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INOVANCE

INOVANCE
汇川技术

MD100P

Integrated AC Drive for Water Pumps Selection Catalog



Industrial automation
Intelligent elevator
New energy vehicle
Industrial robot
Rail transit

FORWARD, ALWAYS PROGRESSING



20

20 Years' Innovation for a Century of Automation

2003
/
2023

67 nationwide offices

400 authorized distributors

1020 service centers

6 inventory centers

2500 sales and service staff



About us

Shenzhen Inovance Technology Co., Ltd. (stock code: SZ.300124) is founded in 2003 and has a current stock market value of about RMB 160 billion. Inovance is the key force in developing industrial automation and drive technologies in China and a provider of optical-mechatronics-hydraulic-pneumatic integrated solutions covering drive, control, motor, and precision machinearies.

Ionvance achieves an annual revenue of RMB 17.945 billion and an operating profit of RMB 3.573 billon in 2021, which grew by 56% and 70% respectively on yoy basis. Headquartered in Shenzhen, Inovance has established multiple production bases in Suzhou, Changzhou, Yueyang, and Nanjing, as well as subsidiaries, resident offices, and service centers in over 20 countries and regions worldwide. As of 2021, Inovance has obtained 2,186 patents and software copyrights. Through continuous investment in R&D, Inovance has enhanced its technical strength in such fields as motor and drive control, industrial control software, electric drive assembly for new energy vehicles, digitalization, and industrial robots.

Inovance is dedicated to the development of core technologies in motor drive and control, power electronics, and industrial Internet communication, with business covering industrial automation, elevator electrical assessories, new energy vehicles, industrial robots, and rail transit. Inovance aims to provide integrated solutions and industry-tailored products based on various industry needs, creating continuous values for customers.

The core technologies of Inovance not only covers the information layer, control layer, drive layer, execution layer, and perception layer, but also covers such fields as industrial automation, elevator, new energy vehicle, and trail transit, including:

① high performance vector control technology, servo control technology, and high-power IGCT drive technology in the drive layer;

② small- to large-scale PLC technology, CNC control technology, robot control technology, and high-speed bus technology in the control layer;

③ high-performance servo motor technology, high-efficiency motor technology, high-speed motor and magnetic levitation bearing technology, high-precision encoder design and process technology, precision transmission machine design and process technology, and image recognition technology in the execution layer;

④ industrial Internet, edge computing, industrial AI technology in the information layer; and

⑤ process technologies in industries including new energy vehicle, elevator, air contioner, air compressor, 3C manufacturing, lithium battery, silicon, crane, injection molding machine, textile, metal product, printing, and packaging.

Inovance has been listed into "CCTV Top 10 Socially Responsible Corporate in Top 50 Listed Companies in China" in 2017, "National Enterprise Technology Center" in 2021, "First Batch of Postdoctoral Workstation in Shenzhen", "Top 100 Innovative Enterprise In Jiangsu", "First Batch of Key R&D Projects in Intelligent Robot in China", and "New Energy Vehicle Power Assembly Engineering Center in Jiangsu".

(By end of 2022)

