

National high-tech enterprise



SAJ SMART PUMP DRIVE

Expert on Variable Frequency Constant Pressure Water Supply



Service Provider for Digitized Building Energy Management

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GUANGZHOU SANJING ELECTRIC CO.,LTD. (Stock code:835613)



To build **green**, intelligent
and **efficient** energy
environment, and to create better,
happier and healthier lives
for people everywhere.



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About SAJ

Headquartered in Guangzhou, serves the world

Guangzhou Sanjing Electric Co., LTD (Stock Code: 835613, hereinafter referred to as SAJ) is a professional leading provider of motor drive and control technology, renewable energy conversion, transmission and storage solutions. Established in 2005, with the registered capital of 50.4 million RMB, SAJ has a strong Research & Development and technical service team.

Focusing on the technical innovation, SAJ masters the leading technology of high performance frequency vector control, motion control, and photovoltaic power generation. SAJ has been awarded as National High-tech Enterprise, Intertek "Authorized Satellite Lab", Guangzhou "Little Giant" Enterprise of Science & Technology, Guangdong Solar Inverter Engineering & Technology Research Center and so on. So far, the company has been authorized 20 invention patents, 76 utility model patents, 15 exterior design patents, 25 software copyrights and 6 software product registrations.

SAJ specializes in providing professional distributed solar inverter, energy storage hybrid solar inverter and monitoring solution, general frequency drive, smart pump drive, and solar pumping system. Now regarding the total shipment, SAJ general frequency drive (<11kW) ranks Top 5, smart pump drive and solar pumping system as Top 1 in domestic market, meanwhile, SAJ solar inverters has been awarded the Top 10 solar inverter brand in China for last five consecutive years, and become the golden supplier of Belgium largest community solar project. For the residential solar inverter (1kW-10kw), SAJ monthly average shipment has become the Top 3 as the first choice for residential solar investment, so far, SAJ has provided distributed solar inverters & solutions for poverty alleviation projects from more than 18 provinces.

With the strategy of local service network, SAJ has 16 branch offices and 50 service centers in China, overseas service center has expanded to Germany, Switzerland, Belgium, Australia and other countries. With the superior quality and comprehensive service network, SAJ has successfully applied 1 million sets of products around the world.

Adhering to the concept of "integrity, learning, innovation, win-win cooperation", SAJ is devoted to the development of the leading drive & zero-carbon and energy saving technology, to build green, smart and efficient energy environment, to make lives better, happier, and healthier.



Milestones

500
thousand sets



- 2016年
 - Wins Top 10 National Low Voltage AC Drive Brand
 - Set up SAJ Jiangxi Daughter Company
 - Signed Strategic Cooperative Agreement with TÜV Rheinland
 - The 4th time to win China Top 10 Solar Inverter Enterprise(2016)
 - Total 1000,000 AC Drive Released Since Established

2017

- Released High Performance VM1000 Vector Control VFD and PDG10 Smart Pump Drive
- Started HR Optimization Project With MERCER.
- Won "China Top 30 Science and Technology Innovation Pioneer" in the "Power of Role Model—Science and Technology Innovation Competition"
- SAJ eSolar Family Photovoltaic Academy Started National Tour from Foshan City
- Won SNEC "Top 10 Highlights" Golden Award of GW Level
- Won "2017 Asia Photovoltaic—Photovoltaic Application Award"
- Won the Honor of "China Top 10 Solar Inverter Enterprise" for 5 Consecutive Years
- SAJ Jiangxi Factory with an area of 22,000 m2 has been put into Production and its Annual Production Capacity is up to 3GW
- SAJ eSolar Shared Operation and Maintenance Platform (eSolar O&M) Launched Officially

2015

- Wins guangdong solar inverter engineering&technology research center
- Wins 2015 excellent supplier of string inverter
- Wins 2015 china top 10 solar inverter enterprise
- Wins 2015 top 10 solar innovation enterprises in asia
- Release pdm20 smart mini pump drive
- Passed the onsas18001 occupational health and safety managementsystem certification
- Wins guangzhou little giant enterprises in science&technology

2014

- IEEE fellow, Chinese-American scientist Feng Lin introduced by Thousand Talents program joins SAJ
- Enters the field of water-application drive; launches IP54 water and dust proof 8200B series smart pump drive
- Passes ISO14001: 2004 Environment Management System Certification
- Becomes the top 1 brand of smart pump drive industry in China
- Releases PDS23 high performance AC solar pump controller and entire solutions

2013

- Ranks in top 20 companies for patent creator in Guangzhou development zone
- Set up European daughter company in Belgium to execute local managing strategy
- SAJ's solar inverters are widely reported by CCTV news
- Wins 2013 innovation award on photovoltaic product

2011

- Starts using the new ERP system
- Obtains "software production" certificate of Guangdong
- Obtains "Enterprise of good faith and credit (grade A)"
- Set up SAJ Renewable Business, entering solar inverter industry
- Establishes the research and innovation base for graduate students in South China University of Technology
- Obtains Intertek "authorized satellite lab"
- Obtains German TÜV, Australian SAA, and UK G83 certificate

2009

- Obtains Private Science & Technology Enterprise Certificate
- Obtains National Hi-Tech Enterprise Certificate
- Obtains independent Import/Export License
- Moves to and headquartered in Science City, Guangzhou
- High-tech Zone

2005

- Enters the field of industrial automation
- Determines variable frequency drives as the core business
- Founded in Guangzhou, Guangdong Province

2007

- Builds the most cost-effective brand in industrial automation
- Launches 8000 series variable frequency drive

2010

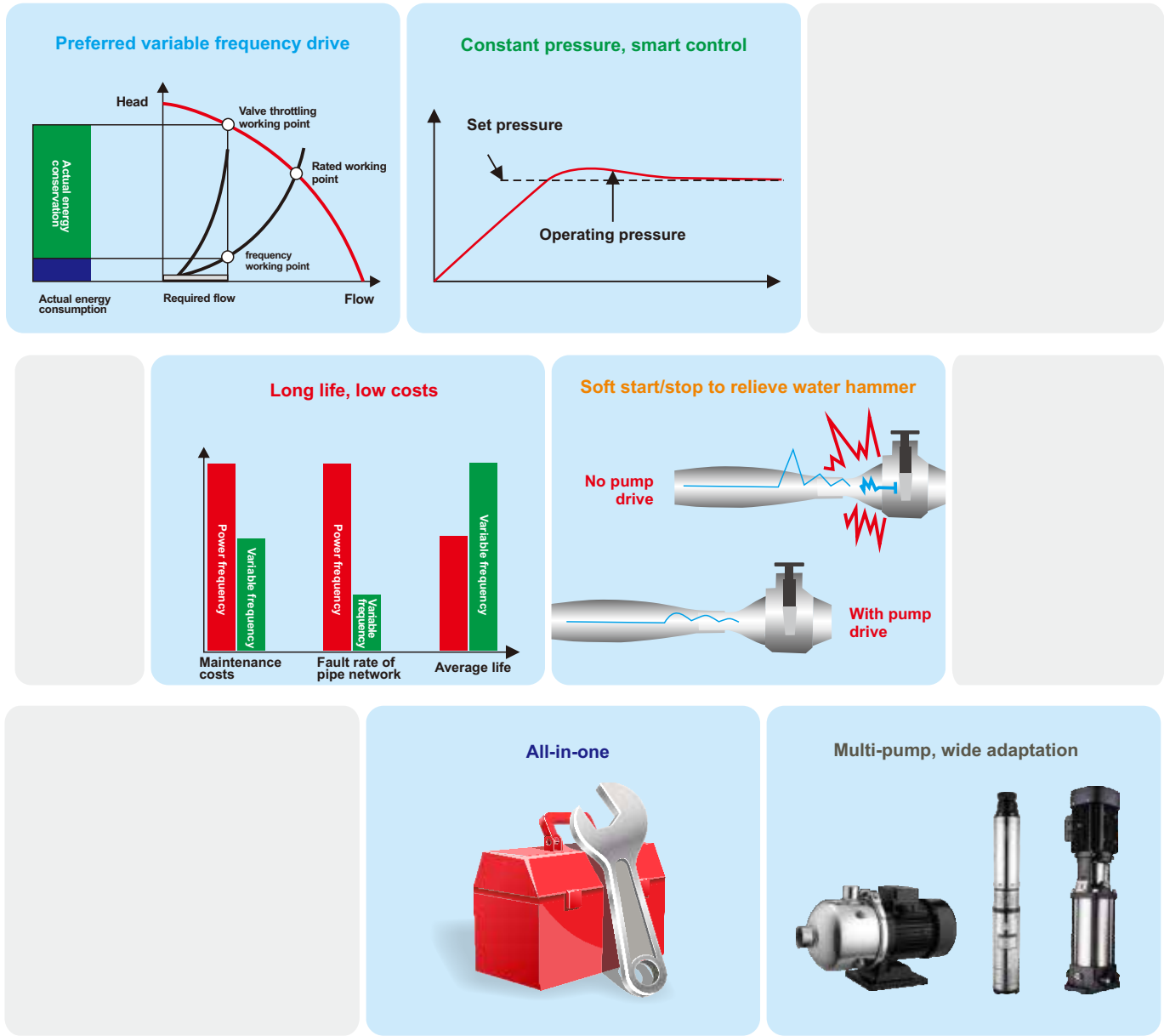
- Heads for servo drives with its successful application to injection molding machine
- Obtains "2010-2011 the best growth brand of Chinese automation"
- Successfully breaks through the vector control platform
- Establishes variable frequency drive engineering research center of Harbin Institute of Technology
- Passes ISO9001:2008 international quality system certification

SAJ SMART PUMP DRIVE

Overview of SAJ Smart Pump Drive

SAJ Smart Pump Drive (S.P.D) is a series of products for water systems which include water intake, water treatment, water distribution and wastewater recycling. Based on variable frequency technology, water systems with S.P.D are easy to keep constant pressure, saving energy and lowering water leakage during operation. Through ramping start and stop of pumps with S.P.D, cost of water systems is also reduced as the service life of pipe network and pumps becomes longer. Integrated with SAJ Smart Pump Control(S.P.C) which combines signal processing, pressure control, network link and special pump function together, SAJ Smart Pump Drive family can cover the requirements of different water systems, providing multiple installation choices and optional parts.

Advantages of SAJ Smart Pump Drive




Contrast of Three Common Constant Pressure Water Supply Control




Contrasting items	SAJ smart pump drive	PLC+variable frequency control	Multi-pump controller+VFD
	Difficulty of realization/effect	Difficulty of realization/effect	Difficulty of realization/effect
Speed regulation energy saving control	Easy	Difficult	Medium
Wiring of electrical control	Easy	Difficult	Difficult
Anti-interference, long term reliability	Good effect	Poor effect	Poor effect
Composition	Brief	Complicated	Complicated
Customization	Easy Customizing	Often rework by PLC programmer	Hard customizing
Expansion capability	Easy	Difficult	medium
Installation&debugging	Convenient	Difficult	Difficult
Parameter setting	Easy operation	Difficult	medium
Maintenance costs	Low	High	medium


Smart Control, Smart Drive


SAJ, as a leading brand in domestic water industry, elaborately builds and creates a potent force in smart pump drives. With industry segmentation, three kinds of products possessed distinctive features and remarkable functions, which creates better values for clients and users.

