PUMP CONTROLLER (VSD)

SAFETY INFORMATION

Make sure the wiring and the pump's rotation direction is correct before using. This catalogue will be helpful in regards to the installation, parameter settings, troubleshooting, and daily maintenance of the VSD. To ensure safe operation of the equipment, read the following catalogue before connecting power to it. Keep this catalogue handy and distribute to all users for reference.

MODEL DESCRIPTION

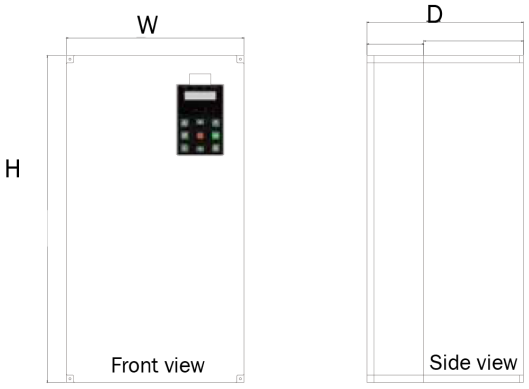
AR100 - F 0030 L 4 3

- Output phases: 3 - Three phase output
- Input voltage: 4 - 380V, 5 - 525V
- Frequency range: L - 0 to 400Hz
- Largest compatible motor: 0030 means 30kw
- Type
- Range



AR100 DIMENSIONS





	MODEL	POWER IN KW	CURRENT IN A	VOLTAGE	HEIGHT IN MM	WIDTH IN MM	DEPTH IN MM	HOLE HEIGHT IN MM	HOLE WIDTH IN MM	HOLE SIZE IN MM
AR100	AR 100-F0040 L43	4	8.5	400	185	97	135	173	86	5
	AR 100-F0055 L43	5.5	13	400						
	AR 100-F0075 L43	7.5	16	400						
	AR 100-F0110 L43	11	25	400	257	145	165	247	133	5
	AR 100-F0150 L43	15	32	400						
	AR 100-F0185 L43	18.5	38	400	321	170	174	306	153	7
	AR 100-F0220 L43	22	45	400						
	AR 100-F0300 L43	30	60	400	455	252	184	422	195	9
	AR 100-F0370 L43	37	75	400						
	AR 100-F0450 L43	45	90	400	630	307	220	600	200	11
	AR 100-F0750 L43	75	150	400	800	405	220	770	300	11
	AR 100-F0930 L43	93	170	400						
	AR 100-F1100 L43	110	210	400						
	AR 100-F0030 L53	3	4.5	525	165	90	125	155	79	5
	AR 100-F0040 L53	4	6.5	525	185	97	135	173	86	5
	AR 100-F0055 L53	5.5	9	525						
	AR 100-F0075 L53	7.5	12	525						
	AR 100-F0110 L53	11	17.5	525	257	145	165	247	133	5
	AR 100-F0150 L53	15	24	525						
	AR 100-F0185 L53	18.5	29	525	321	170	174	306	153	7
	AR 100-F0220 L53	22	35	525						
	AR 100-F0300 L53	30	47.5	525	455	252	184	422	195	9
	AR 100-F0370 L53	37	59	525						
	AR 100-F0450 L53	45	71	525	630	307	220	600	200	11
	AR 100-F0750 L53	75	118	525	730	360	220	700	250	11
	AR 100-F0930 L53	93	145	525	800	405	220	770	300	11
	AR 100-F1100 L53	110	174	525						

STANDARD SPECIFICATION

CATEGORY		SPECIFICATION	
Features	Control System	A current vector drive dedicated to pumping systems	
	Drive performance	Drives induction motors and synchronous motors	
	Carrier frequency	0.5kHz -15kHz;	
	Input frequency resolution	Digital setting: 0.01Hz;	
		Analog setting: maximum frequency × 0.025%.	
	Control method	Open loop vector control (SVC);	
		Closed-loop vector control (FVC);	
		V/F control.	
	Starting torque	0.5Hz/110%	
	Speed range	1:100 (SVC)	1:1000 (FVC)
	Steady Speed Accuracy	±0.5%(SVC)	±0.02%(FVC)
	Constant pressure	0.01Mpa	
	Torque Control Accuracy	±5%(FVC)	
	Jog control	Jog frequency range: 0.00Hz - 50.00Hz;	
		Jog acceleration and deceleration time: 0.0s - 6500.0s.	
	Automatic Voltage Regulation (AVR)	When the grid voltage changes, it can automatically keep the output voltage constant	
	Overvoltage and ovecurrent	Automatically limit the current and voltage during operation	
	Fast current limiting function	Minimize the overcurrent fault and protect the normal operation of the drive	
Run	Run command	Operation panel setting, control terminal setting, serial communication port setting.	
	Operating frequency	Digital input, analog voltage input, analog current input, serial port input	
	Pressure inputs	Digital input, analog voltage input, analog current input, serial port input	
	Input and output terminals	4 digital inputs	
		2 relay outputs	
		2 standard analog 4-20mA inputs	
Display and keyboard operation	Key lock and function selection	Lock some or all of the keys, and restrict the functionality of some keys to prevent misuse	
	Protection features	Power-on motor short circuit detection, input and output phase loss protection, overcurrent protection, overvoltage protection, undervoltage protection, overtemperature protection	
Environment	Installation	Indoors, out of direct sunlight, dust, corrosive gas, flammable gas, oil mist, water vapor, dripping water or salt, etc	
	Altitude environment	Below 1000m.	
	Ambient temperature	-10°C - +40°C	
	Humidity	Less than 95%RH, no condensation of water droplets.	
	Vibration	Less than 5.9m/s ^{2} (0.6g).	
	Storage temperature	-20°C - +60°C.	

