Solid-state Timer

H3YN-□-B

Miniature Timer with Multiple Time Ranges and Multiple Operating Modes

- UL listed when used with a Push-In Plus Terminal Block Socket. ✻ Conforms to CSA, CE Marking, LR, and CCC.
- Black design with power supply terminals on top and contact output terminals on bottom.
- Standard multiple operating modes and multiple time ranges.
- Pin configuration compatible with MY Power Relay.
- Minimizes stock.

✻ When used in combination with a Push-In Plus Terminal Block Socket (PYF-□-PU-L).

⚠ Refer to *Safety Precautions* on page 38.

For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

Ordering Information

List of Models

Supply voltage	Time-limit contact	Short-time range model (0.1 s to 10 min)	Long-time range model (0.1 min to 10 h)
24, 100 to 120, 200 to 230 VAC; 12, 24, 48, 100 to 110, 125 VDC	DPDT	H3YN-2-B	H3YN-21-B
	4PDT	H3YN-4-B ✻1	H3YN-41-B ✻1
24 VDC	4PDT (Twin contacts)	H3YN-4-Z-B ✻1, ✻2	H3YN-41-Z-B ✻1, ✻2

Note: 1. Sockets and Hold-down Clips are not included with the H3YN-B. They must be ordered separately.

✻1. Use the H3YN-4-B or H3YN-41-B Series when switching micro loads, and use the H3YN-4-Z-B or H3YN-41-Z-B Series when switching even smaller loads.

✻2. Only models with 24 VDC power supply are available.

Accessories (Order Separately)

Hold-down Clips

Name/specification		Model
Hold-down Clips	For PYF-□-PU-L	Y92H-3

Note: For details, refer to *Precautions for H3Y-series Timers* on page 31.

Socket

Timer		Square Sockets				
Contact	Model	Pin	Connection	Terminal	Model	Terminal Type
DPDT	H3YN-2□-B	8-pin	Front Connecting	DIN track mounting	PYF-08-PU-L	Push-In Plus Terminal Block
4PDT	H3YN-4□-B	14-pin	Front Connecting	DIN track mounting	PYF-14-PU-L	Push-In Plus Terminal Block

Note: 1. Cannot be used with the H3YN-□-0 (PCB terminals).

2. For details, refer to *Precautions for H3Y-series Timers* on page 31.

Specifications

Ratings

Item	H3YN-2-B/-4-B/-4-Z-B	H3YN-21-B/-41-B/-41-Z-B
Time ranges	0.1 s to 10 min (1 s, 10 s, 1 min, or 10 min max. selectable)	0.1 min to 10 h (1 min, 10 min, 1 h, or 10 h max. selectable)
Rated supply voltage ✻5, ✻6	24, 100 to 120, 200 to 230 VAC (50/60 Hz) ✻1 12, 24, 48, 100 to 110, 125 VDC ✻2	
Pin type	Plug-in	
Operating mode	ON-delay, interval, flicker OFF start, or flicker ON start (selectable with DIP switch)	
Operating voltage range	85% to 110% of rated supply voltage (12 VDC: 90% to 110% of rated supply voltage) ✻3	
Reset voltage	10% min. of rated supply voltage ✻4	
Power consumption	100 to 120 VAC: Relay ON: Approx. 1.8 VA (1.6 W) at 120 VAC, 60 Hz Relay OFF: Approx. 1 VA (0.6 W) at 120 VAC, 60 Hz 200 to 230 VAC: Relay ON: Approx. 2.2 VA (1.8 W) at 230 VAC, 60 Hz Relay OFF: Approx. 1.5 VA (1.1 W) at 230 VAC, 60 Hz 24 VAC: Relay ON: Approx. 1.8 VA (1.4 W) at 24 VAC, 60 Hz Relay OFF: Approx. 0.3 VA (0.2 W) at 24 VAC, 60 Hz 12 VDC: Relay ON: Approx. 1.1 W at 12 VDC Relay OFF: Approx. 0.1 W at 12 VDC 24 VDC: Relay ON: Approx. 1.1 W at 24 VDC Relay OFF: Approx. 0.1 W at 24 VDC 48 VDC: Relay ON: Approx. 1.2 W at 48 VDC Relay OFF: Approx. 0.3 W at 48 VDC 100 to 110 VDC: Relay ON: Approx. 1.6 W at 110 VDC Relay OFF: Approx. 0.4 W at 110 VDC 125 VDC: Relay ON: Approx. 1.6 W at 125 VDC Relay OFF: Approx. 0.4 W at 125 VDC	
Control outputs	DPDT: 5 A at 250 VAC, resistive load ($\cos\phi$ = 1) The minimum applicable load is 1 mA at 5 VDC (P reference value). Contact materials: Ag 4PDT: 3 A at 250 VAC, resistive load ($\cos\phi$ = 1) H3YN-4-B/-41-B series: The minimum applicable load is 1 mA at 1 VDC (P reference value). H3YN-4-Z-B/-41-Z-B series: The minimum applicable load is 1 mA at 1 VDC (P reference value). Contact materials: Au-clad + Ag-alloy	
Ambient operating temperature	-10°C to 55°C (with no icing)	
Storage temperature	-25°C to 65°C	
Ambient operating humidity	35% to 85%	

