

1/16 DIN, Single Preset Counter with Four-Digit LED Display

- Choose from UP, DOWN and reversible counting
- Count speed up to 5 K counts per second
- Wide-range AC or DC supply voltages
- Contact and solid-state output models available
- Memory protection circuit available on AC models
- Easy-to-read 8 mm-high LED display
- Panel-mounting adapter, sockets, and accessories available separately



Ordering Information

■ COUNTERS

Add the supply voltage type to the part number when you order. For example, **H7CN-XHNM-AC**.

Contact Output Types

Memory protection is not available on contact output models with DC supply voltages.

Input signal type		Contact and solid-state inputs for count and reset					
Operating mode		UP counting	DOWN counting	UP counting	DOWN counting	Reversible counting	
						Command input	Individual input
Backup power for memory protection		Not provided		Provided		Not provided	
Output type		SPST-NO		SPDT		SPST-NO	
Max. counting speed	30 cps	H7CN-XLN	H7CN-YLN	H7CN-XLNM	H7CN-YLNM	H7CN-ALN	H7CN-BLN
	5 kcps*	H7CN-XHN	H7CN-YHN	H7CN-XHNM	H7CN-YHNM	H7CN-AHN	H7CN-BHN
Supply voltages	AC	100 to 240 VAC, 50/60 Hz					
	DC	12 to 48 VDC, 20% max. ripple					

*Only the solid-state input signal is available when the maximum counting speed is 5 kcps.

Solid-State Output Types

Input signal type		Contact and solid-state inputs for count and reset	
Operating mode		UP counting	DOWN counting
Backup power for memory protection		Not provided	
Output type		Open collector transistor	
Max. counting speed		5 kcps	
Part number		H7CN-XHNS	H7CN-YHNS
Supply voltages	AC	100 to 240 VAC, 50/60 Hz	
	DC	12 to 48 VDC, 20% max. ripple	

■ ACCESSORIES

Description			Part number
Sockets	11-pin	Bottom surface or track mounting, top screw terminals	P2CF-11
		Bottom surface or track mounting, top screw terminals, finger safe terminal conforms to VDE0106/P100	P2CF-11-E
		Back mounting, for use with Y92F-30 mounting adapter, bottom screw terminals	P3GA-11
	8-pin	Bottom surface or track mounting, top screw terminals	P2CF-08
		Bottom surface or track mounting, top screw terminals, finger safe terminal conforms to VDE0106/P100	P2CF-08-E
		Back mounting, for use with Y92F-30 mounting adapter, bottom screw terminals	P3G-08
		Terminal cover for P3G sockets, conforms to VDE0106/P100	Y92A-48G
Panel mounting adapter		Fits behind panel, ideal for side-by-side installation. Use P3G□-□□ sockets	Y92F-30
Battery for memory backup		Use with H7CN-□□□M counters	Y92S-20
Protective cover		Hard plastic cover protects against dust, dirt, and water; not for use with panel covers	Y92A-48B
		Soft plastic cover protects against dust, dirt, and oil; not for use with panel covers	Y92A-48D
NEMA 4 cover		Waterproof front cover	Y92A-48N
Mounting track		DIN rail, 50 cm (1.64 ft) length; 7.3 mm thick	PFP-50N
		DIN rail, 1 m (3.28 ft) length; 7.3 mm thick	PFP-100N
		DIN rail, 1 m (3.28 ft) length; 16 mm thick	PFP-100N2
End plate			PFP-M
Spacer			PFP-S

Specifications

■ GENERAL CAPABILITIES

Model	H7CN-□□N	H7CN-□□NS
Classification	Single preset counter	
Mounting	Panel, track or surface	
External connections	8-pin round sockets or 11-pin round sockets (-M types)	
Output modes	Sustained output until reset	
Input modes	UP (H7CN-X), DOWN (H7CN-Y), reversible with command input (H7CN-A), reversible with individual input (H7CN-B)	UP (H7CN-X), DOWN (H7CN-Y)
Reset system	Power-OFF: 0.5 sec reset time (except H7CN-M types) Reset time following power application: 0.05 sec External reset and manual: 0.02 second reset time Reset time following signal application: 0.05 sec	
Sensor power supply	Not provided	
Input signal	Count and reset	
Input method	Contact Impedance by short-circuiting contacts: 1 kΩ max. Impedance by opening contacts: 100 kΩ min.	Solid-state input Residual voltage: 0.5 V max. (1 V actual)
Control outputs	SPST-NO, 3 A, 250 VAC SPDT, 3 A, 250 VAC for H7CN-M counters	Open collector transistor, 100 mA, 30 VDC max.
Displays	7-segment LED count value display, 8 mm (0.3 in) high characters, and LED indicators for count up and reset	
Digits	4 digits	
Memory backup	H7CN-M models have a memory protection circuit that protects against momentary power failures lasting up to 10 minutes. An optional Y92S-20 lithium 3 V battery can provide up to 5 years of memory retention.	

