Introduction—Electronic Circuit Protection ESX10-T

Electronic circuit protection type ESX10-T is designed to ensure selective disconnection of 24VDC load systems.

24VDC power supplies, which are widely used in industry today, will shut down the output in the event of an overload with the result that one faulty load in the system can lead to complete disconnection of all loads.

Through selective disconnection the ESX10-T responds much faster to overload or short circuit conditions than the switch-mode power supply. This is achieved by active current limitation. The ESX10-T limits the highest possible current to 1.3 to 1.8 times the selected rated current of the circuit protector. Thus it is possible to switch on capacitive loads of up to 20,000 µF, but they are disconnected only in the event of an overload or short circuit.

For optimal alignment with the characteristics of the application the current rating of the ESX10-T can be selected in fixed values from 0.5 A...12 A. Failure and status indication are provided by a multicolour LED and an integral short-circuit-proof status output or a relay signal contact. Remote operation is possible by means of a remote reset signal or a remote ON/OFF control signal. The manual ON/OFF button allows separate actuation and reset of individual load circuits.

Upon detection of overload or short circuit in the load circuit, the MOSFET of the load output will be blocked to interrupt the current flow. The load circuit can be re-activated via the remote electronic reset input, control input or manually by means of the ON/OFF button.

Features

- Selective load protection, electronic trip characteristics
- Active current limitation for safe connection of capacitive loads up to 20,000 µF and on overload/short circuit
- Current ratings 0.5 A...12 A
- Reliable overload disconnection with 1.1 x I_n plus, even with long load lines or small cable cross sections (see table 3)
- Manual ON/OFF button (S1)
- Control input IN+ for remote ON/OFF signal (option)
- Electronic **reset** input RE (option)
- Clear status and failure indication through LED, status output SF or Si contact F
- Integral fail-safe element adjusted to current rating
- Width per unit only 12.5 mm
- Rail mounting
- Ease of wiring through busbar LINE+ and 0 V as well as signal bars and bridges
- UL/CSA Hazardous area approved– Class 1, Div 2

Approvals

Authority	Voltage rating	Current ratings
UL2367 (E306740)	24VDC	0.5...12 A
UL1604 (E322549)	24VDC	0.5...12 A
(class 1, div. 2, group A, B, C, D)		
UL508/ cUL 508	24VDC	0.5...12 A
CSA file 165971:		
CSA C22.2 No: 213 (class I, div. 2)	24VDC	0.5...12 A
Groups A, B, C, D, T5		
CSA C22.2 No: 142	24VDC	0.5...12 A
Class 2		
Meets requirements for Class 2 current limitation		
(ESX10-T... 0.5 A / 1 A / 2 A / 3 A		

Technical data ($T_{ambient}$ = 40°C, operating voltage U_b = 24VDC)

Operating data	
Operating voltage U_b	24VDC (18...32 V)
Current rating I_n	fixed current ratings: 0.5, 1 A, 2 A, 3 A, 4 A, 6 A, 8 A, 10 A, 12 A
Closed current I_0	ON condition: typically 20...30 mA depending on signal output
Status indication by means of	• **multicolour LED:** GREEN: unit is ON, power-MOSFET is switched on - status output SF ON, supplies + 24VDC ORANGE: in the event of overload or short circuit until electronic disconnection RED: - unit electronically disconnected - load circuit/Power-MOSFET OFF OFF: - manually switched off (S1 = OFF) or device is dead - undervoltage (U_b < 8 V) - after switch-on till the end of the delay period • status output SF (option) • potential-free signal contact F (option) • ON/OFF/ condition of switch S1
Load circuit	
Load output	Power-MOSFET switching output (high side switch)
Overload disconnection	typically 1.1 x I_n (1.05...1.35 x I_n)
Short-circuit current I_K	active current limitation (see table 1)
Trip time for electronic disconnection	see time/current characteristics typically 3 s at I_{Load} > 1.1 x I_n typically 3 s...100 ms at I_{Load} > 1.8 x I_n (or 1.5 x I_n/1.3 x I_n)
Temperature disconnection	internal temperature monitoring with electronic disconnection
Low voltage monitoring load output	with hysteresis, no reset required load "OFF" at U_b < 8 V
Starting delay t_{start}	typically 0.5 sec after every switch-on and after applying U_b
Disconnection of load circuit	electronic disconnection
Free-wheeling circuit	external free-wheeling diode recommended with inductive load
Several load outputs must not be connected in parallel	

Technical data ($T_{ambient}$ = 40°C, operating voltage U_b = 24VDC)

Status output SF	**ESX10-TB-114/-124/**
Electrical data	plus-switching signal output, connects U_b to terminal 12 of module 17plus nominal data: 24VDC / max. 0.2 A (short circuit proof) status output is internally connected to GND with a 10 kOhm resistor
Status OUT	ESX10-TB-114/-124 (signal status OUT), at U_b = +24 V +24 V = S1 is ON, load output connected through 0V = S1 is ON, load output blocked and/or switch S1 is OFF red LED lit
OFF condition	0 V level at status output when: • switch S1 is in ON position, but device is still in switch-on delay • switch S1 is OFF, or control signal OFF, device is switched off • no operating voltage U_b
Signal output F	**ESX10-TB-101/-102**
Electrical data	potential-free signal contact max. 30VDC/0.5 A, min. 10 V/10 mA
ON condition LED green	voltage U_b applied, switch S1 is in ON position no overload, no short circuit
OFF condition LED off	• device switched off (switch S1 is in OFF position) • no voltage U_b applied
Fault condition LED orange	overload condition > 1.1 x I_n up to electronic disconnection
Fault condition LED red	electronic disconnection upon overload or short circuit device switched off with control signal (switch S1 is in ON position)
ESX10-TB-101	single signal, make contact contact SC/SO-SI open
ESX10-TB-102	single signal, break contact contact SC/SO-SI closed
Fault	signal output fault conditions: • no operating voltage U_b • ON/OFF switch S1 is in OFF position • red LED lighted (electronic disconnection)
Reset input RE	**ESX10-TB-124**
Electrical data	voltage: max. +32VDC high > 8VDC ≤ 32VDC low ≤ 3VDC > 0 V power consumption typically 2.6 mA (+24VDC) min. pulse duration typically 10 ms
Reset signal RE (terminal 22)	The electronically blocked ESX10-TB-124 may remotely be reset via an external momentary switch due to the falling edge of a +24 V pulse. A common reset signal can be applied to several devices simultaneously. Switched on devices remain unaffected.
Control input IN+	**ESX10-TB-114**
Electrical data	see reset input RE
Control signal IN+ (terminal 21)	+24V level (HIGH): device will be switched on by a remote ON/OFF signal 0 V level (LOW): device will be switched off by a remote ON/OFF signal
Switch S1 ON/OFF	unit can only be switched on with S1 if a HIGH level is applied to IN+

Technical data ($T_{ambient}$ = 40°C, operating voltage U_b = 24VDC)

General data		
Fail-safe element:	backup fuse for ESX10-T not required because of the integral redundant fail-safe element	
Terminals	**LINE+ / LOAD+ / 0V**	
screw terminals		M4
max. cable cross section		
flexible with wire end ferrule w/wo plastic sleeve		20-6 AWG (0.5 - 10 mm²)
multi-lead connection (2 identical cables)		
rigid/flexible		20-11 AWG (0.5 - 4 mm²)
flexible with wire end ferrule without plastic sleeve		20-13 AWG (0.5 - 2.5 mm²)
flexible with TWIN wire end ferrule with plastic sleeve		20-9 AWG (0.5 - 6 mm²)
wire stripping length		10 mm
tightening torque (EN 60934)		1.2 Nm
Terminals	**aux. contacts**	
screw terminals		M3
max. cable cross section		
flexible with wire end ferrule w/wo plastic sleeve		23-13 AWG (0.25 – 2.5 mm²)
wire stripping length		8 mm
tightening torque (EN 60934)		0.5 Nm
Housing material	moulded	

Mounting	symmetrical rail to EN 50022-35x7.5
Ambient temperature	0...+50 °C (without condensation, see EN 60204-1)
Storage temperature	-20...+70 °C
Humidity	96 hrs/95 % RH/40 °C to IEC 60068-2-78-Cab climate class 3K3 to EN 60721
Vibration	3 g, test to IEC 68-2-6 test Fc
Degree of protection	housing: IP20 DIN 40050 terminals: IP20 DIN 40050
EMC (EMC directive, CE logo)	emission: EN 61000-6-3 susceptibility: EN 61000-6-2
Insulation co-ordination (IEC 60934)	0.5 kV/2 pollution degree 2 re-inforced insulation in operating area
dielectric strength	max. 32VDC (load circuit)
Insulation resistance (OFF condition)	n/a, only electronic disconnection
Approvals	UL2367, File E306740, Solid State Overcurrent Protectors UL1604 (class I, div. 2, zone 2), UL508, CE logo CSA C22.2 No. 142 - file 165971, C22.2 No. 213 - file 165971, C1D2 Groups A, B, C, D, Temp Code T5; Ambient 0°-40°C
Dimensions (W x H x D)	12.5 x 80 x 83 mm
Mass	approx. 65 g

Table 1: voltage drop, current limitation, max. load current

current rating I_n	typically voltage drop U_{on} at I_n	active current limitation (typically)	max. load current at 100% ON duty T_u = 40 °C	T_u = 50 °C
0.5 A	70 mV	1.8 x I_n	0.5 A	0.5 A
1 A	80 mV	1.8 x I_n	1 A	1 A
2 A	130 mV	1.8 x I_n	2 A	2 A
3 A	80 mV	1.8 x I_n	3 A	3 A
4 A	100 mV	1.8 x I_n	4 A	4 A
6 A	130 mV	1.8 x I_n	6 A	5 A
8 A	120 mV	1.5 x I_n	8 A	7 A
10 A	150 mV	1.5 x I_n	10 A	9 A
12 A	180 mV	1.3 x I_n	12 A	10.8 A

Attention: when mounted side-by-side without convection the ESX10-T should not carry more than 80% of its rated load with 100% ON duty due to thermal effects.

Please note:

- The user should ensure that the cable cross sections of the relevant load circuit are suitable for the current rating of the ESX10-T used.
- Automatic start-up of machinery after shut down must be prevented (Machinery Directive 98/37/EG and EN 60204-1). In the event of a short circuit or overload the load circuit will be disconnected electronically by the ESX10-T.
- Refer to UL/CSA file for proper wiring and installation techniques.

Table 2: ESX10-T - Ordering Information

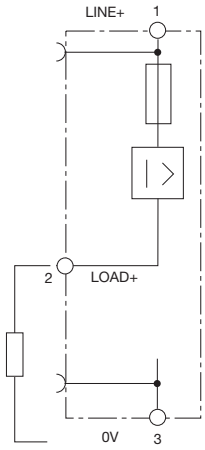
Version	Signal input			Signal output					
				Signal contact			Status output		
	without Signal Input	Control input ON/OFF Reset	Remote Reset	without Signal Output	single signal N/O (normally open NO)	single signal N/C (normally closed NC)	without Signal Output	Status OUT Positive 24V = OK	Status OUT ØV = OK
ESX10-TA-100	x			x			x		
ESX10-TB-101	x				x		x		
ESX10-TB-102	x					x	x		
ESX10-TB-114		x						x	
ESX10-TB-124			x	x				x	
ESX10-TB-127			x	x					x

ESX10-TA-100		ESX10-TB-101		ESX10-TB-102		ESX10-TB-114*		ESX10-TB-124**		ESX10-TB-127	
Current Rating (amps)	**Circuit Protection Part Number**	**Current Rating (amps)**	**N/O Contact Part Number**	**Current Rating (amps)**	**N/C Contact Part Number**	**Current Rating (amps)**	**Control Input Part Number**	**Current Rating (amps)**	**Reset Input Part Number**	**Current Rating (amps)**	**Reset Input Part Number**
0.5	**6720005305**	0.5	**6720005320**	0.5	**6720005340**	0.5	**6720005360**	0.5	**6720005380**	0.5	**6720005309**
1	**6720005301**	1	**6720005321**	1	**6720005341**	1	**6720005361**	1	**6720005381**	1	**6720005319**
2	**6720005302**	2	**6720005322**	2	**6720005342**	2	**6720005362**	2	**6720005382**	2	**6720005329**
3	**6720005303**	3	**6720005323**	3	**6720005343**	3	**6720005363**	3	**6720005383**	3	**6720005339**
4	**6720005304**	4	**6720005324**	4	**6720005344**	4	**6720005364**	4	**6720005384**	4	**6720005349**
6	**6720005306**	6	**6720005326**	6	**6720005346**	6	**6720005366**	6	**6720005386**	6	**6720005369**
8	**6720005308**	8	**6720005328**	8	**6720005348**	8	**6720005368**	8	**6720005388**	8	**6720005389**
10	**6720005310**	10	**6720005330**	10	**6720005350**	10	**6720005370**	10	**6720005390**	10	**6720005399**
12	**6720005312**	12	**6720005332**	12	**6720005352**	12	**6720005372**	12	**6720005392**	12	**6720005313**