Industry Vision

Core Component and Integrated Solution Provider

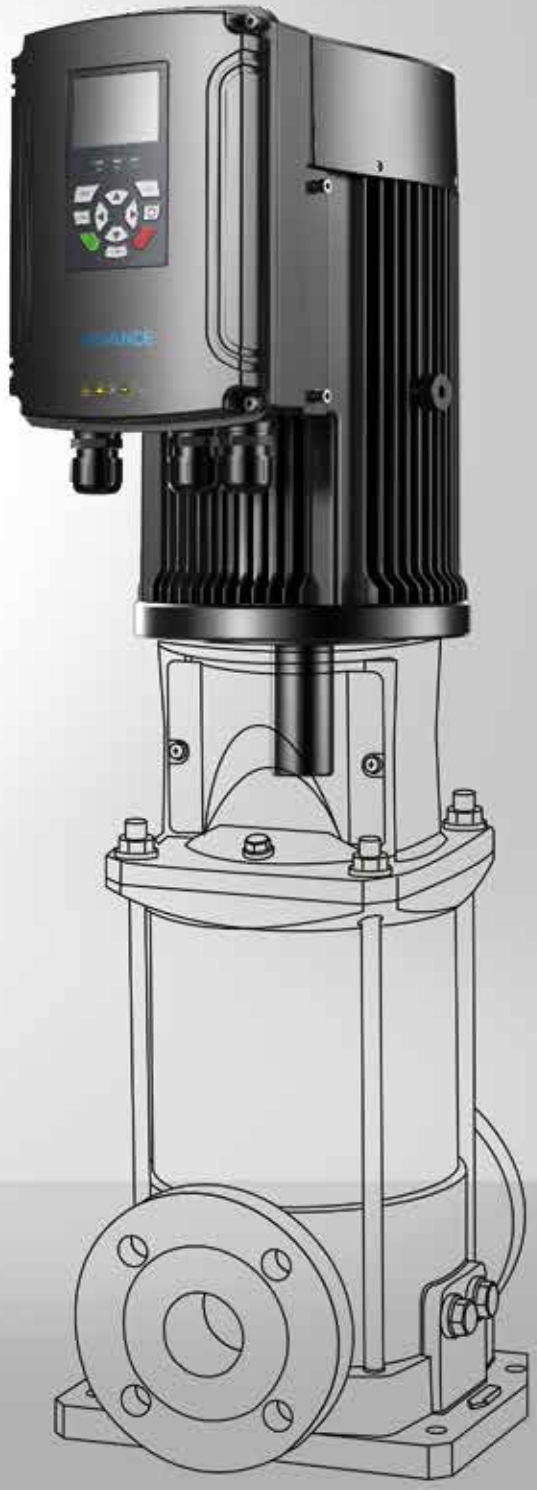
for Fluid Machinery Industry



What Can You Get from the MD100P ?

All-Round Technical Design 6 Significant Advantages

- High Reliability
- Low Noise
- High Performance
- Low Costs
- High Functionality
- Low Power Consumption



MD100P Series Integrated Water Pump AC Drive

The MD100P series integrated water pump AC drive is specially designed for the water pump industry. It is a small- and medium-power drive integrating the AC drive and motor, featuring high protection integration, compact structure, and high performance with sensorless vector control (SVC) of permanent magnet synchronous motor (PMSM). It is easy to use with high reliability and low noise. It can be used for single pump control and intelligent control of multiple pumps.

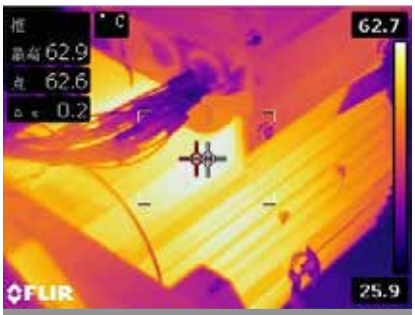
IP rating **IP55**



High Reliability



Environmental reliability test



High-temperature load test

- IP rating: IP55, rated operating temperature: 50°C
- Built-in filter meeting the Category C2 requirements for EMC compliance
- Wide input voltage, without quick-wear parts

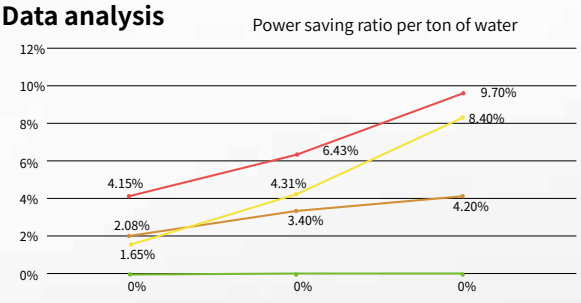
Synchronous motor efficiency of IE5
High efficiency and energy saving

High Performance

- Stable performance and torque with the synchronous motor, and quick response with vector control
- Stable water pressure with distributed PID

Synchronous Speed (r/min)	Power (kW)	IE5	IE4	IE3	IE2
3000	3	91.1%	89.1%	87.1%	84.6%
	4	91.8%	90.0%	88.1%	85.8%
	5.5	92.6%	90.9%	89.2%	87.0%
	7.5	93.3%	91.7%	90.1%	88.1%
	11	94.0%	92.6%	91.2%	89.4%
	15	94.5%	93.3%	91.9%	90.3%
	18.5	94.9%	93.7%	92.4%	90.9%

Data analysis



High Functionality

- Built-in three-phase motor winding temperature sensor and front bearing temperature/vibration sensor
- Built-in SVC and optimal efficiency shift function

