

**USER MANUAL | ZHG-9603 Series
Constant Pressure Water Supply Controller**



Manufacturer: Wenzhou ZIRI Electrical Technology Co.,Ltd.
Add: No. 66, DaQiao Road, Liushi Town, Yueqing City ,
325604.Zhejiang ,China.
Tel: +86-577-27863300
Website:www.chziri.com



All copyrights reserved. shall not be reproduced

All parts ZHG-9603 intelligent pressure water supply controller, including software, appearance, circuit board design and user manuals, etc. which are owned Ziri Electrical Technology Co., Ltd. (hereinafter referred to as the Company) to all. Without obtaining our company's agreement. Any company or individual shall not imitate, copy, and extract. Otherwise the company shall have the right to pursue the responsibility of the parties.

The content that user manual mentioned, just for reference, the software program might change or upgrade. the user manual is also subject to change or upgrade without additional notice. The details for software change and upgrade, please go to our website for checking or contact with our company directly.

Our company has no obligation to undertake any responsibility if there have any error for the content the user manual mentioned.

Version: V1.00

ZIRI ELECTRICAL TECHNOLOGY CO.,LTD.

2016. 05

Foreword

- Thank you very much for your purchase of ZHG-9603 Intelligent constant pressure water supply controller.
- This user manual introduce the installation ,operation ,function setting and trouble shooting of ZHG-9603 Intelligent constant pressure water supply controller.
- Incorrect installation and use may result in damage to the controller or the occurrence of other accidents, please read this manual and make sure the proper installation and use before installation.
- Please forward this manual to the end user, please keep the user manual properly and future reference.
- If any doubts or questions , please contact our company's technical service center .

Table of Contents

Chapter 1 Product Introduction	1-2
1.1 Main Functional Features	1
1.2 Technical Indication	2
Chapter 2 Controller Installation & Wiring	3-5
2.1 Controller Outline Dimension	3
2.2 Controller Installation	3
2.3 Controller Wiring.....	4
Chapter 3 Panel And Operating Instructions	6-7
3.1 Panel And Operating Description	6
Chapter 4 Function Parameter Description	8-25
4.1 Function Parameters	8
4.2 Function Parameters Sheet	8
4.3 Detailed Function Description	15
Chapter 5 Fault Diagnosis & Solutions	26
5.1 Fault Code And Solutions	26
Chapter 6 Quality Warranty	27
6.1 Controller's Quality Warranty	27
Appendix	28-30
Appendix 1:user's Warranty Bill	28
Appendix 2: Controller Fast Setting	29

Chapter 1 Product Introduction

1.1 Main Functional Features

1.1.1 Include 3 units main pumps & one unit small pump, it has multiple controlling mode and meets all kinds of complex requests of water supply.

1.1.2 Timing change pump function, balance all kinds of pumps' working time . improve the average life of the pumps.

1.1.3 Up to 8 periods pressure control, and each period can be set any pressure setting control .and realize the timer ON/OFF function .

1.1.4 Sleep function and auxiliary small pump function, save energy and reduce consumption , extend machine's life.

1.1.5 Positive and negative feedback function , can be used for water supply, but also can be used to pump water and maintain the water level.

1.1.6 over-pressure, low water level, sensor disconnection, inverter failure and alarm control functions etc.

1.1.7 Feedback can connect with passive remote pressure gauge, active voltage and current transmitter.

1.1.8 Feedback device power 0-24V can be modified, stronger commonality.

1.1.9 Feedback signals can be selected .it is more convenient to connect with outer .

1.1.10 Standard 0-10V voltage output, can also be arbitrarily modified to other voltage values, the application will be more flexible.

1.1.11 when the inverter get failure, The controller can choose the automatic transfer to the working frequency running (pressure range control)

1.1.12 Relay fault output function can be selected.

1.1.13 Strong adaptable, applicable to various brands frequency inverter at home and abroad.

1.1.14 All digital signal use photoelectric isolation, strong interference ability .

1.1.15 With complete key function.

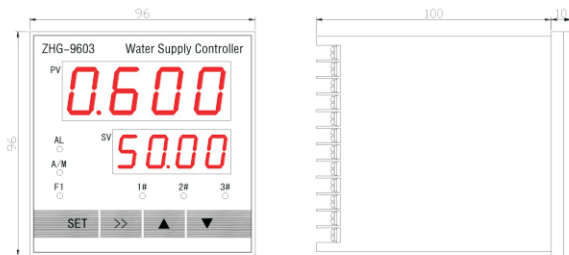
1.2 Technical Indication

Table 1-1 Technical Indication

Item	Item Description
Input power specification	Single phase 220VAC±5%, 50Hz/60Hz
Digital input signal	Level signal, low level is actual, 5mA
Digital output signal	Max. load current I≤50mA
DC output power 1	5V/100mA, 10V/50mA, 24V/30mA
DC output power 2	10V/10mA,
Reply output signal	Contact rating: 250VAC/3A, 30VDC/1A
Analog input signal	10V/10bit
Analog output signal	10V/10bit
Ambient Temperature	-10~+50℃
Humidity	20~90%RH, No condensation of water droplets
Vibration	< 0.5G
Outline dimension(W*H*T)	96mm*96mm*110mm

