Automotive circuit protector 1610-21

1610-21

Single-pole, thermal automotive circuit breaker in a very slim design with coloured housing cap and coloured manual release. Also available with automatic reset for 12 V. Interchangeable in the connection area with blade fuse-links in accordance with DIN 72581 Part 3, ISO 8820-3 Type C or ISO 10924-4 Form CB15.

Typical Features

- Clear identification through colour coding
- Reset button
- Trip-free mechanism
- Compliant with ISO 10924
- Types III (3) and IV (3H) available for 24 V on-board electrical systems
- Standard (1610) and fast (1616) trip curves available

Your benefits

- No replacement fuses required
- Reduced downtimes until re-start after tripping
- 1:1 interchangeable with automotive fuses
- Increased reliability in professional surroundings
- Reliable protection against damage caused by short circuit and overload

Preferred types

Preferred types are E-T-A products, which are most frequently used by our customers. We manufacture these preferred types in substantial quantities. You can find an overview of our preferred types here (Page 3).

Typ. applications

Protection of on-board electrical systems and devices in cars, trucks, buses, boats, low voltage systems, commercial vehicles, construction machinery and agricultural vehicles

Compliance

REACH RoHS CE UKCA IMDS listed VDA

IATF 16949 ISO 14001 ISO 9001

ISO 10924

Web links

Further information, International approvals, Technical basics, REACH, RoHS, Contact

General information

Safety and installation instructions

Caution:
The reset button must not be blocked.

Note:
The circuit breaker labels indicate the rated current, the device type and the maximum voltage. No specific machine readability is guaranteed.

Further information

Further information
https://www.global.e-t-a.com/p51

Technical data

Electrical data	
Rated voltage U_n	DC 12 V, DC 24 V
Operating voltage U_b	DC 9...32 V
Rated current range	5...30 A (standard trip curve)
Maximum voltage	DC 32 V

Rated currents and typical internal voltage drop values	
Rated current I_n [A]	**Voltage drop [mV]**
5	< 150
6	< 150
8	< 150
10	< 150
15	< 150
20	< 150
25	< 150
30	< 150

Endurance (according to ISO 10924-1)		
Disconnections	**Rated current I_n [A]**	**Rated voltage U_n [V]**
300	≤ 50	DC 28

Breaking capacity (according to ISO 10924-1)	
Disconnections	**Rated current I_n [A]**
≥ 3 (O-O-O)	150

Absolute breaking capacity (according to ISO 10924-1)	
Disconnections	**Rated current I_n [A]**
≥ 1	2,000

Mechanical data	
Mass	Approx. 3.7 g
Flammability class acc. to UL 94	V-0
Actuation type according to ISO 10924 (SAE J553)	Type III (3)

Ambient conditions	
Ambient temperature	-40...+85 °C
Storage temperature	-40...+90 °C
Damp heat	**Test according to ISO 16750-4 (IEC 60068-2-78), Test Cab,** 21 days in 93 % rel. humidity, temperature 40 °C

Vibration	**Test according to ISO 16750-3 (IEC 60068-2-6), Test Fc,** 10...500 Hz, ± 0.76 mm (10...57 Hz), 10 g (57...500 Hz), 20 cycles
Shock	**Test according to ISO 16750-3 (IEC 60068-2-27), Test Ea,** 50 g / 11 ms, with type 12 socket
Corrosion	**Test according to IEC 60068-2-11, test Ka** 96 hours at 5 % salt mist
IP code standard	IEC 60529
Actuating area IP code (standard)	IP30
Terminal area IP code (standard)	IP00

Ordering number code

1 Type number	
1610	1-pole, thermal automotive circuit protector

2 Device type	
21	with reset button

3 Rated current range
5A
6A
8A
10A
15A
20A
25A
30A

Please observe our minimum order quantities and packaging units.

