

# Self-powered Total Counter New H7EC

- Eight-digits, counting range 0 to 99999999.
- Dual input speed: 30 Hz ↔ 1 kHz (except for AC/DC multi-voltage input models)



## Model Number Structure

### Model Number Legend

Note: Some configurations are not available.

H7EC - N   -      
1 2 3

#### 1. Count Input

None: No-voltage input  
 V: PNP/NPN universal DC voltage input (4.5 to 30 VDC)  
 FV: AC/DC multi-voltage input

#### 2. Case Color

None: Light gray  
 B: Black

#### 3. Display

None: 7-segment LCD without backlight  
 H: 7-segment LCD with backlight

## Ordering Information

### Total Counters

Count input	Max. counting speed	Display	Model	
			Light-gray body	Black body
PNP/NPN universal DC voltage input (4.5 to 30 VDC)	30 Hz ↔ 1 kHz (switchable)	7-segment LCD with backlight	H7EC-NV-H	H7EC-NV-BH
		7-segment LCD	H7EC-NV	H7EC-NV-B
AC/DC multi-voltage input (24 to 240 VAC/VDC)	20 Hz	7-segment LCD	H7EC-NFV	H7EC-NFV-B
No-voltage	30 Hz ↔ 1 kHz (switchable)	7-segment LCD	H7EC-N	H7EC-N-B

### Accessories (Order Separately)

Name	Model
Compact Flush Mounting Bracket	Y92F-35
Flush Mounting Bracket (See note 1)	Y92F-34
Wire-wrap Terminal (set of two Terminals)	Y92S-37
Lithium Battery (See note 2)	Y92S-36
Waterproof Packing (See note 1)	Y92S-32

Note: 1. Provided with H7EC. (Order additional Brackets separately as required.)

2. Built into H7EC. Order replacements using the above model number before the service life expires.

## Specifications

### ■ General

Item	H7EC-NV-□ H7EC-NV-□H	H7EC-NFV-□	H7EC-N-□
Operating mode	Up type		
Mounting method	Flush mounting		
External connections	Screw terminals, optional Wire-wrap Terminals (see note 1)		
Reset	External/Manual reset		
Number of digits	8		
Count input	PNP/NPN universal DC voltage input	AC/DC multi-voltage input	No-voltage input
Display	7-segment LCD with or without backlight, zero suppression (character height: 8.6 mm) (see note 2)		
Max. counting speed	30 Hz/1 kHz	20 Hz	30 Hz/1 kHz
Case color	Light gray or black (-B models)		
Attachment	Waterproof packing, Y92F-34 Flush Mounting Bracket		
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. Separately ordered Wire-wrap Terminals (Y92S-37) are required.  
2. Only PNP/NPN universal DC voltage input models (-H models) have a backlight.

### ■ Ratings

Item	H7EC-NV-□ H7EC-NV-□H	H7EC-NFV-□	H7EC-N-□
Supply voltage	Backlight model: 24 VDC (0.3 W max.) (only for backlight) No-backlight model: Not required (powered by built-in battery)	Not required (powered by built-in battery)	
Count 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.	
Max. counting speed (see note)	30 Hz or 1 KHz (Switchable with switch)	20 Hz	30 Hz or 1 KHz (Switchable with switch)
Minimum signal width	20 Hz: 25 ms 30 Hz: 16.7 ms 1 KHz: 0.5 ms		
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%		

