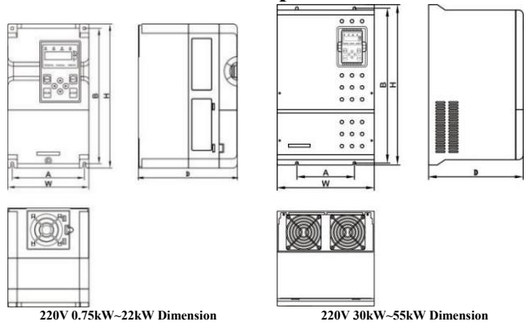
B603PRO Series Intelligent Controller for Water Pump Simple Manual

Dimension Model and Specification

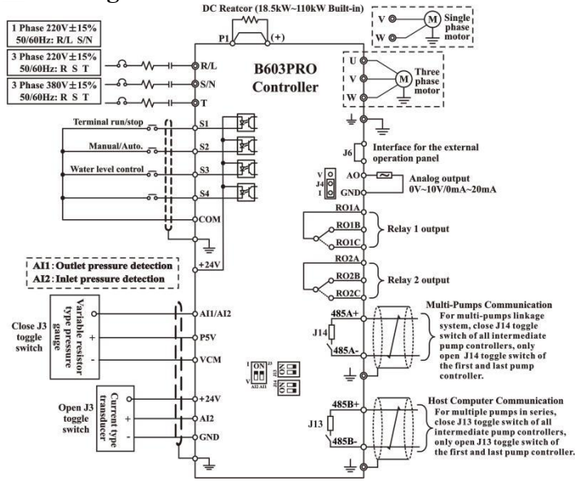


220V 0.75kW~22kW Dimension
380V 0.75kW~37kW Dimension

220V 30kW~55kW Dimension
380V 45kW~200kW Dimension

Model	Rated Output Current (A)	Motor Power (kW)	Installation Dimension A(mm)	Installation Dimension B(mm)	External Dimension H(mm)	External Dimension W(mm)	External Dimension D(mm)	Installation Hole (mm)
Input: AC 1PH 220V, Output: AC 3PH 0~220V								
B603PRO-2001	4.5	0.75	114	174	186	126	163.8	5
B603PRO-2002	7.0	1.5						
B603PRO-2003	10.0	2.2						
Input: AC 3PH 220V, Output: AC 3PH 0~220V								
B603PRO-2001	4.5	0.75	114	174	186	126	163.8	5
B603PRO-2002	7.0	1.5						
B603PRO-2003	10.0	2.2						
B603PRO-2004	13.0	3.0	114	174	186	126	185	5
B603PRO-2005	17.0	3.7						
B603PRO-2007	25.0	5.5	129	242	258	145	176.5	5.5
B603PRO-2010	32.0	7.5	146	301	313	161	210	6
B603PRO-2015	45.0	11.0	185	330	342	200	200.5	6
B603PRO-2020	60.0	15.0						
B603PRO-2025	75.0	18.5	233	381	400	251	213	6
B603PRO-2030	91.0	22.0						
B603PRO-2040	112.0	30.0	199	534	554	336	327.5	9
B603PRO-2050	150.0	37.0						
B603PRO-2060	176.0	45.0						
B603PRO-2075	210.0	55.0						
Input: AC 3PH 380V, Output: AC 3PH 0~380V								
B603PRO-4001	2.1	0.75	114	174	186	126	163.8	5
B603PRO-4002	3.8	1.5						
B603PRO-4003	5.1	2.2						
B603PRO-4005	9.5	4.0	114	174	186	126	185	5
B603PRO-4007	14.0	5.5						
B603PRO-4010	18.5	7.5	129	242	258	145	176.5	5.5
B603PRO-4015	25.0	11.0	146	301	313	161	210	6
B603PRO-4020	32.0	15.0						
B603PRO-4025	38.0	18.5	185	330	342	200	200.5	6
B603PRO-4030	45.0	22.0						
B603PRO-4040	60.0	30.0	233	381	400	251	213	6
B603PRO-4050	75.0	37.0						
B603PRO-4060	92.0	45.0	199	534	554	336	327.5	9
B603PRO-4075	115.0	55.0						
B603PRO-4100	152.0	75.0						
B603PRO-4120	180.0	90.0						
B603PRO-4150	215.0	110.0						
B603PRO-4180	260.0	132.0	360.0	848.0	870.0	503.0	362.0	11.0
B603PRO-4215	305.0	160.0						
B603PRO-4250	340.0	185.0						
B603PRO-4270	380.0	200.0						