Additional notes

Colour coding	
Rated current I_n [A]	**Cap colour**
5	Light brown
6	Green
8	Golden yellow
10	Red
15	Blue
20	Yellow
25	White
30	Light green

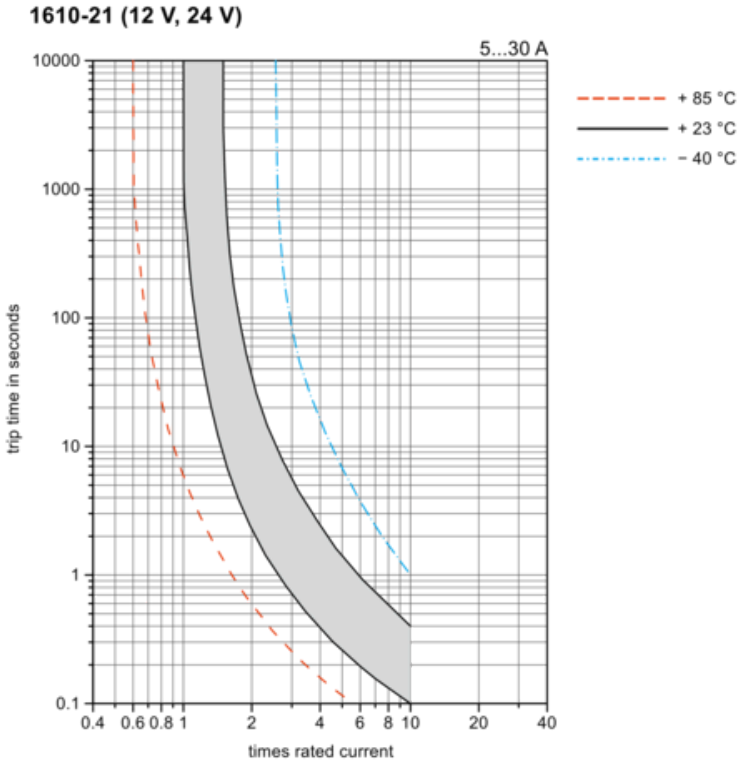
Preferred types

Preferred types	Preferred rated currents [A]				
1610-21-	5	10	15	20	25

Compliance	
VDA	PSW Level 1, 2, 3
Compliance according to	EN 50581:2012 Technical documentation for the assessment of electrical and electronic equipment with regard to the restriction of hazardous substances

Time-/current characteristics

Time-/Current characteristics – standard trip curve



Ambient temperature-dependent trip curve

Ambient temperature [°C]	Temperature factor
-40	0.73
-30	0.78
-20	0.82
-10	0.86
0	0.91
10	0.95
23	1
40	1.09
50	1.16
60	1.25
70	1.33
85	1.43

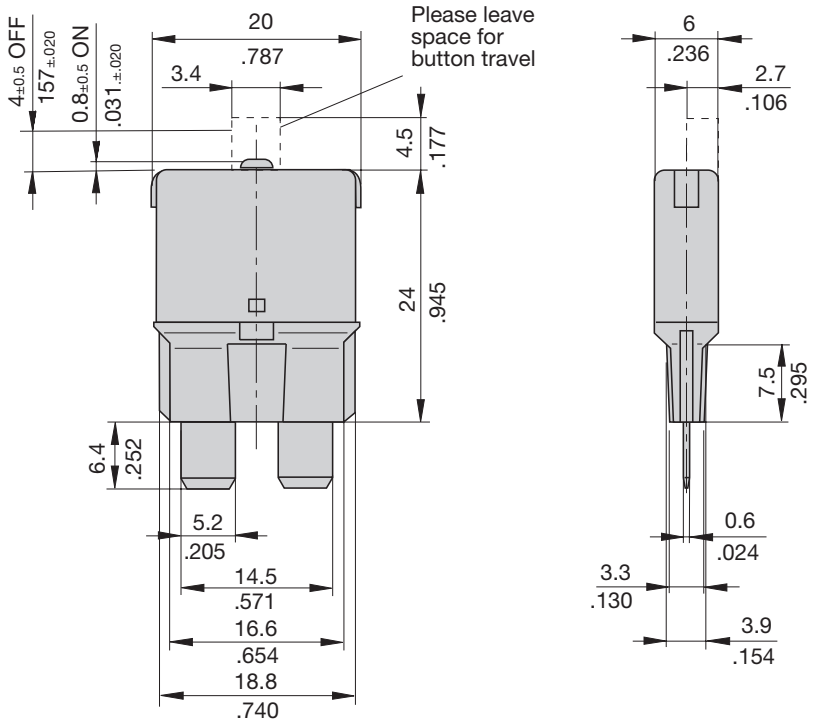
The time/current characteristics depend on the ambient temperatures. In order to eliminate early or late tripping, please multiply the rated current of the circuit breaker with a temperature factor (see Technical Information chapter).

