



Specification

Power Supply		9-30VDC/VAC
Power Consumption		2 VA
Display		LED
Input	Digital Input	
	Inputs Points	4
	Input Voltage Range	12-24 VDC
	Input Current Per Input	5 mA @12 VDC 11 mA @ 24 VDC
	Isolation	1500 Vrms Between Field And Logic
	Input NTC & PTC	2 K, 10 K
	Inputs Points	4
	Input Range	NTC/PTC (-40 to 130 °C)
Output	Output Points	8
	Maximum Voltage	36 VDC
	Maximum Current	100mA per Output
	Isolation	1500 Vrms between Field and Logic
Communication	Protocol	MODBUS RTU
	Baud Rate	2400, 4800, 9600, 19200, 38400, 57600
	Parity	None, Even, Odd
	Stop Bits	1, 2
	Data Bits	8
	Maximum Support Node	255
Ambient Operation	Temperature	-10 °C to 60 °C
	Humidity	<85% RH Non-Condensing
Ambient Storage	Temperature	-20 °C to 80 °C
	Humidity	<85% RH Non-Condensing
Protection Degree		IP20
Installation		DIN RAIL
Material		ABS-V0
Size (mm.)		23 x 113 x 100
Weight (kg.)		150

Description

- Modbus RS-485 I/O Module Digital Input / Digital Output / NTC & PTC PH-09: This device operates on the RS-485 Modbus Protocol system and provides 4 Digital Inputs, 8 Digital Outputs and 4 NTC & PTC Inputs.
- Digital Inputs support NPN and PNP Open Collector, as well as contact inputs.
- Digital Outputs are NPN Open Collector type.
- NTC & PTC sensor inputs have a measurement and display range of -40 to 130 °C.
- Inputs and outputs are isolated per channel.
- Built-in counter modes are available: Count Up and Count Up + Down.
- Operation via the RS-485 Modbus Protocol.
- Suitable for use as Remote I/O or for expanding I/O for a PLC.
- LEDs indicate the status of each input and output.

Operation

PH-09 provides 4 Digital Inputs, 8 Digital Outputs, and 4 NTC & PTC inputs with built-in isolation. It can read and write data via the RS-485 Modbus Protocol, receiving commands from a PLC or software. It functions as I/O expansion for a PLC or as remote I/O for collecting and distributing input/output signals located far from the main controller (PLC or software).

In addition, the inputs can operate as a 32-bit counter function to count the number of input signals detected.

Operation of the Digital Input

The inputs of the PH-09 can be used with proximity switches, photo switches, encoders, contacts, etc., and support both NPN and PNP types. The counter function offers three selectable operating modes as follows:

Mode 0: Operates as a digital input only, reading ON/OFF status with no counting.

Mode 1: Operates as a digital input reading ON/OFF status, and the Counter Up function of each input is enabled. The counted values are stored in 32-bit registers from Counter 1 to Counter 8.

Mode 2: Operates as both a digital input reading ON/OFF status and a Counter Up/Down function. In this mode, two inputs are used for counting: Input 1 is used for counting up and Input 2 is used for counting down, with the resulting value stored in Counter 1 register. Input 3 is used for counting up and Input 4 is used for counting down, with the resulting value stored in Counter 2 register.

Mode 3: Counting is performed using Input 1 and Input 2 working in relation to each other. In the case where a workpiece passes Sensor Input channel 1 first and then passes the next sensor, the counting operation is performed accordingly.

If the workpiece passes Sensor Input channel 1 first and then Input channel 2 in sequence, Sum Counter A will be incremented by one, and the time interval between Sensor Input 1 and Sensor Input 2 must be less than the preset time. Alternatively, if the workpiece passes Sensor Input channel 2 first and then Input channel 1 in sequence, Sum Counter A will be decremented by one, and for Input channels 3 and 4, the resulting value will be stored in the Sum Counter.

