

# 755 Series Octal Base Magnetic Latching Relay Specifications

755 Series Specifications (@ 25°C)			
Part Numbers	755-2C-120A (single coil)	755-2C-240A (single coil)	755-2CD-24D (double coil)
<b>Contact Specifications</b>			
<b>Contact Type</b>	DPDT		
<b>Contact Material</b>	Silver cadmium oxide, gold flashed		
<b>Contact Rating</b>	16A @ 120/240VAC 50/60Hz, 16A @ 28VDC		
<b>Minimum Switching Requirement</b>	100mA @ 5VDC or 0.5W		
<b>Contact Resistance</b>	50mΩ		
<b>Coil Specifications</b>			
<b>Standard</b>	LED Indicator		
<b>Coil Input Voltage</b>	120VAC	240VAC	24VDC
<b>Coil Resistance</b>	10kΩ	3.6kΩ	350Ω
<b>Power Consumption</b>	2VA to 3.55VA (60Hz) AC		
<b>Dropout Voltage (% of rated voltage)</b>	N/A		
<b>Pull-in Voltage</b>	AC: Max. 85% of nominal voltage or less DC: Max 80% of nominal voltage or less		
<b>Max. Voltage (Max. instantaneous voltage)</b>	115% of the rated coil voltage		
<b>General Specifications</b>			
<b>Service Life</b>	Mechanical @ no load: 10 million operations Electrical: 100,000 operations @ rated resistive load (AC1)		
<b>Operating Temperature</b>	AC: -30°C to 70°C (-22°F to 158°F) DC: -30°C to 75°C (-22°F to 167°F)		
<b>Weight</b>	170 g (6 oz)		
<b>*Agency Approvals and Standards</b>	UL Recognized file E43641, CE Pending, CSA 244610		

\* UL Listed when used with sockets 750-2C-SKT and 750-3C-SKT.  
Current limited to rating of relay or socket, whichever is less.

# Packaged M.O.V.s and Diodes

## Overview

Metal Oxide Varistors (MOV) and Diode circuits are offered as convenient plug-in modules. Plugging a module into the relay socket connects the circuit in parallel with the relay coil. No additional wiring is required.

Modules fit within the maximum dimensions of the relay and socket.

## Features

- MOVs protect by shunting potentially damaging electrical spikes away from the relay coil. Ideal for AC and DC applications.
- Diodes protect external drive circuitry from inductive voltages generated when removing coil voltage. Ideal for DC applications. Polarity sensitive.

## Application

Many PLC systems control one or more inductive load devices. These inductive loads (devices with a coil) generate transient voltages when they are de-energized with a relay contact. When a relay contact is closed it "bounces", which causes the coil to energize and de-energize until the "bouncing" stops. The transient voltage which is generated is much larger in amplitude than the supply voltage, especially with a DC supply voltage.

When switching a DC-supplied inductive load the full supply voltage is always present when the relay contact opens (or "bounces"). When switching an AC-supplied inductive load, if the voltage is not zero when the relay contact opens, there is energy stored in the inductor that is released when the voltage to the inductor is suddenly removed. This release of energy is what produces transient voltages.



When inductive load devices (motors, motor starters, interposing relays, solenoids, valves, etc.) are controlled with relay contacts, it is recommended that a surge suppression device be connected directly across the coil of the field device. If the inductive device has plug-type connectors, the suppression device can be installed on the terminal block of the relay output.

Metal oxide varistors (MOV) and diodes are devices which provide good surge and transient suppression of AC and DC powered coils.