Note on series mounting	When mounted side-by-side, the devices can only carry up to 80 % of their rated current or a higher rating must be selected (see Technical Information: https://www.e-t-a.de/ti_e).

Dimensional drawing

Dimensional drawing

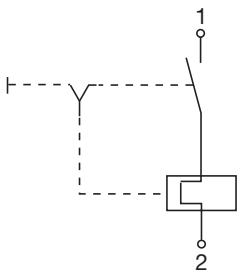
1610-21



Schematic diagrams

Schematic diagrams

1610-21



Accessories

Optional accessories

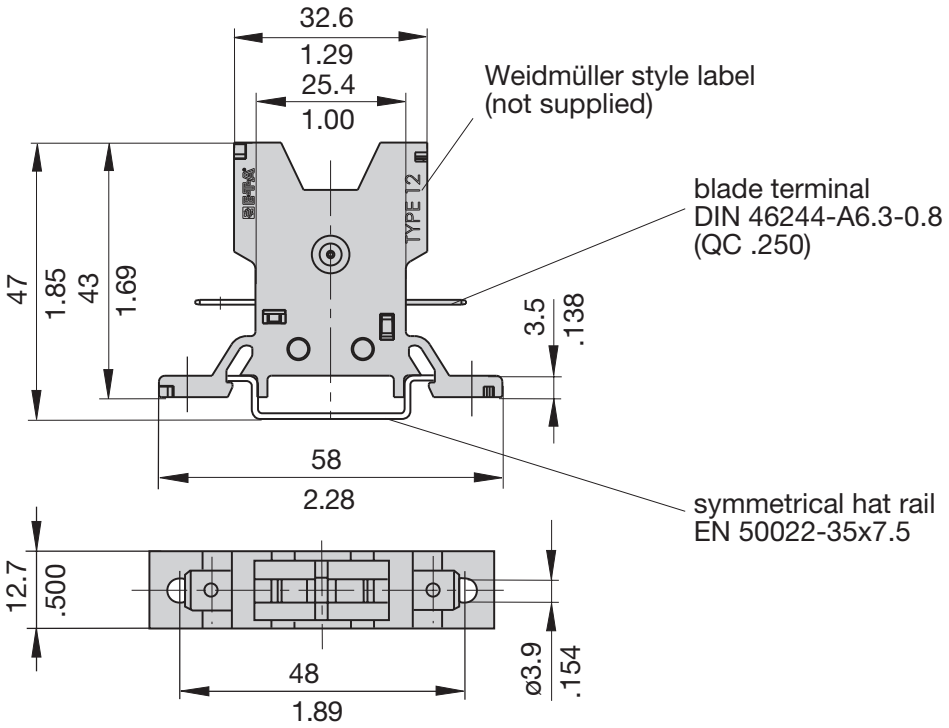
12	Terminal block	
↳ X21058801	**Connecting chain -P10** 1.5 mm², brown (up to 13 A continuous load)	
↳ X21058802	**Connecting chain -P10** 2.5 mm² black	
↳ X21058803	**Connecting chain -P10** 2.5 mm² red	
↳ X21058804	**Connecting chain -P10** 2.5 mm² blue	
↳ X21115701	Busbar for plug-in socket with connection terminal	

↳ X21115702	Busbar for plug-in socket without connection terminal	

Further information about accessories (drawings)

