

## Description

Compact single pole thermal circuit breaker with push-to-reset, tease free, trip free, snap action mechanism and separate (colour coded) manual release. Combining full feature circuit breaker protection and convenience with low cost of ownership benefits. Fitted with blade terminals for plug-in mounting. Type III to SAE J 553.

## Typical applications

Extra low voltage wiring systems on all types of vehicles and marine craft.

## Ordering information

Type No.	
1170	plug-in
	<b>Design standard</b>
01	blade terminals for automotive fuse blocks (standard) with retaining clips
02	blade terminals for automotive fuse blocks, without retaining clips
21	as design 01 but with higher interrupting capacity
22	as design 02 but with higher interrupting capacity
	<b>Current ratings</b>
	3...25 A
1170 - 01 - 15 A	ordering example

## Standard current ratings, typical voltage drop values and actuator colours (manual release)

Current rating (A)	Voltage drop (mV)	Actuator colour	
3	< 300	violet	(approximating RAL 4008)
4	< 300	pink	(approximating RAL 3015)
5	< 150	orange-brown	(approximating RAL 8023)
6	< 150	mossy-green	(approximating RAL 6005)
7.5	< 150	hazel	(approximating RAL 8011)
8	< 150	honey	(approximating RAL 1005)
10	< 150	red	(approximating RAL 3020)
15	< 150	blue	(approximating RAL 5012)
20	< 150	yellow	(approximating RAL 1018)
25	< 150	pearl	(approximating RAL 1013)



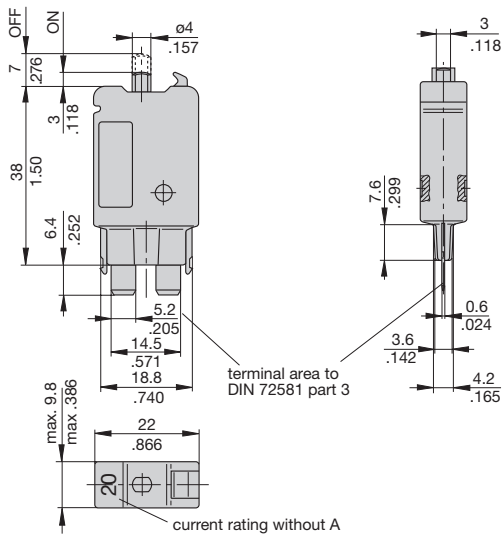
1170-...

## Technical data

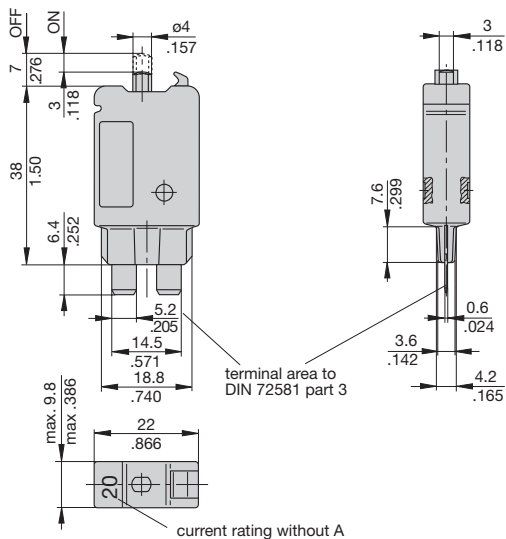
Voltage rating	DC 28 V
Current ratings	3...25 A (30 A upon request)
Typical life	6,000 operations at $I_N$ 3,000 operations at $2 \times I_N \leq 20$ A 1,000 operations at $2 \times I_N \geq 25$ A
Ambient temperature	-30...+60 °C (-22...+140 °F)
Interrupting capacity $I_{cn}$	3...15 A 200 A (1170-01/-02) 3...15 A 400 A (1170-21/-22) 20...25 A 400 A
Ultimate short-circuit breaking capacity	$\geq 1$ break operation at 2000 A
Degree of protection (IEC 60529/DIN 40050)	operating area IP40 terminal area IP00
Vibration	3 or 4 A: 8 g (57-500 Hz) $\pm 0.65$ mm (10-57 Hz) 5...25 A: 10 g (57-500 Hz) $\pm 0.76$ mm (10-57 Hz), to IEC 60068-2-6, test Fc, 10 frequency cycles/axis
Shock	3 or 4 A: 35 g (11 ms) 5...25 A: 50 g (11 ms) to IEC 60068-2-27, test Ea
Corrosion	96 hours at 5 % salt mist, to IEC 60068-2-11, test Ka
Humidity	240 hours at 95 % RH to IEC 60068-2-3, test Ca
Mass	approx. 13 g

