THERMAL CIRCUIT BREAKERS
1180

Miniaturised single pole thermal circuit breaker with switching function optional (push-push actuation). Independent trip-free and snap action mechanisms ensure a reliable switching behaviour. Corresponds to the EN 60934 (IEC 60934) standard: S-type, TO. Can be plugged into fuse terminal blocks for DIN rail mounting.

TYPICAL FEATURES

- Facilitated mounting through plug-in type standard fuse terminal block compatibility
- Fine rated current increments, especially for the lower current range
- Very slim design of only 8.2 mm
- Both suitable for AC and DC applications

YOUR BENEFITS

- Increased system availability through resettability after tripping and fast error detection via error indication
- Space- and weight savings in the equipment through a particularly compact design of only 8.2 mm
- Reduced maintenance costs as the circuit breakers can activate the load path and remain in the fuse terminal block

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 4).

TYP. APPLICATIONS

Mountable onto fuse terminal blocks, which can be connected in series onto DIN rails for load protection in power distribution systems in the control cabinet and plant engineering sector.

APPROVALS / CERTIFICATIONS

WEB LINKS

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

COMPLIANCE

GENERAL INFORMATION

SAFETY AND INSTALLATION INSTRUCTIONS

Installation must be done by a qualified electrician.

TECHNICAL DATA

ELECTRICAL DATA

Rated voltage and rated current range acc. to IEC 60934	AC 250 V (50/60 Hz); 0.1...10 A DC 65 V; 0.1...10 A
Rated voltage and rated current range acc. to UL 1077	AC 250 V (50/60 Hz); 0.1...10 A DC 72 V; 0.1...10 A
Current ratings I_n	0.1 A; 0.2 A; 0.3 A; 0.4 A; 0.5 A; 0.7 A; 0.8 A; 1 A; 1.5 A; 2 A; 2.5 A; 3 A; 3.5 A; 4 A; 5 A; 6 A; 7 A; 8 A; 10 A
Rated insulation voltage	AC 250 V
Minimum load	DC 10 V / 100 mA

RATED CURRENTS AND TYPICAL INTERNAL RESISTANCE VALUES

Rated current I_n [A]	Internal resistance [Ω]	Rated current I_n [A]	Internal resistance [Ω]
0.1	81	2	0.25
0.2	22	2.5	0.18
0.3	8.7	3	0.11
0.4	5.5	3.5	0.08
0.5	3.4	4	0.07
0.6	2.5	5	≤ 0.05
0.7	1.7	6	≤ 0.05
0.8	1.5	7	≤ 0.05
1	0.9	8	≤ 0.05
1.5	0.4	10	≤ 0.05

BEHAVIOUR AT RATED CURRENT ACCORDING TO EN IEC 60934

Number of poles	Number of cycles	Rated voltage U_n [V]	Multiple of rated current I_n
1-pole	3,000	AC 250	1.0
1-pole	500	AC 250	2.0
1-pole	3,000	DC 65	1.0
1-pole	500	DC 65	2.0

RATED RUPTURE CAPACITY BEHAVIOUR ACCORDING TO EN IEC 60934

Number of poles	Rated current range [A]	Number of cycles	Rated voltage U_n [V]	Multiple of rated current I_n
1-pole	1...10	40	AC 250	6.0
1-pole	1...10	40	DC 65	4.0

RUPTURE CAPACITY ACCORDING TO EN IEC 60934 (I_{cn})

Rated current I_n [A]	Rated voltage U_n [V]	Short-circuit breaking capacity I_{cn} [A]
0,1…0,8	DC 32	25 I_n
1...5	DC 32	10 I_n
6…10	DC 32	20 I_n
0,1…0,8	DC 65	18 I_n
1…5	DC 65	9 I_n
6...10	DC 65	15 I_n
0,1…0,8	AC 250	10 I_n
1...5	AC 250	9 I_n
6…10	AC 250	12 I_n

RUPTURE CAPACITY ACCORDING TO UL 1077 (I_{nc})			
Number of poles	**Rated current I_n [A]**	**Rated voltage U_n [V]**	**Rated short circuit current I_{nc} [A]**
1-pole	0.1...10	AC 250	2,000
1-pole	0.1...10	DC 72	2,000

