Panasonic
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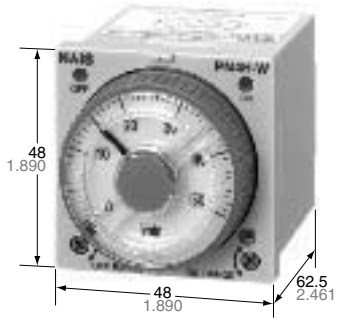
DIN48 SIZE ANALOG MULTI-RANGE CYCLIC TWIN TIMERS

PM4H-W

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



mm inch

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.**

CHARACTERISTICS

Item \ Type			PM4H-W
Rating	Rated operating voltage		100 to 240V AC, 12V DC, 24V AC/DC, 48 to 125V DC
	Rated frequency		50/60Hz common (AC operating type)
	Rated power consumption		Approx. 10VA (100 to 240V AC) Approx. 2.5VA (24V AC) Approx. 2W (12V DC, 24V DC, 48 to 125V DC)
	Output rating		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:)	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 (At 500V DC) Between live and dead metal parts Between input and output Between contacts of different poles 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	Shock resistance	Functional	Min. 98m/s² (4 times on 3 axes)
		Destructive	Min. 980m/s² (5 times on 3 axes)
	Vibration resistance	Functional	10 to 55Hz: 1 cycle/min double amplitude of 0.5mm (10min on 3 axes)
		Destructive	10 to 55Hz: 1 cycle/min double amplitude of 0.75mm (1h on 3 axes)
Operating condition	Ambient temperature		–10 to +50°C +14 to +122°F
	Ambient humidity		Max. 85%RH
	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.

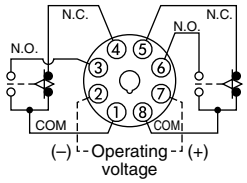
PRODUCT TYPE

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 pin	PM4HW-H-AC240VW
						Screw terminal	PM4HW-H-AC240VSW
					24V AC/DC	8 pin	PM4HW-H-24VW
						Screw terminal	PM4HW-H-24VSW
					12V DC	8 pin	PM4HW-H-DC12VW
						Screw terminal	PM4HW-H-DC12VSW
				IP50	100 to 240V AC	8 pin	PM4HW-H-AC240V
						Screw terminal	PM4HW-H-AC240VS
					24V AC/DC	8 pin	PM4HW-H-24V
						Screw terminal	PM4HW-H-24VS
					12V DC	8 pin	PM4HW-H-DC12V
						Screw terminal	PM4HW-H-DC12VS

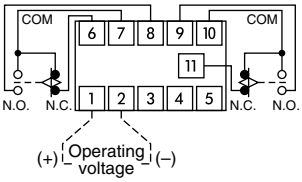
When ordering CE type, please order the Part No. with suffix CE. (e.g. PM4HW-H-AC240VWCE)

WIRING DIAGRAMS

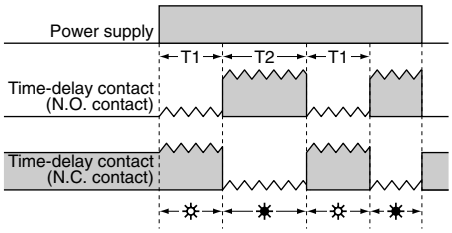
Pin Type
Cyclic timed-out relay contact: 2C



