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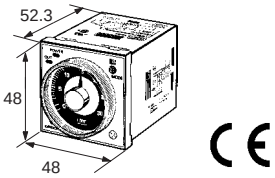
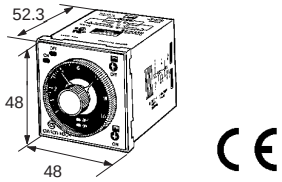
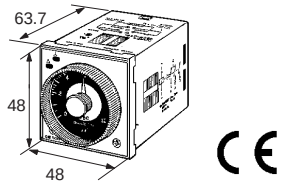
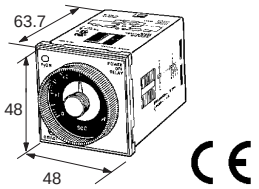
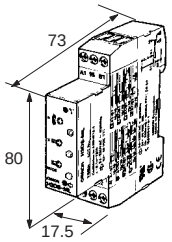
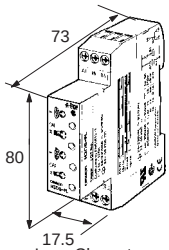
Selection Guide

Classification		Analog Timer					
Model		**H3CR-A**			**H3CR-F**	**H3CR-G**	
Features		DIN 48 x 48-mm Multifunctional Timer with many time ranges, operating modes and wide power supply ranges Optional panel cover in black and gray available			DIN 48 x 48-mm Solid-state Twin Timers	DIN 48 x 48-mm Solid-state Star-delta Timers	
Appearance and dimensions							
Time range (60 Hz)		0.05 s to 600 h			0.05 s to 300 h	0.5 to 120 s	
Supply voltage		100 to 240 VAC (50/60 Hz)/100 to 125 VDC, 24 to 48 VAC (50/60 Hz)/12 to 48 VDC			100 to 240 VAC (50/60 Hz), 12 VDC, 24 VDC/VAC (50/60 Hz), 48 to 125 VDC	100 to 120 VAC (50/60 Hz), 200 to 240 VAC (50/60 Hz)	
Power consumption		H3CR-A/-A8 (When relay ON) AC: approx. 2.1 VA (1.6 W) at 240 VAC DC: approx. 0.8 W at 24 VDC (When relay OFF) AC: approx. 1.3 VA (1.1 W) at 240 VAC DC: approx. 0.2 W at 24 VDC			100 to 240 VAC: approx. 10 VA (2.1 W) at 240 VAC 24 VAC/VDC: approx. 2 VA (1.7 W) at 24 VAC, approx. 1 W at 24 VDC 48 to 125 VDC: approx. 1.5 W at 125 VDC 12 VDC: approx. 1 W at 12 VDC	100 to 120 VAC: approx. 6 VA (2.4 W) at 120 VAC 200 to 240 VAC: approx. 12 VA (3.0 W) at 240 VAC	
Accuracy of operating time		±0.2% max.			±0.2% max.	±0.2% max.	
Setting error		±5%±0.05 s max.			±5%±0.05 s max.	±5%±0.05 s max.	
Control output		5 A at 250 VAC			5 A at 250 VAC/30 VDC	5 A at 250 VAC/30 VDC	
Contact configuration	**Type**	-A/-A8	-A8E	-AS/-A8S		-G8EL	-G8L
	Time-limit	DPDT	SPDT	Solid-state	DPDT	SPST-NO	SPST-NO
	Instantaneous	---	SPDT	---	---	SPST-NO	---
Operating mode		A: ON-delay B: Flicker OFF start B2: Flicker ON start C: Signal ON/OFF-delay D: Signal OFF-delay E: Interval G: Signal ON/OFF-delay J: One-shot			Flicker OFF start Flicker ON start	Star-delta timer	
Life expectancy	**Mechanical**	20 x 10^6 operations			20 x 10^6 operations	20 x 10^6 operations	
	Electrical (Resistive load) (see note 1)	100 x 10^3 operations (5 A at 250 VAC)			100 x 10^3 operations (5 A at 250 VAC)	100 x 10^3 operations (5 A at 250 VAC)	
EMC		Conforms to EN61812-1			Conforms to EN61812-1	Conforms to EN61812-1	
Approved standards (see note 2)		UL, CSA, LR, conforms to EN61812-1			UL, CSA, LR, conforms to EN61812-1	UL, CSA, LR, conforms to EN61812-1	
Socket	**Front Connecting**	P2CF			P2CF	P2CF	
	Back Connecting	PL, P3G			P3G	P3G	
Catalog number		L084			L084	L084	

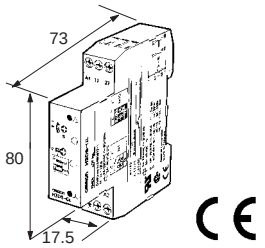
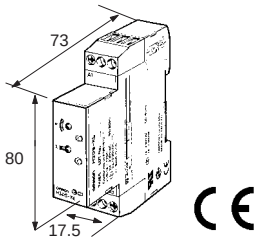
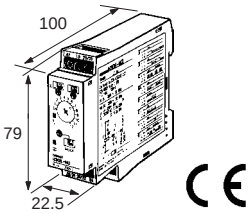
Note: **1.** Check with the relevant catalog.
2. For detailed information about applicable standards, refer to the relevant catalog.

Selection Guide

Classification		Analog Timer			
Model		**H3CR-H**		**H3DS-M/-S/-A**	**H3DS-F**
Features		DIN 48 x 48-mm Solid-state Power OFF-delay Timers		DIN Track Mounting, Standard 17.5-mm Width, Solid-state Multi-functional Timer with Smart Dial/ Selector-locking Mechanism	DIN Track Mounting, Standard 17.5-mm Width, Solid-state Twin Timer with Smart Dial/Selector-locking Mechanism
Appearance and dimensions				 Screw-Less Clamp types available.	 Screw-Less Clamp types available.
Time range (60 Hz)		0.05 s to 12 min		0.1 s to 120 h	0.1 s to 12 h
Supply voltage		100 to 120 VAC (50/60 Hz), 200 to 240 VAC (50/60 Hz), 24 VAC/VDC (50/60 Hz), 48 VDC, 100 to 125 VDC		24 to 230 VAC (50/60 Hz)/ 24 to 48 VDC	24 to 230 VAC (50/60 Hz)/ 24 to 48 VDC
Power consumption		100 to 120 VAC: approx. 0.23 VA (0.22 W) at 120 VAC 200 to 240 VAC: approx. 0.35 VA (0.3 W) at 240 VAC 24 VAC/DC: approx. 0.17 VA (0.15 W) at 24 VAC, approx. 0.1 W at 24 VDC 48 VDC: approx. 0.18 W at 48 VDC 100 to 125 VDC: approx. 0.5 W at 125 VDC		AC: 32 VA max./3.0 W max. (typical: 30 VAC/2.7 W) at 230 VAC, 14 VA max./2.2 W max. (typical: 13 VAC/2.1 W) at 100 to 120 VAC DC: 0.7 W max. (typical: 0.6 W) at 24 VDC, 1.4 W max. (typical: 1.3 W) at 48 VDC	AC: 33 VA max./2.2 W max. (typical: 31 VAC/2.0 W) at 230 VAC, 11 VA max./1.9 W max. (typical: 9.7 VAC/1.7 W) at 100 to 120 VAC DC: 0.7 W max. (typical: 0.6 W) at 24 VDC, 1.4 W max. (typical: 1.2 W) at 48 VDC
Accuracy of operating time		±0.2% max.		±1% max.	±1% max.
Setting error		±5%±0.05 s max.		±10%±0.05 s max.	±10%±0.05 s max.
Control output		5 A at 250 VAC/30 VDC		5 A at 250 VAC/30 VDC	5 A at 250 VAC/30 VDC
Contact configuration	**Type**	-H8L/-HRL	-H8RL		
	Time-limit	DPDT	SPDT	SPDT	SPDT
	Instantaneous	---	---	---	---
Operating mode		Power OFF-delay		A: ON-delay B: Flicker OFF start B2: Flicker ON start C: Signal ON/OFF-delay D: Signal OFF-delay E: Interval G: Signal ON/OFF-delay J: One-shot	Flicker OFF start/Flicker ON start
Life expectancy	**Mechanical**	10 x 10^6 operations		10 x 10^6 operations	10 x 10^6 operations
	Electrical (Resistive load) (see note 1)	100 x 10^3 operations (5 A at 250 VAC)		100 x 10^3 operations (5 A at 250 VAC)	100 x 10^3 operations (5 A at 250 VAC)
EMC		Conforms to EN61812-1		Conforms to EN61812-1 (EMI: EN55011 class B)	Conforms to EN61812-1 (EMI: EN55011 class B)
Approved standards (see note 2)		UL, CSA, LR, conforms to EN61812-1		UL, CSA, conforms to EN61812-1	UL, CSA, conforms to EN61812-1
Socket	**Front Connecting**	P2CF		---	---
	Back Connecting	P3G		---	---
Catalog number		L084		L098	L098

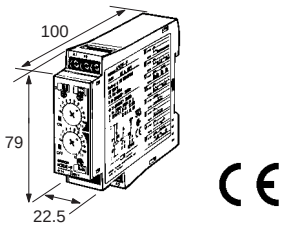
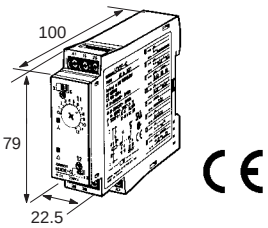
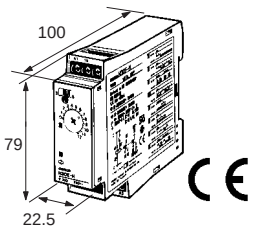
Note: **1.** Check with the relevant catalog.
2. For detailed information about applicable standards, refer to the relevant catalog.

Selection Guide

Classification		Analog Timer			
Model		**H3DS-G**	**H3DS-X**	**H3DE-M/-S**	
Features		DIN Track Mounting, Standard 17.5-mm Width, Solid-state Star-delta Timer with Smart Dial/Selector-locking Mechanism	DIN Track Mounting, Standard 17.5-mm Width, Solid-state Two-wired Timer with Smart Dial/Selector-locking Mechanism	DIN Track Mounting, Standard 22.5-mm Width Timer	
Appearance and dimensions		 Screw-Less Clamp types available.	 Screw-Less Clamp types available.		
Time range (60 Hz)		1 s to 120 s	0.1 s to 120 h	0.10 s to 120 h	
Supply voltage		24 to 230 VAC (50/60 Hz)/ 24 to 48 VDC	24 to 230 VAC/VDC (50/60 Hz)	24 to 230 VAC/DC (50/ 60 Hz) 12 VDC (H3DE-M2 only)	
Power consumption		AC: 21 VA max./1.7 W max. (typical: 20 VAC/1.6 W) at 230 VAC 11 VA max./2.0 W max. (typical: 8.6 VAC/1.5 W) at 100 to 120 VAC DC: 1.3 W max. (typical: 1.2 W) at 24 VDC 0.7 W max. (typical: 0.6 W) at 48 VDC	5 mA max.	H3DE-S1 AC: approx. 2.7 VA (1.6 W) at 230VAC DC: approx. 0.7 W at 24 VDC	
Accuracy of operating time		±1% max.	±1% max.	±1% max.	
Setting error		±10%±0.05 s max.	±10%±0.05 s max.	±10%±0.05 s max.	
Control output		5 A at 250 VAC/30 VDC	SCR output: 5 mA to 0.7 A	5 A at 250 VAC/30 VDC	
Contact configuration	**Type**			-M1/-S1	-M2/-S2
	Time-limit	SPST-NO	SCR output	SPDT	SPDT
	Instantaneous	---	---	---	SPDT (Programmable to Time-limit)
Operating mode		Star-delta operation	ON-delay	A: ON-delay B: Flicker OFF start B2: Flicker ON start C: Signal ON/OFF-delay D: Signal OFF-delay E: Interval G: Signal ON/OFF-delay J: One-shot	
Life expectancy	**Mechanical**	10×10^6 operations	---	10×10^6 operations	
	Electrical (Resistive load) (see note 1)	100×10^3 operations (5 A at 250 VAC)	---	100×10^3 operations (5 A at 250 VAC)	
EMC		Conforms to EN61812-1 (EMI: EN55011 class B)	Conforms to EN61812-1 (EMI: EN55011 class B)	Conforms to EN61812-1 (EMI: EN55011 class B)	
Approved standards (see note 2)		UL, CSA, conforms to EN61812-1	UL, CSA, conforms to EN61812-1	UL, CSA, conforms to EN61812-1	
Socket	**Front Connecting**	---	---	---	
	Back Connecting	---	---	---	
Catalog number		L098	L098	L092	

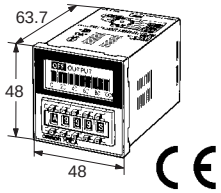
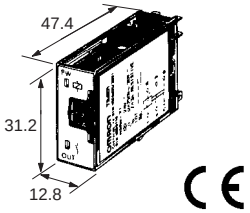
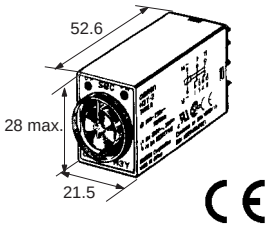
Note: **1.** Check with the relevant catalog.
2. For detailed information about applicable standards, refer to the relevant catalog.

