RIEVTECH

# RI3000 Series
# Frequency Inverter Accessory

## Constant Water Supply Kit
## User Manual



# 1 Apply to

## 1.1 Scope of Application

Constant Water Supply Kit is special designed as accessory of RI3000 Series frequency inverter to commit constant water supply requirement situation with several pumps.

## 1.2 Installation Instruction

- Install when totally disconnected from the power;
- Connecting with frequency inverter by RS485 cable;
- The CN5 terminal named +24V should be connected by wire to +24V terminal of frequency inverter;
- Fix the source water supply card with screws. The external dimensions are shown in Figure 1.1.

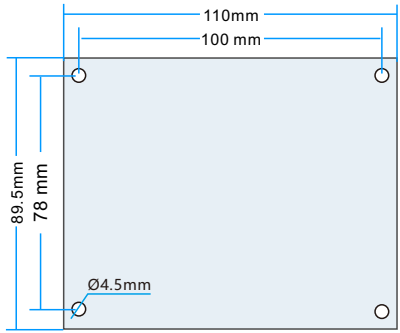


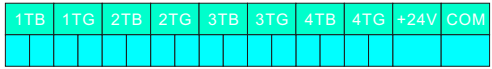

Figure 1-1

# 2 Function

## 2.1 Function

- To realize 4 pumps linkage working to provide constant water supply;
- Realize multi pump working by turns regularly;
- Pump sleep and wake up function;
- Could lock the pump and realize switching running between single pump and multi pumps;
- Alarm function is available at overload-voltage and under load voltage;
- Simple interface with frequency inverter, adopt serial communication.

## 2.2 Terminal Wiring Instruction




| Terminal | Instruction |
|---|---|
| +24V,COM | Power Input ： DC 24V |
| 1TB—4TG | ¤ Contactor controlling terminal output.<br>¤ TB means frequency conversion point<br>¤ TG means power frequency point |

**Remarks:**

- 1TB: First frequency conversion terminal;
- 1TG: First power frequency terminal;
- 2TB: Second frequency conversion terminal;
- 2TG: Second power frequency terminal;
- 3TB: Third frequency conversion terminal;
- 3TG: Third power frequency terminal;
- 4TB: Fourth frequency conversion terminal;
- 4TG: Fourth power frequency terminal.

## 2.3 Water Supply Control

### 2.3.1 Operation and Switch of TB/TG

TB Operation means the pump or motor is controlled by the output of frequency inverter.

TG Operation means the pump or motor is controlled by the output of industrial power supply.

Switch of TB/TG means the pump or motor's control switched from TB to TG, or reverse.

### 2.3.2 Operation Selection

The frequency inverter controls the pumps to operate on turn. According to the pressure feedback, the frequency inverter could decide which and how many pumps to wake up and work.

Actually, at any certain time point, the frequency inverter could only drive one pump to run. For example, when the first pump reach the top limit frequency and the system request another pump to work together, the frequency inverter will switch the first pump to work under TG model ( power frequency), and then wake up the second pump and drive this pump to work under the proper frequency.

# 3 Parameter

## 3.1 Feature

The function parameter <P7 group: Close loop running control function parameter> in <User's Guide> is specially for providing constant water supply.