 **Field 1:** Single pump constant pressure control in home application
PDM20 Series Smart **Mini** Pump Drive

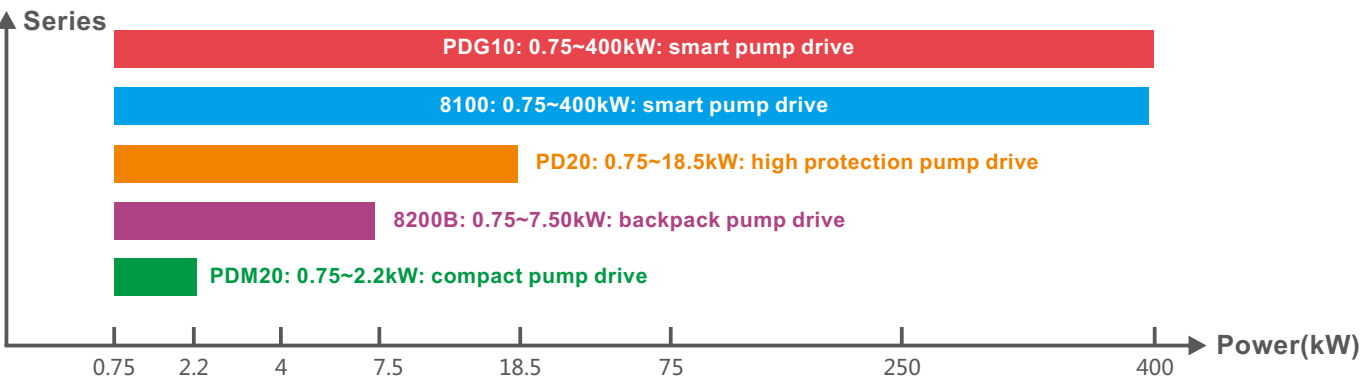
 **Field 2:** Small&medium high accuracy timing control and monitoring water supply system
PD20 Series Smart **Pro** Pump Drive

 **Field 3:** Industrial& civilian pumps and fluid control
PDG10 Series Smart **Effi** Pump Drive

 **Field 2:** Small&medium centralized constant pressure and non-negative water supply device
8200B Series Smart **Easy** Pump Drive

 **Field 4:** Large pump soft start frequency conversion controller
8100 Series Smart **Eco** Pump Drive

Series Chart of Pump Drives



Smart Pump Drive Selection Guide

	PDG10	PDM20	PD20	8100	8200B
Structure	Standard IP20	Backpack, IP65	Backpack, IP65	Standard IP20	Backpack, fully enclosed shell, IP54
Size at the same power	Large	Smallest	Smaller	Large	Small
Power range	0.75~400kW	0.75~2.2kW	0.75~18.5kW	0.75~400kW	0.75~7.5kW
Performance	High	Standard	Higher	High	High
Installation	Cabinet or wall mounted	Backpack installation	Backpack installation	Cabinet or wall mounted	Backpack installation
Function	Stand alone/Multi Pump Smart Link, optimized water supply protection	Single pump application with dedicated functions of water supply	Upper monitor, Multi-Pump Smart Link+real time clock, fuller functions and water supply protection	Stand alone/Multi Pump Smart Link, optimized water supply protection	Stand alone/Multi-Pump Smart Link, optimized water supply protection
Expansion card	Dual RS485 communication	None	RS485 communication extension card	None	None
Applications	Single pump application/ multi-pump(host and auxiliary pumps)combination	Small single pump constant pressure water supply equipment	Single pump application/ multi-pump(host and auxiliary pumps) combination/timing control, high adaptation to environment	Single pump application/ multi-pump(host and auxiliary pumps)combination	Single pump application/multi-pump(host and auxiliary pumps) combination, small power, high adaptation to environment

PDM20 SERIES

Power range: Single-phase input and three-phase output: 0.75-2.2kW

PDM20 Series Smart Mini Pump Drive

PDM20 series products are all-in-one pump drives, suitable for small single pump constant pressure water supply equipment. It is compact and delicate, with its size only 45% of other series of products in the same specification. It can be installed directly on the pump motor with IP65 dust and water proof protection. Equipped with perfect single pump control function, it is easy to operate with high reliability and good quality.

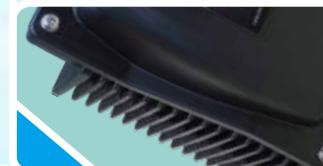


Small size

Great performance

Delicate design

- ▶ Streamline surface design
- ▶ Hidden fan design, beautiful and elegant



High reliability

- ▶ IP65, dust and water proof
- ▶ Special cooling passage, good heat dissipation
- ▶ Controlled fan design, long lifespan



Better applicability

- ▶ Pressure boost& stabilization, restarting at power on, water shortage protection, self-recovery
- ▶ One-key pressure setting, rapid parameter view
- ▶ Single phase 220VAC input, easy application



Perfectly match small three-phase horizontal booster pump

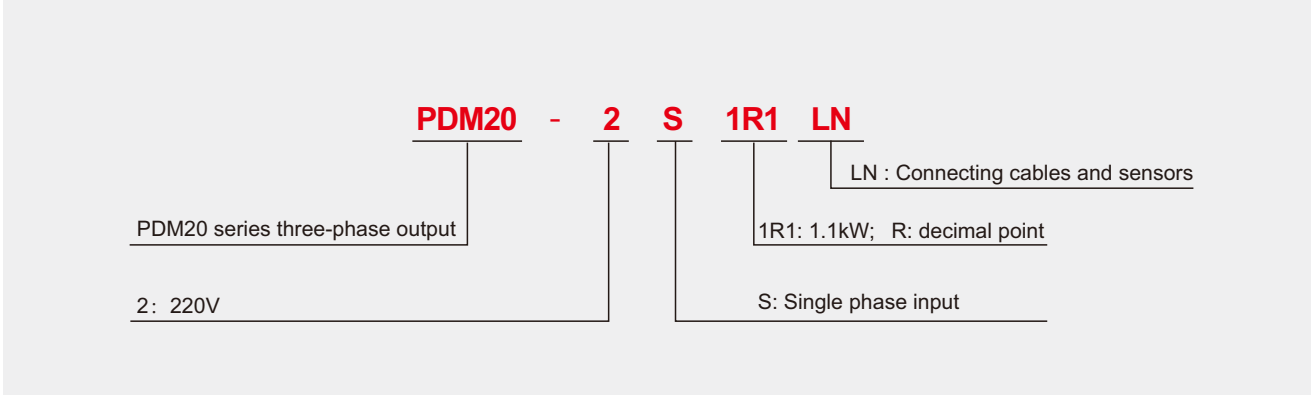
- ▶ Domestic smallest pump drive
- ▶ Installed directly to motor, no need of control cabinet



■ Technical Data

Control characteristic	Control mode	V/F control
	Start torque	1Hz 100%
	Speed regulation range	1:20
	Speed-holding precision	±1.0%
	Overload capability	120% rated current for 60s, 150% rated current for 1s
	V/F curve	Linear
	Acceleration/deceleration curve	Linear; time range: 0.1-3600s
Input/output	Start frequency	1~10Hz
	Input voltage	Single-phase 220V±15%
	Input frequency range	50/60Hz, fluctuation range: ±5%
	Output voltage	Three-phase 0-rated input voltage
	Output frequency	0~50/60Hz
Peripheral interface	Programmable digital input	2 digital input
	Programmable analog input	AI1:0-10V/4-20mA, selected by function parameters
	Analog power	+5V-+24V adjustable power, set voltage by function code setting
Basic functions	Command running channel	operation panel and digital terminals
	Frequency source	Digital setting, PID setting
	Integrated PID	Realize closed loop control system
	AVR	When grid voltage changes, it keeps output voltage constant automatically. By default, it doesn't work at deceleration.
Pump control	Stall control	Automatically limit current and voltage at running period to prevent tripping caused by frequent overcurrent/over voltage.
	LED display, setting	Display pressure, voltage, programmable, rapid pressure setting, parameter hidden function
	Automatic energy-saving running	Decrease output voltage automatically at light load to save energy.
	Password setting	4-bit password can be set with non-zero numbers. Exit password setting interface and the password will be valid after 1 minute.
	Parameter lock	Define whether the parameter is locked in running or stopped state in case of misoperation.
	Constant pressure control	PID adjustment, PID feedback of break detection, PID sleeping and wakeup
	Self-starting at power on	Optional self-starting at power on, adjustable starting delay
	Anti-freezing	Anti-freezing running option: frequency, time, cycle
Water supply protection	Water leakage inspection	Optimize sleeping control by water leakage inspection
	High pressure alarm	Detect feedback pressure to protect pipe network
	Low pressure alarm	Detect feedback pressure to protect pipe network and pumps
	Water shortage protection	Multiple detection modes output pressure, frequency, current; auto reset and restart
Application environment	Altitude	Lower than 1000m, service in derated capacity above 1000m. Derate 1% capacity every 100m increase in height.
	Environmental temperature	-10℃~+40℃, service in derated capacity for 40℃~50℃. Derate 4% capacity every 1℃ increase in temperature.
	Vibration	<9.8m/S2(1.0G)
	Storage temperature	-40℃~+70℃

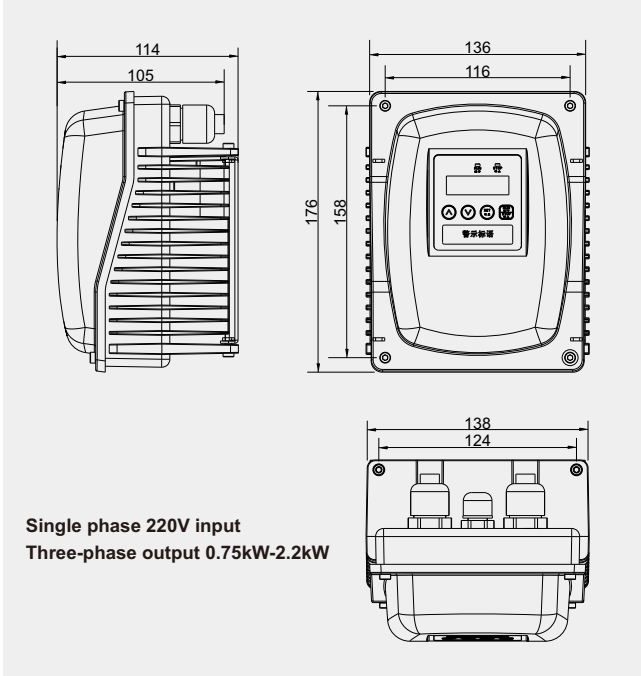
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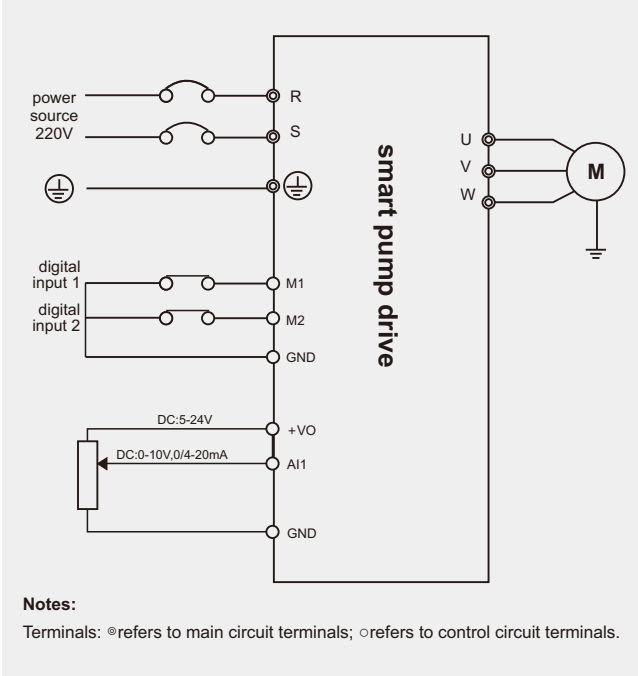
■ Selection Guide

voltage class	kW	HP	rated input current(A)	rated output current(A)	series		2: 220V S: single-phase	adaptive motor power	LN wiring version
single phase 220VAC ±15%	0.75	1	9	4.5	PDM20	-	2S	R75	LN
	1.1	1.5	11	5.5	PDM20	-	2S	1R1	LN
	1.5	2	14	7	PDM20	-	2S	1R5	LN
	2.2	3	20	10	PDM20	-	2S	2R2	LN