Selection Guide

Classification		Analog Timer		
Model		**H3DE-F**	**H3DE-G**	**H3DE-H**
Features		DIN Track Mounting, Standard 22.5-mm Width, Solid-state Twin timer	DIN Track Mounting Standard 22.5-mm Width, Solid-state Star-delta Timer	DIN Track Mounting, Standard 22.5-mm Width, Solid-state Power OFF-delay Timer
Appearance and dimensions				
Time range (60 Hz)		0.1 s to 12 h	1 s to 120 s	0.1 s to 120 s
Supply voltage		24 to 230 VAC/VDC (50/60 Hz)	24 to 230 VAC/VDC (50/60 Hz)	100 to 120 VAC (50/60 Hz) 200 to 230 VAC (50/60 Hz) 24 VAC/VDC (50/60 Hz) 48 VAC/VDC (50/60 Hz)
Power consumption		AC: approx. 3.1 VA (1.8 W) at 230 VAC DC: approx. 0.8 W at 24 VDC	AC: approx. 3 VA (1.8 W) at 230 VAC DC: approx. 0.8 W at 24 VDC	AC: approx. 1.6 VA (1.0 W) at 230 VAC DC: approx. 0.2 W at 24 VDC
Accuracy of operating time		±1% max.	±1% max.	±1% max.
Setting error		±10%±0.05 s max.	±10%±0.05 s max.	±10%±0.05 s max.
Control output		5 A at 250 VAC	5 A at 250 VAC	5 A at 250 VAC
Contact configuration	**Type**			
	Time-limit	SPDT	SPDT	SPDT
	Instantaneous	---	---	---
Operating mode		Flicker-OFF/Flicker-ON start	Star-delta operation	Power OFF-delay
Life expectancy	**Mechanical**	10 x 10^6 operations	10 x 10^6 operations	10 x 10^6 operations
	Electrical (Resistive load) (see note 1)	100 x 10^3 operations (5 A at 250 VAC)	100 x 10^3 operations (5 A at 250 VAC)	100 x 10^3 operations (5 A at 250 VAC)
EMC		Conforms to EN61812-1 (EMI: EN55011 class B)	Conforms to EN61812-1 (EMI: EN55011 class B)	Conforms to EN61812-1 (EMI: EN55011 class A)
Approved standards (see note 2)		UL, CSA, conforms to EN61812-1	UL, CSA, conforms to EN61812-1	UL, CSA, conforms to EN61812-1
Socket	**Front Connecting**	---	---	---
	Back Connecting	---	---	---
Catalog number		L092	L092	L092

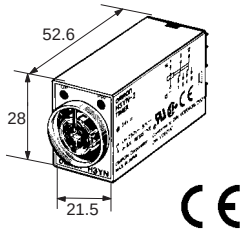
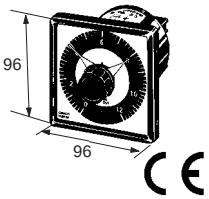
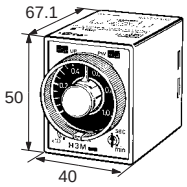
Note: **1.** Check with the relevant catalog.
2. For detailed information about applicable standards, refer to the relevant catalog.

Selection Guide

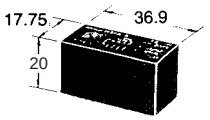
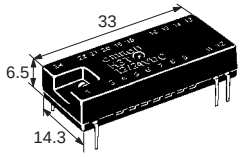
Classification		Analog Timer						
Model		**H3CA**			**H3RN**		**New H3Y**	
Features		DIN-sized (48 x 48 mm, 45 x 75 mm) Timer with digital setting and LCD display-multifunctions			Ultra-slim timer for G2R relay socket		Miniature Timer Compatible with the MY Relay	
Appearance and dimensions								
Time range (60 Hz)		0.1 s to 9999 h			0.1 s to 10 h		0.04 s to 3 h	
Supply voltage		24 to 240 VAC (50/60 Hz), 100/110/120 VAC (50/60 Hz), 200/220/240 VAC (50/60 Hz), 12 to 240 VDC, 24 VDC, 110 VDC			24 VAC (50/60 Hz), 12, 24 VDC		24, 100 to 120, 200 to 230 VAC (50/60 Hz); 12, 24, 48, 125, 100 to 110 VDC	
Power consumption		AC: approx. 4 to 10 VA (1.5 W) DC: approx. 1 to 2 W			24 VAC: approx. 0.8 VA (0.5 W) 24 VDC: approx. 0.5 W		100 to 120 VAC: approx. 1.5 VA (1.3 W) 100 to 110 VDC: approx. 1.3 W	
Accuracy of operating time		±0.3%±0.05 s			±1% max.		±1% max.	
Setting error		±0.3%±0.05 s max.			±15%±0.05 s max.		±10%±0.05 s max.	
Control output		3 A at 250 VAC			3 A at 250 A		-2/-2-0: 5 A at 250 VAC -4/-4-0: 3 A at 250 VAC	
Contact configuration	**Type**	-A/-FA	-8H	-8	-1/-11	-2/-21	-2/-2-0	-4/-4-0
	Time-limit	SPDT	SPDT	DPDT	SPDT	DPST-NO	DPDT,	4PDT
	Instantaneous	---	SPDT	---	---	---	---	
Operating mode		A: ON-delay B: Flicker C: Signal ON/OFF-delay D: Signal OFF-delay E: Interval F: One-shot and flicker G: Signal ON/OFF-delay H: Signal OFF-delay			ON-delay Interval Flicker-ON		ON-delay	
Life expectancy	**Mechanical**	10 x 10^6 operations			10 x 10^6 operations		10 x 10^6 operations	
	Electrical (Resistive load) (see note 1)	100 x 10^3 operations (5 A at 250 VAC)			100 x 10^3 operations (3 A at 250 VAC)		4PDT: 200 x 10^3 operations (3 A at 250 VAC) DPDT: 500 x 10^3 operations (5 A at 250 VAC)	
EMC		Conforms to EN61326			Conforms to EN61812-1		Conforms to EN61812-1	
Approved standards (see note2)		UL, CSA, LR conforms to EN61010-1			UL, CSA, conforms to EN61812-1		UL, CSA, LR, conforms to EN61812-1	
Socket	**Front Connecting**	P2CF			R2RF		PYF	
	Back Connecting	PL, P3G			P2R		PY	
Catalog number		L032			L090		L024	

Note: **1.** Check with the relevant catalog.
2. For detailed information about applicable standards, refer to the relevant catalog.

Selection Guide

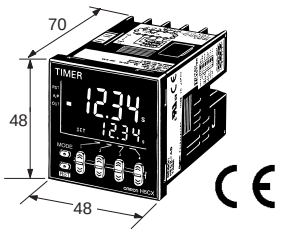
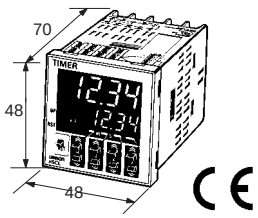
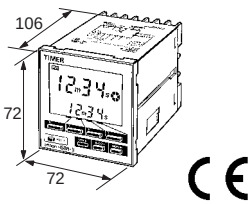
Classification		Analog Timer					
Model		**H3YN**		**H3AM**		**H3M**	
Features		Miniature Timer with Multiple Time Ranges and Multiple Operating Modes		Large setting dial and moving pointers are ideal for easy operation and monitoring		Solid-state Timer with variable time ranges	
Appearance and dimensions							
Time range (60 Hz)		0.1 s to 10 h		0.2 to 60 h		0.05 to 30 h	
Supply voltage		24 VAC (50/60 Hz) 100 to 120 VAC (50/60 Hz) 200 to 230 VAC (50/60 Hz) 12, 24, 48, 100 to 110, 125 VDC		100 to 240 VAC (50/60 Hz)		100/110/120, 200/220/ 240 VAC (50/60 Hz), 12, 24, 48, 100, or 110 VDC	
Power consumption		100 to 120 VAC: approx. 1.5 VA (1.3 W) 100 to 110 VDC: approx. 1.3 W		Approx. 9 VA (5 W)		AC: approx. 5 VA (2 W) DC: approx. 2 W	
Accuracy of operating time		±1% max.		±0.7% max.		±1% max.	
Setting error		±10%±0.05 s max.		±2% max.		±10% max.	
Control output		5 A at 250 VAC/3 A at 250 VAC		5 A at 250 VAC		5 A at 250 VAC	
Contact configuration	**Type**	-2/-21	-4/-41	-NS	-NSR	H3M	H3M-H
	Time-limit	DPDT	4PDT	SPDT	SPDT	DPDT	SPDT
	Instantaneous	---		SPDT (Programmable to Time-limit)	SPDT	---	SPDT
Operating mode		ON-delay Interval Flicker-ON		ON-delay		ON-delay	
Life expectancy	**Mechanical**	10 x 10^6 operations		50 x 10^5 operations		20 x 10^6 operations	
	Electrical (Resistive load) (see note 1)	4PDT: 200 x 10^3 operations (3 A at 250 VAC) DPDT: 500 x 10^3 operations (5 A at 250 VAC)		100 x 10^3 operations (5 A at 250 VAC)		100 x 10^3 operations (5 A at 250 VAC)	
EMC		Conforms to EN61812-1		Conforms to EN61812-1		---	
Approved standards (see note2)		UL, CSA, LR, conforms to EN61812-1		UL, CSA, conforms to EN61812-1		UL, CSA, LR	
Socket	**Front Connecting**	PYF		---		PF	
	Back Connecting	PY		---		PL, P3G	
Catalog number		L089		L095		L025	

Selection Guide

Classification		Analog Timer	
Model		**H3FA**	**H3T**
Features		DIP type Timer for PC board-use provides contact and solid-state output	PCB-mounting time unit for high-frequency applications
Appearance and dimensions			
Time range (60 Hz)		0.1 s to 60 min	0.1 to 60 min
Supply voltage		5, 6, 12, or 24 VDC; 5/6, 12/24 VDC	12 to 24 VDC 12/24 VDC
Power consumption		Approx. 80 to 330 mW	12 VDC: 60 mW 24 VDC: 120 mW
Accuracy of operating time		±0.5% max.	±2%
Setting error		0 to 30%	0 to 100%
Control output		Contact output: 3 A at 250 VAC Solid-state output: 150 mA at 30 VDC	Solid-state: 100 mA
Contact configuration	**Type**		
	Time-limit	SPST-NO + SPST-NC, solid-state	SPST-NO
	Instantaneous	---	---
Operating mode		ON-delay Cumulative	ON-delay Cumulative
Life expectancy	**Mechanical**	10×10^6 operations	---
	Electrical (Resistive load) (see note 1)	100×10^3 operations (3 A at 250 VAC)	---
EMC		---	---
Approved standards (see note2)		UL, CSA	---
Socket	**Front Connecting**		
	Back Connecting		
Catalog number		L038	L037

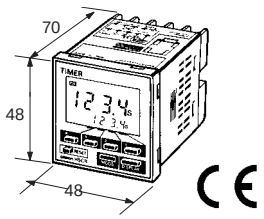
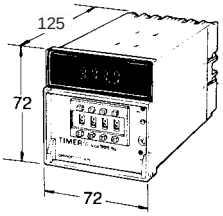
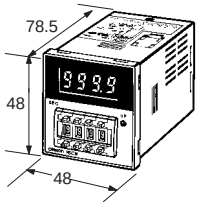
Note: **1.** Check with the relevant catalog.
2. For detailed information about applicable standards, refer to the relevant catalog.