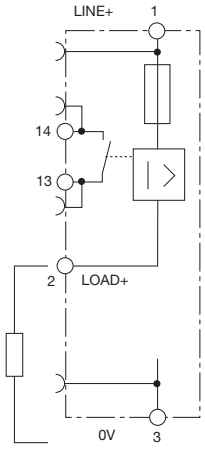
* Control force input on/off ** Reset input only to reset under fault conditions

ESX10-T Signal inputs / outputs (wiring diagram)

ESX10-TA-100
without signal input/output

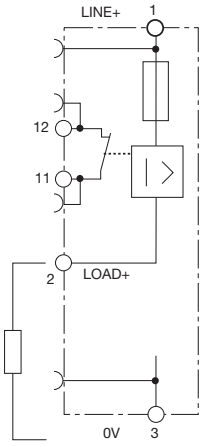


ESX10-TB-101
without signal input
with signal output F
(single signal, N/O)



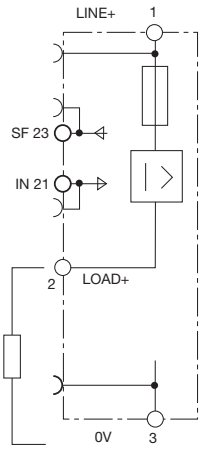
operating condition: 13-14 closed
fault condition: 13-14 open

ESX10-TB-102
without signal input
with signal output F
(single signal, N/C)



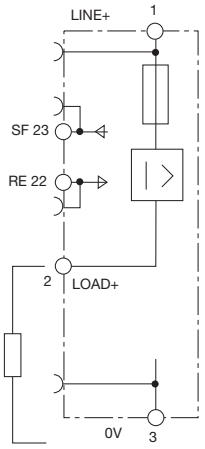
operating condition: 11-12 open
fault condition: 11-12 closed

ESX10-TB-114
with control input IN+
(+24VDC)
with status output SF
(+24 V = load output ON)



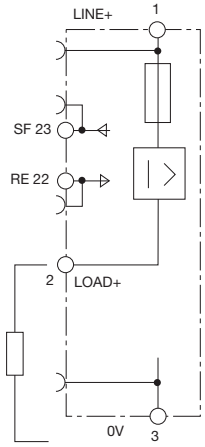
operating condition: SF +24 V = OK
fault condition: SF 0 V

ESX10-TB-124
with reset input RE
(+24VDC ↓)
with status output SF
(+24 V = load output ON)



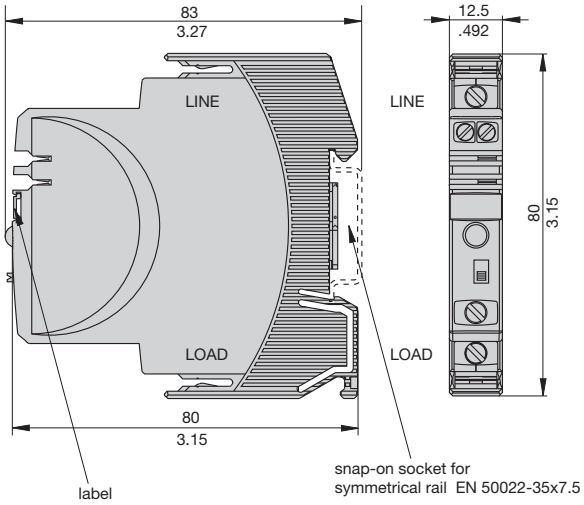
operating condition: SF +24 V = O
fault condition: SF 0 V

ESX10-TB-127
with reset input RE
(+DC 24 V ↓)
with inverse status output SF
(0 V = load output ON)



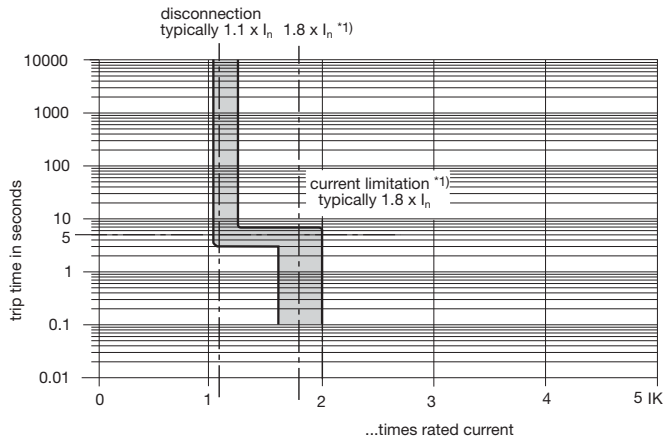
operating condition: SF 0 V = OK
fault condition: SF +24 V

Dimensions



This is a metric design and millimeter dimensions take precedence (mm / inch)

Time/Current characteristic curve (T_a = 25 °C)



*1) current limitation typically 1.8 x I_n times rated current at I_n = 0.5 A...6 A
current limitation typically 1.5 x I_n times rated current at I_n = 8 A or 10 A
current limitation typically 1.3 x I_n times rated current at I_n = 12 A

- The trip time is typically 3 s in the range between 1.1 and 1.8 x In*1).
- Electronic current limitation occurs at typically 1.8 x In*1) which means that under all overload conditions (independent of the power supply and the resistance of the load circuit) the max. overload before disconnection will not exceed 1.8 x In*1) times the current rating. Trip time is between 100 ms and 3 sec (depending on overload or at short circuit).
- Without this current limitation a considerably higher overload current would flow in the event of an overload or short circuit.

Table 3: Reliable trip of ESX10-T

Reliable trip of ESX10-T with different cable lengths and cross sections

Resistivity of copper ρ_0 = 0.0178 (Ohm x mm²) / m

U_b = DC 19.2 V (= 80 % of 24 V) — voltage drop of ESX10-T and tolerance of trip point (typically 1.1 x I_n = 1.05 ... **1.35 x I_n**) have been taken into account.

ESX10-T-selected rating I_n (in A) →	**3**	**6**	
e. g. trip current I_{ab} = 1.25 x I_n (in A) →	3.75	7.5	→ **ESX10-T trips after 3 s**
R_{max} in Ohm = (U_b / I_{ab}) - 0.050 →	**5.07**	**2.51**	

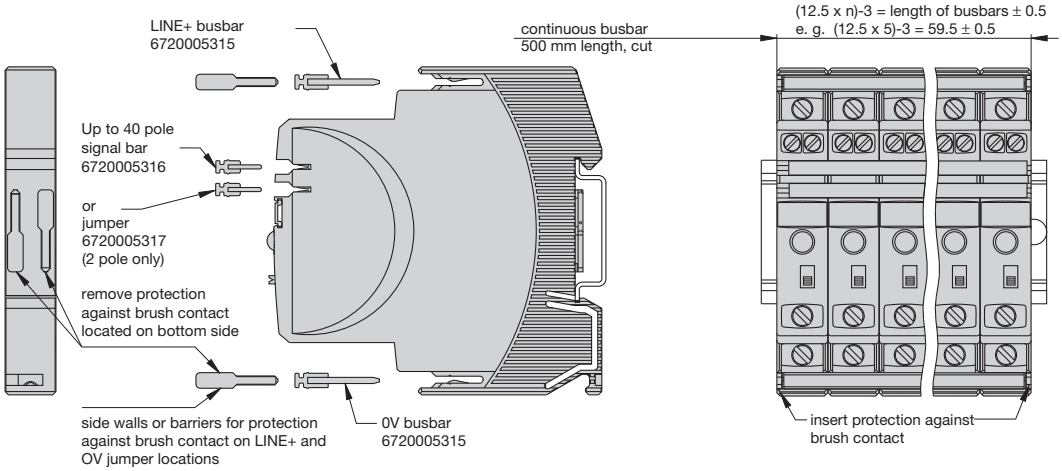
The ESX10-T reliably trips from 0 Ohm to max. circuitry resistance R_{max}

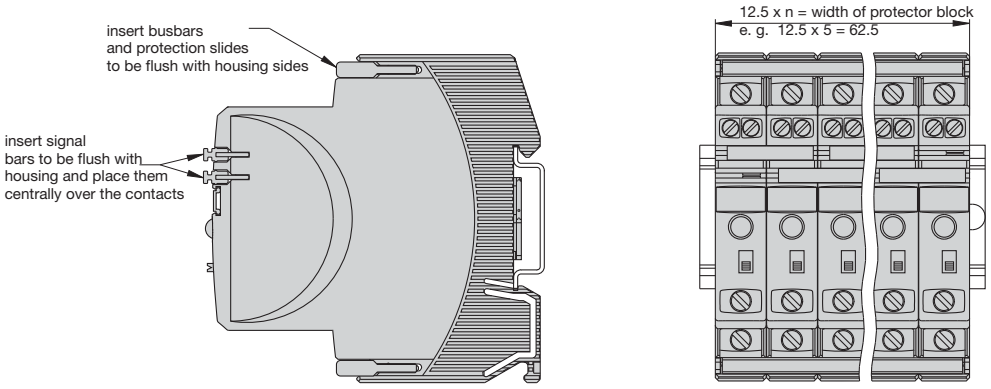
Cable cross section **A** in mm²		0.14	0.25	0.34	0.5	0.75	1	1.5
cable length **L** in meter (= single length) ↓		**cable resistance in Ohm = (R_0 x 2 x L) / A** ↓						
5		1.27	0.71	0.52	0.36	0.24	0.18	0.12
10		2.54	1.42	1.05	0.71	0.47	0.36	0.24
15		3.81	2.14	1.57	1.07	0.71	0.53	0.36
20		5.09	2.85	2.09	1.42	0.95	0.71	0.47
25		6.36	3.56	2.62	1.78	1.19	0.89	0.59
30		7.63	4.27	3.14	2.14	1.42	1.07	0.71
35		8.90	4.98	3.66	2.49	1.66	1.25	0.83
40		10.17	5.70	4.19	2.85	1.90	1.42	0.95
45		11.44	6.41	4.71	3.20	2.14	1.60	1.07
50		12.71	7.12	5.24	3.56	2.37	1.78	1.19
75		19.07	10.68	7.85	5.34	3.56	2.67	1.78
100		25.34	14.24	10.47	7.12	4.75	3.56	2.37
125		31.79	17.80	13.09	8.90	5.93	4.45	2.97
150		38.14	21.36	15.71	10.68	7.12	5.34	3.56
175		44.50	24.92	18.32	12.46	8.31	6.23	4.15
200		50.86	28.48	20.94	14.24	9.49	7.12	4.75
225		57.21	32.04	23.56	16.02	10.68	8.01	5.34
250	→	63.57	35.60	26.18	17.80	11.87	8.90	5.93

Example 1:	max. length at 1.5 mm² and 3 A	**214 m** →	
Example 2:	max. length at 1.5 mm² and 6 A	**106 m**	
Example 3:	mixed wiring:	R1 = 40 m in 1.5 mm² and R2 = 5 m in 0.25 mm²:	
	(Control cabinet – sensor/actuator level)	R1 = 0.95 Ohm, R2 = 0.71 Ohm	**Total (R1 + R2) = 1.66 Ohm**

Mounting examples for ESX10-T

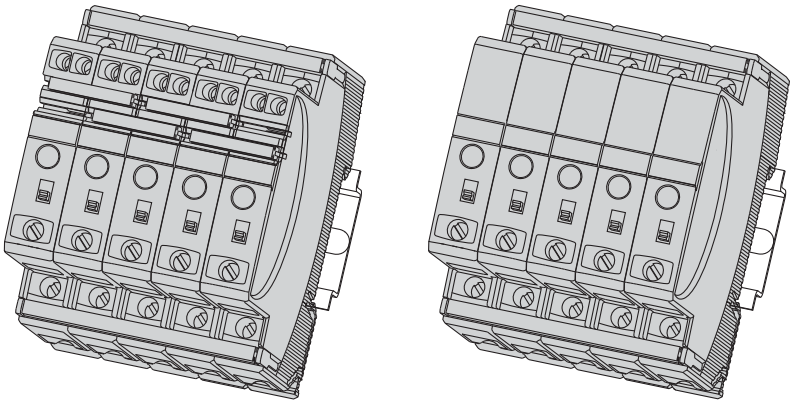
The ESX10-T features an integral power distribution system.





