INOVANCE

Advancing industrial technology,
for a better world



Industrial Robot Remote I/O Control Function

User Guide

Industrial Automation | New Energy Vehicle | Intelligent Elevator | Intelligent Robot | Digital Energy | Rail Transit

Data code 19012874A00

Legal and Disclaimer

Copyright

Copyright © 2025 Shenzhen Inovance Technology Co., Ltd. All rights reserved

This documentation is the exclusive property of Shenzhen Inovance Technology Co., Ltd. No individual or entity may excerpt, reproduce, modify, translate, or distribute any content herein without written consent from Inovance.

Legal action will be taken against infringement.

Trademarks

INOVANCE is a registered trademark of Shenzhen Inovance Technology Co., Ltd. and its affiliates. All other trademarks or registered trademarks mentioned in this documentation are the property of their respective owners. Unauthorized use of these trademarks by third parties for any purpose without written authorization could violate the rights of their owners.

Disclaimer of Liability

Due to continuous updates and improvements of products and technologies, the content of this documentation may not fully match the actual products. In the event of any discrepancies, the actual products shall prevail.

The contents are subject to change without notice due to product upgrade.

Waste Disposal

The storage, use, and disposal of this product (including optional accessories) must comply with local laws and regulations.

Qualified Personnel

The product/system described in this documentation may be operated only by personnel qualified for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel can identify the risks of the product/system and prevent possible dangers.

Proper Use of the Product

Proper transportation, storage, assembly, installation, commissioning, operation, and maintenance are required to ensure the safe operation of the product without any problems. The required ambient conditions must be met. All operations must follow the guidelines provided in this documentation.

Preface

Introduction

This "Industrial Robot Remote I/O Control Function User Guide" provides reference instructions for using the remote I/O control function of Inovance Technology industrial robots. It is primarily intended for engineers and system integrators, aiming to provide comprehensive content such as usage procedures for remote I/O control permissions and specifications for remote calls.

More Data

Data Name	Data Code	Description
IR-TP200 Series Industrial Robot Teach Pendant User Guide	19012798	This guide introduces software-related operations of the robot teach pendant. Contact Inovance technical support to obtain this guide.
Industrial Robot InoRobotLab User Guide	19012861	This guide introduces software-related operations of the robot InoRobotLab software. Contact Inovance technical support to obtain this guide.
Industrial Robot Instruction Guide	19012825	This guide introduces the function descriptions, instruction formats and parameter explanations, usage examples, and application cases for project instructions of Inovance Technology industrial robots.
Industrial Robot Remote Ethernet Control Function User Guide	19012860	This guide introduces the interface configuration, API call format, API function call examples, common issues and troubleshooting for remote Ethernet control of Inovance Technology industrial robots.
Industrial Robot Controller Software Update User Guide	19012875	This guide introduces the software update procedures and component update procedures for Inovance Technology industrial robots.
Industrial Robot Communication Guide	19012876	This guide introduces the comprehensive multi-protocol communication solution for Inovance industrial robots. It covers mainstream industrial standards including Modbus, EtherNet/IP, PROFINET, EtherCAT, and the MC protocols, serving as a complete technical guide for industrial automation system integration.

Data Name	Data Code	Description
Industrial Robot Remote I/O Control Function User Guide (this guide)	19012874	This guide introduces the interface configuration, bus read/write instruction formats, and bus invocation precautions for remote I/O control of Inovance Technology industrial robots.

Revision History

Revision Date	Data Version	Revision
2026-01	A00	First issue

Access to the Guide

This guide is not delivered together with the product. You can obtain the PDF version in the following ways.

- Do keyword search under Service and Support at http://www.inovance.com.
- Scan the QR code on the product with your smart phone.
- Scan the QR code below to install My Inovance app, where you can search for and download user guides.

Basic Safety Instructions

Safety Precautions

Safety Disclaimer

- This chapter presents essential safety instructions for a proper use of the equipment. Before operating the equipment, read through the guide and comprehend all the safety instructions. Failure to observe the safety instructions may result in death, severe personal injuries, or equipment damage.
- "DANGER", "WARNING", and "CAUTION" items in this guide do not indicate all safety precautions that need to be followed; instead, they just supplement the safety precautions.
- Use this product according to designated environment requirements. Damage caused by improper use is not covered by warranty.
- Inovance shall take no responsibility for any personal injuries or property damage caused by improper usage.

Safety Levels and Definitions



Indicates that failure to comply with the notice will result in severe personal injuries or even death.



Indicates that failure to comply with the notice may result in severe personal injuries or even death.



Indicates that failure to comply with the notice may result in minor or moderate personal injuries or equipment damage.

Safety Precautions

- Drawings in the guide are sometimes shown without covers or protective guards. Remember to install the covers or protective guards as specified first, and then perform operations in accordance with the instructions.
- The drawings in the guide are shown for illustration only and may be different from the product you purchased.
- Operators must take mechanical precautions to protect personal safety and wear protective equipment, such as anti-smashing shoes, safety clothing, safety glasses, protective gloves, and protective sleeves.

Unpacking
 • Do not install the equipment if you find damage, rust, or signs of use on the equipment or accessories upon unpacking. • Do not install the equipment if you find water seepage or missing or damaged components upon unpacking.

- Do not install the equipment if you find the packing list does not conform to the equipment you received.



- Before unpacking, check whether the outer package is intact, damaged, wet, damped, or deformed.
- Unpack the package in sequence. Do not hit the package violently.
- Check whether there is damage, rust, or injuries on the surface of the equipment and equipment accessories before unpacking.
- Check whether the package contents are consistent with the packing list before unpacking.

Storage and Transportation



- Large-scale or heavy equipment must be transported by qualified professionals using specialized hoisting equipment. Failure to comply may result in personal injuries or equipment damage.
- Before hoisting the equipment, ensure that components such as the front cover and terminal blocks are secured firmly with screws. Loosely-connected components may fall off and result in personal injuries or equipment damage.
- Never stand or stay below the equipment when the equipment is being hoisted by the hoisting equipment.
- When hoisting the equipment with a steel rope, ensure the equipment is hoisted at a constant speed without suffering from vibration or shock. Do not turn the equipment over or let the equipment stay hanging in the air. Failure to comply may result in personal injuries or equipment damage.



- Handle the product with care and mind your steps to prevent personal injuries or product damage.
- When carrying the equipment with bare hands, hold the equipment casing firmly with care to prevent parts from falling. Failure to comply may result in personal injuries.
- Store and transport the equipment based on the storage and transportation requirements. Failure to comply will result in equipment damage.
- Avoid storing or transporting the equipment in environments with water splash, rain, direct sunlight, strong electric field, strong magnetic field, and strong vibration.
- Avoid storing the product for more than 3 months. When the product needs to be stored for an extended period, take more strict protection and necessary inspection.
- Pack the equipment strictly before transportation. Use a sealed box for long-distance transportation.
- Never transport the equipment with other equipment or materials that may harm or have negative impacts on this equipment.

Installation



- The equipment can only be operated by professionals with electrical knowledge. Non-professionals are not allowed to operate on the equipment.



- Read through the guide and safety precautions before installation.
- Do not install the equipment in places with strong electric or magnetic fields.
- Before installation, check that the mechanical strength of the installation site can bear the weight of the equipment. Failure to comply will result in mechanical hazards.
- Do not wear loose clothes or accessories during installation. Failure to comply may result in an electric shock.
- When installing the equipment (such as controller) in a closed environment (such as a cabinet or casing), use a cooling device (such as a fan or air conditioner) to cool the environment down to the required temperature. Failure to comply may result in equipment over-temperature or a fire.
- Do not retrofit the equipment.
- Do not loosen the fixing bolts of the product parts and components.
- When the equipment (such as controller) is installed in a cabinet or final assembly, a fireproof enclosure providing both electrical and mechanical protections must be provided. The IP rating must meet IEC standards and local laws and regulations.
- Before installing devices with strong electromagnetic interference, such as a transformer, install a shielding device for the equipment to prevent malfunction.
- Install the product on an incombustible object such as metal and do not touch or attach the product to combustibles. Failure to comply can result in fire accident.



- Cover the top of the equipment (such as controller) with a piece of cloth or paper during installation. This is to prevent unwanted objects such as metal chippings, oil, and water from falling into the equipment and causing faults. After installation, remove the cloth or paper on top of the equipment to prevent over-temperature caused by poor ventilation due to blocked ventilation holes.

Wiring



- Equipment installation, wiring, maintenance, inspection, or component replacement must be performed only by professionals.
- Before wiring, disconnect all the power supplies of the equipment. Wait for at least the time designated on the equipment warning label before further operations because residual voltage still exists after

power-off. Measure the direct voltage of the main circuit and ensure that the voltage is within the safety range. Failure to comply can result in an electric shock.

- Do not perform wiring, remove the equipment cover, or touch the circuit board with power ON. Failure to comply can result in an electric shock.
- Check that the equipment is grounded properly. Failure to comply can result in an electric shock.



- Do not connect the input power supply to the output side of the equipment. Failure to comply can result in equipment damage or even a fire.
- When connecting a drive to the motor, check that the phase sequences of the drive and motor terminals are consistent to prevent reverse motor rotation.
- Cables used for wiring must meet cross sectional area and shielding requirements. The shield of the cable must be reliably grounded at one end.
- Tighten the terminal screws with the tightening torque specified in the user guide. Improper tightening torque may result in overheat, damage to the connecting parts, or a fire.
- After wiring is done, check that all cables are connected properly and no screws, washers or exposed cables are left inside the equipment. Failure to comply may result in electric shock or equipment damage.



- Follow the electrostatic discharge (ESD) procedure and wear an anti-static wrist strap to perform wiring. Failure to comply may result in damage to the equipment or to the internal circuit.
- Use shielded twisted pairs for the control circuit. Connect the shield to the grounding terminal of the equipment for grounding purpose. Failure to comply can result in equipment malfunction.

Power-On



- Before power-on, check that the equipment is installed properly with reliable wiring and the motor can be restarted.
- Check that the power supply meets equipment requirements before power-on to prevent equipment damage or a fire.
- Do not open the cabinet door or protective cover of the product, touch any wiring terminal of the product, or remove any part of the product with power on. Failure to comply can result in an electric shock.



- After the completion of wiring and parameter setting, perform a robot test run to confirm that the robot can operate safely. Failure to comply may result in personal injuries or equipment damage.

- Before power-on, check that the rated voltage of the equipment is consistent with that of the power supply. Failure to comply may result in fire accident.
- Before power-on, check that no one is near the equipment, motor, or machine. Failure to comply may result in death or personal injuries.

Operation



- The equipment must be operated only by professionals. Failure to comply can result in death or personal injuries.
- Do not touch any connecting terminals or disassemble any unit or component of the equipment during operation. Failure to comply can result in an electric shock.



- Do not touch the equipment enclosure, fan, or resistor with bare hands. Failure to comply may result in burns.
- Prevent metal or other objects from falling into the equipment during operation. Failure to comply may result in a fire or equipment damage.

Maintenance



- Equipment installation, wiring, maintenance, inspection, or component replacement must be performed only by professionals.
- Do not maintain the equipment with power ON. Failure to comply can result in an electric shock.
- Before maintenance, cut off all the power supplies of the equipment and wait for at least the time designated on the equipment warning label.
- When a permanent magnet motor is used, do not touch the motor terminals immediately after power-off because the motor terminals can generate induced voltage during rotation even after the equipment is powered off. Failure to comply can result in an electric shock.

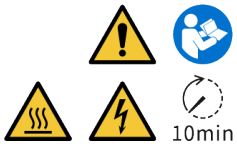


- Perform routine and regular inspection and maintenance on the equipment in accordance with maintenance requirements and keep a record.

Repair
DANGER • Equipment installation, wiring, maintenance, inspection, or component replacement must be performed only by professionals. • Do not maintain the equipment with power ON. Failure to comply can result in an electric shock. • Before inspection and repair, cut off all the power supplies of the equipment and wait for at least the time designated on the equipment warning label.
WARNING • Submit a request for repair services in accordance with the product warranty agreement. • When the fuse is blown or the circuit breaker or earth leakage circuit breaker (ELCB) trips, wait for at least the time designated on the equipment warning label before power-on or further operations. Failure to comply may result in death, personal injuries or equipment damage. • Troubleshooting and repair must be performed by professionals in accordance with the repair instructions, with repair records kept properly. • Replace quick-wear parts of the equipment in accordance with the replacement instructions. • Do not operate on damaged equipment. Failure to comply may result in death, personal injuries, or severe equipment damage. • After the equipment is replaced, check the wiring and set parameters again.
Disposal
WARNING • Dispose of retired equipment in accordance with local regulations and standards. Failure to comply may result in death, personal injuries, or property damage. • Recycle retired equipment in accordance with industry waste disposal standards to avoid environmental pollution.

Safety Label

For safe operation and maintenance, comply with the safety labels on the equipment. Do not damage or remove the safety labels. See the following table for descriptions of the safety labels.

Safety labels	Description
	• Read through the safety instructions before operating the equipment. Failure to comply may result in death, personal injuries, or equipment damage. • Do not touch the terminals or remove the cover with power ON or within 10 min after power-off. Failure to comply can result in an electric shock.

Industrial Information Security

The product provides an interface to connect to the network and transmits data through the network interface. To protect factories, systems, machines, and networks from cyber attacks and ensure safe operation, a proper industrial information security protection mechanism must be implemented.
The customer is responsible for providing and continuously ensuring a secure connection between the product and the customer network or any other network to prevent unauthorized access to its factories, systems, machines, and networks. The system or machine can be connected to the corporate network or the Internet only when secure connections are ensured and appropriate security measures are taken (for example, anti-virus software or firewall installed).
Inovance continuously develops and improves products and solutions to improve safety. It is strongly recommended that you update the product promptly and always use the latest version.



Malware (such as viruses, Trojans, and worms) can put the product in an unsafe running state, which may result in death, serious injuries, and property damage. Observe the following precautions:

- Always use the latest software version. If the product version is no longer supported or the latest version is not used, customers will be exposed to increased risk of cyber attacks.
- Take appropriate protection measures (including but not limited to installing anti-virus software, firewall, WAF, IPS/IDS, and situation awareness system, and applying authentication, data encryption) to prevent files in mobile storage devices from being damaged by malware, and to prevent products, networks, systems, and interfaces from unauthorized access, interference, intrusion, data leakage, or information breach.
- Check all safety-related interfaces and settings after commissioning.

Contents

1 Configuration Through Software Interface 15
1.1 Configuration Through the InoRobotLab Software 15
1.1.1 Fieldbus Switch Settings 15
1.1.2 Address Allocation Settings 21
1.1.3 I/O Mapping Settings 26
1.1.4 Project Number Configuration 44
1.2 Configuration through the Teach Pendant 46
1.2.1 Fieldbus Switch Settings 46
1.2.1.1 Modbus Settings 46
1.2.1.2 EtherNet/IP Settings 47
1.2.1.3 EtherCAT Settings 48
1.2.1.4 MC Settings 51
1.2.1.5 PROFINET Settings 52
1.2.2 I/O Mapping Configuration 53
1.2.3 Project Number Configuration 56
2 Introduction of Robot Bus Addresses 58
3 Differences Between Two Remote I/O Unit Control Modes 59
3.1 Remote I/O Unit (Effective in Both Auto and Manual Modes) 59
3.2 Remote I/O Unit (Only Effective in Auto Mode) 59
3.3 Example of Differences Between Two Types of Control Modes 63
4 Classification and Use of Remote Control 64
4.1 Basic Remote Control 64
4.2 Extended Remote Control 64
5 I/O monitor 66
5.1 I/O Monitor in InoRobotLab Software 66
5.1.1 Inputs 66
5.1.1.1 Bit Monitoring 66
5.1.1.2 Byte Monitoring 68
5.1.1.3 Word Monitoring 69
5.1.2 Outputs 71
5.1.3 System I/Os 71
5.1.4 Meaning of Colors in I/O Monitor 71
5.2 I/O Monitor in InoRobotTP Software 72
5.2.1 Input 72
5.2.2 Output 74
5.2.3 AD/DA 76
5.2.4 System I/Os 76

5.2.5 Meaning of Colors in I/O Monitor 79
6 User Instructions for Read/Writing the Bus 81
6.1 How to Receive Data from PLC Through Instructions 81
7 Controlling the Robot via Digital I/O and Fieldbus I/O Simultaneously 82
8 Appendix 84
8.1 Appendix 1: Fieldbus I/O Correspondence 84
8.2 Appendix 2: Extended Remote Control Command List 103
8.2.1 List of Commands 103
8.2.2 System Status Reading and Setting Commands 115
8.2.3 Point Read/Write-Related Commands 152
8.2.4 System Variable-Related Commands 168
8.2.5 System Standard I/O-Related Commands 185
8.2.6 Motion-Related Commands 195
8.2.7 System Parameter Settings-Related Commands 222
8.2.8 External Axis-Related Commands 230
8.2.9 Interference Zone-Related Commands 234
8.2.10 Average Load Rate and Current Monitoring 246
8.2.11 Multitasking-Related Commands 249
8.2.12 Tracking Process-Related Commands 251
8.2.13 Analog Read/Write-Related Commands 262
8.2.14 System Diagnosis-Related Commands 265
8.2.15 Data Stream-Related Commands 269
8.2.15.1 Getting the Bus Data Stream Status 269
8.2.15.2 Setting the Bus Data Stream Status 269
8.2.15.3 Data Stream Motion MovAbsJ 270
8.2.15.4 Data Stream Motion MovJ 273
8.2.15.5 Data Stream Motion MovL 277
8.2.15.6 Data Stream Motion Jump 280
8.2.15.7 Data Stream Motion JumpL 284
8.2.15.8 Data Stream Motion MovC Point 1 287
8.2.15.9 Data Stream Motion MovC Point 2 291
8.2.15.10 Setting the Acceleration and Deceleration Jerk Levels Of the Motion Segment 294
8.2.15.11 Reading the Acceleration and Deceleration Jerk Levels Of the Motion Segment 294
8.2.15.12 Setting the Enable/Disable of Optimal Trajectory Function 295
8.2.15.13 Reading the Enable/Disable Status of Optimal Trajectory Function 296
8.2.16 Pallet-Related Commands 297
8.2.17 Point Conversion-Related Commands 313

8.2.18 Collision Detection 317
8.2.18.1 Setting the Collision Detection Switch 317
8.2.18.2 Reading the Collision Detection Switch 318
8.2.18.3 Setting the Collision Detection Sensitivity 319
8.2.18.4 Reading the Collision Detection Sensitivity 320
8.2.18.5 Setting the Collision Detection Trigger Action 321
8.2.18.6 Reading the Collision Detection Trigger Action 322
8.2.19 Real-time Data Interaction 323
8.2.19.1 Loading the Real-time Configuration 323
8.2.19.2 Setting the Activation Status 324
8.3 Appendix 3: Instructions for Special Bus Types 326
8.3.1 Overview of Endianness 326
8.3.2 Endianness Conversion of Siemens PROFINET Bus 327
8.4 Appendix 4: Notes for Robot "0" Programming Function 329

1 Configuration Through Software Interface

1.1 Configuration Through the InoRobotLab Software

1.1.1 Fieldbus Switch Settings

You can switch on or off five types of buses including Modbus, EtherNet/IP, EtherCAT, MC, and PROFINET, and configure the bus parameters.

> CAUTION
>
> Only one fieldbus can be activated at a time.

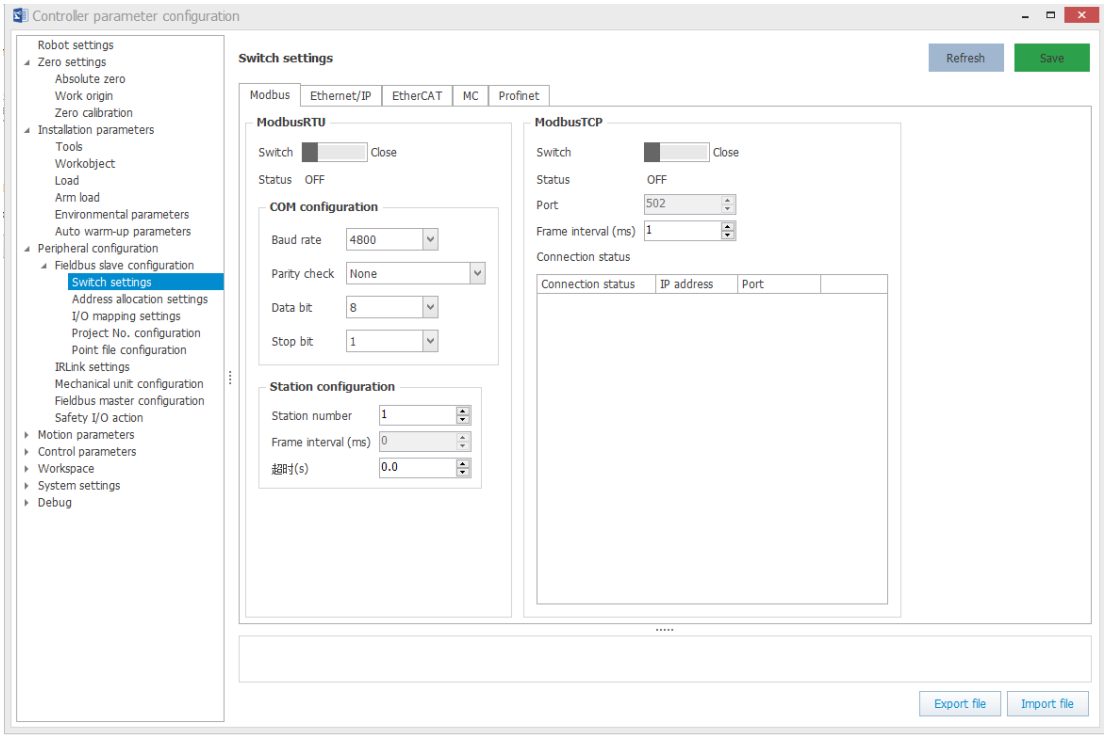
Modbus settings

Modbus-RTU and Modbus TCP functions of the robot controller can be enabled simultaneously without conflict.

Regardless of Modbus-RTU or Modbus TCP, the robot controller can only be configured as Modbus slave, not as Modbus master on InoRobotLab.

Steps

1. Double-click "Controller parameter configuration" in the device tree, then select "Peripheral configuration" > "Fieldbus slave configuration" > "Switch settings" > "Modbus", as shown in the figure below.



2. Toggle the switch and click "Save" to turn on or off the Modbus-RTU and Modbus TCP functions.
3. In the Modbus-RTU function, the frame interval depends on the baud rate. The larger the baud rate, the smaller the frame interval. If the baud rate is changed, the frame interval will be automatically changed accordingly.
4. In the Modbus TCP function, the port number is fixed to 502 and the frame interval can be set as needed.

5. The order of toggle switch operation and parameter setting is not limited. The settings are saved to the controller only when you click the "Save" button.

Results:

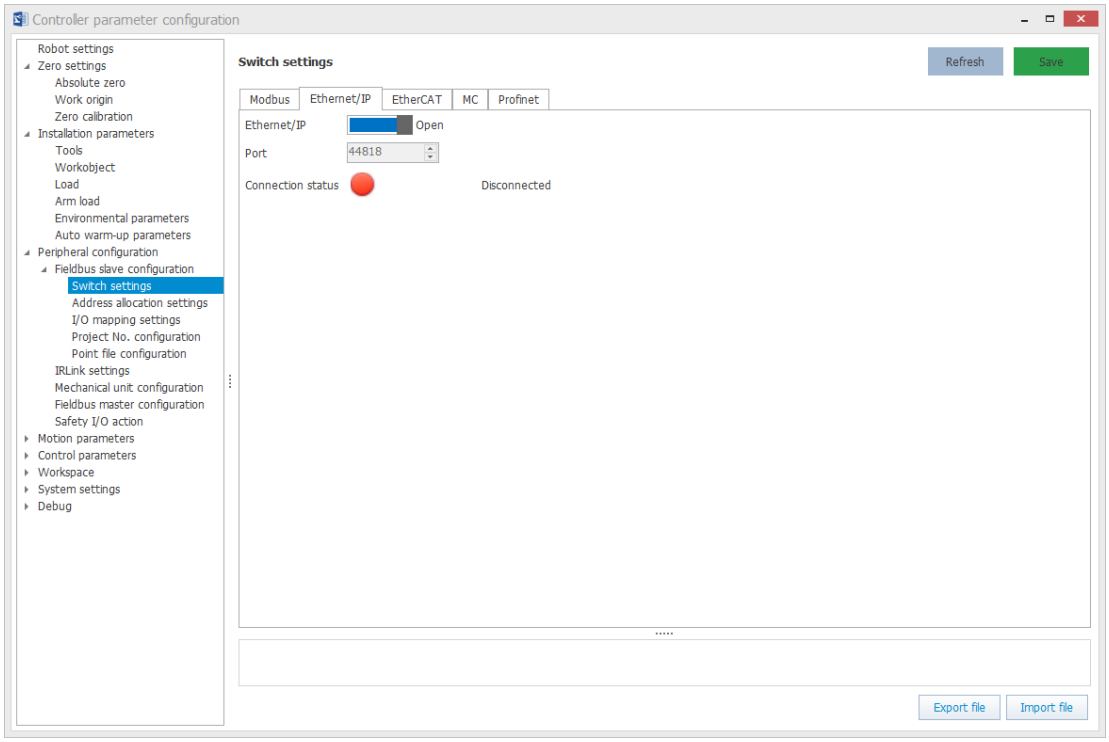
After the configuration is complete, you can verify the configuration through communication with the Modbus client.

For the usage of Modbus functions, see the "Modbus Bus Communication" section in the "Industrial Robot Communication Guide".

EtherNet/IP settings

Steps

1. You can enable or disable the EtherNet/IP slave function by toggling the switch and clicking the "Save" button in the upper right corner.
2. The interface also displays the port number and connection status of the slave. When no connection exists, the indicator is red. When a master is connected, the indicator is green. The IP address and port number of the master are displayed.



For the usage of EtherNet/IP functions, see the "EtherNet/IP Bus Communication" section in the "Industrial Robot Communication Guide".

EtherCAT settings

Steps

1. You can enable or disable the EtherCAT slave function by toggling the switch and clicking the "Save" button. You can also configure the alias of the slave and the maximum number of dropped frames.
2. The interface also displays the connection status of the EtherCAT slave. When no connection exists, the indicator is red. When a master is connected, the indicator is green.

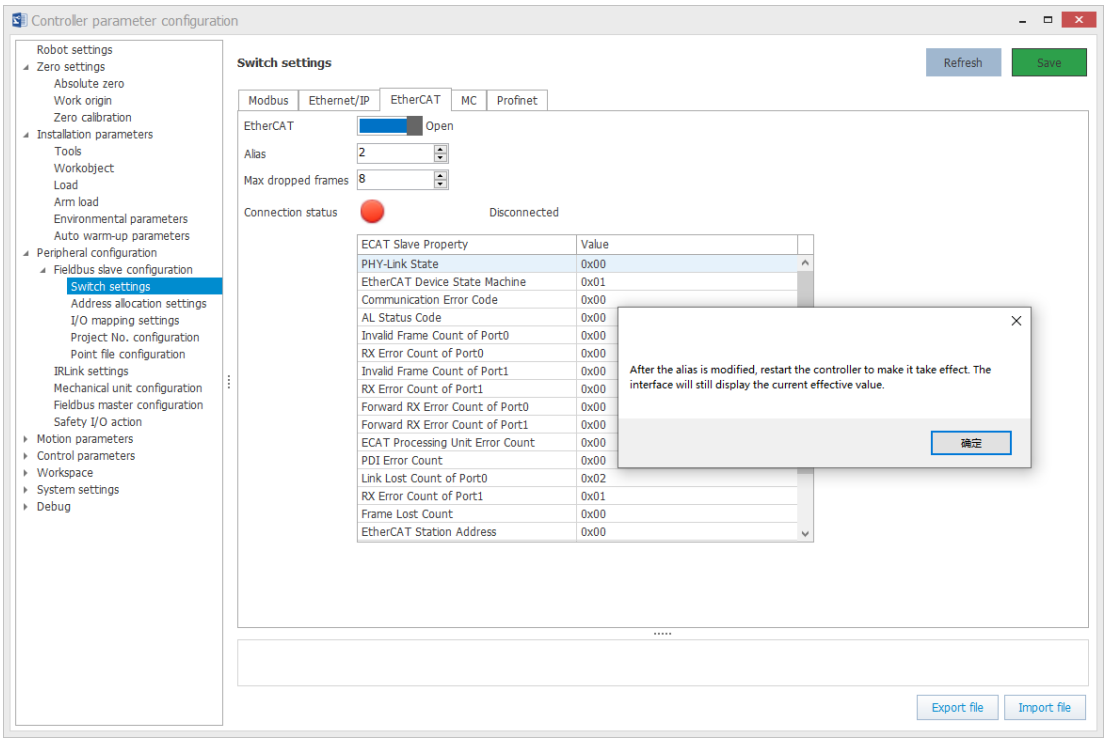
> **NOTE**
>
> The EtherCAT slave function can only be activated through on the controller that supports the EtherCAT slave function.

The following table lists the properties of the EtherCAT slave:

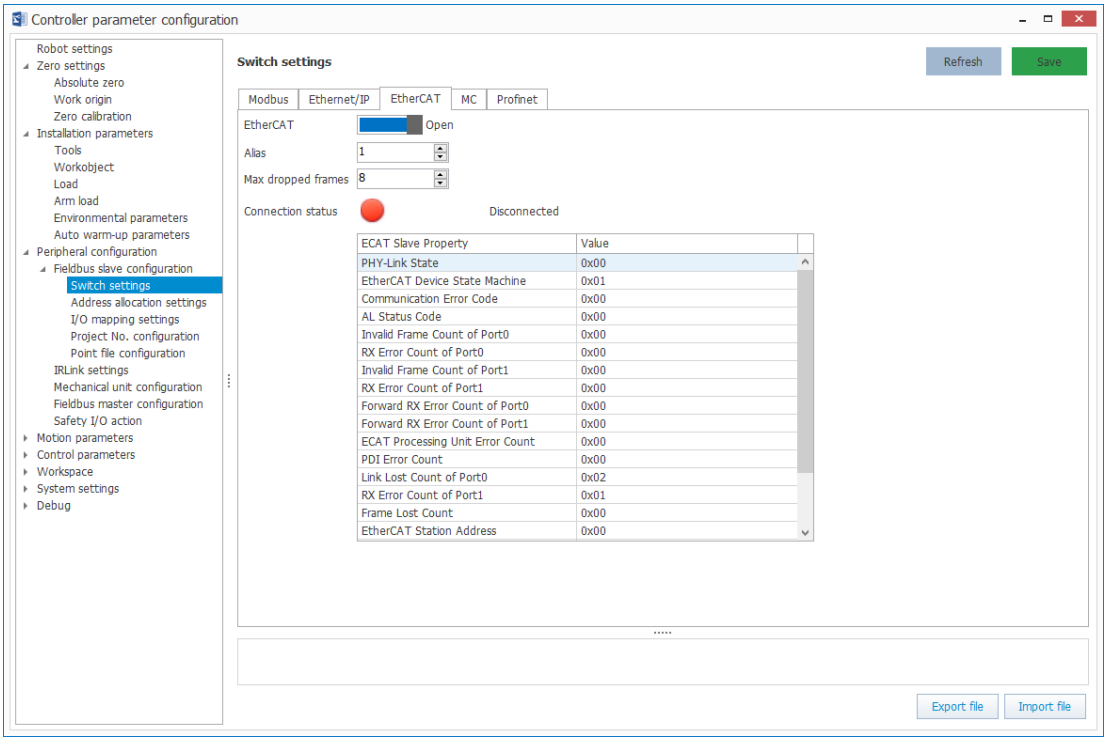
EtherCAT slave property	Description
PHY-Link status	The Link status of the port, where a value of 0 for the corresponding bit indicates LinkDown, and 1 indicates LinkUp: • Bit0: status of port 0 • Bit1: status of port 1
EtherCAT device state machine	Actual slave status: • 1: Init (initialization status) • 2: PreOP (pre-operational status) • 4: SafeOP (safe operational status) • 8: OP (operational status)
Communication error code	Communication error code, uploaded by MCU. The controller triggers the corresponding alarm if communication error code exists.
AL status code	Application layer status code, uploaded by MCU
Invalid Frame Count Of Port0	Invalid frame count received on port 0, uploaded by MCU
RX Error Count of Port0	Error frame count received on port 0, uploaded by MCU
Invalid Frame Count Of Port1	Invalid frame count received on port 1, uploaded by MCU
RX Error Count of Port1	Error frame count received on port 1, uploaded by MCU
Forward RX Error Count of Port0	Forwarded error frame count on port 0, uploaded by MCU
Forward RX Error Count of Port1	Forwarded error frame count on port 1, uploaded by MCU
ECAT Processing Unit Error Count	Data frame processing unit error count, uploaded by MCU
PDI Error Count	PDI error count, uploaded by MCU

EtherCAT slave property	Description
Link Loss Count of Port0	Connection loss count on port 0, uploaded by MCU
Link Loss Count of Port1	Connection loss count on port 1, uploaded by MCU
Frame Lost Count	Accumulated frame loss count on slave, uploaded by MCU
EtherCAT Station Address	MCU uploads the site name configured by the master.
ESC Version	ESC version information, uploaded by MCU
XML Version	XML version information, uploaded by MCU
Software Version	Software version number, uploaded by MCU

- After the alias is modified, the robot needs to be powered on again to make the modification take effect.



- For controllers with safety function, the interface has options for data link enhancement switch and XML reset switch. For both switches to take effect, the robot needs to be powered on again.



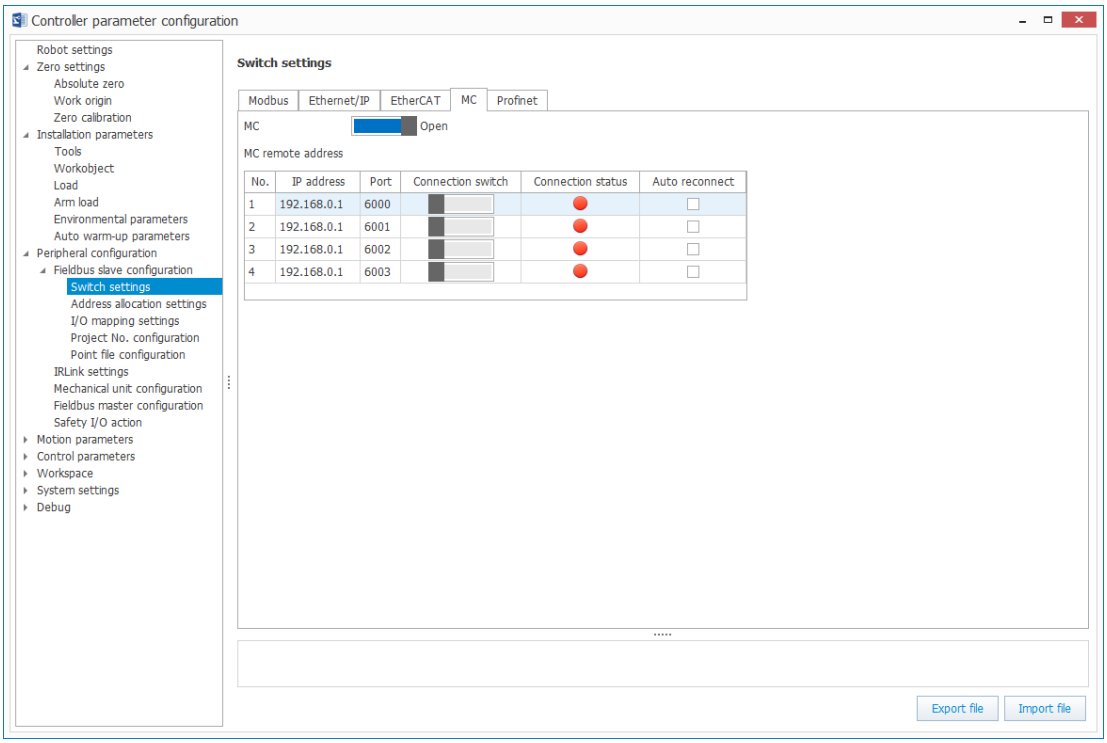
For the usage of EtherCAT functions, see the "EtherCAT Bus Communication" section in the "Industrial Robot Communication Guide".

MC settings

You can enable the MC function of the robot controller. The robot acts as a slave.

Steps

1. Double-click "Controller parameter configuration" in the device tree, then select "Peripheral configuration" > "Fieldbus slave configuration" > "Switch settings" > "MC", as shown in the figure below.



2. In contrast to the previous three protocols, the MC function can be enabled or disabled directly through the toggle switch. The interface displays the IP address, port number, connection switch, connection status, and automatic re-connection switch of the four masters. You can establish a connection to the master by entering the IP address and port number of the master and then clicking the connection

switch. The indicator is red when there is no master connection, and green when there is a master connection.

CAUTION

- After the master connection is successful, the IP and port numbers of the master cannot be modified.
- The auto re-connect option can be checked only when the master connection is successful.
- When the auto re-connect option is checked, the IP address, port number, and connection switch cannot be modified.

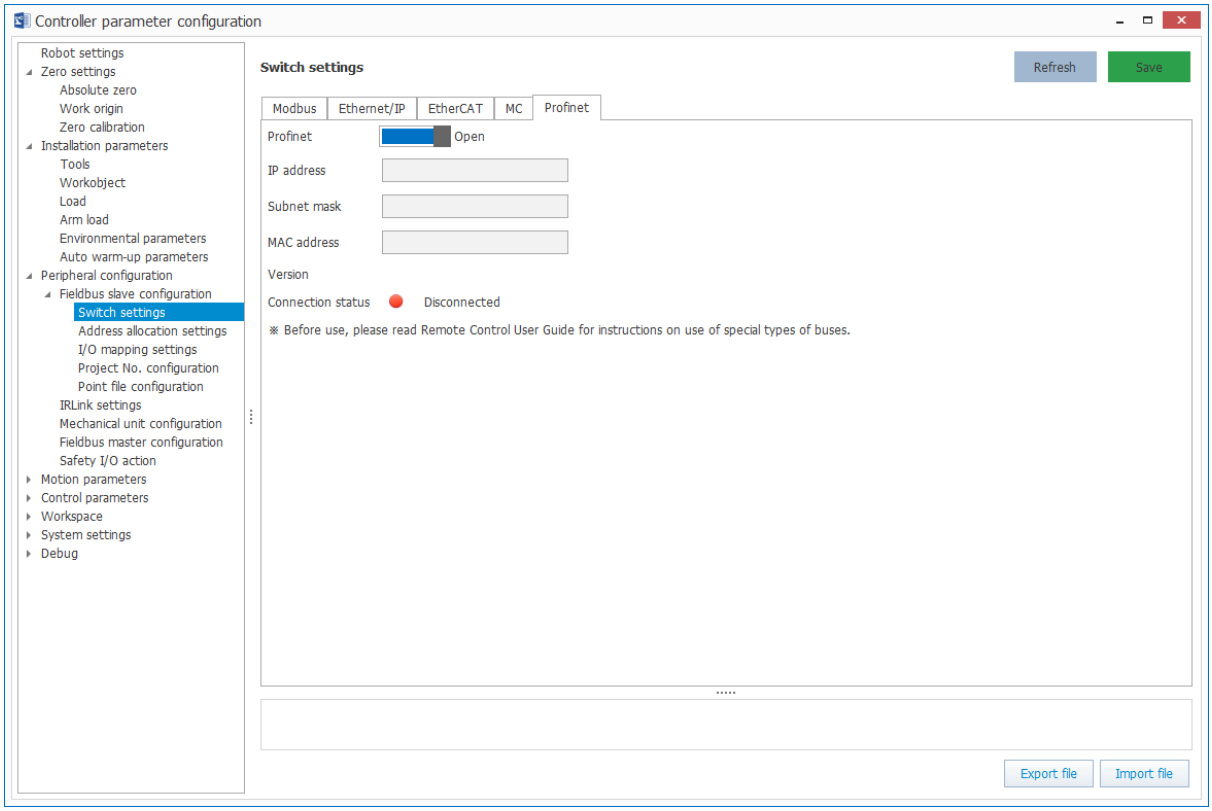
Results:

After the configuration is complete, you can verify the configuration through communication with the MC client.

For the usage of MC functions, see the "MC Bus Communication" section in the "Industrial Robot Communication Guide".

PROFINET settings

1. Double-click "Controller parameter configuration" in the device tree, then select "Peripheral configuration" > "Fieldbus slave configuration" > "Switch settings" > "PROFINET", as shown in the figure below.



2. You can enable or disable the PROFINET slave function by toggling the switch and clicking the "Save" button.
3. The interface also displays the connection status of the PROFINET slave, the IP address, subnet mask, MAC address, and software version of the slave expansion card. The connection status indicator is red when the PROFINET slave function is not enabled or communication with the master fails. When communication with the master is normal, the connection status indicator is green.

> **CAUTION**
>
> To use this function, the controller must be installed with an external PROFINET slave expansion card.

For the usage of PROFINET functions, see the "PROFINET Communication with a Siemens PLC" section in the "Industrial Robot Communication Guide".

1.1.2 Address Allocation Settings

Before using the address allocation function, you need to understand the concept of the robot bus addresses first. For details, see 2 Introduction of Robot Bus Addresses.

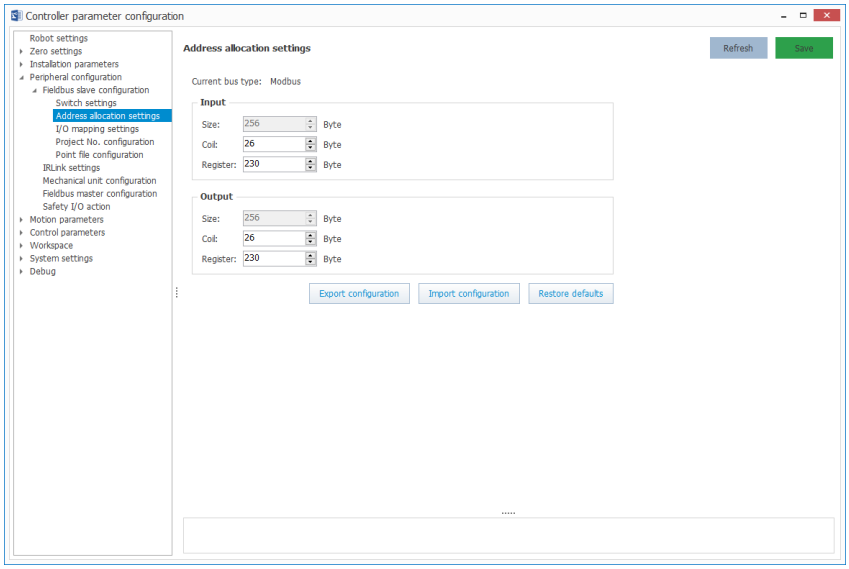
The so-called address allocation is to specify the range of fieldbus I/Os for communication with the master. Only I/O with an assigned address can interact with the master (PLC or HMI in most cases) to input and output data. The following takes Modbus, EtherNet/IP, EtherCAT, MC and PROFINET functions as examples to describe the address allocation.

Modbus Address Allocation

When the Modbus-RTU or Modbus TCP function is activated, the current bus type is displayed as Modbus.

You can change the number of bytes of the allocated coil and register. The bytes are automatically added to the total size of the input address. By default, the size of coil is 26 bytes and the size of the register is 230 bytes. The relationship between the Modbus address table and the robot bus address is as follows when the default configuration is used.

Modbus address	Robot address
Coil 4096-4303 (208 coils, 26 bytes)	In512-In719 (208 bits, 26 bytes)
Register 34800-34914 (115 registers, 230 bytes)	In720-In2559 (1840 bits, 230 bytes)
Coil 0-207 (208 coils, 26 bytes)	Out512-Out719 (208 bits, 26 bytes)
Register 2048-2162 (115 registers, 230 bytes)	Out720-Out2559 (1840 bits, 230 bytes)



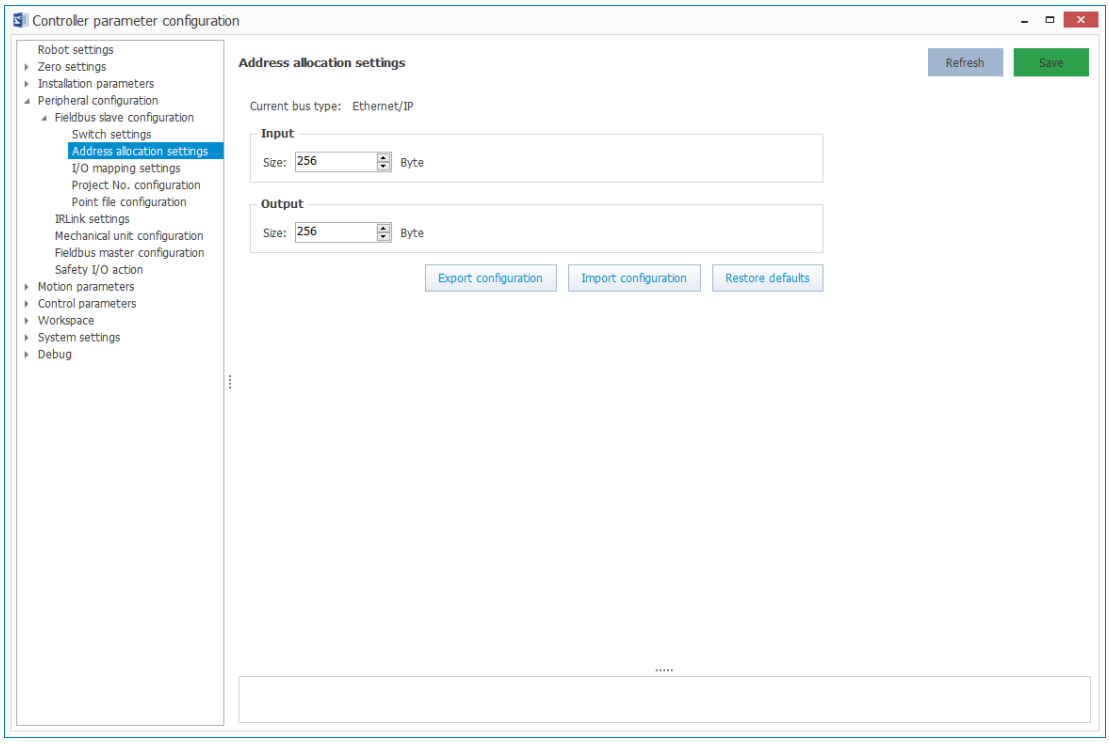
EtherNet/IP Address Allocation

When the EtherNet/IP function is activated, the current bus type is displayed as EtherNet/IP.

You can change the number of bytes of the input and output addresses. By default, the size of input/output address is 256 bytes. The relationship between the EtherNet/IP address table and the robot bus address is as follows when the default configuration is used.

(m is the start word address of the data transmitted to the robot by the EtherNet/IP master, and n is the start word address of the data transmitted to the EtherNet/IP master by the robot.)

EtherNet/IP address	Robot address
m to m+127 (128 words, 256 bytes)	In512-In2559 (2048 bits, 256 bytes)
n to n+127 (128 words, 256 bytes)	Out512-Out2559 (2048 bits, 256 bytes)



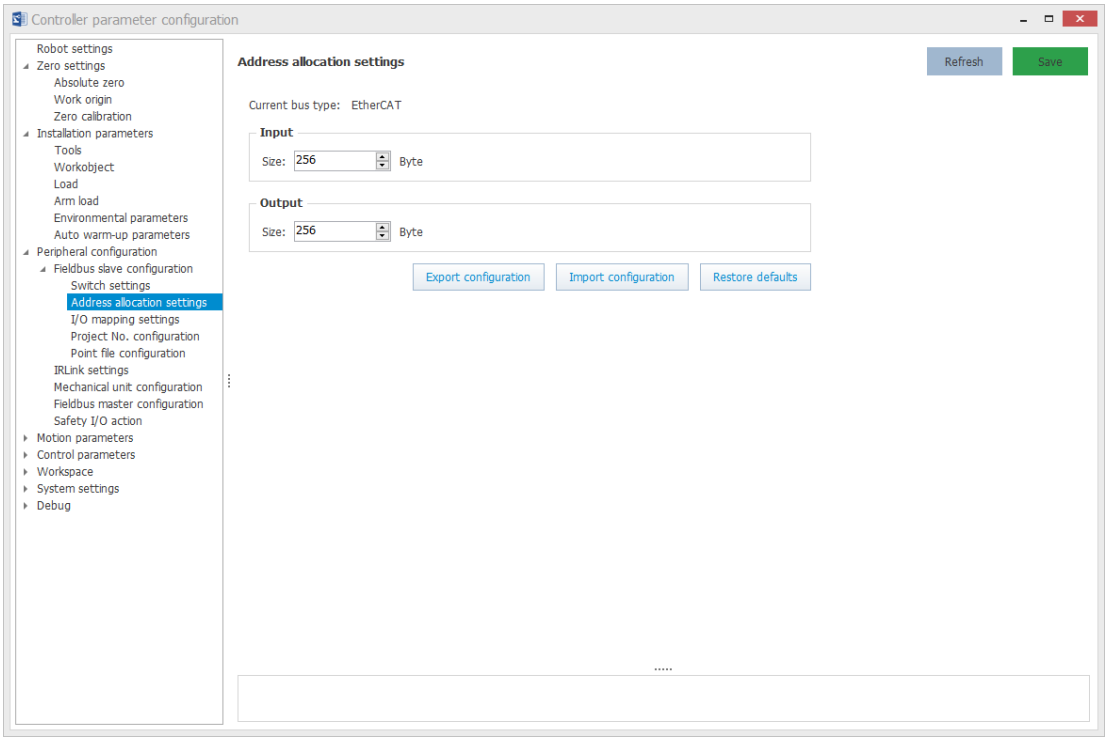
EtherCAT Address Allocation

When the EtherCAT function is activated, the current bus type is displayed as EtherCAT.

You can change the number of bytes of the input and output addresses. By default, the size of input/output address is 256 bytes. The relationship between the EtherCAT address table and the robot bus address is as follows when the default configuration is used.

(p is the first object of RxPDO in the EtherCAT protocol, and q is the first object of TxPDO in the EtherCAT protocol.)

EtherCAT address	Robot address
p to p+127 (128 RxPDOs, 256 bytes)	In512-In2559 (2048 bits, 256 bytes)
q to q+127 (128 RxPDOs, 256 bytes)	Out512-Out2559 (2048 bits, 256 bytes)



MC Address Allocation

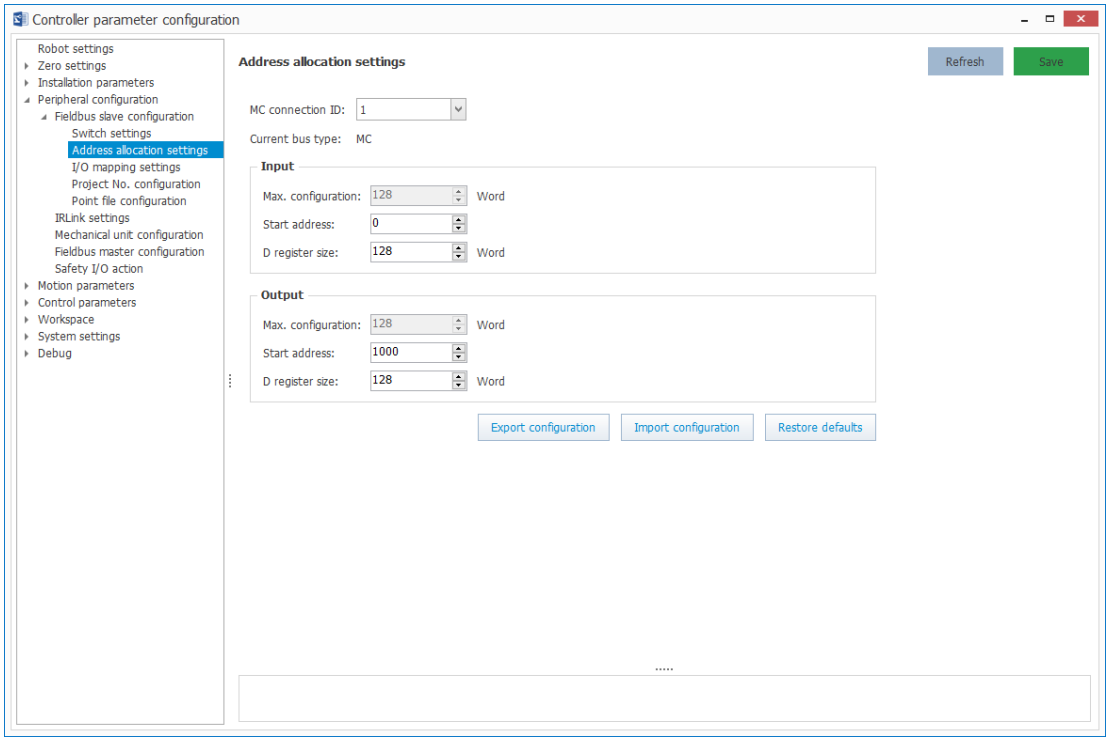
When the MC function is activated, the current bus type is displayed as MC. In addition, an MC connection ID is displayed, indicating the number of the current master.

You can change the number of bytes of the start address and D register for the input and output. By default, the size of input/output address is 256 bytes. The size of the input/output D register is between 2 and 256 bytes. The size must be an even number. The sum of the number of bytes of the start address and the D register of the input must be smaller than the start address of the output. The relationship between the MC address table and the robot bus address is as follows when the default configuration is used.

MC address	Robot address
D register D0-D255 (128 registers, 256 bytes)	In512-In2559 (2048 bits, 256 bytes)
D register D1000-D1255 (128 registers, 256 bytes)	Out512-Out2559 (2048 bits, 256 bytes)



According to technical data of Mitsubishi PLC, the maximum number of soft components is 40,000. Therefore, the sum of the number of bytes of the start address and the output D register should be less than or equal to 40,000. The configuration page only limits that the input/output start address is less than or equal to 40,000, and the user need to ensure on their own that the address size is correct. Input start address + Input D register ≤ Output start address < Output start address + Output D register ≤ 40000.



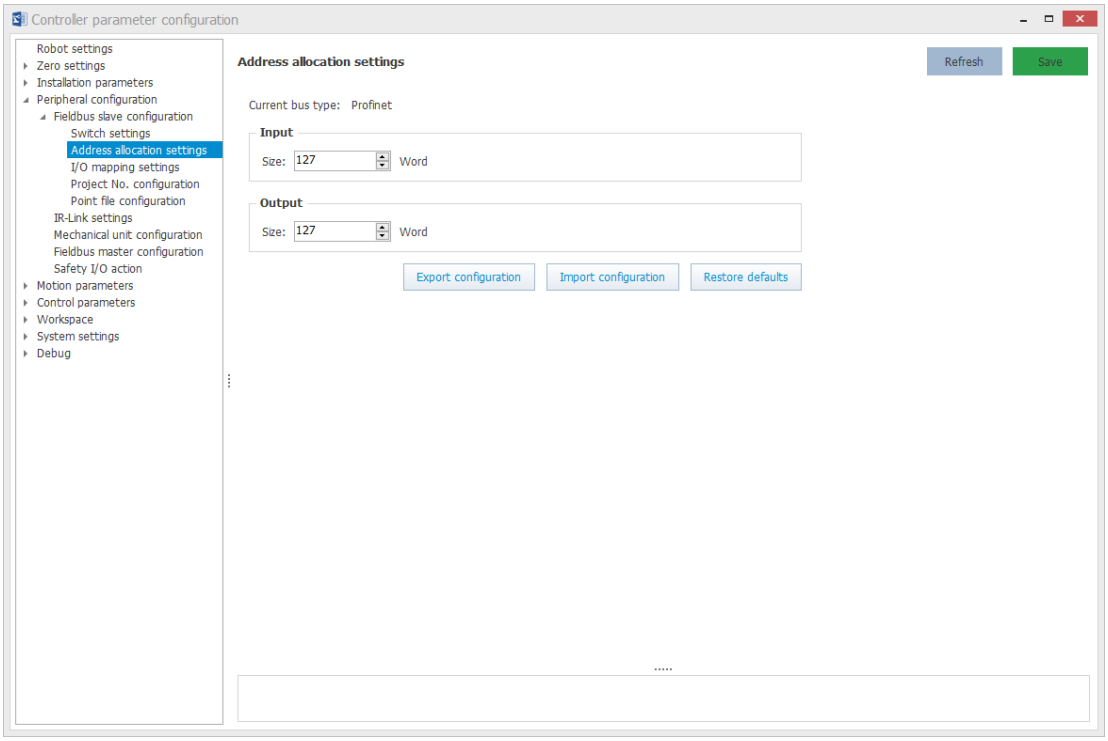
PROFINET Address Allocation

When the PROFINET function is activated, the current bus type is displayed as PROFINET.