Selection Guide

Classification		Digital Timer				
Model		**H5CX**		**H5CL**		**H5BR**
Features		48 x 48-mm Multifunctional Digital Timer		Easy-to-see and easy-to-operate DIN 48 x 48-mm Digital Timer with IP66/NEMA 4 protection		72 x 72-mm Timer with easy-to-use functions
Appearance and dimensions						
Time range (60 Hz)		0.001 s to 9999 h		0.001 s to 999.9 h		0.001 s to 9999 h
Supply voltage		100 to 240 VAC (50/60 Hz), 24 VAC (50/60 Hz)/12 to 24 VDC				100 to 240 VAC (50/60 Hz), 24 VAC (50/60 Hz)/12 to 24 VDC
Power consumption		AC: approx. 6.2 VA at 264 VAC approx. 5.1 VA at 26.4 VAC DC: approx. 2.4 W at 12 VDC		AC: 10 VA DC: 3 W		AC: approx. 8 VA at 240 VAC DC: approx. 5 W at 24 VDC
Accuracy of operating time		Power ON start: ±0.01%±0.05 s max. Signal start: ±0.005%±0.03 s max.		Power start: ±0.01%±0.05 s max. Signal start: ±0.005%±0.03 s max.		Power start: ±0.01%±0.05 s max. Signal start: ±0.005%±0.03 s max.
Setting error						
Control output		Contact output: 5 A at 250 VAC Solid state: 100 mA at 30 VDC		Contact: 3 A at 250 VAC Solid state: 100 mA at 30 VDC		Contact: 5 A at 250 VAC Solid state: 100 mA at 30 VDC
Contact configuration	**Type**	-A/-A11/-L8	-AS/-A11S/-L8S	-A/-AD	-AS/-ADS	
	Time-limit	SPDT	Solid-state	SPDT	Solid-state	SPDT, solid-state
	Instantaneous	---		---	---	---
Operating mode		A: Signal ON-delay A-1: Signal ON-delay 2 A-2: Power ON-delay 1 A-3: Power ON-delay 2 b: Repeat cycle 1 b-1: Repeat cycle 2 d: Signal OFF-delay E: Interval F: Cumulative Z: ON/OFF-duty adjustable flicker toff: Twin timer OFF start ton: Twin timer ON start		A: Signal ON-delay F: Cumulative		A: Signal ON-delay 1 A-1: Signal ON-delay 2 A-2: Power ON-delay 1 A-3: Power ON-delay 2 b: Repeat cycle 1 b-1: Repeat cycle 2 d: Signal OFF-delay E: Interval F: Cumulative
Life expectancy	**Mechanical**	10 x 10^6 operations		10 x 10^6 operations		10 x 10^6 operations
	Electrical (Resistive load) (see note 1)	100 x 10^3 operations (5 A at 250 VAC)		100 x 10^3 operations (3 A at 250 VAC)		100 x 10^3 operations (5 A at 250 VAC)
EMC		Conforms to EN61326		Conforms to EN61326		Conforms to EN61326
Approved standards (see note2)		cULus, cURus, conforms to EN61010-1		UL, CSA, conforms to EN61010-1		UL, CSA, conforms to EN61010-1
Socket	**Front Connecting**	P2CF		P2CF		
	Back Connecting	P3G		P3G		
Catalog number		L101		L085		L034

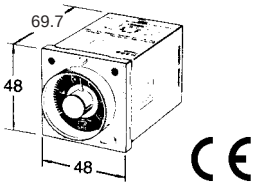
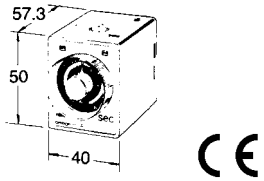
Note: **1.** Check with the relevant catalog.
2. For detailed information about applicable standards, refer to the relevant catalog.

Selection Guide

Classification		Digital Timer			
Model		**H5CR**		**H5AN**	**H5CN**
Features		1/16 DIN Timer with easy-to-use function		DIN-sized (72 x 72 mm) Quartz Timer with multiple functions	Miniature DIN-sized (48 x 48 mm) Quartz Timer with abundant series versions
Appearance and dimensions					
Time range (60 Hz)		0.001 s to 9999 h		0.01 s to 9999 h	0.001 s to 99 h 59 min
Supply voltage		100 to 240 VAC (50/60 Hz), 24 VAC (50/60 Hz), 12 to 24 VDC		100 to 240 VAC (50/60 Hz), 12 to 24, 48, or 100 VDC	100 to 240 VAC (50/60 Hz), 12 to 48 VDC
Power consumption		AC: approx. 3 VA to 5 VA at 240 VAC DC: approx. 1 W to 2 W at 24 VDC		AC: approx. 10 VA at 240 VAC DC: approx. 5 W at 24 VDC	AC: approx. 12 VA at 240 VAC DC: approx. 2.5 W at 48 VDC
Accuracy of operating time **Setting error**		Power OFF start: ±0.01%±0.05 s max. Reset start: ±0.005%±0.03 s max.		Power start: ±0.01%±0.05 s max. Reset start: ±0.005%±0.03 s max.	Power start: ±0.01%±0.05 s max. Reset start: ±0.005%±0.03 s max.
Control output		Contact output: 5 A at 250 VAC		Contact output: 3 A at 250 VAC Solid-state output: 100 mA at 30 VDC	Contact output: 3 A at 250 VAC Solid-state output: 100 mA at 30 VDC
Contact configuration	**Type**	-L/-B/-S	-LS/-BS/-SS		
	Time-limit	SPDT	Solid-state	SPDT, solid-state	SPDT, solid-state
	Instantaneous	---	---	---	---
Operating mode		A: Signal ON-delay 1 A-1: Signal ON-delay 2 A-2: Power ON-delay 1 A-3: Power ON-delay 2 b: Repeat cycle 1 b-1: Repeat cycle 2 d: Signal OFF-delay E: Interval F: Cumulative		ON-delay Cumulative One shot output	ON-delay
Life expectancy	**Mechanical**	10 x 10^6 operations		10 x 10^6 operations	10 x 10^6 operations
	Electrical (Resistive load) (see note 1)	100 x 10^3 operations (5 A at 250 VAC)		100 x 10^3 operations (3 A at 250 VAC)	100 x 10^3 operations (3 A at 250 VAC)
EMC		Conforms to EN61326		---	---
Approved standards (see note2)		UL, CSA, conforms to EN61010-1		UL, CSA	UL, CSA
Socket	**Front Connecting**	P2CF			P2CF
	Back Connecting	P3G			P3G
Catalog number		L035		L050	L052

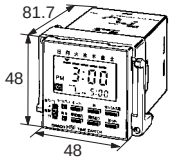
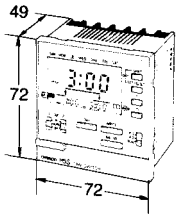
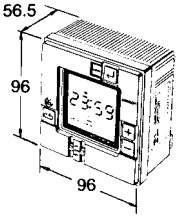
Note: **1.** Check with the relevant catalog.
2. For detailed information about applicable standards, refer to the relevant catalog.

Selection Guide

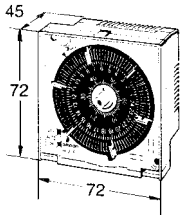
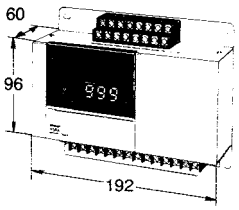
Classification		Motor Timer			
Model		**H2C**		**H2A**	
Features		DIN-sized (48 x 48 mm, 45 x 75 mm) Motor Timer with variable time range		Miniature, high-performance Motor Timer	
Appearance and dimensions					
Time range (60 Hz)		0.2 s to 30 h		0.2 s to 28 h	
Supply voltage		110, 115, 120, 220, 240 VAC (50/60 Hz), 100 VAC (50 Hz), 100/110 VAC (60 Hz), 200 VAC (50 Hz), 200/220 VAC (60 Hz)		100 VAC (50 Hz) 100/110 VAC (60 Hz) 200 VAC (50 Hz) 200/220 VAC (60 Hz)	
Power consumption		Approx. 3.5 VA (3.3 W)		Approx. 3 VA (2.7 W)	
Accuracy of operating time		±0.5%		±2%	
Setting error		±2% max.		±5% max.	
Control output		6 A at 250 VAC		2 A at 250 VAC	
Contact configuration	**Type**	H2C/-8/-F/-R/-FR	-8R	H2A-H	H2A
	Time-limit	SPDT	SPDT	SPDT	SPDT
	Instantaneous	SPDT	---	SPST-NO	---
Operating mode		ON-delay		ON-delay	
Life expectancy	**Mechanical**	30 x 10^6 operations		1 x 10^6 operations	
	Electrical (Resistive load) (see note 1)	500 x 10^3 operations (3 A at 250 VAC)		500 x 10^3 operations (2 A at 250 VAC)	
EMC		Conforms to EN61812-1		Conforms to EN61812-1	
Approved standards (see note2)		UL, CSA, conforms to EN61812-1		UL, CSA, conforms to EN61812-1	
Socket	**Front Connecting**	PF, P2CF		PF	
	Back Connecting	PL, P3G		PL, P3G	
Catalog number		L007		L004	

Note: **1.** Check with the relevant catalog.
2. For detailed information about applicable standards, refer to the relevant catalog.

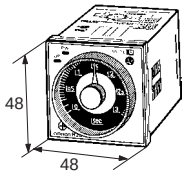
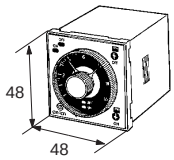
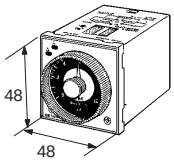
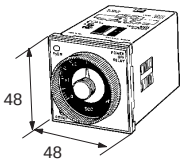
Selection Guide

Classification		Digital Daily Time Switch	Weekly Time Switch	Daily Time Switch
Model		**H5F**	**H5S**	**H5L**
Features		Easy-to-operate Daily Time Switch for various time control	Weekly Time Switch for various time controls	Easy programming with large LCD display and interactive function
Appearance and dimensions				
Time range (60 Hz)		24 h x 1 week	1 week	24 h x 7 days
Supply voltage		100 to 240 VAC (50/60 Hz)	100 to 240 VAC (50/60 Hz), 24 VDC	100 to 240 VAC (50/60 Hz)
Power consumption		Approx. 2 VA	AC: approx. 3 VA DC: approx. 0.8 W	Approx. 7 VA
Accuracy of operating time		±0.01%±0.05 s max.	±0.01%±0.05 s max.	±0.01%±0.05 s max.
Cyclic error		Monthly error: ±15 s	Monthly error: ±15 s	Monthly error: ±15 s
Control output		Contact output: 15 A at 250 VAC	15 A at 250 VAC	15 A at 250 VAC (at 50°C), 12 A at 250 VAC (at 55°C)
Contact configuration	**Time-limit**	SPST-NO	SPST-NO x 2 circuits	DPST-NO x 2 circuits
	Instantaneous	---	---	---
Operating mode		Pulse operation and day-long operation	Pulse operation, cycle operation, and day-long operation	Cycle operation and day-long operation
Power interruption compensation		Available	Available	Available
Number of set steps		16	24	16
Others		24-hour control	Weekly control	24-hour control
Life expectancy		50 x 10^3 operations (15 A, 250 VAC, resistive Load)	50 x 10^3 operations (15 A, 250 VAC, resistive Load)	100 x 10^3 operations (15 A, 250 VAC, resistive Load)
Approved standards		UL, CSA	UL, CSA	UL, CSA
Catalog number		L015	L014	L031

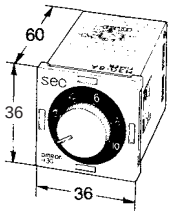
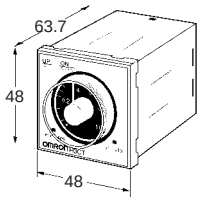
Selection Guide

Classification		24-hour/Weekly Time Switch	Others
Model		**H2F**	**H5RA**
Features		Up to 96 ON/OFF cycles from DIN-sized (72 x 72 mm) Timer	Replaces rotary cams for repeat pattern control
Appearance and dimensions			
Time range (60 Hz)		24 h/1 week	0.02 s to 99.9 h
Supply voltage		100 to 240 VAC (50/60 Hz)	100 to 240 VAC (50/60 Hz)
Power consumption		Synchronous motor: 3 VA max. Quartz motor: (AC) 1 or 4 VA max. (DC) 1 W max.	10 W max.
Accuracy of operating time		±3 min max.	±0.1%±30 ms
Cyclic error		±3 min max.	±0.1%±10 ms
Control output		15 A at 250 VAC	Solid-state output: 100 mA at 30 VDC
Contact configuration	**Type**		
	Time-limit	SPST-NO, SPDT	Solid-state
	Instantaneous	---	---
Operating mode		Day-long operation	---
Power interruption compensation		Available (M models only)	---
Number of set steps		96 max. with separately sold sets	---
Others		---	Cycle control
Life expectancy		2 years min. (approx. 10×10^3 operations)	---
Approved standards		UL, CSA	UL, CSA
Catalog number		L013	L080

