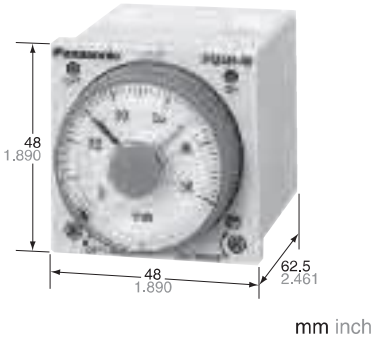


PM4H-W

Panasonic
ideas for life

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 accuracy Note:1) | Time range | 1s to 500h 16 time ranges switchable (T ₁ , T ₂ time setting individually) | |
| | 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%) | |
| Contact | Temperature error | ±2% (at 20°C ambient temp. at the range of -10 to +50°C +14 to 122°F) | |
| | Contact arrangement | Timed-out 2 Form C | |
| | Contact resistance (Initial value) | Max. 100mΩ (at 1A 6V DC) | |
| Life | Contact material | Silver alloy | |
| | Mechanical (contact) | 2×10 ⁷ | |
| Electrical function | Electrical (contact) | 10 ⁹ (at rated control capacity) | |
| | Allowable operating voltage range | 85 to 110% of rated operating voltage (at 20°C coil temp.) | |
| | Insulation resistance (Initial value) | 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 |
|-------|-----------------------|------------|-------------|-------------------|-------------|-------------|
| | Control | time range | | | | |
| 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

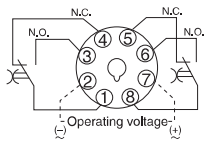
| Type | Operating mode | Contact arrangement | Time range | Protective structure | Rated Operating voltage | Terminal type | Part number | | |
|----------------------|--------------------------------|--------------------------------|--------------------------------------|----------------------|-------------------------|----------------|------------------|------------------|-----------------|
| 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 | | |
| | | | | | 12V DC | 8 pins | PM4HW-H-DC12VW | | |
| | | | | | | Screw terminal | PM4HW-H-DC12VSW | | |
| | | | | | | IP50 | 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 | | | | | | | |

Analog
Timers

Terminal layouts and wiring diagrams

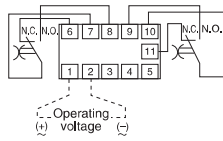
Pin Type

Cyclic timed-out relay contact: 2C



Screw terminal type

Cyclic timed-out relay contact: 2C

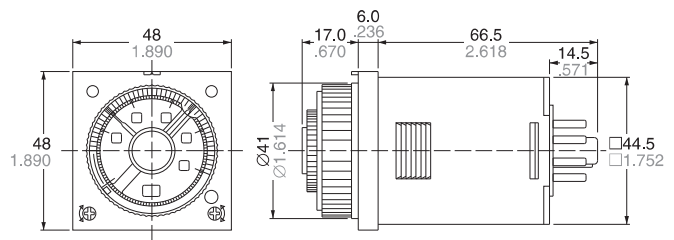
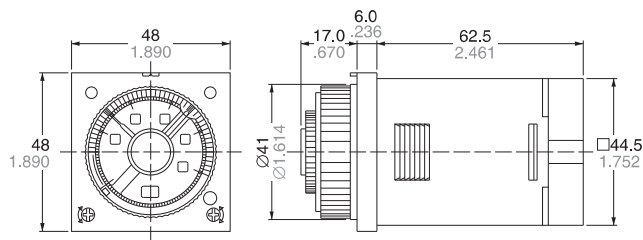


Dimensions

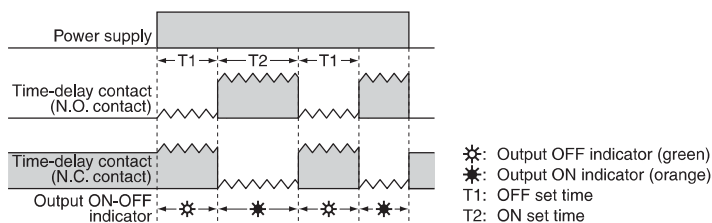
• Screw terminal type: M3.5

• Pin type

mm inch
Tolerance: ±0.5 ±.020



Operation



PM4H SERIES MODES AND TIME SETTING

1. Operation method

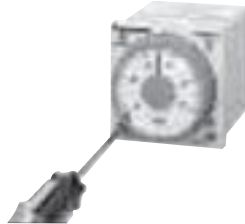
1) Operation mode setting [PM4H-A type]

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), (FI), (SF), (OS), (FZ), (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.