RATINGS

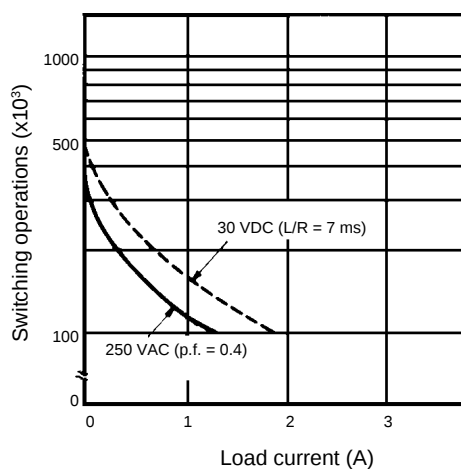
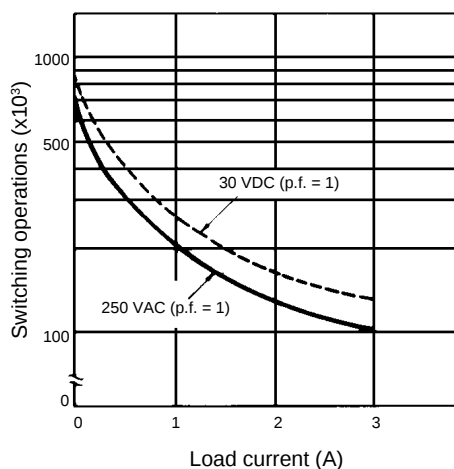
Supply voltage	AC	100 to 240 VAC, 50/60 Hz
	DC	12 to 48 VDC (20% max. ripple)
Operating voltage range	85 to 110% of rated voltage	
Power consumption	Approx. 12 VA/2.5 W at 240 VAC, 50 Hz	
	Approx. 2.5 W at 48 VDC	
Max. counting speeds (CP1, CP2)	30 cps with contact and solid-state inputs; 5,000 cps with solid-state inputs only	
Minimum pulse widths	16.7 ms at 30 cps (ON/OFF ratio of 1:1)	
	0.1 ms at 5 kcps (ON/OFF ratio of 1:1)	
Approvals	UL / CSA	

CHARACTERISTICS

Ambient operating temperature		-10° to 55°C (14° to 131°F)
Storage temperature		-25° to 65°C (-13° to 149°F)
Ambient operating humidity		35 to 85% RH
Insulation resistance		100 mΩ minimum at 500 VDC
Dielectric strength		2,000 VAC, 50/60 Hz for 1 minute between current-carrying terminal and exposed metal parts, between power supply circuit and control output circuit
Vibration	Mechanical durability	10 to 55 Hz, 0.75 mm (0.03 in) double amplitude
	Malfunction durability	10 to 55 Hz, 0.5 mm (0.02 in) double amplitude
Shock	Mechanical durability	Approx. 30 G
	Malfunction durability	Approx. 10 G
Service life	Mechanical	10 million operations minimum under no load at 1,800 operations/hour switching frequency
	Electrical	100,000 operations minimum under resistive load at 3 A, 250 VAC (p.f. = 1)
Weight		150 g (5.3 oz.)