Selection Guide

Classification		Sold in only Asia						
Model		**H3BA-N**			**H3BF-N**	**H3BG-N**		**H3BH-N**
Features		Solid-state Timer with valuable multiple Time ranges and multiple Operating modes			A wide variety of DIN 48 x 48-mm Twin Timers	DIN 48 x 48-mm Star-delta Timer		DIN 48 x 48-mm Power OFF-delay Timers
Appearance and dimensions								
Time range (60 Hz)		0.05 s to 300 h			0.05 s to 30 h	0.5 s to 120 s		0.05 s to 12 min.
Supply voltage		110 VAC (50/60 Hz) 220 VAC (50/60 Hz) 24 VDC			110 VAC (50/60 Hz) 220 VAC (50/60 Hz)	110 VAC (50/60 Hz) 220 VAC (50/60 Hz)		110 VAC (50/60 Hz) 220 VAC (50/60 Hz)
Power consumption		H3BA-N/-N8 110 VAC: approx. 4.6 VA (1.5 W) 220 VAC: approx. 7.9 VA (1.3 W) 224 VDC: approx. 0.6 W			110 VAC: approx. 2.9 VA (1.6 W) 220 VAC: approx. 7.0 VA (1.6 W)	110 VAC: approx. 4.6 VA (2.3 W) 220 VAC: approx. 9.5 VA (2.3 W)		110 VAC: approx. 0.17 VA (0.15 W) 220 VAC: approx. 0.24 VA (0.18 W)
Accuracy of operating time		±0.3% max.			±0.3% max.	±0.3% max.		±0.3% max.
Cyclic error		±5%±0.05 s max.			±5%±0.05 s max.	±5%±0.05 s max.		±5%±0.05 s max.
Control output		5 A at 250 VAC			5 A at 250 VAC	5 A at 250 VAC		5 A at 250 VAC
Contact configuration	**Type**	-N	-N8	-N8H	H3BF-N8	-N8	-N8H	
	Time-limit	DPDT		SPDT	DPDT	SPST-NO	SPST-NO	DPDT
	Instantaneous	---		SPDT	---	---	SPST-NO	---
Operating mode		A: On-delay B: Flicker OFF start B2: Flicker ON start C: Signal ON/OFF-delay D: Signal OFF-delay E: Interval	On-delay		Flicker OFF start	Star-delta Timer		Power OFF-delay Timer
Life expectancy	**Mechanical**	20 x 10^6 operations			20 x 10^6 operations	20 x 10^6 operations		10 x 10^6 operations
	Electrical (Resistive load) (see note 1)	100 x 10^3 (5 A at 250 VAC)			100 x 10^3 (5 A at 250 VAC)	100 x 10^3 (5 A at 250 VAC)		100 x 10^3 (5 A at 250 VAC)
EMC		---			---	---		---
Approved standards (see note 2)		UL, CSA, LR			UL, CSA	UL, CSA		UL, CSA
Socket	**Front Connecting**	P2CF			P2CF	P2CF		P2CF
	Back Connecting	P3G			P3G	P3G		P3G
Catalog number		L093			L094	L094		L094

Selection Guide

Classification		Sold in only Asia			
Model		**H3G**		**H3CT**	
Features		Low-cost, plug-in Solid-state Timer		DIN 48 x 48 mm standard size Analogue Timer	
Appearance and dimensions					
Time range (60 Hz)		0.1 s to 3 h		0.1 s to 30 h	
Supply voltage		24, 100/110/120, or 200/220/240 VAC (50/60 Hz) 12 to 24 VDC		100/110/120 or 200/220/240 VAC (50/60 Hz), 12, 24 VDC	
Power consumption		Approx. 3.4 VA at 200 VAC		100 to 120 VAC: 4.4 VA 200 to 240 VAC: 9.3 VA 24 VDC: 1.3 W 12 VDC: 1 W	
Accuracy of operating time		±2% max.		±1% max.	
Setting error		±10% max.		±5% max.	
Control output		-8A: 7 A at 250 VAC -8C: 5 A at 250 VAC		5 A at 250 VAC	
Contact configuration	**Type**	-8A	-8C	-8A	-8H
	Time-limit	SPDT	DPDT	SPDT	SPDT
	Instantaneous	---		---	SPDT
Operating mode		ON-delay		ON-delay	
Life expectancy	**Mechanical**	10×10^6 operations		10×10^6 operations	
	Electrical (Resistive load) (see note 1)	500×10^3 operations (2 A at 250 VAC)		100×10^3 operations (5 A at 250 VAC)	
Approved standards (see note 2)		UL, CSA		---	
Socket	**Front Connecting**	PF		P2CF	
	Back Connecting	P3G		P3G, PL	
Catalog number		L033		L088	

Note: **1.** Check with the relevant catalog.
2. For detailed information about applicable standards, refer to the relevant catalog.

Glossary

Accuracy of Operating Time

Differences of operating times measured when the Timer repeats operation under the same condition with a given setting time.

Formula for calculation (with operating time measured more than 5 times):

Accuracy of operating time

$$= \pm\frac{1}{2} \times \frac{\text{T max.} - \text{T min.}}{\text{TMs}} \times 100\ (\%)$$

where,

T max.: Maximum value of operating times measured at the same set time

T min.: Minimum value of operating times measured at the same set time

TMs: Maximum scale time (TMs is a set value in the case of a Digital Timer)

If there are setting changes in the H3CA or other types of Analog Timer while they are in time-limit operation, the following operation will result.

$$T = T_1 + T_2 \times \frac{T_3 - T_1}{T_3}$$

T: Final time-up time

T_1: Time elapsed

T_2: New setting

T_3: Previous setting

Ambient Humidity

The ambient humidity at which a device can be used in the continuously operated state.

Ambient Temperature (Operating)

The ambient temperature at which a device can be used in the continuously operated state.

Ambient Temperature (Storage)

The ambient temperature at which a device, without power applied, may be stored safely.

Dielectric Strength

The maximum voltage a dielectric can withstand without rupturing.

Electrical Life Expectancy

The life expectancy of a Timer when the control output of the Timer is operated to switch the specified voltage/current load connected to the control output.

The electrical or mechanical life of the Timer is generally indicated by the operating times of control output. The electrical life is indicated by the operating time of the control output connected to a load and the mechanical life is indicated by the operating time of the control output with no load. The electrical life is shorter than the mechanical life. The lighter the load is, the longer the electrical life will be. Therefore, to prolong the electrical life of the Timer, use the Timer to switch heavy loads via relays instead of directly switching them with the control output.

Electrical Reset

To reset Timer by applying a required voltage to the reset circuit.

Holding Time

The period of time from the completion of the time-limit operation to the start of the reset operation.

Impulse Withstand Voltage (AC)

A voltage imposed between the operating power supply terminals or between a charged terminal and non-charged metal part to check the withstand surge voltage of the Timer. The impulse withstand voltage imposed between the operating power supply terminals is 3 kV and that imposed between a charged terminal and non-charged metal part is 4.5 kW with both using a ±1.2x50-μs standard waveform.

Influence of Temperature

A change in operating time when the ambient temperature changes within a permissible range.

Formula for calculation (with operating time measured more than 5 time):

Variation due to temperature change

$$= \pm\frac{TMx_2 - TMs_2}{TMs} \times 100\ (\%)$$

where,

TM_2: Average value of operating times measured at 20°C

TMx_2: Average value of operating times measured at a temperature which causes the maximum deviation from TM_2 within the specified ambient temperature range.

TMs: Maximum scale time (TMs is a set value in the case of the Digital Timer)

Influence of Voltage

A change in operating time when the voltage of the control power source changes within the permissible fluctuation range.

Formula for calculation:

Variation due to voltage change

$$= \pm\frac{TMx_1 - TM_1}{TMs} \times 100\ (\%)$$

where,

TM_1: Average value of operating times measured at rated voltage

TMx_2: Average value of operating times measured at a voltage which causes the maximum deviation from TM_1 within the permissible fluctuation range.

TMs: Maximum scale time (TMs is a set value in the case of the Digital Timer.)

Insulation Resistance

The resistance offered by an insulating material to the flow of current resulting from an impressed DC voltage.

Life Expectancy (Mechanical)

The life expectancy of a Timer when the control output of the Timer is operated under no load condition.

Manual Reset

To mechanically reset the Timer by manual operation.

Noise Immunity

The mechanical and physical resistance of the Timer against external noise.

The noise resistance of the Timer is checked with a noise simulator, a coil load, an oscillating relay, and static electric noise.

OFF Time

The period of time between the moment that the Timer starts returning to its initial state and the moment that the operating voltage is applied to the operating circuit. Therefore, the OFF time of the Timer is larger than the resetting time.

OFF Time Characteristics

A change in operating time when the operating time in a given OFF time and the OFF time are changed.

Formula for calculation:

OFF time characteristic

$$= \pm \frac{TMx_3 - TM_3}{TMs} \times 100\ (\%)$$

TM_3: Average value of operating times measured with a 1-second OFF time.

TM_{X3}: Average value of operating times measured with an OFF time that causes the maximum deviation from TM_{X3} within the specified OFF-time range of one hour from the specified resetting time.

TM_S: Maximum scale time (TMs is a set value in the case of the Digital Timer.)

OFF-time characteristics are determined by the charging and discharging of a capacitor and resistor used in combination as an Electronic Timer. The characteristics vary by ±1.5% to ±5%.

Operating time accuracy, setting error, influence of voltage, influence of temperature, and OFF-time characteristics are items used to express the precision of the Timer. Any of these items may be ignored depending on the particular specifications of the model.

The Motor Timer and Electronic Timer indicate these items by percentage values. The Count Timer indicates these items by differential time values because the differential range of the Timer's operating time is almost definite due to the operating principle of the Timer. Furthermore, the Count Timer total setting error can be indicated to express all these items in the case of the Count Timer.

ON Time

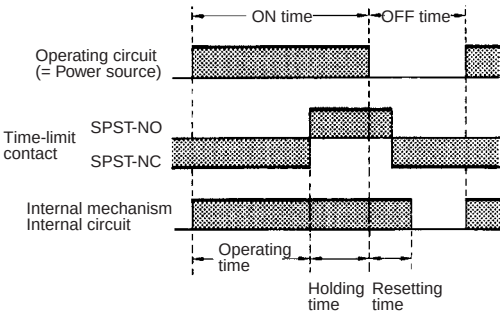
The period of time during which a required voltage is being applied to the operating circuit.

Operating Time

The period of time from the application of a required voltage to the operating circuit until the completion of the time-limit contact operation.

Resetting Time

The period of time from the interruption of the voltage supplied to the operating circuit during or after the time-limit operation until the return of the Timer to its initial state.



The resetting time of the Timer is the period of time during which all the internal components including the contacts, pointer, and the circuit components, such as the capacitor, of the Timer are reset.

If the Timer is in operation with an insufficient OFF time (i.e., the OFF time is less than the rated resetting time), the normal operation of the Timer cannot be expected. In such cases, the Timer may operate with insufficient operating time, operate instantaneously, or not operate at all. Be sure that the OFF time of the Timer is the same as or more than the rated resetting time.

Self-reset

To automatically reset the Timer by interrupting the voltage being supplied to the operating circuit.

Setting Error

A difference between the actual operating time and scale time.

Formula for calculation (measurement position can be any scale position as long as it is set to 1/3 min. of the maximum scale time):

Setting error

$$= \frac{TM - Ts}{TMs} \times 100\ (\%)$$

where,

TM: Average value of measured operating times

Ts: Set time

TMs: Maximum scale time (TMs is a set value in the case of the Digital Timer)

Shock Resistance (Destruction)

The threshold of shock beyond which an abnormality is expected to occur in the appearance or function of a device.

Shock Resistance (Malfunction)

The threshold of shock beyond which a device can no longer operate properly by satisfying the prescribed ratings.

Vibration Resistance (Destruction)

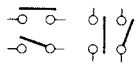
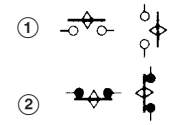
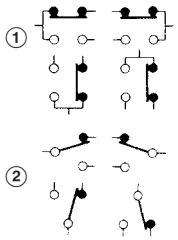
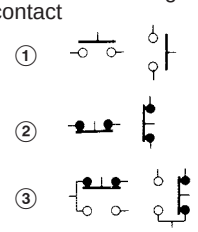
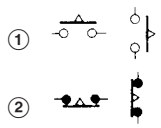
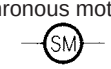
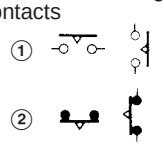
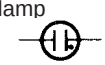
The threshold of vibration beyond which an abnormality is expected to occur in the appearance or function of a device.