Protection Device Selection Guide					
Part Number	Price	Description	Nominal Input Voltage	Dimensions & Package	Mating Socket
<b>AD-ASMD-250</b>	<--->	Protection diode module for 784 and 75 series relays. Plug-in modules come in package of 5.	6-250VDC	Figure 1	783-3C-SKT 784-4C-SKT-1 750-2C-SKT 750-3C-SKT
<b>AD-ASMM-24</b>		MOV module for 784 and 75 series relays that operate at 24VAC coil voltage. Package includes 5 modules.	24VAC/VDC		
<b>AD-ASMM-120</b>		MOV module for 784 and 75 series relays that operate at 120VAC coil voltage. Package includes 5 modules.	120VAC/VDC		
<b>AD-ASMM-240</b>		MOV module for 784 and 75 series relays that operate at 240VAC coil voltage. Package includes 5 modules.	240VAC/VDC		
<b>AD-BSMD-250</b>	<--->	Protection diode module for 782 series relays. Plug-in modules come in package of 5.	6-250VDC	Figure 2	782-2C-SKT
<b>AD-BSMM-24</b>		MOV module for 782 series relays that operate at 24VAC coil voltage. Package includes 5 modules.	24VAC/VDC		
<b>AD-BSMM-120</b>		MOV module for 782 series relays that operate at 120VAC coil voltage. Package includes 5 modules.	120VAC/VDC		
<b>AD-BSMM-240</b>		MOV module for 782 series relays that operate at 240VAC coil voltage. Package includes 5 modules.	240VAC/VDC		

## Accessory dimensions

inches [mm]

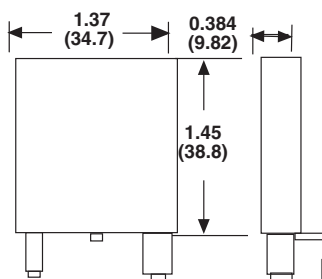


Figure 1

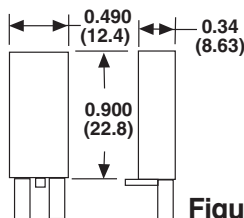


Figure 2



# Power Relays



## Features

- High power contacts capable of switching up to 40A
- Open construction
- SPDT, DPST and DPDT models
- Riveted construction for high reliability
- Maximum contact voltage up to 600V

AD-PR40-1C-12D  
shown

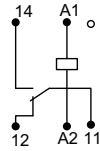
Power Relay Selection Guide						
Part Number	Price	Coil Voltage	Configuration	Contact Rating	Price	Dimensions
<b>AD-PR40-1C-12D</b>	<--->	12VDC	SPDT	40A	<--->	Figure 1
<b>AD-PR40-1C-24D</b>	<--->	24VDC				
<b>AD-PR40-1C-24A</b>	<--->	24VAC				
<b>AD-PR40-1C-120A</b>	<--->	120VAC				
<b>AD-PR40-1C-240A</b>	<--->	240VAC				
<b>AD-PR40-2A-12D</b>	<--->	12VDC	DPST	40A	<--->	Figure 2
<b>AD-PR40-2A-24D</b>	<--->	24VDC				
<b>AD-PR40-2A-24A</b>	<--->	24VAC				
<b>AD-PR40-2A-120A</b>	<--->	120VAC				
<b>AD-PR40-2A-240A</b>	<--->	240VAC	DPDT	40A	<--->	Figure 3
<b>AD-PR40-2C-12D</b>	<--->	12VDC				
<b>AD-PR40-2C-24D</b>	<--->	24VDC				
<b>AD-PR40-2C-24A</b>	<--->	24VAC				
<b>AD-PR40-2C-120A</b>	<--->	120VAC				
<b>AD-PR40-2C-240A</b>	<--->	240VAC				

