

Total Counter/Time Counter (DIN 72 x 36) H7HP

Compact Total Counters and Time Counters with Easy-to-read Displays and IP66G/ NEMA4 Water and Oil Resistance

- Large, easy-to-read displays: 15-mm-high characters for 6-digit models; 12-mm-high characters for 8-digit models.
- High-visibility, negative transmissive LCD display with built-in red LED backlight at low power consumption.
- Compact (66 mm) body.
- Switch 6-digit models between total counter and time counter operation.



Model Number Structure

Model Number Legend

H7HP-□□□□
1 2 3 4

1. Classification

- A: Total counter/time counter
- C: Total counter

2. Digits

- None: 6 digits
- 8: 8 digits

3. Supply Voltage

- None: 100 to 240 VAC
- D: 12 to 24 VDC

4. Case Color

- None: Light gray (Munsell 5Y7/1)
- B: Black

Ordering Information

List of Models

| Supply voltage | 6-digit total counter/time counter | | 8-digit total counter | |
|----------------|------------------------------------|----------|-----------------------|-----------|
| | Light gray | Black | Light gray | Black |
| 100 to 240 VAC | H7HP-A | H7HP-AB | H7HP-C8 | H7HP-C8B |
| 12 to 24 VDC | H7HP-AD | H7HP-ADB | H7HP-C8D | H7HP-C8DB |

Specifications

■ Ratings

| Item | 6-digit total counter/time counter | | 8-digit total counter | |
|--------------------------------|--|--|----------------------------------|---------------------------|
| | H7HP-A | H7HP-AD | H7HP-C8 | H7HP-C8D |
| Rated supply voltage | 100 to 240 VAC (50/60 Hz) | 12 to 24 VDC (see note 1) | 100 to 240 VAC (50/60 Hz) | 12 to 24 VDC (see note 1) |
| External power supply | 50 mA at 12 VDC | --- | 50 mA at 12 VDC | --- |
| Operating voltage range | 85% to 110% of rated supply voltage | | | |
| Power consumption | 100 to 240 VAC: 6.5 VA max. 12 to 24 VDC: 0.6 W max. | | | |
| Dimensions | 72 x 36 x 66 mm (W x H x D) | | | |
| Mounting method | Flush mounting | | | |
| External connections | Screw terminals | | | |
| Degree of protection | Panel surface: IEC IP66 (JEM standard IP66G) and NEMA Type 4 (indoors) | | | |
| Display | 7-segment, negative transmissive LCD (with red backlight) | | | |
| Digits | 6 digits (15-mm-high characters) | | 8 digits (12-mm-high characters) | |
| Function | Total counter/time counter (selected via DIP switch) | | Total counter | |
| Input mode | Up/down (individual) (total counter), or accumulative (time counter) | | Up/down (individual) | |
| Max. counting speeds | 30 Hz or 5 kHz (selected via DIP switch) | | | |
| Counting range | -99999 to 999999 | | -9999999 to 99999999 | |
| Time specification | 0.1 to 99999.9 h/1 s to 99 h 59 min 59 s | | --- | |
| Timing accuracy | ±100 ppm (-10°C to 55°C) | | --- | |
| Memory backup | EEP-ROM: 200,000 operations min. | | | |
| Input | Input signals | Count 1 (increment), count 2 (decrement), reset, and key protection (see note 2) | | |
| | Input method | No-voltage input (NPN transistor input) or voltage input (PNP transistor input) (selected via DIP switch) | | |
| | Count, start, gate, reset | No-voltage input (NPN transistor input) Short-circuit (ON) impedance: 1 KΩ max. Short-circuit (ON) residual voltage: 2 VDC max. Open (OFF) impedance: 100 kΩ min. Voltage input (PNP transistor input) Short-circuit (ON) impedance: 1 KΩ max. ON voltage: 9 to 24 VDC OFF voltage: 5 VDC max. Open (OFF) impedance: 100 kΩ min. | | |
| | Key protection | No-voltage input (NPN transistor input) Short-circuit (ON) impedance: 1 KΩ max. Short-circuit (ON) residual voltage: 0.5 VDC max. Open (OFF) impedance: 100 kΩ min. | | |
| Input response speed | Reset | Time counter: 20 ms; total counter: 20 ms or 1 ms (automatically switched according to counting speed) | | |
| | Start | Time counter: 20 ms | | |
| | Key protection | Approx. 1 s | Approx. 1 s | |
| Reset system | External and manual resets | | | |

Note: 1. Contains 20% ripple (p-p) max.