Screw terminal type
Cyclic timed-out relay contact: 2C



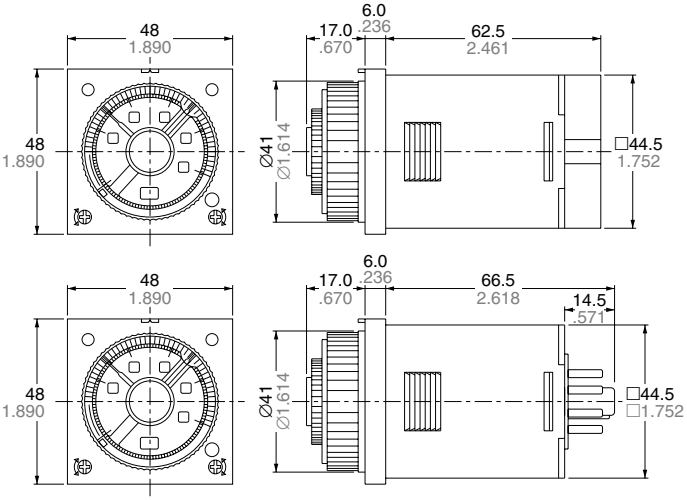
OPERATION



☼: Output OFF indicator (red)
✷: Output ON indicator (green)
T1: OFF set time
T2: ON set time

DIMENSIONS

mm inch



TIME RANGE

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

<PM4H-W>
All types of PM4H-W timer have multi-time range.
16 time ranges are selectable.
1s to 500h (Max. range) is controlled.

MODES & TIME SETTING

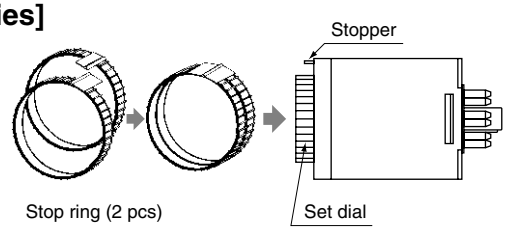
1) Operation mode setting [PM4H-A]
8 operation modes are selectable with operation mode selector.
Turn the operation mode selector with screw driver.
Operation mode is shown up through the window above the mode selector. The marks are Ⓞ, Ⓕ, Ⓕ, Ⓕ, Ⓢ, Ⓢ, Ⓢ, Ⓒ.
Turn the mode selector to the mark until you 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 setting [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.

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.

How to use “Stop ring” [PM4H series]

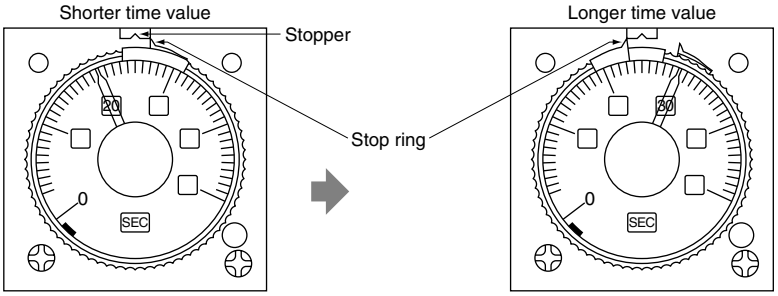
1) Fixed time setting
Set the desired time and put 2 stop rings together.
Insert the rings into stopper to fix the time.

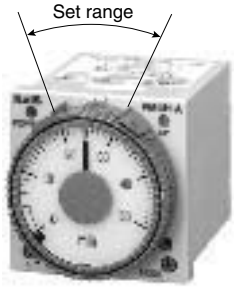


2) Fixed time range setting
Example: Time range 20s to 30s.

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.

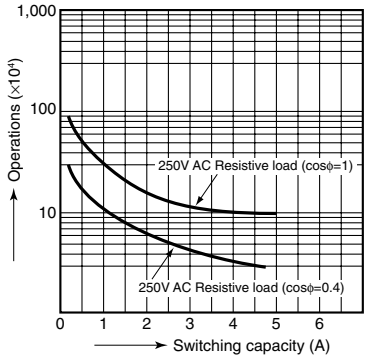




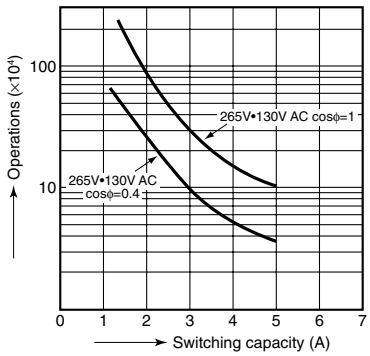
DATA

■ Load control life

• Load life curve (PM4H-A, PM4H-S, PM4H-W)



• Load life curve (PM4H-M)



CAUTIONS

1. Terminal connections

1) Refer to wiring diagram before terminal connections.

