

## Description

An extremely versatile range of rocker switch/thermal circuit breakers (S-type TO CBE to EN 60934 with trip free mechanism) offering the choice of single pole, double pole with single pole protection, and double pole with protection on both poles. Designed for snap-in panel mounting with versions available for three different panel cut-out sizes. Illumination is optional and there is a range of colours and markings for the rocker. Under overload conditions the rocker returns to the OFF position. 6-way frame for 3120-F5 available upon request.

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.
- Mechanical slide interlock.

Approved to CBE standard EN 60934 (IEC 60934).

## Typical applications

Motors, transformers, solenoids, extra low voltage wiring systems, office machines, electro-medical equipment, power supplies, communications systems, medical equipment to EN 60601.

## 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	3.5	0.0565
0.2	24	4	0.0435
0.3	12	4.5	0.0435
0.4	5.30	5	0.0325
0.5	4.20	6	0.0215
0.6	2.90	7	0.0165
0.8	1.50	8	0.0165
1	0.9	10	< 0.02
1.2	0.80	12	< 0.02
1.5	0.45	14	< 0.02
2	0.27	16	< 0.02
2.5	0.0785	18	< 0.02
3	0.0595	20	< 0.02

## Illumination voltage/power consumption

operating voltage	power consumption	
	filament/neon	LED
6 V	60 mA	9 mA
12 V	20 mA	9 mA
24 V	20 mA	9 mA
48 V	20 mA	1.5 mA
115 V	< 1.5 mA	< 1 mA*
230 V	< 1.5 mA	< 1 mA*
415 V	< 1 mA	not available

\* single pole version only

## 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 2pole 0.1...10 A 1pole
BV	AC 250 V, DC 28 V	0.1...20 A
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	AC 240 V:	0.1...20 A	<b>1 pole</b> 30,000 operations at 1 x I <sub>N</sub> , inductive
	DC 50 V:	0.1...4 A 4.5...16 A	30,000 operations at 1 x I <sub>N</sub> , inductive 30,000 operations at 1 x I <sub>N</sub> , resistive
DC 28 V:	4.5...20 A	30,000 operations at 1 x I <sub>N</sub> , inductive	
	AC 415 V:	0.1...16 A	<b>2 pole</b> 10,000 operations at 1 x I <sub>N</sub> , inductive
AC 240 V:	0.1...16 A	50,000 operations at 1 x I <sub>N</sub> , inductive	
	17...20 A	30,000 operations at 1 x I <sub>N</sub> , inductive	
DC 50 V:	0.1...16 A	50,000 operations at 1 x I <sub>N</sub> , inductive	
	17...20 A	10,000 operations at 1 x I <sub>N</sub> , inductive	
Ambient temperature	-30...+60 °C (-22...+140 °F)		
Insulation co-ordination (IEC 60664 and 60664 A)	rated impulse withstand voltage	pollution degree 2	
	2.5 kV	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 <sub>cn</sub>	0.1...2 A	10 x I <sub>N</sub>	
	2.5...20 A	250 A 2 pole, or 150 A 1 pole	
Interrupting capacity (UL 1077)	I <sub>N</sub>	U <sub>N</sub>	2 pole
	0.1...2 A	AC 250 V	200 A
	2.5...3 A	AC 250 V	1,000 A
	3.5...8 A	AC 250 V	2,000 A
	9...16 A	AC 250 V	3,500 A
	18...20 A	AC 250 V	5,000 A
0.1...20 A	DC 50 V	1,000 A	
Degree of protection (IEC 60529/DIN 40050)	operating area IP40 (IP54 with water splash protection)		
	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 60068-2-3, test Ca		
Mass	approx. 33 g (double pole)		
	approx. 27 g (single pole)		

## Ordering information

<b>Type No.</b>	
3120	rocker switch/circuit breaker
<b>Mounting</b>	
<b>F</b> snap in frame	
<b>Size of frame</b> <span style="float:right">panel thickness</span>	
3	to fit mounting cut-out 50.5 x 21.5 mm 1-6.35 mm (.039-.250 in)
5	to fit mounting cut-out 44.5 x 22 mm 1-4 mm (.039-.157 in)
6	to fit mounting cut-out 45 x 33.7 mm 1.2-2.4 mm (.047-.094 in)
<b>Number of poles</b>	
0	2 pole, unprotected, switch only
1	1 pole, thermally protected
2	2 pole, thermally protected
5	2 pole, thermally protected on one pole only (terminals 11,12k,12i)
6	1 pole, unprotected, switch only
<b>Mounting frame design</b>	
1	collar height 1 mm
3	collar height 9 mm
4	collar height 2 mm with water splash protection (IP54), not with -F6...
<b>U</b> with water splash protection and actuator guard	
<b>Terminal configuration</b>	
<b>P7</b>	blade terminals 2x2.8x0.8 mm (QC 2x.110) (terminals 12(k), 22(k), 11, 21), not for under voltage module, not for switch
<b>H7</b>	12(k), 22(k): blade terminals 2x2.8-0.8 (QC 2x.110) 11, 21: terminal screws, not for switch
<b>N7</b>	as P7, but including shunt terminals 12(i) and 22 (i) as blade terminals 2x2.8x0.8 mm(QC 2x.110) not for under voltage module
<b>G7</b>	as H7, but including shunt terminals 12(i) and 22 (i) as blade terminals 2x2.8x0.8 mm(QC 2x.110)
<b>Characteristic curve</b>	
<b>T1</b>	thermal, 1.01-1.4 x I <sub>N</sub>
<b>Q1</b>	switch only
<b>Actuator style</b>	
<b>W</b>	rocker
<b>U</b>	momentary switch
<b>Switch colour designation</b>	
opaque	translucent (for illuminated versions)
<b>01</b> black	<b>12</b> white
<b>02</b> white	<b>14</b> red
<b>04</b> red	<b>15</b> orange
	<b>19</b> green
<b>Rocker markings</b>	
A	
B	
C	
D	
E	
F	
X	
X = without marking	
<b>Rocker illumination (optional)</b>	
<b>B</b>	filament ≤ 48V AC/DC; neon ≥ 115V AC
<b>G</b>	green LED, AC/DC
<b>Y</b>	yellow LED, AC/DC
<b>R</b>	red LED, AC/DC
<b>Illumination voltage range</b>	
<b>0</b>	4 - 7 V (B,G,Y,R)
<b>1</b>	10 - 14 V (B,G,Y,R)
<b>2</b>	20 - 28 V (B,G,Y,R)
<b>3</b>	90 - 140 V (B)
<b>4</b>	185 - 275 V (B)
<b>5</b>	42 - 54 V (B,Y,R)
<b>Current ratings</b>	
<b>0.1...20 A</b>	

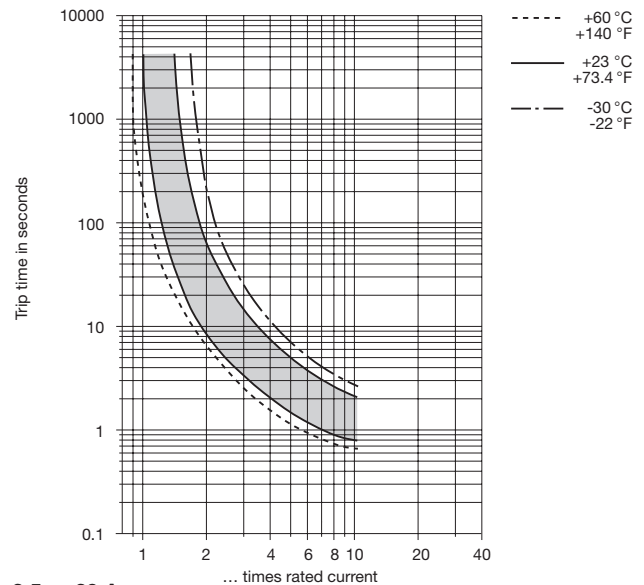
3120 - F 3 2 1 - N7 T1 - W 14 A B 4 - 10 A ordering example  
 3120 - F . 0 . - N7 Q1 - W .. . . - 20 A (switch only)

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

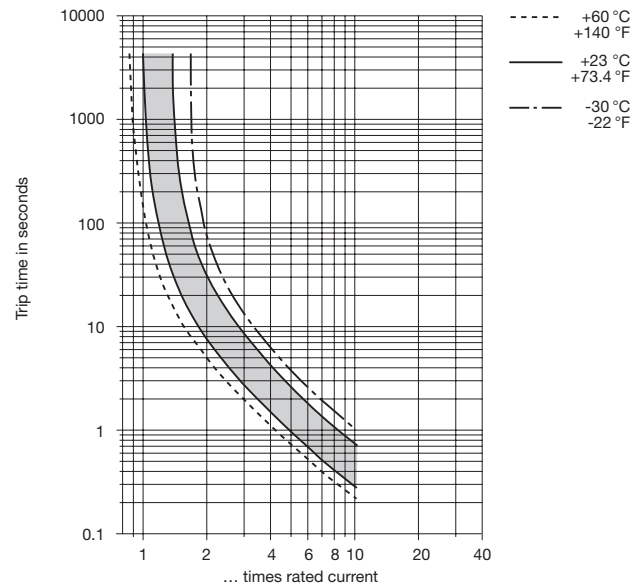
## Typical time/current characteristics

single or double pole load

0.1 ... 2 A



2.5 ... 20 A



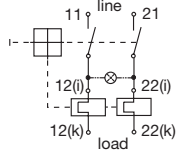
The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping, please multiply the circuit breaker current ratings by the derating factor shown below. See also section 9 - Technical information.