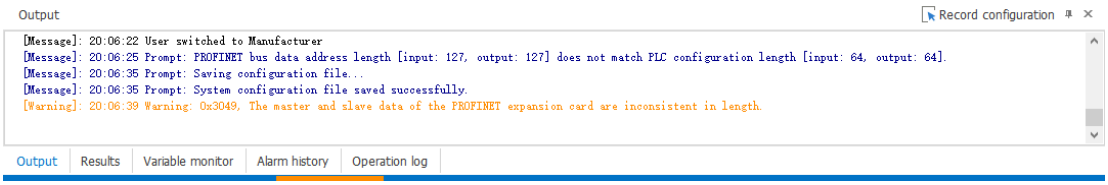
You can change the number of bytes of the input and output addresses. By default, the size of input/output address is 127 bytes. The relationship between the PROFINET address table and the robot bus address is as follows when the default configuration is used.

(Q is the first object of the PROFINET output register, and I is the first object of the PROFINET input register.)

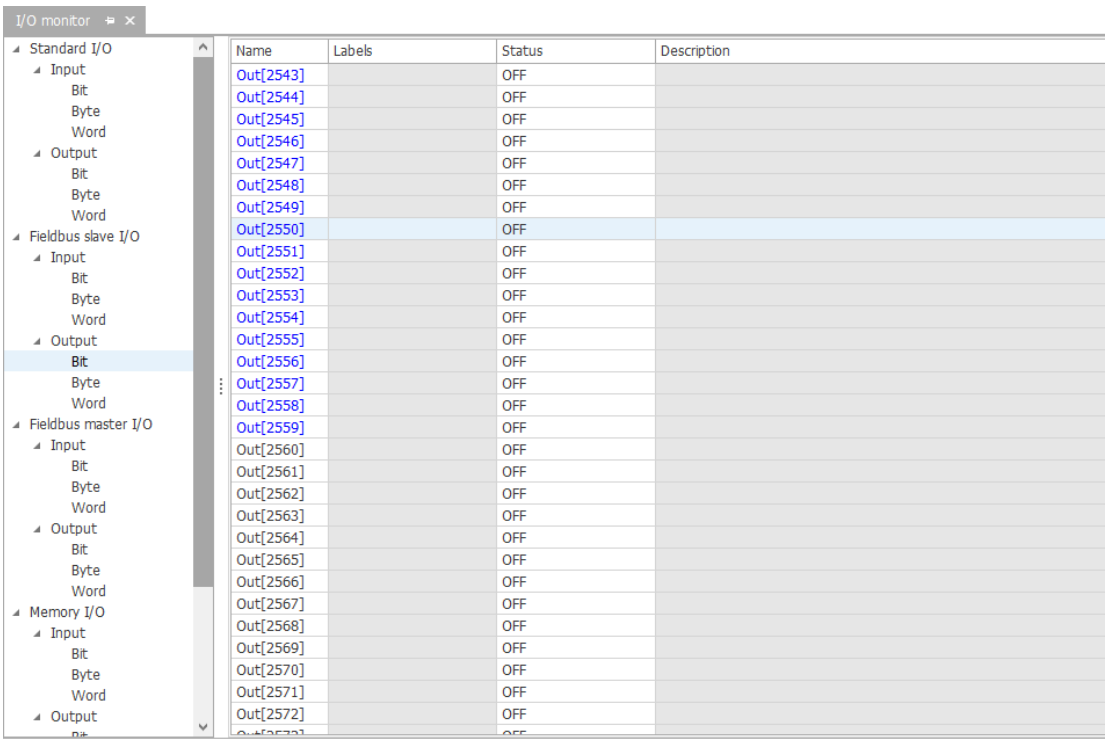
EtherCAT address	Robot address
Q to Q+126 (127 registers, 254 bytes)	In512-In2543 (2032 bits, 254 bytes)
I to I+126 (127 registers, 254 bytes)	Out512-Out2543 (2032 bits, 254 bytes)



- To ensure the integrity of the PROFINET communication data, ensure that the address length of the master is the same with that of the robot. When an address length difference is detected, H3049 alarm (which cannot be cleared) will be displayed on the robot and a prompt message is printed on the InoRobotLab interface. To clear the alarm, eliminate the address length difference.



- For the convenience of identification, the fieldbus I/O assigned with addresses are displayed in blue, while those not assigned with addresses are displayed in black, as shown in the figure below.



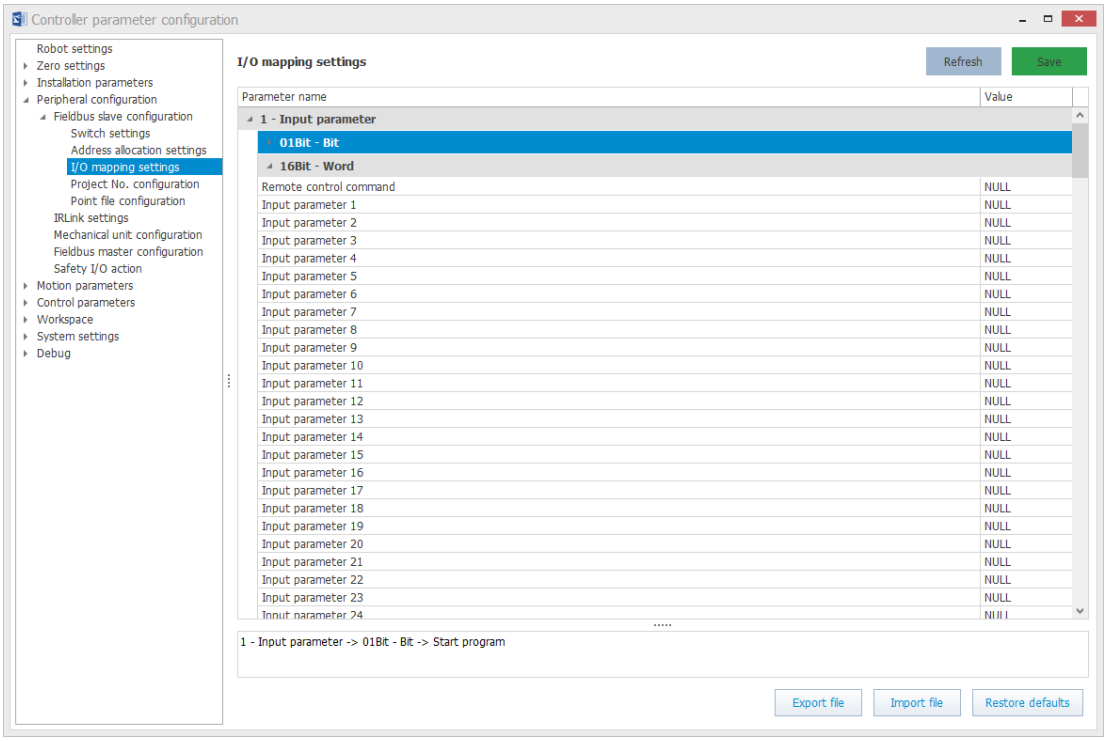
1.1.3 I/O Mapping Settings

Remote I/O control allows you to control program start/stop, reset, and emergency stop of the robot via I/Os (including digital I/Os, fieldbus I/Os, and memory I/Os). You can also monitor the program running and fault state of the robot.

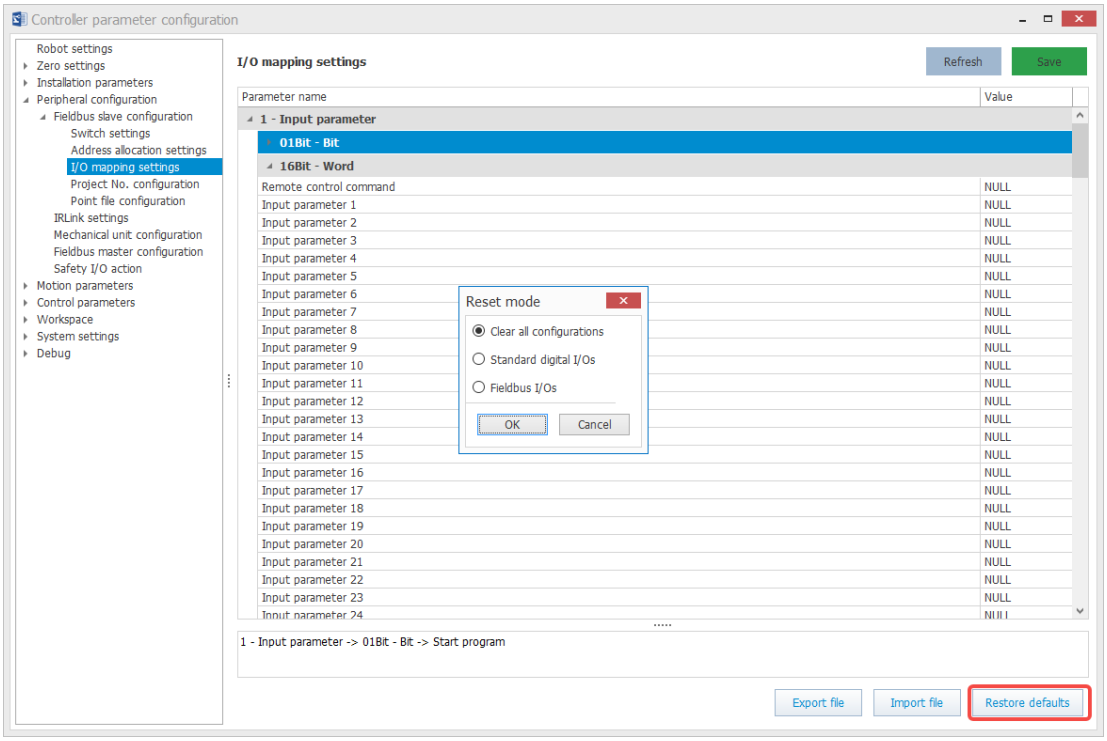
The I/O mapping is to bind some commands of the remote I/O control function to the input signals (In) of the robot, and the status of the robot to the output signals (Out). In this way, you can control the robot using the input signals and monitor the robot using the output signals.

Steps

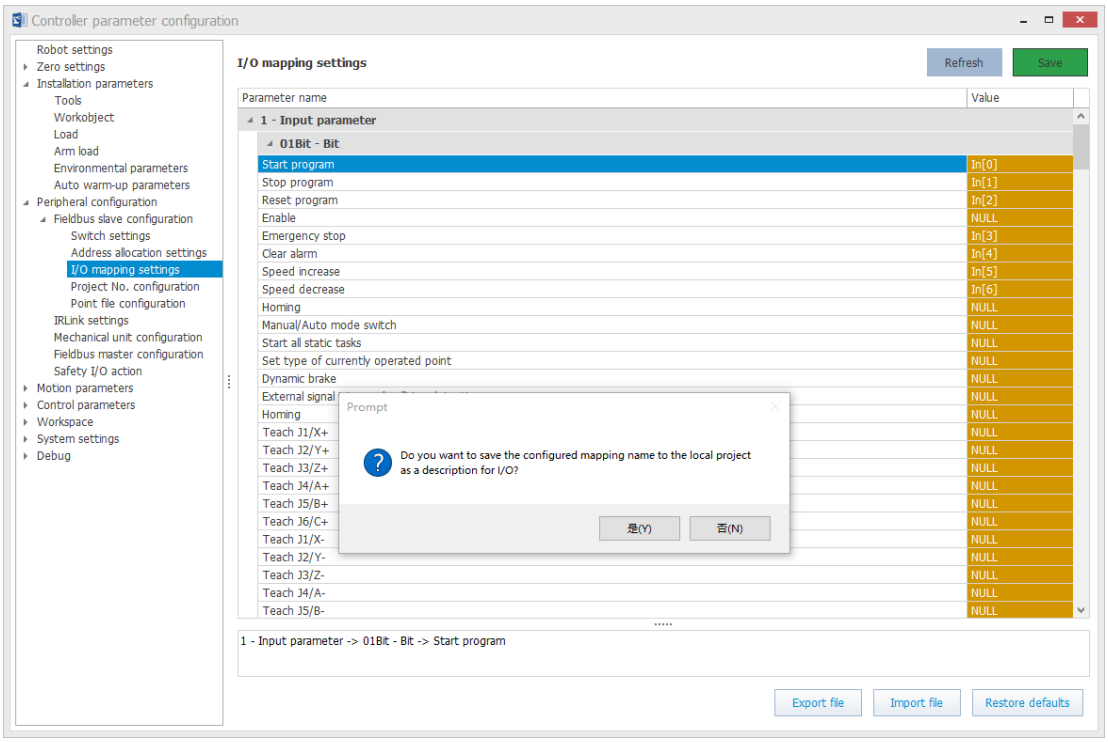
1. Double-click "Controller parameter configuration" in the device tree, then select "Peripheral configuration" > "Fieldbus slave configuration" > "I/O mapping settings", as shown in the figure below.



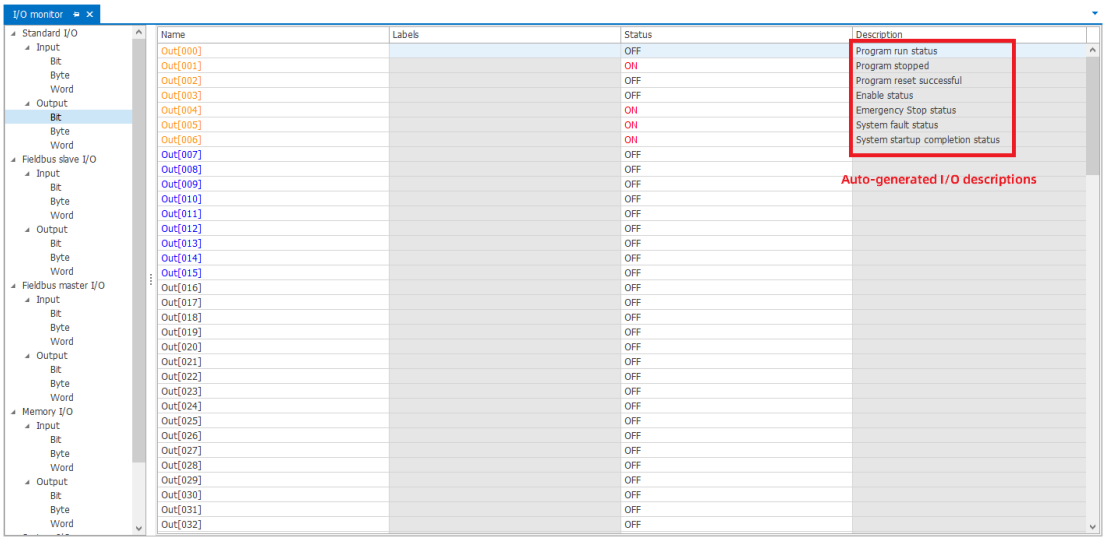
2. The default I/O mapping is empty. To facilitate user operation, two sets of default I/O configurations are provided. One group is standard digital I/Os and the other group is fieldbus I/Os. You can select the default I/O configurations by clicking the "Restore defaults" button in the lower right corner. You can also choose "Clear all configurations" to clear the existing setting values.



3. If you select "Standard digital IO" or "Fieldbus IO", the default I/O mapping is generated. You can adjust the default mapping as needed and click the "Save" button. When a project is currently open in InoRobotLab, a pop-up prompt displays after you click the "Save" button.



Click "Yes" to save the settings. Then you can see the auto-generated I/O description on the monitoring interface. You can also view the auto-generated I/O description in the I/O labels of the project file.



For the configuration of standard digital I/O mapping and fieldbus I/O mapping, see the description below.

Standard digital I/O mapping

The default standard digital I/O configuration is as follows:

(1) Bus input address mapping table

Robot address	Function	Type	Remarks
In0	Start program	Reset type	-
In1	Stop program	Level type	-
In2	Program reset	Reset type	-
NULL	Enable	Special type	-
In3	Emergency stop	Level type	• OFF indicates an emergency stop command. • ON indicates a non-emergency stop command.
In4	Clear the alarm.	Reset type	-
In5	Speed increase	Reset type	-
In6	Speed decrease	Reset type	-
NULL	Homing (return to origin 0)	Reset type	After this operation is performed, the current direct motion mode changes to Movj.

Robot address	Function	Type	Remarks
NULL	Switch between the manual mode and auto mode: • 0: Manual • 1: Auto	Level type	If the robot is moving at high speed in auto mode, it stops the motion before switching to manual mode.
NULL	Start all static tasks	Reset type	-
NULL	Set the type of currently operated point	Level type	-
NULL	Dynamic Brake	Reset type	-
NULL	External signal triggered collision detection	Reset type	-
NULL	Homing	Reset type	-
NULL	Reserved	-	-
NULL	Teach J1/X+	Special type	Change from controlling robot motion to controlling mechanical unit axis motion. Switch the mechanical unit through the remote control command 0x0701.
NULL	Teach J2/Y+	Special type	
NULL	Teach J3/Z+	Special type	
NULL	Teach J4/A+	Special type	
NULL	Teach J5/B+	Special type	
NULL	Teach J6/C+	Special type	
NULL	Reserved	-	-
NULL	Reserved	-	-

Robot address	Function	Type	Remarks
NULL	Teach J1/X-	Special type	Change from controlling robot motion to controlling mechanical unit axis motion. Switch the mechanical unit through the remote control command 0x0701.
NULL	Teach J2/Y-	Special type	
NULL	Teach J3/Z-	Special type	
NULL	Teach J4/A-	Special type	
NULL	Teach J5/B-	Special type	
NULL	Teach J6/C-	Special type	

(2) Bus output address mapping table

Robot address	Function
Out0	Program running state
Out1	Program stop state
Out2	Program reset successful state
Out3	Enable state
Out4	• ON indicates an emergency stop state. • OFF indicates a non-emergency stop state.
Out5	System fault state
NULL	System warning state
NULL	Servo fault state
NULL	Servo warning state
NULL	Safety door warning state
Out6	System startup completed state
NULL	Homing completed state
NULL	Bus communication heartbeat signal

Fieldbus I/O mapping

The default fieldbus I/O configuration is as follows:

(1) Bus input address mapping table (basic remote control area)

Robot address	Function	Type	Remarks	Whether control authority takes effect in manual mode
In512	Start program	Reset type	-	No
In513	Stop program	Reset type	-	No
In514	Program reset	Reset type	-	No
In515	Enable	Special type	-	No
In516	Emergency Stop	Level type	• OFF indicates an emergency stop command. • ON indicates a non-emergency stop command.	No
In517	Clear the alarm.	Reset type	-	No
In518	Speed increase	Reset type	-	No
In519	Speed decrease	Reset type	-	No
In520	Homing	Reset type	-	No
In521	Switch between the manual mode and auto mode: • 0: Manual • 1: Auto	Level type	If the robot is moving at high speed in auto mode, it stops the motion before switching to manual mode.	Yes

Robot address	Function	Type	Remarks	Whether control authority takes effect in manual mode
In522	Start all active static tasks that are stopped due to an exception	Reset type	0->1 start	No
In523	Set the type of currently operated point to P variable	Level type	• 0: Position point • 1: Joint point	No
In524	Dynamic braking setting	Special type	• 0: Disable • 1: Enabled	No
In525	External signal triggered collision detection	Reset type	-	No
In526	Homing	Reset type	-	No
In525-In527	Reserved	-	-	No
In528	Teach J1/X+	Special type	Change from controlling robot motion to controlling mechanical unit axis motion. Switch the mechanical unit through the remote control command 0x0701.	No
In529	Teach J1/Y+	Special type		No
In530	Teach J3/Z+	Special type		No
In531	Teach J4/A+	Special type		No
In532	Teach J5/B+	Special type		No
In533	Teach J6/C+	Special type		No

Robot address	Function	Type	Remarks	Whether control authority takes effect in manual mode
In534	Reserved	-	-	Yes
In535	Reserved	-	-	Yes
In536	Teach J1/X-	Special type	Change from controlling robot motion to controlling mechanical unit axis motion. Switch the mechanical unit through the remote control command 0x0701.	No
In537	Teach J2/Y-	Special type		No
In538	Teach J3/Z-	Special type		No
In539	Teach J4/A-	Special type		No
In540	Teach J5/B-	Special type		No
In541	Teach J6/C-	Special type		No
In542	Reserved	-	-	Yes
In543	Reserved	-	-	Yes
In544	Write the current robot position to the current P/JP variable	Reset type	-	No
In545	Reserved	-	-	Yes
In546	Move directly to the robot position specified by the current P/JP variable	Reset type	-	No

Robot address	Function	Type	Remarks	Whether control authority takes effect in manual mode
In547	OUT[0] control command	Special type	-	No
In548	OUT[1] control command	Special type	-	No
In549	OUT[2] control command	Special type	-	No
In550	OUT[3] control command	Special type	-	No
In551	OUT[4] control command	Special type	-	No
In552	OUT[5] control command	Special type	-	No
In553	OUT[6] control command	Special type	-	No
In554	OUT[7] control command	Special type	-	No
In555	OUT[8] control command	Special type	-	No
In556	OUT[9] control command	Special type	-	No
In557	OUT[10] control command	Special type	-	No
In558	OUT[11] control command	Special type	-	No
In559	OUT[12] control command	Special type	-	No

Robot address	Function	Type	Remarks	Whether control authority takes effect in manual mode
In560	OUT[13] control command	Special type	-	No
In561	OUT[14] control command	Special type	-	No
In562	OUT[15] control command	Special type	-	No
In571 to In719	Reserved area (can be used as a custom area)	-	-	Yes

(2) Bus output address mapping table (basic remote control area)

Robot address	Function	Remarks	Whether control authority takes effect in manual mode
Out512	Program running state	-	Yes
Out513	Program stop state	-	Yes
Out514	Program reset successful state	-	Yes
Out515	Robot enable state	-	Yes
Out516	Robot emergency stop state	• ON indicates an emergency stop state. • OFF indicates a non-emergency stop state.	Yes
Out517	System fault state	-	Yes
Out518	System warning state	-	Yes
Out519	Servo fault state	-	Yes

Robot address	Function	Remarks	Whether control authority takes effect in manual mode
Out520	Servo warning state	-	Yes
Out521	Safety door warning state	-	Yes
Out522	System startup completed state	-	Yes
Out523	Robot in motion state	-	Yes
Out524	Robot motion complete state	-	Yes
Out525	Bus communication heartbeat signal	-	Yes
Out526	Dynamic braking state	• 0: Disable • 1: Enabled	Yes
Out527	P/JP variable write successful	-	Yes
Out528	IN[0] state	-	Yes
Out529	IN[1] state	-	Yes
Out530	IN[2] state	-	Yes
Out531	IN[3] state	-	Yes
Out532	IN[4] state	-	Yes
Out533	IN[5] state	-	Yes
Out534	IN[6] state	-	Yes
Out535	IN[7] state	-	Yes
Out536	IN[8] state	-	Yes
Out537	IN[9] state	-	Yes
Out538	IN[10] state	-	Yes

Robot address	Function	Remarks	Whether control authority takes effect in manual mode
Out539	IN[11] state	-	Yes
Out540	IN[12] state	-	Yes
Out541	IN[13] state	-	Yes
Out542	IN[14] state	-	Yes
Out543	IN[15] state	-	Yes
Out544	OUT[0] state	-	Yes
Out545	OUT[1] state	-	Yes
Out546	OUT[2] state	-	Yes
Out547	OUT[3] state	-	Yes
Out548	OUT[4] state	-	Yes
Out549	OUT[5] state	-	Yes
Out550	OUT[6] state	-	Yes
Out551	OUT[7] state	-	Yes
Out552	OUT[8] state	-	Yes
Out553	OUT[9] state	-	Yes
Out554	OUT[10] state	-	Yes
Out555	OUT[11] state	-	Yes
Out556	OUT[12] state	-	Yes
Out557	OUT[13] state	-	Yes
Out558	OUT[14] state	-	Yes
Out559	OUT[15] state	-	Yes

Robot address	Function	Remarks	Whether control authority takes effect in manual mode
Out560	Read the type of the currently operated point	• 0: Position point • 1: Joint point	Yes
Out561 to Out719	Reserved area (can be used as a custom area)	-	Yes

(3) Bus input address mapping table (extended remote control area)

No.	Function	Description
In720 to In735	Remote control command	-
In736 to In751	Remote control input parameter 1	-
In752 to In767	Remote control input parameter 2	-
In768 to In783	Remote control input parameter 3	-
…	…	...
In1680 to In1695	Remote control input parameter 60	-
…	Reserved	-
In1920 to In1935	Extended remote cycle command	-
In1936 to In1951	Extended remote cycle input parameter 1	-
In1952 to In1967	Extended remote cycle input parameter 2	-
…	Reserved	-
In2224 to In2239	Robot zero programming mode switch	-
In2240 to In2255	Reserved	-

No.	Function	Description
In2256 to In2271	Switch point file via I/O	• 0: Success • 1: Switching • 2: Point switching error
In2272 to In2287	Reserved	-
In2288 to In2303	Robot zero programming external permission settings	-
In2304 to In2319	Switch project via I/O	-
In2320 to In2335	Load number selection	-
In2336 to In2351	Frame selection	Added world frame types: • 1: Joint frame • 2: Base frame • 3: Flange frame • 4: Workobject frame • 5: World frame
In2352 to In2367	Tool frame No. selection	-
In2368 to In2383	Workobject frame No. selection	-
In2384 to In2399	Speed settings	-
In2400 to In2415	Direct motion mode settings • 0: MovJ • 1: MovL • 2: Jump • 3: JumpL • 4: MovABSJ	-
In2416 to In2431	Lower bits of the LH parameter of the jump motion	-
In2432 to In2447	Higher bits of the LH parameter of the jump motion	-
In2448 to In2463	Lower bits of the MH parameter of the jump motion	-
In2464 to In2497	Higher bits of the MH parameter of the jump motion	-

No.	Function	Description
In2480 to In2495	Lower bits of the RH parameter of the jump motion	-
In2496 to In2511	Higher bits of the RH parameter of the jump motion	-
In2512 to In2527	Write the index of the current P/JP variable	-
In2528 to In2543	Reserved	-
In2544 to In2559	Reserved	-

(4) Bus output address mapping table (extended remote control area)

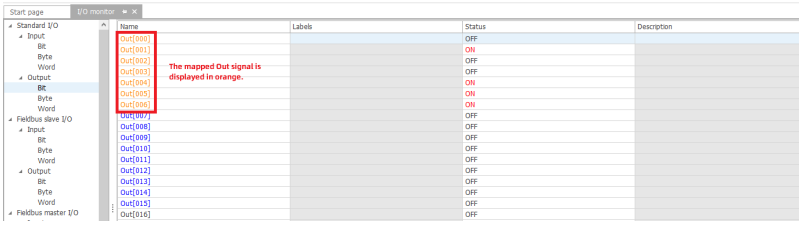
No.	Function	Remarks
Out720 to Out735	Remote control state	-
Out736 to Out751	Remote control return parameter 1/Remote control error code	-
Out752 to Out767	Remote control return parameter 2/System fault code	-
Out768 to Out783	Remote control return parameter 3	-
…	…	...
Out1680 to Out1695	Remote control return parameter 60	-
…	Reserved	-
Out1920 to Out1935	Extended remote cycle state	-
Out1936 to Out1951	Extended remote cycle output parameter 1	-
Out1962 to Out1967	Extended remote cycle output parameter 2	-
Out1968 to Out1983	Robot zero programming mode status	-
Out1984 to Out1999	Robot zero programming external permission status	-
Out2000 to Out2015	X coordinate of J1 at current position - Low	Position of the active mechanical unit (robot by default)
Out2016 to Out2031	X coordinate of J1 at current position - High	
Out2032 to Out2047	Y coordinate of J2 at current position - Low	

No.	Function	Remarks
Out2048 to Out2063	Y coordinate of J2 at current position - High	
Out2064 to Out2079	Z coordinate of J3 at current position - Low	
Out2080 to Out2095	Z coordinate of J3 at current position - High	
Out2096 to Out2111	A coordinate of J4 at current position - Low	
Out2112 to Out2127	A coordinate of J4 at current position - High	
Out2128 to Out2143	B coordinate of J5 at current position - Low	
Out2144 to Out2159	B coordinate of J5 at current position - High	
Out2160 to Out2175	C coordinate of J6 at current position - Low	
Out2176 to Out2191	C coordinate of J6 at current position - High	
…	…	…
Out2224 to Out2239	Collision alarm status	-
Out2240 to Out2255	Active P/JP variable number	-
Out2256 to Out2271	Position file switching status	-
Out2272 to Out2287	Current control	• 0: PC/TP • 2: Remote Ethernet client • 4: Remote I/O
Out2288 to Out2303	Active project No.	Range 1-256
Out2304 to Out2319	Current project switchover state	• 0: Switchover successful • 1: Switchover in progress • 2: Project not obtained • 3: Invalid project name for remote I/O switchover • 4: The current project is running and needs to be stopped before switchover. • 5: Incoming path error (system error) • 6: Project compilation in progress, please wait • 7: Input value out of range (1-256)
Out2320 to Out2335	Current load number	-

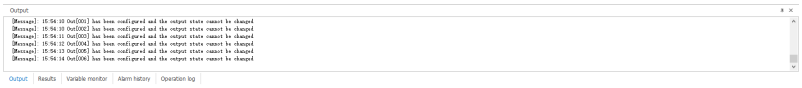
No.	Function	Remarks
Out2336 to Out2351	Current frame	-
Out2352 to Out2367	Current tool frame No.	-
Out2368 to Out2383	Current workobject frame No.	-
Out2384 to Out2399	Current speed	-
Out2400 to Out2415	Current fault code	-
Out2416 to Out2431	Current mode	-
Out2432 to Out2447	Current direct motion mode • 0: MovJ • 1: MovL • 2: Jump • 3: JumpL	-
Out2448 to Out2463	Lower bits of the LH parameter of the current jump motion	-
Out2464 to Out2479	Higher bits of the LH parameter of the current jump motion	-
Out2480 to Out2495	Lower bits of the MH parameter of the current jump motion	-
Out2496 to Out2511	Higher bits of the MH parameter of the current jump motion	-
Out2512 to Out2527	Lower bits of the RH parameter of the current jump motion	-
Out2528 to Out2543	Higher bits of the RH parameter of the current jump motion	-

Results:

- After the setting is completed and saved, you can switch control to the remote I/O unit. You can control the robot and monitor the robot state through I/O, and observe whether the robot feedback meets expectations.
- The output signals in bit format that are mapped are displayed in orange on the monitoring screen, as shown in the figure below.

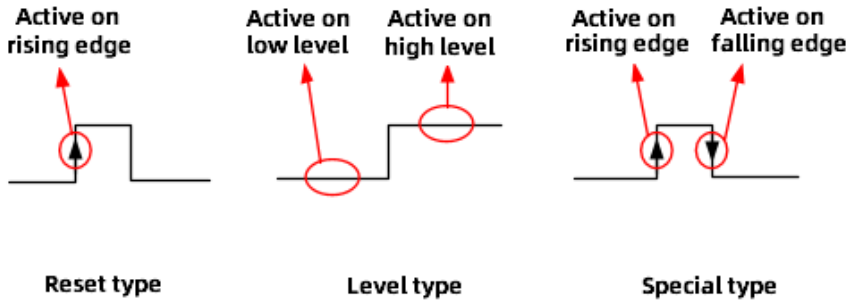


- When the user attempts to change the orange output signal, the message bar indicates that the output signal is configured and the output state cannot be changed.



NOTE

- The input signals in the I/O mapping configuration take effect only when the control permission is granted to the remote I/O unit. In contrast, the output signals can indicate the robot state regardless of to which device the control permission is granted.
- The output signals configured in the I/O settings will be occupied by the system and can no longer be controlled through the monitoring page or command.
- The run and stop state in the output configuration refer to the run and stop of the program, rather than the start and stop of robot motion. Once started, the robot remains in the running state until the stop command is received.
- After the input signal is used to impose emergency stop on the robot, the robot will be automatically enabled if the control permission is switched back to InoRobotLab. In this case, for safety reasons, you must press and release the emergency stop button before you can operate the robot.
- The following describes the reset type, level type, and special type commands.



  - For a reset type command (active on rising edge of the user input command), in order for the command to take effect, you need to write 1 when the corresponding coil is 0, maintain it for a period of time (recommended at least 200 ms), and then clear the value. You can refer to the level sequence relationship of the reset type buttons of the HMI.
  - For a level type command (edge is not detected, only the level, high or low, is detected), you need to write 1 to the corresponding coil for the command to take effect. To cancel the command, you need to write 0 to the corresponding coil.
  - For a special type command (active on both rising and falling edges of the user input command), it is actually a special level command, which takes effect only when the value in the address changes. Taking the enable command as an example, a transition from 0 to 1 activates enabling, while a transition from 1 to 0 activates disabling.

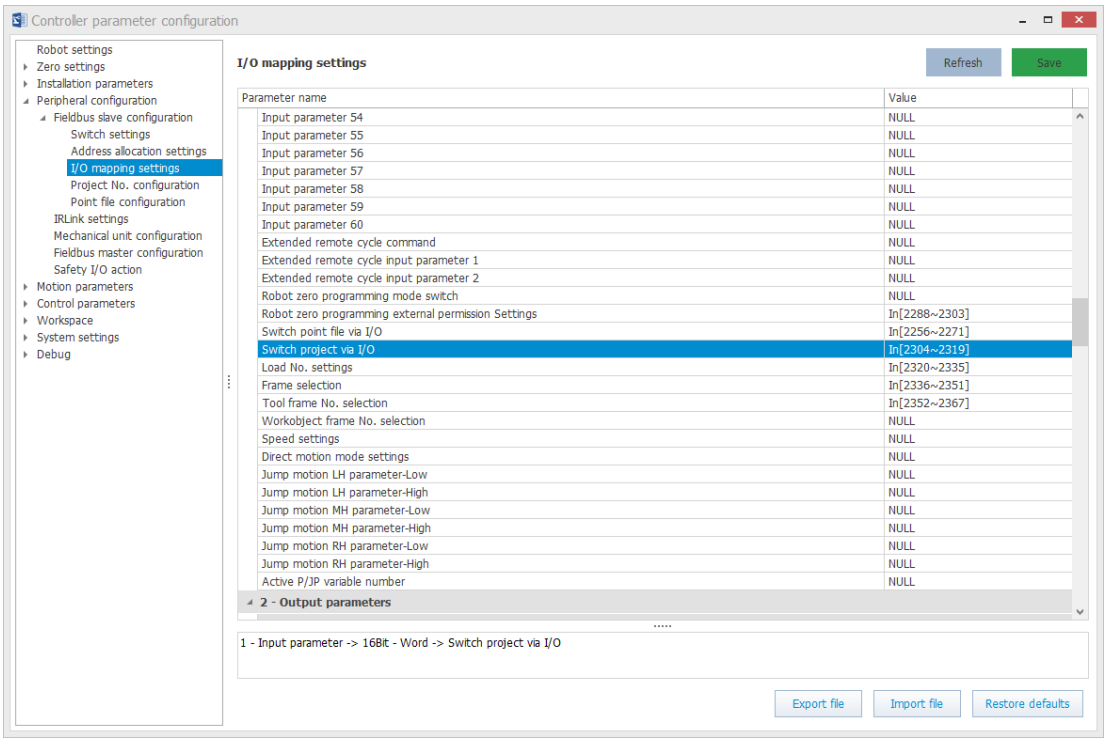
1.1.4 Project Number Configuration

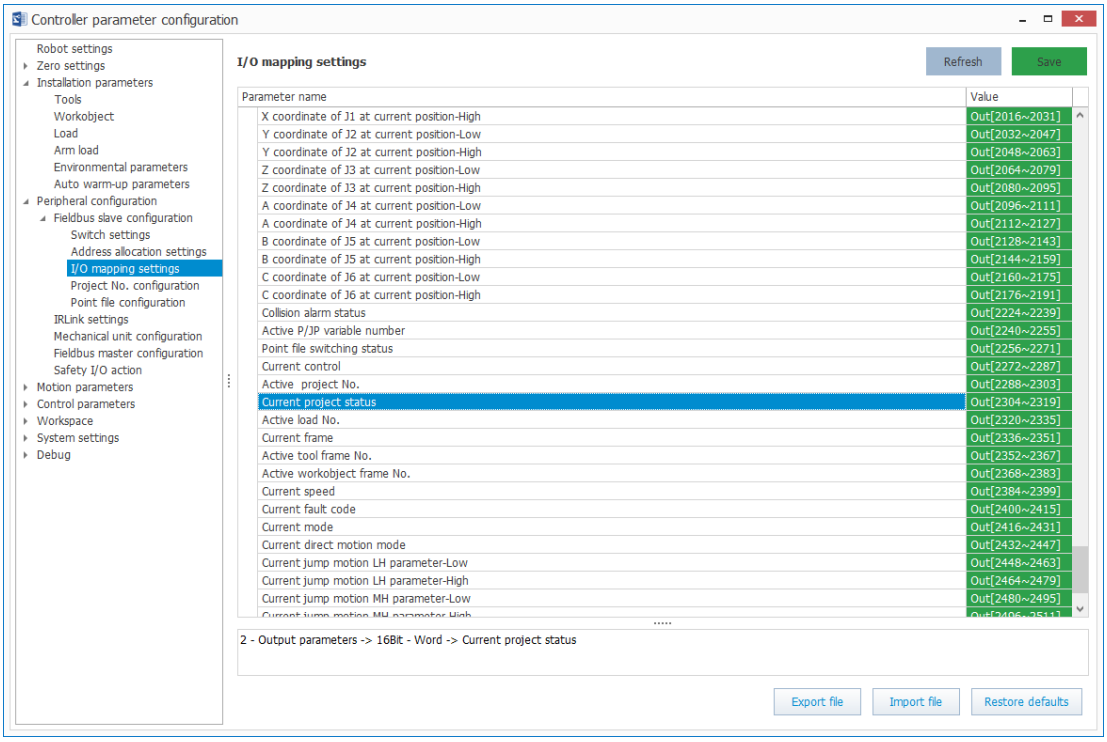
The program number configuration is to map the sequence number and the project. It supports up to 256 mapping relationships. Then, you can switch the project via the bus.

Steps

1. I/O mapping settings

   The "Switch project via I/O" and "Current project status" parameters are configured as shown in the figure below.





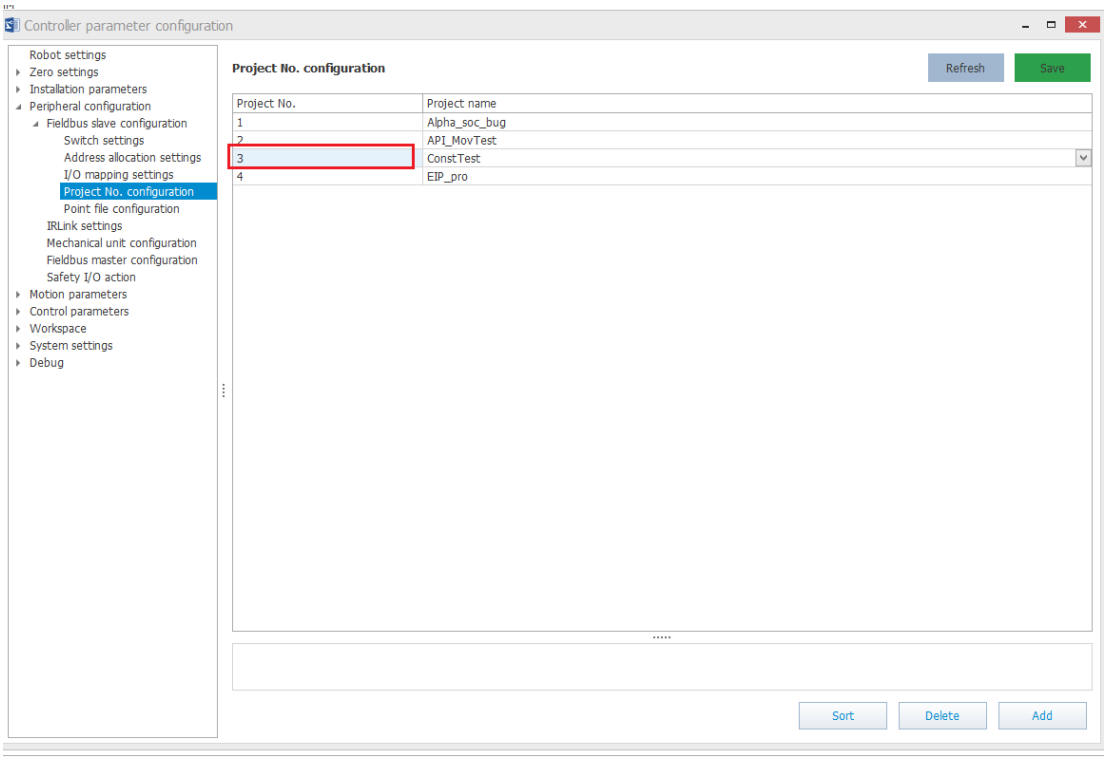
2. Project number configuration

   Connect the controller, and go to "Controller parameter settings" > "Peripheral configuration" > "Fieldbus slave configuration" > "Project No. configuration". The current project mapping relationship list is

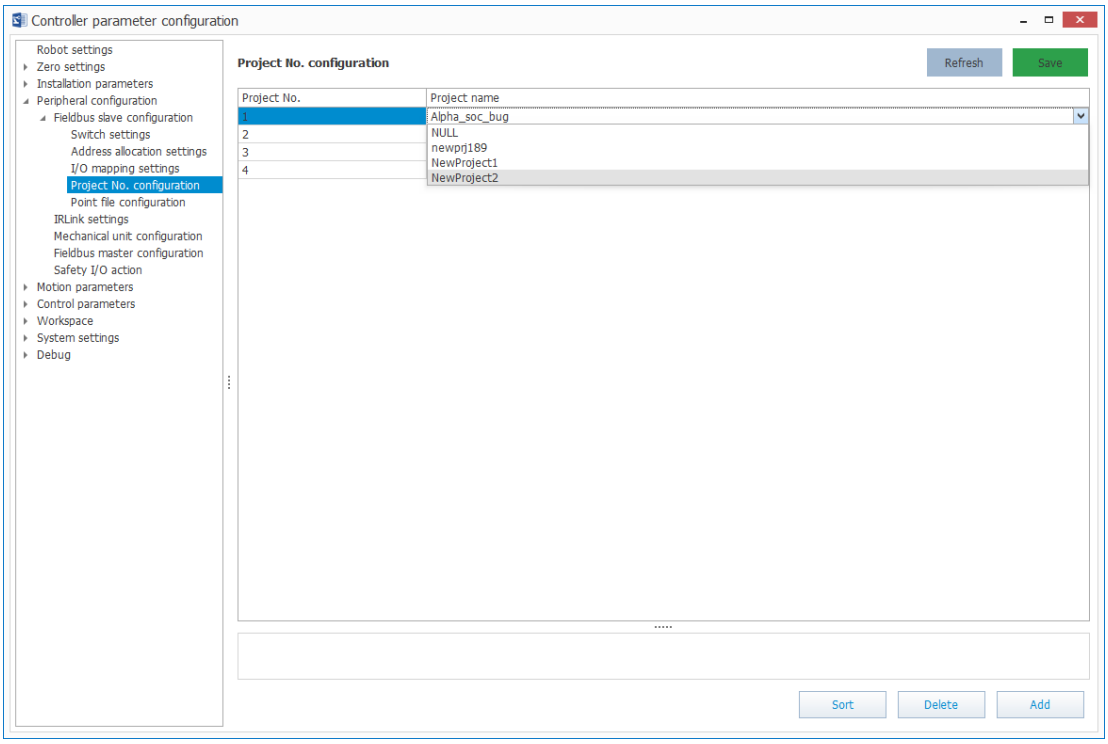
automatically loaded.

The related parameters are described as follows:

- Refresh: Displays the current project mapping relationship of the controller to the list.
- Add: Adds a project mapping. The number is automatically sorted from the smallest to the largest. The project name is "NULL" by default.
- Edit the project number: The project number ranges from 1 to 256. Click the project number to edit it directly. The project number must be unique.



3. Select the project name from the drop-down list. The used project names will be automatically filtered out.



The related parameters are described as follows:

- Sort: Sorts the project number from the smallest to the largest.
- Delete: Deletes the selected one or more lines of the list.
- Multi-selection: Same as file selection operation in Windows system. Examples of Related Shortcut Keys: Ctrl+A: Select all lines; Shift+Click: Select multiple consecutive lines; Ctrl+Click: Select multiple particular lines.
- Save: Saves the project mapping relationship to the controller. It is recommended to click "Sort" before saving.

If you do not click "Save", when you close the controller parameter setting interface and reopen it, the interface will be restored to the data before modification.

1.2 Configuration through the Teach Pendant

1.2.1 Fieldbus Switch Settings

You can switch on or off five types of buses including Modbus, EtherNet/IP, EtherCAT, MC, and PROFINET, and configure the bus parameters.

> CAUTION
>
> Only one fieldbus can be activated at a time.

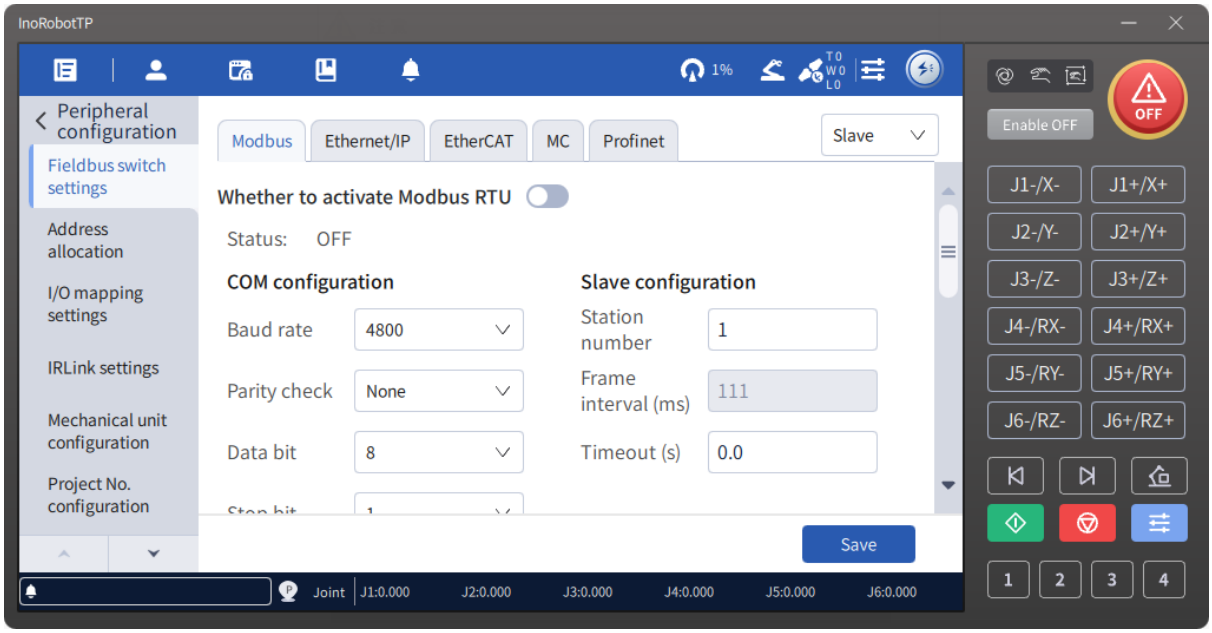
1.2.1.1 Modbus Settings

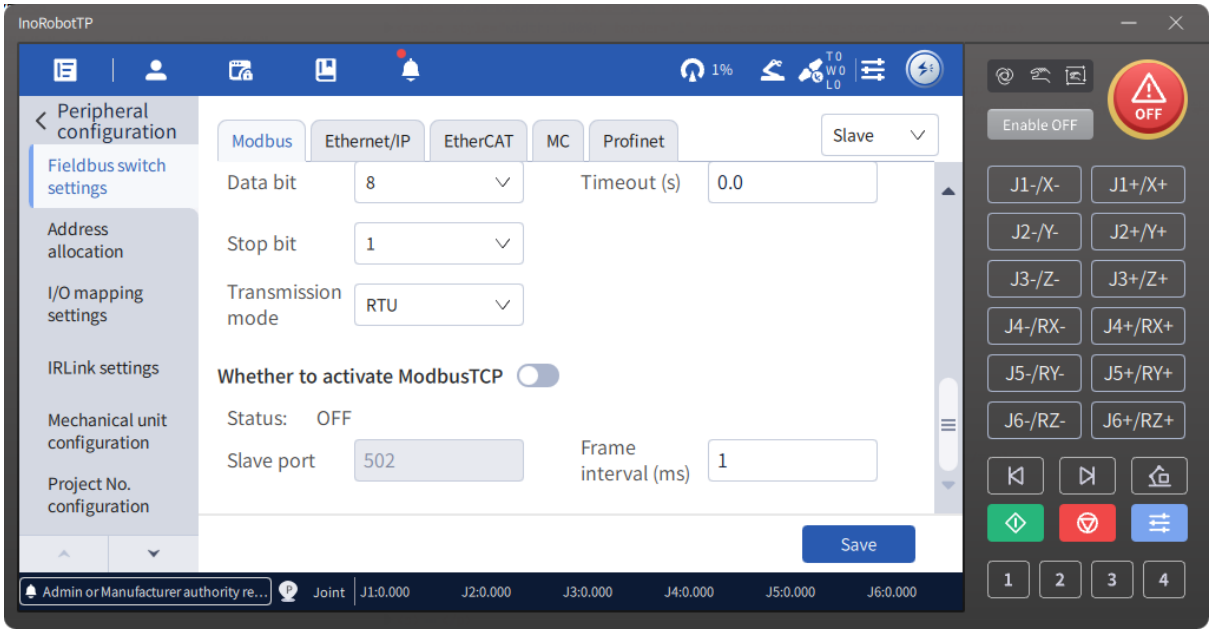
Modbus-RTU and Modbus TCP functions of the robot controller can be enabled simultaneously without conflict.

Regardless of Modbus-RTU or Modbus TCP, the robot controller can only be configured as Modbus slave, not as Modbus master on teach pendant and InoRobotLab.

Steps

1. Click "Settings" > "Peripheral configuration" > "Fieldbus switch settings" > "Modbus", as shown below.





2. Toggle the switch and click "Save" to turn on or off the Modbus-RTU and Modbus TCP functions.

- In the Modbus-RTU function, the frame interval depends on the baud rate. The larger the baud rate, the smaller the frame interval. If the baud rate is changed, the frame interval will be automatically changed accordingly.
- In the Modbus TCP function, the port number is fixed to 502 and the frame interval can be set as needed.

> **NOTE**
>
> The order of toggle switch operation and parameter setting is not limited. The settings are saved to the controller only when you click the "Save" button.

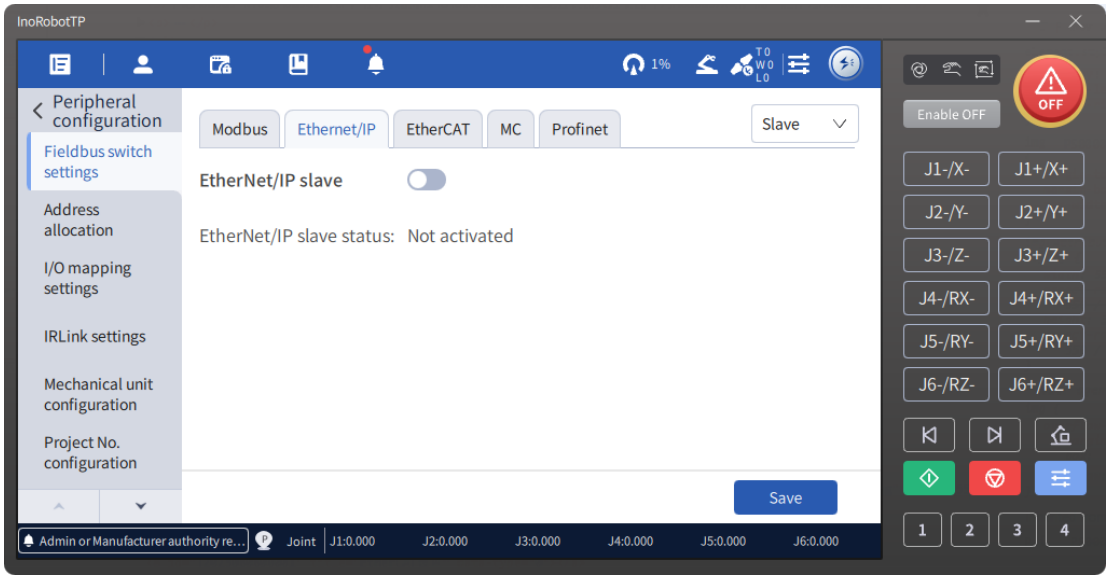
Results:

After the configuration is complete, you can verify the configuration through communication with the Modbus client.

1.2.1.2 EtherNet/IP Settings

Steps

1. You can enable or disable the EtherNet/IP slave function by toggling the switch and clicking the "Save" button.
2. The interface also displays the port number and connection status of the slave. When a master is connected, the indicator is green. The IP address and port number of the master are displayed.

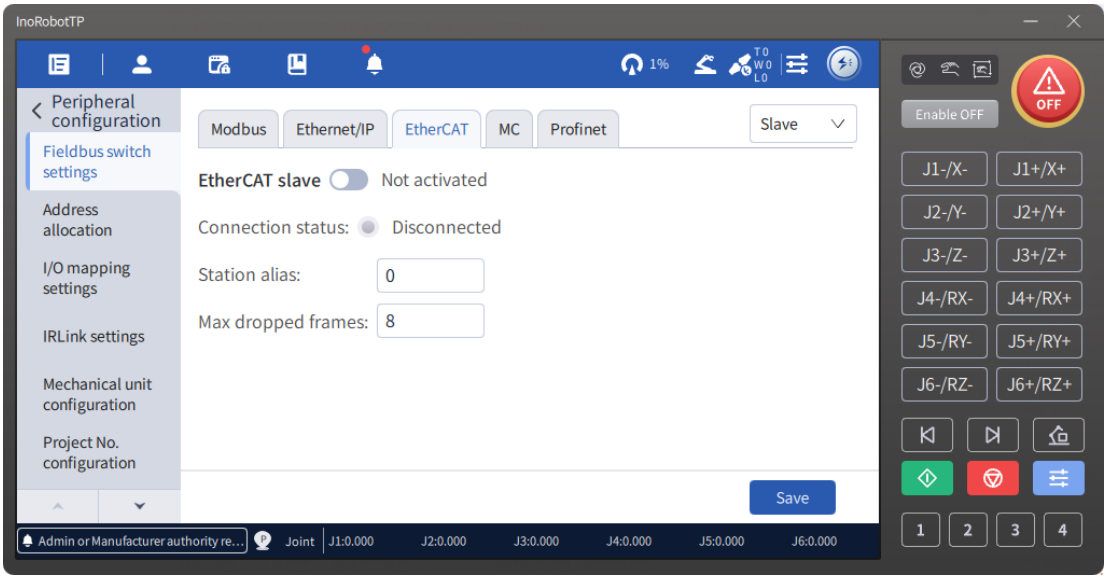


For the usage of EtherNet/IP functions, see the "EtherNet/IP Bus Communication" section in the "Industrial Robot Communication Guide".

1.2.1.3 EtherCAT Settings

Steps

1. Click "Settings" > "Peripheral configuration" > "Fieldbus switch settings" > "EtherCAT", as shown below.



2. You can enable or disable the EtherCAT slave function by toggling the switch and clicking the "Save" button. You can also configure the alias of the slave and the maximum number of dropped frames.
3. The interface also displays the connection status of the EtherCAT slave. When no connection exists, the indicator is red. When a master is connected, the indicator is green.

NOTE

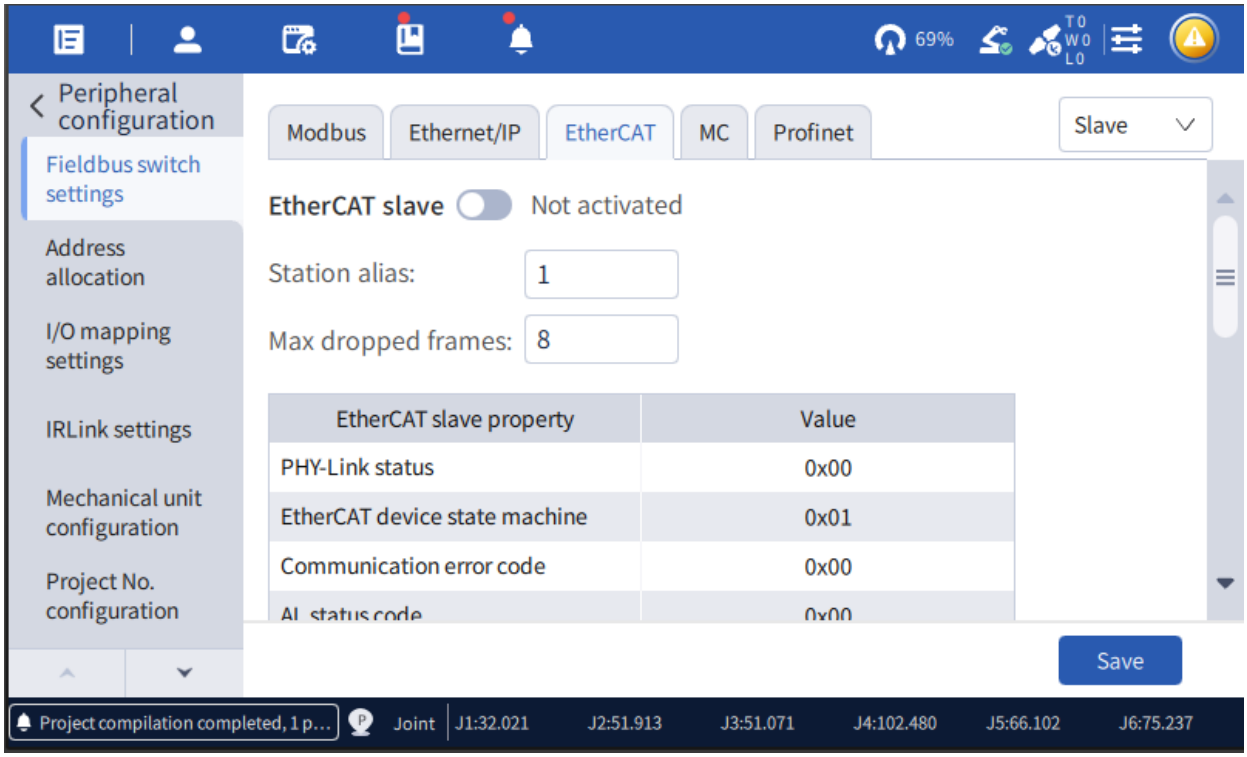
- The EtherCAT slave function can only be activated through on the controller that supports the EtherCAT slave function.
- You can enable or disable the EtherCAT slave function and configure the related parameters.