■ Outline Dimensions



■ Wiring Diagram



PD20 SERIES

Power range: Three-phase input and three-phase output: 0.75-18.5kW

PD20 Series Smart Pro Pump Drive

PD20 series pump drive is a brand new generation high end smart all-in-one high protection product developed independently by SAJ. Dust and water proof, it can be installed on junction box of pump motor in various brands. Various kinds of sensor signal can be connected in. The system is easy to operate with good reliability, low noise, superior performance. Equipped with dual independent RS485 interface and RTC, it can realize multi-pump(main and host drive) control. When the main drive controls host drives with RS485, it can also communicate with other smart devices or upper machine by the other RS485.



Designed by international
standard certification

CE certification, supporting export



Super high
protection

Excellent dust and
water proof effect
Light and stable



Appearance design concept
derived from Europe

Elaborate design, good quality
Precise manufacture, reliable



Full water supply function

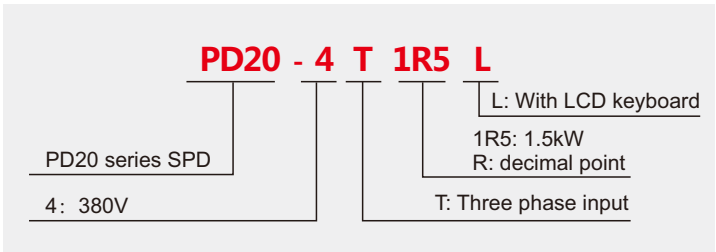
Dual 485, suitable for monitoring
+multi-connection
RTC function, timing edition of
applications
Fully improve dedicated functions
of pumps



■ Technical Data

Control characteristic	Control mode	V/F control
	Start torque	1Hz 100%
	Speed regulation range	1:20
	speed-holding precision	±1.0%
	Overload capability	120% rated current for 60s, 150% rated current for 1s
Input/output and I/O	V/F curve	Linear, squared curve
	Acceleration/deceleration time	Range: 0.1-800s
	Input voltage	220V/380V±15%
	Input frequency range	50/60Hz, fluctuation range: ±5%
	Output voltage	0-rated input voltage
Peripheral interface	Output frequency	0~50/60Hz
	Programmable digital input	2 digital input
	Communication interfaces	Equipped with one isolated RS485, and one extended Rs485
	Programmable analog input	Dual circuit, it can be set as voltage or current input by setting parameters; input voltage range0-10V; input current range 0/4-20mA
	Analog power	4-13,+24V dual power
Basic functions	Relay output	1 output, programmable
	Open collector output	1 output, programmable
	Analog output	Reserved
	Command running channel	Four kinds of channels: 1. operation panel 2. control terminal 3.serial communication port, choose 1 and 2 for host drive and 3 for auxiliaries 4. pressure of water inlet
	Internal clock	LCD keyboard built-in RTC
Pump control	Integrated PID	Advanced PID arithmetic to realize closed loop control system
	Host and auxiliary drive connection	Extensible dual RS485 design, One drive in the system can be host and controls auxiliaries (5 at most) to work by communication mode. Host sends PID feedback to auxiliaries and monitors status of auxiliaries in real time. If failure occurs, the auxiliary will be skipped. The host can control auxiliaries and communicate with upper computer through the extended RS485 at the same time.
	AVR	When grid voltage changes, it keeps output voltage constant automatically. By default, it doesn't work at deceleration.
	Stall control	Automatically limit current and voltage at running period to prevent tripping caused by frequent overcurrent/over voltage.
	Password setting	4-bit password can be set with non-zero numbers. Exit password setting interface and the password will be valid after 1 minute.
Water supply protection	Parameter lock	Define whether the parameter is locked in running or stopped state in case of misoperation.
	Automatic energy-saving running	Decrease output voltage automatically at light load to save energy.
	Constant pressure control	PID adjustment, PID feedback of break detection, PID sleeping and wakeup
	Self-starting at power on	Optional self-starting at power on, adjustable starting delay
	Anti-freezing	Anti-freezing running frequency, time and cycle
Application environment	Water leakage inspection	Optimize sleeping control by water leakage inspection
	High pressure alarm	Detect feedback pressure to protect pipe network
	Low pressure alarm	Detect feedback pressure to protect pipe network and pumps
	Water shortage protection	Multiple water shortage protection detection modes (including no sensor mode)Controller detects that pipe network pressure is lower than water shortage pressure, system stops working automatically. After set period, it restarts automatically for specified times. If pressure restores to normal, system works normally. Otherwise, system stops automatically in case of idle running of pump and prolongs pump lifetime in maximum.
	Installation environment	Installation environment should have be without direct sunlight, dust, corrosive gas, inflammable gas, oil mist, steam, water drop
	Altitude	Lower than 1000m, service in derated capacity above 1000m. Derate 1% capacity every 100m increase in height.
	Environmental temperature	-10℃~+40℃, service in derated capacity for 40℃~50℃. Derate 4% capacity every 1℃ increase in temperature.
	Vibration	<5.9m/S2(0.6G)
	Storage temperature	-40℃~+70℃

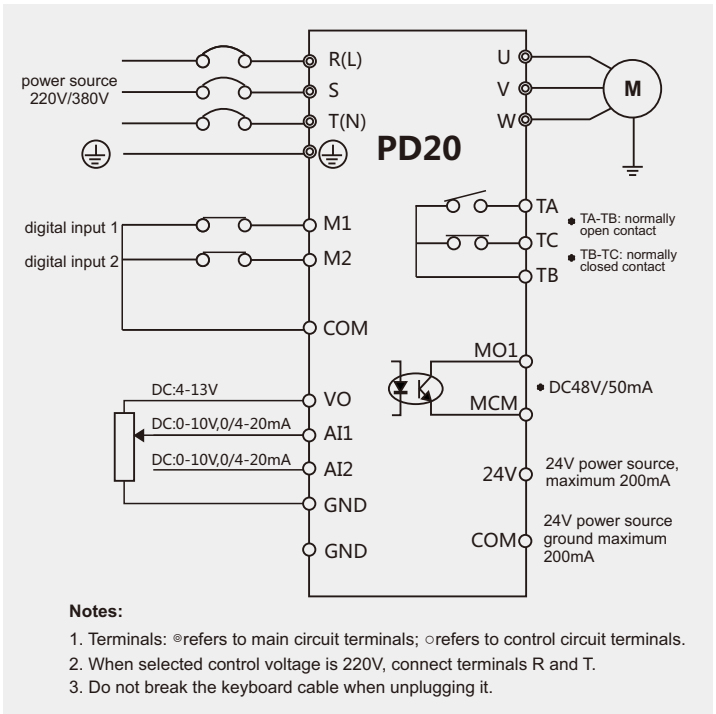
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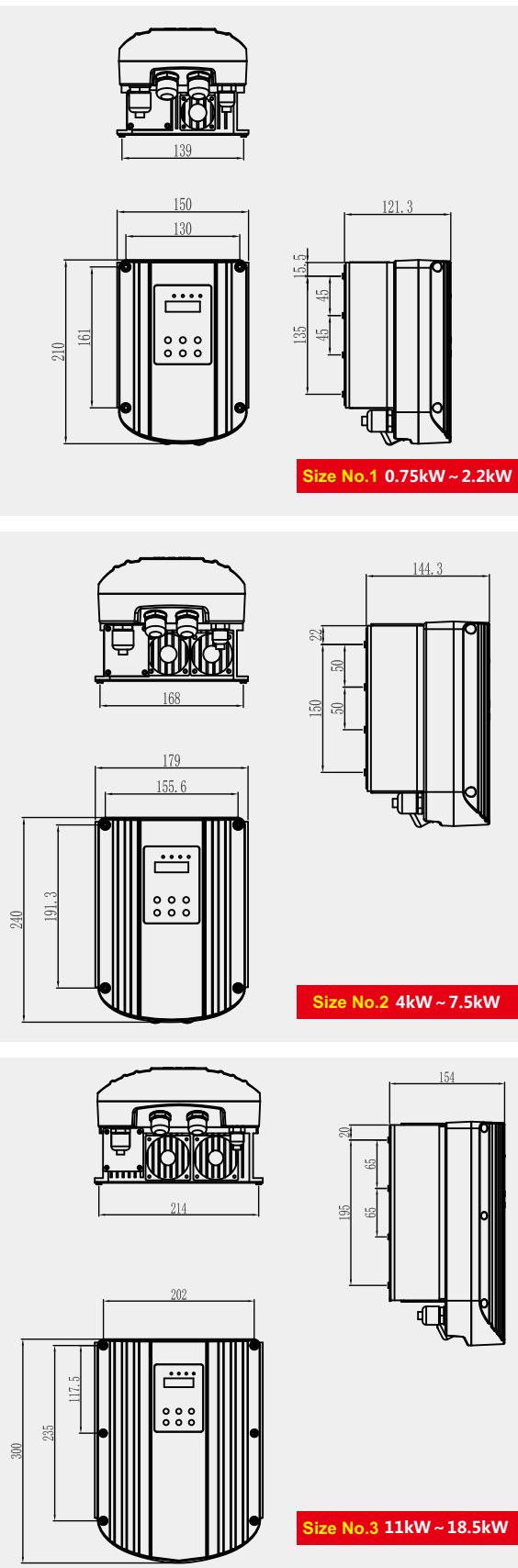
■ Selection Guide

Voltage class	kW	HP	Rated input current (A)	Rated output current (A)	Size No.	Series		2 : 220V 4 : 380V	T: three-phase S: single-phase	Adaptive motor power
Single phase 220VAC ±15%	0.75	1	8.2	4.5	1	PD20	-	2	S	R75
	1.5	2	14.2	7	1	PD20	-	2	S	1R5
	2.2	3	23	10	1	PD20	-	2	S	2R2
Three phase 380VAC ±15%	0.75	1	3.4	2.5	1	PD20	-	4	T	R75
	1.5	2	5	3.7	1	PD20	-	4	T	1R5
	2.2	3	5.8	5	1	PD20	-	4	T	2R2
	4	5	10	9	2	PD20	-	4	T	004
	5.5	7	15	13	2	PD20	-	4	T	5R5
	7.5	10	20	17	2	PD20	-	4	T	7R5
	11	15.0	26	25	3	PD20	-	4	T	11
	15	20.4	35	32	3	PD20	-	4	T	15
	18.5	25.2	38	37	3	PD20	-	4	T	18R5

■ Wiring Diagram



■ Outline Dimensions



PDG10 SERIES

Power range: Single phase input and three-phase output: 0.75-2.2kW;
Three-phase input and three-phase output: 1.5-400kW

PDG10 Series **Smart** Effi Pump Drive

PDG10 series wall mounted (cabinet) pump dedicated drives are smart all-in-one water supply products developed independently by SAJ. It is installed in the electric control cabinet and can be connected to many kinds of sensor signals such as pressure sensors, transmissible pressure gauges and pressure switches. The system is easy to operate and cost effective with high reliability and low noise. Each pump is equipped with a pump drive, which can realize multi-pump(host and auxiliary pumps) linked operation.



