# AC FREQUENCY CONVERSION CONTROLLER MANUAL

This controller employs motor vector control algorithms and features overcurrent protection, over-power protection, overheating protection, reverse reopening upon obstruction during closing, and stopping upon obstruction during opening. It supports full-range speed regulation (30–100Hz) for standard asynchronous motors.

⚠ Caution: This product contains high-voltage components. Installation and setup should be performed by qualified personnel to avoid the risk of electric shock!

⚠ Caution: The gate must be equipped with an anti-derailment device independent of the controller!
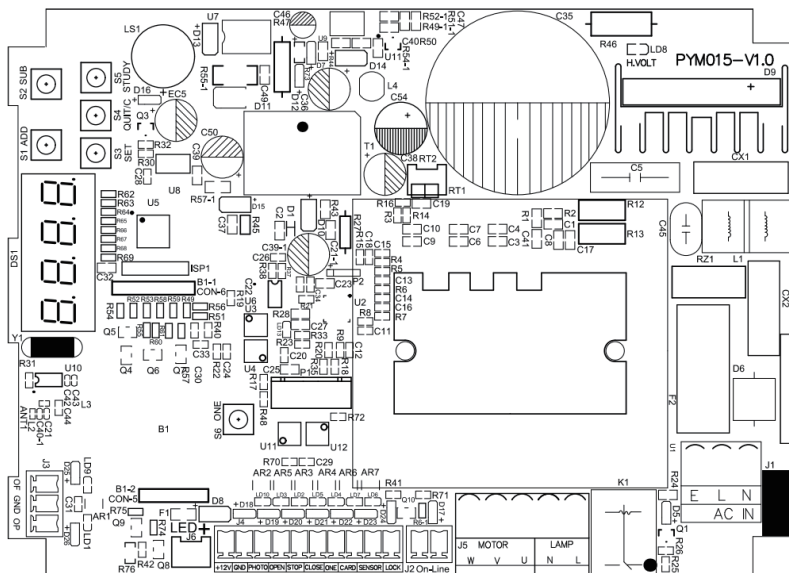
⚠ Caution: After initial installation or after changing the motor speed parameters, a travel learning cycle must be performed again!

⚠ Caution: When using the automatic gate closing or ground sensor functions, an infrared anti-pinch device must be installed.

## 1.INTERFACE INSTRUCTIONS



**L:** Live power input.

**N:** Neutral power input.

**U, V, W:** Connecting to a three-phase motor. Wiring must be based on the gate's direction of movement.

**Running Light:** Connecting to a 220V AC warning light to provide a warning when the gate is in motion.

**Open Limit:** Normally open mode. Used to connect the gate fully open signal.

**Close Limit :** Normally open mode. Used to connect the gate fully closed signal.

**Infrared:** Normally open mode. During opening, triggering the infr-ared signal will cause the gate to reverse and fully open.

**Open:** Normally open mode. Triggers the gate to open when activated.

**Stop:** Normally open mode. Stops the motor when activated.

**Close:** Normally open mode. Triggers the gate to close when activated.

**Single Button:** Normally open mode. Cycles through open-stop-close-stop with each activation.

**Access Control:** Normally open mode. Connecting to an access control system for authorized opening and automatic closing.

**Ground Loop:** Normally open mode.

**The ground loop input has three operating states:**

1. During closing: If a ground loop signal is detected, the gate will reverse to the fully open position, then delay for 2 seconds before initiating the closing action.
2. During opening: If a ground loop signal is detected, the gate will continue ope-ning until reaching the fully open position, then delay for 2 seconds before initiat-ing the closing action.
3. After fully opening: When the gate is already at the fully open position, a ground loop signal will trigger a 2-second delay before the gate begins closing.
Interlock: Cross-connect with the stop interface of the second controller to realize the function of opening only one gate.

## 2.SETTING INSTRUCTIONS

System Standby Mode, press the <SET> button briefly to enter parameter settings.
- Adjust parameters using the <+> and <-> buttons.
- Press <SET>briefly again to switch to the next setting item.
- Press <QUIT>briefly to exit setup mode.
- Factory Reset: In setup mode, holding the <SET> button for 15 seconds to restore default parameters.