MECHANICAL & ELECTRICAL INSTALLATION

Installation environment:

- Ambient temperature has a significant impact on the drive's lifespan. It should be maintained within the range of -10°C to 40°C.
- Install the drive on a flame-retardant surface, ensuring sufficient clearance around it, as the drive generates substantial heat during operation. Mount the drive vertically on its back using bolts.
- Install the drive in a location that is free from water droplets, steam, dust, dirt, and metal particles.
- Avoid locations exposed to oil mist, salt, or corrosive gases.
- Install the drive where vibration levels are below 0.6G and away from machines that generate strong impacts, such as lathes.
- Do not install the drive in areas exposed to direct sunlight, high humidity (above 95%), or water.
- Ensure the installation site is free from flammable, combustible, or explosive gases, liquids, or solids.

Installation:

- When transporting the product, use appropriate lifting equipment to avoid damage.
- Do not stack drive packaging boxes higher than the specified limit.
- If the drive is damaged or missing components, do not operate it.
- Avoid placing heavy objects on top of the drive.
- Ensure that screws, cable fragments, conductive materials, oil, or other flammable substances do not enter the drive.
- Do not drop the drive or subject it to strong impacts.
- Before installation, confirm that the mounting surface and surrounding structures can support the weight of the drive. The drive should be installed indoors in a well-ventilated area, mounted vertically on a wall, and with sufficient clearance from adjacent objects or barriers, as shown below: (In figure D, E & F)

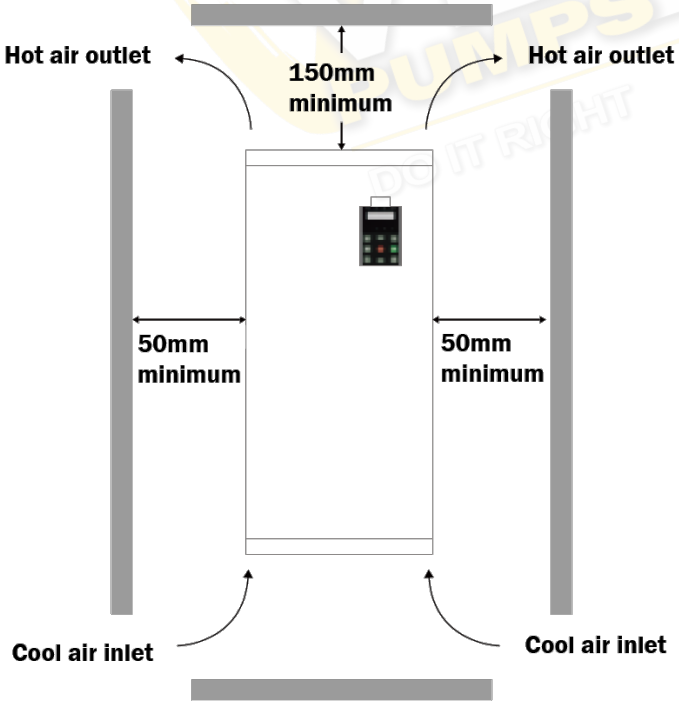


Figure D

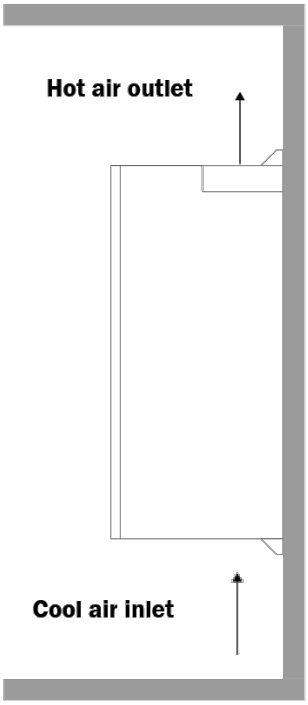


Figure E

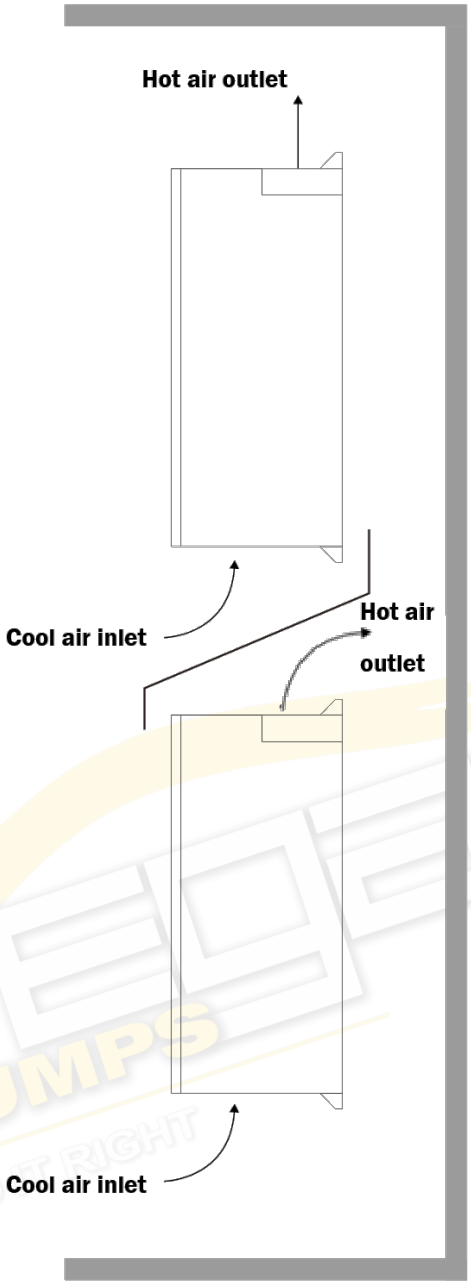
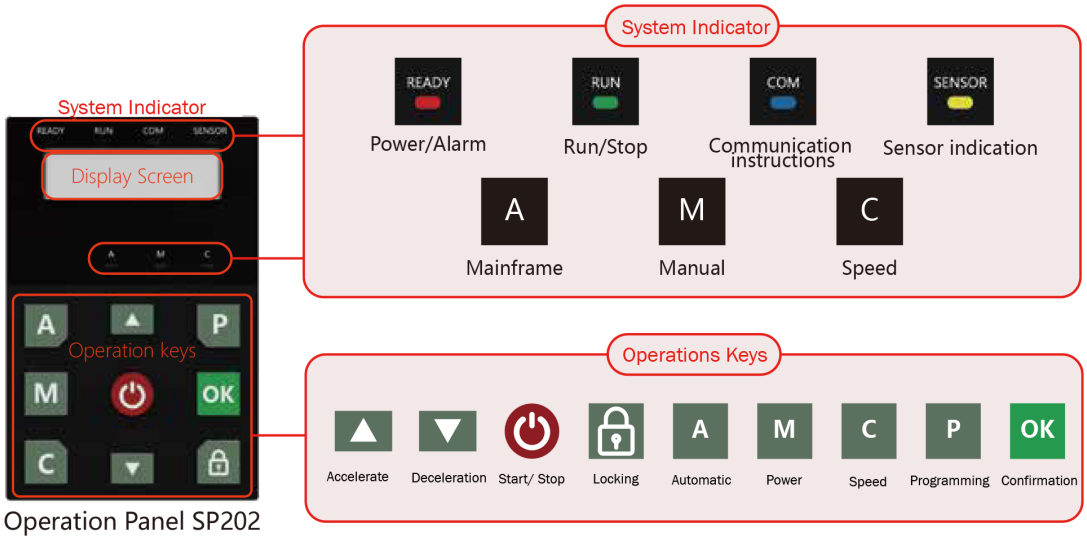