Engineering Data

ELECTRICAL SERVICE LIFE



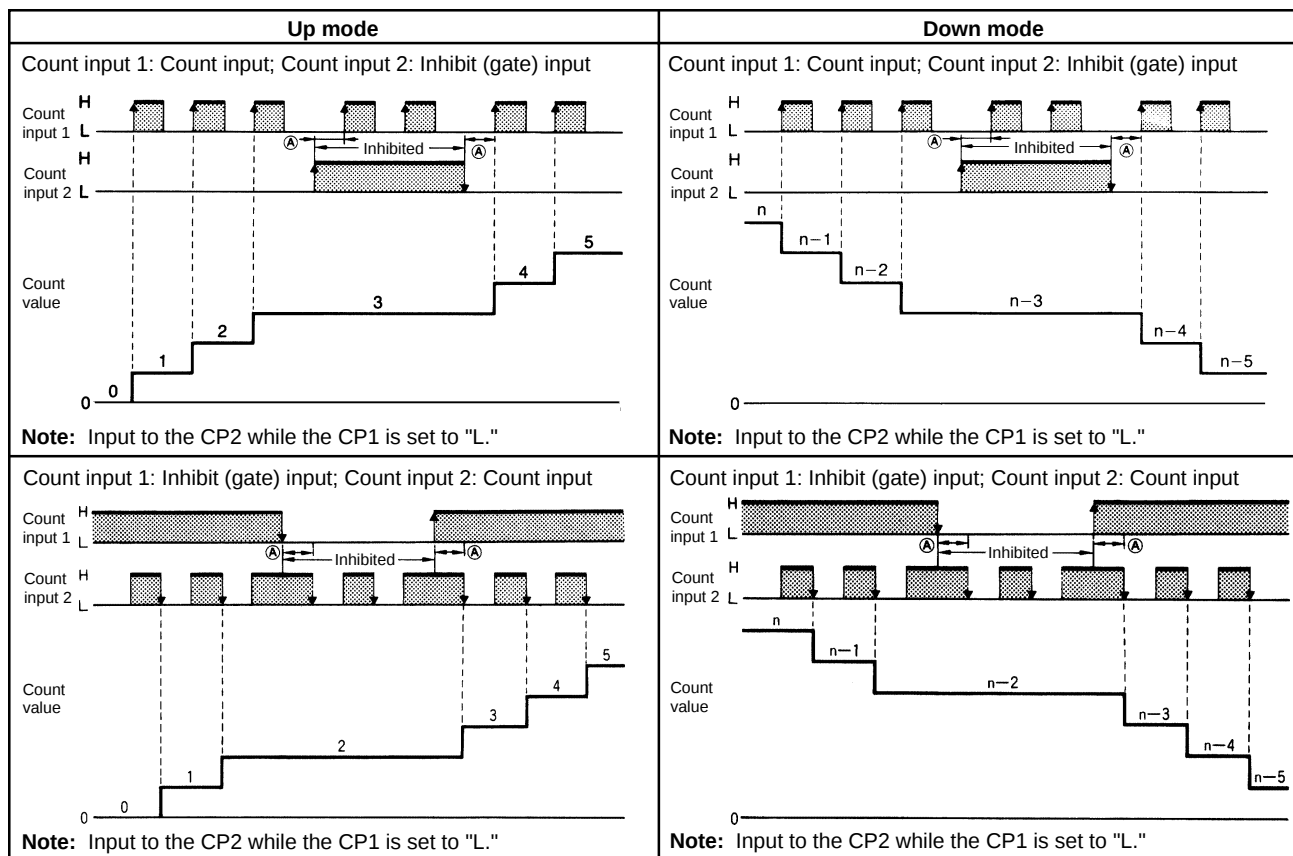
Note:
The service life graphs apply to all relay output models. They do not apply to solid-state output models H7CN-XHNS or H7CN-YHNS.

Timing Charts

■ INPUT MODE

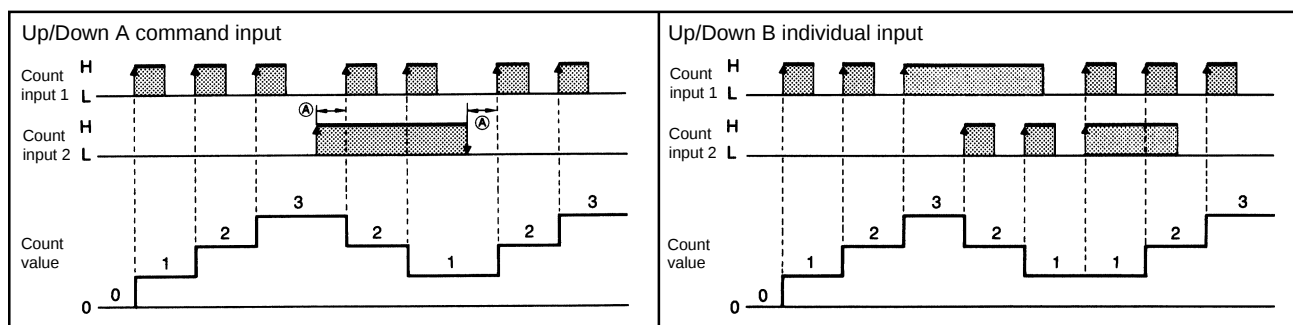
Up/Down Selectable Type

Note: (A) must be more than the minimum signal width. If (A) is set shorter than the minimum signal width, the error of count ± 1 may occur.