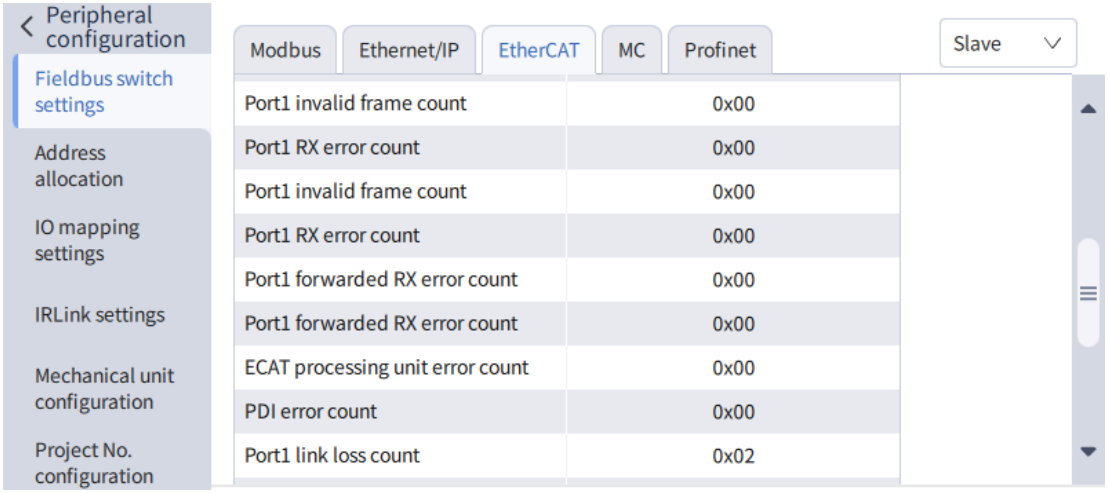
The following table lists the properties of the EtherCAT slave:

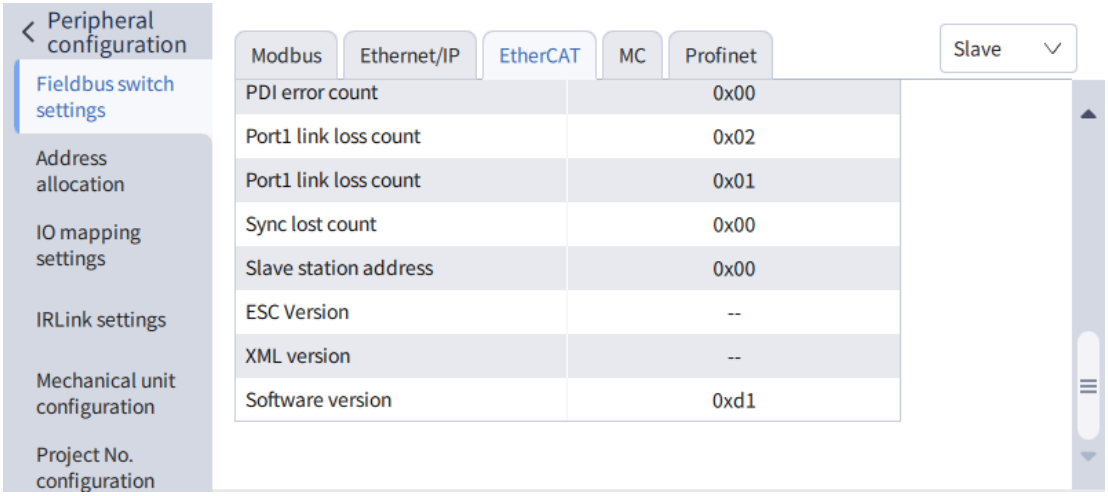
EtherCAT slave property	Description
PHY-Link status	The Link status of the port, where a value of 0 for the corresponding bit indicates LinkDown, and 1 indicates LinkUp: • Bit0: status of port 0 • Bit1: status of port 1
EtherCAT device state machine	Actual slave status: • 1: Init (initialization status) • 2: PreOP (pre-operational status) • 4: SafeOP (safe operational status) • 8: OP (operational status)
Communication error code	Communication error code, uploaded by MCU. The controller triggers the corresponding alarm if communication error code exists.
AL status code	Application layer status code, uploaded by MCU
Port0 invalid frame count	Invalid frame count received on port 0, uploaded by MCU
Port0 RX error count	Error frame count received on port 0, uploaded by MCU
Port1 invalid frame count	Invalid frame count received on port 1, uploaded by MCU
Port1 RX error count	Error frame count received on port 1, uploaded by MCU
Port0 forwarded RX error count	Forwarded error frame count on port 0, uploaded by MCU
Port1 forwarded RX error count	Forwarded error frame count on port 1, uploaded by MCU
ECAT processing unit error count	Data frame processing unit error count, uploaded by MCU
PDI error count	PDI error count, uploaded by MCU
Port0 link loss count	Connection loss count on port 0, uploaded by MCU
Port1 link loss count	Connection loss count on port 1, uploaded by MCU
Sync lost count	Accumulated frame loss count on slave, uploaded by MCU

EtherCAT slave property	Description
Site name configured by master	MCU uploads the site name configured by the master.
ESC Version	ESC version information, uploaded by MCU
XML version	XML version information, uploaded by MCU
Software version	Software version number, uploaded by MCU

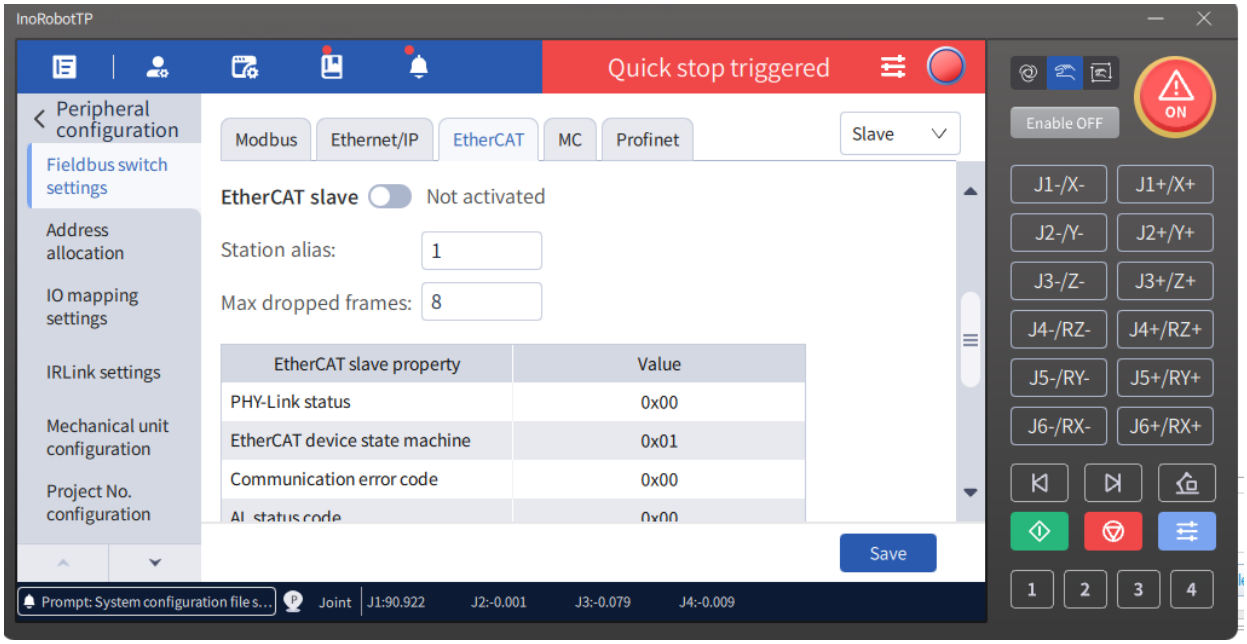
- After the alias is modified, the robot needs to be powered on again to make the modification take effect.







- For controllers with safety function, the interface has options for data link enhancement switch and XML reset switch. For both switches to take effect, the robot needs to be powered on again.



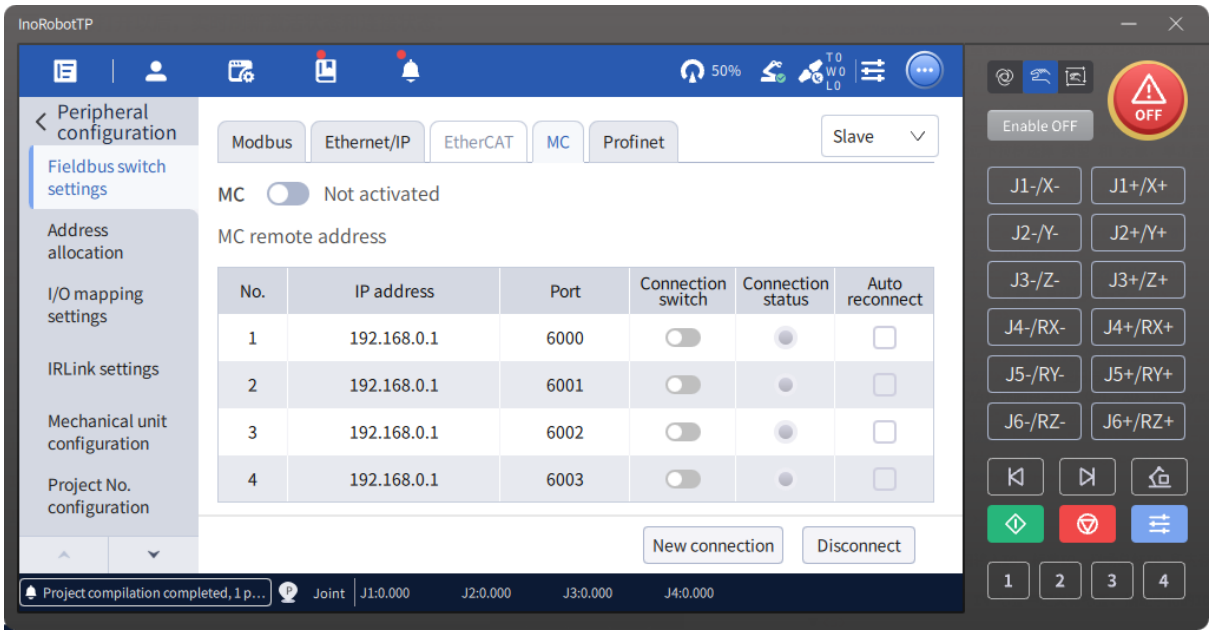
For the usage of EtherCAT functions, see the "EtherCAT Bus Communication" section in the "Industrial Robot Communication Guide".

1.2.1.4 MC Settings

You can enable the MC function of the robot controller. The robot acts as a slave. Up to four master connections are supported.

Steps

1. Select a connection item in the list to establish a connection or break the current connection, as shown below.



2. In contrast to the previous three protocols, the MC function can be enabled or disabled directly through the toggle switch. The interface displays the IP address, port number, connection switch, connection status, and automatic re-connection switch of the four masters. You can establish a connection to the master by entering the IP address and port number of the master and then clicking the "New connection" button.
3. Select a connection item and click "Disconnect" button to disconnect the controller from the external MC.

CAUTION

- After the master connection is successful, the IP and port numbers of the master cannot be modified.
- The auto re-connect option can be checked only when the master connection is successful.
- When the auto re-connect option is checked, the IP address, port number, and connection switch cannot be modified.

For the usage of MC functions, see the "MC Bus Communication" section in the "Industrial Robot Communication Guide".

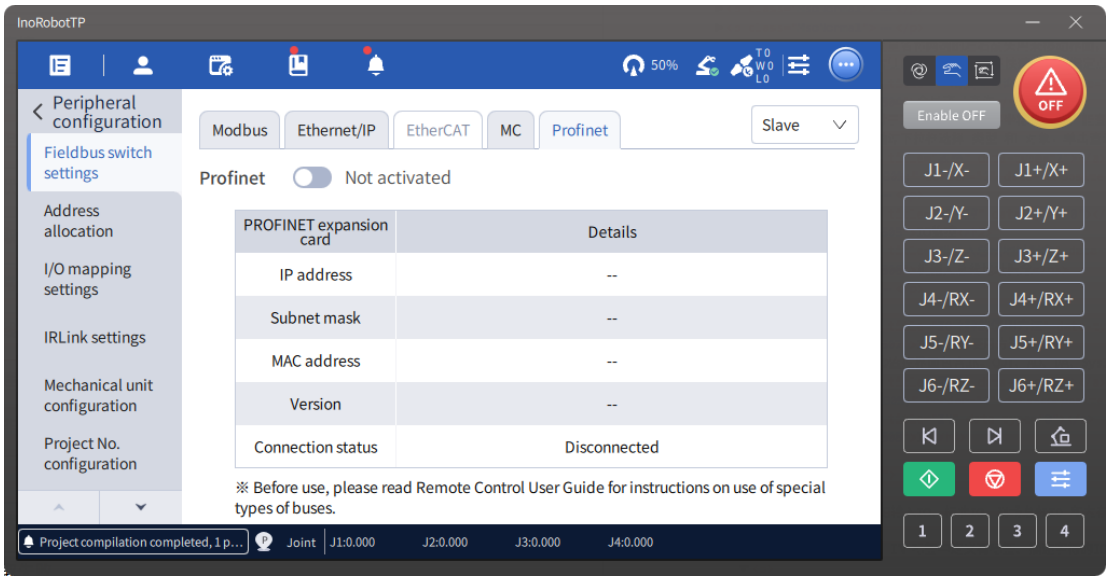
1.2.1.5 PROFINET Settings

Steps

1. You can enable or disable the PROFINET slave function by toggling the switch and clicking the "Save" button.
2. The interface also displays the IP address, subnet mask, MAC address, software version number, and master connection status of the PROFINET slave expansion card. When not connected, the status is displayed as "Disconnect". When a master is connected, it displays "Connected".

NOTE

- To use this function, the controller must be installed with an external PROFINET slave expansion card.
- It allows you to configure the PROFINET slave function of the robot.



For the usage of PROFINET functions, see the "PROFINET Communication with a Siemens PLC" section in the "Industrial Robot Communication Guide".

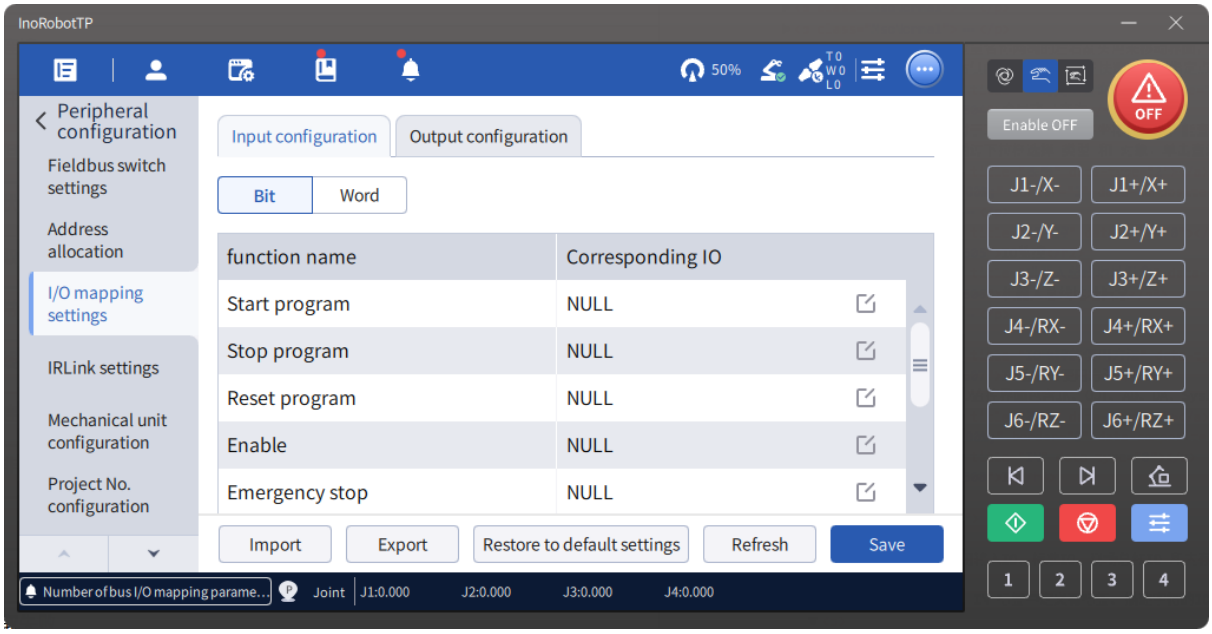
1.2.2 I/O Mapping Configuration

Remote I/O control allows you to control program start/stop, reset, and emergency stop of the robot via I/Os (including digital I/Os, fieldbus I/Os, and memory I/Os). You can also monitor the program running and fault state of the robot.

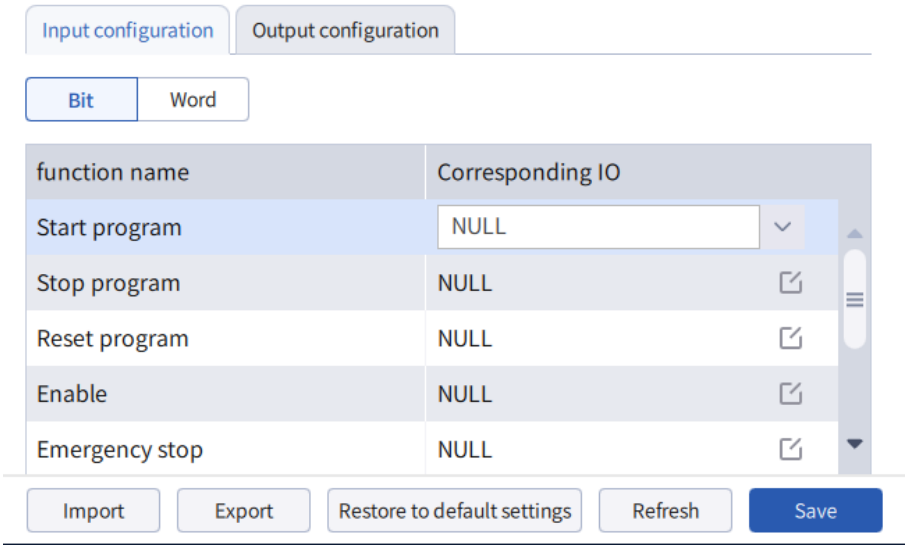
The I/O mapping is to bind some commands of the remote I/O control function to the input signals (In) of the robot, and the status of the robot to the output signals (Out). In this way, you can control the robot using the input signals and monitor the robot using the output signals.

Steps

1. Click "Settings" > "Peripheral configuration" > "I/O mapping settings", as shown below.



2. To modify I/O mapping, click the edit button in the corresponding I/O column to display the edit box, and enter the desired I/O number in the edit box. If you do not want to configure any I/O, enter the character "NULL".



The teach pendant only supports the I/O mapping configuration for the following functions:

I/O function		Description
Input	Start program	Start the current program in the remote I/O unit mode, active on rising edge
Input (used for external control)	Start program	Start the current program in the remote I/O unit mode, active on rising edge
	Stop program	Stop the running program in the remote I/O unit mode, active on rising edge
	Reset program	Reset the robot program in the remote I/O unit mode, active on rising edge (Program can be reset only when in stopped state.)
	Enable	Enable the robot in the remote I/O unit mode, active on both rising (enable) and falling (disable) edges
	Emergency stop	Impose emergency stop on the robot in the remote I/O unit mode. ON for non-emergency stop; OFF for emergency stop.
	Clear alarm	Clear the alarm in the remote I/O unit mode, active on rising edge
	Speed increase	Increase the global operating speed of the system by 5% in the remote I/O unit mode, active on rising edge
	Speed decrease	Decrease the global operating speed of the system by 5% in the remote I/O unit mode, active on rising edge
	Homing	Return the robot to the work origin 0 in the remote I/O unit mode, active on rising edge
	Switch to manual mode	Switch the robot to manual mode in the remote I/O unit mode, active on rising edge

I/O function		Description
	Switch to auto mode	Switch the robot to the auto mode in the remote I/O unit mode, active on rising edge
	Start all static tasks	Start the current static task in the remote I/O unit mode, active on rising edge
	Set the type of currently operated point	Set the current point type in the remote I/O unit mode, active on rising edge
	Dynamic brake	Set the dynamic brake in the remote I/O unit mode, active on rising edge
	External signal triggered collision detection	Set the triggered collision detection in remote I/O unit mode, active on rising edge
	Homing	Set the homing of the robot in the remote I/O unit mode, active on rising edge
Output (Used for display status)	Program run status	Under any control permission, the specified I/O output an ON signal when task 0 is in running state
	Program stopped	Under any control permission, the specified I/O output an OFF signal when task 0 is in stopped state
	Program reset successful	Under any control permission, the specified I/O output an ON signal when the program is set successfully
	Enable status	Under any control permission, the specified I/O output an ON signal when the system is enabled
	Emergency stop status	Under any control permission, the specified I/O output an ON signal when the system is in the emergency stop status
	System fault status	Under any control permission, the specified I/O output an ON signal when the system stops at an alarm
	System warning status	Under any control permission, the specified I/O output an ON signal when a warning occurs in the system
	Servo fault status	Under any control permission, the specified I/O output an ON signal when the servo drive reports a fault
	Servo warning status	Under any control permission, the specified I/O output an ON signal when a warning occurs on the servo drive
	Safety door warning status	Under any control permission, the specified I/O output an ON signal when a safety door warning occurs

I/O function		Description
	System startup completion status	Under any control permission, the specified I/O output an ON signal when the system is in the startup completion status
	Robot in motion	Under any control permission, the specified I/O output an ON signal when the robot is in motion
	Robot motion completion status	Under any control permission, the specified I/O output an ON signal when the robot finishes the direct motion command
	Bus communication heartbeat	Under any control permission, the ON-OFF state switchover occurs continuously as long as this I/O is configured. The default switchover interval is 1s.

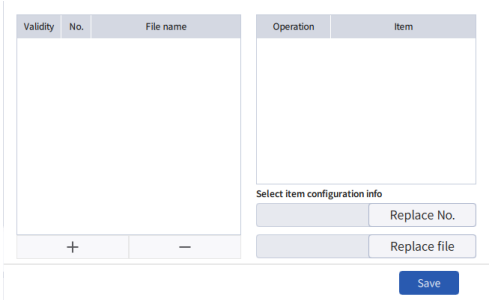
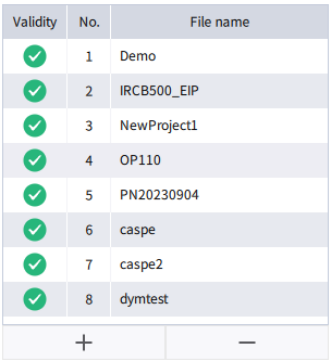
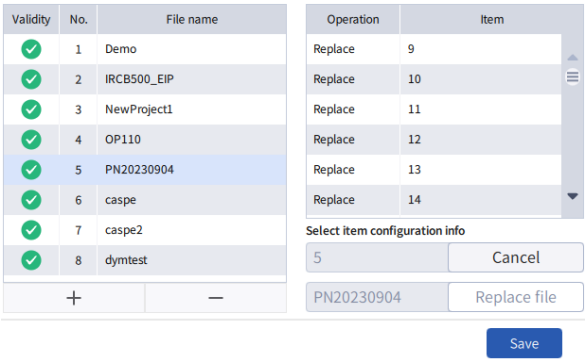
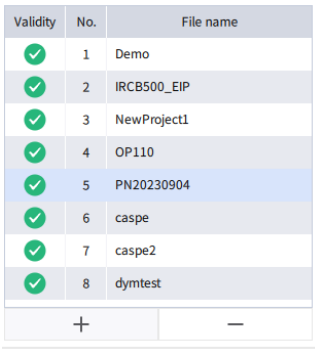


- If the message "Current I/O value is already used" is displayed when an I/O is selected, but the function bound to this I/O cannot be found on the I/O mapping interface, it indicates that this I/O has already been configured to a certain function through InoRobotLab. You can check the I/O configuration on InoRobotLab.
- The input signals in the I/O mapping configuration take effect only when the control permission is granted to the remote I/O unit. In contrast, the output signals can indicate any robot states except the motion complete state, regardless of to which device the control permission is granted.
- The output port selected in the I/O mapping will be occupied by the system and can no longer be controlled through the monitor panel or through the instructions.
- The run and stop state in the output configuration refer to the run and stop of the program, rather than the start and stop of robot motion. Once started, the robot remains in the running state until the stop command is received or a fault is encountered.
- After the robot is placed into emergency stop through an In signal, if you switch the robot control to the teach pendant, the emergency stop will be automatically released.

1.2.3 Project Number Configuration

Many recipes may exist in different projects. You can switch the projects through the bus. The system includes 256 program IDs. The project path corresponding to each ID can be set in the I/O mapping.

Steps

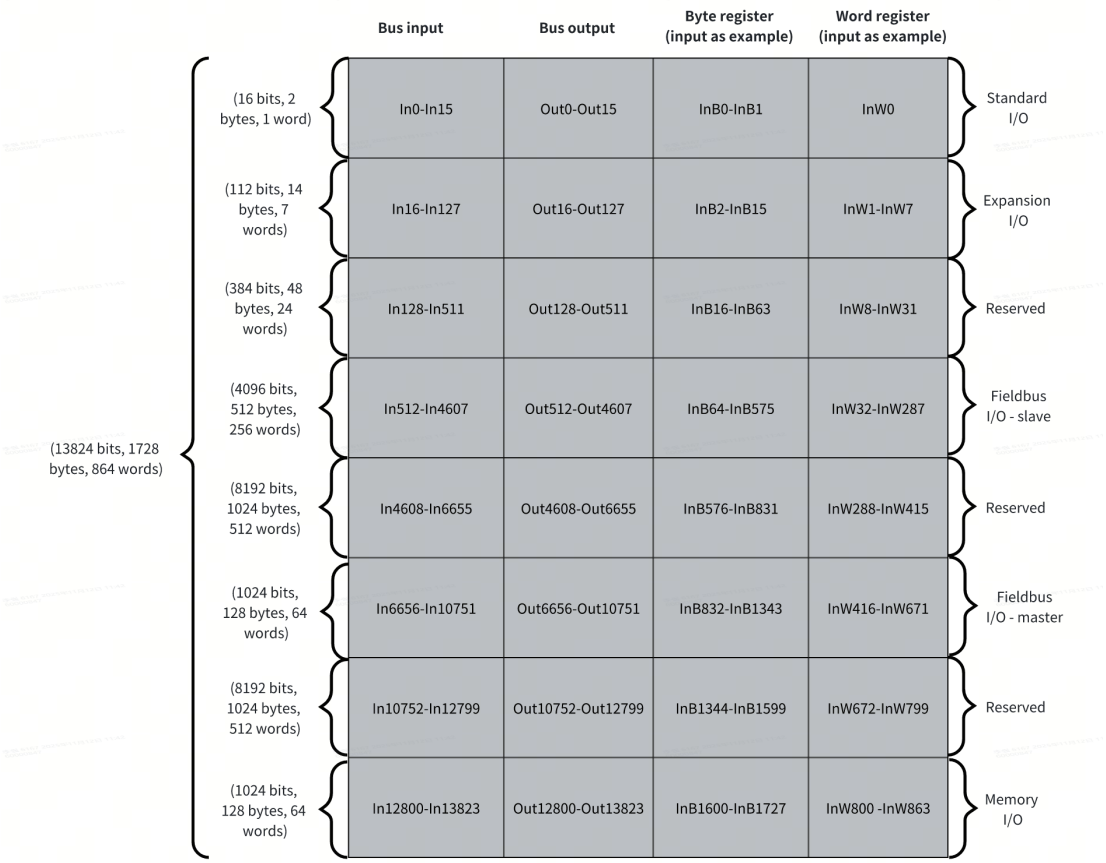
No.	Operation	Illustrative diagram
1	Go to "Settings" > "Peripheral settings" > "Project No. configuration". The project configuration number information is retrieved from the controller.	
2	The project number configuration information is displayed if available. You can scroll up and down using the scrollbar on the right side of the list to view the information.	
3	You can manually replace the number or file. Select the row to be replaced in the list, click the "Replace No." or "Replace file" button, and then click "Replace" in the options list to complete the manual replacement operation.	
4	To delete a project number configuration, select the configuration and click "Delete".	

CAUTION

All the changes need to be saved before they can take effect. The changes will be lost when you switch to other interfaces without saving them.

2 Introduction of Robot Bus Addresses

The following introduces the concept of the robot bus addresses. The bus addresses of the robot include standard I/Os, fieldbus I/Os, and memory I/Os, as shown in the figure below.

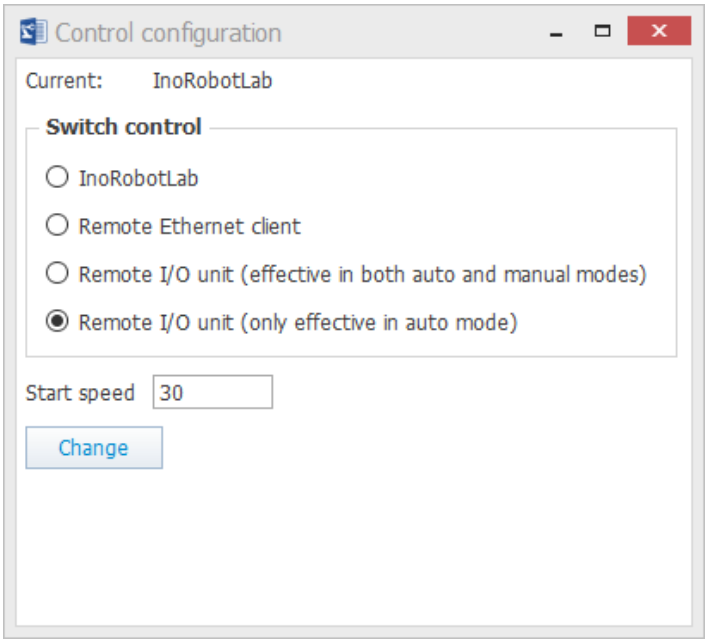


		Bus input	Bus output	Byte register (input as example)	Word register (input as example)	
(13824 bits, 1728 bytes, 864 words)	(16 bits, 2 bytes, 1 word)	In0-In15	Out0-Out15	InB0-InB1	InW0	Standard I/O
	(112 bits, 14 bytes, 7 words)	In16-In127	Out16-Out127	InB2-InB15	InW1-InW7	Expansion I/O
	(384 bits, 48 bytes, 24 words)	In128-In511	Out128-Out511	InB16-InB63	InW8-InW31	Reserved
	(4096 bits, 512 bytes, 256 words)	In512-In4607	Out512-Out4607	InB64-InB575	InW32-InW287	Fieldbus I/O - slave
	(8192 bits, 1024 bytes, 512 words)	In4608-In6655	Out4608-Out6655	InB576-InB831	InW288-InW415	Reserved
	(1024 bits, 128 bytes, 64 words)	In6656-In10751	Out6656-Out10751	InB832-InB1343	InW416-InW671	Fieldbus I/O - master
	(8192 bits, 1024 bytes, 512 words)	In10752-In12799	Out10752-Out12799	InB1344-InB1599	InW672-InW799	Reserved
	(1024 bits, 128 bytes, 64 words)	In12800-In13823	Out12800-Out13823	InB1600-InB1727	InW800 -InW863	Memory I/O

- Standard I/O: Equivalent to digital I/O, i.e., I/O where the switching state is directly associated with the physical level high or low.
- Fieldbus I/O: Currently, the fieldbus I/O of the robot refers to the I/O used by the robot to interact with the master when the robot is acting as a fieldbus slave.
- Memory I/O: Equivalent to the robot's internal Bool-type variables, used for internal arithmetic.

3 Differences Between Two Remote I/O Unit Control Modes

The remote I/O unit control is divided into two modes: Remote I/O unit (effective in both auto and manual modes) and Remote I/O unit (only effective in auto mode).



3.1 Remote I/O Unit (Effective in Both Auto and Manual Modes)

In this control mode, the remote I/O unit has full control regardless of whether the controller is in auto or manual mode. The teach pendant/InoRobotLab can only perform monitoring function, but cannot perform setting and operating type functions such as modifying global variables, axis control and teaching, and more.

3.2 Remote I/O Unit (Only Effective in Auto Mode)

In this control mode, the remote I/O unit has full control when the controller is in auto mode. The teach pendant/InoRobotLab can only perform monitoring function. If the controller is switched to the manual mode, the remote I/O unit will lose the control permission. In this case, the teach pendant/InoRobotLab can perform setting and operating type functions such as modifying global variables, axis control and teaching, and more. The remote I/O unit can only perform monitoring function and instructions from the remote I/O unit such as setting or teaching instructions will not take effect. (For details on the effectiveness of the basic remote instructions, see the bus input address mapping table (basic remote control area) in section 1.1.3 I/O Mapping Settings. For details on the effectiveness of the extended remote I/O instructions, see 8.2.1 List of Commands.) The following two tables show the functions that can be performed by InoRobotLab and teach pendant when the controller is in the manual mode.

Concept explanation

- Effective: The remote command can be executed.
- Ineffective: The remote command will not be executed.

Functions available on InoRobotLab are as shown in the following table.

Function	**Operation in InoRobotLab**	**Special requirements**	**Permission requirements**
Enable/ Disable the robot	Click the control panel to enable or disable the robot	Line number is not changed.	User, Administrator, and Manufacturer
Modify the global variables	Go to "Station" > "Monitor" > "Global variable monitor".	The line number is not changed after the global variables are changed.	User, Administrator, and Manufacturer
Modify the global points	Go to "Station" > "Monitor" > "Global variable monitor".	The line number is not changed after the global points are changed (only the memory points are modified here, and the modified points disappear after restart).	User, Administrator, and Manufacturer
	Double-click a point line on the point page (only supported for global points P).	The single adjustment range for each direction is [-5, 5].	User, Administrator, and Manufacturer
	Batch modify points on the point page (only supported for global points P)	The single adjustment range for each direction is [-5, 5].	User, Administrator, and Manufacturer
Modify the I/ Os	Go to "Station" > "Monitor" > "I/O monitor".	Modifying the I/Os while the program is running does not change the line number.	User, Administrator, and Manufacturer
Axis control panel	Function	The following functions do not reset the line number.	User, Administrator, and Manufacturer
	Speed settings	-	
	Mechanical unit settings	-	
	Axis motion control	-	
	Mechanical lock	The robot needs to be disabled.	
	Dynamic brake/Singularity crossing	The robot needs to be disabled.	
	Homing	Homing without trajectory recovery	
	Independent axis reset	-	
	Change motion mode	-	
	Move to point (MovL, MovJ, MovAbsJ, Jump, JumpL)	Without trajectory recovery	

Function	**Operation in InoRobotLab**	**Special requirements**	**Permission requirements**
	Display the current position	-	
Axis control panel > Coordination function	Turn on/off coordination function	-	User, Administrator, and Manufacturer
Global speed modification	Top of the panel	The line number is not affected.	User, Administrator, and Manufacturer
Return to work origin	Go to "Controller parameter configuration" > "Zero settings" > "Work origin" > "Move to point".	-	User, Administrator, and Manufacturer

Functions available on teach pendant are as shown in the following table.

Function	**Operation on teach pendant**	**Special requirements**	**Permission requirements**
Enable/Disable the robot	Enable or disable the robot through the button on the right side panel	Line number is not changed.	User mode, Edit mode, Admin, and Manufacturer
Modify the global variables	Go to "Monitor" > "Global variable".	The line number is not changed after the global variable is modified (The teach pendant cannot set custom global variables, Tool, wobj, or load parameters.)	Edit mode, Admin, and Manufacturer
	Double-click a point line on the point page (only supported for global points P).	The single adjustment range for each direction is [-5, 5].	Edit mode, Admin, and Manufacturer
	Batch modify points on the point page (only supported for global points P)	The single adjustment range for each direction is [-5, 5].	Edit mode, Admin, and Manufacturer
Modify the points during debugging	Modify the points in debugging mode.	The line number is not changed after the points are modified in the debugging mode.	Edit mode, Admin, and Manufacturer
Modify the I/Os	Go to "Station" > "Monitor" > "I/O monitor".	The line number is not changed after the I/O modification.	Edit mode, Admin, and Manufacturer

Function	Operation on teach pendant	Special requirements	Permission requirements
Axis control panel	Function	The following functions do not reset the line number.	User mode, Edit mode, Admin, and Manufacturer
	Mechanical unit settings		
	Axis motion control		
	Mechanical lock/Dynamic brake	The robot needs to be disabled.	
	Singularity crossing	The robot does not need to be disabled.	
	Independent axis reset	-	
	Change motion mode	-	
	Display the current position	-	
	Homing	-	
Axis control panel > Coordination function	Turn on/off coordination function	-	User mode, Edit mode, Admin, and Manufacturer
Move to point (MovL, MovJ, JumpL, Jump, MovAbsJ)	Go to "Manual" > "Point" > "GO".	The line number will not be reset (Trajectory recovery not available.)	User mode, Edit mode, Admin, and Manufacturer
Global speed modification	Go to the upper right corner of the main interface.	The line number is not reset.	User mode, Edit mode, Admin, and Manufacturer
Return to work origin	Go to "Settings" > "Zero point settings" > "Work origin" > "Move to point".	-	Edit mode, Admin, and Manufacturer

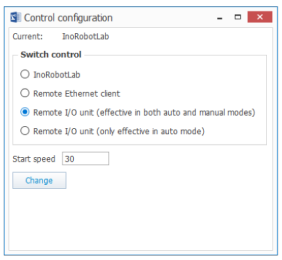
CAUTION

- The teach pendant cannot set custom global variables, Tool, Wobj, or Load, but these can be configured using the InoRobotLab software.
- The "Line number reset policy" function allows you to configure whether to reset the running program line number when a switchover between manual and auto modes occurs under the control of the remote I/O unit.
  - Reset Running line number: When a switchover between manual and auto modes occurs under the control of the remote I/O unit, the program running line number will be reset.
  - Do not reset running line number: When a switchover between manual and auto modes occurs under the control of the remote I/O unit, the program running line number will not be reset.

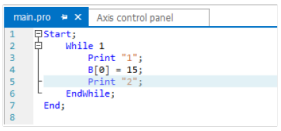
3.3 Example of Differences Between Two Types of Control Modes

- Scenario 1: Switch to remote I/O unit control mode (effective in both auto and manual modes), and start the program. A problem exists with variable B[0] in the program. In this case, you can modify the variable using the remote command 0x0301.

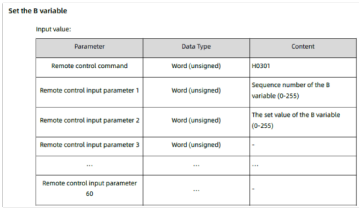
1. Switch to the Remote I/O unit mode (effective in both manual and auto modes)



2. During the program execution, a problem exists with variable B[0] in the program

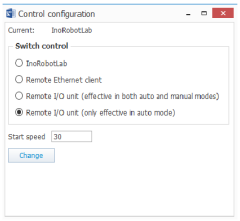


3. Modify the variable using the remote command 0x0301

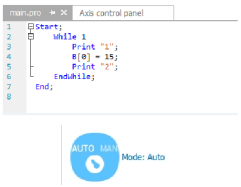


- Scenario 2: Switch to remote I/O unit control mode (only effective in auto mode), and start the program. A problem exists with variable B[0] in the program. In this case, you can switch to the manual mode and modify the variable on InoRobotLab, then switch back to the auto mode and restart the program.

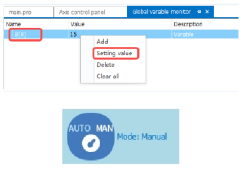
1. Switch to remote I/O unit control mode (only effective in auto mode), and start the program.



2. When a problem exists with variable B[0] in the program, switch to the manual mode.



3. Modify the variable under "Global variable monitor" on InoRobotLab, then switch back to the auto mode and restart the program.



4 Classification and Use of Remote Control

4.1 Basic Remote Control

Basic remote control uses a method where one Bit corresponds to one function, mainly divided into three types: Reset, Level, and Special. For usage methods, see the current Modbus control.

4.2 Extended Remote Control

As mentioned earlier, the extended remote control consists of an input area and an output area. The input area includes function codes and additional input parameters, while the output area includes the current remote control status and return parameters. The specific parameter meanings are as follows:

Input:

Content	Input address	Remarks
Remote control command	Default: In720-In735, configurable	Enter the remote control command/parameter.
Remote control input parameter 1	Default: In736-In751	The content format is given in each parameter.
Remote control input parameter 2	Default: In752-In767	The content format is given in each parameter.
Remote control input parameter 3	Default: In768-In783	The content format is given in each parameter.
…	…	…
Remote control input parameter 60	Default: In1680-In1695	The content format is given in each parameter.

Output:

Content		Word output	Remarks
Current remote control state		Default: Out720-Out735, configurable	Returns the current execution state
Remote control return parameter 1	Remote control execution failure error code	Default: Out736-Out751	The content format is given in each parameter.
Remote control return parameter 2	Controller system fault code	Default: Out752-Out767	The content format is given in each parameter.
Remote control return parameter 3	-	Default: Out768-Out783	The content format is given in each parameter.
…	…	…	…
	-		

Content		Word output	Remarks
Remote control return parameter 60		Default: Out1680-Out1695	The content format is given in each parameter.

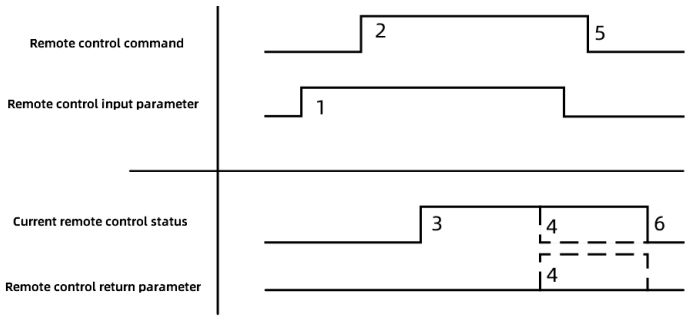
The use of extended remote control is as follows:

1. The remote command is executed by assigning the command code to the bus input address corresponding to the remote control command, and by assigning the command data to the bus input address.

> CAUTION
>
> You need to enter the command data before entering the command.

2. After receiving the remote command, the controller processes the command and sends status (result) and other information to the master unit through the current remote control status and remote control return parameters.
3. After the remote command is completed, assign the status initialization command (hexadecimal: 0x0000) to the bus input address corresponding to the remote control command. Remote commands can be executed when the current remote control status is idle (hexadecimal: 0x0000).

The timing requirements for remote control are as follows:



- Setting of the remote control input parameters.
- Setting of the remote control commands.
- The current remote control status changes to the command execution state 0x0001.
- When the command is executed quickly, the status may not change from the command execution status to 0x0001, but to the command completion status 0x0002.
- The current remote control status changes to command completion status 0x0002 or abnormal execution status 0x0003. If any data is returned, the remote control return parameters will generate corresponding data.
- Setting of the remote control status initialization command 0x0000.
- The current remote control status changes to the idle status.

For details on remote control commands, the format of input parameters, and the meaning of return parameters, see 8.2 Appendix 2: Extended Remote Control Command List.

5 I/O monitor

5.1 I/O Monitor in InoRobotLab Software

5.1.1 Inputs

You can view the input status of standard I/Os, slave fieldbus I/Os, master fieldbus I/Os, memory I/Os, and system I/Os. Also, you can force the input signal of standard I/Os, and observe the corresponding input status in the "Status" and "Value" columns.

The inputs can be displayed in Bit, Byte, and Word based on the size of the variable, corresponding to In, InB and InW of the system I/O variable respectively. The following describes the three monitoring modes: Bit, Byte, and Word.

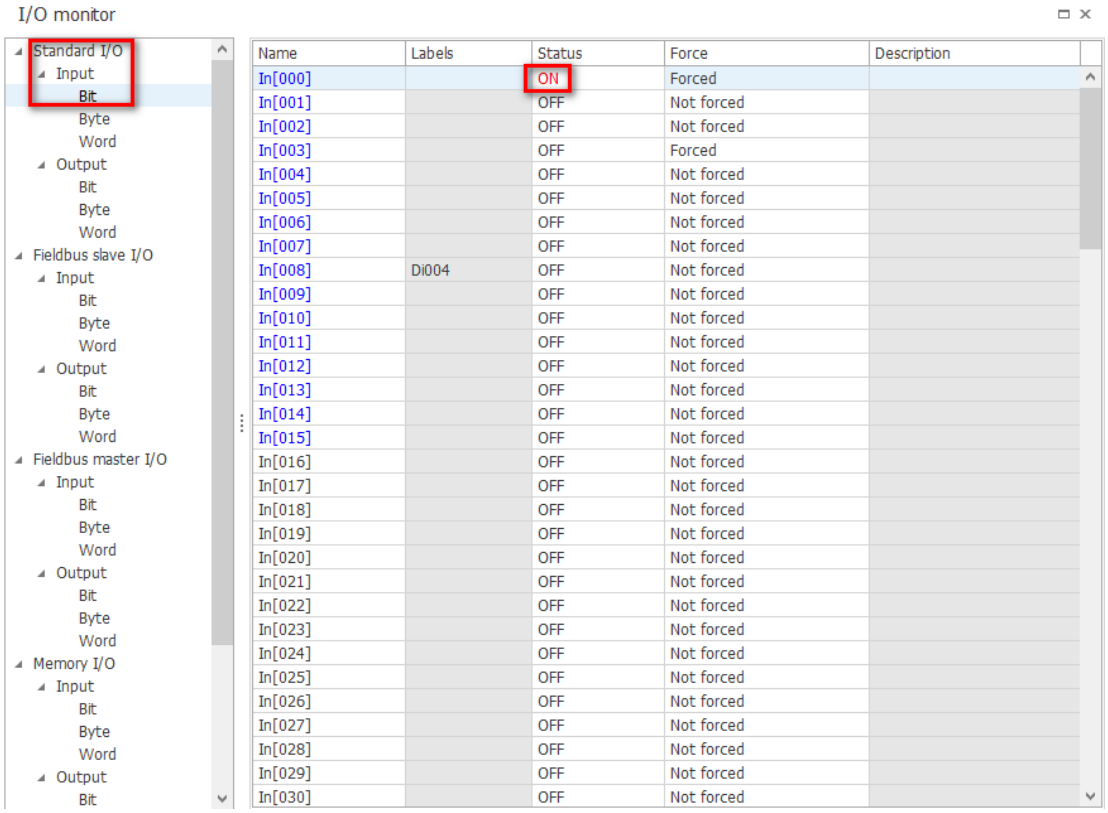
Prerequisite

- Ensure that the controller is connected, that the input and output modules are connected correctly, and that the IR-Link settings or EtherCAT settings are made correctly.
- To monitor fieldbus I/Os, ensure that the address is assigned correctly and that the fieldbus master is connected.

5.1.1.1 Bit Monitoring

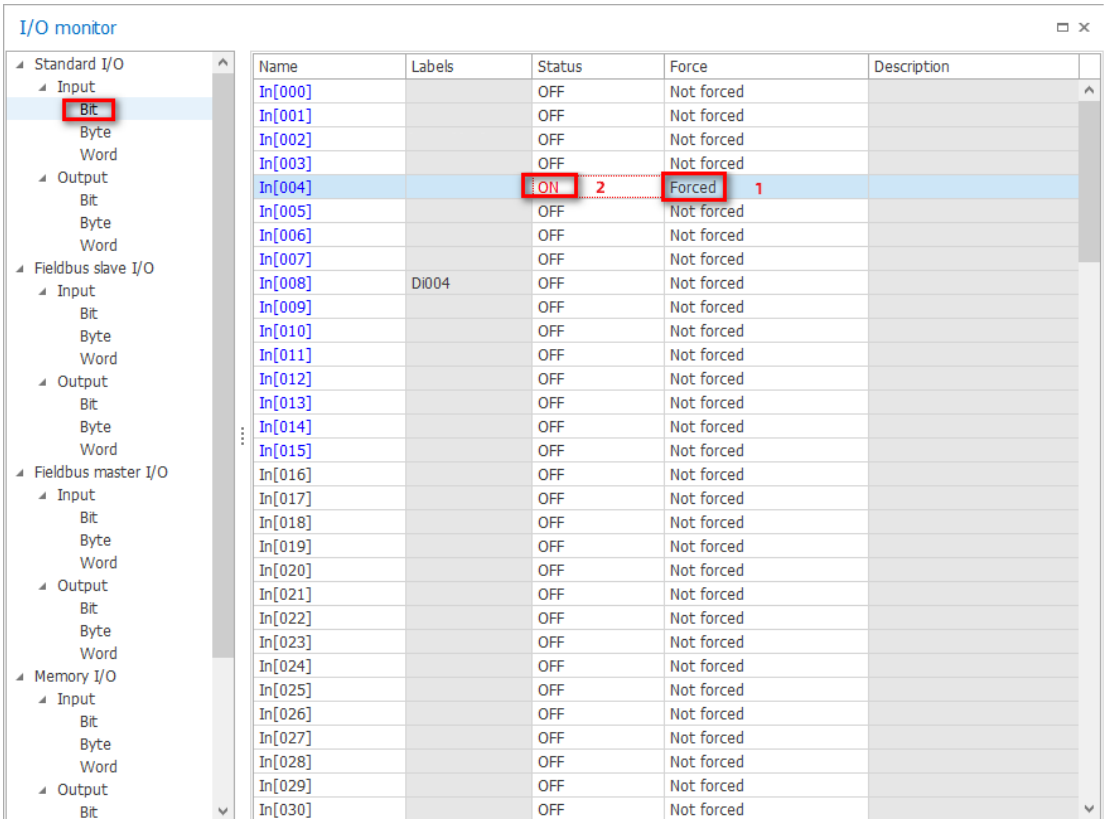
Viewing the Input Status

On the I/O monitor page, select "Standard I/O" > "Input" > "Bit". You can view the input status, as shown below.



Forcing the Input Status

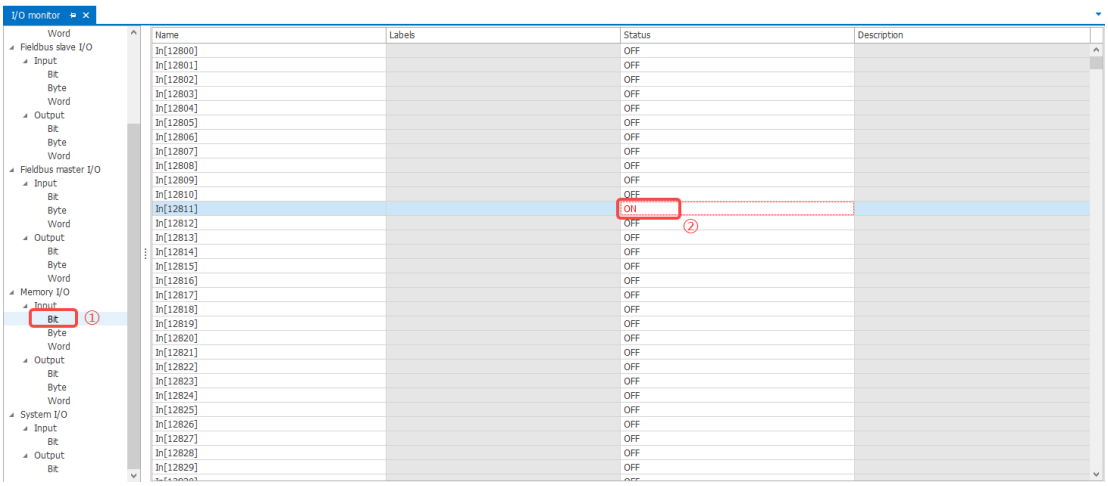
Select "Standard I/O" > "Input" > "Bit", click the force switch of an input, for example, In[005], to switch it to "Forced", and then click the input's status to change its status from "OFF" to "ON".



After the forcing takes effect, the input is judged according to the forced value in the logical judgment of the program.

Changing the Input Status of Memory I/Os

Select "Memory I/O" > "Input" > "Bit", click the status of an input, for example In[12806]. The status of the input is changed, for example, from "OFF" to "ON".

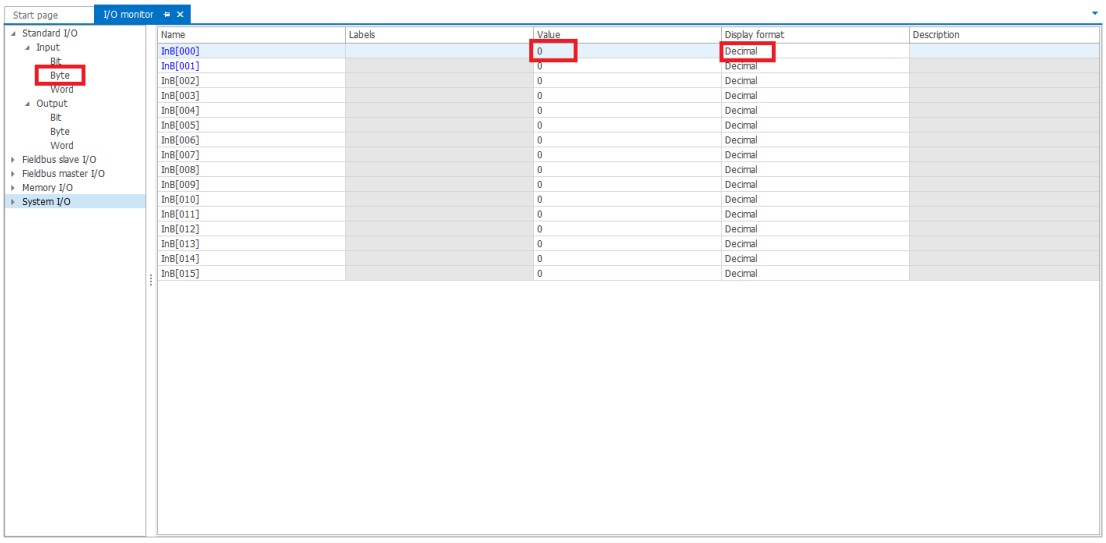


After the change takes effect, the input is judged according to the value displayed in the monitoring list in the logical judgment of the program.

