

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



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	AC 240 V: 0.1...20 A	1-pole 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
	AC 415 V: 0.1...16 A	2-pole 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 60664 A) 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	I _{nc}
1, 2-pole	0.1...20 A	AC 250 V	5000 A
1, 2-pole	0.1...20 A	DC 50 V	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
without 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.

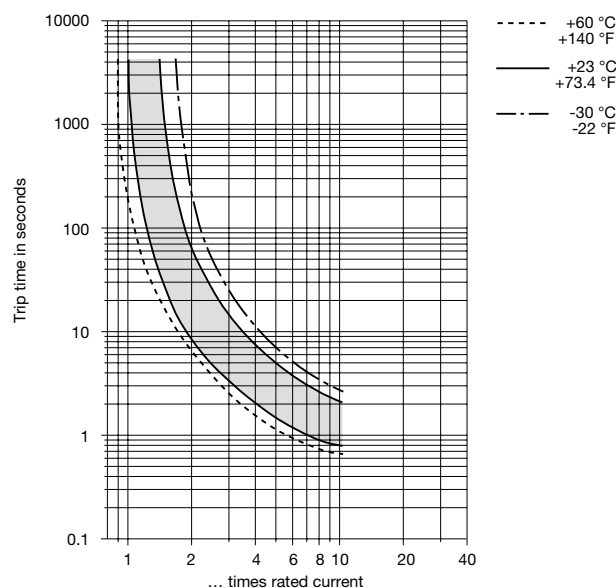
Approvals

Authority	Standard	Rated voltage	Current ratings
VDE	IEC/EN 60934	3 AC 415 V AC 240 V DC 50 V DC 50 V DC 28 V	0.1 A...16 A (2-pole) 0.1 A...20 A 0.1 A...20 A (2-pole) 0.1 A...4 A (1-pole) 0.1 A...20 A
UL	UL 1077	AC 250 V DC 50 V AC 250 V	0.1 A...20 A 0.1 A...20 A 30 A (2 poles in parallel)
CSA	C22.2 No 235	AC 250 V DC 50 V AC 250 V	0.1 A...20 A 0.1 A...20 A 30 A (2 poles in parallel)
CQC	GB 17701	AC 240 V DC 50 V	0.1 A...20 A 0.1 A...20 A