Chapter 2 Controller Installation & Wiring

2.1 Controller Outline Dimension

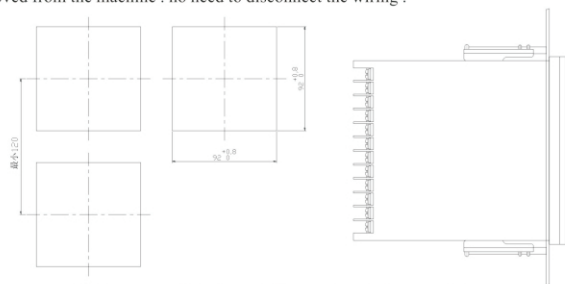


Picture 2-1 Outline Dimension

2.2 Controller Installation

This controller is adopted international standard case, please open a square hole of 90*92mm on the front plate of cabinet(error is 0.8/-0.0) when installing, set it ahead of the former cabinet plate, then lock it by random fastener.

when repairing the controller . The controller panel with the movement can be removed from the machine . no need to disconnect the wiring .

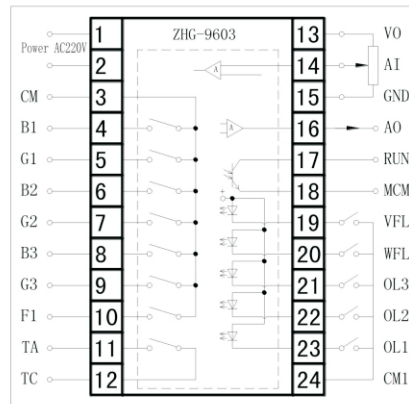


Unit: (mm) Use the installation plate thicknessof 2-10mm

Picture 2-2 Installing Schematic Diagram

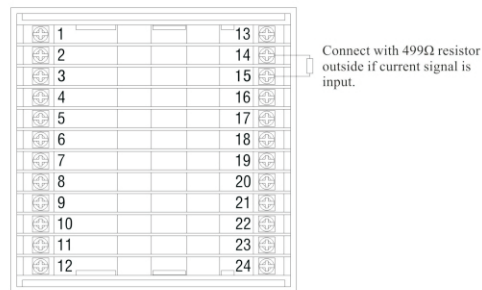
2.3 Controller Wiring

2.3.1 Controller Wiring Schematic Diagram (picture 2-3)



Picture 2-3 controller circuit terminal

2.3.2 Controller Wiring Schematic Diagram (picture 2-4)



Picture 2-4 Real terminal

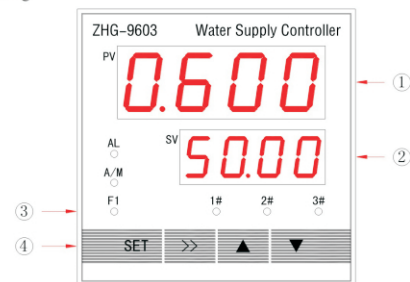
2.3.3 Controller terminal description

Terminal No.	Terminal mark	Function description
1	L	AC220V power live wire
2	N	AC220V power null wire
3	CM	pump output relay's public port.
4	B1	1# variable frequency pump controlling contact
5	G1	1# working frequency pump controlling contact
6	B2	2# variable frequency pump controlling contact
7	G2	2# working frequency pump controlling contact
8	B3	3# variable frequency pump controlling contact
9	G3	3# working frequency pump controlling contact
10	F1	Small pump working frequency controlling contact
11	TA	Controller fault output contact
12	TC	
13	V+	Two wires transmitter active end or tele-manometer's full terminal (high-end)
14	AI	Two wires transmitter negative end or tele-manometer's sliding terminal (medium-end)
15	GND	Analog public terminal or tele-manometer's resistance null terminal (low-end)
16	AO	5V/10V analog output terminal, to control inverter's frequency
17	RUN	Connect to inverter's running control terminal
18	MCM	Connect to inverter's digital public port
19	MI5	Multi - function input terminal 5
20	MI4	Multi - function input terminal 4
21	MI3	Multi - function input terminal 3
22	MI2	Multi - function input terminal 2
23	MI1	Multi - function input terminal 1
24	CM1	Digital signal public terminal

Chapter 3 Panel And Operating Instructions

3.1 Panel And Operating Description

3.1.1 Panel drawing



Picture 3-1 panel schematic

3.1.2 Panel and operation description

Table 3-1 indicator state description

Display	Function specification
● AL	Fault indication, controller is in fault when light is on.
● A/M	automatic/manual control, controller is in auto-control status when the light it on.
● F1	Small pump working indication, small pump is in working status when the light is on.
● 1#	1 # pump working status indicator, The controller is in variable frequency work when the light flashing; while the controller is in working frequency when the light always light on constantly.
● 2#	2 # pump working status indicator, The controller is in variable frequency work when the light flashing; while the controller is in working frequency when the light always light on constantly.
● 3#	3 # pump working status indicator, The controller is in variable frequency work when the light flashing; while the controller is in working frequency when the light always light on constantly.