5 ESX10-TB
with busbars
and jumpers

5 ESX10-TA
with busbars



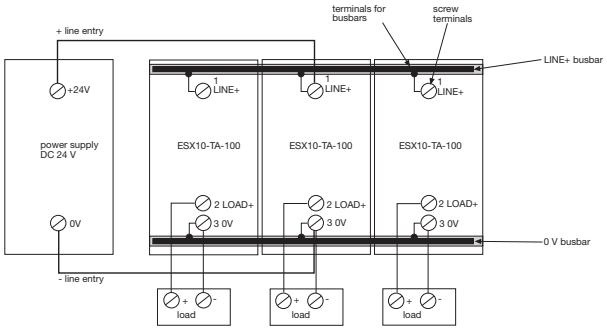
Mounting procedure:

Before wiring insert busbars into protection block.

Connection diagrams and application examples ESX10-T

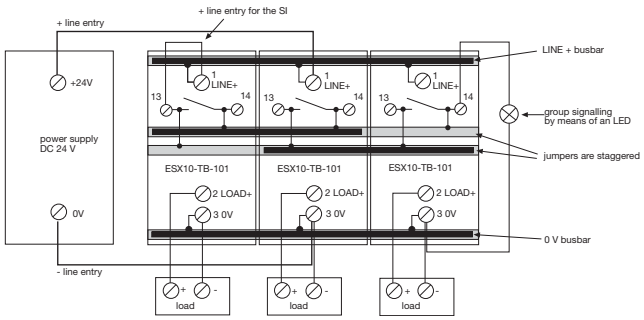
Signal contacts are shown in OFF or fault concition.

ESX10-TA-100



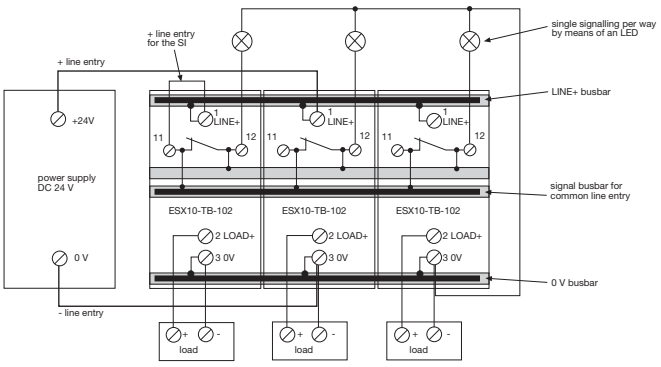
ESX10-TB-101

group signaling (series connection)



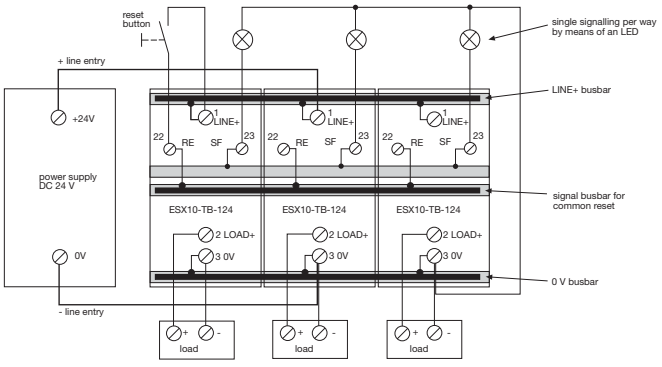
ESX10-TB-102

Single signaling with common line entry



ESX10-TB-124

Single signaling with common reset



Accessories for ESX10-T

Description

The ESX10-T features an integral power distribution system. The following wiring modes are possible with various plug-gable current and signal busbars:

- LINE +(24VDC)
- 0 V

  Caution: The electronic devices ESX10-T require a 0 V connection

- signal contacts
- reset inputs

Description	Part No.	
Busbars for LINE+ and 0 V	**6720005315**	
max. load with one line entry (recommended: centre line entry)	I_{max}	50 A
max. load with two line entries	I_{max}	63 A
length:	500 mm	

Signal busbars for signal contacts and reset inputs	**6720005316**	
max. load with one line entry	I_{max}	1 A
with one series connection of signal contacts	I_{max}	0.5 A
length:	500 mm	

Jumpers for signal contacts	**6720005317**
length:	21 mm
packing unit:	10 pcs

TS32 rail adapter	**9102100000**

(Remove protection walls/barriers before using adapter.)

For detailed installation instructions and approvals contact Weidmuller at 1-800-849-9343 or go to www.weidmuller.com

Introduction—Circuit Protection

Weidmuller's DIN-rail mounted circuit breakers are available for use in applications where circuit protection must be able to distinguish between circuit overloads and short circuits. Each circuit breaker has the ability to be reset without the need to change components. All circuit breakers are available with an assortment of jumpers and marking tags.

Circuit breakers in the 9926 Series are cULus listed according to UL489 and CSA 22.2 No. 5.02, CE, VDE. The hydraulic magnetic trip mechanism offers 10,000A of interrupting capacity in 120V and 240V, 50/60Hz applications.

9926 Series

The CB2200 Series feature integrated alarm contacts within a narrow profile, thereby allowing increased enclosure capacity. All of these circuit breakers demonstrate consistent reliability through 100% calibration and testing, and feature a touch safe design to prevent injury from accidental contact with live components.

CB2200 Series

The CB4200 Series of thermal magnetic circuit breakers feature a push-button style of trip reset. This reset provides a visual indication of status which allows for rapid troubleshooting.

CB4200 Series

The CB9100 Series of thermal magnetic circuit breakers provide a rugged and industry-standard form factor (18 mm/pole). For supplemental circuit protection.

CB9100 Series

Circuit Breakers
Hydraulic Magnetic Type

- Single pole and double pole versions
- 120/240 VAC, 50/60 Hz
- Up to 25A
- Just 13 mm wide
- Mounts on 35mm DIN-rail
- cULus listed according to UL489 CSA C22.2 No. 5.02, CE, VDE

9926 Series
Single Pole

9926 Series
Double Pole

Ordering Data

Type: Single Pole (up to 120 VAC)

Current Ratings (amps)	Part No. TS 35	Description
0.5	**9926251000**	QL-1-13-DM-KM-0.5
1	**9926251001**	QL-1-13-DM-KM-01
2	**9926251002**	QL-1-13-DM-KM-02
3	**9926251003**	QL-1-13-DM-KM-03
4	**9926251004**	QL-1-13-DM-KM-04
5	**9926251005**	QL-1-13-DM-KM-05
6	**9926251006**	QL-1-13-DM-KM-06
7	**9926251007**	QL-1-13-DM-KM-07
8	**9926251008**	QL-1-13-DM-KM-08
10	**9926251010**	QL-1-13-DM-KM-10
13	**9926251013**	QL-1-13-DM-KM-13
15	**9926251015**	QL-1-13-DM-KM-15
16	**9926251016**	QL-1-13-DM-KM-16
20	**9926251020**	QL-1-13-DM-KM-20
25	**9926251025**	QL-1-13-DM-KM-25

Type: Double Pole (up to 240 VAC)

Current Ratings (amps)	Part No. TS 35	Description
0.5	**9926252000**	QL-2-13-DM-KM-0.5
1	**9926252001**	QL-2-13-DM-KM-01
2	**9926252002**	QL-2-13-DM-KM-02
3	**9926252003**	QL-2-13-DM-KM-03
4	**9926252004**	QL-2-13-DM-KM-04
5	**9926252005**	QL-2-13-DM-KM-05
6	**9926252006**	QL-2-13-DM-KM-06
7	**9926252007**	QL-2-13-DM-KM-07
8	**9926252008**	QL-2-13-DM-KM-08
10	**9926252010**	QL-2-13-DM-KM-10
13	**9926252013**	QL-2-13-DM-KM-13
15	**9926252015**	QL-2-13-DM-KM-15
16	**9926252016**	QL-2-13-DM-KM-16
20	**9926252020**	QL-2-13-DM-KM-20
25	**9926252025**	QL-2-13-DM-KM-25

Technical Data	
Voltage	120/240 VAC, 50/60Hz
Current	
minimum	0.5A
maximum	25A
Interrupting capacity	10,000A
Dielectric strength	1500V, 50/60Hz
Insulation resistance	100MΩ
Operating life	10000 mechanical operations
Operating temperature	-40…+65°C
Wire size*	
0.5-15A:	14AWG min., 10AWG max.
20-25A:	10AWG min.
Torque	20 in.-lb

Approval

cULus listed according to UL489 CSA C22.2 No. 5.02, CE, VDE

Accessories	**Part No.**
Bus-bar (1 pole, insulated, 1 m)	**67101904**
Bus-bar (2 pole, insulated, 1 m)	**67101972**
Bus-bar end cap, 1 pole	**67101973**
Bus-bar end cap, 2 pole	**67101974**
Power lug, straight	**67101960**
Power lug, 90°	**67101961**
Lock-out handle	**67101913**

*Wire sizes: gauges specified are the minimum allowable as per CSA and UL standards.

The 9926 circuit breakers do not have provisions for marking tags. A possible solution is to cut the adhesive SchS2 tag rail to length (approximately 20 mm on a single pole unit so the current rating remains visible or approximately 30 mm on a two pole unit). The SchS2 accepts DEK, WS and ESG 8/17 marking tags. The part number for adhesive SchS2 is **1720600000**.

Trip Curves—Hydraulic Magnetic Type
Typical time/current characteristics at 30ºC

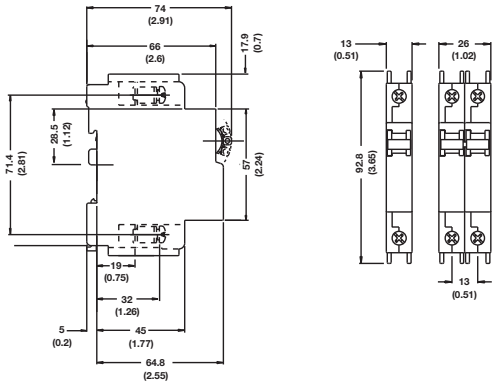
Sample trip characteristics - KM

	125%	150%	200%	400%	600%	800%	1000%
minimum (sec)	15	8	4	0.7	0.09	0.007	0.005
maximum (sec)	300	90	28	4	1.5	0.6	0.4

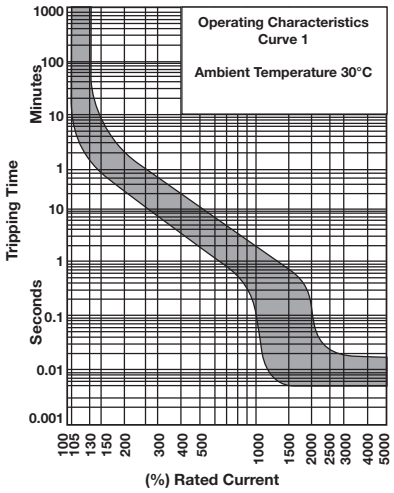
Although the 9926 series uses a magnetic only trip mechanism, CSA testing indicates a trip characteristic similar to thermal magnetic trip mechanisms. No de-rating is required at elevated temperatures.

Additional trip curves and amp ratings are available upon request.