Operation(Con)

Input Filter (Input Filter operation characteristics)

0 = Can read input frequency up to a maximum of 1 kHz

1 = Can read input frequency up to a maximum of 10 Hz. If the input frequency is higher than 10 Hz, the device will not be able to count.

Suitable for switch-type inputs.

Input type selection

- NPN: The input is counted when the signal changes from +12V to +24V to 0V (Active Low).

- PNP: The input is counted when the signal changes from 0V to +12V to +24V (Active High).

Digital Output operation

The PH-09 has 8 NPN outputs.

Hour Counter Output (minutes)

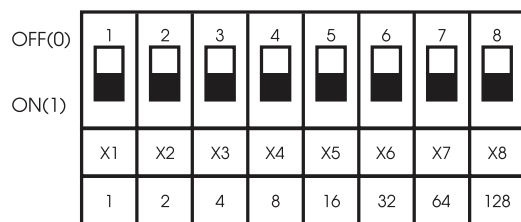
Enable Hour Counter

0 = Disable (disable Hour Counter operation)

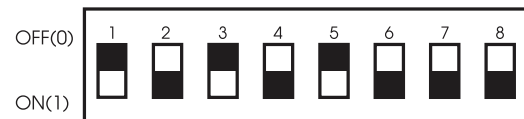
1 = Enable (enable Hour Counter operation)

Each Hour Counter output channel can be configured with a set point. When the Hour Counter value reaches the set point, the Hour Counter will be reset to 0. If the set point is set to 0, the Hour Counter will continue counting continuously.

Device Address ID Setting



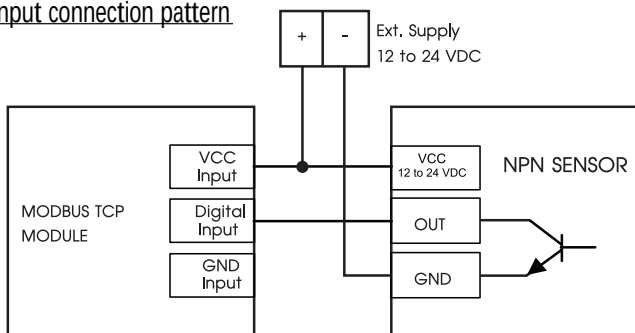
$$\text{Address} = X1 + X2 + X3 + X4 + X5 + X6 + X7 + X8$$



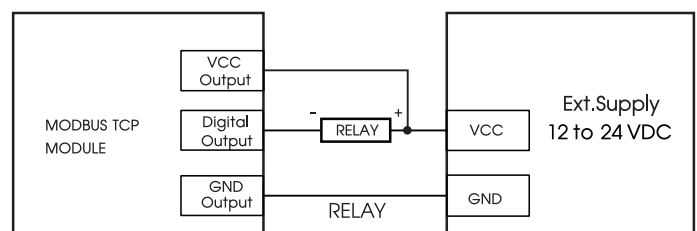
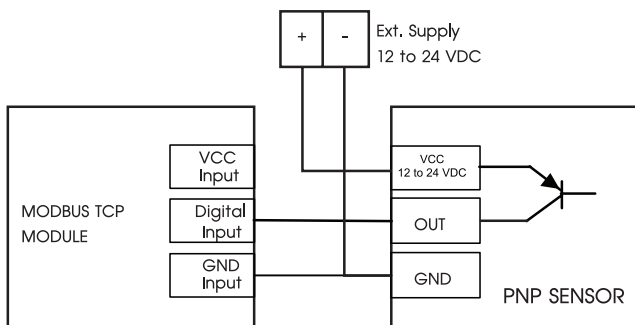
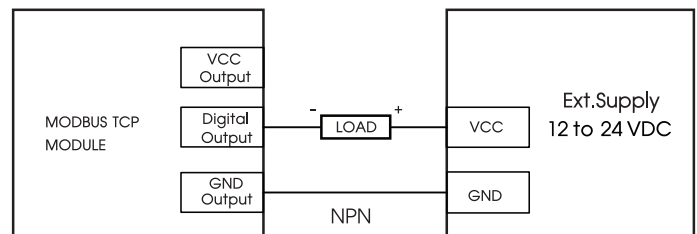
$$\text{Address} = 1 + 4 + 16 = 21$$

Example Device Address ID setting User need to set Address to be 2. It can set by press switch as picture below.

