Self-powered Time Counter
H7ET

- Seven digits, time range 0 to 3999d23.9h.
- Dual time range: 999999.9 ←→ 3999d23.9h or 999h59m59s ←→ 9999h59.9m

Model Number Structure

■ Model Number Legend

H7ET - N □ □ - □ □
1 2 3 4

1. Count Input
None: No-voltage input
V: PNP/NPN universal DC voltage input
FV: AC/DC multi-voltage input

2. Time Range
None: 999999.9h/3999d23.9h
1: 999h59m59s/9999h59.9m

3. Case Color
None: Light gray
B: Black

4. Display
None: 7-segment LCD without backlight
H: 7-segment LCD with backlight

Ordering Information

■ Time Counters

Timer input	Display	Time range			
		999999.9h ←→ 3999d23.9h (switchable)		999h59min59s ←→ 9999h59.9min (switchable)	
		Light-gray body	Black body	Light-gray body	Black body
PNP/NPN universal DC voltage input	7-segment LCD with backlight	H7ET-NV-H	H7ET-NV-BH	H7ET-NV1-H	H7ET-NV1-BH
	7-segment LCD	H7ET-NV	H7ET-NV-B	H7ET-NV1	H7ET-NV1-B
AC/DC multi-voltage input	7-segment LCD	H7ET-NFV	H7ET-NFV-B	H7ET-NFV1	H7ET-NFV1-B
No-voltage input	7-segment LCD	H7ET-N	H7ET-N-B	H7ET-N1	H7ET-N1-B

■ Accessories (Order Separately)

Lithium Battery	Y92S-36	
Wire-wrap Terminal (set of two terminals)	Y92S-37	
Compact Flush Mounting Bracket (See note.)	Y92F-35	
Flush Mounting Adapter	26 mm × 45.3 mm	Y92F-75
	27.5 mm × 52.5 mm	Y92F-76
	24.8 mm × 48.8 mm	Y92F-77B

Note: The New H7E models are supplied with a Y92F-34 Mounting Bracket.

Specifications

■ General

Item	H7ET-NV-□ H7ET-NV-□H	H7ET-NFV-□	H7ET-N-□	H7ET-NV1-□ H7ET-NV1-□H	H7ET-NFV1-□	H7ET-N1-□
Operating mode	Accumulating					
Mounting method	Flush mounting					
External connections	Screw terminals					
Reset	External/Manual reset					
Display	7-segment LCD with or without backlight, zero suppression (character height: 8.6 mm) (see note 1)					
Number of digits	7					
Time range	0.0h to 999999.9h ←→ 0.0h to 3999d23.9h (switchable with switch)			0s to 999h59min59s ←→ 0.0min to 9999h59.9min (switchable with switch)		
Timer input	PNP/NPN universal DC voltage input	AC/DC multi-voltage input	No-voltage input	PNP/NPN universal DC voltage input	AC/DC multi-voltage input	No-voltage input
Case color	Light gray or black (-B models)					
Attachment	Waterproof packing, flush mounting bracket, time unit labels (see note 2)					
Approved standard	UL863, CSA C22.2 No.14, Lloyds Conforms to EN61010-1/IEC61010-1 (pollution degree2/overvoltage category III) Conforms to VDE0106/P100					

Note: 1. Only PNP/NPN universal DC voltage input models (-H models) have a backlight.

2. “-hours”, “-d-h”, “-h-m”, and “-h-m-s” labels are included.

