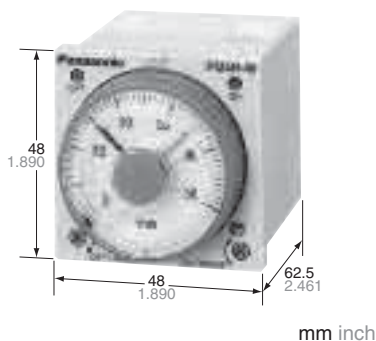


Panasonic
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DIN48 SIZE
ANALOG MULTI-RANGE
CYCLIC TWIN TIMERS

PM4H-W



UL File No.: E122222
CSA File No.: LR39291



Features

- A single twin timer unit that repeats (variable) ON/OFF.
- Multiple ranges with a 0.1 s to 500 h time specification on a single unit.
- The output ON/OFF operation is indicated by red and green LED's. It's easy to check the operation at a glance.
- The AC free power supply and shorter body make it easier to use.
- A new screw terminal type has been added to the conventional pin type. Wiring can be done easily with a screwdriver.
- Compliant with UL, CSA, CE and LLOYD.

Specifications

Item		Type	PM4H-W
Rating	Rated operating voltage		100 to 240V AC, 48 to 125V DC, 12V DC, 24V AC/DC
	Rated frequency		50/60Hz common (AC operating type)
	Rated power consumption		Approx. 10VA (100 to 240V AC) Approx. 2.5VA (24V AC) Approx. 1.5W (12V DC, 24V DC, 48 to 125V DC)
	Rated control capacity		5A 250V AC (resistive load)
	Operation mode		Cyclic (OFF-start/Twin operation)
	Time range		1s to 500h 16 time ranges switchable (T ₁ , T ₂ time setting individually)
Time accuracy Note:1)	Operation time fluctuation		±0.3% (power off time change at the range of 0.3s to 1h)
	Setting error		±5% (Full-scale value)
	Voltage error		±0.5% (at the operating voltage changes between 85 to 110%)
	Temperature error		±2% (at 20°C ambient temp. at the range of -10 to +50°C +14 to 122°F)
Contact	Contact arrangement		Timed-out 2 Form C
	Contact resistance (Initial value)		Max. 100mΩ (at 1A 6V DC)
	Contact material		Silver alloy
Life	Mechanical (contact)		2×10 ⁷
	Electrical (contact)		10 ⁵ (at rated control capacity)
Electrical function	Allowable operating voltage range		85 to 110% of rated operating voltage (at 20°C coil temp.)
	Insulation resistance (Initial value)		Min. 100MΩ Between live and dead metal parts Between input and output Between contacts of different poles (At 500V DC) Between contacts of same pole
	Breakdown voltage (Initial value)		2,000Vrms for 1 min Between live and metal parts 2,000Vrms for 1 min Between input and output 2,000Vrms for 1 min Between contacts of different poles 1,000Vrms for 1 min Between contacts of same pole
	Min. power off time		300ms
	Max. temperature rise		55°C 131°F
Mechanical function	Vibration resistance	Functional	10 to 55Hz: 1 cycle/min double amplitude of 0.25mm (10min on 3 axes)
		Destructive	10 to 55Hz: 1 cycle/min double amplitude of 0.375mm (1h on 3 axes)
	Shock resistance	Functional	Min. 98m/s ² (4 times on 3 axes)
		Destructive	Min. 980m/s ² (5 times on 3 axes)
Operating condition	Ambient temperature		-10 to +50°C +14 to +122°F
	Ambient humidity		30 to 85%RH (non-condensing)
	Atmospheric pressure		860 to 1,060hPa
	Ripple factor (DC type)		20%
Others	Protective construction		IP65 on front panel (using rubber gasket ATC18002) <only for IP65 type>
	Weight		120g 4.233 oz (Pin type), 130g 4.586 oz (Screw terminal type)

- Notes:
- 1) Unless otherwise specified, the measurement conditions at the maximum scale time standard are specified to be the rated operating voltage (within 5% ripple factor for DC), 20°C 68°F ambient temperature, and 1s power off time.
 - 2) For the 1s range, the tolerance for each specification becomes ±10ms.
 - 3) As internal components may become worn when using continuous conduction, the product should be replaced periodically.

PM4H-W

Time range

All types of PM4H-W timer have multi-time range.

16 time ranges are selectable.

1s to 500h (Max. range) is controlled.