Two-way communication extension performance

- ▶ Standard dual RS485 interface for On-line monitoring purpose
- ▶ Standard dual relay, one drive two rotation
- ▶ Standard dual analog, current voltage change at will



Multi-Pump Smart Link, easy setting

- ▶ Only a network cable is needed to combine multiple pumps.
- ▶ One key setting to realize multi-pump linkage constant pressure water supply

Applications

- ▶ Non-negative pressure water supply system
- ▶ Secondary booster water supply system
- ▶ Water treatment, water circulation system
- ▶ Air conditioning cold water and warm water system



Dedicated water supply function

- ▶ Single-point/multi-point pressure detection, more precise and energy saving
- ▶ Dedicated control: dormancy, water leakage, automatic running recovery
- ▶ Dedicated protection: water shortage, antifreezing, alarm at high and low pressure



Wide applicability

- ▶ General product design
- ▶ Wide power range 0.75-400kW
- ▶ Stable and reliable
- ▶ Panel control function, apply to fan and water pump

■ Technical Data

Control characteristic	Starting torque	0.5Hz 100%
	Speed adjustable range	1:100
	speed-holding precision	±1.0%
	Overload capability	150% rated current for 60s; 180% rated current for 1s
	Acceleration/deceleration time	Range: 0.01 ~ 360s
Input/output	Start frequency	0.01 ~ 10.00Hz
	Input voltage	220V/380V±15%
	Input frequency range	50/60Hz, fluctuation range: ±5%
	Output voltage	0 ~ rated input voltage
	Output frequency	0 ~ 50/60Hz
peripheral interface	Programmable digital input	6 ways of digital terminal input
	Programmable analog input	AI1: 0/4 ~ 20mA; To switching 0~10V by setting parameters AI2: 0/4 ~ 20mA; To switching 0~10V by setting parameters
	Relay output	2 way of output, programmable
	Open-collector output	1 way of output, programmable
	Analog output	Reserved
Basic functions	Command running channel	Three kinds of channels: 1. operation panel 2. control terminal 3.serial communication port, choose 1 and 2 for host drive and 3 for auxiliaries
	Multi-Pump Smart Link	One drive in the system can be host and controls auxiliaries(4 at most) to work by communication mode. Host sends PID feedback to auxiliaries and monitors status of auxiliaries in real time. If failure occurs, the auxiliary will be skipped.
	Integrated PID	Advanced PID arithmetic to realize closed loop control system
	AVR	When grid voltage changes, it keeps output voltage constant automatically. By default, it doesn't work at deceleration.
	Stall control	Automatically limit current and voltage at running period to prevent tripping caused by frequent overcurrent/overvoltage.
	Water shortage protection	Controller detects that pipe network pressure is lower than water shortage pressure, system stops working automatically. After set period, it restarts automatically for specified times. If pressure restores to normal, system works normally. Otherwise, system stops automatically in case of idle running of pump and prolongs pump lifetime in maximum.
	High pressure alarm	When pressure exceeds set pressure, it stops automatically to prevent pipe network from high pressure.
	Automatic energy-saving running	Decrease output voltage automatically at light load to save energy.
	Password setting	4-bit password can be set with non-zero numbers. Exit password setting interface and the password will be valid after 1 minute.
	Parameter lock	Define whether the parameter is locked in running or stopped state in case of misoperation.
Application environment	Installation environment	Installation environment should have be without direct sunlight, dust, corrosive gas, inflammable gas, oil mist, steam, water drop
	Altitude	Lower than 1000m, service in derated capacity above 1000m. Derate 1% capacity every 100m increase in height.
	Environmental temperature	-10℃ ~ +40℃, service in derated capacity for 40℃ ~ 50℃. Derate 4% capacity every 1℃ increase in temperature.
	Humidity	≤95%RH, no water condensation
	Vibration	< 5.9m / S2(0.6G)

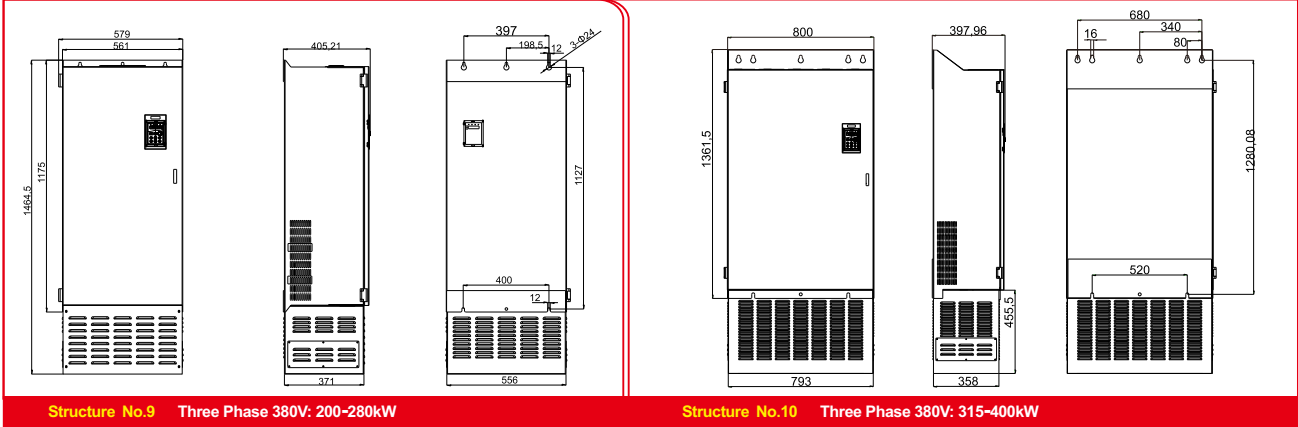
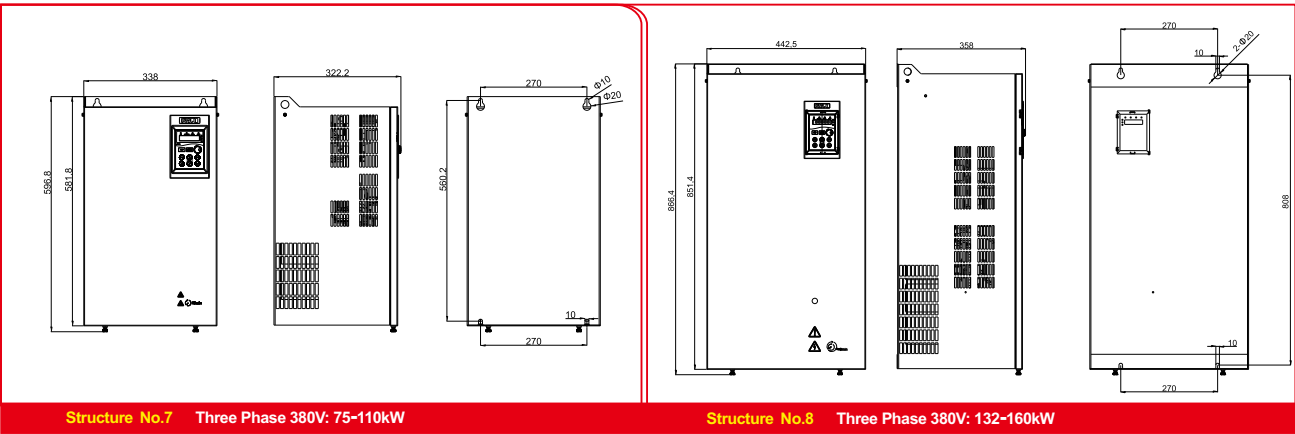
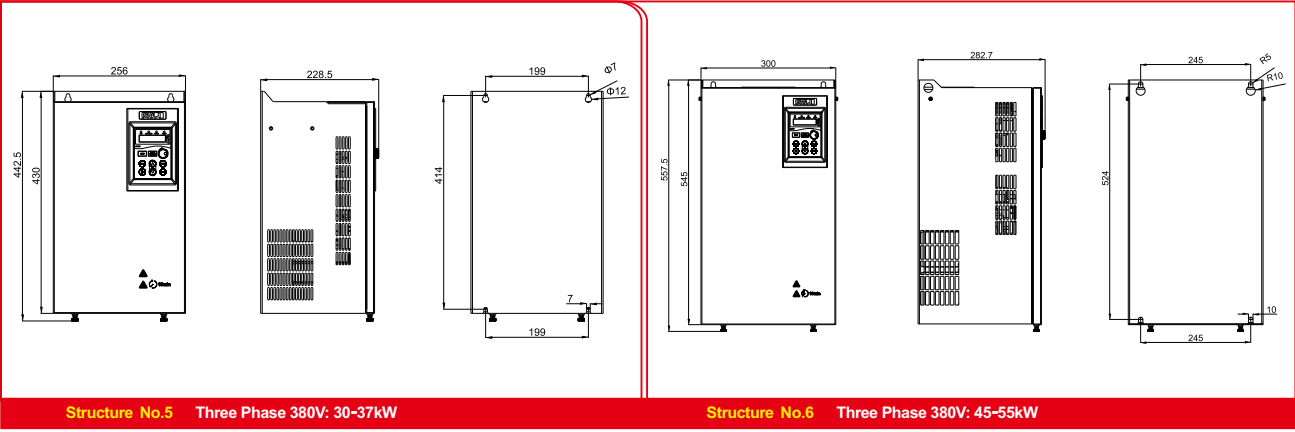
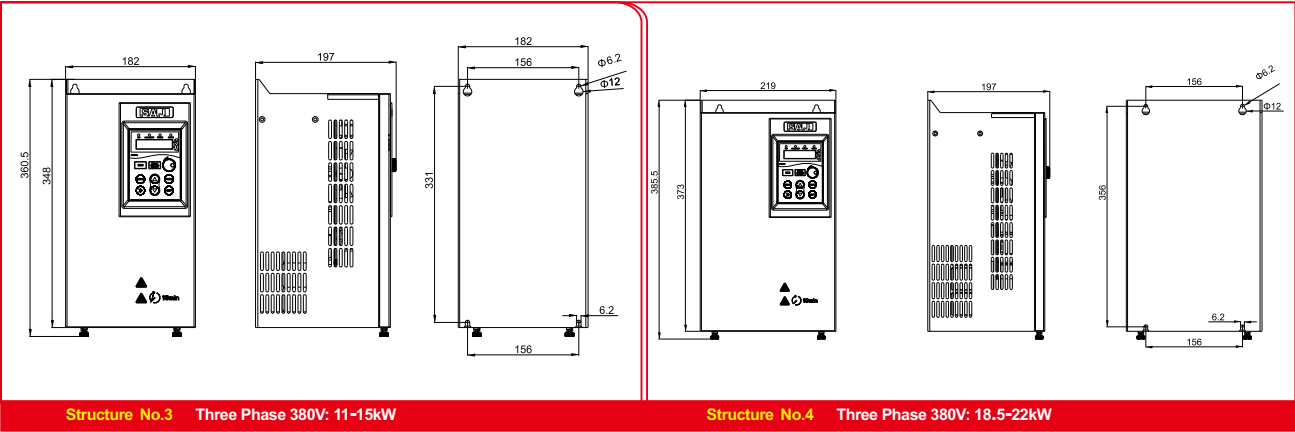
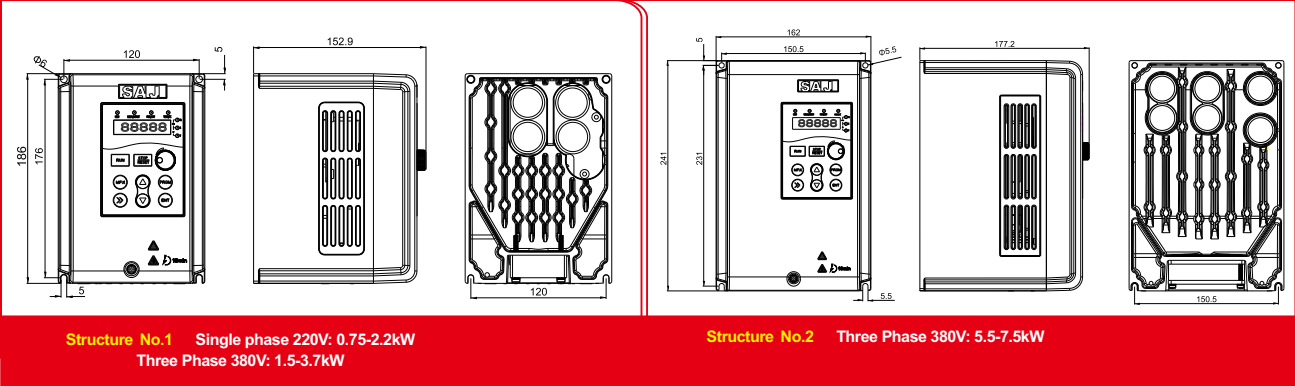
■ Model Number Description