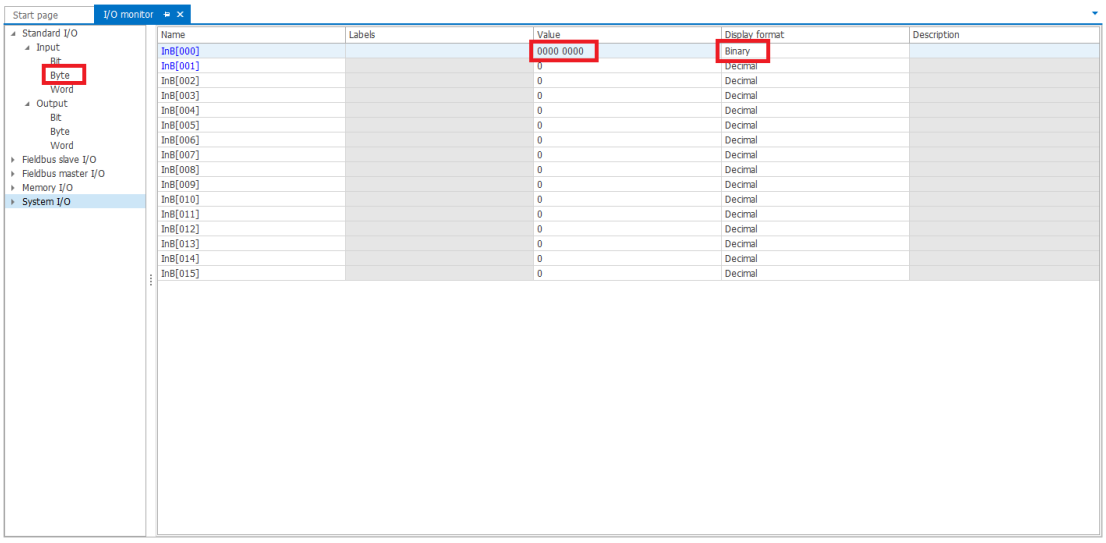
5.1.1.2 Byte Monitoring

Viewing the Input Status

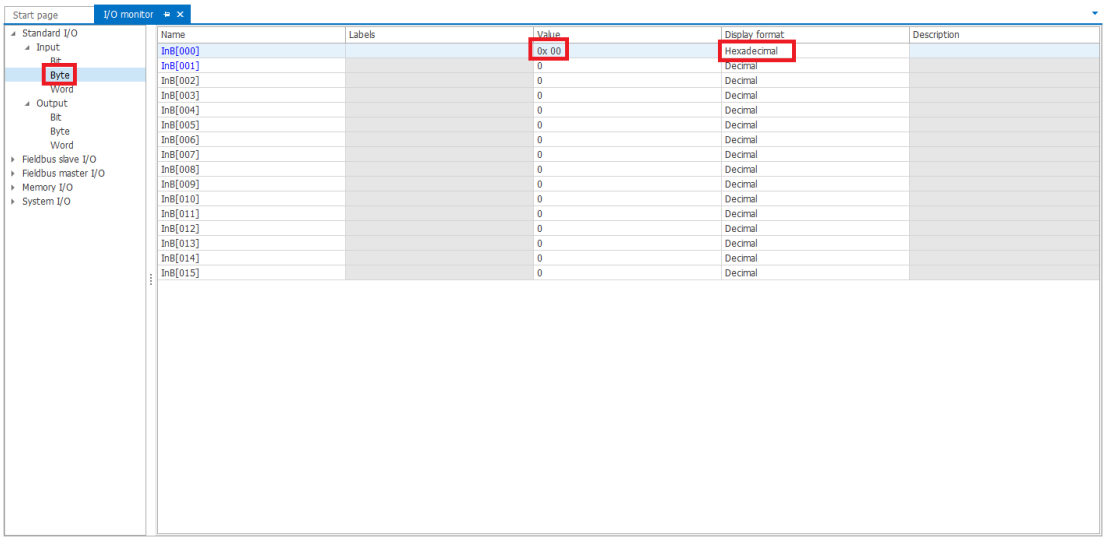
- On the I/O monitor page, select "Standard I/O" > "Input" > "Byte". You can click the "Display format" cell to change the display format including decimal, binary, hexadecimal and 32-bit floating-point. For example, InB[000] is displayed in decimal with a value of 0.



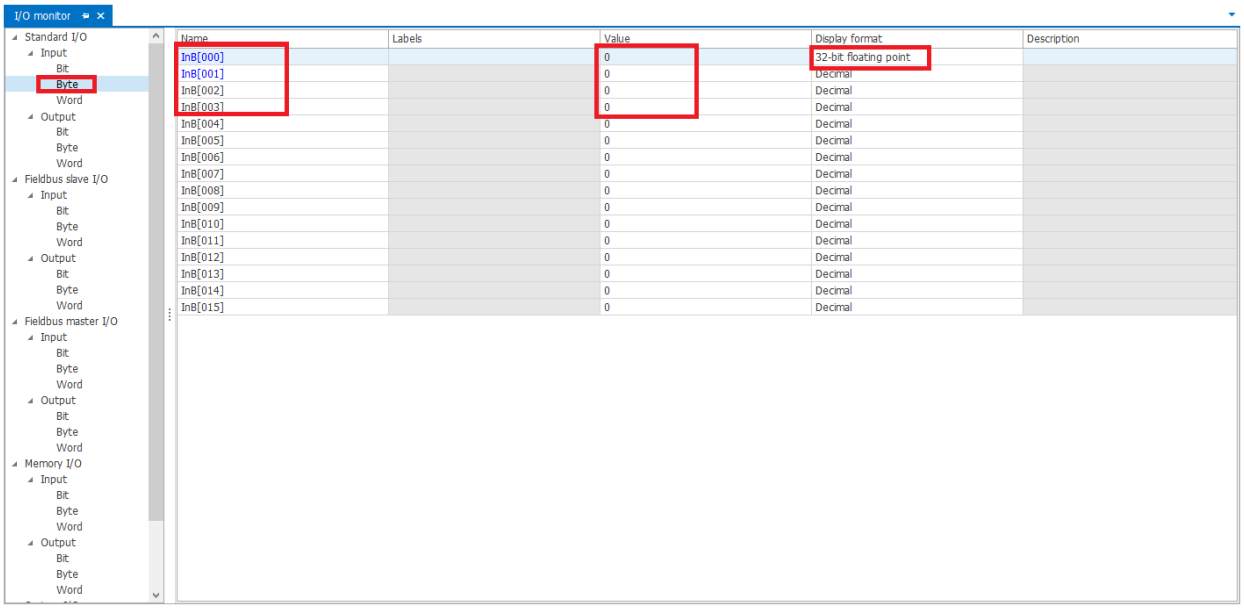
- When displayed in binary, the value of InB[000] is 0000 0000.



- When displayed in hexadecimal, the value of InB[000] is 0x 00.



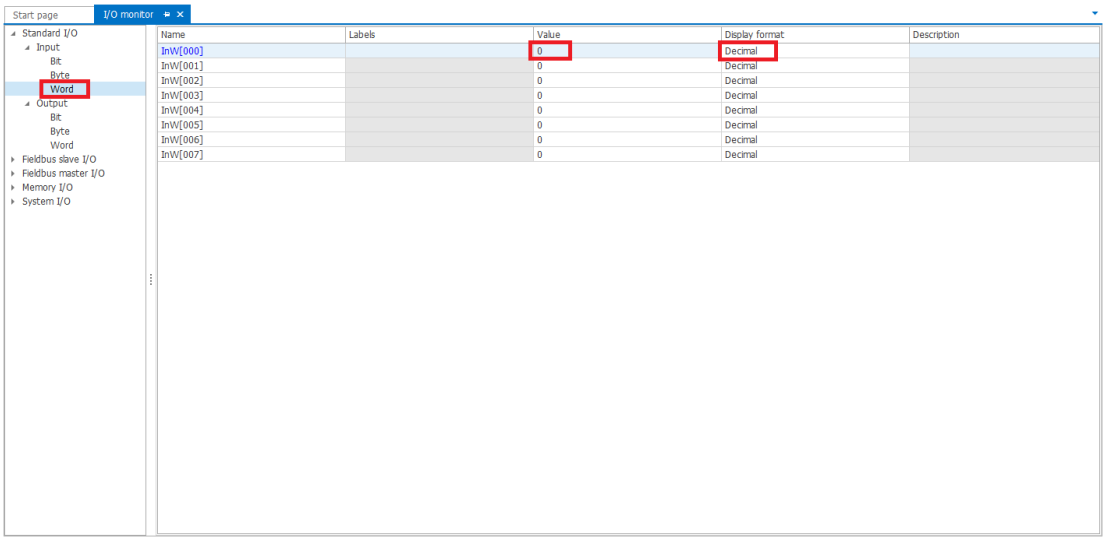
When the 32-bit floating-point format is selected, the value displayed is actually a 32-bit floating-point number consisting of four bytes, as there are only 8 bits in a byte. For example, InB[000] is displayed as a 32-bit floating-point number as shown below. The value 0 indicates the value of a 32-bit floating-point number consisting of four bytes InB[000], InB[001], InB[002], and InB[003].



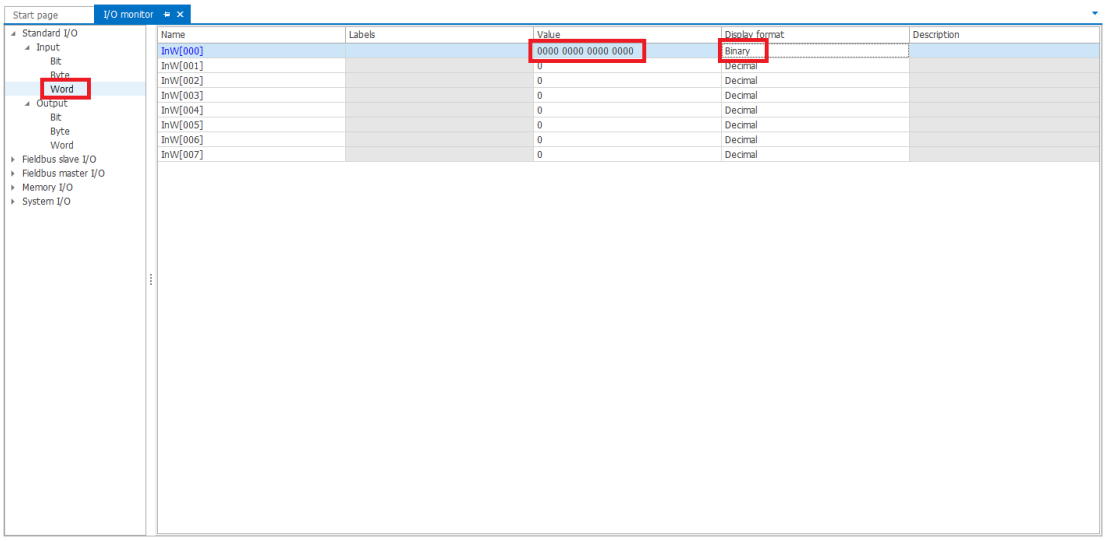
5.1.1.3 Word Monitoring

Viewing the Input Status

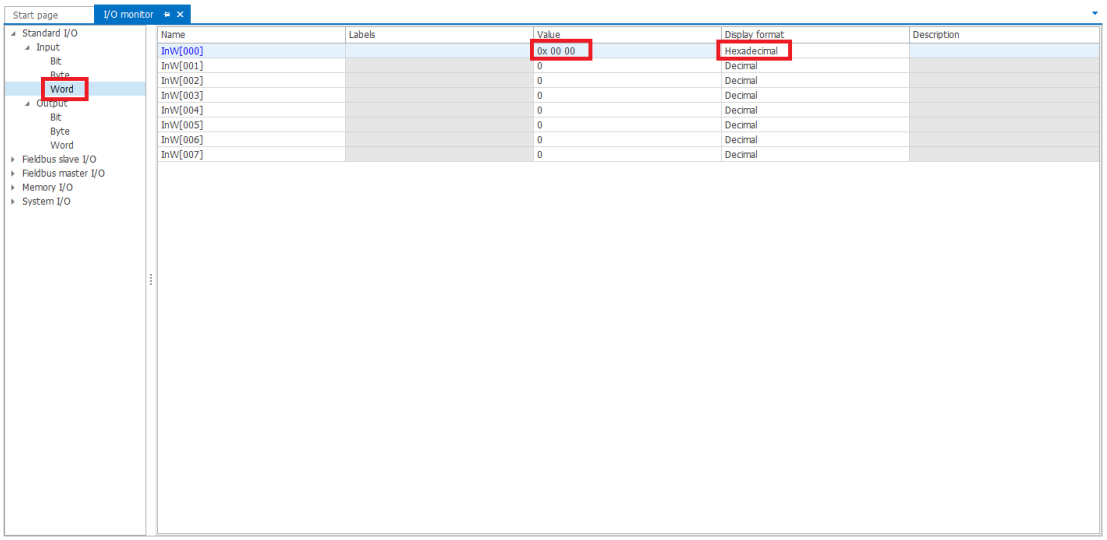
- On the I/O monitor page, select "Standard I/O" > "Input" > "Word". You can click the "Display format" column to change the display format including decimal, binary, hexadecimal and 32-bit floating-point. For example, InW[000] is displayed in decimal with a value of 0.



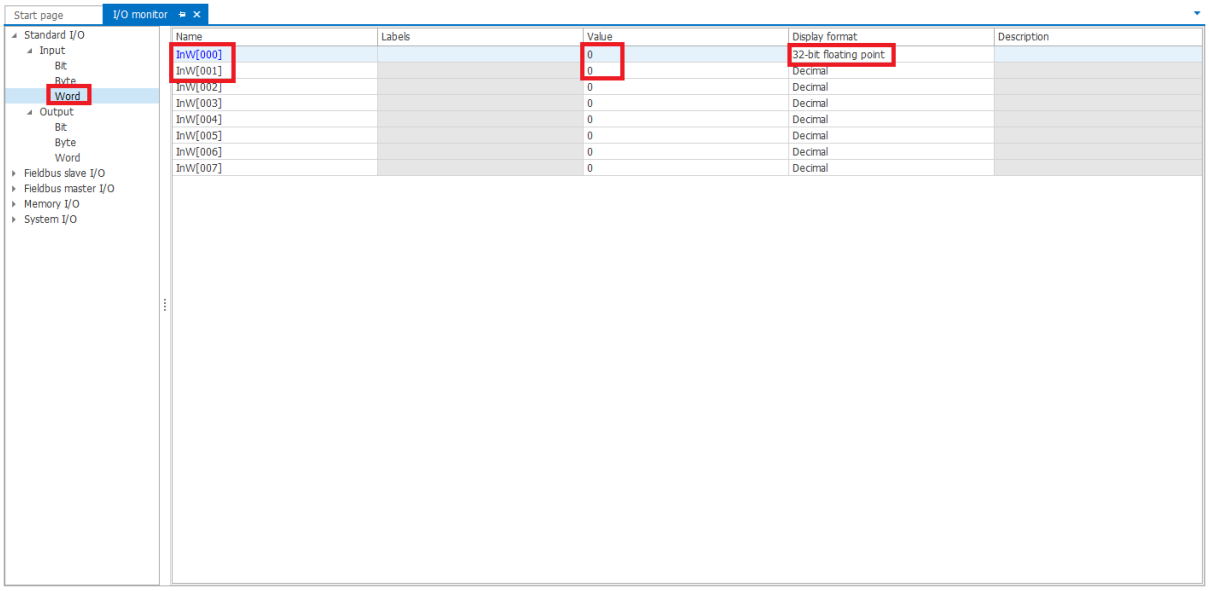
- When displayed in binary, the value of InW[000] is 0000 0000 0000 0000.



- When displayed in hexadecimal, the value of InW[000] is 0x 00 00.



- When the 32-bit floating-point format is selected, the value displayed is actually a 32-bit floating-point number consisting of two words, as there are only 16 bits in a word. For example, InW[000] is displayed as a 32-bit floating-point number as shown below. The value 0 indicates the value of a 32-bit floating-point number consisting of two bytes InW[000] and InW[001].



5.1.2 Outputs

You can view the output status of standard I/Os, slave fieldbus I/Os, master fieldbus I/Os, memory I/Os, and system I/Os. Also, you can modify the output status. You can observe the output status in the "Status" and "Value" columns.

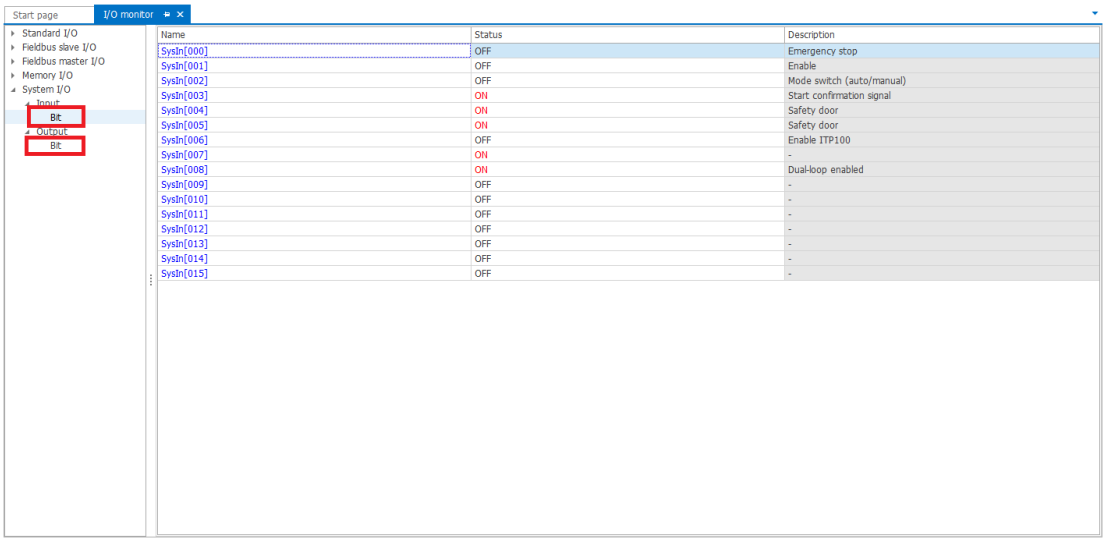
The outputs can be displayed in Bit, Byte, and Word based on the size of the variable, corresponding to Out, OutB and OutW of the system I/O variable respectively. The related operations are similar to those for inputs. For specific operations, see 5.1.1 Inputs section.

Prerequisite

- Ensure that the controller is connected, that the input and output modules are connected correctly, and that the IR-Link settings or EtherCAT settings are made correctly.
- To monitor fieldbus I/Os, ensure that the address is assigned correctly and that the fieldbus master is connected.

5.1.3 System I/Os

The system I/Os include 16 inputs and 16 outputs, which can be displayed by bit only.



5.1.4 Meaning of Colors in I/O Monitor

In the I/O monitor, the variable names are differentiated by colors: blue, orange and black, respectively.

- Blue: Indicates standard I/Os connected to the actual device or bus I/Os assigned with an address.
- Orange: Indicates outputs which have been occupied and for which the control permissions is not RC_ ACTIVE. The status of such outputs cannot be changed through monitoring interface or instructions.
- Black:
  - Indicates standard I/Os not connected to the actual device or bus I/Os not assigned with an address.
  - Indicates outputs which have not been occupied and for which the control permissions is RC_ ACTIVE.

> **NOTE**
>
> The orange display has a higher priority than blue and black. When an I/O is displayed in orange, if you want to know whether the I/O has blue or black attributes, you can infer based on the color of the I/Os before and after it.

Control permission of output signal:

Control Permission	Description
RC_STATIC	Indicates that it is occupied by the RC system. That is, Out is bound to a system function. In this case, the output signal is related to the function only and the signal status cannot be manually changed.
RC_ACTIVE	Indicates that it is under normal RC control. In this case, the signal is normally controlled. For example, you can change the signal in "I/O Monitor" or using the Set instruction.

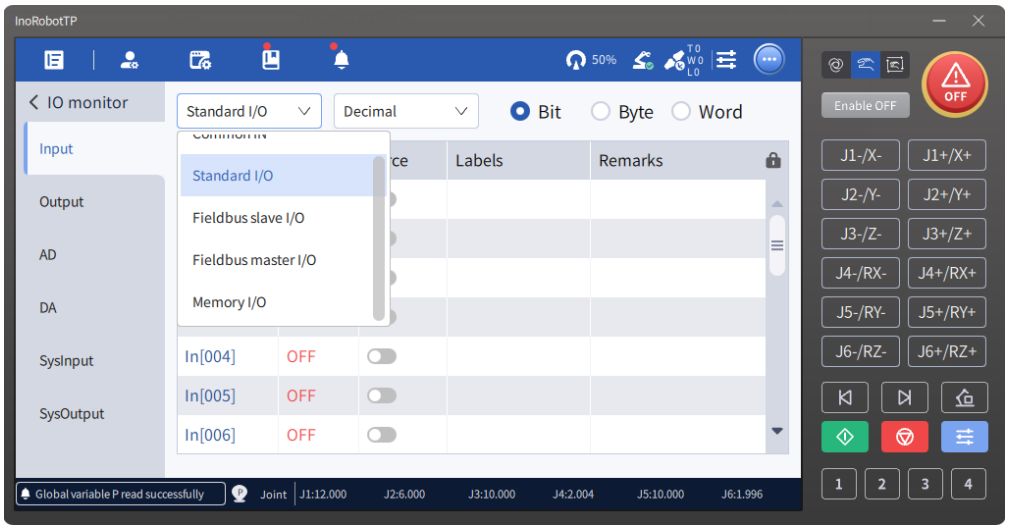
5.2 I/O Monitor in InoRobotTP Software

The "IO monitor" interface includes five sections: Input, Output, AD, DA, SysI/O.

> **CAUTION**
>
> Before using the I/O monitor, ensure that the IR-Link configuration is correct.

5.2.1 Input

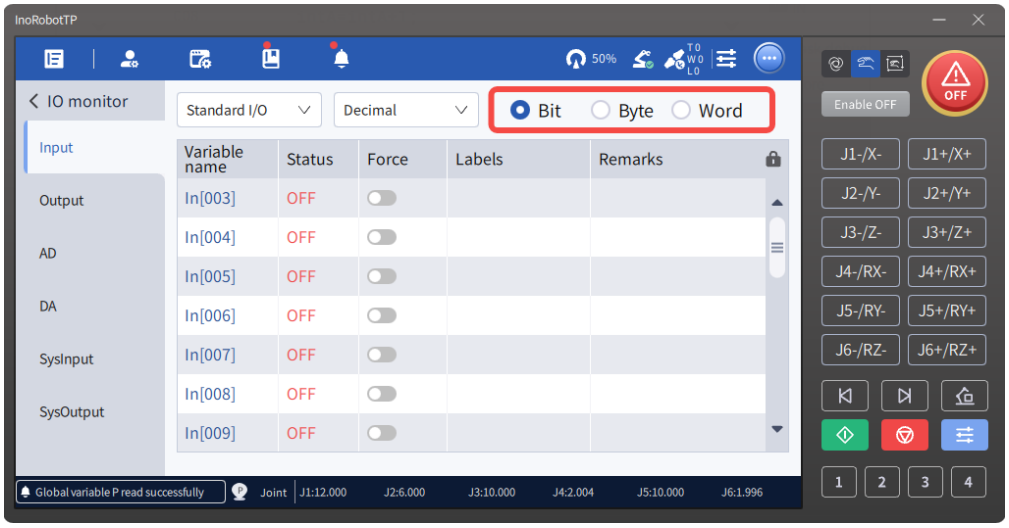
1. Input I/O is divided into Common IN, Standard I/O, Fieldbus I/O, and Memory I/O, which can be selected through the drop-down menu as shown in the following figure.



> **NOTE**
>
> Common IN: Indicates inputs with specified label and remark. When the current active project contains inputs with specified label, these inputs are displayed as common inputs.

For definitions of Standard I/O, Fieldbus I/O, and Memory I/O, see the 2 Introduction of Robot Bus Addresses section.

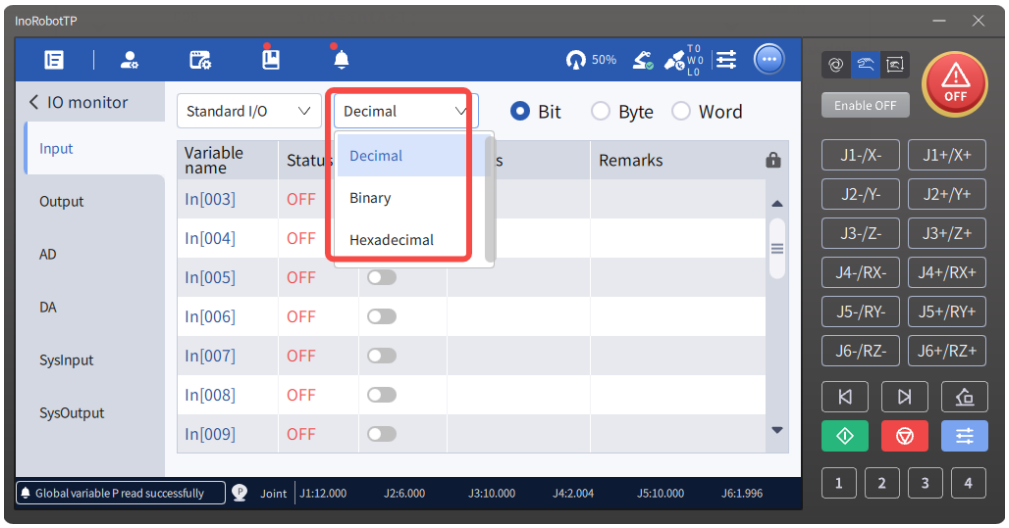
2. Each I/O is further divided into three display modes: Bit, Byte, and Word.



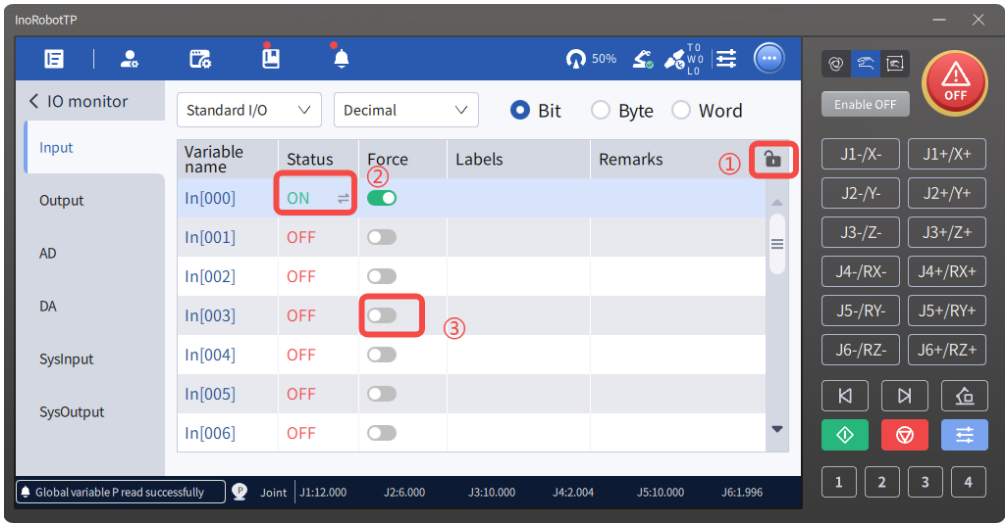
> **NOTE**
>
> The value of 8 bits corresponds to the value of one byte, and the value of 16 Bits corresponds to the value of one word. For example: The I/O value with bit indexes 0-7 corresponds to the value of InB[0]; the I/O value with bit indexes 0-15 corresponds to the value of InW.

3. When you choose to display an input by bit, the status may be ON or OFF depending on the return value: 1 for ON, 0 for OFF, ON in red, OFF in black.

4. Inputs displayed by byte and word can further be displayed in decimal, binary, or hexadecimal. The default display format is "Decimal".



5. When you choose to display an input by bit, the "Force" column is displayed. In the figure below, areas ①, ② and ③ respectively indicate the lock button, variable status bar, and force switch button. Clicking the lock icon can switch the status between "Locked" and "Unlocked". When the lock button is in the unlocked status, you can click the "Force" toggle button to switch to force. At this time, you can double-click the "Status" column to change the status of the value.



The parameter descriptions for the corresponding columns in the Input interface are as follows:

- Status: Displays the current status. Specifically, for standard I/O inputs, directly click the signal value to toggle it to the opposite state.
- Force: The status of the input signal is determined by the external source by default. However, you can change the status of an input signal to "Forced" using the Force switch. Then the signal can be forced to ON or OFF.
- Labels: Corresponds to the "Label" string in the project's I/O label that matches the I/O variable name.
- Remarks: Corresponds to the "Remarks" string in the project's I/O label that matches the I/O variable name.

All input variables can be monitored in the "Monitor" list on the debug page.

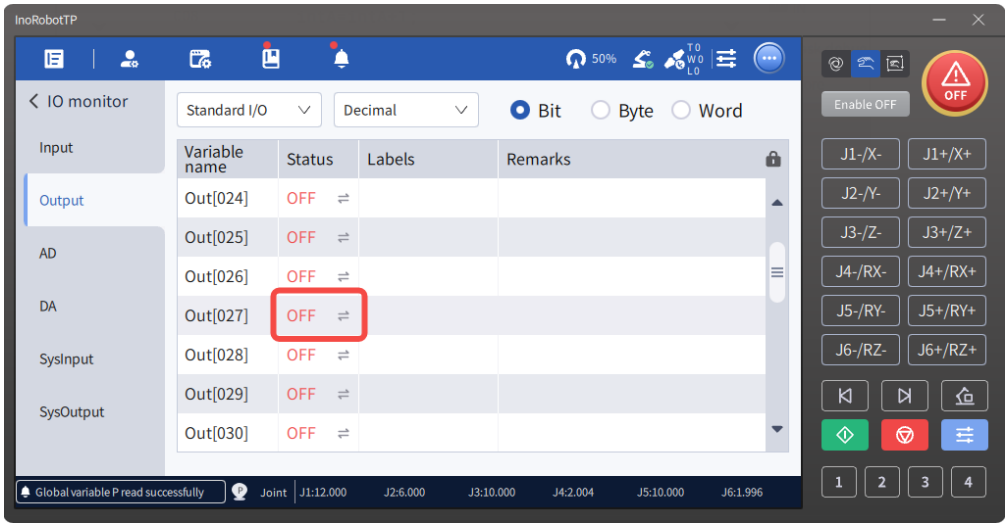
There are two ways to enter the monitoring interface:

- Enter the debug mode, click "Variable monitor", check the "Pickup monitor" option.
- Or select "Custom", enter the variable name and click "Add", then the variable is automatically displayed in the list of "Variable monitor" objects.

5.2.2 Output

The operation on the outputs is generally similar to that on the inputs.

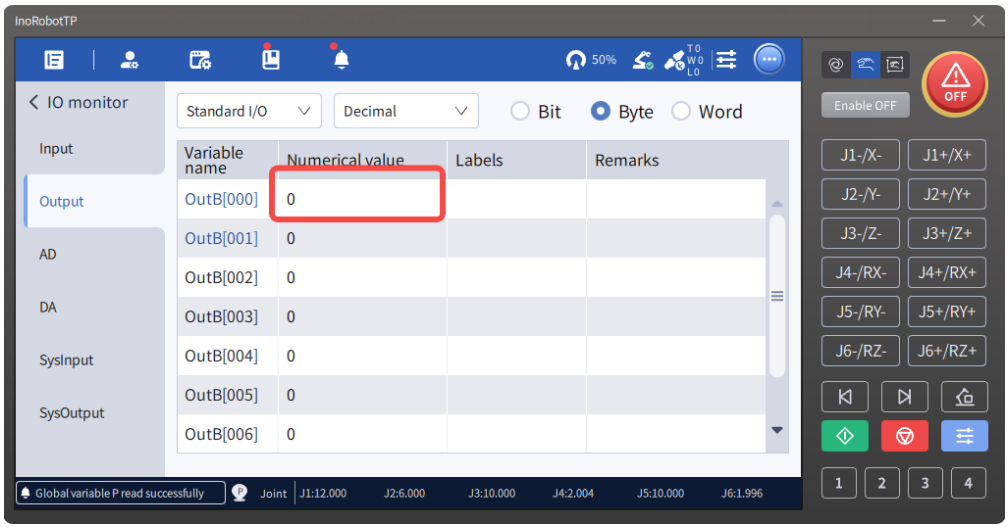
1. Similar to the input, the value of 8 bits corresponds to the value of one byte, and the value of 16 bits corresponds to the value of one word.
2. For Bit, when the I/O is displayed in orange, it indicates no control authority, and the ON/OFF status cannot be changed by double-clicking. When the I/O is displayed in blue, the status can be switched by double-clicking.

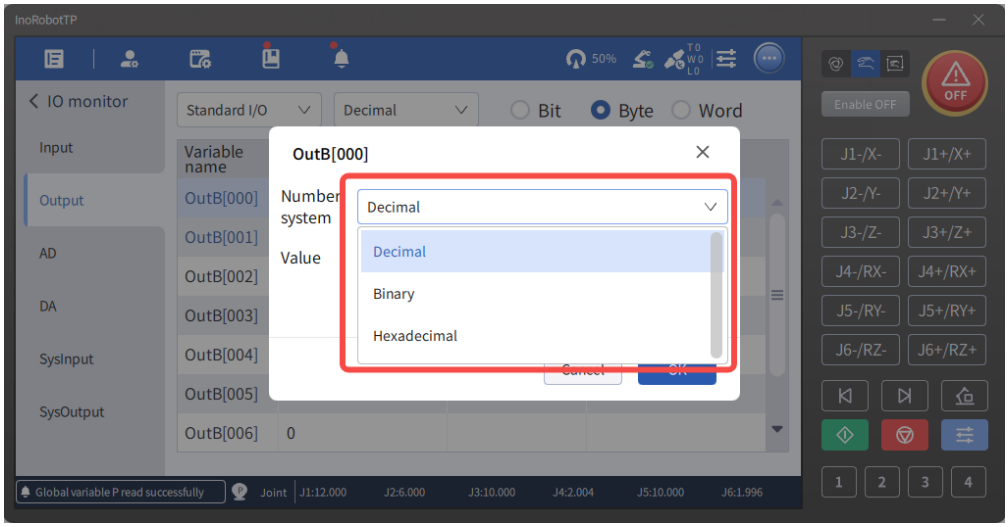


3. For writable status of byte and word, it differs slightly from that of bit. For example:

   1) For OutB[000], it consists of Out[000] to Out[007]. Therefore, if any of Out[000] to Out[007] are mapped, the value of OutB[000] cannot be modified via the page.

   2) Based on the above example, for OutW[000], it consists of OutB[000] and OutB[001]. Since OutB[000] is non-modifiable, when changing the value of OutW[000] triggers a modification of OutB[000], it will result in an error and the modification will not take effect.





All output variables can be monitored in the "Monitor" list on the debug page.

- Enter the debug mode, click "Variable monitor", check the "Pickup monitor" option.

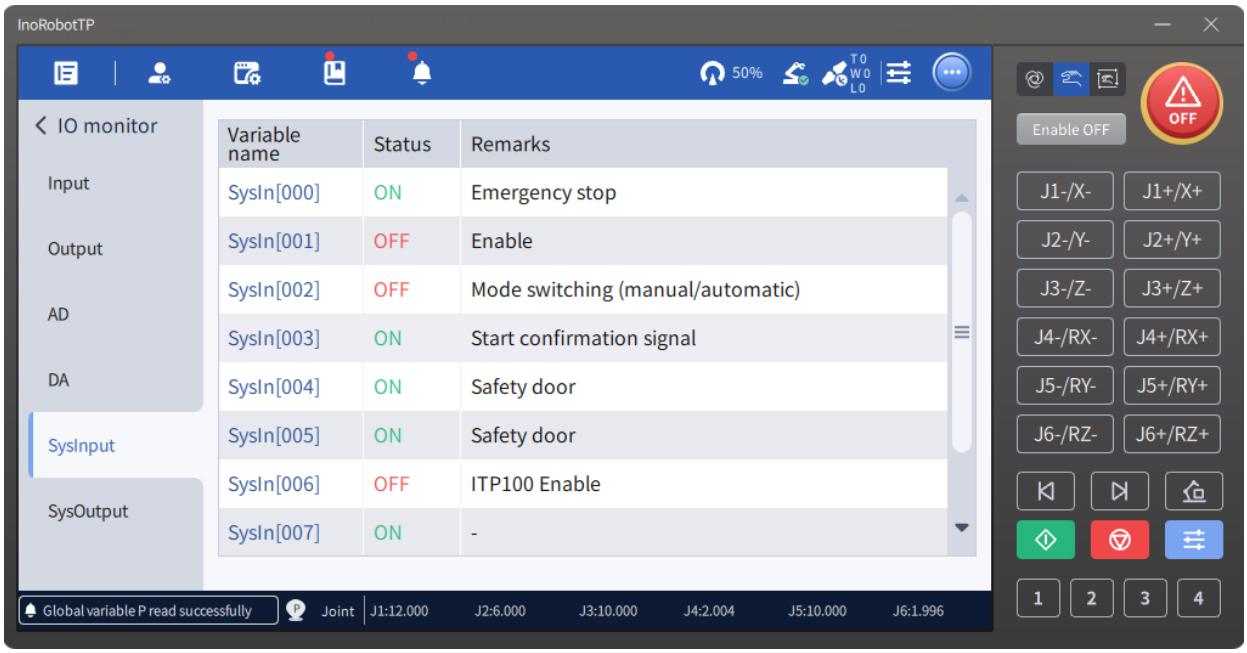
- Or select "Custom", enter the variable name and click "Add", then the variable is automatically displayed in the list of "Variable monitor" objects.

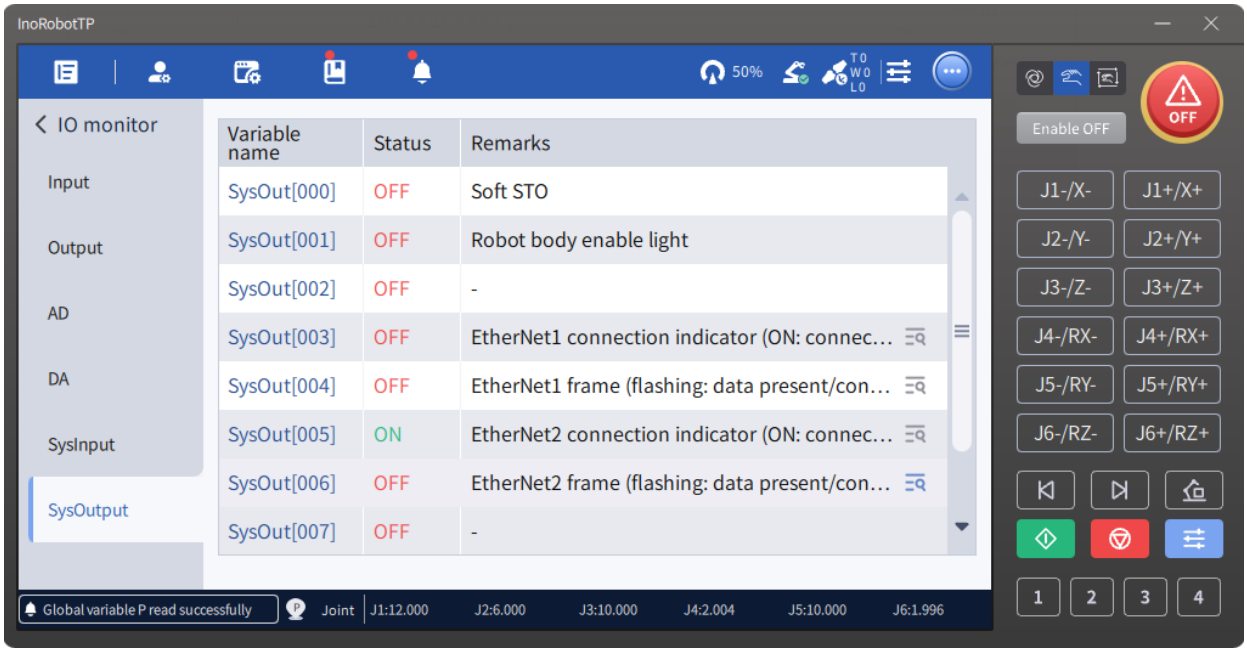
5.2.3 AD/DA

- Output type: It indicates that an analog signal is current or voltage.
- Range: The analog signal range, divided into two types: IR-Link and EtherCAT.
  - Every analog port has several selection ranges according to IR-Link product models.
  - Range: Analog signal range. Every analog port has several selection ranges according to EtherCAT product models.
- Status: An analog parameter value. When it is a voltage signal, the unit is V; When it is a current signal, it is measured in mA. Click the status to directly modify the status value.
- DA switch: It determines whether a DA status value is valid. You can change the status by clicking the switch.
- Label: Displays the label set in the project.

> **NOTE**
>
> Remark: Displays the remarks set in the project.
>
> Note: Labels and remarks cannot be modified here, please modify them in the project.

5.2.4 System I/Os





For the IRCB10 controller, System I/Os are In[0] to In[2] that are linked to emergency stop, enable function and mode switching respectively and displayed on the input/output interface.

For the IRCB300, IRCB100, IRCB500 and IRCB501 controllers, System I/Os have separate SysInput and SysOutput interfaces with 16 inputs and 16 outputs as follows:

System I/Os of IRCB300/IRCB100 controller:

Input	Function	Output	Function
SysIn[0]	Emergency stop	SysOut[0]	System running indication
SysIn[1]	Enable	SysOut[1]	System error indicator
SysIn[2]	Mode switching (manual/automatic)	SysOut[2]	System enabled indication
SysIn[3]	-	SysOut[3]	EtherNet1 connection indicator • On: connected • Off: not connected
SysIn[4]	Safety door	SysOut[4]	EtherNet1 frame • Flashing: data present • Constantly on: connected, but no data
SysIn[5]	Safety door	SysOut[5]	EtherNet2 connection indicator • On: connected • Off: not connected

SysIn[6]	ITP100 enable	SysOut[6]	EtherNet2 frame • Flashing: data present • Constantly on: connected, but no data
SysIn[7]	-	SysOut[7]	-
SysIn[8]	-	SysOut[8]	Robot body enable light
SysIn[9]	-	SysOut[9]	-
SysIn[10]	-	SysOut[10]	-
SysIn[11]	-	SysOut[11]	-
SysIn[12]	-	SysOut[12]	-
SysIn[13]	-	SysOut[13]	-
SysIn[14]	-	SysOut[14]	-
SysIn[15]	-	SysOut[15]	-

System I/Os of IRCB500/IRCB501 controller:

Input	Function	Output	Function
SysIn[0]	Emergency stop	SysOut[0]	Soft STO
SysIn[1]	Enable	SysOut[1]	Robot body enable light
SysIn[2]	Mode switching (manual/automatic)	SysOut[2]	-
SysIn[3]	Start confirmation signal	SysOut[3]	EtherNet1 connection indicator • On: connected • Off: not connected
SysIn[4]	Safety door	SysOut[4]	EtherNet1 frame • Flashing: data present • Constantly on: connected, but no data
SysIn[5]	Safety door	SysOut[5]	EtherNet2 connection indicator • On: connected

			• Off: not connected
SysIn[6]	ITP100 enable	SysOut[6]	EtherNet2 frame • Flashing: data present • Constantly on: connected, but no data
SysIn[7]	-	SysOut[7]	-
SysIn[8]	-	SysOut[8]	
SysIn[9]	-	SysOut[9]	-
SysIn[10]	-	SysOut[10]	-
SysIn[11]	-	SysOut[11]	-
SysIn[12]	-	SysOut[12]	-
SysIn[13]	-	SysOut[13]	-
SysIn[14]	-	SysOut[14]	-
SysIn[15]	-	SysOut[15]	-

5.2.5 Meaning of Colors in I/O Monitor

In the I/O monitor, the variable names are differentiated by colors: blue, orange and black, respectively.

- Blue: Indicates standard I/Os connected to the actual device or bus I/Os assigned with an address.
- Orange: Indicates outputs which have been occupied and for which the control permissions is not RC_ ACTIVE. The status of such outputs cannot be changed through monitoring interface or instructions.
- Black: Indicates I/Os that meet the following conditions:
  - Indicates standard I/Os not connected to the actual device or bus I/Os not assigned with an address.
  - Indicates outputs which have not been occupied and for which the control permissions is RC_ ACTIVE.

NOTE

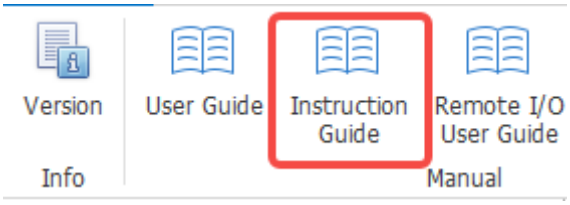
The orange display has a higher priority than blue and black. When an I/O is displayed in orange, if you want to know whether the I/O has blue or black attributes, you can infer based on the color of the I/Os before and after it.

Control permission of output signal:

Control Permission	Description
RC_STATIC	Indicates that it is occupied by the RC system. That is, Out is bound to a system function. In this case, the output signal is related to the function only and the signal status cannot be manually changed.
RC_ACTIVE	Indicates that it is under normal RC control. In this case, the signal is normally controlled. For example, you can change the signal in "I/O Monitor" or using the Set instruction.

6 User Instructions for Read/Writing the Bus

See the Industrial Robot Instruction Guide on the InoRobotLab software by clicking "About" > "Instruction Guide" in the menu bar.



6.1 How to Receive Data from PLC Through Instructions

Receive INT32 data from PLC using a custom area:

R[0] = IN[1056].INT32 or R[0] = INB[132].INT32 or R[0] = INW[66].INT32

Receive FLOAT data from PLC using a custom area:

R[0] = IN[1056].FLOAT or R[0] = INB[132].FLOAT or R[0] = INW[66].FLOAT

Receive FLOAT data from PLC using a custom area and directly define the points:

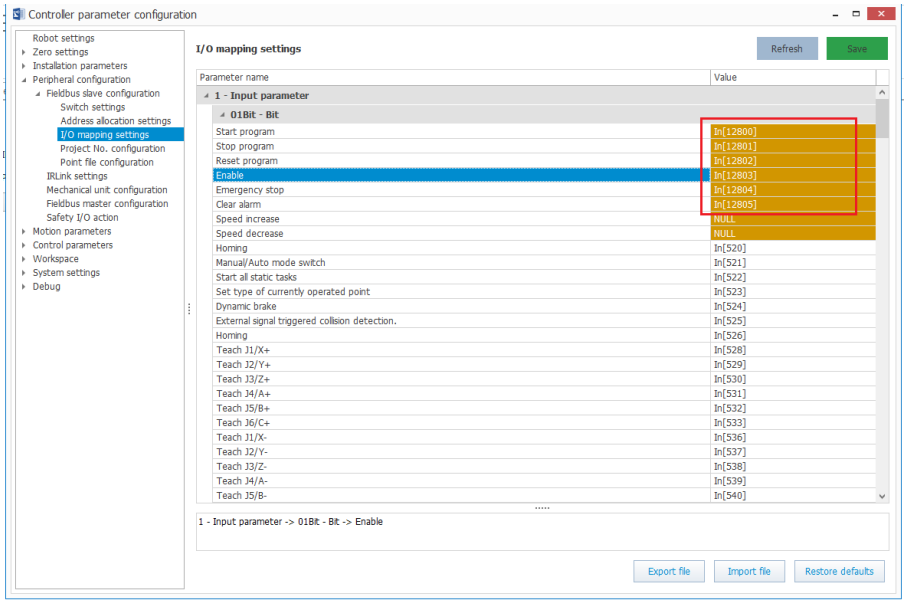
P[0] = {(INW[66].FLOAT, INW[68].FLOAT, INW[70].FLOAT,0,0,0),(1,0,0,0),(1,0,0)};

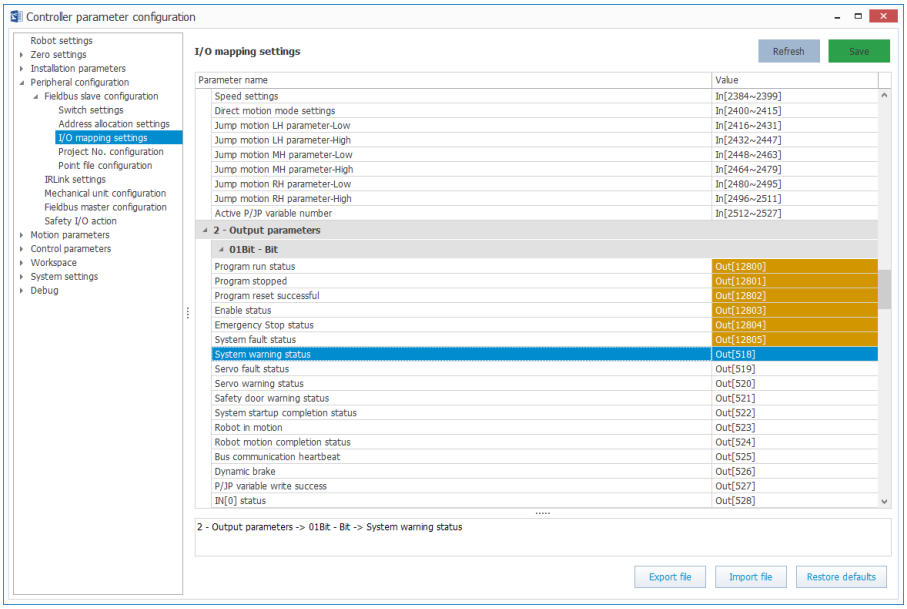
Receive DOUBLE data from PLC using a custom area:

R[0] = IN[1056].DOUBLE or R[0] = INB[132].DOUBLE or R[0] = INW[66].DOUBLE

7 Controlling the Robot via Digital I/O and Fieldbus I/O Simultaneously

1. In the I/O mapping settings, configure the I/Os corresponding to functions such as program start as memory I/Os (starting from 12800).





2. Write a static task that is to be implemented through signals or operations:

Start;

In12800 = In0 | In512; (In0 is a digital I/O, and In512 is a fieldbus slave I/O)

In12801 = In1 | In513;

In12802 = In2 | In514;

In12803 = In3 | In515;

In12804 = In4 | In516;

In12805 = In5 | In517;

Out0 = Out12800; (Out0 is a digital I/O)

Out512 = Out12800; (Out512 is a fieldbus slave IO)

```
Out1 = Out12801
Out513 = Out12801
Out2 = Out12802
Out514 = Out12802
Out3 = Out12803
Out515 = Out12803
Out4 = Out12804
Out516 = Out12804
Out5 = Out12805
Out517 = Out12805
End;
```

8 Appendix

8.1 Appendix 1: Fieldbus I/O Correspondence

When the I/O size is set to 512 bytes in the address allocation, the relationship between the fieldbus I/Os and the addresses of different fieldbuses is shown in the following table.

Fieldbus input address mapping relationship:

- m is the start word address of the data transmitted by the EtherNet/IP master to the robot.
- p is the start word address of the data transmitted by the EtherCAT master to the robot, that is, the first object of RxPDO.
- j is the start word address of the data transmitted by the MC master to the robot.
- s is the start word address of the data transmitted by the PROFINET master to the robot.

Robot address	Modbus address	EtherNet/IP address	EtherCAT address	MC address	PROFINET address
Modbus object type: Coil; access type: read/write; parameter: 0x01, 0x05, 0x0f					
In512	4096 (coil address)	m (Bit0)	p (Bit0)	j (Bit0)	s (Bit8)
In513	4097 (coil address)	m (Bit1)	p (Bit1)	j (Bit1)	s (Bit9)
In514	4098 (coil address)	m (Bit2)	p (Bit2)	j (Bit2)	s (Bit10)
In515	4099 (coil address)	m (Bit3)	p (Bit3)	j (Bit3)	s (Bit11)
In516	4100 (coil address)	m (Bit4)	p (Bit4)	j (Bit4)	s (Bit12)
In517	4101 (coil address)	m (Bit5)	p (Bit5)	j (Bit5)	s (Bit13)
In518	4102 (coil address)	m (Bit6)	p (Bit6)	j (Bit6)	s (Bit14)
In519	4103 (coil address)	m (Bit7)	p (Bit7)	j (Bit7)	s (Bit15)
In520	4104 (coil address)	m (Bit8)	p (Bit8)	j (Bit8)	s (Bit0)
In521	4105 (coil address)	m (Bit9)	p (Bit9)	j (Bit9)	s (Bit1)

Robot address	Modbus address	EtherNet/IP address	EtherCAT address	MC address	PROFINET address
In522	4106 (coil address)	m (Bit10)	p (Bit10)	j (Bit10)	s (Bit2)
In523	4107 (coil address)	m (Bit11)	p (Bit11)	j (Bit11)	s (Bit3)
In524	4108 (coil address)	m (Bit12)	p (Bit12)	j (Bit12)	s (Bit4)
In525	4109 (coil address)	m (Bit13)	p (Bit13)	j (Bit13)	s (Bit5)
In526	4110 (coil address)	m (Bit14)	p (Bit14)	j (Bit14)	s (Bit6)
In527	4111 (coil address)	m (Bit15)	p (Bit15)	j (Bit15)	s (Bit7)
In528 to In543	4112-4127 (coil address)	m+1 (Bit0-Bit15)	p+1 (Bit0-Bit15)	j+1 (Bit0-Bit15)	Low: s+1 (Bit0-Bit15) High: s+1 (Bit0-Bit15)
In544 to In559	4128-4143 (coil address)	m+2 (Bit0-Bit15)	p+2 (Bit0-Bit15)	j+2 (Bit0-Bit15)	Low: s+2 (Bit8-Bit15) High: s+2 (Bit0-Bit7)
In560 to In575	4144-4159 (coil address)	m+3 (Bit0-Bit15)	p+3 (Bit0-Bit15)	j+3 (Bit0-Bit15)	Low: s+3 (Bit8-Bit15) High: s+3 (Bit0-Bit7)
In576 to In591	4160-4175 (coil address)	m+4 (Bit0-Bit15)	p+4 (Bit0-Bit15)	j+4 (Bit0-Bit15)	Low: s+4 (Bit8-Bit15) High: s+4 (Bit0-Bit7)
In592 to In607	4176-4191 (coil address)	m+5 (Bit0-Bit15)	p+5 (Bit0-Bit15)	j+5 (Bit0-Bit15)	Low: s+5 (Bit8-Bit15) High: s+5 (Bit0-Bit7)

Robot address	Modbus address	EtherNet/IP address	EtherCAT address	MC address	PROFINET address
In608 to In623	4192-4207 (coil address)	m+6 (Bit0-Bit15)	p+6 (Bit0-Bit15)	j+6 (Bit0-Bit15)	Low: s+6 (Bit8-Bit15)
					High: s+6 (Bit0-Bit7)
In624 to In639	4208-4223 (coil address)	m+7 (Bit0-Bit15)	p+7 (Bit0-Bit15)	j+7 (Bit0-Bit15)	Low: s+7 (Bit8-Bit15)
					High: s+7 (Bit0-Bit7)
In640 to In655	4224-4239 (coil address)	m+8 (Bit0-Bit15)	p+8 (Bit0-Bit15)	j+8 (Bit0-Bit15)	Low: s+8 (Bit8-Bit15)
					High: s+8 (Bit0-Bit7)
In656 to In671	4240-4255 (coil address)	m+9 (Bit0-Bit15)	p+9 (Bit0-Bit15)	j+9 (Bit0-Bit15)	Low: s+9 (Bit8-Bit15)
					High: s+9 (Bit0-Bit7)
In672 to In687	4256-4271 (coil address)	m+10 (Bit0-Bit15)	p+10 (Bit0-Bit15)	j+10 (Bit0-Bit15)	Low: s+10 (Bit8-Bit15)
					High: s+10 (Bit0-Bit7)
In688 to In703	4272-4287 (coil address)	m+11 (Bit0-Bit15)	p+11 (Bit0-Bit15)	j+11 (Bit0-Bit15)	Low: s+11 (Bit8-Bit15)
					High: s+11 (Bit0-Bit7)
In704 to In719	4288-4303 (coil address)	m+12 (Bit0-Bit15)	p+12 (Bit0-Bit15)	j+12 (Bit0-Bit15)	Low: s+12 (Bit8-Bit15)
					High: s+12 (Bit0-Bit7)
Modbus object type: holding register; access type: read/write; parameter: 0x03, 0x06, 0x10					
In720 to In735	34800 (register address)	m+13	p+13	j+13	s+13
In736 to In751	34801 (register address)	m+14	p+14	j+14	s+14

Robot address	Modbus address	EtherNet/IP address	EtherCAT address	MC address	PROFINET address
In752 to In767	34802 (register address)	m+15	p+15	j+15	s+15
In768 to In783	34803 (register address)	m+16	p+16	j+16	s+16
In784 to In799	34804 (register address)	m+17	p+17	j+17	s+17
In800 to In815	34805 (register address)	m+18	p+18	j+18	s+18
In816 to In831	34806 (register address)	m+19	p+19	j+19	s+19
In832 to In847	34807 (register address)	m+20	p+20	j+20	s+20
In848 to In863	34808 (register address)	m+21	p+21	j+21	s+21
In864 to In879	34809 (register address)	m+22	p+22	j+22	s+22
In880 to In895	34810 (register address)	m+23	p+23	j+23	s+23
In896 to In911	34811 (register address)	m+24	p+24	j+24	s+24
In912 to In927	34812 (register address)	m+25	p+25	j+25	s+25
In928 to In943	34813 (register address)	m+26	p+26	j+26	s+26
In944 to In959	34814 (register address)	m+27	p+27	j+27	s+27
In960 to In975	34815 (register address)	m+28	p+28	j+28	s+28
In976 to In991	34816 (register address)	m+29	p+29	j+29	s+29
In992 to In1007	34817 (register address)	m+30	p+30	j+30	s+30

Robot address	Modbus address	EtherNet/IP address	EtherCAT address	MC address	PROFINET address
In1008 to In1023	34818 (register address)	m+31	p+31	j+31	s+31
In1024 to In1039	34819 (register address)	m+32	p+32	j+32	s+32
In1040 to In1055	34820 (register address)	m+33	p+33	j+33	s+33
In1056 to In1071	34821 (register address)	m+34	p+34	j+34	s+34
In1072 to In1087	34822 (register address)	m+35	p+35	j+35	s+35
In1088 to In1103	34823 (register address)	m+36	p+36	j+36	s+36
In1104 to In1119	34824 (register address)	m+37	p+37	j+37	s+37
In1120 to In1135	34825 (register address)	m+38	p+38	j+38	s+38
In1136 to In1151	34826 (register address)	m+39	p+39	j+39	s+39
In1152 to In1167	34827 (register address)	m+40	p+40	j+40	s+40
In1168 to In1183	34828 (register address)	m+41	p+41	j+41	s+41
In1184 to In1199	34829 (register address)	m+42	p+42	j+42	s+42
In1200 to In1215	34830 (register address)	m+43	p+43	j+43	s+42
In1216 to In1231	34831 (register address)	m+44	p+44	j+44	s+44
In1232 to In1247	34832 (register address)	m+45	p+45	j+45	s+45
In1248 to In1263	34833 (register address)	m+46	p+46	j+46	s+46

Robot address	Modbus address	EtherNet/IP address	EtherCAT address	MC address	PROFINET address
In1264 to In1279	34834 (register address)	m+47	p+47	j+47	s+47
In1280 to In1295	34835 (register address)	m+48	p+48	j+48	s+48
In1296 to In1311	34836 (register address)	m+49	p+49	j+49	s+49
In1312 to In1327	34837 (register address)	m+50	p+50	j+50	s+50
In1328 to In1343	34838 (register address)	m+51	p+51	j+51	s+51
In1344 to In1359	34839 (register address)	m+52	p+52	j+52	s+52
In1360 to In1375	34840 (register address)	m+53	p+53	j+53	s+53
In1376 to In1391	34841 (register address)	m+54	p+54	j+54	s+54
In1392 to In1407	34842 (register address)	m+55	p+55	j+55	s+55
In1408 to In1423	34843 (register address)	m+56	p+56	j+56	s+56
In1424 to In1439	34844 (register address)	m+57	p+57	j+57	s+57
In1440 to In1455	34845 (register address)	m+58	p+58	j+58	s+58
In1456 to In1471	34846 (register address)	m+59	p+59	j+59	s+59
In1472 to In1487	34847 (register address)	m+60	p+60	j+60	s+60
In1488 to In1503	34848 (register address)	m+61	p+61	j+61	s+61
In1504 to In1519	34849 (register address)	m+62	p+62	j+62	s+62

Robot address	Modbus address	EtherNet/IP address	EtherCAT address	MC address	PROFINET address
In1520 to In1535	34850 (register address)	m+63	p+63	j+63	s+63
In1536 to In1551	34851 (register address)	m+64	p+64	j+64	s+64
In1552 to In1567	34852 (register address)	m+65	p+65	j+65	s+65
In1568 to In1583	34853 (register address)	m+66	p+66	j+66	s+66
In1584 to In1599	34854 (register address)	m+67	p+67	j+67	s+67
In1600 to In1615	34855 (register address)	m+68	p+68	j+68	s+68
In1616 to In1631	34856 (register address)	m+69	p+69	j+69	s+69
In1632 to In1647	34857 (register address)	m+70	p+70	j+70	s+70
In1648 to In1663	34858 (register address)	m+71	p+71	j+71	s+71
In1664 to In1679	34859 (register address)	m+72	p+72	j+72	s+72
In1680 to In1695	34860 (register address)	m+73	p+73	j+73	s+73
In1696 to In1711	34861 (register address)	m+74	p+74	j+74	s+74
In1712 to In1727	34862 (register address)	m+75	p+75	j+75	s+75
In1728 to In1743	34863 (register address)	m+76	p+76	j+76	s+76
In1744 to In1759	34864 (register address)	m+77	p+77	j+77	s+77
In1760 to In1775	34865 (register address)	m+78	p+78	j+78	s+78

Robot address	Modbus address	EtherNet/IP address	EtherCAT address	MC address	PROFINET address
In1776 to In1791	34866 (register address)	m+79	p+79	j+79	s+79
In1792 to In1807	34867 (register address)	m+80	p+80	j+80	s+80
In1808 to In1823	34868 (register address)	m+81	p+81	j+81	s+81
In1824 to In1839	34869 (register address)	m+82	p+82	j+82	s+82
In1840 to In1855	34870 (register address)	m+83	p+83	j+83	s+83
In1856 to In1871	34871 (register address)	m+84	p+84	j+84	s+84
In1872 to In1887	34872 (register address)	m+85	p+85	j+85	s+85
In1888 to In1903	34873 (register address)	m+86	p+86	j+86	s+86
In1904 to In1919	34874 (register address)	m+87	p+87	j+87	s+87
In1920 to In1935	34875 (register address)	m+88	p+88	j+88	s+88
In1936 to In1951	34876 (register address)	m+89	p+89	j+89	s+89
In1952 to In1967	34877 (register address)	m+90	p+90	j+90	s+90
In1968 to In1983	34878 (register address)	m+91	p+91	j+91	s+91
In1984 to In1999	34879 (register address)	m+92	p+92	j+92	s+92
In2000 to In2015	34880 (register address)	m+93	p+93	j+93	s+93
In2016 to In2031	34881 (register address)	m+94	p+94	j+94	s+94

Robot address	Modbus address	EtherNet/IP address	EtherCAT address	MC address	PROFINET address
In2032 to In2047	34882 (register address)	m+95	p+95	j+95	s+95
In2048 to In2063	34883 (register address)	m+96	p+96	j+96	s+96
In2064 to In2079	34884 (register address)	m+97	p+97	j+97	s+97
In2080 to In2095	34885 (register address)	m+98	p+98	j+98	s+98
In2096 to In2111	34886 (register address)	m+99	p+99	j+99	s+99
In2112 to In2127	34887 (register address)	m+100	p+100	j+100	s+100
In2128 to In2143	34888 (register address)	m+101	p+101	j+101	s+101
In2144 to In2159	34889 (register address)	m+102	p+102	j+102	s+102
In2160 to In2175	34890 (register address)	m+103	p+103	j+103	s+103
In2176 to In2191	34891 (register address)	m+104	p+104	j+104	s+104
In2192 to In2207	34892 (register address)	m+105	p+105	j+105	s+105
In2208 to In2223	34893 (register address)	m+106	p+106	j+106	s+106
In2224 to In2239	34894 (register address)	m+107	p+107	j+107	s+107
In2240 to In2255	34895 (register address)	m+108	p+108	j+108	s+108
In2256 to In2271	34896 (register address)	m+109	p+109	j+109	s+109
In2272 to In2287	34897 (register address)	m+110	p+110	j+110	s+110

Robot address	Modbus address	EtherNet/IP address	EtherCAT address	MC address	PROFINET address
In2288 to In2303	34898 (register address)	m+111	p+111	j+111	s+111
In2304 to In2319	34899 (register address)	m+112	p+112	j+112	s+112
In2320 to In2335	34900 (register address)	m+113	p+113	j+113	s+113
In2336 to In2351	34901 (register address)	m+114	p+114	j+114	s+114
In2352 to In2367	34902 (register address)	m+115	p+115	j+115	s+115
In2368 to In2383	34903 (register address)	m+116	p+116	j+116	s+116
In2384 to In2399	34904 (register address)	m+117	p+117	j+117	s+117
In2400 to In2415	34905 (register address)	m+118	p+118	j+118	s+118
In2416 to In2431	34906 (register address)	m+119	p+119	j+119	s+119
In2432 to In2447	34907 (register address)	m+120	p+120	j+120	s+120
In2448 to In2463	34908 (register address)	m+121	p+121	j+121	s+121
In2464 to In2479	34909 (register address)	m+122	p+122	j+122	s+122
In2480 to In2495	34910 (register address)	m+123	p+123	j+123	s+123
In2496 to In2511	34911 (register address)	m+124	p+124	j+124	s+124
In2512 to In2527	34912 (register address)	m+125	p+125	j+125	s+125
In2528 to In2543	34913 (register address)	m+126	p+126	j+126	s+126

Robot address	Modbus address	EtherNet/IP address	EtherCAT address	MC address	PROFINET address
In2544 to In2559	34914 (register address)	m+127	p+127	j+127	s+127

Fieldbus output address mapping relationship:

- n is the start word address of the data transmitted by the robot to the EtherNet/IP master.
- q is the start word address of the data transmitted by the robot to the EtherCAT master, that is, the first object of TxPDO.
- k is the start word address of the data transmitted by the robot to the MC master.
- t is the start word address of the data transmitted by the robot to the PROFINET master.

