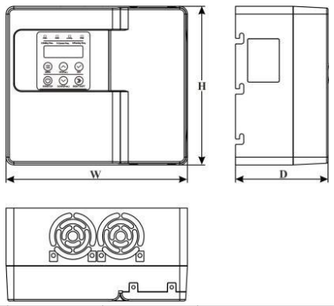
BEDFORD

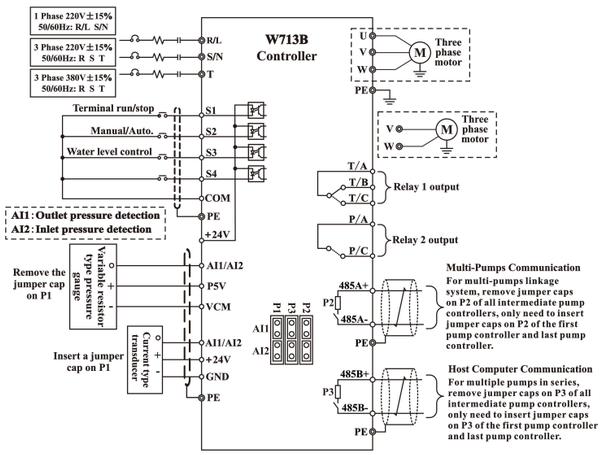
W713B Series Intelligent Controller for Water Pump Simple Manual

Dimension Model and Specification



Model	Rated Output Current (A)	Motor Power (kW)	External Dimension		
			H(mm)	W(mm)	D(mm)
Input: AC 1PH 220V, Output: AC 3PH 0~220V					
W713B-2001	4.5	0.75	170	190	110
W713B-2002	7.0	1.5			
W713B-2003	10.0	2.2			
Input: AC 3PH 220V, Output: AC 3PH 0~220V					
W713B-2001	4.5	0.75	170	190	110
W713B-2002	7.0	1.5			
W713B-2003	10.0	2.2			
W713B-2004	13.0	3.0	205	235	120
W713B-2005	17.0	3.7			
W713B-2007	25.0	5.5	220	290	150
W713B-2010	32.0	7.5			
Input: AC 3PH 380V, Output: AC 3PH 0~380V					
W713B-4001	2.1	0.75	170	190	110
W713B-4002	3.8	1.5			
W713B-4003	5.1	2.2			
W713B-4004	6.8	3.0			
W713B-4005	9.5	4.0	205	235	120
W713B-4007	14.0	5.5			
W713B-4010	18.5	7.5			
W713B-4015	25.0	11.0	220	290	150
W713B-4020	32.0	15.0			
W713B-4025	38.0	18.5			

Wiring



Main circuit terminal's function as following:

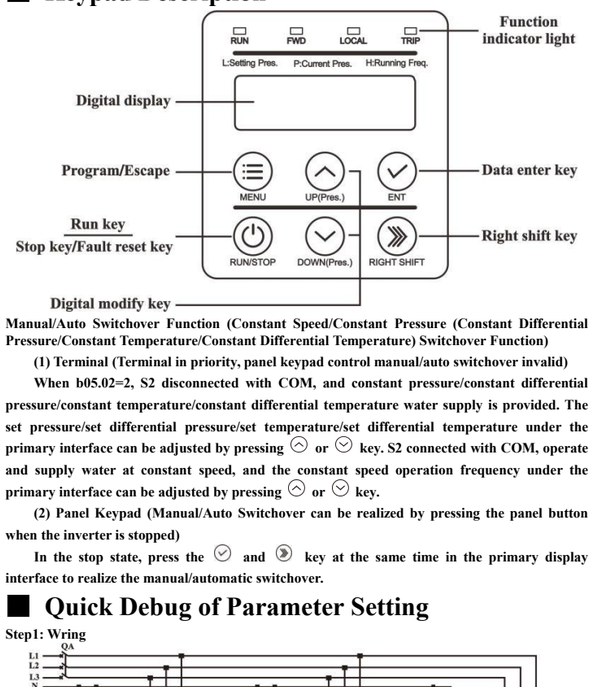
Terminal Symbol	Function Description
L, N	Terminals of single phase AC input
R, S, T	Terminals of 3 phase AC input
U, V, W	Terminals of 3 phase AC output
PE	Terminals of ground

The functions of the control terminal are described below:

Type	Terminal symbol	Function Description
Power Source	P5V-VCM	Providing 10mA current, used for external resistance type remote pressure gauge. Unplug the jumper cap on the control panel P1.
	+24V-GND	Providing 24V power source, used for pressure transducer, the max.output current is 200mA.
Analog Input	+24V-AI1	Reception of 0/4mA~20mA pressure transducer. Plug in jumper cap on control panel P1.
	+24V-AI2	
Digital Input	S1-COM	ON-OFF signal input, optical coupling with +24V and COM
	S2-COM	
	S3-COM	
	S4-COM	

