



12.8 Underload protection

Motor underload is generally not need to be protected, but, the occasion requires underload protection such as load may appear abnormal mutation, for sudden rupture of assembly line conveyor belt and so on. This situation needs to be put into underload protection.

Protection operation characteristic: If average of three currents overload setting value until the time is out, underload protection acts reliably.

Related parameters

Table with 5 columns: Function, Parameter name, Setting range, Default value, Define. Includes Undern protection parameters like Protection action, Action setting value, and Time setting value.

12.9 Overvoltage protection

Overvoltage will cause the motor core to saturate, greatly increasing the motor excitation current, thereby burning the motor. Overvoltage protection prevents the motor from operating under unacceptable high pressure conditions.

Related parameters

Table with 5 columns: Function, Parameter name, Setting range, Default value, Define. Includes Overvoltage parameters like Protection action, Action setting value, and Time setting value.

12.10 Undervoltage Protection

When the system voltage is too low, the motor torque is insufficient, long-term operation will lead to the motor burn, the undervoltage protection function can avoid the motor in the low voltage conditions are not allowed to run.

Related parameters

Table with 5 columns: Function, Parameter name, Setting range, Default value, Define. Includes Undervoltage parameters like Protection action, Action setting value, and Time setting value.

12.11 Underpower protection

When the motor is running at low load, the current of the motor is not necessarily small due to the low power factor. The undercurrent protection function protects the motor by monitoring the active power.

Under power protection is applied after the motor has entered the operating state. When the active power is lower than the set setting value, the under-power protection is activated and executed in a limit time.

Related parameters

Table with 5 columns: Function, Parameter name, Setting range, Default value, Define. Includes Underpower protection parameters like Protection action, Action setting value, and Time setting value.

12.12 TE Protection(Adapt to increased safety type motor)

TE time protection is suitable for continuous operation, including easy start and infrequent start-up will not produce significant additional temperature rise, allows the use of anti-time overload protection device of the increased safety explosion-proof motor(example: YA, YA2 series, etc).

Increased the safety and explosion-proof motor nameplate data "TE" time for the AC winding at the maximum ambient temperature to reach the rated operating stability after the temperature, from the time it takes to block the current to the time required to rise to the limit temperature.

When the TE time protection function is turned on, the overload protection function will be automatically turned off. TE time protection function in line with GB3836.3-2010 standard requirements, TE time protection failure must be manually reset.

Table with 5 columns: Function, Parameter name, Setting range, Default value, Define. Includes TE protection parameters like Protection action, Action setting value, and Time setting value.

TE time protection property list, the curve up to the standard of IEC79-7, GB3836.3-2000.

Table with 7 columns: Ith, 1s, 4.0s, 4.3s, 5.0s, 5.5s, 6.0s, 15.0s. Shows protection curves for various current ratings.

12.13 Contactor Breaking Current Protection

Judging whether the maximum phase current is greater than the setting, the contactor allows breaking current, if not, all exports are moves to the contact control export; if so, all protect exports are moves in the circuit breaker points shunt release export control.

Contactor breaking current protection if turned on, it has been put into protection, when monitoring the maximum phase current is greater than the setting of the contactor to allow breaking current, the direct jump circuit breaker.

Related parameters

Table with 5 columns: Function, Parameter name, Setting range, Default value, Define. Includes Contactor breaker protection parameters like Protection action, Action setting value, and Time setting value.

12.14 Undervoltage Auto-restart

Low voltage motor control power often direct quote from 380V power system when the system voltage appears short fault (commonly known as "shake of voltage"), easily lead to shutdown of the motor. The device provides the motor with the loss of voltage restarting function, so that the motor in the power supply and the system is restored to normal condition, can automatically restart to the normal operation.

Immediately restart: when the motor undervoltage protection parking or lost voltage sags interval in 0.5 seconds, due to inertia that motor rpm drop is very small, can be directly to restart the motor. This function in the power grid, "shaking", can ensure the continuous normal operation of equipment. Time delay reset: when the motor undervoltage protection parking or lost voltage due to voltage sags time interval in the 0.5s-60s (time can be set). At this time the current change greatly, at the same time to start multiple motor will lead to excessive starting current. Therefore, the device will be in accordance with the restart delay to restart the motor (delay time can be set).

