

**CP-F slim type circuit protectors**

250V AC/65V DC (1-pole) 0.1A to 30A  
250V AC/125V DC (2-pole) 0.1A to 30A  
250V AC (3-pole) 0.1A to 30A

■ **Description**

FUJI's compact and high-performance CP-F series circuit protectors incorporate FUJI's advanced technology. Their thin sizes make them ideal for use as AC/DC line switches in office and industrial equipment.

■ **Features**

- Only 17.5mm wide — mounting space is reduced by 30% compared with conventional types.
- AC/DC common use
- Available with auxiliary switch and alarm switch
- Also available in types having inertia delay characteristics
- Trip-free mechanism
- IEC rail mounting

■ **Standards**

UL (File No.E96846)  
TÜV (IEC)(R9650230)  
CCC (China GB)(2003010309067080)

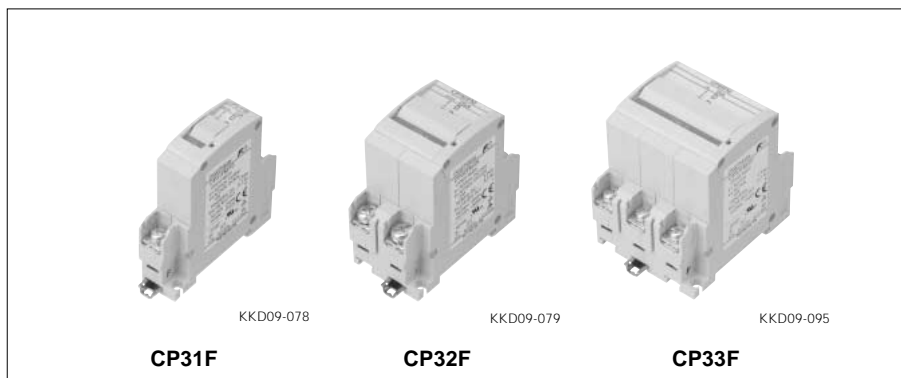
■ **Accessories**

● **Auxiliary switch (Type W)**

This switch is used for ON-OFF lamp indicator or control circuit.

● **Alarm switch (Type K)**

This switch can be connected to a warning lamp or buzzer to indicate when the circuit protector has been tripped. Auxiliary and alarm switches for low level circuit are also available on request. (Type W1, K1)



■ **Specifications**

Type	CP31F	CP32F	CP33F
Pole	1-pole	2-pole	3-pole
Rated insulation voltage (Ui)	250V AC 65V DC	250V AC 125V DC	250V AC —
Rated operational voltage (Ue)	240V AC 60V DC	240V AC 120V DC	240V AC —
Rated current	0.1, 0.3, 0.5, 1, 2, 3, 5, 7, 10, 15, 20, 25, 30A		
Rated breaking capacity	2500A at 240V AC 2500A at 60V DC (1-pole) 2500A at 120V DC (2-pole)		
Operating characteristic	Long time delay (AC circuit only) Medium time delay, Instantaneous tripping		
Tripping mechanism	Hydraulic-magnetic		
Ambient temperature	-10 to +60°C		
Dielectric strength	2000V AC 1min		
Electrical durability	10000 operations or more		
Terminals (Self-lifting)	Main circuit Auxiliary circuit	M5 (25A or over), M4 (20A or less) M3.5	
Mass (Approx.)	80g	160g	240g

**Ratings of auxiliary and alarm switches**

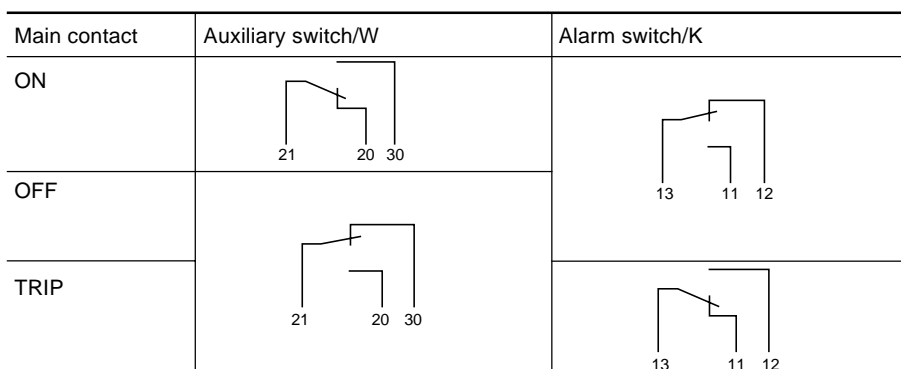
Standard type (Type W, K)

250V AC	Resistive load: 1A Inductive load: 0.5A
125V AC	Resistive load: 3A Inductive load: 1A
60V DC	Resistive load: 1A Inductive load: 0.5A
30V DC	Resistive load: 2A Inductive load: 1A

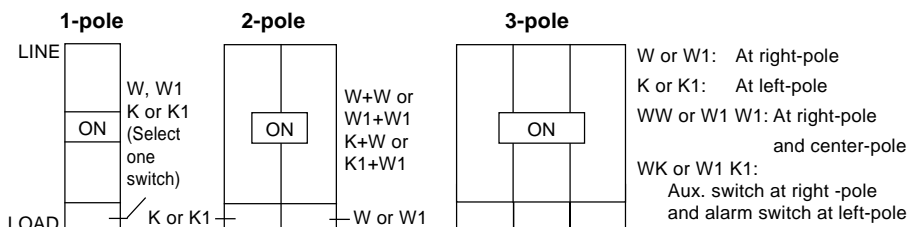
**Minimum permissible load**

For low level circuit (Type W1, K1)

24V DC	1mA
12V DC	2mA
6V DC	5mA



**Number of auxiliary and alarm switches mountable**

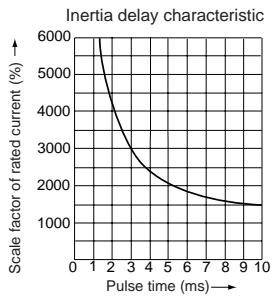


# Circuit Protectors CP31F, 32F, 33F

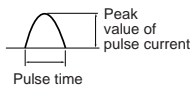
## ● Inertia delay device (Type D)

This inertia delay device is designed to prevent the circuit protector from operating erroneously due to such inrush current and to carry out an interruption within the prescribed operating characteristics in the face of an overcurrent.

The protector does not operate even when a pulse current of approx. 14 times (peak value) rated current with a pulse width of 10ms flows.

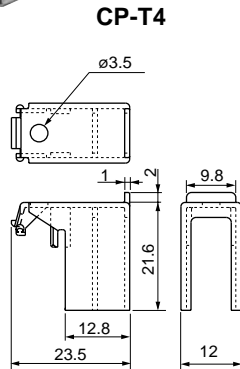
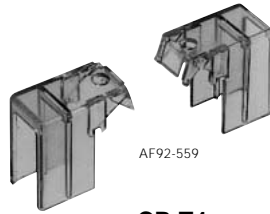


- Scale factor of the rated current (%)  
Peak value of pulse current  $\times$  100  
Rated current of protector
- Waveform of pulse current:  
Sinusoidal wave or parabolic pulse

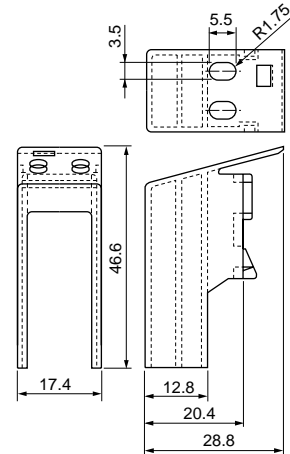


## ● Snap-on mounting terminal covers

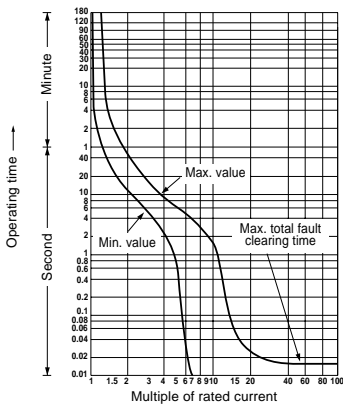
- For main terminal: CP-T4
- For auxiliary terminal: CP-T5



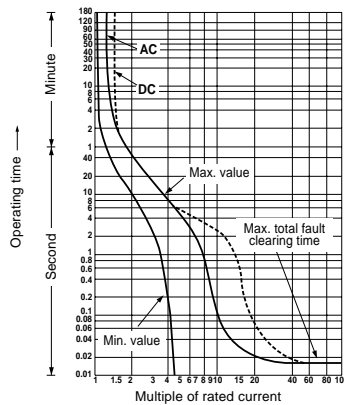
## CP-T5



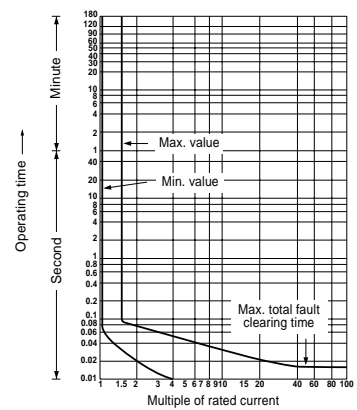
## ■ Characteristic curves Long time delay tripping type AC circuit only



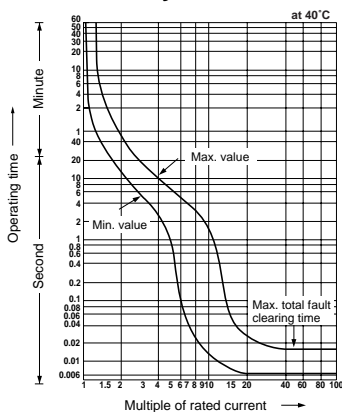
## Medium time delay tripping type AC/DC circuit



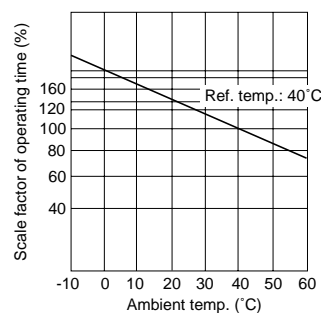
## Instantaneous tripping type AC/DC circuit