OVERLOAD, ENDURANCE ACCORDING TO UL 1077				
Rated current range I_n [A]	**Test**	**Number of cycles**	**Rated voltage U_n [V]**	**Multiple of rated current I_n**
0.1...10	OL	50	AC 250	1.5
0.1...10	END	6,000	AC 250	1.0
0.1...10	OL	50	DC 72	1.5
0.1...10	END	6,000	DC 72	1.0

OL = overload | END = endurance

Insulation co-ordination (EN IEC 60664)	Operating area Rated impulse voltage 2.5 kV / pollution degree 2 Installation area: Rated impulse voltage 2.5 kV / pollution degree 2
Insulation resistance	> 100 MΩ at DC 500 V (between main contacts in OFF / open condition)

DIELECTRIC STRENGTH ACCORDING TO EN IEC 60934	
Scope	**AC Test voltage [V]**
Actuating area	3,000
Installation area	1,500
Open main circuit	1,500

MECHANICAL DATA	
Mounting dimensions (WxHxD)	8.2 x 48.8 x 24.4 mm
Mounting dimensions (height in OFF condition)	52.3 mm
Mass	Approx. 10 g
Flammability class acc. to UL 94	V-0
Mounting data	Can be plugged into automotive fuse terminal blocks for DIN rail mounting

MOUNTING VALUES			
terminal block	**max. plug-in force [N]**	**max. pull-out force [N]**	**Tightening torque [Nm]**
X22223301	70...130	70...130	1.5...1.6
X22223302	70...130	70...130	1.5...1.6
X22232601	30...60	30...80	-
X22231502	30...60	30...80	-

Mechanical endurance	10,000 cycles

AMBIENT CONDITIONS	
Ambient temperature	-20...+60 °C (T60)
Storage temperature	-40...+80 °C
Damp heat	**Test according to IEC 60068-2-78, test Cab** 240 hrs in 95 % RH Temperature +40 °C
Vibration	**Test according to IEC 60068-2-6 test Fc** ±0.38 mm (10...57 Hz), 5 g (57...500 Hz) at 1 I_n
Shock	**Test according to IEC 60068-2-27, test Ea** 25 g/ 11 ms at 1 I_n
Corrosion	**Test according to IEC 60068-2-11, test Ka** 96 hours at 5 % salt mist
IP code standard	IEC 60529, DIN VDE 0470
Actuating area IP code (standard)	IP40
Terminal area IP code (standard)	IP00

Operating altitude	≤4000 m above SL

ORDERING NUMBER CODE

1 TYPE NUMBER	
1180	Thermal, single-pole circuit breaker, plug-in type

2 VARIANT	
01	With switching function, no marking label
02	reset function only, no marking label

3 RATED CURRENT	
0,1...10A	For a detailed graduation, see the "Rated current series" entry in the "Electrical data" section.

Please observe our minimum order quantities.

PREFERRED TYPES

Preferred types	Short description	Preferred rated currents [A]										
1180-01-...	single-pole, without auxiliary contacts	0.5	1	1.5	2	2.5	3	4	5	6	8	10

