

## Description

Single pole, miniaturised thermal circuit breaker with trip-free mechanism and push/pull on/off manual actuation (M-type TO CBE to EN 60934). Threadneck panel mounted, temperature-compensated, with optional auxiliary contacts. Fully approved for commercial aircraft and similar requirements.

Various dummies are available without protective function, allowing connection of pre-installed wiring without loads.

**US patent number:** US 6,490,141 B2 (4120-G4 moulded threadneck)

## Typical applications

Extra low voltage wiring systems on all types of vehicles for land, sea and air.

## Ordering information

### Type No.

**4120** single pole, with temperature compensation

#### Mounting

**G** threadneck panel mounting

#### Threadneck design

**1** M12x1x6.3 (aluminium)

**2** 7/16-32 UNx6.3 (aluminium)

#### Number of poles

**1** 1-pole, thermally protected

#### Hardware for threadneck

**0** without hardware

**1** hex nut M12x1, corrugated washer 12/15, fitted

**3** hex nut M12x1 (aluminium), serrated lock washer 12.1/17.2, bulk shipped

**4** hex nut 7/16-32UN (aluminium), serrated lock washer 11.3/14.9, fitted

#### Terminal design (main terminals)

**K1** screw terminals with metric thread K14 (M4)

**J1** screw terminals with inch thread J14 (8-32UNC-2B)

**J2** screw terminals with inch thread J17 (8-32UNC-2B)

**J3** screw terminals with inch thread J25 (6-32UNC-2B)

**P1** blade terminals 6.3x0.8, DIN 46244, silver-plated

#### Characteristic curve

**M1** thermal, 1.15 - 1.4 I<sub>N</sub>

#### Terminal screws

**A** Phillips screw M4x6, fitted

**B** Phillips screw 8-32UNC-2Ax6, fitted

**C** Phillips screw 6-32UNC-2Ax6 (MS 51957-26)

**K** hex screw with Phillips head 8-32UNC-3Ax7.6, fitted

**M** hex screw with Phillips head 8-32UNC-3Ax7.6, bulk shipped

**Z** without terminal hardware

#### Terminal washers

**0** without lock washer

**1** wave washer A4, fitted

**2** lock washer 4.3, fitted

**4** lock washer 3.7 (MS 35338-136)

**5** lock washer 4.3/9, fitted

**6** lock washer 4.3/9, bulk shipped

#### Auxiliary contact

**S0** without auxiliary contact

**S1** with auxiliary contact (connector

EN 3155-016M2018) (NC)

