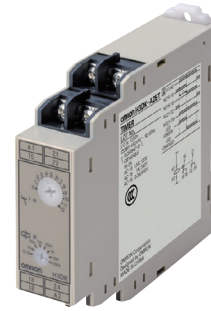


ON-delay Timer

H3DK-A2ET

Single-mode ON-delay Timer

- Wide variety of time ranges from 0.1 s to 1,200 h.
- Power supply from 380 to 440 VAC.



Ordering Information

■ List of Models

Operating mode	Supply voltage	Control output	Model
ON Delay	380 to 440 VAC	Contact output, time-limit SPDT + instantaneous SPDT	H3DK-A2ET

■ Model Structure

Model	Terminal block	Output type	Mounting method
H3DK-A2ET	8 terminals	Time-limit SPDT + instantaneous SPDT	DIN Track mounting

Specifications

■ Time Ranges

Time range setting	0.1 s	1 s	10 s	1 min	10 min	1 h	10 h	100 h
Set time range	0.1 to 1.2 s	1 to 12 s	10 to 120 s	1 to 12 min	10 to 120 min	1 to 12 h	10 to 120 h	100 to 1,200 h

■ Ratings

Power supply voltage	380 to 440 VAC, 50/60 Hz
Allowable voltage fluctuation range	380 to 440 VAC: 85% to 110% of rated voltage (-10 to 45°C)
Reset time	100 ms min. (reset voltage: 10% max.)
Power consumption	At 440 VAC: 11 VA max.
Control output	<ul style="list-style-type: none"> • Rated load: 120 VAC, category AC-15: 1.5 A 220 VAC, category AC-15: 1 A 440 VAC, category AC-15: 0.3 A • Rated through current: 2 A • Minimum load: 10 mA at 5 VDC (P level, reference value)
Ambient operating temperature	-10 to 55°C (with no icing)
Storage temperature	-40 to 70°C (with no icing)
Ambient operating humidity	25% to 85%

■ Characteristics

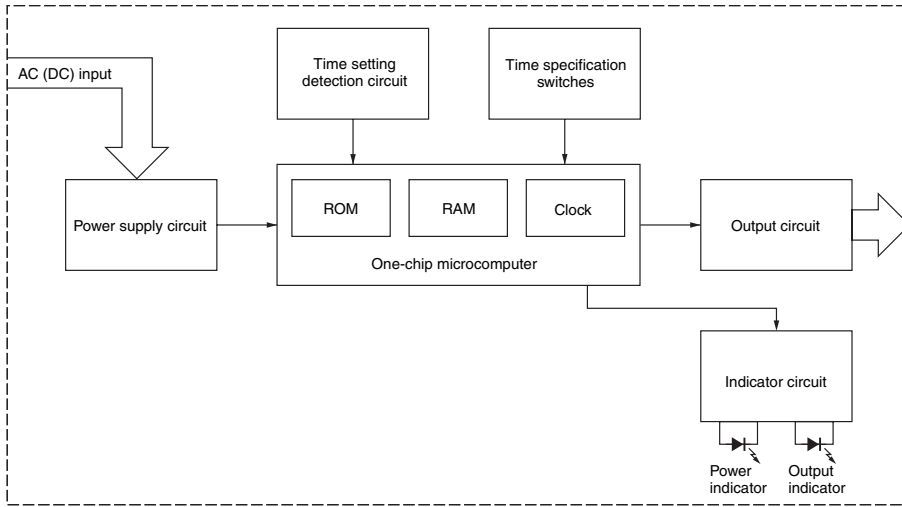
Accuracy of operating time	±1% of FS max. (±1% ±10 ms max. at 1.2-s range)	
Setting error	±10% of FS ±50 ms max.	
Influence of voltage	±0.5% of FS max. (±0.5% ±10 ms max. at 1.2-s range)	
Influence of temperature	±2% of FS max. (±2% ±10 ms max. at 1.2-s range)	
Insulation resistance	100 MΩ min. at 500 VDC	
Dielectric strength	Between current-carrying metal parts and non-current-carrying metal parts: 2,500 VAC 50/60 Hz for 1 min. Between control output terminals and operating circuit: 2,500 VAC 50/60 Hz for 1 min. Between contacts not located next to each other: 1,000 VAC 50/60 Hz for 1 min.	
Vibration resistance	Destruction	0.75-mm single amplitude at 10 to 55 Hz for 2 h each in 3 directions
	Malfunction	0.5-mm single amplitude at 10 to 55 Hz for 10 min each in 3 directions
Shock resistance	Destruction	1,000 m/s ² 3 times each in 6 directions
	Malfunction	100 m/s ² 3 times each in 6 directions
Life expectancy	Mechanical	10 million operations min. (under no load at 1,800 operations/h)
	Electrical	100,000 operations min. (under rated load at 360 operations/h)
Degree of protection	IP30 (Terminal block: IP00)	
Weight	Approx. 120 g	