## Long time delay with inertia delay device AC circuit only



## Ambient temperature compensation

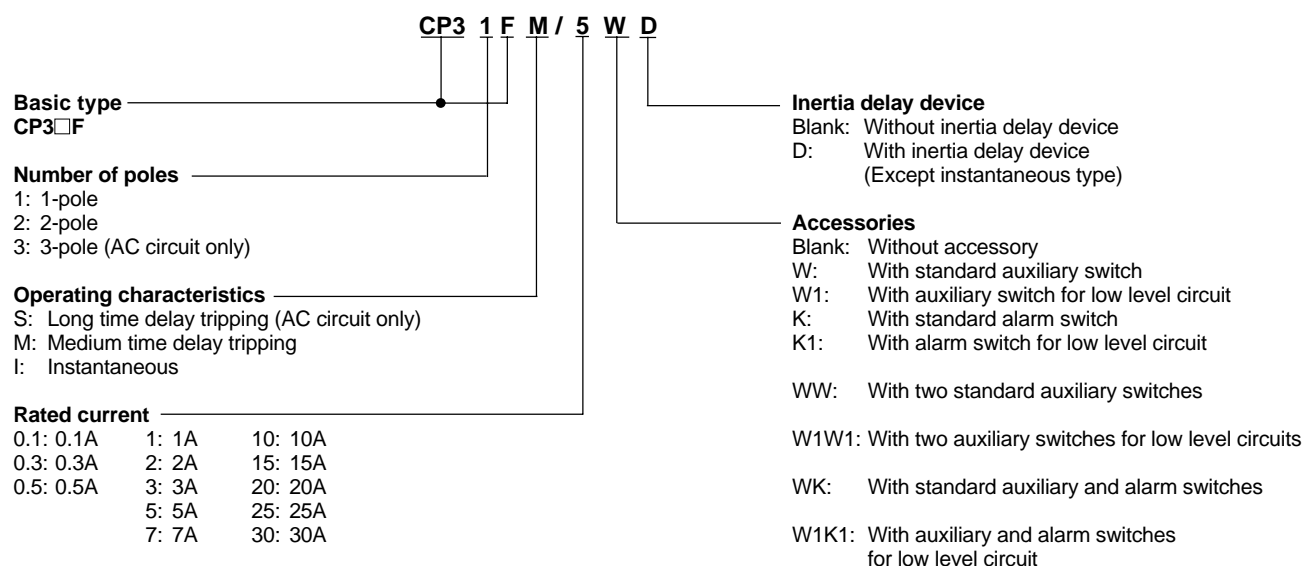


■ Versions

	Operating characteristic	CP31F (1-pole) Type	CP32F (2-pole) Type	CP33F (3-pole) Type
Without inertia delay device	Long time Medium time Instantaneous	CP31FS/□ CP31FM/□ CP31FI/□	CP32FS/□ CP32FM/□ CP32FI/□	CP33FS/□ CP33FM/□ CP33FI/□
With inertia delay device	Long time Medium time Instantaneous	CP31FS/□D CP31FM/□D —	CP32FS/□D CP32FM/□D —	CP33FS/□D CP33FM/□D —
With standard auxiliary switch	Long time Medium time Instantaneous	CP31FS/□W CP31FM/□W CP31FI/□W	CP32FS/□W CP32FM/□W CP32FI/□W	CP33FS/□W CP33FM/□W CP33FI/□W
With standard auxiliary switch and inertia delay device	Long time Medium time Instantaneous	CP31FS/□WD CP31FM/□WD —	CP32FS/□WD CP32FM/□WD —	CP33FS/□WD CP33FM/□WD —
With standard alarm switch	Long time Medium time Instantaneous	CP31FS/□K CP31FM/□K CP31FI/□K	CP32FS/□K CP32FM/□K CP32FI/□K	CP33FS/□K CP33FM/□K CP33FI/□K
With standard alarm switch and inertia delay device	Long time Medium time Instantaneous	CP31FS/□KD CP31FM/□KD —	CP32FS/□KD CP32FM/□KD —	CP33FS/□KD CP33FM/□KD —
With auxiliary switch for low level circuit	Long time Medium time Instantaneous	CP31FS/□W1 CP31FM/□W1 CP31FI/□W1	CP32FS/□W1 CP32FM/□W1 CP32FI/□W1	CP33FS/□W1 CP33FM/□W1 CP33FI/□W1
With auxiliary switch for low level circuit and inertia delay device	Long time Medium time Instantaneous	CP31FS/□W1D CP31FM/□W1D —	CP32FS/□W1D CP32FM/□W1D —	CP33FS/□W1D CP33FM/□W1D —
With alarm switch for low level circuit	Long time Medium time Instantaneous	CP31FS/□K1 CP31FM/□K1 CP31FI/□K1	CP32FS/□K1 CP32FM/□K1 CP32FI/□K1	CP33FS/□K1 CP33FM/□K1 CP33FI/□K1
With alarm switch for low level circuit and inertia delay device	Long time Medium time Instantaneous	CP31FS/□K1D CP31FM/□K1D —	CP32FS/□K1D CP32FM/□K1D —	CP33FS/□K1D CP33FM/□K1D —

Note : □ Enter the rated current in the □ mark of the type number. 0.1A: 0.1, 0.3A: 0.3, 0.5A: 0.5 ----- 30A: 30

■ Type number nomenclature



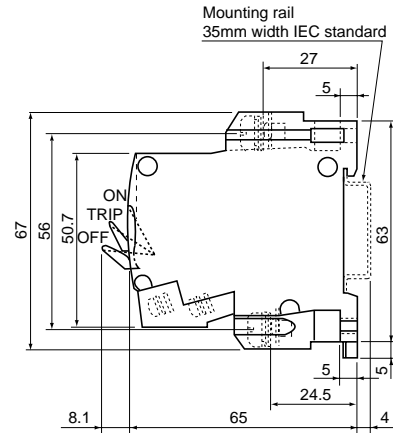
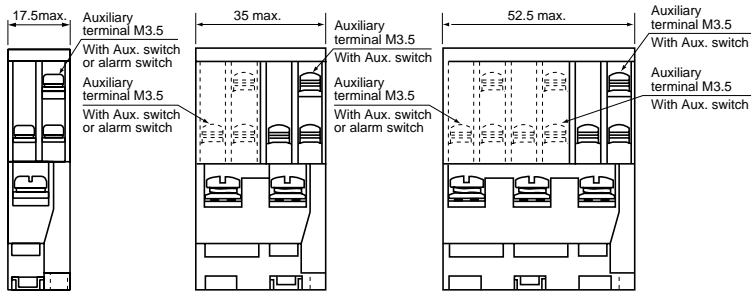
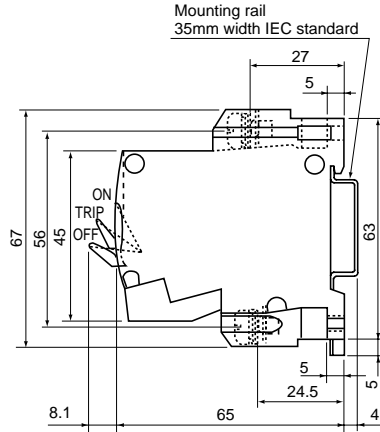
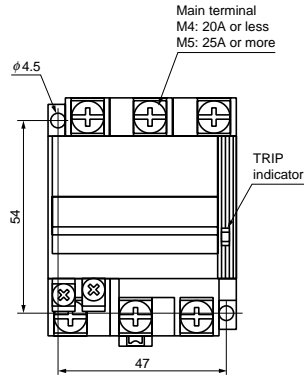
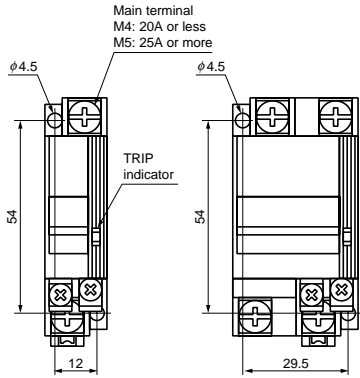
# Circuit Protectors CP31F, 32F, 33F

## ■ Dimensions, mm

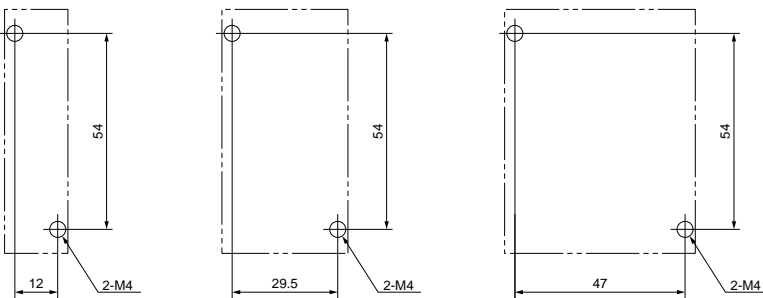
1-pole

2-pole

3-pole



## Panel drilling



**CP31, CP31D, CP32D circuit protectors**

250V AC 0.3A to 30A  
50V DC 0.3A to 30A

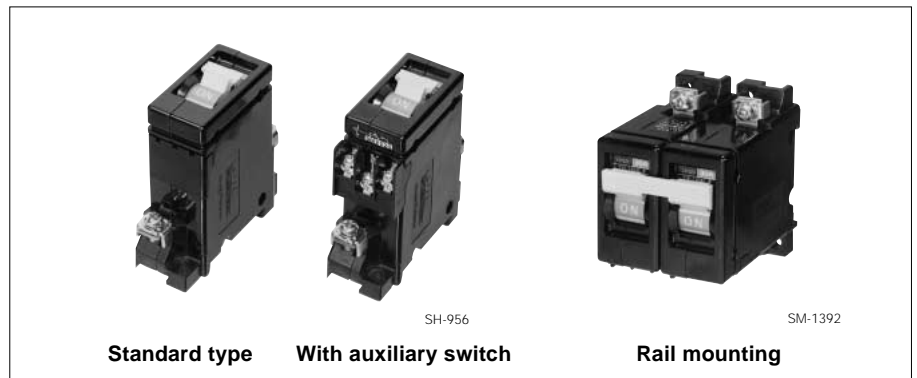
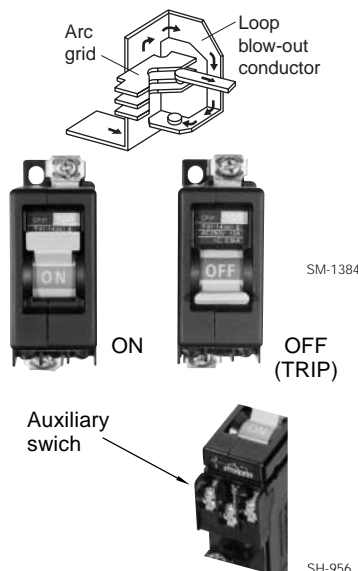
■ **Description**

The CP31 and CP32 have a similar functions to a molded case circuit breaker and they can be used for normal switching ON and OFF operations while breaking both overload and short-circuit currents. They are available in two time-current versions—an instantaneous and a time-delay version. A suitable type should be selected to match the thermal and permissible current requirements.

These are recommended for sequential control circuits, motor control circuits, solenoid-operated valves, heaters and solid-state applications.

■ **Features**

- Excellent arc interruption  
Since the arc extinguisher uses a loop blow-out system the arc is rapidly extinguished.
- Highly visible handle indication ON shows red and OFF or TRIP blue.
- When positioned at ON the operating handle is completely housed inside the molded case and does not protrude.  
This helps to prevent erroneous operation.
- Trip-free mechanism
- Also available with auxiliary switch SPDT.
- Two time-current versions—  
instantaneous operation and a time delay type. Select the model best suited to your protection needs.
- CP31D and CP32D types are of front and rail dual mounting.



■ **Time-delay tripping type**

Rated current (A)	CP31 (1-pole) Front mounting Type	Rail mounting Type	CP31D (1-pole) Type	CP32D (2-pole) Type
0.3	CP31/0.3	CP31/0.3X	CP31D/0.3	CP32D/0.3
0.5	CP31/0.5	CP31/0.5X	CP31D/0.5	CP32D/0.5
1	CP31/1	CP31/1X	CP31D/1	CP32D/1
2	CP31/2	CP31/2X	CP31D/2	CP32D/2
3	CP31/3	CP31/3X	CP31D/3	CP32D/3
5	CP31/5	CP31/5X	CP31D/5	CP32D/5
7	CP31/7	CP31/7X	CP31D/7	CP32D/7
10	CP31/10	CP31/10X	CP31D/10	CP32D/10
15	CP31/15	CP31/15X	CP31D/15	CP32D/15
20	CP31/20	CP31/20X	CP31D/20	CP32D/20
25	CP31/25	CP31/25X	CP31D/25	CP32D/25
30	CP31/30	CP31/30X	CP31D/30	CP32D/30

■ **Typical applications**

These CP31 and CP32 protectors are used for normal on-off switching of the power supply while also providing overload protection of the load circuits.

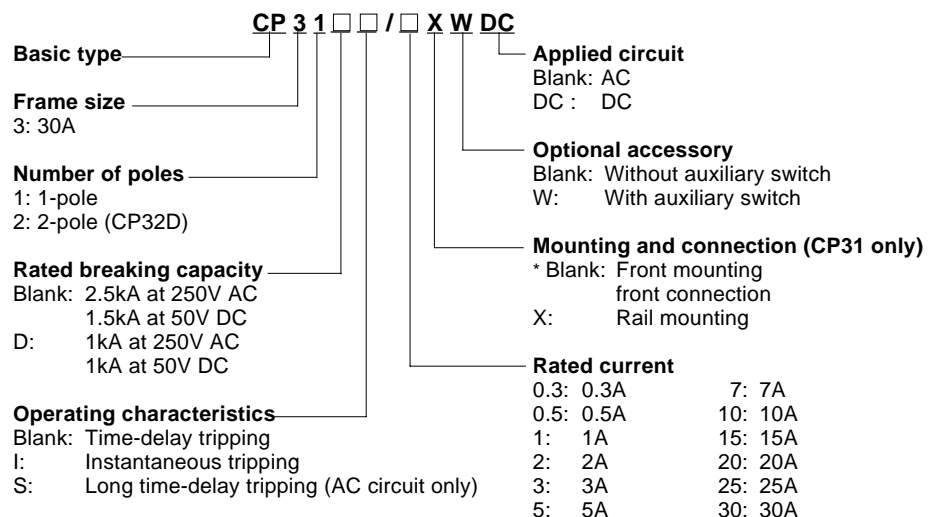
**Time-delay tripping type**

- Control circuits
- Solenoid valves and motor circuits
- Heater circuits

**Instantaneous tripping type**

- Semiconductor circuits
- SCR (Silicon controlled rectifier) and triac circuits
- Computer peripheral equipment

■ **Type number nomenclature**



\* One and the same CP31D and CP32D can be used for both front mounting and rail mounting.

# Circuit Protectors

## CP31, CP31D, CP32D

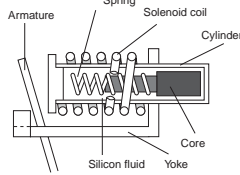
### ■ Operation

The operation of the magnetic overload release of the CP31, CP31D and CP32D circuit protectors are as shown in the sectional diagram Fig. 1. The magnetic tripping element of the circuit protector is simple—a solenoid coil wound around a hermetically-sealed non-magnetic cylinder containing a spring-loaded movable iron core and a silicon fluid.

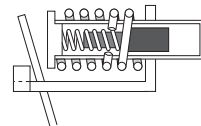
When currents less than the rated value flow no movement occurs in either the armature or iron core. However, when a sustained overcurrent occurs the magnetic field is increased. This causes the iron core to move along the cylinder. Once the core reaches the opposite end of the cylinder the armature is attracted which causes the protector to trip as shown in Fig. 2 and 3.