2. Only a non-voltage input (NPN transistor) is possible for the key protection input. The key protection input will be a non-voltage input even if the NPN/PNP input mode is set to PNP. Key protection is used to prohibit operating the Reset Key. The reset input terminals will still be functional.

■ Characteristics

| | |
|----------------------------------|---|
| Insulation resistance | 100 MΩ min. (at 500 VDC) |
| Dielectric strength | 2,000 VAC, 50/60 Hz for 1 min between current-carrying terminal and exposed non-current-carrying metal parts (AC model) 1,000 VAC, 50/60 Hz for 1 min between current-carrying terminal and exposed non-current-carrying metal parts (DC model) 2,000 VAC, 50/60 Hz for 1 min between power terminals and control input terminals (AC model) 1,000 VAC, 50/60 Hz for 1 min between power terminals and control input terminals (DC model) |
| Impulse withstand voltage | 3 kV (between power terminals) (1 kV for 12-to-24-VDC models) 4.5 kV (between current-carrying terminal and exposed non-current-carrying metal parts) (1.5 kV for 12-to-24-VDC models) |
| Noise immunity | ±1.5 kV (between AC power terminals), ±480 V (between DC power terminals), ±480 V (between input terminals); square-wave noise by noise simulator (pulse width: 100 ns/1 μs, 1-ns rise) |
| Static immunity | Display: Malfunction: 8 kV Destruction: 15 kV DIP switch: Malfunction: 4 kV Destruction: 8 kV |
| Vibration resistance | Destruction: 10 to 55 Hz with 0.75-mm single amplitude, four cycles each in three directions (8 minutes per cycle) Malfunction: 10 to 55 Hz with 0.5-mm single amplitude, four cycles each in three directions (8 minutes per cycle) |
| Shock resistance | Destruction: 294 m/s ² each in three directions Malfunction: 196 m/s ² each in three directions |
| Ambient temperature | Operating: -10°C to 55°C (with no icing) Storage: -25°C to 65°C (with no icing) |
| Ambient humidity | Operating: 35% to 85% |
| EMC | (EMI) E61326 Emission Enclosure: EN55011 Group 1 class A Emission AC Mains: EN55011 Group 1 class A (EMS) EN61326 Immunity ESD: EN61000-4-2: 4 kV contact discharge (level 2) 8 kV air discharge (level 3) Immunity RF-interference: EN61000-4-3: 10 V/m (Amplitude-modulated, 80 MHz to 1 GHz) (level 3); 10 V/m (Pulse-modulated, 900 MHz ±5 MHz) (level 3) Immunity Conducted Disturbance: EN61000-4-6: 10 V (0.15 to 80 MHz) (according to EN61000-6-2) Immunity Burst: EN61000-4-4: 2 kV power-line (level 3); 2 kV I/O signal-line (level 4) Immunity Surge: EN61000-4-5: 1 kV line to lines (power and output lines) (level 2); 2 kV line to ground (power and output lines) (level 3) Immunity Voltage Dip/Interruption: EN61000-4-11: 0.5 cycle, 100% (rated voltage) |
| Approved standards | UL508, CSA22.2 No.14, conforms to EN61010-1, VDE0106/P100 |
| Case color | Rear section: Gray smoke; Front section: 5Y7/1 (light gray) or N1.5 (black) |
| Weight | Approx. 106 g |

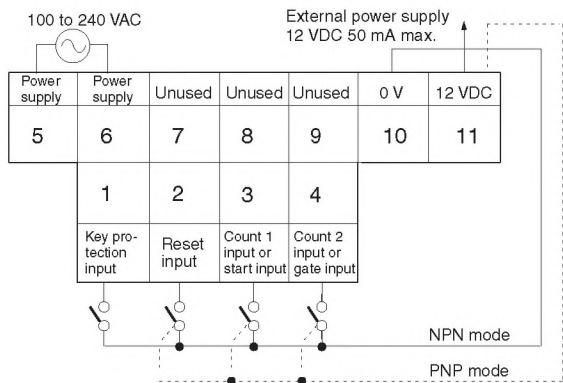
Connections

Terminal Arrangement

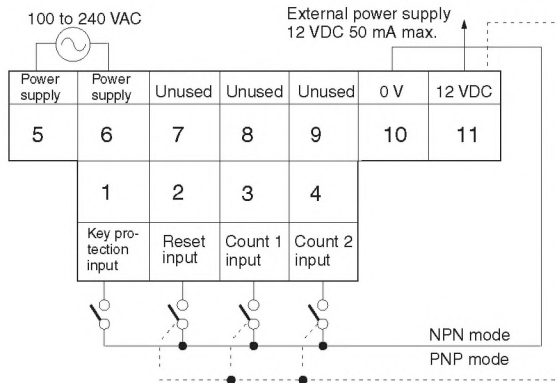
- Note:** 1. Incremented for count 1 (CP1) inputs; decremented for count 2 (CP2) inputs.
 2. Non-contact input is also available.