## Dimensions

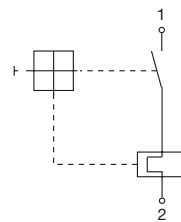
### 1170-01/-21



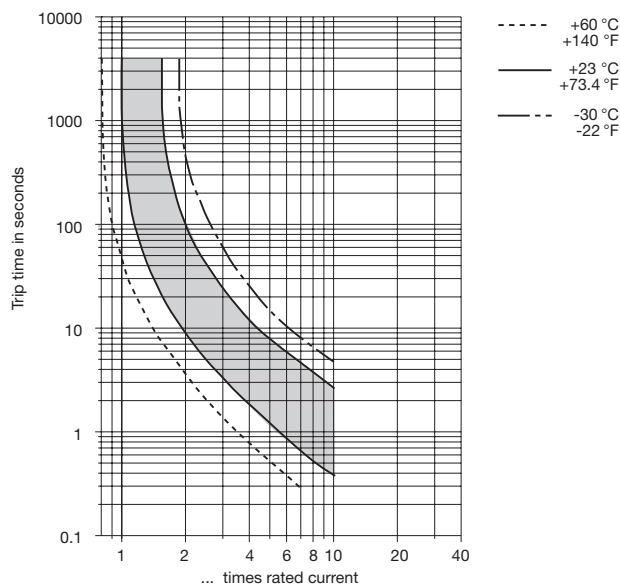
### 1170-02/-22



## Internal connection diagram



## Typical time/current characteristics at +23°C/73.4°F

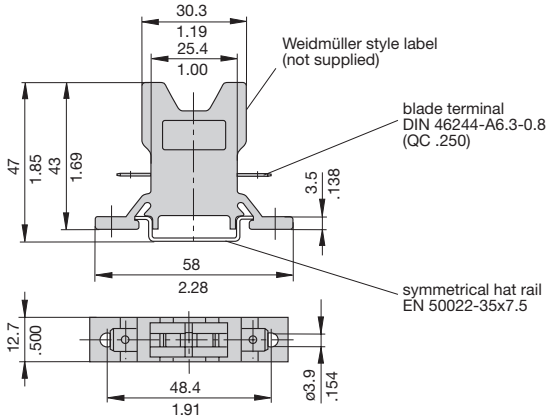


The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping, please multiply the circuit breaker current ratings by the derating factor shown below. See also section 9 – Technical information.

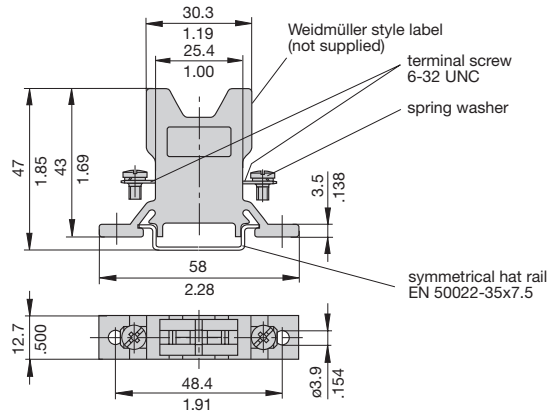
Ambient temperature °F	-22	-4	+14	+32	+73.4	+104	+122	+140
°C	-30	-20	-10	0	+23	+40	+50	+60
Derating factor	0.8	0.76	0.84	0.92	1	1.08	1.16	1.24

## Accessories

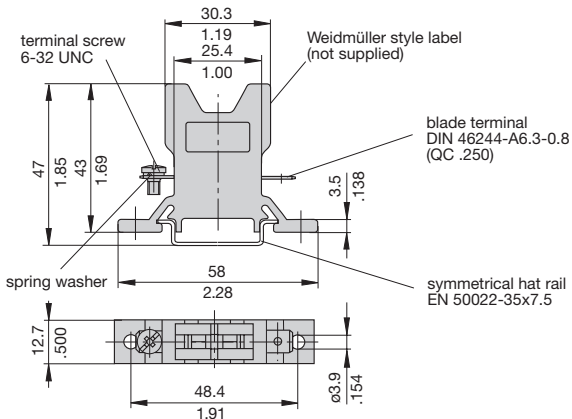
### Socket 12-P10



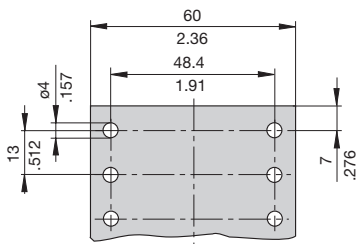
### Socket 12-J20



### Socket 12-A10



### Dimensions for surface mounting



Other sockets available to special order  
Labels: Weidmüller, D-33102 Paderborn

## Ordering information Mounting socket 12

### Type No.

12 Mounting socket

### Terminal design

P10 blade terminals A 6.3-0.8 (QC .250)

