
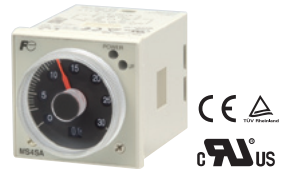








FUJI Time Delay Relays




Multi-range Super Timers

MS4S series					
Operation Type	Multimode MS4SM	On-delay MS4SA	On-delay MS4SC	On-off repetitive MS4SR	
Contact	5A 250V AC (Res. load) Timed: 2PDT	5A 250V AC (Res. load) Timed: 2PDT	5A 240V AC (Res. load) Timed: SPDT Instant: SPDT	5A 250V AC (Res. load) Timed: 2PDT	
Time range	16 field selectable time ranges				
	Time-scale timing range (max.)	Controlled timing range			
		Time unit: 0.1s	Time unit: s	Time unit: min	Time unit: h
		6	0.05-0.6s	0.5-6min	0.5-6h
		12	0.1-1.2s	1-12min	1-12h
		30	0.25-3s	2.5-30min	2.5-30h
		60	0.5-6s	5-60min	5-60h
		Input voltage	100-240V AC 50/60Hz 48-127V DC 24V AC/DC 50/60Hz	100-240V AC 50/60Hz 48-127V DC 24V AC/DC 50/60Hz	100-240V AC 50/60Hz 48-127V 24V AC/DC 50/60Hz

MS4S series	 			
Operation	Off-delay		Star-delta	On-delay power reset
Type	MS4SF		MS4SY	MS4SE
Contact	3A 250V AC (Res. load) Timed: 2PDT	5A 250V AC (Res. load) Timed: SPDT with instantaneous reset	5A 240V AC Timed: 2NO for star and delta output Instant: 1NO	5A 250V AC Instant: SPDT
Time range	4 field selectable time ranges		4 field selectable time ranges	
	Time-scale timing range (max.)	Controlled timing range		16 field selectable time ranges
		MS4SF-1T, 1TR Time unit: s	MS4SF-1N, 1NR Time unit: min	
	0.6	0.05-0.6s	0.05-0.6min	
	1.2	0.1-1.2s	0.1-1.2min	
	6	0.5-6s	0.5-6min	
12	1-12s	1-12min		
Input voltage	100-240V AC 50/60Hz 48-127V DC 24V AC/DC 50/60Hz		100-240V AC 50/60Hz	

■ Sockets and accessories for MS4S series						
Description		Surface/rail mounting		Flush mounting		Front cover
		Screw terminal	Solder terminal	Screw terminal	Solder terminal	
			Socket		Adaptor	
Type	For MS4SM	TP411X	11GB	TP411SBA	ATX2NS	FC4A
	For MS4SA, MS4SC, MS4SF, MS4SF-R, MS4SY, MS4SR, MS4SE	TP48X	8GB	TP48SB	ATX1NS	FC4A

Miniature size Super Timers

ST7P series			
Operation Type	On-delay ST7P-2		Off-delay ST7PF
Contact	3A 240V AC (Res. load) Timed: 2PDT		2A 250V AC (Res. load) Timed: SPDT
Time range	0.06-0.5s		
	0.1-1s		
	0.3-3s		
	0.4-5s		
	0.2-2h		
	1-10min		
	2-30min		
	4-60min		
	0.5-6h		
	1-12h		
Input voltage	100-120V AC 50/60Hz		
	200-230V AC 50/60Hz		
	24V DC		

■ Sockets for ST7P series					
Description		Screw terminal/rail mounting		PC board	
		M3	M3.5	Solder terminal	Wire wrap pin terminal
Type	For ST7P-2, ST7PF	TP88X1	TP88X2	TP88B	TP88R2
	For ST7P-4	TP814X1	TP814X2	TP814B	TP814R2

FUJI Time Delay Relays & Control Relays

Fuji Electric FA Components & Systems Co.,Ltd.

FUJI control equipment is conveniently compact and unfailingly reliable. Its broad range of models and types with their sophisticated designs provide powerful tools for your precision applications.

Control Relays

Miniature control relays
HH52, 53, 54
Wide variety of types
The HH52, 53, and 54 series relays come in a wide variety of types, so there is an ideal relay for every application. Types include models with LEDs to clearly indicate operation status, models with a suppressor to decrease coil surge voltages.

High contact reliability
The HH52PW and HH54PW relays have highly reliable bifurcated contacts. Because of the very low contact resistance of their gold-plated silver contacts, these relays can be used in low-level circuits (0.1mA, 1V DC).

High current switching capacity
The HH52PU relays have a high contact capacity of 7A. And the HH54PU, 5A. These relays are suitable for switching solenoids or small motor main circuits.

