

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/s².

■ **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**

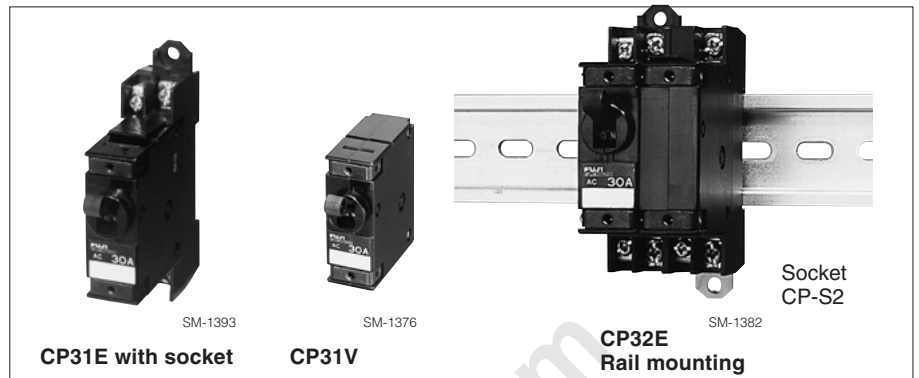
● **Auxiliary switch (Type W)**

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

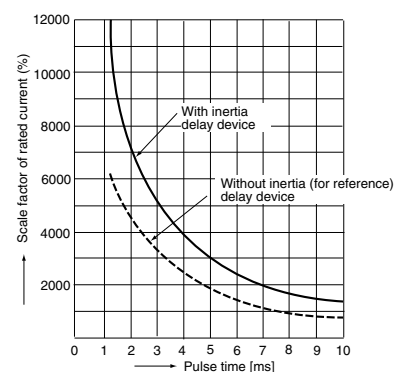
250V AC	Resistive load: 3A Inductive load: 2A
125V AC	Resistive load: 5A Inductive load: 3A
60V DC	Resistive load: 1A Inductive load: 0.5A
30V DC	Resistive load: 4A Inductive load: 3A

● **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.

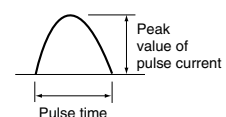
Inertia delay characteristics



- 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

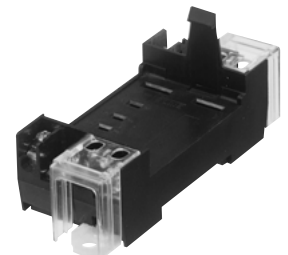
Internal circuit	Operating characteristics	CP31V (1-pole) Type	CP32V (2-pole) Type	CP33V (3-pole) Type	CP34V (4-pole) Type
Series trip type	Long time Medium time Short time Instantaneous	CP31V/□ CP31VM/□ CP31VF/□ CP31VI/□	CP32V/□ CP32VM/□ CP32VF/□ CP32VI/□	CP33V/□ CP33VM/□ CP33VF/□ CP33VI/□	CP34V/□ CP34VM/□ 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

■ **Type number nomenclature**

CP3 1 E 2 M / □ W D DC N (AC 200V)

Basic type

CP3□E (c₁VA_{us}), CP3□V (c₁VA_{us}, 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)