9926 Series AC Version - dimensions in mm (in.)

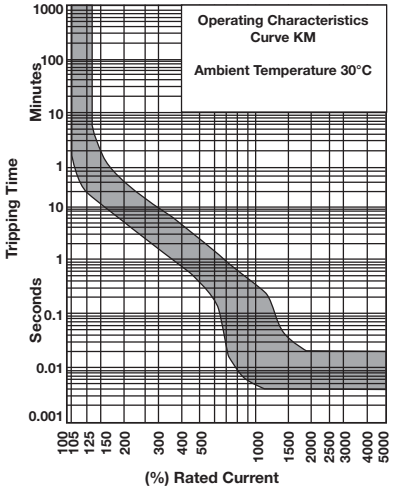


9926 Series–AC version Trip Curve



Trip Curve 1 applies to the following part numbers where "XX" is the current rating:
Single Pole— **99262512XX** Double Pole— **99262522XX**

9926 Series–AC version Trip Curve



9926 Series Branch Rated Circuit Breakers–AC Version with Contacts

Circuit Breakers with Auxiliary switch, Trip alarm, Combination of both

- AC voltages (120/240V)
- Single and double pole versions
- cULus listed according to UL489 and C22.2 No. 5.02, CE, VDE
- Factory fitted auxiliary or trip alarm
- Compact 6.5mm width
- Attached to right hand side of circuit breaker

9926 Series Single Pole w/ Auxiliary Contact†

9926 Series Single Pole Trip (Alarm Contact)

9926 Series Single Pole Combination (Auxiliary & Alarm Contact)†

Technical Data	
Voltage	120/240 VAC, 50/60Hz
Current	
minimum	0.5A
maximum	25A
Interrupting capacity	10,000A
Dielectric strength	1500V, 50/60Hz
Insulation resistance	100MΩ
Operating life	10000 mechanical operations
Operating temperature	-40…+65°C
Wire size*	
0.5-15A:	14AWG min., 10AWG max.
20-25A:	10AWG min.
Torque	20 in.-lb
Approval	
cULus listed according to UL489 and C22.2 No. 5.02, CE, VDE	

†UL 489 listed
(5A, 250 VAC; 0.5A, 80 VDC Auxiliary; 0.5A, 125 VDC Trip Alarm)

IEC 60947-5-1 Approved
(5A, 250 VAC; 0.5A, 110 VDC Auxiliary; 0.5A, 125 VDC Trip Alarm)

*Wire sizes: gauges specified are the minimum allowable as per CSA and UL standards.

The 9926 circuit breakers do not have provisions for marking tags. A possible solution is to cut the adhesive SchS2 tag rail to length (approximately 20 mm on a single pole unit so the current rating remains visible or approximately 30 mm on a two pole unit). The SchS2 accepts DEK, WS and ESG 8/17 marking tags. The part number for adhesive SchS2 is **1720600000**.

Type: Single Pole Aux (up to 120 VAC)

Current Ratings (amps)	Part No.	Description
1	**9926261001**	QL-A-1-13-DM-KM-1
2	**9926261002**	QL-A-1-13-DM-KM-2
5	**9926261005**	QL-A-1-13-DM-KM-5
10	**9926261010**	QL-A-1-13-DM-KM-10
15	**9926261015**	QL-A-1-13-DM-KM-15
20	**9926261020**	QL-A-1-13-DM-KM-20
25	**9926261025**	QL-A-1-13-DM-KM-25

Type: Single Pole Trip (up to 120 VAC)

Current Ratings (amps)	Part No.	Description
1	**9926271001**	QL-T-1-13-DM-KM-1
2	**9926271002**	QL-T-1-13-DM-KM-2
5	**9926271005**	QL-T-1-13-DM-KM-5
10	**9926271010**	QL-T-1-13-DM-KM-10
15	**9926271015**	QL-T-1-13-DM-KM-15
20	**9926271020**	QL-T-1-13-DM-KM-20
25	**9926271025**	QL-T-1-13-DM-KM-25

Type: Single Pole Combo (up to 120 VAC)

Current Ratings (amps)	Part No.	Description
1	**9926281001**	QL-AT-1-13-DM-KM-1
2	**9926281002**	QL-AT-1-13-DM-KM-2
5	**9926281005**	QL-AT-1-13-DM-KM-5
10	**9926281010**	QL-AT-1-13-DM-KM-10
15	**9926281015**	QL-AT-1-13-DM-KM-15
20	**9926281020**	QL-AT-1-13-DM-KM-20
25	**9926281025**	QL-AT-1-13-DM-KM-25

9926 Series Double Pole w/ Auxiliary Contact†

9926 Series Double Pole Trip (Alarm Contact)

9926 Series Double Pole Combination (Auxiliary & Alarm Contact)†

Type: Double Pole Aux (up to 240 VAC)

Current Ratings (amps)	Part No.	Description
1	**9926262001**	QL-A-2-13-DM-KM-1
2	**9926262002**	QL-A-2-13-DM-KM-2
5	**9926262005**	QL-A-2-13-DM-KM-5
10	**9926262010**	QL-A-2-13-DM-KM-10
15	**9926262015**	QL-A-2-13-DM-KM-15
20	**9926262020**	QL-A-2-13-DM-KM-20
25	**9926262025**	QL-A-2-13-DM-KM-25

Type: Double Pole Trip (up to 240 VAC)

Current Ratings (amps)	Part No.	Description
1	**9926272001**	QL-T-2-13-DM-KM-1
2	**9926272002**	QL-T-2-13-DM-KM-2
5	**9926272005**	QL-T-2-13-DM-KM-5
10	**9926272010**	QL-T-2-13-DM-KM-10
15	**9926272015**	QL-T-2-13-DM-KM-15
20	**9926272020**	QL-T-2-13-DM-KM-20
25	**9926272025**	QL-T-2-13-DM-KM-25

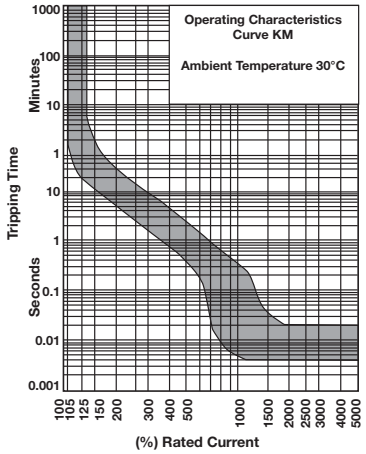
Type: Double Pole Combo (up to 240 VAC)

Current Ratings (amps)	Part No.	Description
1	**9926282001**	QL-AT-2-13-DM-KM-1
2	**9926282002**	QL-AT-2-13-DM-KM-2
5	**9926282005**	QL-AT-2-13-DM-KM-5
10	**9926282010**	QL-AT-2-13-DM-KM-10
15	**9926282015**	QL-AT-2-13-DM-KM-15
20	**9926282020**	QL-AT-2-13-DM-KM-20
25	**9926282025**	QL-AT-2-13-DM-KM-25

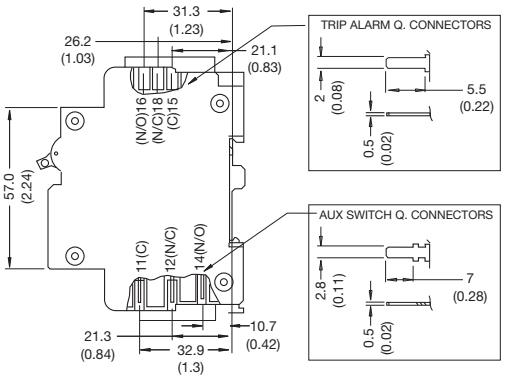
9926 Series–AC version Trip Curve

Trip Curves—Hydraulic Magnetic Type Typical time/current characteristics at 30°C

Additional trip curves and amp ratings are available upon request.



Dual Mount Dimensions in mm (in.)



Circuit Breakers Hydraulic Magnetic Type

- Single pole versions only
- U2 trip curve for general purpose applications
- 80 and 125 VDC
- Up to 60A
- Just 13 mm wide
- Mounts on 35mm DIN-rail
- UL 489A listed
- VDE

9926 Series Single Pole (80 VDC)

9926 Series Single Pole (125 VDC)

Ordering Data

Type: Single Pole (80 VDC)

Current Ratings (amps)	Part No.	Description
0.5	**9926251900**	QY-1-13-DM-U2-0.5
1	**9926251901**	QY-1-13-DM-U2-01
2	**9926251902**	QY-1-13-DM-U2-02
3	**9926251903**	QY-1-13-DM-U2-03
4	**9926251904**	QY-1-13-DM-U2-04
5	**9926251905**	QY-1-13-DM-U2-05
10	**9926251910**	QY-1-13-DM-U2-10
15	**9926251915**	QY-1-13-DM-U2-15
20	**9926251920**	QY-1-13-DM-U2-20
25	**9926251925**	QY-1-13-DM-U2-25
30	**9926251930**	QY-1-13-DM-U2-30
35	**9926251935**	QY-1-13-DM-U2-35
40	**9926251940**	QY-1-13-DM-U2-40
45	**9926251945**	QY-1-13-DM-U2-45
50	**9926251950**	QY-1-13-DM-U2-50
60	**9926251960**	QY-1-13-DM-U2-60

Type: Single Pole (125 VDC)

Current Ratings (amps)	Part No.	Description
1	**9926251801**	QY-1-13-DM-U2-01-B1
2	**9926251802**	QY-1-13-DM-U2-02-B1
3	**9926251803**	QY-1-13-DM-U2-03-B1
4	**9926251804**	QY-1-13-DM-U2-04-B1
5	**9926251805**	QY-1-13-DM-U2-05-B1
10	**9926251810**	QY-1-13-DM-U2-10-B1
15	**9926251815**	QY-1-13-DM-U2-15-B1
20	**9926251820**	QY-1-13-DM-U2-20-B1
25	**9926251825**	QY-1-13-DM-U2-25-B1
30	**9926251830**	QY-1-13-DM-U2-30-B1
35	**9926251835**	QY-1-13-DM-U2-35-B1
40	**9926251840**	QY-1-13-DM-U2-40-B1
45	**9926251845**	QY-1-13-DM-U2-45-B1
50	**9926251850**	QY-1-13-DM-U2-50-B1
60	**9926251860**	QY-1-13-DM-U2-60-B1

Accessories

Type	Part No.
Bus-bar (1 pole, insulated 1m)	**67101904**
Bus bar end cap, 1 pole	**67101973**
Power lug, straight	**67101960**
Power lug, 90°	**67101961**
Lock-out handle	**67101913**

Technical Data	
Voltage	80,125 VDC
Current	
minimum	0.5 A
maximum	60 A
Interrupting capacity	10,000 A
Dielectric strength	1500 V, 50/60 Hz
Insulation resistance	100 MΩ
Operating life	10000 mechanical operations
Operating temperature	-40…+65°C
Wire size*	
1-15A:	14 AWG min., 10 AWG max.
20-25A:	10 AWG min.
Torque	20 in.-lb
Approval	
UL 489A Listed, CE, VDE	

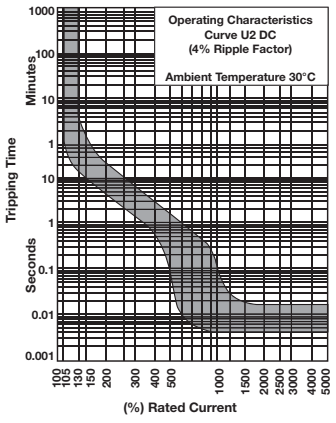
*Wire sizes: gauges specified are the minimum allowable as per CSA and UL standards.

The 9926 circuit breakers do not have provisions for marking tags. A possible solution is to cut the adhesive SchS2 tag rail to length (approximately 20 mm on a single pole unit so the current rating remains visible or approximately 30 mm on a two pole unit). The SchS2 accepts DEK, WS and ESG 8/17 marking tags. The part number for adhesive SchS2 is **1720600000.**

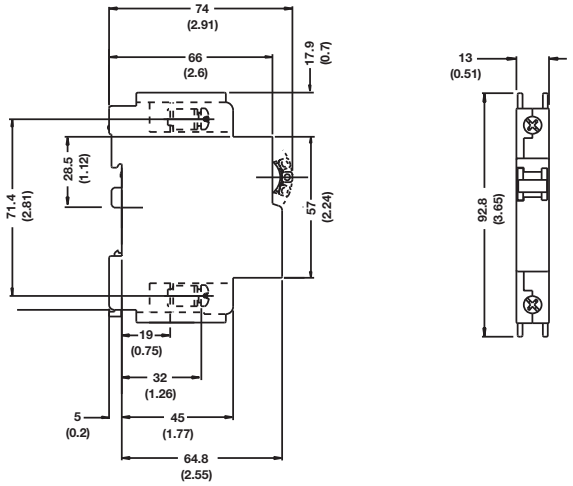
9926 Series–DC version Trip Curve

Trip Curves—Hydraulic Magnetic Type Typical time/current characteristics at 30ºC

Additional trip curves and amp ratings are available upon request.



