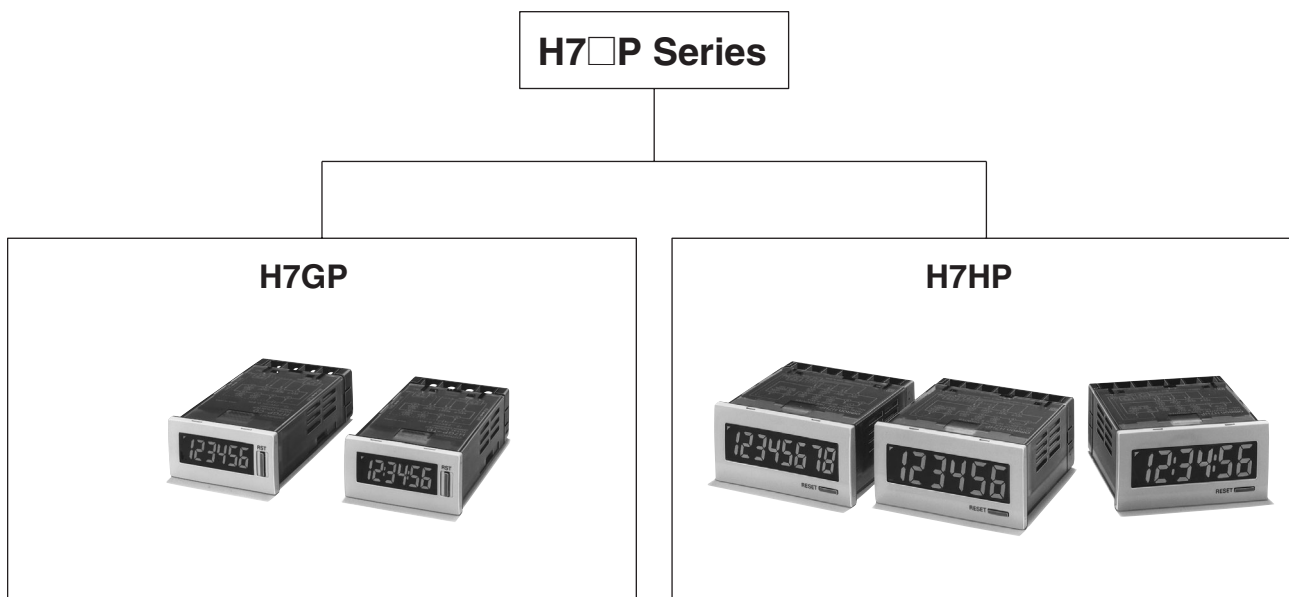


Total Counter/Time Counter H7GP/H7HP

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments. Refer to *Warranty and Application Considerations* (page 20), and *Safety Precautions* (page 15).

High-visibility, IP66/NEMA4 Protection Total Counter/Time Counter Range

- IP66 (JEM standard IP66G: oil resistance) and NEMA4 protection standards.
- Switch between NPN and PNP operation.
- Both external and manual resets provided.
- Finger-protection terminal block cover prevents electrical shocks conforming to VDE0106/100.
- Conforms to EMC standards (EN61326).
- Conforms to IEC standards, and approved by UL and CSA.
- Wide power supply range.
- Six-language instruction manual provided.



- 6-digit total counter
- 6-digit time counter
- DIN 48 x 24

- 6-digit total counter/time counter
- 8-digit total counter
- DIN 72 x 36

Contents

Total Counter/Time Counter

| | |
|------------|---|
| H7GP | 2 |
| H7HP | 8 |

Common to Both Counters

| | |
|---------------------------|----|
| Input Connections..... | 14 |
| Safety Precautions..... | 15 |
| Degree of Protection..... | 17 |

Total Counter/Time Counter (DIN 48 x 24) H7GP

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

- High-visibility, negative transmissive LCD display with 8.5-mm-high characters and built-in red LED backlight at low power consumption.
- Compact (80 mm) body.