PDG10		-	4	T	1R5
PDG10: protectionseries					1.5kW R : decimal point
2 : 220V , 4 : 380V					S : single phase T : three-phase

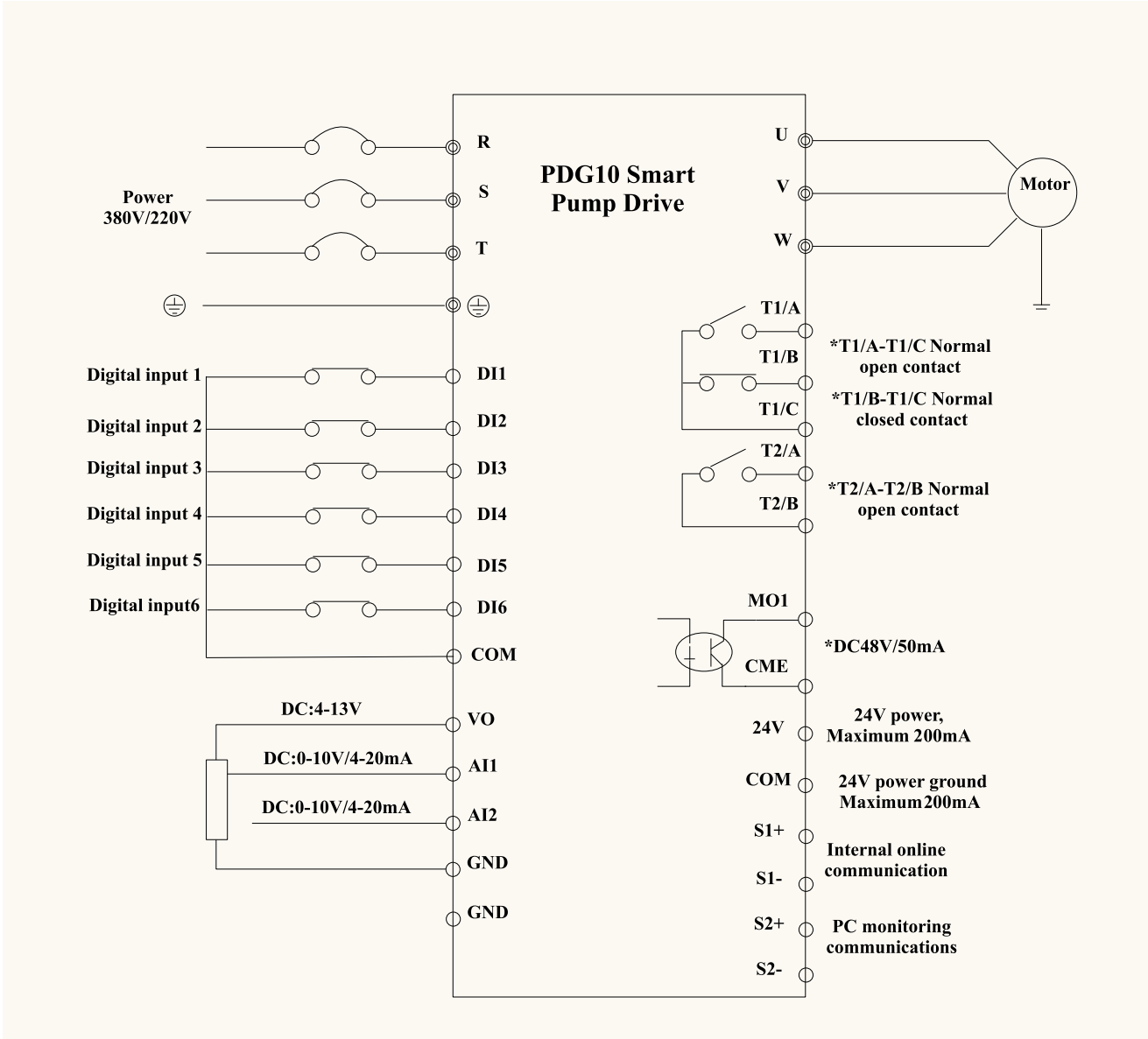
■ Selection Guide

Voltage grade	Power		Rated input current(A)	Rated output current(A)	Struc-ture No.	Series No.	Version	2:220V 4:380V	S:single-phase T: three-phase	Adaptive motor power
	kW	HP								
Single phase 220VAC ±15%	0.75	1	8.2	4.5	1	PDG	10	2	S	0.75
	1.5	2	14.2	7	1	PDG	10	2	S	1.5
	2.2	3	23	10	1	PDG	10	2	S	2.2
Three phase 380VAC ±15%	1.5	2	5.0	3.8	1	PDG	10	4	T	1.5
	2.2	3	5.8	5.1	1	PDG	10	4	T	2.2
	3.7	5	10.5	9	1	PDG	10	4	T	3.7
	5.5	7.5	14.6	13	2	PDG	10	4	T	5.5
	7.5	10	20.5	17	2	PDG	10	4	T	7.5
	11	15	26	25	3	PDG	10	4	T	11
	15	20	35	32	3	PDG	10	4	T	15
	18.5	25	38.5	37	4	PDG	10	4	T	18.5
	22	30	46.5	45	4	PDG	10	4	T	22
	30	40	62	60	5	PDG	10	4	T	30
	37	50	76	75	5	PDG	10	4	T	37
	45	60	923	91	6	PDG	10	4	T	45
	55	70	113	112	6	PDG	10	4	T	55
	75	100	157	150	7	PDG	10	4	T	75
	90	125	180	170	7	PDG	10	4	T	90
	110	150	214	210	7	PDG	10	4	T	110
	132	180	256	253	8	PDG	10	4	T	132
	160	220	307	304	8	PDG	10	4	T	160
	200	275	385	377	9	PDG	10	4	T	200
	220	300	430	426	9	PDG	10	4	T	220
	250	340	468	465	9	PDG	10	4	T	250
	280	380	525	520	9	PDG	10	4	T	280
	315	430	590	585	10	PDG	10	4	T	315
	355	480	665	650	10	PDG	10	4	T	355
	400	545	785	725	10	PDG	10	4	T	400

■ Dimensions(mm)



■ Wiring Diagram



8200B SERIES

Power range: Single phase input and three-phase output: 0.75-2.2kW;
Three-phase input and three-phase output: 0.75-7.5kW



8200B Series **Smart** Easy Pump Drive

8200 series pump dedicated drives are smart all-in-one water supply products with high protection developed independently by SAJ. Its enclosure is dust proof and water proof. It can be installed on the junction box of various pump motors and also be connected to many kinds of sensor signals. The system is easy to operate and cost effective with high reliability and low noise. Each pump is equipped with a pump drive, which can realize multi-pump(host and auxiliary pumps) linked operation.



