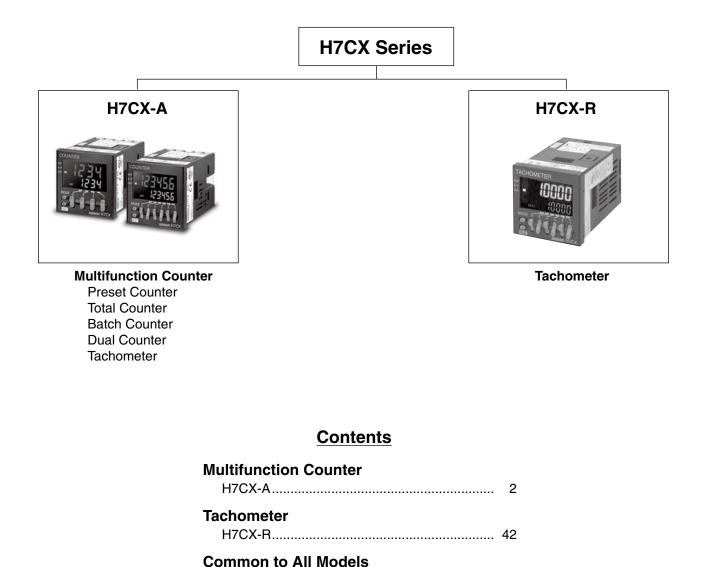
Multifunction Counter/Tachometer

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments. Refer to *Safety Precautions (Common)* on page 59.

DIN 48 \times 48 mm Multifunction Counter/Tachometer Series

- Highly visible display with backlit negative transmissive LCD.
- Intuitive setting enabled using ergonomic up/down digit keys (4-digit models) and DIP switch.
- PNP/NPN switchable DC voltage input.
- Finger-safe terminals (screw terminal block models).
- Complies with IP66/NEMA4/UL Type 4X (when using the Y92S-29 Waterproof Packing and Y92F-30 Flush Mounting Adapter).



Safety Precautions 59

Multifunction Preset Counter

DIN 48 \times 48 mm Multifunction Preset Counter with a Bright, Easy-to-view, Negative Transmissive LCD

- Programmable PV color to visually alert when output status changes (screw terminal block models).
- Configurable as 1-stage counter, 2-stage counter, total and preset counter, batch counter, dual counter, or tachometer. (Configurability varies with model.)
- Meets a variety of mounting requirements: Screw terminal block models, and pin-style terminal models.
- Six-language instruction manual.



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Model Number Structure

Model Number Legend

H7CX-A

- 1. External connection None: Screw terminals
- 11: 11-pin socket 2. No. of digits
 - None: 6 digits 4: 4 digits
- 3. Stage setting
 - None: 1-stage setting
 - U: Factory-set to 1-stage setting
 - W: Factory-set to 2-stage setting

4. Output type

None: Contact output or contact and transistor in combination S: Transistor output

- 5. Supply voltage/external power supply
 - None: 100 to 240 VAC at 50/60 Hz with 12 VDC power supply D: 12 to 24 VDC without external power supply
 - D1: 12 to 24 VDC or 24 VAC at 50/60 Hz with 12 VDC power
 - supply

```
6. Case color
```

- None: Black
- G: Light gray (Munsell 5Y7/1): Produced upon request.

Ordering Information

■ List of Models

Supporte	d configurations		 1-stage counter 1-stage counter with total counter 				2-stage counter - 1-stage counter with total counter 1-stage counter with batch counter - 1-stage counter with batch - 1-stage co with batch with batch		 1-stage counter 2-stage counter 1-stage counter with total counter 1-stage counter with batch counter Dual counter (addition only)
Sensor	Output type	Supply voltage	11-pin socket			Screw terminal			
power supply			1-stage			1-stage (See note.)	2-stage		
			6 digits	4 digits	6 digits	4 digits	6 digits	6 digits	4 digits
			H7CX-A11	H7CX-A114	H7CX-A	H7CX-A4	H7CX-AU	H7CX-AW	H7CX-A4W
12 VDC	Contact output	100 to 240 VAC	H7CX-A11	H7CX-A114	H7CX-A	H7CX-A4		H7CX-AW	H7CX-A4W
		12 to 24 VDC/ 24 VAC	H7CX-A11D1	H7CX-A114D1				H7CX-AWD1	
	Contact and transistor output	100 to 240 VAC					H7CX-AU		
		transistor output	12 to 24 VDC/ 24 VAC					H7CX-AUD1	
	Transistor output	100 to 240 VAC	H7CX-A11S	H7CX-A114S	H7CX-AS	H7CX-A4S		H7CX-AWS	
		12 to 24 VDC/ 24 VAC	H7CX-A11SD1				H7CX-AUSD1	H7CX-AWSD1	
None	Contact output	12 to 24 VDC			H7CX-AD	H7CX-A4D			
	Transistor output	1			H7CX-ASD	H7CX-A4SD		H7CX-AWSD	H7CX-A4WSD