Dimensions in mm (in.)



9926 Series Supplemental Circuit Breakers

Circuit Breakers Hydraulic Magnetic Type

- AC Voltages 277/480V
- Trip curve 2 for general purpose applications
- UL 1077 recognized
- VDE approved and CE marked
- Just 13 mm wide
- Mounts to 35 mm DIN-rail
- Factory fitted auxiliary or trip alarm
- Single, double and triple pole versions

9926 Series Single Pole

9926 Series Double Pole

9926 Series Triple Pole

Ordering Data

Type: Single Pole (up to 277 VAC)

Current Ratings (amps)	Part No.	Description
1	**9926251501**	QZ-1-13-D-2-01
2	**9926251502**	QZ-1-13-D-2-02
3	**9926251503**	QZ-1-13-D-2-03
4	**9926251504**	QZ-1-13-D-2-04
5	**9926251505**	QZ-1-13-D-2-05
6	**9926251506**	QZ-1-13-D-2-06
8	**9926251508**	QZ-1-13-D-2-08
10	**9926251510**	QZ-1-13-D-2-10
15	**9926251515**	QZ-1-13-D-2-15
20	**9926251520**	QZ-1-13-D-2-20
25	**9926251525**	QZ-1-13-D-2-25
35	**9926251535**	QZ-1-13-D-2-35
40	**9926251540**	QZ-1-13-D-2-40
50	**9926251550**	QZ-1-13-D-2-50
60	**9926251560**	QZ-1-13-D-2-60

Type: Double Pole (up to 480 VAC)

Current Rating (amps)	Part No.	Description
1	**9926252501**	QZ-2-13-D-2-01
2	**9926252502**	QZ-2-13-D-2-02
4	**9926252504**	QZ-2-13-D-2-04
5	**9926252505**	QZ-2-13-D-2-05
6	**9926252506**	QZ-2-13-D-2-06
10	**9926252510**	QZ-2-13-D-2-10
15	**9926252515**	QZ-2-13-D-2-15
20	**9926252520**	QZ-2-13-D-2-20
25	**9926252525**	QZ-2-13-D-2-25
30	**9926252530**	QZ-2-13-D-2-30
35	**9926252535**	QZ-2-13-D-2-35
40	**9926252540**	QZ-2-13-D-2-40
50	**9926252550**	QZ-2-13-D-2-50
60	**9926252560**	QZ-2-13-D-2-60

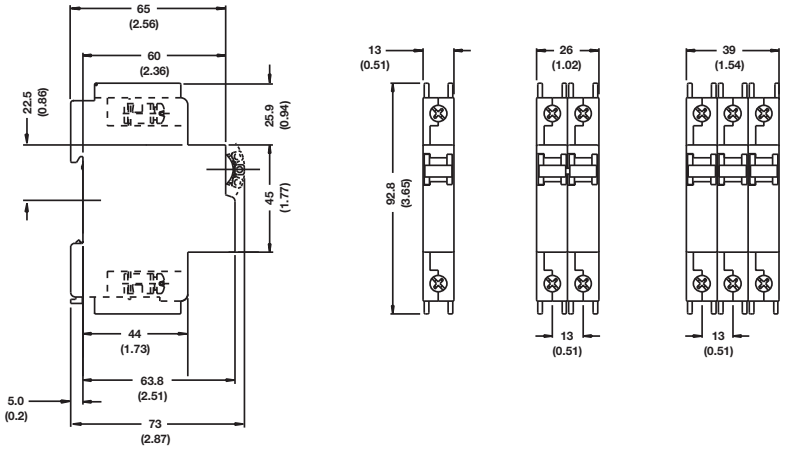
Type: Triple Pole (up to 480 VAC)

Current Rating (amps)	Part No.	Description
10	**9926253510**	QZ-3-13-D-2-10
15	**9926253515**	QZ-3-13-D-2-15
20	**9926253520**	QZ-3-13-D-2-20
25	**9926253525**	QZ-3-13-D-2-25
30	**9926253530**	QZ-3-13-D-2-30
40	**9926253540**	QZ-3-13-D-2-40
50	**9926253550**	QZ-3-13-D-2-50
60	**9926253560**	QZ-3-13-D-2-60

Accessories

Type	Part No.
Bus bar (1 pole, insulated 1m)	**67101904**
Bus bar (2 pole, insulated 1m)	**67101972**
Bus bar (3 pole, insulated 1m)	**67101971**
Bus bar end cap, 1 pole	**67101973**
Bus bar end cap, 2 pole or 3 pole	**67101974**
Power lug, straight	**67101960**
Power lug, 90°	**67101961**
Lock-out handle	**67101913**

9926 Series Supplemental – dimensions in mm (in.)



Technical Data

Voltage	277/480 VAC @ 50/60 Hz
Current	
minimum	0.5 A
maximum	60 A
Interrupting capacity	5 kA @ 277/480 V, 5 kA @ 120 V, 5 kA @ 240 V
Dielectric strength	1500 V, 50/60 Hz
Insulation resistance	100 MΩ
Operating life	10000 mechanical operations
Operating temperature	-40…+65°C
Wire size*	
1-15A:	14 AWG min., 10 AWG max.
20-25A:	10 AWG min.
Torque	20 in.-lb

Approval

†UL 1077 Recognized, VDE (EN 60947-2) Approved, CSA C22.2 No. 235, CE Marked

*Wire sizes: gauges specified are the minimum allowable as per CSA and UL standards.

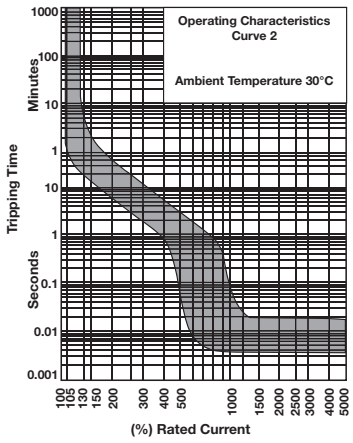
The 9926 circuit breakers do not have provisions for marking tags. A possible solution is to cut the adhesive SchS2 tag rail to length (approximately 20 mm on a single pole unit so the current rating remains visible or approximately 30 mm on a two pole unit).The SchS2 accepts DEK, WS and ESG 8/17 marking tags.
The part number for adhesive SchS2 is **1720600000**.

†cURus recognized to UL1077 and C22.2 No. 235

9926 Series–Supplemental Trip Curve

Trip Curves—Hydraulic Magnetic Type Typical time/current characteristics at 30ºC

Additional trip curves and amp ratings are available upon request.



Circuit Breakers
Auxiliary switch, Trip alarm, Combination of both

- AC Voltages 277/480V
- Trip curve 2 for general purpose applications
- UL 1077 recognized
- VDE approved and CE marked
- Just 13 mm wide
- Mounts to 35 mm DIN-rail
- Factory fitted auxiliary or trip alarm
- Single, double and triple pole versions

Technical Data

Voltage	277/480 VAC @ 50/60 Hz
Current	
minimum	0.5 A
maximum	60 A
Interrupting capacity	5 kA @ 277/480 V, 5 kA @ 120 V, 5 kA @ 240 V
Dielectric strength	1500 V, 50/60 Hz
Insulation resistance	100 MΩ
Operating life	10000 mechanical operations
Operating temperature	-40…+65°C
Wire size*	
1-15A:	14 AWG min., 10 AWG max.
20-25A:	10 AWG min.
Torque	20 in.-lb

Approval

†UL 1077 Recognized, VDE (EN 60947-2) Approved, CSA C22.2 No. 235, CE Marked

‡UL 489 listed
(5A, 250 VAC; 0.5A, 80 VDC Auxiliary; 0.5A, 125 VDC Trip Alarm)

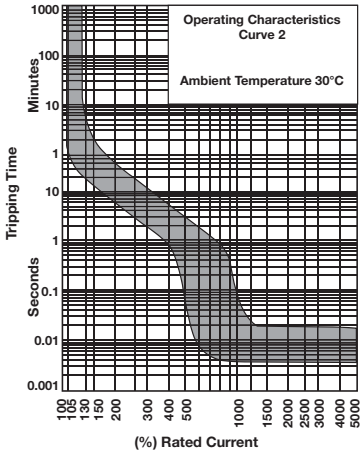
IEC 60947-5-1 Approved
(5A, 250 VAC; 0.5A, 110 VDC Auxiliary; 0.5A, 125 VDC Trip Alarm)

*Wire sizes: gauges specified are the minimum allowable as per CSA and UL standards.

The 9926 circuit breakers do not have provisions for marking tags. A possible solution is to cut the adhesive SchS2 tag rail to length (approximately 20 mm on a single pole unit so the current rating remains visible or approximately 30 mm on a two pole unit). The SchS2 accepts DEK, WS and ESG 8/17 marking tags.The part number for adhesive SchS2 is **1720600000**.

9926 Series–Supplemental Trip Curve

Trip Curves—Hydraulic Magnetic Type Typical time/current characteristics at 30ºC



†cURus recognized to UL1077 and C22.2 No. 235

9926 Series Single Pole w/ Auxiliary Contact‡

Type: Single Pole Aux (up to 277 VAC)

Current Ratings (amps)	Part No.	Description
1	**9926261501**	QZ-A-1-13-D-2-01
2	**9926261502**	QZ-A-1-13-D-2-02
5	**9926261505**	QZ-A-1-13-D-2-05
10	**9926261510**	QZ-A-1-13-D-2-10
15	**9926261515**	QZ-A-1-13-D-2-15
20	**9926261520**	QZ-A-1-13-D-2-20
25	**9926261525**	QZ-A-1-13-D-2-25

9926 Series Single Pole Trip (Alarm Contact)

Type: Single Pole Trip (up to 277 VAC)

Current Ratings (amps)	Part No.	Description
1	**9926271501**	QZ-T-1-13-D-2-01
2	**9926271502**	QZ-T-1-13-D-2-02
5	**9926271505**	QZ-T-1-13-D-2-05
10	**9926271510**	QZ-T-1-13-D-2-10
15	**9926271515**	QZ-T-1-13-D-2-15
20	**9926271520**	QZ-T-1-13-D-2-20
25	**9926271525**	QZ-T-1-13-D-2-25

9926 Series Single Pole Combination (Auxiliary & Alarm Contact)‡

Type: Single Pole Combo (up to 277 VAC)

Current Ratings (amps)	Part No.	Description
1	**9926281501**	QZ-AT-1-13-D-2-01
2	**9926281502**	QZ-AT-1-13-D-2-02
5	**9926281505**	QZ-AT-1-13-D-2-05
10	**9926281510**	QZ-AT-1-13-D-2-10
15	**9926281515**	QZ-AT-1-13-D-2-15
20	**9926281520**	QZ-AT-1-13-D-2-20
25	**9926281525**	QZ-AT-1-13-D-2-25

9926 Series Double Pole w/ Auxiliary Contact‡

Type: Double Pole Aux (up to 480 VAC)

Current Ratings (amps)	Part No.	Description
1	**9926262501**	QZ-A-2-13-D-2-01
2	**9926262502**	QZ-A-2-13-D-2-02
5	**9926262505**	QZ-A-2-13-D-2-05
10	**9926262510**	QZ-A-2-13-D-2-10
15	**9926262515**	QZ-A-2-13-D-2-15
20	**9926262520**	QZ-A-2-13-D-2-20
25	**9926262525**	QZ-A-2-13-D-2-25

9926 Series Double Pole Trip (Alarm Contact)

Type: Double Pole Trip (up to 480 VAC)

Current Ratings (amps)	Part No.	Description
1	**9926272501**	QZ-T-2-13-D-2-01
2	**9926272502**	QZ-T-2-13-D-2-02
5	**9926272505**	QZ-T-2-13-D-2-05
10	**9926272510**	QZ-T-2-13-D-2-10
15	**9926272515**	QZ-T-2-13-D-2-15
20	**9926272520**	QZ-T-2-13-D-2-20
25	**9926272525**	QZ-T-2-13-D-2-25

9926 Series Double Pole Combination (Auxiliary & Alarm Contact)‡

Type: Double Pole Combo (up to 480 VAC)