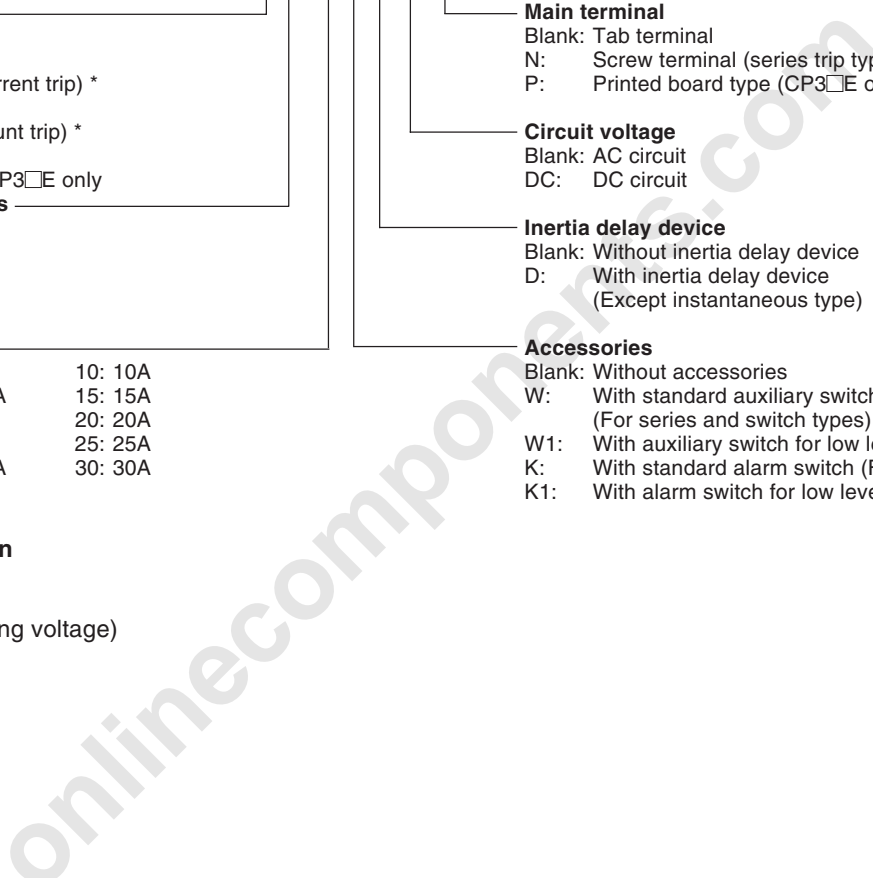
Accessories

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

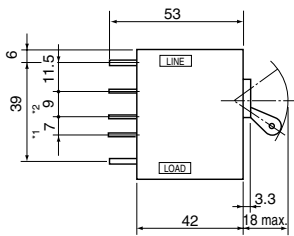
■ **Ordering information**

Specify the following:

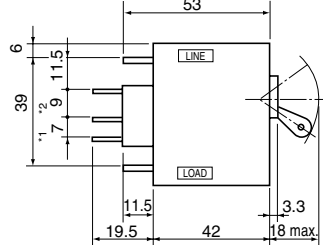
1. Type number
 (Including rated tripping voltage)



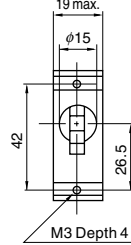
■ Dimensions, mm
 ● Series trip and switch types
Tab terminal
CP31E, CP31E4



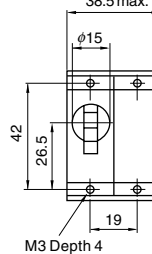
CP31V, CP31V4



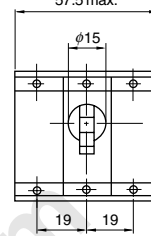
1-pole



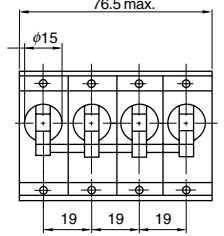
2-pole



3-pole

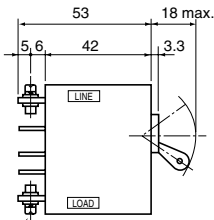


4-pole



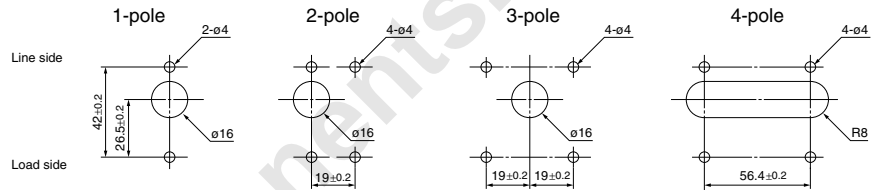
*1 With auxiliary switch (W1), With alarm switch (K1) : 6
 *2 With auxiliary switch (W1), With alarm switch (K1) : 10

Screw terminal

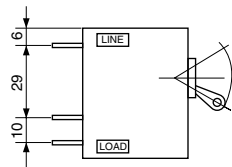


Main terminal M4 x 8
 Thickness: 0.8
 Width: 6.3

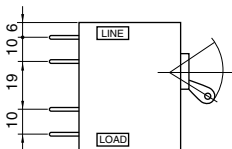
Panel drilling



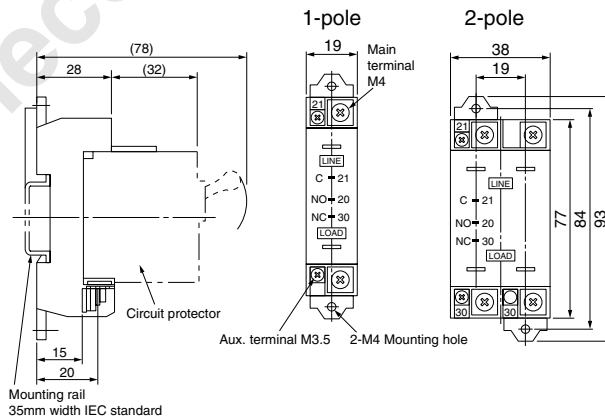
● Shunt trip type
Tab terminal



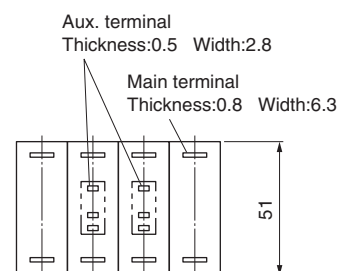
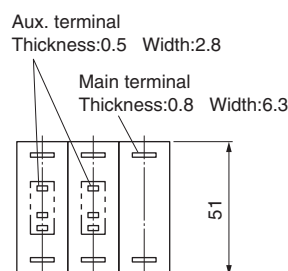
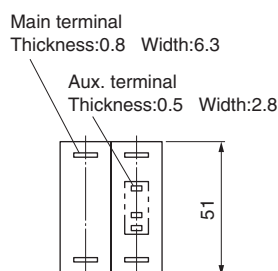
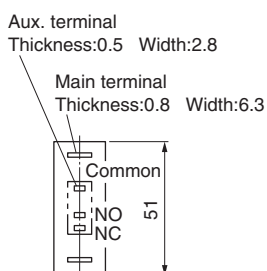
● Relay trip type (CP-E only)
Tab terminal