Vibration Resistance (Malfunction)

The threshold of vibration beyond which a device can no longer operate properly by satisfying the prescribed ratings.

Glossary

■ Symbols Used in Internal Connection Diagram of Timers

Name and symbol	Description	Name and symbol	Description
NO contacts 	Normally open contacts (A pair of contacts which are normally open when no relay input is applied.)	Time-limit operation, time-limit resetting contacts 	① NO contacts ② NC contacts
NC contacts 	Normally closed contacts (A pair of contacts which are normally closed when no relay input is applied.)		
Transfer contacts 	Transfer contacts (NO and NC contacts which have a common contact terminal are collectively called “transfer contacts.”) A variety of contacts shown in ① and ② are all transfer contacts with NC contact arranged either on the right side or on the upper side.	Manually operated, automatic resetting contact 	Contacts which reset upon release of the hand, and used as the contacts to operate pushbutton switches. ① NO contacts ② NC contacts ③ Transfer contacts
Time-limit operating contacts 	① NO contacts	Synchronous motor 	A miniature motor which operates in synchronization with power frequency.
	② NC contacts	Relay 	An electromagnetic relay
Time-limit resetting contacts 	① NO contacts	LED 	Used to indicate the operating state of the Timer.
	② NC contacts	Neon lamp 	Used to indicate the operating state of the Timer.

■ Inrush Current

Note "---" indicates a constant current and therefore omitted from the table. All the values are approximate values and should therefore be used as a guide.

Timers

Model		Voltage	Applied voltage	Inrush current (peak value)	Time (see note)
H3CR-A, -A8, -AP		100 to 240 VAC/100 to 125 VDC	264 VAC	0.78 A	1.8 ms
			137.5 VDC	0.31 A	3.2 ms
		24 to 48 VAC/12 to 48 VDC	26.4 VAC	0.83 A	2.4 ms
			26.4 VDC	0.57 A	6.3 ms
H3CR-A8E		100 to 240 VAC/100 to 125 VDC	264 VAC	1.76 A	0.1 ms
			137.5 VDC	0.55 A	0.2 ms
		24 to 48 VAC/12 to 48 VDC	26.4 VAC	0.27 A	3.5 ms
			26.4 VDC	0.27 A	3.1 ms
H3CR-AS, -A8S		24 to 48 VAC/12 to 48 VDC	26.4 VAC	0.37 A	2.2 ms
			26.4 VDC	0.25 A	3.2 ms
H3CR-F		100 to 240 VAC	264 VAC	750 mA	1 ms
		24 VAC/DC	26.4 VAC	0.85 A	10 ms
			26.4 VDC	0.6 A	9.4 ms
		12 VDC	13.2 VDC	52 mA	3.3 ms
		48 to 125 VDC	137.5 VDC	0.5 A	9.1 ms
H3CR-H	S Series	100 to 120 VAC	132 VAC	1.05 A	111 ms
		200 to 240 VAC	264 VAC	1.07 A	119 ms
		24 VAC/DC	26.4 VAC	1.26 A	133 ms
			26.4 VDC	0.85 A	137 ms
		48 VDC	52.8 VDC	0.73 A	112 ms
		100 to 125 VDC	137.5 VDC	0.62 A	109 ms
	M Series	100 to 120 VAC	132 VAC	1.02 A	364 ms
		200 to 240 VAC	264 VAC	1.03 A	323 ms
		24 VAC/DC	26.4 VAC	1.21 A	478 ms
			26.4 VDC	0.87 A	560 ms
		48 VDC	52.8 VDC	0.71 A	384 ms
		100 to 125 VDC	137.5 VDC	0.62 A	380 ms
H3DE-S1, -M1, -F		24 to 230 VAC/DC	253 VAC	4.40 A	0.03 ms
			26.4 VDC	204 mA	11 ms
			253 VDC	2.64 A	0.03 ms
H3DE-S2, -M2, -G		24 to 230 VAC/DC	253 VDC	4.44 A	0.03 ms
			26.4 VDC	202 mA	10 ms
			253 VDC	2.68 A	0.03 ms
		12 VDC (H3DE-M2 only)	12 VDC	56 mA	51 ms
H3DE-H	S Series	24 VAC/DC	26.4 VAC	1.28 A	150 ms
			26.4 VDC	0.87 A	150 ms
		48 VAC/DC	52.8 VAC	1.05 A	150 ms
			52.8 VDC	0.73 A	150 ms
		100/110/120 VAC	132 VAC	1.05 A	150 ms
		200/220/240 VAC	264 VAC	1.00 A	150 ms
	L Series	24 VAC/DC	26.4 VAC	1.33 A	300 ms
			26.4 VDC	0.91 A	300 ms
		48 VAC/DC	52.8 VAC	1.05 A	300 ms
			52.8 VDC	0.73 A	300 ms
		100/110/120 VAC	132 VAC	1.05 A	300 ms
		200/220/240 VAC	264 VAC	1.01 A	300 ms

Technical Information

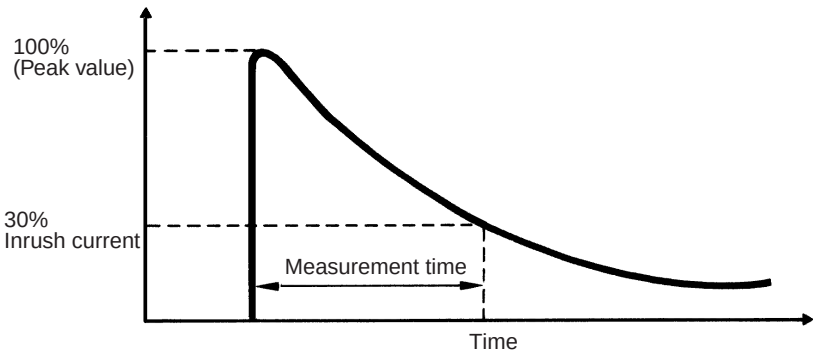
Model	Voltage	Applied voltage	Inrush current (peak value)	Time (see note)
H3DS-ML	24 to 230 VAC/24 to 48 VDC	253 VAC	2.65 A	0.52 ms
		26.4 VDC	0.49 A	3.40 ms
H3DS-SL	24 to 230 VAC/24 to 48 VDC	253 VAC	2.50 A	0.50 ms
		26.4 VDC	0.40 A	3.30 ms
H3DS-AL	24 to 230 VAC/24 to 48 VDC	253 VAC	2.48 A	0.48 ms
		26.4 VDC	0.41 A	3.15 ms
H3DS-FL	24 to 230 VAC/24 to 48 VDC	253 VAC	2.67 A	0.67 ms
		53 VDC	0.92 A	2.77 ms
H3DS-GL	24 to 230 VAC/24 to 48 VDC	253 VAC	2.52 A	0.59 ms
		53 VDC	0.94 A	2.67 ms
H3DS-XL	24 to 230 VAC/VDC	253 VAC	9.8 mA	1.00 ms
		53 VDC	3.28 mA	10.00 ms
H3AM-NS	100 to 240 VAC	264 VAC	2.74 A	1.7 ms
H3AM-NSR	100 to 240 VAC	264 VAC, Power supply terminal	2.5 A	1.3 ms
		264 VAC, Reset terminal	2.78 A	1.7 ms
H3M Series	100/110/120 VAC	264 VAC	1.2 A	0.5 ms
	200/220/240 VAC	132 VAC	620 mA	0.4 ms
	110 VDC	---	---	---
	100 VDC	---	---	---
	48 VDC	52.8 VDC	5 A	1 ms
	24 VDC	26.4 VDC	2.6 A	1 ms
	12 VDC	13.2 VDC	1.3 A	1 ms
H3RN Series	Other than 24 VAC	---	---	---
	24 VAC	26.4 VAC	200 mA	60 ms
H3Y Series	Other than 12 VDC	---	---	---
	12 VDC	13.2 VDC	600 mA	1 ms
H3YN Series	Other than 12 VDC	---	---	---
	12 VDC	13.2 VDC	600 mA	1 ms
H5CL-A, -AS	100 to 240 VAC	264 VAC	4 A	2 ms
H5CL-AD, -ADS	12 to 24 VDC	26.4 VDC	6 A	5 ms
H3CA-A Series	24 to 240 VAC/12 to 240 VDC	264 VAC	1.6 A	0.6 ms
H3CA-8, -8-306	200/220/240 VAC	264 VAC	1.5 A	0.6 ms
	100/110/120 VAC	132 VAC	780 mA	5 ms
	24 VDC	---	---	---
H3CA-8H, -8H-306	200/220/240 VAC	264 VAC	1.6 A	0.6 ms
	100/110/120 VAC	132 VAC	1.5 A	5 ms
	24 VDC	26.4 VDC	1.2 A	2 ms
H5CR-L, -LS	100 to 240 VAC	264 VAC	6.7 A	1 ms
	24 VAC	26.4 VAC	6.7 A	1 ms
	12 to 24 VDC	26.4 VDC	5.1 A	3 ms
H5CR-B, -BS	100 to 240 VAC	264 VAC	6.7 A	1 ms
	24 VAC	26.4 VAC	8 A	2 ms
H5CR-S, -SS	12 to 24 VDC	26.4 VDC	14 A	1 ms
H5BR-B	100 to 240 VAC	264 VAC	6.7 A	1 ms
	24 VAC	26.4 VAC	8 A	2 ms
H5CN Series	100 to 240 VAC	264 VAC	500 mA	2 ms
	12 to 48 VDC	52.8 VDC	1.2 A	3 ms

Model	Voltage	Applied voltage	Inrush current (peak value)	Time (see note)
H5AN Series	100 to 240 VAC	264 VAC	16 A	1 ms
	100 VDC	110 VDC	8 A	2 ms
	48 VDC	52.8 VDC	5 A	3 ms
	12 to 24 VDC	26.4 VDC	15 A	2 ms
H3FA-A	24 VDC	26.4 VDC	180 mA	2 ms
	12 VDC	13.2 VDC	600 mA	2 ms
	6 VDC	6.6 VDC	660 mA	2 ms
	5 VDC	5.5 VDC	550 mA	2 ms
H3FA-SA	24 VDC	26.2 VDC	180 mA	2 ms
	12 VDC	13.2 VDC	90 mA	2 ms
	6 VDC	6.6 VDC	660 mA	2 ms
	5 VDC	5.5 VDC	550 mA	2 ms
H3T Series	All specifications	---	---	---
H5RA	100 to 240 VAC	264 VAC	15 A	1 ms

Time Switches

Model	Voltage specification	Applied voltage	Inrush current (peak value)	Time (see note)
H2F Series	All specifications	---	---	---
H2E Series	All specifications	---	---	---
H5L-A	All specifications	---	---	---
H5S Series	100 to 240 VAC	264 VAC	2.5 A	0.3 ms
	24 VDC	26.4 VDC	1.1 A	3 ms
H5F Series	100 to 240 VAC	264 VAC	2 A	0.3 ms

Note The time of the inrush current is measured as shown in the following figure.



Technical Information

■ Precautions

Warnings

The following models have built-in lithium batteries.

1. Non-replaceable Battery
   H5RA, H5L, H5S, and H5F Timers incorporate a non-replaceable lithium battery. These models must not be disassembled, deformed with pressure, heated up to 100°C or more, or burned for disposal, otherwise the battery may burn or explode.
2. Replaceable Battery
   The Y92S-20 is a replaceable lithium battery for the H5CN-M. Do not short-circuit the positive and negative poles of the battery, or recharge, disassemble, apply pressure to deform, or throw the battery into a fire for disposal, otherwise the battery may explode, burn, or cause liquid leakage.

Operating Environment Precautions

Be sure to use the Timer according to its rated ambient operating temperature and humidity ranges.

Be sure to store the Timer according to its rated temperature and humidity ranges. Leave the Timer at room temperature for three hours or more before turning the Timer on if the Timer has been stored at a temperature of –10°C or below.

Refer to the ratings of the Timer and be sure that the Timer is free of excessive vibration, shock, and drops, and sprays of water and oil.

Do not use the Timer in locations with excessive dust, corrosive gas, or direct sunlight.

Separate the Timer, its wires, and all input devices connected to the Timer from power lines that generate noise and other noise generating sources.

If the Timer is used in locations with high static electricity, such as sites with pipes transporting molding materials, powders, or liquids, be sure to separate the Timer from all sources generating static electricity.

Correct Use

Operating Time Setting

When setting the operating time, do not turn the setting knob, do not turn the setting knob beyond its scale range. For precise time setting, conduct operation tests by adjusting the setting knob.