Up/Down Type

Note: (A) must be more than the minimum signal width. If (A) is set shorter than the minimum signal width, the error of count ± 1 may occur.

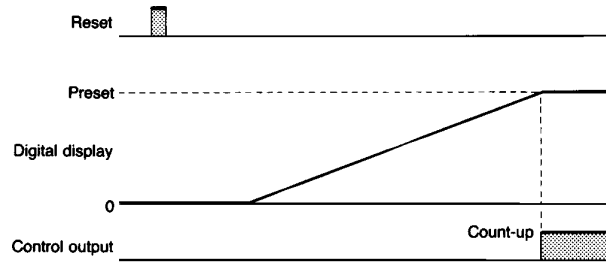


H: Short-circuit ON-time impedance; 1 k Ω max. Residual voltage; 0.5 V max.

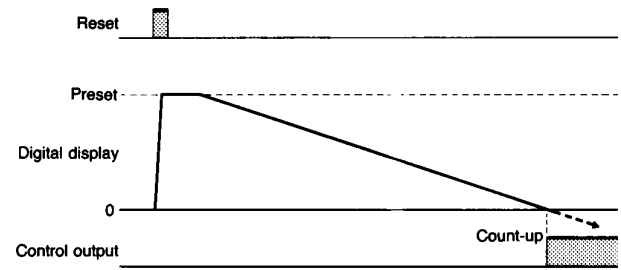
L: Open-circuit OFF-time impedance; 100 k Ω min.

OUTPUT OPERATION

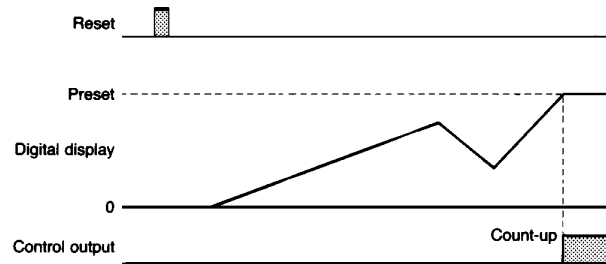
UP Counters



DOWN Counters



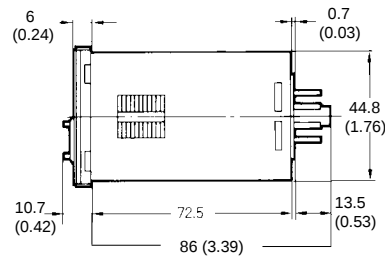
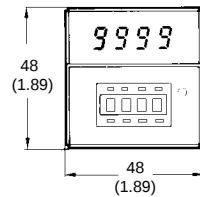
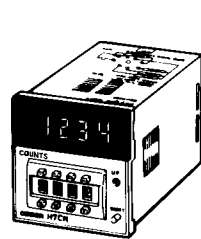
Reversible Counters



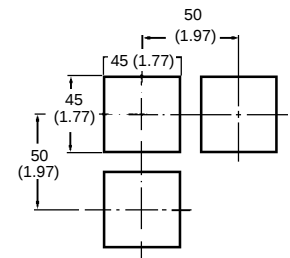
Dimensions

Unit: mm (inch)

COUNTERS



Panel cutout

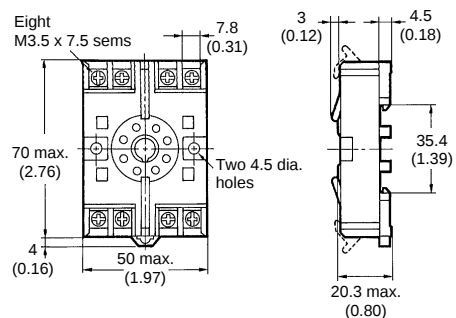
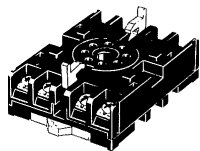


Note: Recommended panel thickness is 1 to 3.2 mm.