Note: Can be used as a 2-stage counter. In this case, each output can be flexibly allocated to either stage 1 or 2.

Accessories (Order Separately)

	Name	Models			
Flush Mounting Adapter (See note 1.)		Y92F-30			
Waterproof Packing (See note 1.)		Y92S-29			
Track Mounting/Front Connecting	11-pin	P2CF-11			
Socket	11-pin, finger-safe type	P2CF-11-E			
Back Connecting Socket	11-pin	P3GA-11			
	11-pin, finger-safe type	P3GA-11 with Y92A-48G (See note 2.)			
Hard Cover		Y92A-48			
Soft Cover		Y92A-48F1			
Mounting Track	50 cm (l) × 7.3 mm (t)	PFP-50N			
1 m (l) × 7.3 mm (t)		PFP-100N			
1 m (l) × 16 mm (t)		PFP-100N2			
End Plate		PFP-M			
Spacer		PFP-S			

Note: 1. Supplied with screw-terminal models (i.e., excluding H7CX-A11□/-A114□ models).

2. Y92A-48G is a finger-safe terminal cover attached to the P3GA-11 Socket.

Specifications

Ratings

•-								
Item			H7CX-A	H7CX-A114	H7CX-A11			
Classification		Preset counter						
Supported configurations		1-stage counter, 1-stage counter with total counter (selectable)						
Rated supply voltage (See note 1.)		100 to 240 VAC (50/60 Hz), 12 to 24 VDC 100 to 240 VAC (50/60 Hz) 24 VAC (50/60 Hz)/12 to 24 VDC						
Operating volta	ge range	85% to 110% of rated supply volta	age (90% to 110% at 12 VDC)					
Power consump	otion	Approx. 9.2 VA at 264 VAC Approx. 7.2 VA at 264 VAC Approx. 3.7 W at 12 VDC						
Mounting metho	od	Flush mounting		Flush mounting, surface mounting, or DIN track mounting				
External connect	ctions	Screw terminals		11-pin socket				
Terminal screw tightening torqu		0.5 N·m max.						
Display		7-segment, negative transmissive	LCD					
(See note 2.)	PV	11.5-mm-high characters, red or green (programmable)	9-mm-high characters, red					
	SV	6-mm-high characters, green						
Digits		4 digits (–999 to 9,999) SV range: 0 to 9,999	6 digits (–99,999 to 999,999) SV range: –99,999 to 999,999 (See note 3.) or 0 to 999,999	4 digits (-999 to 9,999) SV range: 0 to 9,999	6 digits (-99,999 to 999,999) SV range: -99,999 to 999,999 (See note 3.) or 0 to 999,999			
Max. counting s	speed	30 Hz or 5 kHz (selectable, ON/O	30 Hz or 5 kHz (selectable, ON/OFF ratio 1:1), common setting for CP1 and CP2					
Input modes		Increment, decrement, command	, individual, and quadrature					
Input signals		CP1, CP2, reset, and total reset						
		No-voltage input/voltage input (switchable) No-voltage input DN impedance: $1 \Omega max$. (Leakage current: 5 to 20 mA at 0 Ω) DN residual voltage: $3 V max$. DFF impedance: $100 k\Omega$ min. /oltage input igh (logic) level: 4.5 to $30 VDC$.ow (logic) level: 0 to $2 VDC$ (Input resistance: approx. $4.7 k\Omega$)						
Reset input		Minimum reset input signal width:	1 or 20 ms (selectable), common	setting for all inputs				
Reset system		External, manual, and automatic reset (internal according to C, R, P, and Q mode operation)						
Output modes		N, F, C, R, K-1, P, Q, A	N, F, C, R, K-1, P, Q, A, K-2, D, L	N, F, C, R, K-1, P, Q, A	N, F, C, R, K-1, P, Q, A, K-2, D, L			
One-shot outpu	t time	0.01 to 99.99 s						
Output type		Contact type: SPDT Transistor type: 1 transistor						
Control output Contact output: 3 A at 250 VAC/30 VDC, resistive load (cosφ=1) Minimum applied load: 10 mA at 5 VDC (failure level: P, reference value) Transistor output: NPN open collector, 100 mA at 30 VDC Residual voltage: 1.5 VDC max. (approx. 1 V) Leakage current: 0.1 mA max.								
External power	supply	NEMA B300 Pilot Duty, 1/4 HP 3-A resistive load at 120 VAC, 1/3 HP 3-A resistive load at 240 VAC 12 VDC (±10%), 100 mA (except for H7CX-A D models) Refer to Safety Precautions (Common) on page 59 for details.						
Key protection		Yes						
Prescaling function		Yes (0.001 to 9.999)	Yes (0.001 to 99.999)	Yes (0.001 to 9.999)	Yes (0.001 to 99.999)			
Decimal point adjustment		Yes (rightmost 3 digits)		, · · · · · · · · · · · · · · · · · · ·	- · · · ·			
Sensor waiting time 250 ms max. (Control output is turned OFF and no input is accepted du				d during sensor waiting time.)				
Memory backup)	EEPROM (overwrites: 100,000 tin	nes min.) that can store data for 1	0 years min.				
Ambient temper	rature	Operating: -10 to 55°C (-10 to 55°C storage: -25 to 65°C (with no	50°C if counters are mounted side icing or condensation)	by side) (with no icing or conden-	sation)			
Ambient humidi	ity	25% to 85%						
Case color		Black (N1.5), light gray (Munsell 5Y7/1, produced upon request)						
Attachments		Waterproof packing, flush mounti		None				
		reactive passing, hash mounti	.g acaptor					