Figure F

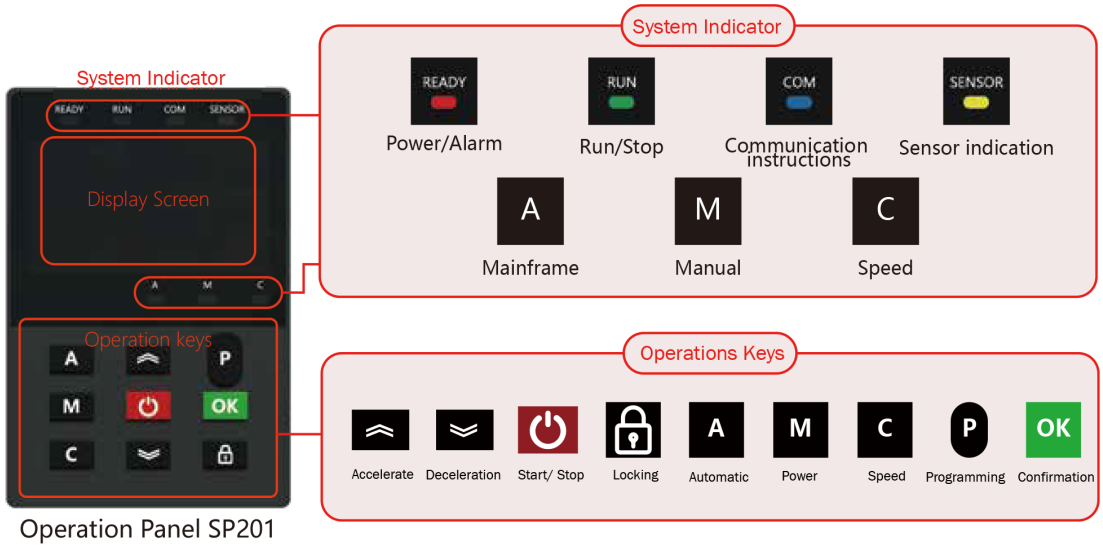
The user should pay special attention to heat dissipation when installing the drive and take note of the following points:

- The minimum clearance distance for installation is shown in Figure D. Ensure there is sufficient clearance for proper heat dissipation, and take into account the heat output of other components when positioning the drive.
- Install the drive vertically to allow heat to dissipate upwards. Do not install the drive upside down. When mounting two Variable Speed Drives vertically (one above the other), an airflow diversion plate must be installed between them, as shown in Figure F.
- The installation bracket must be flame retardant.
- If the drive is installed in an area containing metal dust, position the heat sink outside the cabinet. In this case, ensure that the space inside the sealed cabinet is sufficiently large.

OPERATION PANEL INSTRUCTIONS



Operation Panel SP202



Operation Panel SP201

Description of the working status of the system indicator light

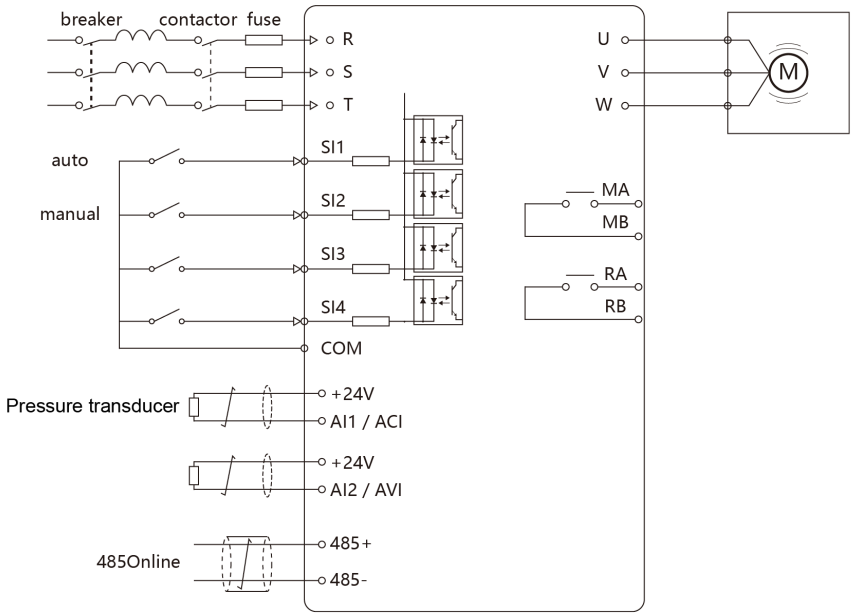
	Light On	Light Off	Light Twinkle
Power/ Alarm	Ready to run	Not ready, please check	Controller failure
RUN/STOP	Run state	Stop state	Sleep state
Mainframe/ Auxilliary	Master unit	Man or faliure state	Auxiliary state
Communication	—	Non- communication or failure communication	Communication state
Sensor	Normal transmitter state	No transmitter detected	No transmitter or transmitter abnormal
A (automatic)	Host machine	---	Auxiliary
M (power)	Manual	---	—
C (speed)	Speed mode	---	—