✻1. Do not use the output from an inverter as the power supply. Refer to *Safety Precautions for All Timers* for details on your OMRON website.
✻2. Single-phase, full-wave-rectified power supplies can be used.
✻3. When using the H3YN-B continuously in any place where the ambient temperature is in a range of 45°C to 50°C, supply 90% to 110% of the rated supply voltages (supply 95% to 110% with 12 VDC type).
✻4. Set the reset voltage as follows to ensure proper resetting.
100 to 120 VAC: 10 VAC max.
200 to 230 VAC: 20 VAC max.
100 to 110 VDC: 10 VDC max.
✻5. Refer to *Safety Precautions for All Timers* on your OMRON website when combining the Timer with an AC 2-wire proximity sensor.
✻6. A diode to prevent reverse voltages is provided only on models with a DC power supply.

Characteristics

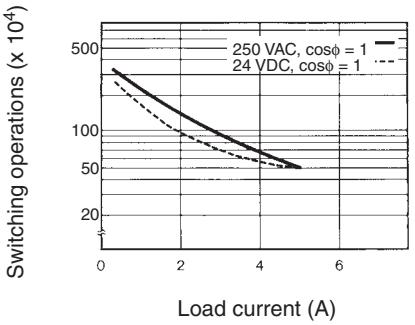
Item	H3YN-2-B/-21-B/-4-B/-41-B
Accuracy of operating time	±1% FS max. (1 s range: ±1%±10 ms max.)
Setting error	±10%±50 ms FS max.
Reset time	Min. power-opening time: 0.1 s max. (including halfway reset)
Influence of voltage	±2% FS max.
Influence of temperature	±2% FS max.
Insulation resistance	100 MΩ min. (at 500 VDC)
Dielectric strength	2,000 VAC, 50/60 Hz for 1 min (between current-carrying terminals and exposed non-current-carrying metal parts) ✱1 2,000 VAC, 50/60 Hz for 1 min (between operating power circuit and control output) 2,000 VAC, 50/60 Hz for 1 min (between different pole contacts; 2-pole model) 1,500 VAC, 50/60 Hz for 1 min (between different pole contacts; 4-pole model) 1,000 VAC, 50/60 Hz for 1 min (between non-continuous contacts)
Vibration resistance	Destruction: 10 to 55 Hz, 0.75-mm single amplitude for 1 h each in 3 directions Malfunction: 10 to 55 Hz, 0.5-mm single amplitude for 10 min each in 3 directions
Shock resistance	Destruction: 1,000 m/s^2 Malfunction: 100 m/s^2
Life expectancy	Mechanical: 10,000,000 operations min. (under no load at 1,800 operations/h) Electrical: DPDT: 500,000 operations min. (5 A at 250 VAC, resistive load at 1,800 operations/h) 4PDT: 200,000 operations min. (H3YN-4-Z/-41-Z: 100,000 operations min.) (3 A at 250 VAC, resistive load at 1,800 operations/h) ✱2
Impulse withstand voltage	Between power terminals: 3 kV for 100 to 120 VAC, 200 to 230 VAC, 100 to 110 VDC, 125 VDC 1 kV for 12 VDC, 24 VDC, 48 VDC, 24 VAC Between exposed non-current-carrying metal parts: 4.5 kV for 100 to 120 VAC, 200 to 230 VAC, 100 to 110 VDC, 125 VDC 1.5 kV for 12 VDC, 24 VDC, 48 VDC, 24 VAC
Noise immunity	±1.5 kV, square-wave noise by noise simulator (pulse width: 100 ns/1 μs, 1-ns rise)
Static immunity	Destruction: 8 kV Malfunction: 4 kV
Degree of protection	IP40
Weight	Approx. 50 g
EMC	(EMI) EN 61812-1 Emission Enclosure: EN 55011 Group 1 class A Emission AC Mains: EN 55011 Group 1 class A (EMS) EN 61812-1 Immunity ESD: IEC 61000-4-2 Immunity RF-interference: IEC 61000-4-3 Immunity Burst: IEC 61000-4-4 Immunity Surge: IEC 61000-4-5 Immunity Conducted Disturbance: IEC 61000-4-6 Immunity Voltage Dip/Interruption: IEC 61000-4-11
Approved standards	cULus (or cURus): UL 508/CSA C22.2 No.14 ✱3, CSA C22.2 No.14, Lloyds, CCC: GB/T 14048.5 ✱5 Conforms to EN 61812-1 and IEC 60664-1. (2.5 kV/2 for H3YN-2-B/-21-B ✱4, 2.5 kV/1 for H3YN-4-B/-41-B, H3YN-4-Z-B/-41-Z-B ✱4)

