Application of CHV160 to Multi-pump Constant Pressure Water Supply

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■ Introduction

To meet the constant pressure requirement for water supply in industrial production, life, and agricultural water-saving irrigation projects, the CHV160 series dedicated water supply inverters are applied to quickly assemble a constant pressure water supply system. This kind of inverter integrates the variable frequency speed regulation technology, PLC technology and PID control technology, and can be assembled into a complete closed loop automatic control system. The use of this dedicated inverter to assemble an automatic water supply control system features small investment, high automation degree, complete protection function, reliable operation, simple operation, and obvious water-saving and energy-saving effect. Especially, it will not cause secondary pollution. Therefore, with its excellent cost-performance ratio, the inverter is the most ideal equipment to replace water tower, gravity water tank, and towerless water supply unit.

■ Operating Principle

When the automatic water supply system operates, the equipment uses a high-sensitivity pressure sensor over the water supply pipeline to detect the pressure change of the pipeline upon water consumption change, and continuously transmits change signals to the inverter. After judging and calculating by use of a microcomputer and comparing with the set pressure, the inverter sends a frequency change command to the controller. In this way, the controller changes the frequency to change the rotation speed of the pump motor and the number of pumps to be enabled, and to automatically adjust the water consumption at peak/valley time, to ensure the constant pressure of the water pipeline and meet the user's requirement for water consumption.

■ Function Implementation

Guangzhou Changning Mechanical & Electric Equipment Co., Ltd. is a professional manufacturer of constant pressure water supply equipment. The customer requires that two variable frequency pumps can be used, the dormancy function can be used 24 hours a day, and the faulty pump function can be masked. And furthermore, the fast restart function in the case of instantaneous power failure should be implemented. According to these requirements, the final adjustment parameters are as follows:

P0.01   Operation command channel   1: Terminal command channel
P1.15   Power failure restart selection   1: Restart enabled,
P2   Input the whole group of parameters according to the actual situations
P4.12   Terminal function detection selection upon power-on   1: Terminal operation

command enabled upon power-on.

P5.02	S1 terminal function selection	1: Forward operation
P5.03	S2 terminal function selection	41: Motor A disabled
P5.04	S3 terminal function selection	42: Motor B disabled
P5.17	Upper AI1 limits	5.00V.
P6.04	Relay 1 output selection	3: Fault output
PF.00	Water supply mode selection	1: Universal water supply mode
PF.01	Water supply pressure setting source selection	0: Digital Setting

PF.02   Digital setting of water supply pressure   set by actual requirement (set to 50.0% presently)

PF.03	Pressure feedback source selection	0: AI1 feedback setting
PF.11	Pump A type selection	1: Variable frequency control pump
PF.12	Pump B type selection	Variable frequency control pump
PF.13	Pump CB type selection	3: Dedicated dormant pump

PF.18- PF.20 Rated current of pump   Input according to the actual current of the motor

PF.25   RT1 input function selection   1: Connecting pump A for variable frequency control

PF.26   RT2 input function selection   2: Connecting pump A for power frequency control

PF.27   RT13 input function selection   3: Connecting pump B for variable frequency control

PF.28   RT4 input function selection   4: Connecting pump B for power frequency control

PF.29   RT5 input function selection   6: Connecting pump C for power frequency control

PF.47   Current moment   Input current moment (this parameter should be set if a dormant pump is used)

PF.48	Selection of pressure steps	1
PF.49	T1 start moment	00.00

PF.50   Pressure in time segment T1   Input by actual requirement (set to 40% presently)

PF.51	T2 start moment	23.59
PF.65	Dormant time segment selection	1

PF.66   Dormant pressure tolerance   Input by actual requirement (set to 1% presently)

PF.67   Adding/reducing pump delay for dormancy   Input by actual requirement (set to 6 presently)

PF.68	Dormancy awake enables	1: Enabled

After the above commissioning, the solution was finally acknowledged by the user, which once again shows that the application of the water supply card does not have any logic operation problem. The problems of water supply machine complained by the customer are normally caused by improper parameter adjustment.
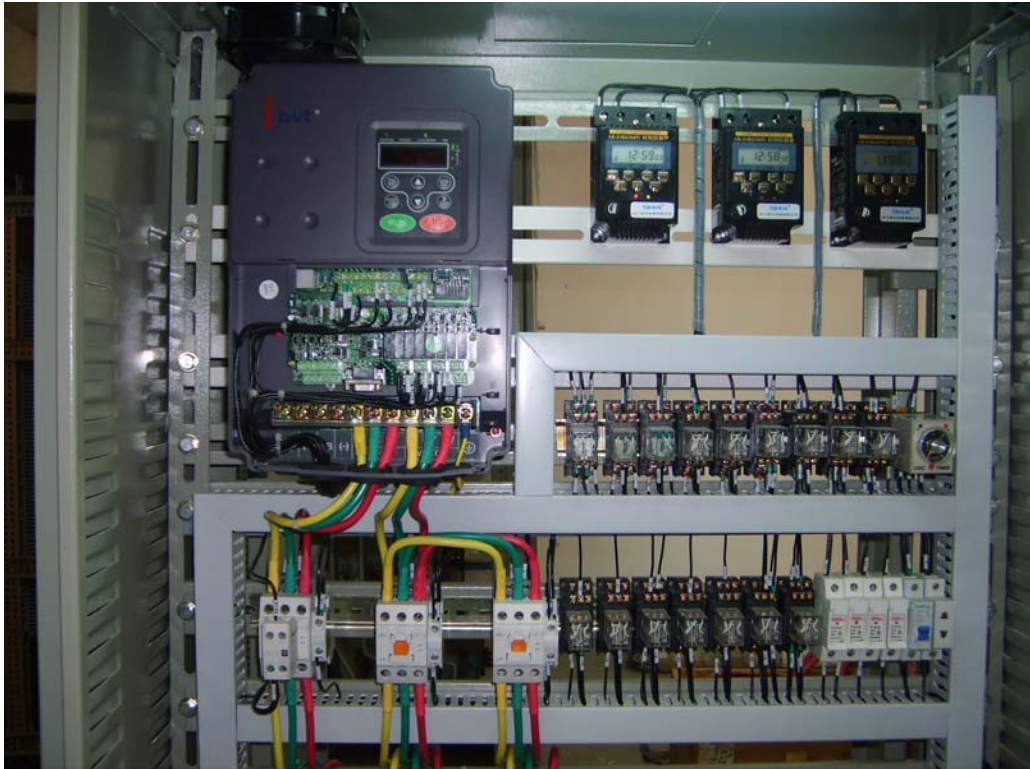
■ Site Picture

Full Automatic Constant Pressure Water Supply System

Feedback
pressure gauge

Water Supply Equipment

Wiring in Automatic Constant Pressure Water Supply Cabinet (1)

Wiring in Automatic Constant Pressure Water Supply Cabinet (2)

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