■ Ratings

Item	H7ET-NV□-□ H7ET-NV□-□H	H7ET-NFV□-□	H7ET-N□-□
Supply voltage	Backlight model: 24 VDC (0.3 W max.) (for backlight) No-backlight model: Not required (powered by built-in battery)	Not required (powered by built-in battery)	
Timer input	High (logic) level: 4.5 to 30 VDC Low (logic) level: 0 to 2 VDC (Input impedance: Approx. 4.7 kΩ)	High (logic) level: 24 to 240 VAC/VDC, 50/60 Hz Low (logic) level: 0 to 2.4 VAC/VDC, 50/60 Hz	No voltage input Maximum short-circuit impedance: 10 kΩ max. Short-circuit residual voltage: 0.5 V max. Minimum open impedance: 750 kΩ min.
Reset input		No voltage input Maximum short-circuit impedance: 10 kΩ max. Short-circuit residual voltage: 0.5 V max. Minimum open impedance: 750 kΩ min.	
Minimum pulse width	1 s		
Reset system	External reset and manual reset: Minimum signal width of 20 ms		
Terminal screw tightening torque	0.98 N·m max.		
Ambient temperature	Operating: -10°C to 55°C (with no condensation or icing) Storage: -25°C to 65°C (with no condensation or icing)		
Ambient humidity	Operating: 25% to 85%		

■ Characteristics

Item	H7ET-NV□-□ H7ET-NV□-H□	H7ET-NFV□-□	H7ET-N□-□
Time accuracy	±100 ppm (25°C)		
Insulation resistance	100 MΩ min. (at 500 VDC) between current-carrying metal parts and exposed non-current-carrying metal parts, and between the backlight power supply and timer input terminals/reset terminals for backlight models	100 MΩ min. (at 500 VDC) between current-carrying metal parts and exposed non-current-carrying metal parts and between timer input terminals and reset terminals	100 MΩ min. (at 500 VDC) between current-carrying metal parts and exposed non-current-carrying metal parts
Dielectric strength	1,000 VAC, 50/60 Hz for 1 min between current-carrying metal parts and exposed non-current-carrying metal parts and between the backlight power supply and timer input terminals/reset terminals for backlight models	3,700 VAC, 50/60 Hz for 1 min between timer input terminals and exposed non-current-carrying metal parts 2,200 VAC, 50/60 Hz for 1 min between reset terminals and exposed non-current-carrying metal parts and between timer input terminals and reset terminals	1,000 VAC, 50/60 Hz for 1 min between current-carrying metal parts and exposed non-current-carrying metal parts
Impulse withstand voltage	4.5 kV between current-carrying terminal and exposed non-current-carrying metal parts	4.5 kV between current-carrying terminal and exposed non-current-carrying metal parts 3 kV between timer input terminals and reset terminals	4.5 kV between current-carrying terminal and exposed non-current-carrying metal parts
Noise immunity	Square-wave noise generated by noise simulator (pulse width: 100 ns/1 μs, 1-ns rise)		
	±600 V (Between timer input terminals/ Between reset terminals) ±480 V (Between the backlight power supply terminals for backlight models)	±1.5 kV (Between timer input terminals) ±500 V (Between reset terminals)	±500 V (Between timer input terminals/ Between reset terminals)
Static immunity	±8 kV (malfunction)		
Vibration resistance	Malfunction: 0.15-mm single amplitude at 10 to 55 Hz for 10 min each in 3 directions Destruction: 0.375-mm single amplitude at 10 to 55 Hz for 2 hrs each in 3 directions		
Shock resistance	Malfunction: 200 m/s² 3 times each in 6 directions Destruction: 300 m/s² 3 times each in 6 directions		
EMC	(EMI) EN61326 Emission Enclosure: EN55011 Group 1 class B (EMS) EN61326 Immunity ESD: EN61000-4-2: 4 kV contact discharge (level 2) 8 kV air discharge (level 3) Immunity RF-interference from AM Radio Waves: EN61000-4-3: 10 V/m (80 MHz to 1 GHz) (level 3) Immunity RF-interference from Pulse-modulated Radio Waves: EN61000-4-3: 10 V/m (900 MHz ± 5 MHz) (level 3) Immunity Conducted Disturbance: EN61000-4-6: 10 V (0.15 to 80 MHz) (level 3) Immunity Burst: EN61000-4-4: 2 kV power line (level 3) 2 kV I/O signal line (level 4)		
Degree of protection	Front panel: IP66, NEMA4 with waterproof packing Terminal block: IP20		
Weight (see note)	No-backlight model: Approx. 60 g Backlight model: Approx. 65 g	Approx. 60 g	Approx. 60 g

Note: Weight includes waterproof packing and flush mounting bracket.