Dedicated water supply function

- ▶ Single-point/multi-point pressure detection, more precise and energy saving
- ▶ Dedicated control: dormancy, water leakage, automatic running recovery
- ▶ Dedicated protection: water shortage, anti-freezing, alarm at high and low pressure
- ▶ Optional LCD, more convenient operation and debugging



Backpack installation

- ▶ Perfectly match vertical pump
- ▶ Free of control cabinet
- ▶ No need of special wiring

Applications

- ▶ Non-negative pressure water supply system
- ▶ Secondary booster water supply system
- ▶ Water treatment, water circulation system
- ▶ Air conditioning cold water and warm water system

Maintenance free, high reliability

- ▶ IP54, dust proof and water proof
- ▶ Backup pump can replace fault main pump automatically to prevent water failure effectively



Multi-Pump Smart Link, easy setting

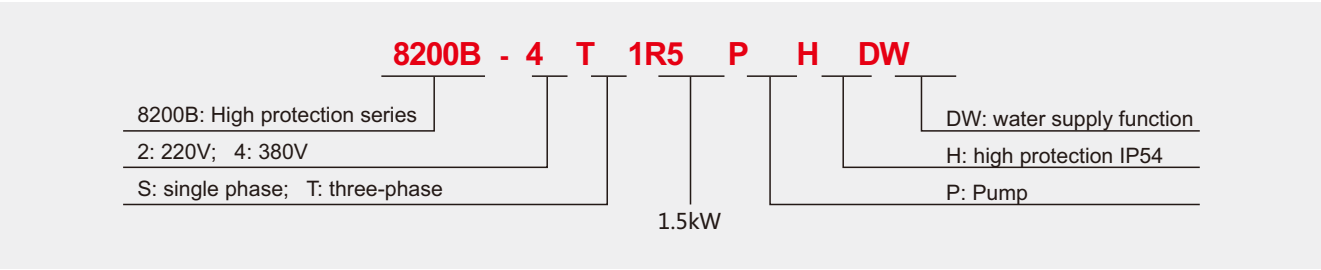
- ▶ Only a network cable is needed to combine multiple pumps.
- ▶ One key setting to realize multi-pump linkage constant pressure water supply



■ Technical Data

Control characteristic	Starting torque	0.5Hz 100%
	Speed adjustable range	1:100
	speed-holding precision	±1.0%
	Overload capability	150% rated current for 60s; 180% rated current for 1s
	Acceleration/deceleration time	Range: 0.01 ~ 360s
Input/output	Start frequency	0.01 ~ 10.00Hz
	Input voltage	220V/380V±15%
	Input frequency range	50/60Hz, fluctuation range: ±5%
	Output voltage	0 ~ rated input voltage
	Output frequency	0 ~ 50/60Hz
Peripheral interface	Programmable digital input	6 ways of digital terminal input
	Programmable analog input	AVI (transmissible pressure gauge): 0 ~ 10V ACI (pressure transmitter): 0.4 ~ 20mA; able to be switched to 0 ~ 10V by jumper
	Relay output	1 way of output, programmable
	Open-collector output	1 way of output, programmable
Basic functions	Analog output	Reserved
	Command running channel	Three kinds of channels: 1. operation panel 2. control terminal 3.serial communication port, choose 1 and 2 for host drive and 3 for auxiliaries
	Multi-Pump Smart Link	One drive in the system can be host and controls auxiliaries(4 at most) to work by communication mode. Host sends PID feedback to auxiliaries and monitors status of auxiliaries in real time. If failure occurs, the auxiliary will be skipped.
	Integrated PID	Advanced PID arithmetic to realize closed loop control system
	AVR	When grid voltage changes, it keeps output voltage constant automatically. By default, it doesn't work at deceleration.
	Stall control	Automatically limit current and voltage at running period to prevent tripping caused by frequent overcurrent/over voltage.
	Water shortage protection	Controller detects that pipe network pressure is lower than water shortage pressure, system stops working automatically. After set period, it restarts automatically for specified times. If pressure restores to normal, system works normally. Otherwise, system stops automatically in case of idle running of pump and prolongs pump lifetime in maximum.
	High pressure alarm	When pressure exceeds set pressure, it stops automatically to prevent pipe network from high pressure.
	Automatic energy-saving running	Decrease output voltage automatically at light load to save energy.
	Password setting	4-bit password can be set with non-zero numbers. Exit password setting interface and the password will be valid after 1 minute.
	Parameter lock	Define whether the parameter is locked in running or stopped state in case of misoperation.
Application environment	Installation environment	Installed in places without direct sunlight; dust and water proof Note: 1. No complete dust prevention; 2. No explosion protection
	Altitude	Lower than 1000m, service in derated capacity above 1000m. Derate 1% capacity every 100m increase in height.
	Environmental temperature	-10℃ ~ +40℃, service in derated capacity for 40℃ ~ 50℃. Derate 4% capacity every 1℃ increase in temperature.
	Humidity	≤95%RH, no water condensation
	Vibration	< 5.9m / S2(0.6G)

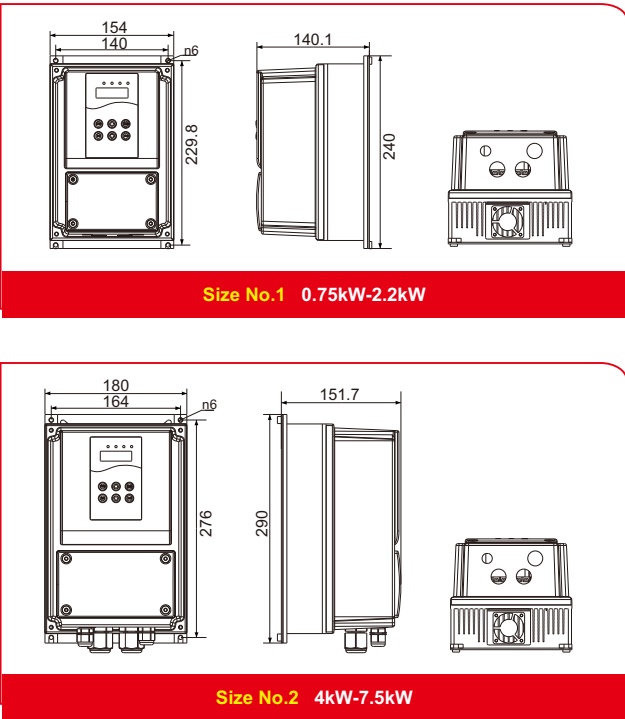
■ Model Number Description



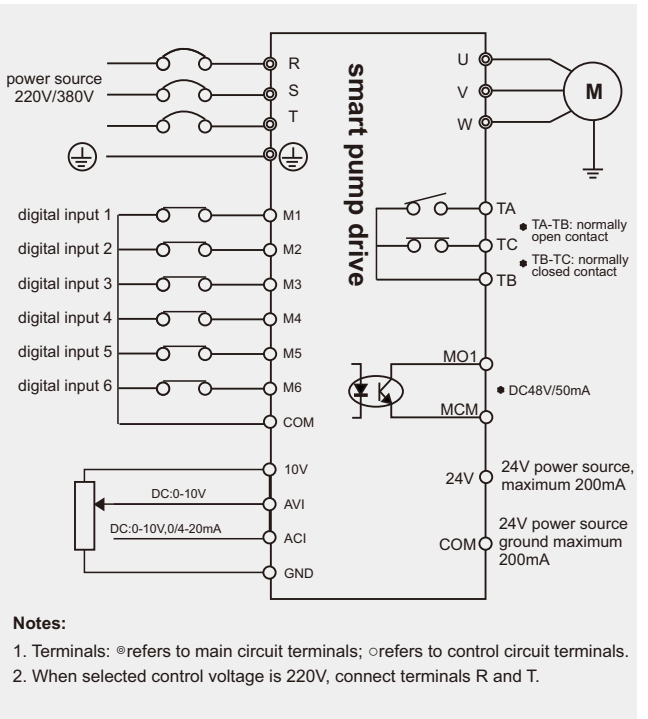
■ Selection Guide

voltage class	kW	HP	rated input current(A)	rated output current(A)	size No.	series		2: 220V 4: 380V	S: single phase T: three-phase	adaptive motor power	P: Pump	H: high protection IP54	DW: water supply function
single phase 220VAC ±15%	0.75	1	8.2	4.5	1	8200B	-	2	S	R75	P	H	DW
	1.5	2	14.2	7	1	8200B	-	2	S	1R5	P	H	DW
	2.2	3	23	10	1	8200B	-	2	S	2R2	P	H	DW
three-phase 380VAC ±15%	0.75	1	3.4	2.5	1	8200B	-	4	T	R75	P	H	DW
	1.5	2	5	3.7	1	8200B	-	4	T	1R5	P	H	DW
	2.2	3	5.8	5	1	8200B	-	4	T	2R2	P	H	DW
	4	5.5	10	9	2	8200B	-	4	T	004	P	H	DW
	5.5	7.5	15	13	2	8200B	-	4	T	5R5	P	H	DW
	7.5	10	20	17	2	8200B	-	4	T	7R5	P	H	DW

■ Outline Dimensions



■ Wiring Diagram



8100 SERIES

Power range: Single phase input and three-phase output: 0.75-2.2kW;
Three-phase input and three-phase output: 0.75-400kW

8100 Series Smart Eco Pump Drive

8100 series wall mounted (cabinet) pump dedicated drives are smart all-in-one water supply products developed independently by SAJ. It is installed in the electric control cabinet and can be connected to many kinds of sensor signals such as pressure sensors, transmissible pressure gauges and pressure switches. The system is easy to operate and cost effective with high reliability and low noise. Each pump is equipped with a pump drive, which can realize multi-pump(host and auxiliary pumps) linked operation.



Small size, convenient installation

- ▶ Small in size compared with like products
- ▶ Cabinet, wall-mounted installation



Multi-Pump Smart Link, easy setting

- ▶ Only a network cable is needed to combine multiple pumps.
- ▶ One key setting to realize multi-pump linkage constant pressure water supply

Applications

- ▶ Non-negative pressure water supply system
- ▶ Secondary booster water supply system
- ▶ Water treatment, water circulation system
- ▶ Air conditioning cold water and warm water system



Dedicated water supply function

- ▶ Single-point/multi-point pressure detection, more precise and energy saving
- ▶ Dedicated control: dormancy, water leakage, automatic running recovery
- ▶ Dedicated protection: water shortage, antifreezing, alarm at high and low pressure



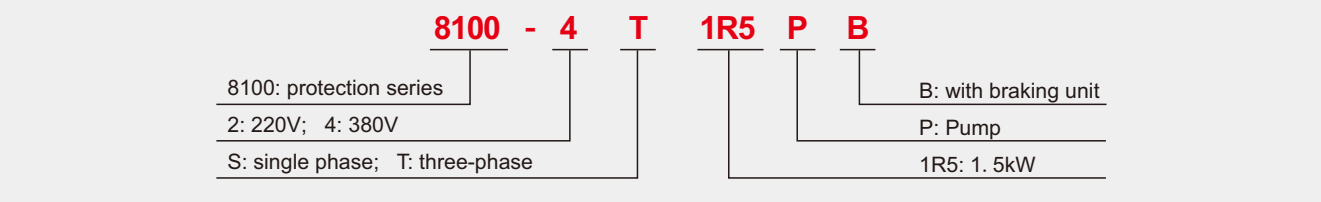
Wide applicability

- ▶ General product design
- ▶ Wide power range 0.75-400kW
- ▶ Stable and reliable