J20 screw terminals 6-32 UNC

A10 1 blade terminal A6.3-0.8 (QC .250)/1 screw terminal 6-32 UNC

### Version

(blank) single socket

20 two-way

30 three-way

40 four-way

60 six-way

12 - P10 - 20 ordering example

## Accessories for mounting socket 12

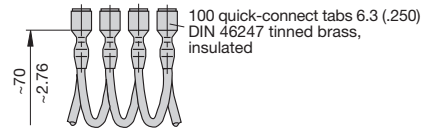
### Connector bus links -P10

X 210 588 01/ 1.5 mm<sup>2</sup> (AWG 16), brown (up to 13 A max. load)

X 210 588 02/ 2.5 mm<sup>2</sup> (AWG 14), black (up to 20 A max. load)

X 210 588 03/ 2.5 mm<sup>2</sup> (AWG 14), red (up to 20 A max. load)

X 210 588 04/ 2.5 mm<sup>2</sup> (AWG 14), blue (up to 20 A max. load)

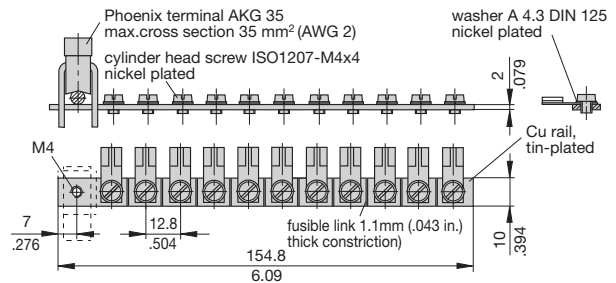


### Bus bar (supplied as a complete package)

(up to 100 A max. load)

X 211 157 01 with terminal

X 211 157 02 without terminal



This is a metric design and millimeter dimensions take precedence ( $\frac{\text{mm}}{\text{inch}}$ )

All dimensions without tolerances are for reference only. In the interest of improved design, performance and cost effectiveness the right to make changes in these specifications without notice is reserved. Product markings may not be exactly as the ordering codes. Errors and omissions excepted.

## Description

Miniaturised single pole thermal circuit breaker with switching function optional (push-push actuation). Reliable snap-acting and trip-free mechanism. Approved to CBE standard EN/IEC 60934. S-type, TO. Blade terminals fitting into sockets for rail mounting.

## Typical applications

Protection of loads in power distribution systems in control cabinets and process control.

## Ordering information

<b>Type No.</b>	
<b>1180</b>	single pole thermal circuit breaker, plug-in mounting
<b>Versions</b>	
<b>01</b>	with switching function, without label
<b>02</b>	reset function only, without label
<b>Current rating range</b>	
<b>0.1...10 A</b>	
<b>1180 - 01 - 1 A</b>	ordering example

## Standard current ratings and typical internal resistance values

Current rating (A)	Internal resistance (Ω)	Current rating (A)	Internal resistance (Ω)
0.1	81	2	0.25
0.2	22	2.5	0.18
0.25	14	3	0.11
0.3	8.7	3.5	0.08
0.4	5.5	4	0.07
0.5	3.4	5	≤ 0.05
0.6	2.5	6	≤ 0.05
0.7	1.7	7	≤ 0.05
0.8	1.5	8	≤ 0.05
1	0.9	10	≤ 0.05
1.5	0.4		

## Approvals

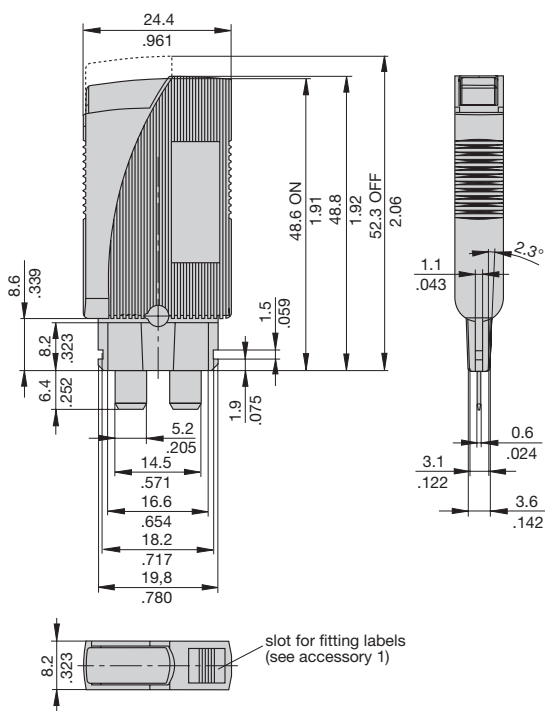
Authority	Voltage rating	Current ratings
VDE	AC 250 V; DC 65 V	0.1...10 A
UL	AC 250 V; DC 72 V	0.1...10 A
UL, Canada	AC 250 V; DC 72 V	0.1...10 A