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

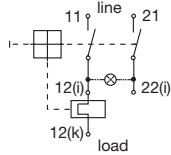


## Internal connection diagrams

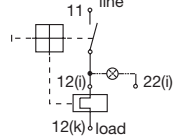
**2 pole, thermally protected on both poles**



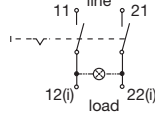
**2 pole, thermally protected on one pole only**



**1 pole, thermally protected**



**2 pole, unprotected**

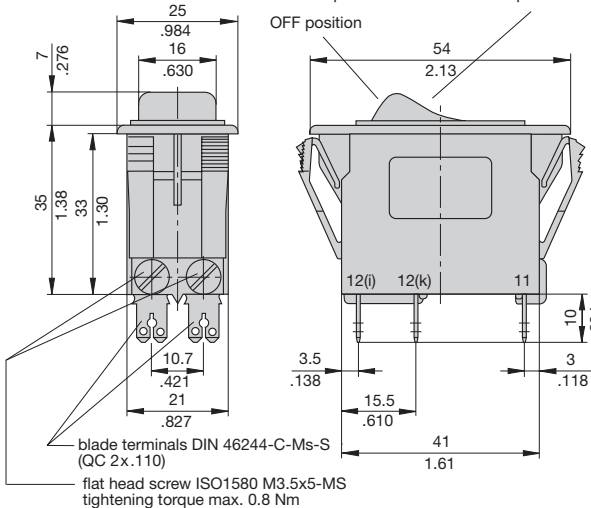


## Dimensions

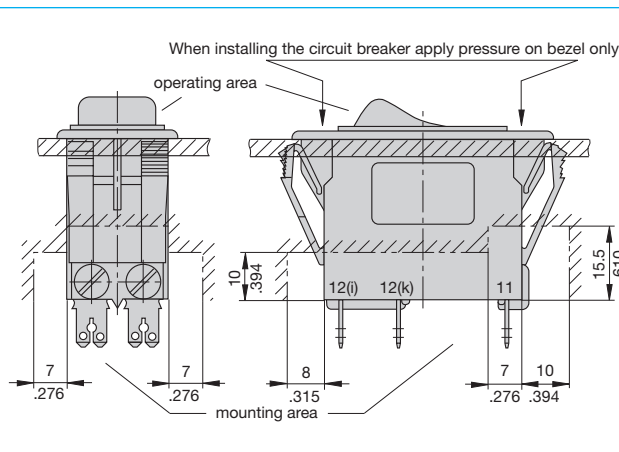
**Style F3.1**

collar height 1 mm/.039 in.

Actuating force max. 35 N  
optional illumination in ON position



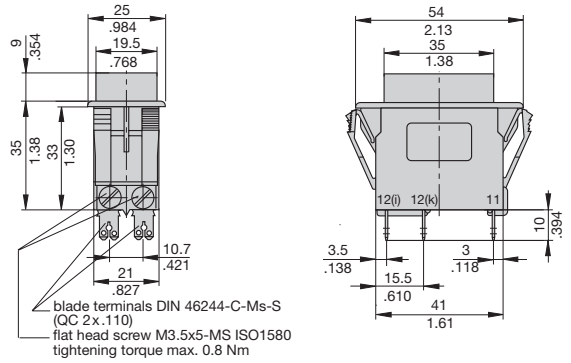
## Installation drawing



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

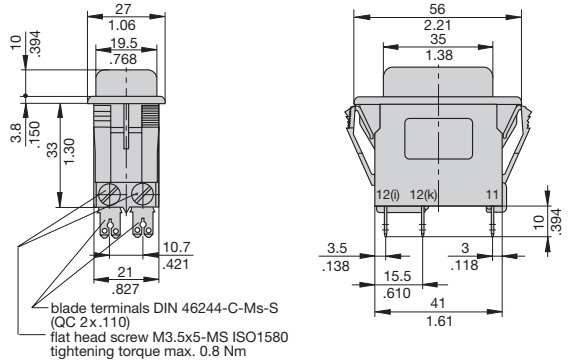
## Mounting style variants

**Style F 3.3 collar height 9 mm (.354 in.)**

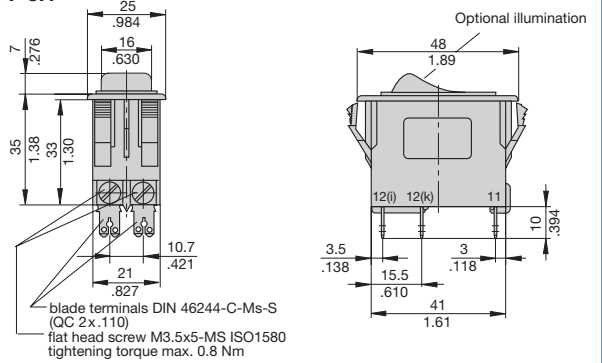


**Style F 3.4**

collar height 2 mm (.079 in.), with water splash protection

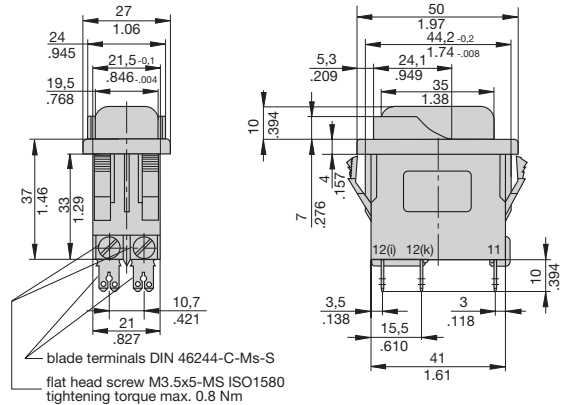


**Style F 5.1**



**Style F 5.U**

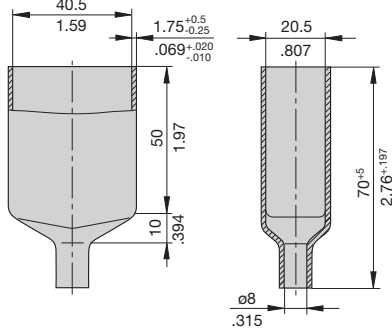
with water splash protection (IP54) and actuator guard



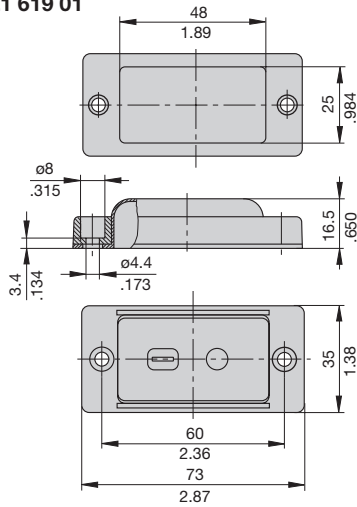
Dimension diagram for style F6 is available on request.

