**Time delay relays**

FUJI time delay relays feature top performance and dependability.
These compact industrial time delay relays are specifically designed for process
control, machine tools, safety device control, and other applications in which
space is at a premium and reliability essential.
FUJI manufactures a wide variety of highly versatile time delay relays, which
include Super Timers and digital timers that meet diverse needs in industry.



KKD05-126

■ **Super Timers**
● **MS4S/Multimode and compact body**
The MS4S is a timer with four operation modes.  The
on-delay, flicker, one-shot or signal off-delay operation
modes can be selected.
*See page 03/52 for further information.*



KKD05-145

● **ST7P/Miniature size**
The ST7P is a highly efficient miniaturized on-delay
timer.
The maximum timing interval is 12 hours.
*See page 03/60 for further information.*

**03**

# Time Delay Relays
## Ordering code system

■ **Ordering code system**
● **Super Timer MS4S series**

<u>M</u> <u>S</u> <u>4</u> <u>S</u> <u>M</u>-<u>AP</u> <u>1T</u>
① ② ③ ④ ⑤⑥ ⑦⑧

### ① Product category

| Code | Description |
|------|-------------|
| M | Timer, counter |

### ② Series category

| Code | Description |
|------|-------------|
| S | Super timer |

### ③ Timer size

| Code | Description |
|------|-------------|
| 4S | DIN 48mm square |

### ④ Version

| Code | Operation |
|------|-----------|
| M | Multimode operation |
| A | On-delay operation |
| C | On-delay operation with instantaneous contact |
| F | Off-delay operation |
| Y | For star-delta starting |
| R | Repeat operation |

### ⑤⑥ Input voltage

| Code ⑤ | ⑥ | Input voltage |
|--------|----|---------------|
| A | P | 100–240V AC |
| C | E | 24V AC/DC |
| D | L | 48–127V DC |

### ⑦⑧ Timing range

| Code ⑦ | ⑧ | Timing range | |
|--------|----|--------------|--|
| 1 | T | 0.6 – 12s | (MS4SF) |
| 1 | N | 0.6 – 12min | (MS4SF) |

● **Super Timer ST7P series**

<u>M</u> <u>S</u> <u>7</u> <u>P</u> <u>2</u>-<u>AP</u> <u>1T</u>
① ② ③ ④ ⑤ ⑥⑦ ⑧⑨

### ① Product category

| Code | Description |
|------|-------------|
| M | Timer, counter |

### ② Series category

| Code | Description |
|------|-------------|
| S | Super timer |

### ③ Timer size

| Code | Description |
|------|-------------|
| 7 | Miniature type |

### ④ Mounting

| Code | Mounting |
|------|----------|
| P | Plug-in |
| B | Printed circuit board |

### ⑤ Output contact

| Code | Contact arrangement |
|------|---------------------|
| 2 | Timed, 2PDT |
| 4 | Timed, 4PDT |
| Blank | Timed, SPDT (ST7PF only) |

### ⑥⑦ Input voltage

| Code ⑥ | ⑦ | Input voltage |
|--------|----|---------------|
| A | 2 | 200–230V AC |
| A | 1 | 100–120V AC |
| A | P | 240V AC |
| A | E | 24V AC |
| D | 1 | 100–110V DC |
| D | F | 48V DC |
| D | E | 24V DC |
| D | B | 12V DC |

### ⑧⑨ Timing range

| Code ⑧ | ⑨ | Timing range |
|--------|----|--------------|
| P | 5 | 0.06 – 0.5s(MS7P□,7B□) |
| 1 | S | 0.1 – 1s(MS7P□,7B□) |
| 3 | S | 0.3 – 3s(MS7P□,7B□) |
| 5 | S | 0.4 – 5s(MS7P□,7B□) |
| 1 | T | 1 – 10s(MS7P□,7B□) |
| 3 | T | 2 – 30s(MS7P□,7B□) |
| 6 | T | 4 – 60s(MS7P□,7B□) |
| 3 | M | 0.25 – 3min(MS7P□,7B□) |
| 1 | N | 1 – 10min(MS7P□,7B□) |
| 3 | N | 2 – 30min(MS7P□,7B□) |
| 6 | N | 4 – 60min(MS7P□,7B□) |
| 2 | H | 0.2 – 2h(MS7P□,7B□) |
| 6 | H | 0.5 – 6h(MS7P□,7B□) |
| 1 | J | 1 – 12h(MS7P□,7B□) |
| 2 | J | 2 – 24h(MS7P□,7B□) |

● **Socket (For MS4S)**

| Mounting | Terminal | Type | Ordering code |
|----------|----------|------|---------------|
| Surface | Screw | TP411X | MX41X2 |
| Surface | Screw | TP48X | MX48X2 |
| Flush | Screw | TP411SBA | MX41N1A |
| Flush | Screw | TP48SB | MX48N1 |
| Flush | Soldering | ATX1NS | MX48NS |
| Flush | Soldering | ATX2NS | MX41NS |

● **Socket (For ST7P)**

| Mounting | Terminal | Type | Ordering code |
|----------|----------|------|---------------|
| Surface | Soldering | TP88 | MX58 |
| Surface | Soldering | TP814 | MX54 |
| Surface | Wire wrap | TP88R2 | MX58R2 |
| Surface | Wire wrap | TP814R2 | MX54R2 |
| Surface | P. C. board | TP88B | MX58B |
| Surface | P. C. board | TP814B | MX54B |
| Surface | Screw | TP88X2 | MX58X2 |
| Surface | Screw | TP814X2 | MX54X2 |
| Surface | Screw | TP88X1 | MX58X1 |
| Surface | Screw | TP814X1 | MX54X1 |

● **Accessory**

| Description | Type | Ordering code |
|-------------|------|---------------|
| Hold-down spring | FX3 | MZ24 |
| Adaptor | TX4 | MZ34 |