The accuracy the operating time of the Analog Timer is indicated by the percentage value on the basis of the full-scale time. The absolute fluctuation value will not be improved by changing the time setting. Therefore, when selecting the model, be sure that the application will be able to use a time setting as close as the full-scale time setting of the Timer.

When there are setting changes in the H3CA-A or other types of Analog Timer while they are in time-limit operation, the following operation will result.

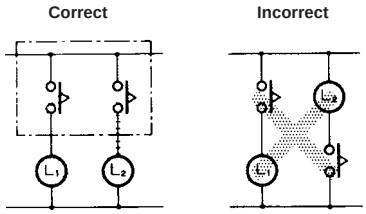
$$T = T_1 + T_2 \times \frac{T_3 - T_1}{T_3}$$

T: Final time-up time
T_1: Time elapsed
T_2: New setting
T_3: Previous setting

Control Output

Do not use the Timer with an excessive load current or connect an excessively heavy load to the Timer, otherwise the life of the relay contact will be significantly shortened.

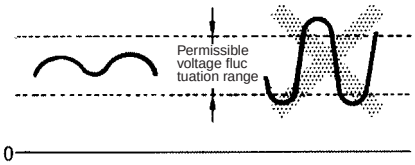
The following are correct and incorrect connection examples. Do not wire the Timer like the incorrect example, otherwise a rare short-circuit may be caused by the Timer's internal contacts that will be different to each other in polarity.



Power Supply

Impose supply voltage on the Timer through a switch or relay contact at one time. Do not impose supply voltage gradually, otherwise the Timer may go into time-up condition or may not be reset.

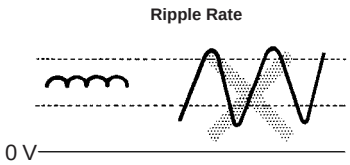
Be sure that the fluctuation of the supply voltage is within the permissible range.



Be sure that the capacity of the power supply is large enough, otherwise the Timer may not start due to inrush current that may flow for an instant when the Timer is turned on.

AC power can be applied to the Timer regardless of the polarity of the power supply terminals. When supplying DC power, be careful enough not to make a mistake in polarity.

Be sure that the ripple rate of DC power supplied to the Timer is within the rated range.



Refer to the following for the ripples rates of typical simple power supplies.

Rectifying method	Ripple rate
Single-phase, full-wave	Approx. 48%
Three-phase, full-wave	Approx. 4%
Three-phase, half-wave	Approx. 17%

Note Refer to the permissible ripple rate of the model to be used.

The Timer can withstand an external impulse voltage of 3 kV with a ±1.2x50-μs standard waveform, which conforms to the Japanese JEC-210 standards, imposed between the power supply terminals. If an impulse voltage exceeding this should exist, use an appropriate surge absorber.

Others

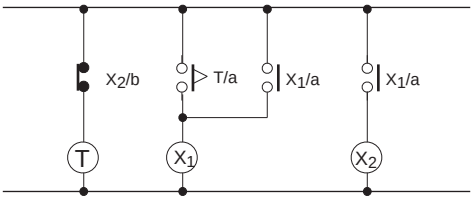
When conducting a dielectric test, impulse voltage test, or insulation resistance test between electric circuit and non-current-carrying metal parts of the Timer mounted to a control panel, be sure to take the following steps. These steps will prevent the internal circuitry of the Timer from damage that may be caused if a machine on the control panel has an improper dielectric strength or insulation resistance.

1. Separate the Timer from the circuitry of the control panel by disconnecting the socket from the Timer or wires.
2. Short-circuit all terminals of the Timer.
   If any device with no-contact output, such as a proximity sensor, photoelectric sensor, or SSR, is directly connected to the Timer, current leakage from the device may cause Timer malfunction. Be sure to test the device with the Timer before using the device for actual applications.

Before using the Timer to switch inductive loads, be sure to connect a surge absorbing element to the Timer in order to prevent the Timer from malfunction and damage. A diode is an example of a surge absorbing element for DC circuits and a surge absorber is an example of a surge absorbing element for AC circuits.

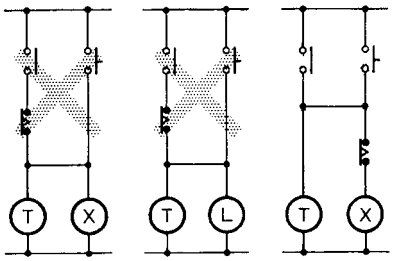
The H3CA-A, H3CR-H, and H3DR-H incorporate latching relays. The contacts of these relays may become inverted or neutral if any of one these Timers is dropped. Be sure to check the relays if the Timers has been dropped.

Do not leave the Timer in time-up condition for a month or longer in places with high temperatures, otherwise the internal parts, such as electrolytic capacitor, of the Timer may be damaged. Refer to the following diagram and use the Timer with an appropriate relay so that the Timer will not be left in time-up condition for a long time.



(X) : Auxiliary relay (e.g. MY Relay)

When the Timer is reset right after the Timer goes into time-up condition, be sure to provide the Timer with an appropriate circuit configuration considering the resetting time of the Timer so that a sequential error will not result.



The Digital Timer uses the constant value read method. Be careful when changing the set value because the output of the Digital Timer will be ON when the set value coincides with the count value.

Be sure that the casing of the Timer is free from organic solvents, such as paint thinner and benzene, strong acid and alkali solvents, which will damage the casing.

Do not remove the casing of the Timer.

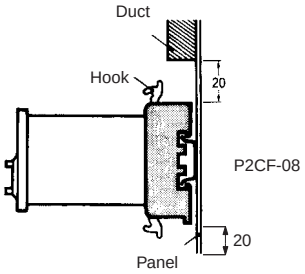
Mounting

Surface Mounting

There is no particular restriction on surface mounting directions, but be sure that the Timer is securely mounted horizontally.

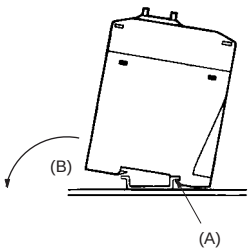
• P2CF Socket

When mounting the Timer vertically with the P2CF Socket, consider the movable hooks and be sure that there is a 20-mm space on each of the upper and lower parts of the Socket.

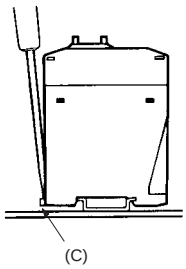


• Track Mounting (H3CA-FA)

1. Hook portion (A) onto one rail and press the Timer in the (B) direction.

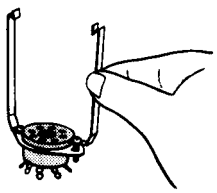


2. When dismounting the Timer, insert a flat-blade screwdriver into portion (C) and remove the Timer.

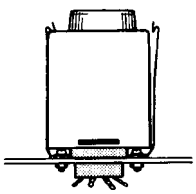


• PL Socket

1. Insert the PL Socket from the panel surface and secure the L-shaped hooks of the Socket with screws.

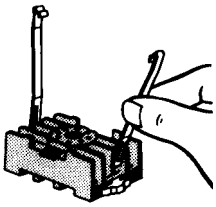


2. Connect the Timer to the Socket and press the tip of each hook by hand.



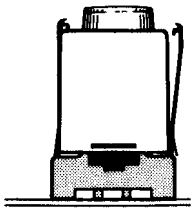
Technical Information

- PF085A or P2B Socket (1)
  1. Mount the Socket to the panel surface and insert the F-shaped hook into the sockets.

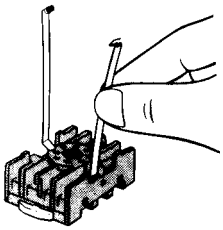


Example: PF085A

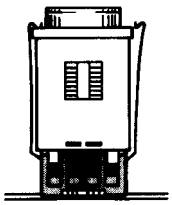
  2. Connect the Timer to the Socket and press the tip of each hook by hand.



- PF85A Socket (2)
  1. Secure the Socket to the panel surface with screws and insert the F-shaped hook into the sockets.



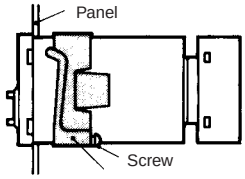
  2. Connect the Timer to the Socket and press the tip of each hook by hand.



Panel Mounting

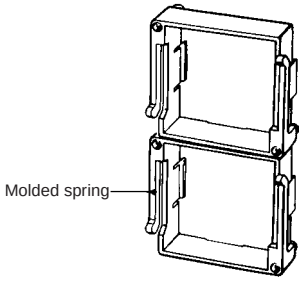
The mounting panel must be 1.0 to 3.2 mm in thickness, and varies with the model. Refer to the precautions for each model for details.

When the Y92F-30 Flush Mounting Adapter is used, insert the Timer into the square hole from the front side of the panel and put on the Flush Mounting Adapter from the rear side of the Timer. Press the Flush Mounting Adapter so that the space between the Flush Mounting Adapter and the panel is reduced as much as possible, and secure the Flush Mounting Adapter with screws.

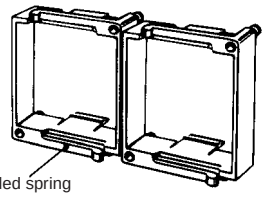


Y92F-30

When multiple Timers are closely mounted vertically, be sure that the molded springs of each Y92F-30 Flush Mounting Adapter are located on the left and right sides.



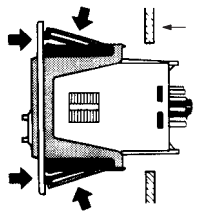
When multiple Timers are closely mounted horizontally, be sure that the molded springs of each Y92F-30 Flush Mounting Adapter are located on the top and bottom sides.



When using the US08, be sure to use 10.5-dia. max. multi-conductor cable or 3-dia. max. insulated stranded wire for wiring.

When the Y92F-40, Y92F-70, Y92F-71, Y92F-73, or Y92F-74 Flush Mounting Adapter is used, just insert the Timer into the square panel hole. If the panel coating is too thick and the hooks do not click, spread open the hooks appropriately to the left and right after inserting the Timer to the hole.

Spread open the hooks to the left and right.

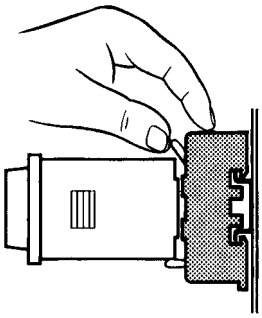


The illustration is an example with the Y92F-70.

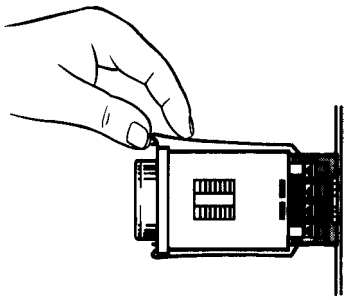
Spread open the hooks to the left and right.

Dismounting

Surface Mounting with P2CF

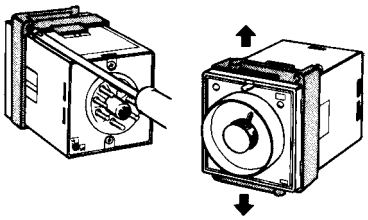


Surface Mounting with PF085A

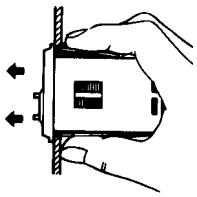


Panel Mounting

Loosen the screws of the Flush Mounting Adapter, spread open the hooks, and remove the Mounting Adapter.



When the Y92F-40, Y92F-70, Y92F-71, Y92F-73, or Y92F-74 Mounting Adapter is used, press the hook inwards with the thumb and index finger of both hands, and press the Timer towards the front side.