AD-PR40-1C-xxxx

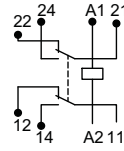
AD-PR40-2C-xxxx

AD-PR40-2A-xxxx

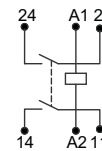
## Wiring



SPDT



DPDT



DPST

## Dimensions inches [mm]

Figure 1

AD-PR40-1C-xx

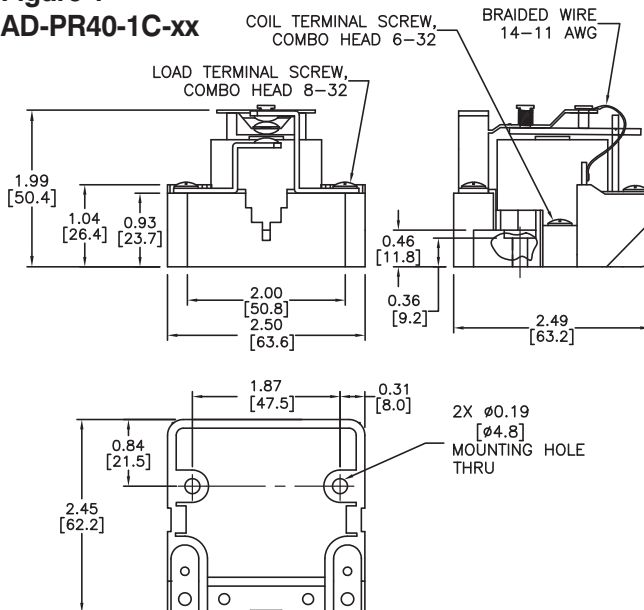
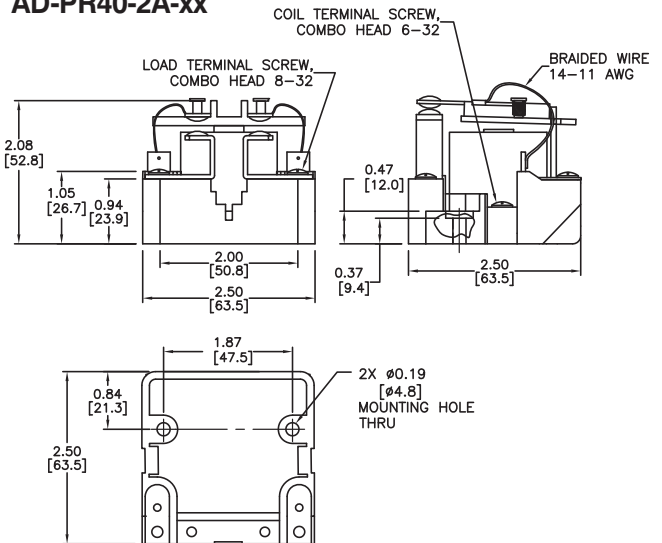