Current Ratings (amps)	Part No.	Description
1	**9926282501**	QZ-AT-2-13-D-2-01
2	**9926282502**	QZ-AT-2-13-D-2-02
5	**9926282505**	QZ-AT-2-13-D-2-05
10	**9926282510**	QZ-AT-2-13-D-2-10
15	**9926282515**	QZ-AT-2-13-D-2-15
20	**9926282520**	QZ-AT-2-13-D-2-20
25	**9926282525**	QZ-AT-2-13-D-2-25

9926 Series Triple Pole w/ Auxiliary Contact‡

Type: Triple Pole Aux (up to 480 VAC)

Current Ratings (amps)	Part No.	Description
1	**9926263501**	QZ-A-3-13-D-2-01
2	**9926263502**	QZ-A-3-13-D-2-02
5	**9926263505**	QZ-A-3-13-D-2-05
10	**9926263510**	QZ-A-3-13-D-2-10
15	**9926263515**	QZ-A-3-13-D-2-15
20	**9926263520**	QZ-A-3-13-D-2-20
25	**9926263525**	QZ-A-3-13-D-2-25

9926 Series Triple Pole Trip (Alarm Contact)

Type: Triple Pole Trip (up to 480 VAC)

Current Ratings (amps)	Part No.	Description
1	**9926273501**	QZ-T-3-13-D-2-01
2	**9926273502**	QZ-T-3-13-D-2-02
5	**9926273505**	QZ-T-3-13-D-2-05
10	**9926273510**	QZ-T-3-13-D-2-10
15	**9926273515**	QZ-T-3-13-D-2-15
20	**9926273520**	QZ-T-3-13-D-2-20
25	**9926273525**	QZ-T-3-13-D-2-25

9926 Series Triple Pole Combination (Auxiliary & Alarm Contact)‡

Type: Triple Pole Combo (up to 480 VAC)

Current Ratings (amps)	Part No.	Description
1	**9926283501**	QZ-AT-3-13-D-2-01
2	**9926283502**	QZ-AT-3-13-D-2-02
5	**9926283505**	QZ-AT-3-13-D-2-05
10	**9926283510**	QZ-AT-3-13-D-2-10
15	**9926283515**	QZ-AT-3-13-D-2-15
20	**9926283520**	QZ-AT-3-13-D-2-20
25	**9926283525**	QZ-AT-3-13-D-2-25

9926 Series Supplemental Circuit Breakers–GFCI

Ground Fault Current Interrupt

- CE approved
- UL1077 and UL1053 recognized
- Small frame size (26mm wide)
- Single pole plus switched neutral ground leakage protection
- Trip point is unaffected by ambient temperature
- Current ratings up to 50A
- Trip indication (mid trip handle position)
- Trip curve 2 for general purpose applications

9926 Series GFCI

Ordering Data

Type: Single Pole GFCI

Current Ratings (amps)	Part No.	Description
5	**9926291105**	QF17A2505 - CB W/GFI
10	**9926291110**	QF17A2510 - CB W/GFI
15	**9926291115**	QF17A2515 - CB W/GFI
20	**9926291120**	QF17A2520 - CB W/GFI
25	**9926291125**	QF17A2525 - CB W/GFI
30	**9926291130**	QF17A2530 - CB W/GFI
50	**9926291150**	QF17A2550 - CB W/GFI

Technical Data

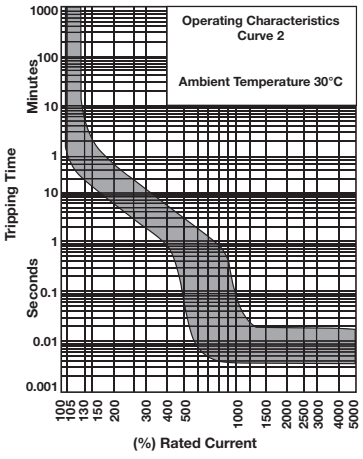
Standard Ampere Ratings (A)	5 to 50A
Sensitivity (mA)	30 (CE) / 22 (UL)
Number of Poles	1 + N
Equipment Type	Ground Leakage/GFCS
Rated Voltage (V)	230 (CE) / 240 (UL)
Rated Interrupting/ Withstand Capacity (kA)	5 kA / –
Weight (kg)	0.26
Trip Curve (standard)	2
Operating Temperature	-40 to +65ºC

Approval

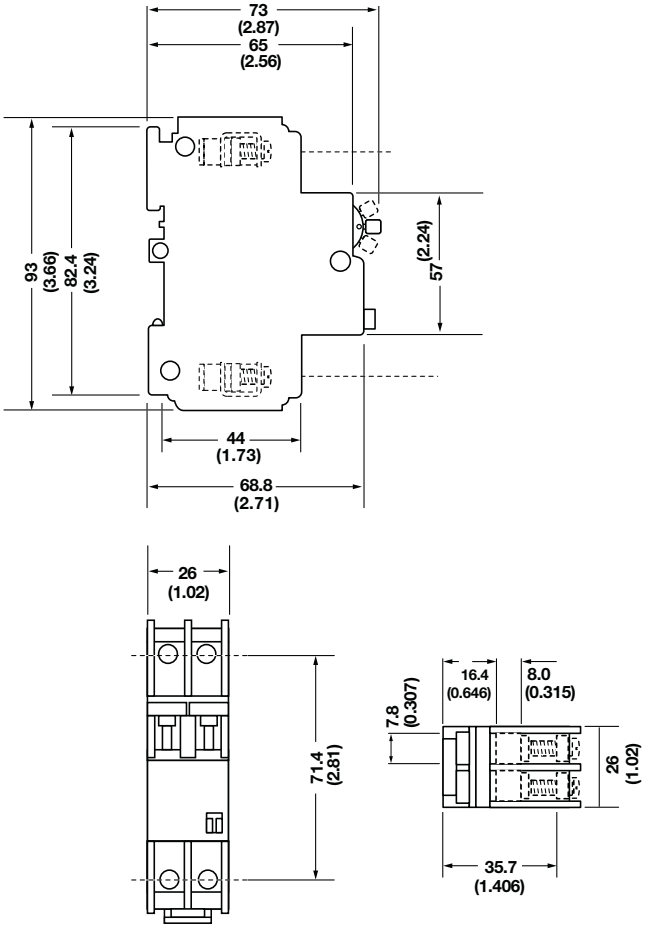
UL 1077 and UL 1053, CE

9926 Series–AC version Trip Curve

Trip Curves—Hydraulic Magnetic Type Typical time/current characteristics at 30ºC



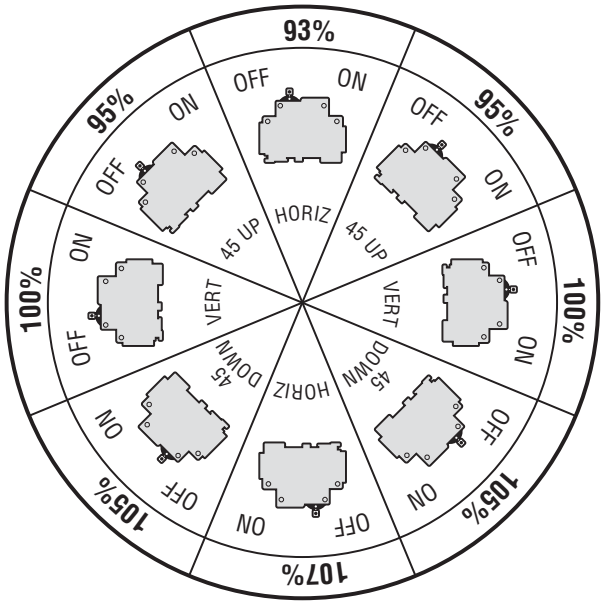
9926 Series GFCI – dimensions in mm (in.)



Mounting Options

If the product is not vertically mounted in the normal DIN-rail mounting orientation, a rating factor must be applied. Figure 1 shows a diagram of the rating factor to apply. The published curves for these circuit breaker products are produced with the circuit breaker in the vertical mounting position. The rating factor only applies to the must hold and must trip points of the curve as the other parts (instantaneous trip point) stay largely unaffected.

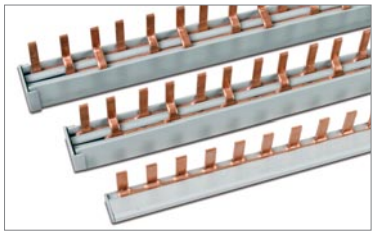
It is important to note that in environments that are exposed to a high degree of vibration, the cables that connect to the circuit breaker must be securely held in place, as the breaker is not designed to carry the weight of the cables. A maximum of 35N can be applied to the terminal area, in a direction perpendicular to the mounting axis.



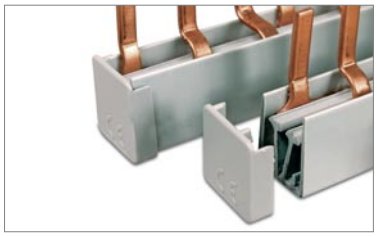
Accessories

Technical Data	
Current Rating	80A max.
Voltage	500V max.
Short Circuit Strength	25kA

Type	Part No.
Bus bar (1 pole, insulated 1m)	**67101904**
Bus bar (2 pole, insulated 1m)	**67101972**
Bus bar (3 pole, insulated 1m)	**67101971**



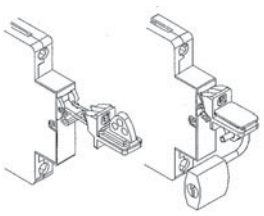
Type	Part No.
Bus bar end cap, 1 pole	**67101973**
Bus bar end cap, 2 pole or 3 pole	**67101974**



Technical Data	
Current Rating	85A max.
Wire Size	10 AWG min., 4 AWG max.
Dimensions	A: 6 mm B: 32 mm

Type	Part No.
Power lug, straight	**67101960**
Power lug, 90°	**67101961**

Type	Part No.
Lock-out handle	**67101913**



Part Number Table - Example

To order 9926 Series Single Pole Circuit Breaker
Part No. 9926251100

- Current Rating of 1.0 amp
- Internal Resistance per Pole of 1.1 ohms
- Trip Curve – M1, Medium (Standard)

9	9	2	6	2	5	1	0	0	0

Amperage
"00" - 0.5A
"01" - 1A
"02" - 2A
/
"60" - 60A

Trip Curves (Types 5-9)
"0" - Branch AC KM (Standard)
"1" - Branch AC OP (Instantaneous)
"2" - Branch AC 1 (Fast)
"3" - Supplemental 9 (Slow)
"4" - Branch 80VDC 1 (Fast)
"5" - Supplemental 2 (Standard)
"6" - Branch 125VDC OP (Instantaneous)
"7" - Branch 80VDC OP (Instantaneous)
"8" - Branch 125VDC U2 (Standard)
"9" - Branch 80VDC U2 (Standard)

Poles
1 Pole
2 Pole
3 Pole

Type
"5" - Base Breaker
"6" - With Auxiliary Contact
"7" - With Trip Alarm Contact
"8" - Combo Aux/Trip Contact
"9" - GFCI

9	9	2	6	2	4	1	0	0	0

Amperage
"00" - 0.5A
"01" - 1A
"02" - 2A
/
"60" - 60A

Trip Curves (Type 4)
"0" - Supplemental 1 (Slow)
"1" - Supplemental 3 (Fast)
"3" - Branch AC 9 (Slow)

Poles
1 Pole
2 Pole
3 Pole

Type
"4" - Base Breaker

CB4200 Series Supplemental Circuit Breakers

Circuit Breakers
Thermal Magnetic Type

- Rated from 0.05 to 16.0 amps
- Available in single or double pole configurations
- Features a tease free design to reduce contact damage
- Offers push button trip/reset function
- Trip free design means the breaker cannot be held closed against a fault
- Mounts on 32mm* or 35mm DIN-rail
- UL 1077 recognized
- CSA C22.2 No. 235