Serial No	Button	Display	Description
	PRG	P*	Enter parameter group
Program setting	▲ ▼	PA-PE	(See parameter list)
	OK		Enter parameter group
	RUN		Shift
	PRG		Exit parameter group
Pressure setting	▲ ▼	3.0 - 3.0	Constant pressure water supply mode: The first two bits are setting pressure The next two bits are actual pressure
Speed setting	▲ ▼	H 33.12	Speed control mode: Adjust the output frequency directly
Choose master	▲ ▼	F1	
	OK		Confirmed as master mode
	PRG		Exit
Choose auxiliary	▲ ▼	F2	
	OK		Confirmed as auxiliary mode
	PRG		Exit
Choose man mode	▲ ▼	F3	
	OK		Confirmed as man/speed mode
	PRG		Exit
Running data query	▲ ▼	F0	(See running data list2)
	OK		Querying running data
	PRG		Exit
State query	OK		
	PRG	P,h,c,u,l,t	See state data1

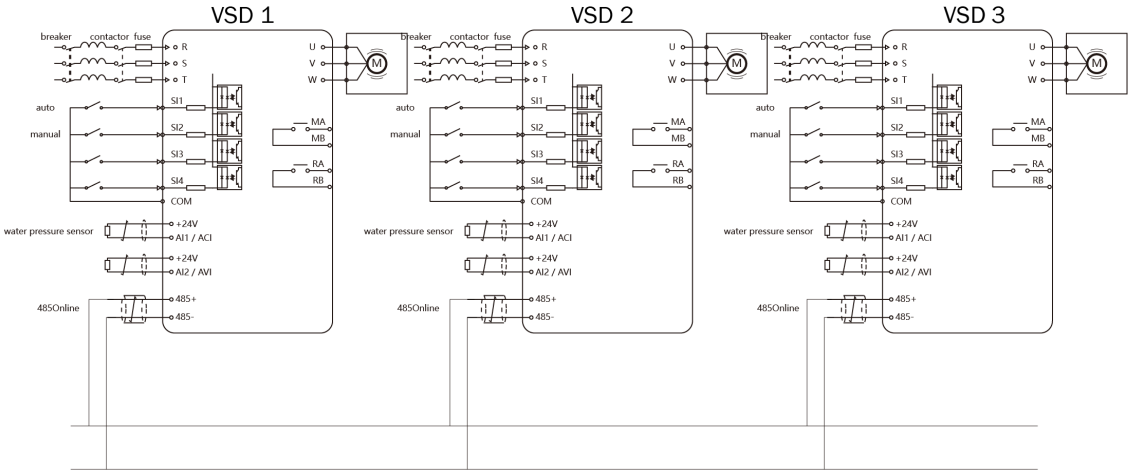
Pumps On Line - www.pumps.co.za

WIRING DIAGRAM

SINGLE PUMP WIRING DIAGRAM



MULTI- PUMP ONLINE WIRING DIAGRAM



DISPLAY

BUTTON	DISPLAY	UNIT	DESCRIPTION
OK	P 2850	rpm	Speed
OK	H 50.00	Hz	Given Frequency
OK	U 540.0	V	DC Bus Voltage
OK	D 380.0	V	Output Voltage
OK	C 5.80	A	Output current
OK	Γ00189	min	Cumulative time
OK	A 2.00	bar	Set pressure
OK	B 2.35	bar	Feedback pressure
OK	5.0-4.9	bar	Given - feedback
OK	T35.6	°C	Drive temperature
OK	٦00075	min	Countdown to pump change

QUICK SETUP GUIDE:

NOTE: This is only a guide and there may be additional parameters that needs to be adjusted for your specific application.

1. When using a pressure transducer to maintain constant pressure, the following settings needs to be adjusted for most applications:

PA-00 – (pressure transducer rating in bar
PE-03 – 0 or 1 (motor direction)
PE-05 – 50.00 (max frequency)
PE-06 – 5.0 (acceleration time)
PE-07 – 3.0 (deceleration time)
PE-16 – 3000 (rpm limit at water shortage)
PE-18 – 3000 (rpm limit when disconnected)
PE-20 – Motor type (0 for ordinary induction motor)
PE-21 – Motor rated voltage (verify the motor voltage according to the nameplate and terminal box connection, also verify the power supply voltage)
PE-22 – Motor rated power (according to motor nameplate details)
PE-23 – Motor rated current (according to motor nameplate details)
PE-24 – Motor synchronous speed (3000 rpm for 2pole motors, 1500 rpm for 4pole motors)
PE-25 – Motor rated frequency (50Hz)
PE-28 – No-load current (determined by the application)

2. When using a pressure transducer to maintain constant pressure, and a float switch to provide dry running protection, the following settings needs to be adjusted for most applications:

PA-00 – (pressure transducer rating in bar)
PC-32 – 0 (low water level delay time)
PC-37 – 27 (low water level when S1 and COM are connected, “A36” or “Err36” will be displayed)
PE-03 – 0 or 1 (motor direction)
PE-05 – 50.00 (max frequency)
PE-06 – 5.0 (acceleration time)
PE-07 – 3.0 (deceleration time)
PE-16 – 3000 (rpm limit at water shortage)
PE-18 – 3000 (rpm limit when disconnected)
PE-20 – Motor type (0 for ordinary induction motor)
PE-21 – Motor rated voltage (verify the motor voltage according to the nameplate and terminal box connection, also verify the power supply voltage)
PE-22 – Motor rated power (according to motor nameplate details)
PE-23 – Motor rated current (according to motor nameplate details)
PE-24 – Motor synchronous speed (3000 rpm for 2pole motors, 1500 rpm for 4pole motors)
PE-25 – Motor rated frequency (50Hz)
PE-28 – No-load current (determined by the application)

3. For running the pump from a dry contact (float switch or pressure switch):
PC-37 – 1 (forward running when S1 and COM are connected)
PE-01 – 1 (controlled from external terminals)
PE-02 – 0 (max speed controlled by PE-05)
PE-05 – 50.00 (max frequency)
PE-06 – 5.0 (acceleration time)
PE-07 – 3.0 (deceleration time)
PE-15 – 0 (turn off delay before starting up)
PE-16 – 3000 (Automatically resets if PE-24 is adjusted. rpm limit at water shortage)
PE-18 – 3000 (Automatically resets if PE-24 is adjusted. rpm limit when disconnected)
PE-20 – Motor type (0 for ordinary induction motor)
PE-21 – Motor rated voltage (verify the motor voltage according to the nameplate and terminal box connection, also verify the power supply voltage)
PE-22 – Motor rated power (according to motor nameplate details)
PE-23 – Motor rated current (according to motor nameplate details)
PE-24 – Motor synchronous speed (3000 rpm for 2pole motors, 1500 rpm for 4pole motors)
PE-25 – Motor rated frequency (50Hz)
PE-28 – No-load current (determined by the application)

4. For running the pump without any input devices:
PE-02 – 0 (max speed controlled by PE-05)
PE-05 – 50.00 (max frequency)
PE-20 – Motor type (0 for ordinary induction motor)
PE-21 – Motor rated voltage (verify the motor voltage according to the nameplate and terminal box connection, also verify the power supply voltage)
PE-22 – Motor rated power (according to motor nameplate details)
PE-23 – Motor rated current (according to motor nameplate details)
PE-24 – Motor synchronous speed (3000 rpm for 2pole motors, 1500 rpm for 4pole motors)
PE-25 – Motor rated frequency (50Hz)
PE-28 – No-load current (determined by the application)

F0 PARAMETERS GROUP

Code	Function	Unit	Description
F0-00	Motor speed		
F0-01	Setting frequency	Hz	
F0-02	DC bus voltage	V	
F0-03	Output voltage	V	
F0-04	Output current	A	
F0-05	Output power	kW	
F0-06	Output torque	%	
F0-07	Input terminal state		0 ~ 14 bit: Input terminal state: 0: Invalid 1: Valid
F0-08	N/A		
F0-09	AI1 analog	V	
F0-10	AI2 analog	V	
F0-11	Stop time	Min	
F0-12	Operate time	Min	
F0-13	Power on timing	Min	
F0-14	Operate timing	Min	
F0-15	PID pressure set point	Bar	
F0-16	PID feedback pressure	Bar	
F0-17	Setting-Actual pressure		
F0-18	Heatsink temperature	C	
F0-19	Countdown to exchange	Min	
F0-23	Countdown to pressure holding	Sec	
F0-24	Pump numbers		
F0-28	Version type		
F0-29	Delay of reducing pumps		

PA PARAMETERS GROUP

Code	Name	Range	Factory Setting	Description
PA00	Sensor range	0-90.00	10.00	
PA01	Pressure given source	0-6	0	0:PA02 set 1: AI1 2:AI2 3:Reserved 4:Reserved 5:Communication 6:Mulit-command
PA02	Pressure set value	0.0-100.0%	30.00%	
PA03	Pressure feedback source	0-3	0	0:AI1 1:AI2
PA04	PID initial speed	0.0-100.0%	40.00%	
PA05	Initial speed hold time	0.00-650.00s	0.1s	
PA06	Feedback filtering time	0.00-60.00s	0.00s	
PA07	N/A	0.00-60.00s	0.00s	
PA08	Max.forward deviation	0.0-100.0%	1.00%	
PA09	Max. Reverse deviation	0.0-100.0%	1.00%	
PA10	Proportional gain:Kp1	0.0-100.0	50	
PA11	Integral time:Ti1	0.01-10.00s	0.8s	
PA12	Differential time:Td1	0.00-10.000	0.000s	
PA13	Proportional gain:Kp2	0.0-100.0	100	
PA14	Integral time:Ti2	0.01-10.00s	0.2	
PA15	Differential time:Td2	0.00-10.000	0.000s	
PA16	PID exchange condition	0-2	0	0:Non-exchange 1:Exchange by terminal DI 2:Auto exchange by deviation 3:Auto exchange by run frequenc
PA17	Exchange deviation 1	0.0-PA20	0.5%	
PA18	Exchange deviation 2	PA19-100.0%	0.1%	
PA19	Feedback missing value	0-50s	0.1%	0.0%:No judgment feedback loss 0.1%: 0.1%~100.0%
PA20	Feedback missing time	0.0-20.00s	0s	
PA21	PID stop operation	0-1	0	0:No operation at stop state 1: Operation at stop state
				Units: Integral separation 0: Invalid
PA22	PID Integral property	0-1	0	1: valid Tens:Whether to stop integration after the output reaches the limit 0:Continue integration 1:Stop integration
PA23	PID cut-off frequency			
PA24	PID deviation limit			
PA25	PID differential amplitude			
PA26	Setting change time			
PA27	PID direction			0: Positive 1:Reverse

