

Description

Switch/thermal trip free circuit breaker (S-type TO CBE to EN 60934) with standard isolator style two button operation. Single button press-to-reset version also available. Both types can be supplied in single pole configuration only, in double pole with single pole protection, and in double pole with protection on both poles. Designed for snap-in panel mounting. There is a choice of push button colour combinations and illumination is optional.

Any one of the following additional function modules can be supplied factory fitted to the rear of the switch/circuit breaker:

- Under voltage release coil (for double pole versions only).
- Magnetic trip coil for short circuit protection.
- Magnetic trip coil for remote relay trip.
- Auxiliary contacts for status signalling.

Approved to CBE standard EN 60934 (IEC 60934).

Meets the requirements regarding fire resistance of EN 60335-1 : 2007-02 Safety of household and similar electrical appliances.

Typical applications

Motors, transformers, solenoids, extra low voltage wiring systems, office machines, electro-medical equipment, power supplies, communications systems, industrial controls.

Standard current ratings and typical internal resistance values

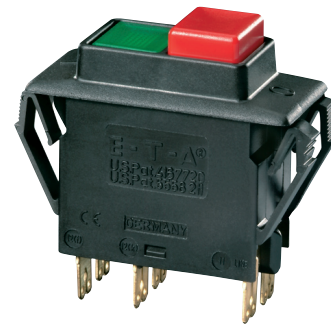
Current rating (A)	Internal resistance per pole (Ω)	Current rating (A)	Internal resistance per pole (Ω)
0.1	94	4	0.0435
0.2	24	4.5	0.0435
0.3	12	5	0.0325
0.4	5.30	6	0.0215
0.5	4.20	7	0.0165
0.6	2.90	8	0.0165
0.8	1.50	10	< 0.02
1	0.9	12	< 0.02
1.2	0.80	14	< 0.02
1.5	0.45	15	< 0.02
2	0.27	16	< 0.02
2.5	0.0785	18	< 0.02
3	0.0595	20	< 0.02
3.5	0.0565		

Illumination voltage/power consumption

operating voltage	power consumption	
	Y + R	G
12 V	2 mA	3.5 mA
24 V	2 mA	3.5 mA
48 V	2 mA	3.5 mA
115 V	0.9 mA	2.8 mA
230 V	0.9 mA	2.8 mA

Approvals

Authority	Voltage ratings	Current ratings
VDE (EN 60934)	AC 240 V; DC 28 V DC 50 V DC 50 V	0.1...20 A 0.1...20 A 2-pole 0.1...10 A 1-pole
UL, CSA	AC 250 V; DC 50 V	0.1...20 A
CCC	AC 250 V; DC 50 V	0.1...20 A



3120-F...

Technical data

For further details please see chapter: Technical Information

Voltage rating	AC 240 V; DC 50 V (AC 415 V to special order) (UL: AC 250 V; DC 50 V)	
Current ratings	0.1...20 A (up to 30 A to special order, single pole only)	
Typical life	1-pole AC 240 V: 0.1...20 A 30,000 operations at 1 x I _N , inductive DC 50 V: 0.1...4 A 30,000 operations at 1 x I _N , inductive 4.5...16 A 30,000 operations at 1 x I _N , resistive DC 28 V: 0.1...20 A 30,000 operations at 1 x I _N , inductive 2-pole AC 415 V: 0.1...16 A 10,000 operations at 1 x I _N , inductive AC 240 V: 0.1...16 A 50,000 operations at 1 x I _N , inductive 17...20 A 30,000 operations at 1 x I _N , inductive DC 50 V: 0.1...16 A 50,000 operations at 1 x I _N , inductive 17...20 A 10,000 operations at 1 x I _N , inductive	
Ambient temperature	-30...+60 °C (-22...+140 °F)	
Insulation co-ordination (IEC 60664 and 60664 A)	rated impulse withstand voltage 2.5 kV	pollution degree 2
	reinforced insulation in operating area	
Dielectric strength (IEC 60664 and 60664A) operating area between poles (2-pole)	test voltage AC 3,000 V	AC 1,500 V
Insulation resistance	> 100 MΩ (DC 500 V)	
Interrupting capacity I _{cn}	0.1...2 A 10 x I _N 2.5...20 A 250 A 2-pole, or 150 A 1-pole	
Interrupting capacity (UL 1077)		
	I _N	U _N
1, 2-pole	0.1...20 A	AC 250 V
1, 2-pole	0.1...20 A	DC 50 V
	I _{nc}	
	5000 A	
	1000 A	
Degree of protection (IEC 60529/DIN 40050)	operating area IP40 terminal area IP00	
Vibration	8 g (57-500 Hz), ± 0.61 mm (10-57 Hz) to IEC 60068-2-6, test Fc 10 frequency cycles/axis	
Shock	30 g (11 ms) to IEC 60068-2-27, test Ea	
Corrosion	96 hours at 5 % salt mist, to IEC 60068-2-11, test Ka	
Humidity	240 hours at 95 % RH, to IEC 60068-2-78, test Cab	
Mass	approx. 33 g (double pole) approx. 27 g (single pole)	