Type	Terminal symbol	Function Description
Relay Output	T/A-T/B	Relay output, T/A, P/A common terminal, T/B NC terminal, T/C, P/C NO terminal. The relay switch contact signal, which can be either alarm or valve switch signals. Max.capacity of contact: AC 250V-3A or DC 30V-1A.
	T/A-T/C	
	P/A-P/C	
Commu-nication	485A+	485 communication interface. Use twisted pair cable or shielded cable for dedicated communication interface.
	485A-	
	485B+	485 communication interface. Use twisted pair cable or shielded cable for the standard 485 communication interface.
	485B-	
Remarks	P1	AI1 and AI2 Input type selection switch. Plug in jumper cap for current type signal, otherwise for resistance pressure gauge.
	P2	P2: 485A communication terminal resistance selection
	P3	P3: 485B communication terminal resistance selection Plug in jumper cap to connect terminal resistor, noted that for multi-pump, only plug in the jumper cap of the first and the last.

Keypad Description



Manual/Auto Switchover Function (Constant Speed/Constant Pressure (Constant Differential Pressure/Constant Temperature/Constant Differential Temperature) Switchover Function)

(1) Terminal (Terminal in priority, panel keypad control manual/auto switchover invalid)

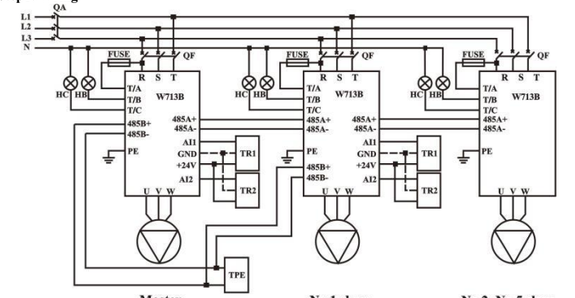
When b05.02=2, S2 disconnected with COM, and constant pressure/constant differential pressure/constant temperature/constant differential temperature water supply is provided. The set pressure/set differential pressure/set temperature/set differential temperature under the primary interface can be adjusted by pressing ⌃ or ⌄ key. S2 connected with COM, operate and supply water at constant speed, and the constant speed operation frequency under the primary interface can be adjusted by pressing ⌃ or ⌄ key.

(2) Panel Keypad (Manual/Auto Switchover can be realized by pressing the panel button when the inverter is stopped)

In the stop state, press the ⌄ and » key at the same time in the primary display interface to realize the manual/automatic switchover.

Quick Debug of Parameter Setting

Step1: Wring



Control 5 auxiliaries at most, up to 6 pump linkage work

Step2: Modify b08.00~b08.04 parameters according to motor nameplate

b08.00: Rated power of motor (cannot exceed the power labeled on inverter nameplate)

b08.01: Rated frequency of motor (Normally 50Hz/60Hz)

b08.02: Rated RPM of motor

b08.03: Rated voltage of motor

b08.04: Rated current of motor (Cannot exceed the output current labeled on inverter nameplate)

Step3: Confirmation of the pump operating direction

A short trial run to see if the pump's running rotation is correctly. The pump steering can be changed in the following two ways:

(1) Power off inverter until its LED display extinguish, switch over any two output wires of U V W

(2) b00.02 Stop inverter, modify parameter b00.02

Step4: Setting control mode and linkage mode

b01.18: Set this parameter based on the required control mode. b01.18=0 (constant pressure), b01.18=1 (constant differential pressure), b01.18=2 (constant temperature), b01.18=3 (constant differential temperature)

b01.17: Set this parameter based on the required linkage mode. b01.17=0 (synchronous), b01.17=1 (master-slave), b01.17=2 (big-small pump), b01.17=3 (one duty one standby), b01.17=4 (one VFD drive two pumps)

Step5: Setting transducer measuring range, feedback type

(1) Transducer setting

b01.05: Set this parameter according to the maximum range labeled on transducer.

(2) Temperature transducer setting

b01.07: AI1 temperature lower limit (outlet), set this parameter according to the minimum value of the labeled on temperature transducer.

b01.09: AI1 temperature Higher limit (outlet), set this parameter according to the maximum value of the labeled on temperature transducer.

b01.12: AI2 temperature lower limit (inlet), set this parameter according to the minimum value of the labeled on temperature transducer.

b01.14: AI2 temperature Higher limit (inlet), set this parameter according to the maximum value of the labeled on temperature transducer.

(3) According to the transducer feedback type, p1plug in jumper cap for current type signal, otherwise resistance pressure gauge signal.