Table 3-2 Digital display and push button description

1	Digital display 1	It display feedback pressure, parameter number.
2	Digital display 2	It display setting pressure, given frequency, time, parameter code, fault code etc.
3	LED1-6	Refer to Table 3-1
4	SET	SET/OK key: press this key, enter the parameter mode; press again, enter the parameter content, press again, to save and back to parameter status; press this key over than 3s, back to initial status; press this key over than 5s in initial status, to shift over auto mode and manual mode
	>>	Monitor / Shift key: When data is modified, press this key to select the modification bit of the data. On manual mode press this key to switch between pumps and switch on/off the pump by ▲ or ▼. In AUTO mode of the initial state. pressing this button to switch the setting pressure, frequency and time. Press this key to reset the fault when get fault .
	▲	Add key: Press this key to increase the data or parameter code, hold down can increase the upper modification speed .
	▼	Decrease key: Press this key to reduce the data or parameter code, press and hold can increase the speed of downward modification.

Chapter 4 Function Parameter Description

4.1 Function Parameters



TIP

- The marked “√” Indicate the parameter setting value of controller is in automatic or manual mode . can be modified
- The marked “×” Indicate the parameter setting value of controller is in manual mode and can be modified. while couldn't be modified in automatic mode.
- “-” Indicate the parameter only display .couldn't be modified.

4.2 Function Parameters Sheet

Code	Name	Setting Value	Unit	Min. Unit	Factory Setting	Running Modification
F000	Pressure setting value	0.00~F012		0.01	1.00	√
F001	Water supply mode selection	0:3 variable frequency cycle 1:1 variable frequency +2 working frequency cycle 2:1 variable frequency +3 working frequency cycle 3:3 working frequency cycle		1	0	×
F002	Reserved	-	-	-	-	-
F003	Reserved	-	-	-	-	-
F004	Overpressure alarm pressure	0.00~F012		0.01	1.30	×

4.2 Function Parameters Sheet (Continued)

Code	Name	Setting Value	Unit	Min. Unit	Factory Setting	Range Modification
F005	Overpressure alarm delay time	0~9999	s	1	3s	✓
F006	The first pump selection	1~3		1	1	×
F007	Automatic control delay time	0~9999	s	1	3s	×
F008	Sensor signal type selection	0:Voltage signal 1:Current Signal		1	0	×
F009	Sensor power setting	0.00~24.00	V	0.01	5.00V	×
F010	Sensor signal input lower limit	0.00~F011	V/mA	0.01	0.00V	✓
F011	Sensor signal input upper limit	F010~20.00	V/mA	0.01	5.00V	✓
F012	Sensor setting range	0.00~99.99		0.01	1.60	×
F013	Decimal digits of pressure value selection	0~3		1	2	✓
F014	Manual / Automatic mode selection	0: Panel selection 1: Terminal selection		1	0	✓
F015	LED2 Display content	0:The setting pressure 1:Frequency		1	0	✓
F016	Analog output setting	0.00~10.00	V	0.01	10.00V	✓
F017	Inverter Accel/Decel time	0.0~999.9	s	0.1	10.0s	✓

4.2 Function Parameters Sheet (Continued)

Code	Name	Setting Value	Unit	Min. Unit	Factory Setting	Range Modification
F018	Frequency preset value	0.0~50.0	Hz	0.1	50.0Hz	×
F019	Preset frequency holding time	0~9999	s	1	0s	×
F020	The minimum operating frequency	0.0~50.0	Hz	0.1	25.0Hz	✓
F021	Timing time of changing the pump	0.0~999.9	h	0.1	0.0h	×
F022	The pressure threshold width of increasing pumps	0.00~F012		0.01	0.05	×
F023	The delay time of Increasing pumps	0~9999	s	1	10s	×
F024	The delay time of variable frequency switch to working frequency	0~9999	s	1	1s	×
F025	The frequency of reducing pumps	0.0~50.0	Hz	0.1	35.0Hz	×
F026	The pressure threshold width of reducing pumps.	0.00~F012		0.01	0.00	×