Related parameters

Table with 5 columns: Function, Parameter name, Setting range, Default value, Define. Includes Undervoltage Auto-restart parameters like Protection action, Restore voltage, Power loss time(s), and Delay start time(s).

12.15 Power Factor Protection

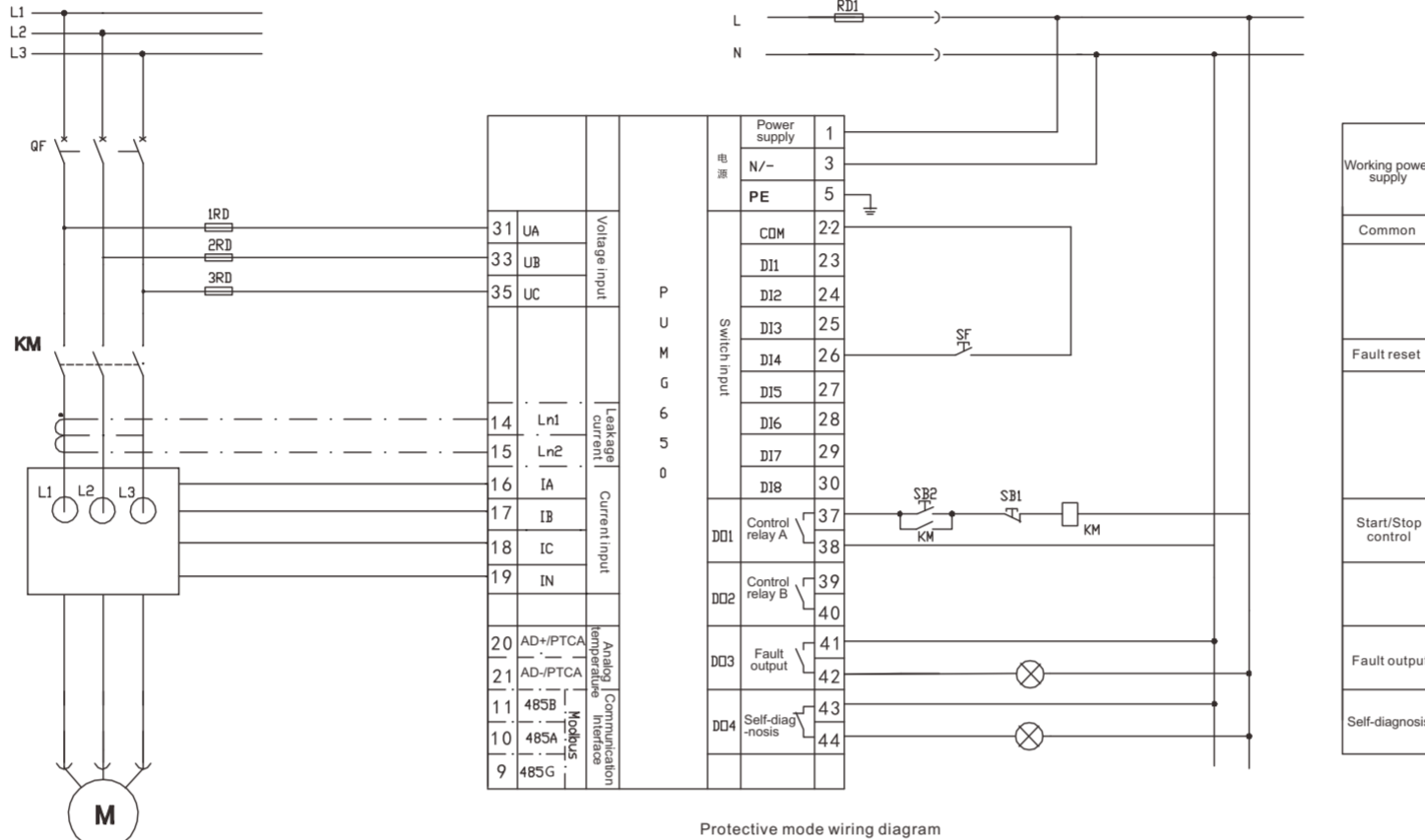
For low-side motors, the power factor changes more frequently than motor current or active power. Therefore, power factor protection is particularly suited to the distinction between no-load operation and failure (such as tearing of the conveyor belt or transmission shaft breakage).