Three "Highs" and Three "Lows"

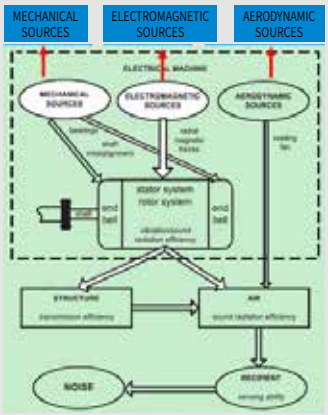


Overall power saving ratio up to **10%**

Low Noise

◆ Patented air duct and fan blade design with low wind noise

◆ High carrier frequency and low magnetic density, without electromagnetic noise during operating



Synchronous Motor Speed（r/min）	Power (kW)	Noise of the MD100P (dB)
3000	3	55
	4	60
	5.5	62
	7.5	65
	11	69
	15	69
	18.5	69

Low Costs

◆ High integration, simplifying system design without increasing system costs

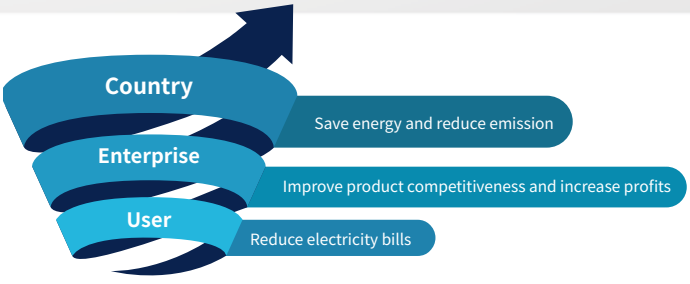
◆ Long service life and light weighted modular design, reducing maintenance costs

◆ Overall power saving ratio up to 10% with the synchronous motor, reducing operational costs

Item	Asynchronous Motor (IE3)	MD100P	Conclusion
Power (kW)	7.5	3~7.5	Drive added
Dimensions (mm)	550 X 270	433 X 205	43.7% down
Weight (kg)	53	30	45% down

Low Power Consumption

◆ PMSM in compliance with the European IE5 standard and China's latest Class 1 energy standard



Product Specifications

Model numbers

MD100P - 4T - 5.5
① ② ③

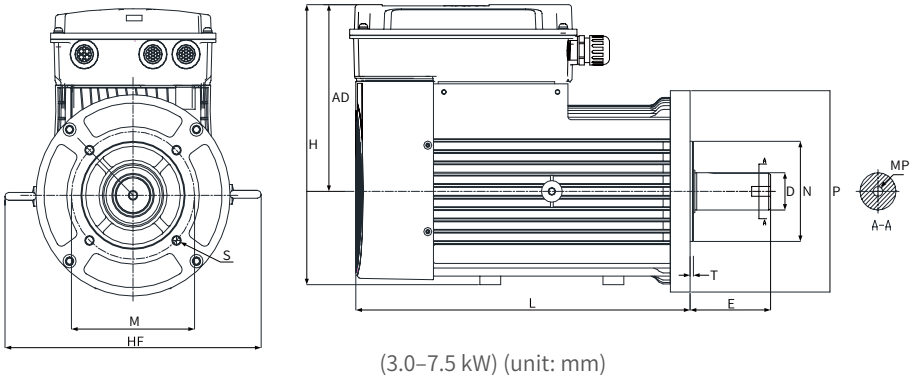
① Product series MD100P Integrated AC Drive for Water Pumps	③ Power rating 3.0：3.0kW 4.0：4.0kW 5.5：5.5kW 7.5：7.5kW 11：11kW 15：15kW 18.5：18.5kW
② Voltage class: 4T Three-phase 380/440 V	