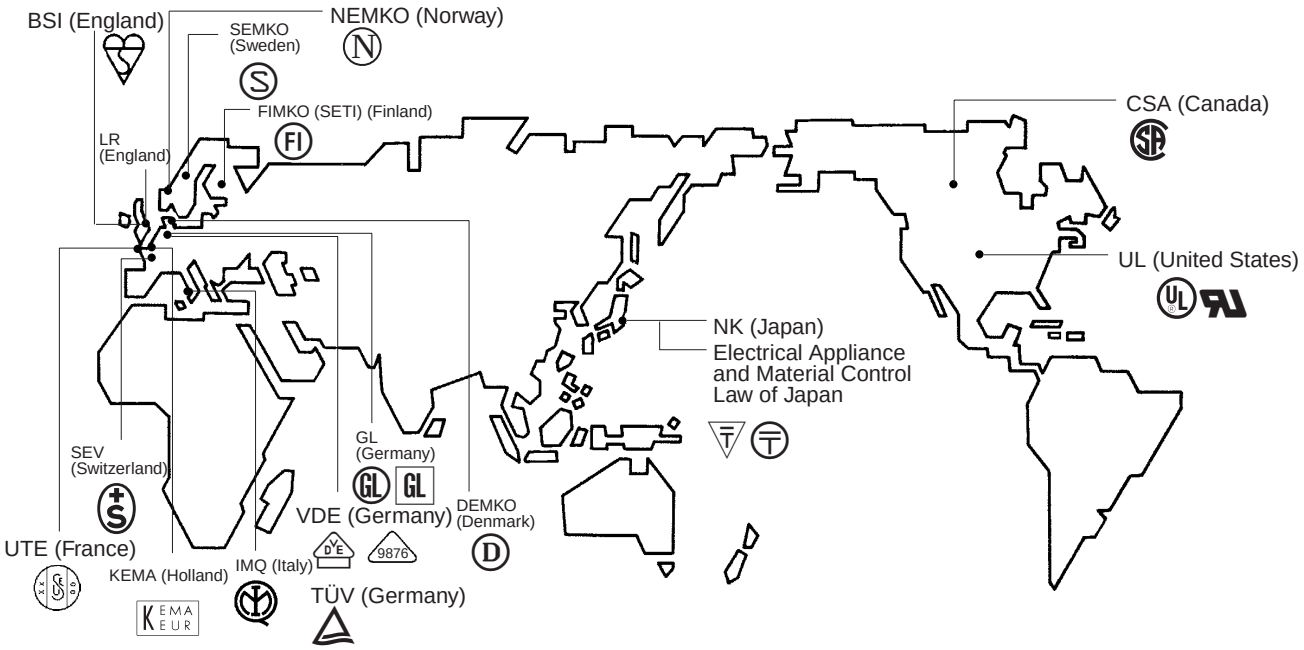


Check Items for Timer Model Selection

1. Operating current (AC or DC) and frequency
2. Rated voltage
3. Power consumption
4. Operating and resetting methods
5. Contact configuration and capacity
6. Operating time range
7. Resetting time
8. Mechanical and electrical life
9. Operating environment, such as temperature, humidity, dust, vibration, and shock
10. Peripheral power supply environment, such as peripheral devices and permissible voltage fluctuation range
11. Operating frequency
12. Setting frequency and type (time or timing setting)
13. Accuracy of operating time
14. Mounting method and direction
15. Size restriction

Standards

■ National Standards



IEC (International Electrotechnical Commission)

The IEC is a standardization commission established in 1908 to promote unification and coordination of international standards relating to electricity. It is headquartered in Geneva, Switzerland.

In order to accomplish the above aims, IEC standards are provided. The IEC strongly recommends that all member nations of the IEC have their domestic standards in conformance with IEC standards when the member nations establish their standards.

At present, there are 50 member nations in the IEC. Based on the latest technology reported by leading member nations, IEC standards are issued as technological standards relating to electricity. Established international safety standards provided by various countries and accepted worldwide are based on IEC standards.

In order to simplify approval procedures for electrical devices and promote smooth international trade, there is an international scheme called the CB Scheme (Certification Body Scheme), which is authorized by the IEC. Based on the CB Scheme, safety tests on electrical devices are conducted and certificates are issued if the devices are proven to meet IEC standards. Products issued with such certificates are accepted in 30 countries around the world.

UL (Underwriters Laboratories Inc.)

A nonprofit organization established in 1894 by the American association of fire insurance companies.

Underwriters Laboratories (abbreviated to UL hereafter) conducts approval testing on all kinds of electrical products. In many U.S. cities and states, UL approval is legally required on all electrical items sold.

In order to obtain UL approval on an electrical product, all major internal components also require UL approval.

UL offers two classifications of approvals, the listing mark and the recognition mark.

A Listing Mark constitutes an entire approval of a product. Products display the Listing Mark shown below.

LISTING MARK

The Recognition Mark applies to the components used in a product, and therefore constitutes a more conditional approval of a product. Products display the Recognition Mark shown below.

RECOGNITION MARK

The UL and CSA are unifying their standards with the adoption of a mutual approval system. Furthermore, they are adjusting their standards so that they will be in conformance with IEC standards.

CSA (Canadian Standards Association)

This association descended from a nonprofit, non-government standardization organization established in 1919. In addition to industrial standardization, the association now carries out safety testing on electrical products.

CSA has closer ties to government agencies than UL, so that electrical products not approved by CSA cannot be sold in Canada. Non-approved goods being sold illegally may have to be withdrawn.

CSA approval is known as “certification,” and consequently, CSA-approved equipment is referred to as “certified equipment.” Products display the mark shown below. For a conditional certification, products display component acceptance mark.

The CSA is adjusting its standards so that they will be in conformance with UL and IEC standards.

CERTIFICATION MARK

EN (European Norm)

In connection with EC unification, 18 European countries will integrate their conventional safety standards into EN standards. When EN standards come into effect, they will apply as unified standards in Europe in place of conventional safety standards. EN standards related to electricity are based on IEC standards plus requirements of countermeasures against electric shock. Each EN code consists of the prefix “EN” followed by five characters beginning with the number 6 (e.g., EN60204).

Industrial products exported to Europe must satisfy IEC standards if the products do not fall under EN standards.

Industrial products exported to European countries from Japan or North America or traded between European countries must satisfy EN standards. Furthermore, 12 types of industrial products, such as machines, low-voltage devices, and EMC equipment, must bear CE markings. A product bearing the CE marking indicates that the product meets safety standards specified by all relative EC Directives. For example, an industrial machine must satisfy the EC Machinery Directives, Low-voltage Directives (LVD), and EMC requirements.

VDE (Verband Deutscher Electrotechniker e.V.)

The VDE (German electrical technician’s association), established in 1893, is mainly responsible for carrying out safety testing and approval administration of electrical products. Compliance with VDE standards is not proscribed under German law, however, the extremely heavy penalties imposed on the manufacturer of an unapproved product which causes an electric-shock or fire mean that compliance is effectively compulsory in practice.

The VDE offers two major classifications of approval: the VDE Mark (below left) for products that can be used independently on the market, and the Monitoring Mark (below right) for components that are built into other products. The number inside the Monitoring Mark is the VDE registration number.

VDE MARK

MONITORING MARK

LR (Lloyd's Register of Shipping)

These are the standards of the Lloyd’s Register of Shipping, headquartered in London. All of the OMRON control components approved in LR are UMS ships, the unmanned engine-room ship classification in the Lloyd’s Register.

Unlike the safety standards such as UL, the devices are checked to ensure that they can function sufficiently under the environmental conditions when they are used in ships.
When a device is approved, Lloyd’s Register doesn’t apply the passing mark on the product, but includes it on the list of approved products that it publishes every year.

NK (Nippon Kaiji Kyokai)

Automation equipment and devices receive tests and inspections based on the provisions of the steel-ship regulations and can be formally approved if the tests are passed.

Testing at the production factory can be partially or entirely omitted when automation equipment and devices that have been formally approved are installed on ships.

As a general rule, manufacturers of approved products indicate that the products being shipped have been approved. (It is also acceptable to affix a label to products which require it.)

Standards

Electrical Appliance and Material Control Law of Japan

All products that are governed by the Electrical Appliance and Material Control Law of Japan are electrical appliances for general use at the home or office. It does not apply to other industrial electrical equipment.

Electrical products falling under the auspices of this law are known as electrical appliances and divided into first-grade and second-grade appliances according to how dangerous they are and how widespread their use is.

First-grade appliances can display the marking, as shown in the left column of the table, with an authorization number and be manufactured and sold if they pass the formal authorization tests prior to manufacturing. Second-grade appliances can be manufactured and sold if the manufacturer reports the production of the appliances to the authorities concerned.

The law underwent major revisions in July 1995 to be in conformance with IEC standards such as IEC335. Consequently, the marking for second-grade appliances was eliminated with the marking for first-grade appliances remaining unchanged. Furthermore, the range of applicable products has been greatly revised.

Grade	First-grade	Second-grade
Before revision	282 applicable products 	216 applicable products 
After revision	165 applicable products 	333 applicable products (no marking)

■ EMC

Directive 89/336/EEC Concerning Electromagnetic Compatibility

The EMC Directive is a new-approach directive laying down equipment protection requirements and leaving it to standards, primarily harmonized standards or, failing that, national standards, to define product characteristics.

The EMC Directive is a total harmonization directive, i.e., its provisions replace the national provisions concerned.

The EMC Directive must be transposed into national law by 1st July 1991. Its provisions have applied since 1st January 1992.

The wide scope of the EMC Directive has demonstrated the overriding need to provide for a transitional period, so as to ensure a harmonious changeover from the application of systems of a purely national character to an exclusive Community system.

That is why, on 28 April 1992, the Council adopted Directive 92/31/EEC with a view to allowing a transitional period until 31 December 1995.

During this transitional period, a manufacturer will have the choice of placing on the market/putting into service:

- Products manufactured in accordance with the EMC Directive, whereby the free movement of the product is guaranteed pursuant to the Directive, or
- Products manufactured in accordance with national regulations or possibly with technical specifications of a non-mandatory nature, whereby free movement of the product will be guaranteed pursuant to Article 30 of the EEC Treaty, albeit subject to the possible derogations provided for in Article 36 and the jurisprudence of the European Community Court of Justice.

Normative References

EN61326
1997
Electrical equipment for measurement, control and laboratory use
EMC requirements

EN61812-1
1996
Specified time relays for industrial use
Part 1: Requirements and test

EN50081-1
1992
Electromagnetic compatibility –
Emission standard
Part 1: Residential, commercial and light industry

EN50081-2
1993
Electromagnetic compatibility –
Emission standard
Part 2: Industrial environment

EN50082-1
1992
Electromagnetic compatibility –
Immunity standard
Part 1: Residential, commercial and light industry

EN50082-2
1995
Electromagnetic compatibility –
Immunity standard
Part 2: Industrial environment

EN55011
1991
Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medial (ISM) radio-frequency equipment

EN55022
1994
Limits and methods of measurement of radio disturbance characteristics of information technology equipment

EN60204-1
1992
Safety of machinery –
Electrical equipment of machines
Part 1: General requirements

EN61000-4-2
1995
Electromagnetic compatibility for industrial-process measurement and control equipment
Part 2: Electrostatic discharge requirements

EN61000-4-3
1996
Electromagnetic compatibility for industrial-process measurement and control equipment
Part 3: Radiated electromagnetic field requirements

EN61000-4-4
1995
Electromagnetic compatibility for industrial-process measurement and control equipment
Part 4: Electrical fast transient/burst requirements

EN61000-4-6
1996
Electromagnetic compatibility for industrial-process measurement and control equipment
Part 6: Immunity to conducted disturbances induced by radio frequency fields.

EN61000-4-8
1993
Electromagnetic compatibility
Part 4: Testing and measurement techniques
Section 8: Power frequency magnetic field immunity test

ENV50140
1993
Electromagnetic compatibility –
Basic immunity standard
Radiated, radio-frequency electromagnetic field –
Immunity test

ENV50141
1993
Electromagnetic compatibility –
Basic immunity standard
Conducted disturbances inducted by radio-frequency fields –
Immunity test

IEC60801-5 (Draft)
1993
Electromagnetic compatibility for industrial-process measurement and control equipment
Part 5: Surge voltage immunity requirements

IEC60068-2-2
1974
Environmental testing
Tests B: Dry heat

IEC60068-2-30
1980
Environmental testing
Test Db and guidance: Damp heat, cyclic (12 + 12 hour cycle)

IEC60068-2-36
1973
Environmental testing
Test Fdb: Random vibration wide band
Reproducibility Medium

IEC60529
1989
Degrees of protection provided by enclosures

MIL-STD-810E
1989
Method 514.4: Vibration

ASTM D 4728
1987
Standard test method for random vibration testing of shipping containers

Note **Abbreviations**

EMC:	Electromagnetic compatibility
EMS:	Electromagnetic susceptibility
EMI:	Electromagnetic interference
RF:	Radio frequency
ISM:	Industrial, scientific and medical equipment

Standards

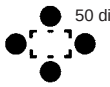
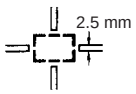
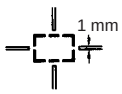
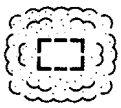
■ Enclosure Ratings

IP - □ □ □
1 2 3

Protection Specification Code (International Protection) (IEC529)

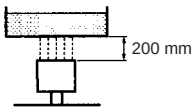
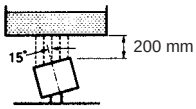
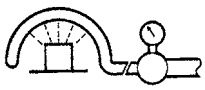
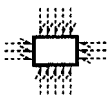
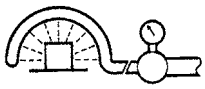
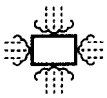
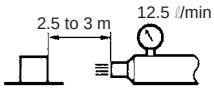
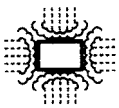
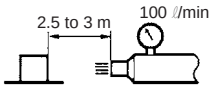
1. IEC Standards (IEC 529)

Protection Against Solid Foreign Objects

Grade	Protection	Criteria
0		No protection
1		Full penetration of 50-mm diameter of sphere not allowed. Contact with hazardous parts not permitted.
2		Full penetration of 12.5-mm diameter of sphere not allowed. The jointed test linger shall have adequate clearance from hazardous parts.
3		The access probe of 2.5-mm diameter shall not penetrate.
4		The access probe of 1.0-mm diameter shall not penetrate.
5	Dust protected 	Limited ingress of dust permitted (no harmful deposit).
6	Dust-tight 	Totally protected against ingress of dust.