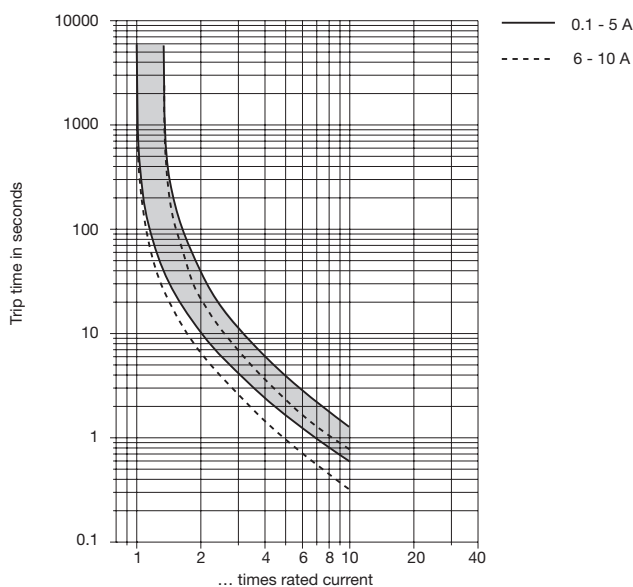
## Technical data

Voltage rating	AC 250 V; DC 65 V (UL, UL Canada: AC 250 V; DC 72 V)
Current ratings	0.1...10 A
Typical life	6,000 operations at 1 x I <sub>N</sub> (low-inductance) 3,000 operations at 1 x I <sub>N</sub> (inductive) 500 operations at 2 x I <sub>N</sub> (inductive)
Ambient temperature	-20...+60 °C (T 60) -4...+140 °F
Insulation co-ordination (IEC 60664 and 60664 A)	rated impulse withstand voltage 2.5 kV pollution degree 2 reinforced insulation in operating area
Dielectric strength (IEC 60664 and 60664A)	test voltage operating area AC 3,000 V installation area AC 1,500 V
Insulation resistance	> 100 MΩ (DC 500 V)
Interrupting capacity I <sub>cn</sub>	0.1...5 A 6 x I <sub>N</sub> 6...10 A 8 x I <sub>N</sub>
Interrupting capacity (UL 1077)	AC 250 V: 2,000 A DC 65 V: 200 A
Degree of protection (IEC 60529/DIN 40050)	operating area IP40 terminal area IP00
Vibration without terminal block	5 g (57-500 Hz) ±0.38mm (10-57 Hz) to IEC 60068-2-6, test Fc, 10 frequency cycles/axis and to EN 50155
Shock without terminal block	25 g (11 ms) to IEC 60068-2-27, test Ea
Corrosion	96 hours at 5 % salt mist, to IEC 60068-2-11, test Ka
Humidity	240 hours at 95 % RH to IEC 60068-2-3, test Ca
Mass	approx. 15 g

## Dimensions



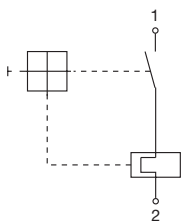
## Typical time/current characteristics at +23°C/73.4°F



The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping, please multiply the circuit breaker current ratings by the derating factor shown below. See also section 9 – Technical information.

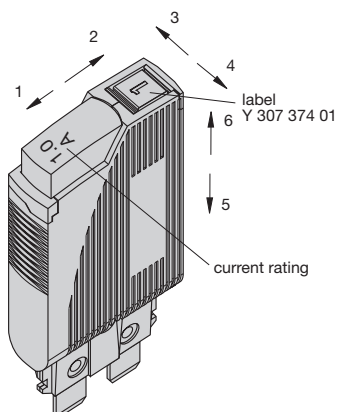
Ambient temperature °F	-22	-4	+14	+32	+73.4	+104	+122	+140
°C	-30	-20	-10	0	+23	+40	+50	+60
Derating factor	0.8	0.76	0.84	0.92	1	1.08	1.16	1.24

## Internal connection diagram

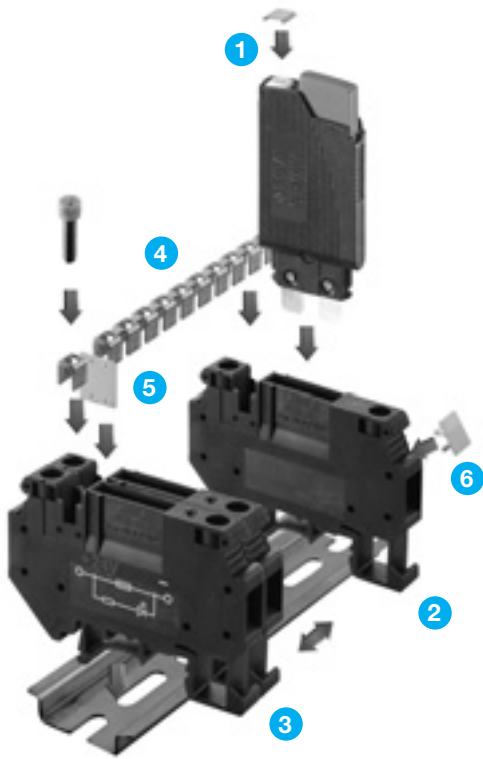


**Note:** When several devices are mounted together, each device should only carry 80 % of its rating or it must be overrated accordingly.