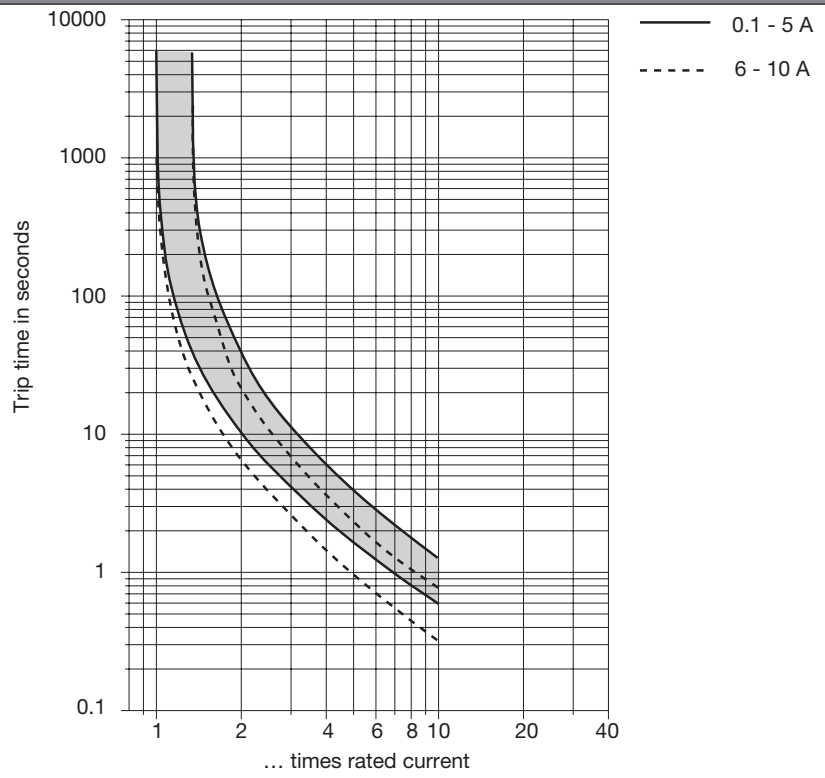
APPROVALS

APPROVALS				
Approval authority	**Test standard**	**File Certificate No.**	**Rated voltage [V]**	**Rated current range [A]**
VDE	IEC/EN 60934	136482	AC 250 DC 65	AC: 0.1...10 DC: 0.1...10
UL	UL 1077 C22.2 No 235	E67320	AC 250 (50/60 Hz) DC 72	AC: 0.1...10 DC: 0.1...10
CSA	C22.2 No 235	2052352	AC 250 DC 72	AC: 0.1...10 DC: 0.1...10
CQC	GB T17701	2020970307008210	AC 250 DC 65	AC: 0.1...10 DC: 0.1...10

Find further information about approvals here: https://www.e-t-a.de/approvals_en

TIME-/CURRENT CHARACTERISTICS

TIME/CURRENT CHARACTERISTICS



The time/current characteristic curves depend on the ambient temperatures. In order to prevent premature or delayed tripping, the rated current of the circuit breaker must be multiplied with a temperature factor (see Technical Information chapter).

AMBIENT TEMPERATURE-DEPENDENT TRIP CURVE

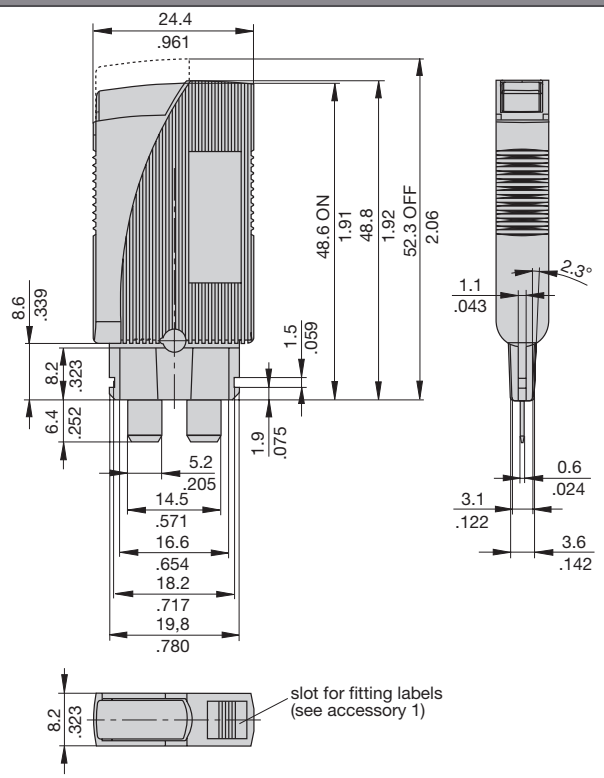
Ambient temperature [°C]	Temperature correction factor
-20	0.76
-10	0.84
0	0.92
23	1
40	1.08
50	1.16
60	1.24

Example: I_n = 1 A at 50 °C means 1 A x 1.16 = 1.16 A.
A circuit breaker with I_n 1.2 A must be selected.