Easy-to-identify coil voltage
Coil voltage ratings are indicated by insulation tape colors, and can be identified at a glance.

UL, CSA and TÜV approved

Miniature power relays
HH62, 63, 64
Compact, lightweight, and high contact rating
Although compact and lightweight, these power relays have a contact rating of 10A. These relays are suitable for switching small motors and solenoid valve coil circuits.

Wide variety of types
The HH62, 63, and 64 series relays come in a wide variety of types, so these relays are also ideal for many kinds of electrical equipment. Types include models with LEDs to clearly indicate operation status, models with a suppressor to decrease coil surge voltages.

Easy-to-identify coil voltage
Coil voltage ratings are indicated by insulation tape colors, and can be identified at a glance.

Quickly replaceable socket mounting
This series has a socket mounting structure which makes mounting, maintenance, and checking easy.

UL, CSA and TÜV approved

Time Delay Relays

MS4S series
Wide timing and voltage range
This series covers timing from 0.05 seconds to 60 hours with 16 time ranges and can operate from 100V to 240V AC input voltage.

Instantaneous operation with zero preset
This series can operate and output signals instantly with a preset of zero, which is impossible with conventional CR timer. This function makes it easier to check the operation sequences of systems.

Versatile operation modes
This series can operate in on-delay, signal off-delay, flicker, one-shot momentary action, and on-off repeated operation models. MS4SY is also used for star-delta starting of 3-phase induction motor.

Accuracy of ±0.3%
The repeat accuracy is a remarkable ±0.3%, including initial operation. These timers are ideal for high-speed machine tools and automated control circuit applications where high accuracy is required.

UL, CSA and TÜV approved

ST7P series
Compact and high precision
A small mounting space, the same size as that of the FUJI miniature control relays, means this series requires only a small mounting space. The time error in repeated operations is one percent of full scale.

Three operation types
The user can choose the optimum model from on-delay single range (ST7P), and off-delay (ST7PF).

Wide time delay range
Time delays from 0.06 seconds to 12 hours are covered with 14 time ranges.

Easy time delay setting
Presetting delay time is made easy by a large transparent setting dial. The time setting pointer is close to the time scale, so setting is precise and easy.

Easy-to-confirm operation checking
LED indicators make it easy to check timer operation.

Multi-output contacts
ST7P series relays have a highly reliable FUJI miniature control relay in their output circuit to provide multiple output contacts. (Timed 2PDT or 4PDT contacts)

UL, CSA and TÜV approved




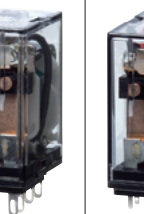

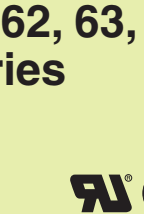
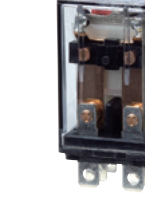
Fuji Electric FA Components & Systems Co.,Ltd.

5-7, Nihonbashi Odemma-cho, Chuo-ku, Tokyo 103-0011, Japan
URL <http://www.fujielectric.co.jp/fcs/eng/>

Information in this catalog is subject to change without notice.

Your Best Choice is FUJI.

AEH409b

Miniature control relays HH52, 53, 54 series		Standard type			High capacity type		
		Plug-in mounting	PC board mounting	Flange mounting	Plug-in mounting	PC board mounting	Flange mounting
							
Contact form		Single	Bifurcated	Single	Bifurcated	Single	Bifurcated
Without LED	2PDT	HH52P	HH52PW	HH52B	HH52BW	HH52S	HH52SW
	3PDT	HH53P	—	HH53B	—	HH53S	—
	4PDT	HH54P	HH54PW	HH54B	HH54BW	HH54S	HH54SW
With LED	2PDT	HH52P-L	HH52PW-L	HH52B-L	HH52BW-L	—	—
	3PDT	HH53P-L	—	HH53B-L	—	—	—
	4PDT	HH54P-L	HH54PW-L	HH54B-L	HH54BW-L	—	—
With surge suppression diode (DC)	2PDT	HH52P-F	HH52PW-F	HH52B-F	HH52BW-F	HH52S-F	HH52SW-F
	3PDT	HH53P-F	—	HH53B-F	—	HH53S-F	—
	4PDT	HH54P-F	HH54PW-F	HH54B-F	HH54BW-F	HH54S-F	HH54SW-F
With surge suppression diode and LED (DC)	2PDT	HH52P-FL	HH52PW-FL	HH52B-FL	HH52BW-FL	—	—
	3PDT	HH53P-FL	—	HH53B-FL	—	—	—
	4PDT	HH54P-FL	HH54PW-FL	HH54B-FL	HH54BW-FL	—	—
With surge suppression CR (AC)	2PDT	HH52P-CR	HH52PW-CR	HH52B-CR	HH52BW-CR	HH52S-CR	HH52SW-CR
	3PDT	HH53P-CR	—	HH53B-CR	—	HH53S-CR	—
	4PDT	HH54P-CR	HH54PW-CR	HH54B-CR	HH54BW-CR	HH54S-CR	HH54SW-CR
With surge suppression CR and LED (AC)	2PDT	HH52P-CRL	HH52PW-CRL	HH52B-CRL	HH52BW-CRL	—	—
	3PDT	HH53P-CRL	—	HH53B-CRL	—	—	—
	4PDT	HH54P-CRL	HH54PW-CRL	HH54B-CRL	HH54BW-CRL	—	—