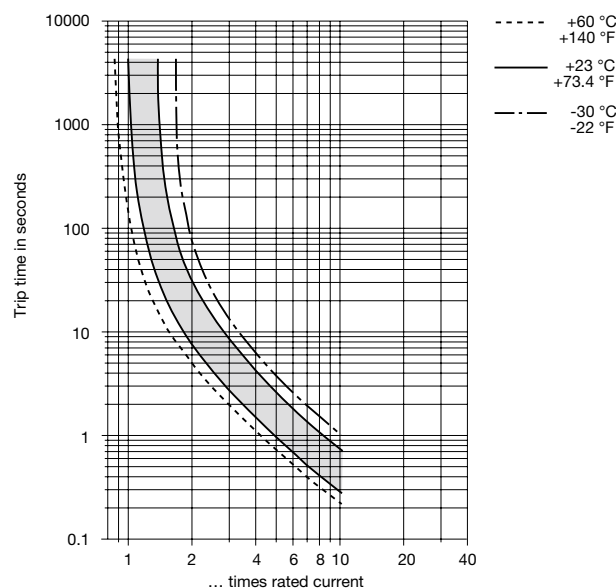
Typical time/current characteristics

single or double pole load

0.1...2 A



2.5...20 A

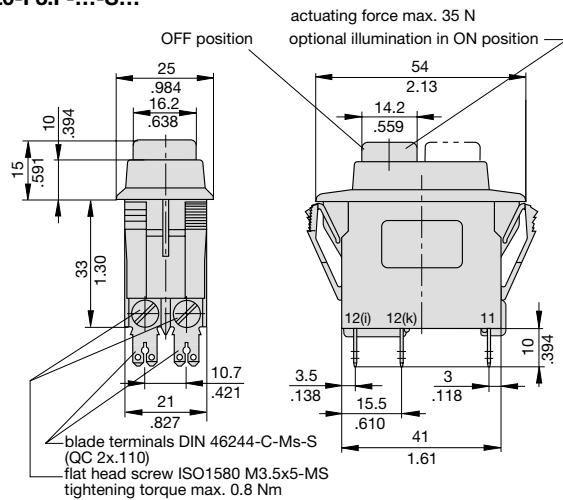


The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping, please multiply the circuit breaker current ratings by the derating factor shown below. See also section Technical information.

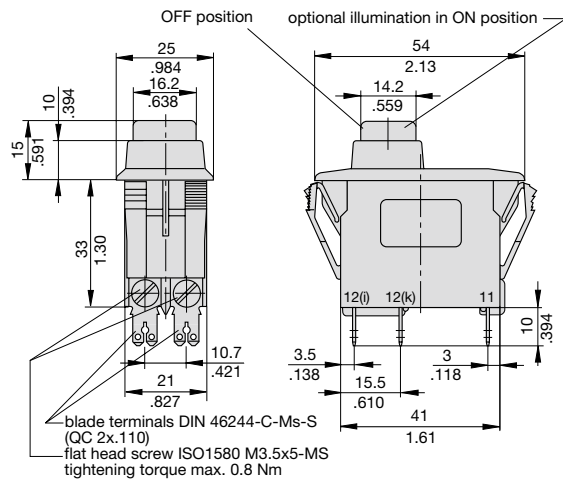
Ambient temperature	°F	-22	-4	+14	+32	+73.4	+104	+122	+140
°C		-30	-20	-10	0	+23	+40	+50	+60
Derating factor		0.8	0.76	0.84	0.92	1	1.08	1.16	1.24

Dimensions

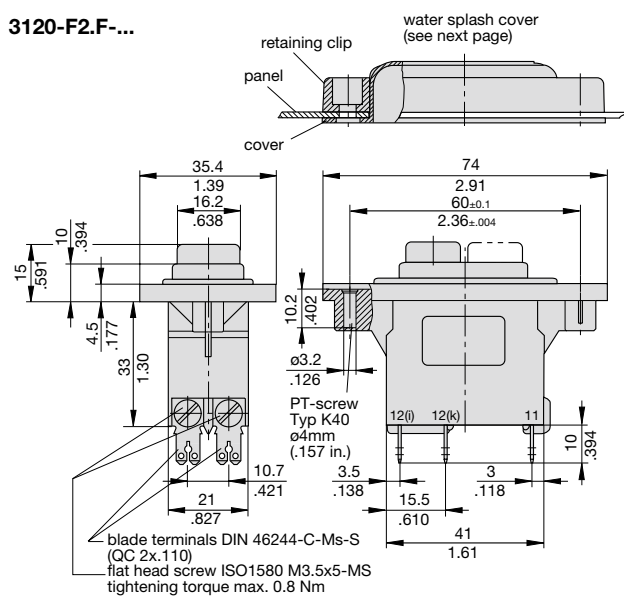
3120-F3.F-...-S...



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

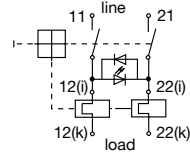


3120-F2.F-...