Robot address	Modbus address	EtherNet/IP address	EtherCAT address	MC address	PROFINET address
Modbus object type: discrete input; access type: read-only; parameter: 0x02					
Out512	0 (coil address)	n (Bit0)	q (Bit0)	k (Bit0)	t (Bit8)
Out513	1 (coil address)	n (Bit1)	q (Bit1)	k (Bit1)	t (Bit9)
Out514	2 (coil address)	n (Bit2)	q (Bit2)	k (Bit2)	t (Bit10)
Out515	3 (coil address)	n (Bit3)	q (Bit3)	k (Bit3)	t (Bit11)
Out516	4 (coil address)	n (Bit4)	q (Bit4)	k (Bit4)	t (Bit12)
Out517	5 (coil address)	n (Bit5)	q (Bit5)	k (Bit5)	t (Bit13)
Out518	6 (coil address)	n (Bit6)	q (Bit6)	k (Bit6)	t (Bit14)
Out519	7 (coil address)	n (Bit7)	q (Bit7)	k (Bit7)	t (Bit15)
Out520	8 (coil address)	n (Bit8)	q (Bit8)	k (Bit8)	t (Bit0)
Out521	9 (coil address)	n (Bit9)	q (Bit9)	k (Bit9)	t (Bit1)
Out522	10 (coil address)	n (Bit10)	q (Bit10)	k (Bit10)	t (Bit2)
	...	...	...	...	...
Out527	15 (coil address)	n (Bit15)	q (Bit15)	k (Bit15)	t (Bit7)
Out528 to Out543	16-31 (coil address)	n+1 (Bit0-Bit15)	q+1 (Bit0-Bit15)	k+1 (Bit0-Bit15)	Low: t+1 (Bit8-Bit15) High: t+1 (Bit0-Bit7)

Robot address	Modbus address	EtherNet/IP address	EtherCAT address	MC address	PROFINET address
Out544 to Out559	32-47 (coil address)	n+2 (Bit0-Bit15)	q+2 (Bit0-Bit15)	k+2 (Bit0-Bit15)	Low: t+2 (Bit8-Bit15) High: t+2 (Bit0-Bit7)
Out560 to Out575	48-63 (coil address)	n+3 (Bit0-Bit15)	q+3 (Bit0-Bit15)	k+3 (Bit0-Bit15)	Low: t+3 (Bit8-Bit15) High: t+3 (Bit0-Bit7)
Out576 to Out591	64-79 (coil address)	n+4 (Bit0-Bit15)	q+4 (Bit0-Bit15)	k+4 (Bit0-Bit15)	Low: t+4 (Bit8-Bit15) High: t+4 (Bit0-Bit7)
Out592 to Out607	80-95 (coil address)	n+5 (Bit0-Bit15)	q+5 (Bit0-Bit15)	k+5 (Bit0-Bit15)	Low: t+5 (Bit8-Bit15) High: t+5 (Bit0-Bit7)
Out608 to Out623	96-111 (coil address)	n+6 (Bit0-Bit15)	q+6 (Bit0-Bit15)	k+6 (Bit0-Bit15)	Low: t+6 (Bit8-Bit15) High: t+6 (Bit0-Bit7)
Out624 to Out639	112-127 (coil address)	n+7 (Bit0-Bit15)	q+7 (Bit0-Bit15)	k+7 (Bit0-Bit15)	Low: t+7 (Bit8-Bit15) High: t+7 (Bit0-Bit7)
Out640 to Out655	128-143 (coil address)	n+8 (Bit0-Bit15)	q+8 (Bit0-Bit15)	k+8 (Bit0-Bit15)	Low: t+8 (Bit8-Bit15) High: t+8 (Bit0-Bit7)
Out656 to Out671	144-159 (coil address)	n+9 (Bit0-Bit15)	q+9 (Bit0-Bit15)	k+9 (Bit0-Bit15)	Low: t+9 (Bit8-Bit15) High: t+9 (Bit0-Bit7)

Robot address	Modbus address	EtherNet/IP address	EtherCAT address	MC address	PROFINET address
Out672 to Out687	160-175 (coil address)	n+10 (Bit0-Bit15)	q+10 (Bit0-Bit15)	k+10 (Bit0-Bit15)	Low: t+10 (Bit8-Bit15)
					High: t+10 (Bit0-Bit7)
Out688 to Out703	176-191 (coil address)	n+11 (Bit0-Bit15)	q+11 (Bit0-Bit15)	k+11 (Bit0-Bit15)	Low: t+11 (Bit8-Bit15)
					High: t+11 (Bit0-Bit7)
Out704 to Out719	192-207 (coil address)	n+12 (Bit0-Bit15)	q+12 (Bit0-Bit15)	k+12 (Bit0-Bit15)	Low: t+12 (Bit8-Bit15)
					High: t+12 (Bit0-Bit7)
Modbus object type: input register; access type: read-only; parameter: 0x04					
Out720 to Out735	2048 (register address)	n+13	q+13	k+13	t+13
Out736 to Out751	2049 (register address)	n+14	q+14	k+14	t+14
Out752 to Out767	2050 (register address)	n+15	q+15	k+15	t+15
Out768 to Out783	2051 (register address)	n+16	q+16	k+16	t+16
Out784 to Out799	2052 (register address)	n+17	q+17	k+17	t+17
Out800 to Out815	2053 (register address)	n+18	q+18	k+18	t+18
Out816 to Out831	2054 (register address)	n+19	q+19	k+19	t+19
Out832 to Out847	2055 (register address)	n+20	q+20	k+20	t+20
Out848 to Out863	2056 (register address)	n+21	q+21	k+21	t+21
Out864 to Out879	2057 (register address)	n+22	q+22	k+22	t+22

Robot address	Modbus address	EtherNet/IP address	EtherCAT address	MC address	PROFINET address
Out880 to Out895	2058 (register address)	n+23	q+23	k+23	t+23
Out896 to Out911	2059 (register address)	n+24	q+24	k+24	t+24
Out912 to Out927	2060 (register address)	n+25	q+25	k+25	t+25
Out928 to Out943	2061 (register address)	n+26	q+26	k+26	t+26
Out944 to Out959	2062 (register address)	n+27	q+27	k+27	t+27
Out960 to Out975	2063 (register address)	n+28	q+28	k+28	t+28
Out976 to Out991	2064 (register address)	n+29	q+29	k+29	t+29
Out992 to Out1007	2065 (register address)	n+30	q+30	k+30	t+30
Out1008 to Out1023	2066 (register address)	n+31	q+31	k+31	t+31
Out1024 to Out1039	2067 (register address)	n+32	q+32	k+32	t+32
Out1040 to Out1055	2068 (register address)	n+33	q+33	k+33	t+33
Out1056 to Out1071	2069 (register address)	n+34	q+34	k+34	t+34
Out1072 to Out1087	2070 (register address)	n+35	q+35	k+35	t+35
Out1088 to Out1103	2071 (register address)	n+36	q+36	k+36	t+36
Out1104 to Out1119	2072 (register address)	n+37	q+37	k+37	t+37
Out1120 to Out1135	2073 (register address)	n+38	q+38	k+38	t+38

Robot address	Modbus address	EtherNet/IP address	EtherCAT address	MC address	PROFINET address
Out1136 to Out1151	2074 (register address)	n+39	q+39	k+39	t+39
Out1152 to Out1167	2075 (register address)	n+40	q+40	k+40	t+40
Out1168 to Out1183	2076 (register address)	n+41	q+41	k+41	t+41
Out1184 to Out1199	2077 (register address)	n+42	q+42	k+42	t+42
Out1200 to Out1215	2078 (register address)	n+43	q+43	k+43	t+42
Out1216 to Out1231	2079 (register address)	n+44	q+44	k+44	t+44
Out1232 to Out1247	2080 (register address)	n+45	q+45	k+45	t+45
Out1248 to Out1263	2081 (register address)	n+46	q+46	k+46	t+46
Out1264 to Out1279	2082 (register address)	n+47	q+47	k+47	t+47
Out1280 to Out1295	2083 (register address)	n+48	q+48	k+48	t+48
Out1296 to Out1311	2084 (register address)	n+49	q+49	k+49	t+49
Out1312 to Out1327	2085 (register address)	n+50	q+50	k+50	t+50
Out1328 to Out1343	2086 (register address)	n+51	q+51	k+51	t+51
Out1344 to Out1359	2087 (register address)	n+52	q+52	k+52	t+52
Out1360 to Out1375	2088 (register address)	n+53	q+53	k+53	t+53
Out1376 to Out1391	2089 (register address)	n+54	q+54	k+54	t+54

Robot address	Modbus address	EtherNet/IP address	EtherCAT address	MC address	PROFINET address
Out1392 to Out1407	2090 (register address)	n+55	q+55	k+55	t+55
Out1408 to Out1423	2091 (register address)	n+56	q+56	k+56	t+56
Out1424 to Out1439	2092 (register address)	n+57	q+57	k+57	t+57
Out1440 to Out1455	2093 (register address)	n+58	q+58	k+58	t+58
Out1456 to Out1471	2094 (register address)	n+59	q+59	k+59	t+59
Out1472 to Out1487	2095 (register address)	n+60	q+60	k+60	t+60
Out1488 to Out1503	2096 (register address)	n+61	q+61	k+61	t+61
Out1504 to Out1519	2097 (register address)	n+62	q+62	k+62	t+62
Out1520 to Out1535	2098 (register address)	n+63	q+63	k+63	t+63
Out1536 to Out1551	2099 (register address)	n+64	q+64	k+64	t+64
Out1552 to Out1567	2100 (register address)	n+65	q+65	k+65	t+65
Out1568 to Out1583	2101 (register address)	n+66	q+66	k+66	t+66
Out1584 to Out1599	2102 (register address)	n+67	q+67	k+67	t+67
Out1600 to Out1615	2103 (register address)	n+68	q+68	k+68	t+68
Out1616 to Out1631	2104 (register address)	n+69	q+69	k+69	t+69
Out1632 to Out1647	2105 (register address)	n+70	q+70	k+70	t+70

Robot address	Modbus address	EtherNet/IP address	EtherCAT address	MC address	PROFINET address
Out1648 to Out1663	2106 (register address)	n+71	q+71	k+71	t+71
Out1664 to Out1679	2107 (register address)	n+72	q+72	k+72	t+72
Out1680 to Out1695	2108 (register address)	n+73	q+73	k+73	t+73
Out1696 to Out1711	2109 (register address)	n+74	q+74	k+74	t+74
Out1712 to Out1727	2110 (register address)	n+75	q+75	k+75	t+75
Out1728 to Out1743	2111 (register address)	n+76	q+76	k+76	t+76
Out1744 to Out1759	2112 (register address)	n+77	q+77	k+77	t+77
Out1760 to Out1775	2113 (register address)	n+78	q+78	k+78	t+78
Out1776 to Out1791	2114 (register address)	n+79	q+79	k+79	t+79
Out1792 to Out1807	2115 (register address)	n+80	q+80	k+80	t+80
Out1808 to Out1823	2116 (register address)	n+81	q+81	k+81	t+81
Out1824 to Out1839	2117 (register address)	n+82	q+82	k+82	t+82
Out1840 to Out1855	2118 (register address)	n+83	q+83	k+83	t+83
Out1856 to Out1871	2119 (register address)	n+84	q+84	k+84	t+84
Out1872 to Out1887	2120 (register address)	n+85	q+85	k+85	t+85
Out1888 to Out1903	2121 (register address)	n+86	q+86	k+86	t+86

Robot address	Modbus address	EtherNet/IP address	EtherCAT address	MC address	PROFINET address
Out1904 to Out1919	2122 (register address)	n+87	q+87	k+87	t+87
Out1920 to Out1935	2123 (register address)	n+88	q+88	k+88	t+88
Out1936 to Out1951	2124 (register address)	n+89	q+89	k+89	t+89
Out1952 to Out1967	2125 (register address)	n+90	q+90	k+90	t+90
Out1968 to Out1983	2126 (register address)	n+91	q+91	k+91	t+91
Out1984 to Out1999	2127 (register address)	n+92	q+92	k+92	t+92
Out2000 to Out2015	2128 (register address)	n+93	q+93	k+93	t+93
Out2016 to Out2031	2129 (register address)	n+94	q+94	k+94	t+94
Out2032 to Out2047	2130 (register address)	n+95	q+95	k+95	t+95
Out2048 to Out2063	2131 (register address)	n+96	q+96	k+96	t+96
Out2064 to Out2079	2132 (register address)	n+97	q+97	k+97	t+97
Out2080 to Out2095	2133 (register address)	n+98	q+98	k+98	t+98
Out2096 to Out2111	2134 (register address)	n+99	q+99	k+99	t+99
Out2112 to Out2127	2135 (register address)	n+100	q+100	k+100	t+100
Out2128 to Out2143	2136 (register address)	n+101	q+101	k+101	t+101
Out2144 to Out2159	2137 (register address)	n+102	q+102	k+102	t+102

Robot address	Modbus address	EtherNet/IP address	EtherCAT address	MC address	PROFINET address
Out2160 to Out2175	2138 (register address)	n+103	q+103	k+103	t+103
Out2176 to Out2191	2139 (register address)	n+104	q+104	k+104	t+104
Out2192 to Out2207	2140 (register address)	n+105	q+105	k+105	t+105
Out2208 to Out2223	2141 (register address)	n+106	q+106	k+106	t+106
Out2224 to Out2239	2142 (register address)	n+107	q+107	k+107	t+107
Out2240 to Out2255	2143 (register address)	n+108	q+108	k+108	t+108
Out2256 to Out2271	2144 (register address)	n+109	q+109	k+109	t+109
Out2272 to Out2287	2145 (register address)	n+110	q+110	k+110	t+110
Out2288 to Out2303	2146 (register address)	n+111	q+111	k+111	t+111
Out2304 to Out2319	2147 (register address)	n+112	q+112	k+112	t+112
Out2320 to Out2335	2148 (register address)	n+113	q+113	k+113	t+113
Out2336 to Out2351	2149 (register address)	n+114	q+114	k+114	t+114
Out2352 to Out2367	2150 (register address)	n+115	q+115	k+115	t+115
Out2368 to Out2383	2151 (register address)	n+116	q+116	k+116	t+116
Out2384 to Out2399	2152 (register address)	n+117	q+117	k+117	t+117
Out2400 to Out2415	2153 (register address)	n+118	q+118	k+118	t+118

Robot address	Modbus address	EtherNet/IP address	EtherCAT address	MC address	PROFINET address
Out2416 to Out2431	2154 (register address)	n+119	q+119	k+119	t+119
Out2432 to Out2447	2155 (register address)	n+120	q+120	k+120	t+120
Out2448 to Out2463	2156 (register address)	n+121	q+121	k+121	t+121
Out2464 to Out2479	2157 (register address)	n+122	q+122	k+122	t+122
Out2480 to Out2495	2158 (register address)	n+123	q+123	k+123	t+123
Out2496 to Out2511	2159 (register address)	n+124	q+124	k+124	t+124
Out2512 to Out2527	2160 (register address)	n+125	q+125	k+125	t+125
Out2528 to Out2543	2161 (register address)	n+126	q+126	k+126	t+126
Out2544 to Out2559	2162 (register address)	n+127	q+127	k+127	t+127

8.2 Appendix 2: Extended Remote Control Command List

8.2.1 List of Commands

Category	Function	Parameter	Description	Whether control authority takes effect in manual mode
System status-related commands	Read the current frame	0x0001	Added world frame types	Yes
	Set the current frame	0x0002		No
	Read the speed level	0x0003	-	Yes
	Set the speed level	0x0004	-	No

Category	Function	Parameter	Description	Whether control authority takes effect in manual mode
	Get the current fault code and warning code of the system	0x0005	-	Yes
	Get the current fault code and warning code of the servo drive	0x0006	-	Yes
	Read the Manual/Auto mode	0x0007	-	Yes
	Set the Manual/Auto mode	0x0008	-	No
	Read the current position of the robot	0x0009	Read the current position value in a certain frame format • 1: Joint frame • 2: Base frame • 3: Tool frame • 4: Workobject frame • 5: World frame	Yes
	Read the current tool frame number	0x000A	-	Yes
	Set the current tool frame number	0x000B	-	No
	Read the current workobject frame number	0x000C	-	Yes
	Set the current workobject frame number	0x000D	-	No
	Read the heartbeat interval	0x000E	-	Yes
	Set the heartbeat interval	0x000F	-	No
	Read the current control permission	0x0010	-	Yes
	Read the current load number	0x0011	-	Yes
	Set the current load number	0x0012	-	No

Category	Function	Parameter	Description	Whether control authority takes effect in manual mode
	Read the DA binding state and the linear speed analog setting	0x0013	Input parameter 1: The DA number queried Return parameter: For details, see the reading of the DA binding state and the linear speed analog setting.	Yes
	Read the DA binding state, linear speed value, and DA output data	0x0014	Input parameter 1: The DA number queried Return parameter: For details, see the reading of DA binding state, linear speed value, and DA output data.	Yes
	Set the binding of the linear speed and the analog output	0x0015	Input parameter: For details, see the binding settings of linear speed and the analog output.	No
	Set the unbinding of the linear speed and the analog output	0x0016	Input parameter 1: Unbound DA number Return parameter: For details, see the unbinding settings of linear speed and analog output.	No
	Read the trajectory recovery threshold check mode	0x0017	-	Yes
	Set the trajectory recovery threshold check mode	0x0018	Input parameter 1: • 0: Joint mode • 1: Position control mode	No
	Read the trajectory recovery threshold	0x0019	Input parameter 1: • 1: Manual • 2: Auto Return parameter: For details, see the reading of	Yes

Category	Function	Parameter	Description	Whether control authority takes effect in manual mode
			trajectory recovery threshold.	
	Set the trajectory recovery threshold	0x001A	Input parameter: For details, see the setting of the trajectory recovery threshold.	No
	Read the current position display format	0x0710	• 1: Joint frame • 2: Base frame • 3: Flange frame • 4: Workobject frame • 5: World frame	Yes
	Set the current position display format	0x0711	• 1: Joint frame • 2: Base frame • 3: Flange frame • 4: Workobject frame • 5: World frame	No
	Get the connection status of the InoRobotLab software	0x0828	-	Yes
Read/Write-related commands	Read the global P/JP points	0x0200	Input parameters: • 01: Whether the point is a position point (0) or a joint point (1) • 02: Point number Return parameter: For details, see the "Point Read/Write-Related Commands".	Yes

Category	Function	Parameter	Description	Whether control authority takes effect in manual mode
	Write the current position of the robot to the global P/JP point	0x0201	Input parameters: • 01: Whether the point is a position point or a joint point ◦ 0: Position ◦ 1: Joint • 02: Point number Return parameter: For details, see the "Point Read/Write-Related Commands".	No
	Write the input robot point to the global P/JP point	0x0202	Input parameters: • 01: Whether the point is a position point (0) or a joint point (1) • 02: Point number Return parameter: For details, see the "Point Read/Write-Related Commands".	No
	Read the current joint point	0x0930	-	Yes
	Read the current position point	0x0931	-	Yes
System variable-related commands	Read the B variable	0x0300	-	Yes
	Set the B variable	0x0301	-	No
	Batch read the B variables	0x0302	-	Yes
	Batch set the B variables	0x0303	-	No
	Read the R variable	0x0304	-	Yes
	Set the R variable	0x0305	-	No
	Batch read the R variables	0x0306	-	Yes
	Batch set the R variables	0x0307	-	No

Category	Function	Parameter	Description	Whether control authority takes effect in manual mode
	Read the D variable	0x0308	-	Yes
	Set the D variable	0x0309	-	No
	Batch read the D variables	0x030A	-	Yes
	Batch set the D variables	0x030B	-	No
System standard I/O-related commands	Read the system standard I/O input state (in word)	0x0400	-	Yes
	Read the system standard I/O output state (in word)	0x0401	-	Yes
	Set the system standard I/O output state (in word)	0x0402	-	No
	Batch read the system standard I/O input state (in word)	0x0403	-	Yes
	Batch read the system standard I/O output state (in word)	0x0404	-	Yes
	Batch set the system standard I/O output state (in word)	0x0405	-	No
Motion-related commands	Move to a point via MOVJ	0x0500	-	No
	Move to a point via MOVL	0x0501	-	No
	Move to a point via JUMP	0x0502	-	No
	Move to a point via JUMPL	0x0503	-	No
	Move to a joint point with specified value via MOVJABS	0x0504	Add interpolation motion to a joint point with specified value	No
	Move to the position of input point data via Movabsj	0x0900	-	No
	Move to the position of input point data via Movj	0x0901	-	No

Category	Function	Parameter	Description	Whether control authority takes effect in manual mode
	Move to the position of input point data via Movl	0x0902	-	No
	Move to the position of input point data via Jump	0x0903	-	No
	Move to the position of input point data via JumpL	0x0904	-	No
	Reserved	0x0505	-	Yes
	Reserved	0x0506	-	Yes
	Reserved	0x0507	-	Yes
	Query the robot motion status	0x0508	-	Yes
	Query the robot motion completion status	0x0509	-	Yes
	Interrupt the current direct motion	0x050A	-	No
	Read the current teaching motion mode	0x050B	-	Yes
	Set the current teaching motion mode	0x050C	-	No
	Read the TCP speed	0x050D	-	Yes
	Read the joint speed	0x050E	-	Yes
Read the system parameter settings	Read the joint stepsize of jogging	0x0600	-	Yes
	Set the joint stepsize of jogging	0x0601	-	No
	Read the position stepsize of jogging	0x0602	-	Yes
	Set the position stepsize of jogging	0x0603	-	No

Category	Function	Parameter	Description	Whether control authority takes effect in manual mode
	Read the orientation stepsize of jogging	0x0604	-	Yes
	Set the orientation stepsize of jogging	0x0605	-	No
	Read the motion mode	0x0606	-	Yes
	Set the motion mode	0x0607	-	No
Analog setting-related commands	Read the AD analog input	0x0610	-	Yes
	Read the DA analog input	0x0611	-	Yes
	Write the DA analog output	0x0612	-	No
External axis-related commands	Read the activated unit for teaching motion	0x0701	-	Yes
	Set the activated unit for teaching motion	0x0702	-	No
	Read the coordination switch for teaching motion	0x0703	-	Yes
	Set the coordination switch for teaching motion	0x0704	-	No
Average load rate and current monitoring	Read the average load rate	0x0750	-	Yes
	Read the current	0x0751	-	Yes

Category	Function	Parameter	Description	Whether control authority takes effect in manual mode
Multitasking-related commands	Get the task status	0x0800	Input parameter 1: Input value range 0 to 3, return status: • 0: Stop • 1: Start • 10: Completed • 100: Not activated If the input range is exceeded, the return status is 3; if normal, the return value is 1.	Yes
Tracking process-related commands	Read the height of the workobject for the tracking process	0x0801	-	Yes
	Set the height of the workobject for the tracking process	0x0802	-	No
	Read the upper and lower boundaries for the tracking process	0x0803	-	Yes
	Set the upper and lower boundaries for the tracking process	0x0804	-	No
	Read the detection parameters for the tracking process	0x0805	-	Yes
	Set the detection parameters for the tracking process	0x0806	-	No
Interrupt-related commands	Get the interrupt task operation status	0x0807	Input parameter 1: Input value range 0 to 15, return parameters: • 0: Non-interrupt operation • 1: Interrupt operation	Yes

Category	Function	Parameter	Description	Whether control authority takes effect in manual mode
	Get the trajectory recovery status for interrupt	0x0808	Return parameters: • 0: Recovery to original trajectory status upon non-interrupt exit • 1: Recovery to original trajectory status upon interrupt exit	Yes
System diagnosis-related commands	Set the save parameters for system diagnosis	0x0824	-	Yes
	Get the save parameters for system diagnosis	0x0825	-	Yes
	Set the save operation for system diagnosis	0x0826	-	Yes
	Read the save progress value for system diagnosis	0x0827	-	Yes
Interference zone-related commands	Get the interference zone parameters	0x8010	-	Yes
	Set the interference zone parameters	0x8011	-	No
	Get the interference zone status	0x8012	-	Yes
	Sets the interference zone status	0x8013	-	No
	Get the monitoring object parameters	0x8014	-	Yes
	Set the monitoring object parameters	0x8015	-	No
	Get the active monitoring object	0x8016	-	Yes

Category	Function	Parameter	Description	Whether control authority takes effect in manual mode
	Set the monitoring object to be activated	0x8017	-	No
Data stream-related commands	Get the bus data stream status	0x0917	-	Yes
	Set the bus data stream status	0x0918	-	No
	Data stream motion MovAbsJ	0x0910	-	No
	Data stream motion MovJ	0x0911	-	No
	Data stream motion MovL	0x0912	-	No
	Data stream motion Jump	0x0913	-	No
	Data stream motion JumpL	0x0914	-	No
	Data stream motion MovC point 1	0x0915	-	No
	Data stream motion MovC point 2	0x0916	-	No
	Set the acceleration and deceleration jerk levels of the motion segment	0x0921	-	No
	Read the acceleration and deceleration jerk levels of the motion segment	0x0922	-	Yes
	Turn on or off the optimal trajectory function	0x0923	-	No
	Read the ON/OFF of optimal trajectory function	0x0924	-	Yes
Pallet-related commands	Set the pallet parameters	0x0940	-	Yes
	Read the pallet parameters	0x0941	-	Yes
	Clear the pallet parameters	0x0942	-	Yes

Category	Function	Parameter	Description	Whether control authority takes effect in manual mode
	Query the defined points 1 to 3 of the corresponding pallet points (Defined number of pallet boundary points: 3 points)	0x0943 0x0944 0x0945	-	Yes
	Query the output points of the corresponding pallet points (Defined number of pallet boundary points: 3 points)	0x0946	-	Yes
	Query the defined points 1 to 4 of the corresponding pallet points (Defined number of pallet boundary points: 4 points)	0x0947 0x0948 0x0949 0x0950	-	Yes
	Query the output points of the corresponding pallet points (Defined number of pallet boundary points: 4 points)	0x0951	-	Yes
Point conversion-related commands	Converts a position in the world frame into a position in the frame of a designated workobject that is fixed and not held by the robot (RobHold = 0, and UFFix = 1).	0x0762	-	Yes
Real-time data interaction	Load the real-time configuration file	0x0830	-	No
	Set the real-time interaction channel	0x0831	-	No



For multi-robot control in the future, use the highest bit of the parameter to specify the robot number. For example, parameter 0xR500, where R indicates the robot number.

8.2.2 System Status Reading and Setting Commands

Read the current frame

Input value:

Parameter	Data Type	Value
Remote control command	Word (unsigned)	H0001
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	The value of the current frame read: • 1: Joint frame • 2: Base frame • 3: Flange frame • 4: Workobject frame • 5: World frame
Remote control return parameter 2	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	
…	…	
Remote control return parameter 60	Word (unsigned)	

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001: Failed to read the current frame.

Parameter	Data Type	Value
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

Set the current frame

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0002
Remote control input parameter 1	Word (unsigned)	Value entered when setting the current frame (1-5): • 1: Joint frame • 2: Base frame • 3: Flange frame • 4: Workobject frame • 5: World frame
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
...	...	...
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
...	...	...
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal. 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	• 0x0001: The frame number entered is out of range. • 0x0002: Setting is not allowed in auto mode or in motion state. • 0x0003: Failed to set the current frame.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

Read the speed level

Input value:

Parameter	Data Type	Content
Remote control command	-	H0003
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
...	...	...
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter	Word (unsigned)	System speed level read.

Parameter	Data Type	Content
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001: Failed to read the system speed level.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Set the speed level

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0004
Remote control input parameter 1	Word (unsigned)	Speed level (1 to 100)
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-

Parameter	Data Type	Content
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	• 0x0001: The speed level entered is out of range. • 0x0002: Failed to set the speed level.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Get the current fault codes and warning codes

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0005
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	

Parameter	Data Type	Content
		• 0x0000: Initialization is complete and new remote commands can be accepted. • 0x0001: The command is being executed. • 0x0002: The command is executed successfully. • 0x0003: The command execution is abnormal.
Remote control return parameter	Word (unsigned)	The current fault code of the system returned.
Remote control return parameter 2	Word (unsigned)	The current system warning code returned.
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 0x0001: Failed to get the current system fault code. • 0x0002: Failed to get the current system warning code.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Get the current fault code and warning code of the servo drive

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0006
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-

Parameter	Data Type	Content
…	…	…
Remote control input parameter 60	…	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	• 0x0000: Initialization is complete and new remote commands can be accepted. • 0x0001: The command is being executed. • 0x0002: The command is executed successfully. • 0x0003: The command execution is abnormal.
Remote control return parameter 1	Word (unsigned)	J1 servo fault code or warning code (Only one can be present at the same time.)
Remote control return parameter 2	Word (unsigned)	J2 servo fault code or warning code
Remote control return parameter 3	Word (unsigned)	J3 servo fault code or warning code
Remote control return parameter 4	Word (unsigned)	J4 servo fault code or warning code
Remote control return parameter 5	Word (unsigned)	J5 servo fault code or warning code
Remote control return parameter 6	Word (unsigned)	J6 servo fault code or warning code
Remote control return parameter 7	-	Reserved
Remote control return parameter 8	-	Reserved
Remote control return parameter 9	Word (unsigned)	Reserved
Remote control return parameter 10	Word (unsigned)	Reserved
Remote control return parameter 11	Word (unsigned)	Reserved
Remote control return parameter 12	Word (unsigned)	Reserved
Remote control return parameter 13	Word (unsigned)	Reserved
Remote control return parameter 14	Word (unsigned)	Reserved
Remote control return parameter 15	-	Reserved
Remote control return parameter 16	-	Reserved
…	…	…

Parameter	Data Type	Content
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001: Failed to get the current servo fault code or warning code failure
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

Get the Manual/Auto mode

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0007
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
...	...	...
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	The current mode of the system returned. • 1: Manual mode • 2: Auto mode • 3: Teaching check • 5: Continuous teaching check
Remote control return parameter 2	Word (unsigned)	-

Parameter	Data Type	Content
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001: Failed to get the current system mode.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Switch the system mode between manual and auto modes

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0008
Remote control input parameter 1	Word (unsigned)	• 1: Set to Manual mode • 2: Set to Auto mode
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-

Parameter	Data Type	Content
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	• 0x0001: The input mode is neither 1 nor 2. • 0x0002: Manual/Auto mode switchover failed. • 0X0003: This parameter is already mapped.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Read the current position of the robot

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0009
Remote control input parameter 1	Word (unsigned)	Read the current position value in a certain frame format: • 1: Joint frame • 2: Base frame • 3: Flange frame • 4: Workobject frame • 5: World frame
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-

Parameter	Data Type	Content
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Single-precision floating-point	Lower bits of X coordinate of J1
Remote control return parameter 2		Higher bits of X coordinate of J1
Remote control return parameter 3	Single-precision floating-point	Lower bits of Y coordinate of J2
Remote control return parameter 4		Higher bits of Y coordinate of J2
Remote control return parameter 5	Single-precision floating-point	Lower bits of Z coordinate of J3
Remote control return parameter 6		Higher bits of Z coordinate of J3
Remote control return parameter 7	Single-precision floating-point	Lower bits of A coordinate of J4
Remote control return parameter 8		Higher bits of A coordinate of J4
Remote control return parameter 9	Single-precision floating-point	Lower bits of B coordinate of J5
Remote control return parameter 10		Higher bits of B coordinate of J5
Remote control return parameter 11	Single-precision floating-point	Lower bits of C coordinate of J6
Remote control return parameter 12		Higher bits of C coordinate of J6
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.

Parameter	Data Type	Value
Remote control execution failure error code	Word (unsigned)	• 0x0001: The frame display format entered is out of range. • 0x0002: Failed to set frame display format. • 0x0003: The active tool and workobject parameters do not match.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

Get the current tool frame number

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H000A
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
...	...	...
Remote control input parameter 60	-	-

Return value:

When execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	• 0x0000: Initialization is complete and new remote commands can be accepted. • 0x0001: The command is being executed. • 0x0002: The command is executed successfully. • 0x0003: The command execution is abnormal.
Remote control return parameter 1	Word (unsigned)	The current tool frame number returned.

Parameter	Data Type	Content
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001: Failed to get the current tool frame number.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Set the current tool frame number

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H000B
Remote control input parameter 1	Word (unsigned)	The set tool frame number (0-15).
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-

Parameter	Data Type	Content
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	• 0x0001: The tool frame number entered is out of range. • 0x0002: Setting is not allowed in auto mode or in motion state. • 0x0003: Failed to set the current tool frame number.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Get the current workobject frame number

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H000C
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	The current workobject frame number returned.
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001 Failed to get the current workobject frame number
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	_	-
…	…	…
Reserved	…	-

Set the current workobject frame number

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H000D
Remote control input parameter 1	Word (unsigned)	The set workobject frame number (0-15).
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	• 0x0001: The workobject frame number entered is out of range. • 0x0002: Setting is not allowed in auto mode or in motion state. • 0x0003: Failed to set the current workobject frame number.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Read the heartbeat interval

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H000E
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	Heartbeat interval, in ms
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001: Failed to read the heartbeat interval.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	-

Parameter	Data Type	Value
Reserved	Word (unsigned)	-

Set the heartbeat interval

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H000F
Remote control input parameter 1	Word (unsigned)	Heartbeat interval (default value: 500 ms, range: 200 ms to 65000 ms, accuracy: ±50 ms.)
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal.

Parameter	Data Type	Value
		• 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	• 0x0001: The heartbeat interval entered is out of range. • 0x0002: Failed to set the heartbeat interval.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

Read the current control permission

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0010
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
...	...	...
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	• 0x0000: Initialization is complete and new remote commands can be accepted.

Parameter	Data Type	Content
		• 0x0001: The command is being executed. • 0x0002: The command is executed successfully. • 0x0003: The command execution is abnormal.
Remote control return parameter 1	Word (unsigned)	Current control permission • 0: InoRobotLab software or teach pendant • 1: InoRobShop • 2: Remote Ethernet client • 3: Remote I/O unit
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001: Failed to read the current control permission.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Read the current load number

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0011
Remote control input parameter 1	Word (unsigned)	-

Parameter	Data Type	Content
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	The current load number returned.
Remote control return parameter 2	Word (unsigned)	-
…	..	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001 Failed to get the current load number of the system
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	…	-

Set the current load number

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0012
Remote control input parameter 1	Word (unsigned)	The set load number (0-15)
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	• 0x0001: The load number entered is out of range. • 0x0002: Setting is not allowed in auto mode or in motion state. • 0x0003: Failed to set the current load number.

Parameter	Data Type	Value
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

Read the DA binding state and the linear speed analog setting

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0013
Remote control input parameter 1	Word (unsigned)	Bound DA number 0 to (num*4-1)
Remote control input parameter 2	Word (unsigned)	-
...	...	...
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	The binding state of DA, range 0 or 1.
Remote control return parameter 2	32-bit floating-point type	Lower bits of the minValue variable
Remote control return parameter 3		Higher bits of the minValue variable
Remote control return parameter 4	32-bit floating-point type	Lower bits of the maxValue variable
Remote control return parameter 5		Higher bits of the maxValue variable
Remote control return parameter 6	32-bit floating-point type	Lower bits of the minSpeed variable
Remote control return parameter 7		Higher bits of the minSpeed variable
Remote control return parameter 8	32-bit floating-point type	Lower bits of the maxSpeed variable

Parameter	Data Type	Content
Remote control return parameter 9		Higher bits of the maxSpeed variable
…	…	…
Remote control return parameter 60	-	-

When execution fails:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001: DA[Index] is occupied. 0x0002: DA module is not configured. 0x0003: The input data is out of range. 0x0004: Internal error in command execution.
Controller system error code	Word (unsigned)	Refer to system fault codes
…	…	…
Remote control return parameter 60	Word (unsigned)	-

Read the DA binding state, linear speed value, and DA output data

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0014
Remote control input parameter 1	Word (unsigned)	Bound DA number 0 to (num*4-1)
Remote control input parameter 2	Word (unsigned)	-
…	..	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	The binding state of DA, range 0 or 1.

Parameter	Data Type	Content
Remote control return parameter 2	32-bit floating-point type	Lower bits of the real-time output value of DA
Remote control return parameter 3		Higher bits of the real-time output value of DA
Remote control return parameter 4	32-bit floating-point type	Lower bits of the real-time output value of linear speed
Remote control return parameter 5		Higher bits of the real-time output value of linear speed
…	…	…
Remote control return parameter 60	-	-

When execution fails:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 0x0001: DA[Index] is occupied. • 0x0002: DA module is not configured. • 0x0003: The input data is out of range. • 0x0004: Internal error in command execution.
Controller system error code	Word (unsigned)	Refer to system fault codes
…	…	…
Remote control return parameter 60	Word (unsigned)	-

Set the binding of the linear speed and the analog output

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0015
Remote control input parameter 1	Word (unsigned)	Bound DA number 0 to (num*4-1)
Remote control input parameter 2	32-bit floating-point type	Lower bits of the input value of the minValue variable

Parameter	Data Type	Content
Remote control input parameter 3		Higher bits of the input value of the minValue variable
Remote control input parameter 4	32-bit floating-point type	Lower bits of the input value of the maxValue variable
Remote control input parameter 5		Higher bits of the input value of the maxValue variable
Remote control input parameter 6	32-bit floating-point type	Lower bits of the input value of the minSpeed variable
Remote control input parameter 7		Higher bits of the input value of the minSpeed variable
Remote control input parameter 8	32-bit floating-point type	Lower bits of the input value of the maxSpeed variable
Remote control input parameter 9		Higher bits of the input value of the maxSpeed variable
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the

Parameter	Data Type	Content
		remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	• 0x0001: DA[Index] is occupied. • 0x0002: DA module is not configured. • 0x0003: The input data is out of range. • 0x0004: Internal error in command execution.
Controller system error code	Word (unsigned)	Refer to system fault codes
…	…	…
Remote control return parameter 60	Word (unsigned)	-

Set the unbinding of the linear speed and the analog output

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0016
Remote control input parameter 1	Word (unsigned)	Bound DA number 0 to (num*4-1)
Remote control input parameter 2	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	• 0x0001: DA[Index] is occupied. • 0x0002: DA module is not configured. • 0x0003: The input data is out of range. • 0x0004: Internal error in command execution.
Controller system error code	Word (unsigned)	Refer to system fault codes
…	…	…
Remote control return parameter 60	Word (unsigned)	-

Read the trajectory recovery threshold check mode

Read whether the trajectory recovery threshold check mode is joint mode or position mode.

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0017
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	• 0: Joint mode

Parameter	Data Type	Content
		• 1: Position control mode
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001: Failed to read the trajectory recovery threshold check mode.
Controller system error code	Word (unsigned)	Refer to system fault codes
…	…	…
Remote control return parameter 60	Word (unsigned)	-

Set the trajectory recovery threshold check mode

Set the trajectory recovery threshold check mode to joint mode or position mode.

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0018
Remote control input parameter 1	Word (unsigned)	• 0: Joint mode • 1: Position control mode
Remote control input parameter 2	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-

Parameter	Data Type	Content
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	• 0x0001: Failed to set the trajectory recovery threshold check mode. • 0x0004: The input data is out of range.
Controller system error code	Word (unsigned)	Refer to system fault codes
…	…	…
Remote control return parameter 60	Word (unsigned)	-

Read the trajectory recovery threshold

In position mode, read the trajectory recovery threshold in manual motion and automatic motion.

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0019
Remote control input parameter 1	Word (unsigned)	• 1: Manual • 2: Auto
Remote control input parameter 2	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	32-bit floating-point type	Lower bits of the input value of the TCP distance variable
Remote control return parameter 2		Higher bits of the input value of the TCP distance variable
Remote control return parameter 3	32-bit floating-point type	Lower bits of the input value of the TCP rotation variable
Remote control return parameter 4		Higher bits of the input value of the TCP rotation variable
Remote control return parameter 5	32-bit floating-point type	Lower bits of the input value of the external axis distance variable
Remote control return parameter 6		Higher bits of the input value of the external axis distance variable
Remote control return parameter 7	32-bit floating-point type	Lower bits of the input value of the external axis rotation variable
Remote control return parameter 8		Higher bits of the input value of the external axis rotation variable
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 0x0001: Failed to read the track recovery threshold. • 0x0004: The input data is out of range.
Controller system error code	Word (unsigned)	Refer to system fault codes
…	…	…
Remote control return parameter 60	Word (unsigned)	-

Set the trajectory recovery threshold

Set the trajectory recovery threshold in different modes according to the mode selected.

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H001A
Remote control input parameter 1	Word (unsigned)	• 1: Manual • 2: Auto
Remote control input parameter 2	32-bit floating-point type	Lower bits of the input value of the TCP distance variable
Remote control input parameter 3		Higher bits of the input value of the TCP distance variable
Remote control input parameter 4	32-bit floating-point type	Lower bits of the input value of the TCP rotation variable
Remote control input parameter 5		Higher bits of the input value of the TCP rotation variable
Remote control input parameter 6	32-bit floating-point type	Lower bits of the input value of the external axis distance variable
Remote control input parameter 7		Higher bits of the input value of the external axis distance variable
Remote control input parameter 8	32-bit floating-point type	Lower bits of the input value of the external axis rotation variable
Remote control input parameter 9		Higher bits of the input value of the external axis rotation variable
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	• 0x0001: Failed to set the track recovery threshold. • 0x0004: The input data is out of range.
Controller system error code	Word (unsigned)	Refer to system fault codes
…	…	…
Remote control return parameter 60	Word (unsigned)	-

Read the current position display format

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0710
Remote control input parameter 1	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	• 1: Joint frame • 2: Base frame • 3: Flange frame • 4: Workobject frame • 5: World frame
Remote control return parameter 2	Word (unsigned)	-

Address	Data Type	Content
…	…	…
Remote control return parameter 60	Word (unsigned)	-

Set the current position display format

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0711
Remote control input parameter 1	Word (unsigned)	• 1: Joint frame • 2: Base frame • 3: Flange frame • 4: Workobject frame • 5: World frame
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective

Parameter	Data Type	Value
		in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	• 1: The position display format entered is out of range. • 2: The current active mechanical unit only supports joint coordinates for the position display format. • 3: The current joint frame only supports joint coordinates for the position display format. • 4: The current frame is not joint frame. It is not allowed to set the position display format to the joint coordinates. • 5: The tool is not held by the robot. It is not allowed to set the position display format to the flange coordinates. • 6: Other internal errors, contact the manufacturer.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

Set the mechanical lock

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0760
Remote control input parameter 1	Word (unsigned)	Mechanical lock switch: 1: Enable 0: Disable
Remote control input parameter 2	Word (unsigned)	-

Parameter	Data Type	Content
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 50	-	-

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 50	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001: The mechanical lock command is out of range.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Read the mechanical status

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0761
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-

Parameter	Data Type	Content
…	…	…
Remote control input parameter 50	-	-

Return value:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	Mechanical lock switch status: 0: OFF 1: ON
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 50	Word (unsigned)	-

Read the connection status of the InoRobotLab software

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0828
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 50	-	-

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	Connection status of the InoRobotLab: 0: Disconnected 1: Connected

Address	Data Type	Content
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 50	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001: Failed to read the connection status of the InoRobotLab.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

8.2.3 Point Read/Write-Related Commands

Read the global points

Input value:

Parameter	Data Type	Value
Remote control command	Word (unsigned)	H0200
Remote control input parameter 1	Word (unsigned)	The point data in the memory and in the global point file can be read. Global point type: • 0: Position point currently loaded • 1: Joint point currently loaded • 1000-1127: Position point file with corresponding index. By default, 1000 is P.pts (thousand's place: Position point file type, unit's place to hundred's place: Point file number). The file number can be configured in the interface, range 0-127.

Parameter	Data Type	Value
Remote control input parameter 2	Word (unsigned)	Global point number (0-9999)
Remote control input parameter 3	Word (unsigned)	-
…		…
Remote control input parameter 60		-

Return value, when execution is successful (position point P):

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0000: Initialization is complete and new remote commands can be accepted. • 0x0001: The command is being executed. • 0x0002: The command is executed successfully. • 0x0003: The command execution is abnormal.
Remote control return parameter 1	Single-precision floating-point type	Lower bits of X coordinate of J1 read from the P variable
Remote control return parameter 2	Single-precision floating-point type	Higher bits of X coordinate of J1 read from the P variable
Remote control return parameter 3	Single-precision floating-point type	Lower bits of Y coordinate of J2 read from the P variable
Remote control return parameter 4	Single-precision floating-point type	Higher bits of Y coordinate of J2 read from the P variable
Remote control return parameter 5	Single-precision floating-point type	Lower bits of Z coordinate of J3 read from the P variable
Remote control return parameter 6	Single-precision floating-point type	Higher bits of Z coordinate of J3 read from the P variable
Remote control return parameter 7	Single-precision floating-point type	Lower bits of A coordinate of J4 read from the P variable
Remote control return parameter 8	Single-precision floating-point type	Higher bits of A coordinate of J4 read from the P variable
Remote control return parameter 9	Single-precision floating-point type	Lower bits of B coordinate of J5 read from the P variable

Parameter	Data Type	Value
Remote control return parameter 10	Single-precision floating-point type	Higher bits of B coordinate of J5 read from the P variable
Remote control return parameter 11	Single-precision floating-point type	Lower bits of C coordinate of J6 read from the P variable
Remote control return parameter 12	Single-precision floating-point type	Higher bits of C coordinate of J6 read from the P variable
Remote control return parameter 13	Word (signed)	Arm parameter 1 read from the P variable
Remote control return parameter 14	Word (signed)	Arm parameter 2 read from the P variable
Remote control return parameter 15	Word (signed)	Arm parameter 3 read from the P variable
Remote control return parameter 16	Word (signed)	Arm parameter 4 read from the P variable
Remote control return parameter 17	Single-precision floating-point type	Lower bits of E1 joint value read from the P variable
Remote control return parameter 18	Single-precision floating-point type	Higher bits of E1 joint value read from the P variable
Remote control return parameter 19	Single-precision floating-point type	Lower bits of E2 joint value read from the P variable
Remote control return parameter 20	Single-precision floating-point type	Higher bits of E2 joint value read from the P variable
Remote control return parameter 21	Single-precision floating-point type	Lower bits of E3 joint value read from the P variable
Remote control return parameter 22	Single-precision floating-point type	Higher bits of E3 joint value read from the P variable
Remote control return parameter 23	Single-precision floating-point type	Lower bits of E4 joint value read from the P variable
Remote control return parameter 24	Single-precision floating-point type	Higher bits of E4 joint value read from the P variable
Remote control return parameter 25	Single-precision floating-point type	Lower bits of E5 joint value read from the P variable
Remote control return parameter 26	Single-precision floating-point type	Higher bits of E5 joint value read from the P variable

Parameter	Data Type	Value
Remote control return parameter 27	Single-precision floating-point type	Lower bits of E6 joint value read from the P variable
Remote control return parameter 28	Single-precision floating-point type	Higher bits of E6 joint value read from the P variable
…	…	…
Remote control return parameter 60	-	-

When execution is successful (joint point JP):

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0000: Initialization is complete and new remote commands can be accepted. • 0x0001: The command is being executed. • 0x0002: The command is executed successfully. • 0x0003: The command execution is abnormal.
Remote control return parameter 1	Single-precision floating-point type	Lower bits of X coordinate of J1 read from JP variable
Remote control return parameter 2		Higher bits of X coordinate of J1 read from JP variable
Remote control return parameter 3	Single-precision floating-point type	Lower bits of Y coordinate of J2 read from JP variable
Remote control return parameter 4		Higher bits of Y coordinate of J2 read from JP variable
Remote control return parameter 5	Single-precision floating-point type	Lower bits of Z coordinate of J3 read from JP variable
Remote control return parameter 6		Higher bits of Z coordinate of J3 read from JP variable
Remote control return parameter 7	Single-precision floating-point type	Lower bits of A coordinate of J4 read from JP variable
Remote control return parameter 8		Higher bits of A coordinate of J4 read from JP variable
Remote control return parameter 9	Single-precision floating-point type	Lower bits of B coordinate of J5 read from JP variable
		Higher bits of B coordinate of J5 read from JP variable

Parameter	Data Type	Value
Remote control return parameter 10		
Remote control return parameter 11	Single-precision floating-point type	Lower bits of C coordinate of J6 read from JP variable
Remote control return parameter 12		Higher bits of C coordinate of J6 read from JP variable
Remote control return parameter 13	Single-precision floating-point type	Lower bits of E1 joint value read from JP variable
Remote control return parameter 14		Higher bits of E1 joint value read from JP variable
Remote control return parameter 15	Single-precision floating-point type	Lower bits of E2 joint value read from JP variable
Remote control return parameter 16		Higher bits of E2 joint value read from JP variable
Remote control return parameter 17	Single-precision floating-point type	Lower bits of E3 joint value read from JP variable
Remote control return parameter 18		Higher bits of E3 joint value read from JP variable
Remote control return parameter 19	Single-precision floating-point type	Lower bits of E4 joint value read from JP variable
Remote control return parameter 20		Higher bits of E4 joint value read from JP variable
Remote control return parameter 21	Single-precision floating-point type	Lower bits of E5 joint value read from JP variable
Remote control return parameter 22		Higher bits of E5 joint value read from JP variable
Remote control return parameter 23	Single-precision floating-point type	Lower bits of E6 joint value read from JP variable
Remote control return parameter 24		Higher bits of E6 joint value read from JP variable
…	…	…
Remote control return parameter 60	-	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 01: The point type input is out of range. • 02: The global point input is out of range. • 03: Failed to get the robot via index. • 04: Failed to get the file name via point type (1000-1127). • 05: Point data switch in progress, try again later.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

Write the current position of the robot to the global point

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0201
Remote control input parameter 1	Word (unsigned)	You can write the current position of the robot to the memory and currently loaded file or to a specified file. Global point type: • 0: Position point currently loaded (written to memory and loaded file) • 1: Joint point currently loaded (written to memory and loaded file) • 1000-1127: Position point file with corresponding index (written to specified file). By default, 1000 is P.pts (thousand's place: Position point file type, unit's place to hundred's place: Point file number). The file number can be configured in the interface, range 0-127.
Remote control input parameter 2	Word (unsigned)	Number of modified global points (0-9999)
...	...	...