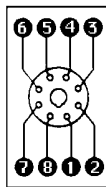
Panel cutout conforms to DIN 43700.

■ ACCESSORIES

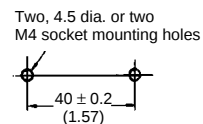
P2CF-08 Track Mounting/Front Connecting Socket



Terminal Arrangement/
Internal Connections
(Top View)

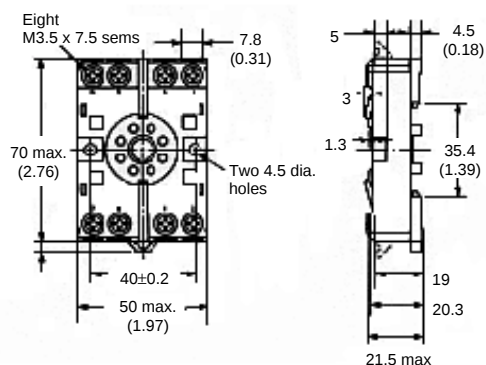
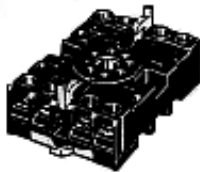


Surface Mounting
Holes

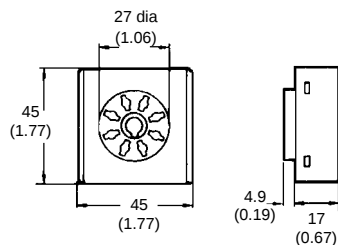
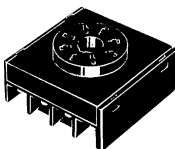


P2CF-08E Finger Safe Terminal Type

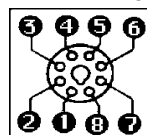
Conforming to VDE0106/P100



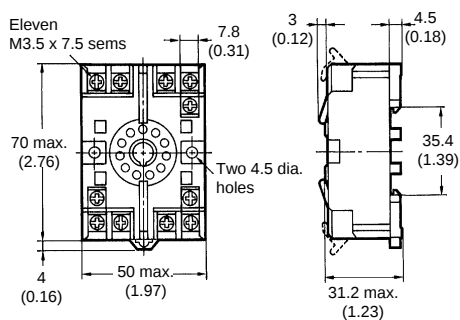
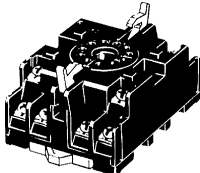
P3G-08 Back Connecting Socket



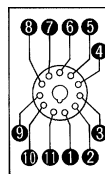
Terminal Arrangement



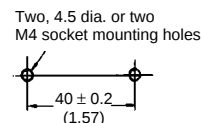
P2CF-11 Track Mounting/Front Connecting Socket



Terminal Arrangement

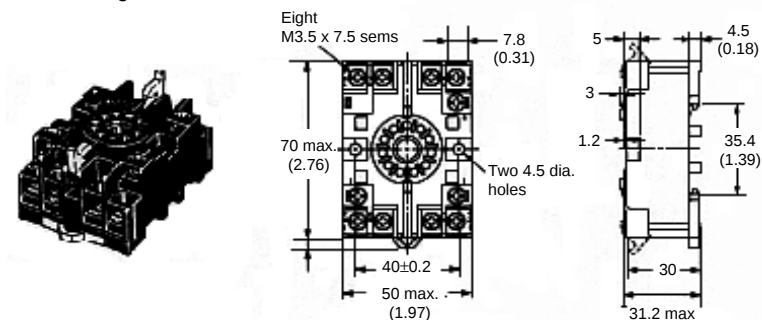
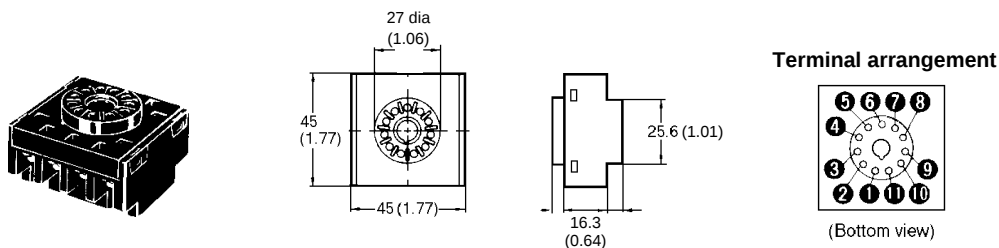