Figure 2

AD-PR40-2A-xx

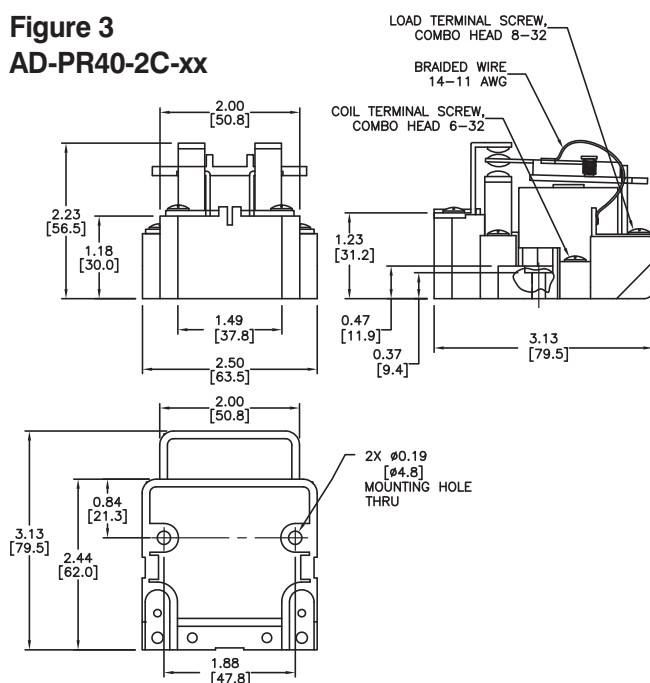


# Power Relays Specifications

Power Relays Specification Table															
Part Numbers	AD-PR40-1C-12D	AD-PR40-1C-24D	AD-PR40-1C-24A	AD-PR40-1C-120A	AD-PR40-1C-240A	AD-PR40-2A-12D	AD-PR40-2A-24D	AD-PR40-2A-24A	AD-PR40-2A-120A	AD-PR40-2A-240A	AD-PR40-2C-12D	AD-PR40-2C-24D	AD-PR40-2C-24A	AD-PR40-2C-120A	AD-PR40-2C-240A
<b>General Specifications</b>															
<b>Service Life</b>	Mechanical: 1 million operations AC and DC Electrical: 50,000 operations @ 300VAC/100,000 @ 28VDC														
<b>Operating Temperature</b>	-55°C to 55°C (-67°F to 131°F)														
<b>Response Time</b>	30 ms														
<b>Weight</b>	227g (8 oz) to 312g (11 oz)														
<b>Agency Approvals and Standards</b>	UL Recognized E191059, CE Certified (9667186-9811), CSA Certified 244610, RoHS														
<b>Environmental Protection</b>	Not applicable to open relays														
<b>Pilot Duty</b>	A600														
<b>Terminal Wire</b>	Max 10 AWG														
<b>Terminal Torque</b>	11 to 15 in-lb (1.2 to 1.7 Nm)														
<b>Coil Specifications</b>															
<b>Coil Input Voltage</b>	12VDC	24VDC	24VAC	120VAC	240VAC	12VDC	24VDC	24VAC	120VAC	240VAC	12VDC	24VDC	24VAC	120VAC	240VAC
<b>Coil Resistance</b>	70Ω	290Ω	12Ω	290Ω	1.2kΩ	70Ω	290Ω	12Ω	290Ω	1.2kΩ	70Ω	290Ω	12Ω	290Ω	1.2kΩ
<b>Power Consumption</b>	60Hz, 10VA (AC) , 4.0W DC														
<b>Dropout Voltage (% of rated voltage)</b>	Min. 10%														
<b>Pull-in Voltage</b>	Max. 85% of nominal voltage or less AC, Max. 80% of nominal voltage or less DC														
<b>Max. Voltage (Max. continuous voltage)</b>	110% of the rated coil voltage														
<b>Contact Specifications</b>															
<b>Contact Type</b>	SPDT				DPST				DPDT						
<b>Contact Material</b>	Silver cadmium oxide, gold flashed														
<b>Contact Rating</b>	40A @ 300VAC or 28VDC; 2HP motor load														
<b>Minimum Switching Requirement</b>	1A @ 5VAC/VDC														
<b>Maximum Switching Voltage</b>	600V @ 5A														
<b>Dielectric Strength Between Contacts</b>	1600V rms														

## Dimensions inches [mm]

**Figure 3**  
**AD-PR40-2C-xx**



# Fuji 1/16 DIN Super Timers

## Overview

The MS4S series super timers are 1/16 DIN style timing relays designed for process control, machine tool control, safety control and many other types of applications. The timers are plug-in 8-pin or 11-pin surface/DIN-rail mountable with up to four selectable modes of operation and four selectable timing ranges.

## Features

### MS4SM

- Multi-mode timer with mode indication. On-delay (PO), flicker (FL), one-shot (OS), or signal off-delay (SF)
- 11-pin plug-in with start, reset and gate (interrupt) input signals and a DPDT contact output
- Timing range from 0.05 seconds to 60 hours
- Timer scale with selectable ranges of 0-6, 0-12, 0-30 and 0-60
- Timing units in selectable ranges of 0.1s, sec, min and hrs
- Power on LED indicator (green) flickers during timing operation, UP (red) LED is on when normally open contact is closed

- Timing units in selectable ranges of 0.1s, sec, min and hrs
- Power on LED indicator (green) flickers during timing operation, UP (red) LED is on when normally open contact is closed