**Note:** ON/OFF ratio 1:1

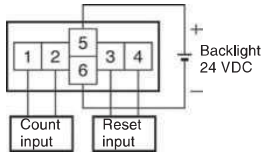


# Connections

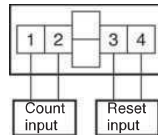
## Terminal Arrangement

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

Backlight Model



No-backlight Model

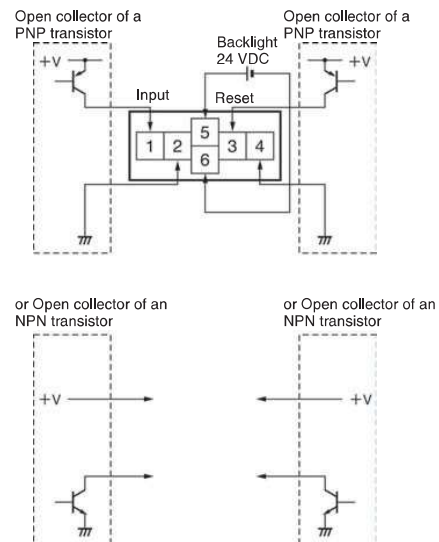
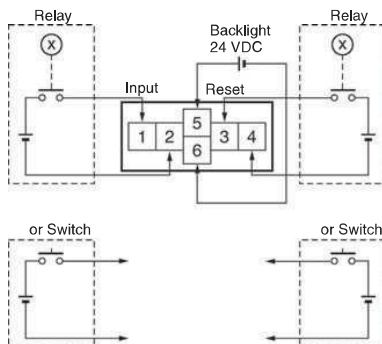


## Connections

### H7EC Total Counter

#### PNP/NPN Universal DC Voltage Input Model With Backlight

1. Contact Input (Input by a Relay or Switch Contact)
2. Solid-state Input

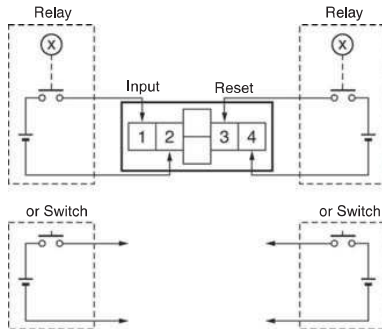


**Note:** 1. Terminals 2 and 4 (input circuit and reset circuit) are functionally isolated.

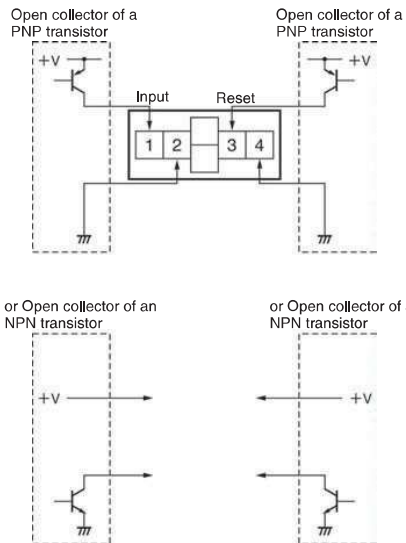
2. Select input transistors according to the following:  
Dielectric strength of the collector  $\geq 50$  V  
Leakage current  $< 100 \mu\text{A}$

## PNP/NPN Universal DC Voltage Input Model Without Backlight

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



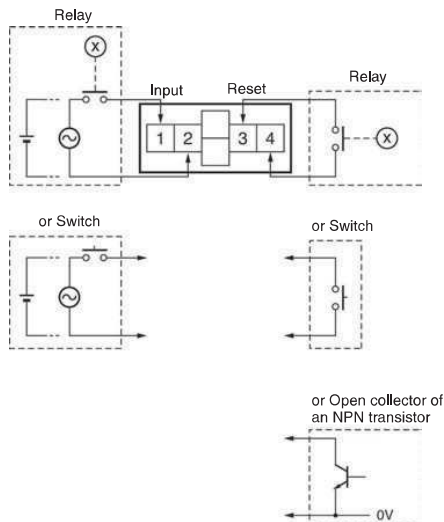
### 2. Solid-state Input



**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  $\geq 50$  V  
Leakage current  $< 100 \mu\text{A}$

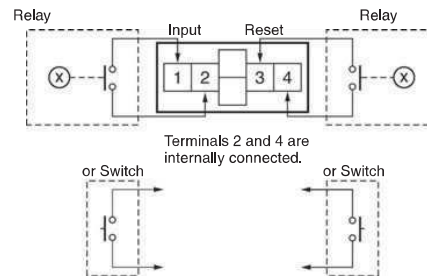
## AC/DC Multi-voltage Input Model



**Note:** Select input transistors according to the following:  
Dielectric strength of the collector  $\geq 50$  V  
Leakage current  $< 1 \mu\text{A}$

## No-voltage Input Model

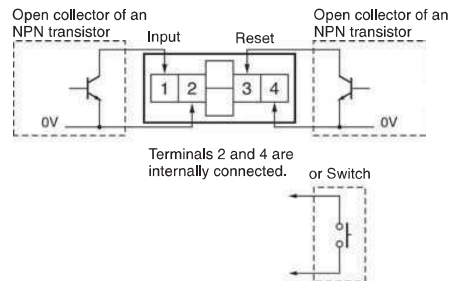
### 1. Contact Input (Input by a Relay or Switch Contact)



**Note:** Use Relays and Switches that have high contact reliability because the current flowing from terminals 1 or 3 is small. 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 small thus allowing easy connection.