H3DK-A2ET

Connections

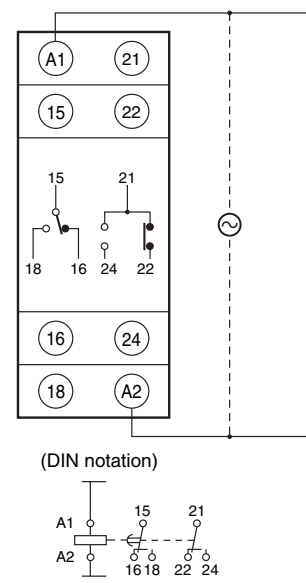
■ Block Diagrams

H3DK-A2ET



■ Terminal Arrangement

H3DK-A2ET

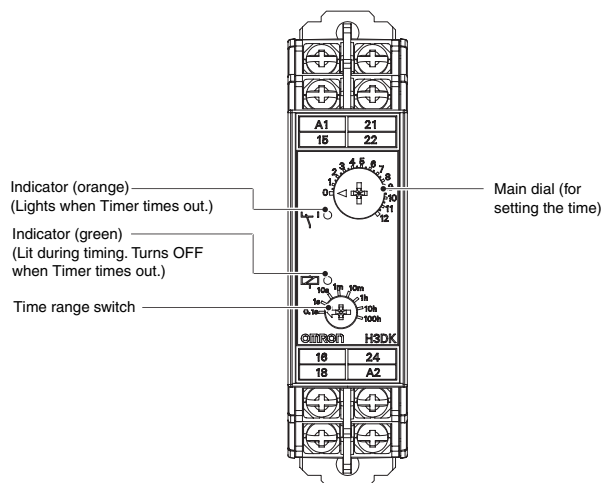


Nomenclature

H3DK-A2ET

Front View

Bottom View



Terminal Block
(See note.)

Note: Screw Tightening Torque
Recommended torque: 0.49 N·m
Maximum torque: 0.98 N·m

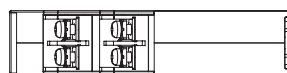
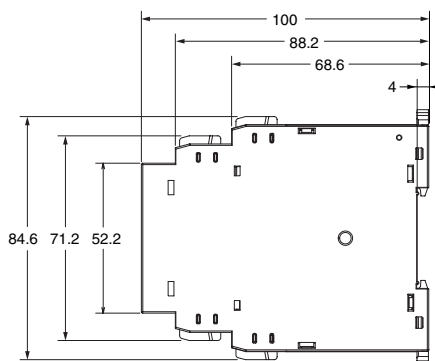
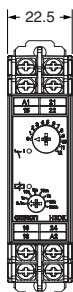
Dimensions

Timers

H3DK-A2ET



Note: Terminal screws are M3.5.



Track Mounting Products (Sold Separately)

Refer to page 6 for details.

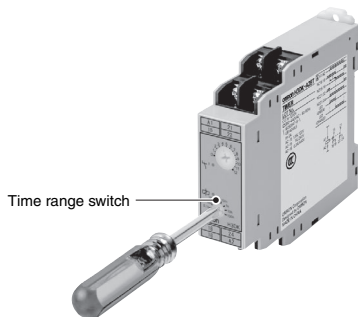
Operating Procedures

Basic Operation

Setting the Time Range

Setting the Time Range

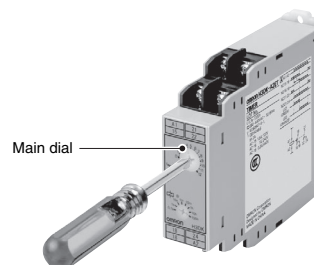
The time range switch can be used to set the time range. Turn the switch with a flat-blade or Phillips screwdriver.



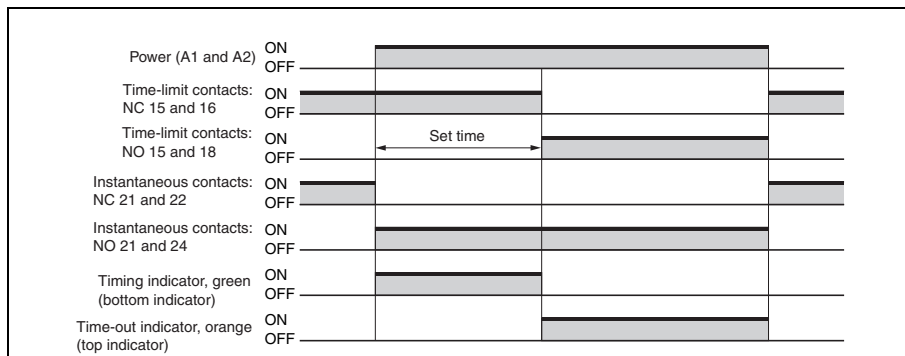
Setting the Time

Setting the Time

The start time is set with the main dial.