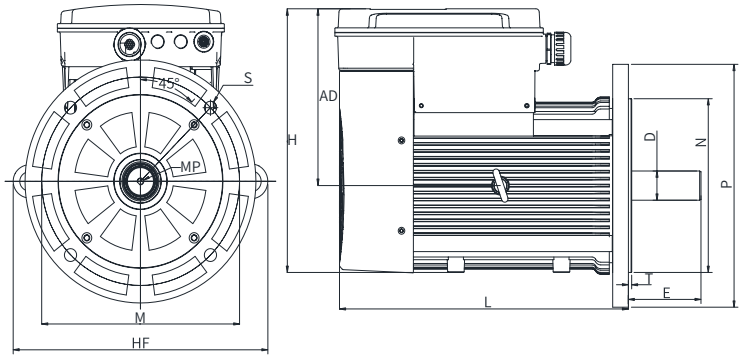
Technical Data

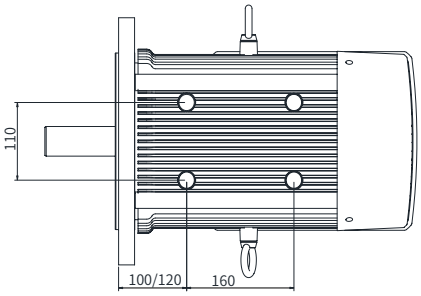
Item		Specifications
Basic drive parameters	Output frequency	0 Hz to 250 Hz
	Carrier frequency	The default carrier frequency is 15 kHz before delivery and can be reduced according to the load requirements. The carrier frequency cannot be lower than 10 kHz.
	Input frequency	Digital setting: 0.01 Hz Analog setting: maximum frequency x 0.025%
	AC drive capacity	0.75 kVA to 18.5 kVA
	Input voltage	AC 3PH 380 V to 440 V (–10% to +10%), 50/60 Hz ± 5%
	Motor type and control mode	Synchronous motor: SVC
	Speed range	1:25 (synchronous motor, SVC)
	Speed control accuracy	±0.5% (SVC)
	Speed fluctuation	±0.5% (SVC)
	Overload capacity	Overload reported after running at 110% of rated current for 60s
Customized functions	Running command channel	Three channels are provided, including operating panel setting, control terminal setting, and serial communication setting, which can be switched over in various ways.
	Frequency source	Four sources are provided, including digital setting, analog setting, serial port setting, and multi-speed setting. You can switch between and superpose these sources in various ways.
HMI	Input terminals	6 low-speed DI terminals 3 AI terminals AI1 only supports a voltage input in the range of 0 V to 10 V. AI2 and AI3 support a voltage input in the range of 0 V to 10 V or current input in the range of 0 mA to 20 mA.
	Output terminals	1 DO terminal 1 AO terminal, supporting a current output in the range of 0 mA to 20 mA or voltage output in the range of 0 V to 10 V 2 RO terminals
	Communication terminals	1 RS485 communication terminal 1 CAN communication terminal
Protection		AC drive overcurrent, AC drive overload, motor overload, AC drive overvoltage, AC drive undervoltage, AC drive over-temperature, output phase loss, communication fault, current detection fault, motor auto-tuning fault, and EEPROM reading-writing fault
Environment	Altitude	⩽ 3000 m, de-rated by 1% for every additional 100 m when the altitude is above 1000 m
	Temperature	–25°C to +55°C In places where the temperature is in the range of 50°C to 55°C , the output current needs to be reduced by 1% for every additional 1°C .
	Humidity	5% to 95% (no frost or condensation)
	Vibration	1g
	Storage temperature	–25°C to +70°C
	Overvoltage category (OVC)	OVCIII
	Pollution degree	PD2
	IP rating	IP55

Dimensions



(3.0–7.5 kW) (unit: mm)





(11–18.5 kW) (unit: mm)

Motor Model	Power (kw)	Weight (kg)	Speed (rpm)	Installation Dimensions (mm)											
				D	E	MP	N	M	S	T	L	AD	HF	H	P
				Shaft Diameter	Shaft Extension	Shaft End Hole	Rabbet	Screw Position	Screw	Rabbet Height	Length	Length	Length	Length	Length
MD100P-4T3.0	3.0	21	3000	28	60	M10 Depth: 20	110	130	4-M8	3.5	353	191	272	286	205
MD100P-4T4.0	4.0	22													
MD100P-4T5.5-4V18	5.5	25													
MD100P-4T7.5-4V18	7.5	30													
MD100P-4T5.5	5.5	35		38	80		130	165	4-M10						
MD100P-4T7.5	7.5	30													
MD100P-4T11	11	45		42	110		250	300	4-Φ18.5	5	455	255	386	380	350
MD100P-4T15	15	61.8													
MD100P-4T18.5	18	64.5									475				