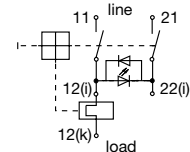


Internal connection diagrams

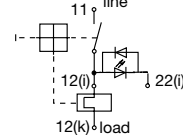
2-pole, thermally protected on both poles



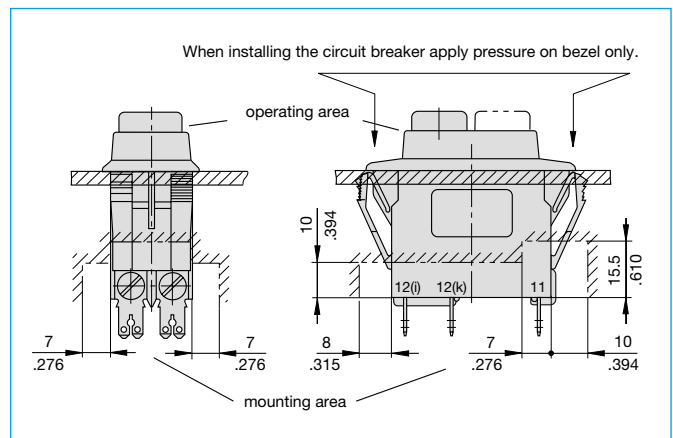
2-pole, thermally protected on one pole only



1-pole, thermally protected

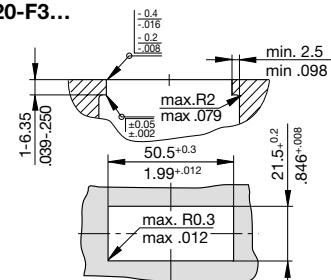


Installation drawing

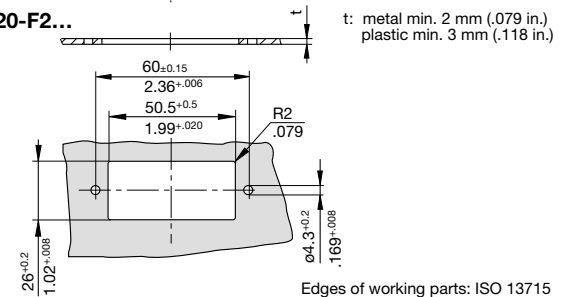


Panel cut-out

3120-F3...



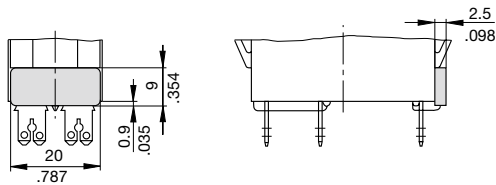
3120-F2...



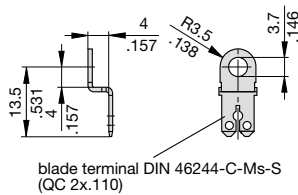
This is a metric design and millimeter dimensions take precedence (mm/inch)