Model Number Structure

Model Number Legend

H7GP-□□□
1 2 3

1. Classification

- C: Total counter
- T: Time counter

2. Supply Voltage

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

3. Case Color of Front Section

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

Ordering Information

List of Models

| Supply voltage | 6-digit total counter | | 6-digit time counter | |
|----------------|-----------------------|----------|----------------------|----------|
| | Light gray | Black | Light gray | Black |
| 100 to 240 VAC | H7GP-C | H7GP-CB | H7GP-T | H7GP-TB |
| 12 to 24 VDC | H7GP-CD | H7GP-CDB | H7GP-TD | H7GP-TDB |

Specifications

■ Ratings

| Item | 6-digit total counter | | 6-digit time counter | |
|-------------------------|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------------------|
| | H7GP-C | H7GP-CD | H7GP-T | H7GP-TD |
| 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 | 48 x 24 x 80 mm (W x H x D) | | | |
| Mounting method | Flush mounting | | | |
| External connections | Screw terminals | | | |
| Degree of protection | Panel surface: JEM IP66G and NEMA Type 4 (indoors) | | | |
| Display | 7-segment, negative transmissive LCD (with red backlight) | | | |
| Digits | 6 digits (8.5-mm-high characters) | | | |
| Input mode | Up (increment) | | Accumulative | |
| Max. counting speeds | 30 Hz or 5 kHz (selected via DIP switch) | | --- | |
| Counting range | 0 to 999999 | | --- | |
| 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, reset, and key protection (see note 2) | | Start, 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, reset, start | 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 | 20 or 1 ms (automatically switched according to counting speed) | | 20 ms |
| | Start | --- | | 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) EN61326 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. 76 g |

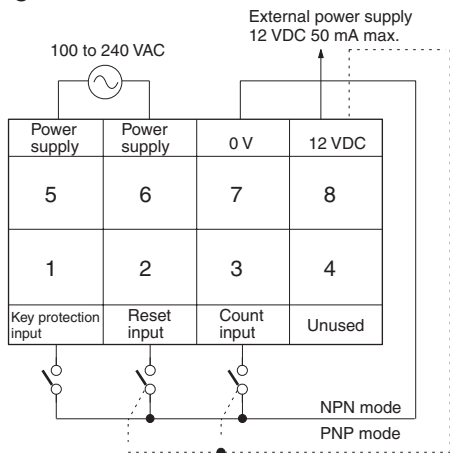
Connections

Terminal Arrangement

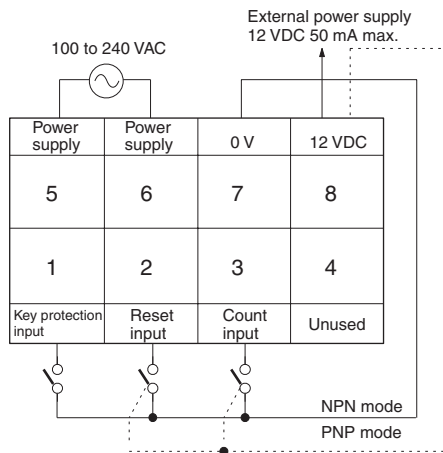
Note: Non-contact input is also available.

AC Models

H7GP-C

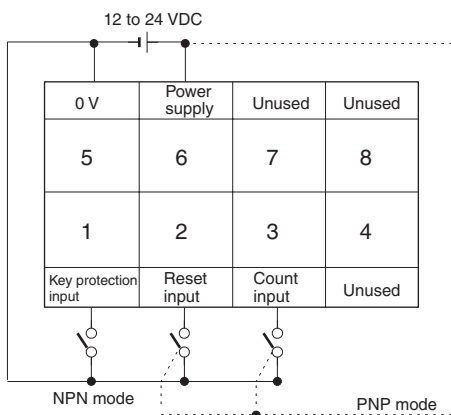


H7GP-T

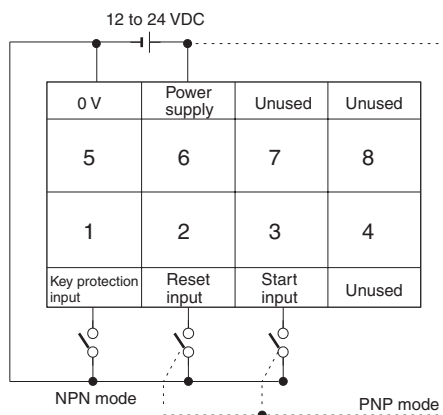


DC Models

H7GP-CD



H7GP-TD



Operation

■ DIP Switch Settings

Set all DIP switches before mounting the Counter to a control panel. All switches are set toward the display panel before shipping.