## Shock directions



## Accessories - Terminal block with screw terminals



**1 Label** for circuit breaker 1180, surface for marking 4.5 x 5 mm (packaging quantity 120 pcs)  
**Y 307 374 01**

**2 Terminal block** for DIN rail mounting, with screw terminals up to 6 mm<sup>2</sup> conductor, width 8.2 mm, dimensions 64 x 42.5 x 8.2 mm, headroom over the upper rail edge with circuit breaker fitted (OFF position) 84 mm.  
 Approvals: UL 300 V / 30 A / AWG 26-8  
**X 222 233 01**

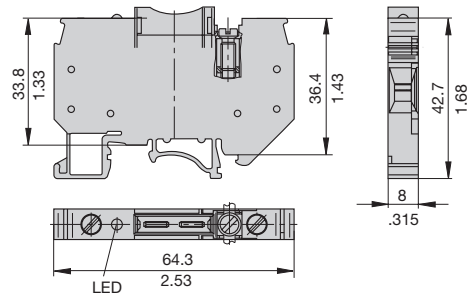
**3 Terminal block** for DIN rail mounting see item 2, but with LED DC 24 V (lighted after tripping); current rating LED 2 mA  
**X 222 233 02**

**4 Bus connection** for potential bridging of several terminal blocks see item 2 and 3 (10-pole, separable, mounting hardware included), max. current rating 34 A  
**X 222 232 01**

**5 Insulation barriers** for insertion between two circuits (packaging quantity 10 pcs)  
**Y 307 373 01**

**6 Label** for terminal block, see item 2 and 3, surface for marking 8 x 10 mm (packaging quantity 10 pcs)  
**Y 307 375 01**

### Dimensions X 222 233 02



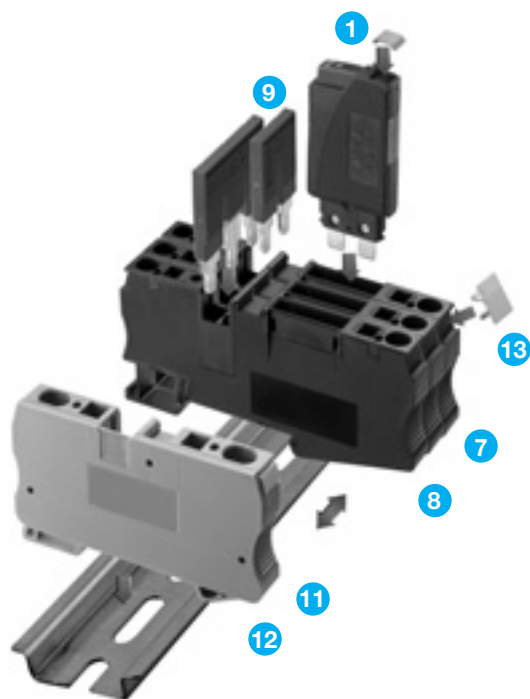
### Vibration

**with terminal block X 222 233 01 and X 222 233 02**  
 5 g (57-500 Hz), ± 0.38 mm (10-57 Hz) to IEC 60068-2-6, test Fc, 10 frequency cycles/axis and EN 50155

### Shock

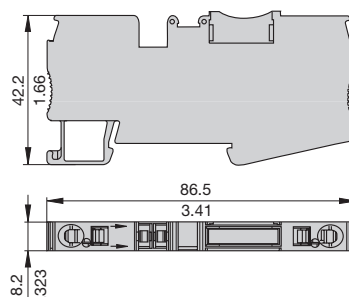
**with terminal block X 222 233 01 and X 222 233 02**  
 25 g (11 ms) to IEC 60068-2-27, test Ea

## Accessories - Terminal block with spring-loaded terminals



- 1 Label** for circuit breaker 1180, surface for marking 4.5 x 5 mm (packaging quantity 120 pcs)  
**Y 307 374 01**
- 7 Terminal block** for DIN rail mounting, with spring-loaded terminals up to 4 mm<sup>2</sup> conductor, width 8.2 mm, dimensions 68.5 x 36.5 x 8.2 mm, headroom over the upper rail edge with circuit breaker fitted (OFF position) 82 mm.  
 UL approval pending.  
**X 222 316 01**
- 8 Terminal block** for DIN rail mounting see item 7, but with LED DC 24 V (lighted after tripping); current rating LED 2 mA  
**X 222 315 02**
- 9 Jumper 2pole**, max. current rating 32 A for terminal blocks items 7 and 8 and feed supply terminal item 11.  
**X 222 318 01**
- 10 Jumper 3pole**, max. current rating 32 A for terminal blocks items 7 and 8 and feed supply terminal item 11.  
**X 222 318 02**
- 11 Feed supply terminal** with spring-loaded terminals up to 6 mm<sup>2</sup> conductor, width 8.2 mm, suitable for use with jumpers items 9 and 10 (power distribution).  
**X 222 317 01**
- 12 Cover** for feed supply terminal item 11 for closing the open side at the end of an assembly.  
**Y 307 507 01**
- 13 Label** for terminal block items 7 and 8, and feed supply terminal item 11, surface for marking 7.5 x 5 mm (packaging quantity 50 pcs)  
**Y 307 508 01**