Wiring



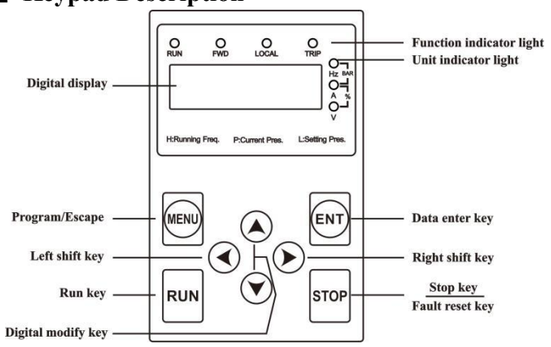
Main circuit terminal's function as following:

Terminal Symbol	Function Description
L, N	Terminals of single phase AC input
R, S, T	Terminals of 3 phase AC input
(+), (-)	Spare terminals of external braking unit
(+), PB	Spare terminals of external braking resistor
P1, (+)	Spare terminals of external DC reactor
(-)	Terminals of negative DC bus
U, V, W	Terminals of 3 phase AC output
V, W	Terminals of 1 phase AC output
⏚	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
	+24V-GND	Providing 24V power source, used for pressure transmitter, the max.output current is 200mA.
Analog Input	+24V-AI1	Reception of 0/4mA~20mA pressure transmitter, Toggle switch J3 on control panel should select ON side.
	+24V-AI2	
Digital Input	S1-COM	ON-OFF signal input, optical coupling with +24V and COM Input voltage range: 9V~30V Input impedance: 2.4kΩ
	S2-COM	
	S3-COM	
	S4-COM	
Analog Output	AO-GND	DC 0V~10V/0mA~20mA analog output, voltage or current signal output determined by J4 short-circuit cap selection on main circuit board.
Relay Output	RO2A-RO2B	Relay output, RO2A, RO1A common terminal, RO2B, RO1B NC terminal, RO2C, RO1C 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.
	RO2A-RO2C	
	RO1A-RO1B	
	RO1A-RO1C	
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	Toggle Switch J3	AI1 and AI2 Input type selection switch. Toggle switch turn to ON side as current type signal, othewise, as voltage type signal
	Toggle Switch J13	J13: 485B communication terminal resistance selection J14: 485A communication terminal resistance selection Toggle switch turn to ON side as connecting to terminal resistance, noted that for multi-pump, only open toggle switch of the first pump and last pump.
	Toggle Switch J14	

Keypad Description



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

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

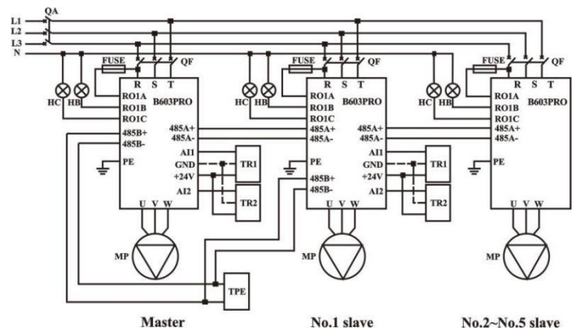
When b05.02 = 2, S2 disconnected with COM, and constant pressure/constant differential pressure water supply is provided. S2 connected with COM, operate and supply water at constant speed.

(2) Panel Keypad (Manual/Auto Switchover can be realized by pressing the panel button when the controller 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: Wiring



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

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

Password: b00.00=65535, b07.22=65535

b08.00: Rated power of motor (cannot exceed the power labeled on controller 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 controller 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 controller until its LED display extinguish, switch over any two output wires of U, V, W

(2) b00.02 Stop controller, 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)

b01.17: 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) Pressure transducer setting, Set "b01.05" according to the maximum range labeled on pressure transducer.

(2) According to the transducer feedback type, put main circuit toggle switch J3 to ON side (current type signal), or other side (voltage type signal).