Timing Charts



Safety Precautions

● Refer to Safety Precautions for All Timers.

Caution

Switching arcs or relay heating may cause fire or explosion. Do not use the Timer in the presence of inflammable or explosive gases.



The inrush current will depend on the type of load and may influence the contact switching frequency and number of operations. Check both the rated current and the inrush current, and allow leeway in the circuit design.



The life of the output relay largely depends on the switching current and other switch conditions. Consider the actual application conditions and do not exceed the rated load or electrical life. If the output relay is used beyond its service life, the contacts may fuse or burning may occur. Also, never exceed the rated load current. When using a heater, also place a thermal switch in the load circuit.



Do not remove the external case.



Minor electric shock, fire, or equipment failure may sometimes occur. Do not disassemble, modify, or repair the Timer or touch any internal parts.



Precautions for Safe Use

- Forked crimp terminals or stranded wires can be used in addition to ferrule terminals to wire terminals. When wiring two wires to the same terminals, use the same wire type.
- Rapid changes in temperature or high humidity may cause condensation in Timer circuits, possibly resulting in malfunction or damage to components. Check the application environment.
- Store the Timer within the rated ranges given for the Timer model you are using. If the Timer is stored below -20°C , allow it to warm up for three hours at room temperature before turning ON the power supply.
- Use the Timer within the ambient operating temperature and ambient operating humidity ranges given for the Timer model you are using.
- Use the Timer within the characteristics for water and oil exposure given for the Timer model you are using.
- Do not use the Timer in locations subject to excessive dust, corrosive gas, or direct sunlight.
- Do not use the Timer in locations subject to vibration and shock. Long-term exposure may damage the Timer due to stress.
- Separate the Timer from any sources of excessive static electricity, such as forming materials and pipes carrying power or liquid materials.
- Maintain the variations in the power supply voltage to within the specified allowable range.
- If a voltage that exceeds the rating is applied, internal components may be destroyed.
- Wire all terminals correctly.
- Use only the specified wires for wiring.
Applicable wire gauge: AWG18 to AWG22
- Install and clearly label a switch or circuit breaker so that the operator can quickly turn OFF the power supply.
- If the Timer is left in the timed out condition for a long period of time at high temperatures, internal components (such as electrolytic capacitors) may deteriorate quickly.
- The exterior of the Timer may be damaged by organic solvents (such as thinners or benzene), strong alkali, or strong acids.
- For Timers with AC power input, use a commercial power supply for the power supply voltage. Although some inverters give 50/60 Hz as the output frequency, do not use an inverter output as the power supply for a Timer. Doing so may result in smoking or burning due to internal temperature increases in the Timer.
- Use the same type of wiring for all Timer wiring.
- When disposing of the Timer, observe all local ordinances as they apply.
- The Timer may not operate properly in locations that are subject to sulfide gas, such as in sewers or incinerators. Products that are suitable for operation in sulfide gas are not available for OMRON Timers or general control devices. Seal the Timer to isolate it from sulfide gas. If the Timer cannot be sealed, OMRON can make special products with resistance to sulfide gas for some Timers. Ask your OMRON representative for details.
- Confirm that the power and output indicators are operating normally. Depending on the operating environment, the indicators and plastic parts may deteriorate faster than expected, causing the indicators to fail. Periodically perform inspections and replacements.

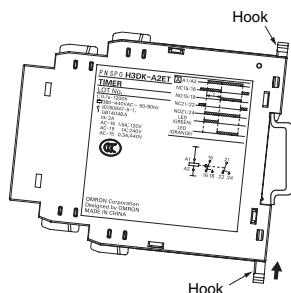
Precautions for Correct Use

● Changing Switch Settings

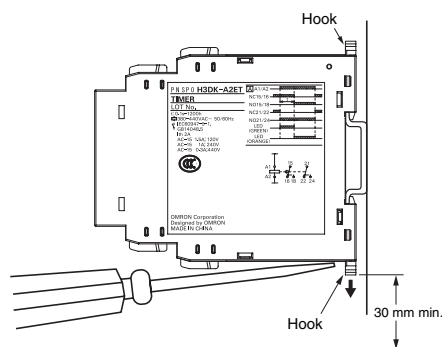
Do not change the time unit or time scale while the Timer is in operation. Doing so may result in malfunction. Turn OFF the power supply before changing the setting of any switch.