■ **Types**

| Description | Operation | Contact arrangement | | Timer body | Required socket type Surface mounting | Flush mounting | Rail mounting |
|---|---|---|---|---|---|---|---|
| | | Timed | Instant. | Type | Type | Type | Type |
| **Super Timer** Multi-range, compact body | Multi-mode • On-delay • Flicker • One-shot • Signal off-delay | 2PDT | – | **MS4SM** | TP411X 11GB + FX3 (Hold-down spring) | TP411SBA+TX4 (Adaptor) ATX2NS+TX4 (Adaptor) | TP411X |
| | On-delay | 2PDT SPDT | – SPDT | **MS4SA** **MS4SC** | TP48X 8GB + FX3 (Hold-down spring) | TP48SB+TX4 (Adaptor) ATX1NS+TX4 (Adaptor) | TP48X |
| | Off-delay | 2PDT SPDT | – | **MS4SF** **MS4SF-R** | | | |
| | Star-delta | 2NO | 1NO | **MS4SY** | | | |
| | On-off repetitive operation | 2PDT | – | **MS4SR** | | | |
| **Super Timer** Miniature size | On-delay | 2PDT | – | **ST7P-2** | TP88 TP88R2 TP88B | – | TP88X2 TP88X1 |
| | On-delay | 4PDT | – | **ST7P-4** | TP814 TP814R2 TP814B | – | TP814X2 TP814X1 |

**03**

# Time Delay Relays
## Super Timers
## MS4S

### Direct-reading time-scale and compact body
### MS4S Super Timer

MS4S series Super Timers feature an easy setting and direct-reading system of four time-scale.
MS4SM timer is multimode operation type and MS4SA and MS4SC timers are on-delay operation type.

#### ■ Features
- Time-scale indication window and time-scale selector
  By turning a time-scale selector, the timing-scales appear in the indication windows one set a time.
  Although this is a multimode timer, the optional times such as 56 or 27 minutes can be easily set with the direct-reading time-scale.

- Compact timer with instantaneous contact
  On-delay timers with instantaneous contact, as well as multimode and on-delay timers, are compact.
  The front to back length of the timers is only 66.5mm.

- Operation mode indication window and operation mode selector
  Four operation modes are provided (MS4SM type only).
  By turning the operation mode selector, the on-delay, flicker, one-shot, or signal off-delay operation mode can be selected. The present mode is shown in the operation mode indication window with the marks PO, FL, OS or SF.

- LED power ON and output indicator
  The power-source lamp (Green) is lit when power is on and flickers during timer operation.
  The output lamp (Red) is lit when the timed NO contact is on.

- Wide range of AC supply voltage
  Supply voltages of 100 to 240V AC are commonly available (ordering code: AP type only).

- Instantaneous operation function with 0 indication
  When the timer dial is set at 0, output is given instantaneously, allowing sequence checks to be performed easily.

- Time unit indication window and time unit selector
  By turning the time selector, time units of 0.1 sec., sec., min, and hours. can be selected and made to appear in the indication window.

- Improvement of resistance to waveform distortion
  The resistance to distortion of secondary voltage waveform of the power supply caused by inverters and uninterruptible power supplies (UPS) is improved.
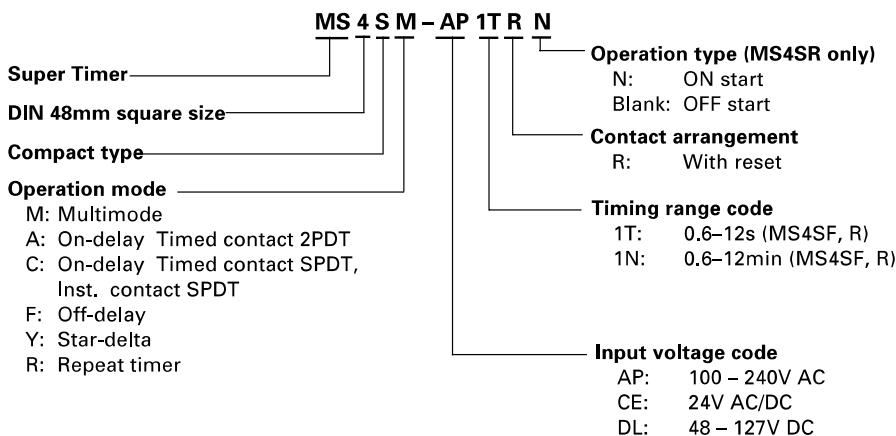


**MS4SM**                    KKD05-126



- Operation mode selector
- Operation mode indication window
- Power ON indication (Green)
- Output indication (Red)
- Time unit indication window
- Time unit selector
- Timing range selector

KKD05-189
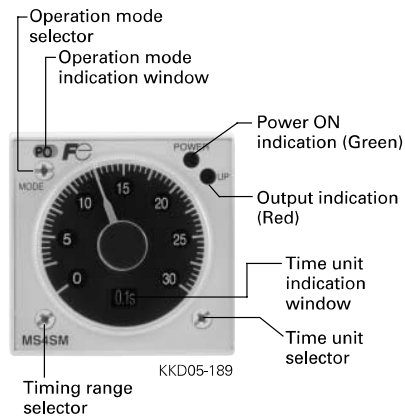
- UL, c**Ru**us and TÜV approved

#### ■ Timing range/16 ranges

| Time-scale | Time unit indication window | | | |
|---|---|---|---|---|
| | 0.1s | sec | min | hrs |
| 0 1 2 3 4 5 6 | 0.05 – 0.6s | 0.05 – 6s | 0.5 – 6min | 0.5 – 6h |
| 0 2 4 6 8 10 12 | 0.1 – 1.2s | 1 – 12s | 1 – 12min | 1 – 12h |
| 0 5 10 15 20 25 30 | 0.25 – 3s | 2.5 – 30s | 2.5 – 30min | 2.5 – 30h |
| 0 10 20 30 40 50 60 | 0.5 – 6s | 5 – 60s | 5 – 60min | 5 – 60h |

#### ■ Type number nomenclature

**MS 4 S M – AP 1T R N**

- Super Timer
- DIN 48mm square size
- Compact type
- Operation mode
  - M: Multimode
  - A: On-delay Timed contact 2PDT
  - C: On-delay Timed contact SPDT, Inst. contact SPDT
  - F: Off-delay
  - Y: Star-delta
  - R: Repeat timer