### Dimensions X 222 316 01



### Vibration

**with terminal blocks X 222 316 01 and X 222 315 02**  
 vibration axis 3-4:  
 3 g (57-500 Hz), ± 0.38 mm (10-57 Hz)  
 other axes:  
 5 g (57-500 Hz), ± 0.38 mm (10-57 Hz)  
 to IEC 60068-2-6, test Fc,  
 10 frequency cycles/axis  
 and EN 50155

### Shock

**with terminal blocks X 222 316 01 and X 222 315 02**  
 25 g (11 ms)  
 to IEC 60068-2-27, test Ea

This is a metric design and millimeter dimensions take precedence ( $\frac{\text{mm}}{\text{inch}}$ )

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## Description

Miniaturised single pole press-to-reset cycling trip free thermal circuit breaker designed for automotive fuse block installation. Extends the benefits of circuit breaker performance and convenience to applications which are cost critical. Colour-coded housing caps or manual release buttons available.

## Typical applications

Extra low voltage wiring systems on all types of vehicles and marine craft.

## Ordering information

### Type No.

**1610** single pole automotive circuit breaker

### Voltage rating

**21** DC 28 V

**H2** DC 28 V, with manual release facility (type III to SAE J 553)

**92** DC 12 V, autoreset (type I to SAE J 553)

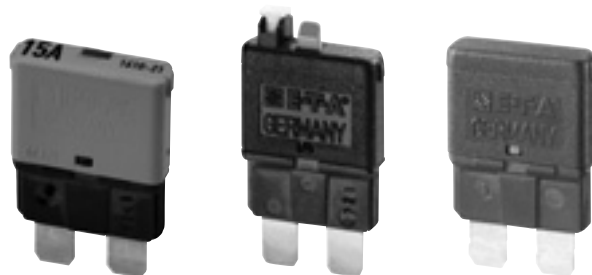
### Current ratings

**6 8 10 15 20 25 30 A**

**1610 - 21 - 8 A** ordering example

## Current ratings, typical voltage drop values and colour coding

Current rating (A)	Voltage drop (mV)	Actuator colour manual release (1610-H2) or housing cap colour (1610-21)
6	< 150	mossy-green (approximating RAL 6005)
8	< 150	honey (approximating RAL 1005)
10	< 150	red (approximating RAL 3020)
15	< 150	blue (approximating RAL 5012)
20	< 150	yellow (approximating RAL 1018)
25	< 150	pearl (approximating RAL 1013)
30	< 150	light-green (approximating RAL 6018)



**1610-21**

**1610-H2**

**1610-92**

## Technical data

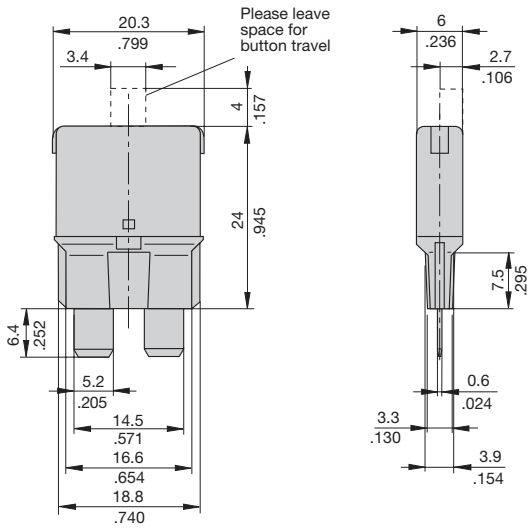
Voltage rating	1610-92: DC 12 V 1610-21/1610-H2: DC 32 V
Current ratings	6...25 A (30 A upon request)
Service short-circuit breaking capacity	300 operations at $\leq 50$ A
Reset period for 1610-92 (at 23 °C)	$\leq 15$ s
Ambient temperature	-30...+60 °C (-22...+140 °F)
Degree of protection (IEC 60529/DIN 40050)	operating area IP30 (-21/-H2) operating area IP54 (-92) terminal area IP00
Ultimate short-circuit breaking capacity	$\geq 3$ break operations at 150 A, or $\geq 1$ break operation at 2,000 A
Vibration (with mounting socket 12)	5 g (57-500 Hz), $\pm 0.38$ mm (10-57 Hz) to IEC 60068-2-6, test Fc 10 frequency cycles/axis
Shock (with mounting socket 12)	25 g (11 ms) to IEC 60068-2-27, test Ea
Corrosion	96 hours at 5 % salt mist, to IEC 60068-2-11, test Ka
Humidity	240 hours at 95 % RH, to IEC 60068-2-3, test Ca
Mass	approx. 5 g