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

 $\label{eq:2.1} \textbf{2.} \ \ \textbf{The display is lit only when the power is ON}.$

Only when the following modes are selected. Input mode: command, individual, or quadrature; output mode: K-2, D, or L

H7CX-A

■ Ratings (contd.)

	Item		H7CX-A4W	H7CX-AW	H7CX-AU			
Classification			Preset counter	Preset counter/tachometer				
Supported configurations		1-stage counter, 2-stage counter, 1-stage counter with total counter, 1-stage counter with batch counter, dual counter (addition only) (selectable)	1-stage counter, 2-stage counter, 1-stage counter with total counter, 1-stage counter with bac counter, dual counter (addition/subtraction), tachometer (selectable)					
Rated supply voltage (See note 1.)			100 to 240 VAC (50/60 Hz), 12 to 24 VDC	100 to 240 VAC (50/60 Hz), 24 VAC (50/60 Hz)/12 to 24 VDC, 12 to 24 VDC	100 to 240 VAC (50/60 Hz), 24 VAC (50/60 Hz)/12 to 24 VDC			
Operating voltage	e range		85% to 110% of rated supply voltage (90%	to 110% at 12 VDC)				
Power consumpti	on		Approx. 9.2 VA at 264 VAC Approx. 7.2 VA at 26.4 VAC Approx. 3.7 W at 12 VDC					
Mounting method	1		Flush mounting					
External connecti	ions		Screw terminals					
Terminal screw tig	ghtening torq	Je	0.5 N·m max.					
Display (See note	2.)		7-segment, negative transmissive LCD					
		PV	11.5-mm-high characters, red or green (programmable) (programmable)					
		sv	6-mm-high characters, green	1				
Digits			4 digits (-999 to 9,999) SV range: 0 to 9,999	6 digits (-99,999 to 999,999 or 0 to 999,999 when using as Tachometer) SV range: -99,999 to 999,999 (See note 3.) or 0 to 999,999				
Input signals			CP1, CP2, reset 1, and reset 2					
Input method			No-voltage input/voltage input (switchable) No-voltage input ON impedance: 1 k Ω max. (Leakage curred ON residual voltage: 3 V max. OFF impedance: 100 k Ω min. <u>Voltage input</u> High (logic) level: 4.5 to 30 VDC Low (logic) level: 0 to 2 VDC (Input resistar	,				
Counter	Max. counting	g speed	30 Hz or 5 kHz (selectable, ON/OFF ratio 1	:1), common setting for CP1 and CP2				
ľ	Input mode		Increment, decrement, command, individual, and quadrature					
	Reset input		Minimum reset input signal width: 1 or 20 ms (selectable), common setting for all inputs					
	Reset system		External, manual, and automatic reset (internal according to C, R, P, and Q mode operation)					
	Output modes		N, F, C, R, K-1, P, Q, A N, F, C, R, K-1, P, Q, A, K-2, D, L, H					
