EX3G HMI PLC All-in-One User Manual

Thank you for purchasing Coolmay EX3G HMI PLC All-in-One products. This manual mainly explains the product features, specifications and wiring methods. Detailed PLC programming, please refer to “Coolmay EX3G HMI PLC All-in-One Programming Manual”. Detailed HMI part, refer to “Coolmay HMI Programming Manual”. The features are as below.

- **High-speed integration.**
  1. The digital points are 30 inputs and 50 outputs at most. The digital output can be transistor relay or mixed input. A single current source output (0-5mA/0-20mA/4-20mA) is available. Simultaneous access to 10DI/4DO and 10DI/6DO input. Access to 10DI/6DO input (10DI-30DO).
  2. The PLC part of models 70KH, 70H-38M, 70H-24M can optionally select one 485 port or two 485 ports for 100H, 120H, 10H, 15H, 24H models. The PLC part can only connect one 485 port at most.
  3. The PLC part of models 43H0, 43H4 40H-50Kt can optionally select two RS485, and HMI part can connect one RS485.

- **Highly integrated.**
  1. Supports high-speed counting and high-speed pulse, 43H0-43H4 series: 4-channel single phase 60kHz or AB-2/2-channel 60kHz plus 1 channel. 70H-38M series: 8-channel 10kHz per channel. 70H-24M series: 10-channel 10kHz per channel. 70KH series: total high-speed counting and pulse cannot exceed 40kHz.
  2. The digital relay output index: high-speed input: current<4.5mA/19V. 12DI/12DO: Current<5mA (except type 2 power; 12DI/12DO: Current<6mA). 10KHz/20KHz/40KHz pulse: 1 channel.

- **PlC**
  PLC is compatible with Mitsubishi programming software, and HMI is Coolmay HMI programming software.

- **More models are supported to customize if bulk order.**

## Product Details

- **Naming rules:**
  1. EX3G-43H0-24M RT-4AD 2DA, Y-AD1-1, J-P 48SP322H SS
  2. HMI 43H0-24MH04K30KH30 4-30MHz 50Kt 70KH 70H-10A 70H-70KH
  3. Digital input and output (DI/O): 10DI/12DO, 14DI/12DO, 24DI/2DO, 24DI/12DO, 30DI/30DO, etc.
  4. Module type: M-Main module of universal controller
  5. Digital output (DO): 5 relay, 5 transistor, 5 relay and transistor
  6. Analog input (AI): 4 channels for 43H0, 12 channel for 70H-38M
  7. Analog output (AO): 1 channels for 43H0 and 70H-38M
  8. AI type: 
     - E1: Thermocouple E (can be customized as type K, T, S or J, supports negative temperature), PT1000, PT100, NT/NTC, temperature 50Kt, 50Kt, 50Kt, 50Kt
     - AI: 0-20mA, AI: 4-20mA, AI: 0-5V, AI: 0-10V, AI: 0-60V
  9. AO type: 
     - AO: 0-20mA, AO: 0-5V, AO: 0-15V, AO: 0-10V
  10. Power source: 24VDC, 24VDC, 24VDC, 24VDC
  11. High-speed output: 61DI, 61DO; 62DI, 62DO; 63DI, 63DO

## Basic parameter

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## More规格可自定义/可定制

※ More specifications can be customized if bulk order.

- **High-speed output: 61DI, 61DO; 62DI, 62DO; 63DI, 63DO.
- **Analog input and output: 61AI, 61AO; 62AI, 62AO; 63AI, 63AO.
- **Environment:**
  - Operating temperature: 0°C-70°C
  - Relative humidity: 5%-95%RH
  - Storage temperature: -20°C-70°C

## Mechanical Design

### Electric Design

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- **Digital relay output index:**
  - 61DI: 61AI: relay output index: high-speed input: current<4.5mA/19V. 12DI/12DO: Current<5mA (except type 2 power; 12DI/12DO: Current<6mA). 10KHz/20KHz/40KHz pulse: 1 channel.