- Operation type (MS4SR only)
  - N: ON start
  - Blank: OFF start
- Contact arrangement
  - R: With reset
- Timing range code
  - 1T: 0.6–12s (MS4SF, R)
  - 1N: 0.6–12min (MS4SF, R)
- Input voltage code
  - AP: 100 – 240V AC
  - CE: 24V AC/DC
  - DL: 48 – 127V DC

#### ■ Ordering information
Specify the following
1. Ordering code or type number of body and socket.

**03**

## ■ Specifications   (MS4SM, MS4SA, MS4SC)

| Type | Ordering code | Input voltage | Operation | Contact | Timing range | Socket * |
|------|------|------|------|------|------|------|
| **MS4SM** | MS4SM-AP<br>MS4SM-CE<br>MS4SM-DL | 100 – 240V AC<br>24V AC/DC<br>48 – 127V DC | On-delay<br>Flicker<br>One-shot<br>Signal off-delay | Timed:<br>2PDT<br><br>5A | Total 16 ranges<br>0.05 – 0.6s<br>0.1 – 1.2s<br>0.25 – 3s<br>0.05 – 6s<br>0.5 – 6 (s, min, h)<br>1 – 12 (s, min, h)<br>2.5 – 30 (s, min, h)<br>5 – 60 (s, min, h) | Surface mounting:<br>TP411X<br> 11GB(RX1G)+FX3(MZ24)<br><br>Flush mounting:<br>TP411SBA<br>ATX2NS(MX41NS) |
| **MS4SA** | MS4SA-AP<br>MS4SA-CE<br>MS4SA-DL | 100 – 240V AC<br>24V AC/DC<br>48 – 127V DC | On-delay | Timed:<br>2PDT<br>5A | | Surface mounting:<br>TP48X(MX48X2)<br> 8GB(RX8G)+FX3(MZ24)<br><br>Flush mounting:<br>TP48SB(MX48N1)<br>ATX1NS(MX48NS) |
| **MS4SC** | MS4SC-AP<br>MS4SC-CE<br>MS4SC-DL | 100 – 240V AC<br>24V AC/DC<br>48 – 127V DC | On-delay | Timed:<br>SPDT<br>Instant:<br>SPDT<br>5A | | |

* (   ): Ordering code

## ■ Technical data   (MS4SM, MS4SA, MS4SC)

| | |
|------|------|
| Repeat accuracy | ±0.3% at max. setting time |
| Reset time | 0.1s or less |
| Operating voltage range | 0.85 to 1.1 times rated input voltage |
| Operating temperature range | –10 to +55°C (No icing) |
| Humidity | 35 to 85% (No condensation) |
| Contact ratings | 5A at 250V AC resistive load |
| Power consumption | Approx. 10VA at AC, Approx. 1W at DC, |
| Insulation resistance | 100MΩ at 500 DC megger |
| Dielectric strength | 2000V AC 1min. between current carrying part and non-current carrying part<br>2000V AC 1min. between output contact and control circuit<br>1000V AC 1min. between open contacts |
| Vibration | Malfunction durability: 10 to 55Hz, 0.5mm double amplitude<br>Mechanical durability: 10 to 55Hz, 0.75mm double amplitude |
| Shock | Malfunction durability: 100m/s$^2$<br>Mechanical durability: 500m/s$^2$ |
| Durability | Mechanical: 20 million operations<br>Electrical: 100000 operations at 240V AC 5A resistive load |
| Mass | Approx. 100g |

## ■ Standards
UL file No.:        E44592
TÜV License No.:  R50007315 (MS4SM)
                    R50006667 (MS4SA, MS4SC)

# Time Delay Relays
## Super Timers
## MS4S

■ **Timing and wiring diagrams**

### MS4SM

#### 1. On-delay  PO
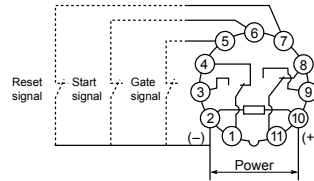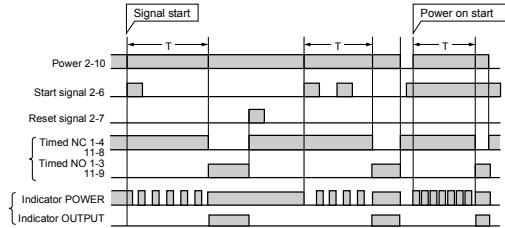




- Turn the mode selector until PO is displayed.
- When power is on, applying the start signal turns the timed NO (Normally open) contact on after the set time has elapsed.
- For the power-on start, the start signal pins (2 and 6) must be connected in advance.

#### 2. Flicker  FL
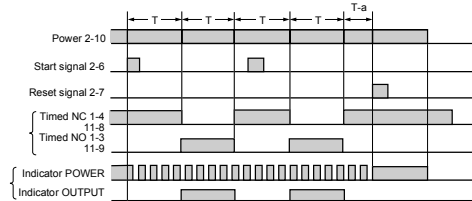


- Turn the mode selector until FL is displayed.
- When power is on, applying the start signal turns the timed contact on and off repeatedly at the set time intervals.

#### 3. One-shot  OS
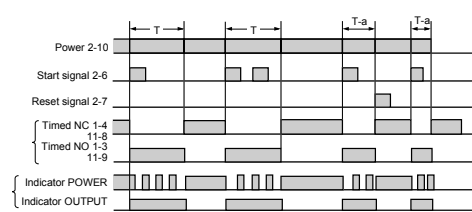


- Turn the mode selector until OS is displayed.
- When power is on, applying the start signal instantly turns the timed NO contact on and turns it off after the set time has elapsed.

#### 4. Signal off-delay  SF
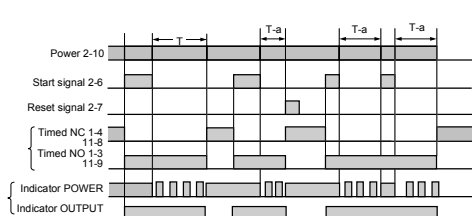


- Turn the mode selector until SF is displayed.
- When power is on, applying the start signal instantly turns the timed NO contact on.  Removing the start signal turns the contact off after the set time has elapsed.