4.2 Function Parameters Sheet (Continued)

Code	Name	Setting Value	Unit	Min. Unit	Factory Setting	Running Modification
F027	The delay time of reducing pump	0~9999	s	1	5s	×
F028	The delay time of working frequency switch to variable frequency	0 ~ 9999	s	1	1s	×
F029	Sleep frequency	0.0 ~ 50.0	Hz	0.1	30.0Hz	✓
F030	The delay time of sleep frequency	0 ~ 9999	s	1	5s	✓
F031	The wake up pressure threshold width	0.00 ~ F012		0.01	0.10	✓
F032	Wake-up delay time	0 ~ 9999	s	1	5s	✓
F033	Small pump attribute selection	0:OFF 1:ON		1	1	×
F034	The pressure threshold width of small pump starting	0.00 ~ F012		0.01	0.08	×
F035	The pressure threshold width of small pump stopping	0.00 ~ F012		0.01	0.05	×

4.2 Function Parameters Sheet (Continued)

Code	Name	Setting Value	Unit	Min. Unit	Factory Setting	Running Modification
F036	MI1 terminal function selection	0:NO function 1: No. 1 pump working frequency fault input 2: No. 2 pump working frequency fault input 3: No. 3 pump working frequency fault input 4:Lack of water input 5:Inverter fault input 6: Manual / automatic mode selection input		1	1	×
F037	MI2 terminal function selection			1	2	×
F038	MI3 terminal function selection			1	3	×
F039	MI4 terminal function selection			1	4	×
F040	MI5 terminal function selection			1	5	×
F041	NO. 1 pump attribute selection		0:OFF 1:ON		1	1
F042	NO. 2 pump attribute selection			1	1	×
F043	NO. 3 pump attribute selection			1	1	×
F044	Relay output function selection	0:Fault 1:Over voltage		1	0	✓
F045	PID polarity selection	0:Positive 1:negative		1	0	×
F046	Proportional gain Kp	0.00~100.00		0.01	1.00	✓
F047	Integral time Ti	0.01~100.00	s	0.01	0.50s	✓

4.2 Function Parameters Sheet (Continued)

Code	Name	Setting Value	Unit	Min. Unit	Factory Setting	Running Modification
F048	Differential time Td	0.00~100.00	s	0.01	0.00s	✓
F049	Sample cycle T	0.01~100.00	s	0.01	0.10s	✓
F050	PID bias limit	0.00~F012		0.01	0.00	✓
F051	PID feedback lost detecting value	0.00~F012		0.01	0.05	✓
F052	PID feedback lost detecting time	0~9999	s	1	30s	✓
F053	System time-Year	2000~2100		1	2015	×
F054	System-Date	0101~1231		1	1001	×
F055	System-week	1~7		1	4	×
F056	System time-hour.minute	00.00~23.59		1	00.00	×
F057	System running time	0~9999	h	1	0h	-
F058	Timing function selection	0:close 1~8:open		1	0	×
F059	T1 time	00.00~23.59		1	00.00	×
F060	T1 time pressure	0.00~F012		0.01	0.00	×
F061	T2 time	00.00~23.59		1	00.00	×
F062	T2 time pressure	0.00~F012		0.01	0.00	×
F063	T3 time	00.00~23.59		1	00.00	×
F064	T3 time pressure	0.00~F012		0.01	0.00	×
F065	T4 time	00.00~23.59		1	00.00	×
F066	T4 time pressure	0.00~F012		0.01	0.00	×

4.2 Function Parameters Sheet (Continued)

Code	Name	Setting Value	Unit	Min. Unit	Factory Setting	Running Modification
F067	T5 time	00.00~23.59		1	00.00	×
F068	T5 time pressure	0.00~F012		0.01	0.00	×
F069	T6 time	00.00~23.59		1	00.00	×
F070	T6 time pressure	0.00~F012		0.01	0.00	×
F071	T7 time	00.00~23.59		1	00.00	×
F072	T7 time pressure	0.00~F012		0.01	0.00	×
F073	T8 time	00.00~23.59		1	00.00	×
F074	T8 time pressure	0.00~F012		0.01	0.00	×
F075	Inverter Fault solution	0:stop all 1:reserve		1	0	×
F076	Fault automatic reset delay time	0~9999		1	0	×
F077	Water coming pressure detection value	0.00~F012		0.01	0.00	×
F078	Water coming pressure detection delay time	0~9999		1	5	×
F079	Parameter lock	0: allow modify 1:Prohibit modify		1	0	×
F080	Restore Parameter	0:No action 1:Restore the default value		1	0	×
F081	Software version	0.00~99.99		0.01	1.02	-

4.3 Detailed Function Description

F000 Pressure setting value Factory Setting:1.00	Setting Range: 0.00~F012
---	--------------------------

System required target, The setting value is invalid if timing control starts.

F001 Water supply mode selection Factory Setting:0	Setting Range: 0~3
---	--------------------

Water supply control mode setting

- 0: 3 variable frequency Three motor control inverter via cycle work
 1: 1 variable frequency +2 working frequency a inverter control the motor fixed work, and the other two working frequency cycle work;
 2: 1 variable frequency+3 working frequency a inverter control the motor fixed work, and the other three working frequency cycle work
 3: 3 working frequency three motors controlled by working frequency cycle work .