**S5** with polarized auxiliary contact (NC)

#### Barrier

**Z** without barrier

#### Colour of the push button

**G** green to EN (e. g. 2 1/2)

**N** black to EN (e. g. 2 1/2)

#### Current ratings

**1...25 A**

**4120 - G 1 1 - 1 - K1 M1 - A 1 S0 Z N - 10 A** ordering example



**4120-...**

## Technical data

|                                                                                         |                                                                                                                                                   |                          |                    |
|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------|
| Voltage rating                                                                          | AC 115 V (300 Hz to 800 Hz); DC 28 V                                                                                                              |                          |                    |
| Current rating range                                                                    | 1...25 A (0.5 A upon request)                                                                                                                     |                          |                    |
| Auxiliary circuit                                                                       | 1 A, DC 28 V (0.5 A upon request)                                                                                                                 |                          |                    |
| Typical life                                                                            | 20,000 operations mechanical, or<br>5,000 operations at 1 x I <sub>N</sub>                                                                        |                          |                    |
| Ambient temperature                                                                     | -55°C ...+125°C (-67...+257 °F)                                                                                                                   |                          |                    |
| Insulation co-ordination<br>(IEC 60664 and 60664A)                                      | rated impulse<br>withstand voltage<br>1.5 kV                                                                                                      | pollution<br>degree<br>3 |                    |
| Dielectric strength<br>(IEC 60664 and 60664A)<br>operating area<br>main to aux. circuit | test voltage<br>AC 1,500 V<br>AC 1,500 V                                                                                                          |                          |                    |
| Insulation resistance                                                                   | > 100 MΩ (DC 500 V)                                                                                                                               |                          |                    |
| Interrupting capacity I <sub>cn</sub>                                                   | AC 115 V (400 Hz):                                                                                                                                | 1...4 A<br>5...25 A      | 1,000 A<br>2,000 A |
|                                                                                         | DC 28 V:                                                                                                                                          | 1...25 A                 | 6,000 A            |
| Degree of protection<br>(IEC 60529/DIN 40050)                                           | operating area IP40<br>terminal area IP00                                                                                                         |                          |                    |
| Vibration<br>(sinusoidal)                                                               | 10 g (57-2000 Hz), ± 0.76 mm (5-57 Hz)<br>to ISO 7137, EN 2350 para. 5.3.1                                                                        |                          |                    |
| Vibration                                                                               | 1...2.5 A: 0.04 g <sup>2</sup> /Hz ± 1,5 dB; 7.3 g eff<br>3...20 A: 0.06 g <sup>2</sup> /Hz ± 1,5 dB; 9 g eff<br>to ISO 7137, EN 2350 para. 5.3.1 |                          |                    |
| Acceleration                                                                            | 17 g, to ISO 2669, EN 2350 para. 5.3.3                                                                                                            |                          |                    |
| Shock                                                                                   | 50 g (11 ms), to ISO 7137,<br>EN 2350 para. 5.3.2                                                                                                 |                          |                    |
| Corrosion                                                                               | 48 hours at 5 % salt mist<br>to ISO 7137, EN 2350 para. 5.4.2                                                                                     |                          |                    |
| Humidity                                                                                | 240 hours at 95 % RH,<br>to ISO 7137, EN 2350 para. 5.4.3                                                                                         |                          |                    |
| Explosion                                                                               | to VG 95210, sheet 10                                                                                                                             |                          |                    |
| Altitude                                                                                | ≤ 22,000 m above sea level                                                                                                                        |                          |                    |
| Mass                                                                                    | approx. 20.6 g with terminal screws,<br>without -Si<br>approx. 24.6 g with terminal screws,<br>with -Si                                           |                          |                    |

## Preferred types

| Preferred types                                | Standard current ratings (A) |   |   |   |     |    |    |    |    |
|------------------------------------------------|------------------------------|---|---|---|-----|----|----|----|----|
|                                                | 1                            | 2 | 3 | 5 | 7.5 | 10 | 15 | 20 | 25 |
| 4120-G214-J1M1-B2S0ZN<br>(MS3320)              | x                            | x | x | x | x   | x  | x  | x  | x  |
| 4120-G111-K1M1-A1S0ZN<br>(EN 2495/VG93345 T06) | x                            | x | x | x | x   | x  | x  | x  | x  |

## Standard current ratings and typical volt drop values

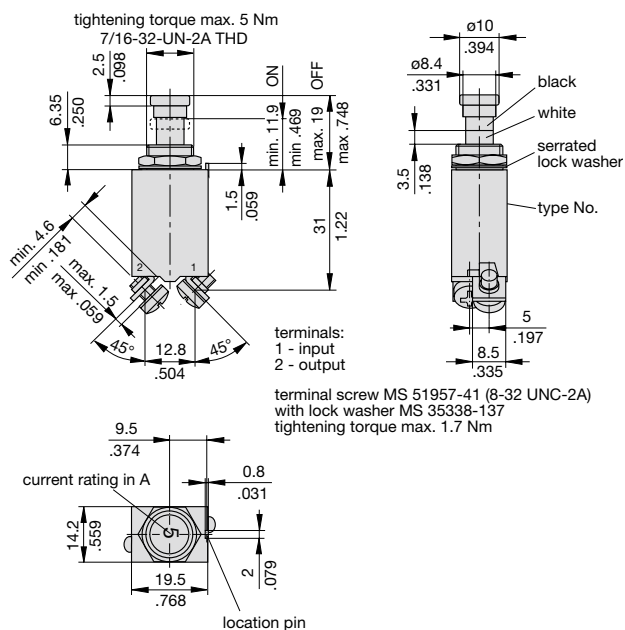
| Current rating (A) | Volt drop (mV) | Current rating (A) | Volt drop (mV) |
|--------------------|----------------|--------------------|----------------|
| 1                  | 1100           | 7.5                | 250            |
| 2                  | 550            | 10                 | 230            |
| 2.5                | 460            | 15                 | 200            |
| 3                  | 440            | 20                 | 190            |
| 4                  | 380            | 25                 | 190            |
| 5                  | 260            |                    |                |