Surface Mounting Holes

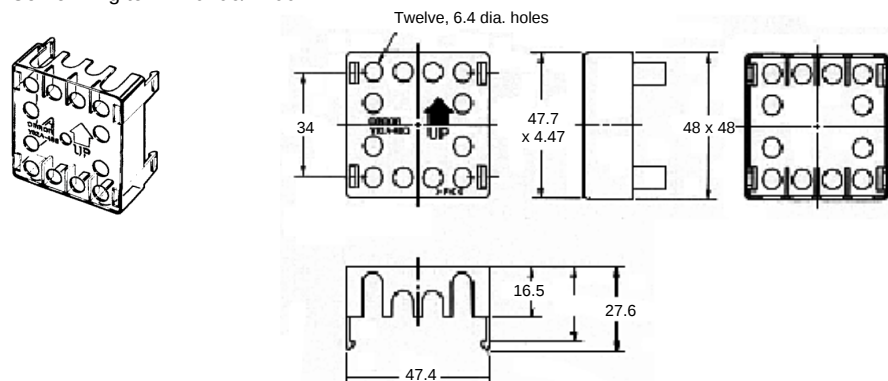


P2CF-11-E Finger Safe Terminal Type

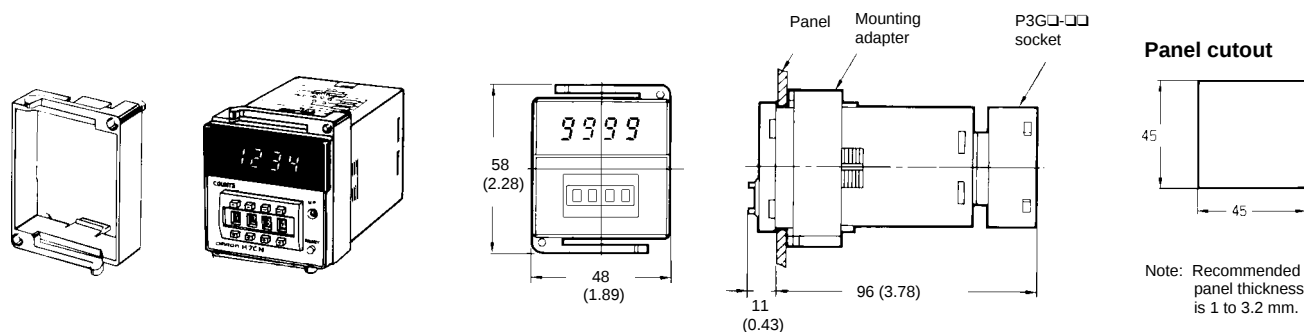
Conforming to VDE0106/P100

**P3GA-11 Back Mounting Socket****Y92A-48G Finger Safe Terminal for P3G(A)**

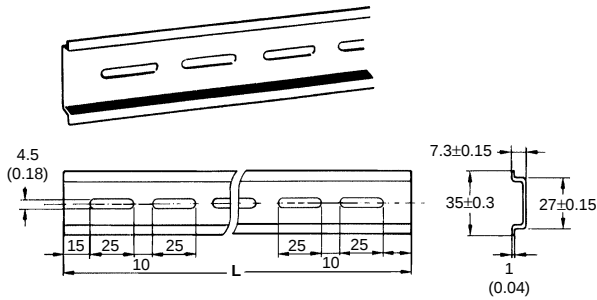
Conforming to VDE0106/P100

**Y92F-30 Panel Mounting Adapter**

Adapter installs behind the panel. It is ideal for side by side installation. Use P3GA-11 or P3G-08 sockets.