Step6: Correct displayed pressure value

b01.06: AI1 input voltage lower limit (used for adjusting zero bias of pressure transducer)

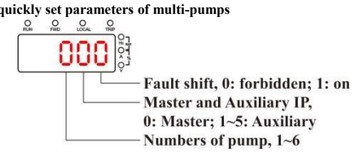
b01.08: AI1 input voltage higher limit (when display pressure smaller than the actual, decrease Higher Limit; when display pressure greater than the actual, increase Higher Limit)

b01.11: AI2 input voltage lower limit (used for adjusting zero bias of pressure transducer)

b01.13: AI2 input voltage higher limit (when display pressure smaller than the actual, decrease Higher Limit; when display pressure greater than the actual, increase Higher Limit)

Step7: Multi-pumps quick setting

b00.07: Can quickly set parameters of multi-pumps



For example, when set parameters of three pump, Master b00.07=301, No.1 slave b00.07=311, No.2 slave b00.07=320

Running Fault and Trouble Shooting

Fault Code	Fault value	Fault Type	Reason	Solution
LP	0x1C	Low Water Pressure	1.Abnormal sensor; 2.Motor rotates in the reverse direction; 3.Insufficient water inflow; 4.There is air inside the pump	●Check the installation of pressure transducer; ●Check the motor's direction of rotation is correct or not; ●Check the parameter b01.01 (setting value too big); ●Check the pump whether is vent out the air inside
LP2	0x2A	Low Water Pressure at Inlet	1.Abnormal sensor; 2.Insufficient water inflow	●Check the installation of pressure transducer; ●Check the parameter b07.00 (setting value too big)
HP	0x1B	High Water Pressure	1.Abnormal sensor; 2.The parameter b01.00 setting value is too small	●Check the installation of pressure transducer; ●Check the parameter b01.00 (setting value too small)
LT	0x20	Low Temperature	1.Abnormal sensor; 2.The temperature is too low	●Check the installation of temperature transducer; ●Check parameter b01.29 value set whether is too large
LT2	0x2B	Low Temperature at Inlet	1.Abnormal sensor; 2.The temperature at inlet is too low	●Check the installation of temperature transducer; ●Check the parameter b07.00 (setting value too big);
HT	0x1F	High Temperature	1.Abnormal sensor; 2.The parameter b01.28 setting value is too small	●Check the installation of temperature transducer; ●Check the parameter b01.28 (setting value too small)
LL	0x29	Low Water Level	1.Water level of pool is too low; 2.Abnormal water level switch; 3.Wrong setting of water level switch style parameter	●Check the water system ●Check the situation of the control terminal S3 ●Check the parameter b05.00
E022	0x16	AI1 Sensor Fault	1.Transducer disconnected; 2.Wrong transducer wiring; 3.Transducer short circuit; 4.Transducer break down	●Check the cable between transducer and controller; ●Check the transducer whether is normal
E033	0x21	AI2 Sensor Fault	1.Transducer disconnected; 2.Wrong transducer wiring; 3.Transducer short circuit; 4.Transducer break down	●Check the cable between transducer and controller; ●Check the transducer whether is normal
E001	0x01	Inverter unit fault	1.Acc/Dec time is too short; 2.IGBT module fault; 3.Malfunction caused by interference; 4.Grounding is not properly	●Increase Acc/Dec time; ●Check external equipment and eliminate interference; ●Ask supplier for support
E002	0x02	Over-current When Acceleration	1.Acceleration time is too short; 2.Low input voltage; 3.There are impurities in the pump; 4.Pump blocked;	●Prolong acceleration time; ●Check the power supply; ●Check water quality and water intake environment ; ●Check motor;
E003	0x03	Over-current When Deceleration	1.Dec time is too short; 2.Load is too heavy; 3.The power of controller is small	●Prolong Dec. time; ●Increase braking unit; ●Select bigger capacity controller
E004	0x04	Over-current When Constant Speed Running	1.Sudden change of load; 2.Low input voltage; 3.The power of controller is small	●Check the load; ●Check the power supply; ●Select bigger capacity controller
E005	0x05	Over-voltage When Acceleration	1.High input voltage; 2.Regenerative energy from the motor is too large	●Check the power supply; ●Avoid to restart the motor until it stop running completely
E006	0x06	Over-voltage When Deceleration	1.Dec time is too short; 2.Load is too heavy;	●Increase Dec. time; ●Increase braking unit;
E007	0x07	Over-voltage When Constant Speed Running	1.High input voltage; 2.Load is too heavy	●Install input reactor; ●Increase braking unit
E009	0x09	DC Bus Under-voltage	1.Low input voltage	●Check the grid's input power supply
E010	0x0A	Controller Overload	1.Acceleration time is too short; 2.Low input voltage 3.Restart the motor when it does not stop totally;	●Increase acceleration time; ●Check the power supply; ●Avoid restarting during shutdown;
E011	0x0B	Motor Overload	1.Low input voltage; 2.Wrong setting of motor parameter; 3.Motor blocked or something stick in the pump;	●Check the power supply; ●Reset the rated current of motor; ●Check motor;