AC Models

H7HP-A

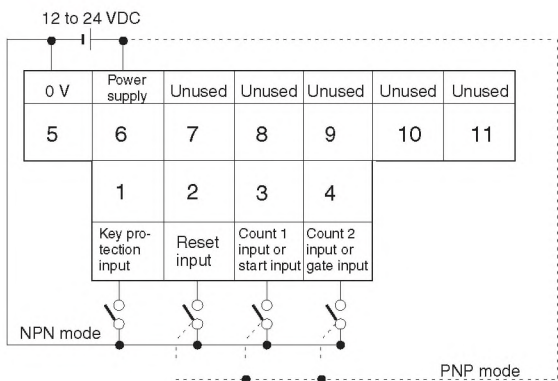


H7HP-C8

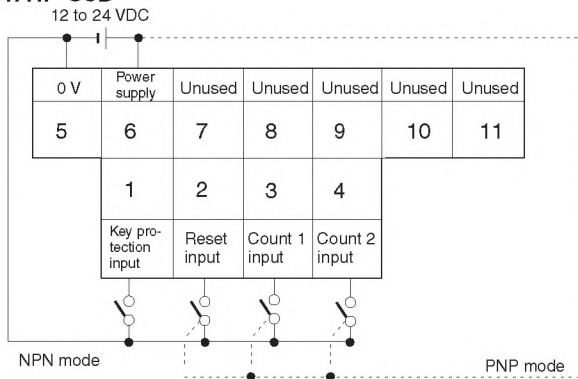


DC Models

H7HP-AD



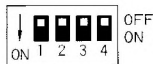
H7HP-C8D



Operation

DIP Switch Settings

Switches 1 to 4 are all set to OFF before shipping.



H7HP-A/-AD

| Pin no. | Item | OFF | ON |
|---------|-------------------|---------------|------------------|
| 1 | Function | Total counter | Time counter |
| 2 | Counting speed | 30 Hz | 5 kHz |
| | Time range | 99999.9 h | 99 h 59 min 59 s |
| 3 | Input mode (note) | NPN | PNP |
| 4 | Unused | --- | --- |

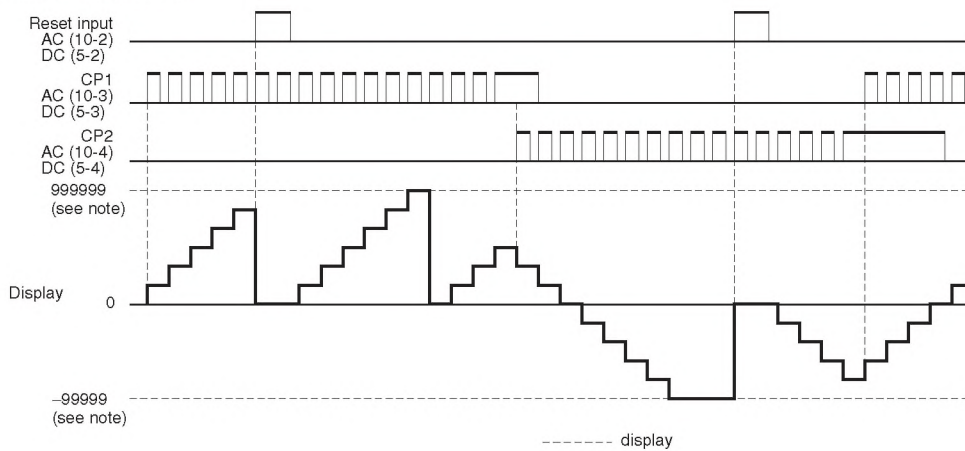
H7HP-C8/-C8D

| Pin no. | Item | OFF | ON |
|---------|-------------------|-------|-------|
| 1 | Unused | --- | --- |
| 2 | Counting speed | 30 Hz | 5 kHz |
| 3 | Input mode (note) | NPN | PNP |
| 4 | Unused | --- | --- |

Note: When the setting has been changed, turned power off and on to continue. The display will show "0" when the power is turned back on.