2. IEC Standards

Protection Against Harmful Ingress of Water

Grade	Protection	Criteria	Examination method
0	No particular protection	No protection	No test
1	Rain 	Protected against vertically falling drops of water.	Spray water downwards in vertical direction for 10 minutes using a water-dripping test device. 
2	Rain 	Protected against vertically falling drops of water with enclosure tilted 15° from the vertical.	Tilt by 15° and spray water for 10 minutes (2.5 minutes in each direction) using a water-dripping test device. 
3	Rain 	Protected against sprays to 60° from the vertical.	Spray water up to 60° in both directions from the vertical axis for 10 minutes using the test device shown below.  Flow per water spray hole: 0.07 l/min
4	Water splash from all directions 	Protected against water splashed from all directions; limited ingress permitted.	Spray water from all directions for 10 minutes using the test device shown below.  Flow per water spray hole: 0.07 l/min
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
7	Temporary immersion (see note 1) 	Protected against the effects of immersion between 15 cm and 1 m.	Submerge for 30 minutes at the depth of 1 m (if the device is located lower than 850 mm). 
8	Continuous immersion (see note 2) 	Protected against long periods of immersion under pressure.	Test according to the conditions agreed upon between the manufacturer and user.

3. JEM (Japan Electrical Manufacturers Association Standards) Standards (JEM 1030)

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.

NEMA (National Electrical Manufactures Association)

Conversion from NEMA to IEC529 (Reverse conversion is not possible.)

NEMA250	IEC529
1	IP10
2	IP11
3	IP54
3R	IP14
3S	IP54

NEMA250	IEC529
4, 4X	IP56
5	IP52
6, 6P	IP67
12, 12K	IP52
13	IP54

Note Based on the Appendix A of the NEMA Standard. Classification of the NEMA enclosure rating differs from that of the IEC529 in corrosion resistance, rust resistance, and watertightness.

Accesories (Order Separately)

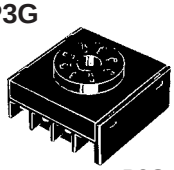
■ Sockets

Model	Type	Number of pins	Applicable Sockets	
			Front	Back
H3CR	H3CR-A8 -A8S -A8E -A8EL -F8 -F8-300 -F8N -F8N-300 -G8L -G8EL -H8L -H8RL	8	P2CF-08 P2CF-08-E	P3G-08
	H3CR-A -AS -F -F-300 -FN -FN-300 HRL	11	P2CF-11 P2CF-11-E	P3GA-11 PL11 PL11-Q PLE11-0
H3CA	H3CA-8 (H)	8	P2CF-08 P2CF-08-E	P3G-08/ PL08 PL08-Q PLE08-0
	H3CA-A	11	P2CF-11 P2CF-11-E	P3GA-11/ PL11 PL11-Q PLE11-0
H3RN	H3RN-1 -11	5	P2RF-05-E	P2R-057P
	H3RN-2 -21	8	P2RF-08-E	P2R-087P
New H3Y	H3Y-2	8	PYF08A-A PYF08A-N PYF08A-E	PY08 PY08QN(2) PY08-02
	H3Y-4	14	PYF14A PYF14A-N PYF14A-E	PY14 PY14QN(2) PY14-02
H3YN	H3YN-2/-21	8	PYF08A-A PYF08A-N PYF08A-E	PY08 PY08QN(2) PY08-02
	H3YN-4/-41/ -4-Z/-41-Z	14	PYF14A PYF14A-N PYF14A-E	PY14 PY14QN(2) PY14-02
H3M	H3M/H3M-H	8	PF085A	P3G-08/ PL08 PL08-Q PLE08-0
H5CL	H5CL-A□	11	P2CF-11 P2CF-11-E	P3GA-11
H5CR	H5CR-L	8	P2CF-08 P2CF-08-E	P3G-08
H5CN	H5CN-□□	8	P2CF-08 P2CF-08-E	P3G-08
	H5CN-□□M	11	P2CF-11 P2CF-11-E	P3GA-11
H2C	H2C-8/H2C-8R	8	P2CF-08 P2CF-08-E PF085A	P3G-08/ PL08 PL08-Q PLE08-0
	H2C/H2C-R	11	PF113A	P3GA-11/ PL11 PL11-Q PLE11-0
H2A	All types	8	PF085A/ P2B	P3G-08/ PL08 PL08-Q PLE08-0

Accesories (Order Separately)

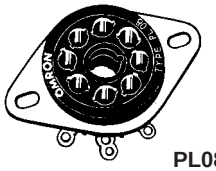
■ Back Connecting Sockets

P3G



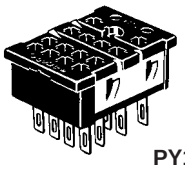
P3G-08

PL



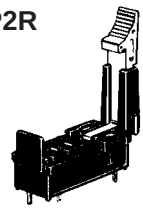
PL08

PY



PY14

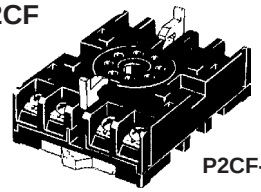
P2R



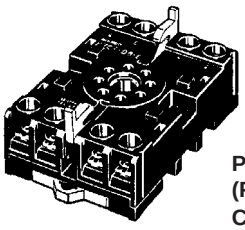
P2R-057P

■ Front Connecting Sockets

P2CF

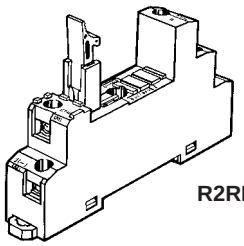


P2CF-08



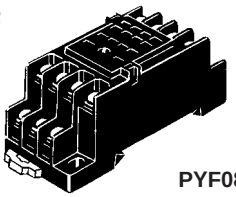
P2CF-08-E
(Finger Safe Terminal Type)
Conforming to VDE0106/P100

P2RF

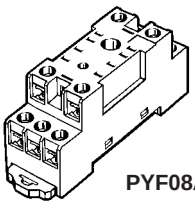


R2RF-05-E

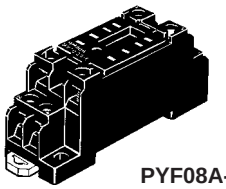
PYF



PYF08A



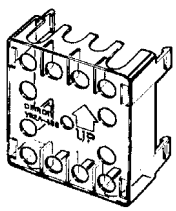
PYF08A-N



PYF08A-E

■ Finger Safe Terminal Cover

Y92A-48G
(Attachment for P3G-08/P3GA-11 Socket)



■ Hold-down Clips

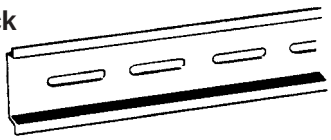
For Rectangular Sockets

- PYC-A1
- PHC-12
- PTC-1
- Y92H-3
- Y92H-4

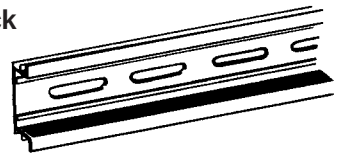
Accesories (Order Separately)

■ Mounting Accessories

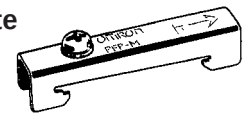
Support Track
PFP-100N
PFP-50N



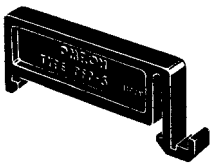
Support Track
PFP-100N2



End Plate
PFP-M

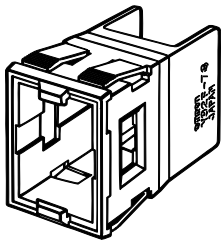


Spacer
PFP-S



■ Flush Mounting Adapter

Y92F-78
(For H3Y/H3YN-series Timers)



■ Watertight Covers

Y92A-□□N

Model	Y92A-96N	Y92A-72N	Y92A-49N	Y92A-48N
Size	96 x 96 mm	72 x 72 mm	48 x 96 mm	48 x 48 mm
Enclosure ratings	IP66 or NEMA4 (indoors)			
Applicable Timers	H3CR, H3CA, H5CR, H2C, H5CN, H5BR, H5AN			
Catalog number	Q088			

Discontinued Models

Production is constantly being re-organized to deal with different models that can be used for the same applications, and models that have not been ordered for some time due to changing needs. Models for which production has been discontinued and their recommended alternative models are listed in the table below.

Note Before using recommended alternative models, confirm specifications and other items with the relevant documentation.

Name	Model	Recommended alternative models	Scheduled to be discontinued	Remarks
Daily Time Switch	H2E	H2F-D	End of March 2000	Mounting, dimensions, wiring, and performance ratings are different.
	H2E-2	H5S-FA	End of March 2000	Mounting, dimensions, wiring, and performance ratings are different.
Solid-state Timer	H3BA	H3CR-A	End of March 1997	Depth is smaller for some models.
	H3BF-8	H3CR-F8	End of March 1997	Depth is smaller.
	H3BG	H3CR-G	End of March 1997	---
	H3BH	H3CR-H	End of March 1997	---
	H3D/-2	H3DE-S1/-S2	End of March 1997	Mounting, dimensions, and wiring are different.
	H3D-2H	H3DE-S2	End of March 1997	Mounting, dimensions, and wiring are different.
	H3DG	H3DE-G	End of March 1997	Wiring is different.
	H3DH	H3DE-H	End of March 1997	Wiring is different.
	H3DR-AS	H3CR-AS	End of March 2000	Mounting, dimensions, and wiring are different.
	H3DR-A(P)	H3DE-M2 (H3CR-A)	End of March 2000	Dimensions and wiring are different.
	H3DR-F	H3DE-F (H3CR-F8)	End of March 2000	Dimensions and wiring are different.
	H3DR-G	H3DE-G	End of March 2000	Dimensions and wiring are different.
	H3DR-H	H3DE-H	End of March 2000	Dimensions and wiring are different.
	H3DR-M	H3DE-S1	End of March 2000	Dimensions and wiring are different.
	H3DR-P(P)	H3DE-M1	End of March 2000	Dimensions and wiring are different.
	H3DX	H3DE-S1	End of March 1997	Wiring is different.
	H3Y-2-4□	H3Y-2	End of March 1997	Appearance is different.
	H3Y-4-48	H3Y-4	End of March 1997	Appearance is different.
	H3Y-4-CBG-0	H3Y-4-CBG	End of March 1997	Appearance and terminal shape are different.
	H3YU	H3YN-4(41)	End of March 1997	Settings are required for the H3YN's interval mode.
	H3Y-4-Z	H3YN-4(41)-Z	End of March 1997	Can only be used for 24 VDC.
	H3Y-4-33	H3Y-4-CBG	End of March 1997	Appearance is different.
Program Time Switch	H5E	H5S	End of March 2002	Mounting, dimensions, and operating method are different.
	H5W(-Y)	H5S-A (2 Switches)	End of March 1999	Mounting, appearance, operating characteristics, and operating method are different.
Delay Relay	LY1D	H3Y-4	End of March 1997	Sockets and dimensions are different.
	MY2V	H3Y-4	End of March 1999	---
Mini Timer	NSY NSY-2	H3AM-NS	End of March 1998	Wiring is different.
Sub-mini Timer	STP-N(M)□(2) STP-Y(M)□(2)	H3CR-A8E	End of March 1999	Mounting and appearance are different.
	STP-N(M)R STP-Y(M)R	H2C-8R	End of March 1999	Mounting and appearance are different.
	SYS SYS-R	H3AM-NS/-NSR	End of March 1998	Wiring is different.
Time Unit	TDE	H3Y	End of March 1998	• Contact output used for control output instead of non-contact output. • Dimensions (height) are different.

Notes

History of OMRON Timers