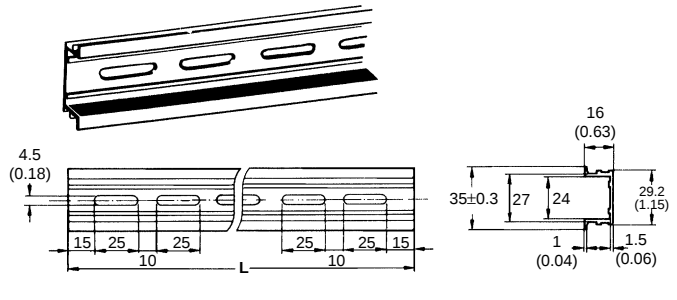
PFP-100N, PFP-50N Mounting Track



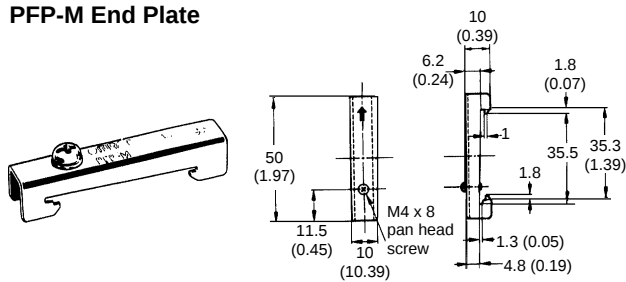
L: Length

1 m	PFP-100N
50 cm	PFP-50N
1 m	PFP-100N2

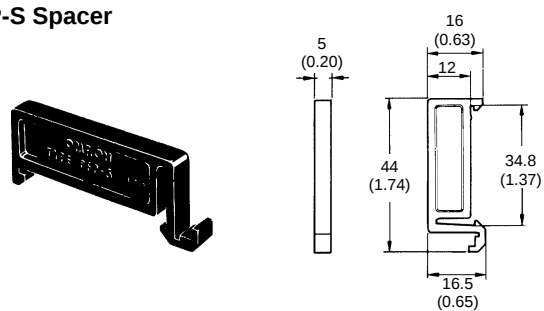
PFP-100N2 Mounting Track



PFP-M End Plate



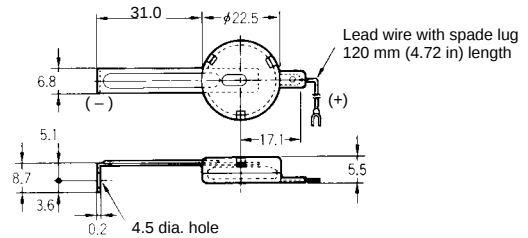
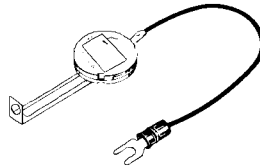
PFP-S Spacer



BATTERY FOR MEMORY BACK-UP

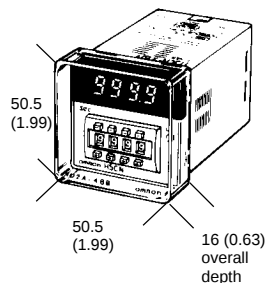
Y92S-20 Battery

Use this battery with H7CN-□M counters with memory protection circuit. While the counter's built-in memory protection circuit can retain values for power failures lasting up to 10 minutes, the optional battery protects memory in case of a longer power outage. We recommend using the battery as a safeguard. Memory values can be retained for up to 5 years.

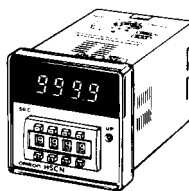


PROTECTIVE COVERS

Y92A-48B Hard Plastic Cover



Y92A-48D Soft Plastic Cover

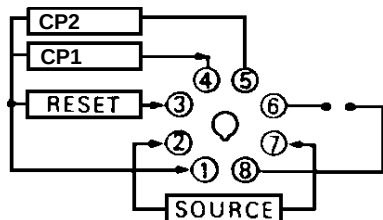


Hard plastic cover Y92A-48B and soft plastic cover Y92A-48D snap onto the front of the counter to protect against dirt and water. The Y92A-48B hard plastic cover prevents accidental resetting. Y92A-48D soft plastic cover fits snugly over the front and allows settings to be changed. These covers are intended for use in areas where unusual service conditions do not exist.

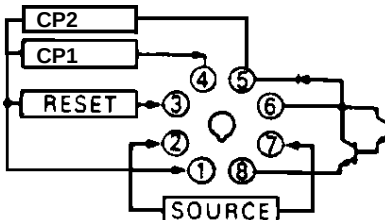
Connections

	Input terminal number				Power supply terminal numbers		Output terminals			Memory	
	COM	Reset	CP1	CP2	AC (common), DC-	AC (hot), DC+	COM	NC	NO	DC-	DC+
H7CN-□□N	1	3	4	5	2	7	8	—	6	—	—
H7CN-□□□S	1	3	4	5	2	7	8	—	6	—	—
H7CN-□□□M	3	7	6	5	2	10	11	8	9	1	4