PC PARAMETERS GROUP

Code	Name	Range	Factory Setting	Description
PC-00	Function parameters			Pump station set Eg.: 05.01 Pump quantity: 5pcs. Current pump number: 1ST Factory reset: PC00 = 0001 (PE20 to PE28 will not be reset)
PC-08	Pump quantity	2-16	1	Pump quantity (Decide by PC-00 value)
PC-09	Current pump number	1-16	1	Current pump number (Decide by PC-00 value)
PC-10	Serial number	0-9999	0	Reserve
PC-11	Operation mode	1-5	1	1:Master 2:Auxiliary: 3:Manual 4:Disable 5:Failure:
PC-12	WiFi serial setting	0-9999	0	Reserve
PC-13	Division code	0-9999	0	Reserve
PC-14	Quantity of main pumps	1-16	1	The quantity of pumps will run in the system
PC-15	Quantity of small pumps	1-5	0	The quantity of small flow pumps will run in the system
PC-16	Pump's exchange time	0-6500s	10800s	Exchange time of master pump
PC-17	Small pump's exchange time11	0-6000s	0	Exchange time of small pump
PC-18	Small pump's exchange speed	0-9999	0	Small pump exchange speed point
PC-19	Exchange temperature point	0-100.0	70	Auto exchanged when master controller's temperature more than this value
PC-20	Adding. pump speed	0-100	95	Auxiliary pump speed value
PC-21	Reducing. pump speed	100%	75	Auxiliary pump speed value
PC-22	Delay of adding&reducing pump	0-6500	10	Delay of adding & reducing pump
PC-23	Reserve			
PC-24	Water source sensor range	0-100.00	0	Sensor range
PC-25	Water source detect deviation	0-10.00	0	Water detect deviation
PC-26	Water source alarm1	0-100	0	PC26>PC27, high level alarm; PC26<PC27, recovered
PC-27	Water source alarm 2	0-100	0	Water alarm deviation
PC-28	Level outlet1(for double sensors function)	0-50	0	PC28>PC29: as high level alarm(code 26)
PC-29	Level outlet2 (for double sensors function)	0-50	0	PC28<PC29, as low level alarm (code:26)
PC-30	Delay of high/low pressure alarm	0-6500	0	
PC-31	Delay of high water level alarm	0-600.0	0	0: AlarmEr.31---reset by manual >0, alarm delay, reset delay (Terminal function:9)
PC-32	Delay of low water level alarm	0-600.0	0	0:Alarm Er.27,reset by manual >0, alarm delay, reset delay (Terminal function:10)
PC-33	PID start buffering	0-600.0	5	Change this value if use bigger pressure vessel(longer time to avoid pressure lash)
PC-34	Inspect interval	0-6500	4320.0	Pumps auto start after long time no use to avoid freezing or rusting
PC-35	Inspect frequency	0-1000	700	
PC-36	Inspect working time	0-6500.0	20	

PC PARAMETERS GROUP

Code	Name	Range	Factory Setting	Description
PC-37	Input terminal function: S1	0-18	1	
PC-38	Input terminal function: S2	0-18	4	
PC-39	Reserve	0-18	9	
PC-40	Reserve	0-18	0	
PC-41	N/A	0-18	0	
PC-42	N/A	0-18	2	
PC-44	The last failure record			
PC-45	The last two failure			
PC-46	The latest failure			
PC-47	Recent failure frequency	3times failure frequency		The latest failure frequency
PC-48	Recent failure current	3times failure current		The latest failure current
PC-49	Recent failure DC voltage	3 times bus voltage		The latest failure bus voltage
PC-50	Recent failure running	3 power on time		The latest power on time
PC-51	Failure's feedback pressure			

INPUT TERMINAL FUNCTIONS PC37---PC40 DESCRIPTION

Code	Display	Setting Range	Factory setting	Change limit
PC-37	Input terminal function: S1	0~18	1	*
PC-38	Input terminal function: S2	0~18	4	*
PC-39	Reserve	0~18	9	*
PC-40	Reserve	0~18	0	*

Setting	Function	Description
0	No function	The terminals can set as no functions you don't use them
1	(FWD)	User the external terminals to control drive's FWD & REV.
2	(REV)	
3	Three-wire operation instruction	
4	(FJOG)	FJOG: FWD inching turning, RJOG: REV reverse inching turning. Jog running frequency, JOG-acc./dec. Time, Parameter PE08, PE09
5	(RJOG)	
6	UP	Modify the frequency by external terminal setting frequency. When the frequency set as Numbers, press UP/DOWN to change thefrequency.
7	DOWN	
8	(RESET)	To reset by the teminal control. It is with same function as panel's RESET.
9	External fault input1	PC31=0:, Alarm immediately Er.31, Reset by manual. PC31>0: Alarm delay Er.31, Reset delay
10	External fault input2	PC32=0: Alarm immediatelyEr.27, Reset by manual. PC32>0:Alarm delayEr.27, Reset delay
11	External fault normal open input	When the signal deliver to drive, it display Er.014

PC PARAMETERS GROUP

Setting	Function	Description
12	Multi-speed terminal1	With 8 multi-speed setting by these three terminals.
13	Multi-speed terminal2	
14	Multi-speed terminal3	
16	Forward host enable	Multi-pump system, when standby, enable as master, and motor direction forward
17	Reverse host enable	Multi-pump system, when standby, enable as master, and motor direction reverse
25	PE01=3	Valid
26	PE01=3	Valid
27	PC32>0	
28	PC31<0	

OUPUT TERMINAL FUNCTIONS PC41---PC42 DESCRIPTION

Code	Display	Setting Range	Factory setting	Change limit
PC-41	Relay output function choose	MA/MB 0~18	1	*
PC-42	Relay output function choose	RA/RB 0~18	2	*