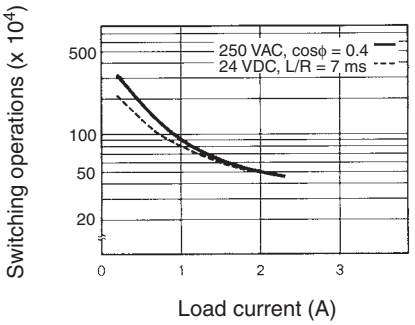
✱1. Terminal screw sections are excluded.
✱2. Refer to the *Life-test Curve*.
✱3. cULus listing applies when the OMRON PYF-□-PU-L is used.
cURus recognition applies when any other socket is used.
✱4. Overvoltage category II
✱5. CCC certification requirements

Model	H3YN-2-B/21-B	H3YN-4-B/41-B
Recommended fuse	RT14-20/6A (380 VAC 6 A), manufactured by DELIXI	RT14-20/4A (380 VAC 4 A), manufactured by DELIXI
Rated operating voltage Ue Rated operating current Ie	AC-15: Ue: 250 VAC, Ie: 3 A AC-13: Ue: 250 VAC, Ie: 5 A DC-13: Ue: 30 VDC, Ie: 0.5 A	AC-15: Ue: 250 VAC, Ie: 2 A AC-13: Ue: 250 VAC, Ie: 3 A DC-13: Ue: 30 VDC, Ie: 0.5 A
Rated insulation voltage	250 V	
Rated impulse withstand voltage (altitude: 2,000 m max.)	2.5 kV (at 240 VAC)	
Conditional short-circuit current	1000 A	

Life-test Curve (Reference Value)

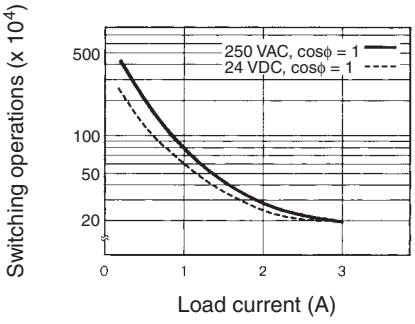
H3YN-2-B/-21-B

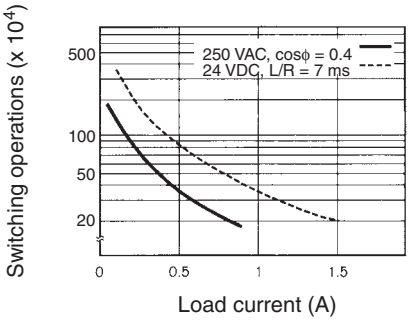




Reference: A maximum current of 0.6 A can be switched at 125 VDC (cosϕ = 1).
Maximum current of 0.2 A can be switched if L/R is 7 ms. In both cases, a life of 100,000 operations can be expected.
The minimum applicable load is 1 mA at 5 VDC (P reference value)