## Accessories

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

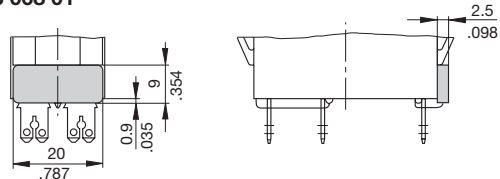


### Water splash cover, transparent (IP66) for style -F5... X 221 619 01

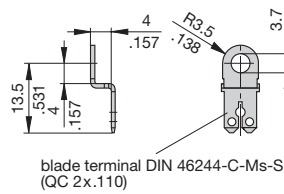


### 6-way frame for 3120-F5... upon request

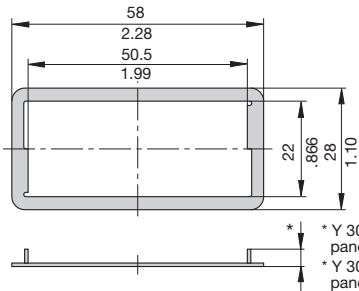
### Insulated cover Y 303 068 01



### Terminal adapter Y 303 862 01

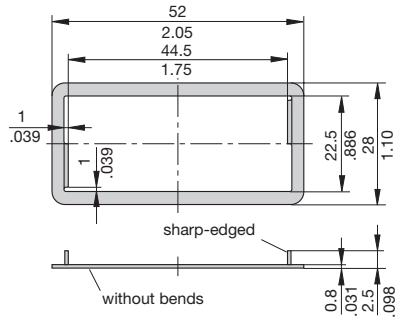


### Spacer for 3120-F3... Y 303 675 01/02

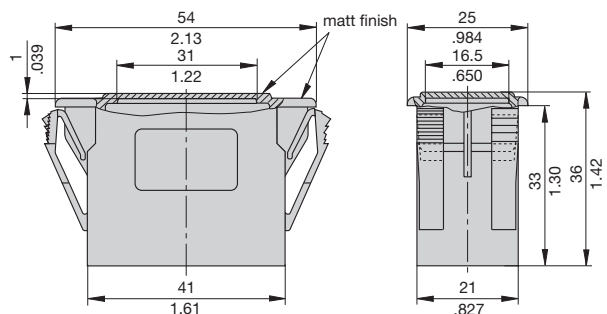


\* Y 303 675 01 suitable for panel thickness < 2 mm (.079 in)  
\* Y 303 675 02 suitable for panel thickness < 4 mm (.157 in)

### Spacer for 3120-F5... Y 303 676 01

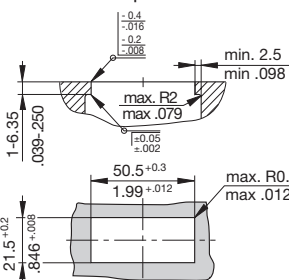


### Blanking piece in -F3 frame Y 303 885 31

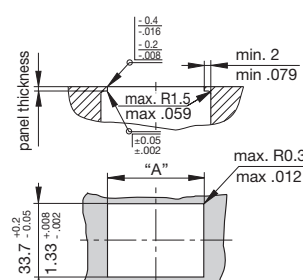


## Cut-out dimensions

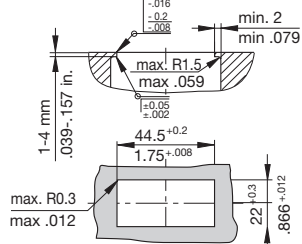
### Cut-out for mounting style -F3 with rocker and push button



### Cut-out for mounting style -F6 with rocker



### Cut-out for mounting style -F5 with rocker



panel thickness	mm	1.2 <sup>+0.4</sup>	1.6 <sup>+0.8</sup>	2.4 <sup>+1</sup>
	inch	.047 <sup>+0.016</sup>	.063 <sup>+0.031</sup>	.094 <sup>+0.039</sup>
dimension "A"	mm	45 <sup>+0.2</sup> / <sub>-0.05</sub>	45 <sup>+1.1</sup> / <sub>-0.05</sub>	45 <sup>+2.2</sup> / <sub>-0.05</sub>
	inch	1.77 <sup>+0.008</sup> / <sub>.002</sub>	1.77 <sup>+0.043</sup> / <sub>.002</sub>	1.77 <sup>+0.087</sup> / <sub>.002</sub>

Edges of working parts: ISO 13715

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

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.

## Description

E-T-A's proven type 3120 in a new attractive styling (S-type TO CBE to EN 60934 with trip free mechanism) offering the choice of single pole, double pole with single pole protection, and double pole with protection on both poles. Designed for snap-in panel mounting with illumination as an option. Under overload conditions the rocker returns to the OFF position.

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.
- Mechanical slide interlock.

Approved to CBE standard EN 60934 (IEC 60934).

Available accessories: water splash protection and actuator guard to prevent inadvertent operation.

## Typical applications

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

## 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	3.5	0.0565
0.2	24	4	0.0435
0.3	12	4.5	0.0435
0.4	5.30	5	0.0325
0.5	4.20	6	0.0215
0.6	2.90	7	0.0165
0.8	1.50	8	0.0165
1	0.9	10	< 0.02
1.2	0.80	12	< 0.02
1.5	0.45	14	< 0.02
2	0.27	16	< 0.02
2.5	0.0785	18	< 0.02
3	0.0595	20	< 0.02

## Illumination voltage/power consumption

operating voltage	power consumption	
	filament/neon	LED
6 V	60 mA	9 mA
12 V	20 mA	9 mA
24 V	20 mA	9 mA
48 V	20 mA	1.5 mA
115 V	< 1.5 mA	< 1 mA*
230 V	< 1.5 mA	< 1 mA*
415 V	< 1 mA	not available

\* single pole version only

## 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
BV	AC 250 V, DC 28 V	0.1...20 A
UL, CSA	AC 250 V, DC 50 V	0.1...20 A
CCC	AC 250 V, DC 50 V	0.1...20 A



3120-F7..

## 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	30,000 operations at 1 x I <sub>N</sub> , inductive
	DC 50 V:	0.1...4 A	30,000 operations at 1 x I <sub>N</sub> , inductive
		4.5...16 A	30,000 operations at 1 x I <sub>N</sub> , resistive
	DC 28 V:	4.5...20 A	30,000 operations at 1 x I <sub>N</sub> , inductive
	<b>2 pole</b>		
	AC 415 V:	0.1...16 A	10,000 operations at 1 x I <sub>N</sub> , inductive
	AC 240 V:	0.1...16 A	50,000 operations at 1 x I <sub>N</sub> , inductive
		17...20 A	30,000 operations at 1 x I <sub>N</sub> , inductive
	DC 50 V:	0.1...16 A	50,000 operations at 1 x I <sub>N</sub> , inductive
		17...20 A	10,000 operations at 1 x I <sub>N</sub> , inductive
Ambient temperature	-30...+60 °C (-22...+140 °F)		
Insulation co-ordination (IEC 60664 and 60664 A)	rated impulse withstand voltage	pollution degree 2	
	2.5 kV	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 <sub>cn</sub>	0.1...2 A	10 x I <sub>N</sub>	
	2.5...20 A	250 A 2 pole, or 150 A 1 pole	
Interrupting capacity (UL 1077)	I <sub>N</sub>	U <sub>N</sub>	2 pole
	0.1...2 A	AC 250 V	200 A
	2.5...3 A	AC 250 V	1,000 A
	3.5...8 A	AC 250 V	2,000 A
	9...6 A	AC 250 V	3,500 A
	18...20 A	AC 250 V	5,000 A
	0.1...20 A	DC 50 V	1,000 A
Degree of protection (IEC 60529/DIN 40050)	operating area IP40 (IP54 with water splash protection) 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 60068-2-3, test Ca		
Mass	approx. 33 g (double pole)		
	approx. 27 g (single pole)		