2) Use the screw terminal type for flush mounting.

For using 8 pin type, use the timer with screw terminal socket (AT8-RR) or 8 pin cap (AD8-RC).

For using 11 pin type, use the timer with 11 pin cap (AT8-DP11).

Do not solder directly the pin of the timer for connection.

3) The connection to power supply

100 to 240V AC, 24V AC type

Type	Pin	Screw terminal
PM4H-A PM4H-F11R	Connect the terminal ②-⑩ to the power source.	Connect the terminal z-x to the power source.
PM4H-S PM4H-M PM4H-W PM4H-SD PM4H-F8 PM4H-F8R	Connect the terminal ②-⑦ to the power source.	

DC type

Type	Pin	Screw terminal
PM4H-A PM4H-F11R	Connect the terminal ② to negative (–), the terminal ⑩ to positive (+).	Connect the terminal x to negative (–), the terminal z to positive (+).
PM4H-S PM4H-M PM4H-W PM4H-F8 PM4H-F8R	Connect the terminal ② to negative (–), the terminal ⑦ to positive (+).	

Prevent inductive or residual voltages generating between the power supply terminals after the power is off.

(If the power supply cables are routed parallel to the high voltage or power cables, an inductive voltage will be generated between the power supply terminals.)

On the DC type, keep the voltage within the allowable operating voltage range with ripple rate of 20% or less.

Apply the power supply voltage at once through the switch or relay contacts. If the voltage is gradually applied, the timer may time up or power supply reset may not operate regardless of setting time.

4) The control output load must be less than the rated load capacity of the relay contacts.

2. Input connections

1) If the circuits is connected as in Fig. A, the internal circuits must be broken. Be sure to connect the circuit as in Fig. B. Especially, for customer who has been used PM48A (Conventional type), be sure to check if the new circuit for PM4H timer is corrected as in Fig. B.

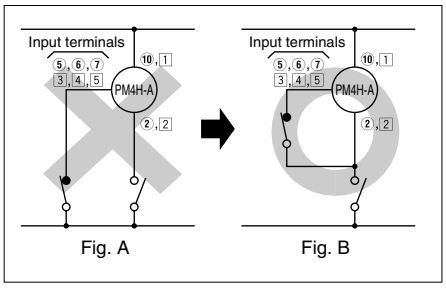
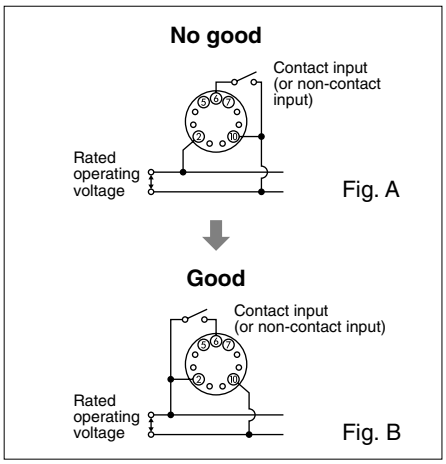


Fig. A Fig. B

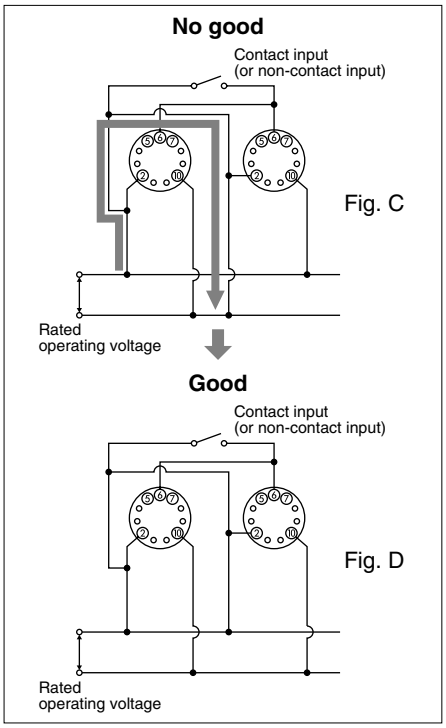
2) Since the PM4H timers use a transformerless power supply system, the input equipment must use the power supply transformer in which the secondary side is not grounded with the primary and secondary sides insulated, in order to prevent interference of the power supply circuit when connecting the external input circuit.