Ordering information

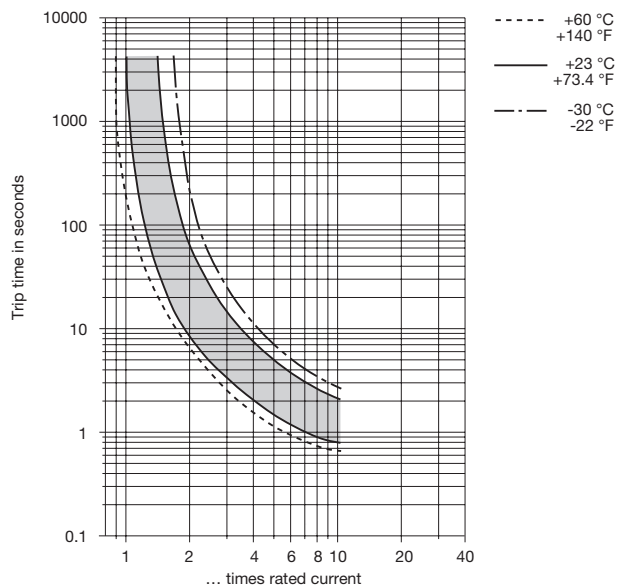
Type No.	
3120	push button switch/circuit breaker
Mounting	
F	snap in frame
Size of frame	
2	flange mounting, special frame for fitting splash cover
3	to fit mounting cut-out 50.5 x 21.5 mm (1.99 x 8.47 in) panel thickness 1 - 6.35 mm (.039 - .250 in)
Number of poles	
1	1-pole, thermally protected
2	2-pole, thermally protected
5	2-pole, 1-pole thermally protected (terminals 11,12k,12i)
Mounting frame design	
F	with 2 push buttons
G	with 1 push button (switch-on only)
Terminal configuration	
P7	blade terminals, standard for curve T1 (thermal circuit breaker)
H7	as P7, terminals 11 and 21 with flat head screws M3.5 - standard for units with undervoltage release module
Characteristic curve	
T1	thermal 1.01 - 1.4 x I _N
Switch style / colour / Illumination	
D 01X	1 push button* black opaque without illumination
D 02X	1 push button* white black opaque without illumination
D 04X	1 push button* red opaque without illumination
D 19XG	1 push button* green translucent with LED illumination
SGRX	2 push buttons green/red opaque with LED illumination
SGRXG	2 push buttons green/red translucent with LED illumination
Illumination voltage range	
1	10 - 14 V DC
2	20 - 28 V DC
3	90 - 140 V AC
4	185 - 275 V AC
Current ratings	
0.1...20 A	
3120 - F 3 2 F - P7 T1 - S GRXG 4 - 10 A ordering example	

N.B.
Switch only versions must be specified with -N7 or -G7 terminals.
Terminals 12(k) and 22 (k) are not fitted.