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).

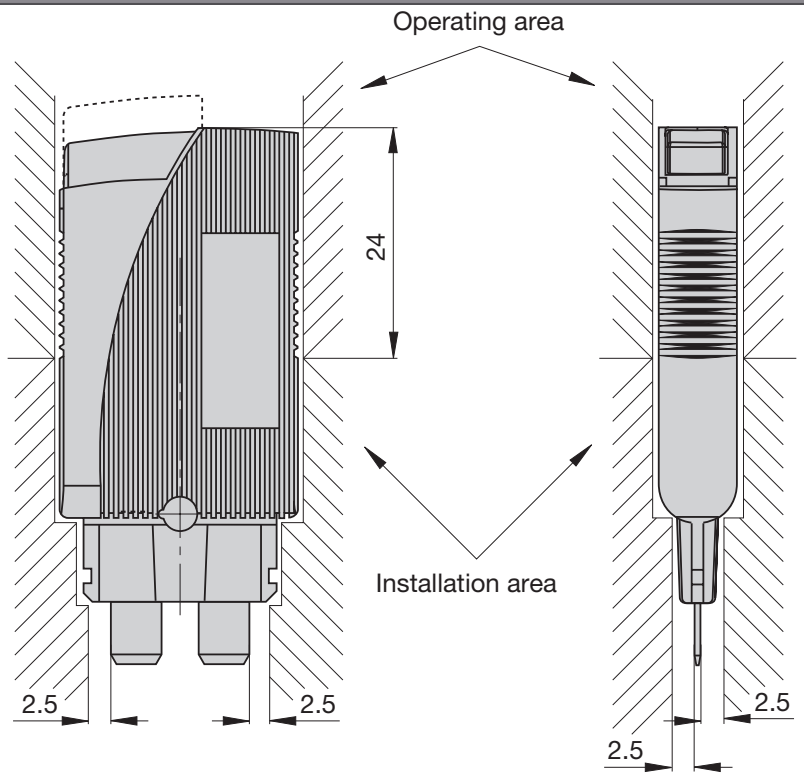
DIMENSIONS

DIMENSIONS



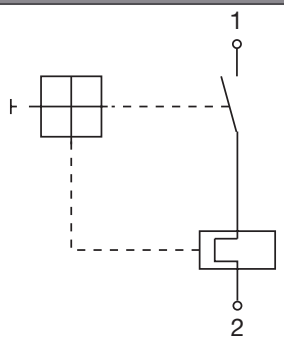
INSTALLATION INSTRUCTIONS

INSTALLATION DRAWING



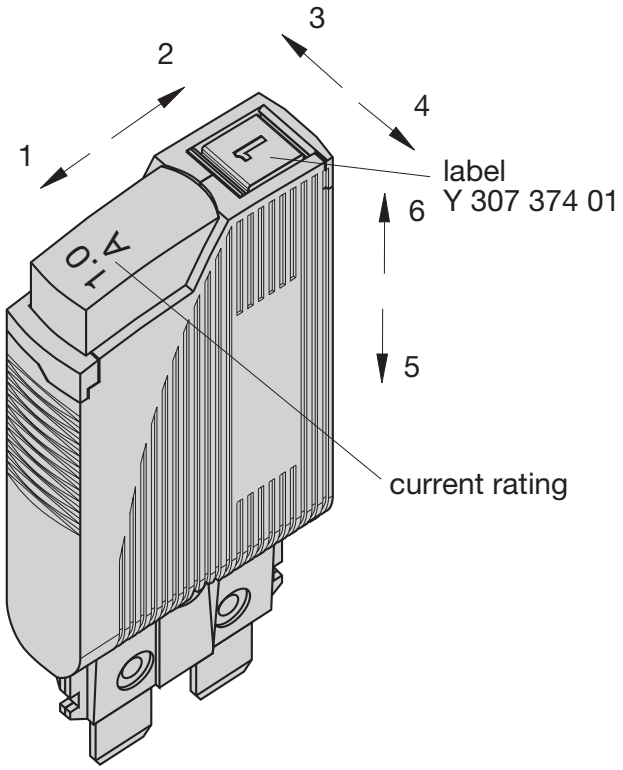
SCHEMATIC DIAGRAMS

SCHEMATIC DIAGRAMS



AMBIENT CONDITIONS

SHOCK DIRECTIONS



ACCESSORIES

REQUIRED ACCESSORIES

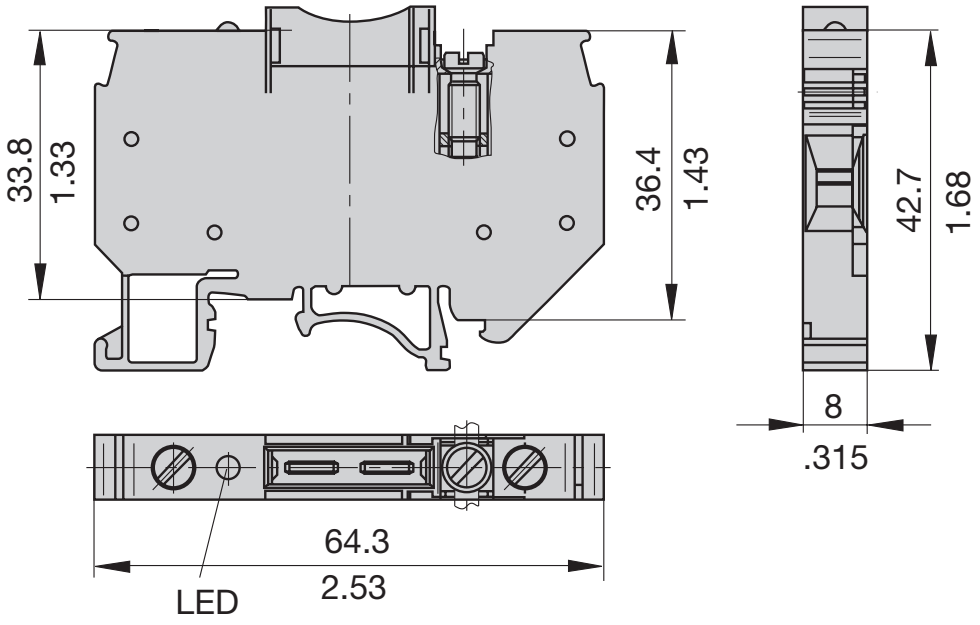
X22223301	Fuse terminal block for DIN rail mounting, with spring terminals up to 6 mm^2 flexible cable, grid dimension 8.2 mm, tightening torque: 1.5...1.6 Nm, stripping length: 10 millimeters. Dimensions 64 x 42.5 x 8.2 mm, clearance above top edge of mounting rail incl. inserted circuit breaker (in OFF position) 84 mm. Approval: UL File E197598	
X22223302	Fuse terminal block for DIN rail mounting, with spring terminals up to 6 mm^2 flexible cable, grid dimension 8.2 mm, tightening torque: 1.5...1.6 Nm, stripping length: 10 mm. Dimensions 64 x 42.5 x 8.2 mm, clearance above top edge of mounting rail incl. inserted circuit breaker (in OFF position) 84 mm. With LED DC 24 V (lights up when circuit breaker has tripped), I_n LED = 2 mA. Approval: UL File E197598	