## Approvals (configurations)

| Authority        | Standard                | Voltage ratings             | Current ratings          |
|------------------|-------------------------|-----------------------------|--------------------------|
| UL               | UL 1077                 | DC 50 V                     | 0.5 A...25 A             |
| Bw               | VG 95345, part 6        | AC 115 V, 400 Hz<br>DC 28 V | 1 A...25 A<br>1 A...25 A |
| Bw               | EN 2495-...U /<br>-...M | AC 115 V, 400 Hz<br>DC 28 V | 1 A...25 A<br>1 A...25 A |
| Bw               | LN 29887                | AC 115 V, 400 Hz<br>DC 28 V | 5 A...25 A<br>5 A...25 A |
| Bw               | EN 3773-004             | AC 115 V, 400 Hz<br>DC 28 V | 1 A...25 A<br>1 A...25 A |
| Dep. of the Navy | MS 3320                 | AC 115 V, 400 Hz<br>DC 28 V | 1 A...20 A<br>1 A...20 A |
| Airbus           | EN 2995-004             | AC 115 V, 400 Hz<br>DC 28 V | 1 A...25 A<br>1 A...25 A |
| Airbus           | EN 2995-005             | AC 115 V, 400 Hz<br>DC 28 V | 1 A...25 A<br>1 A...25 A |

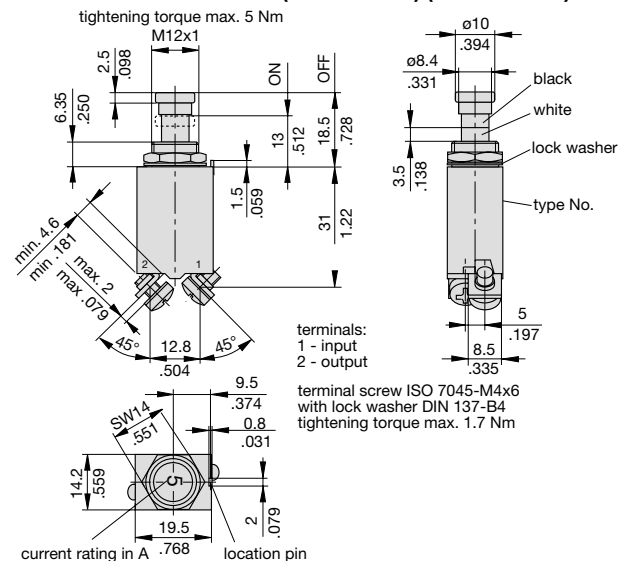
## Dimensions 4120-...