H7GP-C/-CD

| Switch | Item | Function | |
|------------------------------|-------------------------|---------------|-------|
| 3 (On right side from front) | Input mode (note 1) | Display side | NPN |
| | | Terminal side | PNP |
| 4 (On left side from front) | Counting speed (note 1) | Display side | 30 Hz |
| | | Terminal side | 5 kHz |

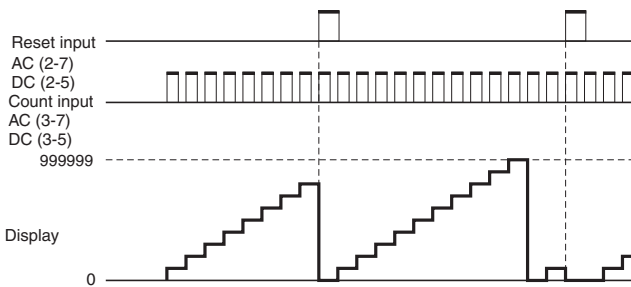
H7GP-T/-TD

| Switch | Item | Function | |
|------------------------------|---------------------|---------------|-------------------|
| 3 (On right side from front) | Input mode (note 1) | Display side | NPN |
| | | Terminal side | PNP |
| 4 (On left side from front) | Time range (note 1) | Display side | 99999.9h (note 2) |
| | | Terminal side | 99 h 59 min 59 s |

- Note: 1.** 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.
- 2.** The decimal point will flash every second when "99999.9 h" is set.

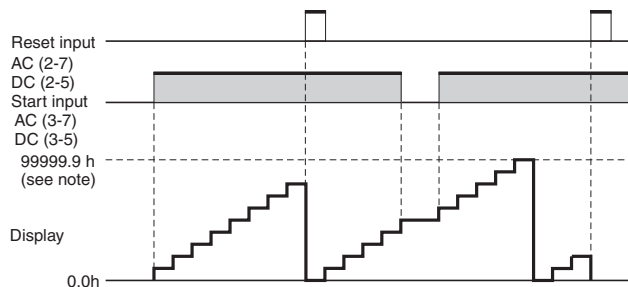
■ Operating Modes

Total Counters



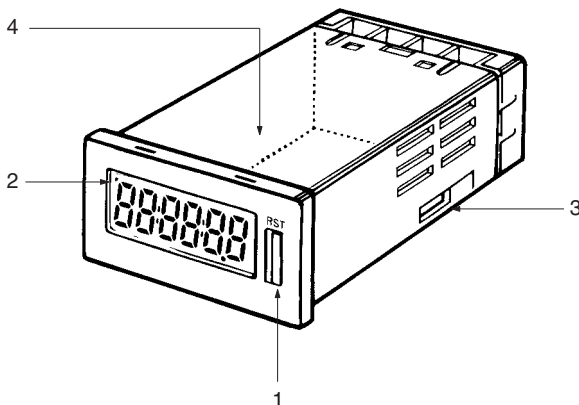
Note: The count value will return to "0" when "999999" is exceeded.

Time Counters



Note: Display values are shown for full scale set to 99999.9 h. The count value will return to "0" when "99999.9" is exceeded.

Nomenclature

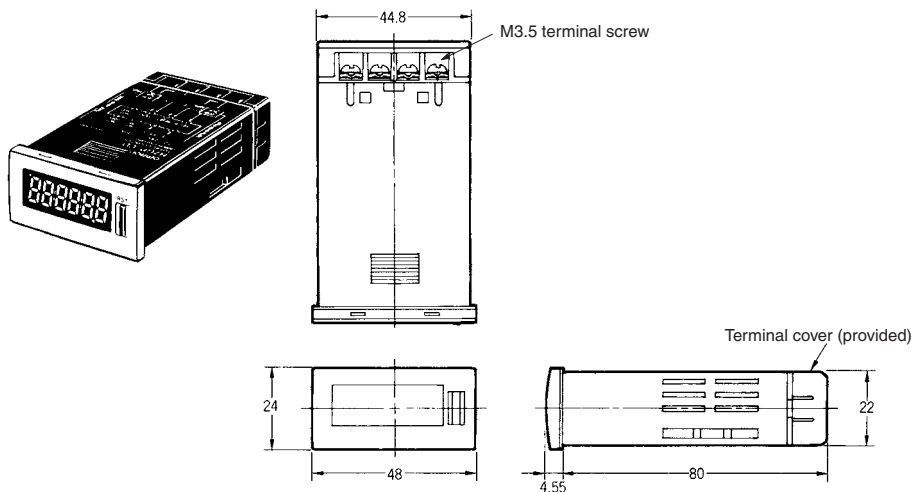


- Reset Key**
Resets the count value, but will not operate while the keys are protected.
- Key Protection Indicator**
Lit while the keys are protected. (Reset Key is disabled.)
- NPN/PNP DIP Switch**
(Count or start with reset)
When the setting has been changed, turned power off and on to continue. The display will show "0" when the power is turned back on. See below for details.
- Counting Speed DIP Switch (H7GP-C)
Time Range DIP Switch (H7GP-T)**
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. Refer to *DIP Switch Setting* for details.