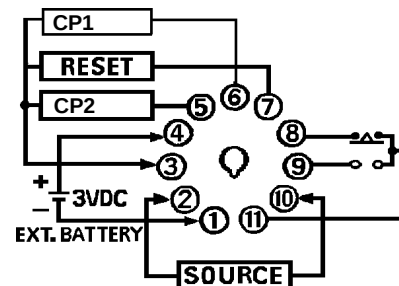
H7CN-□□N Counter



H7CN-□□□S Counter



H7CN-□□□M Counter



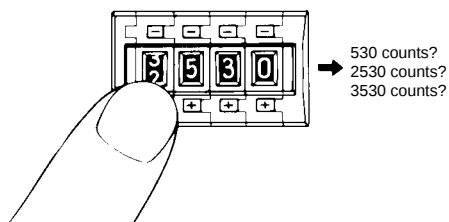
Operation

■ SETTING THE COUNT PRESET

Use the four pushwheel switches on the front panel to set the desired count. Firmly push the switches to avoid having two numbers appear in the display window. This causes the operating time to drift widely.

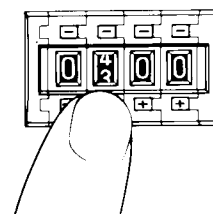
Do not change the setting while the counter is powered up. It may cause a momentary output to occur.

Undesirable settings



WARNING

Do not set all four digits to zero. This causes a momentary output to occur that may lead to accidental injury or damage.

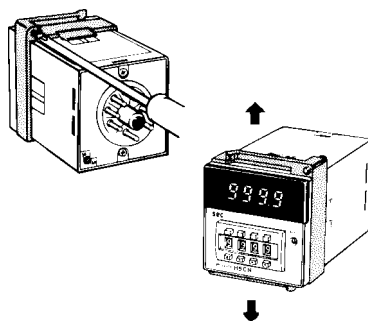


Mounting

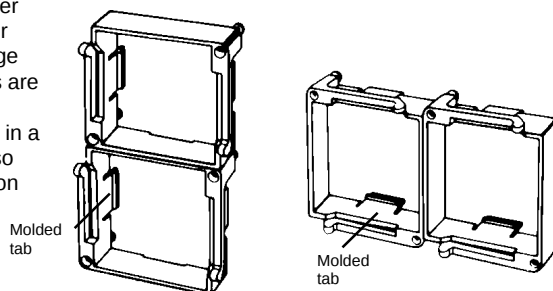
■ PANEL MOUNTING

Using Y92F-30 Adapter

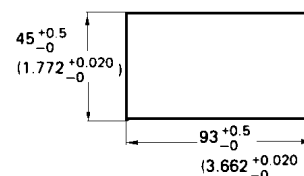
Insert the counter through the panel cutout. Push the Y92F-30 adapter from the rear of the counter as far forward toward the panel as possible. Push the P3G□-□□ socket onto the rear of the counter. Then wire the socket. Tighten the two retaining screws. To release the adapter, lift the tab at the rear of the adapter.



Several counters may be panel mounted close together using a Y92F-30 adapter as shown here. When mounting two or more counters in a vertical line, arrange the adapters so that their molded tabs are positioned on the right and left sides. When mounting two or more counters in a horizontal line, arrange the adapters so that their molded tabs are positioned on the top and bottom sides.



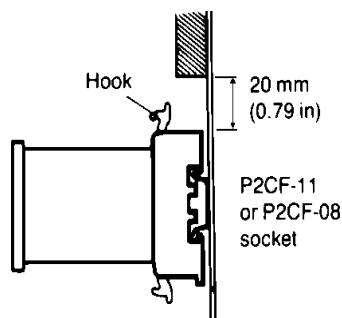
Panel cutout for side-by-side mounting of two counters



P2CF-□□ Socket

Mounting

The P2CF-□□ socket has two hooks that secure the counter to the socket. Be sure to allow at least 20 mm (0.79 in) clearance above and below the socket to gain access and to release the hooks for servicing and maintenance. Insert counter into the socket. Latch hooks. Then clip rear of the socket to the track. Push the bottom onto the track until the latch hooks securely.



Removal

Pull the latch on the socket with a flat-blade screwdriver and remove the counter and socket as one unit.

NOTE: DIMENSIONS ARE SHOWN IN MILLIMETERS. To convert millimeters to inches divide by 25.4.

OMRON

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