### MS4SA
● **On-delay**
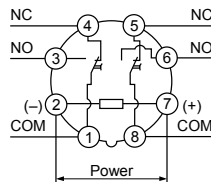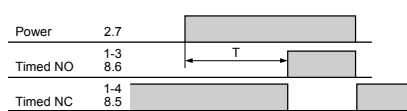


- When power is applied, the timed NO contacts make after the set time has elapsed.
- When power is removed, the contacts reset.

### MS4SC
● **On-delay**
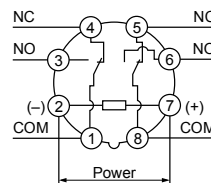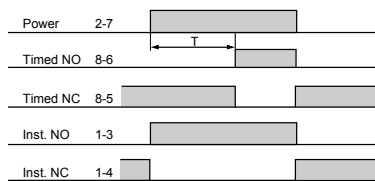


- Timed contact
  When power is applied, the NO contact makes after the set time has elapsed.  When power is removed, the contacts reset.
- Instantaneous contact
  When power is applied, the NO contact makes instantly.  When power is removed, the contacts reset.

Notes:  •  T=Set time.  T-a=Time period within the set time
•  The gate signal is used to interrupt the elapsing of timing operation.

■ **Specifications (MS4SF, MS4SF-R, MS4SY)**

| Type | Ordering Code | Input voltage | Operation | Contact | Timing range | | |
|------|---------------|---------------|-----------|---------|--------------|---|---|
| **MS4SF** | MS4SF-AP■ MS4SF-CE■ MS4SF-DL■ | 100-240V AC 24V AC/DC 48-127V DC | OFF-delay | Timed: 2PDT 5A | 0.05-0.6 (s, min) 0.1-1.2 (s, min) | | |
| | MS4SF-AP■R MS4SF-CE■R MS4SP-DL■R | 100-240V AC 24V AC/DC 48-127V DC | | Timed: SPDT with inst. reset: SPDT | 0.5-6 (s, min) 1-12 (s, min) | | |
| **MS4SY** | MS4SY-AP | 100-240V AC | Star-delta | Timed 1 NO (star output) Timed 1 NO (delta output) + Instant 1NO | Star starting time 0.5-6s, 1-12s, 5-60s, 10-120s | Star-delta chengeover time 0.05s, 0.1s, 0.25s, 0.5s | |

**03**

Note: Enter the timing range code in the ■ mark, see page *03/50*.

■ **Technical data**

| Type | MS4SF | | MS4SF-R | MS4SY |
|------|-------|---|---------|-------|
| Repeat accuracy | ±0.3% at max. setting time | | | |
| Reset time | – | | | 0.5s or less |
| Operating voltage range Operating temperature range Humidity | 0.85 to 1.1 times rated input voltage -10 to +55°C(No icing) 35 to 85% RH (No condensation) | | | |
| Contact ratings | 3A at 250V AC resistive load | | 5A at 250V AC resistive load | |
| Power consumption Insulation resistance Dielectric strength Vibration Shock | Approx. 1VA at AC, Approx. 1W at DC 100MΩ at 500V DC megger 2000V AC 1min. between current carrying part and non-current currying part 2000V AC 1min. between output contact and control circuit 1000V AC 1min. between open contacts Malfunction durability: 10 to 55Hz, 0.5mm double amplitude Mechanical durability: 10 to 55Hz, 0.75mm double amplitude Malfunction durability: 100m/s² Mechanical durability: 500m/s² | | | |
| Durability | Mechanical | 10 million operations | | 20 million operations |
| | Electrical | 100000 operations at 250V AC 3A res. load | 80000 operations at 250V AC 5A res. load | |
| Mass | Approx. 100g | | | |

■ **Standards**
   UL file No. : E44592

# Time Delay Relays
## Super Timers
## MS4S

## ■ Timing and wiring diagrams

| ● MS4SF type off-delay timer | MS4SF-R type off-delay timer | MS4SY type star-delta timer |
|---|---|---|
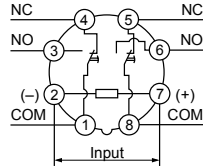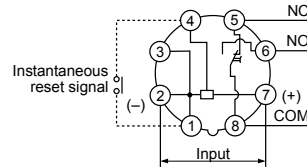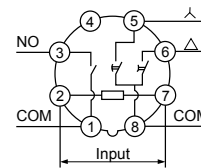
Note: Do not use terminal ③ of the MS4SF-R as a relay terminal because it is connected to terminals ① and ② in the timer.

### ● MS4SF type

| Operation | Operation pattern | Remarks |
|---|---|---|
| Off-delay (Timed 2PDT contacts) | Power (2-7)<br>Timed INO (1-3)(8-6)<br>Timed INC (1-4)(8-5)<br>T=set time | • When power is on, timed NO contact on.<br>• When power is off, timed NO contact off after the set time has elapsed. |

### ● MS4SF-R type

| Operation | Operation pattern | Remarks |
|---|---|---|
| Off-delay (Timed SPDT contact) | Power (2-7)<br>Instantaneous reset signal (1-4)<br>Timed NO (8-6)<br>Timed NC (8-5)<br>T-a=Time within a set time | • When power is on, timed NO contact on.<br>• When power is off, timed NO contact off after the set time has elapsed.<br>• When the instantaneous reset signal is on, timed NO contact immediately off. |

Notes: • T-a indicates some time within a set time.
    • Each signal can be input by shorting the terminals.
    • For the MS4SF-R, apply the instantaneous reset signal for 100 ms or longer.