Scale	Time unit	sec	min	hrs	10h
1	Control time range	0.1s to 1s	0.1 min to 1 min	0.1h to 1h	1.0h to 10h
5		0.5s to 5s	0.5 min to 5 min	0.5h to 5h	5h to 50h
10		1.0s to 10s	1.0 min to 10 min	1.0h to 10h	10h to 100h
50		5s to 50s	5 min to 50 min	5h to 50h	50h to 500h

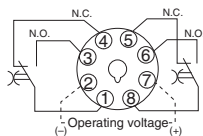
Product types

Type	Operating mode	Contact arrangement	Time range	Protective structure	Rated Operating voltage	Terminal type	Part number
PM4H-W Twin timer	Cyclic (OFF-start, Twin)	Relay Timed-out 2 Form C	16 selectable ranges (1s to 500h)	IP65	100 to 240V AC	8 pins	PM4HW-H-AC240VW
						Screw terminal	PM4HW-H-AC240VSW
					48 to 125V DC	8 pins	PM4HW-H-DC125VW
						Screw terminal	PM4HW-H-DC125VSW
					24V AC/DC	8 pins	PM4HW-H-24VW
						Screw terminal	PM4HW-H-24VSW
				IP50	12V DC	8 pins	PM4HW-H-DC12VW
						Screw terminal	PM4HW-H-DC12VSW
					100 to 240V AC	8 pins	PM4HW-H-AC240V
						Screw terminal	PM4HW-H-AC240VS
					48 to 125V DC	8 pins	PM4HW-H-DC125V
						Screw terminal	PM4HW-H-DC125VS
					24V AC/DC	8 pins	PM4HW-H-24V
						Screw terminal	PM4HW-H-24VS
					12V DC	8 pins	PM4HW-H-DC12V
						Screw terminal	PM4HW-H-DC12VS

Terminal layouts and wiring diagrams

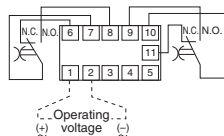
Pin Type

Cyclic timed-out relay contact: 2C



Screw terminal type

Cyclic timed-out relay contact: 2C

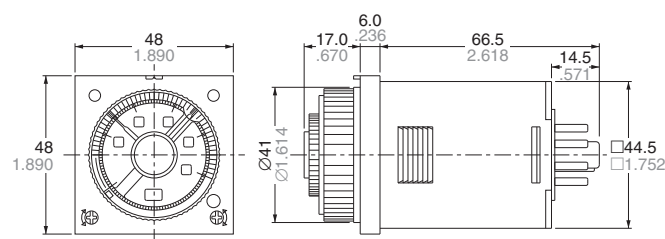
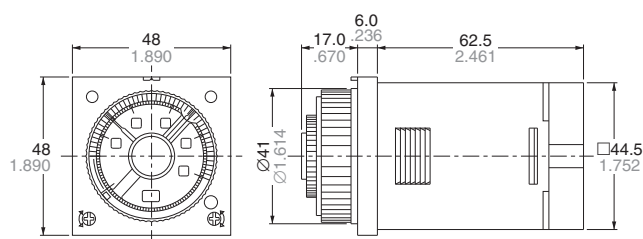


Dimensions

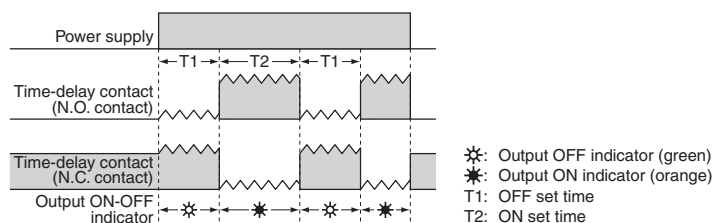
• Screw terminal type: M3.5

• Pin type

mm inch
Tolerance: $\pm 0.5 \pm 0.020$



Operation



PM4H SERIES MODES AND TIME SETTING

1. Operation method

1) Operation mode setting

[PM4H-A type]

8 operation modes are selectable with operation mode selector.

Turn the operation mode selector with screw driver.

Operation mode is shown up through the window above the mode selector. The marks are ON, FL, FO, OF1, SF, OS, OF2, OC.

Turn the mode selector to the mark until you can check by clicking sound.

Confirm the mode selector position if it is correct.

If the position is not stable, the timer might mis-operate.



2) Time range setting

[PM4H series common]

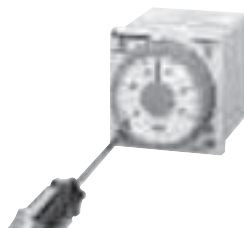
16 time ranges are selectable between 1s to 500h.

Turn the time range selector with the screw driver.

Clockwise turning increases the time range, and Counter-clockwise turning decrease the time range.

Confirm the range selector position if it is correct.

If the position is not stable, the timer might mis-operate.



3) Time setting [common]

To set the time, turn the set dial to a desired time within the range.

Instantaneous output will be on when the dial is set to "0".

When the instantaneous output is used, the dial should be set under "0" range.

(Instantaneous output area)

When power supply is on, the time range, setting time and operation mode cannot be changed.