■ Technical Data

Control characteristic	Starting torque	0.5Hz 100%
	Speed adjustable range	1:100
	speed-holding precision	±1.0%
	Overload capability	150% rated current for 60s; 180% rated current for 1s
	Acceleration/deceleration time	Range: 0.01 ~ 360s
Input/output	Start frequency	0.01 ~ 10.00Hz
	Input voltage	220V/380V±15%
	Input frequency range	50/60Hz, fluctuation range: ±5%
	Output voltage	0 ~ rated input voltage
	Output frequency	0 ~ 50/60Hz
peripheral interface	Programmable digital input	6 ways of digital terminal input
	Programmable analog input	AVI (transmissible pressure gauge): 0 ~ 10V ACI (pressure transmitter): 0.4 ~ 20mA; able to be switched to 0 ~ 10V by jumper
	Relay output	1 way of output, programmable
	Open-collector output	1 way of output, programmable
	Analog output	Reserved
Basic functions	Command running channel	Three kinds of channels: 1. operation panel 2. control terminal 3.serial communication port, choose 1 and 2 for host drive and 3 for auxiliaries
	Multi-Pump Smart Link	One drive in the system can be host and controls auxiliaries(4 at most) to work by communication mode. Host sends PID feedback to auxiliaries and monitors status of auxiliaries in real time. If failure occurs, the auxiliary will be skipped.
	Integrated PID	Advanced PID arithmetic to realize closed loop control system
	AVR	When grid voltage changes, it keeps output voltage constant automatically. By default, it doesn't work at deceleration.
	Stall control	Automatically limit current and voltage at running period to prevent tripping caused by frequent overcurrent/over voltage.
	Water shortage protection	Controller detects that pipe network pressure is lower than water shortage pressure, system stops working automatically. After set period, it restarts automatically for specified times. If pressure restores to normal, system works normally. Otherwise, system stops automatically in case of idle running of pump and prolongs pump lifetime in maximum.
	High pressure alarm	When pressure exceeds set pressure, it stops automatically to prevent pipe network from high pressure.
	Automatic energy-saving running	Decrease output voltage automatically at light load to save energy.
	Password setting	4-bit password can be set with non-zero numbers. Exit password setting interface and the password will be valid after 1 minute.
	Parameter lock	Define whether the parameter is locked in running or stopped state in case of misoperation.
Application environment	Installation environment	Installation environment should have be without direct sunlight, dust, corrosive gas, inflammable gas, oil mist, steam, water drop
	Altitude	Lower than 1000m, service in derated capacity above 1000m. Derate 1% capacity every 100m increase in height.
	Environmental temperature	-10℃ ~ +40℃, service in derated capacity for 40℃ ~ 50℃. Derate 4% capacity every 1℃ increase in temperature.
	Humidity	≤95%RH, no water condensation
	Vibration	< 5.9m / S2(0.6G)

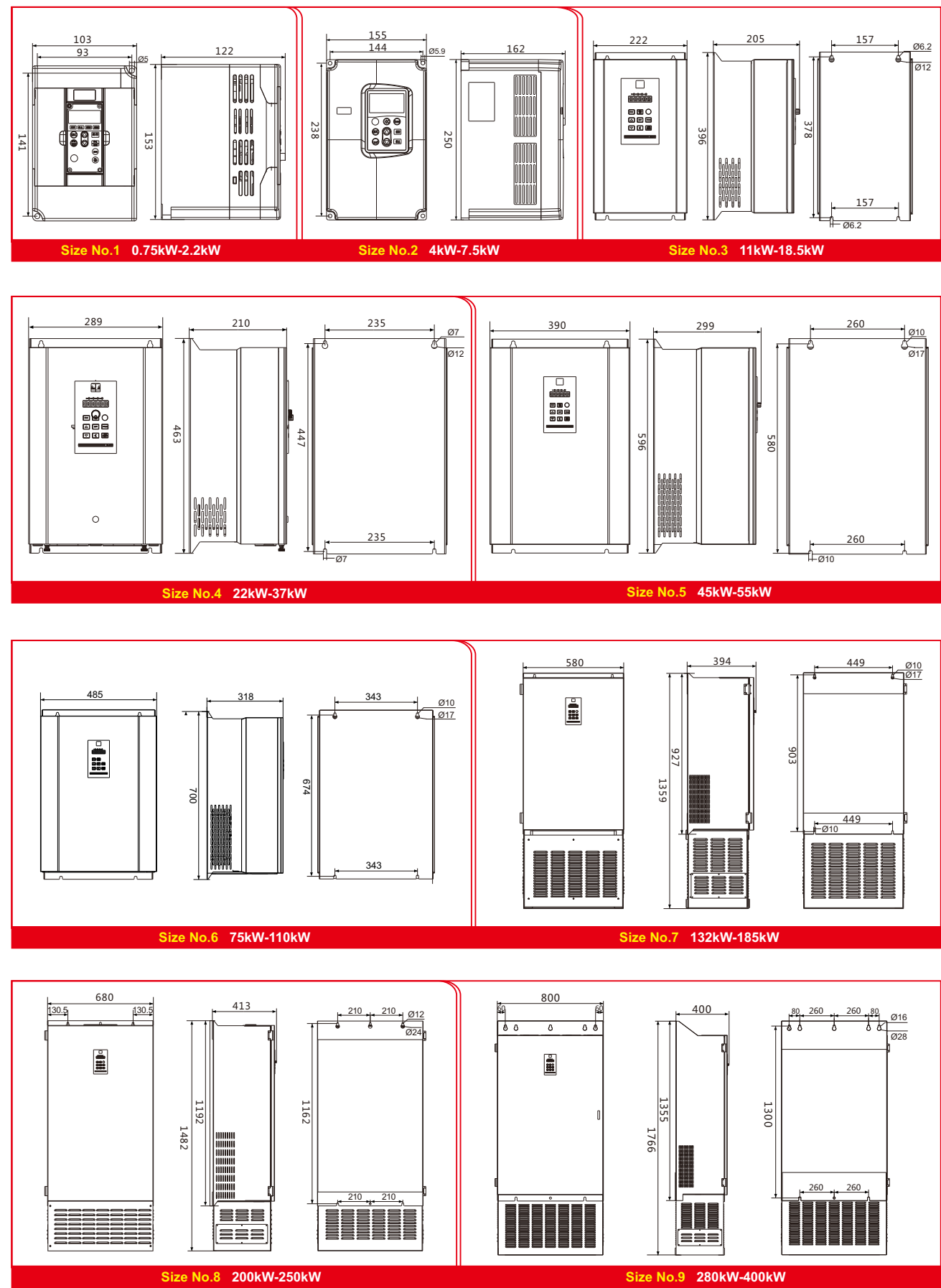
■ Model Number Description



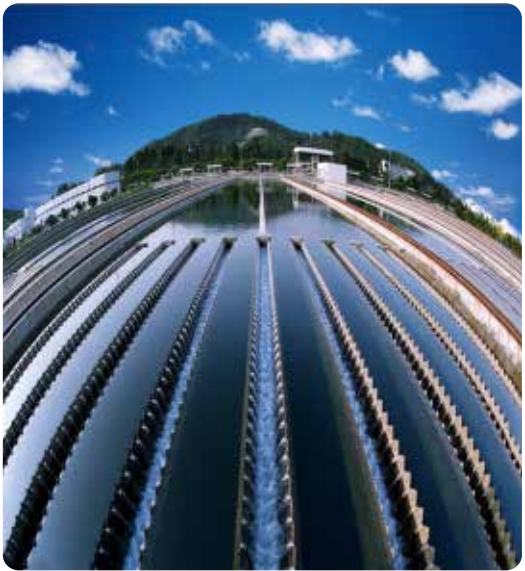
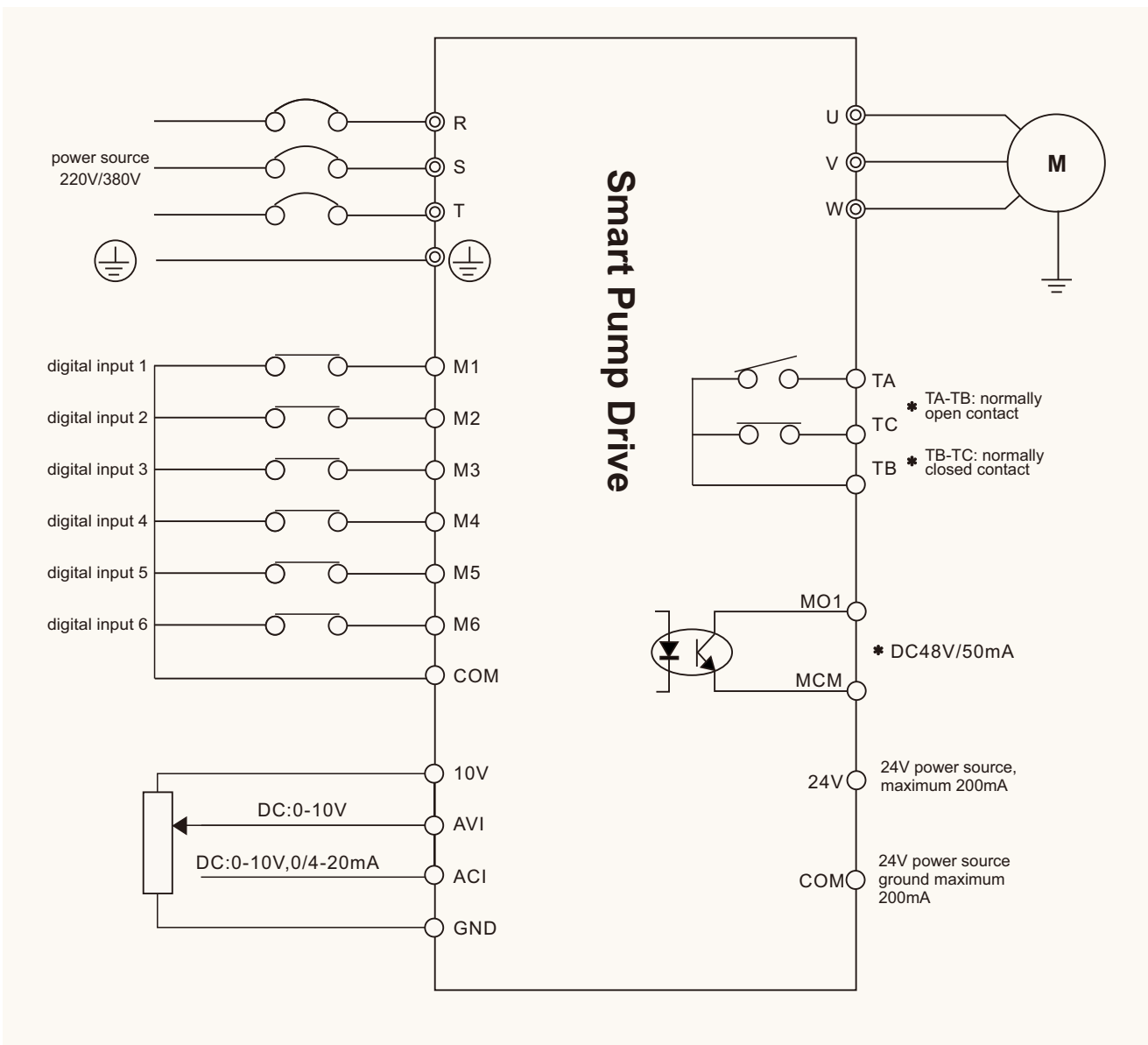
■ Selection Guide