### N.B.

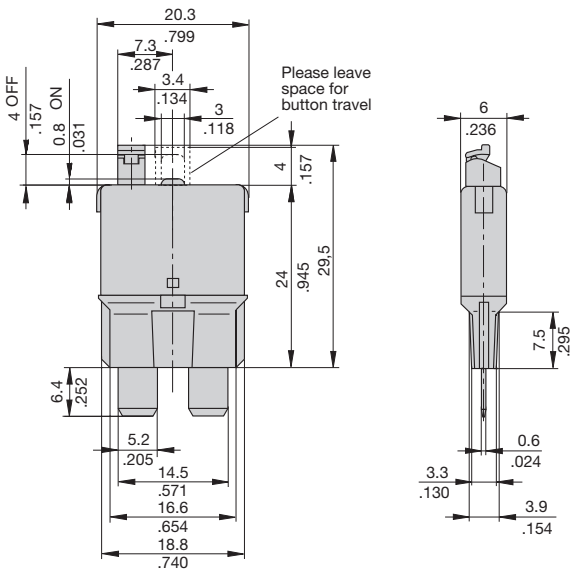
It is good practice to switch off the vehicle's ignition system before re-setting the circuit breaker. Free travel of the actuator must be ensured.

## Dimensions

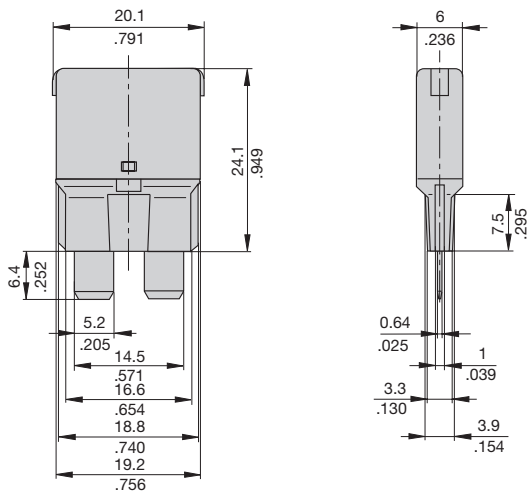
### 1610-21



### 1610-H2

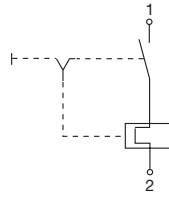


### 1610-92

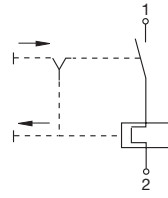


## Internal connection diagrams

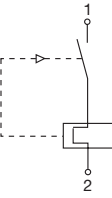
### 1610-21



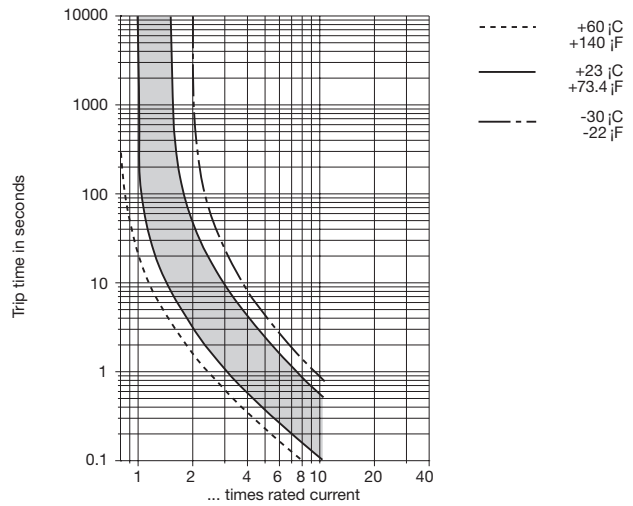
### 1610-H2



### 1610-92

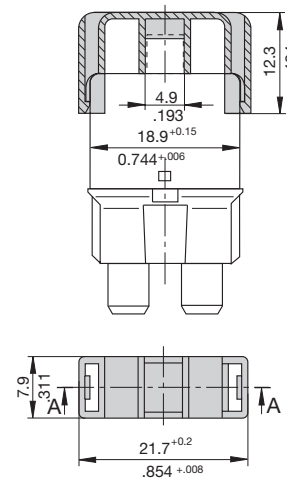


## Typical time/current characteristic curve



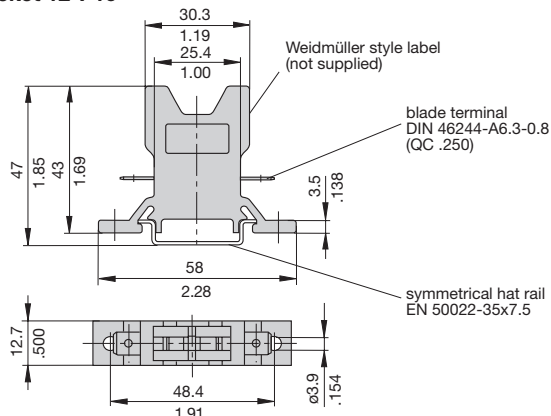
## Accessories

### Cover Y 307 207 01

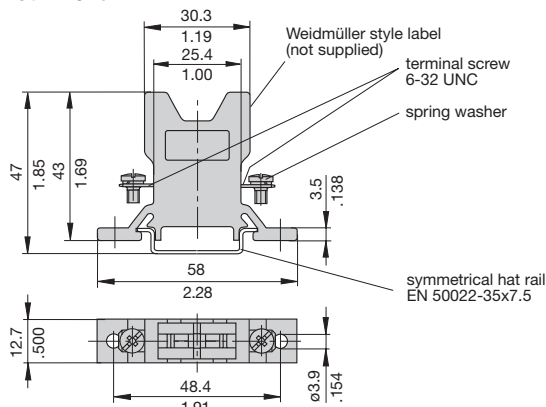


## Accessories

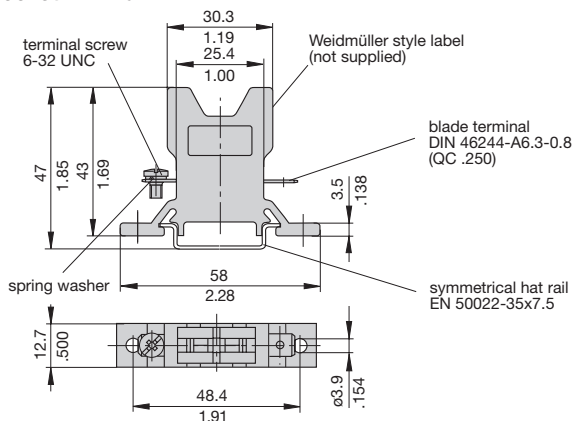
### Socket 12-P10



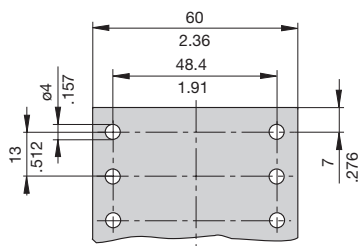
### Socket 12-J20



### Socket 12-A10



### Dimensions for surface mounting



Other sockets available to special order  
Labels: Weidmüller, D-33102 Paderborn

## Ordering information Mounting socket 12

### Type No.

12 Mounting socket

### Terminal design

P10 blade terminals A 6.3-0.8 (QC .250)

J20 screw terminals 6-32 UNC