Turn off the power supply or a reset signal is applied to set the new operation mode.

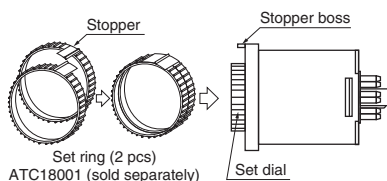
If the position is not stable, the timer might mis-operate.

2. How to use "Set ring" [PM4H series common]

1) Fixed time setting

Set the desired time and put 2 set rings together.

Insert the rings into stopper to fix the time.



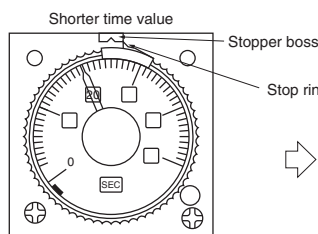
2) Time range setting

Example: Time range 20s to 30s.

① Shorter time value setting

Set the dial to 20s.

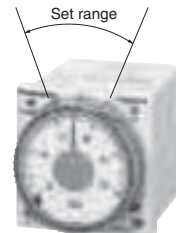
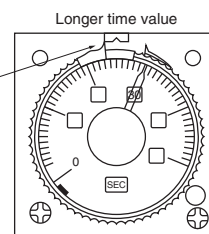
Place the stop ring at the right side of stopper.



② Longer time value setting

Set the dial to 30s.

Place the stop ring at the left side of stopper.



Note) The stoppers for the lower limit setting set ring and the upper limit setting set ring face the opposite directions.

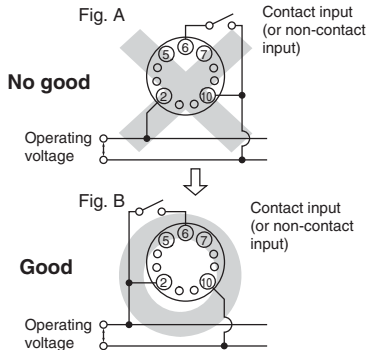
Applicable standard (PM4H series common)

Safety standard	EN61812-1	Pollution Degree 2/Overvoltage Category III
EMC	(EMI)EN61000-6-4 Radiation interference electric field strength Noise terminal voltage (EMS)EN61000-6-2 Static discharge immunity	EN55011 Group1 ClassA EN55011 Group1 ClassA
	RF electromagnetic field immunity	EN61000-4-2 4 kV contact 8 kV air
	EFT/B immunity	EN61000-4-3 10 V/m AM modulation (80 MHz to 1 GHz) 10 V/m pulse modulation (895 MHz to 905 MHz)
	Surge immunity	EN61000-4-4 2 kV (power supply line) 1 kV (signal line)
	Conductivity noise immunity	EN61000-4-5 1 kV (power line)
	Power frequency magnetic field immunity	EN61000-4-6 10 V/m AM modulation (0.15 MHz to 80 MHz)
	Voltage dip/Instantaneous stop/Voltage fluctuation immunity	EN61000-4-8 30 A/m (50 Hz) EN61000-4-11 10 ms, 30% (rated voltage) 100 ms, 60% (rated voltage) 1,000 ms, 60% (rated voltage) 5,000 ms, 95% (rated voltage)

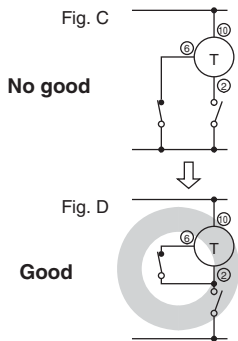
PRECAUTIONS IN USING THE PM4H SERIES

1. Input connections (PM4H-A type)

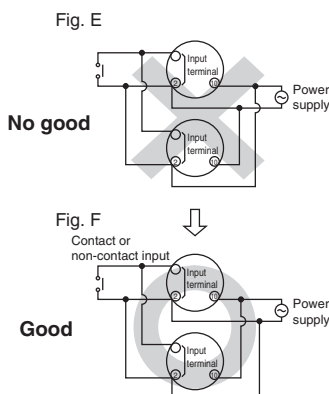
1) Be sure not to use terminal ⑩ as the common terminal of the input signal as shown in Fig. A. Otherwise, the internal circuit of the timer may be damaged. Use terminal ② as the common terminal as shown in Fig. B.



If the circuit is connected as in Fig. C, the internal circuits must be broken. Be sure to connect the circuit as in Fig. D.



2) When one input signal is simultaneously applied to more than one timer, be sure to avoid the wiring shown in Fig. E. Otherwise, the short-circuit current will flow and cause damage. Be sure to align the polarity of the power supply as shown in Fig. F.