Accessories

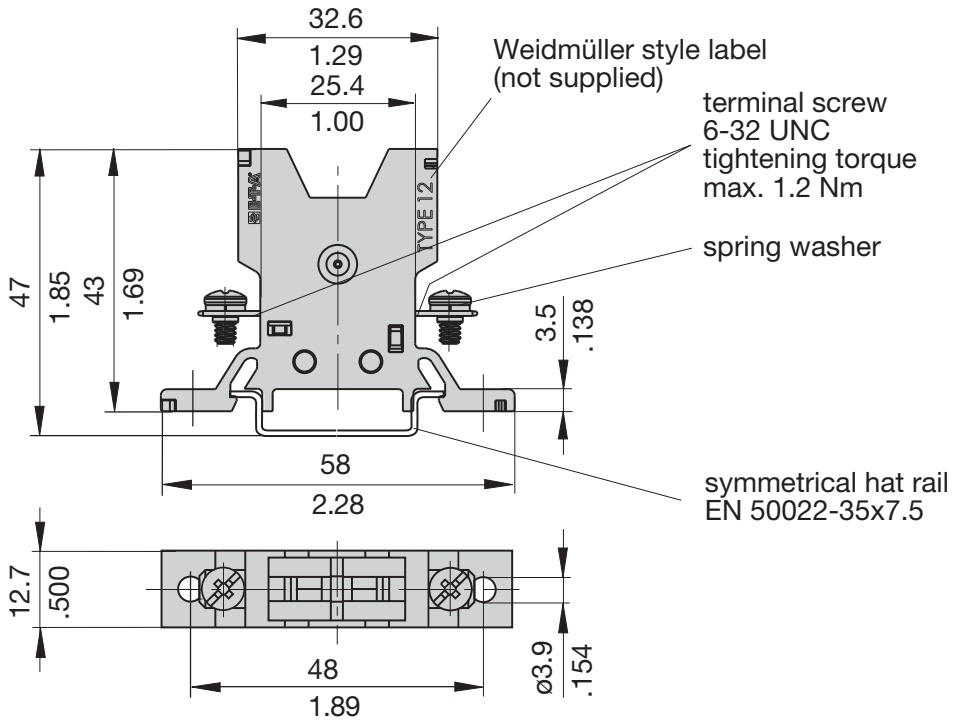
Socket 12-P10



Note: The terminal block is designed for a rated current of only 25 A.