Specifications

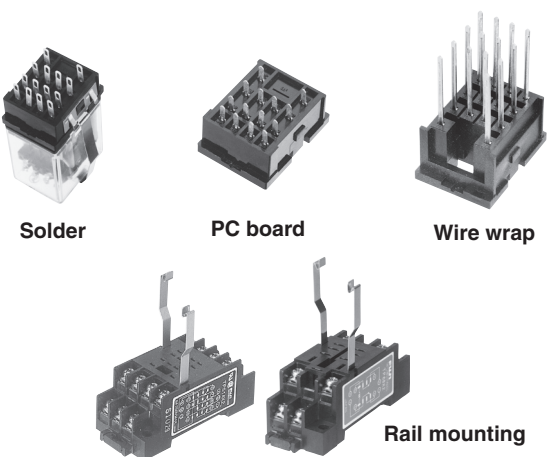
Description		Standard type					High capacity type	
Rated insulation voltage		250A					250A	
Basic type		HH52	HH53	HH54	HH52□W	HH54□W	HH52□U	HH54□U
Contact	Form	Single button			Bifurcated		Single button	
	Arrangement	2PDT	3PDT	4PDT	2PDT	4PDT	2PDT	4PDT
	Material	Silver			Gold-plated silver		Silver alloy	Gold-plated silver alloy
	Rated voltage	240V AC/120V DC			240V AC/120V DC		240V AC/120V DC	
	Rated thermal current	5A	5A	3A	5A	3A	7A	5A
Min. operating voltage and current		5V DC, 1mA	1V DC, 1mA	1V DC, 1mA	1V DC, 0.1mA		5V DC, 100mA	1V DC, 1mA
Coil	Rated voltage	6, 12, 24, 48, 100/110, 110/120, 200/220, 220/240V AC 6, 12, 24, 48, 100/110V DC						
	Pick-up voltage	AC	80% or less of rated voltage					
	Drop-out voltage	AC	30% or more of rated voltage					
		DC	10% or more of rated voltage					
Mechanical durability	AC	50 million operations			20 million operations		50 million operations	
	DC	100 million operations			20 million operations		100 million operations	
Operating temperature		-55°C to +70°C (no icing)						

Contact ratings UL, CSA and TÜV approved

Basic type	Voltage	Single-phase motor (HP)	Resistive load (A)	Inductive load (A)	Polarity
HH52P, 52B, 52S HH53P, 53B, 53S	120V AC	1/6	5	1.5	Opposite polarity
	240V AC	1/4	5	—	
	30V DC	—	5	2 (15ms)	
HH54P, 54B, 54S	120V AC	1/10	3	1	Opposite polarity
	240V AC	1/4	3	—	
	30V DC	—	3	2 (15ms)	
HH52PU, 52BU, 52SU	120V AC	1/4	7	1.5	Opposite polarity
	240V AC	3/4	7	—	
	30V DC	—	7	2 (15ms)	
HH54PU, 54BU, 54SU	120V AC	1/8	5	1	Opposite polarity
	240V AC	1/4	5	—	
	30V DC	—	5	2 (15ms)	
HH52PW, 52BW, 52SW	120V AC	1/6	5	1.5	Opposite polarity
	240V AC	1/4	5	—	
	30V DC	—	5	2 (15ms)	
HH54PW, 54BW, 54SW	120V AC	—	3	1	Opposite polarity
	240V AC	—	3	—	
	30V DC	—	3	2 (15ms)	

Sockets UL, CSA and TÜV approved

Description	Type	Used with
Solder terminal	TP58	HH52P
	TP511	HH53P
	TP514	HH54P
PC board terminal	TP58B	HH52P
	TP511B	HH53P
	TP514B	HH54P
Wire wrap terminal	TP58R2	HH52P
	TP511R2	HH53P
	TP514R2	HH54P
Screw terminal rail mounting	TP58X1, X2	HH52P
	TP511X2	HH53P
	TP514X1, X2	HH54P