X22231601	Fuse terminal block for DIN rail mounting, with spring terminals, up to 4 mm^2 flexible cable, grid dimension 8.2 mm, Dimensions 68.5 x 36.5 x 8.2 mm, Stripping length: 8...10 mm, clearance above top edge of mounting rail incl. inserted circuit breaker (in OFF position) 82 mm. Approval: UL File E197598	
X22231502	fuse terminal blocks for DIN rail mounting, with spring terminals, up to 4 mm^2 flexible cable, grid dimension 8.2 mm, dimensions 68.5 x 36.5 x 8.2 mm, stripping length: 8...10 mm Clearance above top edge of mounting rail incl. inserted circuit breaker (in OFF position) 82 mm. With LED DC 24 V (lights up when circuit breaker has tripped), I_n LED = 2 mA. Approval: UL File E197598	
OPTIONAL ACCESSORIES		
Y30737501	Marking labels for X22223301 & X22223302 fuse terminal blocks, labelling area 8 x 10 mm Packaging unit: 10 pcs	
Y30737401	Marking labels for circuit breakers, labelling area 4.5 x 5 mm Packing unit: 120 pcs	
Y30750801	X22231601, X22231502 fuse terminal block & X22231701 supply terminal marking label. • Marking area 7.5 x 5 mm Packing unit: 50 pcs	
X22223201	Fixed jumper for potential bridging via several fuse terminal blocks (10-poles, separable, incl. 10 mounting screws), I_{max} = 34 A	
X22231701	Supply terminal with spring-loaded terminals up to 6 mm^2, flexible line, grid dimension 8.2 mm Plug-in option for X22231801 and X22231802 jumpers for cross-connection to the fuse terminal blocks for power distribution.	
Y30737301	Separating plate for electrical circuit separation plugged between the X22223301 & X22223302 fuse terminal blocks. Packaging unit: 10 pcs	
X22231801	2-pole jumper, for cross-connection of the socket centre, I_{max} = 32 A for X22231601 & X22231502 fuse terminal blocks and X22231701 supply terminal.	
X22231802	3-pole jumper, for cross-connection of the socket centre, I_{max} = 32 A for X22231601 & X22231502 fuse terminal blocks and X22231701 supply terminal.	
Y30750701	Cover for X22231701 supply terminal to cover the opening at the end of a row of mounted modules.	

FURTHER INFORMATION ABOUT ACCESSORIES (DRAWINGS)

ACCESSORIES

Dimensions X 222 233 02

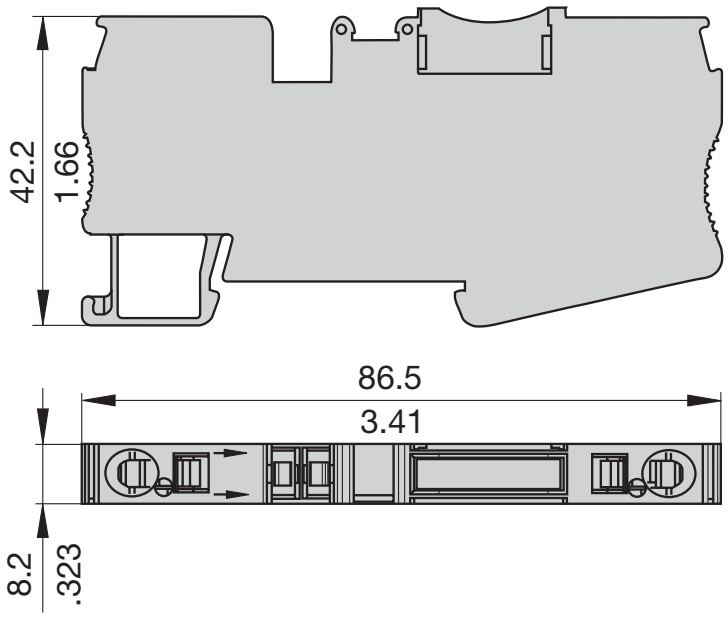


Vibration resistance
with X22231601 and X22231502 fuse terminal blocks oscillation axis 3-4:
3 g (57-500 Hz), ± 0.38 mm (10-57 Hz)
further axes:
5 g (57-500 Hz), ± 0.38 mm (10-57 Hz)
Test according to IEC 60068-2-6, test Fc, 10 frequency cycles/axis and EN 50155

Shock resistance
with X22231601 and X22231502 fuse terminal blocks
25g (11ms)
Test according to IEC 60068-2-27, test Ea