### MS4SC

- On-delay timer
- 8-pin plug-in with a SPDT timed contact output and a SPDT instantaneous contact output
- Timing range from 0.05 seconds to 60 hours
- Timer scale with selectable ranges of 0-6, 0-12, 0-30 and 0-60

### MS4SA

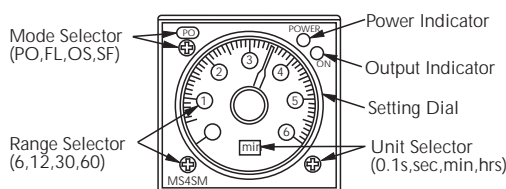
- On-delay timer
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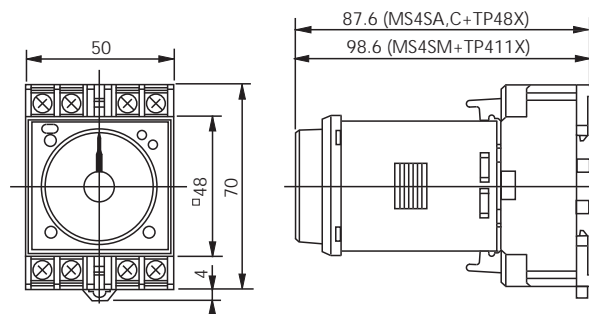
Product Selection Guide				
Part Number	Description	Voltage	Time Range	Price
<b>MS4SM-AP-ADC</b>	Multi-mode timer with selectable timing range from 0.05s to 60 hours. Input power is 100 - 240 VAC. DPDT relay output. 11-pin connection. UL, CSA, TÜV approved. <i>Note:</i> Socket mounts must be purchased separately	100-240 VAC	0.05 seconds to 60 hours	<--->
<b>MS4SA-AP-ADC</b>	On-delay timer with selectable timing range from 0.05s to 60 hours. Input power is 100 - 240 VAC. DPDT relay output. 8-pin connection. UL, CSA, TÜV approved. <i>Note:</i> Socket mounts must be purchased separately		0.05 seconds to 60 hours	<--->
<b>MS4SC-AP-ADC</b>	On-delay timer with selectable timing range from 0.05s to 60 hours. Input power is 100 - 240 VAC. SPDT timed relay output and SPDT instantaneous relay output. 8-pin connection. UL, CSA, TÜV approved		0.05 seconds to 60 hours	<--->
<b>MS4SM-CE-ADC</b>	Multi-mode timer with selectable timing range from 0.05s to 60 hours. Input power is 24 VDC/AC. DPDT relay output. 11-pin connection. UL, CSA, TÜV approved. <i>Note:</i> Socket mounts must be purchased separately	24 VDC/AC	0.05 seconds to 60 hours	<--->
<b>MS4SA-CE-ADC</b>	On-delay timer with selectable timing range from 0.05s to 60 hours. Input power is 24 VDC/AC. DPDT relay output. 8-pin connection. UL, CSA, TÜV approved. <i>Note:</i> Socket mounts must be purchased separately		0.05 seconds to 60 hours	<--->
<b>MS4SC-CE-ADC</b>	On-delay timer with selectable timing range from 0.05s to 60 hours. Input power is 24 VDC/AC. SPDT timed relay output and SPDT instantaneous relay output. 8-pin connection. UL, CSA, TÜV approved. <i>Note:</i> Socket mounts must be purchased separately		0.05 seconds to 60 hours	<--->
<b>TP411X</b>	Surface mount socket for MS4SM series timers. UL, CSA, TÜV approved	N/A	N/A	<--->
<b>TP411SBA</b>	Flush mount socket for MS4SM series timers. UL, CSA, TÜV approved, requires PANEL-16*			<--->
<b>TP48X</b>	Surface mount socket for MS4SA and MS4SC series timers. UL, CSA, TÜV approved			<--->
<b>TP48SB</b>	Flush mount socket for MS4SA and MS4SC series timers. UL, CSA, TÜV approved, requires PANEL-16*			<--->

\*Panel clips for mounting through a door are optional and must be purchased separately. See part# PANEL-16 on page 26-43.