Setting	Function	Description
0	No output	The output terminal has no fuction
1	Drive running	This indicates the drive is running state. With output frecuency (frequency can be 0), output as ON Signal.
2	Fault output (Fault shutdown)	When the drive fails and stops, output as ON Signal.
5	Run at zero speed (stop but no output)	When drive is running and output frequency is 0, output as ON Signal. When the drive is at stop state, output as OFF Signal.
6	Motor overload pre-alarm	Before the motor overload protection acts, it judges according to the overload pre-alarm threshold, and outputs ON Signal after exceeding the pre-alarm.
7	Drive overload pre-alarm	10s before overload protection of drive, output as ON Signal.
12	Cumulative running time reached	The accumulative running time of the drive has reached.
13	Frequency limit	When the setting frequency exceed the upper limit frequency or lower frequency, and it's output frequency also reaches the upper limit frequency or lower limit frequency, output as ON Signal.
15	Ready to run	When the drive's main circuit and control circuit of poer supply are state, also no failure information detected, drive is enable to run, output as ON Signal.
17	Upper limit frequency reached	When the running frequency is up to upper limit frequency, output as ON Signal.
18	Lower limit frequency reached (Stop state but no output)	When the running frequency is up to lower limit frequency, output as ON Signal. If stop state, output as OFF Signal.

PE PARAMETERS GROUP

Code	Name	Precision	Unit	Description
PE-00	Pump motor working mode	0-2	0	0: Vector 2: VF
PE-01	Control order choose	0-2	0	0:Keypad control 1:External terminal control
PE-02	Frequency source choose	0-8	8	0: Frequency set by keypad 8: Constant pressure control mode
PE-03	Motor rotation	0-1	0	0: Run as choose 1:Run the opposite direction
PE-04	Carrier frequency	0.5-16.0KHz	8	According to the drive power
PE-05	Preset frequency	0.001-Max. frequency	30.0	
PE-06	Acc. time	0.0-6500.0s	5	
PE-07	Dec. time	0.0-6500.0s	5	
PE-08	Jog frequency	0-Max. frequency	2	
PE-09	Jog acc./dec. time	0-6500.0s	20	
PE-10	Sleep frequency	0-Max.speed	1500	
PE-11	Sleep delay	0-6500.0s	60.0	
PE-12	Wake up differential pressure	0-6553.5	0.30	
PE-13	Wake up delay	0-500	0.1	
PE-14	Barometric coefficients	0-120	20	
PE-15	Delay of built-in lack of water	0-6553.5 30	30	0: Closed
PE-16	Speed limit lack of water	0-Max.speed	2800	
PE-17	Delay of transmitter breakage	0-6553.5	30.0	0: Closed
PE-18	Speed limit as transmitter breakage	0-Max.speed	2100	
PE-19	Delay of non-motor	0-6553.5	10	0: Closed
PE-20	Motor type	0: Normal asynchronous motor 1: Variable frequency asynchronous motor 2:Permanent magnet synchronous motor	0	
PE-21	Rated voltage	1-200v		
PE-22	Rated power	0.1-1000.0kw		
PE-23	Rated current	0.01A-655.35A		
PE-24	Rated rpm	1-65535rpm		
PE-25	Rated frequency	0.01--Max. frequency		

FAULT CODE

Fault Code	Fault Name	Fault Reason	Disposal methods
Err.01P	Under voltage	1.Transient power cut exists or not 2.Check if the input voltage of the motor driver inverter is within the value required by the regulation 3.Measure if the DC bus voltage is normal 4.Check if the rectifying bridge or the buffering resistor is normal 5.Check if the drive board is normal 6.Check if the main control board is normal	1.Motor driver inverter reset 2.Adjust the power supply or remove the peripheral power-supply loop fault 3.Seek technical support
Err.02P	Over voltage during accel.	1.Is there any brake unit or brake resistor installed 2.The input voltage is too high or not 3.f there exists the external force driving the motor operation during the acceleration process 4.The acceleration time is too short or not	1.Install the brake unit and resistor 2.Adjust the voltage within the normal range 3.Cancel the external force or install the brake resistor 4.Increase the acceleration time
Err.03P	Over-current during decel.	1.Check if the output loop of the drive has the earthing or short circuit 2.Whether the motor parameter identification has been performed or not 3.Is the deceleration time too short 4.Is the voltage too low 5.Whether there exists a shock load during the deceleration process 6.Is there the brake unit or brake resistor installed	1.Remove the peripheral fault 2. Perform the motor parameter Identification 3.Increase the deceleration time 4.Adjust the voltage within the normal range 5.Cancel the shock load 6.Install the brake unit and brake resistor
Err.04P	Over-current at constant speed	1.Check if the output loop of the motor driver inverter has the short circuit or leakage circuit 2.Whether it is V/F mode, the motor parameter identification has been performed or not 3.The voltage is too low 4.Is there the shock load during the running 5.The type of drive is too small	1.Remove the peripheral fault 2.Perform the motor parameter identification 3.Adjust the voltage within the normal range 4.Cancel the shock load 5.Choose the bigger power drive
Err.05P	Over-current during accel.	1.Is the acceleration time too short. 2.Whether it is proper to manually raise torque or V/F curve 3.The voltage is too low or not 4.If the output loop of the drive has the earthing or short circuit 5.Control mode is V/F,but the motor parameter if is indentification performed. 6.Try to drive the rotating motor. 7.Is there the shock load during the acceleration process 8.The type of drive is small	1. Increase the acceleration time 2. Adjust the manual raising of torque or V/F curve 3. Adjust the voltage to the normal range 4. Remove the peripheral fault 5. Perform the motor parameter ide Select the rotation speed tracing before restarting or restart after the motor stops 7. Cancel shock load 8. Choose the bigger power drive
Err.06P	Over voltage during decel	1.The input voltage is too high. If there exists external forces driving the 2.motor operation during the deceleration process 3.The deceleration time is too short or no 4.Is there any brake resistor installed	1.Adjust the voltage within normal range 2.Cancel the external force or install the brake resistor 3.Increase the deceleration time or install the brake resistor 4.Install the brake resistor
Err.07P	Motor Over Load	1.The type of drive is small 2.The motor protection parameter P9.01 setting is suitable or not 3.The load is too big or the motor is blocked	1.Increase the drive capacity 2.Correctly set up the parameter 3.Reduce the load
Err.08P	Drive Overload	1.The type of drive is small 2.The load is too big or the motor is blocked	1.Increase the drive capacity 2.Reduce the load