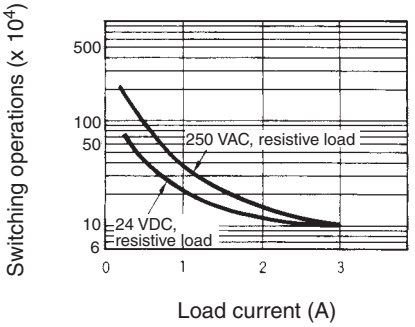
H3YN-4-B/-41-B





Reference: A maximum current of 0.5 A can be switched at 125 VDC (cosϕ = 1).
Maximum current of 0.2 A can be switched if L/R is 7 ms. In both cases, a life of 100,000 operations can be expected.
The minimum applicable load is 1 mA at 1 VDC (P reference value)

H3YN-4-Z-B/-41-Z-B

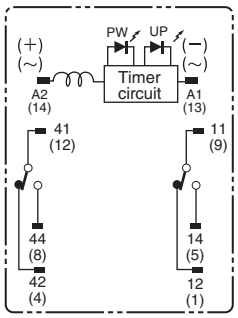


Reference: A maximum current of 0.5 A can be switched at 125 VDC (cosϕ = 1).
Maximum current of 0.2 A can be switched if L/R is 7 ms. In both cases, a life of 100,000 operations can be expected.
The minimum applicable load is 0.1 mA at 1 VDC (P reference valu

Connections

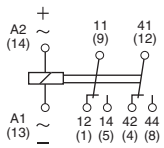
Connection

H3YN-2-B/-21-B

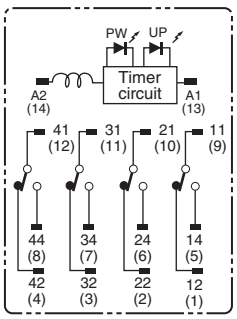


(Bottom View)

(DIN Indication)

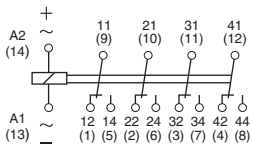


H3YN-4-B/-41-B
H3YN-4-Z-B/-41-Z-B



(Bottom View)

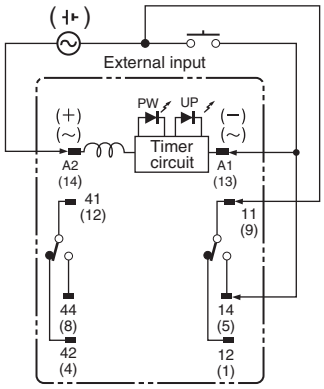
(DIN Indication)

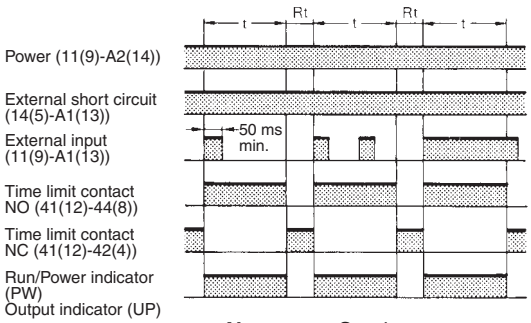


Pulse Operation

A pulse output for a certain period can be obtained with a random external input signal.
Use the H3YN-B in interval mode as shown in the following timing charts.

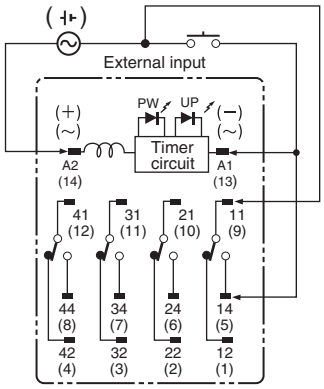
H3YN-2-B/-21-B

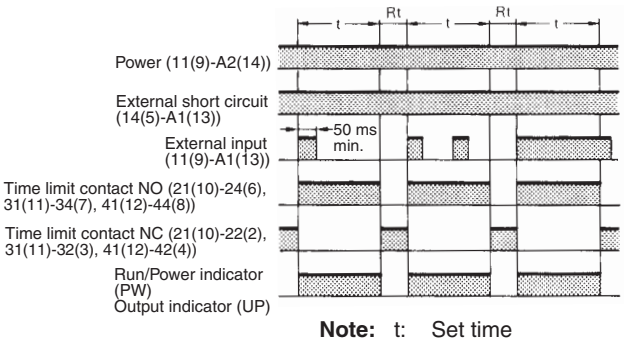




Note: t: Set time
Rt: Reset time

H3YN-4-B/-41-B
H3YN-4-Z-B/-41-Z-B





Note: t: Set time
Rt: Reset time

⚠ Caution

Be careful when connecting wires.