## Ordering information

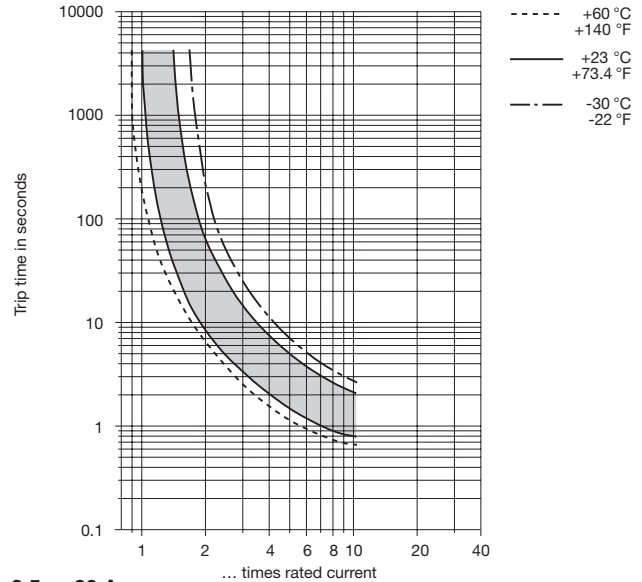
<b>Type No.</b>	
3120	rocker switch/circuit breaker
<b>Mounting</b>	
<b>F</b> snap in frame	
<b>Size of frame</b> <span style="float:right">panel thickness</span>	
7	to fit mounting cut-out 44.5x22mm(1.75x.866 in) 1-4 mm(.039-.157 in)
<b>Number of poles</b>	
0	2 pole, unprotected, switch only
1	1 pole, thermally protected
2	2 pole, thermally protected
5	2 pole, thermally protected on one pole only (terminals 11,12k,12i)
6	1 pole, unprotected, switch only
<b>Mounting frame design</b>	
<b>N</b>	grey frame
<b>P</b>	snap-on actuator guard grey
<b>Q</b>	snap-on water splash cover grey
<b>R</b>	black frame
<b>S</b>	snap-on actuator guard black
<b>T</b>	snap-on water splash cover black
<b>Terminal configuration</b>	
<b>P7</b>	blade terminals 2x2.8x0.8 mm (QC 2x.110) (terminals 12(k), 22(k), 11, 21), not for under voltage module, not for switch
<b>H7</b>	12(k), 22(k): blade terminals 2x2.8-0.8 (QC 2x.110) 11, 21: terminal screws, not for switch
<b>N7</b>	as P7, but including shunt terminals 12(i) and 22 (i) as blade terminals 2x2.8x0.8 mm(QC 2x.110) not for under voltage module
<b>G7</b>	as H7, but including shunt terminals 12(i) and 22 (i) as blade terminals 2x2.8x0.8 mm(QC 2x.110)
<b>Characteristic curve</b>	
<b>T1</b>	thermal, $1.01-1.4 \times I_N$
<b>Q1</b>	switch only
<b>Actuator style</b>	
<b>A</b>	rocker
<b>Switch colour designation</b>	
<b>20</b>	blue opaque
<b>30</b>	blue translucent
<b>Rocker markings</b>	
<b>Q</b>	"I" and "0" moulded in
<b>Push button illumination (optional)</b>	
<b>B</b>	filament, AC/DC
<b>G</b>	green LED, AC/DC
<b>R</b>	red LED, AC/DC
<b>Illumination voltage range (optional)</b>	
<b>0</b>	4 - 7 V (G,B,R)
<b>1</b>	10 - 14 V (G,B,R)
<b>2</b>	20 - 28 V (G,B,R)
<b>3</b>	90 - 140 V (B)
<b>4</b>	185 - 275 V (B)
<b>5</b>	42 - 54 V (B,R)
<b>Current ratings</b>	
<b>0.1...20 A</b>	
3120 - F 7 2 N - N7 T1 - A 20 Q B 4 - 10 A ordering example	
3120 - F . 0 N - N7 Q1 - A 20 Q B 4 - 20 A (switch only)	

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

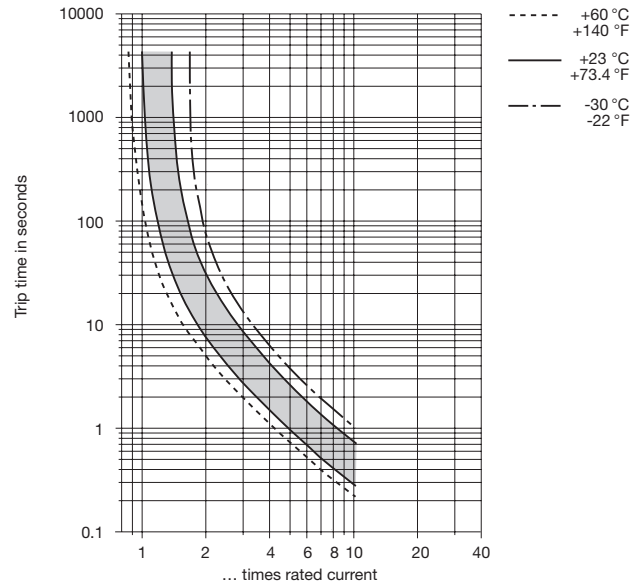
## Typical time/current characteristics

single or double pole load

### 0.1 ... 2 A



### 2.5 ... 20 A

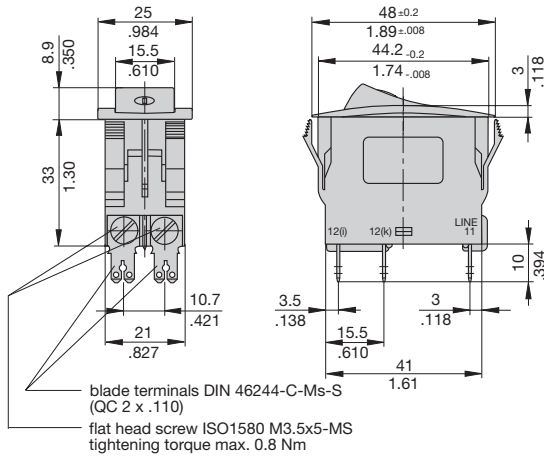


The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping, please multiply the circuit breaker current ratings by the derating factor shown below. See also section 9 - Technical information.

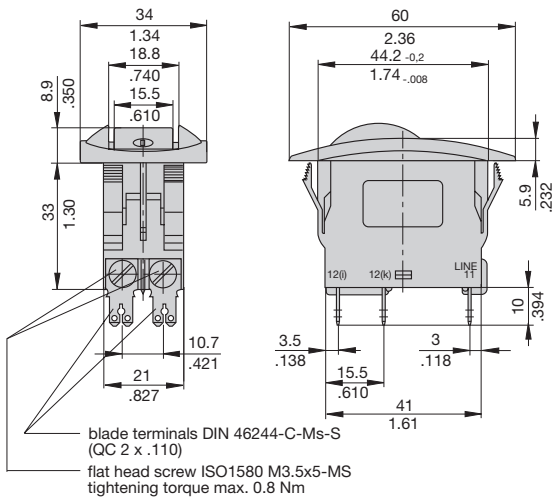
Ambient temperature °F	-22	-4	+14	+32	+73.4	+104	+122	+140
°C	-30	-20	-10	0	+23	+40	+50	+60
Derating factor	0.8	0.76	0.84	0.92	1	1.08	1.16	1.24

## Dimensions

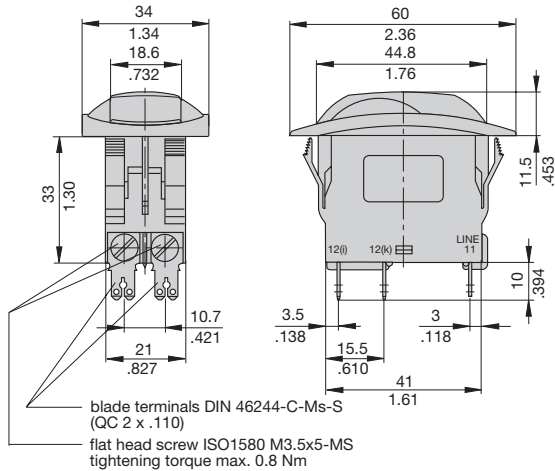
### Style -F7.N and F7.R



### Style -F7.P and F7.S

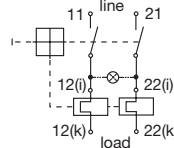


### Style -F7.Q and F7.T

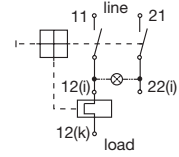


## Internal connection diagrams

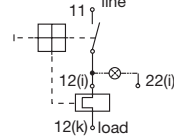
2 pole, thermally protected on both poles



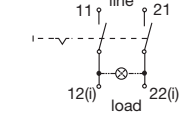
2 pole, thermally protected on one pole only