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



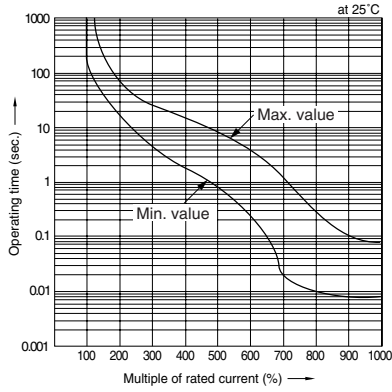
Terminal arrangement



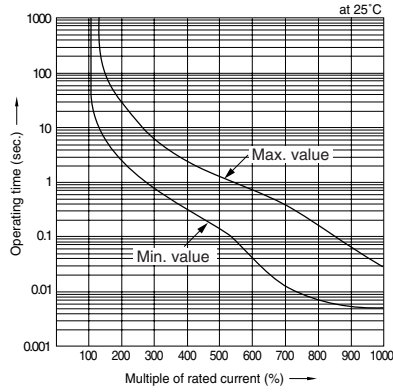
■ Characteristic curves

AC circuit

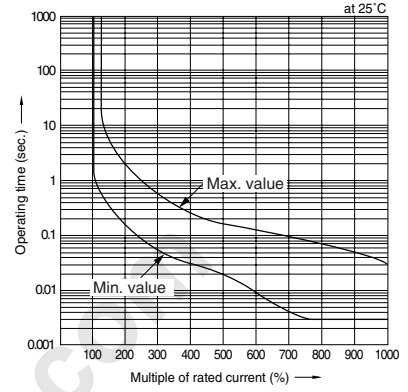
Long time delay (s)



Medium time delay (M)

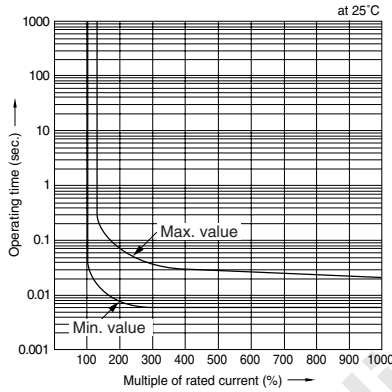


Short time delay (F)



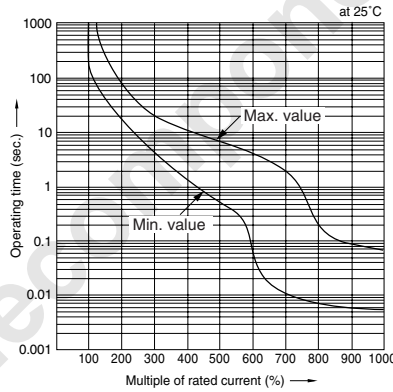
AC circuit

Instantaneous (I)

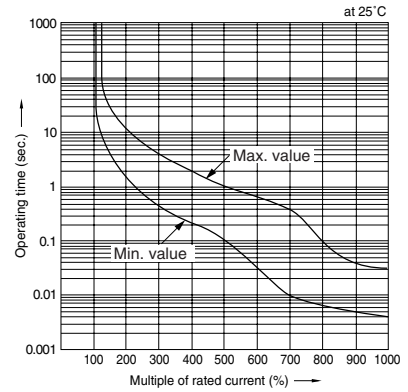


DC circuit

Long time delay

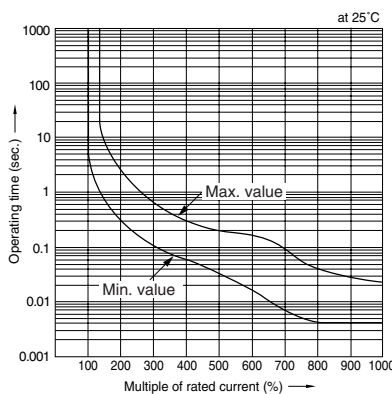


Medium time delay (M)

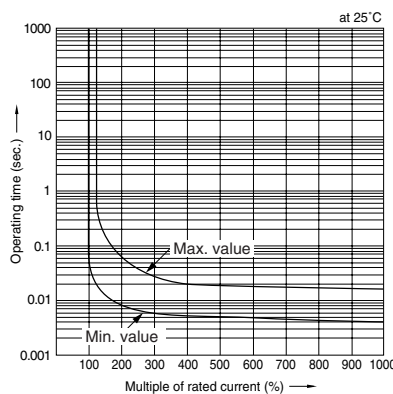


DC circuit

Short time delay (F)



Instantaneous (I)



Ambient temperature compensation