Parameter	Data Type	Content
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	-	-
…	…	…
Remote control return parameter 60	-	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal. 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	• 01: The point type input is out of range. • 02: The global point input is out of range. • 03: Failed to get current robot point. • 04: Point modification is not allowed during robot motion or in auto mode. • 05: The arm parameter of P variable is illegal. • 06: Error acquiring robot points via index. • 07: Error setting robot points via index. • 08: Failed to find file name via point type (1000-1127). • 09: Point data switch in progress, try again later.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Write the input robot point to the global point

Input value (position point P):

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0202
Remote control input parameter 1	Word (unsigned)	You can write the input robot points to the memory and currently loaded file or to a specified file. Global point type: • 0: Position point currently loaded (written to memory and loaded file) • 1: Joint point currently loaded (written to memory and loaded file) • 1000-1127: Position point file with corresponding index (written to specified file). By default, 1000 is P.pts (thousand's place: Position point file type, unit's place to hundred's place: Point file number). The file number can be configured in the interface, range 0-127.
Remote control input parameter 2	Word (unsigned)	Number of modified global points (0-9999)
Remote control input parameter 3	Single-precision floating-point type	Lower bits of X coordinate of J1 written by the P variable
Remote control input parameter 4		Higher bits of X coordinate of J1 written by the P variable
Remote control input parameter 5	Single-precision floating-point type	Lower bits of Y coordinate of J2 written by the P variable
Remote control input parameter 6		Higher bits of Y coordinate of J2 written by the P variable
Remote control input parameter 7	Single-precision floating-point type	Lower bits of Z coordinate of J3 written by the P variable
Remote control input parameter 8		Higher bits of Z coordinate of J3 written by the P variable
Remote control input parameter 9	Single-precision floating-point type	Lower bits of A coordinate of J4 written by the P variable
Remote control input parameter 10		Higher bits of A coordinate of J4 written by the P variable

Parameter	Data Type	Content
Remote control input parameter 11	Single-precision floating-point type	Lower bits of B coordinate of J5 written by the P variable
Remote control input parameter 12		Higher bits of B coordinate of J5 written by the P variable
Remote control input parameter 13	Single-precision floating-point type	Lower bits of C coordinate of J6 written by the P variable
Remote control input parameter 14		Higher bits of C coordinate of J6 written by the P variable
Remote control input parameter 15	Word (signed)	Arm parameter 1 written by the P variable
Remote control input parameter 16	Word (signed)	Arm parameter 2 written by the P variable
Remote control input parameter 17	Word (signed)	Arm parameter 3 written by the P variable
Remote control input parameter 18	Word (signed)	Arm parameter 4 written by the P variable
Remote control input parameter 19	Single-precision floating-point type	Lower bits of E1 joint value written by the P variable
Remote control input parameter 20		Higher bits of E1 joint value written by the P variable
Remote control input parameter 21	Single-precision floating-point type	Lower bits of E2 joint value written by the P variable
Remote control return parameter 22		Higher bits of E2 joint value written by the P variable
Remote control return parameter 23	Single-precision floating-point type	Lower bits of E3 joint value written by the P variable
Remote control return parameter 24		Higher bits of E3 joint value written by the P variable
Remote control return parameter 25	Single-precision floating-point type	Lower bits of E4 joint value written by the P variable
Remote control return parameter 26		Higher bits of E4 joint value written by the P variable

Parameter	Data Type	Content
Remote control return parameter 27	Single-precision floating-point type	Lower bits of E5 joint value written by the P variable
Remote control return parameter 28		Higher bits of E5 joint value written by the P variable
Remote control return parameter 29	Single-precision floating-point type	Lower bits of E6 joint value written by the P variable
Remote control return parameter 30		Higher bits of E6 joint value written by the P variable
…	…	…
Remote control return parameter 60	-	-

Input value (joint point JP):

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0202
Remote control input parameter 1	Word (unsigned)	Type of modified global point: • 0: Position point • 1: Joint point
Remote control input parameter 2	Word (unsigned)	Number of modified global points (0-9999)
Remote control input parameter 3	Single-precision floating-point type	Lower bits of X coordinate of J1 written by the JP variable
Remote control input parameter 4		Higher bits of X coordinate of J1 written by the JP variable
Remote control input parameter 5	Single-precision floating-point type	Lower bits of Y coordinate of J2 written by the P variable
Remote control input parameter 6		Higher bits of Y coordinate of J2 written by the JP variable
Remote control input parameter 7	Single-precision floating-point type	Lower bits of Z coordinate of J3 written by the JP variable
Remote control input parameter 8		Higher bits of Z coordinate of J3 written by the JP variable

Parameter	Data Type	Content
Remote control input parameter 9	Single-precision floating-point type	Lower bits of A coordinate of J4 written by the JP variable
Remote control input parameter 10		Higher bits of A coordinate of J4 written by the JP variable
Remote control input parameter 11	Single-precision floating-point type	Lower bits of B coordinate of J5 written by the JP variable
Remote control input parameter 12		Higher bits of B coordinate of J5 written by the JP variable
Remote control input parameter 13	Single-precision floating-point type	Lower bits of C coordinate of J6 written by the JP variable
Remote control input parameter 14		Higher bits of C coordinate of J6 written by the JP variable
Remote control input parameter 15	Single-precision floating-point type	Lower bits of E1 joint value written by the JP variable
Remote control input parameter 16		Higher bits of E1 joint value written by the JP variable
Remote control input parameter 17	Single-precision floating-point type	Lower bits of E2 joint value written by the JP variable
Remote control input parameter 18		Higher bits of E2 joint value written by the JP variable
Remote control input parameter 19	Single-precision floating-point type	Lower bits of E3 joint value written by the JP variable
Remote control input parameter 20		Higher bits of E3 joint value written by the JP variable
Remote control input parameter 21	Single-precision floating-point type	Lower bits of E4 joint value written by the JP variable
Remote control return parameter 22		Higher bits of E4 joint value written by the JP variable
Remote control return parameter 23	Single-precision floating-point type	Lower bits of E5 joint value written by the JP variable
Remote control return parameter 24		Higher bits of E5 joint value written by the JP variable

Parameter	Data Type	Content
Remote control return parameter 25	Single-precision floating-point type	Lower bits of E6 joint value written by the JP variable
Remote control return parameter 26		Higher bits of E6 joint value written by the JP variable
…	…	…
Remote control return parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	-	-
…	…	…
Remote control return parameter 60		-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal. 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	• 01: The point type input is out of range. • 02: The global P variable is out of range. • 03: Point modification is not allowed during robot motion or in auto mode. • 04: The arm parameter of P variable is illegal. • 05: Error acquiring robot points via index. • 06: Error setting robot points via index. • 07: Failed to get the file name via point type (1000-1127). • 08: Point data switch in progress, try again later.
Controller system error code	Word (unsigned)	Refer to system fault codes

Parameter	Data Type	Value
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

Read the current robot joint point

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0930
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Single-precision floating-point type	Lower bits of X coordinate of J1 read from JP variable
Remote control return parameter 2		Higher bits of X coordinate of J1 read from JP variable
Remote control return parameter 3	Single-precision floating-point type	Lower bits of Y coordinate of J2 read from JP variable
Remote control return parameter 4		Higher bits of Y coordinate of J2 read from JP variable
Remote control return parameter 5	Single-precision floating-point type	Lower bits of Z coordinate of J3 read from JP variable
Remote control return parameter 6		Higher bits of Z coordinate of J3 read from JP variable
Remote control return parameter 7	Single-precision floating-point type	Lower bits of A coordinate of J4 read from JP variable
Remote control return parameter 8		Higher bits of A coordinate of J4 read from JP variable

Address	Data Type	Content
Remote control return parameter 9	Single-precision floating-point type	Lower bits of B coordinate of J5 read from JP variable
Remote control return parameter 10		Higher bits of B coordinate of J5 read from JP variable
Remote control return parameter 11	Single-precision floating-point type	Lower bits of C coordinate of J6 read from JP variable
Remote control return parameter 12		Higher bits of C coordinate of J6 read from JP variable
Remote control return parameter 13	Single-precision floating-point type	Lower bits of E1 joint value read from JP variable
Remote control return parameter 14		Higher bits of E1 joint value read from JP variable
Remote control return parameter 15	Single-precision floating-point type	Lower bits of E2 joint value read from JP variable
Remote control return parameter 16		Higher bits of E2 joint value read from JP variable
Remote control return parameter 17	Single-precision floating-point type	Lower bits of E3 joint value read from JP variable
Remote control return parameter 18		Higher bits of E3 joint value read from JP variable
Remote control return parameter 19	Single-precision floating-point type	Lower bits of E4 joint value read from JP variable
Remote control return parameter 20		Higher bits of E4 joint value read from JP variable
Remote control return parameter 21	Single-precision floating-point type	Lower bits of E5 joint value read from JP variable
Remote control return parameter 22		Higher bits of E5 joint value read from JP variable
Remote control return parameter 23	Single-precision floating-point type	Lower bits of E6 joint value read from JP variable
Remote control return parameter 24		Higher bits of E6 joint value read from JP variable

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control return parameter 1	Word (unsigned)	0x0001: Failed to get current point.

Read the current robot position point

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0931
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Single-precision floating-point type	Lower bits of X coordinate of J1 read from the P variable
Remote control return parameter 2		Higher bits of X coordinate of J1 read from the P variable
Remote control return parameter 3	Single-precision floating-point type	Lower bits of Y coordinate of J2 read from the P variable
Remote control return parameter 4		Higher bits of Y coordinate of J2 read from the P variable
Remote control return parameter 5	Single-precision floating-point type	Lower bits of Z coordinate of J3 read from the P variable
Remote control return parameter 6		Higher bits of Z coordinate of J3 read from the P variable
Remote control return parameter 7	Single-precision floating-point type	Lower bits of A coordinate of J4 read from the P variable
Remote control return parameter 8		Higher bits of A coordinate of J4 read from the P variable

Address	Data Type	Content
Remote control return parameter 9	Single-precision floating-point type	Lower bits of B coordinate of J5 read from the P variable
Remote control return parameter 10		Higher bits of B coordinate of J5 read from the P variable
Remote control return parameter 11	Single-precision floating-point type	Lower bits of C coordinate of J6 read from the P variable
Remote control return parameter 12		Higher bits of C coordinate of J6 read from the P variable
Remote control return parameter 13	Word (signed)	Arm parameter 1 read from the P variable
Remote control return parameter 14	Word (signed)	Arm parameter 2 read from the P variable
Remote control return parameter 15	Word (signed)	Arm parameter 3 read from the P variable
Remote control return parameter 16	Word (signed)	Arm parameter 4 read from the P variable
Remote control return parameter 17	Single-precision floating-point type	Lower bits of E1 joint value read from the P variable
Remote control return parameter 18		Higher bits of E1 joint value read from the P variable
Remote control return parameter 19	Single-precision floating-point type	Lower bits of E2 joint value read from the P variable
Remote control return parameter 20		Higher bits of E2 joint value read from the P variable
Remote control return parameter 21	Single-precision floating-point type	Lower bits of E3 joint value read from the P variable
Remote control return parameter 22		Higher bits of E3 joint value read from the P variable
Remote control return parameter 23	Single-precision floating-point type	Lower bits of E4 joint value read from the P variable
Remote control return parameter 24		Higher bits of E4 joint value read from the P variable

Address	Data Type	Content
Remote control return parameter 25	Single-precision floating-point type	Lower bits of E5 joint value read from the P variable
Remote control return parameter 26		Higher bits of E5 joint value read from the P variable
Remote control return parameter 27	Single-precision floating-point type	Lower bits of E6 joint value read from the P variable
Remote control return parameter 28		Higher bits of E6 joint value read from the P variable

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control return parameter 1	Word (unsigned)	• 0x0001: Failed to get current point. • 0x0002: The current point is a singular point. • 0x0003: Point conversion failed

8.2.4 System Variable-Related Commands

Read the B variable

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0300
Remote control input parameter 1	Word (unsigned)	Index of the B variable (0-255)
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	The read value of the B variable
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	…	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 0x0001: The input subscript of the B variable is out of range. • 0x0002: Failed to read the B variable.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
...	…	...
Reserved	Word (unsigned)	-

Set the B variable

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0301
Remote control input parameter 1	Word (unsigned)	Index of the B variable (0-255)
Remote control input parameter 2	Word (unsigned)	The set value of the B variable (0-255)
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	…	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	• 0x0001: The input subscript of the B variable is out of range. • 0x0002: The input value of the B variable is out of range. • 0x0003: Failed to modify the B variable.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Batch read the B variables

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0302
Remote control input parameter 1	Word (unsigned)	Starting index i of the B variable (0-255)
Remote control input parameter 2	Word (unsigned)	Number (n) of the read B variables (1-50)
Remote control input parameter 3	Word (unsigned)	-

Parameter	Data Type	Content
…	…	…
Remote control input parameter 60	-	-

NOTE

When n exceeds 50, only the first 50 B variables are displayed. When i is in the range 0-255, but i+n exceeds 256, the excess B variables cannot be read. In these two cases, the "Current remote control status" is "The command is executed successfully."

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	Value of the read B[i] variable
Remote control return parameter 2	Word (unsigned)	Value of the read B[i+1] variable
…	…	…
Remote control return parameter n	-	Value of the read B[i+n-1] variable
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 0x0001: The starting index of the B variable is out of range. • 0x0002: The number of the read B variables is 0.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Batch set the B variables

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0303
Remote control input parameter 1	Word (unsigned)	Starting index i of the B variable (0-255)
Remote control input parameter 2	Word (unsigned)	Number (n) of the set B variables (1-48)
Remote control input parameter 3	Word (unsigned)	Input value of B[i] variable
Remote control input parameter 4	Word (unsigned)	Input value of B[i+1] variable
…	…	…
Remote control input parameter n+2	Word (unsigned)	Input value of B[i+n-1] variable
…	…	…
Remote control input parameter 60	-	-

NOTE

When n exceeds 48, only the first 48 B variables can be modified. When i is in the range 0-255, but i+n exceeds 256, the excess B variables cannot be modified. In these two cases, the "Current remote control status" is "The command is executed successfully."

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	...	...
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.

Parameter	Data Type	Value
Remote control execution failure error code	Word (unsigned)	• 0x0001: The starting index of the B variable is out of range. • 0x0002: The number of the set B variables is 0. • 0x0003: Failed to batch set the value of B variables.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

Read the R variable

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0304
Remote control input parameter 1	Word (unsigned)	Index of the R variable (0-255)
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
...	...	...
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Double word (signed)	Lower bits of the value of the read R variable
Remote control return parameter 2		Higher bits of the value of the read R variable
...	...	...
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001: The subscript of the R variable is out of range.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

Set the R variable

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0305
Remote control input parameter 1	Word (unsigned)	Index of the R variable (0-255)
Remote control input parameter 2	Double word (signed)	Lower bits of the read value of the set R variable
Remote control input parameter 3		Higher bits of the value of the set R variable
...	...	...
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
...	...	...
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	• 0x0001: The index of the R variable is out of range. • 0x0002: Failed to set the R variable.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

Batch read the R variables

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0306
Remote control input parameter 1	Word (unsigned)	Starting index i of the R variable (0-255)
Remote control input parameter 2	Word (unsigned)	Number (n) of the read R variables (1-25)
Remote control input parameter 3	Word (unsigned)	-
...	...	...
Remote control input parameter 60	-	-

NOTE

When n exceeds 25, only the first 25 R variables are displayed. When i is in the range 0-255, but i+n exceeds 256, the excess R variables cannot be read. In these two cases, the "Current remote control status" is "The command is executed successfully."

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Double word (signed)	Lower bits of the read value of the read R[i] variable
Remote control return parameter 2		Higher bits of the read value of the read R[i] variable
Remote control return parameter 3	Double word (signed)	Lower bits of the read value of the read R[i+1] variable
Remote control return parameter 4		Higher bits of the read value of the read R[i+1] variable
…	…	…
Remote control return parameter 1+(n-1)*2-1	Double word (signed)	Lower bits of the read value of the read R[i+n-1] variable
Remote control return parameter 2+(n-1)*2		Higher bits of the read value of the read R[i+n-1] variable
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 0x0001: The starting index of the R variable is out of range. • 0x0002: The number of the read R variables is 0.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Batch set the R variables

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0307
Remote control input parameter 1	Word (unsigned)	Starting index i of the R variable (0-255)
Remote control input parameter 2	Word (unsigned)	Number (n) of the set R variables (1-24)
Remote control input parameter 3	Double word (signed)	Lower bits of the input value of the R[i] variable
Remote control input parameter 4		Higher bits of the input value of the R[i] variable
Remote control input parameter 5	Double word (signed)	Lower bits of the input value of the R[i+1] variable
Remote control input parameter 6		Higher bits of the input value of the R[i+1] variable
…	…	…
Remote control input parameter 3+(n-1)*2-1	Double word (signed)	Input value of R[i+n-1] variable
Remote control input parameter 4+(n-1)*2		Input value of R[i+n-1] variable
…	…	…
Remote control input parameter 60	-	-

NOTE

When n exceeds 24, only the first 24 R variables can be modified. When i is in the range 0-255, but i+n exceeds 256, the excess R variables cannot be modified. In these two cases, the "Current remote control status" is "The command is executed successfully."

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…

Parameter	Data Type	Content
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	• 0x0001: The starting index of the R variable is out of range. • 0x0002: The number of the set R variables is 0. • 0x0003: Failed to batch set the value of R variables.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

Read the D variable

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0308
Remote control input parameter 1	Word (unsigned)	Index of the D variable (0-255)
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
...	...	...
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Double-precision floating-point type	Lowest bit of the value of the read D variable
Remote control return parameter 2		Lower bits of the value of the read D variable
Remote control return parameter 3		Higher bits of the value of the read D variable
Remote control return parameter 4		Highest bit of the value of the read D variable
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001: The index of the D variable is out of range.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Set the D variable

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0309
Remote control input parameter 1	Word (unsigned)	Index of the D variable (0-255)

Parameter	Data Type	Content
Remote control input parameter 2	Double-precision floating-point type	Lowest bit of the value of the set D variable
Remote control input parameter 3		Lower bits of the value of the set D variable
Remote control input parameter 4		Higher bits of the value of the set R variable
Remote control input parameter 5		The highest bit of the value of the set D variable
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	• 0x0001: The index of the D variable is out of range. • 0x0002: Failed to set the D variable.
Controller system error code	Word (unsigned)	Refer to system fault codes

Parameter	Data Type	Value
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

Batch read the D variables

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H030A
Remote control input parameter 1	Word (unsigned)	Starting index i of the D variable (0-255)
Remote control input parameter 2	Word (unsigned)	Number (n) of the read D variables (1-12)
Remote control input parameter 3	Word (unsigned)	-
...	...	...
Remote control input parameter 60	-	-

NOTE

When n exceeds 12, only the first 12 D variables are displayed. When i is in the range 0-255, but i+n exceeds 256, the excess D variables cannot be read. In these two cases, the "Current remote control status" is "The command is executed successfully."

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	64-bit floating-point type	Lowest bit of the read value of the read D[i] variable
Remote control return parameter 2		Lower bits of the read value of the read D[i] variable
Remote control return parameter 3		Higher bits of the read value of the read D[i] variable
Remote control return parameter 4		Highest bit of the read value of the read D[i] variable

Parameter	Data Type	Content
Remote control return parameter 5	64-bit floating-point type	Lowest bit of the value of the read D[i+1] variable
Remote control return parameter 6		Lower bits of the value of the read D[i+1] variable
Remote control return parameter 7		Higher bits of the value of the read D[i+1] variable
Remote control return parameter 8		Highest bit of the value of the read D[i+1] variable
Remote control return parameter 9	64-bit floating-point type	Lowest bit of the value of the read D[i+2] variable
Remote control return parameter 10		Lower bits of the value of the read D[i+2] variable
Remote control return parameter 11		Higher bits of the value of the read D[i+2] variable
Remote control return parameter 12		Highest bit of the value of the read D[i+2] variable
Remote control return parameter 13	64-bit floating-point type	Lowest bit of the value of the read D[i+3] variable
Remote control return parameter 14		Lower bits of the value of the read D[i+3] variable
Remote control return parameter 15		Higher bits of the value of the read D[i+3] variable
Remote control return parameter 16		Highest bit of the value of the read D[i+3] variable
Remote control return parameter 17	64-bit floating-point type	Lowest bit of the value of the read D[i+4] variable
Remote control return parameter 18		Lower bits of the value of the read D[i+4] variable
Remote control return parameter 19		Higher bits of the value of the read D[i+4] variable
Remote control return parameter 20		Highest bit of the value of the read D[i+4] variable
Remote control return parameter 21	-	-

Parameter	Data Type	Content
Remote control return parameter 22	-	-
Remote control return parameter 60	-	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 0x0001: The starting index of the D variable is out of range. • 0x0002: The number of the read D variables is 0.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Batch set the D variables

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H030B
Remote control input parameter 1	Word (unsigned)	Starting index i of the D variable (0-255)
Remote control input parameter 2	Word (unsigned)	Number (n) of the read D variables (1-12)
Remote control input parameter 3	64-bit floating-point type	Lowest bit of the input value of the D[i] variable
Remote control input parameter 4		Lower bits of the input value of the D[i] variable
Remote control input parameter 5		Higher bits of the input value of the D[i] variable
Remote control input parameter 6		Highest bit of the input value of the D[i] variable

Parameter	Data Type	Content
Remote control input parameter 7	64-bit floating-point type	Lowest bit of the input value of the D[i+1] variable
Remote control input parameter 8		Lower bits of the input value of the D[i+1] variable
Remote control input parameter 9		Higher bits of the input value of the D[i+1] variable
Remote control input parameter 10		Highest bit of the input value of the D[i+1] variable
Remote control input parameter 11	64-bit floating-point type	Lowest bit of the input value of the D[i+2] variable
Remote control input parameter 12		Lower bits of the input value of the D[i+2] variable
Remote control input parameter 13		Higher bits of the input value of the D[i+2] variable
Remote control input parameter 14		Highest bit of the input value of the D[i+2] variable
Remote control input parameter 15	64-bit floating-point type	Lowest bit of the input value of the D[i+3] variable
Remote control input parameter 16		Lower bits of the input value of the D[i+3] variable
Remote control input parameter 17		Higher bits of the input value of the D[i+3] variable
Remote control input parameter 18		Highest bit of the input value of the D[i+3] variable
Remote control input parameter 19	64-bit floating-point type	Lowest bit of the input value of the D[i+4] variable
Remote control input parameter 20		Lower bits of the input value of the D[i+4] variable
Remote control input parameter 21		Higher bits of the input value of the D[i+4] variable
Remote control input parameter 22		Highest bit of the input value of the D[i+4] variable
Remote control input parameter 60	-	-

> **NOTE**
>
> When n exceeds 12, only the first 12 D variables can be modified. When i is in the range 0-255, but i+n exceeds 256, the excess D variables cannot be modified. In these two cases, the "Current remote control status" is "The command is executed successfully."

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	• 0x0001: The starting index of the D variable is out of range. • 0x0002: The number of the set D variables is 0. • 0x0003: Failed to batch set the value of D variables.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

8.2.5 System Standard I/O-Related Commands

Read the system standard I/O input state

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0400
Remote control input parameter 1	Word (unsigned)	Word subscript of standard I/O input (0-7)
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	Standard I/O input state read: 16 I/Os can be read at a time and converted to binary state. • 0: OFF • 1: ON
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 0x0001: Standard I/O number entered is out of range. • 0x0002: Failed to read the standard I/O input state.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Read the system standard I/O output state

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0401
Remote control input parameter 1	Word (unsigned)	Word subscript of standard I/O output (0-7)
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	Standard I/O input state read: 16 I/Os can be read at a time and converted to binary state. • 0: OFF • 1: ON
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 0x0001: Standard I/O number entered is out of range. • 0x0002: Failed to read the standard I/O output state.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…

Parameter	Data Type	Value
Reserved	Word (unsigned)	-

Set the standard I/O output state

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0402
Remote control input parameter 1	Word (unsigned)	Word subscript of standard I/O output (0-7)
Remote control input parameter 2	Word (unsigned)	The set output state (in word)
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.

Parameter	Data Type	Value
Remote control execution failure error code	Word (unsigned)	• 0x0001: Standard I/O number entered is out of range. • 0x0002: Failed to set the standard I/O output.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Batch read the system standard I/O input state (in word)

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0403
Remote control input parameter 1	Word (unsigned)	Start word subscript of standard I/O input (0-7)
Remote control input parameter 2	Word (unsigned)	Number (n) of the read standard I/Os (in word)
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	Input state of the first standard I/O read (subscript by word): 16 I/Os can be read at a time and converted to binary state. • 0: OFF • 1: ON
Remote control return parameter 2	Word (unsigned)	Input state of the second standard I/O read (subscript by word)

Parameter	Data Type	Content
…	…	…
Remote control return parameter 8	Word (unsigned)	Input state of the eighth standard I/O read (subscript by word)
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 0x0001: Starting standard I/O number entered is out of range. • 0x0002: The read standard I/O is out of range.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Batch read the system standard I/O output state (in word)

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0404
Remote control input parameter 1	Word (unsigned)	Start subscript of standard I/O (in word, range 0-7)
Remote control input parameter 2	Word (unsigned)	Number (n) of the read standard I/Os (in word, range 1 to 8)
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	Input state of the first standard I/O read (subscript by word): 16 I/Os can be read at a time and converted to binary state. • 0: OFF • 1: ON
Remote control return parameter 2	Word (unsigned)	Input state of the second standard I/O read (subscript by word)
…	…	…
Remote control return parameter 8	Word (unsigned)	Input state of the eighth standard I/O read (subscript by word)
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 0x0001: Starting standard I/O number entered is out of range. • 0x0002: The read standard I/O is out of range.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Batch set the system standard I/O output state (in word)

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0405

Parameter	Data Type	Content
Remote control input parameter 1	Word (unsigned)	Start subscript of standard I/O (in word, range 0-7)
Remote control input parameter 2	Word (unsigned)	Number (n) of the set standard I/Os (in word, range 1 to 8)
Remote control input parameter 3	Word (unsigned)	Input value of the first set standard I/O (in word)
Remote control input parameter 4	Word (unsigned)	Input value of the second set standard I/O (in word)
…	…	…
Remote control input parameter 10	-	Input value of the eighth set standard I/O (in word)
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 8	Word (unsigned)	-
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.

Parameter	Data Type	Value
Remote control execution failure error code	Word (unsigned)	• 0x0001: Starting standard I/O number entered is out of range. • 0x0002: The set standard I/O is out of range.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

Set the system single standard DO Robot_Set_DO

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0406
Remote control input parameter 1	Word (unsigned)	DO index: 0-127
Remote control input parameter 2	Word (unsigned)	Level • 1: ON • 0: OFF

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control instruction execution failure error code	Word (unsigned)	• 0x0001: The I/O index number is out of range. • 0x0002: The I/O level parameter is out of range. • 0x0003: I/O user cannot be set. • 0x0004: I/O is already occupied.

Read the system single standard DO Robot_Get_DO

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0407
Remote control input parameter 1	Word (unsigned)	DO index: 0-127
Remote control input parameter 2	Word (unsigned)	-

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	DO index
Remote control return parameter 2	Word (unsigned)	Level • 1: ON • 0: OFF

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control instruction execution failure error code	Word (unsigned)	0x0001: The I/O index number is out of range.

Read the system single standard Robot_Get_DO Robot_Get_DI

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0408
Remote control input parameter 1	Word (unsigned)	DO index: 0-127
Remote control input parameter 2	Word (unsigned)	-

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.

Address	Data Type	Content
Remote control return parameter 1	Word (unsigned)	DI index
Remote control return parameter 2	Word (unsigned)	Level • 1: ON • 0: OFF

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control instruction execution failure error code	Word (unsigned)	0x0001: The digital I/O index number is out of range.

8.2.6 Motion-Related Commands

Move to a point via MOVJ

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0500
Remote control input parameter 1	Word (unsigned)	Subscript of the P variable to be moved to (0-9999)
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-

Parameter	Data Type	Content
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	• 0x0001: Direct movement to the point is not allowed when in non-manual mode, when there is an alarm, or when the robot is not enabled. • 0x0002: The index of the P variable entered is out of range. • 0x0003: The P variable entered is not defined. • 0x0004: The point is out of range.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Move to a point via MOVL

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0501
Remote control input parameter 1	Word (unsigned)	Subscript of the P variable to be moved to (0-9999)
Remote control input parameter 2	Word (unsigned)	-

Parameter	Data Type	Content
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	• 0x0001: Direct movement to the point is not allowed when in non-manual mode, when there is an alarm, or when the robot is not enabled. • 0x0002: The index of the P variable entered is out of range. • 0x0003: The P variable entered is not defined. • 0x0004: The point is out of range.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Move to a point via JUMP

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0502
Remote control input parameter 1	Word (unsigned)	Subscript of the P variable to be moved to (0-9999)
Remote control input parameter 2	Single-precision floating-point type	Lower bits of the LH parameter of the JUMP motion
Remote control input parameter 3		Higher bits of the LH parameter of the JUMP motion
Remote control input parameter 4	Single-precision floating-point type	Lower bits of the MH parameter of the JUMP motion
Remote control input parameter 5		Higher bits of the MH parameter of the JUMP motion
Remote control input parameter 6	Single-precision floating-point type	Lower bits of the RH parameter of the JUMP motion
Remote control input parameter 7		Higher bits of the RH parameter of the JUMP motion
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.

Parameter	Data Type	Value
Remote control execution failure error code	Word (unsigned)	• 0x0001: Direct movement to the point is not allowed when in non-manual mode, when there is an alarm, or when the robot is not enabled. • 0x0002: The index of the P variable entered is out of range. • 0x0003: The P variable entered is not defined. • 0x0004: The point is out of range. • 0x0005: The LH, MH, and RH parameters are incorrect.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

Move to a point via JUMPL

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0503
Remote control input parameter 1	Word (unsigned)	Subscript of the P variable to be moved to (0-9999)
Remote control input parameter 2	Single-precision floating-point type	Lower bits of the LH parameter of the JUMPL motion
Remote control input parameter 3		Higher bits of the LH parameter of the JUMPL motion
Remote control input parameter 4	Single-precision floating-point type	Lower bits of the MH parameter of the JUMPL motion
Remote control input parameter 5		Higher bits of the MH parameter of the JUMPL motion
Remote control input parameter 6	Single-precision floating-point type	Lower bits of the RH parameter of the JUMPL motion
Remote control input parameter 7		Higher bits of the RH parameter of the JUMPL motion
...	...	...

Parameter	Data Type	Content
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	• 0x0001: Direct movement to the point is not allowed when in non-manual mode, when there is an alarm, or when the robot is not enabled. • 0x0002: The index of the P variable entered is out of range. • 0x0003: The P variable entered is not defined. • 0x0004: The point is out of range. • 0x0005: The LH, MH, and RH parameters are incorrect.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Move to a point via MovAbsj

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0504
Remote control input parameter 1	Word (unsigned)	Subscript of the JP variable to be moved to (0-9999)
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.

Parameter	Data Type	Value
Remote control execution failure error code	Word (unsigned)	• 0x0001: Direct movement to the point is not allowed when in non-manual mode, when there is an alarm, or when the robot is not enabled. • 0x0002: The index of the JP variable entered is out of range. • 0x0003: The JP variable entered is not defined. • 0x0004: The point is out of range.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

Move to the position of input point data via Movabsj

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0900
Remote control input parameter 1	Single-precision floating-point	Lower bits of J1 coordinate read from JP variable
Remote control input parameter 2		Higher bits of J1 coordinate read from JP variable
Remote control input parameter 3	Single-precision floating-point	Lower bits of J2 coordinate read from JP variable
Remote control input parameter 4		Higher bits of J2 coordinate read from JP variable
Remote control input parameter 5	Single-precision floating-point	Lower bits of J3 coordinate read from JP variable
Remote control input parameter 6		Higher bits of J3 coordinate read from JP variable
Remote control input parameter 7	Single-precision floating-point	Lower bits of J4 coordinate read from JP variable
Remote control input parameter 8		Higher bits of J4 coordinate read from JP variable

Parameter	Data Type	Content
Remote control input parameter 9	Single-precision floating-point	Lower bits of J5 coordinate read from JP variable
Remote control input parameter 10		Higher bits of J5 coordinate read from JP variable
Remote control input parameter 11	Single-precision floating-point	Lower bits of J6 coordinate read from JP variable
Remote control input parameter 12		Higher bits of J6 coordinate read from JP variable
Remote control input parameter 13	Single-precision floating-point	Lower bits of E1 joint value read from JP variable
Remote control input parameter 14		Higher bits of E1 joint value read from JP variable
Remote control input parameter 15	Single-precision floating-point	Lower bits of E2 joint value read from JP variable
Remote control input parameter 16		Higher bits of E2 joint value read from JP variable
Remote control input parameter 17	Single-precision floating-point	Lower bits of E3 joint value read from JP variable
Remote control input parameter 18		Higher bits of E3 joint value read from JP variable
Remote control input parameter 19	Single-precision floating-point	Lower bits of E4 joint value read from JP variable
Remote control input parameter 20		Higher bits of E4 joint value read from JP variable
Remote control input parameter 21	Single-precision floating-point	Lower bits of E5 joint value read from JP variable
Remote control input parameter 22		Higher bits of E5 joint value read from JP variable
Remote control input parameter 23	Single-precision floating-point	Lower bits of E6 joint value read from JP variable
Remote control input parameter 24		Higher bits of E6 joint value read from JP variable

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 0x0001: Direct movement to the point is not allowed when in non-teaching mode, when there is an alarm, when in data stream mode, or when the robot is not enabled. • 0x0002: The point is out of range. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Move to the position of an input point data via Movj

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0901
Remote control input parameter 1	Single-precision floating-point	Lower bits of X coordinate read from the P variable
Remote control input parameter 2		Higher bits of X coordinate read from the P variable

Parameter	Data Type	Content
Remote control input parameter 3	Single-precision floating-point	Lower bits of Y coordinate read from the P variable
Remote control input parameter 4		Higher bits of Y coordinate read from the P variable
Remote control input parameter 5	Single-precision floating-point	Lower bits of Z coordinate read from the P variable
Remote control input parameter 6		Higher bits of Z coordinate read from the P variable
Remote control input parameter 7	Single-precision floating-point	Lower bits of A coordinate read from the P variable
Remote control input parameter 8		Higher bits of A coordinate read from the P variable
Remote control input parameter 9	Single-precision floating-point	Lower bits of B coordinate read from the P variable
Remote control input parameter 10		Higher bits of B coordinate read from the P variable
Remote control input parameter 11	Single-precision floating-point	Lower bits of C coordinate read from the P variable
Remote control input parameter 12		Higher bits of C coordinate read from the P variable
Remote control input parameter 13	Word (signed)	Arm parameter 1 read from the P variable
Remote control input parameter 14	Word (signed)	Arm parameter 2 read from the P variable
Remote control input parameter 15	Word (signed)	Arm parameter 3 read from the P variable
Remote control input parameter 16	Word (signed)	Arm parameter 4 read from the P variable
Remote control input parameter 17	Single-precision floating-point	Lower bits of E1 joint value read from the P variable
Remote control input parameter 18		Higher bits of E1 joint value read from the P variable
Remote control input parameter 19	Single-precision floating-point	Lower bits of E2 joint value read from the P variable
Remote control input parameter 20		Higher bits of E2 joint value read from the P variable

Parameter	Data Type	Content
Remote control input parameter 21	Single-precision floating-point	Lower bits of E3 joint value read from the P variable
Remote control input parameter 22		Higher bits of E3 joint value read from the P variable
Remote control input parameter 23	Single-precision floating-point	Lower bits of E4 joint value read from the P variable
Remote control input parameter 24		Higher bits of E4 joint value read from the P variable
Remote control input parameter 25	Single-precision floating-point	Lower bits of E5 joint value read from the P variable
Remote control input parameter 26		Higher bits of E5 joint value read from the P variable
Remote control input parameter 27	Single-precision floating-point	Lower bits of E6 joint value read from the P variable
Remote control input parameter 29		Higher bits of E6 joint value read from the P variable

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.

Parameter	Data Type	Value
Remote control execution failure error code	Word (unsigned)	• 0x0001: Direct movement to the point is not allowed when in non-teaching mode, when there is an alarm, when in data stream mode, or when the robot is not enabled. • 0x0002: The point is out of range. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

Move to the position of an input point data via Movl

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0902
Remote control input parameter 1	Single-precision floating-point	Lower bits of X coordinate read from the P variable
Remote control input parameter 2		Higher bits of X coordinate read from the P variable
Remote control input parameter 3	Single-precision floating-point	Lower bits of Y coordinate read from the P variable
Remote control input parameter 4		Higher bits of Y coordinate read from the P variable
Remote control input parameter 5	Single-precision floating-point	Lower bits of Z coordinate read from the P variable
Remote control input parameter 6		Higher bits of Z coordinate read from the P variable
Remote control input parameter 7	Single-precision floating-point	Lower bits of A coordinate read from the P variable
Remote control input parameter 8		Higher bits of A coordinate read from the P variable

Parameter	Data Type	Content
Remote control input parameter 9	Single-precision floating-point	Lower bits of B coordinate read from the P variable
Remote control input parameter 10		Higher bits of B coordinate read from the P variable
Remote control input parameter 11	Single-precision floating-point	Lower bits of C coordinate read from the P variable
Remote control input parameter 12		Higher bits of C coordinate read from the P variable
Remote control input parameter 13	Word (signed)	Arm parameter 1 read from the P variable
Remote control input parameter 14	Word (signed)	Arm parameter 2 read from the P variable
Remote control input parameter 15	Word (signed)	Arm parameter 3 read from the P variable
Remote control input parameter 16	Word (signed)	Arm parameter 4 read from the P variable
Remote control input parameter 17	Single-precision floating-point	Lower bits of E1 joint value read from the P variable
Remote control input parameter 18		Higher bits of E1 joint value read from the P variable
Remote control input parameter 19	Single-precision floating-point	Lower bits of E2 joint value read from the P variable
Remote control input parameter 20		Higher bits of E2 joint value read from the P variable
Remote control input parameter 21	Single-precision floating-point	Lower bits of E3 joint value read from the P variable
Remote control input parameter 22		Higher bits of E3 joint value read from the P variable
Remote control input parameter 23	Single-precision floating-point	Lower bits of E4 joint value read from the P variable
Remote control input parameter 24		Higher bits of E4 joint value read from the P variable
Remote control input parameter 25	Single-precision floating-point	Lower bits of E5 joint value read from the P variable
Remote control input parameter 26		Higher bits of E5 joint value read from the P variable

Parameter	Data Type	Content
Remote control input parameter 27	Single-precision floating-point	Lower bits of E6 joint value read from the P variable
Remote control input parameter 29		Higher bits of E6 joint value read from the P variable

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 0x0001: Direct movement to the point is not allowed when in non-teaching mode, when there is an alarm, when in data stream mode, or when the robot is not enabled. • 0x0002: The point is out of range. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Move to the position of an input point data via Jump



The Jump and JumpL points together with the jump parameters constitute the data required for the jump motion

Basic remote control command: Write

IN value	Function
In2416 to In2413	Lower bits of the LH parameter of the jump motion
In2432 to In2447	Higher bits of the LH parameter of the jump motion
In2448 to In2463	Lower bits of the MH parameter of the jump motion
In2464 to In2497	Higher bits of the MH parameter of the jump motion
In2480 to In2495	Lower bits of the RH parameter of the jump motion
In2496 to In2511	Higher bits of the RH parameter of the jump motion

Basic remote control command: Read

OUT Value	Function
Out2448 to Out2463	Lower bits of the LH parameter of the current jump motion
Out2464 to Out2479	Higher bits of the LH parameter of the current jump motion
Out2480 to Out2495	Lower bits of the MH parameter of the current jump motion
Out2496 to Out2511	Higher bits of the MH parameter of the current jump motion
Out2512 to Out2527	Lower bits of the RH parameter of the current jump motion
Out2528 to Out2543	Higher bits of the RH parameter of the current jump motion

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0903
Remote control input parameter 1	Single-precision floating-point	Lower bits of X coordinate read from the P variable
Remote control input parameter 2		Higher bits of X coordinate read from the P variable
Remote control input parameter 3	Single-precision floating-point	Lower bits of Y coordinate read from the P variable
Remote control input parameter 4		Higher bits of Y coordinate read from the P variable

Parameter	Data Type	Content
Remote control input parameter 5	Single-precision floating-point	Lower bits of Z coordinate read from the P variable
Remote control input parameter 6		Higher bits of Z coordinate read from the P variable
Remote control input parameter 7	Single-precision floating-point	Lower bits of A coordinate read from the P variable
Remote control input parameter 8		Higher bits of A coordinate read from the P variable
Remote control input parameter 9	Single-precision floating-point	Lower bits of B coordinate read from the P variable
Remote control input parameter 10		Higher bits of B coordinate read from the P variable
Remote control input parameter 11	Single-precision floating-point	Lower bits of C coordinate read from the P variable
Remote control input parameter 12		Higher bits of C coordinate read from the P variable
Remote control input parameter 13	Word (signed)	Arm parameter 1 read from the P variable
Remote control input parameter 14	Word (signed)	Arm parameter 2 read from the P variable
Remote control input parameter 15	Word (signed)	Arm parameter 3 read from the P variable
Remote control input parameter 16	Word (signed)	Arm parameter 4 read from the P variable
Remote control input parameter 17	Single-precision floating-point	Lower bits of E1 joint value read from the P variable
Remote control input parameter 18		Higher bits of E1 joint value read from the P variable
Remote control input parameter 19	Single-precision floating-point	Lower bits of E2 joint value read from the P variable
Remote control input parameter 20		Higher bits of E2 joint value read from the P variable
Remote control input parameter 21	Single-precision floating-point	Lower bits of E3 joint value read from the P variable
Remote control input parameter 22		Higher bits of E3 joint value read from the P variable
Remote control input parameter 23	Single-precision floating-point	Lower bits of E4 joint value read from the P variable
Remote control input parameter 24		Higher bits of E4 joint value read from the P variable
Remote control input parameter 25	Single-precision floating-point	Lower bits of E5 joint value read from the P variable
Remote control input parameter 26		Higher bits of E5 joint value read from the P variable
Remote control input parameter 27	Single-precision floating-point	Lower bits of E6 joint value read from the P variable
Remote control input parameter 29		Higher bits of E6 joint value read from the P variable

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 0x0001: Direct movement to the point is not allowed when in non-teaching mode, when there is an alarm, when in data stream mode, or when the robot is not enabled. • 0x0002: The point is out of range. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Move to the position of an input point data via JumpL

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0904
Remote control input parameter 1	Single-precision floating-point	Lower bits of X coordinate read from the P variable
Remote control input parameter 2		Higher bits of X coordinate read from the P variable

Parameter	Data Type	Content
Remote control input parameter 3	Single-precision floating-point	Lower bits of Y coordinate read from the P variable
Remote control input parameter 4		Higher bits of Y coordinate read from the P variable
Remote control input parameter 5	Single-precision floating-point	Lower bits of Z coordinate read from the P variable
Remote control input parameter 6		Higher bits of Z coordinate read from the P variable
Remote control input parameter 7	Single-precision floating-point	Lower bits of A coordinate read from the P variable
Remote control input parameter 8		Higher bits of A coordinate read from the P variable
Remote control input parameter 9	Single-precision floating-point	Lower bits of B coordinate read from the P variable
Remote control input parameter 10		Higher bits of B coordinate read from the P variable
Remote control input parameter 11	Single-precision floating-point	Lower bits of C coordinate read from the P variable
Remote control input parameter 12		Higher bits of C coordinate read from the P variable
Remote control input parameter 13	Word (signed)	Arm parameter 1 read from the P variable
Remote control input parameter 14	Word (signed)	Arm parameter 2 read from the P variable
Remote control input parameter 15	Word (signed)	Arm parameter 3 read from the P variable
Remote control input parameter 16	Word (signed)	Arm parameter 4 read from the P variable
Remote control input parameter 17	Single-precision floating-point	Lower bits of E1 joint value read from the P variable
Remote control input parameter 18		Higher bits of E1 joint value read from the P variable
Remote control input parameter 19	Single-precision floating-point	Lower bits of E2 joint value read from the P variable
Remote control input parameter 20		Higher bits of E2 joint value read from the P variable
Remote control input parameter 21	Single-precision floating-point	Lower bits of E3 joint value read from the P variable
Remote control input parameter 22		Higher bits of E3 joint value read from the P variable
Remote control input parameter 23	Single-precision floating-point	Lower bits of E4 joint value read from the P variable
Remote control input parameter 24		Higher bits of E4 joint value read from the P variable
Remote control input parameter 25	Single-precision floating-point	Lower bits of E5 joint value read from the P variable
Remote control input parameter 26		Higher bits of E5 joint value read from the P variable
Remote control input parameter 27	Single-precision floating-point	Lower bits of E6 joint value read from the P variable
Remote control input parameter 29		Higher bits of E6 joint value read from the P variable

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 0x0001: Direct movement to the point is not allowed when in non-teaching mode, when there is an alarm, when in data stream mode, or when the robot is not enabled. • 0x0002: The point is out of range. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Query the robot motion status

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0508
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-

Parameter	Data Type	Content
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	Direct motion complete state: • 0: Not in motion • 1: In motion
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001: Failed to query the direct motion state.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Query the robot motion completion status

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0509
Remote control input parameter 1	Word (unsigned)	-

Parameter	Data Type	Content
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	Direct motion complete state • 0: Motion not complete • 1: Motion complete
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001: Failed to query the direct motion complete state.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Terminate the current direct motion

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H050A

Parameter	Data Type	Content
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	0x0001: Failed to terminate the direct motion.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Read the current teaching motion mode

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H050B
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	Current teaching mode: • 0: Continuous teaching • 1: Jog teaching
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001: Failed to read the teaching mode.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Set the current teaching motion mode

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H050C
Remote control input parameter 1	Word (unsigned)	• 0: Continuous teaching • 1: Jog teaching
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	0x0001: The teaching mode input parameter is invalid.
Controller system error code	Word (unsigned)	Refer to system fault codes

Parameter	Data Type	Value
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

Get the current motion speed of the robot end point

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H050D
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-
...	...	...
Remote control input parameter 50	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	32-bit floating-point type	Lower bits of the TcpSpeed variable
Remote control return parameter 2		Higher bits of the TcpSpeed variable
...	...	...
Remote control return parameter 50	-	-

When execution fails:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001: Internal error in command execution.
Controller system error code	Word (unsigned)	Refer to system fault codes
...	...	...

Parameter	Data Type	Content
Remote control return parameter 50	Word (unsigned)	-

Get the current joint speed of the specified mechanical unit and axis

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H050E
Remote control input parameter 1	Word (unsigned)	Mechanical unit index (range: 0-3)
Remote control input parameter 2	Word (unsigned)	Axis number (range: 1 to maximum axis number of mechanical unit, maximum value is 6)
…	…	…
Remote control input parameter 50	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	32-bit floating-point type	Lower bits of the JointSpeed variable
Remote control return parameter 2		Higher bits of the JointSpeed variable
…	…	…
Remote control return parameter 50	-	-

When execution fails:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 0x0001: The mechanical unit index is out of range. • 0x0002: The axis number is out of range. • 0x0003: Failed to get specified joint speed.

Parameter	Data Type	Content
Controller system error code	Word (unsigned)	Refer to system fault codes
…	…	…
Remote control return parameter 50	Word (unsigned)	-

8.2.7 System Parameter Settings-Related Commands

Read the joint stepsize of jogging

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0600
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Single-precision floating-point type	Lower bits of the joint stepsize of jogging
Remote control return parameter 2		Higher bits of the joint stepsize of jogging
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001: Failed to read the joint stepsize of jogging.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-

Parameter	Data Type	Value
...	...	...
Reserved	Word (unsigned)	-

Set the joint stepsize of jogging

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0601
Remote control input parameter 1	Single-precision floating-point type	Lower bits of the joint stepsize of jogging
Remote control input parameter 2		Higher bits of the joint stepsize of jogging
Remote control input parameter 3	Word (unsigned)	-
...	...	...
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
...	...	...
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	0x0001: The joint stepsize of jogging entered is out of range [0.01, 10].
Controller system error code	Word (unsigned)	Refer to system fault codes

Parameter	Data Type	Value
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

Read the position stepsize of jogging

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0602
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
...	...	...
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Single-precision floating-point type	Lower bits of the position stepsize of jogging
Remote control return parameter 2		Higher bits of the position stepsize of jogging
...	...	...
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001: Failed to read the position stepsize of jogging.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-

Parameter	Data Type	Value
...	...	...
Reserved	Word (unsigned)	-

Set the position stepsize of jogging

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0603
Remote control input parameter 1	Single-precision floating-point type	Lower bits of the position stepsize of jogging
Remote control input parameter 2		Higher bits of the position stepsize of jogging
Remote control input parameter 3	Word (unsigned)	-
...	...	...
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
...	...	...
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	0x0001: The position stepsize of jogging entered is out of range [0.01, 10].

Parameter	Data Type	Value
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

Read the orientation stepsize of jogging

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0604
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
...	...	...
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Single-precision floating-point type	Lower bits of the orientation stepsize of jogging
Remote control return parameter 2		Higher bits of the orientation stepsize of jogging
...	...	...
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001: Failed to read the orientation stepsize of jogging.

Parameter	Data Type	Value
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

Set the orientation stepsize of jogging

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0605
Remote control input parameter 1	Single-precision floating-point type	Lower bits of the orientation stepsize of jogging
Remote control input parameter 2		Higher bits of the orientation stepsize of jogging
Remote control input parameter 3	Word (unsigned)	-
...	...	...
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
...	...	...
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.

Parameter	Data Type	Value
Remote control execution failure error code	Word (unsigned)	0x0001: The orientation stepsize of jogging entered is out of range [0.01, 10].
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

Read the motion mode

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0606
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
...	...	...
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	• 0: Continuous motion • 1: Jog (G1) • 2: Jog (G2) • 3: Jog (G3) • 4: Jog (Custom)
...	...	...
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	-
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

Set the motion mode

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0607
Remote control input parameter 1	Word (unsigned)	• 0: Continuous motion • 1: Jog (G1) • 2: Jog (G2) • 3: Jog (G3) • 4: Jog (Custom)
...	...	...
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
...	...	...
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.

Parameter	Data Type	Value
Remote control execution failure error code	Word (unsigned)	• 0x0001: The input parameter is out of range. • 0x0002: This parameter cannot be set in auto mode or in running state.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

8.2.8 External Axis-Related Commands

Read the activated unit for teaching motion

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0701
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
...	...	...
Remote control input parameter 60	-	-

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	Index of the active mechanical unit: Corresponds to the display on the controller's axis control panel, for example, 0 indicates Robot.
Remote control return parameter 2	Word (unsigned)	-
...	...	...