### ● MS4SY type

| Operation | Operation pattern | Remarks |
|---|---|---|
| 人-△ (with instantaneous contact 1NO) | Power (2-7)<br>Timed contact人 (8-5)<br>Timed contact△ (8-6)<br>Instantaneous contact NO (1-3)<br>$T_1$=Set time    $T_2$=Changeover time | • Timed contact<br>  Timed contact 人 on when the power is on, and off after a set time. Timed contact △ on after a changeover time has elapsed and opens when the power turns off.<br>• Instantaneous contact<br>  When the power is turned on, instantaneous NO contact on. It opens when the power turns off. |

**03**

## ■ Specifications (MS4SR)

| Type | Ordering code | Input voltage | Operation mode | | Contact | Timing range |
|---|---|---|---|---|---|---|
| **MS4SR** | MS4SR-AP | 100-240V AC | Off-start | On-off repetitive operation | Timed: 2PDT 5A | 0.5-6 (×0.1s, s, min, h) |
| | MS4SR-CE | 24V AC/DC | | | | 1-12 (×0.1s, s, min, h) |
| | MS4SR-DL | 48-127V DC | | | | 2.5-30 (×0.1s, s, min, h) |
| | MS4SR-APN | 100-240V AC | On-start | | | 5-60 (×0.1s, s, min, h) |
| | MS4SR-CEN | 24V AC/DC | | | | |
| | MS4SR-DLN | 48-127V DC | | | | |

## ■ Technical data (MS4SR)

| | |
|---|---|
| Repeat accuracy | ±0.3%±0.01s at max. setting time |
| Reset time | 0.1s or less |
| Operating voltage range | 0.85 to 1.1 times rated input voltage |
| Operating temperature range | -10 to +55°C(No icing) |
| Humidity | 35 to 85% RH (No condensation) |
| Contact ratings | 5A at 250V AC resistive load |
| Power consumption | Approx. 10VA at AC, Approx. 1W at DC |
| Insulation resistance | 100MΩ at 500V DC megger |
| Dielectric strength | 2000V AC 1min. between current carrying part and non-current currying part |
| | 2000V AC 1min. between output contact and control circuit |
| | 1000V AC 1min. between open contacts |
| Vibration | Malfunction durability: 10 to 55Hz, 0.5mm double amplitude |
| | Mechanical durability: 10 to 55Hz, 0.75 mm double amplitude |
| Shock | Malfunction durability: 100m/s$^2$ |
| | Mechanical durability: 500m/s$^2$ |
| Durability | Mechanical: 20 million operations |
| | Electrical: 100000 operations at 250V AC 5A resistive load |
| Mass | Approx. 100g |

## ■ Wiring diagram
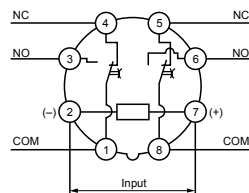


## ■ Operation pattern

### MS4SR

| Operation | Operation pattern | Remarks |
|---|---|---|
| Repeat (Off-start) |  | • When power is on, timed contacts on and off every set time interval.<br>• The contacts reset when the power is removed. |

### MS4SR-N

| Operation | Operation pattern | Remarks |
|---|---|---|
| Repeat (On-start) |  | • When powe is on, timed contacts on and off every set time interval.<br>• The contacts reset when the power is removed. |

## ■ Dimensions, mm

### ● Bodies

**MS4SM**

48

48

**MS4SA, C, F, Y**

48

48

15 | 66.5
6 | 52.3 | 14.2
ø39
44.5 sq.

Mass : Approx. 100g

**MS4SR**

48

48

16.5 | 66.5
6 | 52.3 | 14.2
ø39
14
44.5 sq.
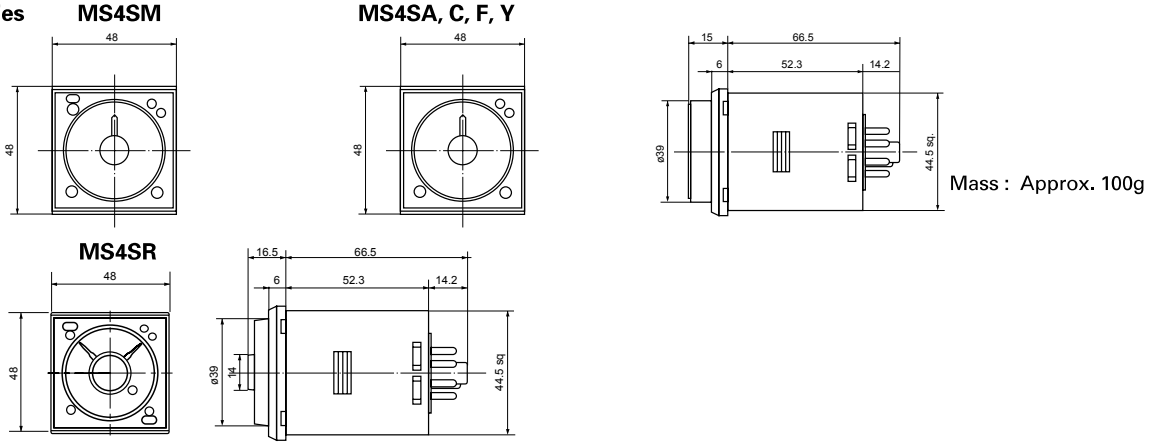
### ● Sockets for surface mounting
**TP411X (11-pin) for MS4SM**

38.4
18.8 | Terminal M3.5x8 | 24.5 | 5.5
70
35.4
2-ø4.5
7.8
50
31.2 or less
40 ±0.2
Mounting hole 2-ø4.5
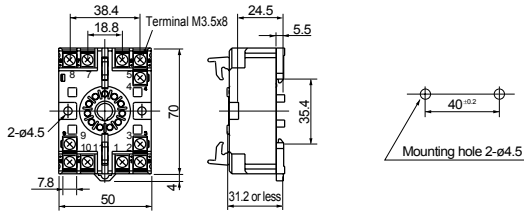
Mass : Approx. 70g