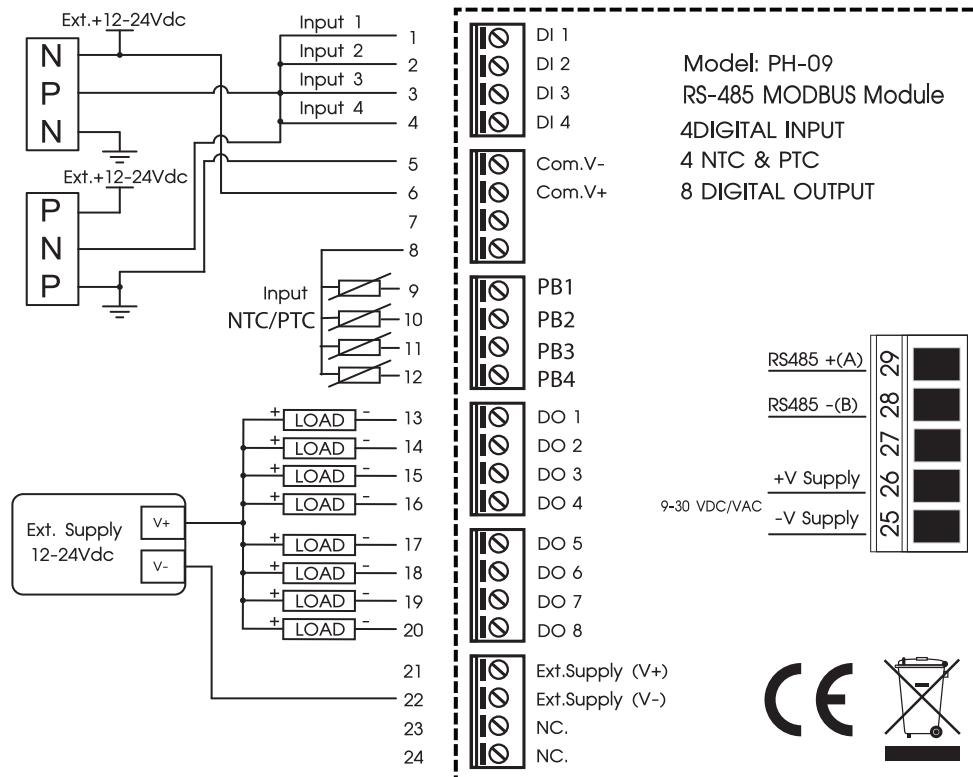
Input connection pattern



Output connection pattern



Wiring Diagram

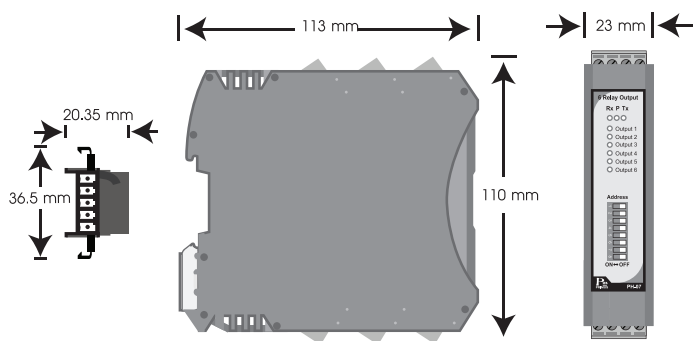


WARNING

- Make sure the correct wiring connection before turning on electricity. Mis-wiring may cause malfunction of the unit and fire.
- Never modify the unit to prevent damage or incident such as malfunction and fire etc.

Dimension

Ordering Code



PH - 09