3) Terminal ②-⑥ (screw terminal ②-③) should be connected as the start input. Connect terminals ②-⑦ (screw terminal ②-④) for reset signal input. Connect terminals ②-⑤ (screw terminal ②-⑤) for stop signal input. Be sure not to connect with other terminals and apply excessive voltage. The internal circuit will be damaged.

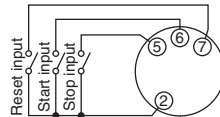
4) The input wiring other than the power supply circuit should avoid these conditions, high-voltage wiring and parallel wiring with power wire. Wire in short with using the shielding wire or metal wiring tube.

5) For start, reset and stop input, use gold-plated contact with high reliability. Since contact bouncing causes errors in the start, use an input contact less bounce time.

6) Keep the minimum signal input time over 0.05 s.

2. Input signal conditions (PM4H-A type)

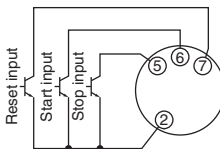
1) Connection of contact input (Pin type example)



Use gold-plated contacts with high-reliability. The bounce time at the contacts causes errors in the timer operation time. Accordingly, use start input contact whose bounce time is short. The resistance when shorted should be less than 1k Ω , and when open resistance should be more than 100k Ω .

For the screw terminal type, connect the terminal ② to the each input signal.

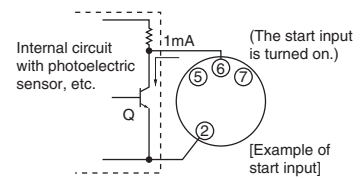
2) Connection of non-contact input (Pin type example) (open-collector)



Apply the open-collector connection. The characteristics of the transistor used must be $V_{CE0}=10V$ or more, $I_C=10mA$ or more, and $I_{CBO}=6\mu A$ or less. Additionally, the input impedance must be 1k Ω or less, and the residual voltage must be 0.6V or less.

For the screw terminal type, connect the terminal ② to the each input signal.

3) Connection of non-contact input (Pin type example) (voltage input)



Even if the open collector is not used, input is also possible from the non-contact circuit of 6 to 30V DC. In this case, the start input is turned on when the signal is turned from H to L.

The residual voltage must be 0.6V or less when Q is on. On the AC type, an insulated transformer is required as the power supply for the photoelectric sensor, etc. (power supply for the input devices).

Note: Keep the minimum input signal time of each signal to 0.05s or more.

3. Checking the contacts before use (PM4H-F only)

When the power ON time is less than the minimum power application time, the contacts may remain in an ON state, so the state of the contacts should be checked before use. When the contacts are in an ON state, activating them once will return them to their normal state (the OFF state after time-out). (Be aware that relay characteristics may result in the contacts being in that same ON state if exposed to excessive vibration and impact during transport.)

4. Time setting

To set the time, turn the set dial to a desired time within the range.

Instantaneous output will be on when the dial is set to "0".

When the instantaneous output is used, the dial should be set under "0" range. (Instantaneous output area)

Note) When power supply is on, the time range, setting time and operation mode cannot be changed.

Turn off the power supply or a reset signal is applied to set the new operation mode.

If the position is not stable, the timer might mis-operate.

PRECAUTIONS IN USING THE PM4H SERIES

5. Superimposed surge of power supply (PM4H series common)
For the superimposed surge of power supply, the standard waveform is taken as the standard value for surge-proof voltage.
If external surge occurs exceeding the specified value, the internal circuit may break down. In this case, use a surge

Operation voltage	Surge voltage
100 to 240V AC 100 to 120V AC 200 to 240V AC 48 to 125V DC	4,000V
12V DC, 24V DC 24V AC/DC	500V

absorption element.
The positive and negative voltages are applied each five times between the power pins.
The typical surge absorption elements include a varistor, a capacitor, and a diode. If a surge absorption element is used, use an oscilloscope to see whether or not the foreign surge exceeding the specified value appears.

6. Acquisition of CE marking
Please abide by the conditions below when using in applications that comply with EN61812-1.
1) Overvoltage category III, pollution level 2
2) This timer employs a power supply without a transformer, so the power and input signal terminals are not insulated. (PM4H-A only)
(1) When a sensor is connected to the input circuit, install double insulation on the sensor side.
(2) In the case of contact input, use dual-insulated relays, etc.
3) The load connected to the output contact should have basic insulation.
This timer is protected with basic insulation and can be double-insulated to meet EN/IEC requirements by using basic insulation on the load.
4) Please use a power supply that is protected by an overcurrent protection device which complies with the EN/IEC standard (example: 250 V 1 A fuse, etc.).

5) You must use a terminal socket or socket for the installation. Do not touch the terminals or other parts of the timer when it is powered. When installing or un-installing, make sure that no voltage is being applied to any of the terminals.
6) Do not use this timer as a safety circuit. For example when using a timer in a heater circuit, etc., provide a protection circuit on the machine side.