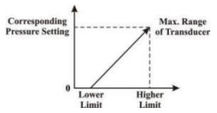
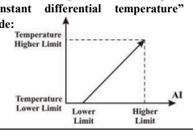
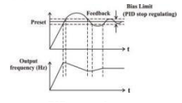
Fault Code	Fault value	Fault Type	Reason	Solution
E012	0x0C	Input Phase Failure	1.Open-phase occurred at R, S,T power input side;	●Check the wiring, installation and the power supply;
E013	0x0D	Output Phase Failure	1.Open-phase occurred at U,V,W output side (or there is asymmetric of load three phase)	●Check the output wiring; ●Check the motor and cable;
E014	0x0E	IGBT Overheat	1.Cooling fans of controller blocked or damaged; 2.Ambient temperature is too high; 3.Wires or connectors of control board are loose; 4.Control board is abnormal	●Clear air duct or replace cooling fans; ●Decrease the ambient temperature; ●Check wiring connection and reconnect; ●Ask supplier for support;
E016	0x10	RS485B Communication Timeout	1.The upper controller works abnormally; 2.Communication line is abnormal; 3.Wrong setting of communication parameter;	●Check wiring connection of upper controller; ●Check communication wiring; ●Setting correct communication parameters;
E018	0x12	Current Detection Fault	1.Wires or connectors of control board are loose; 2.Abnormal current detection circuit;	●Check wiring connection and re-wire; ●Ask supplier for service
E021	0x15	EEPROM Fault	1.Error occurred in the read-write of control parameters; 2.EEPROM damaged	●Press STOP button to reset; ●Ask supplier for service

Instructions of Parameters Group

The W713B RS485B supports Modbus RTU protocol, which is used for controller or water supply system running state information and related functional parameter setting.

Function Code	Name	Setting Range	Factory Setting	Description
br-00 Group Application Function				
b00.00	Reserved			
b00.01	Pressure Setting	b01.01~ b01.00-1.0	3.0bar	Set according to the actual requirements of user
	Differential Pressure Setting	0.0~ b01.00-1.0	0.5bar	
	Temperature Setting	-15.0~ b01.28-10.0	30.0℃	
	Differential Pressure Setting		5.0℃	
b00.02	Motor Rotating Direction	0~1	0	0: Forward; 1: Reverse
b00.07	Quick debugging setting	0x000~0x651	0x100	
b00.08	Constant Speed Operating Frequency Setting Value	b05.07~b05.06	50.00Hz	When the constant speed operating frequency needs to be set to a greater value, the upper operating limit b05.06 shall be modified first, and then the value shall be modified
b00.09	Manual Frequency Source Selection	0~3	0	0: Keyboard (b00.08); 1: AI1; 2: AI2; 3: Communications control
br-01 Group Application Function				
b01.00	High Water Pressure Alarm Value	b01.01 ~b01.05	8.0bar	When actual pressure on the outlet side is higher than this preset value, the inverter halts, alarms and displays "HP".
b01.01	Low Water Pressure Alarm Value	0.0~b01.00	0.5bar	When the "constant pressure" or "constant differential pressure" control modes are in operation, the actual pressure on the outlet side is lower than the low water pressure alarm value (b01.01) for a low pressure running time (b01.02), the inverter halts, alarms and displays "LP";
b01.02	Low Pressure Running Time Low Temperature Running Time	0.0~300.0	20.0s	When the "constant temperature" or "constant differential temperature" control modes are in operation, the actual temperature on the outlet side is lower than the low temperature alarm value (b01.29) for a low temperature running time (b01.02), the inverter halts, alarms and displays "LT".
b01.05	Maximum Transducer Setting Range	0.0~100.0	10.0bar	1. For "constant pressure" or "constant differential pressure" control mode, If the rated max. range of transducer is 16.0bar, b01.05 should be set to 16.0; 2. Set the control range of "constant temperature" or "constant differential temperature" in parameters b01.07 and b01.09 (water outlet), b01.12 and b01.14 (water inlet).
b01.06	AI1 Lower Limit	0.00~b01.08	1.00V	●Lower limit (b01.06, b01.11) use to transducer zero setting ●Corresponding Setting of Lower Limit (b01.07, b01.12) use to transducer minimum setting ●Higher limit (b01.08, b01.13) use to accordant display and transducer: when display smaller than the actual, decrease higher limit; when display greater than the actual, increase higher limit ●Corresponding Setting of Higher Limit (b01.09, b01.14) use to transducer maximum setting ●When analog input is interfered, prolong filtering time so as to increase the ability of anti-interference, but decrease the sensitivity. ●Corresponding relationship of transducer parameter setting of "constant pressure" and "constant differential pressure" control mode:
b01.07	Corresponding Setting of AI1 Lower Limit	-100.0~100.0	0.0%	
	AI1 Temperature Lower Limit		0.0℃	
b01.08	AI1 Higher Limit	b01.06~10.00	5.00V	
b01.09	Corresponding Setting of AI1 Higher Limit	-100.0~100.0	100.0%	
	AI1 Temperature Higher Limit		100.0℃	
b01.10	AI1 Filtering Time	0.00~10.00	0.10s	
b01.11	AI2 Lower Limit	0.00~b01.13	1.00V	
b01.12	Corresponding Setting of AI2 Lower Limit	-100.0~100.0	0.0%	
	AI2 Temperature		0.0℃	