**TP48X (8-pin) for MS4S□**

38.4 | Terminal M3.5x8 | 14
18.8 | 5.5
70
35.4
2-ø4.5
7.8
50
20.3 or less
40 ±0.2
Mounting hole 2-ø4.5
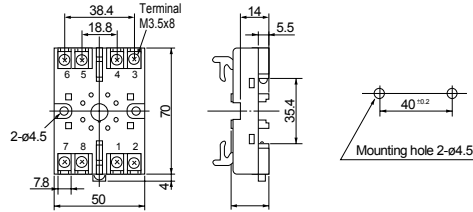
Mass : Approx. 59g

### 8GB, 11GB (Soldering sockets)

**8GB**

max. 16
4.8 | 8.3
0.8
ø28.4

49
39
4.1
33
6

**11GB**

49
39
4.1
33
6
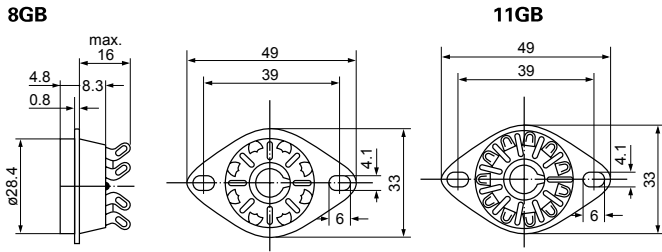
Mass : Approx. 13g          Approx. 13g

Note: Where ordering the 8GB and 11GB types of surface mounting socket, specify hold-down spring FX3 separately.

**Where mounted from back side of mounting plate**
Panel cutting

2-ø4.5
ø30
40

Mounting plate

**Hold-down spring/FX3**

4.5 | (2.5)
60.7±0.3 | 58 | 4.2
6 | 6
5
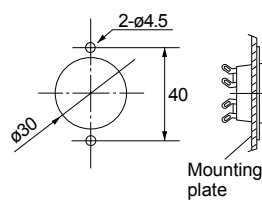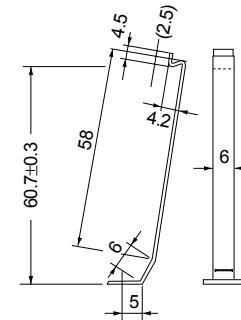
### Mounting rails

**TH35-7.5**
Steel

7.5 | 1
27 | 35
44x20=880
12.7
5.5
20 | 20 | 10
900
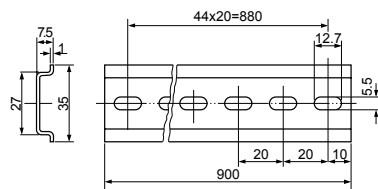
Mass : 290g

**TH35-7.5AL**
Aluminum

7.5 | 1
27 | 35
44x20=880
12
5.5
20 | 20 | 10
900
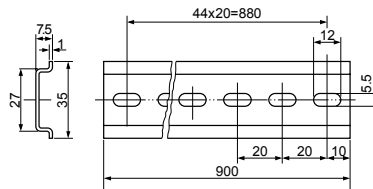
Mass : 145g

**TH35-15AL**
Aluminum

15 | 1
27 | 25 | 35
44x20=880
12
5.5
20 | 20 | 10
900
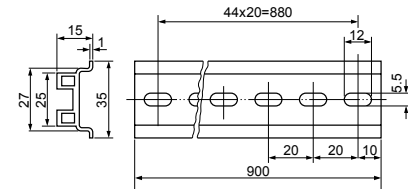
Mass : 320g

## ■ Dimensions, mm
## ● Sockets for flush mounting

### TX4
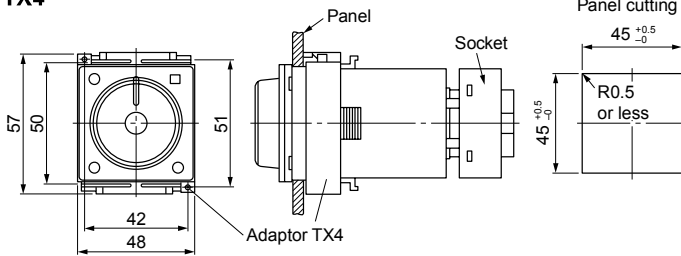


Mass : Approx. 15g

For flush mounting, an adaptor TX4 (sold separately) is required to fix the timer to the panel.
The illustration shows a timer being fixed to a panel, using the adapter TX4.

### ● Accessories (supplied)

### TX4 adaptor
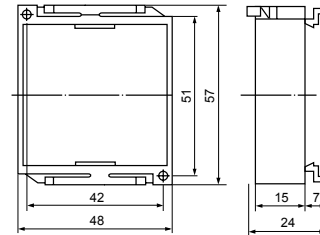


**03**

### TP411SBA (11-pin) for MS4SM



Mass : Approx. 43g

### ATX2NS (Soldering socket)



View from terminal side
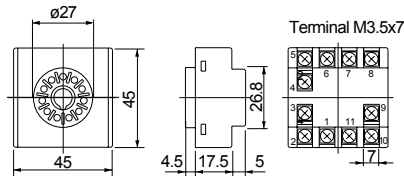
Mass : Approx. 20g

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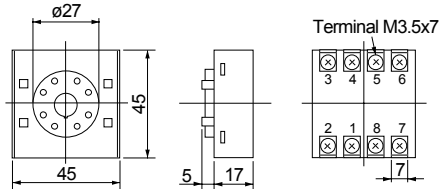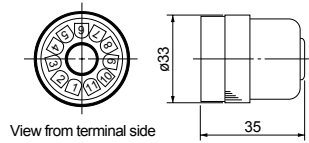


Mass : Approx. 38g

### ATX1NS (Soldering socket)



View from terminal side
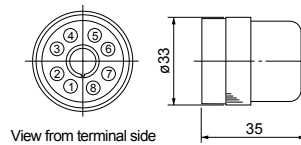
Mass : Approx. 18g

## ■ Notes on use
Refer to the instruction manual.

# Time Delay Relays
## Super Timers
## ST7P, 7B

### Miniature size Super Timer ST7P series

The ST7P and ST7B series are compact and highly accurate Super Timers.
The ST7P and ST7B are on-delay operation types.