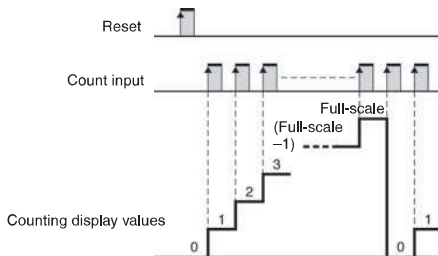
2. Select input transistors according to the following:  
Dielectric strength of the collector  $\geq 50$  V  
Leakage current  $< 1 \mu\text{A}$

# Operation

## ■ Operating Modes

### H7EC Total Counter

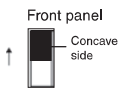
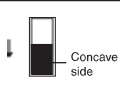
Incrementing Operation (Up)



## Nomenclature

**Counting speed switch**


For all models except for H7EC-NFV-□, if the counting speed setting is changed, the present value will not be held and so press the Reset Key on the front panel.

Setting (see note)	Counting speed
 Front panel	30 Hz (default setting)
 Terminal block	1 kHz

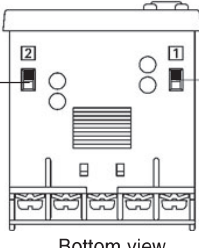
**Reset Key**  
Reset the count value. Not operable under key-protect.

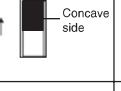
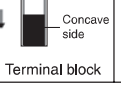
**Key-protect Switch**  
The Reset Key is not operable while the key-protect switch is set to ON.

Front view



Bottom view



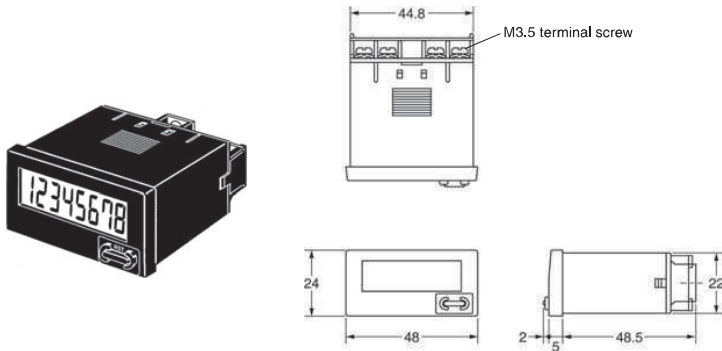
Setting (see note)	Key-protect
 Front panel	OFF (default setting)
 Terminal block	ON

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

# Dimensions

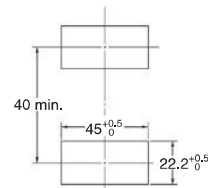
**Note:** All units are in millimeters unless otherwise indicated.

## H7EC-N

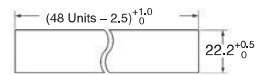


### Panel Cutout

Separate mounting

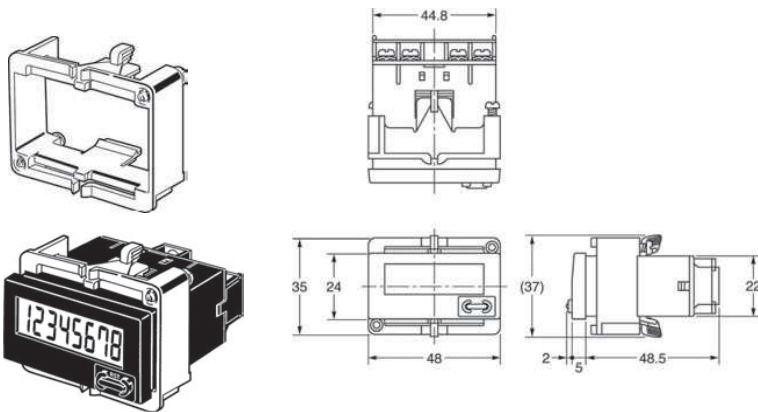


### Dense mounting



Waterproofing is not possible for dense mounting

## Dimensions with Y92F-34 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.