● Mounting and Dismounting

- Although there are no particular mounting restrictions, the Timer should be mounted as horizontally as possible.
- When mounting the Timer on a mounting Track, loosen the two hooks, press the Timer onto the Track, and then insert the hooks.



- When removing the Timer, pull out the two hooks, and then remove the Timer from the Track



- It will be easier to mount and dismount the Timer if a distance of 30 mm or more is provided between the bottom of the Timer and other equipment.

● Environment

- When using the Timer in an area with excessive electronic noise, separate the Timer and input device as far as possible from the noise sources. It is also recommended to shield the input signal wiring to prevent electronic interference.
- The external impulse voltage entering across the power supply terminals has been checked against a $\pm 1.2 \times 50 \mu\text{s}$ standard waveform according to JEC-210, Impulse Voltage/Current Test, of The Institute of Electrical Engineers of Japan. Surge or noise superimposed on the power supply may damage internal components or cause them to malfunction. We recommend that you check the circuit waveform and use surge absorbers. The effects on components depend on the type of surge and noise that are generated. Always perform testing with the actual equipment.

● Other Precautions

- If the Timer is mounted on a control panel, dismount the Timer from the control panel before carrying out a voltage withstand test between the electric circuits and non-current-carrying metal parts of the Timer. (Otherwise, the internal circuits of the Timer may be damaged.)
- The life expectancy of the control output contacts is greatly affected by switching conditions. Always confirm operation using the actual conditions and equipment before using the Timer and make sure that the number of switching operations presents no problems in performance. If Timer application is continued after performance has deteriorated, insulation failure between circuits, burning of the control output relay, or other problem will eventually occur.
- If the power supply voltage is gradually increased, a power reset may occur or the Timer may time out. Use a switch, relay, or other device with contacts to apply the power supply voltage all at once.
- Make sure that residual voltage or inductive voltage is not applied after the power turns OFF.
- Error in the operation time of the Timer is given as a percentage of the full-scale time. The absolute value of the error will not change even if the set time is changed. Therefore, always use the Timer with the set time set as close as possible to the full-scale value of the set time range.
- When switching a microload, check the specified minimum load given for the Timer model you are using.
- When setting the operating time, do not turn the dial beyond the scale range.
- If better accuracy is required in the set time, adjust the dial while measuring the operation time.
- If the Timer is reset immediately after timing out, make sure that the circuit configuration allows sufficient resetting time. Errors will occur in the sequence if there is not sufficient resetting time.
- When directly switching a DC load, the switching capacity will be lower than when switching an AC load.

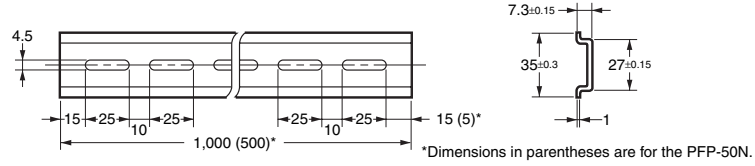
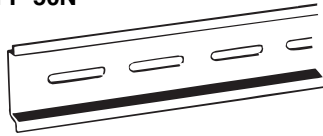
Track Mounting Products (Sold Separately)

(Unit: mm)

DIN Track

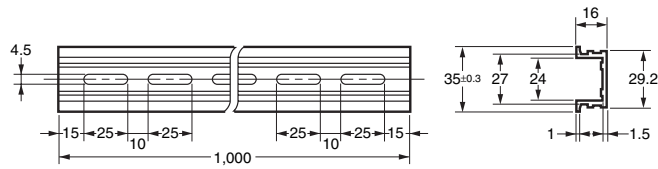
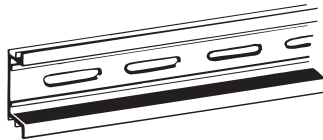
PFP-100N

PFP-50N



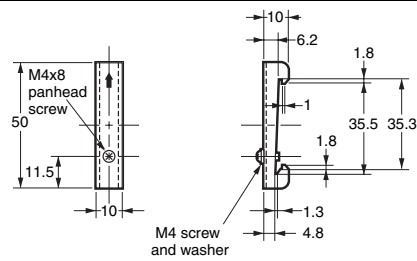
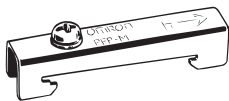
DIN Track

PFP-100N2



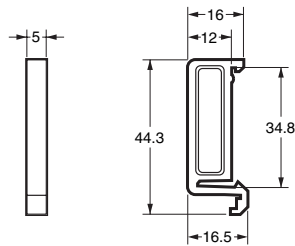
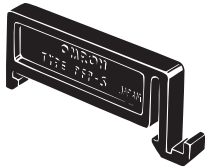
End Plate

PFP-M



Spacer

PFP-S



Note 1: Order the above products in multiples of 10.

Note 2: The Tracks conform to DIN standards.

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