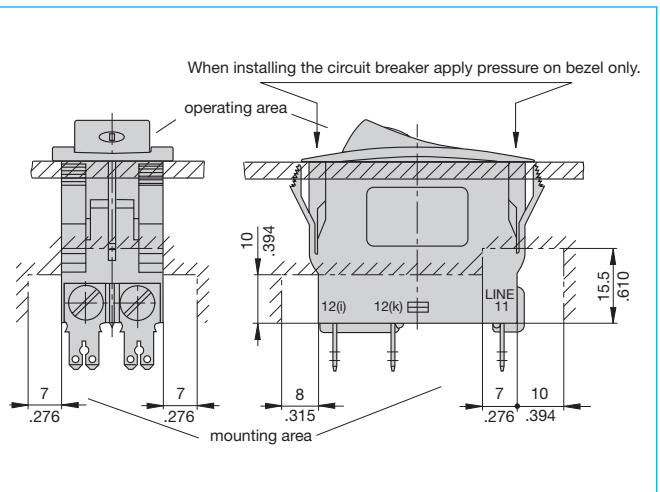
1 pole, thermally protected



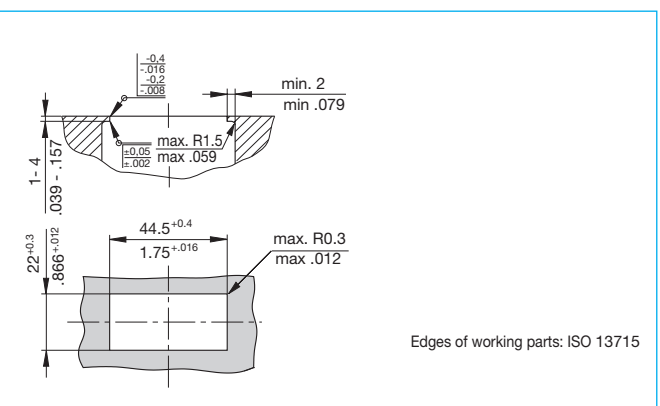
2 pole, unprotected



## Installation drawing



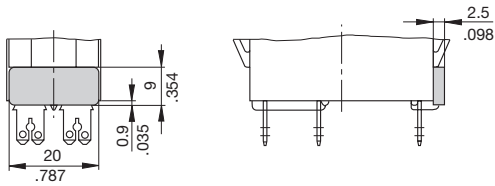
## Panel cut-out



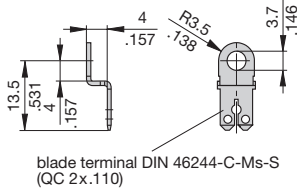
This is a metric design and millimeter dimensions take precedence (mm/inch)

## Accessories

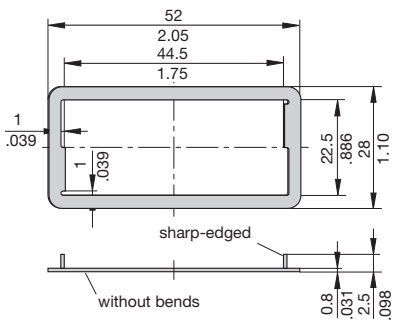
### Insulated cover Y 303 068 01



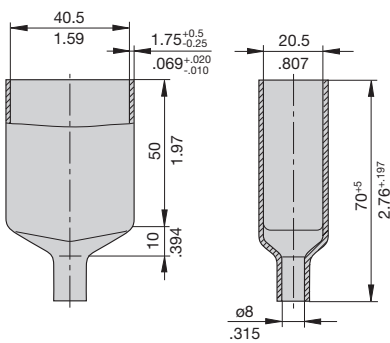
### Terminal adapter Y 303 862 01



### Spacer Y 303 676 01



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

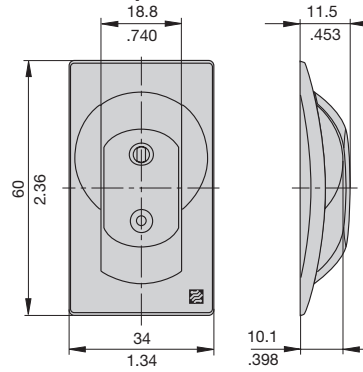


### Translucent water splash cover (IP54)

X 222 143 01

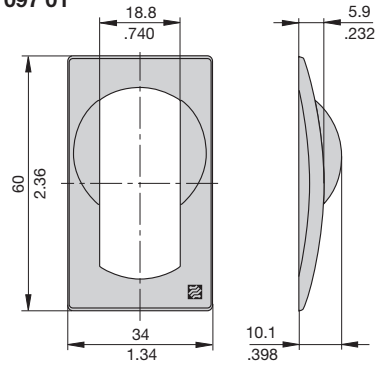
Consisting of

- Y 307 097 01 snap-on frame with actuator guard
- Y 307 096 01 soft plastic cover



Snap-on frame with actuator guard (can be snapped on as switch-on protection or switch-off protection)

Y 307 097 01



This is a metric design and millimeter dimensions take precedence ( $\frac{\text{mm}}{\text{inch}}$ )

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.



## 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.
- Mechanical slide interlock.

Approved to CBE standard EN 60934 (IEC 60934).

## 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	3.5	0.0565
0.2	24	4	0.0435
0.3	12	4.5	0.0435
0.4	5.30	5	0.0325
0.5	4.20	6	0.0215
0.6	2.90	7	0.0165
0.8	1.50	8	0.0165
1	0.9	10	< 0.02
1.2	0.80	12	< 0.02
1.5	0.45	14	< 0.02
2	0.27	16	< 0.02
2.5	0.0785	18	< 0.02
3	0.0595	20	< 0.02

## Illumination voltage/power consumption

operating voltage	power consumption	
	filament/neon	LED
6 V	60 mA	9 mA
12 V	20 mA	9 mA
24 V	20 mA	9 mA
48 V	20 mA	1.5 mA
115 V	< 1.5 mA	< 1 mA*
230 V	< 1.5 mA	< 1 mA*
415 V	< 1 mA	not available

\* single pole version only

## 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
BV	AC 250 V, DC 28 V	0.1...20 A
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	<b>1 pole</b> AC 240 V: 0.1...20 A 30,000 operations at 1 x I <sub>N</sub> , inductive DC 50 V: 0.1...4 A 30,000 operations at 1 x I <sub>N</sub> , inductive 4.5...16 A 30,000 operations at 1 x I <sub>N</sub> , resistive DC 28 V: 4.5...20 A 30,000 operations at 1 x I <sub>N</sub> , inductive <b>2 pole</b> AC 415 V: 0.1...16 A 10,000 operations at 1 x I <sub>N</sub> , inductive AC 240 V: 0.1...16 A 50,000 operations at 1 x I <sub>N</sub> , inductive 17...20 A 30,000 operations at 1 x I <sub>N</sub> , inductive DC 50 V: 0.1...16 A 50,000 operations at 1 x I <sub>N</sub> , inductive 17...20 A 10,000 operations at 1 x I <sub>N</sub> , inductive		
Ambient temperature	-30...+60 °C (-22...+140 °F)		
Insulation co-ordination (IEC 60664 and 60664 A)	rated impulse withstand voltage	pollution degree	
	2.5 kV	2	
	reinforced insulation in operating area		
Dielectric strength (IEC 60664 and 60664A)	test voltage		
	operating area	AC 3,000 V	
	between poles (2 pole)	AC 1,500 V	
Insulation resistance	>100 MΩ (DC 500 V)		
Interrupting capacity I <sub>cn</sub>	0.1...2 A 10 x I <sub>N</sub> 2.5...20 A 250 A 2 pole, or 150 A 1 pole		
Interrupting capacity (UL 1077)	I <sub>N</sub>	U <sub>N</sub>	2 pole
	0.1...2 A	AC 250 V	200 A
	2.5...3 A	AC 250 V	1,000 A
	3.5...8 A	AC 250 V	2,000 A
	9...16 A	AC 250 V	3,500 A
	18...20 A	AC 250 V	5,000 A
	0.1...20 A	DC 50 V	1,000 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 60068-2-3, test Ca		
Mass	approx. 33 g (double pole) approx. 27 g (single pole)		