F002 Reserved	
F003 Reserved	
F004 Overpressure alarm pressure Factory Setting:1.30	Setting Range: 0.00~F012
F005 Overpressure alarm delay time Factory Setting:3s	Setting Range: 0~9999

Shut down all pumps and alarm when the feedback pressure value exceed the setting value . reaches overpressure alarm delay time(F005). The function is invalid when the overpressure alarm delay time is set to 0.

F006 The first pump selection Factory Setting:1	Setting Range: 1~3
--	--------------------

set the priority pump number when the system initial running

F007 Automatic control delay time Factory Setting:3s	Setting Range: 0~9999
---	-----------------------

Set the controller delay time from energize on to automatically running or manually switch to automatically running.

F008 Sensor signal type selection Factory Setting:0	Setting Range 0~1
--	-------------------

Set the sensor feedback signal type.

- 0: The voltage signal can be free changed by F010~F011
 1: The current signal can be free changed by F010~F011

F009 Sensor power setting Factory Setting:5.00V	Setting Range: 0.00~24.00
--	---------------------------

Setting the Sensor power supply.

F010 sensor signal input lower limit Factory Setting:0.00V	Setting Range: 0.00~F011
F011 sensor signal input upper limit Factory Setting:5.00V	Setting Range: F010~24.00

Set the range of the sensor output signal

F012 Sensor setting range Factory Setting:1.60	Setting Range: 0.00~99.99
---	---------------------------

Set the maximum range of the sensor

F013 decimal digits of pressure value selection Factory Setting:2	Setting Range: 0~3
--	--------------------

Set the decimal place of pressure value

F014 Manual / Automatic mode selection Factory Setting:0	Setting Range: 0~1
---	--------------------

Set the source of the controller manual / automatic mode.

0: Panel selection The manual and automatic operation modes are selected by pressing the SET key on the panel.

1: Terminal selection The manual and automatic operation modes are selected by the multi-function terminals MI1 to Mi5.

F015 LED2 Display content Factory Setting:0	Setting Range: 0~2
--	--------------------

Select the display 2 display content, press the button >> to switch the display content when running automatically

0: set the pressure

1: Frequency

F016 Analog output setting Factory Setting:10.00V	Setting Range: 0.00~10.00
--	---------------------------

Set the controller analog output voltage value. can be adjusted according to the external desired signal.

F017 Inverter Accel/Decel time Factory Setting:10.0s	Setting Range: 0.0~999.9
---	--------------------------

The parameter is set the required time for the controller' output frequency from 0 to 50Hz. Select the appropriate acceleration and deceleration time (consistent with the inverter accel./decel. time), Make the system stable at the setting pressure.

F018 Frequency preset value Factory Setting:50.0Hz	Setting Range: 0.0~50.0
---	-------------------------

F019 Preset frequency holding time Factory Setting:0s	Setting Range: 0~9999
--	-----------------------

In order to make the controlled object quick reach to a predetermined value, the controller set force the output of a frequency value F018 to the predetermined time F019 according to this parameters. when it's close to the controlled object .PID operation was put into running to improve the response speed .

F020 The minimum operating frequenc Factory Setting:25.0Hz	Setting Range: 0.0~50.0
---	-------------------------

This parameter sets the minimum output frequency limit of pump . when only one variable frequency pump is working the parameter reaches to the setting pressure. but no water out at the operating frequency.

F021 Timing time of changing the pump Factory Setting:0.0h	Setting Range: 0.0~999.9
---	--------------------------

When this parameter is used to balance the use of each pump to prevent pump corrosion. After it reach to the running time, if the pump is in stop state, will make the longest working time pump stop. the stopped pump is in operation .Setting a value of 0.0 is invalid.

F022 The pressure threshold width of increasing pumps Factory Setting:0.05	Setting Range: 0.00~F012
---	--------------------------

F023 The delay time of Increasing pumps Factory Setting:10s	Setting Range: 0~9999
--	-----------------------

Set the pressure hysteresis and delay time when increasing the number of pumps . in order to reduce the phenomenon of increasing the pumps frequently .

F024 The delay time of variable frequency switch to working frequency Setting Range: 0~9999	Factory Setting:1s
--	--------------------

Set the delay time for variable frequency control switch to working frequency control.

F025 The frequency of reducing pumps Factory Setting:35.0Hz	Setting Range: 0.0~50.0
--	-------------------------

F026 The pressure threshold width of reducing pumps. Factory Setting:0.00	Setting Range: 0.00~F012
--	--------------------------

F027 The delay time of reducing pump Factory Setting:5s	Setting Range: 0~9999
--	-----------------------

Set the frequency , pressure hysteresis and delay time when reducing the number of pumps . in order to reduce the phenomenon of reducing the pumps frequently .