ACCESSORIES

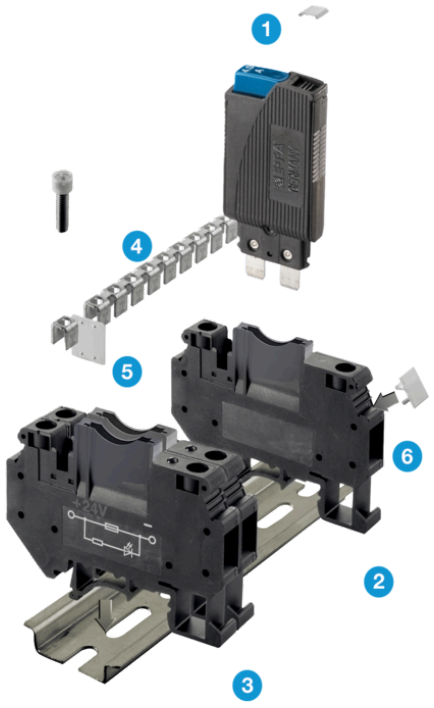
Dimensions X 222 316 01



Vibration resistance
with X22231601 and X22231502 fuse terminal blocks oscillation axis 3-4:
3 g (57-500 Hz), ± 0.38 mm (10-57 Hz)
further axes:
5 g (57-500 Hz), ± 0.38 mm (10-57 Hz)
Test according to IEC 60068-2-6, test Fc, 10 frequency cycles/axis and EN 50155

Shock resistance
with X22231601 and X22231502 fuse terminal blocks
25g (11ms)
Test according to IEC 60068-2-27, test Ea

ACCESSORIES - FUSE TERMINAL BLOCK WITH SCREW CONNECTION



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 mm² 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 File E197598
X 222 233 01

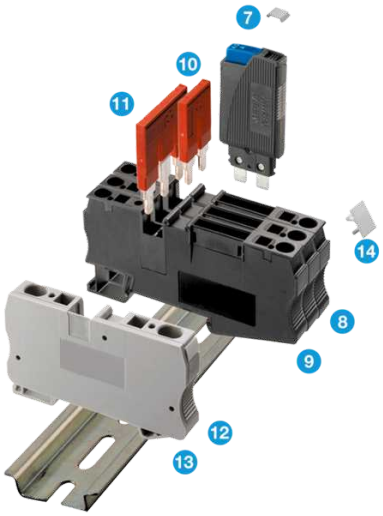
3 **Terminal block** for DIN rail mounting see item 2,
but with LED DC 24 V (lighted after tripping);
current rating LED 2 mA
Approvals: UL File E197598
X 222 233 02

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

FUSE TERMINAL BLOCK WITH SPRING-FORCE TERMINAL



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

8 **Terminal block** for DIN rail mounting, with spring-loaded terminals up to 4 mm² 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.
Approvals: UL File E197598
X 222 316 01

9 **Terminal block** for DIN rail mounting see item 7, but with LED DC 24 V (lighted after tripping); current rating LED 2 mA
Approvals: UL File E197598
X 222 315 02

10 **Jumper 2pole,** max. current rating 32 A for terminal blocks items 7 and 8 and feed supply terminal item 11.
X 222 318 01

11 **Jumper 3pole,** max. current rating 32 A for terminal blocks items 7 and 8 and feed supply terminal item 11.
X 222 318 02

12 **Feed supply terminal** with spring-loaded terminals up to 6 mm² conductor, width 8.2 mm, suitable for use with jumpers items 9 and 10 (power distribution).
X 222 317 01

13 **Cover** for feed supply terminal item 11 for closing the open side at the end of an assembly.
Y 307 507 01

14 **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

FURTHER PRODUCTS

RELATED PRODUCTS

Power board modules	The power distribution system has been designed to accommodate plug-in type thermal 1170-21, 1180 and 1610 circuit breakers. It is designed as printed circuit board module for rail mounting. Typical applications are mainly in control cabinets for utility vehicles and special vehicles and for mobile construction machinery. The current supplied by a power supply is distributed onto 5 ways/slots. There are two LEDs for each circuit breaker. When the circuit breaker has tripped, the red LED lights up. The green LED is lighted when the circuit breaker is in ON condition. The distribution module generates a group signalling. This signal can be enquired via a potential-free relay. The jumpers allow bridging the signalling for individual circuit breakers if those are not fitted.	

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.