Address	Data Type	Content
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001: Failed to read the teaching mode.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

Set the activated unit for teaching motion

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0702
Remote control input parameter 1	Word (unsigned)	Index of the active mechanical unit: Corresponds to the display on the controller's axis control panel, for example, 0 indicates Robot.
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
...	...	...
Remote control input parameter 60	-	-

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-

Address	Data Type	Content
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	• 0x0001: Mechanical unit does not exist. • 0x0002: Currently in Auto mode.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Read the coordination switch for teaching motion

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0703
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	Status of coordination switch for teaching motion: • 0: OFF • 1: ON
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

Set the coordination switch for teaching motion

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0704
Remote control input parameter 1	Word (unsigned)	Coordination switch for teaching motion: • 0: Disable • 1: Enable
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	• 0x0001: Input parameter out of range (0 or 1). • 0x0002: Coordination setting failure (condition is not met, or the robot is in motion or in auto mode)
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

8.2.9 Interference Zone-Related Commands

Get the interference zone parameters based on the index

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	0x0810
Input parameter 1	Word (unsigned)	Interference zone index

Return value, when execution is successful:

Parameter	Data Type		Value
Current remote control state	Word (unsigned)		0x0002: Normal
Output parameter 1	Word (unsigned)		Interference zone index
Output parameter 2	Low bit	Double word (signed)	Input signal
Output parameter 3	High bit		

Parameter	Data Type		Value	
Output parameter 4	Low bit	Double word (signed)	Output signal	
Output parameter 5	High bit			
Output parameter 6	Word (unsigned)		Inside and outside • 0: Inside • 1: Outside	
Output parameter 7	Word (unsigned)		Alarm status • 0: No alarm • 1: Alarm	
Output parameter 8	Low bit	Single-precision floating-point	Safety distance	
Output parameter 9	High bit			
Output parameter 10	Word (unsigned)		Current workobject number	
Output parameter 11	Word (unsigned)		Set the mode	
			0: Diagonal point	1: Datum point + side length
Output parameter 12	Low bit	Single-precision floating-point	Diagonal point 1_X	Datum point X
Output parameter 13	High bit			
Output parameter 14	Low bit	Single-precision floating-point	Diagonal point 1_Y	Datum point Y
Output parameter 15	High bit			
Output parameter 16	Low bit	Single-precision floating-point	Diagonal point 1_Z	Datum point Z
Output parameter 17	High bit			
Output parameter 18	Low bit	Single-precision floating-point	Diagonal point 2_X	Offset dx
Output parameter 19	High bit			
Output parameter 20	Low bit	Single-precision floating-point	Diagonal point 2_Y	Offset dy
Output parameter 21	High bit			
Output parameter 22	Low bit	Single-precision floating-point	Diagonal point 2_Z	offset dz
Output parameter 23	High bit			
…	…		…	…

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: Abnormal
Failure error code	Word (unsigned)	1: Parameter acquisition error

Set the interference zone parameters based on the index

Parameter	Data Type		Value	
Remote control command	Word (unsigned)		0x0811	
Input parameter 1	Word (unsigned)		Interference zone index	
Input parameter 2	Low bit	Double word (signed)	Input signal	
Input parameter 3	High bit			
Input parameter 4	Low bit	Double word (signed)	Output signal	
Input parameter 5	High bit			
Input parameter 6	Word (unsigned)		Inside and outside • 0: Inside • 1: Outside	
Input parameter 7	Word (unsigned)		Alarm status • 0: No alarm • 1: Alarm	
Input parameter 8	Low bit	Single-precision floating-point	Safety distance	
Input parameter 9	High bit			
Input parameter 10	Word (unsigned)		Current workobject number	
Input parameter 11	Word (unsigned)		Set the mode	
			0: Diagonal point	1: Datum point + side length
Input parameter 12	Low bit	Single-precision floating-point	Diagonal point 1_X	Datum point X
Input parameter 13	High bit			

Parameter	Data Type		Value	
Input parameter 14	Low bit	Single-precision floating-point	Diagonal point 1_Y	Datum point Y
Input parameter 15	High bit			
Input parameter 16	Low bit	Single-precision floating-point	Diagonal point 1_Z	Datum point Z
Input parameter 17	High bit			
Input parameter 18	Low bit	Single-precision floating-point	Diagonal point 2_X	Offset dx
Input parameter 19	High bit			
Input parameter 20	Low bit	Single-precision floating-point	Diagonal point 2_Y	Offset dy
Input parameter 21	High bit			
Input parameter 22	Low bit	Single-precision floating-point	Diagonal point 2_Z	offset dz
Input parameter 23	High bit			
…	…		…	…

When execution is successful:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0002: Normal

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: Abnormal • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Failure error code	Word (unsigned)	Non-zero: Parameter setting abnormal: • 1: Index out of range • 2: Parameter input abnormal & not in manual mode • 3: Parameter setting abnormal • 4: Parameter saving error • 5: Parameter saving error

Get the interference zone status

Input value:

Parameter	Data Type	Value
Remote control command	Word (unsigned)	0x0812

Output value When execution is successful:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0002: Normal
Output parameter 1	Word (unsigned)	Interference zone 0: State 0/1
Output parameter 2	Word (unsigned)	Interference zone 1: State 0/1
Output parameter 3	Word (unsigned)	Interference zone 2: State 0/1
Output parameter 4	Word (unsigned)	Interference zone 3: State 0/1
Output parameter 5	Word (unsigned)	Interference zone 4: State 0/1
Output parameter 6	Word (unsigned)	Interference zone 5: State 0/1
Output parameter 7	Word (unsigned)	Interference zone 6: State 0/1
Output parameter 8	Word (unsigned)	Interference zone 7: State 0/1
Output parameter 9	Word (unsigned)	Interference zone 8: State 0/1
Output parameter 10	Word (unsigned)	Interference zone 9: State 0/1
Output parameter 11	Word (unsigned)	Interference zone 10: State 0/1
Output parameter 12	Word (unsigned)	Interference zone 11: State 0/1
Output parameter 13	Word (unsigned)	Interference zone 12: State 0/1
Output parameter 14	Word (unsigned)	Interference zone 13: State 0/1
Output parameter 15	Word (unsigned)	Interference zone 14: State 0/1
Output parameter 16	Word (unsigned)	Interference zone 15: State 0/1

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: Abnormal
Failure error code	Word (unsigned)	1: Parameter acquisition error

Set the interference zone state based on the index

Input value:

Parameter	Data Type	Value
Remote control command	Word (unsigned)	0x0813
Input parameter 1	Word (unsigned)	Interference zone index
Input parameter 2	Word (unsigned)	Interference zone status

Output value When execution is successful:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0002: Normal

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: Abnormal • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Failure error code	Word (unsigned)	Non-zero: Parameter setting abnormal

Get the monitoring object parameters based on the index

Input value:

Parameter	Data Type	Value
Remote control command	Word (unsigned)	0x0814
Input parameter 1	Word (unsigned)	Monitoring object index

Output value When execution is successful:

Parameter	Type	Value	
Current remote control state	Word (unsigned)	0x0002: Normal	
Output parameter 1	Word (unsigned)	Monitoring object index	
Output parameter 2	Word (unsigned)	Monitoring object type	
		0: TCP	1: Multi-TCP

Parameter	Type	Value	
Output parameter 3	Word (unsigned)	NULL	MTCP_Tool 1 activation status
Output parameter 4	Word (unsigned)	NULL	MTCP_Tool 2 activation status
Output parameter 5	Word (unsigned)	NULL	MTCP_Tool 3 activation status
Output parameter 6	Word (unsigned)	NULL	MTCP_Tool 4 activation status
Output parameter 7	Word (unsigned)	NULL	MTCP_Tool number 1
Output parameter 8	Word (unsigned)	NULL	MTCP_Tool number 2
Output parameter 9	Word (unsigned)	NULL	MTCP_Tool number 3
Output parameter 10	Word (unsigned)	NULL	MTCP_Tool number 4
…	…	…	…

2-Sphere:

Parameter	Type		Value
Current remote control state	Word (unsigned)		0x0002: Normal
Output parameter 1	Word (unsigned)		Monitoring object index
Output parameter 2	Word (unsigned)		Monitoring object type
			2: Sphere
Output parameter 3	Low bit	Single-precision floating-point	Sphere_Z
Output parameter 4	High bit		
Output parameter 5	Low bit	Single-precision floating-point	Sphere_R
Output parameter 6	High bit		
…	…		…

Cuboid bounding box

Parameter	Type	Value
Current remote control state	Word (unsigned)	0x0002: Normal

Parameter	Type		Value		
Output parameter 1	Word (unsigned)		Monitoring object index		
Output parameter 2	Word (unsigned)		Monitoring object type		
			3: Cuboid bounding box		
Output parameter 3	Word (unsigned)		Cuboid bounding box_setting mode		
			0: Diagonal point	1: Datum point + side length	2: Get point + height
Output parameter 4	Low bit	Single-precision floating-point	Cuboid bounding box_diagonal point 1X	Datum point X	Point 1_X
Output parameter 5	High bit				
Output parameter 6	Low bit	Single-precision floating-point	Cuboid bounding box_diagonal point 1Y	Datum point Y	Point 1_Y
Output parameter 7	High bit				
Output parameter 8	Low bit	Single-precision floating-point	Cuboid bounding box_diagonal point 1Z	Datum point Z	Point 1_Z
Output parameter 9	High bit				
Output parameter 10	Low bit	Single-precision floating-point	Cuboid bounding box_diagonal point 2X	Offset dx	Point 2_X
Output parameter 11	High bit				
Output parameter 12	Low bit	Single-precision floating-point	Cuboid bounding box_diagonal point 2Y	Offset dy	Point 2_Y
Output parameter 13	High bit				
Output parameter 14	Low bit	Single-precision floating-point	Cuboid bounding box_diagonal point 2Z	offset dz	Point 2_Z
Output parameter 15	High bit				
Output parameter 16	Low bit	Single-precision floating-point	NULL	NULL	Point 3_X
Output parameter 17	High bit				
Output parameter 18	Low bit	Single-precision floating-point	NULL	NULL	Point 3_Y
Output parameter 19	High bit				
Output parameter 20	Low bit	Single-precision floating-point	NULL	NULL	Point 3_Z
Output parameter 21	High bit				
Output parameter 22	Low bit	Single-precision floating-point	NULL	NULL	Point 4_X
Output parameter 23	High bit				

Parameter	Type		Value		
Output parameter 24	Low bit	Single-precision floating-point	NULL	NULL	Point 4_Y
Output parameter 25	High bit				
Output parameter 26	Low bit	Single-precision floating-point	NULL	NULL	Point 4_Z
Output parameter 27	High bit				
Output parameter 28	Low bit	Single-precision floating-point	NULL	NULL	Height H
Output parameter 29	High bit				

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word	0x0003: Abnormal
Failure error code	Word (unsigned)	1: Parameter setting abnormal

Set the monitoring object parameters based on the index

0-TCP and 1- MTCP:

Parameter	Type	Value	
Remote control command	Word (unsigned)	0x0815	
Input parameter 1		Monitoring object index	
Input parameter 2	Word (unsigned)	Monitoring object type	
		0: TCP	1: Multi-TCP
Input parameter 3	Word (unsigned)	NULL	MTCP_Tool 1 activation status
Input parameter 4	Word (unsigned)	NULL	MTCP_Tool 2 activation status
Input parameter 5	Word (unsigned)	NULL	MTCP_Tool 3 activation status
Input parameter 6	Word (unsigned)	NULL	MTCP_Tool 4 activation status
Input parameter 7	Word (unsigned)	NULL	MTCP_Tool number 1
Input parameter 8	Word (unsigned)	NULL	MTCP_Tool number 2
Input parameter 9	Word (unsigned)	NULL	MTCP_Tool number 3

Parameter	Type	Value	
Input parameter 10	Word (unsigned)	NULL	MTCP_Tool number 4
…	…	…	…

2-Sphere:

Parameter	Type		Value
Remote control command	Word (unsigned)		0x0815
Input parameter 1	Word (unsigned)		Monitoring object index
Input parameter 2	Word (unsigned)		Monitoring object type
			2: Sphere
Input parameter 3	Low bit	Single-precision floating-point	Sphere_Z
Input parameter 4	High bit		
Input parameter 5	Low bit	Single-precision floating-point	Sphere_R
Input parameter 6	High bit		
…	…		…

3-Cuboid bounding box:

Parameter	Type		Value		
Remote control command	Word (unsigned)		0x0815		
Output parameter 1	Word (unsigned)		Monitoring object index		
Output parameter 2	Word (unsigned)		Monitoring object type		
			3: Cuboid bounding box		
Output parameter 3	Word (unsigned)		Cuboid bounding box_setting mode		
			0: Diagonal point	1: Datum point + side length	2: Get point + height
Output parameter 4	Low bit	Single-precision floating-point	Cuboid bounding box_diagonal point 1X	Datum point X	Point 1_X
Output parameter 5	High bit				

Parameter	Type		Value		
Output parameter 6	Low bit	Single-precision floating-point	Cuboid bounding box_diagonal point 1Y	Datum point Y	Point 1_Y
Output parameter 7	High bit				
Output parameter 8	Low bit	Single-precision floating-point	Cuboid bounding box_diagonal point 1Z	Datum point Z	Point 1_Z
Output parameter 9	High bit				
Output parameter 10	Low bit	Single-precision floating-point	Cuboid bounding box_diagonal point 2X	Offset dx	Point 2_X
Output parameter 11	High bit				
Output parameter 12	Low bit	Single-precision floating-point	Cuboid bounding box_diagonal point 2Y	Offset dy	Point 2_Y
Output parameter 13	High bit				
Output parameter 14	Low bit	Single-precision floating-point	Cuboid bounding box_diagonal point 2Z	offset dz	Point 2_Z
Output parameter 15	High bit				
Output parameter 16	Low bit	Single-precision floating-point	NULL	NULL	Point 3_X
Output parameter 17	High bit				
Output parameter 18	Low bit	Single-precision floating-point	NULL	NULL	Point 3_Y
Output parameter 19	High bit				
Output parameter 20	Low bit	Single-precision floating-point	NULL	NULL	Point 3_Z
Output parameter 21	High bit				
Output parameter 22	Low bit	Single-precision floating-point	NULL	NULL	Point 4_X
Output parameter 23	High bit				

Parameter	Type		Value		
Output parameter 24	Low bit	Single-precision floating-point	NULL	NULL	Point 4_Y
Output parameter 25	High bit				
Output parameter 26	Low bit	Single-precision floating-point	NULL	NULL	Point 4_Z
Output parameter 27	High bit				
Output parameter 28	Low bit	Single-precision floating-point	NULL	NULL	Height H
Output parameter 29	High bit				

When execution is successful:

Parameter	Data Type	Value
Current remote control state	Word	0x0002: Normal

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word	• 0x0003: Abnormal • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Failure error code	Word (unsigned)	Non-zero: Parameter setting abnormal: • 1: Index out of range • 2: Parameter input abnormal & not in manual mode • 3: Parameter setting abnormal • 4: Parameter saving error • 5: Parameter saving error

Get the monitoring object status

Input value:

Parameter	Data Type	Value
Remote control command	Word	0x0816

Output Value, when execution is successful:

Parameter	Data Type	Value
Current remote control state	Word	0x0002: Normal
Output parameter 1	Word (unsigned)	Index of the active monitoring object

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word	0x0003: Abnormal
Failure error code	Word (unsigned)	1: Parameter acquisition error

Set the interference zone state based on the index

Input value:

Parameter	Data Type	Value
Remote control command	Word	0x0817
Input parameter 1	Word (unsigned)	Monitoring object index

Output value When execution is successful:

Parameter	Data Type	Value
Current remote control state	Word	0x0002: Normal

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word	0x0003: Abnormal
Failure error code	Word (unsigned)	1: Parameter acquisition error

8.2.10 Average Load Rate and Current Monitoring

Read the average load rate

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0750
Remote control input parameter 1	Word (unsigned)	-

Parameter	Data Type	Content
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Single-precision floating-point	Lower bits of the average load rate of J1
Remote control return parameter 2	Single-precision floating-point	Higher bits of the average load rate of J1
Remote control return parameter 3	Single-precision floating-point	Lower bits of the average load rate of J2
Remote control return parameter 4	Single-precision floating-point	Higher bits of the average load rate of J2
Remote control return parameter 5	Single-precision floating-point	Lower bits of the average load rate of J3
Remote control return parameter 6	Single-precision floating-point	Higher bits of the average load rate of J3
Remote control return parameter 7	Single-precision floating-point	Lower bits of the average load rate of J4
Remote control return parameter 8	Single-precision floating-point	Higher bits of the average load rate of J4
Remote control return parameter 9	Single-precision floating-point	Lower bits of the average load rate of J5
Remote control return parameter 10	Single-precision floating-point	Higher bits of the average load rate of J5
Remote control return parameter 11	Single-precision floating-point	Lower bits of the average load rate of J6
Remote control return parameter 12	Single-precision floating-point	Higher bits of the average load rate of J6

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001: Average load rate limit parameter error.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

Read the current

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0751
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
...	...	...
Remote control input parameter 60	-	-

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Single-precision floating-point	Lower bits of the current of J1
Remote control return parameter 2	Single-precision floating-point	Higher bits of the current of J1
Remote control return parameter 3	Single-precision floating-point	Lower bits of the current of J2
Remote control return parameter 4	Single-precision floating-point	Higher bits of the current of J2

Address	Data Type	Content
Remote control return parameter 5	Single-precision floating-point	Lower bits of the current of J3
Remote control return parameter 6	Single-precision floating-point	Higher bits of the current of J3
Remote control return parameter 7	Single-precision floating-point	Lower bits of the current of J4
Remote control return parameter 8	Single-precision floating-point	Higher bits of the current of J4
Remote control return parameter 9	Single-precision floating-point	Lower bits of the current of J5
Remote control return parameter 10	Single-precision floating-point	Higher bits of the current of J5
Remote control return parameter 11	Single-precision floating-point	Lower bits of the current of J6
Remote control return parameter 12	Single-precision floating-point	Higher bits of the current of J6

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001: Current limit parameter error.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

8.2.11 Multitasking-Related Commands

Multi-task status acquisition

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0800
Remote control input parameter 1	Word (unsigned)	Enter task ID: Range 0 to 15
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	Return status • 0: Stop • 1: Start • 10: Completed • 100: Not activated
Remote control return parameter 1	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001: Instruction ID is out of range and execution fails.
Reserved	Word (unsigned)	-
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

8.2.12 Tracking Process-Related Commands

Read the height of the workobject for the tracking process

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0801
Remote control input parameter 1	Word (unsigned)	Conveyor number
Remote control input parameter 2	Word (unsigned)	Workobject number
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	Conveyor number
Remote control return parameter 2	Word (unsigned)	Workobject number
Remote control return parameter 3	Single-precision floating-point	Lower bits of workobject height value
…	Single-precision floating-point	Higher bits of workobject height value
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 1: Input out of range • 2: Execution failed
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Set the height of the workobject for the tracking process

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0802
Remote control input parameter 1	Word (unsigned)	Conveyor number
Remote control input parameter 2	Word (unsigned)	Workobject number
Remote control input parameter 3	Single-precision floating-point	Lower bits of workobject height value
Remote control input parameter 4	Single-precision floating-point	Higher bits of workobject height value
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	• 1: Input out of range • 2: Execution failed

Parameter	Data Type	Value
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

Read the upper and lower boundaries for the tracking process

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0803
Remote control input parameter 1	Word (unsigned)	Conveyor number
...	...	...
Remote control input parameter 60	-	-

Return value (Regular boundaries), when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	Conveyor number
Remote control return parameter 2	Word (unsigned)	Boundary type, 0: Regular boundaries
Remote control return parameter 3	Single-precision floating-point	Lower bits of upper workspace boundary

Return value (Inclined boundaries), when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	Conveyor number
Remote control return parameter 2	Word (unsigned)	Boundary type, 1: Inclined boundaries
...	Single-precision floating-point	Lower bits of X coordinate of the upper workspace boundary P1

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 1: Input out of range • 2: Execution failed
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
...	...	...
Reserved	Word (unsigned)	-

Set the upper and lower boundaries for the tracking process

Input value (Regular boundaries)

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0804
Remote control input parameter 1	Word (unsigned)	Conveyor number
Remote control input parameter 2	Word (unsigned)	Boundary type, 0: Regular boundaries
Remote control input parameter 3	Single-precision floating-point	Lower bits of upper workspace boundary
Remote control input parameter 4	Single-precision floating-point	Lower bits of lower workspace boundary
Remote control input parameter 5	Single-precision floating-point	Lower bits of lower pickup boundary
Remote control input parameter 6	Single-precision floating-point	Lower bits of stop distance
Remote control input parameter 60	-	Null

Input value (Inclined boundaries)

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0804
Remote control input parameter 1	Word (unsigned)	Conveyor number
Remote control input parameter 2	Word (unsigned)	Boundary type, 1: Inclined boundaries

Parameter	Data Type	Content
Remote control input parameter 3	Single-precision floating-point type	Lower bits of X coordinate of the upper workspace boundary P1
Remote control input parameter 4	Single-precision floating-point type	Higher bits of X coordinate of the upper workspace boundary P1
Remote control input parameter 5	Single-precision floating-point type	Lower bits of Y coordinate of the upper workspace boundary P1
Remote control input parameter 6	Single-precision floating-point type	Higher bits of Y coordinate of the upper workspace boundary P1
Remote control input parameter 7	-	Lower bits of X coordinate of the upper workspace boundary P2
Remote control input parameter 8	-	Higher bits of X coordinate of the upper workspace boundary P2
Remote control input parameter 9	-	Lower bits of Y coordinate of the upper workspace boundary P2
Remote control input parameter 10	-	Higher bits of Y coordinate of the upper workspace boundary P2
Remote control input parameter 11	-	Lower bits of X coordinate of the upper workspace boundary P3
Remote control input parameter 12	-	Higher bits of X coordinate of the upper workspace boundary P3
Remote control input parameter 13	-	Lower bits of Y coordinate of the upper workspace boundary P3
Remote control input parameter 14	-	Higher bits of Y coordinate of the upper workspace boundary P3
Remote control input parameter 15	-	Lower bits of X coordinate of the upper workspace boundary P4
Remote control input parameter 16	-	Higher bits of X coordinate of the upper workspace boundary P4
Remote control input parameter 17	-	Lower bits of Y coordinate of the upper workspace boundary P4
Remote control input parameter 18	-	Higher bits of Y coordinate of the upper workspace boundary P4
Remote control input parameter 19	-	Lower bits of lower pickup boundary

Parameter	Data Type	Content
Remote control input parameter 20	-	Higher bits of lower pickup boundary
Remote control input parameter 21	-	Lower bits of stop distance
Remote control input parameter 22	-	Higher bits of stop distance
…	…	…
Remote control input parameter 60	-	Null

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	• 1: Input out of range • 2: Execution failed • 3: Inappropriate parameter combination (e.g. upper workspace boundary is larger than lower workspace boundary) • 4: Setting is not allowed when in auto mode or when the robot is running.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Read the detection mode for the tracking process

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0805
Remote control input parameter 1	Word (unsigned)	Conveyor number
...	...	...
Remote control input parameter 60	-	-

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	Conveyor number
Remote control return parameter 2	Word (unsigned)	Detection mode for the tracking process
…	...	...

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 1: Input out of range • 2: Execution failed
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
...	…	...
Reserved	Word (unsigned)	-

Read the detection parameters for the tracking process

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0806
Remote control input parameter 1	Word (unsigned)	Conveyor number
Remote control input parameter 2	Word (unsigned)	Detection method: • 0: Vision • 1: Sensor • 2: Vision + Sensor • 3: Vision + Instruction
Remote control input parameter 3	Word (unsigned)	Parameter No.: The parameter number set in each detection mode (This number determines the function of parameter 4.) In the Vision mode: • Parameter No. 0: Shooting spacing • Parameter No. 1: Duplicate detection distance In the Sensor mode: • Parameter No. 0: Invalid DI distance • Parameter No. 1: Workobject type No. In the Vision + Sensor mode: • Parameter No. 0: DO level hold time • Parameter No. 1: Duplicate detection distance • Parameter No. 2: Invalid DI distance • Parameter No. 3: Delay distance In the Vision + Instruction mode: • Parameter No. 0: DO level hold time • Parameter No. 1: Duplicate detection distance
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	Conveyor number
Remote control return parameter 2	Word (unsigned)	Detection method: • 0: Vision • 1: Sensor • 2: Vision + Sensor • 3: Vision + Instruction
Remote control return parameter 3	-	Parameter No.: The parameter number set in each detection mode (This number determines the function of parameter 4.) In the Vision mode: • Parameter No. 0: Shooting spacing • Parameter No. 1: Duplicate detection distance In the Sensor mode: • Parameter No. 0: Invalid DI distance • Parameter No. 1: Workobject type No. In the Vision + Sensor mode: • Parameter No. 0: DO level hold time • Parameter No. 1: Duplicate detection distance • Parameter No. 2: Invalid DI distance • Parameter No. 3: Delay distance In the Vision + Instruction mode: • Parameter No. 0: DO level hold time • Parameter No. 1: Duplicate detection distance
Remote control return parameter 4	• Word (unsigned) for workobject type number • Single-precision floating-point in other cases	Except for the case of workobject type, in other cases it is the low bit of the data.

Address	Data Type	Content
Remote control return parameter 5	In other cases, it is: Single-precision floating-point	Except for the case of workobject type, in other cases it is the high bit of the data.
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 1: Input out of range • 2: Failed to get the detection type. • 3: Failed to get the detection parameters.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

Set the detection parameters for the tracking process

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0807
Remote control input parameter 1	Word (unsigned)	Conveyor number
Remote control input parameter 2	Word (unsigned)	Detection method: • 0: Vision • 1: Sensor • 2: Vision + Sensor • 3: Vision + Instruction

Parameter	Data Type	Content
Remote control input parameter 3	Word (unsigned)	Parameter No.: The parameter number set in each detection mode (This number determines the function of parameter 4.) In the Vision mode: • Parameter No. 0: Shooting spacing • Parameter No. 1: Duplicate detection distance In the Sensor mode: • Parameter No. 0: Invalid DI distance • Parameter No. 1: Workobject type No. In the Vision + Sensor mode: • Parameter No. 0: DO level hold time • Parameter No. 1: Duplicate detection distance • Parameter No. 2: Invalid DI distance • Parameter No. 3: Delay distance In the Vision + Instruction mode: • Parameter No. 0: DO level hold time • Parameter No. 1: Duplicate detection distance
Remote control input parameter 4	• Word (unsigned) for workobject type number • Single-precision floating-point in other cases	• For workobject type number, it is null. • In other cases, it is the low bit of data.
Remote control input parameter 5	Single-precision floating-point in other cases	• The workobject type number is empty • In other cases, it is the high bit of data.
Remote control input parameter 60	-	-

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-

Address	Data Type	Content
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	• 0x0003: The command execution is abnormal. • 0x0005: The control permission is granted to the remote I/O unit (only effective in auto mode), the controller is in the manual mode and the remote command does not take effect.
Remote control execution failure error code	Word (unsigned)	• 1: Input out of range • 2: Failed to get the detection type. • 3: Failed to get the detection parameters. • 4: Operation is not allowed when in auto mode or when the robot is running. 5: The set detection type is not active.
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

8.2.13 Analog Read/Write-Related Commands

Read the AD analog input

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0610
Remote control input parameter 1	Word (unsigned)	AD analog number
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-

Parameter	Data Type	Content
…	…	…
Remote control input parameter 23	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	Lower bits of analog value
Remote control return parameter 2	Word (unsigned)	Higher bits of analog value
…	…	…
Remote control return parameter 23	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 0x0001: Input AD number is out of range (0-15, 64-79) • 0x0002: Internal error
Controller system error code	Word (unsigned)	Refer to system fault codes

Read the DA analog output

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0611
Remote control input parameter 1	Word (unsigned)	DA analog number
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 23	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	Lower bits of analog value
Remote control return parameter 2	Word (unsigned)	Higher bits of analog value
…	…	…
Remote control return parameter 23	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 0x0001: Input AD number is out of range (0-15, 64-79) • 0x0002: Internal error
Controller system error code	Word (unsigned)	Refer to system fault codes

Set the DA analog output

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0612
Remote control input parameter 1	Word (unsigned)	DA analog number
Remote control input parameter 2	Single-precision floating-point type	Lower bits of analog value
Remote control input parameter 3		Higher bits of analog value
…	…	…
Remote control input parameter 23	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-

Parameter	Data Type	Content
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 23	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 0x0001: Input analog value is out of range • 0x0002: Input DA value is out of range • 0x0003: System internal error
Controller system error code	Word (unsigned)	Refer to system fault codes

8.2.14 System Diagnosis-Related Commands

Set the save parameters for system diagnosis

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	0x0824
Remote control input parameter 1	Word (unsigned)	Startup parameter type: • 0: All • 1: System • 2: Logic • 3: Trajectory
Remote control input parameter 2	Word (unsigned)	Whether checked: • 0: Not checked • 1: Checked
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 1	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	1: parameter incorrect

Get the save parameters for system diagnosis

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	0x0825
Remote control input parameter 1	Word (unsigned)	Startup parameter type: • 0: All • 1: System • 2: Logic • 3: Trajectory
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.

Parameter	Data Type	Content
Remote control return parameter 1	Word (unsigned)	• 0: Not checked • 1: Checked • 2: Not all checked (ALL)
Remote control return parameter 1	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	1: parameter incorrect

Trigger the system diagnostics

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	0x0826
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 1	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	1: Repeat trigger
...	...	...
Reserved	Word (unsigned)	-

Read the save progress value for system diagnosis

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	0x0827
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
...	...	...
Remote control input parameter 60	-	-

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	0-100: Return value
Remote control return parameter 1	Word (unsigned)	-
...	...	...
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.

Parameter	Data Type	Value
Remote control execution failure error code	Word (unsigned)	1: Internal error
...	...	...
Reserved	Word (unsigned)	-

8.2.15 Data Stream-Related Commands

8.2.15.1 Getting the Bus Data Stream Status

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0917
Remote control input parameter 1	Word (unsigned)	-

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	• 0: Disable • 1: Enable/Resume • 2: Pause

8.2.15.2 Setting the Bus Data Stream Status

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0918
Remote control output parameter 1	Data stream command	• 0: Disable • 1: Enable • 2: Pause • 3: Resume

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.

Address	Data Type	Content
Remote control return parameter 1	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 0x0001: Robot is not in a stopped state when data stream is enabled. • 0x0002: Robot is still in motion when data stream is enabled, trajectory clearance failed. • 0x0003: External axis reset failed when data stream is enabled • 0x0004: When data stream is paused or resumed, robot sub-mode is not in data stream mode. • 0x0011: The input data stream mode type is out of range.
Controller system error code	Word (unsigned)	Refer to system fault codes

8.2.15.3 Data Stream Motion MovAbsJ

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0910
Remote control input parameter 1	Single-precision floating-point	Lower bits of J1 coordinate read from the JP variable
Remote control input parameter 2		Higher bits of J1 coordinate read from the JP variable
Remote control input parameter 3	Single-precision floating-point	Lower bits of J2 coordinate read from the JP variable
Remote control input parameter 4		Higher bits of J2 coordinate read from the JP variable
Remote control input parameter 5	Single-precision floating-point	Lower bits of J3 coordinate read from the JP variable
Remote control input parameter 6		Higher bits of J3 coordinate read from the JP variable
Remote control input parameter 7	Single-precision floating-point	Lower bits of J4 coordinate read from the JP variable
Remote control input parameter 8		Higher bits of J4 coordinate read from the JP variable
Remote control input parameter 9	Single-precision floating-point	Lower bits of J5 coordinate read from the JP variable
Remote control input parameter 10		Higher bits of J5 coordinate read from the JP variable

Parameter	Data Type	Content
Remote control input parameter 11	Single-precision floating-point	Lower bits of J6 coordinate read from the JP variable
Remote control input parameter 12		Higher bits of J6 coordinate read from the JP variable
Remote control input parameter 13	Single-precision floating-point	Lower bits of E1 joint value read from the JP variable
Remote control input parameter 14		Higher bits of E1 joint value read from the JP variable
Remote control input parameter 15	Single-precision floating-point	Lower bits of E2 joint value read from the JP variable
Remote control input parameter 16		Higher bits of E2 joint value read from the JP variable
Remote control input parameter 17	Single-precision floating-point	Lower bits of E3 joint value read from the JP variable
Remote control input parameter 18		Higher bits of E3 joint value read from the JP variable
Remote control input parameter 19	Single-precision floating-point	Lower bits of E4 joint value read from the JP variable
Remote control input parameter 20		Higher bits of E4 joint value read from the JP variable
Remote control input parameter 21	Single-precision floating-point	Lower bits of E5 joint value read from the JP variable
Remote control input parameter 22		Higher bits of E5 joint value read from the JP variable
Remote control input parameter 23	Single-precision floating-point	Lower bits of E6 joint value read from the JP variable
Remote control input parameter 24		Higher bits of E6 joint value read from the JP variable
Remote control input parameter 25	Word (unsigned)	Speed type
Remote control input parameter 26	Word (unsigned)	Speed percentage
Remote control input parameter 27	Single-precision floating-point	Lower bits of TCP speed
Remote control input parameter 28		Higher bits of TCP speed
Remote control input parameter 29	Single-precision floating-point	Lower bits of TCP orientation speed
Remote control input parameter 30		Higher bits of TCP orientation speed
Remote control input parameter 31	Single-precision floating-point	Lower bits of external axis linear speed
Remote control input parameter 32		Higher bits of external axis linear speed
Remote control input parameter 33	Single-precision floating-point	Lower bits of external axis rotation speed
Remote control input parameter 34		Higher bits of external axis rotation speed
Remote control input parameter 35	Word (unsigned)	Whether the speed is affected by the global percentage
Remote control input parameter 36	Word (signed)	Interpolation accuracy

Parameter	Data Type	Content
Remote control input parameter 37	Word (unsigned)	Number of I/O control structure groups
Remote control input parameter 38	Word (unsigned)	Motion I/O number
Remote control input parameter 39	Word (unsigned)	Output I/O value
Remote control input parameter 40	Word (unsigned)	Set condition type
Remote control input parameter 41	Single-precision floating-point	Lower bits of set condition data
Remote control input parameter 42		Higher bits of set condition data
Remote control input parameter 43	Word (unsigned)	Motion I/O number
Remote control input parameter 44	Word (unsigned)	Output I/O value
Remote control input parameter 45	Word (unsigned)	Set condition type
Remote control input parameter 46	Single-precision floating-point	Lower bits of set condition data
Remote control input parameter 47		Higher bits of set condition data
Remote control input parameter 48	Word (unsigned)	Motion I/O number
Remote control input parameter 49	Word (unsigned)	Output I/O value
Remote control input parameter 60	Word (unsigned)	Set condition type
Remote control input parameter 51	Single-precision floating-point	Lower bits of set condition data
Remote control input parameter 52		Higher bits of set condition data

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.

Parameter	Data Type	Value
Remote control execution failure error code	Word (unsigned)	• 0x0001: Cannot start data stream motion when robot is not in stopped state • 0x0004: Cannot start motion when robot is not in data stream mode • 0x0006: Motion speed type parameter out of range • 0x0007: Motion speed value parameter out of range • 0x0008: Motion interpolation accuracy parameter out of range • 0x0009: Cannot move when robot is in emergency stop state • 0x000A: Cannot move when robot has error alarm information • 0x000B: Cannot move when robot is not enabled • 0x000C: Maximum number of stored motion instruction parameters reached, system cannot accept new motion instructions • 0x000D: Robot motion instruction I/O condition setting error • 0x000E: Independent axis switching not completed, cannot start motion • 0x0012: Cannot perform data stream motion when data stream mode is not enabled.
Controller system error code	Word (unsigned)	Refer to system fault codes

8.2.15.4 Data Stream Motion MovJ

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0911
Remote control input parameter 1	Single-precision floating-point	Lower bits of X coordinate read from the P variable
Remote control input parameter 2		Higher bits of X coordinate read from the P variable
Remote control input parameter 3	Single-precision floating-point	Lower bits of Y coordinate read from the P variable
Remote control input parameter 4		Higher bits of Y coordinate read from the P variable

Parameter	Data Type	Content
Remote control input parameter 5	Single-precision floating-point	Lower bits of Z coordinate read from the P variable
Remote control input parameter 6		Higher bits of Z coordinate read from the P variable
Remote control input parameter 7	Single-precision floating-point	Lower bits of A coordinate read from the P variable
Remote control input parameter 8		Higher bits of A coordinate read from the P variable
Remote control input parameter 9	Single-precision floating-point	Lower bits of B coordinate read from the P variable
Remote control input parameter 10		Higher bits of B coordinate read from the P variable
Remote control input parameter 11	Single-precision floating-point	Lower bits of C coordinate read from the P variable
Remote control input parameter 12		Higher bits of C coordinate read from the P variable
Remote control input parameter 13	Word (signed)	Arm parameter 1 read from the P variable
Remote control input parameter 14	Word (signed)	Arm parameter 2 read from the P variable
Remote control input parameter 15	Word (signed)	Arm parameter 3 read from the P variable
Remote control input parameter 16	Word (signed)	Arm parameter 4 read from the P variable
Remote control input parameter 17	Single-precision floating-point	Lower bits of E1 joint value read from the P variable
Remote control input parameter 18		Higher bits of E1 joint value read from the P variable
Remote control input parameter 19	Single-precision floating-point	Lower bits of E2 joint value read from the P variable
Remote control input parameter 20		Higher bits of E2 joint value read from the P variable
Remote control input parameter 21	Single-precision floating-point	Lower bits of E3 joint value read from the P variable
Remote control input parameter 22		Higher bits of E3 joint value read from the P variable
Remote control input parameter 23	Single-precision floating-point	Lower bits of E4 joint value read from the P variable
Remote control input parameter 24		Higher bits of E4 joint value read from the P variable
Remote control input parameter 25	Single-precision floating-point	Lower bits of E5 joint value read from the P variable
Remote control input parameter 26		Higher bits of E5 joint value read from the P variable
Remote control input parameter 27	Single-precision floating-point	Lower bits of E6 joint value read from the P variable
Remote control input parameter 28		Higher bits of E6 joint value read from the P variable
Remote control input parameter 29	Word (unsigned)	Speed type
Remote control input parameter 30	Word (unsigned)	Speed percentage

Parameter	Data Type	Content
Remote control input parameter 31	Single-precision floating-point	Lower bits of TCP speed
Remote control input parameter 32		Higher bits of TCP speed
Remote control input parameter 33	Single-precision floating-point	Lower bits of TCP orientation speed
Remote control input parameter 34		Higher bits of TCP orientation speed
Remote control input parameter 35	Single-precision floating-point	Lower bits of external axis linear speed
Remote control input parameter 36		Higher bits of external axis linear speed
Remote control input parameter 37	Single-precision floating-point	Lower bits of external axis rotation speed
Remote control input parameter 38		Higher bits of external axis rotation speed
Remote control input parameter 39	Word (unsigned)	Whether the speed is affected by the global percentage
Remote control input parameter 40	Word (signed)	Interpolation accuracy
Remote control input parameter 41	Word (signed)	Number of I/O control structure groups
Remote control input parameter 42	Word (unsigned)	Motion I/O number
Remote control input parameter 43	Word (unsigned)	Output I/O value
Remote control input parameter 44	Word (unsigned)	Set condition type
Remote control input parameter 45	Single-precision floating-point	Lower bits of set condition data
Remote control input parameter 46		Higher bits of set condition data
Remote control input parameter 47	Word (unsigned)	Motion I/O number
Remote control input parameter 48	Word (unsigned)	Output I/O value
Remote control input parameter 49	Word (unsigned)	Set condition type
Remote control input parameter 60	Single-precision floating-point	Lower bits of set condition data
Remote control input parameter 51		Higher bits of set condition data
Remote control input parameter 52	Word (unsigned)	Motion I/O number
Remote control input parameter 53	Word (unsigned)	Output I/O value
Remote control input parameter 54	Word (unsigned)	Set condition type
Remote control input parameter 55	Single-precision floating-point	Lower bits of set condition data
Remote control input parameter 56		Higher bits of set condition data

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 0x0001: Cannot start data stream motion when robot is not in stopped state • 0x0004: Cannot start motion when robot is not in data stream mode • 0x0005: Cartesian position point information error • 0x0006: Motion speed type parameter out of range • 0x0007: Motion speed value parameter out of range • 0x0008: Motion interpolation accuracy parameter out of range • 0x0009: Cannot move when robot is in emergency stop state • 0x000A: Cannot move when robot has error alarm information • 0x000B: Cannot move when robot is not enabled • 0x000C: Maximum number of stored motion instruction parameters reached, system cannot accept new motion instructions • 0x000D: Robot motion instruction I/O condition setting error • 0x000E: Independent axis switching not completed, cannot start motion • 0x0012: Cannot perform data stream motion when data stream mode is not enabled.

Parameter	Data Type	Value
Controller system error code	Word (unsigned)	Refer to system fault codes

8.2.15.5 Data Stream Motion MovL

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0911
Remote control input parameter 1	Single-precision floating-point	Lower bits of X coordinate read from the P variable
Remote control input parameter 2		Higher bits of X coordinate read from the P variable
Remote control input parameter 3	Single-precision floating-point	Lower bits of Y coordinate read from the P variable
Remote control input parameter 4		Higher bits of Y coordinate read from the P variable
Remote control input parameter 5	Single-precision floating-point	Lower bits of Z coordinate read from the P variable
Remote control input parameter 6		Higher bits of Z coordinate read from the P variable
Remote control input parameter 7	Single-precision floating-point	Lower bits of A coordinate read from the P variable
Remote control input parameter 8		Higher bits of A coordinate read from the P variable
Remote control input parameter 9	Single-precision floating-point	Lower bits of B coordinate read from the P variable
Remote control input parameter 10		Higher bits of B coordinate read from the P variable
Remote control input parameter 11	Single-precision floating-point	Lower bits of C coordinate read from the P variable
Remote control input parameter 12		Higher bits of C coordinate read from the P variable
Remote control input parameter 13	Word (signed)	Arm parameter 1 read from the P variable
Remote control input parameter 14	Word (signed)	Arm parameter 2 read from the P variable
Remote control input parameter 15	Word (signed)	Arm parameter 3 read from the P variable
Remote control input parameter 16	Word (signed)	Arm parameter 4 read from the P variable
Remote control input parameter 17	Single-precision floating-point	Lower bits of E1 joint value read from the P variable
Remote control input parameter 18		Higher bits of E1 joint value read from the P variable
Remote control input parameter 19	Single-precision floating-point	Lower bits of E2 joint value read from the P variable
Remote control input parameter 20		Higher bits of E2 joint value read from the P variable

Parameter	Data Type	Content
Remote control input parameter 21	Single-precision floating-point	Lower bits of E3 joint value read from the P variable
Remote control input parameter 22		Higher bits of E3 joint value read from the P variable
Remote control input parameter 23	Single-precision floating-point	Lower bits of E4 joint value read from the P variable
Remote control input parameter 24		Higher bits of E4 joint value read from the P variable
Remote control input parameter 25	Single-precision floating-point	Lower bits of E5 joint value read from the P variable
Remote control input parameter 26		Higher bits of E5 joint value read from the P variable
Remote control input parameter 27	Single-precision floating-point	Lower bits of E6 joint value read from the P variable
Remote control input parameter 28		Higher bits of E6 joint value read from the P variable
Remote control input parameter 29	Word (unsigned)	Speed type
Remote control input parameter 30	Word (unsigned)	Speed percentage
Remote control input parameter 31	Single-precision floating-point	Lower bits of TCP speed
Remote control input parameter 32		Higher bits of TCP speed
Remote control input parameter 33	Single-precision floating-point	Lower bits of TCP orientation speed
Remote control input parameter 34		Higher bits of TCP orientation speed
Remote control input parameter 35	Single-precision floating-point	Lower bits of external axis linear speed
Remote control input parameter 36		Higher bits of external axis linear speed
Remote control input parameter 37	Single-precision floating-point	Lower bits of external axis rotation speed
Remote control input parameter 38		Higher bits of external axis rotation speed
Remote control input parameter 39	Word (unsigned)	Whether the speed is affected by the global percentage
Remote control input parameter 40	Word (signed)	Interpolation accuracy
Remote control input parameter 41	Word (signed)	Number of I/O control structure groups
Remote control input parameter 42	Word (unsigned)	Motion I/O number
Remote control input parameter 43	Word (unsigned)	Output I/O value
Remote control input parameter 44	Word (unsigned)	Set condition type
Remote control input parameter 45	Single-precision floating-point	Lower bits of set condition data
Remote control input parameter 46		Higher bits of set condition data

Parameter	Data Type	Content
Remote control input parameter 47	Word (unsigned)	Motion I/O number
Remote control input parameter 48	Word (unsigned)	Output I/O value
Remote control input parameter 49	Word (unsigned)	Set condition type
Remote control input parameter 60	Single-precision floating-point	Lower bits of set condition data
Remote control input parameter 51		Higher bits of set condition data
Remote control input parameter 52	Word (unsigned)	Motion I/O number
Remote control input parameter 53	Word (unsigned)	Output I/O value
Remote control input parameter 54	Word (unsigned)	Set condition type
Remote control input parameter 55	Single-precision floating-point	Lower bits of set condition data
Remote control input parameter 56		Higher bits of set condition data

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 0x0001: Cannot start data stream motion when robot is not in stopped state • 0x0004: Cannot start motion when robot is not in data stream mode • 0x0005: Cartesian position point information error • 0x0006: Motion speed type parameter out of range • 0x0007: Motion speed value parameter out of range

Parameter	Data Type	Content
		• 0x0008: Motion interpolation accuracy parameter out of range • 0x0009: Cannot move when robot is in emergency stop state • 0x000A: Cannot move when robot has error alarm information • 0x000B: Cannot move when robot is not enabled • 0x000C: Maximum number of stored motion instruction parameters reached, system cannot accept new motion instructions • 0x000D: Robot motion instruction I/O condition setting error • 0x000E: Independent axis switching not completed, cannot start motion • 0x0012: Cannot perform data stream motion when data stream mode is not enabled.
Controller system error code	Word (unsigned)	Refer to system fault codes

8.2.15.6 Data Stream Motion Jump

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0913
Remote control input parameter 1	Single-precision floating-point	Lower bits of X coordinate read from the P variable
Remote control input parameter 2		Higher bits of X coordinate read from the P variable
Remote control input parameter 3	Single-precision floating-point	Lower bits of Y coordinate read from the P variable
Remote control input parameter 4		Higher bits of Y coordinate read from the P variable
Remote control input parameter 5	Single-precision floating-point	Lower bits of Z coordinate read from the P variable
Remote control input parameter 6		Higher bits of Z coordinate read from the P variable
Remote control input parameter 7	Single-precision floating-point	Lower bits of A coordinate read from the P variable
Remote control input parameter 8		Higher bits of A coordinate read from the P variable
Remote control input parameter 9	Single-precision floating-point	Lower bits of B coordinate read from the P variable
Remote control input parameter 10		Higher bits of B coordinate read from the P variable

Parameter	Data Type	Content
Remote control input parameter 11	Single-precision floating-point	Lower bits of C coordinate read from the P variable
Remote control input parameter 12		Higher bits of C coordinate read from the P variable
Remote control input parameter 13	Word (signed)	Arm parameter 1 read from the P variable
Remote control input parameter 14	Word (signed)	Arm parameter 2 read from the P variable
Remote control input parameter 15	Word (signed)	Arm parameter 3 read from the P variable
Remote control input parameter 16	Word (signed)	Arm parameter 4 read from the P variable
Remote control input parameter 17	Single-precision floating-point	Lower bits of E1 joint value read from the P variable
Remote control input parameter 18		Higher bits of E1 joint value read from the P variable
Remote control input parameter 19	Single-precision floating-point	Lower bits of E2 joint value read from the P variable
Remote control input parameter 20		Higher bits of E2 joint value read from the P variable
Remote control input parameter 21	Single-precision floating-point	Lower bits of E3 joint value read from the P variable
Remote control input parameter 22		Higher bits of E3 joint value read from the P variable
Remote control input parameter 23	Single-precision floating-point	Lower bits of E4 joint value read from the P variable
Remote control input parameter 24		Higher bits of E4 joint value read from the P variable
Remote control input parameter 25	Single-precision floating-point	Lower bits of E5 joint value read from the P variable
Remote control input parameter 26		Higher bits of E5 joint value read from the P variable
Remote control input parameter 27	Single-precision floating-point	Lower bits of E6 joint value read from the P variable
Remote control input parameter 29		Higher bits of E6 joint value read from the P variable
Remote control input parameter 30	Word (unsigned)	Speed type
Remote control input parameter 31	Word (unsigned)	Speed percentage
Remote control input parameter 32	Single-precision floating-point	Lower bits of TCP speed
Remote control input parameter 33		Higher bits of TCP speed
Remote control input parameter 34	Single-precision floating-point	Lower bits of TCP orientation speed
Remote control input parameter 35		Higher bits of TCP orientation speed
Remote control input parameter 36	Single-precision floating-point	Lower bits of external axis linear speed
Remote control input parameter 37		Higher bits of external axis linear speed

Parameter	Data Type	Content
Remote control input parameter 38	Single-precision floating-point	Lower bits of external axis rotation speed
Remote control input parameter 39		Higher bits of external axis rotation speed
Remote control input parameter 40	Word (unsigned)	Whether the speed is affected by the global percentage
Remote control input parameter 41	Word (signed)	Interpolation accuracy
Remote control input parameter 42	Word (signed)	Number of I/O control structure groups
Remote control input parameter 43	Word (unsigned)	Motion I/O number
Remote control input parameter 44	Word (unsigned)	Output I/O value
Remote control input parameter 45	Word (unsigned)	Set condition type
Remote control input parameter 46	Single-precision floating-point	Lower bits of set condition data
Remote control input parameter 47		Higher bits of set condition data
Remote control input parameter 48	Word (unsigned)	Motion I/O number
Remote control input parameter 49	Word (unsigned)	Output I/O value
Remote control input parameter 60	Word (unsigned)	Set condition type
Remote control input parameter 51	Single-precision floating-point	Lower bits of set condition data
Remote control input parameter 52		Higher bits of set condition data
Remote control input parameter 53	Word (unsigned)	Motion I/O number
Remote control input parameter 54	Word (unsigned)	Output I/O value
Remote control input parameter 55	Word (unsigned)	Set condition type
Remote control input parameter 56	Single-precision floating-point	Lower bits of set condition data
Remote control input parameter 57		Higher bits of set condition data

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…

Parameter	Data Type	Content
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 0x0001: Cannot start data stream motion when robot is not in stopped state • 0x0004: Cannot start motion when robot is not in data stream mode • 0x0005: Cartesian position point information error • 0x0006: Motion speed type parameter out of range • 0x0007: Motion speed value parameter out of range • 0x0008: Motion interpolation accuracy parameter out of range • 0x0009: Cannot move when robot is in emergency stop state • 0x000A: Cannot move when robot has error alarm information • 0x000B: Cannot move when robot is not enabled • 0x000C: Maximum number of stored motion instruction parameters reached, system cannot accept new motion instructions • 0x000D: Robot motion instruction I/O condition setting error • 0x000E: Independent axis switching not completed, cannot start motion • 0x0012: Cannot perform data stream motion when data stream mode is not enabled.
Controller system error code	Word (unsigned)	Refer to system fault codes

8.2.15.7 Data Stream Motion JumpL

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0914
Remote control input parameter 1	Single-precision floating-point	Lower bits of X coordinate read from the P variable
Remote control input parameter 2		Higher bits of X coordinate read from the P variable
Remote control input parameter 3	Single-precision floating-point	Lower bits of Y coordinate read from the P variable
Remote control input parameter 4		Higher bits of Y coordinate read from the P variable
Remote control input parameter 5	Single-precision floating-point	Lower bits of Z coordinate read from the P variable
Remote control input parameter 6		Higher bits of Z coordinate read from the P variable
Remote control input parameter 7	Single-precision floating-point	Lower bits of A coordinate read from the P variable
Remote control input parameter 8		Higher bits of A coordinate read from the P variable
Remote control input parameter 9	Single-precision floating-point	Lower bits of B coordinate read from the P variable
Remote control input parameter 10		Higher bits of B coordinate read from the P variable
Remote control input parameter 11	Single-precision floating-point	Lower bits of C coordinate read from the P variable
Remote control input parameter 12		Higher bits of C coordinate read from the P variable
Remote control input parameter 13	Word (signed)	Arm parameter 1 read from the P variable
Remote control input parameter 14	Word (signed)	Arm parameter 2 read from the P variable
Remote control input parameter 15	Word (signed)	Arm parameter 3 read from the P variable
Remote control input parameter 16	Word (signed)	Arm parameter 4 read from the P variable
Remote control input parameter 17	Single-precision floating-point	Lower bits of E1 joint value read from the P variable
Remote control input parameter 18		Higher bits of E1 joint value read from the P variable
Remote control input parameter 19	Single-precision floating-point	Lower bits of E2 joint value read from the P variable
Remote control input parameter 20		Higher bits of E2 joint value read from the P variable
Remote control input parameter 21	Single-precision floating-point	Lower bits of E3 joint value read from the P variable
Remote control input parameter 22		Higher bits of E3 joint value read from the P variable
Remote control input parameter 23	Single-precision floating-point	Lower bits of E4 joint value read from the P variable
Remote control input parameter 24		Higher bits of E4 joint value read from the P variable

Parameter	Data Type	Content
Remote control input parameter 25	Single-precision floating-point	Lower bits of E5 joint value read from the P variable
Remote control input parameter 26		Higher bits of E5 joint value read from the P variable
Remote control input parameter 27	Single-precision floating-point	Lower bits of E6 joint value read from the P variable
Remote control input parameter 28		Higher bits of E6 joint value read from the P variable
Remote control input parameter 29	Word (unsigned)	Speed type
Remote control input parameter 30	Word (unsigned)	Speed percentage
Remote control input parameter 31	Single-precision floating-point	Lower bits of TCP speed
Remote control input parameter 32		Higher bits of TCP speed
Remote control input parameter 33	Single-precision floating-point	Lower bits of TCP orientation speed
Remote control input parameter 34		Higher bits of TCP orientation speed
Remote control input parameter 35	Single-precision floating-point	Lower bits of external axis linear speed
Remote control input parameter 36		Higher bits of external axis linear speed
Remote control input parameter 37	Single-precision floating-point	Lower bits of external axis rotation speed
Remote control input parameter 38		Higher bits of external axis rotation speed
Remote control input parameter 39	Word (unsigned)	Whether the speed is affected by the global percentage
Remote control input parameter 40	Word (signed)	Interpolation accuracy
Remote control input parameter 41	Word (signed)	Number of I/O control structure groups
Remote control input parameter 42	Word (unsigned)	Motion I/O number
Remote control input parameter 43	Word (unsigned)	Output I/O value
Remote control input parameter 44	Word (unsigned)	Set condition type
Remote control input parameter 45	Single-precision floating-point	Lower bits of set condition data
Remote control input parameter 46		Higher bits of set condition data
Remote control input parameter 47	Word (unsigned)	Motion I/O number
Remote control input parameter 48	Word (unsigned)	Output I/O value
Remote control input parameter 49	Word (unsigned)	Set condition type

Parameter	Data Type	Content
Remote control input parameter 50	Single-precision floating-point	Lower bits of set condition data
Remote control input parameter 51		Higher bits of set condition data
Remote control input parameter 52	Word (unsigned)	Motion I/O number
Remote control input parameter 53	Word (unsigned)	Output I/O value
Remote control input parameter 54	Word (unsigned)	Set condition type
Remote control input parameter 55	Single-precision floating-point	Lower bits of set condition data
Remote control input parameter 56		Higher bits of set condition data

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 0x0001: Cannot start data stream motion when robot is not in stopped state • 0x0004: Cannot start motion when robot is not in data stream mode • 0x0005: Cartesian position point information error • 0x0006: Motion speed type parameter out of range • 0x0007: Motion speed value parameter out of range • 0x0008: Motion interpolation accuracy parameter out of range • 0x0009: Cannot move when robot is in emergency stop state • 0x000A: Cannot move when robot has error alarm information • 0x000B: Cannot move when robot is not enabled • 0x000C: Maximum number of stored motion instruction parameters reached, system cannot accept new motion instructions

Parameter	Data Type	Value
		• 0x000D: Robot motion instruction I/O condition setting error • 0x000E: Independent axis switching not completed, cannot start motion • 0x0012: Cannot perform data stream motion when data stream mode is not enabled.
Controller system error code	Word (unsigned)	Refer to system fault codes

8.2.15.8 Data Stream Motion MovC Point 1

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0915
Remote control input parameter 1	Single-precision floating-point	Lower bits of X coordinate of J1 read from the P variable
Remote control input parameter 2		Higher bits of X coordinate of J1 read from the P variable
Remote control input parameter 3	Single-precision floating-point	Lower bits of Y coordinate of J2 read from the P variable
Remote control input parameter 4		Higher bits of Y coordinate of J2 read from the P variable
Remote control input parameter 5	Single-precision floating-point	Lower bits of Z coordinate of J3 read from the P variable
Remote control input parameter 6		Higher bits of Z coordinate of J3 read from the P variable
Remote control input parameter 7	Single-precision floating-point	Lower bits of A coordinate of J4 read from the P variable
Remote control input parameter 8		Higher bits of A coordinate of J4 read from the P variable
Remote control input parameter 9	Single-precision floating-point	Lower bits of B coordinate of J5 read from the P variable
Remote control input parameter 10		Higher bits of B coordinate of J5 read from the P variable

Parameter	Data Type	Content
Remote control input parameter 11	Single-precision floating-point	Lower bits of C coordinate of J6 read from the P variable
Remote control input parameter 12		Higher bits of C coordinate of J6 read from the P variable
Remote control input parameter 13	Word (signed)	Arm parameter 1 read from the P variable
Remote control input parameter 14	Word (signed)	Arm parameter 2 read from the P variable
Remote control input parameter 15	Word (signed)	Arm parameter 3 read from the P variable
Remote control input parameter 16	Word (signed)	Arm parameter 4 read from the P variable
Remote control input parameter 17	Single-precision floating-point	Lower bits of E1 joint value read from the P variable
Remote control input parameter 18		Higher bits of E1 joint value read from the P variable
Remote control input parameter 19	Single-precision floating-point	Lower bits of E2 joint value read from the P variable
Remote control input parameter 20		Higher bits of E2 joint value read from the P variable
Remote control input parameter 21	Single-precision floating-point	Lower bits of E3 joint value read from the P variable
Remote control input parameter 22		Higher bits of E3 joint value read from the P variable
Remote control input parameter 23	Single-precision floating-point	Lower bits of E4 joint value read from the P variable
Remote control input parameter 24		Higher bits of E4 joint value read from the P variable
Remote control input parameter 25	Single-precision floating-point	Lower bits of E5 joint value read from the P variable
Remote control input parameter 26		Higher bits of E5 joint value read from the P variable
Remote control input parameter 27	Single-precision floating-point	Lower bits of E6 joint value read from the P variable
Remote control input parameter 28		Higher bits of E6 joint value read from the P variable
Remote control input parameter 29	Word (unsigned)	Speed type
Remote control input parameter 30	Word (unsigned)	Speed percentage
Remote control input parameter 31	Single-precision floating-point	Lower bits of TCP speed
Remote control input parameter 32		Higher bits of TCP speed
Remote control input parameter 33	Single-precision floating-point	Lower bits of TCP orientation speed
Remote control input parameter 34		Higher bits of TCP orientation speed

Parameter	Data Type	Content
Remote control input parameter 35	Single-precision floating-point	Lower bits of external axis linear speed
Remote control input parameter 36		Higher bits of external axis linear speed
Remote control input parameter 37	Single-precision floating-point	Lower bits of external axis rotation speed
Remote control input parameter 38		Higher bits of external axis rotation speed
Remote control input parameter 39	Word (unsigned)	Whether the speed is affected by the global percentage
Remote control input parameter 40	Word (signed)	Interpolation accuracy
Remote control input parameter 41	Word (signed)	Number of I/O control structure groups
Remote control input parameter 42	Word (unsigned)	Motion I/O number
Remote control input parameter 43	Word (unsigned)	Output I/O value
Remote control input parameter 44	Word (unsigned)	Set condition type
Remote control input parameter 45	Single-precision floating-point	Lower bits of set condition data
Remote control input parameter 46		Higher bits of set condition data
Remote control input parameter 47	Word (unsigned)	Motion I/O number
Remote control input parameter 48	Word (unsigned)	Output I/O value
Remote control input parameter 49	Word (unsigned)	Set condition type
Remote control input parameter 60	Single-precision floating-point	Lower bits of set condition data
Remote control input parameter 51		Higher bits of set condition data
Remote control input parameter 52	Word (unsigned)	Motion I/O number
Remote control input parameter 53	Word (unsigned)	Output I/O value
Remote control input parameter 54	Word (unsigned)	Set condition type
Remote control input parameter 55	Single-precision floating-point	Lower bits of set condition data
Remote control input parameter 56		Higher bits of set condition data

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-

Parameter	Data Type	Content
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 0x0001: Cannot start data stream motion when robot is not in stopped state • 0x0004: Cannot start motion when robot is not in data stream mode • 0x0005: Cartesian position point information error • 0x0006: Motion speed type parameter out of range • 0x0007: Motion speed value parameter out of range • 0x0008: Motion interpolation accuracy parameter out of range • 0x0009: Cannot move when robot is in emergency stop state • 0x000A: Cannot move when robot has error alarm information • 0x000B: Cannot move when robot is not enabled • 0x000C: Maximum number of stored motion instruction parameters reached, system cannot accept new motion instructions • 0x000D: Robot motion instruction I/O condition setting error • 0x000E: Independent axis switching not completed, cannot start motion • 0x0012: Cannot perform data stream motion when data stream mode is not enabled.
Controller system error code	Word (unsigned)	Refer to system fault codes

8.2.15.9 Data Stream Motion MovC Point 2

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0916
Remote control input parameter 1	Single-precision floating-point	Lower bits of X coordinate of J1 read from the P variable
Remote control input parameter 2		Higher bits of X coordinate of J1 read from the P variable
Remote control input parameter 3	Single-precision floating-point	Lower bits of Y coordinate of J2 read from the P variable
Remote control input parameter 4		Higher bits of Y coordinate of J2 read from the P variable
Remote control input parameter 5	Single-precision floating-point	Lower bits of Z coordinate of J3 read from the P variable
Remote control input parameter 6		Higher bits of Z coordinate of J3 read from the P variable
Remote control input parameter 7	Single-precision floating-point	Lower bits of A coordinate of J4 read from the P variable
Remote control input parameter 8		Higher bits of A coordinate of J4 read from the P variable
Remote control input parameter 9	Single-precision floating-point	Lower bits of B coordinate of J5 read from the P variable
Remote control input parameter 10		Higher bits of B coordinate of J5 read from the P variable
Remote control input parameter 11	Single-precision floating-point	Lower bits of C coordinate of J6 read from the P variable
Remote control input parameter 12		Higher bits of C coordinate of J6 read from the P variable
Remote control input parameter 13	Word (signed)	Arm parameter 1 read from the P variable
Remote control input parameter 14	Word (signed)	Arm parameter 2 read from the P variable
Remote control input parameter 15	Word (signed)	Arm parameter 3 read from the P variable
Remote control input parameter 16	Word (signed)	Arm parameter 4 read from the P variable

Parameter	Data Type	Content
Remote control input parameter 17	Single-precision floating-point	Lower bits of E1 joint value read from the P variable
Remote control input parameter 18		Higher bits of E1 joint value read from the P variable
Remote control input parameter 19	Single-precision floating-point	Lower bits of E2 joint value read from the P variable
Remote control input parameter 20		Higher bits of E2 joint value read from the P variable
Remote control input parameter 21	Single-precision floating-point	Lower bits of E3 joint value read from the P variable
Remote control input parameter 22		Higher bits of E3 joint value read from the P variable
Remote control input parameter 23	Single-precision floating-point	Lower bits of E4 joint value read from the P variable
Remote control input parameter 24		Higher bits of E4 joint value read from the P variable
Remote control input parameter 25	Single-precision floating-point	Lower bits of E5 joint value read from the P variable
Remote control input parameter 26		Higher bits of E5 joint value read from the P variable
Remote control input parameter 27	Single-precision floating-point	Lower bits of E6 joint value read from the P variable
Remote control input parameter 28		Higher bits of E6 joint value read from the P variable



The motion parameters are based on the first point.