F028 The delay time of working frequency switch to variable frequency Setting Range: 0~9999	Factory Setting:1s
--	--------------------

Set the delay time for working frequency control switch to variable frequency control

F029 Sleep frequency Factory Setting:30.0Hz	Setting Range: 0.0~50.0
F030 The delay time of sleep frequency Factory Setting:5s	Setting Range: 0~9999
F031 The wake up pressure threshold width Factory Setting:0.10	Setting Range: 0.00~F012
F032 Wake-up delay time Factory Setting:5s	Setting Range: 0~9999

F029 is the water supply system go into the frequency value of sleep mode.

when the pipe pressure reaches to the setting value , and the inverter water supply system have been adjusted to the sleep frequency to operate . After a delay F030 wait to go to sleep state waiting for waking up.

F031 is the pressure limits of water supply system from sleep mode go to work state.

when the pipe pressure is smaller than the setting value width. After a delay F032 wait , the water supply system will go automatically from the sleep mode to working mode .

F033 Small pump attribute selectio Factory Setting:1	Setting Range: 0~1
---	--------------------

Set a small pump switch.

0: OFF
1: ON

F034 The pressure threshold width of small pump starting Setting Range: 0.00~F012	Factory Setting:0.50
F035 The pressure threshold width of small pump stopping Setting Range: 0.00~F012	Factory Setting:0.10

The system will go to sleep mode when the property of small pump is on .the small pump is working frequency start when the feedback pressure is lower than the start pressure width F034 of small pumps. The small pump stop when the feedback pressure is higher than the stop pressure width F035 of small pump.

F036 MI1 terminal function selection Factory Setting:1	Setting Range: 0~5
F037 MI2 terminal function selection Factory Setting:2	Setting Range: 0~5
F038 MI3 terminal function selection Factory Setting:3	Setting Range: 0~5
F039 MI4 terminal function selection Factory Setting:4	Setting Range: 0~5
F040 MI5 terminal function selection Factory Setting:5	Setting Range: 0~5

Set the function of terminal MI1 ~ MI5.

0: No function

1: NO. 1 pump working frequency fault input

2: NO. 2 pump working frequency fault input

3: NO. 3 pump working frequency fault input

4: Lack of water fault input

5: Inverter fault input

6: Manual / automatic mode selection input

F041 NO. 1 pump attribute selection Factory Setting:1	Setting Range: 0~1
F042 NO.2 pump attribute selection Factory Setting:1	Setting Range: 0~1
F043 NO. 3 pump attribute selection Factory Setting:1	Setting Range: 0~1

This parameter sets the properties of each pump, the combination of different types of water supply mode.

0: Off

1: ON

F044 Relay output function selection Factory Setting:0	Setting Range: 0~1
---	--------------------

Set the controller output relay function.

0: Fault

1: overpressure

F045 PID polarity selection Factory Setting:0	Setting Range:0~1
--	-------------------

0: Positive

When the feedback signal is greater than the PID given . It requests the output frequency decrease and make PID to balance.

1: negative

When the feedback signal is greater than the PID given . It requests the output frequency increase and make PID to balance.

F046 Proportional gain Kp Factory Setting:1.00	Setting Range:0.00~100.00
---	---------------------------

Proportional gain Kp determines the degree of deviation response of the output frequency, The Proportional gain is bigger .the faster reponse . But it will cause oscillation if it's too big. While too small will cause delayed response..

F047 Integral time Ti Factory Setting:0.50s	Setting Range:0.01 ~ 100.00
--	-----------------------------

The Integral time Ti determines the ratio between the output frequency change speed and deviation. Integral role is the output value will integrate according to the deviation , to eliminate the deviation of feedback value and given value . Integration time is too large, the response is slow, slow response to external disturbances. The integration time is smaller, faster response speed, but too small and easy to cause oscillation.

Differential effect is to make the output frequency and the derivative differential value is in proportion. can timely response for deviation of rapid change .

The differential time is too long and make the system oscillation decay caused by proportional effect . But the differential time is too short . make effects of the system oscillation decay is smaller.

The differential effect is invalid when F048=0.0.

F049 Sample cycle T Factory Setting:0.10s	Setting Range:0.01 ~ 100.00
--	-----------------------------

Sample cycle T refers to the sampling cycle of feedback value. The PID regulator calculates once in each sampling cycle .the bigger the sampling cycle .the slower response is. Sampling is done automatically when F049 = 0.00.

F050 PID bias limit Factory Setting:0.0%	Setting Range:0.0~100.0
---	-------------------------

Bias limit defines the maximum bias between the feedback and the preset . PID stops operation when the bias is within this range . Setting this parameter correctly is helpful to improve the system output accuracy and stability .