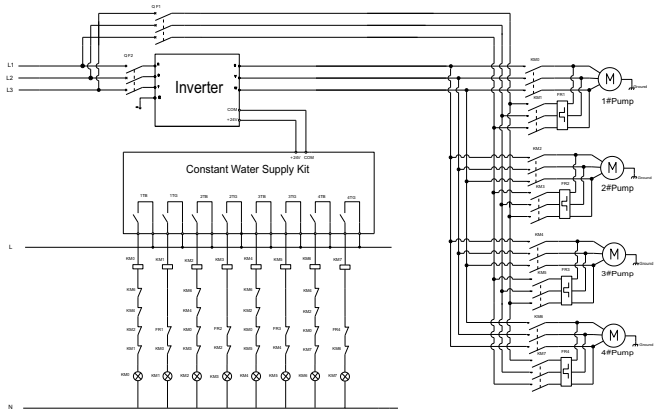
| The necessary parameter setting | | | |
|---|---|---|---|
| Func Code | Name | Range | Statement |
| P0.03 | Running command mode selection | Factory default | 0: Control panel mode<br>1: Terminal control mode<br>2：Serial port control mode |
| P0.17 | Acc time 1 | Factory default | Acc time |
| P0.18 | Dec time 1 | Factory default | Dec time |
| P2.05 | Stop mode | 1: Free Stop | 0: Dec<br>1: Free Stop<br>2: Dec+ DC brake |
| P3.01 | Parameter initialization setting | Factory default | unit's digit:<br>0: All parameters are allowed to be modified.<br>1: All parameters are not allowed to be modified except this parameter itself.<br>2: All parameters are not allowed to be modified except P0.02parameter and this parameter itself<br>ten's digit:<br>0: Inaction<br>1: Factory default reset<br>2: Clear history fault record |
| P3.02 | Parameter copy | Factory default | 0: Inaction<br>1: Parameter upload<br>2: Parameter download<br>Note: only valid in remote control mode |
| P7.00 | Close loop running control selection | 1: Valid | Close loop running control |
| P7.01 | Close loop given channel selection | 0: P7.05 Digital given+ panel▲,▼ Fine tuning | The pressure is fixed in P7.05 |
| P7.02 | Feedback channel selection | 0: VI analog 0~10V input voltage<br>6: CI analog input ( 4~20mA ) | 0: Pressure feedback input through VI terminal, the range is 0-10V DC;<br>6: Pressure feedback input through CI terminal, the range is 4-20mA, and the JP3 wire jumper on the frequency inverter should be fixed at I part. |
| P7.05 | Given value digital setting | Fix one certain number from 0.001~20.000Mpa | The fixed pressure should be less than parameter P7.27 |

| The necessary parameter setting | | | |
|---|---|---|---|
| Func Code | Name | Range | Statement |
| P7.11 | Proportional gain KP | 0.5 | 0.00~5.00 |
| P7.16 | PID Feedback disconnected detection threshold | 0 | 0.00% |
| P7.17 | PID Feedback disconnected action selection | 0~3 | 0: stop<br>1: Run at the frequency set by P0.02<br>2: Stop, showing disconnection fault (E-31) |
| P7.18 | PID Feedback disconnected operation delay time | 0 | Minimum: 0.1 second |
| P7.19 | Pressure level. | Waking up at the level, fix one certain number from 0.001~P7.20 | The motor will wake up at the pressure level |
| P7.20 | Sleep pressure level | Fix one certain number from P7.19~P7.27 | The motor will sleep at this pressure |
| P7.22 | Sleep frequency | Fix one certain number from 0.00~400.0Hz | The sleeping frequency will be fixed by the user according to the application situation, the default number is 20Hz |
| P7.26 | Constant pressure water supply mode | 4 | 0: Choosing not to constant pressure water supply mode<br>1: With a constant pressure water supply mode<br>2: A two constant pressure water supply mode<br>3: A three constant pressure water supply mode<br>4: A four constant pressure water supply mode |
| P7.27 | Remote pressure gauge range | Fix one certain number from 0.001~20.000Mpa | Freq.valueP3 |
| P7.28 | Multi pump operation mode | 00 | unit's digit: Multi-pump operation mode<br>0: fixed order switching<br>1: Timing rotation<br>Ten digits: sleep frequency participates in sleep condition selection<br>0: Yes<br>1: No |
| P7.32 | unit's digit: Waking up Pressure selection | 0 | Hundred's digit: Waking pressure (P7.19) sleep pressure (P7.20) unit selection<br>0: the actual pressure value<br>1:the percentage value of the setting pressure |

Table 1

## 4 System Diagram

Hereby is one frequency inverter driving four pumps model.




**Remarks:**

- One AC contactor should be deployed between the Motor frequency inverter output and TG frequency bypass circuit. And the AC contactor should have Mechanical interlocking device. And electric circuit should make logical interlock to avoid short circuit or damage to the relating equipment.
- The power phase sequence on motor or pump, such as L1/L2/L3 should be correspondence with frequency output sequence of U/V/W. Please check the power phase sequence table, then run the system, to avoid motor reverse rotation problem when switching between TG/TB.
- In the TG bypass circuit branch of Motor, one over current protection device should be deployed.

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