Miniature power relays
HH62, 63, 64 series

							
Contact form		Single	Bifurcated	Single	Bifurcated	Single	Bifurcated
Without LED	2PDT	HH62P	HH62PW	HH62B	HH62BW	HH62S	HH62SW
	3PDT	HH63P	—	—	—	—	—
	4PDT	HH64P	—	—	—	—	—
With LED	2PDT	HH62P-L	HH62PW-L	HH62B-L	HH62BW-L	—	—
	3PDT	HH63P-L	—	—	—	—	—
	4PDT	HH64P-L	—	—	—	—	—
With surge suppression diode (DC)	2PDT	HH62P-F	HH62PW-F	HH62B-F	HH62BW-F	HH62S-F	HH62SW-F
With surge suppression diode and LED (DC)	2PDT	HH62P-FL	HH62PW-FL	HH62B-FL	HH62BW-FL	—	—
With surge suppression CR (AC)	2PDT	HH62P-CR	HH62PW-CR	HH62B-CR	HH62BW-CR	HH62S-CR	HH62SW-CR
With surge suppression CR and LED (AC)	2PDT	HH62P-CRL	HH62PW-CRL	HH62B-CRL	HH62BW-CRL	—	—

TÜV and CE approval pending for HH63 and 64 types.

Specifications

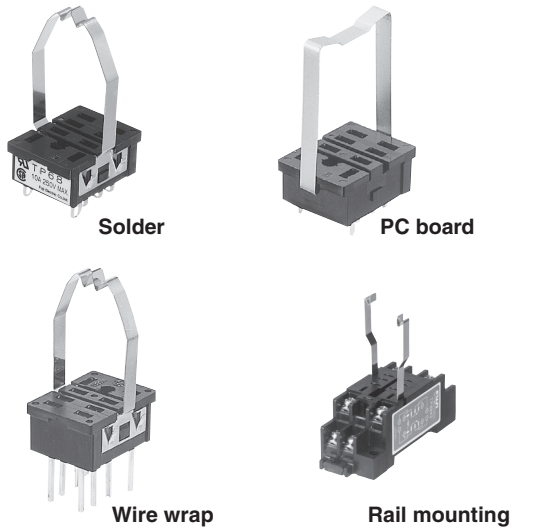
Basic type	HH62	HH63	HH64	HH62W
Rated insulation voltage	250V AC/DC			
Contact	Form	Single button		Bifurcated
	Arrangement	2PDT	3PDT	4PDT
	Material	Silver alloy		Gold-plated silver
	Rated thermal current	10A		7A
	Min. operating voltage and current	5V DC, 100mA		1V DC, 0.1mA
	Coil	HH62: 6, 12, 24, 48, 100/110, 110/120, 200/220, 220/240V AC 6, 12, 24, 48, 100/110V DC HH63, 64: 100, 200V AC, 24V DC		
Mechanical durability (operations)	Rated voltage	AC	80% or less of rated voltage	75% or less of rated voltage
	Pick-up voltage	DC	30% or more of rated voltage	10% or more of rated voltage
	Drop-out voltage	DC	10% or more of rated voltage	10% or more of rated voltage
Operating temperature	AC	50 million	50 million	20 million
	DC	100 million	50 million	20 million
Operating temperature		-55 to 70°C, no icing	-25 to 40°C, no icing	-55 to 70°C, no icing

Contact ratings UL, CSA and TÜV approved

Basic type	Voltage	Single-phase motor (HP)	Resistive load (A)	Inductive load (A)	Polarity
HH62P, 62B, 62S	120V AC	1/3	10	1.5	Opposite polarity
	240V AC	1	10	—	
	30V DC	—	8	2 (15ms)	
HH63P	120V AC	1/6	10	—	Opposite polarity
	240V AC	1/3	—	—	
	30V DC	—	10	—	
HH64P	120V AC	—	10	—	Opposite polarity
	240V AC	—	7.5	—	
	30V DC	—	10	—	
HH62PW, 62BW, 62SW	120V AC	1/6	5	1.5	Opposite polarity
	240V AC	1/4	5	—	
	30V DC	—	5	2 (15ms)	