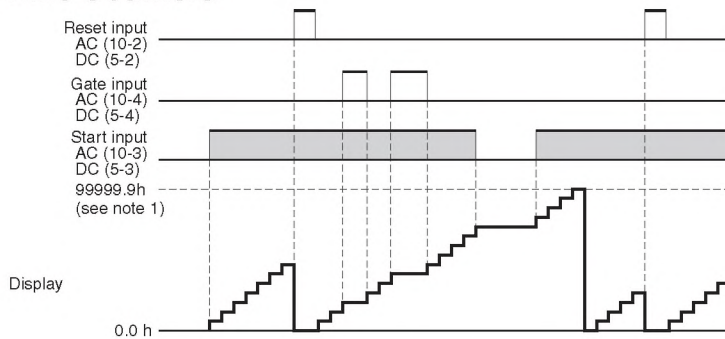
Operating Modes

Total Counters



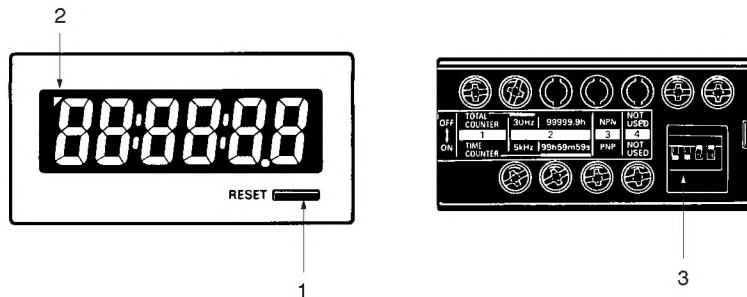
Note: Display values are shown for a 6-digit model.
The count value will return to "0" when "999999" is exceeded.

Time Counters



Note: 1. Display values are shown for full scale set to 99999.9 h.
The count value will return to "0" when "99999.9" is exceeded.
2. Gate input is available only when H7HP-A settings are made.

Nomenclature



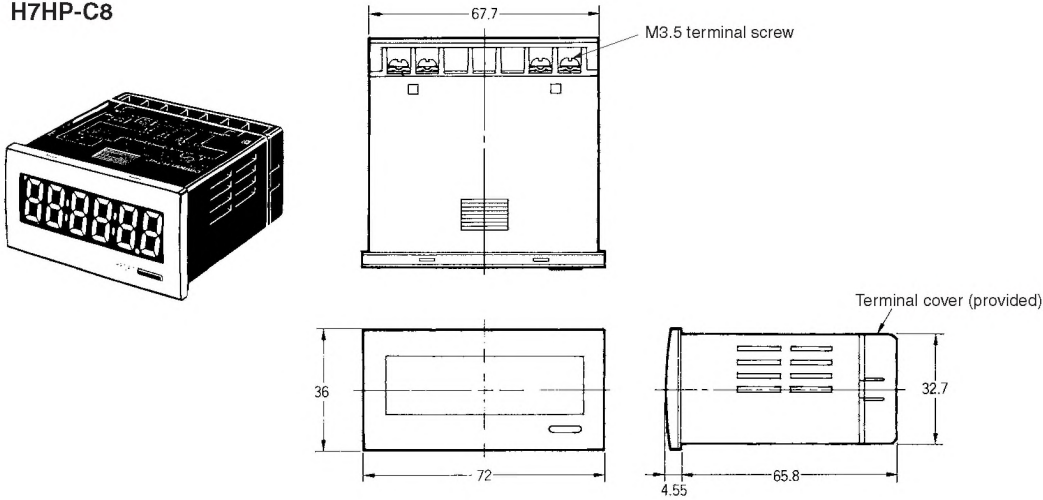
(The figure shows the DIP switch label stuck to the rear of the case.)

- 1. Reset Key**
Resets the count value, but will not operate while the keys are protected.
- 2. Key Protection Indicator**
Lit while the keys are protected (Reset Key is disabled.).
- 3. DIP Switch**
Use to change a setting. Refer to *DIP Switch Settings* for details.

Dimensions

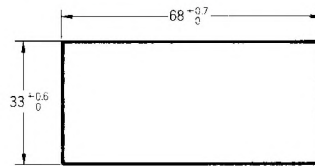
Note: All units are in millimeters unless otherwise indicated.

H7HP-A
H7HP-C8



Panel Cutouts

Panel cutouts are as shown below (according to DIN43700).



- Note:**
1. The mounting panel thickness should be 1 to 6 mm.
 2. Water resistance will be lost if Counters are mounted side-by-side.

With Flush Mounting Bracket