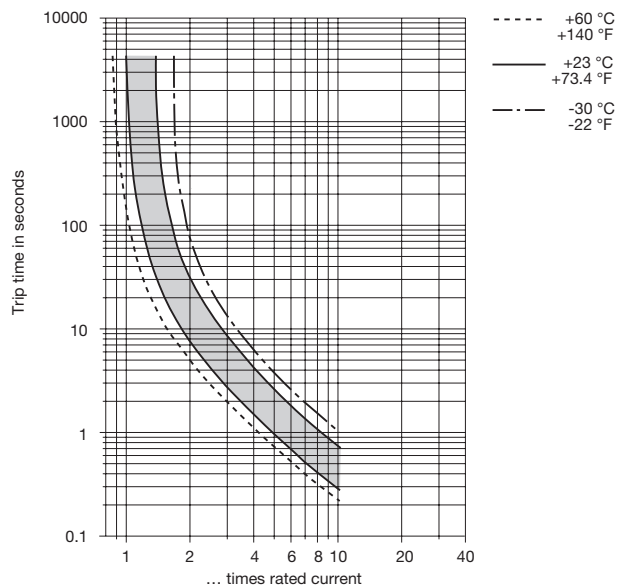
Typical time/current characteristics

single or double pole load

0.1...2 A



2.5...20 A



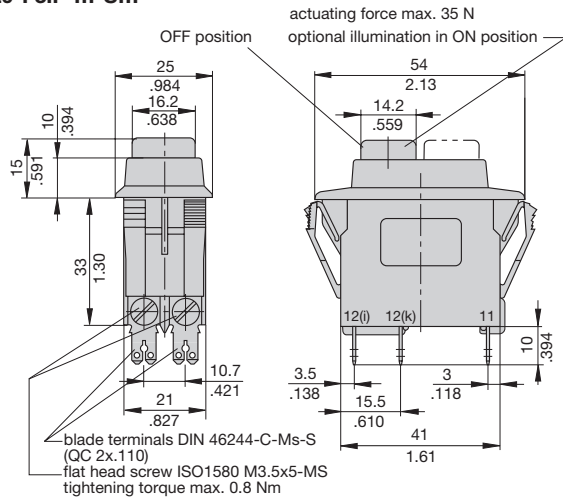
The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping, please multiply the circuit breaker current ratings by the derating factor shown below. See also section Technical information.

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

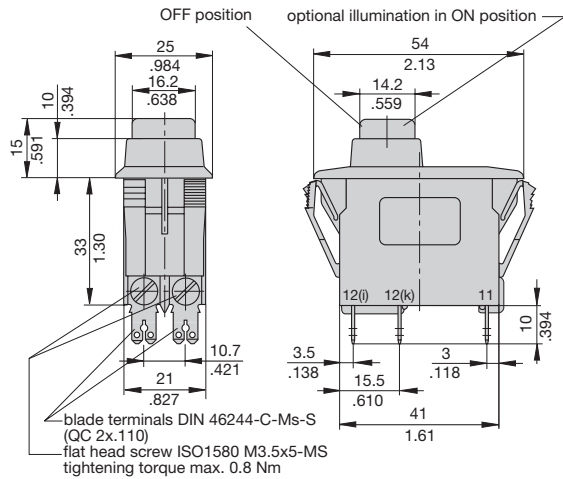
2

Dimensions

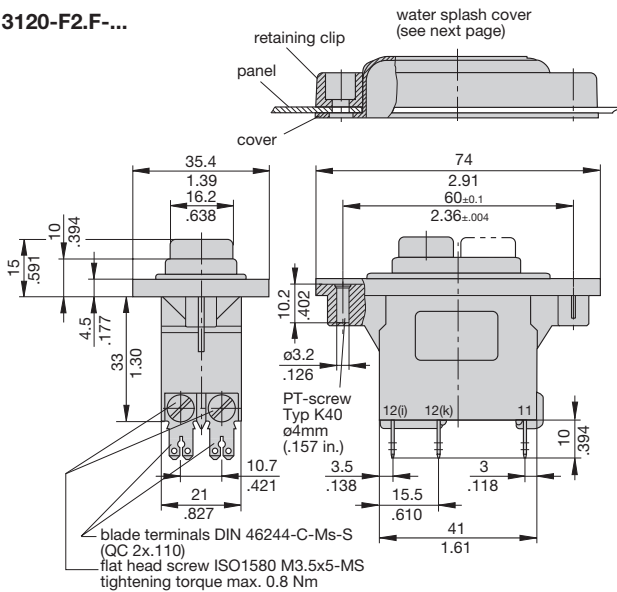
3120-F3.F-...-S...



3120-F3.G-...-D...



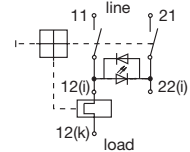
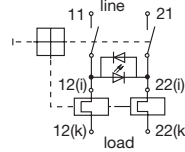
3120-F2.F-...