■ Reference Value

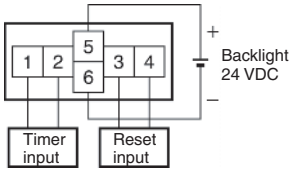
Item	Value	Note
Battery life	10 years min. with continuous input at 25°C (lithium battery)	The battery life is calculated according to the conditions in the left column and therefore is not a guaranteed value. Use these value as reference for maintenance or replacement.

Connections

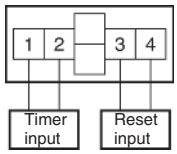
■ Terminal Arrangement

Bottom view: View of the Time Counter rotated horizontally 180°

Backlight Model



No-backlight Model

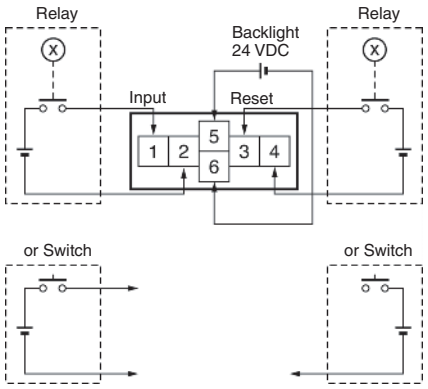


■ Connections

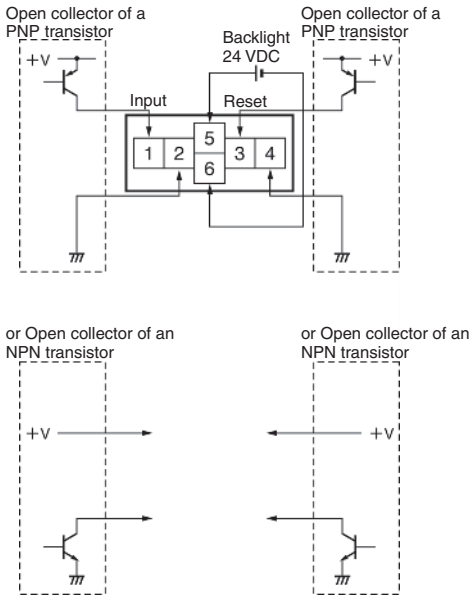
H7ET Time Counter

PNP/NPN Universal DC Voltage Input Model With Backlight

1. Contact Input (Input by a Relay or Switch Contact)



2. Solid-state Input

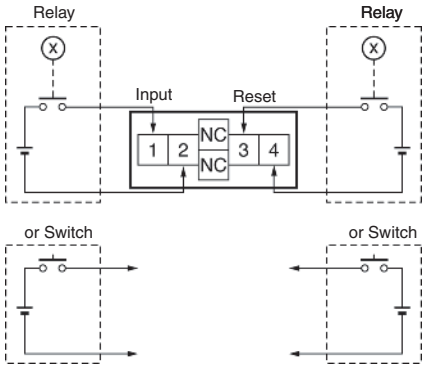


Note: 1. Terminals 2 and 4 (input circuit and reset circuit) are functionally isolated.

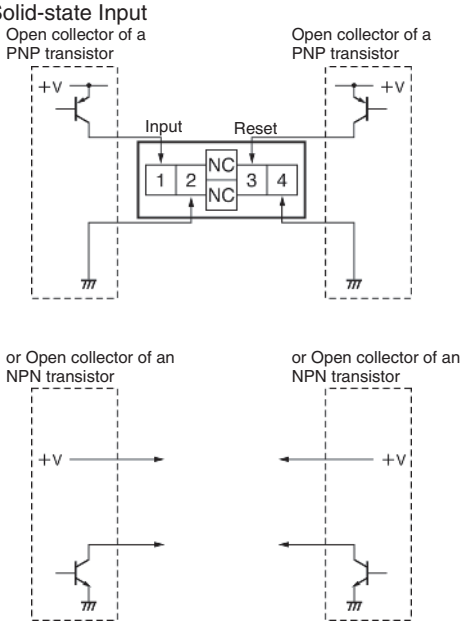
2. Select input transistors according to the following:
Dielectric strength of the collector ≥ 50 V
Leakage current < 1 μA