Related parameters

Table with 5 columns: Function, Parameter name, Setting range, Default value, Define. Includes Power factor Protection parameters like Protection action, Action setting, and Time setting.

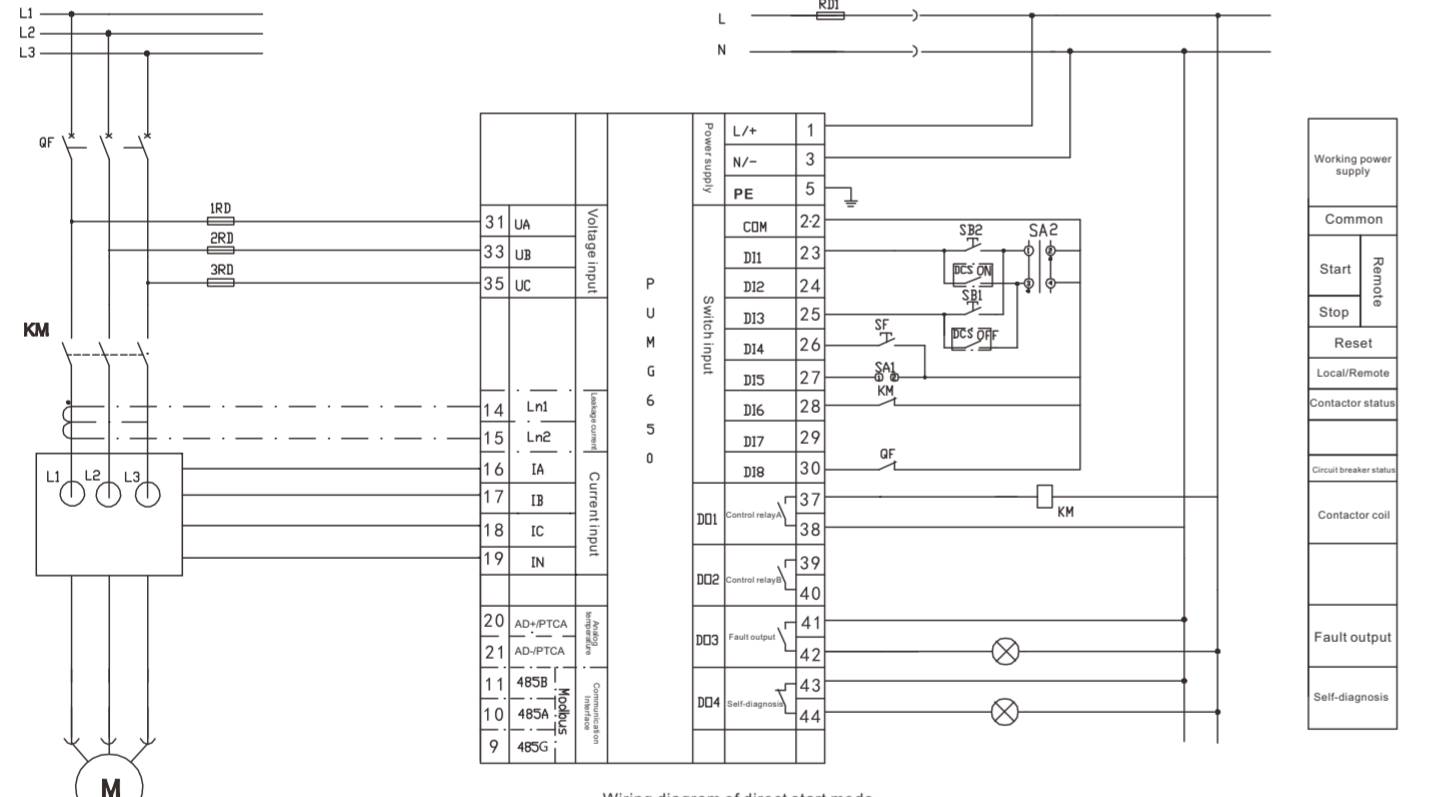
13.Common Field Wiring Diagram

KPM60 series supports a variety of start control mode, due to limited space, this manual only provides typical wiring diagrams for KPM60 in protected mode, direct start mode and bidirectional start mode. For more typical wiring diagrams, please contact the relevant personnel. If you encounter problems with the use of the product, please contact the company's technical staff.