Accessories

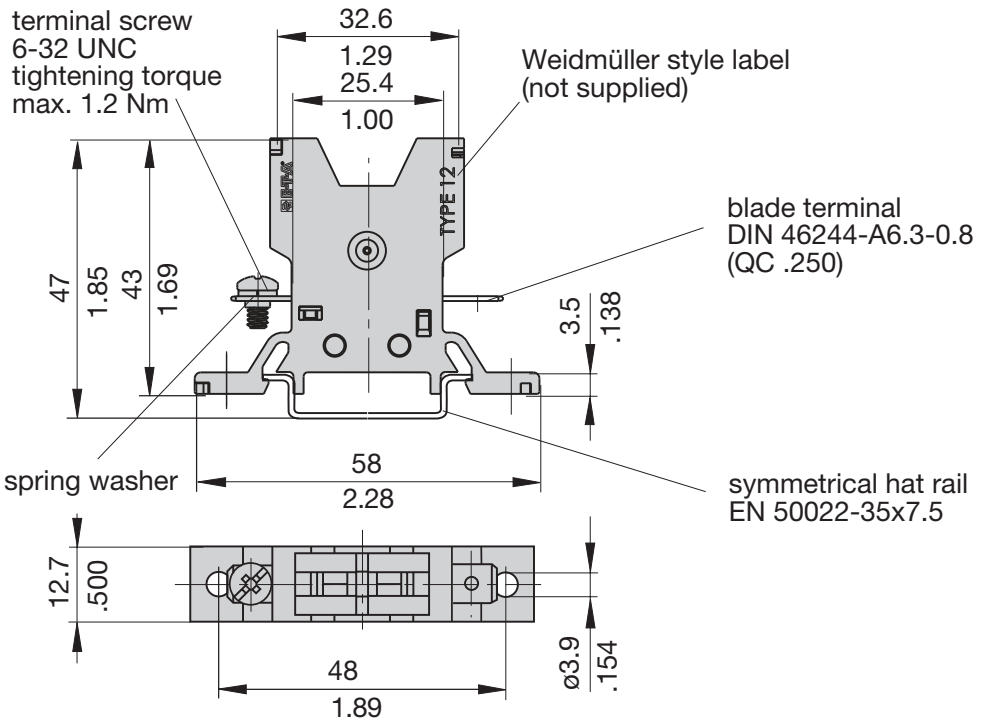
Socket 12-J20



Note: The terminal block is designed for a rated current of only 25 A.

Accessories

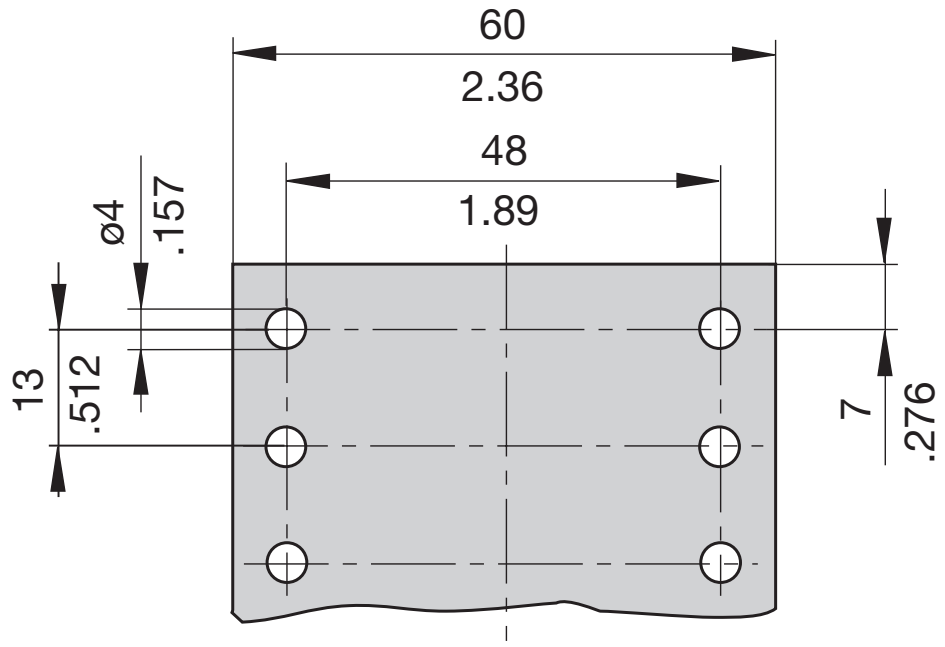
Socket 12-A10



Note: The terminal block is designed for a rated current of only 25 A.

Mounting dimensions terminal block 12

Dimensions for surface mounting



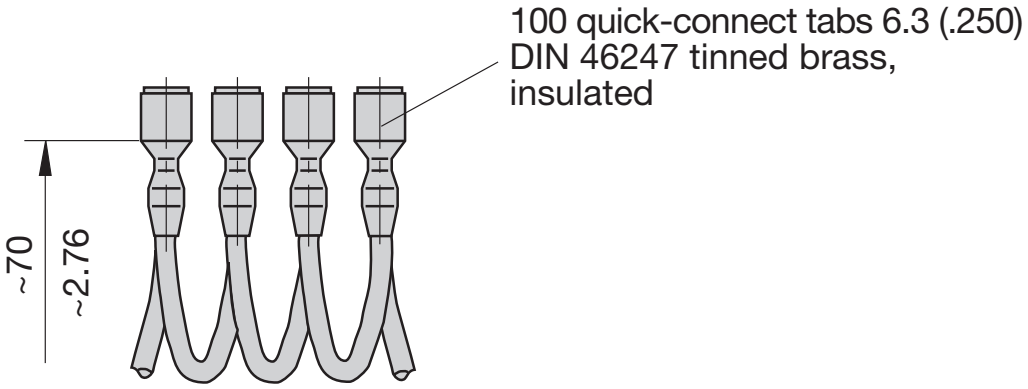
Recommended terminal block: Apparatebau Kirchheim-Teck GmbH & Co, 73230 Kirchheim-Teck
Tel. 0049-7021-9700930 - www.ak-teck.de
Fuse strip 67111 with cover for E-T-A circuit protectors