FAULT CODE

Fault Code	Fault Name	Fault Reason	Disposal methods
Err.09P	Drive unit protection	1.Drive's output to motor possible short circuits. 2.The wiring between motor and drive is too long 3.Moduel is overheat 4.Drive inner wiring loose 5.Motherboard unnormal 6.Power board unnormal 7.Drive module unnormal	1.Check and rule out external faulty 2.Add electric reactor and output filter 3.Check air duct if is blocking;fan if could normal work 4.Plug all connection cables 5.Please seek technical service
Err.10P	Power supply fault	1.Check if the input voltage of the motor driver drive is within the value required by the normal range	1.Adjust the power supply
Err.11P	Over voltage during constant running.	1.Is there any the external force driving the motor during the operation 2.The input voltage is too high or not	1.Cancel the external force or install the brake resistor 2.Adjust the voltage within the normal range
Err.12P	Output phase failure	1.Check if the lead wire from frequency drive to the motor is normal 2.Check if the thre-e p hase output of frequency drive is balanced when running without motor 3.Check if drive board is normal 4.Check if the module is normal	1.Remove peripheral fault 2. Check if the motor three -phase winding is normal, If no, remo ve the fault 3.Seek technical support
Err.13P	Module overheat	1.If the wind channel is blocked 2.If the fan is damaged 3.If the environmental temperature is too high 4.If the module heat-variable resistor is damaged 5.If the inverse module is damaged	1.Clear the wind channel 2.Change the fan 3.Reduce the environmental temperature 4.Change the heatvariable resistor 5.Change the inverse module
Err.14P	External device fault	1.Input peripheral fault signal via multifunctional terminal DI or not 2.Input external fault signal via analog IO function	1.Reset running
Err.15P	Communication fault	1.Communication connection is normal or not 2.Communication parameters P0.28 are correctly set up or not 3.Communication parameters PD are correctly set up or not 4.Master station works or not	1.Check communication connection 2.Change communication parameters
Err.16P	Contactor fault	1.Input phase fault 2.Drive board, contactor is normal or not	1.Check and remove the problems in the peripheral lines 2.Change the drive board, power board, contactor
Err.17P	Current Inspection Circuit Failure	1.Check if Hall device is normal 2.Check if the drive board is normal	1.Change Hall device 2.Change drive board
Err.18P	Motor self-learning failure	1.The parameters identification process is overtime or not 2.The motor parameters are configured as per the data on the nameplate or not	1.Check the lead wire from frequency drive to motor 2.Correctly configure the motor parameters
Err.19P	Encoder disk fault	1.Encoder damaged 2.PG card problem 3.Encoder model not correct 4.Encoder connection wrong	1.Change the encoder 2.Change the PG card 3.Set the correct encoder type 4.Check the connection
Err.20P	Input phase failure	1.Check if the drive board is normal 2.Check if the lightning protection board is normal 3.Check if The main control board is normal 4.Check if the three-phase input power is normal	1.Change drive board, main control board 2.Seek technical support 3.Check and remove the problems in the peripheral lines,To make the three-phase power entering the frequency drive normal

FAULT CODE

Fault Code	Fault Name	Fault Reason	Disposal methods
Err.21P	Hardware fault	1.Over voltage 2.Over current	1.Over voltage solve way 2.Over current solve way
Err.22P	Ground fault	1.Motor to Ground short circuit	1. Change cable or motor
Err.25P	Total running time failure	1.Total running time achieve the setting value	1. To use the reset function to clear the record
Err.26P	EEPROM read-write failure	1.Whether it is normal after the renewal of the main control board	1.main control board fault
Err.27P	User fault 2	1.Input user fault1 signal via multifunctional terminal DI or not 2.Input user fault1 signal via analog IO function	1.Reset running
Err.31P	User fault 1	1. Input user fault1 signal via multifunctional terminal DI or not 2. Input user fault1 signal via analog IO function	1. Reset running
Err.32P	Transmitter breakdown or broken	1. No transmitter 2. Transmitter problem	PE.17 Protection time 0: Close protection
Err.33P	Lack of water	1. Water coming not enough 2. Air in the pipeline	PE.15 Protection time 0: Close protection
Err.35P	Water pump run without any load	1. If air in the pump body 2. If suction side block	PE.19 Protection time 0: Close protection
Err.36P	Low level alarm	Digital signal terminal, set function code 27 : connect, alarm Err.36 Disconnect, recovered .(usually for float switch)	Check the function code and signal if is normal
Err.37P	High level alarm	Digital signal terminal, set function code 28 : connect, alarm Err.38 Disconnect, recovered .(usually for float switch)	Check the function code and signal if is normal
Err.38P	Low level alarm2	1.The command from up machine	The commmunication and signal from up machine if is normal
Err.39P	High level alarm2	1.The command from up machine	The commmunication and signal from up machine if is normal
Err.040	Change over fault	1.Change the motorby terminal when drive is running	1.Operate after drive stop
Err.41P	Speed deviation fault	1.Speed deviation is toobig, and P9.69&P9.60 setting is not correct. 2.Encoder parameter setting is not correct. 3. Does not with parameter identification	1. Setting the value suitable 2. Set the correct encoder 3. Motor parameter identification
Err.42P	Motor over speed fault	1.Speed deviation is too big, and P9.69&P9.60 setting is not correct. 2.Encoder parameter setting is not correct. 3. Does not with parameter identification	1.Setting the value suitable 2.Set the correct encoder 3.Motor parameter identification