When a short circuit occurs the magnetic flux produced in the coil alone is strong enough to attract the armature regardless of core position. This causes circuit to be interrupted instantaneously. (Fig. 4)

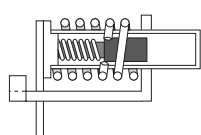
**Fig. 1** Normal load



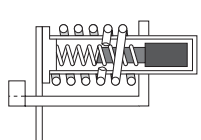
**Fig. 2** Overcurrent



**Fig. 3** Overcurrent trip

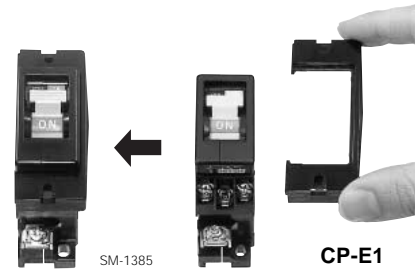


**Fig. 4** Short-circuit current trip



### ■ Adaptor for flush mounting/CP-E1

These circuit protectors can be modified for flush mounting use by a snap-fitting adaptor CP-E1.



Flush mounting      Front mounting

### ■ Snap-on mounting terminal covers

For main terminal: CP-T1  
For auxiliary terminal: CP-T2

### ■ Specifications

Description	CP31	CP31D	CP32D
Pole	1-pole	1-pole	2-pole
Frame size	30 Amps.	30 Amps.	
Rated insulation voltage (Ui)	250V AC, 50V DC	250V AC, 50V DC	
Rated operational voltage (Ue)	250V AC, 50V DC	250V AC, 50V DC	
Rated current	0.3, 0.5, 1, 2, 3, 5, 7, 10, 15, 20, 25, 30A	0.3, 0.5, 1, 2, 3, 5, 7, 10, 15, 20, 25, 30A	
Rated breaking capacity	2500A at 250V AC 1500A at 50V DC	1000A at 250V AC 1000A at 50V DC	
Operating characteristic	Time-delay tripping Instantaneous tripping Long time delay tripping	Time-delay tripping Instantaneous tripping Long time delay tripping	
Ambient temperature	-10°C to +60°C	-10°C to +60°C	
Dielectric strength	2000V AC 1min.	2000V AC 1min.	
Mechanical durability	10000 operations	6000 operations	
Electrical durability	10000 operations	6000 operations	
Mass	Approx. 100g	Approx. 100g (1-pole), 200g (2-pole)	

Note: Specify DC only when ordering circuit protectors for DC circuits.

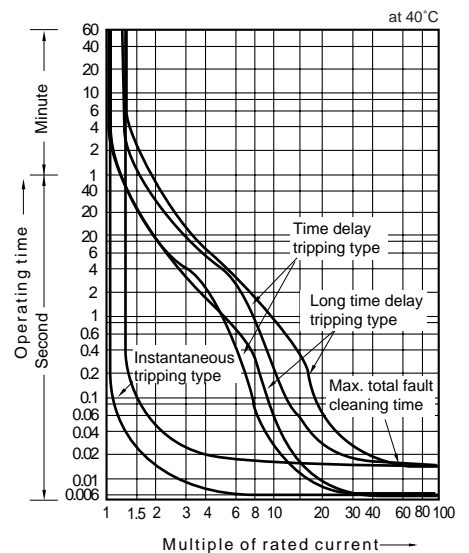
### ■ Auxiliary switch

Main contact	Auxiliary contact
ON 	
OFF or Trip 	

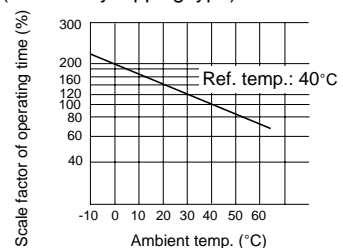
### Auxiliary contact ratings

250V AC	Resistive load: 1A Inductive load: 0.5A
125V AC	Resistive load: 3A Inductive load: 1A
50V DC	Resistive load: 1A Inductive load: 0.5A
30V DC	Resistive load: 2A Inductive load: 1A

### ■ Characteristic curve



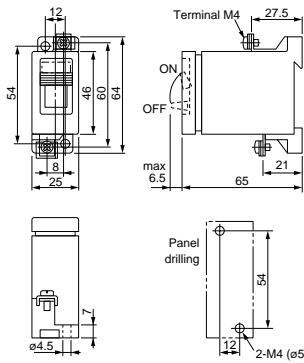
### Ambient temperature compensation (Time delay tripping type)



■ Dimensions, mm

● CP31

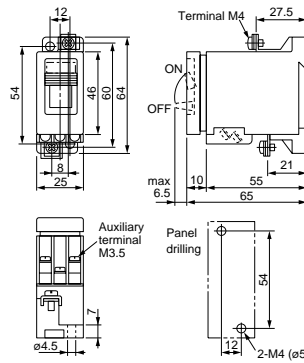
Front mounting type



Mass: Approx. 100g

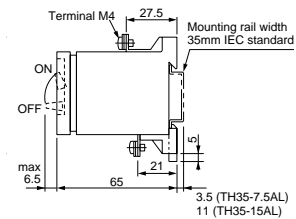
● CP31/W

With auxiliary switch



● CP31/X

Rail mounting type



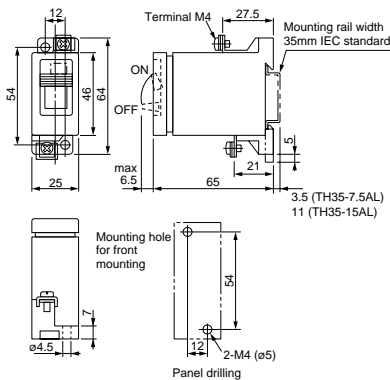
Mounting rail length: 900mm

Type	Material	Mounting pitch (Screw size)
TH35-7.5AL	Aluminium	200mm (M5)
TH35-15AL	Aluminium	400mm (M5)

Clamp TS-XT

● CP31D

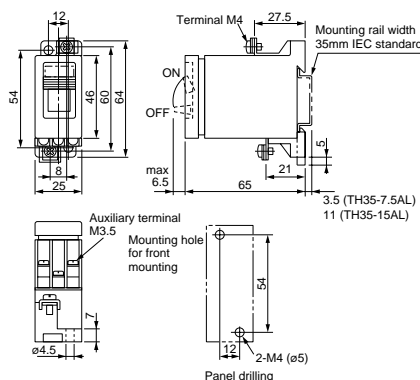
Front mounting/Rail mounting type



Mass: Approx. 100g

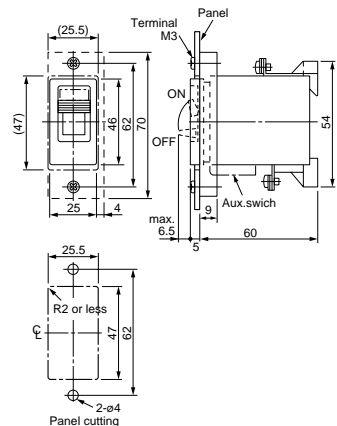
● CP31D/W

With auxiliary switch



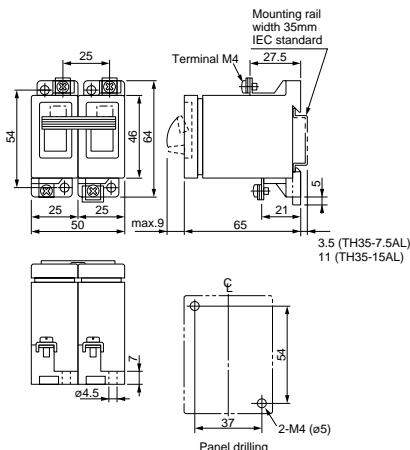
● CP31, CP31D

Flush mounting type



● CP32D

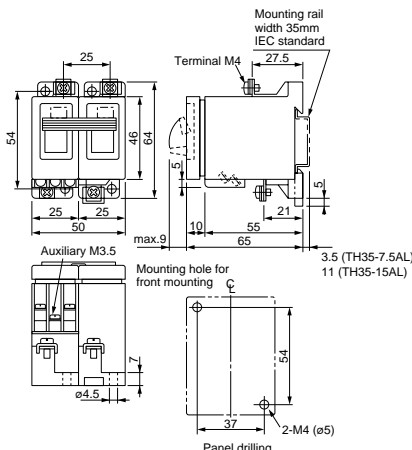
Front mounting/Rail mounting type



Mass: Approx. 200g

● CP32D/W

With auxiliary switch



Size of conductors

Type of terminal	Main terminal	Auxiliary terminal
Terminal screw*	M4	M3.5
Connectable wire sizes	1.25–5.5mm <sup>2</sup>	1.25–2mm <sup>2</sup>
Max. width of applicable crimp terminal	9.8mm (R1.25–4 to R5.5–4)	6.8mm (R2–3.5)
Tightening torque	1.0–1.3N·m	0.8–0.9N·m

Note: \* Terminal screws are the self-lifting to facilitate wiring.

■ Ordering information

Specify the following:

1. Type number


# Circuit Protectors

## CP31P, 32P, 33P


### CP-P circuit protectors

250V AC 0.3A to 25A  
65V DC 0.3A to 25A


#### ■ Description

CP-P circuit protectors are ideal for electronic circuit protection. The space required per pole is approximately 30% less than that for CP-E models allowing significant space savings. Application at any one of 12 rated currents in the range 0.3A to 25A is possible. CP-P circuit protectors have been approved by  and TÜV Standards.

#### ■ Features

- The mounting space is approximately 30% less than that required with CP-E models, and the width per pole has been reduced by approximately 15%.
- Conforms to IEC Standards. (Conforms to CE markings.)
-  and TÜV approved.
- Operated with an easy-to-use toggle handle.
- Male tab soldering, and right angle terminals are available.

#### ■ Standards

 (File No.E96846)  
TÜV (IEC)(R9750278)

#### ■ Accessories

##### ● Auxiliary switch (Type W)

This switch is used for indicator lamp or control circuit.

##### ● Alarm switch (Type K)

This switch can be connected to a warning lamp or buzzer to indicate when the circuit protector has been tripped.

Auxiliary and alarm switches for low level circuit are also available on request. (Type W1, K1)

### Ratings of auxiliary and alarm switches

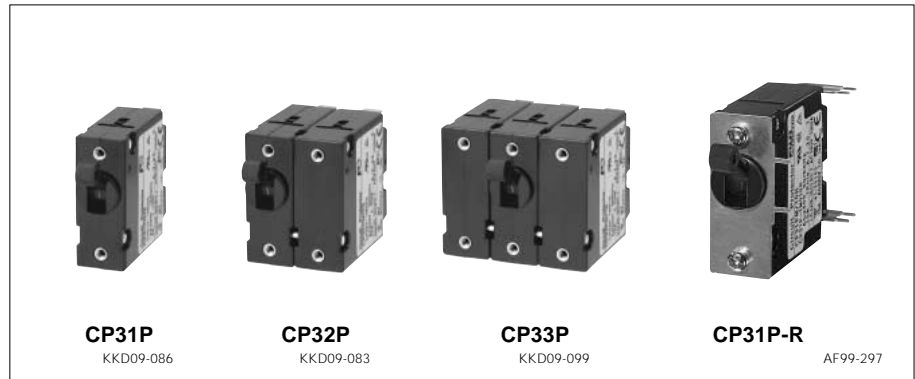
Standard type (Type W, K)

250V AC	Resistive load: 3A Inductive load: 2A
125V AC	Resistive load: 3A Inductive load: 2A
30V DC	Resistive load: 3A Inductive load: 2A

#### Minimum permissible load

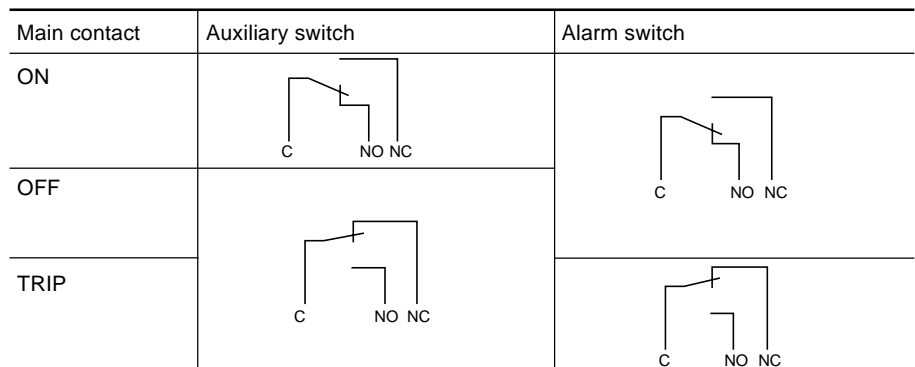
For low level circuit (Type W1, K1)