### ■ Features
- These Super Timers are highly accurate. Their repeat accuracy is less than ±1% at maximum setting time.

- Timing range
  ST7P and ST7B are the single timing range types; 0.06 sec. to 24 hours.
- The large setting dial makes time setting easy.
- The LED indicators make it easy to check timer operation.
- The ST7P has been approved by the UL, c**ᴙ**us and TÜV.

### ■ Standards
UL file No.    Body: E44592
                  Socket: E90265
TÜV License No.: R50004818



ST7□-2

KKD05–145

### ■ Specifications
**Single timing range types**

| Type | Ordering code | Contact | Operation | Timing range *(Refer to Page 03/50)* | | | Input voltage | Socket |
|------|---------------|---------|-----------|-------------|---|---|---------------|--------|
| **ST7P-2** | MS7P2-■□ | Timed: 2PDT | On-delay | 0.06–0.5s<br>0.1–1s<br>0.3–3s<br>0.4–5s<br>1–10s<br>2–30s | 4–60s<br>0.25–3min<br>1–10min<br>2–30min<br>4–60min<br>0.2–2h | 0.5–6h<br>1–12h<br>2-24h | 200-230V AC 50/60Hz<br>100-120V AC 50/60Hz<br>240V AC 50/60Hz<br>100-110V DC<br>24V DC<br>12V DC | Screw<br>Soldering<br>Wire wrap<br>PC board |
| **ST7P-4** | MS7P4-■□ | Timed: 4PDT | | | | | | |
| **ST7B-2** | MS7B2-■□ | Timed: 2PDT | | | | | | |
| **ST7B-4** | MS7B4-■□ | Timed: 4PDT | | | | | | |

Notes: Enter the input voltage code in the ■ mark and timing range code in the □ mark.   * Other voltages are available on request, contact FUJI.

### ■ Technical data

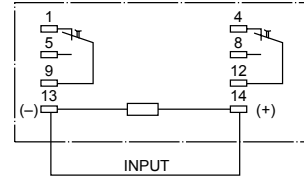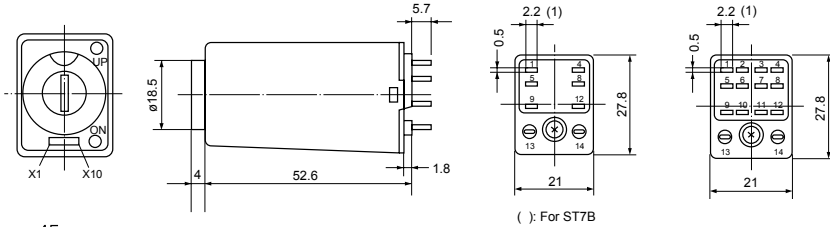| | |
|---|---|
| Repeat accuracy | ±1% at max. setting time |
| Reset time | 0.1s or less |
| Max. operating cycle | 1800 cycles/h |
| Operating temperature range | −10°C to 50°C |
| Mechanical durability | 50 million operations |
| Electrical durability | 500000 operations at 220V AC 3A resistive load (ST7P-2, 7B-2)<br>100000 operations at 220V AC 3A resistive load (ST7P-4, 7B-4) |
| Operating voltage range | 0.85 to 1.1 times input voltage |
| Contact ratings | 3A at 220V AC resistive load |
| Power consumption | 1.2VA at 100V AC, 1.5VA at 200V AC, 1.1W at 24V DC |
| Dielectric strength | 2000V AC rms. 1min. between current carrying part and non current carrying part<br>1500V AC rms. 1min. between output contacts and control circuit<br>1000V AC rms. 1min. between open contacts |
| Insulation resistance | 100MΩ at 500V DC megger |
| Vibration | Mechanical durability: 10 to 55Hz, 0.75mm double amplitude<br>Malfunction durability: 10 to 55Hz, 0.5mm double amplitude |
| Shock | Mechanical durability: 1000m/s$^2$<br>Malfunction durability: 50m/s$^2$ |

■ **Timing diagrams**
**ST7P-2, 7B-2**

Input (13-14)

Timed NO (9-5) (12-8)

Timed NC (9-1) (12-4)

**ST7P-4, 7B-4**

Input (13-14)

Timed NO (9-5) (11-7) (10-6) (12-8)

Timed NC (9-1) (11-3) (10-2) (12-4)

■ **Wiring diagrams**
**ST7P-2, 7B-2**

INPUT

**03**

■ **Dimensions, mm**
● **Bodies**

ST7□-2

ST7□-4

( ): For ST7B

**ST7P-4, 7B-4**

INPUT
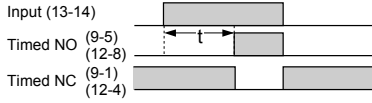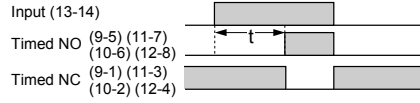
Mass: 45g