V1.0.4

	Lower Limit			
b01.13	AI2 Higher Limit	b01.11~10.00	5.00V	
b01.14	Corresponding Setting of AI2 Higher Limit	-100.0~100.0	100.0%	
	AI2 Temperature Higher Limit		100.0℃	
b01.15	AI2 Filtering Time	0.00~10.00	0.10s	●Corresponding relationship of transducer parameter setting of "constant temperature" and "constant differential temperature" control mode: 
b01.16	Restart After Power-on	0~1	1 0 1 0	0: Invalid; 1: Valid
b01.17	Linkage Mode	0~4	1	0: Synchronous; 1: Master-slave; 2: Big-small pump combination; 3: One duty one standby; 4: One VFD drive two pumps (It needs to be used with One VFD drive two pumps boxes) Note: when b01.17 was set to 4, b01.09 is 0, b05.02 is 5, b05.12 is 1, b06.03 is 10, b06.10 is 11
b01.18	Control Mode	0~3	0	0: Constant pressure; 1: Constant differential pressure; 2: Constant temperature; 4: Constant differential temperature
b01.19	Independent Start and Stop Control	0~1	0	Only be enabled when b05.02 was set to 2. 0: Invalid (Start and stop is controlled by the system after being put into the system) 1: Valid (Start and stop is controlled by the inverter, which can be started and stopped by the panel or S4 terminal)
b01.20	One VFD drive two pumps mode	0~1	0	0: Fixed variable frequency pump 1: Rotate variable frequency pump When enabled, the alternate mode is determined by b05.11, and the alternate time is set by b05.10. Note: After the alternate time reaches, when the sleep function is enabled, the system will automatically complete the alternate while sleeping. When the sleep function is not enabled, the system will complete the alternating at the lower limit of output frequency.
b01.21 ~ b01.27	One VFD drive two pumps related parameters	Set according to the factory value. If you have any questions, please consult our company		
b01.28	High Temperature Alarm Value	When actual temperature on the outlet side is higher than this preset value, the inverter halts, alarms and displays "HT".		
b01.29	Low Temperature Alarm Value	Low temperature alarm value on the outlet side		
br-02 Group Application Function				
b02.00	PID Source Selection	0~1	0	0: Keypad; 1: Reserved
b02.01	PID Output Characteristics	0~1	0	0: Positive action; 1: Negative action
b02.02	PID Output Characteristics	0~1	0 0 0 1	0: Positive action; 1: Negative action
b02.03	Proportional Gain (KP)	0.0~500.0	50.0	Determining the strength of PID regulation, KP is bigger, regulation is stronger, but fluctuate easier too.
b02.04	Integral Coefficient (KI)	0.01~10.00	0.50	Bias between the feedback and the given, determining the speed of regulation, KI is bigger, regulation is stronger.
b02.05	Derivative Coefficient (KD)	0.000~10.000	0.000	Variable ratio between the feedback and the given, KD is bigger, regulation is stronger. Be cautious use, for differential regulation amplifies interference of system.
b02.07	PID Control Bias Limit	0.0~100.0	0.0%	Max. bias of PID output value corresponding to closed loop given value:  PID control curve Corresponding System Diagram of Max. Limit and Output Frequency. Properly set the value can regulate the accuracy and stability of PID system.
b02.08	AI1 Feedback Lost Detecting Value	0.0~100.0	1.0%	Transducer fault detecting setting value, which corresponds to full range (100%). When the feedback disconnection time exceeds open circuit detection time, it is deemed as malfunction by transducer, the system will report corresponding transducer fault (AI1: E022, AI2:E033).
b02.09	AI2 Feedback Lost Detecting Value	0.0~100.0	0.0% 1.0% 0.0% 1.0%	
b02.10	Feedback Lost Detecting time	0.0~3600.0	1.0s	
br-03 Group Application Function				
b03.01	Baud Rate Selection (RS485A)	0~5	5	Data of master and slave comes into the rate. 0: 1200BPS; 1: 2400BPS; 2: 4800BPS 3: 9600BPS; 4: 19200BPS; 5: 38400BPS