1. XXX Opening Frequency: Set 30~100Hz (Lower frequency = slower speed, higher frequency = faster speed). (Default: 60)
2. XXX Closing Frequency: Set 30~100Hz (Lower frequency = slower speed, higher frequency = faster speed). (Default: 50)
3. XXX Opening Obstruction Sensitivity: 1~30 (Lower value = more sensitive). Motor stops immediately upon obstruction while opening. (Default: 5)
4. XXX Closing Obstruction Sensitivity: 1~30 (Lower value = more sensitive). Motor reverses to fully open upon obstruction while closing. (Default: 4)
5. XXX Auto-Close Delay Time: 0~100s (0 = disabled). (Default: 0)
6. XXX Slow-Run Frequency for Opening/Closing: 15~30Hz (Default: 20)
7. XXX Motor Power Setting: 370/550/750W (Default: 370)
8. XXX Remote Single-Button Control:
- On: Remote single button cycles through open/stop/close functions.
- Off: Remote uses separate buttons for open, close, and stop (requires designat-ed remote). (Default: Off)
9. XXX Access Control Setting (0~10):
 - 0: Disables access control port function.
- Other values: Sets gate-open duration (in seconds) after card swipe. (Default: 4)
A. XXX Host/Slave Mode:
 - Off: Host mode.
- On: Slave mode. (Default: Off)
LEAr (Auto-Travel Learning): Must be performed with the gate at mid-travel position (learning is disabled if at limit switch state).

## 3.INSTALLATION

Installation and commissioning must be performed by professionals with utmost attention. Correcting wiring of the motor and limit switches is critical for the proper operation of the automation system.
1. Confirm Limit Switch Functionality
Test whether the open/close limit switches are functioning properly. The limit switches operate in Normally Open (NO) mode. When not triggered, the corresponding indicator light is off. When triggered, the corresponding indicator light stays on. Pushing the gate to the fully open position, Open limit indicator should light up. Pushing the gate to the fully closed position Close limit indicator should light up.
2.Confirm Motor Rotation Direction
Manually moving the gate to the mid-travel position. Pressing the <Single Button> on the controller. The motor will start, and the LED display will show either "oPEn" (opening) or "cLoS" (closing). Check whether the digital tube display content and the gate running direction are consistent. If the gate moves in the opposite direction of the display, then power off the controller, waiting for the display to turn off, swap the U/V motor wires, and retest.
3.Travel learning. Push the gate manually to the middle. short press the "SET" button to enter the setting menu interface, switch the menu to the "LEAr" interface, press the "+" button, and the controller will enter automatic travel learning. You can also directly press the "QUIT" button in the standby interface to enter automatic travel learning. The gate will first close slowly, then open slowly, then close slowly, then open at normal speed, and finally close at normal speed.
4.Test opening and closing, and resistance.
Note: Triggering the gate open, close, stop, or remote control signal during travel learning will immediately terminate the travel learning process.
Note: travel learning is best performed when the motor is cool. Motor power decreases when the motor is hot. If stravel learning is performed while the motor is warm, it may result in false detection of resistance when the motor cools down.

## 4.REMOTE CONTROL LEARNING

Short-press the "code" button. The digital tube displays r.xxx, indicating that the remote control configuration mode has been entered. xxx represents the number of learned remote controls, with a maximum of 128.
Simultaneously press and hold the "On" and "Lock" buttons on the assigned remote for one second to enter the remote control over-the-air pairing mode. This mode only allows adding remote controls, not deleting them.
Pressing the "Stop" button on any remote control or after 10 seconds will exit remote control configuration mode. (In single-button mode or some remote controls without a combination button, you will not be able to enter over-the-air pairing mode.)
Adding a remote control: In multi-button mode, press the "On" button on the remote control. The buzzer will beep once. Press the "On" button again. The buzzer will beep three times, indicating that the remote control has been successfully added. In single-button mode, briefly press the remote control you want to add. The buzzer will beep three times, indicating that the remote control has been successfully added.
Deleting a specific remote: The remote control must be in multi-button mode. In remote control configuration mode, press the remote control's "On" button. The buzzer will beep briefly. Then press the remote control's "Off" button. The buzzer will beep twice, indicating that the remote control has been successfully deleted.
To clear all remote controls: In standby mode, press and hold the "code" button for approximately 15 seconds until the buzzer beeps three times. Release the "code" button to complete the clearing process.

## 5.FAULT CODES

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| Er01: Open/Close Timeout | Er03: Overvoltage | Er05: Travel Learning Failure | Er07: Overpower | Er09: MCU Communication Loss |
| Er02: Overcurrent | Er04: Undervoltage | Er06: Overtemperature | Er08: Resistance | Er10: Limit Error |