## Ordering information

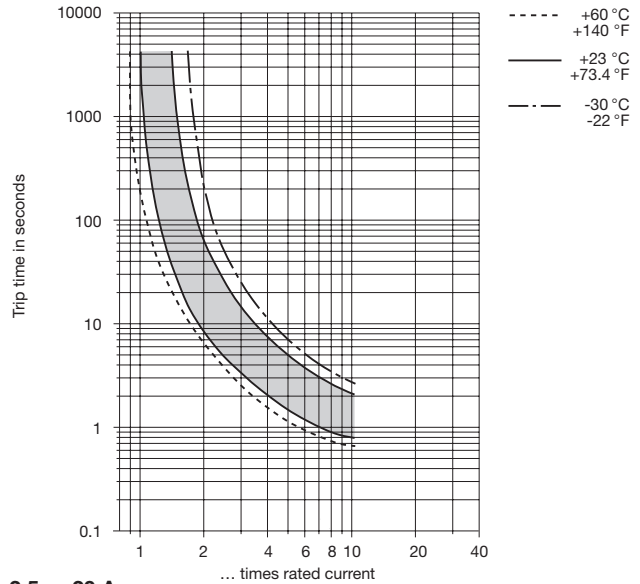
<b>Type No.</b>	
3120	push button switch/circuit breaker
<b>Mounting</b>	
<b>F</b> snap in frame	
<b>Size of frame</b>	
2	flange mounting, special frame for fitting splash cover
3	to fit mounting cut-out 50.5 x 21.5 mm (1.99 x 8.47 in) panel thickness 1 - 6.35 mm (.039 - .250 in)
<b>Number of poles</b>	
0	2 pole, unprotected, switch only
1	1 pole, thermally protected
2	2 pole, thermally protected
5	2 pole, thermally protected on one pole only (terminals 11,12k,12i)
6	1 pole, unprotected, switch only
<b>Mounting frame design</b>	
<b>F</b> with 2 push buttons	
<b>G</b> with 1 push button (switch-on only)	
<b>Terminal configuration</b>	
<b>P7</b> blade terminals 2x2.8x0.8mm(QC 2x.110) (terminals 12(k), 22(k), 11, 21), not for under voltage module, not for switch	
<b>H7</b> 12(k), 22(k): blade terminals 2x2.8-0.8 (QC 2x.110) 11, 21: terminal screws, not for switch	
<b>N7</b> as P7, but including shunt terminals 12(i) and 22 (i) as blade terminals 2x2.8x0.8 mm (QC 2x.110) not for under voltage module	
<b>G7</b> as H7, but including shunt terminals 12(i) and 22 (i) as blade terminals 2x2.8x0.8 mm (QC 2x.110)	
<b>Characteristic curve</b>	
<b>T1</b> thermal, 1.01-1.4 I <sub>N</sub>	
<b>Q1</b> switch only, only for N7 or G7 terminals	
<b>Switch style/colour</b>	
<b>D</b> 1 push button (re-set only)	
<b>Z</b> 1 push button (momentary switch)	
<b>01X</b> black	
<b>04X</b> red	
<b>12X</b> white translucent	
<b>19X</b> green translucent	
<b>S</b> 2 push buttons on/off	
<b>GRX</b> green translucent/red	
<b>WRX</b> white translucent/red	
<b>WBX</b> white translucent/black	
<b>Push button illumination (optional)</b>	
<b>B</b> filament AC/DC	
<b>L</b> neon, AC	
<b>G</b> green LED, AC/DC	
<b>Y</b> yellow LED, AC/DC	
<b>R</b> red LED, AC/DC	
<b>Illumination voltage range (optional)</b>	
<b>0</b> 4 - 7 V (B,G,Y,R)	
<b>1</b> 10 - 14 V (B,G,Y,R)	
<b>2</b> 20 - 28 V (B,G,Y,R)	
<b>3</b> 90 - 140 V (L)	
<b>4</b> 185 - 275 V (L)	
<b>5</b> 42 - 54 V (B,Y,R)	
<b>Current ratings</b>	
<b>0.1...20 A</b>	
3120 - F 3 2 F - N7 T1 - S GRX L 4 - 10 A	ordering example
3120 - F 3 0 F - N7 Q1 - S ... . . - 20 A	switch only

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

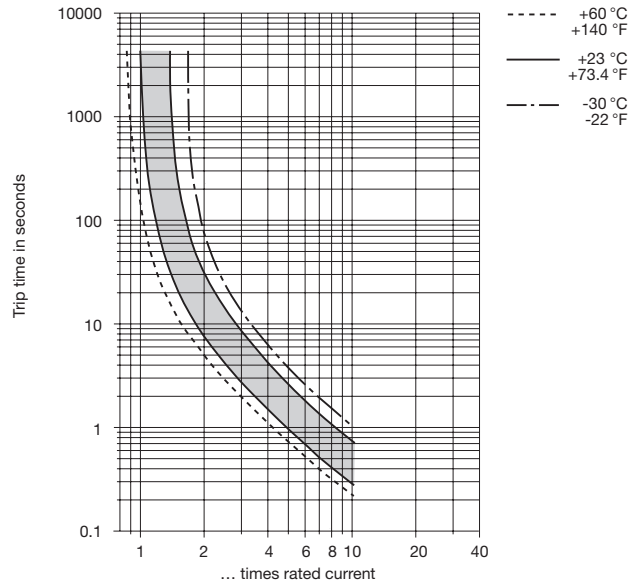
## Typical time/current characteristics

single or double pole load

0.1 ... 2 A



2.5 ... 20 A

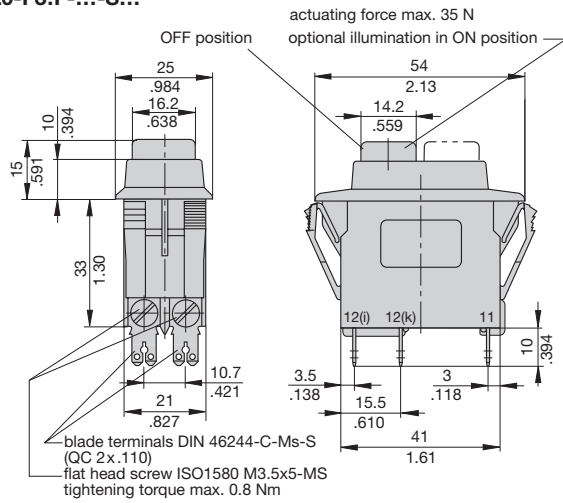


The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping, please multiply the circuit breaker current ratings by the derating factor shown below. See also section 9 – Technical information.

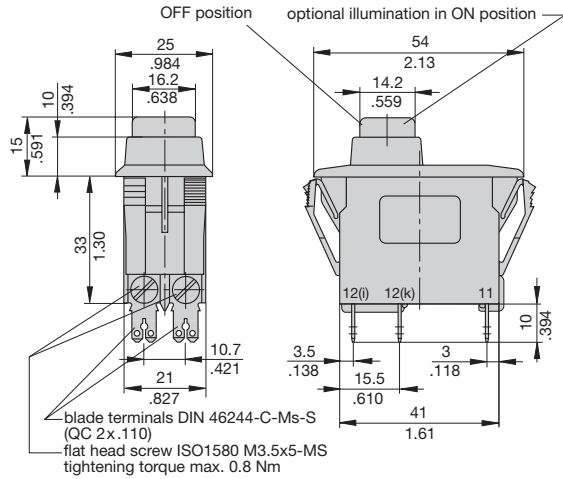
Ambient temperature °F	-22	-4	+14	+32	+73.4	+104	+122	+140
°C	-30	-20	-10	0	+23	+40	+50	+60
Derating factor	0.8	0.76	0.84	0.92	1	1.08	1.16	1.24

## Dimensions

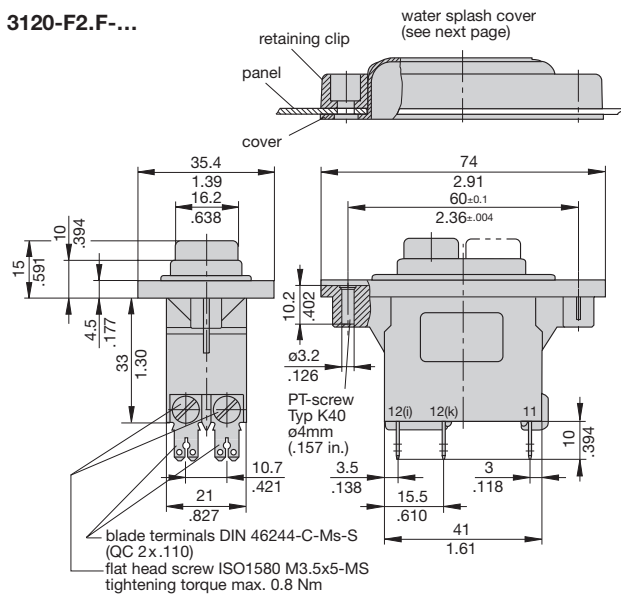
### 3120-F3.F-...-S...