b03.02	Data Format (RS485A)	0~3	3	0: Non parity (8-N-2); 1: Even parity (8-E-1); 2: Odd parity (8-O-1); 3: Non parity (8-N-1)
b03.10	Communication Address (RS485B)	0~250	1	1~250, 0 broadcast address
b03.11	Baud Rate Selection (RS485B)	0~5	3	Data of master and slave comes into the rate. 0: 1200BPS; 1: 2400BPS; 2: 4800BPS 3: 9600BPS; 4: 19200BPS; 5: 38400BPS
b03.12	Data Format (RS485B)	0~3	3	0: Non parity (8-N-2); 1: Even parity (8-E-1); 2: Odd parity (8-O-1); 3: Non parity (8-N-1)
b03.13	Communication Delay Time (RS485B)	0~200	2ms	Interval of data responding.
b03.14	Communication Timeout Delay (RS485B)	0.0~100.0	0.0s	It will alarm after timeout detection when communication line disconnected, the inverter halts, alarms and displays E016. 0.0: Invalid.
br-04 Group Application Function				
b04.00	Sleeping Function	0~1	1 0 0 0	No consuming auto stop. 0: Invalid; 1: Valid.
b04.01	Sleeping Waiting Time	0.0~300.0	5.0s	0.0s~300.0s. No consuming to enter sleep. Unit: Seconds.
b04.02	Sleeping Detection Coefficient	0~1000	150 150 000 000	Used for system sleep detection.
b04.03	Wake-up Bias	0.0~20.0	0.5bar 0.3bar 5.0℃ 3.0℃	During sleeping the wake-up pressure or differential pressure or temperature or differential temperature bias, e.g. the setting value (L)=3.0bar, bias (b04.03)=0.5bar, P<L-0.5=2.5bar, the pump will restart again.
b04.04	Sleeping Bias	0.00~1.00	0.10bar 1.00℃	The pressure (or differential pressure or temperature or differential temperature) fluctuation which allows sleeping.
b04.05	Sleep Test Cycle	0.0~3600.0	20.0s	Sleeping testing cycle.
b04.06	Wake-up Delay Time	0~36000	0s	Wake-up delay time after sleeping.
br-05 Group Application Function				
b05.00	Water Level Control	0~2	2	Water level switch style, this parameter is invalid if the b05.02 is set to 4. 0: Invalid; 1: NC; 2: NO
b05.01	Low Lever Restart Delay Time	0~300	1min	Delay time of restart after water level switch recover.
b05.02	Terminal Control	0~5	2	0: Invalid 1: Electric contact control S1-COM on: Frequency rise S2-COM on: Frequency drop 2: Manual/auto control S2-COM off: Auto control S2-COM on: Manual control 3: Terminal run/stop S1-COM on: Run S1-COM off: Stop S2-COM off: Auto control S2-COM on: Manual control 4: Water Pool control (Water level auto control) S1-COM off: Water shortage protection of the lower pool S2-COM off: Delayed run of lower pool, avoid frequent start S3-COM off: Water supplement of upper pool S4-COM on: Pump stops when upper pool overflow (full) S1-COM off, water shortage of lower pool, running with zero frequency or freeze-proofing frequency, can supply water when S1-COM on, S2-COM on; S4-COM on, overflow of upper pool, running with zero frequency or freeze-proofing frequency, needs to supply water when S4-COM off, S3-COM off. Alternating water supply on each pump, it will alternately start to the next next pump after stopping pump (pump stops when water shortage or overflow). 5：One VFD drive two pumps failure input S1-COM on: M1 pump failure S2-COM on: M2 pump failure
b05.03	Acceleration Time	0.1s~3600.0s	Model Set	The setting time from zero to max. frequency
b05.04	Deceleration Time	0.1s~3600.0s	Model Set	The setting time from max. frequency to zero
b05.05	Maximum Output Frequency	50.00~600.00	50.00Hz	Determine the Acc./Dec. rate
b05.06	Up limit of Output Frequency	b05.07 ~b05.05	50.00Hz	Maximum running frequency
b05.07	Lower Limit of Output Frequency	00.00~b05.06	20.00Hz	The minimum running frequency of pump.
b05.08	Carrier Frequency	1.0kHz ~ 15.0kHz	Model Set	Use to ameliorate the noise of motor and inverter's interference to the surroundings. A high carrier makes a low motor noise, but leads to a big temperature rise and interference.Should not be altered if unnecessary.
b05.09	LP Restart Delay Time LT Restart Delay Time	0~36000	10min	In case of low pressure or low temperature, b05.09≠0, the inverter restarts to work according to the setting time automatically, without artificial restart. b05.09=0, restart invalid.
b05.10	Alternating Time	0.00~300.00	8.00h	In order to balance and prolong the pump service life to set the parameter, unit: hour. When the parameter is set to 0.0, it means in-execution. Operational time of master and auxiliary pump switches over according to the setting alternating