## Control



## Dimensions (timer and socket shown attached)



# Fuji 1/16 DIN Super Timers



**MS4SM-AP-ADC**  
**MS4SM-CE-ADC**



**MS4SA-AP-ADC**  
**MS4SA-CE-ADC**



**MS4SC-AP-ADC**  
**MS4SC-CE-ADC**



**TP411X**



**TP411SBA\***



**TP48X**



**TP48SB\***

Specifications	
<b>Approvals</b>	UL file no.: E44592, CSA file no.: LR20479, TÜV license no: R9551800
<b>Repeat Accuracy</b>	±0.3% at maximum setting time
<b>Reset Time</b>	0.1 second or less
<b>Operating Voltage Range</b>	85-264 VAC 20.4-26.4 VDC/AC MS4SM-AP-ADC MS4SA-AP-ADC MS4SC-AP-ADC MS4SM-CE-ADC MS4SA-CE-ADC MS4SC-CE-ADC
<b>Operating Temperature Range</b>	-10 to +55°C (14 to 131°F) (no icing)
<b>Humidity</b>	35 to 85% (no condensation)
<b>Contact Ratings</b>	5 A at 30 VDC resistive load, 1 A @ 30 VDC inductive load, 5 A @ 250 VAC resistive load, 2.5 A @ 120 VAC inductive load
<b>Power Consumption</b>	Approx. 10 VA for AC; 1 W at 24 VDC
<b>Insulation Resistance</b>	100MΩ at 500 VDC insulation tested
<b>Dielectric Strength</b>	2000 VAC 1 min. between current carrying part and non-current carrying part 2000 VAC 1 min. between output contact and control circuit 1000 VAC 1 min. between open contacts
<b>Vibration</b>	Malfunction durability: 10 to 55Hz, 0.5mm double amplitude Mechanical durability: 10 to 55Hz, 0.75mm double amplitude
<b>Shock</b>	Malfunction durability: 100m/s <sup>2</sup> Mechanical durability: 500m/s <sup>2</sup>
<b>Life Expectancy</b>	Mechanical: 20 million operations (No load operation cycle: 1800/hr.) Electrical: 100,000 operations at 250 VAC 5 A resistive load (operation cycle: 1800/hr.)
<b>Weight</b>	Approx. 100g (3.527 oz.)

\*When using flush mount sockets TP411SBA and TP48SB, panel mounting clip PANEL-16 is required and must be purchased separately. See page 27-63

Company Information

Systems Overview

Programmable Controllers

Field I/O

Software

C-more & other HMI

Drives

Soft Starters

Motors & Gearbox

Steppers/ Servos

Motor Controls

Proximity Sensors

Photo Sensors

Limit Switches

Encoders

Current Sensors

Pressure Sensors

Temperature Sensors

Pushbuttons/ Lights

Process

Relays/ Timers

Comm.

Terminal Blocks & Wiring

Power

Circuit Protection

Enclosures

Tools

Pneumatics

Safety

Appendix

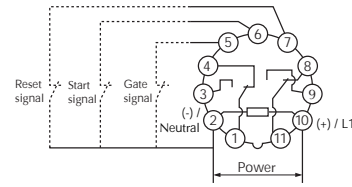
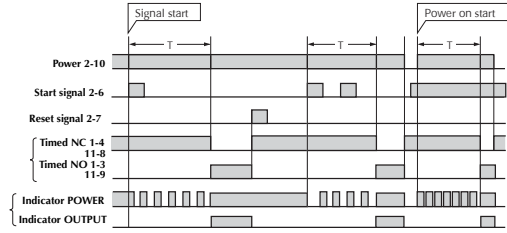
Product Index