voltage class	kW	HP	rated input current(A)	rated output current(A)	size No.	series		2: 220V 4: 380V	S: single phase T: three-phase	adaptive motor power	P: Pump	B: standard built-in braking function -: optional braking function
single phase 220VAC ±15%	0.75	1	8.2	4.5	1	8100	-	2	S	R75	P	B
	1.5	2	14.2	7	1	8100	-	2	S	1R5	P	B
	2.2	3	23	10	1	8100	-	2	S	2R2	P	B
three-phase 380VAC ±15%	0.75	1	3.4	2.5	1	8100	-	4	T	R75	P	B
	1.5	2	5.0	3.7	1	8100	-	4	T	1R5	P	B
	2.2	3	5.8	5.0	1	8100	-	4	T	2R2	P	B
	4	5.5	10.0	9.0	2	8100	-	4	T	004	P	B
	5.5	7.5	15.0	13.0	2	8100	-	4	T	5R5	P	B
	7.5	10	20.0	17.0	2	8100	-	4	T	7R5	P	B
	11	15	26.0	25.0	3	8100	-	4	T	011	P	B
	15	20	35.0	32.0	3	8100	-	4	T	015	P	B
	18.5	25	38.0	37.0	3	8100	-	4	T	18R5	P	B
	22	30	46.0	45.0	4	8100	-	4	T	022	P	
	30	40	62.0	60.0	4	8100	-	4	T	030	P	
	37	50	76.0	75.0	4	8100	-	4	T	037	P	
	45	60	90.0	90.0	5	8100	-	4	T	045	P	
	55	70	105.0	110.0	5	8100	-	4	T	055	P	
	75	100	140.0	150.0	6	8100	-	4	T	075	P	
	93	125	160.0	176.0	6	8100	-	4	T	093	P	
	110	150	210.0	210.0	6	8100	-	4	T	110	P	
	132	175	240.0	250.0	7	8100	-	4	T	132	P	
	160	210	290.0	300.0	7	8100	-	4	T	160	P	
	185	245	330.0	340.0	7	8100	-	4	T	185	P	
	200	260	370.0	380.0	8	8100	-	4	T	200	P	
	220	300	410.0	415.0	8	8100	-	4	T	220	P	
	250	350	460	470	8	8100	-	4	T	250	P	
	280	370	500	520	9	8100	-	4	T	280	P	
	315	420	580	600	9	8100	-	4	T	315	P	
	355	500	620	640	9	8100	-	4	T	355	P	
	400	530	670	690	9	8100	-	4	T	400	P	

■ Outline Dimensions



■ Wiring Diagram



DETAIL APPLICATIONS OF SAJ SMART PUMP DRIVE

Single Pump Pressure Boost Unit



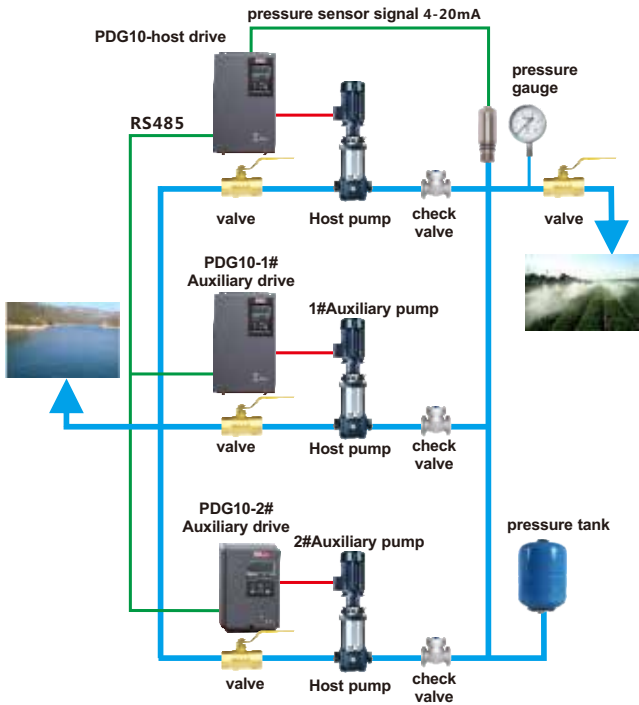
Main functions

Function	Description
Process control	Constant pressure water supply to maintain constant pressure of outlet
Installation	Installed in a cabinet or motor backpack installation
Protection	Water shortage protection, automatic restoration function
Anti-freezing	Anti-freezing operation
Starting mode	Self-starting at power on
Power supply	Two kinds: single phase and three-phase
Accessories	General standard accessories, pressure sensor etc.

Main parts

Name	Quantity	Function
Pump drive	1	Speed regulation, control, protection
Pressure tank	1	Pressure stabilization, buffering
Pressure sensor	1	Detects discharge pressure
Pump with motor	1	Water supply
Five-path check valve	1	Prevent back-flow with multiple specifications
Pressure gauge	1	Indicates actual pressure of supply water

Agriculture Irrigation System



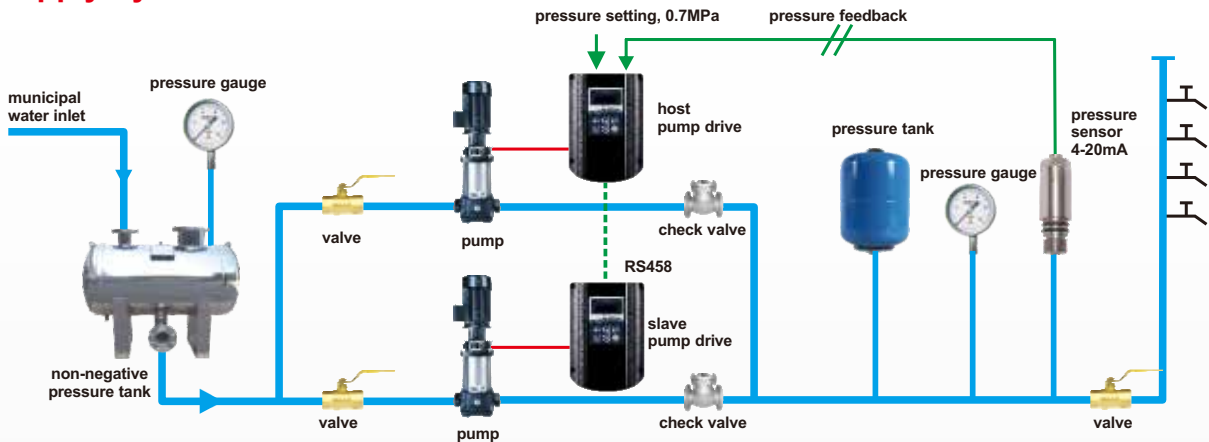
Main functions

Function	Description
Process control	Constant pressure water supply to maintain constant pressure of outlet
Installation	Installed in a cabinet or motor backpack installation
variable frequency pump+power frequency pump combined system	Automatic circulation of host and auxiliary pumps and allocation of loads; backup host can be set; supports 5 pumps at most
Protection	Water shortage protection, automatic restoration function
timing circulation and sleep	schedule pumps to run regularly; sleeping pump can be set, with wakeup function

Main parts

Name	Quantity	Function
Pump drive	1	Speed regulation, control, protection
Pressure tank	1	Pressure stabilization, buffering
Pressure sensor	1	Detects discharge pressure
Pump with motor	more than 1	Water supply
check valve	one for each pump	Prevent back-flow with multiple specifications
Pressure gauge	one or two	Indicates actual pressure of supply water

Multi-pump Smart Link Non-negative Pressure Variable Frequency Constant Water Supply System



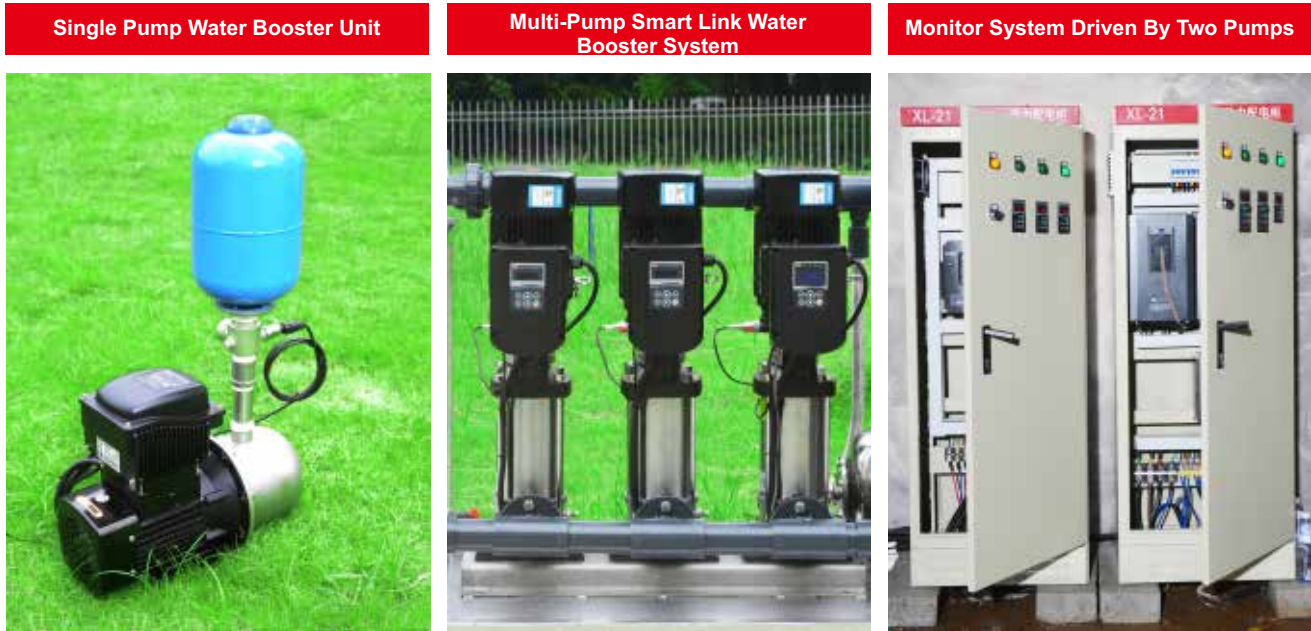
Main functions

Function	Description
Process control	Constant pressure water supply to maintain constant pressure of outlet
Installation	Installed in a cabinet or motor backpack installation
multi-pump connection	automatic circulation of host and auxiliary pumps and allocation of loads; backup host can be set; supports 5 pumps at most
Protection	Water shortage protection, automatic restoration function
Anti-freezing	Anti-freezing operation
Starting mode	Self-starting at power on
Power supply	Two kinds: single phase and three-phase
Accessories	General standard accessories, pressure sensor etc.

Main parts

Name	Quantity	Function
Pump drive	more than 2	Speed regulation, control, protection
Pressure tank	1	Pressure stabilization, buffering
Pressure sensor	1	Detects discharge pressure
Pump with motor	more than 2	Water supply
Five-path check valve	one for each pump	Prevent back-flow with multiple specifications
Pressure gauge	2	Indicates actual pressure of supply water
non-negative pressure tank	1	Indicates actual pressure of supply water and municipal water inlet pressure

Applications of Smart Pump Drive



APPLICATION CASES OF SAJ SMART PUMP DRIVE

Yangjiang platinum bay residential water supply



7.5kW*3 VRV



Guangzhou steel city site water supply system



15kW*2 VRV



APPLICATION CASES OF SAJ SMART PUMP DRIVE

New world garden life water supply in guangdong



Sanya halal south temple water supply system



APPLICATION CASES OF SAJ SMART PUMP DRIVE

Era bank villa life water supply



Water supply to Foshan vocational and technical college



Guangzhou mead Johnson plant virescence water supply



Seven days hotel hot and cold water supply system