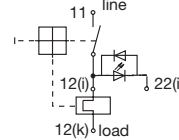
Internal connection diagrams

2-pole, thermally protected on both poles

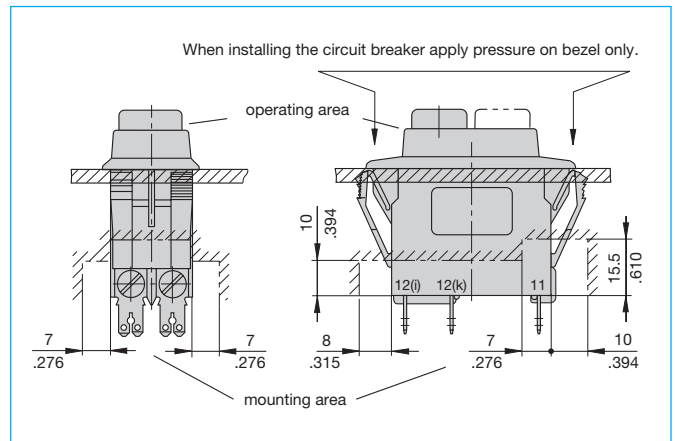
2-pole, thermally protected on one pole only



1-pole, thermally protected

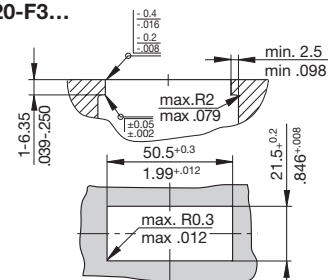


Installation drawing

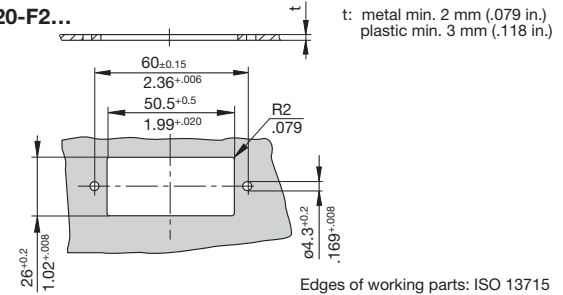


Panel cut-out

3120-F3...



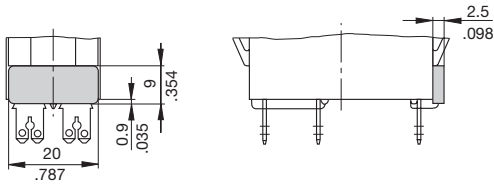
3120-F2...



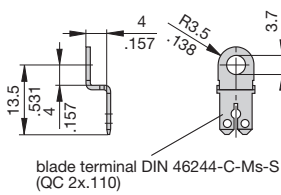
This is a metric design and millimeter dimensions take precedence (mm/inch)

Accessories

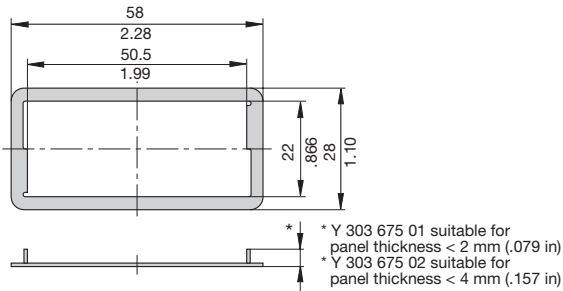
**Insulated cover
Y 303 068 01**



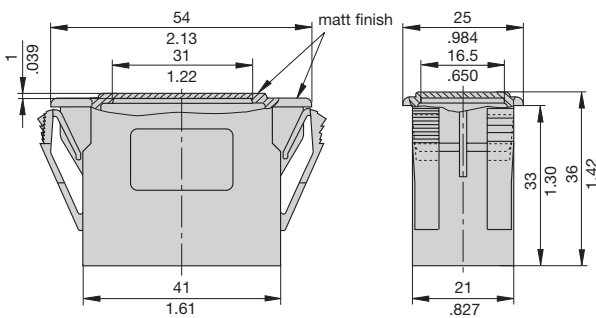
**Terminal adapter
Y 303 862 01**



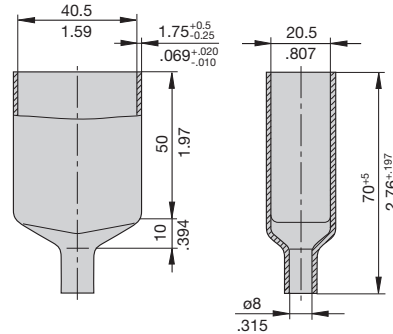
**Spacer for 3120-F3...
Y 303 675 01/02**