Sockets UL, CSA and TÜV approved

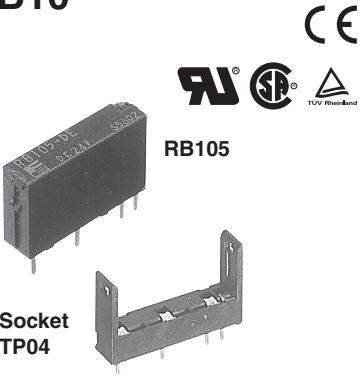
Description	Type	Used with
Solder terminal	TP68	HH62P
	TP68B	HH62PW
PC board terminal	TP68B	HH62P
	TP68R	HH62PW
Wire wrap terminal	TP68R	HH62P
	TP68X2	HH62P
Screw terminal Rail mounting	TP68X2	HH62P
	TP611X2	HH63P
	TP614X2	HH64P



DC operated slim type card relays, RB10

Features

- Thin, miniature size and light weight
The mounting space on the PC board can be reduced.
- UL, CSA and TÜV approved
- Low power consumption
They can be operated by means of non-polarity magnet.
- SIL (Single-side In-Line lead) terminal arrangement
- SIL package allows the relays to be mounted easily on PC board.
- Flux tight construction



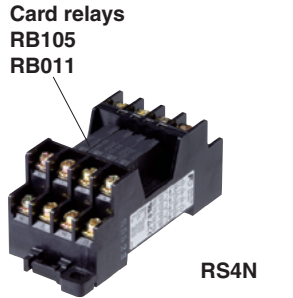
Ratings and performance data

Type	RB104	RB105
Coil	Rated voltage	4.5, 5, 6, 9, 12, 24V DC
	Pick-up voltage	70 to 130% of rated voltage
	Power consumption	120mW
Contact	Contact arrangement	1NO
	Contact resistance	30mΩ or less before use
	Contact material	Au-plated silver alloy
	Max. make/break current	250V AC, 5A 30V DC, 5A
	Rated thermal current	5A
Operating time		10ms or less at rated voltage
Release time		5ms or less at rated voltage
Dielectric strength		750V AC rms. 1min. between open contacts 2,000V AC rms. 1min. between contacts and coil
Insulation resistance		100MΩ or more at 500V DC megger
Electrical durability	AC	100,000 operations at 220V AC 2A, inductive load 130,000 operations at 220V AC 3A, resistive load
	DC	150,000 operations at 24V DC 1A, inductive load 100,000 operations at 24V DC 5A, resistive load
Mechanical durability		20 million operations
Ambient temperature		-40°C to +70°C (no icing)

Relay-and-terminal module, RS type

Features

- Consists of four or six plug-in card relays (RB105, 1NO contact or RB011, 1NC contact) and a terminal module with screw terminals. Ideal for interfacing electronic control devices, such as PLCs or photoelectric sensors with output devices, such as solenoid valves and magnetic contactors.
- Compact size of 34mm wide and 69mm long, including screw terminals (RS4N type).
- Easy wiring
- Built-in coil-surge suppression diodes and operation indicator LEDs simplify circuit design and maintenance.



Output contact	Type	Rated voltage (V DC)
4NO 3NO + 1NC 2NO + 2NC 6NO	RS4N RS41 RS42 RS6N	4.5, 5, 6, 9, 12, 24

Ratings and performance data

Contact	1NO: RB105	1NC: RB011
Contact resistance	30mΩ or less (before use)	
Contact material	Silver alloy (Au-plated)	
Min. operating voltage and current	0.1V DC, 1mA	1V DC, 1mA
Rated thermal current	5A	
Max. make/break current	250V AC, 5A 30V DC, 5A	250V AC, 1A 30V DC, 1A
Operating time	10ms, or less at rated voltage	
Release time	10ms, or less at rated voltage	
Insulation resistance	100MΩ (at 500V DC megger)	
Dielectric strength:	Between contact and coil	
	Between contacts of same pole	
	Between contacts of different pole	
	Between coils of different pole	
	2000V AC 1 minute 750V AC 1 minute 2000V AC 1 minute 500V AC 1 minute	
Vibration:	Malfunction durability	
	Mechanical durability	
	10 to 55Hz, 1mm double amplitude 10 to 55Hz, 1.5mm double amplitude	
Shock:	Malfunction durability	
	Mechanical durability	
	100m/s² 1000m/s²	
Mechanical durability		20 million operations
Electrical durability		See the table below.
Ambient temperature		-25 to +55°C (no icing)

Electrical durability NO output contact (RB105)

Voltage	Operations
220V AC, 2A (inductive load)	100,000
220V AC, 3A (resistive load)	130,000
24V DC, 1A (inductive load)	150,000
24V DC, 5A (resistive load)	100,000

NC output contact (RB011)

Voltage	Operations
220V AC, 3A (resistive load)	100,000
24V DC, 5A (resistive load)	120,00