### 4120-G214-J1M1-B2S0ZN (MS 3320)

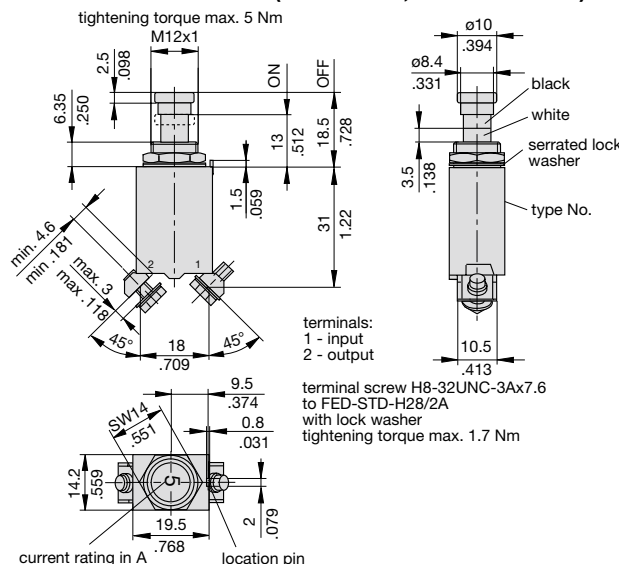


## Dimensions 4120-G1..

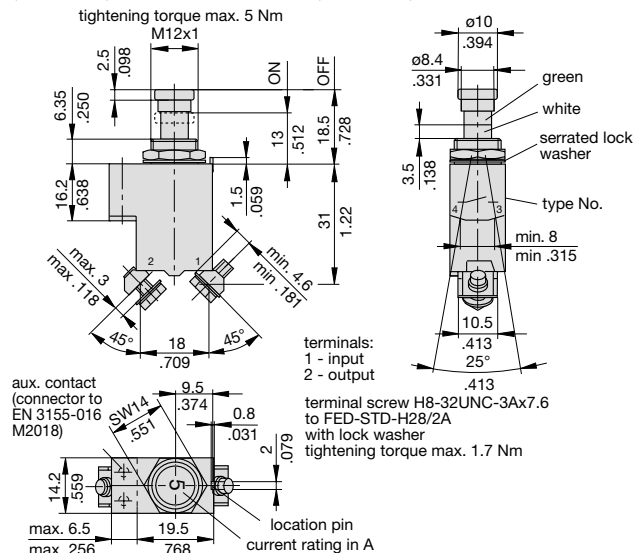
### 4120-G111-K1M1-A1S0ZN (EN2495-...M) (VG95345 T06)



### 4120-G11-J2M1-K5S0ZN (EN2495-...U, EN3773-004 D...)



### 4120-G112-J2M1-K5S1ZG - 4120-G112-J2M1-K5S5ZG (EN2995-004) (EN2995-005)



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

## Mounting holes

### 4120-G2...

**mounting holes S0**

Technical drawing of mounting plate 4120-G2 showing dimensions for mounting holes S0. The plate has a central circular hole and four corner mounting holes. Dimensions include overall width and height with tolerances, hole diameters, and hole-to-hole distances.

Dimensions:

- Overall width:  $\varnothing 3.2^{+0.15}_{-0.126}$
- Overall height:  $9.5^{+0.2}_{-0.374}$
- Central hole diameter:  $\varnothing 11.5^{+0.2}_{-0.453}$
- Thickness: 1.5 - 3 mm, .059 - .118 in.
- Mounting hole diameter:  $\varnothing 3.5^{+0.1}_{-0.118}$
- Mounting hole center-to-center distance (horizontal): min. 20, min. 25\*, min. .787, min. .984\*
- Mounting hole center-to-center distance (vertical): min. 30, min. 1.18

### 4120-G1...

**mounting holes S1 or S5**

Technical drawing of mounting plate 4120-G1 showing dimensions for mounting holes S1 or S5. The plate has a central circular hole and four corner mounting holes. Dimensions include overall width and height with tolerances, hole diameters, and hole-to-hole distances.

Dimensions:

- Overall width:  $\varnothing 3.2^{+0.15}_{-0.126}$
- Overall height:  $9.5^{+0.2}_{-0.374}$
- Central hole diameter:  $\varnothing 12.5^{+0.2}_{-0.492}$
- Thickness: 1.5 - 3 mm, .059 - .118 in.
- Mounting hole diameter:  $\varnothing 3.5^{+0.1}_{-0.138}$
- Mounting hole center-to-center distance (horizontal): min. 20, min. 25\*, min. .787, min. .984\*
- Mounting hole center-to-center distance (vertical): min. 40, min. 1.57

\* min. 25 mm / .984 in. when fitted with splash cover

### mounting holes S0

min. 20  
min. 25 \*  
min. .787  
min. .984 \*

$\varnothing 3^{+0.1}_{-0.004}$   
.118  $\pm$  .004  
9.5  $\pm$  .02  
.374  $\pm$  .008  
min. 1.18  
min. .30  
min. 1.18

$\varnothing 12.5^{+0.2}_{-.492} \pm .008$

thickness 1.5 - 3 mm  
.059 - .118 in.