Be sure not to use an autotransformer.

3) Be sure not to use terminal ⑩ as the common terminal of the operation 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.



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



5) Terminal ②-⑥ (screw terminal ②-③) should be connected as the operation signal 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.

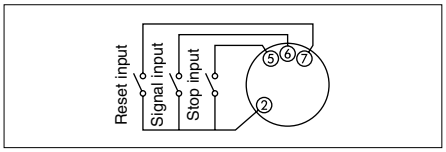
6) The input wiring other than the power supply circuit should avoid these conditions, high-voltage wiring and parallel wiring with power wire. Wire in short with using the sealed-wire or metal wiring tube.

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

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

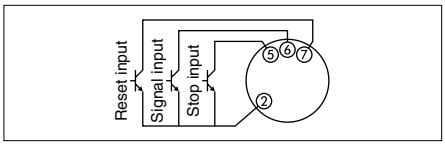
3. Input signal conditions

1) Connections of contact input



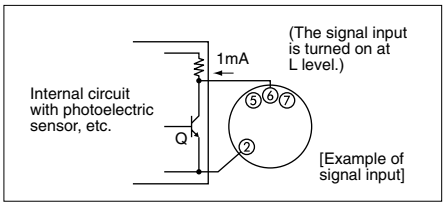
Use gold-plated contacts with high-reliability. The bounce time at the contacts causes errors in the timer operation time. Accordingly, use signal input contact whose bounce time is short. The resistance when shorted should be less than 1kΩ, and when open resistance should be more than 100kΩ.

2) Connections of non-contact input (open-collector)



Apply the open-collector connection. The characteristics of the transistor used must be V_{CEO}=10V or more, I_C=10mA or more, and I_{CBO}=6μA or less. Additionally, the input impedance must be 1kΩ or less, and the residual voltage must be 0.6V or less.

3) 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 signal 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.

4. Power off time

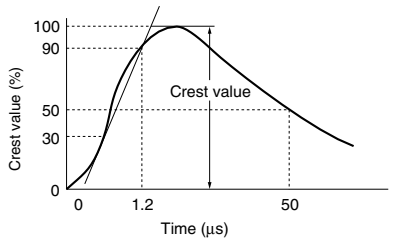
Keep 0.1s (-A, -S, -M type), 0.5s (-SD/SDM type), 0.3s (-W type) or more for the power off time after time cycle is completed.

5. Cautions [Common]

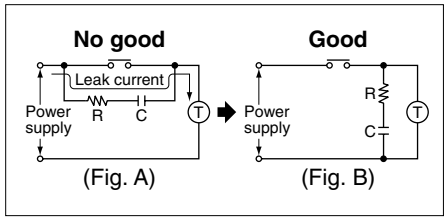
1. Prevent using the timer in such places where flammable or corrosive gas is generated, a lot of dust exists, oil is splashed or considerable shock and vibration occur.
2. Since the main body cover is made of polycarbonate resin, prevent contact with organic solvents such as methyl alcohol, benzine and thinner, or strong alkali materials such as ammonia and caustic soda.
3. External surge protection may be required if the following values are exceeded. Otherwise, the internal circuit will be damaged.

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 24V AC/DC	500V

Surge wave form [±(1.2×50)μs single polarity full wave voltage]



4. For connecting and disconnecting operating voltage to the timer, a circuit should be used to prevent the flow of leakage current. For example, a circuit for contact protection as shown in Fig. A will permit leakage current to flow through R and C, causing erroneous operation of the timer. Instead, the circuit shown in Fig. B should be used.



5. In order to maintain the characteristics of the timer, long continuous current flow through the timer, causing generation of heat internally should be avoided because of the degradation it can cause. For such long continuous operation, the circuit shown below should be used.