## Hardware Interface

- **Input voltage:**
  1. DC12V
- **Input Impedance:**
  1. High-speed input: 3.9KΩ
  2. Common input: 4.3Ω

## Mechanical Design

### Electric parameter

- **Input voltage:**
  1. DC12V
- **Input impedance:**
  1. High-speed input: 3.9KΩ
  2. Common input: 4.3Ω
**Equivalent Circuit**

The PLC input (X) is an externally powered DC24V sink (positive NPN) and the input signal is isolated from the power supply. Connect COM to positive 24V of external power supply while using.

**PLC digital wiring wiring:**
- Ports and circuit: 50% of PLC's input terminals is connected to 24 V. It is connected to power supply (VCC), input signal.
- Three-wire system: The positive pole of the magnetic switch is connected to the PLC's COM terminal, and the negative pole is connected to VCC.
- Three-wire system: Connect the sensor signal input to the COM terminal and the power supply positive, signal line is connected to X terminal near COM. And do correct and effective grounding.

**PLC-232 configuration:**
- Transmit: Output is NPN. COM is connected to the negative pole, and it is connected to the power supply positive, signal line is connected to X terminal near COM. And do correct and effective grounding.
- Relay: Dry contact output, COM can be connected to the positive pole of the power supply.

**PLC Analog Wiring:**
- 1. Three-wire system analog wiring: The positive pole of the analog signal is connected to the COM terminal, and the positive pole of the analog signal power is connected to the GND. Generally, it is the wiring method of the A-20MA-A20MA transmitter.
- 2. Four-wire system: The positive and negative poles of the analog signal power are connected to those of the transmitter respectively, and the positive and negative of the transmitter signal output are connected to the AD and the GND terminal respectively.

**PLC anti-jamming processing:**
- Strong electric field and weak electric field should be separated with wiring and not common ground. When there is a strong electric interference, use magnetic ring on the power supply, and do correct and effective grounding according to the type of the device.
- When the analog is distributed, 1/2 magnetic capacitors can be added for filtering, and a correct and effective grounding can be performed.

**Programming reference**

- Device allocation and power-down retention instructions

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<th>D/X: 048-048/360-360/240-240</th>
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<td>Analog input register AD</td>
<td>Accuracy 12 bits</td>
<td>From AD00 to ADFF can be read as 16-bit digital Analog input</td>
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**AD Input register: AD accuracy 12 bits**

- Supports 8-bit or 16-bit input registers. The input range is ± 1000 μV to ± 5 V. The input range is ± 1000 μV to ± 5 V.
- Sampling frequency: 250 kHz.
- When a negative analog input is detected, the value of the corresponding input pin is changed to 1.
- The maximum input range is ± 1000 μV, and the minimum input range is ± 1000 μV.
- Analog input register AD accuracy 12 bits. Support FROM demand or register read demand.

**CAUTION:**

- Do not use a 5V drive to drive a 2KΩ resistor on a DC24V source.
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**TIPS:**

- Please read carefully the manuals before using our products, and use this product under the environmental conditions specified in this manual.
- Power on after confirmed the voltage (220V/110V +2% -15% and right wiring to avoid damage.
- Tighten the screws or the rail while mounting the product to avoid falling off.
- Avoid using or plug the cable with electricity. It is too easy to cause electric shocks or circuit damage.
- Do not use the cables and communication cables together or close and keep them at a distance of 10mm or more. Strong and weak currents need to be separated and correctly grounded.
- In severe interference situations, input and output cables of the communication and high-frequency signals should use shielded cables to improve anti-jamming performance.
- The grounding terminal FG on this product must be properly grounded to improve the anti-interference ability.
- For an externally powered DC24V sink (positive NPN), and the input signal is isolated from the power supply. Support 25% to 240V of external power supply while using.
- DO (transistor) COM is common cathode.
- Please do not debase the product or change the wiring. Or it will possible to cause breakdown, malfunction, loss, or fire.
- While installing or deinstalling the product, ensure to turn off all power. Or it may cause malfunction and breakdown.

**Catlog**

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