Further terminal blocks upon request

Terminal block accessories

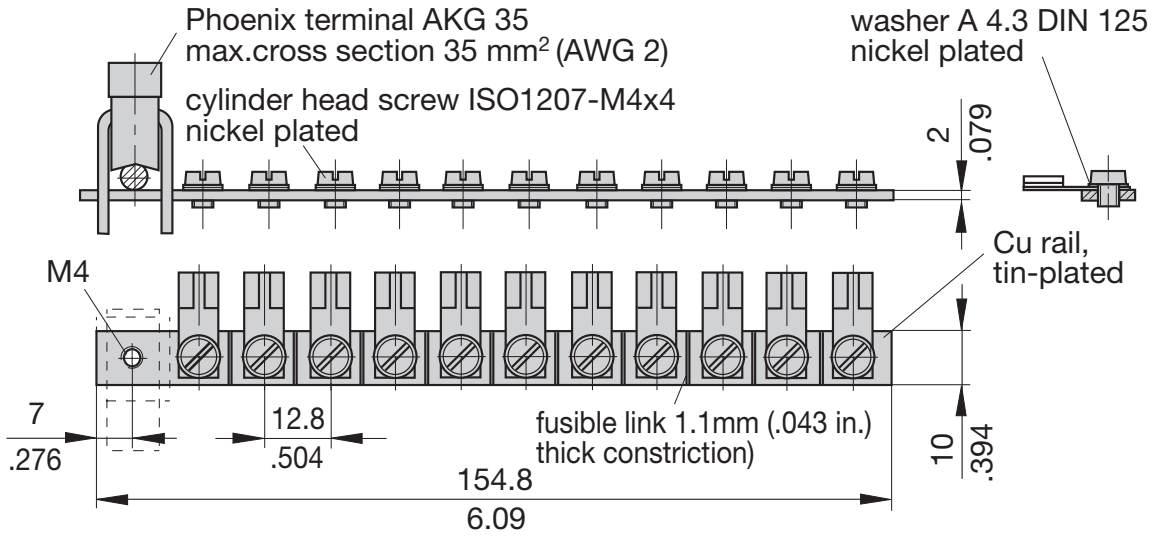
Connector bus links -P10

X 210 588 01/ 1.5 mm², (AWG 16), brown (up to 13 A max. load)
X 210 588 02/ 2.5 mm², (AWG 14), black (up to 20 A max. load)
X 210 588 03/ 2.5 mm², (AWG 14), red (up to 20 A max. load)
X 210 588 04/ 2.5 mm², (AWG 14), blue (up to 20 A max. load)