Mode	Terminals
Pulse operation	Power supply between 11(9) and A2(14) Short-circuit between 14(5) and A1(13) Input signal between 11(9) and A1(13)
Operating mode; interval and all other modes	Power supply between A1(13) and A2(14)

Nomenclature

Main Dial

Set the desired time according to time range selectable by DIP switch.

Run/Power Indicator (Green)
(Lit: Power ON)

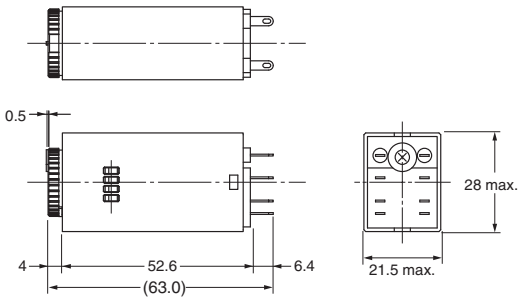
Output Indicator (Orange)
(Lit: Output ON)

Dimensions

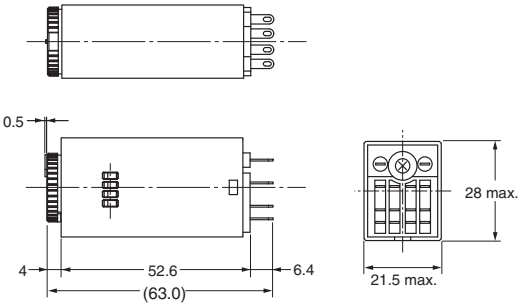
(Unit: mm)

Timers

H3YN-2-B/-21-B Front Mounting



H3YN-4-B/-41-B Front Mounting
H3YN-4-Z-B/-41-Z-B



Operation

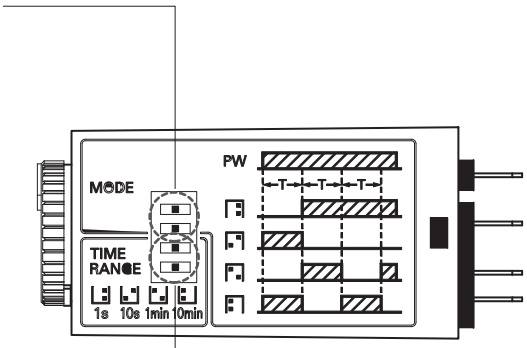
DIP Switch Settings

The 1-s range and ON-delay mode for H3YN-2-B/-4-B/-4-Z-B, the 1-min range and ON-delay mode for H3YN-21-B/-41-B/-41-Z-B are factory-set before shipping.

Time Ranges

Model	Time range	Time setting range	Setting	Factory-set
H3YN-2-B, H3YN-4-B H3YN-4-Z-B	1 s	0.1 to 1 s		Yes
	10 s	1 to 10 s		No
	1 min	0.1 to 1 min		No
	10 min	1 to 10 min		No
H3YN-21-B, H3YN-41-B H3YN-41-Z-B	1 min	0.1 to 1 min		Yes
	10 min	1 to 10 min		No
	1 h	0.1 to 1 h		No
	10 h	1 to 10 h		No

Note: The bottom two DIP switch pins are used to select the time ranges.