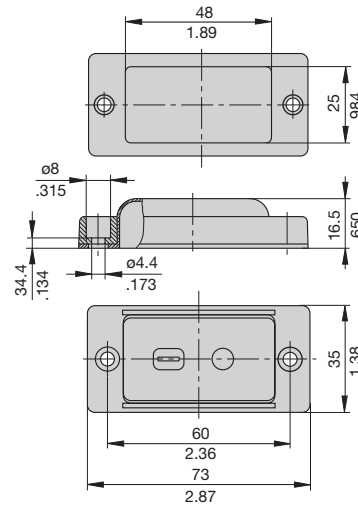
**Blanking piece in -F3 frame
Y 303 885 31**



**Rear terminal shroud black (IP64)
Y 304 275 01**



**Water splash cover, transparent (IP66) for style 3120-F2.F...
X 221 619 01
consisting of
- retaining clip Y 306 551 01
- cover Y 306 001 01**



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

2

Description

A module supplied factory fitted to type 3120-F to provide electrically separate changeover contacts which operate as the main contacts open/wclose. Ideally suited to status signalling and sequence switching.

Typical applications

Monitoring of the switching position of the circuit breaker or any connected load.

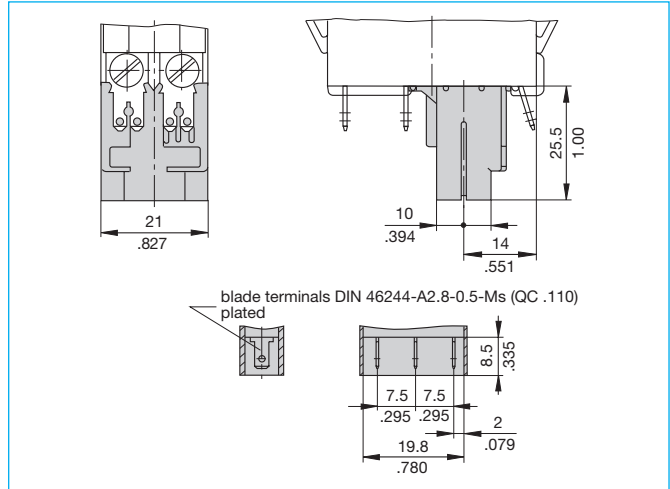
Ordering information

Type No.			
X3120	Module for type 3120 and type 3140		
Function			
S	auxiliary contact module		
Contact configuration			
0	change-over contact		
Terminal design			
1	blade terminals 2.8 x 0.5 (QC .110), silver plated		
Contact rating			
AC	DC (not approved)		
Voltage rating	Current rating	Voltage rating	Current rating
A 10 V-250 V	0.1...4 A	12 V	0.1...4 A
		24 V	0.1...4 A
		60 V	0.1...1 A
		110 V	0.1...0.5 A
220 V	0.1...25 A		
B 10 V-250 V	0.05...1 A	5 V-250 V	0.05...1 A
Supply condition			
M	module mounted to circuit breaker 3120-...		
X3120 - S 0 1 A M ordering example			

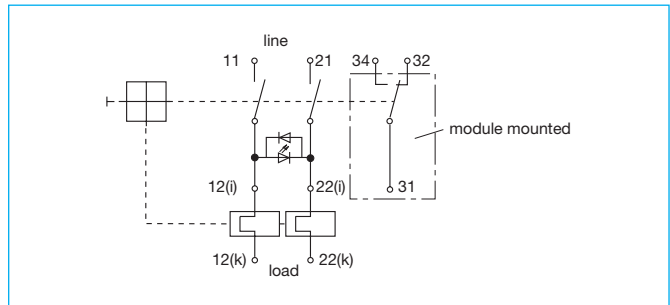
Approvals (complete circuit breaker/module assembly)

Authority	Voltage ratings	Current ratings
VDE (EN 60934)	AC 250 V; DC 28 V	0.05...4 A
UL, CSA	AC 250 V	0.05...4 A