24V DC	1mA
12V DC	2mA
6V DC	5mA



#### ■ Specifications

Type	CP31P	CP32P	CP33P	CP31P-R
Pole	1-pole	2-pole	3-pole	1-pole
Rated insulation voltage (Ui)	250V AC 50/60Hz, 65V DC			
Rated operational voltage (Ue)	240V AC, 60V DC			
Rated current	0.3, 0.5, 0.75, 1, 2, 3, 5, 7.5, 10, 15, 20, 25A			
Rated breaking capacity	1000A at 240V AC 1000A at 60V DC			
Operating characteristic	Long time delay, Medium time delay Short time delay, Instantaneous tripping			
Tripping mechanism	Hydraulic-magnetic			
Ambient temperature	-10°C to +60°C			
Electrical durability	10000 operations			
Terminals	Main circuit Auxiliary circuit	Tab Soldering		Right angle Right angle
Accessories	Auxiliary switch (W, W1) Alarm switch (K, K1)	Available Available		
Mass (Approx.)	40g	85g	130g	40g





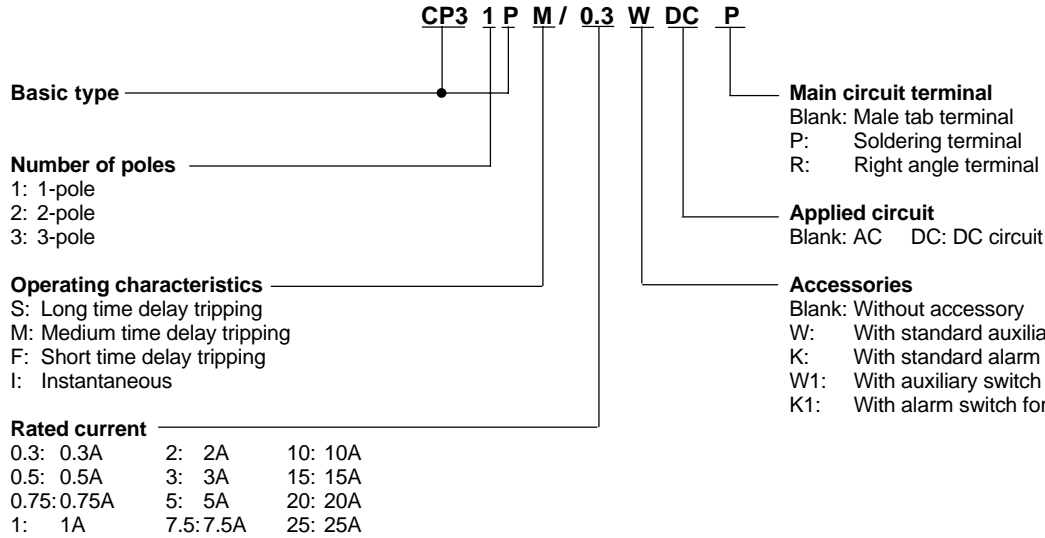
■ Versions

	Operating characteristic	CP31P (1-pole) Type	CP32P (2-pole) Type	CP33P (3-pole) Type
Applied circuit AC	Long time Medium time Short time Instantaneous	CP31PS/□ ■ CP31PM/□ ■ CP31PF/□ ■ CP31PI/□ ■	CP32PS/□ ■ CP32PM/□ ■ CP32PF/□ ■ CP32PI/□ ■	CP33PS/□ ■ CP33PM/□ ■ CP33PF/□ ■ CP33PI/□ ■
Applied circuit DC	Long time Medium time Short time Instantaneous	CP31PS/□DC ■ CP31PM/□DC ■ CP31PF/□DC ■ CP31PI/□DC ■	CP32PS/□DC ■ CP32PM/□DC ■ CP32PF/□DC ■ CP32PI/□DC ■	CP33PS/□DC ■ CP33PM/□DC ■ CP33PF/□DC ■ CP33PI/□DC ■
With standard auxiliary switch	Long time Medium time Short time Instantaneous	CP31PS/□W ■ CP31PM/□W ■ CP31PF/□W ■ CP31PI/□W ■	CP32PS/□W ■ CP32PM/□W ■ CP32PF/□W ■ CP32PI/□W ■	CP33PS/□W ■ CP33PM/□W ■ CP33PF/□W ■ CP33PI/□W ■
Applied circuit DC	Long time Medium time Short time Instantaneous	CP31PS/□WDC ■ CP31PM/□WDC ■ CP31PF/□WDC ■ CP31PI/□WDC ■	CP32PS/□WDC ■ CP32PM/□WDC ■ CP32PF/□WDC ■ CP32PI/□WDC ■	CP33PS/□WDC ■ CP33PM/□WDC ■ CP33PF/□WDC ■ CP33PI/□WDC ■
With standard alarm switch	Long time Medium time Short time Instantaneous	CP31PS/□K ■ CP31PM/□K ■ CP31PF/□K ■ CP31PI/□K ■	CP32PS/□K ■ CP32PM/□K ■ CP32PF/□K ■ CP32PI/□K ■	CP33PS/□K ■ CP33PM/□K ■ CP33PF/□K ■ CP33PI/□K ■
Applied circuit DC	Long time Medium time Short time Instantaneous	CP31PS/□KDC ■ CP31PM/□KDC ■ CP31PF/□KDC ■ CP31PI/□KDC ■	CP32PS/□KDC ■ CP32PM/□KDC ■ CP32PF/□KDC ■ CP32PI/□KDC ■	CP33PS/□KDC ■ CP33PM/□KDC ■ CP33PF/□KDC ■ CP33PI/□KDC ■
With auxiliary switch for low level circuit	Long time Medium time Short time Instantaneous	CP31PS/□W1 ■ CP31PM/□W1 ■ CP31PF/□W1 ■ CP31PI/□W1 ■	CP32PS/□W1 ■ CP32PM/□W1 ■ CP32PF/□W1 ■ CP32PI/□W1 ■	CP33PS/□W1 ■ CP33PM/□W1 ■ CP33PF/□W1 ■ CP33PI/□W1 ■
Applied circuit DC	Long time Medium time Short time Instantaneous	CP31PS/□W1DC ■ CP31PM/□W1DC ■ CP31PF/□W1DC ■ CP31PI/□W1DC ■	CP32PS/□W1DC ■ CP32PM/□W1DC ■ CP32PF/□W1DC ■ CP32PI/□W1DC ■	CP33PS/□W1DC ■ CP33PM/□W1DC ■ CP33PF/□W1DC ■ CP33PI/□W1DC ■
With alarm switch for low level circuit	Long time Medium time Short time Instantaneous	CP31PS/□K1 ■ CP31PM/□K1 ■ CP31PF/□K1 ■ CP31PI/□K1 ■	CP32PS/□K1 ■ CP32PM/□K1 ■ CP32PF/□K1 ■ CP32PI/□K1 ■	CP33PS/□K1 ■ CP33PM/□K1 ■ CP33PF/□K1 ■ CP33PI/□K1 ■
Applied circuit DC	Long time Medium time Short time Instantaneous	CP31PS/□K1DC ■ CP31PM/□K1DC ■ CP31PF/□K1DC ■ CP31PI/□K1DC ■	CP32PS/□K1DC ■ CP32PM/□K1DC ■ CP32PF/□K1DC ■ CP32PI/□K1DC ■	CP33PS/□K1DC ■ CP33PM/□K1DC ■ CP33PF/□K1DC ■ CP33PI/□K1DC ■

Notes : □ Enter the rated current in the □ mark of the type number. 0.3A: 0.3, 0.5A: 0.5 ----- 25A: 25  
 ■ Enter the main circuit terminal in the ■ mark.

# Circuit Protectors CP31P, 32P, 33P

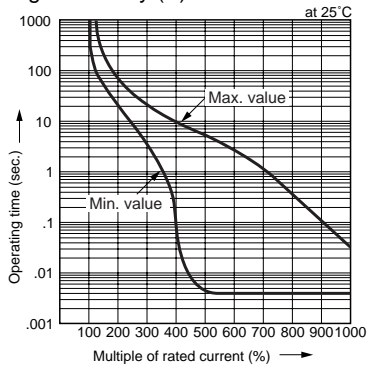
## ■ Type number nomenclature



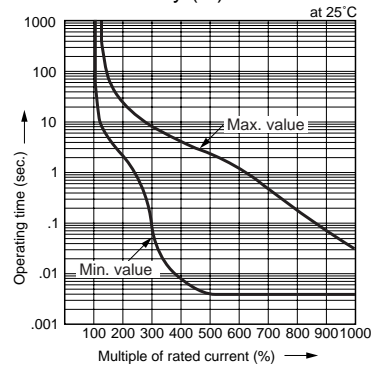
## ■ Characteristic curves

AC circuit

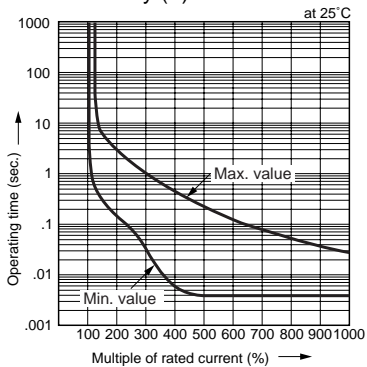
Long time delay (S)



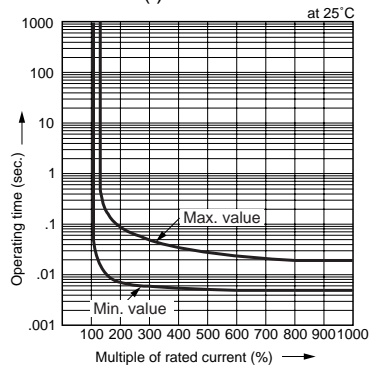
Medium time delay (M)



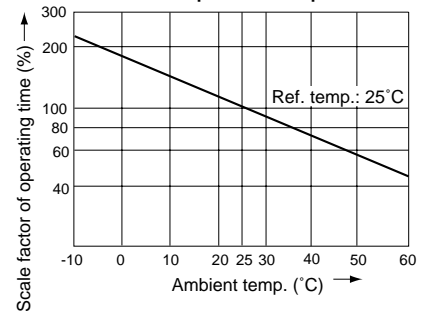
Short time delay (F)



Instantaneous (I)



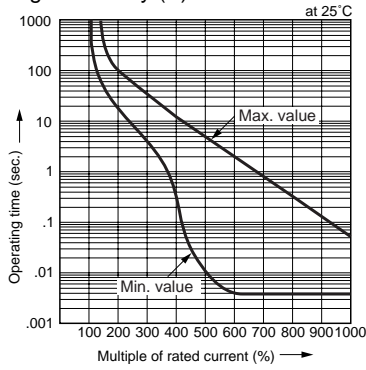
Ambient temperature compensation



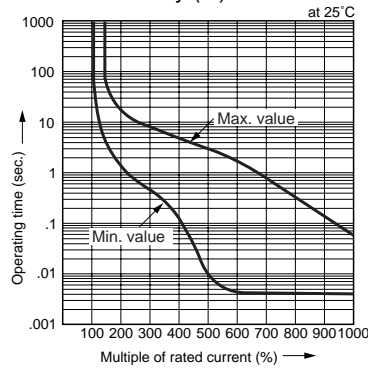
■ Characteristic curves

DC circuit

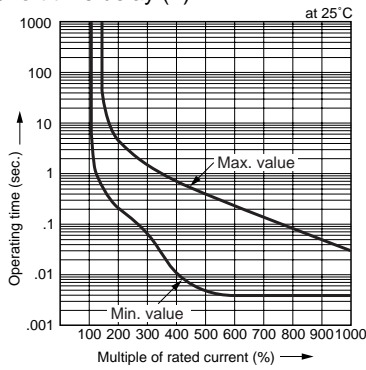
Long time delay (S)



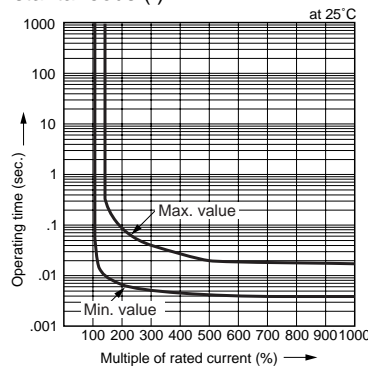
Medium time delay (M)



Short time delay (F)



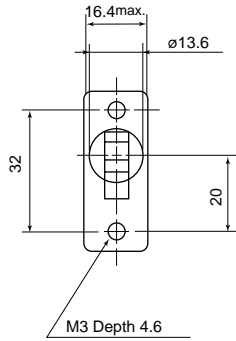
Instantaneous (I)