PNP/NPN Universal DC Voltage Input Model Without Backlight

1. Contact Input (Input by a Relay or Switch Contact)



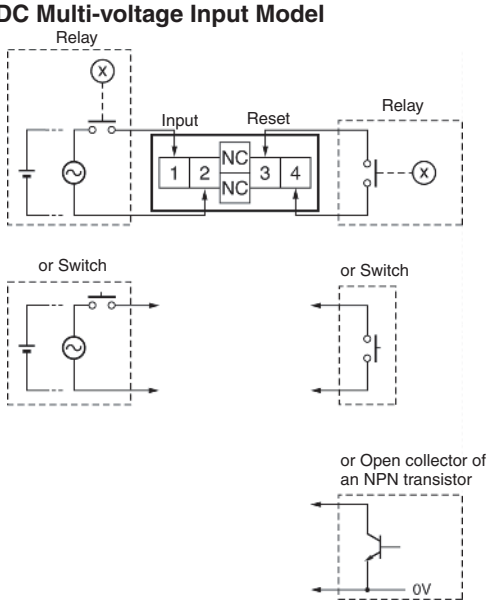
2. Solid-state Input



Note: 1. Terminals 2 and 4 (input circuit and reset circuit) are functionally isolated.

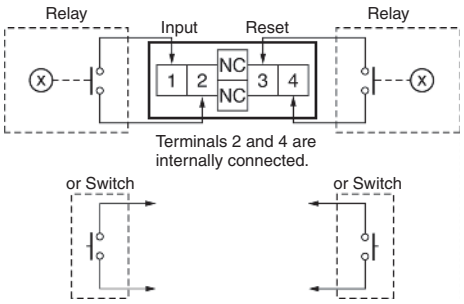
2. Select input transistors according to the following:
Dielectric strength of the collector ≥ 50 V
Leakage current < 1 μA

AC/DC Multi-voltage Input Model



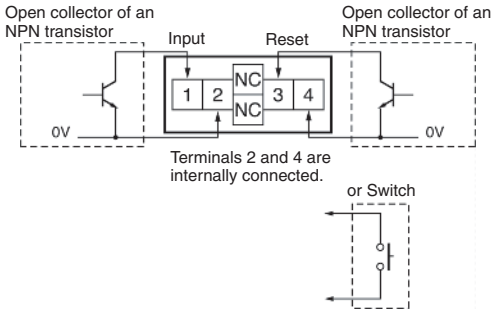
No-voltage Input Model

1. Contact Input (Input by a Relay or Switch Contact)



Note: Use Relays and Switches that have high contact reliability because the current flowing from terminals 1 or 3 is as small as approx. 10 μA. It is recommended that OMRON's G3TA-IA/ID be used as the SSR.

2. Solid-state Input
(Open Collector Input of an NPN Transistor)



Note: 1. Residual voltage in the output section of Proximity Sensors or Photoelectric Sensors becomes less than 0.5 V because the current flowing from terminals 1 or 3 is as small as approx. 10 μA, thus allowing easy connection.

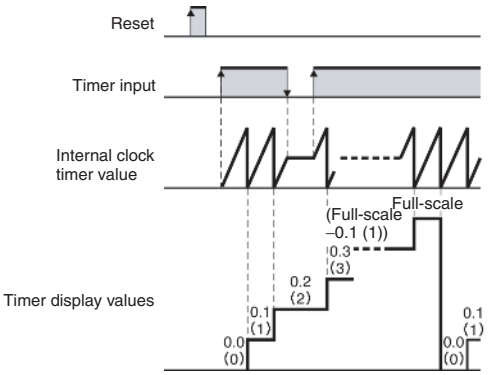
2. Select input transistors according to the following:
Dielectric strength of the collector ≥ 50 V
Leakage current < 1 μA

Operation

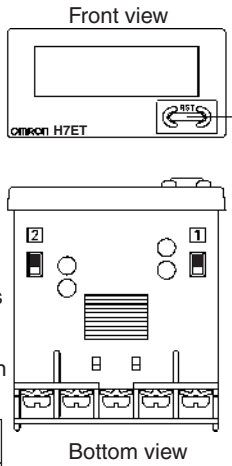
■ Operating Modes

H7ET Time Counter

Incrementing Operation (Up)



Nomenclature



Reset Key

Reset the count value. Not operable under key-protect.