### mounting holes S1 or S5

min. 20  
min. 25 \*  
min. .787  
min. .984 \*

$\varnothing 3.5^{+0.1}_{-0.004}$   
.138  $\pm$  .004  
9.6  $\pm$  .01  
.378  $\pm$  .004  
min. 1.57  
min. .40  
min. 1.57

$\varnothing 12.5^{+0.2}_{-.492} \pm .008$

thickness 1.5 - 3 mm  
.059 - .118 in.

\* min. 25 mm / .984 in. when fitted with splash cover

**4120-G1...**

**mounting holes S1 or S5**

Technical drawing showing the dimensions for mounting holes S1 or S5. The drawing includes two views: a top view and a side view.

**Top View Dimensions:**

- Outer diameter:  $\varnothing 3.2^{+0.15}_{-0.006}$
- Inner diameter (hole):  $\varnothing 1.26^{+0.02}_{-0.008}$
- Thickness: 1.5 - 3 mm (.059 - .118 in.)

**Side View Dimensions:**

- Outer diameter:  $\varnothing 3.5^{+0.1}_{-0.004}$
- Inner diameter (hole):  $\varnothing 1.38^{+0.01}_{-0.004}$
- Center-to-center distance:  $\varnothing 12.5^{+0.2}_{-0.008}$
- Thickness: 1.5 - 3 mm (.059 - .118 in.)

**Notes:**

- \* min. 25 mm / .984 in. when fitted with splash cover

### mounting holes S1 or S5

min. 20  
min. 25 \*  
min. .787  
min. .984 \*

$\varnothing 3.5^{+0.1}_{-.038}$

$\varnothing 9.6 \pm 0.1$

$\varnothing 12.5^{+0.2}_{-.492}$

min. 40  
min. 1.57

thickness 1.5 - 3 mm  
.059 - .118 in.

\* min. 25 mm / .984 in. when fitted with splash cover

\* min. 25 mm / .984 in. when fitted with splash cover

### Internal connection diagram

**with auxiliary contact**  
VG 95345 T06

**with auxiliary contact**  
EN 2995-004

**with polarized auxiliary contact**  
EN 2995-005

[illegible]

**with polarized auxiliary contact**  
EN 2995-005

## Other terminal designs

### Terminal design -J2

Terminal distances to:

- MS 14 105 (a, b)
- MS 14 153 (a, b)
- MS 22 073 (a)
- MS 22 074 (a)
- MS 25 244 (a)
- MS 25 373 (a, b)

Technical drawing of terminal design -J2. The front view shows a rectangular terminal block with a central screw terminal and two side terminals. The distance between the side terminals is labeled 'a' (18 mm/.709 in.). The distance from the center of the side terminals to the center of the top terminal is labeled 'b' (31 mm/1.22 in.). The side terminals are angled at 45°. The side view shows the terminal block with a width of 10.5 mm (.413 in.).

### Terminal design -J3

Terminal distances to:

- MS 26 574 (a, b)

Technical drawing of terminal design -J3. The front view shows a rectangular terminal block with a central screw terminal and two side terminals. The distance between the side terminals is labeled 'a' (15 mm/.591 in.). The distance from the center of the side terminals to the center of the top terminal is labeled 'b' (35.5 mm/1.40 in.). The side terminals are angled at 45°. The side view shows the terminal block with a width of 8.5 mm (.335 in.).

### Terminal design -P1

Technical drawing of terminal design -P1. The front view shows a rectangular terminal block with a central screw terminal and two side terminals. The distance between the side terminals is labeled '13' (.512 in.). The distance from the center of the side terminals to the center of the top terminal is labeled '36' (1.42 in.). The side view shows the terminal block with a width of 6.3 mm (.248 in.).