Accessories

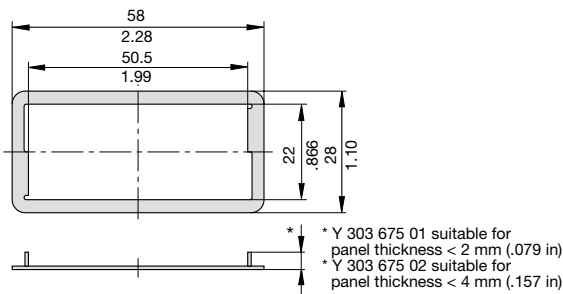
Insulated cover Y 303 068 01



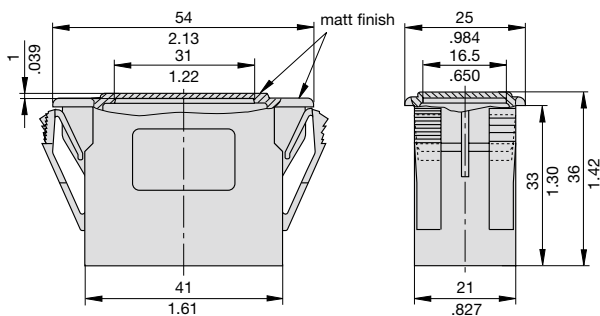
Terminal adapter Y 303 862 01



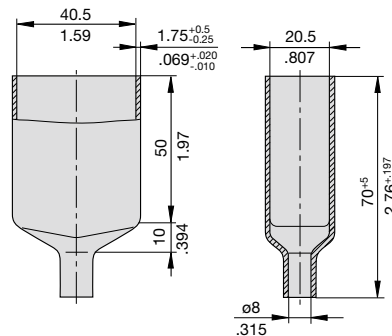
Spacer for 3120-F3... Y 303 675 01/02



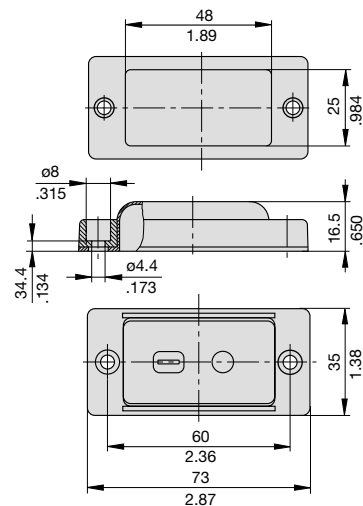
Blanking piece in -F3 frame Y 303 885 31



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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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

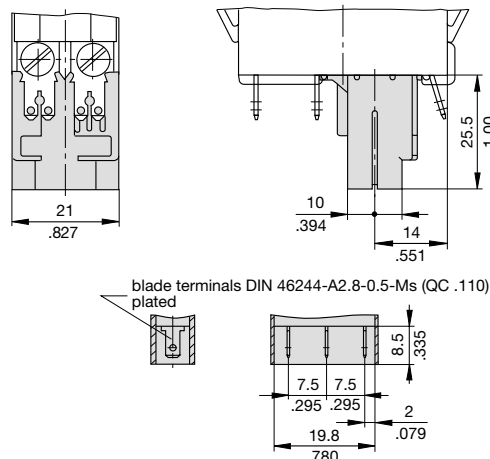
AC		DC (not approved)	
Voltage rating	Current rating	Voltage rating	Current rating
A 10 V-250 V	0.1...4 A	12 V	0.1...4 A
		24 V	0.1...4 A
		60 V	0.1...1 A
		110 V	0.1...0.5 A
B 10 V-250 V	5...100mA	220 V	0.1...25 A
		5 V-250 V	5...100mA

Supply condition

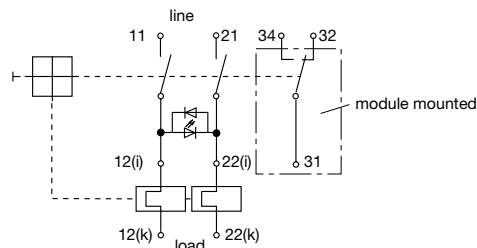
M module mounted to circuit breaker 3120-...

X3120 - S 0 1 A M ordering example

Dimensions



Internal connection diagram



Approvals (complete circuit breaker/module assembly)

Authority	Standard	Rated voltage	Current ratings
VDE	IEC/EN 60934	AC 250 V DC 28 V	0.05 A...4 A 0.05 A...4 A
UL	UL 1077		
CSA	C22.2 No 235	AC 250 V	0.1 A...4 A
CQC	GB 17701		

Technical data

Voltage rating	AC 250 V; DC 220 V
Current rating	0.1...4 A / 5...100 mA
Typical life	50,000 operations
Ambient temperature	-30...+60 °C (-22...+140 °F)
Dielectric strength (IEC 60664 and 60664A)	test voltage
between main and auxiliary circuit	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.