Dimensions

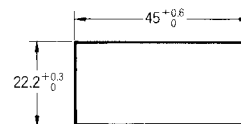
Note: All units are in millimeters unless otherwise indicated.

H7GP-C
H7GP-T



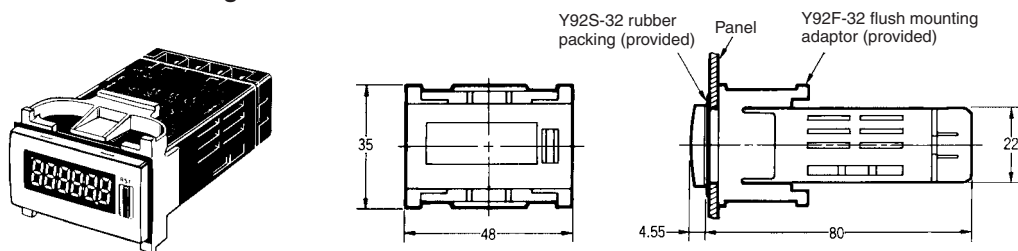
Panel Cutouts

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



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 |

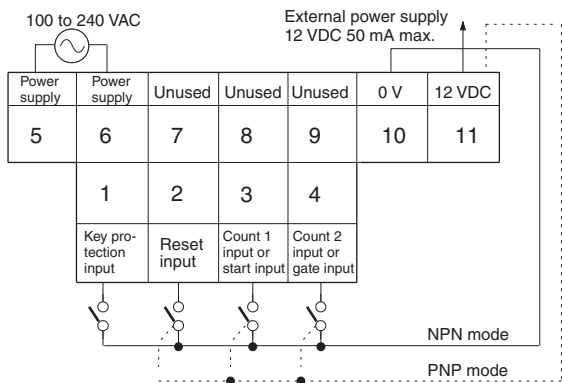
Connections

Terminal Arrangement

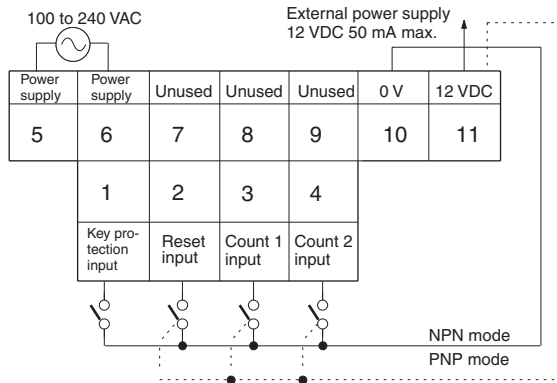
Note: 1. Incremented for count 1 (CP1) inputs; decremented for count 2 (CP2) inputs.
 2. Non-contact input is also available.