Return value, when execution is successful:

Parameter	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 60	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.

Parameter	Data Type	Value
Remote control execution failure error code	Word (unsigned)	• 0x0001: Cannot start data stream motion when robot is not in stopped state • 0x0004: Cannot start motion when robot is not in data stream mode • 0x0005: Cartesian position point information error • 0x0006: Motion speed type parameter out of range • 0x0007: Motion speed value parameter out of range • 0x0008: Motion interpolation accuracy parameter out of range • 0x0009: Cannot move when robot is in emergency stop state • 0x000A: Cannot move when robot has error alarm information • 0x000B: Cannot move when robot is not enabled • 0x000C: Maximum number of stored motion instruction parameters reached, system cannot accept new motion instructions • 0x000D: Robot motion instruction I/O condition setting error • 0x000E: Independent axis switching not completed, cannot start motion • 0x000F: Incorrect usage of MovC2, MovC1 was not called previously • 0x0012: Cannot perform data stream motion when data stream mode is not enabled.
Controller system error code	Word (unsigned)	Refer to system fault codes

8.2.15.10 Setting the Acceleration and Deceleration Jerk Levels Of the Motion Segment

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0921
Remote control input parameter 1	Float (signed)	Jerk percentage of the start segment. Integer data, range 1 to 100.
Remote control input parameter 2		
Remote control input parameter 3	Float (signed)	Deceleration jerk of the end segment. Integer data, range 1 to 100.
Remote control input parameter 4		

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0003: This parameter can only be set in data stream mode.

8.2.15.11 Reading the Acceleration and Deceleration Jerk Levels Of the Motion Segment

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0922
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Float (signed)	Jerk percentage of the start segment. Integer data, range 1 to 100.
Remote control return parameter 2		
Remote control return parameter 3	Float (signed)	Deceleration jerk of the end segment. Integer data, range 1 to 100.
Remote control return parameter 4		

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.

8.2.15.12 Setting the Enable/Disable of Optimal Trajectory Function

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0923
Remote control input parameter 1	Int16_t (signed)	Motion type: • 0: cp motion • 1: ptp motion • 2: All Motion
Remote control input parameter 2	Int16_t (signed)	enableFlag: • 0: Disable optimal planning • 1: Enable optimal planning

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control instruction execution failure error code	Word (unsigned)	• 0x0001: Motion type parameter out of range • 0x0002: Switch type parameter out of range • 0x0003: This parameter can only be set in data stream mode

8.2.15.13 Reading the Enable/Disable Status of Optimal Trajectory Function

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0924
Remote control input parameter 1	Int16_t (signed)	Motion type: • 0: cp motion • 1: ptp motion • 0: cp motion • 1: ptp motion • 2: All Motion
Remote control input parameter 2	-	-

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Int16_t (signed)	Motion type: • 0: cp motion • 1: ptp motion • 0: cp motion • 1: ptp motion • 2: All Motion
Remote control return parameter 2	Int16_t (signed)	Switch: • 0: Disable optimal planning for current motion type • 1: Enable optimal trajectory for current motion

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control instruction execution failure error code	Word (unsigned)	0x0001: Motion type parameter out of range

8.2.16 Pallet-Related Commands

Set the pallet parameters

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0940
Remote control input parameter 1	Word (unsigned)	rowNum: Number of rows, range 1-1000
Remote control input parameter 2	Word (unsigned)	colNum: Number of columns, range 1-1000
Remote control input parameter 3	Word (unsigned)	layerNum: Number of layers, range 1-1000
Remote control input parameter 4	Single-precision floating-point	layerHeight: Lower bits of layer height, in mm
Remote control input parameter 5		layerHeight: Higher bits of layer height, in mm

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control return parameter 1	Word (unsigned)	1: Input parameter out of range

Query the pallet parameters

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0941
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	rowNum: Number of rows, range 1-1000
Remote control return parameter 2	Word (unsigned)	colNum: Number of columns, range 1-1000
Remote control return parameter 3	Word (unsigned)	layerNum: Number of layers, range 1-1000
Remote control return parameter 4	Single-precision floating-point	layerHeight: Lower bits of layer height, in mm
Remote control return parameter 5		layerHeight: Higher bits of layer height, in mm

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.

Clear the pallet parameters

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0942
Remote control input parameter 1	Word (unsigned)	1: Trigger the clear operation

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control return parameter 1	Word (unsigned)	1: Input parameter out of range

Query the points of the corresponding pallet (Define the number of pallet boundary points: 3 points)

① Define pallet point 1

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0943

Parameter	Data Type	Content
Remote control input parameter 1	Single-precision floating-point	Lower bits of X coordinate read from the P variable
Remote control input parameter 2		Higher bits of X coordinate read from the P variable
Remote control input parameter 3	Single-precision floating-point	Lower bits of Y coordinate read from the P variable
Remote control input parameter 4		Higher bits of Y coordinate read from the P variable
Remote control input parameter 5	Single-precision floating-point	Lower bits of Z coordinate read from the P variable
Remote control input parameter 6		Higher bits of Z coordinate read from the P variable
Remote control input parameter 7	Single-precision floating-point	Lower bits of A coordinate read from the P variable
Remote control input parameter 8		Higher bits of A coordinate read from the P variable
Remote control input parameter 9	Single-precision floating-point	Lower bits of B coordinate read from the P variable
Remote control input parameter 10		Higher bits of B coordinate read from the P variable
Remote control input parameter 11	Single-precision floating-point	Lower bits of C coordinate read from the P variable
Remote control input parameter 12		Higher bits of C coordinate read from the P variable
Remote control input parameter 13	Word (signed)	Arm parameter 1 read from the P variable
Remote control input parameter 14	Word (signed)	Arm parameter 2 read from the P variable
Remote control input parameter 15	Word (signed)	Arm parameter 3 read from the P variable
Remote control input parameter 16	Word (signed)	Arm parameter 4 read from the P variable
Remote control input parameter 17	Single-precision floating-point	Lower bits of E1 joint value read from the P variable
Remote control input parameter 18		Higher bits of E1 joint value read from the P variable
Remote control input parameter 19	Single-precision floating-point	Lower bits of E2 joint value read from the P variable
Remote control input parameter 20		Higher bits of E2 joint value read from the P variable
Remote control input parameter 21	Single-precision floating-point	Lower bits of E3 joint value read from the P variable
Remote control input parameter 22		Higher bits of E3 joint value read from the P variable
Remote control input parameter 23	Single-precision floating-point	Lower bits of E4 joint value read from the P variable
Remote control input parameter 24		Higher bits of E4 joint value read from the P variable
Remote control input parameter 25	Single-precision floating-point	Lower bits of E5 joint value read from the P variable
Remote control input parameter 26		Higher bits of E5 joint value read from the P variable

Parameter	Data Type	Content
Remote control input parameter 27	Single-precision floating-point	Lower bits of E6 joint value read from the P variable
Remote control input parameter 28		Higher bits of E6 joint value read from the P variable

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control return parameter 1	Word (unsigned)	-

② Define pallet point 2

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0944
Remote control input parameter 1	Single-precision floating-point	Lower bits of X coordinate read from the P variable
Remote control input parameter 2		Higher bits of X coordinate read from the P variable
Remote control input parameter 3	Single-precision floating-point	Lower bits of Y coordinate read from the P variable
Remote control input parameter 4		Higher bits of Y coordinate read from the P variable
Remote control input parameter 5	Single-precision floating-point	Lower bits of Z coordinate read from the P variable
Remote control input parameter 6		Higher bits of Z coordinate read from the P variable
Remote control input parameter 7	Single-precision floating-point	Lower bits of A coordinate read from the P variable
Remote control input parameter 8		Higher bits of A coordinate read from the P variable
Remote control input parameter 9	Single-precision floating-point	Lower bits of B coordinate read from the P variable
Remote control input parameter 10		Higher bits of B coordinate read from the P variable
Remote control input parameter 11	Single-precision floating-point	Lower bits of C coordinate read from the P variable
Remote control input parameter 12		Higher bits of C coordinate read from the P variable
Remote control input parameter 13	Word (signed)	Arm parameter 1 read from the P variable

Parameter	Data Type	Content
Remote control input parameter 14	Word (signed)	Arm parameter 2 read from the P variable
Remote control input parameter 15	Word (signed)	Arm parameter 3 read from the P variable
Remote control input parameter 16	Word (signed)	Arm parameter 4 read from the P variable
Remote control input parameter 17	Single-precision floating-point	Lower bits of E1 joint value read from the P variable
Remote control input parameter 18		Higher bits of E1 joint value read from the P variable
Remote control input parameter 19	Single-precision floating-point	Lower bits of E2 joint value read from the P variable
Remote control input parameter 20		Higher bits of E2 joint value read from the P variable
Remote control input parameter 21	Single-precision floating-point	Lower bits of E3 joint value read from the P variable
Remote control input parameter 22		Higher bits of E3 joint value read from the P variable
Remote control input parameter 23	Single-precision floating-point	Lower bits of E4 joint value read from the P variable
Remote control input parameter 24		Higher bits of E4 joint value read from the P variable
Remote control input parameter 25	Single-precision floating-point	Lower bits of E5 joint value read from the P variable
Remote control input parameter 26		Higher bits of E5 joint value read from the P variable
Remote control input parameter 27	Single-precision floating-point	Lower bits of E6 joint value read from the P variable
Remote control input parameter 28		Higher bits of E6 joint value read from the P variable

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control return parameter 1	Word (unsigned)	• 2: Pallet instructions for points 3 and 4 cannot be mixed • 3: Pallet point command sequence error

③ Define pallet point 3

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0945
Remote control input parameter 1	Single-precision floating-point	Lower bits of X coordinate read from the P variable
Remote control input parameter 2		Higher bits of X coordinate read from the P variable
Remote control input parameter 3	Single-precision floating-point	Lower bits of Y coordinate read from the P variable
Remote control input parameter 4		Higher bits of Y coordinate read from the P variable
Remote control input parameter 5	Single-precision floating-point	Lower bits of Z coordinate read from the P variable
Remote control input parameter 6		Higher bits of Z coordinate read from the P variable
Remote control input parameter 7	Single-precision floating-point	Lower bits of A coordinate read from the P variable
Remote control input parameter 8		Higher bits of A coordinate read from the P variable
Remote control input parameter 9	Single-precision floating-point	Lower bits of B coordinate read from the P variable
Remote control input parameter 10		Higher bits of B coordinate read from the P variable
Remote control input parameter 11	Single-precision floating-point	Lower bits of C coordinate read from the P variable
Remote control input parameter 12		Higher bits of C coordinate read from the P variable
Remote control input parameter 13	Word (signed)	Arm parameter 1 read from the P variable
Remote control input parameter 14	Word (signed)	Arm parameter 2 read from the P variable
Remote control input parameter 15	Word (signed)	Arm parameter 3 read from the P variable
Remote control input parameter 16	Word (signed)	Arm parameter 4 read from the P variable
Remote control input parameter 17	Single-precision floating-point	Lower bits of E1 joint value read from the P variable
Remote control input parameter 18		Higher bits of E1 joint value read from the P variable
Remote control input parameter 19	Single-precision floating-point	Lower bits of E2 joint value read from the P variable
Remote control input parameter 20		Higher bits of E2 joint value read from the P variable
Remote control input parameter 21	Single-precision floating-point	Lower bits of E3 joint value read from the P variable
Remote control input parameter 22		Higher bits of E3 joint value read from the P variable
Remote control input parameter 23	Single-precision floating-point	Lower bits of E4 joint value read from the P variable
Remote control input parameter 24		Higher bits of E4 joint value read from the P variable

Parameter	Data Type	Content
Remote control input parameter 25	Single-precision floating-point	Lower bits of E5 joint value read from the P variable
Remote control input parameter 26		Higher bits of E5 joint value read from the P variable
Remote control input parameter 27	Single-precision floating-point	Lower bits of E6 joint value read from the P variable
Remote control input parameter 28		Higher bits of E6 joint value read from the P variable

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control return parameter 1	Word (unsigned)	• 2: Pallet instructions for points 3 and 4 cannot be mixed • 3: Pallet point command sequence error

④ Query point results

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0946
Remote control input parameter 1	Word (unsigned)	rowIndex: Row index of the point to be queried
Remote control input parameter 2	Word (unsigned)	colIndex: Column index of the point to be queried
Remote control input parameter 3	Word (unsigned)	layIndex: Layer index of the point to be queried

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	rowIndex: Row index of the queried point
Remote control return parameter 2	Word (unsigned)	colIndex: Column index of the queried point
Remote control return parameter 3	Word (unsigned)	layIndex: Layer index of the queried point

Address	Data Type	Content
Remote control return parameter 4	Single-precision floating-point	Lower bits of X coordinate read from the P variable
Remote control return parameter 5		Higher bits of X coordinate read from the P variable
Remote control return parameter 6	Single-precision floating-point	Lower bits of Y coordinate read from the P variable
Remote control return parameter 7		Higher bits of Y coordinate read from the P variable
Remote control return parameter 8	Single-precision floating-point	Lower bits of Z coordinate read from the P variable
Remote control return parameter 9		Higher bits of Z coordinate read from the P variable
Remote control return parameter 10	Single-precision floating-point	Lower bits of A coordinate read from the P variable
Remote control return parameter 11		Higher bits of A coordinate read from the P variable
Remote control return parameter 12	Single-precision floating-point	Lower bits of B coordinate read from the P variable
Remote control return parameter 13		Higher bits of B coordinate read from the P variable
Remote control return parameter 14	Single-precision floating-point	Lower bits of C coordinate read from the P variable
Remote control return parameter 15		Higher bits of C coordinate read from the P variable
Remote control return parameter 16	Word (signed)	Arm parameter 1 read from the P variable
Remote control return parameter 17	Word (signed)	Arm parameter 2 read from the P variable
Remote control return parameter 18	Word (signed)	Arm parameter 3 read from the P variable
Remote control return parameter 19	Word (signed)	Arm parameter 4 read from the P variable
Remote control return parameter 20	Single-precision floating-point	Lower bits of E1 joint value read from the P variable
Remote control return parameter 21		Higher bits of E1 joint value read from the P variable
Remote control return parameter 22	Single-precision floating-point	Lower bits of E2 joint value read from the P variable
Remote control return parameter 23		Higher bits of E2 joint value read from the P variable
Remote control return parameter 24	Single-precision floating-point	Lower bits of E3 joint value read from the P variable
Remote control return parameter 25		Higher bits of E3 joint value read from the P variable
Remote control return parameter 26	Single-precision floating-point	Lower bits of E4 joint value read from the P variable
Remote control return parameter 27		Higher bits of E4 joint value read from the P variable
Remote control return parameter 28	Single-precision floating-point	Lower bits of E5 joint value read from the P variable
Remote control return parameter 29		Higher bits of E5 joint value read from the P variable

Address	Data Type	Content
Remote control return parameter 30	Single-precision floating-point	Lower bits of E6 joint value read from the P variable
Remote control return parameter 31		Higher bits of E6 joint value read from the P variable

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control return parameter 1	Word (unsigned)	• 2: Pallet instructions for points 3 and 4 cannot be mixed • 3: Pallet point command sequence error • 4: Pallet point calculation error

Query the points of the corresponding pallet (Define the number of pallet boundary points: 4 points)

① Define pallet point 1

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0947
Remote control input parameter 1	Single-precision floating-point	Lower bits of X coordinate read from the P variable
Remote control input parameter 2		Higher bits of X coordinate read from the P variable
Remote control input parameter 3	Single-precision floating-point	Lower bits of Y coordinate read from the P variable
Remote control input parameter 4		Higher bits of Y coordinate read from the P variable
Remote control input parameter 5	Single-precision floating-point	Lower bits of Z coordinate read from the P variable
Remote control input parameter 6		Higher bits of Z coordinate read from the P variable
Remote control input parameter 7	Single-precision floating-point	Lower bits of A coordinate read from the P variable
Remote control input parameter 8		Higher bits of A coordinate read from the P variable
Remote control input parameter 9	Single-precision floating-point	Lower bits of B coordinate read from the P variable
Remote control input parameter 10		Higher bits of B coordinate read from the P variable
Remote control input parameter 11	Single-precision floating-point	Lower bits of C coordinate read from the P variable
Remote control input parameter 12		Higher bits of C coordinate read from the P variable
Remote control input parameter 13	Word (signed)	Arm parameter 1 read from the P variable

Parameter	Data Type	Content
Remote control input parameter 14	Word (signed)	Arm parameter 2 read from the P variable
Remote control input parameter 15	Word (signed)	Arm parameter 3 read from the P variable
Remote control input parameter 16	Word (signed)	Arm parameter 4 read from the P variable
Remote control input parameter 17	Single-precision floating-point	Lower bits of E1 joint value read from the P variable
Remote control input parameter 18		Higher bits of E1 joint value read from the P variable
Remote control input parameter 19	Single-precision floating-point	Lower bits of E2 joint value read from the P variable
Remote control input parameter 20		Higher bits of E2 joint value read from the P variable
Remote control input parameter 21	Single-precision floating-point	Lower bits of E3 joint value read from the P variable
Remote control input parameter 22		Higher bits of E3 joint value read from the P variable
Remote control input parameter 23	Single-precision floating-point	Lower bits of E4 joint value read from the P variable
Remote control input parameter 24		Higher bits of E4 joint value read from the P variable
Remote control input parameter 25	Single-precision floating-point	Lower bits of E5 joint value read from the P variable
Remote control input parameter 26		Higher bits of E5 joint value read from the P variable
Remote control input parameter 27	Single-precision floating-point	Lower bits of E6 joint value read from the P variable
Remote control input parameter 28		Higher bits of E6 joint value read from the P variable

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.

② Define pallet point 2

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0948

Parameter	Data Type	Content
Remote control input parameter 1	Single-precision floating-point	Lower bits of X coordinate read from the P variable
Remote control input parameter 2		Higher bits of X coordinate read from the P variable
Remote control input parameter 3	Single-precision floating-point	Lower bits of Y coordinate read from the P variable
Remote control input parameter 4		Higher bits of Y coordinate read from the P variable
Remote control input parameter 5	Single-precision floating-point	Lower bits of Z coordinate read from the P variable
Remote control input parameter 6		Higher bits of Z coordinate read from the P variable
Remote control input parameter 7	Single-precision floating-point	Lower bits of A coordinate read from the P variable
Remote control input parameter 8		Higher bits of A coordinate read from the P variable
Remote control input parameter 9	Single-precision floating-point	Lower bits of B coordinate read from the P variable
Remote control input parameter 10		Higher bits of B coordinate read from the P variable
Remote control input parameter 11	Single-precision floating-point	Lower bits of C coordinate read from the P variable
Remote control input parameter 12		Higher bits of C coordinate read from the P variable
Remote control input parameter 13	Word (signed)	Arm parameter 1 read from the P variable
Remote control input parameter 14	Word (signed)	Arm parameter 2 read from the P variable
Remote control input parameter 15	Word (signed)	Arm parameter 3 read from the P variable
Remote control input parameter 16	Word (signed)	Arm parameter 4 read from the P variable
Remote control input parameter 17	Single-precision floating-point	Lower bits of E1 joint value read from the P variable
Remote control input parameter 18		Higher bits of E1 joint value read from the P variable
Remote control input parameter 19	Single-precision floating-point	Lower bits of E2 joint value read from the P variable
Remote control input parameter 20		Higher bits of E2 joint value read from the P variable
Remote control input parameter 21	Single-precision floating-point	Lower bits of E3 joint value read from the P variable
Remote control input parameter 22		Higher bits of E3 joint value read from the P variable
Remote control input parameter 23	Single-precision floating-point	Lower bits of E4 joint value read from the P variable
Remote control input parameter 24		Higher bits of E4 joint value read from the P variable
Remote control input parameter 25	Single-precision floating-point	Lower bits of E5 joint value read from the P variable
Remote control input parameter 26		Higher bits of E5 joint value read from the P variable

Parameter	Data Type	Content
Remote control input parameter 27	Single-precision floating-point	Lower bits of E6 joint value read from the P variable
Remote control input parameter 28		Higher bits of E6 joint value read from the P variable

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control return parameter 1	Word (unsigned)	• 2: Pallet instructions for points 3 and 4 cannot be mixed • 3: Pallet point command sequence error

③ Define pallet point 3

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0949
Remote control input parameter 1	Single-precision floating-point	Lower bits of X coordinate read from the P variable
Remote control input parameter 2		Higher bits of X coordinate read from the P variable
Remote control input parameter 3	Single-precision floating-point	Lower bits of Y coordinate read from the P variable
Remote control input parameter 4		Higher bits of Y coordinate read from the P variable
Remote control input parameter 5	Single-precision floating-point	Lower bits of Z coordinate read from the P variable
Remote control input parameter 6		Higher bits of Z coordinate read from the P variable
Remote control input parameter 7	Single-precision floating-point	Lower bits of A coordinate read from the P variable
Remote control input parameter 8		Higher bits of A coordinate read from the P variable
Remote control input parameter 9	Single-precision floating-point	Lower bits of B coordinate read from the P variable
Remote control input parameter 10		Higher bits of B coordinate read from the P variable
Remote control input parameter 11	Single-precision floating-point	Lower bits of C coordinate read from the P variable
Remote control input parameter 12		Higher bits of C coordinate read from the P variable

Parameter	Data Type	Content
Remote control input parameter 13	Word (signed)	Arm parameter 1 read from the P variable
Remote control input parameter 14	Word (signed)	Arm parameter 2 read from the P variable
Remote control input parameter 15	Word (signed)	Arm parameter 3 read from the P variable
Remote control input parameter 16	Word (signed)	Arm parameter 4 read from the P variable
Remote control input parameter 17	Single-precision floating-point	Lower bits of E1 joint value read from the P variable
Remote control input parameter 18		Higher bits of E1 joint value read from the P variable
Remote control input parameter 19	Single-precision floating-point	Lower bits of E2 joint value read from the P variable
Remote control input parameter 20		Higher bits of E2 joint value read from the P variable
Remote control input parameter 21	Single-precision floating-point	Lower bits of E3 joint value read from the P variable
Remote control input parameter 22		Higher bits of E3 joint value read from the P variable
Remote control input parameter 23	Single-precision floating-point	Lower bits of E4 joint value read from the P variable
Remote control input parameter 24		Higher bits of E4 joint value read from the P variable
Remote control input parameter 25	Single-precision floating-point	Lower bits of E5 joint value read from the P variable
Remote control input parameter 26		Higher bits of E5 joint value read from the P variable
Remote control input parameter 27	Single-precision floating-point	Lower bits of E6 joint value read from the P variable
Remote control input parameter 28		Higher bits of E6 joint value read from the P variable

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control return parameter 1	Word (unsigned)	• 2: Pallet instructions for points 3 and 4 cannot be mixed • 3: Pallet point command sequence error

④ Define pallet point 4

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0950
Remote control input parameter 1	Single-precision floating-point	Lower bits of X coordinate read from the P variable
Remote control input parameter 2		Higher bits of X coordinate read from the P variable
Remote control input parameter 3	Single-precision floating-point	Lower bits of Y coordinate read from the P variable
Remote control input parameter 4		Higher bits of Y coordinate read from the P variable
Remote control input parameter 5	Single-precision floating-point	Lower bits of Z coordinate read from the P variable
Remote control input parameter 6		Higher bits of Z coordinate read from the P variable
Remote control input parameter 7	Single-precision floating-point	Lower bits of A coordinate read from the P variable
Remote control input parameter 8		Higher bits of A coordinate read from the P variable
Remote control input parameter 9	Single-precision floating-point	Lower bits of B coordinate read from the P variable
Remote control input parameter 10		Higher bits of B coordinate read from the P variable
Remote control input parameter 11	Single-precision floating-point	Lower bits of C coordinate read from the P variable
Remote control input parameter 12		Higher bits of C coordinate read from the P variable
Remote control input parameter 13	Word (signed)	Arm parameter 1 read from the P variable
Remote control input parameter 14	Word (signed)	Arm parameter 2 read from the P variable
Remote control input parameter 15	Word (signed)	Arm parameter 3 read from the P variable
Remote control input parameter 16	Word (signed)	Arm parameter 4 read from the P variable
Remote control input parameter 17	Single-precision floating-point	Lower bits of E1 joint value read from the P variable
Remote control input parameter 18		Higher bits of E1 joint value read from the P variable
Remote control input parameter 19	Single-precision floating-point	Lower bits of E2 joint value read from the P variable
Remote control input parameter 20		Higher bits of E2 joint value read from the P variable
Remote control input parameter 21	Single-precision floating-point	Lower bits of E3 joint value read from the P variable
Remote control input parameter 22		Higher bits of E3 joint value read from the P variable

Parameter	Data Type	Content
Remote control input parameter 23	Single-precision floating-point	Lower bits of E4 joint value read from the P variable
Remote control input parameter 24		Higher bits of E4 joint value read from the P variable
Remote control input parameter 25	Single-precision floating-point	Lower bits of E5 joint value read from the P variable
Remote control input parameter 26		Higher bits of E5 joint value read from the P variable
Remote control input parameter 27	Single-precision floating-point	Lower bits of E6 joint value read from the P variable
Remote control input parameter 28		Higher bits of E6 joint value read from the P variable

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control return parameter 1	Word (unsigned)	• 2: Pallet instructions for points 3 and 4 cannot be mixed • 3: Pallet point command sequence error

⑤ Query point result

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0951
Remote control input parameter 1	Word (unsigned)	rowIndex: Row index of the point to be queried
Remote control input parameter 2	Word (unsigned)	colIndex: Column index of the point to be queried
Remote control input parameter 3	Word (unsigned)	layIndex: Layer index of the point to be queried

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	rowIndex: Row index of the queried point
Remote control return parameter 2	Word (unsigned)	colIndex: Column index of the queried point

Address	Data Type	Content
Remote control return parameter 3	Word (unsigned)	layIndex: Layer index of the queried point
Remote control return parameter 4	Single-precision floating-point	Lower bits of X coordinate read from the P variable
Remote control return parameter 5		Higher bits of X coordinate read from the P variable
Remote control return parameter 6	Single-precision floating-point	Lower bits of Y coordinate read from the P variable
Remote control return parameter 7		Higher bits of Y coordinate read from the P variable
Remote control return parameter 8	Single-precision floating-point	Lower bits of Z coordinate read from the P variable
Remote control return parameter 9		Higher bits of Z coordinate read from the P variable
Remote control return parameter 10	Single-precision floating-point	Lower bits of A coordinate read from the P variable
Remote control return parameter 11		Higher bits of A coordinate read from the P variable
Remote control return parameter 12	Single-precision floating-point	Lower bits of B coordinate read from the P variable
Remote control return parameter 13		Higher bits of B coordinate read from the P variable
Remote control return parameter 14	Single-precision floating-point	Lower bits of C coordinate read from the P variable
Remote control return parameter 15		Higher bits of C coordinate read from the P variable
Remote control return parameter 16	Word (signed)	Arm parameter 1 read from the P variable
Remote control return parameter 17	Word (signed)	Arm parameter 2 read from the P variable
Remote control return parameter 18	Word (signed)	Arm parameter 3 read from the P variable
Remote control return parameter 19	Word (signed)	Arm parameter 4 read from the P variable
Remote control return parameter 20	Single-precision floating-point	Lower bits of E1 joint value read from the P variable
Remote control return parameter 21		Higher bits of E1 joint value read from the P variable
Remote control return parameter 22	Single-precision floating-point	Lower bits of E2 joint value read from the P variable
Remote control return parameter 23		Higher bits of E2 joint value read from the P variable
Remote control return parameter 24	Single-precision floating-point	Lower bits of E3 joint value read from the P variable
Remote control return parameter 25		Higher bits of E3 joint value read from the P variable
Remote control return parameter 26	Single-precision floating-point	Lower bits of E4 joint value read from the P variable
Remote control return parameter 27		Higher bits of E4 joint value read from the P variable

Address	Data Type	Content
Remote control return parameter 28	Single-precision floating-point	Lower bits of E5 joint value read from the P variable
Remote control return parameter 29		Higher bits of E5 joint value read from the P variable
Remote control return parameter 30	Single-precision floating-point	Lower bits of E6 joint value read from the P variable
Remote control return parameter 31		Higher bits of E6 joint value read from the P variable

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control return parameter 1	Word (unsigned)	• 2: Pallet instructions for points 3 and 4 cannot be mixed • 3: Pallet point command sequence error • 4: Pallet point calculation failed

8.2.17 Point Conversion-Related Commands

Converts a position in the world frame into a position in the frame of a designated workobject that is fixed and not held by the robot (RobHold = 0, and UFFix = 1).

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0762
Remote control input parameter 1	Word (unsigned)	Workobject number
Remote control input parameter 2	Single-precision floating-point	Lower bits of X coordinate read from the P variable
Remote control input parameter 3		Higher bits of X coordinate read from the P variable
Remote control input parameter 4	Single-precision floating-point	Lower bits of Y coordinate read from the P variable
Remote control input parameter 5		Higher bits of Y coordinate read from the P variable
Remote control input parameter 6	Single-precision floating-point	Lower bits of Z coordinate read from the P variable
Remote control input parameter 7		Higher bits of Z coordinate read from the P variable

Parameter	Data Type	Content
Remote control input parameter 8	Single-precision floating-point	Lower bits of A coordinate read from the P variable
Remote control input parameter 9		Higher bits of A coordinate read from the P variable
Remote control input parameter 10	Single-precision floating-point	Lower bits of B coordinate read from the P variable
Remote control input parameter 11		Higher bits of B coordinate read from the P variable
Remote control input parameter 12	Single-precision floating-point	Lower bits of C coordinate read from the P variable
Remote control input parameter 13		Higher bits of C coordinate read from the P variable
Remote control input parameter 14	Word (signed)	Arm parameter 1 read from the P variable
Remote control input parameter 15	Word (signed)	Arm parameter 2 read from the P variable
Remote control input parameter 16	Word (signed)	Arm parameter 3 read from the P variable
Remote control input parameter 17	Word (signed)	Arm parameter 4 read from the P variable
Remote control input parameter 18	Single-precision floating-point	Lower bits of E1 joint value read from the P variable
Remote control input parameter 19		Higher bits of E1 joint value read from the P variable
Remote control input parameter 20	Single-precision floating-point	Lower bits of E2 joint value read from the P variable
Remote control input parameter 21		Higher bits of E2 joint value read from the P variable
Remote control input parameter 22	Single-precision floating-point	Lower bits of E3 joint value read from the P variable
Remote control input parameter 23		Higher bits of E3 joint value read from the P variable
Remote control input parameter 24	Single-precision floating-point	Lower bits of E4 joint value read from the P variable
Remote control input parameter 25		Higher bits of E4 joint value read from the P variable
Remote control input parameter 26	Single-precision floating-point	Lower bits of E5 joint value read from the P variable
Remote control input parameter 27		Higher bits of E5 joint value read from the P variable
Remote control input parameter 28	Single-precision floating-point	Lower bits of E6 joint value read from the P variable
Remote control input parameter 29		Lower bits of E6 joint value read from the P variable

Return value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0762
Remote control input parameter 1	Word (unsigned)	Workobject number

Parameter	Data Type	Content
Remote control input parameter 2	Single-precision floating-point	Lower bits of X coordinate read from the P variable
Remote control input parameter 3		Higher bits of X coordinate read from the P variable
Remote control input parameter 4	Single-precision floating-point	Lower bits of Y coordinate read from the P variable
Remote control input parameter 5		Higher bits of Y coordinate read from the P variable
Remote control input parameter 6	Single-precision floating-point	Lower bits of Z coordinate read from the P variable
Remote control input parameter 7		Higher bits of Z coordinate read from the P variable
Remote control input parameter 8	Single-precision floating-point	Lower bits of A coordinate read from the P variable
Remote control input parameter 9		Higher bits of A coordinate read from the P variable
Remote control input parameter 10	Single-precision floating-point	Lower bits of B coordinate read from the P variable
Remote control input parameter 11		Higher bits of B coordinate read from the P variable
Remote control input parameter 12	Single-precision floating-point	Lower bits of C coordinate read from the P variable
Remote control input parameter 13		Higher bits of C coordinate read from the P variable
Remote control input parameter 14	Word (signed)	Arm parameter 1 read from the P variable
Remote control input parameter 15	Word (signed)	Arm parameter 2 read from the P variable
Remote control input parameter 16	Word (signed)	Arm parameter 3 read from the P variable
Remote control input parameter 17	Word (signed)	Arm parameter 4 read from the P variable
Remote control input parameter 18	Single-precision floating-point	Lower bits of E1 joint value read from the P variable
Remote control input parameter 19		Higher bits of E1 joint value read from the P variable
Remote control input parameter 20	Single-precision floating-point	Lower bits of E2 joint value read from the P variable
Remote control input parameter 21		Higher bits of E2 joint value read from the P variable
Remote control input parameter 22	Single-precision floating-point	Lower bits of E3 joint value read from the P variable
Remote control input parameter 23		Higher bits of E3 joint value read from the P variable
Remote control input parameter 24	Single-precision floating-point	Lower bits of E4 joint value read from the P variable
Remote control input parameter 25		Higher bits of E4 joint value read from the P variable
Remote control input parameter 26	Single-precision floating-point	Lower bits of E5 joint value read from the P variable
Remote control input parameter 27		Higher bits of E5 joint value read from the P variable

Parameter	Data Type	Content
Remote control input parameter 28	Single-precision floating-point	Lower bits of E6 joint value read from the P variable
Remote control input parameter 29		Lower bits of E6 joint value read from the P variable
Remote control input parameter 30	Single-precision floating-point	Lower bits of X coordinate read from the P variable
Remote control input parameter 31		Higher bits of X coordinate read from the P variable
Remote control input parameter 32	Single-precision floating-point	Lower bits of Y coordinate read from the P variable
Remote control input parameter 33		Higher bits of Y coordinate read from the P variable
Remote control input parameter 34	Single-precision floating-point	Lower bits of Z coordinate read from the P variable
Remote control input parameter 35		Higher bits of Z coordinate read from the P variable
Remote control input parameter 36	Single-precision floating-point	Lower bits of A coordinate read from the P variable
Remote control input parameter 37		Higher bits of A coordinate read from the P variable
Remote control input parameter 38	Single-precision floating-point	Lower bits of B coordinate read from the P variable
Remote control input parameter 39		Higher bits of B coordinate read from the P variable
Remote control input parameter 40	Single-precision floating-point	Lower bits of C coordinate read from the P variable
Remote control input parameter 41		Higher bits of C coordinate read from the P variable
Remote control input parameter 42	Word (signed)	Arm parameter 1 read from the P variable
Remote control input parameter 43	Word (signed)	Arm parameter 2 read from the P variable
Remote control input parameter 44	Word (signed)	Arm parameter 3 read from the P variable
Remote control input parameter 45	Word (signed)	Arm parameter 4 read from the P variable
Remote control input parameter 46	Single-precision floating-point	Lower bits of E1 joint value read from the P variable
Remote control input parameter 47		Higher bits of E1 joint value read from the P variable
Remote control input parameter 48	Single-precision floating-point	Lower bits of E2 joint value read from the P variable
Remote control input parameter 49		Higher bits of E2 joint value read from the P variable
Remote control input parameter 60	Single-precision floating-point	Lower bits of E3 joint value read from the P variable
Remote control input parameter 51		Higher bits of E3 joint value read from the P variable
Remote control input parameter 52	Single-precision floating-point	Lower bits of E4 joint value read from the P variable
Remote control input parameter 53		Higher bits of E4 joint value read from the P variable

Parameter	Data Type	Content
Remote control input parameter 54	Single-precision floating-point	Lower bits of E5 joint value read from the P variable
Remote control input parameter 55		Higher bits of E5 joint value read from the P variable
Remote control input parameter 56	Single-precision floating-point	Lower bits of E6 joint value read from the P variable
Remote control input parameter 57		Higher bits of E6 joint value read from the P variable

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control return parameter 1	Word (unsigned)	• 1: Input parameter out of range • 2: Calculation error

8.2.18 Collision Detection

8.2.18.1 Setting the Collision Detection Switch

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0765
Remote control input parameter 1	Word (unsigned)	In target mode: • 0: Manual • 1: Auto
Remote control input parameter 2	Word (unsigned)	Axis numbers 1 to 6 refer to axes 1 to 6.
Remote control input parameter 3	Word (unsigned)	Switch: • 0: Disable • 1: Enable
…	…	…
Remote control input parameter 50	-	-

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-

Address	Data Type	Content
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 50	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001: Setting failed
Remote control execution failure error code	Word (unsigned)	0x0004: This parameter cannot be set in auto mode, Enable mode or in running state.
Controller system error code	Word (unsigned)	Refer to system fault codes

8.2.18.2 Reading the Collision Detection Switch

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0766
Remote control input parameter 1	Word (unsigned)	In target mode: • 0: Manual • 1: Auto
Remote control input parameter 2	Word (unsigned)	Axis numbers 1 to 6 refer to axes 1 to 6.
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 50	-	-

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	In target mode: • 0: Manual • 1: Auto

Address	Data Type	Content
Remote control return parameter 2	Word (unsigned)	Axis numbers 1 to 6 refer to axes 1 to 6.
Remote control return parameter 2	Word (unsigned)	Switch: • 0: Disable • 1: Enable
…	…	…
Remote control return parameter 50	Word (unsigned)	Null

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001: Read failed
Controller system error code	Word (unsigned)	Refer to system fault codes

8.2.18.3 Setting the Collision Detection Sensitivity

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0767
Remote control input parameter 1	Word (unsigned)	In target mode: • 0: Manual • 1: Auto
Remote control input parameter 2	Word (unsigned)	Axis numbers 1 to 6 refer to axes 1 to 6.
Remote control input parameter 3	Single-precision floating-point	Sensitivity: 25% to 300%
Remote control input parameter 4		
…	…	…
Remote control input parameter 50	-	Null

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 50	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x000: Setting failed
Remote control execution failure error code	Word (unsigned)	0x0004: This parameter cannot be set in auto mode, Enable mode or in running state.
Controller system error code	Word (unsigned)	Refer to system fault codes

8.2.18.4 Reading the Collision Detection Sensitivity

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0768
Remote control input parameter 1	Word (unsigned)	In target mode: • 0: Manual • 1: Auto
Remote control input parameter 2	Word (unsigned)	Axis numbers 1 to 6 refer to axes 1 to 6.
Remote control input parameter 3	Word (unsigned)	Null
…	…	…
Remote control input parameter 50	-	Null

Return value:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.

Address	Data Type	Content
Remote control return parameter 1	Word (unsigned)	In target mode: • 0: Manual • 1: Auto
Remote control return parameter 2	Word (unsigned)	Axis numbers 1 to 6 refer to axes 1 to 6.
Remote control return parameter 3	Single-precision floating-point	Sensitivity: 25% to 300%
Remote control return parameter 4		
…	…	…
Remote control return parameter 50	Word (unsigned)	Null

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001: Read failed
Controller system error code	Word (unsigned)	Refer to system fault codes

8.2.18.5 Setting the Collision Detection Trigger Action

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0769
Remote control input parameter 1	Word (unsigned)	In target mode: • 0: Manual • 1: Auto
Remote control input parameter 2	Word (unsigned)	• 3: Alarm stopped • 7: Alarm reset
…	…	…
Remote control input parameter 50	-	Null

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 50	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001: Setting failed
Remote control execution failure error code	Word (unsigned)	0x0004: This parameter cannot be set in auto mode, Enable mode or in running state.
Controller system error code	Word (unsigned)	Refer to system fault codes

8.2.18.6 Reading the Collision Detection Trigger Action

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H076A
Remote control input parameter 1	Word (unsigned)	In target mode: • 0: Manual • 1: Auto
Remote control input parameter 2	Word (unsigned)	-
…	…	…
Remote control input parameter 50	-	-

Return value:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	In target mode: • 0: Manual • 1: Auto
Remote control return parameter 2	Word (unsigned)	• 3: Alarm stopped • 7: Alarm reset
…	Word (unsigned)	..
Remote control return parameter 50	Word (unsigned)	Null

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	0x0001: Read failed
Controller system error code	Word (unsigned)	Refer to system fault codes

8.2.19 Real-time Data Interaction

For a detailed description of the function, see the "Function Application" section in the "Industrial Robot InoRobotLab User Guide".

8.2.19.1 Loading the Real-time Configuration

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0830
Remote control input parameter 1	Word (unsigned)	-
Remote control input parameter 2	Word (unsigned)	-
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 50	-	-

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
Remote control return parameter 2	Word (unsigned)	-
…	…	…
Remote control return parameter 50	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 0: Success • 1: Failed to close the channel • 2: Failed to load the configuration file • 3: Failed to refresh the configuration data • 4: Failed to create the interaction channel
Controller system error code	Word (unsigned)	-
…	…	…
Reserved	Word (unsigned)	-



- When loading the real-time data interaction configuration file, first import the real-time interaction configuration file and the uplink/downlink frame configuration files into the controller.
- During loading, check whether the Cfgfilename tag value in the real-time data interaction configuration file matches the name of the uplink/downlink frame configuration file. If they do not match, the configuration file cannot be loaded properly.

8.2.19.2 Setting the Activation Status

Input value:

Parameter	Data Type	Content
Remote control command	Word (unsigned)	H0831
Remote control input parameter 1	Word (unsigned)	Channel ID: 0 to 15

Parameter	Data Type	Content
Remote control input parameter 2	Word (unsigned)	Status setting: • 0: Disable • 1: Enabled
Remote control input parameter 3	Word (unsigned)	-
…	…	…
Remote control input parameter 50	-	-

Return value, when execution is successful:

Address	Data Type	Content
Current remote control state	Word (unsigned)	0x0002: The command is executed successfully.
Remote control return parameter 1	Word (unsigned)	-
…	…	…
Remote control return parameter 50	Word (unsigned)	-

When execution fails:

Parameter	Data Type	Value
Current remote control state	Word (unsigned)	0x0003: The command execution is abnormal.
Remote control execution failure error code	Word (unsigned)	• 0: Success • 1: ID value error • 2: Status value error • 3: Channel does not exist • 4: Status setting exception • 5: Configuration modification exception • 6: Configuration file modification exception
Controller system error code	Word (unsigned)	Refer to system fault codes
Reserved	-	-
…	…	…
Reserved	Word (unsigned)	-

CAUTION

- When setting the status, the system will verify whether the channel has been created. If not, an error will be returned.
- If the data is modified externally and the status setting command is called again without data reloading, the setting will fail.
- If the modified status is the same as the original status, the call is invalid by default and a modification success prompt appears.
- If another channel is opened, the original channel will be closed first, and then the new channel will be opened.

8.3 Appendix 3: Instructions for Special Bus Types

8.3.1 Overview of Endianness

Endianness is the order of bytes in computer memory. It is divided into little-endian and big-endian.

- Little-endian: For multi-byte data (such as word, float, double), the least significant byte is stored at the lowest memory address.
- Big-endian: For multi-byte data, the most significant byte is stored at the lowest memory address.

The data structure of the two types of endianness is as follows. Note that there is no difference in the endianness for the bit and byte data.

Data Type		Little endian	Big endian
Byte (8 bits)	Byte[0]	Byte[0] (bit[0:7])	Byte[0] (bit[0:7])
	Byte[1]	Byte[1] (bit[0:7])	Byte[1] (bit[0:7])
	Byte[2]	Byte[2] (bit[0:7])	Byte[2] (bit[0:7])
	Byte[3]	Byte[3] (bit[0:7])	Byte[3] (bit[0:7])
Word (16 bits)	Word[0]	Byte[0] (bit[0:7])	Byte[0] (bit[8:15])
		Byte[1] (bit[8:15])	Byte[1] (bit[0:7])
	Word[1]	Byte[2] (bit[0:7])	Byte[2] (bit[8:15])
		Byte[3] (bit[8:15])	Byte[3] (bit[0:7])
Double word/Single-precision floating-point number (32 bits)	DWord[0]/ Float[0]	Byte[0] (bit[0:7])	Byte[0] (bit[23:31])
		Byte[1] (bit[8:15])	Byte[1] (bit[16:23])
		Byte[2] (bit[16:23])	Byte[2] (bit[8:15])
		Byte[3] (bit[23:31])	Byte[3] (bit[0:7])

Data Type		Little endian	Big endian
Double-precision floating-point number (64 bits)	Double[0]	Byte[0] (bit[0:7])	Byte[0] (bit[56:63])
		Byte[1] (bit[8:15])	Byte[1] (bit[48:55])
		Byte[2] (bit[16:23])	Byte[2] (bit[40:47])
		Byte[3] (bit[23:31])	Byte[3] (bit[32:39])
		Byte[4] (bit[32:39])	Byte[4] (bit[23:31])
		Byte[5] (bit[40:47])	Byte[5] (bit[16:23])
		Byte[6] (bit[48:55])	Byte[6] (bit[8:15])
		Byte[7] (bit[56:63])	Byte[7] (bit[0:7])

8.3.2 Endianness Conversion of Siemens PROFINET Bus

Like most bus devices on the market, the IRCB501 series controllers adopt little endian. Note that the processors of Siemens series PLC (PROFINET bus) adopt big endian. Therefore, when the Inovance robot acts as a PROFINET slave, endianness conversion is required to ensure communication consistency between the robot and the Siemens PLC master.

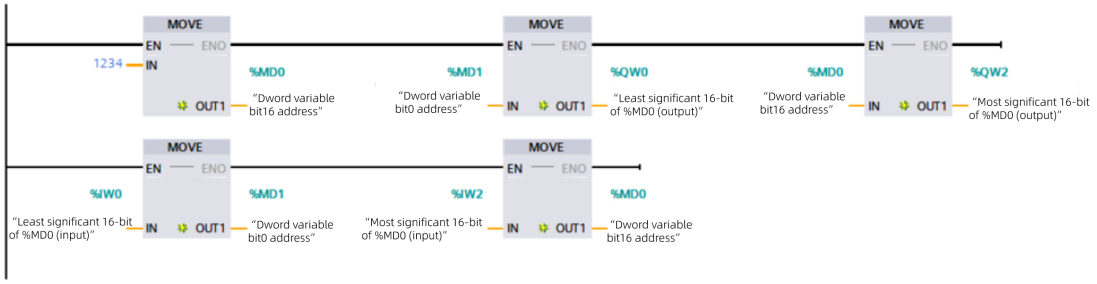
The bus data types supported by IRCB501 series controllers include bit, byte, word, double word, single-precision floating-point (float) and double-precision floating-point (double). When the PROFINET bus is activated, the controller automatically performs endianness conversion of word-type data. To use data types (double word, single-precision floating point, and double-precision floating-point) with a word length exceeding 32 bits, the data needs to be converted to word type at the master before communication is performed.

Data Type	PLC register	Robot register	Remarks
Bit	IB0.0, QB0.0	In[512], Out[512]	Endianness conversion is not required.
Byte	IB0, QB0	InB[64], OutB[64]	
Word	IW0, QW0	InW[32], OutW[32]	The robot system automatically performs endianness conversion.
Double word (Dword) Single-precision floating-point number (Float)	ID0, QD0 Real	InW[32].Float, OutW[32].Float	Manual conversion into word data is required.
Double-precision floating-point number (Double)	LReal	InW[32].Double, OutW[32].Double	

Example of manual endianness conversion:

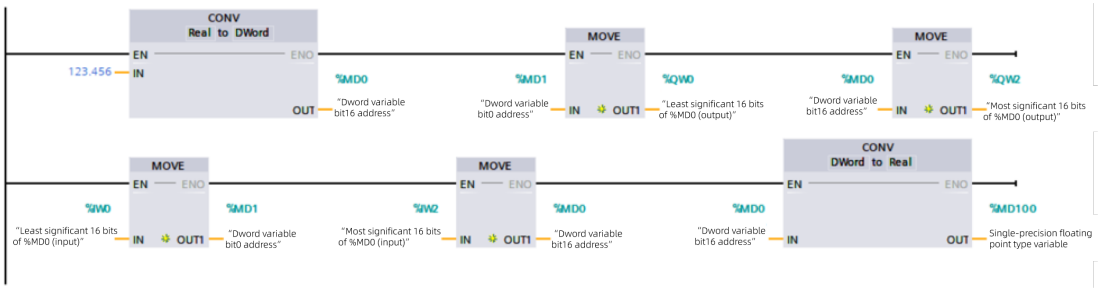
(1) Dword type data conversion

As shown below, MD0 is the internal register address of the PLC (MD0 stores the most significant 16-bit Dword data, and MD1 stores the least significant 16-bit Dword data), which is used to store Dword type data. QW0 is the register address mapped to the PROFINET bus. When data is sent, one Dword type data is divided into two Word type data, and the most significant 16-bit data and the least significant 16-bit data are swapped. When data is received, two Word type data are assigned to the most significant and least significant 16-bit addresses of the Dword register.



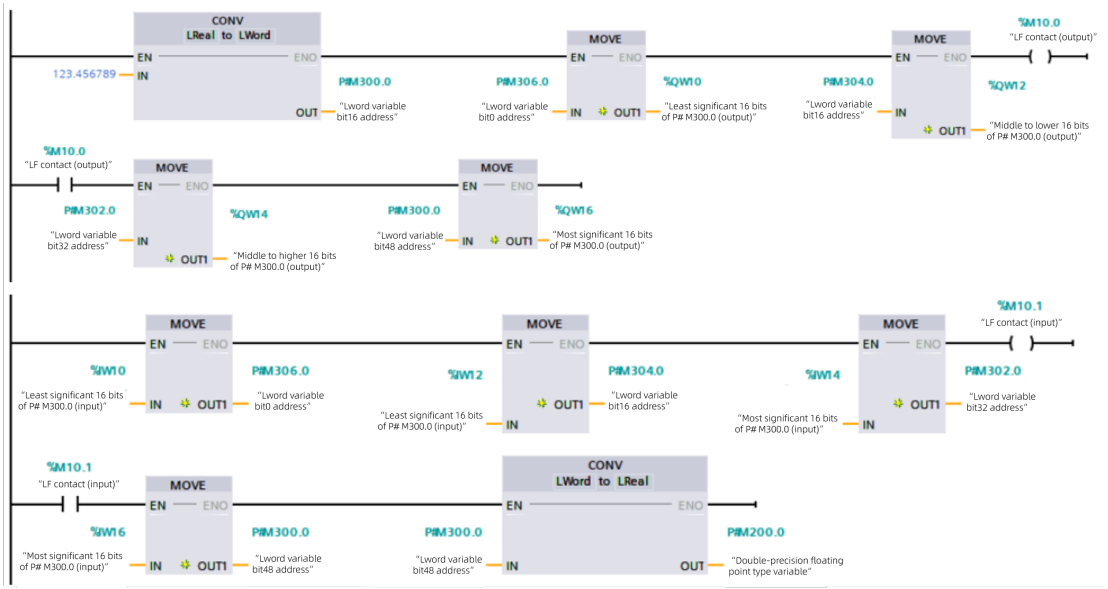
(2) Float type data conversion

Use the CONV instruction to convert Float type data (PLC data is Real type) to Dword type data. The remaining operations are the same as Dword type data conversion.



(3) Double type data conversion

Use the CONV instruction to convert Double type data (PLC data is LReal type) to Lword data (equal to length of four Word data). The remaining operations are the same as Dword type data conversion.

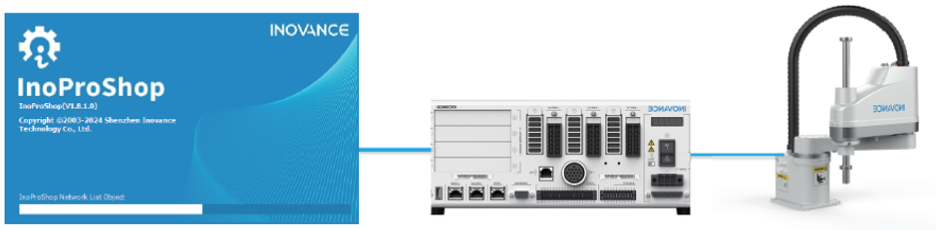


CAUTION

The above examples are for reference only. The addresses of the data register used depend on the actual application.

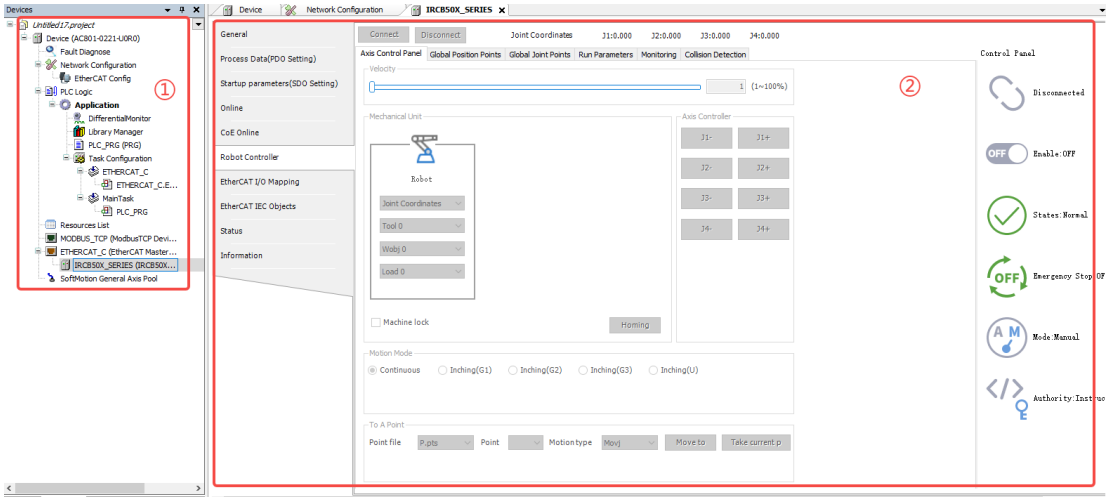
8.4 Appendix 4: Notes for Robot "0" Programming Function

The robot "0" programming function is a bus service provided by the robot controller. In bus-robot interaction mode, this service supports external PLCs to achieve robot teach motion, point acquisition, basic parameter settings, and working condition monitoring through bus communication with the controller. Combined with robot-related interfaces in the PLC-side engineering system code, it enables the application of typical robot working conditions, and reduces the difficulty of using PLC and robot collaborative working conditions, enhancing the usability.



"0" programming mode controls the robot through EtherCAT bus, which requires a stable EtherCAT bus connection between the PLC and the robot. When "0" programming mode is triggered, the bus configuration on the robot side is set to the default "0" programming mode configuration. The original bus configuration will be restored after "0" programming mode is disabled.

- The controller interface for robot control using the "0" programming mode in Inovance PLCs is as follows:



No.	Name	Description
①	Device tree	Used for configuring information such as devices, communications, modules, and programming.
②	"Robot control" interface	Robot "0" programming operation area, including functions such as "Axis control panel", "Global position points", "Global joint points", "Running parameters", "Work condition monitor", and "Collision detection".

- The Inovance PLC instruction library includes basic instructions and motion control instructions for robot control in "0" programming mode.
  - Basic instructions: PDO data read/write, 0 programming mode switching, system fault acquisition and reset, robot and PLC interaction and enabling, emergency stop, frame parameter setting, position acquisition, data stream interaction, optimal trajectory switch, I/O read/write, pallet read/write, point file processing, manual/auto mode switching, and frame setting read/write.
  - Motion control instructions: Teaching of "Move to point", "Playback", "Jog/continuous Motion", and "Homing", etc.

Service and Support

Should you encounter a safety accident during the use or operation of the product, or face challenges in operating and maintaining the equipment, which remain unresolved after the relevant documentation is consulted, we provide multiple channels to ensure prompt resolution:

- Channel #1: Contact service@inovance.com.
- Channel #2: Visit https://www.inovance.com/global to access document downloads, after-sales support, spare parts ordering, repair applications, and authenticity verification services.
- Channel #3: Download My Inovance app (https://zshc-eu.inovance.com/download-pc/) where you can access products info and documentation, and query product parameters.

We are committed to providing you with quick and professional technical support, and we look forward to your satisfaction and trust.

19012874A00

Copyright © Shenzhen Inovance Technology Co., Ltd.

Shenzhen Inovance Technology Co., Ltd.

www.inovance.com

Add.: Inovance Headquarters Tower, High-tech Industrial Park,
Guanlan Street, Longhua New District,
Shenzhen 518000, P.R. China

Tel: (0755) 2979 9595 Fax: (0755) 2961 9897

Suzhou Inovance Technology Co., Ltd.

www.inovance.com

Add.: No. 52, Tian E Dang Road, Wuzhong District, 215104,
Suzhou City, Jiangsu Province, P.R. China

Tel: (0512) 6637 6666 Fax: (0512) 6285 6720