	One-shot output time		0.01 to 99.99 s	•				
	Pulse measurement method			Periodic measurement (Sampling period: 200 ms)				
_	Max. counting speed			30 Hz or 10 kHz (selectable)				
_	Measuring ranges			30 Hz: 0.01 to 30.00 Hz 10 kHz: 0.01 Hz to 10 kHz				
	Measuring accuracy			±0.1% FS ±1 digit max. (at 23 ±5°C)				
	Output modes			HI-LO, AREA, HI-HI, LO-LO				
	Auto-zero time			0.1 to 99.9 s				
H	Startup time			0.0 to 99.9 s				
Output type	Average proc	essing	 H7CX-A4W/-AW/-AWD1: SPDT (OUT2) an	OFF/2/4/8 times ad SPST-NO (OUT1)	H7CX-AU/-AUD1: SPDT and 1 transistor			
Control output			H7CX-A4WSD/-AWS/-AWSD1: 2 transistors Contact output: 3 A at 250 VAC/30 VDC, resistive load (cose=1) Minimum applied load: 10 mA at 5 VDC (failure level: P, reference value) Transistor output: NPN open collector, 100 mA at 30 VDC Residual voltage: 1.5 VDC max. (approx. 1 V) Leakage current: 0.1 mA max.					
			NEMA B300 Pilot Duty, 1/4 HP 3-A resistive load at 120 VAC, 1/3 HP 3-A resistive load at 240 VAC					
External power su	upply		12 VDC (±10%), 100 mA (except for H7CX-A□D models) Refer to Safety Precautions (Common) on page 59 for details.					
Key protection			Yes					
Prescaling function			Yes (0.001 to 9.999) Yes (0.001 to 99.999)					
Decimal point adj			Yes (rightmost 3 digits)					
Sensor waiting tir	ne		250 ms max. (Control output is turned OFF and no input is accepted during sensor waiting time.)					
Memory backup Ambient temperat	ture		EEPROM (overwrites: 100,000 times min.) that can store data for 10 years min. Operating: -10 to 55°C (-10 to 50°C if counters are mounted side by side) (with no icing or condensation) Operating: -20 to 65°C (with so icine condensation)					
Ambienthumidte			Storage: -25 to 65°C (with no icing or condensation)					
Ambient humidity	1		25% to 85% Plack (NL 5) light gray (Muscell EV7(1, produced upon regulat))					
Case color Attachments			Black (N1.5), light gray (Munsell 5Y7/1, pro		er, labels for counter/tachometer DIP switch settings			
			er	waterproor packing, nush mounting adapt	in about the councertaction level DIF switch settings			

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

2. The display is lit only when the power is ON.

3. Only when the following modes are selected.

Input mode: command, individual, or quadrature; output mode: K-2, D, L, or H
 Dual count calculating mode: SUB; output mode: K-2, D, L, or H in dual counter operation