Dimensions



Internal connection diagram



Technical data

Voltage rating	AC 250 V; DC 220 V
Current rating	0.1...4 A / 0.05...1 A
Typical life	50,000 operations
Ambient temperature	-30...+60 °C (-22...+140 °F)
Dielectric strength (IEC 60664 and 60664A) between main and auxiliary circuit	test voltage AC 3,000 V
Insulation resistance	> 100 MΩ (DC 500 V)
Vibration	6 g (type X3120-S...A) 8 g (type X3120-S...B) (57-500 Hz), ± 0.46 mm (10-57 Hz) to IEC 60068-2-6, test Fc 10 frequency cycles/axis
Shock	15 g (11 ms), type X3120-S...A 20 g (11 ms), type X3120-S...B to IEC 60068-2-27, test Ea
Corrosion	96 hours at 5 % salt mist, to IEC 60068-2-11, test Ka
Humidity	240 hours at 95 % RH to IEC 60068-2-78, test Cab
Mass	approx. 38 g (complete assembly)

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Description

A module suitable for all double pole versions of type 3120-F to trip the main switch/circuit breaker mechanism in the event of loss of voltage. When the voltage is restored the rocker switch must be reset to reconnect the load, thereby avoiding the safety hazards associated with automatic re-starting of machinery.

Note: Basic unit 3120-...-H7 or -G7: screw terminals necessary.

Typical applications

Machines such as power tools, industrial equipment and domestic appliances where automatic restart after restoration of power could be dangerous (EC Machinery Directive).

Ordering information

Type No.	
X3120	Module for type 3120
Function	
U	undervoltage release module
Terminal design	
00	standard (without separate connections)
01	1 blade terminal 2.8x0.8 (QC .110)
Voltage ratings	
00	AC 230/240 V 50/60 Hz
01	AC 120 V 50/60 Hz
Assembly status	
M	module mounted to the circuit breaker 3120
X3120 -U 00 00 M	ordering example

Preferred types

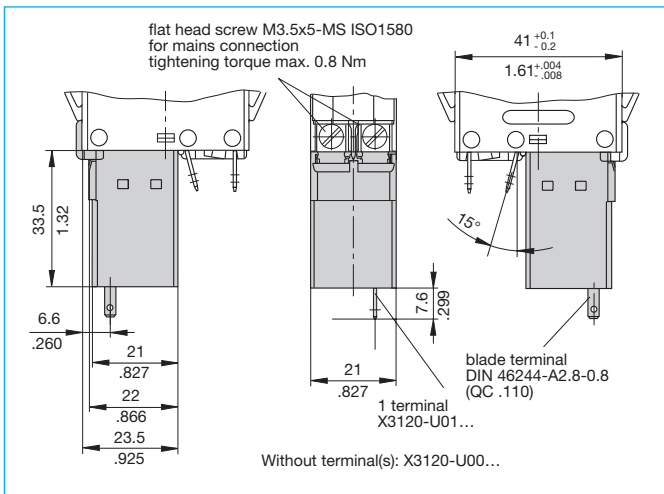


X3120-U0000M
X3120-U0100M

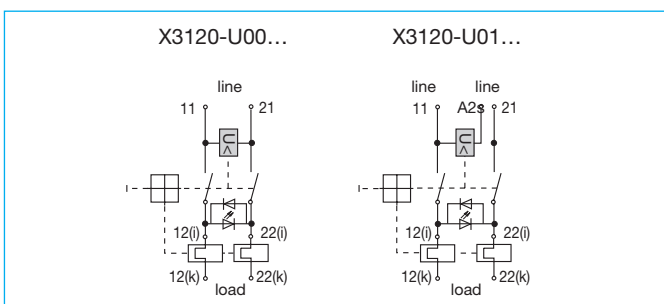
Approvals (complete circuit breaker/module assembly)

Authority	Voltage ratings
VDE (EN 60934)	AC 42...400 V; DC 24 V
UL, CSA	AC 100...240 V; DC 24 V

Dimensions



Internal connection diagrams



Technical data

Voltage ratings	AC 100; 120 V; 230/240 V 50/60 Hz DC 24 V
Voltage tolerance	+10%/-15%
Current consumption	approx. 2.5 mA
Typical life	20,000 operations
Release values	0.2 x U _N < U < 0.7 x U _N (at a rated voltage of AC 100 V the device may release at 70 V and must release at 20 V)
Release delay	t < 20 ms
Latch-in values	≥ 85 % U _N
Ambient temperature	-30...+60 °C (-22...+140 °F)
Vibration	8 g (57-500 Hz) ± 0.61 mm (10-57 Hz) to IEC 60068-2-6, test Fc 10 frequency cycles/axis
Shock	30 g (11 ms) to IEC 60068-2-27, test Ea
Corrosion	48 hours at 5 % salt mist, to IEC 60068-2-11, test Ka
Humidity	240 hours at 95% RH to IEC 60068-2-78, test Cab
Mass	approx. 53 g (complete assembly)

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Description

A module which adds remote trip capability to all versions of type 3120-F. A voltage applied across the coil, by means of an external sensor for example, will cause disconnection of the main switch/circuit breaker mechanism.