Step6: Correct displayed pressure value

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

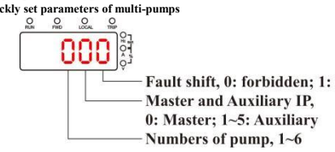
b01.08: AI1 input voltage higher limit (when display pressure smaller than the actual, decrease Higher Limit; when display pressure greater than the actual, increase Higher Limit)

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



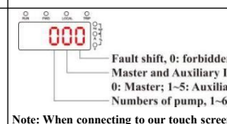
For example, when set parameters of three pump, Master b00.07=301, No.1 slave b00.07=311, No.2 slave b00.07=320

Fault and Trouble Shooting

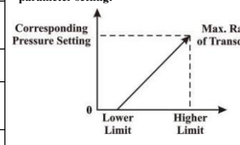
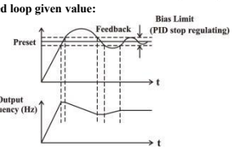
Fault Code	Fault value	Fault Type	Reason	Solution
		Under-voltage		supply
E010	0x0A	Controller Overload	1.Acceleration time is too short; 2.Low input voltage 3.Restart the motor when it does not stop totally;	●Increase acceleration time; ●Check the power supply; ●Avoid restarting during shutdown;
E011	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;
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
P.off	——	Low Voltage Alarm	1.Low input voltage	●Check the grid's input power supply
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 transmitter; ●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 transmitter; ●Check the parameter b07.13 (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 transmitter; ●Check the parameter b01.00 (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.Pressure transmitter disconnected; 2.Wrong pressure transmitter wiring; 3.Pressure transmitter short circuit; 4.Pressure transmitter break down	●Check the cable between pressure transmitter and controller; ●Check the sensor whether is normal
E033	0x21	AI2 Sensor Fault	1.Pressure transmitter disconnected; 2.Wrong pressure transmitter wiring; 3.Pressure transmitter short circuit; 4.Pressure transmitter break down	●Check the cable between pressure transmitter and controller; ●Check the sensor whether is normal
A033	0x1E	Water Shortage Fault	1.No water in the well	●Check whether there is water in the well
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 equipments and eliminate interference; ●Ask supplier for support
E002 / E044	0x02/ 0x2C	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 / E045	0x03/ 0x2D	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 / E046	0x04/ 0x2E	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
E008	0x08	Control Power Supply Fault	1.The input voltage is not within the allowable range	●Adjust the voltage to the allowable range
E009	0x09	DC Bus	1.Low input voltage	●Check the grid's input power

Instructions of Parameters Group

The B603PRO 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	Debugging Password	0~65535	65535	Decide by b06.09
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	
b00.02	Motor Rotating Direction	0~1	0	0: Forward; 1: Reverse
b00.03	Freeze-proofing	0~1	0	0: Invalid; 1: Valid (Used in cold areas)
b00.04	Anti-clogging	0~1	0	0: Invalid; 1: Valid (Prevention measures, only suitable for single pump system)
b00.05	Anti-clogging Rotating Cycle	1.0~300.0	20.0s	Set the forward/reverse rotating direction cycle and corresponding output frequency (should not be higher than the rated frequency of the pump) of anti-clogging
b00.06	Anti-clogging Output Frequency	0.00~b05.05	15.00Hz	
b00.07	Shortcut Key Setting	0x000~0x651	0x100	 Note: When connecting to our touch screen (HMI), set it to 200/300/400/500/600.
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 controller halts, alarms and displays "HP".
b01.01	Low Water Pressure Alarm Value	0.0~b01.00	0.5bar	When actual pressure on the outlet side is lower than this preset value for a low pressure running time (b01.02), the controller halts, alarms and displays "LP"
b01.02	Low Pressure Running Time	0.0~300.0	20.0s	
b01.03	Minimum Freeze-proofing Frequency	1.00~b05.07	5.00Hz	Be valid when b00.03 was set to 1, whenever sleeps, running with the setting frequency in case of freezing
b01.04	Anti-clogging FWD./REV. Dead Time	0.0~3600.0	1.0s	When anti-clogging is valid (b00.04=1), b01.04 set the FWD./REV. transition time
b01.05	Maximum Transducer Setting Range	0.0~100.0	10.0bar	E.g. If the rated max. range of transducer is 16.0bar, b01.05 should be set to 16.0
b01.06	AI1 Lower Limit	0.00~b01.08	1.00V	●Lower limit use to pressure transducer zero setting ●Higher limit use to accordant display and transducer pressure: when display pressure smaller than the actual, decrease higher limit; when display pressure greater than the actual, increase higher limit ●When analog input is interfered, prolong filtering time so as to increase the ability of anti-interference, but decrease the sensitivity.
b01.07	Corresponding Setting of AI1 Lower Limit	-100.0~100.0	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%	