Part # Index

# Fuji 1/16 DIN Timers Timing and Wiring Diagrams

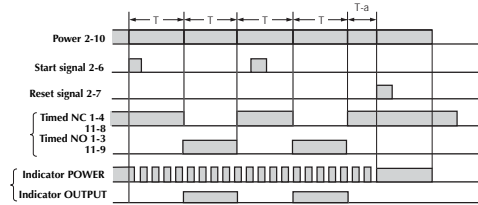
## MS4SM

### 1. On-delay **PO**



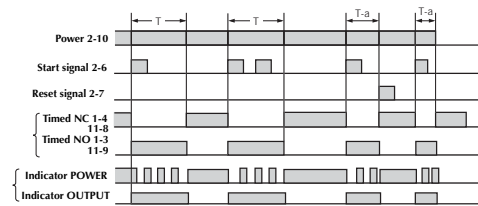
- With power off turn the mode selector until **PO** is displayed.
- When power is on, applying the start signal turns the timed N.O. (normally open) contact on after the set time has elapsed.
- When using a power-on start, pins 2 and 6 (start signal) must be jumpered together

### 2. Flicker **FL**



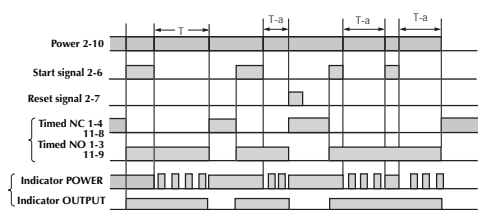
- With power off, turn the mode selector until **FL** is displayed.
- When power is on, applying the start signal turns the timed contact on and off repeatedly at the set time intervals.

### 3. One-shot **OS**



- With power off, turn the mode selector until **OS** is displayed
- When power is on, applying the start signal instantly turns the timed N.O. contact on and turns it off after the set time has elapsed.

### 4. Signal off-delay **SF**



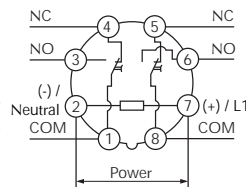
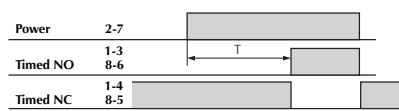
- With power off, turn the mode selector until **SF** is displayed.
- When power is on, applying the start signal instantly turns the timed N.O. contact on. Removing the start signal turns the contact off after the set time has elapsed.

#### Notes:

1.  $T$  = set time.  $t$  = time period within set time.
2. The gate signal is used to interrupt the timing operation.

## MS4SA

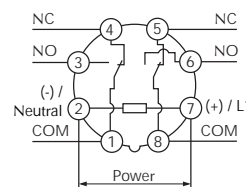
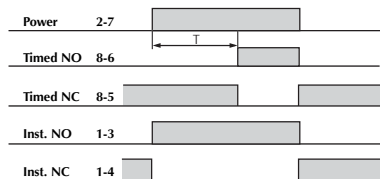
### On-delay



- When power is applied, the timed N.O. contacts make after the set time has elapsed.
- When power is removed, the contacts reset.