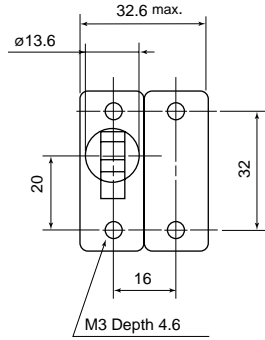
# Circuit Protectors CP31P, 32P, 33P

## ■ Dimensions, mm

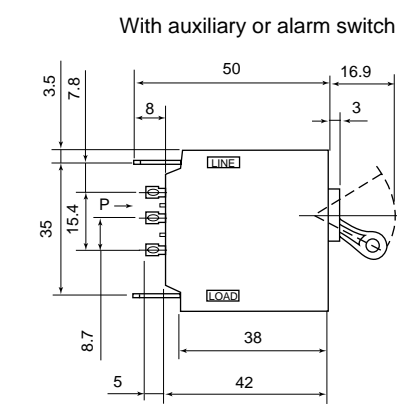
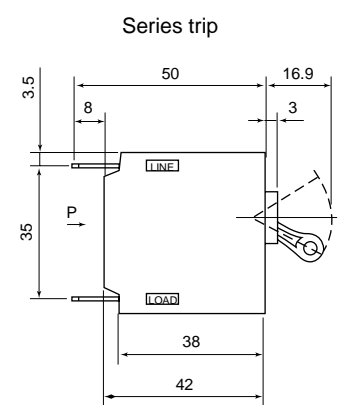
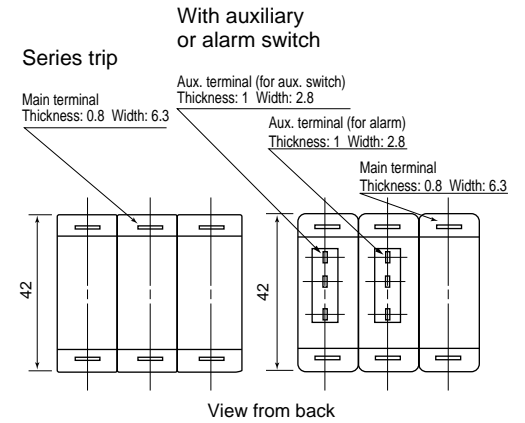
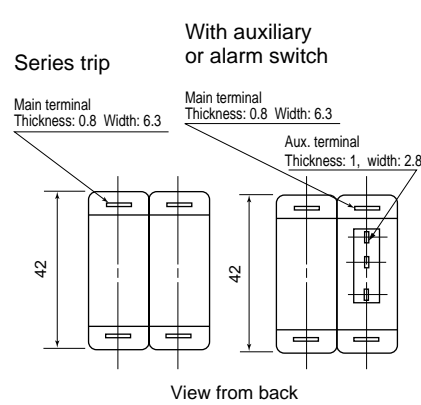
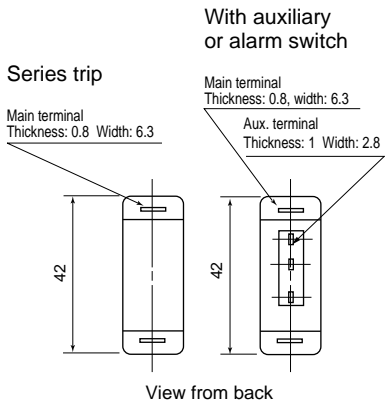
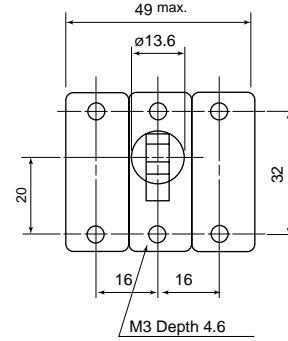
1-pole



2-pole

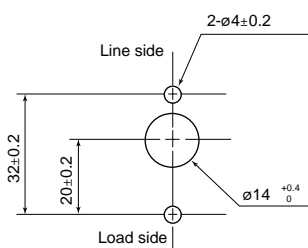


3-pole

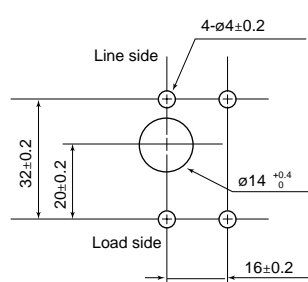


## Panel drilling

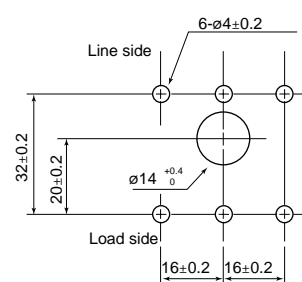
1-pole



2-pole

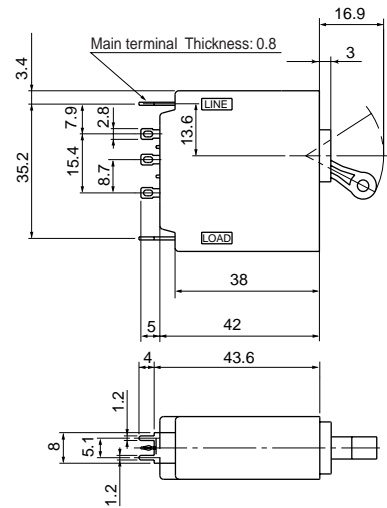


3-pole

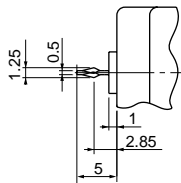


■ Dimensions, mm

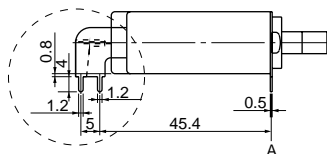
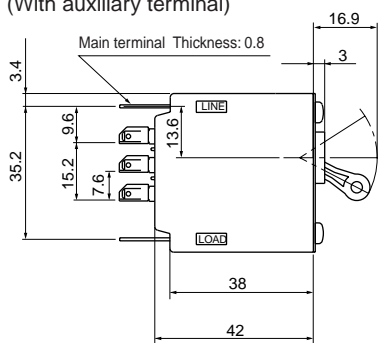
Soldering terminal  
(With auxiliary terminal)



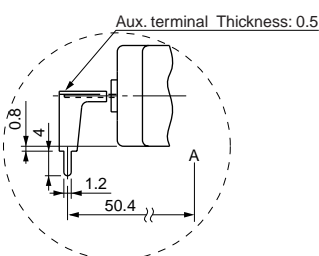
Aux. terminal



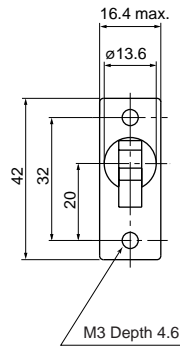
Right angle terminal  
(With auxiliary terminal)



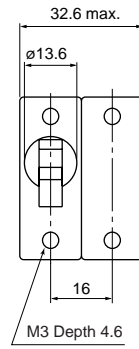
Aux. terminal (Enlarged)



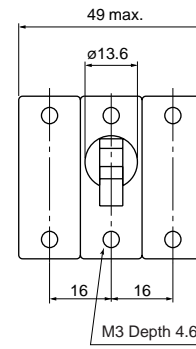
1-pole



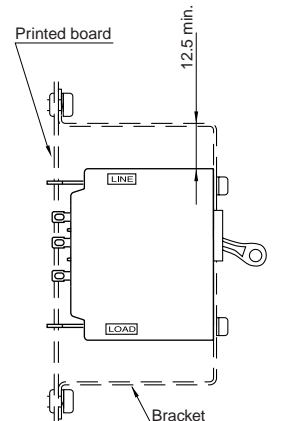
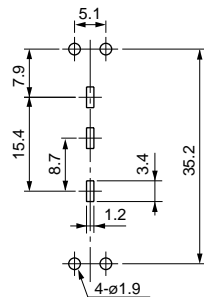
2-pole



3-pole

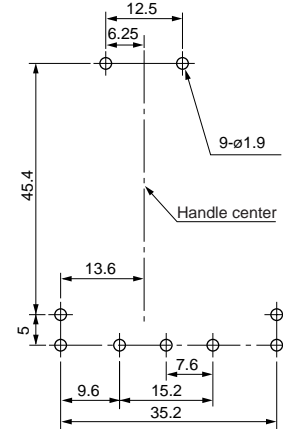


Panel drilling (1-pole)



Bracket  
Not supplied.  
Please prepare it on  
customer's side.

Panel drilling




# Circuit Protectors

## CP51B, 52B, 53B


### 50A frame size circuit protectors

250V AC 0.3A to 50A  
65V DC 0.3A to 50A

#### ■ Features

- Available with ratings from 0.3A to 50A.
- Conforms to IEC Standards. (Conforms to CE markings.)
-  and TÜV approved.
- Rated breaking capacity of 1,500A at 240V AC.
- Stud terminals used.

#### ■ Standards

 (File No.E96846)  
TÜV (IEC)(R9750278)

#### ■ Accessories

##### ● Auxiliary switch (Type W)

This switch is used for ON-OFF lamp indicator or control circuit.

##### ● Alarm switch (Type K)

This switch can be connected to a warning lamp or buzzer to indicate when the circuit protector has been tripped.

Auxiliary and alarm switch for low level circuit are also available on request. (Type W1, K1)

### Ratings of auxiliary and alarm switches

Standard type (Type W, K)

250V AC	Resistive load: 3A Inductive load: 2A
125V AC	Resistive load: 3A Inductive load: 2A
30V DC	Resistive load: 3A Inductive load: 2A

### Minimum permissible load

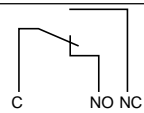

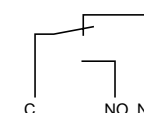
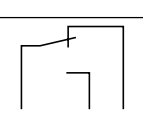
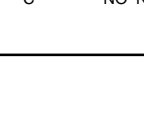

Low level circuit (Type W1, K1)

24V DC	1mA
12V DC	2mA
6V DC	5mA



### ■ Specifications

Type	CP51B	CP52B	CP53B
Pole	1-pole	2-pole	3-pole
Rated insulation voltage (Ui)	250V AC 50/60Hz, 65V DC		
Rated operational voltage (Ue)	240V AC, 60V DC		
Rated current	0.3, 0.5, 0.75, 1, 2, 3, 5, 7.5, 10, 15, 20, 25, 30, 40, 50A		
Rated breaking capacity	1500A at 240V AC 1000A at 60V DC		
Operating characteristic	Long time delay, Medium time delay Short time delay, Instantaneous tripping		
Tripping mechanism	Hydraulic-magnetic		
Ambient temperature	-10°C to +60°C		
Electrical durability	10000 operations		
Terminals	Main circuit Auxiliary circuit	Round stud Soldering	
Accessories	Auxiliary switch (W, W1) Alarm switch (K, K1)	Available Available	
Mass (Approx.)	80g	180g	280g