Application

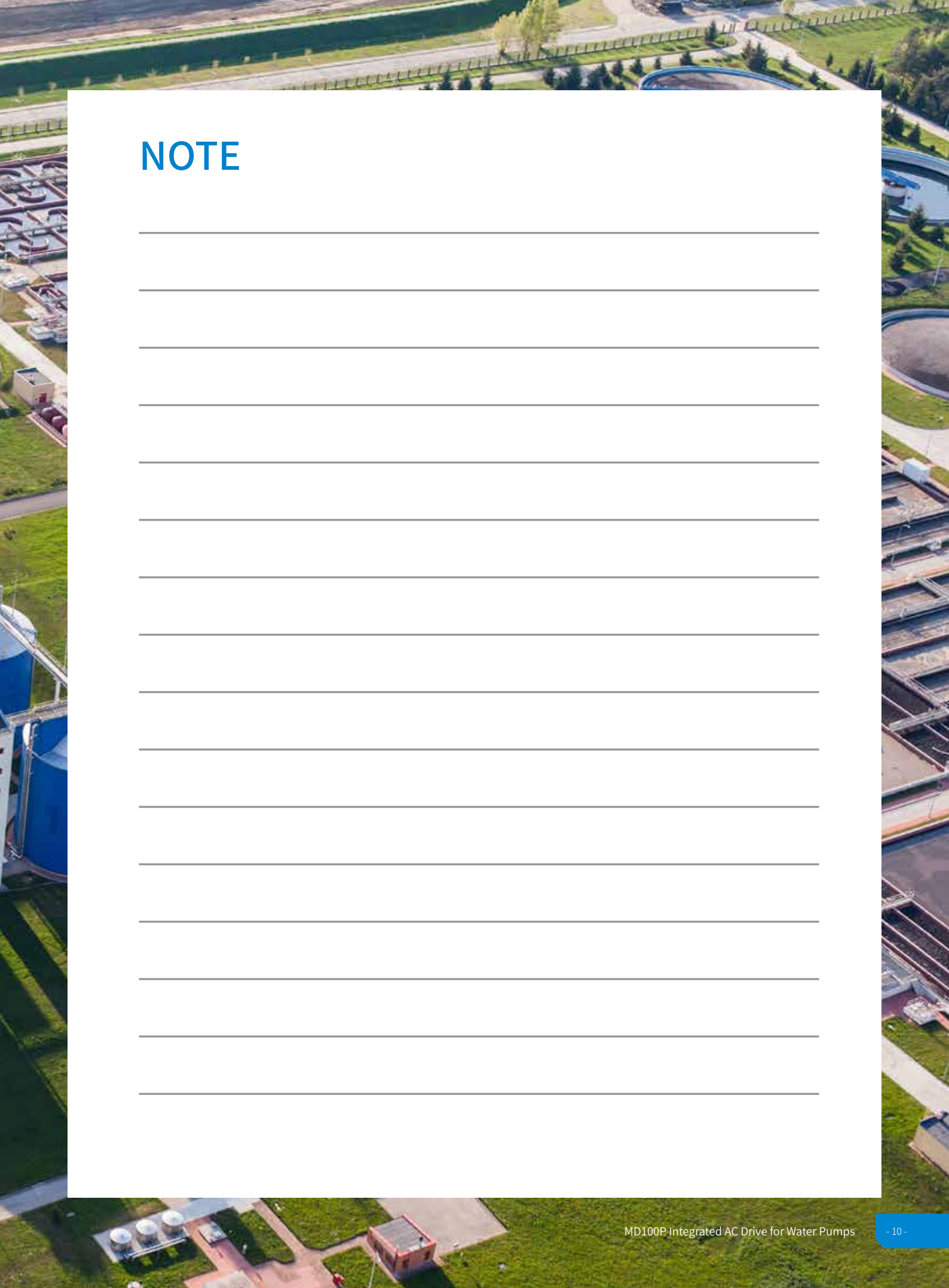
The MD100P series integrated water pump AC drive is specially designed for the water pump industry. It is a small- and medium-power drive integrating the AC drive and motor and featuring high performance, easy operations, and high reliability. It can be used for single pump control and intelligent control of multiple pumps.
The MD100P series integrated water pump AC drive provides a systematic solution for users. It has been successfully applied in our customer projects.











NOTE