CB4200 Series
Single Pole

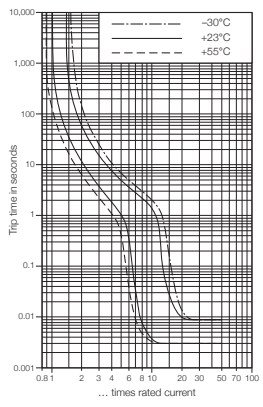
CB4200 Series
Double Pole

Ordering Data	Type: Single Pole		Type: Double Pole	
	Current Ratings (amps)	Part No. TS 35 *For TS 32 Rail, see adapter below	Current Ratings (amps)	Part No. TS 35 *For TS 32 Rail, see adapter below
	0.05	**9124083500**	0.05	**9124223500**
	0.08	**9124653500**	0.08	**9124233500**
	0.1	**9104173500**	0.1	**9120353500**
	0.2	**9104183500**	0.2	**9124243500**
	0.3	**9129813500**	0.3	**9124263500**
	0.4	**9124093500**	0.4	**9124273500**
	0.5	**9101003500**	0.5	**9129583500**
	0.6	**9124113500**	0.6	**9124283500**
	0.7	**9129563500**	0.7	**9124293500**
	0.8	**9101103500**	0.8	**9129593500**
	1.0	**9101203500**	1.0	**9129613500**
	1.2	**9101303500**	1.2	**9129623500**
	1.3	**9124123500**	1.3	**9124313500**
	1.4	**9124133500**	1.4	**9124323500**
	1.5	**9101403500**	1.5	**9129633500**
	1.8	**9124143500**	1.8	**9124333500**
	2.0	**9101503500**	2.0	**9129643500**
	2.5	**9101603500**	2.5	**9129653500**
	3.0	**9101703500**	3.0	**9129663500**
	3.5	**9124163500**	3.5	**9124343500**
	4.0	**9104353500**	4.0	**9129713500**
	4.5	**9124173500**	4.5	**9124353500**
	5.0	**9101803500**	5.0	**9129673500**
	5.5	**9107833500**	5.5	**9124363500**
	6.0	**9103813500**	6.0	**9124373500**
	6.5	**9120043500**	6.5	**9124383500**
	7.0	**9104153500**	7.0	**9124393500**
	8.0	**9103003500**	8.0	**9104673500**
	9.0	**9104613500**	9.0	**9124423500**
	10.0	**9101903500**	10.0	**9129683500**
	11.0	**9124183500**	11.0	**9124433500**
	12.0	**9107843500**	12.0	**9124443500**
	13.0	**9124193500**	13.0	**9124453500**
	14.0	**9107853500**	14.0	**9124463500**
	15.0	**9102003500**	15.0	**9129693500**
	16.0	**9124213500**	16.0	**9124473500**

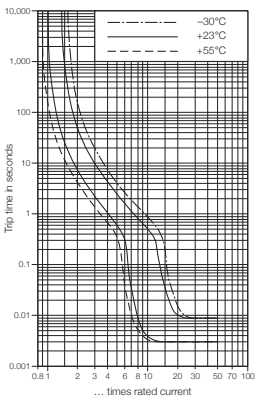
Trip Curves
Thermal Magnetic Type
Typical time/current characteristics at 23°C

CB4200 Series

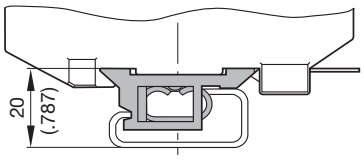
M1+ 0.05 to 7.5 A



M1+ 8 to 16 A

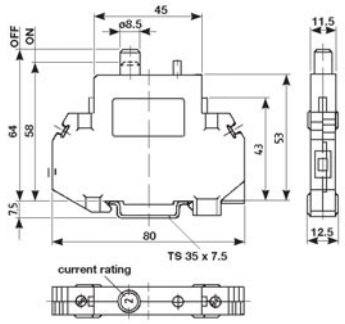


***Adapter foot – dimensions in mm (in.)**

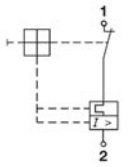


9102100000
TS32 adapter

CB4200 Series
Single Pole

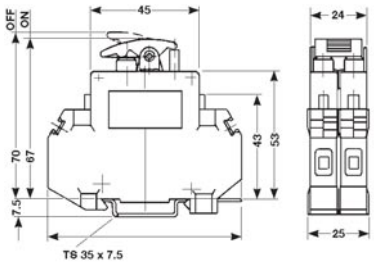


Internal Wiring Diagram

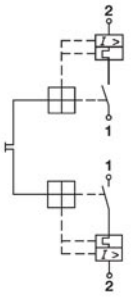


Dimensions in mm

CB4200 Series
Double Pole



Internal Wiring Diagram



Dimensions in mm

Technical Data		
Rated voltage & current†	Voltage Ratings	Current Ratings
UL	AC 250 V, DC 65 V, 50/60 Hz	0.05…16 A
CSA	AC 250 V, DC 65 V, 50/60 Hz	0.05…16 A
VDE	AC 250 V, DC 65 V, 50/60 Hz	0.05…16 A
Creepage resistance	PTI 600 to IEC 112	
Dielectric strength	4,000 VAC; IEC 664 & 664 A	
Insulation resistance	> 100 MΩ (DC 500 V)	
Interrupting capacity	4201-10	Maximum capacity
(VDE 0660, Part 101, P-2)	0.05…0.8 A	Self-limiting
	1…2 A	200 A
	2.5…16 A	400 A
Interrupting capacity; 4201	Rated current	Rated voltage / Maximum capacity
(UL 1077/EN 60934 PC1)	0.05…2.0 A	AC 250 V / 200 A
	2.0…16 A	AC 250 V / 200 A
	20 A	AC 125 V / 400 A
Typical life at 2 x rated current	5,000 operations	
Shock	25 g (11 ms) to IEC 68-2-27, Test Ea	
Torque	1.2 Nm	
Vibration	5 g (57 to 500 Hz / ±0.38 mm, 10 to 57 Hz) to IEC 68-2-6, Test Fc	
Temperature range	-30°C…+55°C (-22°F…+131°F)	
Corrosion	96 hours at 5% salt spray, to IEC 68-2-11, Test Ka	
Humidity	240 hours at 95% RH, to IEC 68-2-3, Test Ca	
Weight	60 g per pole	
Wire size (UL)	#20…8 AWG solid/0.5…6 mm²	

Accessories	Type	Part No.
Jumpers		
Daisy Chain 50*	BDC 50	**9970290000**
Straight CQB** insulated	CQB 2	**9970560000**
	CQB 3	**9970570000**
	CQB 4	**9970580000**
	CQB 10	**9970590000**
Angled CQB** insulated	CQB 2	**9970600000**
	CQB 3	**9970610000**
	CQB 4	**9970620000**
	CQB 10	**9970630000**
Adapter foot (for TS 32 Rail)	MCBAF/TS 32	**9102100000**
Busbar Single pole 1 meter		**6720000227**
Busbar end cap for 6720000227		**6720000225**
Power lug for 6720000227		**6720000226**

Marking Tags		
Note: Part numbers are shown for a single card of pre-printed tags numbered 1-50.	Special print only	WS 8/5 MC **1640750000*****
	Consecutive horizontal	DEK 5/5 **0473460001**
	Consecutive vertical	DEK 5/5 **0473560001**

†Note: Resistive and inductive loads (0.05 - 16 A)
*BDC will accommodate 20 A per pin, 20 A total
**CQB will accommodate 18 A per pin, 18 A total; dedicated to 4201 Series
***Please specify horizontal or vertical print when ordering.
Standard quantity = 144 tags per card.

CB2200 Series Supplemental Circuit Breakers

Circuit Breakers
Thermal Magnetic Type

- Rated from 0.1 to 32.0 amps
- Available in single, double and triple pole configurations
- Offers normally open (N/O) and normally closed (N/C) auxiliary contacts
- Lever-switch trip/reset function
- Mounts on 32mm or 35mm DIN-rail
- UL 1077 recognized
- CSA C22.2 No. 235

CB2200 Series
Single Pole

CB2200 Series
Double Pole

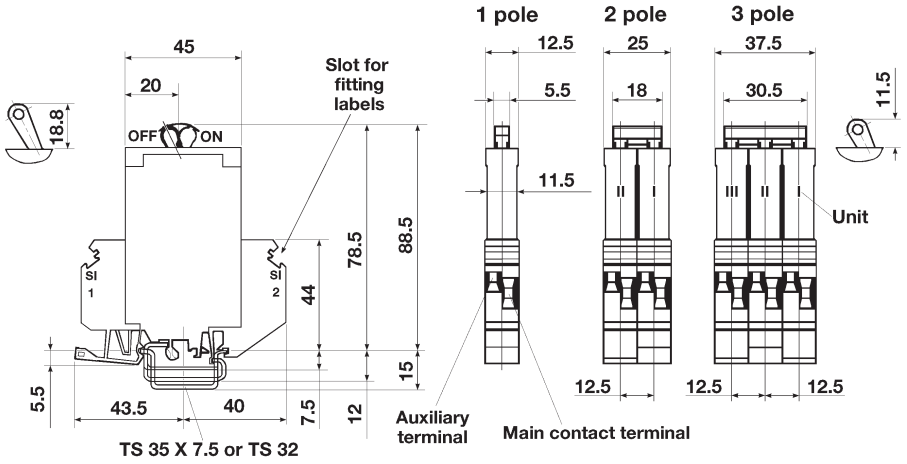
CB2200 Series
Triple Pole

Ordering Data	Type: Single Pole*		Type: Double Pole		Type: Triple Pole	
	Current Ratings (amps)	N/O Aux. Part No.	Current Ratings (amps)	N/O-N/C Part No.	Current Ratings (amps)	N/O-N/C Part No.
	0.1	**9911010005**	0.1	**9912010003**	0.1	**9913010003**
	0.2	**9911020005**	0.2	**9912020003**	0.2	**9913020003**
	0.3	**9911030005**	0.3	**9912030003**	0.3	**9913030003**
	0.4	**9911040005**	0.4	**9912040003**	0.4	**9913040003**
	0.5	**9911050005**	0.5	**9912050003**	0.5	**9913050003**
	0.6	**9911060005**	0.6	**9912060003**	0.6	**9913060003**
	0.8	**9911080005**	0.8	**9912080003**	0.8	**9913080003**
	1.0	**9911100005**	1.0	**9912100003**	1.0	**9913100003**
	1.5	**9911150005**	1.5	**9912150003**	1.5	**9913150003**
	2.0	**9911200005**	2.0	**9912200003**	2.0	**9913200003**
	2.5	**9911250005**	2.5	**9912250003**	2.5	**9913250003**
	3.0	**9911300005**	3.0	**9912300003**	3.0	**9913300003**
	4.0	**9911400005**	4.0	**9912400003**	4.0	**9913400003**
	5.0	**9911500005**	5.0	**9912500003**	5.0	**9913500003**
	6.0	**9911600005**	6.0	**9912600003**	6.0	**9913600003**
	8.0	**9911800005**	8.0	**9912800003**	8.0	**9913800003**
	10	**9921100005**	10	**9922100003**	10	**9923100003**
	12	**9921120005**	12	**9922120003**	12	**9923120003**
	15	**9921150005**	15	**9922150003**	15	**9923150003**
	16	**9921160005**	16	**9922160003**	16	**9923160003**
	18	**9921180005**	18	**9922180003**	18	**9923180003**
	20	**9921200005**	20	**9922200003**	20	**9923200003**
	25	**9921250005**				
	32	**9921320005**				

*All part numbers with N/O Auxiliary Contacts on each pole when the main breaker contact is open (in the OFF position)

Ordering Data	Type: Single Pole		Type: Double Pole		Type: Triple Pole	
	All part numbers with N/C Auxiliary Contacts on each pole when the main breaker contact is open (in the OFF position)					
	Current Ratings (amps)	Part No.	Current Ratings (amps)	Part No.	Current Ratings (amps)	Part No.
	0.1	**9911010000**	0.1	**9912010000**	0.1	**9913010000**
	0.2	**9911020000**	0.2	**9912020000**	0.2	**9913020000**
	0.3	**9911030000**	0.3	**9912030000**	0.3	**9913030000**
	0.4	**9911040000**	0.4	**9912040000**	0.4	**9913040000**
	0.5	**9911050000**	0.5	**9912050000**	0.5	**9913050000**
	0.6	**9911060000**	0.6	**9912060000**	0.6	**9913060000**
	0.8	**9911080000**	0.8	**9912080000**	0.8	**9913080000**
	1.0	**9911100000**	1.0	**9912100000**	1.0	**9913100000**
	1.5	**9911150000**	1.5	**9912150000**	1.5	**9913150000**
	2.0	**9911200000**	2.0	**9912200000**	2.0	**9913200000**
	2.5	**9911250000**	2.5	**9912250000**	2.5	**9913250000**
	3.0	**9911300000**	3.0	**9912300000**	3.0	**9913300000**
	4.0	**9911400000**	4.0	**9912400000**	4.0	**9913400000**
	5.0	**9911500000**	5.0	**9912500000**	5.0	**9913500000**
	6.0	**9911600000**	6.0	**9912600000**	6.0	**9913600000**
	8.0	**9911800000**	8.0	**9912800000**	8.0	**9913800000**
	10	**9921100000**	10	**9922100000**	10	**9923100000**
	12	**9921120000**	12	**9922120000**	12	**9923120000**
	15	**9921150000**	15	**9922150000**	15	**9923150000**
	16	**9921160000**	16	**9922160000**	16	**9923160000**
	18	**9921180000**	18	**9922180000**	18	**9923180000**
	20	**9921200000**	20	**9922200000**	20	**9923200000**
	25	**9921250000**	25	**9922250000**	25	**9923250000**
	32	**9921320000**	32	**9922320000**	32	**9923320000**