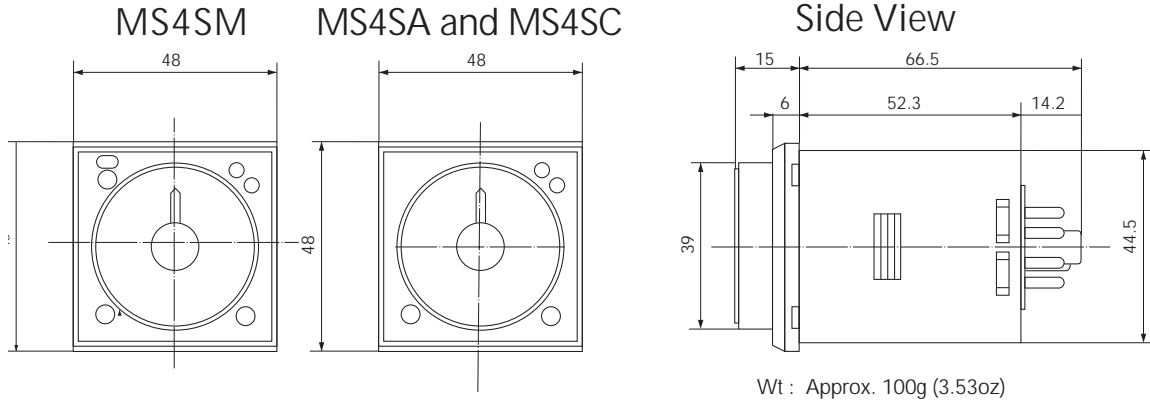
## MS4SC

### On-delay



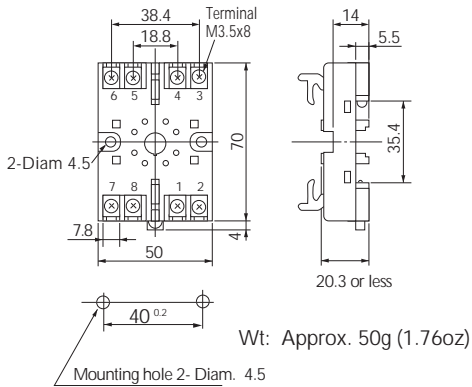
- Timed contact  
When power is applied, the N.O. contact makes after the set time has elapsed. When power is removed, the contacts reset.
- Instantaneous contact  
When power is applied, the N.O. contact makes instantly. When power is removed, the contacts reset.

# Fuji 1/16 DIN Super Timers Dimensions

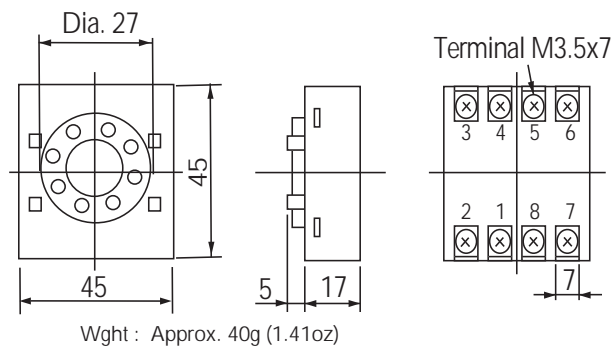


All dimensions in mm

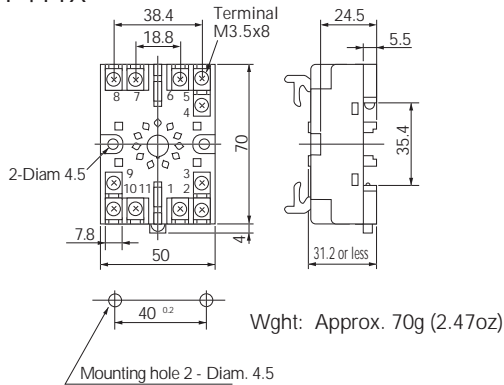
## Socket for MS4SA, MS4SC (8-pin) TP48X



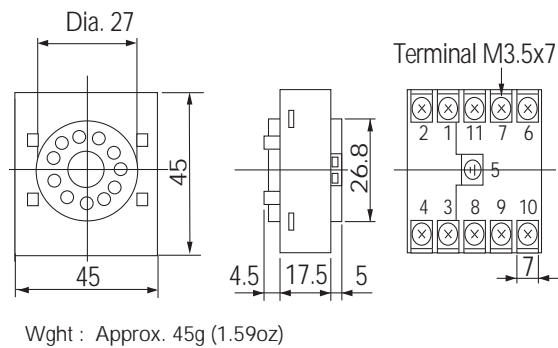
## Socket for MS4SA, MS4SC (8-pin) TP48SB



## Socket for MS4SM (11-pin) TP411X



## Socket for MS4SM (11-pin) TP411SBA



## MS4S Cutout for panel mounting using PANEL-16 mounting clips