				time.
b05.11	Alternating Mode	0~1	0	0: Alternate according to alternating time or sleeping wake-up 1: Only alternate according to alternating time
b05.12	S4 Terminal Control	0~3	0	0: Invalid; 1: Start-stop; 2: Forward and reverse switching; 3: Analog signal source (AI1, AI2) switching
b05.13	Cooling fan control mode	0~1	0	0：The fan operates when the Controller is running 1:The fan operates when the temperature is reached
br-06 Group Application Function				
b06.00	Running Status Display Selection	0x0000~ 0xFFFF	0x041F	bit0: Operational frequency bit1: The actual pressure of pump outlet / The actual differential pressure / The actual temperature of pump outlet / The actual differential temperature bit2: The setting pressure of pump outlet / The setting differential pressur / The setting temperature of pump outlet / The setting differential temperature bit3: Output current bit4: DC bus voltage bit5: Output voltage bit6: Present time bit7: The actual pressure of pump inlet bit8: Input terminal status Bit9: Output current and the actual pressure of pump outlet / Output current and the actual differential pressure / Output current and the actual temperature of pump outlet / Output current and the actual differential temperature Bit10: The setting pressure of pump outlet and the actual pressure of pump outlet / The setting differential pressure and the actual differential pressure / The setting temperature of pump outlet and the actual temperature of pump outlet / The setting differential temperature and the actual differential temperature Note:Under manual model only display "operational frequency", "output current" and "DC bus voltage"
b06.01	Stop Status Display Selection	0x0000~ 0xFFFF	0x020F	bit0: The setting pressure of pump outlet / The setting differential pressure / The setting temperature of pump outlet / The setting differential temperature bit1: The actual pressure of pump outlet / The actual differential pressure / The actual temperature of pump outlet / The actual differential temperature bit2: Giver frequency bit3: DC bus voltage bit4: Input terminal status bit5: Output terminal status bit6: AI1 input voltage bit7: The actual pressure of pump inlet bit8: Present time Bit9: The setting pressure of pump outlet and the actual pressure of pump outlet / The setting differential pressure and the actual differential pressure / The setting temperature of pump outlet and the actual temperature of pump outlet / The setting differential temperature and the actual differential temperature Note: Under manual model only display "giver frequency", , "output current" and "DC bus voltage"
b06.03	Relay 1 Output Selection	0~11	0	0: Error or external fault; 1: Forward running (including zero-speed running); 2: Upper limit frequency reaching; 3: Stop status; 4: Lower limit frequency reaching; 5: The frequency is not equal to zero; 6: Actual pressure on the outlet side reaching high water pressure alarm value; 7: Actual pressure on the outlet side decreases to low water pressure alarm value; 8: Actual temperature on the outlet side reaching high temperature alarm value; 9: Actual temperature on the outlet side decreases to low temperature alarm value; 10: One VFD drive two pumps, used for variable frequency pump control 11: One VFD drive two pumps, used for power frequency pump control
b06.10	Relay 2 Output Selection		1	
b06.09	Set the Password of b00.00	0~65535	0	Password set prevent user from modifying the parameters randomly, avoiding running abnormally and damages.
b06.11	Relay Output Valid Status Selection	00~11	00	0: Positive logic; 1: Negative logic The unit: relay 1; Tens: relay 2
b06.12 ~b06.16	Reserved			
b06.17	Motor type selection	0~1	0	0: 3Phase 1:1Phase
b06.18	Input missing phase selection	0~1	1	0: Invalid 1:Effective
b06.19	Output phase gap selection	0~1	1	0: Invalid 1:Effective
br-07 Group Application Function				
b07.00	Lower Limit of Inlet Pressure	0.0~100.0	0.0bar	Valid all day, especially for the use of taking account of inlet water pressure or temperature.
	Lower Limit of Inlet Temperature	-15.0~200.0	-15.0℃	