A10 1 blade terminal A6.3-0.8 (QC .250) / 1 screw terminal 6-32 UNC

### Version

(blank) single socket

20 two-way

30 three-way

40 four-way

60 six-way

12 - P10 - 20 ordering example

Labels: Weidmüller, D-33102 Paderborn

## Accessories for mounting socket 12

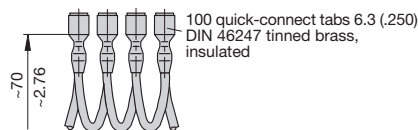
### Connector bus links -P10

X 210 588 01/ 1.5 mm<sup>2</sup> (AWG 16), brown (up to 13 A max. load)

X 210 588 02/ 2.5 mm<sup>2</sup> (AWG 14), black (up to 20 A max. load)

X 210 588 03/ 2.5 mm<sup>2</sup> (AWG 14), red (up to 20 A max. load)

X 210 588 04/ 2.5 mm<sup>2</sup> (AWG 14), blue (up to 20 A max. load)

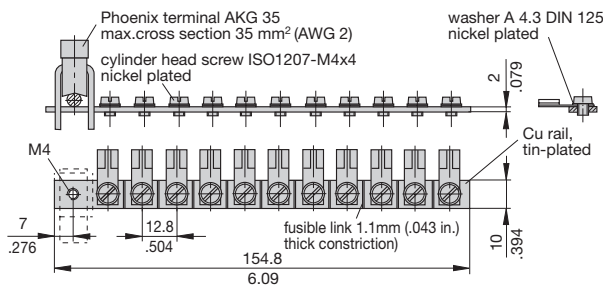


### Bus bar (supplied as a complete package)

(up to 100 A max. load)

X 211 157 01 with terminal

X 211 157 02 without terminal



This is a metric design and millimeter dimensions take precedence ( $\frac{\text{mm}}{\text{inch}}$ )

All dimensions without tolerances are for reference only. In the interest of improved design, performance and cost effectiveness the right to make changes in these specifications without notice is reserved. Product markings may not be exactly as the ordering codes. Errors and omissions excepted.