Typical applications

Electrical monitoring of safety systems, remote trip.

Ordering information

Type No.	
X3120	Module for type 3120
Function	
M	magnetic relay trip module
Style	
2	magnetic remote trip coil
Terminal design	
P7	blade terminals 2x2.8x0.8 (QC 2x.110) tin plated
Supply condition	
M	module mounted to the circuit breaker
Voltage ratings	
AC 120, 230 V	
DC 12, 24 V	
X3120 - M 2 P7 M - 12 V ordering example	

Preferred types



- X3120-M2P7M-120 V
- X3120-M2P7M-230 V
- X3120-M2P7M-24 V

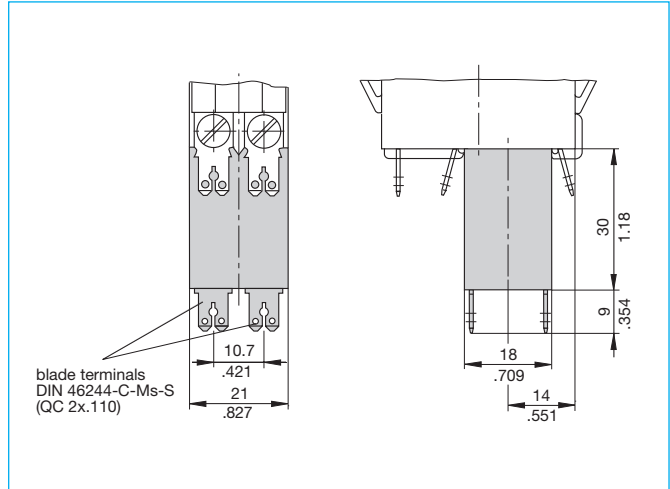
Standard voltage ratings and typical internal resistance values

Voltage rating (A)	Internal resistance per pole (Ω)	Voltage rating (A)	Internal resistance per pole (Ω)
12 V DC	0.78	120 V AC	71.0
24 V DC	3.3	230 V AC	312

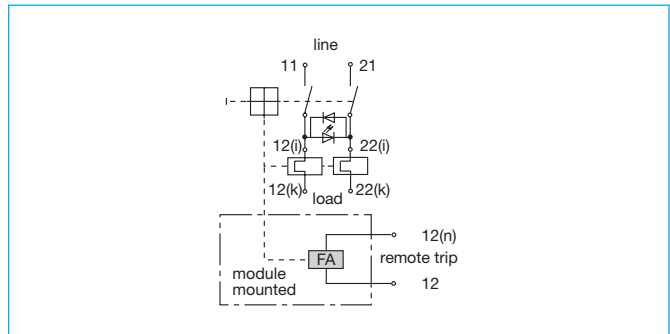
Approvals (complete circuit breaker/module assembly)

Authority	Voltage ratings
VDE (EN 60934)	AC 12...240 V; DC 12...24 V
UL, CSA	AC 12...240 V; DC 12...24 V

Dimensions



Internal connection diagram



Technical data

Voltage ratings	AC 120...230 V; DC 12...24 V
Power consumption	approx. 200 W
Pulse operation	20 ms < t _{ON} < 100 ms / t _{OFF} > 10 sec
Release delay	t < 20 ms
Typical life	50,000 operations at U _N
Ambient temperature	-30...+60 °C (-22...+140 °F)
Dielectric strength (IEC 60664 and 60664A) between main circuit and trip coil circuit	test voltage AC 3,000 V
Insulation resistance	> 100 MΩ (DC 500 V)
Vibration	8 g (57-500 Hz) ± 0.61 mm (10-57 Hz) to IEC 60068-2-6, test Fc 10 frequency cycles/axis
Shock	30 g (11 ms) to IEC 60068-2-27, test Ea
Corrosion	96 hours at 5 % salt mist, to IEC 60068-2-11, test Ka
Humidity	240 hours at 95 % RH to IEC 60068-2-78, test Cab
Mass	approx. 53 g (complete assembly)

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