### Terminal design -J2

Terminal distances to:

- MS 14 105 (a, b)
- MS 14 153 (a, b)
- MS 22 073 (a)
- MS 22 074 (a)
- MS 25 244 (a)
- MS 25 373 (a, b)

Technical drawing of terminal design -J2. The front view shows a rectangular terminal block with a central screw terminal and two side terminals. The distance between the side terminals is labeled 'a' (18 mm/.709 in.). The distance from the center of the side terminals to the center of the top terminal is labeled 'b' (31 mm/1.22 in.). The side terminals are angled at 45°. The side view shows the terminal block with a width of 10.5 mm (.413 in.).

### Terminal design -J3

Terminal distances to:

- MS 26 574 (a, b)

Technical drawing of terminal design -J3. The front view shows a rectangular terminal block with a central screw terminal and two side terminals. The distance between the side terminals is labeled 'a' (15 mm/.591 in.). The distance from the center of the side terminals to the center of the top terminal is labeled 'b' (35.5 mm/1.40 in.). The side terminals are angled at 45°. The side view shows the terminal block with a width of 8.5 mm (.335 in.).

### Terminal design -P1

Technical drawing of terminal design -P1. The front view shows a rectangular terminal block with a central screw terminal and two side terminals. The distance between the side terminals is labeled '13' (.512 in.). The distance from the center of the side terminals to the center of the top terminal is labeled '36' (1.42 in.). The side view shows the terminal block with a width of 6.3 mm (.248 in.).

### Terminal design -J2

Terminal distances to:

- MS 14 105 (a, b)
- MS 14 153 (a, b)
- MS 22 073 (a)
- MS 22 074 (a)
- MS 25 244 (a)
- MS 25 373 (a, b)

Technical drawing of terminal design -J2. The front view shows a rectangular terminal with a central mounting point and two angled terminals at the bottom. The distance between the terminals is labeled 'a' (18 mm/.709 in.). The height of the terminal is labeled 'b' (31 mm/1.22 in.). The angled terminals are at a 45° angle. The side view shows the terminal's profile with a width of 10.5 mm (.413 in.).

### Terminal design -J3

Terminal distances to:

- MS 26 574 (a, b)

Technical drawing of terminal design -J3. The front view shows a rectangular terminal with a central mounting point and two angled terminals at the bottom. The distance between the terminals is labeled 'a' (15 mm/.591 in.). The height of the terminal is labeled 'b' (35.5 mm/1.40 in.). The angled terminals are at a 45° angle. The side view shows the terminal's profile with a width of 8.5 mm (.335 in.).

### Terminal design -P1

Technical drawing of terminal design -P1. The front view shows a rectangular terminal with a central mounting point and two angled terminals at the bottom. The distance between the terminals is labeled 'a' (13 mm/.512 in.). The height of the terminal is labeled 'b' (36 mm/1.42 in.). The angled terminals are at a 45° angle. The side view shows the terminal's profile with a width of 6.3 mm (.248 in.).

### Terminal design -J3

Terminal distances to:  
MS 26 574 (a, b)

The drawing shows a front view and a side view of terminal design -J3. The front view includes dimensions: a total height of 35.5 mm (1.40 inches), a base width of 15 mm (.591 inches), a base angle of 45 degrees, and a terminal width of 8.5 mm (.335 inches). The side view shows a terminal height of 6.3 mm (.248 inches).

35.5 mm / 1.40

b

8.5

.335

45°

a

(15 mm / .591 in.)

6.3

.248

### Terminal design -J3

Terminal distances to:  
MS 26 574 (a, b)

Technical drawing of terminal design -J3. The front view shows a rectangular terminal with a central rectangular cutout. The overall height is dimensioned as  $b = 35.5 \text{ mm} / 1.40$ . The width is dimensioned as  $a = 15 \text{ mm} / .591 \text{ in.}$ . The terminal has a mounting flange at the top and two mounting points at the bottom, with a  $45^\circ$  angle indicated. The side view shows the terminal's profile with a width dimension of  $8.5 / .335$ .