V1.0.3

Function Code	Name	Setting Range	Factory Setting	Description
b01.10	AI1 Filtering Time	0.00~10.00	0.10s	●Corresponding relationship of transducer parameter setting: 
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%	
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%	
b01.15	AI2 Filtering Time	0.00~10.00	0.10s	
b01.16	Restart After Power-on	0~1	1	0: Invalid; 1: Valid
			0	
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; 2~3: Reserved
b01.19	Independent Start and Stop Control	0~1	0	Only be enabled when b05.02 =2 and b01.17≠4 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 controller, which can be started and stopped by the panel or S4 terminal)
b01.20~ b01.29	One VFD drive two pumps related parameters			Set according to the factory value. If you have any questions, please consult our company
br-02 Group Application Function				
b02.00	PID Source Selection	0~1	0	0: Keypad; 1: Reserved
b02.01	PID Feedback Source Selection	0~1	0	0: AI1; 1: AI2
b02.02	PID Output Characteristics	0~1	0	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	2.00	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.
b02.06	Reserved			
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%	
b02.10	Feedback Lost Detecting time	0.0~3600.0	1.0s	
br-03 Group Application Function				
b03.00	Communication Address	0~5	0	00: Master controller 01~05: Auxiliary controller
b03.01	Baud Rate Selection	0~5	5	Data of master and slave comes into the rate. 0: 1200BPS; 1: 2400BPS; 2: 4800BPS 3: 9600BPS; 4: 19200BPS; 5: 38400BPS Note: when b03.16 was set to 0, b03.01 is 5; when b03.16 was set to 1, b03.01 is 3
b03.02	Data Format	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)
b03.03	Communication Delay Time	0~200	2ms	Interval of data responding.
b03.04	Reserved			
b03.05	Communication Error Action	0~1	0	0: Halt and alarm; 1: Don't alarm and continue
b03.06	Communication Response Action	0~1	0	0: Responding to write operation; 1: Un-responding to writer operation
b03.07	Data Transmission Time Interval	0.05~2.00	0.10s	Ensure the effects of data transmission, long-time setting will slow down data transmission and short-time setting will easily make mistakes.
b03.08	Slave Quantity	0~5	0	0~5, 0: None
b03.09	Fault Shift	0~2	2	Fault Master Shift ●Invalid: Factory setting: 2. ●Valid: Master set as 0; Salve 1 set as 1. Remarks: Fault shift demands the salve 1 to connect a backup transducer. When adjust parameters, firstly must adjust the master and then the auxiliary.
b03.10	Communication	0~250	1	1~250, 0 broadcast address

Function Code	Name	Setting Range	Factory Setting	Description
	Address (RS485B)			
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 controller halts, alarms and displays E016. 0.0: Invalid.
b03.15	Communication Protocol Selection (RS485B)	0~1	0	0: MODBUS RTU; 1: Reserved
b03.16	Connect Other Series Controller of BEDFORD	0~1	0	0: Forbid 1: Linkage with B603 series controller
br-04 Group Application Function				
b04.00	Sleeping Function	0~1	1	No consuming auto stop.
			0	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	Used for system sleep detection.
b04.03	Wake-up Pressure Bias	0.0~20.0	0.5bar	During sleeping the wake-up pressure 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.
			0.3bar	
b04.04	Sleeping Bias	0.00~1.00	0.10bar	The pressure (or differential pressure) 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, b05.12≠1) S1 is lower pool low level, S2 is lower pool high level, S3 is upper pool low level, S4 is upper pool high level. S1-COM off: Water shortage protection, stop pump. S2-COM off: Star-up delay, avoid frequent start. S3-COM off: Water supplement. S4-COM on: Pump stops when upper pool overflow (full) When S1-COM is off, lower pool water is in shortage, pump is running with zero or freeze-proofing frequency until S1-COM switch on, when S2-COM is on, can just supply water; when S4-COM is on, upper pool overflow (be full), pump is running with zero frequency or freeze-proofing frequency until S4-COM switch off, when S3-COM is off, can just supply water; 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: #1 pump failure (Variable Frequency Pump) S2-COM on: #2 pump failure (Power Frequency Pump)
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 controller'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	Low Pressure (LP) Restart Delay Time	0~36000	10min	In case of low pressure, b05.09≠0, the controller restarts to work according to the setting time automatically, without artificial restart. b05.09=0, restart invalid.
b05.10	Alternating	0.00~300.00	8.00h	In order to balance and prolong the pump service