● **Sockets/Screw terminal and rail mounting**
**TP88X1 (M3)**

Panel drilling

Approx.96.5 (TH35-15)
Approx.89 (TH35-7.5)
Approx.56.5

Mounting rail width
35mm IEC standard

**TP814X1 (M3)**

Panel drilling

Approx.96.5 (TH35-15)
Approx.89 (TH35-7.5)
Approx.56.5

Mounting rail width
35mm IEC standard

**TP88X2 (M3.5)**     **TP814X2 (M3.5)**

Approx.96.5 (TH35-15)
Approx.89 (TH35-7.5)
Approx.56.5

Panel drilling
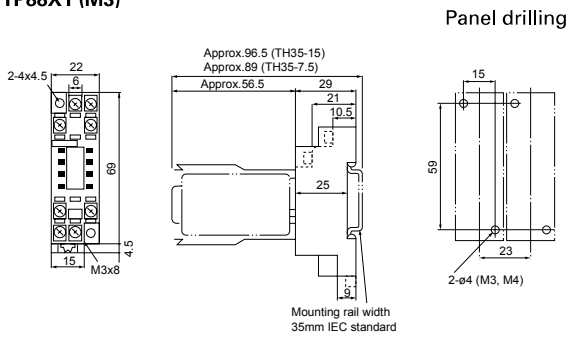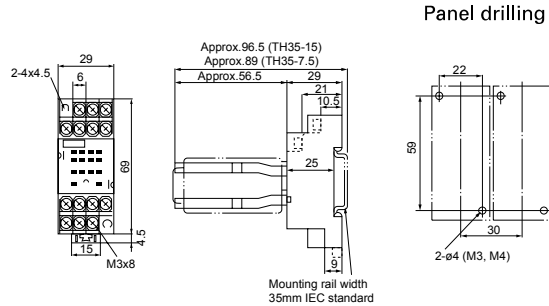
Terminal M3.5x8     Terminal M3.5
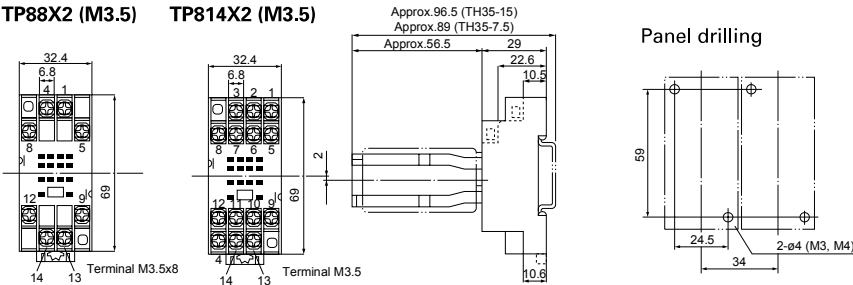
■ **Socket's terminal arrangement**
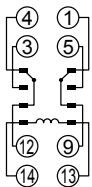
TP88X1, TP88X2          TP814X1,TP814X2
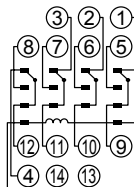
# Time Delay Relays
## Super Timers
## ST7P, 7B

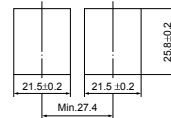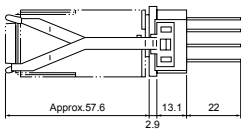■ **Dimensions, mm**
● **Sockets/soldering**
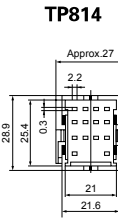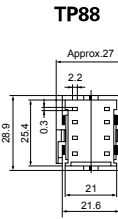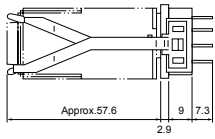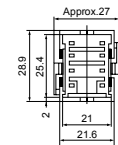


TP88

TP814

Terminal
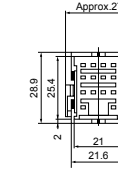
Panel cutting
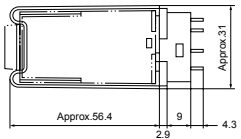TP88, 814
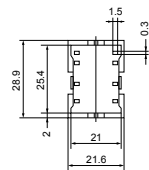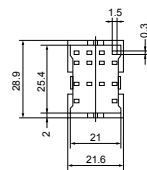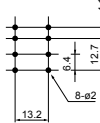TP88R2, 814R2

● **Sockets/Wire wrap**
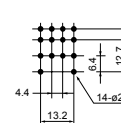


TP88R2

TP814R2

Terminal

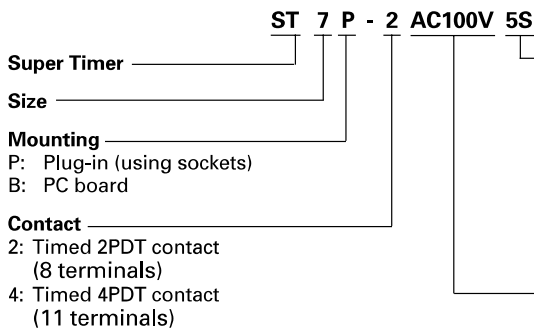● **Sockets/PC board**



TP88B

TP814B

PC board drilling
TP88B        TP814B

## Sockets

| Terminal | For ST7P-2, ST7B-2 | | | For ST7P-4, ST7B-4 | | | Finger protection cover | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Type | Ordering code | Mass (g) | Type | Ordering code | Mass (g) | Type | Ordering code |
| Screw terminal, rail mounting | **TP88X1(M3)** | MX58X1 | 35 | **TR814X1(M3)** | MX54X1 | 54 | RZ52X1 | RZ52X1 |
| Screw terminal, rail mounting | **TP88X2(M3.5)** | MX58X2 | 47 | **TP814X2(M3.5)** | MX54X2 | 51 | RZ54X1 | RZ54X1 |
| Soldering | **TP88** | MX58 | 9 | **TP814** | MX54 | 10 | FX14X2 | RZ54X2 |
| Wire wrap | **TP88R2** | MX58R2 | 11 | **TP814R2** | MX54R2 | 13 | | |
| PC board | **TP88B** | MX58B1 | 9 | **TP814B** | MX54B | 10 | | |

● **Mounting rails:** *See page 03/58.*

■ **Type number nomenclature**

ST  7  P  - 2 AC100V 5S

Super Timer
Size
Mounting
P:  Plug-in (using sockets)
B:  PC board

Contact
2:  Timed 2PDT contact
    (8 terminals)
4:  Timed 4PDT contact
    (11 terminals)

**Timing range**
● ST7P-□, 7B□
0.5S:  0.06–0.5s      3M:    0.25–3min
1S:    0.1–1s         10M:   1–10min
3S:    0.3–3s         30M:   2–30min
5S:    0.4–5s         60M:   4–60min
10S:   1–10s          2H:    0.2–2h
30S:   2–30s          6H:    0.5–6h
60S:   4–60s          12H:   1–12h

**Input voltage**
● ST7P, 7B
AC200V:200–230V AC
AC100V:100–120V AC
AC240V:240V AC
DC100V:100–110V DC
DC24V: 24V DC
DC12V: 12V DC

■ **Ordering information**
Specify the following:
1. Ordering code or type number of
   body (add a suffix of the timing
   range) and socket. (Socket is sold
   separately.)