AC Models

H7HP-A

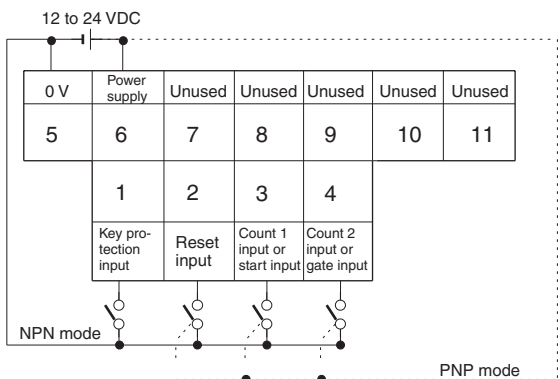


H7HP-C8

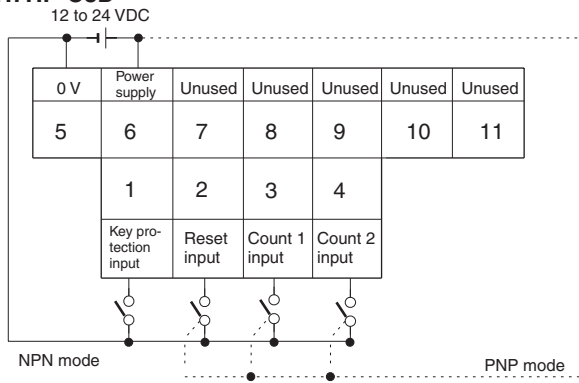


DC Models

H7HP-AD



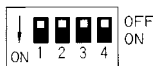
H7HP-C8D



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 | --- | --- |

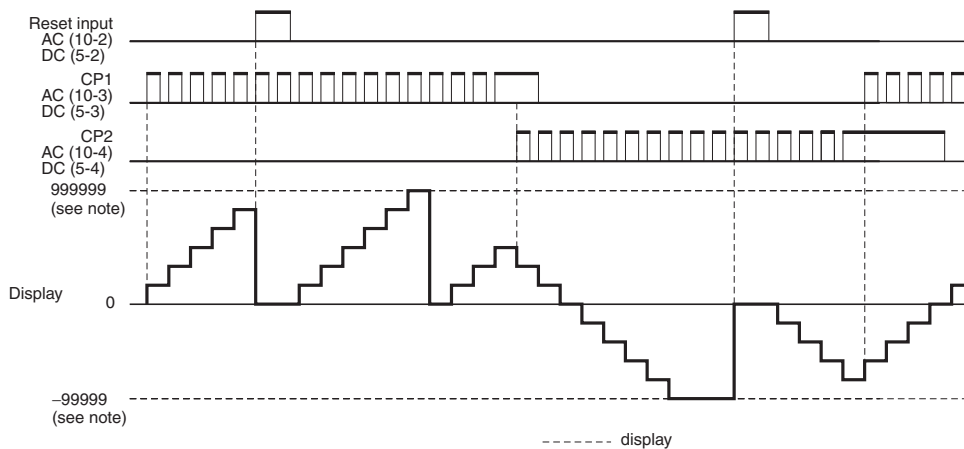
H7HP-C8/-C8D

| 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.

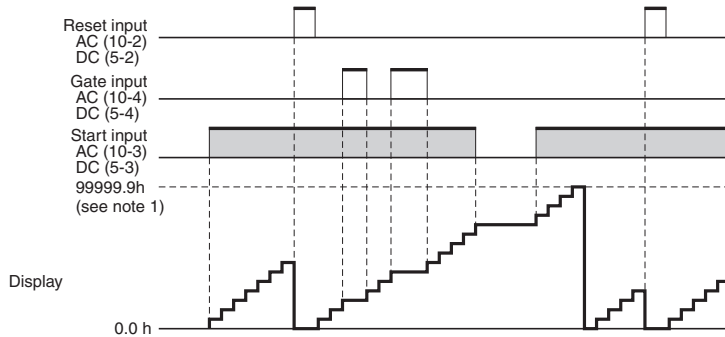
Operating Modes

Total Counters



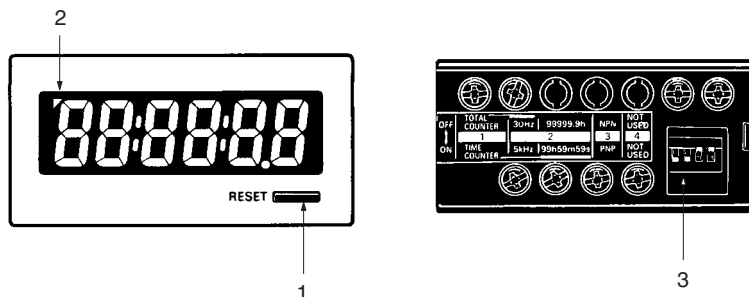
Note: Display values are shown for a 6-digit model.
The count value will return to "0" when "999999" is exceeded.