H7CX-A

■ Characteristics

item	H7CX						
Insulation resistance	100 M Ω min. (at 500 VDC) between current-carrying terminal and exposed non-current-carrying metal parts, and between non-continuous contacts						
Dielectric strength	2,000 VAC, 50/60 Hz for 1 min between current-carrying metal parts and non-current-carrying metal parts 2,000 VAC (for 100 to 240 VAC), 50/60 Hz for 1 min between power supply and input circuit (1,000 VAC for 24 VAC/ 12 to 24 VDC) 1,000 VAC (for H7CX-□SD/-□SD1), 50/60 Hz for 1 min between control output, power supply, and input circuit (2,000 VAC for models other than H7CX-□SD/-□SD1) 1,000 VAC, 50/60 Hz for 1 min between non-continuous contacts						
Impulse withstand voltage	4.5 kV (between current-carrying te	3 kV (between power terminals) for 100 to 240 VAC, 1 kV for 24 VAC/12 to 24 VDC and 12 to 24 VDC 4.5 kV (between current-carrying terminal and exposed non-current-carrying metal parts) for 100 to 240 VAC, 1.5 kV for 24 VAC/12 to 24 VDC and 12 to 24 VDC					
Noise immunity	±1.5 kV (between power terminals) for 100 to 240 VAC and 24 VAC/12 to 24 VDC, ±480 V for 12 to 24 VDC ±600 V (between input terminals) Square-wave noise by noise simulator (pulse width: 100 ns/1 μs, 1-ns rise)						
Static immunity	Destruction: 15 kV Malfunction: 8 kV						
Vibration resistance	Destruction: 10 to 55 Hz with 0.75-mm single amplitude, 2 hours each in three directions Malfunction: 10 to 55 Hz with 0.35-mm single amplitude, 10 min each in three directions						
Shock resistance	Destruction: 294 m/s ² each in three directions Malfunction: 196 m/s ² each in three directions						
Life expectancy	Mechanical: 10,000,000 operations min. Electrical: 100,000 operations min. (3 A at 250 VAC, resistive load) See <i>Life-test Curve</i> on page 7.						
Approved safety standards (See notes 1 and 2.)	UL508/Listing, UL 50 Type 4X for indoor use (enclosure rating) CSA C22.2 No. 14, conforms to EN61010-1 (Pollution degree 2/overvoltage category II) Conforms to VDE0106/P100 (finger protection).						
EMC	(EMI) Emission Enclosure: Emission AC mains: (EMS) Immunity ESD:	EN61326 EN55011 Group EN55011 Group EN61326 EN61000-4-2:	1 class A 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 Ging 10 V/m (Pulse-modulated, 900 MHz ±5 MHz) in the second seco							
Degree of protection	Immunity Voltage Dip/Interruption: Panel surface: IP66, NEMA 4 (indo						
• .	, ,	ors, and or Type					
Weight	Approx. 140 g						

Note: 1. To meet UL listing requirements with the H7CX-A11 models, an OMRON P2CF-11- or P3GA-11 Socket must be mounted on the H7CX. Otherwise, H7CX-A11 models are considered to meet UL508 recognition requirements.

2. The Y92S-29 Waterproof Packing and Y92F-30 Flush Mounting Adapter are necessary to ensure IP66, NEMA4, and UL Type 4X waterproofing between the H7CX and installation panel.

H7CX-A

Dimensions with Flush Mounting Adapter

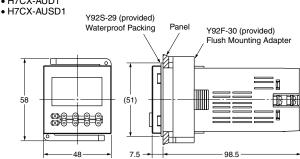
Screw-terminal Models with External Power Supplies (Provided with Adapter and Waterproof Packing)



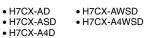
• H7CX-AW • H7CX-A4S

• H7CX-AU • H7CX-AWS • H7CX-AUD1 • H7CX-A4W • H7CX-AWD1



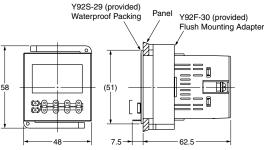


Screw-terminal Models without External Power Supplies (Provided with Adapter and Waterproof Packing)







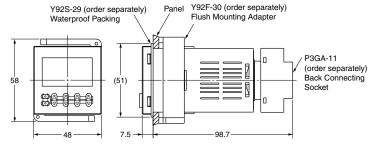


11-pin Socket Models (Adapter and Waterproof Packing Ordered Separately)

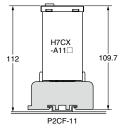
• H7CX-A11 • H7CX-A11S • H7CX-A11D1 H7CX-A11SD1

• H7CX-A114 • H7CX-A114S • H7CX-A114D1





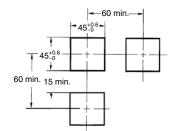
Dimensions with Front Connecting Socket



Note: These dimensions vary with the kind of DIN track (reference value).

Panel Cutouts

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



- Note: 1. The mounting panel thickness should be 1 to 5 mm.
 - 2. To allow easier operability, it is recommended that Adapters are mounted so that the gap between sides with hooks is at least 15 mm (i.e., so that the panel cutout interval is at least 60 mm).
 - 3. It is possible to mount counters side by side, but only in the direction without the hooks.
 - If they are mounted side-by-side, water-resistant specifications cannot be ensured.

n side by side mounting
- A
$A = (48n - 2.5)^{+1}_{0}$

With Y92A-48F1 attached. $A = \{48n-2.5 + (n-1) \times 4\}_{0}^{+1}$ With Y92A-48 attached.

 $A = (51n - 5.5)^{+1}_{0}$