US patent number: US 5,834,996

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

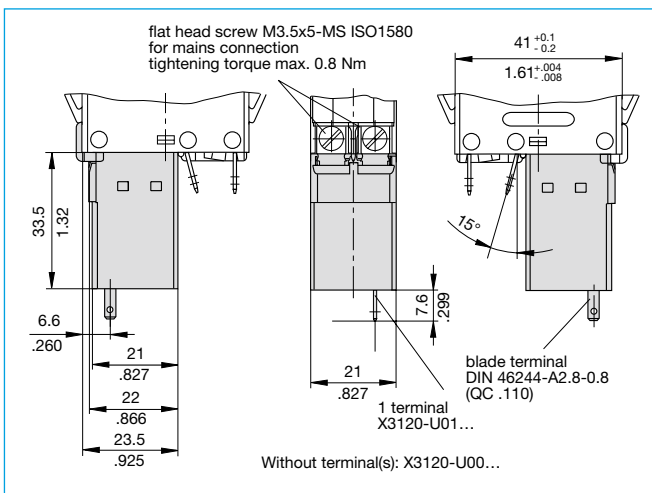
X3120-U0000M

X3120-U0100M

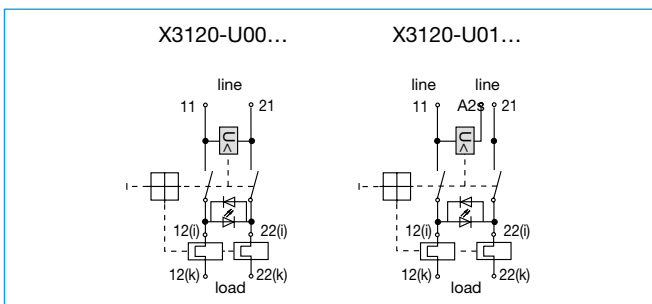
Approvals (complete circuit breaker/module assembly)

Authority	Standard	Rated voltage	Current ratings
VDE	IEC/EN 60934	DC 24 V AC 42 – 400 V	
UL	1077		
CSA	C22.2 No 235		
CQC	GB 17701		

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	$0.2 \times U_N < U < 0.7 \times U_N$ (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	$\geq 85 \% U_N$
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

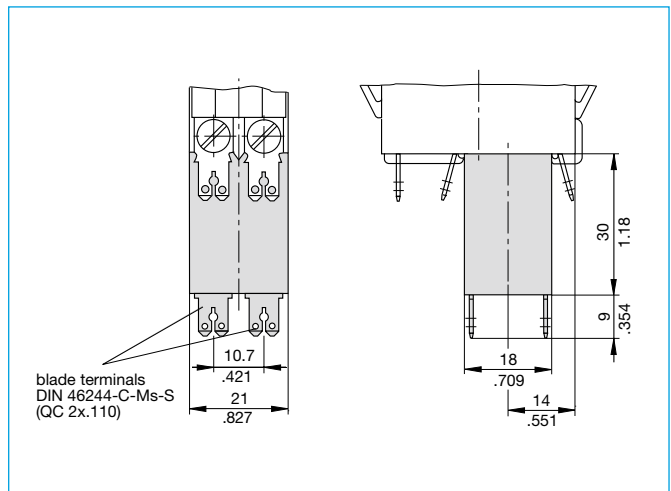
Standard voltage ratings and typical internal resistance values

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

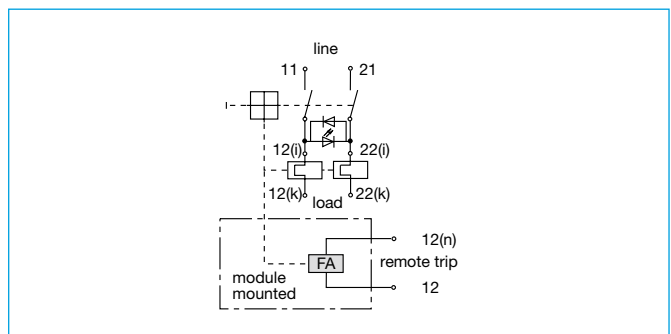
Approvals (complete circuit breaker/module assembly)

Authority	Standard	Rated voltage	Current ratings
VDE	IEC/EN 60934	DC 12 – 24 V AC 12 – 240 V	
UL	UL 1077		
CSA	C22.2 No 235	DC 12 – 28 V AC 12 – 240 V	
CQC	GB 17701		

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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