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

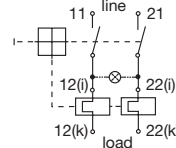


### 3120-F2.F-...

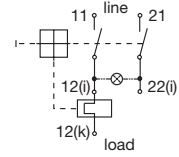


## Internal connection diagrams

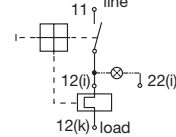
### 2 pole, thermally protected on both poles



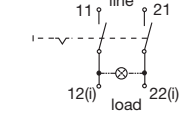
### 2 pole, thermally protected on one pole only



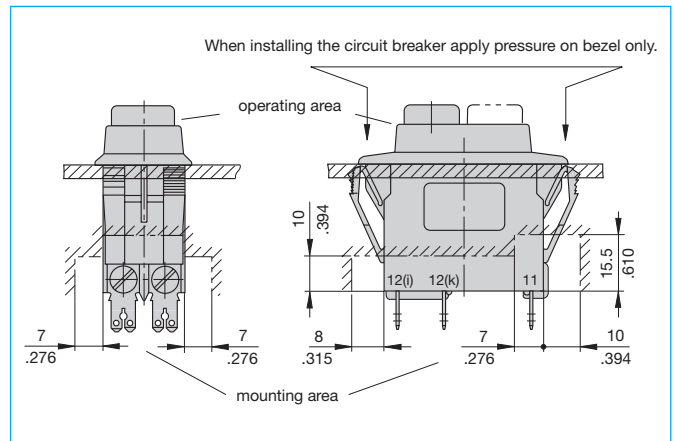
### 1 pole, thermally protected



### 2 pole, unprotected

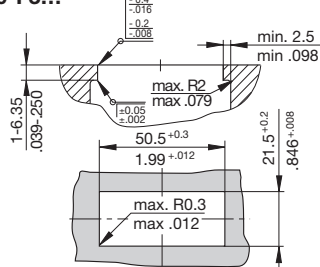


## Installation drawing

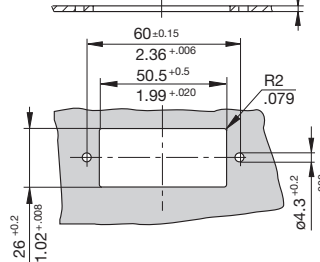


## Panel cut-out

### 3120-F3...



### 3120-F2...



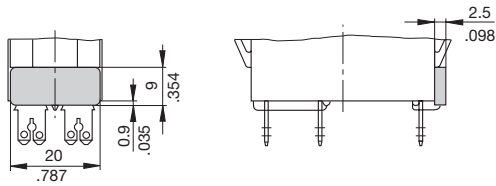
t: metal min. 2 mm (.079 in.)  
plastic min. 3 mm (.118 in.)

Edges of working parts: ISO 13715

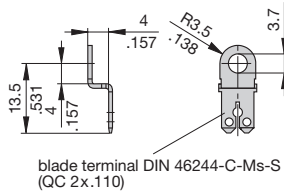
This is a metric design and millimeter dimensions take precedence (mm/inch)

## Accessories

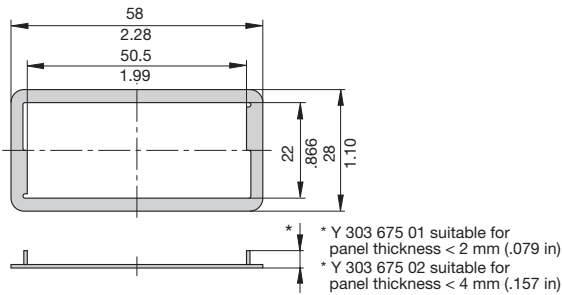
### Insulated cover Y 303 068 01



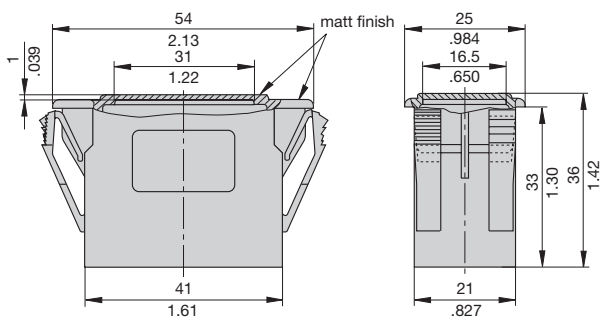
### Terminal adapter Y 303 862 01



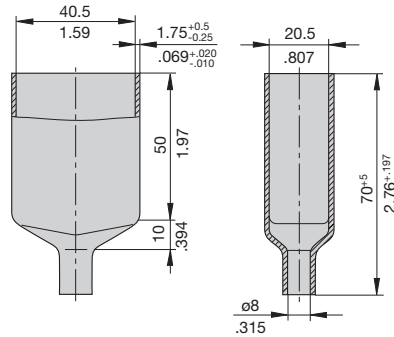
### Spacer for 3120-F3... Y 303 675 01/02



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

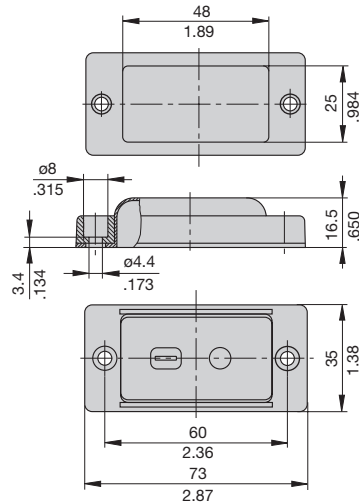


### Rear terminal shroud black (IP64) Y 304 275 01



### Water splash cover, transparent (IP66) for style 3120-F2.F-...

X 221 619 01  
consisting of  
- retaining clip 305 551 01  
- cover Y 306 001 01



This is a metric design and millimeter dimensions take precedence ( $\frac{\text{mm}}{\text{inch}}$ )

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.

## Description

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

## Typical applications

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

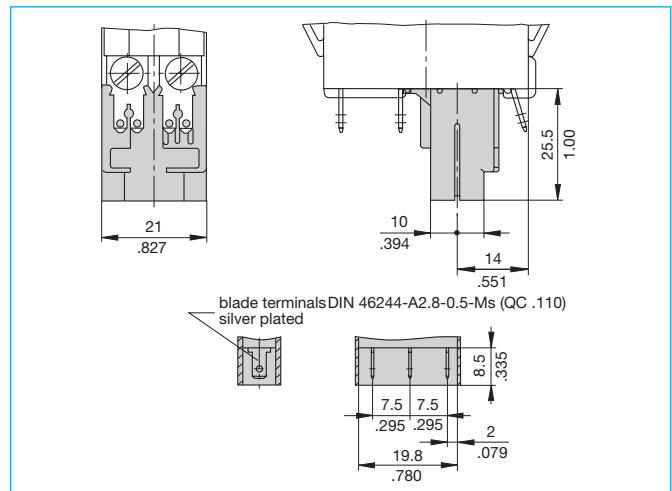
## Ordering information

<b>Type No.</b>			
<b>X3120</b> Module for type 3120 and type 3140			
<b>Function</b>			
<b>S</b> auxiliary contact module			
<b>Contact configuration</b>			
<b>0</b> change-over contact			
<b>Terminal design</b>			
<b>1</b> blade terminals 2.8 x 0.5 (QC .110), silver plated			
<b>Contact rating</b>			
AC		DC (not approved)	
Voltage rating	Current rating	Voltage rating	Current rating
<b>A</b> 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...0.25 A
<b>B</b> 5 V-250 V	0.05...1 A	5 V-250 V	0.05...1 A
<b>Supply condition</b>			
<b>M</b> module mounted to circuit breaker 3120-...			
<b>X3120 - S 0 1 A M</b>	ordering example		

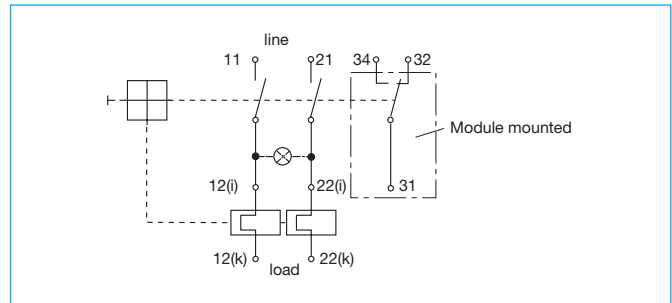
## Approvals (complete circuit breaker/module assembly)

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 60068-2-30, test Ca
Mass	approx. 38 g (complete assembly)