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



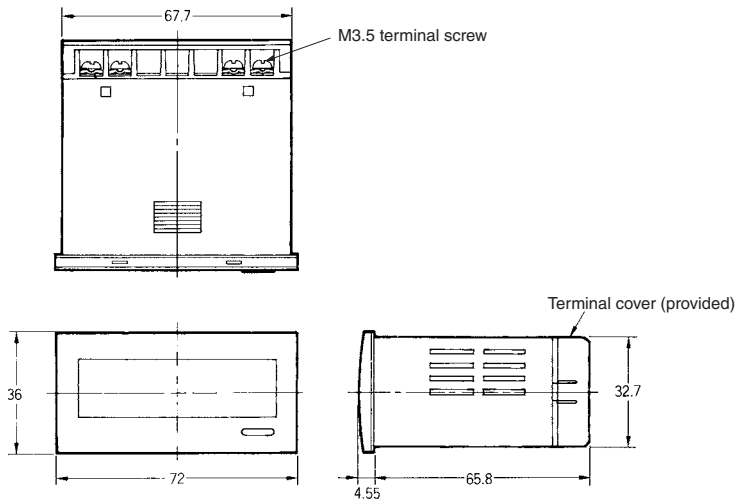
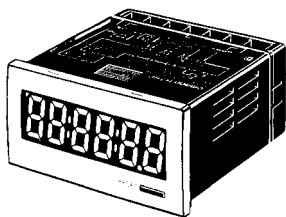
(The figure shows the DIP switch label stuck to the rear of the case.)

- 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

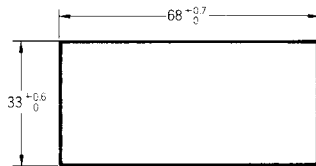
Note: All units are in millimeters unless otherwise indicated.

H7HP-A
H7HP-C8



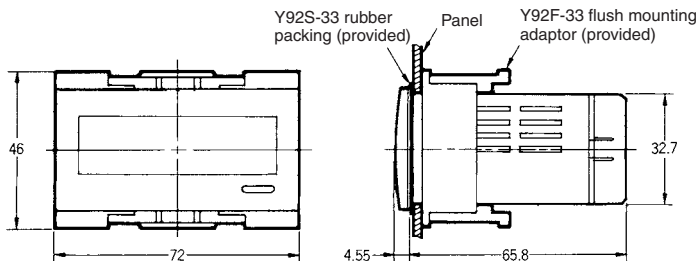
Panel Cutouts

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



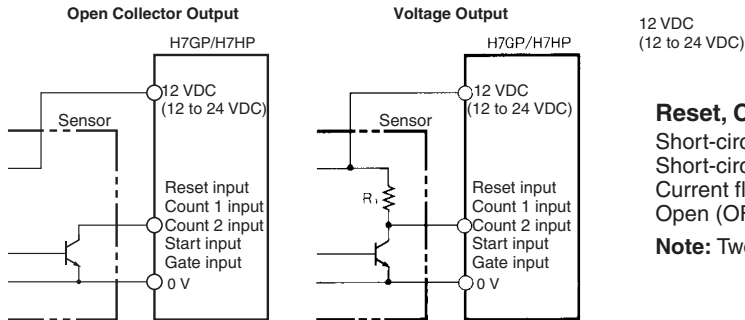
Connections (Common)

Input Connections

Note: The undermentioned is common for all H7GP/H7HP models.

No-voltage Input (NPN Input Mode)

Reset, Count 1, Count 2, Start, and Gate Inputs



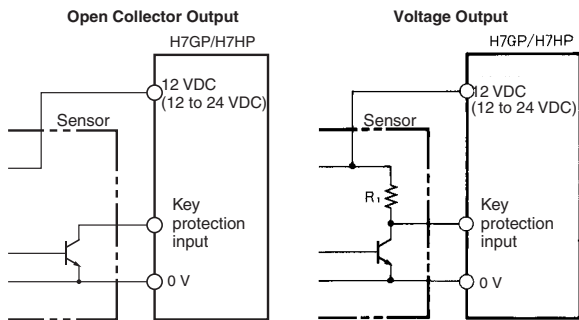
12 VDC
(12 to 24 VDC)

Reset, Count 1, Count 2, Start, and Gate Inputs Specification

Short-circuit (ON) impedance: 1 kΩ max.
 Short-circuit (ON) residual voltage: 2 VDC max.
 Current flow for 0-Ω short-circuit: Approx. 2 mA
 Open (OFF) impedance: 100 kΩ min.

Note: Two-wired sensors cannot be used.

Key Protection Input



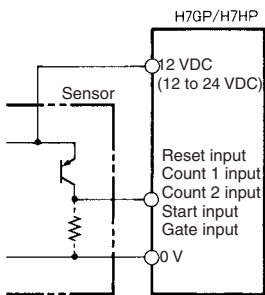
Key Protection Inputs Specification

Short-circuit (ON) impedance: 1 kΩ max.
 Short-circuit (ON) residual voltage: 0.5 VDC max.
 Current flow for 0-Ω short-circuit: Approx. 0.5 mA
 Open (OFF) impedance: 100 kΩ min.