F051 PID feedback lost detecting value Factory Setting:0.05	Setting Range:0.00~F0.04
--	--------------------------

F052 PID feedback lost detecting time Factory Setting:30s	Setting Range:0~9999
--	----------------------

PID feedback lost detecting value is relative to 100% .The system will detect the feedback quantity all the time .when the feedback value is below or equal to the feedback offline detection value .the system will begin to count the detecting time . when the time exceeds the feedback offline detection time .the system will alarm PID feedback disconnection fault.

This parameter sets the properties of each pump, the combination of different types of water supply mode.

0: Off

1: ON

F053 System time-Year Factory Setting:2015	Setting Range:2000 ~ 2100
---	---------------------------

F054 System time-Date Factory Setting:1001	Setting Range:0101 ~ 1231
---	---------------------------

F055 System time-week Factory Setting:4	Setting Range:1~7
--	-------------------

F056 System time-Hour.minutes Factory Setting:00.00	Setting Range:00.00 ~ 23.59
--	-----------------------------

F057 System running time Factory Setting:0h	Setting Range:0 ~ 9999
--	------------------------

Set the controller's system time. The format is 24-hour clock.

F058 Timing function selection Factory Setting:0	Setting Range:0~8
---	-------------------

To meet the different times of the day for different water needs pressure, the pressure control can be implemented on different water peak, low hours, you can set eight periods, different target pressure or shutdown.

F059 T1 Time Factory Setting:00.00	Setting Range:00.00~23.59
F060 T1 time pressure Factory Setting:0.00	Setting Range:0.00~F012
F061 T2 Time Factory Setting:00.00	Setting Range:00.00~23.59
F062 T2 time pressure Factory Setting:0.00	Setting Range:0.00~F012
F063 T3 Time Factory Setting:00.00	Setting Range:00.00~23.59
F064 T3 time pressure Factory Setting:0.00	Setting Range:0.00~F012
F065 T4 Time Factory Setting:00.00	Setting Range:00.00~23.59
F066 T4 time pressure Factory Setting:0.00	Setting Range:0.00~F012
F067 T5 Time Factory Setting:00.00	Setting Range:00.00~23.59
F068 T5 time pressure Factory Setting:0.00	Setting Range:0.00~F012
F069 T6 Time Factory Setting:00.00	Setting Range:00.00~23.59
F070 T6 time pressure Factory Setting:0.00	Setting Range:0.00~F012
F071 T7 Time Factory Setting:00.00	Setting Range:00.00~23.59

F072 T7 time pressure Factory Setting:0.00	Setting Range:0.00~F012
F073 T8 Time Factory Setting:00.00	Setting Range:00.00~23.59
F074 T8 time pressure Factory Setting:0.00	Setting Range:0.00~F012

The parameter is set to different timing periods time and the system required target value. The controller will stop when the pressure value set to 0.00. The time is 24-hour format.

The setting time is set in ascending order.

Example: The pressure is 1.00 at 5:30~23:00, 0.00 for other time. The parameter will set as follows: F058=2, F059=5.30; F060=1.00; F061=23.00; F062=0.00;

F075 Inverter Fault solution Factory Setting:0	Setting Range:0~1
---	-------------------

When the controller processing mode is set to the inverter fault input

0: Stop All

1: Reserved

F076 Fault automatic reset delay time Factory Setting:0	Setting Range:0~9999
--	----------------------

Set the automatic reset delay time when the controller's fault are removed. When it is set to 0, it can not be reset automatically. You must press the >> key or cut off the power to reset.

F077 Water coming pressure detection value Factory Setting:0.00	Setting Range:0.00~F012
--	-------------------------

The parameter is used to detect water pressure inside the water pipe to prevent the pump idle running.

F078 Water coming pressure detection delay time Factory Setting:0	Setting Range:0~9999
--	----------------------

Set the maintain time of water coming pressure to prevent the pump from starting.

F079 Parameter lock
Factory Setting:0

Setting Range:0~1

This parameter is used to set whether the parameters are locked to prevent accidental changes.

- 0: Allow modification
- 1: Prohibit modification

F080 Restore Parameter
Factory Setting:0

Setting Range:0~1

This parameter value is set to 1, All parameter values are restored to factory settings.

F081 Software version
Factory Setting:1.00

Setting Range:0.00~99.99

This parameter is used to view the software version number.