CB2200 Series



Dimensions in mm

Technical Data

Rated voltage & current†		
UL	277 / 480 VAC (50/60 Hz); 65 VDC	0.1…32 A
CSA	277 / 480 VAC (50/60 Hz); 65 VDC	0.1…32 A
VDE	250 / 415 VAC / 65 VDC	0.1…32 A
Auxiliary contacts	250 VAC / 65 VDC, 1 A	
Creepage resistance	PTI 600 to IEC 112	
Dielectric strength	3,000 VAC; IEC 664 & 664 A	
Insulation resistance	> 100 MΩ (DC 500 V)	

Interrupting capacity (VDE 0660, Part 101, P-2)	Rated current	Rated voltage	Rupture capacity (3 times)
	0.05…0.8 A	250 / 415 VAC	400 A
	6…32 A	250 / 415 VAC	800 A

Interrupting capacity (UL 1077/EN 60934 PC1)	Rated current	Rated voltage	Max. rupture capacity (3 times)
	0.1…16 A	277 / 480 VAC	5000 A
	20…32 A	277 / 480 VAC	2000 A
	0.1…32 A	65 VDC	2000 A

Typical life at 2 x rated current	5,000 operations
Shock	25 g (11 ms) to IEC 68-2-27, Test Ea
Torque Nm (lb. in.)	0.6 (5.3) Auxiliary contact: 0.5 (4.4)
Vibration	5 g (57 to 500 Hz / ±0.38 mm, 10 to 57 Hz) to IEC 68-2-6, Test Fc
Temperature range	-30…+60°C (-22°F…+140°F)
Corrosion	96 hours at 5% salt spray, to IEC 68-2-11, Test Ka
Humidity	240 hours at 95% RH, to IEC 68-2-3, Test Ca
Weight	Approximately 60 g per pole
Wire size (UL)	max 6 mm²…8 AWG max 1.5 mm²…14 AWG (Aux. contact)

Accessories

	Type	Part No.
Jumpers Daisy Chain 50	BDC 50, 20 A maximum	**9970290000**
Busbars	1 pole (CB2200)	**9986510000**
	2 pole (CB2200)	**9987360000**

Marking Tags

1 2 3 4 5 6	DEK 5/6	**0490360000***
Special print only	DEK 5/6	**0468660001**
Consecutive horizontal	DEK 5/6	**0468760001**
Consecutive vertical		

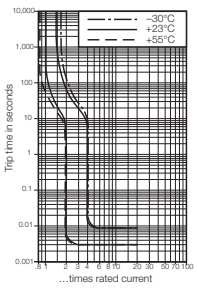
Note: Part numbers shown are for a single card of pre-printed tags numbered 1-50.

†Note: Resistive and inductive loads (0.05 - 16 A)
*Please specify horizontal or vertical print when ordering.

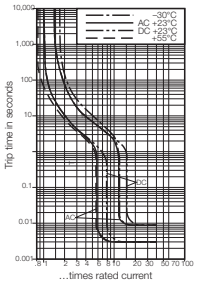
Trip Curves—Thermal Magnetic Type
Typical time/current characteristics at 23ºC

CB2200 Series

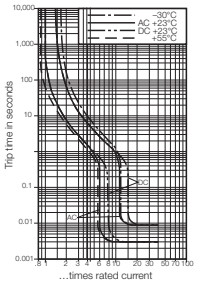
F1 0.1 to 32 A



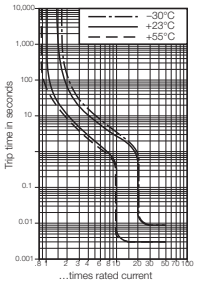
-M1 0.1 to 7.5 A



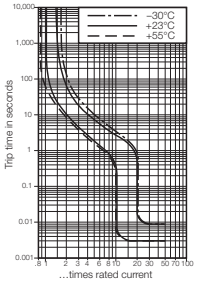
-M1 8 to 32 A



-T1 0.1 to 7.5 A



-T1 8 to 32 A



CB9100 Series Supplemental Circuit Breakers

Circuit Breakers
Thermal Magnetic Type

- Rated from 0.5 to 63 amps
- Available in single, double and triple pole configurations
- Optional auxiliary contacts
- Mounts on 35mm DIN-rail
- UL and CSA approvals
- CSA 277 VAC (1 pole) or 480 VAC (2 and 3 pole)
- 50 VDC (0.5 A to 50 A) 1 pole
- 110 VDC (0.5 A to 50 A) 2 pole

CB9100 Series
Single Pole

CB9100 Series
Double Pole

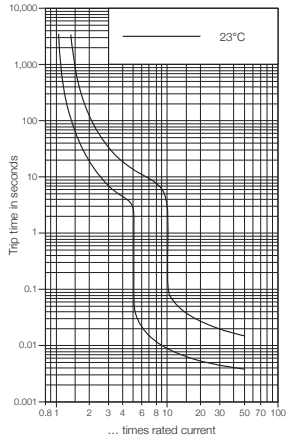
CB9100 Series
Triple Pole

Ordering Data	Type: Single Pole		Type: Double Pole		Type: Triple Pole	
	Current Ratings (amps)	Part No.	Current Ratings (amps)	Part No.	Current Ratings (amps)	Part No.
	0.5	**9925350000**	0.5	**9925650000**	0.5	**9925810000**
	1.0	**9925360000**	1.0	**9925660000**	1.0	**9925820000**
	2.0	**9925380000**	2.0	**9925680000**	2.0	**9925840000**
	3.0	**9925390000**	3.0	**9925690000**	3.0	**9925850000**
	4.0	**9925400000**	4.0	**9925700000**	4.0	**9925860000**
	6.0	**9925410000**	6.0	**9925710000**	6.0	**9925870000**
	10.0	**9925430000**	10.0	**9925730000**	10.0	**9925890000**
	13.0	**9929820000**	13.0	**9929830000**	13.0	**9929840000**
	16	**9925440000**	16	**9925740000**	16	**9925900000**
	20	**9925450000**	20	**9925750000**	20	**9925910000**
	25	**9925460000**	25	**9925760000**	25	**9925920000**
	32	**9925470000**	32	**9925770000**	32	**9925930000**
	40	**9925480000**	40	**9925780000**	40	**9925940000**
	50	**9925490000**	50	**9925790000**	50	**9925950000**
	63	**9925500000**	63	**9925800000**	63	**9925960000**

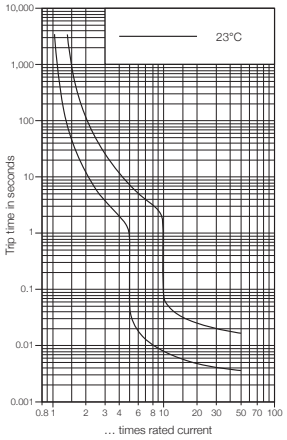
Trip Curves
Thermal Magnetic Type
Typical time/current characteristics at 23°C

CB9100 Series

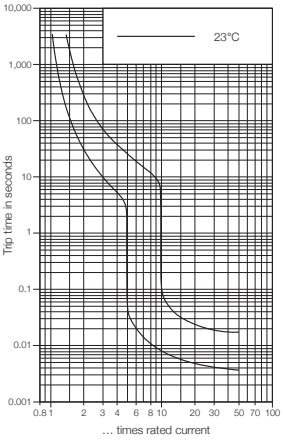
M1 0.5 to 6 A



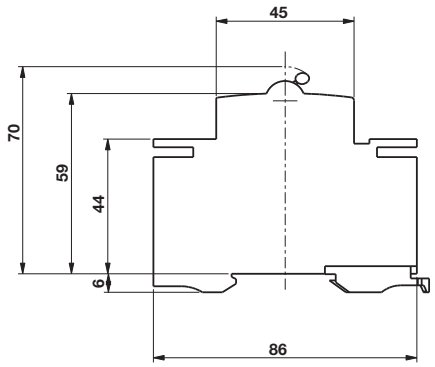
M1 AC 10 to 40 A

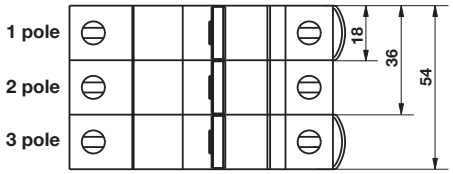


M1 AC 63 A



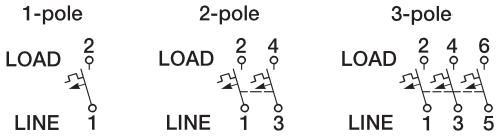
CB9100 Series





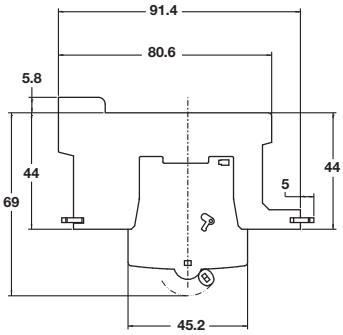
Dimensions in mm

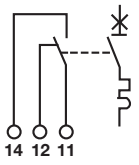
Internal Wiring Diagram



Technical Data				
Rated voltage & current				
UL 1077	277 V (1 pole)	480 V (2 and 3 pole)	50 VDC (1 pole)	110 VDC (2 pole)
CSA C 22.2 No. 235	277 V (1 pole)	480 V (2 and 3 pole)	50 VDC (1 pole)	110 VDC (2 pole)
VDE				
Creepage resistance	PTI 250 to IEC 112			
Insulation resistance	>100 MΩ at 500 VDC			
Interrupting capacity	Current ratings	Interrupting Rupture capacity (3X)	Voltage	
(UL 1077/EN 609334 PC1) 1 pole	0.5...63 A	10,000 A (UL)	277 VAC/50 VDC	
	0.5...32 A	2,000 A (UL)	277 / 480 AC	
	0.5...63 A	6,000 A (UL)	50 VDC (1) pole	
	0.5...50 A	6,000 A (UL)	110 VDC (2) poles	
Mechanical/Electrical endurance	20,000/10,000			
Shock	20 g (10 ms)			
Torque	2 Nm			
Vibration	3 g (10 to 55 Hz)			
Temperature range - operating	-25°C...+55°C (-13°F to 131°F)			
Weight	1 pole (130 g); 2 pole (280 g); 3 pole (430 g)			
Strip length	12 mm			
Auxiliary contact rating	Voltage	Current		
Wire size - #22…12 AWG	AC 220/240	5 A		
	AC 277	3 A		
	DC 24 V	4 A		
	DC 60 V	1 A		
	DC220 V	0.4 A		
Wire size	#18…2 AWG (line); #18…3 AWG (load)			

Auxiliary Contact Modules



Accessories	Type	Current Side/Middle	Part No.
Jumpers	3 pole bus, 10 x 1010 mm, buses (19) 3 phase groupings	80A/100A	**9970330000**
	3 pole bus, 16 x 210 mm, buses (4) 3 phase groupings	120A/130A	**9970340000**
	3 pole bus, 16 x 1010 mm, buses (19) 3 phase groupings	120A/130A	**9970350000**
	1 pole bus, 12 x 210 mm, buses 12 breakers	80A/100A	**9970360000**
	1 pole bus, 12 x 210 mm (insulated), buses 12 breakers	63A	**9991990000**
	Bus bar clamp	130A	**9970370000**
Auxiliary contacts			
SPDT	Auxiliary contacts		**9970300000**
Security hardware	Lock out cover		**9970380000**
Marking Tags			
Adhesive label	ETO 10/26, yellow (26 mm x 10 mm)		**1686401687**

Internal Auxiliary Wiring Diagram