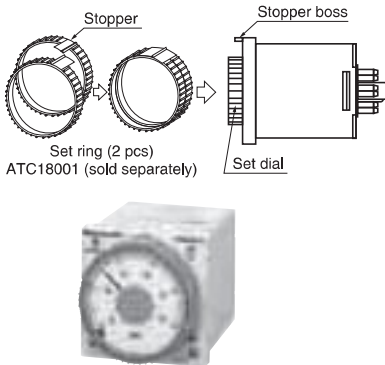
3) Time setting [common]

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.

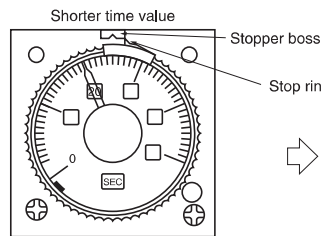


2) Time range setting

Example: Time range 20s to 30s.

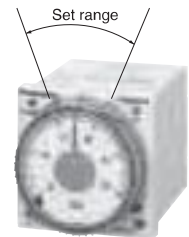
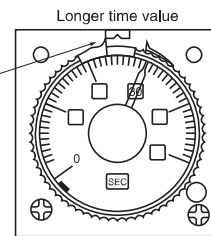
① Shorter time value setting

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.

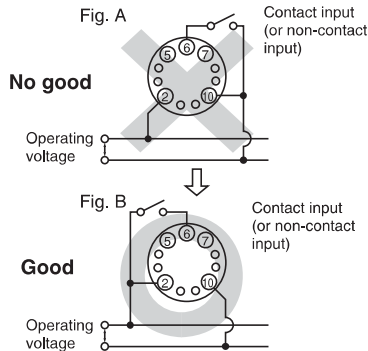
Applicable standard (PM4H series common)

| 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) |

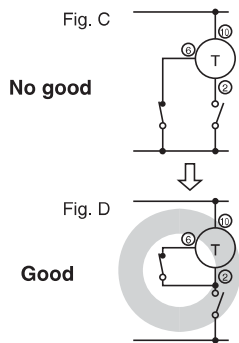
PRECAUTIONS IN USING THE PM4H SERIES

1. Input connections (PM4H-A type)

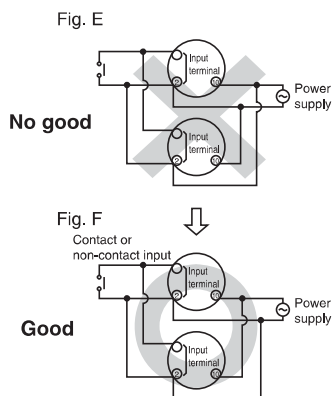
1) Be sure not to use terminal ⑩ as the common terminal of the input signal as shown in Fig. A. Otherwise, the internal circuit of the timer may be damaged. Use terminal ② as the common terminal as shown in Fig. B.



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.

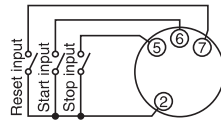
4) The input wiring other than the power supply circuit should avoid these conditions, high-voltage wiring and parallel wiring with power wire. Wire in short with using the shielding wire or metal wiring tube.

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)

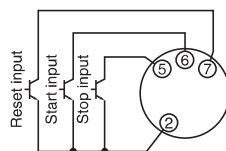
1) Connection of contact input (Pin type example)



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.

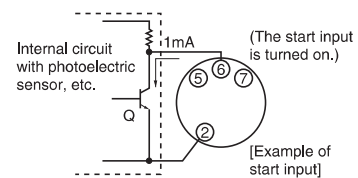
2) Connection of non-contact input (Pin type example) (open-collector)



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.