Terminal block accessories

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



Further products

Related products		
1610-92	Single-pole, thermal automotive circuit protector in a very slim design. Also available with reset button and manual release for 24 V. Interchangeable in the connection area with blade fuse inserts in accordance with DIN 72581 Part 3, ISO 8820-3 Type C or ISO 10924 Form CB15.	
1610-H2	Single pole, thermal automotive circuit protector with reset button and colour coded manual release in a very slim design. Also available with automatic reset for 12 V. Interchangeable in the connection area with blade fuse inserts in accordance with DIN 72581 Part 3, ISO 8820-3 Type C or ISO 10924 Form CB15.	
1616-92	Single pole, thermal circuit protector in miniature design, specifically suitable for automotive applications. Design according to ISO 10924-4. The reversible circuit protector fits into fuse holders designed for blade fuse inserts according to ISO 8820-3. The available rated currents correspond to those of the blade fuse series. Clear identification of the rated current is achieved by colour coding. Fuses and circuit protectors of the same colour have the same rated current. Devices with current ratings from 7.5 to 30 A have a fast characteristic curve that can sustain only 70 % of the rated current as a continuous load.	
1616-21	Single-pole, thermal automotive circuit protector in an ultra-slim design, featuring a coloured housing cap and a coloured manual release button. Also available with automatic reset for 12 V. Interchangeable in the terminal area with blade fuse inserts according to DIN 72581 Part 3, ISO 8820-3 Type C or ISO 10924-4 Form CB15. Devices with current ratings from 7.5 to 30 A have a fast characteristic curve that can sustain only 70 % of the rated current as a continuous load.	
1616-H2	Single-pole, thermal automotive circuit protector in an ultra-slim design, featuring a coloured housing cap and a coloured manual release button. Also available with automatic reset for 12 V. Interchangeable in the terminal area with blade fuse inserts according to DIN 72581 Part 3, ISO 8820-3 Type C or ISO 10924-4 Form CB15. Devices with current ratings from 7.5 to 40 A have a fast characteristic curve that can sustain only 70 % of the rated current as a continuous load.	
1620 type 1	Single pole, thermal circuit protector in miniature design, specifically suitable for automotive applications. The reversible circuit protector fits into fuse holders designed for blade fuse connections according to ISO 8820-3, type F. Also available with automatic reset (only for DC 12 V) and automatic reset protection. It is ensured that the contacts remain open, preventing an automatic reset. The circuit breaker resets automatically after the supply voltage is switched off. Particularly suitable for installation in hardly accessible locations.	
1620 type 2	Single pole, thermal circuit protector in miniature design, specifically suitable for automotive applications. The reversible circuit protector fits into fuse holders designed for blade fuse connections according to ISO 8820-3, type F. Also available with automatic reset (only for DC 12 V) and automatic reset protection. It is ensured that the contacts remain open, preventing an automatic reset. The circuit breaker resets automatically after the supply voltage is switched off. Particularly suitable for installation in hardly accessible locations.	
1620 type 3	Single pole, thermal circuit protector in miniature design, specifically suitable for automotive applications. The reversible circuit protector fits into fuse holders designed for blade fuse connections according to ISO 8820-3, type F. Also available with automatic reset (only for DC 12 V) and automatic reset protection. It is ensured that the contacts remain open, preventing an automatic reset. The circuit breaker resets automatically after the supply voltage is switched off. Particularly suitable for installation in hardly accessible locations.	
1626 type 3	Single-pole thermal circuit protector in miniature design, specifically adapted to automotive applications. The reversible circuit protector fits into fuse holders designed for blade fuse connections according to ISO 8820-3, type F. The available rated currents correspond to those of the blade fuse series. The rated current is clearly identifiable thanks to colour coding.	

1160	Thermal automotive circuit breaker In the event of an overload,one contact opens and limits the overcurrent to protect the load. A voltage actuated holding coil ensures that the contacts remain open, preventing an automatic reset. The circuit breaker automatically resets when the supply voltage is switched off for a short time. Particularly suitable for installation in hardly accessible locations.	
1170	Compact single pole thermal circuit breaker with colour coded manual release. Independent trip-free and snap action mechanisms ensure a reliable switching behaviour. Plug-in type for standard automotive fuse blocks. The 1176 device version is specifically designed for the automotive sector (rated currents correspond to those of the flat fuse series).	
1176	Compact single pole thermal circuit breaker with colour coded manual release. Independent trip-free and snap action mechanisms ensure a reliable switching behaviour. Plug-in type for standard automotive fuse blocks.	

All information and data given on our products are accurate and reliable to the best of our knowledge, but E-T-A does not accept any responsibility for the use in applications which are not in accordance with the present specification. E-T-A reserves the right to change specifications at any time in the interest of technical improvement. Dimensions are subject to change without notice. Please enquire for the latest dimensional drawing with tolerances if required. All dimensions, data, pictures and descriptions are for information only and are not binding. Amendments, errors and omissions excepted. Ordering part numbers may differ from the device marking.