Function Code	Name	Setting Range	Factory Setting	Description
	Time			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: S4-COM on: Run; S4-COM off: Stop 2: Forward and reverse switching: S4-COM on: Reverse; S4-COM off: Forward 3: Analog signal source (AI1, AI2) switching: S4-COM on: AI1 inlet detection, AI2 outlet detection S4-COM off: AI1 outlet detection, AI2 inlet detection
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 bit2: The setting pressure of pump outlet / The setting differential pressur 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 Bit10: The setting pressure of pump outlet and the actual pressure of pump outlet / The setting differential pressur and the actual differential pressure 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 pressur bit1: The actual pressure of pump outlet / The actual differential pressure 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 pressur and the actual differential pressure Note: Under manual model only display "giver frequency", , "output current" and "DC bus voltage"
b06.02	Keypad Display Selection	3	3	3: Both display enable and keypad control
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; 8~9: Reserved 10: One VFD drive two pumps, used for variable frequency pump control 11: One VFD drive two pumps, used for power frequency pump control
b06.04	Third Latest Fault Type		Read Only	Refers to "Fault and Trouble Shooting".
b06.05	Second Latest Fault Type			
b06.06	Latest Fault Type			
b06.07	Parameters Storage Condition	0~2	0	0: Power-off storage 1: Power-off default storage 2: Invalid
b06.08	Accumulated Running Time	0h~65535h	Read Only	Display accumulated running time
b06.09	Set the Password of b00.00	0~65535	65535	Password set prevent user from modifying the parameters randomly, avoiding running abnormally and damages.
b06.10	Relay 2 Output Selection	0~11	1	Same as b06.03
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	AO Output Selection	0~5	0	0: Real-time pressure of pump outlet / Real-time differential pressure (100%: transducer range) 1: The setting pressure of pump outlet / The setting differential pressure (100%: transducer range) 2: Operational frequency (100%: maximum frequency) 3: Output current (100%: twice rated current of motor) 4: Output voltage (100%: 1.2 times rated voltage of controller) 5: Output frequency (100%:rated power of motor)
b06.13	AO Output Lower Limit	0.0~100.0	0.0%	The above function code defines the corresponding relationship between the output value and analog output, when the output value exceeds the range
b06.14	Lower Limit	0.00~10.00	0.00V	

Function Code	Name	Setting Range	Factory Setting	Description
	Corresponding to AO Output			beyond the setting maximum or minimum output, the above will be calculated with the upper limit or the lower limit. When the analog output is current type, 1mA current is equivalent to 0.5V voltage.
b06.15	AO Output Upper Limit	0.0~100.0	100.0%	
b06.16	Upper Limit Corresponding to Output	0.00V~10.00	10.00V	
b06.17	Motor Type Selection	0~1	0	0: 3Phase 1: 1Phase
b06.18	Input Missing Phase Selection	0~1	1	0: Invalid 1: Valid
b06.19	Output Phase Gap Selection	0~1	1	0: Invalid 1: Valid
br-07 Group Application Function				
b07.00	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
b07.01	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 controller halts, alarms and displays "LP2". ●When regardless of the inlet water pressure, just set the lower limit as 0.0.
b07.02	Day-part A Pressure Setting	-15.0~ b01.00-1.0	3.0bar	
	Day-part A Differential Pressure Setting	0.0~ b01.00-1.0	0.5bar	
b07.03	Day-part A Finishing Time	00-00~23-59	00-00	
b07.04	AI2 Lower Limit of Day-part A	0.0~100.0	2.0bar	
b07.05	Day-part B Starting Time	00-00~23-59	00-00	
b07.06	Day-part B Pressure Setting	-15.0~ b01.00-1.0	3.0bar	
	Day-part B Differential Pressure Setting	0.0~ b01.00-1.0	0.5bar	
b07.07	Day-part B Finishing Time	00-00~23-59	00-00	
b07.08	AI2 Lower Limit of Day-part B	0.0~100.0	2.0bar	
b07.09	Day-part C Starting Time	00-00~23-59	00-00	
b07.10	Day-part C Pressure Setting	-15.0~ b01.00-1.0	3.0bar	
	Day-part C Differential Pressure Setting	0.0~ b01.00-1.0	0.5bar	
b07.11	Day-part C Finishing Time	00-00~23-59	00-00	
b07.12	AI2 Lower Limit of Day-part C	0.0~100.0	2.0bar	
b07.13	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. When not needed, set as 0.0.
b07.14	Restore Defaults	0~2	0	0: No action; 1: Set to default 2: Clear error records
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) 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.

In order to ensure the pumps running safety, please enter rated value correctly from motor nameplate.

Attention: Function code b01.05~b01.15, b01.18, b05.05, b06.17~b06.19, b07.02, b07.04, b07.06, b07.08, b07.10, b07.12, b08.00~b08.05, b08.07 won't restore the default setting even if resetting.