## 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)

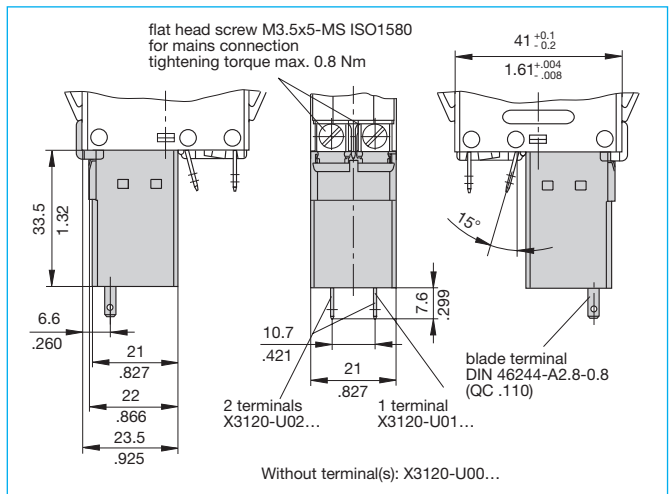
## Ordering information

Type No.	
<b>X3120</b>	Module for type 3120
<b>Function</b>	
<b>U</b>	undervoltage release module
<b>Terminal design</b>	
<b>00</b>	standard (without separate connections)
<b>01</b>	1 blade terminal 2.8x0.8 (QC .110)
<b>02</b>	2 blade terminals 2.8x0.8 (QC .110)
<b>Voltage ratings</b>	
<b>00</b>	AC 230/240 V 50/60 Hz
<b>01</b>	AC 120 V 50/60 Hz
<b>02</b>	AC 100 V 50/60 Hz
<b>03</b>	DC 24 V
<b>Assembly status</b>	
<b>M</b>	module mounted to the circuit breaker 3120
<b>X3120 -U 00 00 M</b>	ordering example

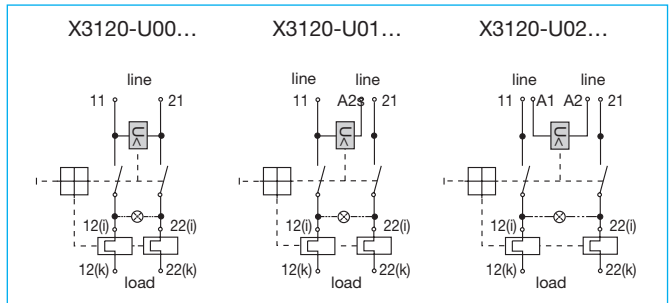
## Approvals (complete circuit breaker/module assembly)

Authority	Voltage ratings
VDE (EN 60934)	AC 100...240 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	$0.2 \times U_N < U < 0.7 \times U_N$ (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) $\pm 0.61$ 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 60068-2-30, test Ca
Mass	approx. 53 g (complete assembly)

## 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

<b>Type No.</b>	
X3120	Module for type 3120
<b>Function</b>	
M	magnetic relay trip module
<b>Style</b>	
2	magnetic remote trip coil
<b>Terminal design</b>	
P7	blade terminals 2 x 2.8 x 0.8 (QC 2x.110) tin plated
<b>Supply condition</b>	
M	module mounted to the circuit breaker
<b>Voltage ratings</b>	
AC 12, 24, 48, 60, 120, 220, 230, 240 V	
DC 12, 24 V	
X3120 - M 2 P7 M - 12 V ordering example	

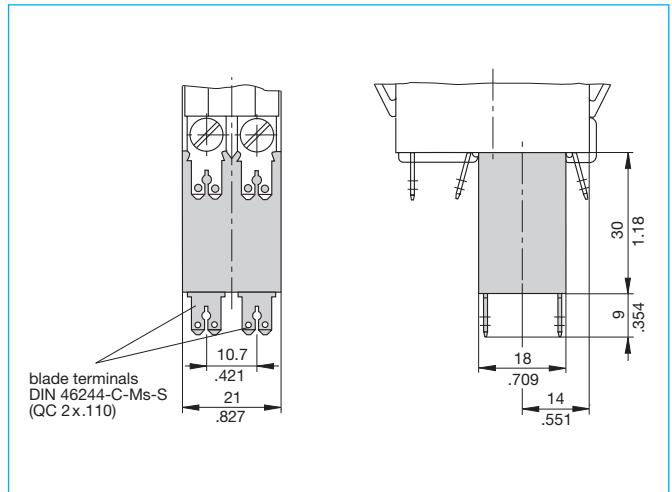
## Standard voltage ratings and typical internal resistance values

Voltage rating (V)	Internal resistance per pole (Ω)	Voltage rating (V)	Internal resistance per pole (Ω)
12 V AC/DC	0.78	120 V AC	71.0
24 V AC/DC	3.3	220 V AC	312
48 V AC	11.9	230 V AC	312
60 V AC	18.5	240 V AC	312

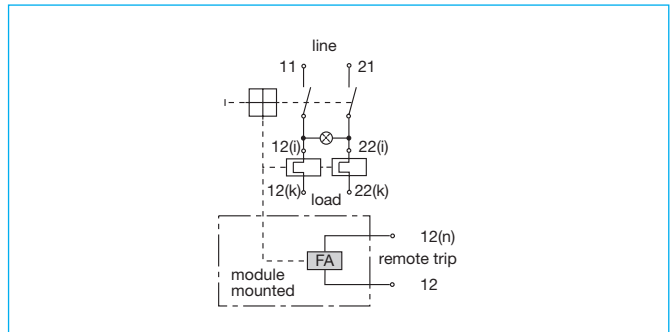
## Approvals (complete circuit breaker/module assembly)

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



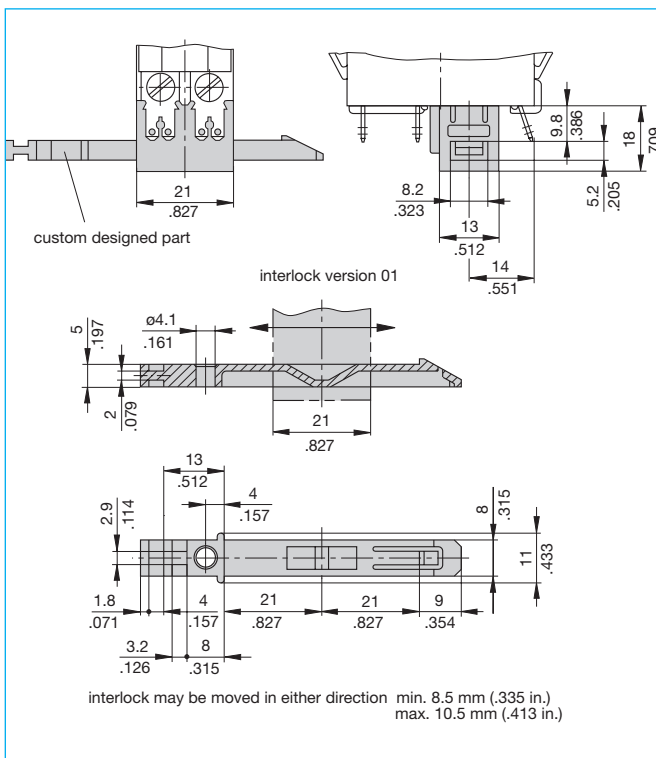
## Technical data

Voltage ratings	AC 12...240 V; DC 12...24 V
Power consumption	approx. 200 W
Pulse operation	20 ms < t <sub>ON</sub> < 100 ms / t <sub>OFF</sub> > 10 sec
Release delay	t < 20 ms
Typical life	50,000 operations at U <sub>N</sub>
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 60068-2-30, test Ca
Mass	approx. 53 g (complete assembly)

## Description

Suitable for use with all type 3120-F versions, this module provides a mechanical safety interlock which, according to the option specified, prevents the main switch/circuit breaker mechanism from being reset/switched on. The actuator is intended for use with interlock systems to ensure that machinery cannot be operated without covers and safety guards in place, for instance.

## Dimensions



## Typical applications

Mechanical monitoring of safety systems, e. g. for garden shredders.

## Ordering information

Type No.	
X3120	Module for type 3120-F
<b>Function</b>	
V	mechanical slide interlock module
<b>Module operation</b>	
1	3120 can only be switched on without the interlock fitted
<b>Interlock design</b>	
00	without interlock
01	interlock version 01 (see dimension diagram)
<b>Delivery condition of interlock</b>	
L	interlock supplied separately with the module
M	module factory-fitted with the interlock in its centre position
O	module supplied without interlock
<b>Operating direction of interlock</b>	
0	without interlock, or interlock supplied separately
1	interlock operated from the side near terminals 11, 12k, 12i of the 3120-...
2	interlock operated from the side near terminals 21, 22k, 22i of the 3120-...
<b>Assembly status</b>	
L	module supplied separately
M	module mounted to the circuit breaker
X3120 - V 1 00 0 0 M	ordering example

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

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.