Main contact	Auxiliary switch/W	Alarm switch/K
ON		
OFF		
TRIP		

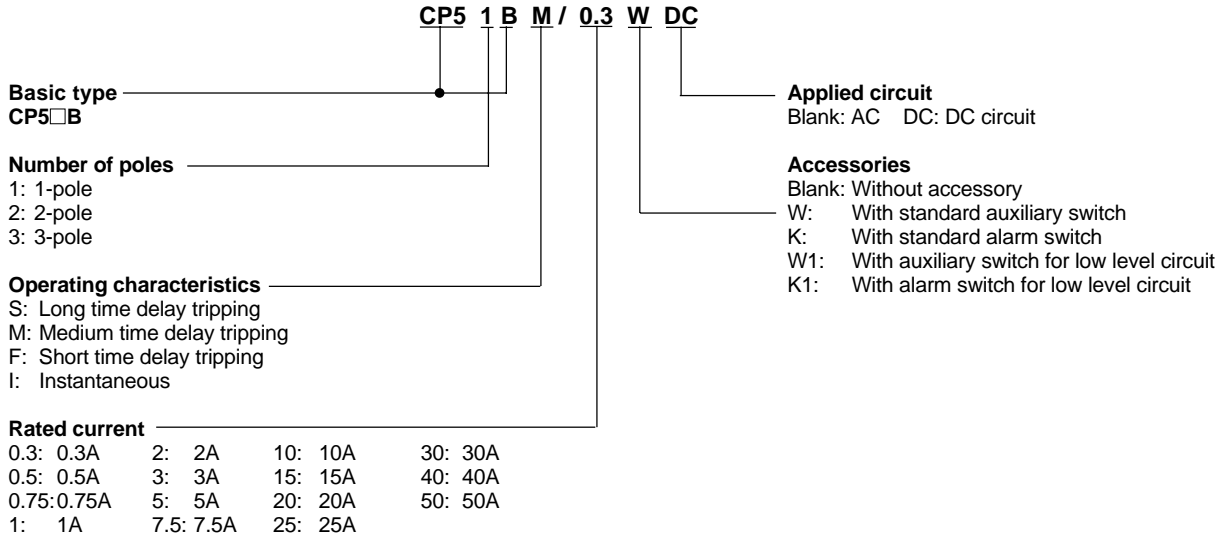
■ Versions

	Operating characteristic	CP51B (1-pole) Type	CP52B (2-pole) Type	CP53B (3-pole) Type
Applied circuit AC	Long time Medium time Short time Instantaneous	CP51BS/□ CP51BM/□ CP51BF/□ CP51BI/□	CP52BS/□ CP52BM/□ CP52BF/□ CP52BI/□	CP53BS/□ CP53BM/□ CP53BF/□ CP53BI/□
Applied circuit DC	Long time Medium time Short time Instantaneous	CP51BS/□DC CP51BM/□DC CP51BF/□DC CP51BI/□DC	CP52BS/□DC CP52BM/□DC CP52BF/□DC CP52BI/□DC	CP53BS/□DC CP53BM/□DC CP53BF/□DC CP53BI/□DC
With standard auxiliary switch	Long time Medium time Short time Instantaneous	CP51BS/□W CP51BM/□W CP51BF/□W CP51BI/□W	CP52BS/□W CP52BM/□W CP52BF/□W CP52BI/□W	CP53BS/□W CP53BM/□W CP53BF/□W CP53BI/□W
Applied circuit DC	Long time Medium time Short time Instantaneous	CP51BS/□WDC CP51BM/□WDC CP51BF/□WDC CP51BI/□WDC	CP52BS/□WDC CP52BM/□WDC CP52BF/□WDC CP52BI/□WDC	CP53BS/□WDC CP53BM/□WDC CP53BF/□WDC CP53BI/□WDC
With standard alarm switch	Long time Medium time Short time Instantaneous	CP51BS/□K CP51BM/□K CP51BF/□K CP51BI/□K	CP52BS/□K CP52BM/□K CP52BF/□K CP52BI/□K	CP53BS/□K CP53BM/□K CP53BF/□K CP53BI/□K
Applied circuit DC	Long time Medium time Short time Instantaneous	CP51BS/□KDC CP51BM/□KDC CP51BF/□KDC CP51BI/□KDC	CP52BS/□KDC CP52BM/□KDC CP52BF/□KDC CP52BI/□KDC	CP53BS/□KDC CP53BM/□KDC CP53BF/□KDC CP53BI/□KDC
With auxiliary switch for low level circuit	Long time Medium time Short time Instantaneous	CP51BS/□W1 CP51BM/□W1 CP51BF/□W1 CP51BI/□W1	CP52BS/□W1 CP52BM/□W1 CP52BF/□W1 CP52BI/□W1	CP53BS/□W1 CP53BM/□W1 CP53BF/□W1 CP53BI/□W1
Applied circuit DC	Long time Medium time Short time Instantaneous	CP51BS/□W1DC CP51BM/□W1DC CP51BF/□W1DC CP51BI/□W1DC	CP52BS/□W1DC CP52BM/□W1DC CP52BF/□W1DC CP52BI/□W1DC	CP53BS/□W1DC CP53BM/□W1DC CP53BF/□W1DC CP53BI/□W1DC
With alarm switch for low level circuit	Long time Medium time Short time Instantaneous	CP51BS/□K1 CP51BM/□K1 CP51BF/□K1 CP51BI/□K1	CP52BS/□K1 CP52BM/□K1 CP52BF/□K1 CP52BI/□K1	CP53BS/□K1 CP53BM/□K1 CP53BF/□K1 CP53BI/□K1
Applied circuit DC	Long time Medium time Short time Instantaneous	CP51BS/□K1DC CP51BM/□K1DC CP51BF/□K1DC CP51BI/□K1DC	CP52BS/□K1DC CP52BM/□K1DC CP52BF/□K1DC CP52BI/□K1DC	CP53BS/□K1DC CP53BM/□K1DC CP53BF/□K1DC CP53BI/□K1DC

Note : □ Enter the rated current in the □ mark of the type number. 0.3A: 0.3, 0.5A: 0.5 ----- 50A: 50

# Circuit Protectors CP51B, 52B, 53B

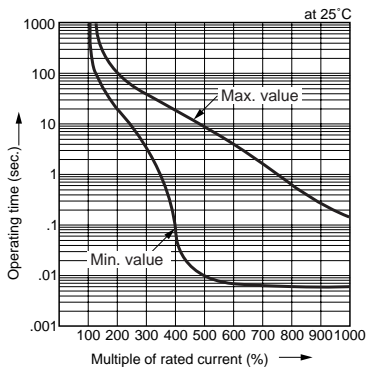
## ■ Type number nomenclature



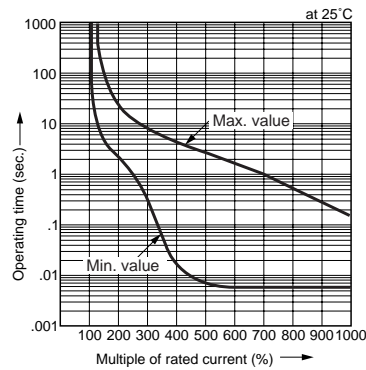
## ■ Characteristic curves

AC circuit

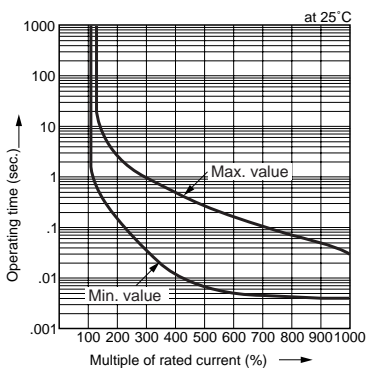
Long time delay (S)



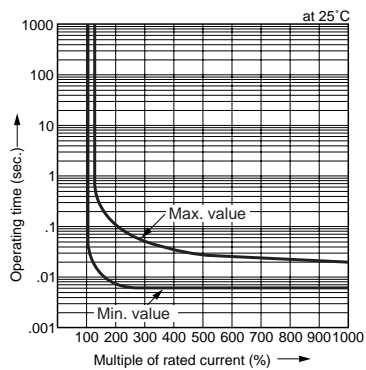
Medium time delay (M)



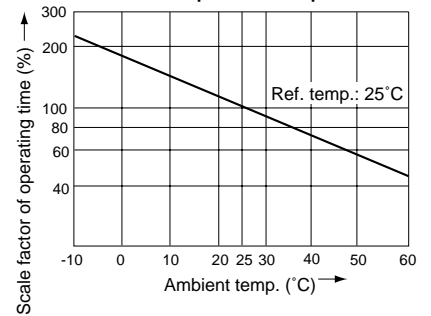
Short time delay (F)



Instantaneous (I)



Ambient temperature compensation

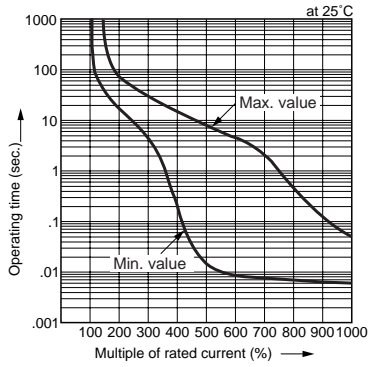




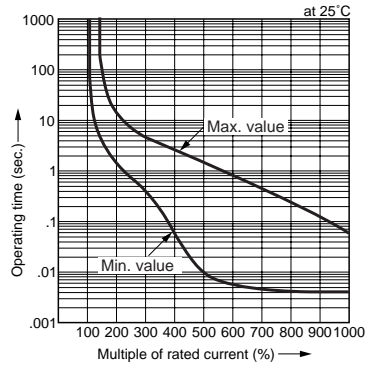
■ Characteristic curves

DC circuit

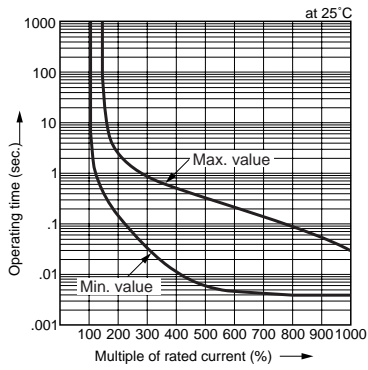
Long time delay (S)



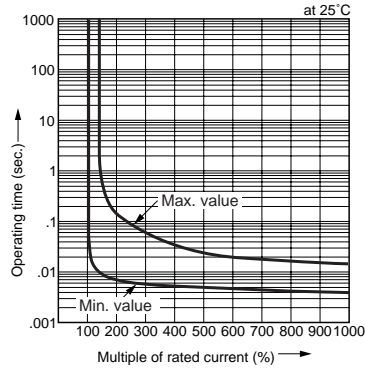
Medium time delay (M)



Short time delay (F)

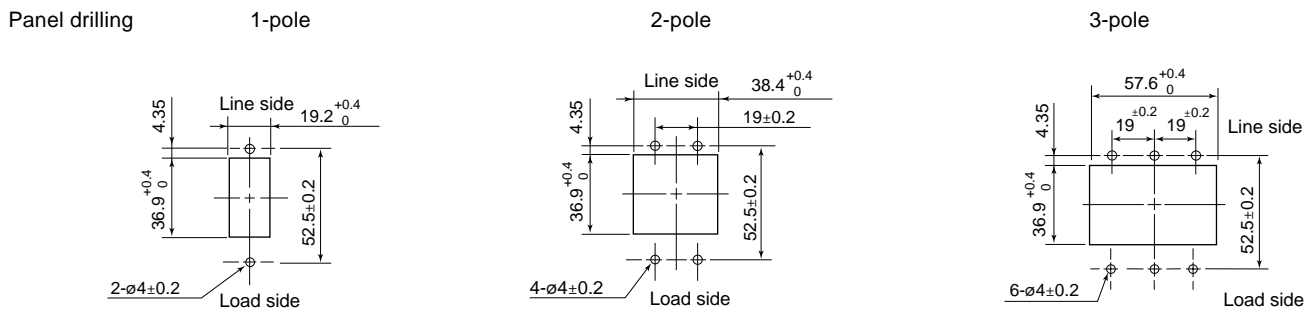
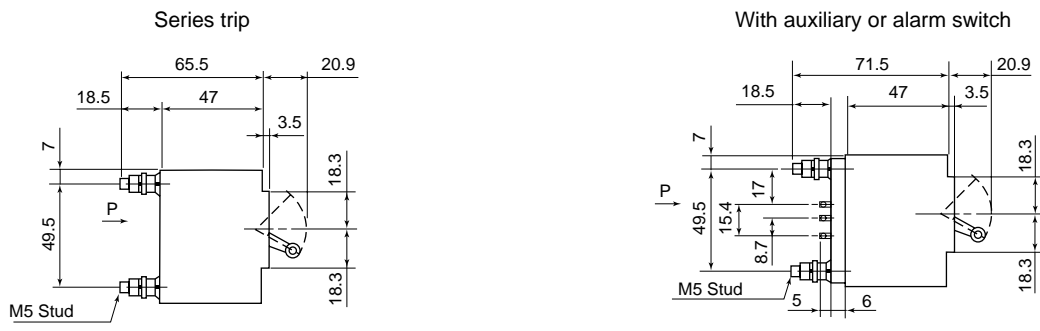
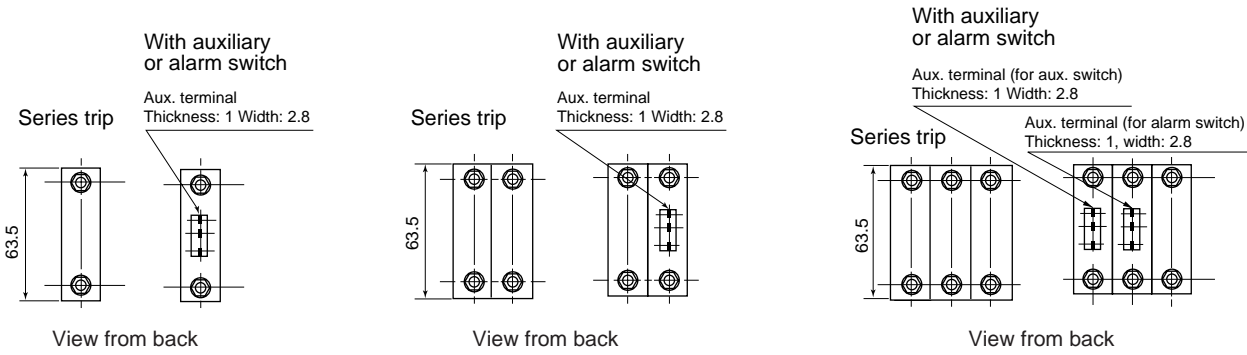
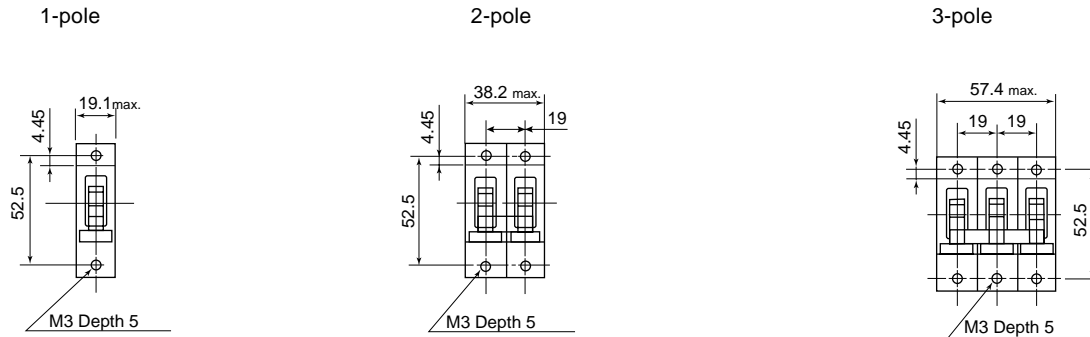


Instantaneous (I)



# Circuit Protectors CP51B, 52B, 53B

## ■ Dimensions, mm



**CP-E and CP-V circuit protectors**

250V AC 0.05A to 30A  
 65V DC 0.05A to 30A

■ **Description**

CP-E, CP-V circuit protectors have been specially developed for computers, communication equipment and peripheral applications. In these situations power irregularities can lead to serious and expensive damage, and reliable protective equipment is required. FUJI circuit protectors meet this need. These protectors are available with ratings from 50mA to 30A. They are widely used in FA, office machinery, communication equipment and industrial computer-controlled equipment. They are also suitable for extremely severe service since they can withstand mechanical shocks up to 981m/s<sup>2</sup>.