Note: Two-wired sensors cannot be used.

Voltage Input (PNP Input Mode)

Reset, Count 1, Count 2, Start, and Gate Inputs



Reset, Count 1, Count 2, Start, and Gate Inputs Specification

Short-circuit (ON) impedance: 1 kΩ max.
 ON voltage: 9 to 24 VDC
 OFF voltage: 5 VDC max.
 Open (OFF) impedance: 100 kΩ min.

Note: Two-wired sensors cannot be used.

Safety Precautions (Common)

Note: The undermentioned is common for all H7GP/H7HP models.

⚠ CAUTION

This may occasionally cause electric shock, fire, or malfunction. Never disassemble, repair, or modify the H7GP/H7HP.

This may occasionally cause electric shock, fire, or malfunction. Do not allow metal fragments or lead wire scraps to fall inside the H7GP/H7HP.

■ Precautions for Safe Use

Observe the following items to ensure the safe use of this product.

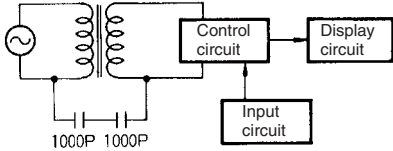
Environmental Precautions

- Store the H7GP/H7HP within the specified ratings. If the H7GP/H7HP has been stored at temperatures -10°C or lower, let it stand for 3 hours or longer at room temperature before turning ON the power supply.
- Use the H7GP/H7HP within the specified ratings for operating temperature and humidity.
- Do not operate the H7GP/H7HP in locations subject to sudden or extreme changes in temperature, or locations where high humidity may result in condensation.
- Do not use the H7GP/H7HP in locations subject to vibrations or shock. Extended use in such locations may result in damage due to stress.
- Do not use the H7GP/H7HP in locations subject to excessive dust, corrosive gas, or direct sunlight.
- Install the H7GP/H7HP well away from any sources of static electricity, such as pipes transporting molding materials, powders, or liquids.
- The H7GP/H7HP is not waterproof or oil resistant. Do not use it in locations subject to water or oil.
- The life expectancy of internal components may be reduced if the H7GP/H7HP is mounted side-by-side.
- Do not use organic solvents (such as paint thinner or benzene), strong alkaline, or strong acids because they will damage the external finish.

Usage Precautions

- Install a switch or circuit breaker that allows the operator to immediately turn OFF the power, and label it to clearly indicate its function.
- Be sure to wire the terminals correctly.
- Do not install input lines in the same duct or conduit as power supply or other high-voltage lines. Doing so may result in malfunction due to noise. Separate the input lines from high-voltage lines.
- Internal elements may be destroyed if a voltage outside the rated voltage is applied.
- Maintain voltage fluctuations in the power supply within the specified range.
- Use a switch, relay, or other contact so that the rated power supply voltage will be reached within 0.1 s. If the power supply voltage is not reached quickly enough, the H7GP/H7HP may malfunction or outputs may be unstable.

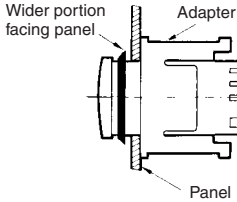
- Although the H7GP/H7HP power supply (primary side) is isolated from control circuits (secondary side) by a transformer, the primary and secondary sides of the transformer are linked by a capacitor, making it possible for high-frequency components to leak to the secondary side. Take adequate precautions against electrical shock. Do not connect input circuits to exposed parts (such as the machine body) and be sure that the power supply is turned off before wiring.



Flush Mounting

The panel surface is water-resistant (conforming to NEMA 4 and IP66). In order to prevent the internal circuit from water penetration through the space between the counter and operating panel, attach a rubber packing between the counter and operating panel and secure the rubber packing with the Y92F-3□ flush-mounting adaptor.

Be sure the rubber packing is installed in the correct direction. The wider portion must be facing the panel when installed, as shown in the following illustration. Using a flat-head screwdriver, press in the Mounting Adapter until it cannot be pressed in any further in order to ensure water-resistant performance.



Other

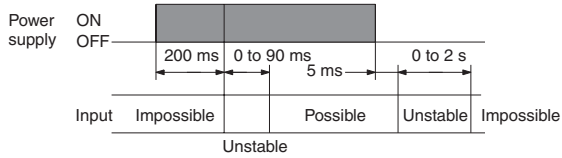
Oil resistance is not applicable to all types of oil. Be sure to test any specific oils before actual application.