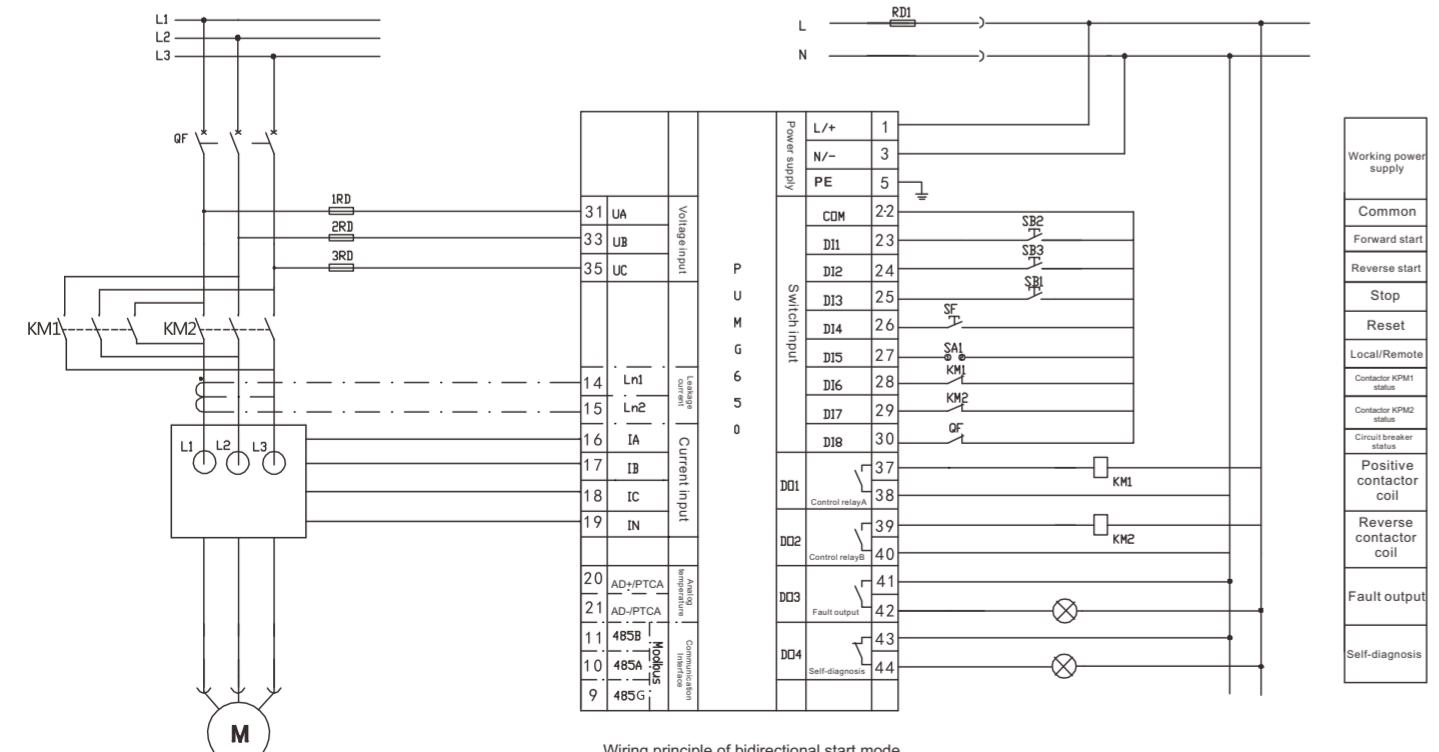
Description

- 1.Under protected mode, the normally open contact string of the control relay DO1 is in the coil loop of the contactor KM, when the controller is powered up, DO1 contacts are closed immediately, operation start button SB2 then motor start, the protection trip occurs, relay DO1 is disconnected, the contactor KM's coil is de-energized, the contactor KM is released, the motor stops.
2. When the motor has a protection alarm or protection trip, press the reset button to clear the fault indication. The relay DO1 will automatically close and enter the ready state, allowing the motor to start again.
3. Dotted lines indicate optional features.