Chapter 5 Fault Diagnosis & Solutions

5.1 Fault Code And Solutions

Table 5-1 common fault code and solutions

Fault code	Fault name	Solution
<i>E-UF</i>	VFD fault	Check VFD's fault code, look over relevant fault information on user manual, solve VFD's fault.
<i>E-LA</i>	Lack of water	Lack of water or water level sensor get fault . Check whether lack of water . water level switch is normal .check the wire connect with level switch is loose . The controller will recover automatically after the water level is normal .
<i>PI dE</i>	Feedback disconnection	Use a multimeter to measure the supply voltage of the sensor to see if it is normal and its connection, and check whether the pump is working properly.
<i>E-oP</i>	Over pressure	Check whether the controller is consistent with the actual pressure in pipe. If no, then test sensor's or controller's analog input. If consistent, it means actual pressure value is bigger than the setting range, it belongs normal warning. When the feedback pressure value exceeds over-pressure alarm pressure (F004) and keep on over-pressure constant time (F005) alarm and also turn off the output, check pump's work status, controller's pressure setting value, whether sensor disconnected or not.
<i>oL-1</i>	No.1 working frequency fault	NO.1 working frequency motor get fault
<i>oL-2</i>	No. 2 working frequency fault	NO.2 working frequency motor get fault
<i>oL-3</i>	No. 3 working frequency fault	NO.3 working frequency motor get fault

Chapter 6 Quality Warranty

6.1 Controller's Quality Warranty

1. warranty period under normal conditions

- Provide repair, replacement and return due to quality problem in a month from the date of purchase
 - Provide repair and replacement due to quality problem in 3 months from the date of purchase.
 - Provide repair as quality problem in 12 months from the date of purchase
2. If the date of purchase can not be verified, then warranty period will according to the date of manufacturer. Service exceeding the warranty period shall be charged to the purchaser. The purchaser enjoys life-long paid service whenever and wherever the uses and controller made in out factory.

3. Service in the following cases, even in the warranty period, shall be charged to the purchaser.

- Damaged caused by mal-operation in violation of this manual.
 - damaged caused by improper use of an controller that is off technical standard.
 - Malfunction or damage caused by fire, earthquake, flood, abnormal input voltage or other natural disasters.
 - Artificial damage caused by unauthorized repair or renovation.
 - include failure or aging of the device due to poor ambient.
 - delayed or unsatisfied payment in violation of purchase appointment
 - malfunction or damage caused by improper transit or storage after purchaser.
 - fail to give an objective description on the use of installation, wiring, operation, maintenance or else.
 - defective products should be sent to us for repair, replacement and return, which can be proceeded only after verifying the burden of liability.
4. In case there is any quality problem or accident, we merely promise to bear the above-mentioned responsibilities. If a user needs more guarantees for liabilities, please assure on the insurance company voluntarily.

Appendix User's Warranty bill

Distributor		Add./Tel.	
Buying date		Invoice No.	

User's company		Telephone:	
Address		Post code	
Contact person		Department	

Equipment name		Serial number	
Installation date		Use date	

Fault:
Solution :



TIP

- The user should keep this warranty bill.

Water Supply Controller Fast Setting

For the setting method of the controller, Please see page 6 and 7 of the manual. The working mode is shown in the following parameter settings:

For example: Meter range is 1.6Mpa, users request is set to 1Mpa constant pressure, the controller will start if pressure $< 0.6\text{Mpa}$.

1、 One inverter run with one motor, The parameters are set as follows:

The setting pressure : F000=1.00

over-pressure alarm pressure: F004=1.30

Meter range: F012=1.60

Sleep frequency: F029=30.0

Wake-up pressure width: $F031=0.40 < (F000-F031=0.60)$ this pressure wake up, it will start the inverter.

Pump 2 property: F042=0

Pump 3 property: F043=0

2、 One Inverter run with two motors , parameter are set as below:

The setting pressure : F000=1.00

Over-pressure alarm pressure: F004=1.30

Meter range: F012=1.60

Increase pump pressure threshold width: $F022=0.05 < (F000-F022=0.95\text{Mpa})$ the pressure wake up, and frequency up to 50HZ, to add pump after deferring

Reduce pump frequency: F025=35.0

Sleep frequency: F029=30.0

Wake-up pressure width: $F031=0.40 < (F000-F031=0.60)$ the pressure wake up start the inverter .

Pump 3 property: F042=0

3、 One Inverter run with three motors . parameter are set as below:

The setting pressure: F000=1.00

Over-pressure alarm pressure: F004=1.30

Meter range: F012=1.60

Increasing pump pressure threshold width: $F022=0.05 < (F000-F022=0.95\text{Mpa})$ the pressure wake up, and frequency up to 50HZ, to add pump after deferring

Reduce pump frequency: F025=35.0

Sleep frequency: F029=30.0

Wake-up pressure width: $F031=0.40 < (F000-F031=0.60)$ less than awaking .Run VFD.

Small Pump setting as below:

With auxiliary pump:

Small pump starting pressure width: $F034=0.08$ equal $(F000-F034=0.92)$, sleep status, small pump will start if less than the pressure .

Small pump stop pressure width: $F035=0.05$ equal $(F000+F035=1.05)$, at sleep status, small pump will stop if bigger than the pressure.

Without auxiliary pump:

F033=0;(also can remain and do not change)

See page 4-5 for terminal wiring diagram, Feel free to contact for control circuit wiring diagram from our company .