■ Precaution for Correct Use

Power Supplies

When turning the power ON and OFF, input signal reception is possible, unstable, or impossible as shown in the diagram below.

Apply the power supply voltage through a relay or switch in such a way that the voltage reaches a fixed value immediately.



Self-diagnostic Function

The following displays will appear if an error occurs.

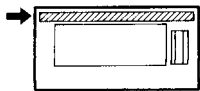
| Display | Error | Correction |
|---------|---------------------------------------------------------------------------------|---------------------------------------------|
| ---- | -99999 max. (H7HP, 6-digit model) -99999999 max. (H7HP, 8-digit model) | Press RST Key or reset input |
| E1 | CPU | Press RST Key or turn power OFF and then ON |
| E2 | Memory | |

Labels

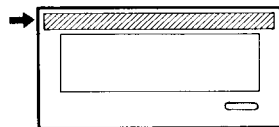
Unit labels are included with the H7GP/H7HP and DIP switch labels are included with the H7HP. Attach these labels as shown in the following illustrations.

Unit Labels

H7GP

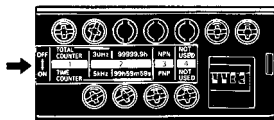


H7HP

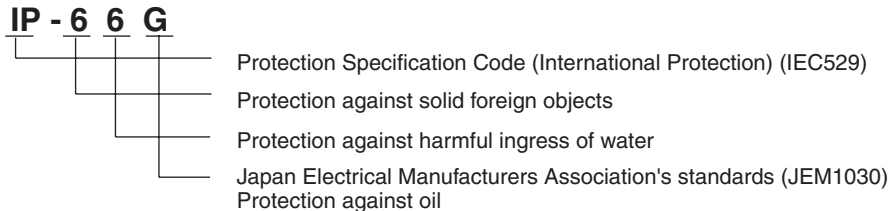


DIP Switch Labels

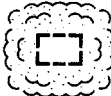
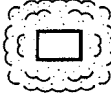
H7HP



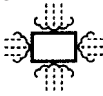
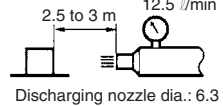
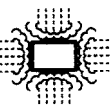
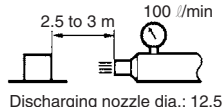
Degree of Protection



Protection Against Solid Foreign Objects

| Grade | Protection | Criteria |
|-------|-----------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| 5 | Dust protected  | Limited ingress of dust permitted (no harmful deposit). |
| 6 | Dust-tight  | Totally protected against ingress of dust. |

Protection Against Harmful Ingress of Water

| Grade | Protection | Criteria | Examination method |
|-------|-------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5 | Housing jets from all directions  | Protected against low-pressure jets of water from all directions; limited ingress permitted. | Spray water from all directions for one minute per m ² of external surface area and for a total time of no less than 3 minutes using the test device shown below.  Discharging nozzle dia.: 6.3 |
| 6 | Strong hosing jets from all directions  | Protected against strong jets of water, e.g. for use on ship-decks; limited ingress permitted. | Spray water from all directions for one minute per m ² of external surface area and for a total time of no less than 3 minutes using the test device shown below.  Discharging nozzle dia.: 12.5 |

**JEM Standards
Protection Against Oil**

| Grade | Protection | Criteria | Criteria |
|-------|---------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| F | Oilproof | Protected against improper operation due to oil drops or spray from any direction. | No penetration of oil to the extent of interfering with proper operation after dropping the specified cutting oil on a test device for 48 hours at a rate of 0.5 ℓ per hour. |
| G | Oil resistant | Protected against penetration of oil drops or spray from any direction. | No penetration of oil after dropping the specified cutting oil on a test device for 48 hours at a rate of 0.5 ℓ per hour. |

Warranty and Application Considerations

Warranty and Limitations of Liability

WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

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Application Considerations

SUITABILITY FOR USE

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the products.

Take all necessary steps to determine the suitability of the product for the systems, machines, and equipment with which it will be used.

Know and observe all prohibitions of use applicable to this product.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

Disclaimers

CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons. Consult with your OMRON representative at any time to confirm actual specifications of purchased product.

DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. M049-E1-04 **In the interest of product improvement, specifications are subject to change without notice.**

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