Time-range switch

If the time-range setting is changed, the present value will not be held and so press the Reset Key on the front panel.

Key-protect Switch

The Reset Key is not operable while the key-protect switch is set to ON.

Setting (see note)	Key-protect
Front panel 	OFF (default setting)
 Terminal block	ON

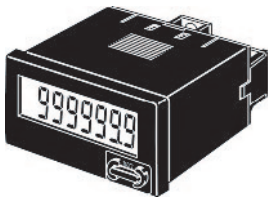
Setting (see note)	Time range	
	H7ET-N□□-□□	H7ET-N□□1-□□
Front panel 	0.0h to 3999d23.9h	0s to 999h59min59s (default setting)
 Terminal block	0.0h to 999999.9h (default setting)	0.0min to 9999h59.9min

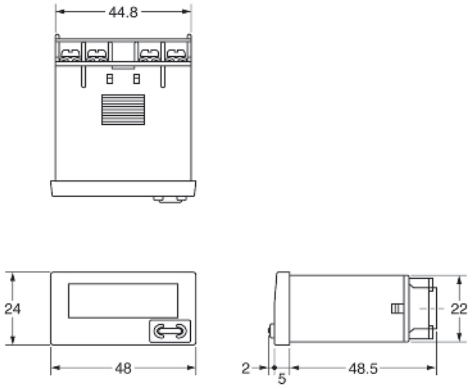
Note: Perform switch setting before mounting to a control panel.

Dimensions

Note: All units are in millimeters unless otherwise indicated.

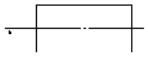
H7ET-N



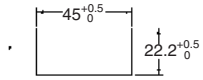


Panel Cutout

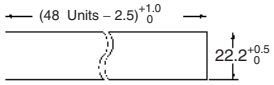
Separate mounting



40 min.

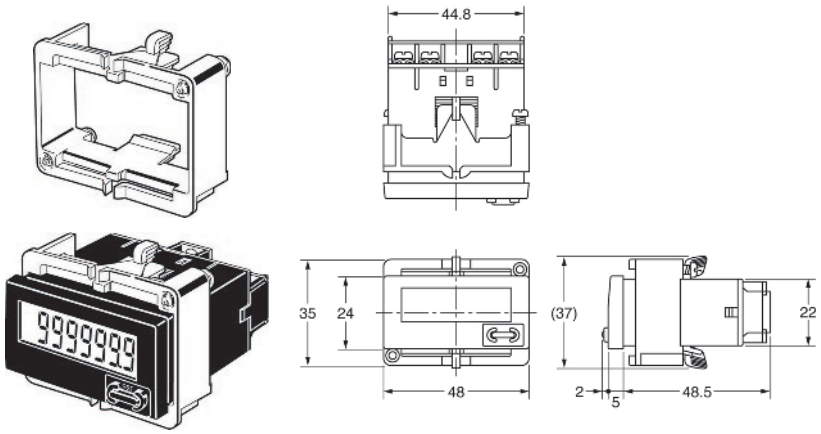


Dense mounting



Waterproofing is not possible for dense mounting

Dimensions with Flush Mounting Bracket



- When mounting, insert the Counter into the cutout, insert the adapter from the back and push in the Counter while making the gap between the front panel and the cutout panel as small as possible. Use screws to secure the Counter. If waterproofing is desired, insert the waterproof packing.
- When several Counters are installed, ensure that the ambient temperature will not exceed specifications.
- The appropriate thickness of the panel is 1 to 5 mm.

Note: A Compact Flush Mounting Bracket (Y92F-35) can also be used. Refer to *Accessories* for details.