### Terminal design -P1

Technical drawing of terminal design -P1. The front view shows a rectangular terminal with a central rectangular cutout. The overall height is dimensioned as  $36 / 1.42$ . The width is dimensioned as  $13 / .512$ . The terminal has a mounting flange at the top and a mounting point at the bottom. The side view shows the terminal's profile with a width dimension of  $6.3 / .248$ .

### Terminal design -J3

Terminal distances to:  
MS 26 574 (a, b)

The drawing shows a front view and a side view of terminal design -J3. The front view includes dimensions: a total height of 35.5 mm (1.40 inches), a base width of 15 mm (.591 inches), and a 45-degree angle for the base flange. The side view shows a base width of 8.5 mm (.335 inches).

35.5 mm / 1.40

b

45°

a

(15 mm / .591 in.)

8.5

.335

### Terminal design -P1

The drawing shows a front view and a side view of terminal design -P1. The front view includes dimensions: a total height of 36 mm (1.42 inches), a base width of 13 mm (.512 inches), and a central slot. The side view shows a base width of 6.3 mm (.248 inches).

36

1.42

13

.512

6.3

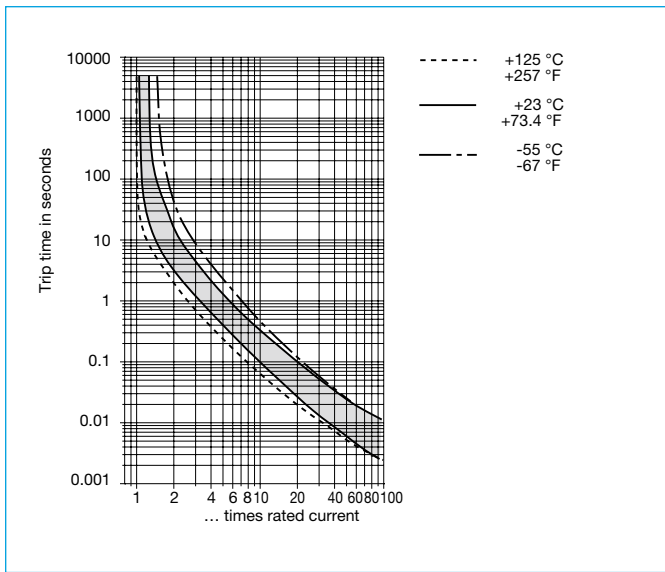
.248

### Terminal design -P1

### Terminal design -P1

### Terminal design -P1

### Typical time/current characteristics



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

## Accessories (approved to VG 95 345, part 23)

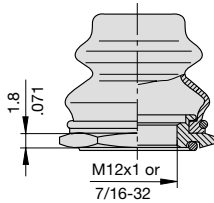
**Splash cover/hex nut assembly with O ring (IP66 and IP67)**

**X 200 801 08** nickel plated nut, transparent cover

**X 200 801 03** matt black finish nut, black cover

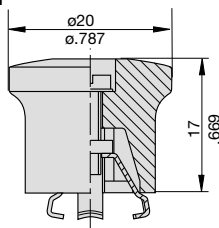
**X 200 801 09** matt black finish nut 7/16-32, black cover

**X 200 801 12** with blackened nut and transparent cover



**Actuator extension (black) to be fitted on the push button**

**X 200 803 01**



## Accessories

**Identification collar to be snapped on the push button**

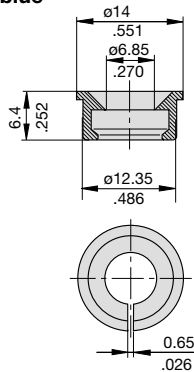
**Y 307 004 01** black

**Y 307 004 02** white

**Y 307 004 03** red

**Y 307 004 04** green

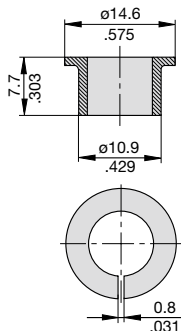
**Y 307 004 05** blue



**Lock out ring to block the push button in OFF position**

**Y 307 005 01** red

**Y 307 005 02** black



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.

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



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