■ **Features**

- Available in instantaneous, short time, medium time and long time delay types, thus making them suitable for a wide range of electronic applications.
- Also available in types having inertia delay characteristics. These do not trip due to inrush current.
- For internal circuits, series trip, shunt trip, relay trip and switch types are available.
- Circuit protectors with an auxiliary and alarm switch are also available.
- Single pole to 3-pole CP types can be operated with a single handle. Handle holes are easily made in panels.
- Widths down to 19mm.

■ **Standards**

UL: CP-E, CP-V (File No. E96846), (File No. E83461 for switch type), Socket CP-S (E96846SP, E83461, LR67978 (CSA C22.2 No.14))  
 TÜV (IEC): CP-V(R50064785)

■ **Accessories**

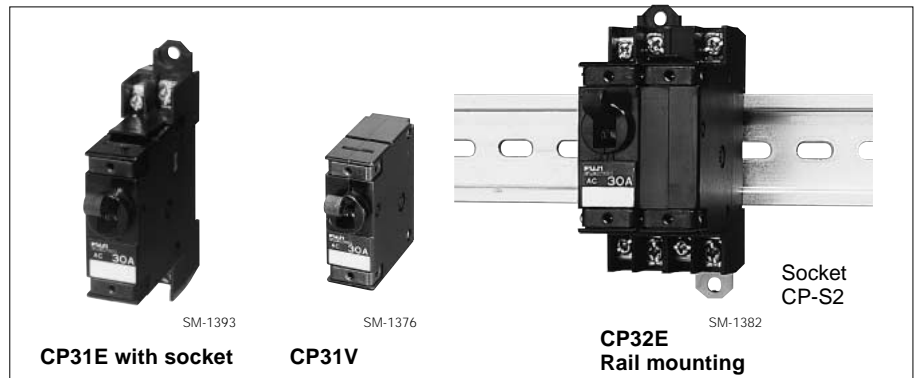
● **Auxiliary switch (Type W)**

This switch is used for indicator lamp or control circuit.

● **Alarm switch (Type K)**

This switch can be connected to a warning lamp or buzzer to indicate when the circuit protector has been tripped.

Auxiliary (W1) and alarm (K1) switch for low level circuit are also available on request.



■ **Specifications**

Type	CP31E, V	CP32E, V	CP33E, V	CP34E, V
Pole	1-pole	2-pole	3-pole	4-pole
Rated insulation voltage (Ui)	250V AC 50/60Hz, 65V DC			
Rated operational voltage (Ue)	250V AC 50/60Hz, 60V DC			
Rated current	0.05, 0.1, 0.25, 0.5, 0.75, 1, 2, 2.5, 3, 5, 7.5, 10, 15, 20, 25, 30A			
Rated breaking capacity	1000A at 250V AC 1000A at 60V DC			
Operating characteristic	Long time delay, Medium time delay Short time delay, Instantaneous tripping			
Tripping mechanism	Hydraulic-magnetic			
Ambient temperature	-10°C to +60°C			
Electrical durability	10000 operations			
Terminals	Main circuit	Tab, screw, printed board		
	Auxiliary circuit	Tab, printed board		
Accessories	Auxiliary switch (W, W1)	Available		
	Alarm switch (K, K1)	Available		
	Inertia delay device (D)	Available		
Mass (Approx.)	60g	120g	180g	240g

**Ratings of auxiliary and alarm switches**

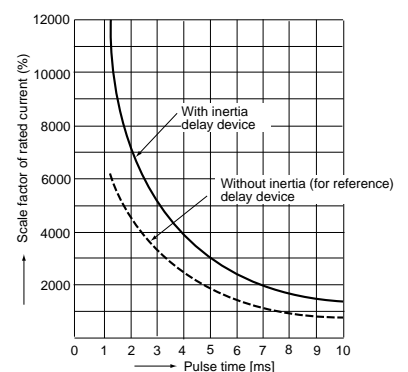
250V AC	Resistive load: 3A Inductive load: 2A
125V AC	Resistive load: 5A Inductive load: 3A
60V DC	Resistive load: 1A Inductive load: 0.5A
30V DC	Resistive load: 4A Inductive load: 3A

● **Inertia delay device (Type D)**

When a circuit carrying loads such as transformers or lamps is closed, an extremely large inrush current flows. This inertia delay device is designed to prevent the circuit protector from operating erroneously due to such inrush current and to carry out an interruption within the prescribed operating characteristics in the face of an overcurrent.

For instance, the following graph explains that the protector does not operate even when a pulse current of approx. 18 times (peak value) rated current with a pulse width of 8ms flows.

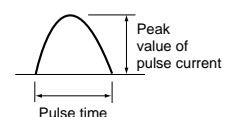
**Inertia delay characteristics**



- Scale factor of the rated current (%)

$$\frac{\text{Peak value of pulse current}}{\text{Rated current for protector}} \times 100$$

- Waveform of pulse current: Sinusoidal wave or parabolic pulse



# Circuit Protectors

## CP31E, 32E, 33E, 34E

### ■ Versions

Internal circuit	Operating characteristics	CP31E (1-pole) Type	CP32E (2-pole) Type	CP33E (3-pole) Type	CP34E (4-pole) Type
Series trip type	Long time Medium time Short time Instantaneous	CP31E/□ CP31EM/□ CP31EF/□ CP31EI/□	CP32E/□ CP32EM/□ CP32EF/□ CP32EI/□	CP33E/□ CP33EM/□ CP33EF/□ CP33EI/□	CP34E/□ CP34EM/□ CP34EF/□ CP34EI/□
Series trip type With inertia delay device	Long time Medium time Short time Instantaneous	CP31E/□D CP31EM/□D CP31EF/□D —	CP32E/□D CP32EM/□D CP32EF/□D —	CP33E/□D CP33EM/□D CP33EF/□D —	CP34E/□D CP34EM/□D CP34EF/□D —
Series trip type With auxiliary switch	Long time Medium time Short time Instantaneous	CP31E/□W CP31EM/□W CP31EF/□W CP31EI/□W	CP32E/□W CP32EM/□W CP32EF/□W CP32EI/□W	CP33E/□W CP33EM/□W CP33EF/□W CP33EI/□W	CP34E/□W CP34EM/□W CP34EF/□W CP34EI/□W
Series trip type With auxiliary switch and inertia delay device	Long time Medium time Short time Instantaneous	CP31E/□WD CP31EM/□WD CP31EF/□WD —	CP32E/□WD CP32EM/□WD CP32EF/□WD —	CP33E/□WD CP33EM/□WD CP33EF/□WD —	CP34E/□WD CP34EM/□WD CP34EF/□WD —
Series trip type With alarm switch	Long time Medium time Short time Instantaneous	CP31E/□K CP31EM/□K CP31EF/□K CP31EI/□K	CP32E/□K CP32EM/□K CP32EF/□K CP32EI/□K	CP33E/□K CP33EM/□K CP33EF/□K CP33EI/□K	CP34E/□K CP34EM/□K CP34EF/□K CP34EI/□K
Series trip type With alarm switch and inertia delay device	Long time Medium time Short time Instantaneous	CP31E/□KD CP31EM/□KD CP31EF/□KD —	CP32E/□KD CP32EM/□KD CP32EF/□KD —	CP33E/□KD CP33EM/□KD CP33EF/□KD —	CP34E/□KD CP34EM/□KD CP34EF/□KD —
Shunt trip type	Long time Medium time Short time Instantaneous	CP31E2/□ CP31E2M/□ CP31E2F/□ CP31E2I/□	CP32E2/□ CP32E2M/□ CP32E2F/□ CP32E2I/□	CP33E2/□ CP33E2M/□ CP33E2F/□ CP33E2I/□	CP34E2/□ CP34E2M/□ CP34E2F/□ CP34E2I/□
Shunt trip type With inertia delay device	Long time Medium time Short time Instantaneous	CP31E2/□D CP31E2M/□D CP31E2F/□D —	CP32E2/□D CP32E2M/□D CP32E2F/□D —	CP33E2/□D CP33E2M/□D CP33E2F/□D —	CP34E2/□D CP34E2M/□D CP34E2F/□D —
Relay trip type (Current trip)	Long time Medium time Short time Instantaneous	CP31E3/□ CP31E3M/□ CP31E3F/□ CP31E3I/□	CP32E3/□ CP32E3M/□ CP32E3F/□ CP32E3I/□	CP33E3/□ CP33E3M/□ CP33E3F/□ CP33E3I/□	CP34E3/□ CP34E3M/□ CP34E3F/□ CP34E3I/□
Relay trip type With inertia delay device	Long time Medium time Short time Instantaneous	CP31E3/□D CP31E3M/□D CP31E3F/□D —	CP32E3/□D CP32E3M/□D CP32E3F/□D —	CP33E3/□D CP33E3M/□D CP33E3F/□D —	CP34E3/□D CP34E3M/□D CP34E3F/□D —
Switch type		CP31E4/30	CP32E4/30	CP33E4/30	CP34E4/30
Switch type With auxiliary switch		CP31E4/30W	CP32E4/30W	CP33E4/30W	CP34E4/30W
Relay trip type (Shunt trip)		CP31E5/30	CP32E5/30	CP33E5/30	CP34E5/30
Dual coil type	Long time Medium time Short time Instantaneous	CP31E6/□ CP31E6M/□ CP31E6F/□ CP31E6I/□	CP32E6/□ CP32E6M/□ CP32E6F/□ CP32E6I/□	CP33E6/□ CP33E6M/□ CP33E6F/□ CP33E6I/□	CP34E6/□ CP34E6M/□ CP34E6F/□ CP34E6I/□
Dual coil type With inertia delay device	Long time Medium time Short time Instantaneous	CP31E6/□D CP31E6M/□D CP31E6F/□D —	CP32E6/□D CP32E6M/□D CP32E6F/□D —	CP33E6/□D CP33E6M/□D CP33E6F/□D —	CP34E6/□D CP34E6M/□D CP34E6F/□D —

Notes: □ Enter the rated current in the □ mark of the type number.  
0.05A: 0.05, 0.1A: 0.1, 0.25A: 0.25.....30A: 30

• When ordering types with auxiliary switch (W1) or alarm switch (K1), add suffix to type number.

■ Versions

Internal circuit	Operating characteristics	CP31V (1-pole) Type	CP32V (2-pole) Type	CP33V (3-pole) Type	CP34V (4-pole) Type
Series trip type	Long time Medium time Short time Instantaneous	CP31V/□ CP31VM/□ CP31VF/□ CP31VI/□	CP32V/□ CP32VM/□ CP32VF/□ CP32VI/□	CP33V/□ CP33VM/□ CP33VF/□ CP33VI/□	CP34V/□ CP34VM/□ CP34VF/□ CP34VI/□
Series trip type With inertia delay device	Long time Medium time Short time Instantaneous	CP31V/□D CP31VM/□D CP31VF/□D —	CP32V/□D CP32VM/□D CP32VF/□D —	CP33V/□D CP33VM/□D CP33VF/□D —	CP34V/□D CP34VM/□D CP34VF/□D —
Series trip type With auxiliary switch	Long time Medium time Short time Instantaneous	CP31V/□W CP31VM/□W CP31VF/□W CP31VI/□W	CP32V/□W CP32VM/□W CP32VF/□W CP32VI/□W	CP33V/□W CP33VM/□W CP33VF/□W CP33VI/□W	CP34V/□W CP34VM/□W CP34VF/□W CP34VI/□W
Series trip type With auxiliary switch and inertia delay device	Long time Medium time Short time Instantaneous	CP31V/□WD CP31VM/□WD CP31VF/□WD —	CP32V/□WD CP32VM/□WD CP32VF/□WD —	CP33V/□WD CP33VM/□WD CP33VF/□WD —	CP34V/□WD CP34VM/□WD CP34VF/□WD —
Series trip type With alarm switch	Long time Medium time Short time Instantaneous	CP31V/□K CP31VM/□K CP31VF/□K CP31VI/□K	CP32V/□K CP32VM/□K CP32VF/□K CP32VI/□K	CP33V/□K CP33VM/□K CP33VF/□K CP33VI/□K	CP34V/□K CP34VM/□K CP34VF/□K CP34VI/□K
Series trip type With alarm switch and inertia delay device	Long time Medium time Short time Instantaneous	CP31V/□KD CP31VM/□KD CP31VF/□KD —	CP32V/□KD CP32VM/□KD CP32VF/□KD —	CP33V/□KD CP33VM/□KD CP33VF/□KD —	CP34V/□KD CP34VM/□KD CP34VF/□KD —
Shunt trip type	Long time Medium time Short time Instantaneous	CP31V2/□ CP31V2M/□ CP31V2F/□ CP31V2I/□	CP32V2/□ CP32V2M/□ CP32V2F/□ CP32V2I/□	CP33V2/□ CP33V2M/□ CP33V2F/□ CP33V2I/□	CP34V2/□ CP34V2M/□ CP34V2F/□ CP34V2I/□
Shunt trip type With inertia delay device	Long time Medium time Short time Instantaneous	CP31V2/□D CP31V2M/□D CP31V2F/□D —	CP32V2/□D CP32V2M/□D CP32V2F/□D —	CP33V2/□D CP33V2M/□D CP33V2F/□D —	CP34V2/□D CP34V2M/□D CP34V2F/□D —
Switch type		CP31V4/30	CP32V4/30	CP33V4/30	CP34V4/30
Switch type With auxiliary switch		CP31V4/30W	CP32V4/30W	CP33V4/30W	CP34V4/30W

Notes: □ Enter the rated current in the □ mark of the type number.  
0.05A: 0.05, 0.1A: 0.1, 0.25A: 0.25.....30A: 30

• When ordering types with auxiliary switch (W1) or alarm switch (K1), add suffix to type number.