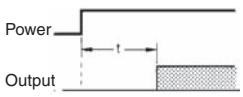
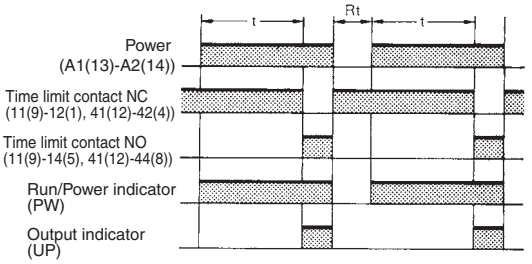
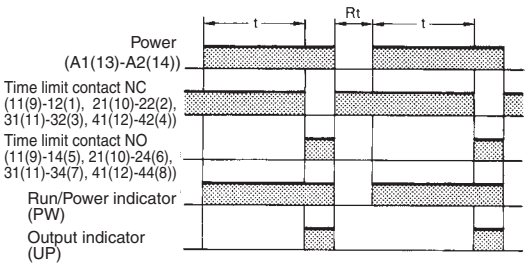
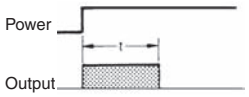
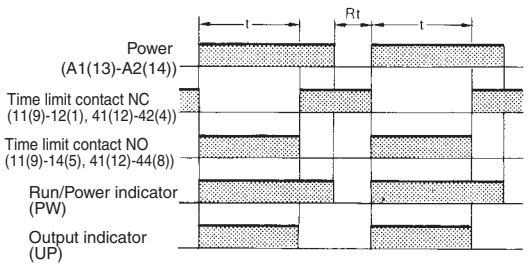
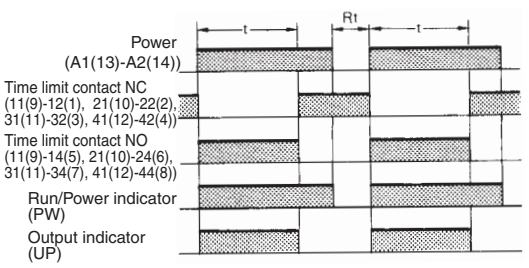
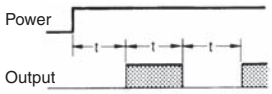
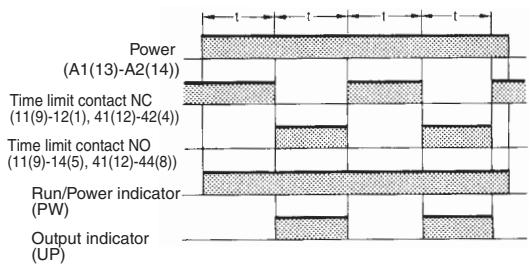
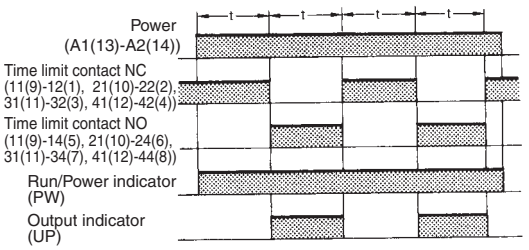
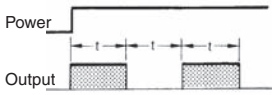
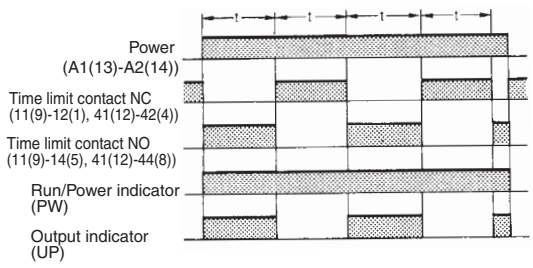
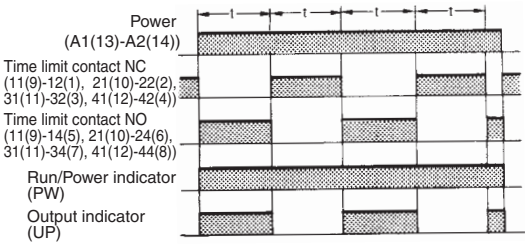


Operating Modes

Operating mode	Setting	Factory-set
ON-delay		Yes
Interval		No
Flicker OFF-start		No
Flicker ON-start		No

Note: The top two DIP switch pins are used to select the operating mode.

Timing Chart

Operating mode	Timing chart	
	H3YN-2-B/-21-B	H3YN-4-B/-41-B
ON-delay 		
Interval 		
Flicker OFF-start 		
Flicker ON-start 		

Note: t: Set time
Rt: Reset time