Wiring diagram of direct start mode

- 1.In the direct start mode, after the controller receives the start command in the ready state, the internal relay DO1 is closed, the contactor KM coil is electrically closed, and the motor is started. When the controller receives the opening command or a protection trip occurs, the relay DO1 is disconnected, the KM coil is de-energized, and the motor is stopped.
2.When the motor has a protection alarm or protection trip, press the reset button to clear the fault indication. When the parking process is over, it can receive a restart command when it enters the ready state.
3.Dotted lines indicate optional features.



Wiring principle of bidirectional start mode

- 1.In the bidirectional start mode, in the ready state, when the protector receives the "start A" command, the internal relay DO1 is closed, the contactor KM1 was forced to pull; when the controller received a stop command or protection trip, DO1 relay is disconnected, motor stops. In the ready state, when the protector receives the "start B" command, the internal relay DO2 is closed and the contactor KM2 is energized; when the controller receives the stop command or the protection trip occurs, the DO2 relay is disconnected and the contactor KM2 Power loss freed, motor stop.
2.When the motor has a protection alarm or protection trip, press the reset button to clear the fault indication. When the parking process is over, it can receive a restart command when it enters the ready state.
3.Dotted line marked as optional function.

12.16 External Fault Protection

External fault protection is provided to users by external access. The switch quantity is used as the input point of the external fault signal, access process closing and tripping integrated chain contact, can be used for process chain function; the user can control according to the needs of the motor, using external fault protection to obtain trip or alarm function. External fault protection Access switch input can be selected "normally open" or "normally closed" mode. After the controller is powered on, the switch input status is continuously detected and the limit time protection is provided according to the input status.

Related parameters

Table with 5 columns: Function, Parameter name, Setting range, Default value, Define. Includes External fault protection parameters like Protection action, Alarm, trip, disable, and Time setting.

12.17 Phase sequence protection

Phase sequence protection can identify phase sequence errors in the three-phase voltage of the motor and avoid motor reversal. In order to avoid the overload protection malfunction, if the phase sequence protection occurs, the corresponding limit should be corrected immediately to ensure the reliable operation of the motor. Phase sequence protection is applied when the motor is ready, starting and running. When the phase sequence of the three-phase voltage is detected, it is time-limited.

Related parameters

Table with 5 columns: Function, Parameter name, Setting range, Default value, Define. Includes Phase sequence protection parameters like Protection action, Alarm, trip, disable, and Action setting.

12.18 Temperature Protection

Temperature protection is the most direct protection of the motor. Insert the PT100 into the motor windings, the resistance of PT100 varies linearly with temperature. Protector according to PT100 features, the motor winding temperature is detected, for motor protection, the protection logic is: When the detected temperature value is greater than the set value, perform a protection action.

Related parameters

Table with 5 columns: Function, Parameter name, Setting range, Default value, Define. Includes Temperature protection parameters like Protection action, Alarm, trip, disable, and Temperature setting.

14. Precautions

14.1 Basic settings

- Before operating properly, make sure to set the following system parameters:
• Rated current of the motor.
• Enter the correct CT rated current value.
• CT ratio is a backup item, is also used by the manufactures to provide 5A CT, external use of other transformers.
• Set the appropriate contactor breaking current, the default setting is 8 times the Ie.
• Confirm the operating mode.
• Confirm the operating authority.
• Confirm the device address and communication baud rate are consistent with the host computer.
• Before the normal operation, you also need to set the protection function to be used for parameter setting.
• In the protection of the stall, unbalanced protection, grounding / leakage protection, short circuit protection, underload protection, overvoltage protection, undervoltage protection, under power protection, if the protection mode is exited, the protection is disabled; if you need to turn on these protection, set the range of the action values and delay times for each protection in the protection function description.

14.2.Common Problem

Table with 3 columns: Fault phenomenon, Possible reason, Possible solution. Lists common issues like device not starting, relay error, and communication problems with their causes and solutions.

15. Contact

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