■ Sockets (CP3□E only)

No. of poles	Circuit protector Type	Auxiliary contact	Alarm contact	Socket Type	Terminal cover Type
1-pole	CP31E, 31E4	—	—	CP-S1	CP-T3
	CP31E/W, 31E4/W	1NO	—	CP-S1A	
		1NC	—	CP-S1B	
	CP31E/K	—	1NC	CP-S1A	
—		1NO	CS-S1B		
2-pole	CP32E, 32E4	—	—	CP-S2	
	CP32E/W, 32E4/W	SPDT	—	CP-S2C	
	CP32E/K	—	SPDT		



AF91-566

# Circuit Protectors

## CP31E, 32E, 33E, 34E

## CP31V, 32V, 33V, 34V

### ■ Type number nomenclature

CP3 1 E 2 M / □ W D DC N (AC 200V)

#### Basic type

CP3□E (c<sub>us</sub>), CP3□V (c<sub>us</sub>, IEC)

#### Number of poles

1: 1-pole    3: 3-pole  
2: 2-pole    4: 4-pole

#### Internal circuit

Blank: Series trip type  
2: Shunt trip type  
3: Relay trip type (Current trip) \*  
4: Switch type  
5: Relay trip type (Shunt trip) \*  
6: Dual coil \*

\* for CP3□E only

#### Operating characteristics

Blank: Long time delay  
M: Medium time delay  
F: Short time delay  
I: Instantaneous

#### Rated current

0.05: 0.05A	2: 2A	10: 10A
0.1: 0.1A	2.5: 2.5A	15: 15A
0.25: 0.25A	3: 3A	20: 20A
0.5: 0.5A	5: 5A	25: 25A
0.75: 0.75A	7.5: 7.5A	30: 30A
1: 1A		

#### Rated tripping voltage

(for CP3□E5 and CP3□E6 only)

- Relay trip type (shunt trip type) / CP3□E5  
200V, 100V, 48V, 24V AC 50/60Hz or DC
- Dual coil type / CP3□E6  
100V, 50V, 32V, 24V, 12V, 6V AC 50/60Hz or DC

#### Main terminal

Blank: Tab terminal  
N: Screw terminal (series trip type and switch type)  
P: Printed board type (CP3□E only)

#### Circuit voltage

Blank: AC circuit  
DC: DC circuit

#### Inertia delay device

Blank: Without inertia delay device  
D: With inertia delay device  
(Except instantaneous type)

#### Accessories

Blank: Without accessories  
W: With standard auxiliary switch  
(For series and switch types)  
W1: With auxiliary switch for low level circuit  
K: With standard alarm switch (For series type)  
K1: With alarm switch for low level circuit

### ■ Ordering information

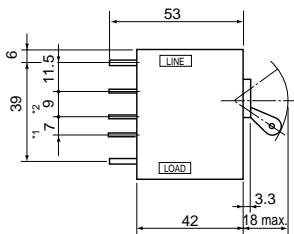
Specify the following:

1. Type number  
(Including rated tripping voltage)

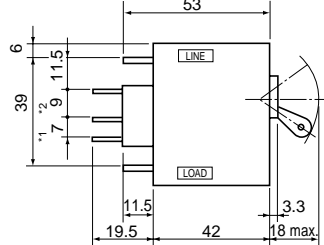
- Dimensions, mm
- Series trip and switch types

**Tab terminal**

**CP31E, CP31E4**

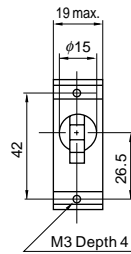


**CP31V, CP31V4**

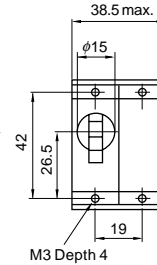


\*1 With auxiliary switch (W1), With alarm switch (K1) : 6  
 \*2 With auxiliary switch (W1), With alarm switch (K1) : 10

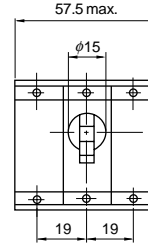
**1-pole**



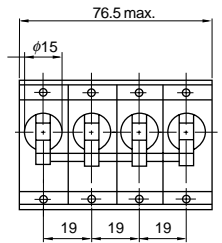
**2-pole**



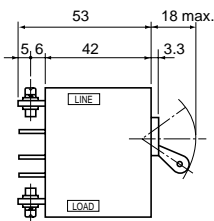
**3-pole**



**4-pole**

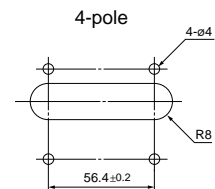
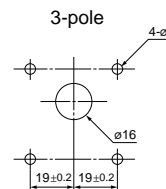
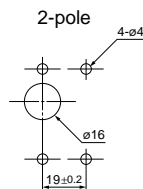
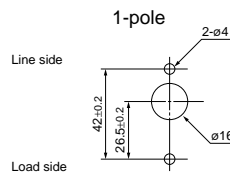


**Screw terminal**



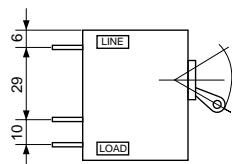
Main terminal M4 x 8  
 Thickness: 0.8  
 Width: 6.3

**Panel drilling**



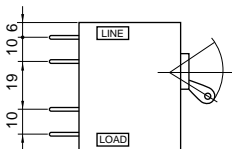
- Shunt trip type

**Tab terminal**

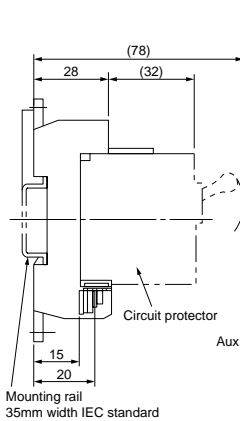


- Relay trip type (CP-E only)

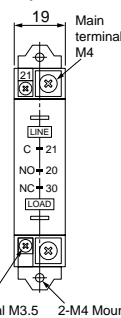
**Tab terminal**



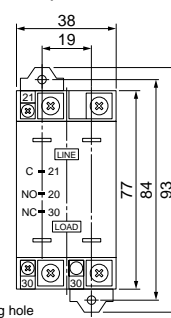
**Socket for rail mounting (CP-E/Series trip and switch types)**



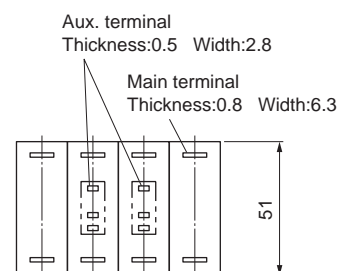
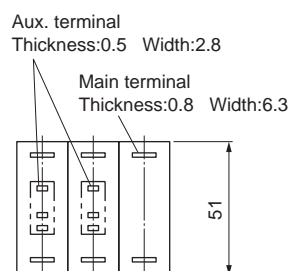
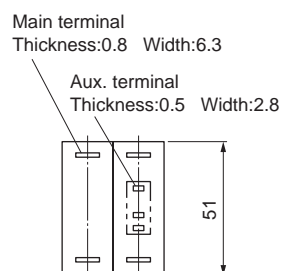
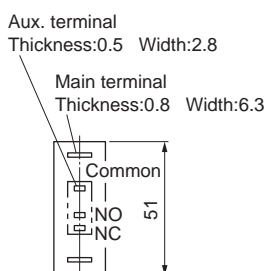
**1-pole**



**2-pole**



**Terminal arrangement**

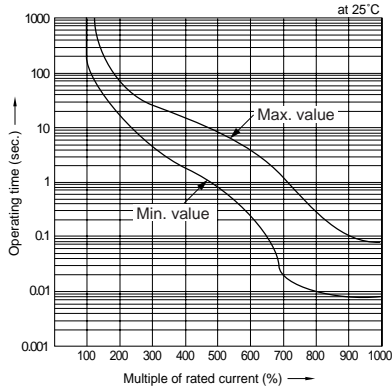


# Circuit Protectors CP31E, 32E, 33E, 34E CP31V, 32V, 33V, 34V

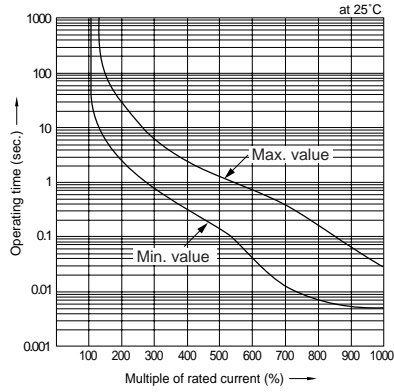
## ■ Characteristic curves

### AC circuit

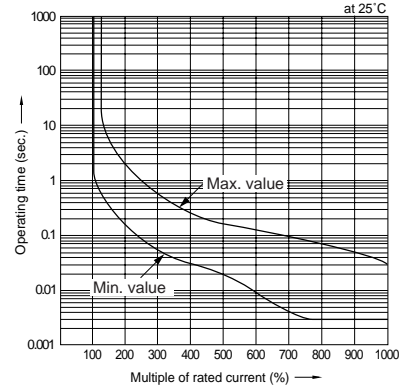
#### Long time delay (S)



#### Medium time delay (M)

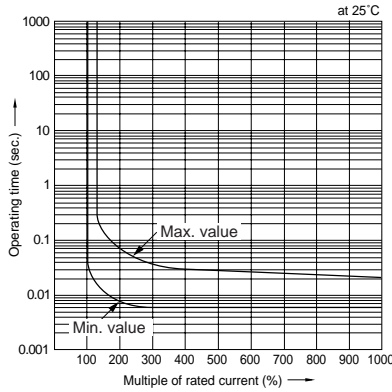


#### Short time delay (F)



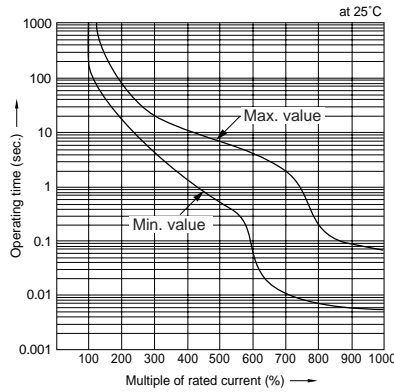
### AC circuit

#### Instantaneous (I)

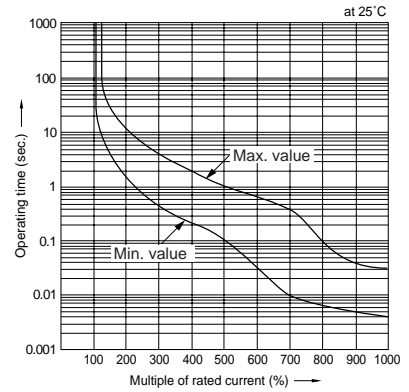


### DC circuit

#### Long time delay

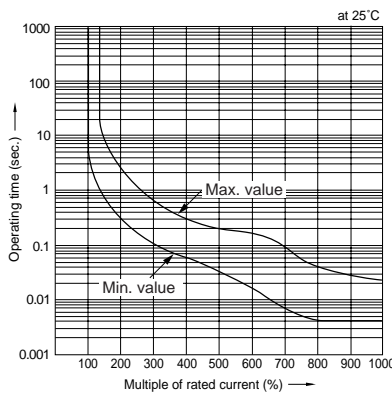


#### Medium time delay (M)

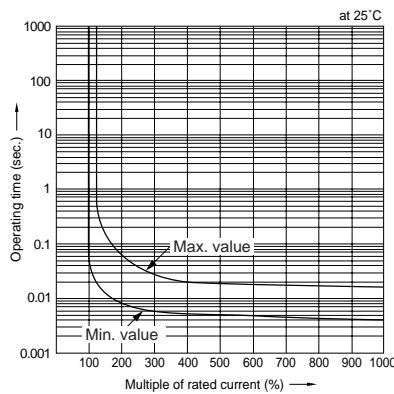


### DC circuit

#### Short time delay (F)



#### Instantaneous (I)



### Ambient temperature compensation