b07.01	Restore Defaults	0~2	0	0: No action 1: Set to default 2: Clear error records
b07.02	Day-part Function Selection	0~3	0	0: Invalid; 1: Day-part A; 2: Day-part A and B; 3: Day-part A, B, C
b07.03	Day-part A Starting Time	00-00~23-59	00-00	●Setting starting time and finishing time to 00-00 is invalid. ●Finishing time should be no less than starting time. ●Running pressure/differential pressure is equivalent to setting pressure/differential pressure of day-par. ●Once actual pressure from inlet pipe network lower than inlet pressure lower limit, the inverter halts, alarms and displays "LP2". ●When regardless of the inlet water pressure, just set the lower limit as 0.0.
b07.04	Day-part A Pressure Setting	-15.0~ b01.00-1bar	3.0bar	
	Day-part A Differential Pressure Setting	0.0~ b01.00-1bar	0.5bar	
	Day-part A Temperature Setting	-15.0~ b01.28-10℃	30.0℃	
	Day-part A Differential Temperature Setting	-15.0~ b01.28-10℃	5.0℃	
b07.05	Day-part A Finishing Time	00-00~23-59	00-00	
b07.06	AI2 Lower Limit of Day-part A	0.0~100.0	2.0bar	
		-15.0~200.0	-15.0℃	
b07.07	Day-part B Starting Time	00-00~23-59	00-00	
b07.08	Day-part B Pressure Setting	-15.0~ b01.00-1bar	3.0bar	
	Day-part B Differential Pressure Setting	0.0~ b01.00-1bar	0.5bar	
	Day-part B Temperature Setting	-15.0~ b01.28-10℃	30.0℃	
	Day-part B Differential Temperature Setting	-15.0~ b01.28-10℃	5.0℃	
b07.09	Day-part B Finishing Time	00-00~23-59	00-00	
b07.10	AI2 Lower Limit of Day-part B	0.0~100.0	2.0bar	
		-15.0~200.0	-15.0℃	
b07.11	Day-part C Starting Time	00-00~23-59	00-00	
b07.12	Day-part C Pressure Setting	-15.0~ b01.00-1bar	3.0bar	
	Day-part C Differential Pressure Setting	0.0~ b01.00-1bar	0.5bar	
	Day-part C Temperature Setting	-15.0~ b01.28-10℃	30.0℃	
	Day-part C Differential Temperature Setting	-15.0~ b01.28-10℃	5.0℃	
b07.13	Day-part C Finishing Time	00-00~23-59	00-00	
b07.14	AI2 Lower Limit of Day-part C	0.0~100.0	2.0bar	
		-15.0~200.0	-15.0℃	
b07.15	One Duty One Standby Operation Mode Function Selection	0~3	0	Different Day-part master pump operating: 0: Invalid 1: Day-part A 2: Day-part A and B 3: Day-part A, B and C
b07.16	Master Start Time Day-part A	00-00~23-59	00-00	●Only limited to one duty one standby system (b01.17=3); ●When b07.15≠0, No.0 pump as the master pump to operate within setting time, other time No.1 pump as the master pump to operate; ●If fault shift happen, the No.1 pump change into new master pump No.0 and directly run as master pump; ●When b07.15=0, the master pump will operate according to setting alternating time
b07.17	Master Finish Time Day-part A	00-00~23-59	00-00	
b07.18	Master Start Time Day-part B	00-00~23-59	00-00	
b07.19	Master Finish Time Day-part B	00-00~23-59	00-00	
b07.20	Master Start Time Day-part C	00-00~23-59	00-00	
b07.21	Master Finish Time Day-part C	00-00~23-59	00-00	
b07.22	Massword of Group Br08	0~65535	00000	0~65535
br-08 Group Application Function				
b08.00	Motor Rated Power	0.1kW~ 350.0kW	Model Set	Depend on model, setting parameters according to nameplate of motor
b08.01	Motor Rated Frequency	0.01Hz~b05.05	50.00Hz	
b08.02	Motor Rated Speed	1RPM~ 36000RPM	Model Set	
b08.03	Motor Rated Voltage	1V~460V		
b08.04	Motor Rated Current	0.01A~655.35A (P≤55kW) n 0.1A~6553.5A (Pr>55kW)		
b08.05	Reserved		00000	
b08.06	Delay Time When Adding Pump	0.1~3600.0	0.5s	After pump operating with full frequency, delay the time of b08.06 , the next pump will operate.
b08.07	Set the Password of b07.22	0~65535	65535	Modify password of b07.22
b08.08	Password of Factory Parameters	0~65535	xxxxx	Don't try to enter or will cause abnormal operation and damages.

Attention: Function code b01.05~b01.15、b01.18、b01.22~b01.23、b05.05、b07.04、b07.06、b07.08、b07.10、b07.12、b07.14、b08.00~b08.05、b08.07~b08.08 won't restore the default setting even if resetting.