

## Description

Single, two and three pole rocker switch/thermal trip free circuit breakers (S-type TO CBE to EN 60934) of compact design for snap-in panel mounting. Available either with protection on one/both/all poles or, in the case of the double pole version, protection on one pole only. Illumination is optional and there is a choice of rocker colours. Approved to CBE standard EN 60934 (IEC 60934).

## Typical applications

Motors, transformers, solenoids, household and office machines, electrical tools, mobile homes, boating, construction vehicles, medical equipment to EN 60601.

## Standard current ratings and typical internal resistance values

| Current rating (A) | Internal resistance per pole ( $\Omega$ ) | Current rating (A) | Internal resistance per pole ( $\Omega$ ) |
|--------------------|---|--------------------|---|
| 0.1                | 94  | 4                  | 0.0435                                    |
| 0.2                | 24  | 5                  | 0.0325                                    |
| 0.3                | 12  | 6                  | 0.0215                                    |
| 0.4                | 5.30                                      | 7                  | 0.0165                                    |
| 0.5                | 4.20                                      | 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

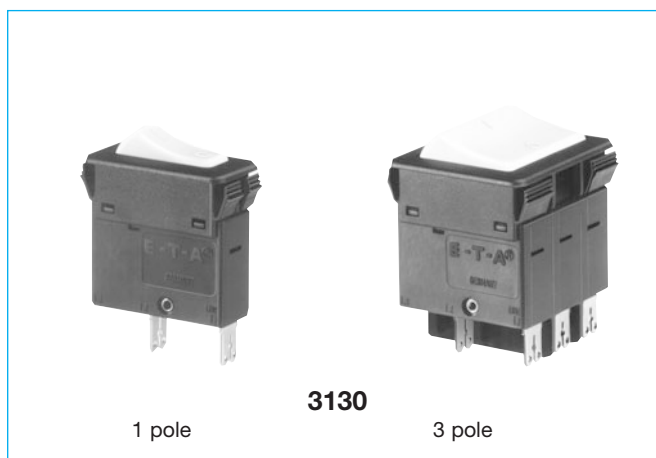
| operating voltage | power consumption |               |
|-------------------|-------------------|---------------|
|                   | filament/neon (B) | LED (G, R, Y) |
| 6 V               | 60 mA             | 9 mA          |
| 12 V              | 20 mA             | 9 mA          |
| 24 V              | 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 rating | Current rating                                  |
|----------------|----------------|---|
| VDE (EN 60934) | AC 240/415 V   | 0.1...20 A single pole<br>0.1...16 A multi pole |
|                | DC 50 V        | 0.1...8 A single pole<br>0.1...16 A multi pole  |
|                | DC 28 V        | 0.1...20 A single pole                          |
|                | UL, CSA        | AC 250 V, DC 50 V<br>3 AC 250 V                 |

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.



1 pole

3130

3 pole

## Technical data

For further details please see chapter: Technical Information

|  |   |                       |
|--|---|-----------------------|
| Voltage rating                                   | AC 240 V; 3 AC 415 V; DC 50 V<br>(UL: AC 250 V; 3 AC 250 V; DC 50 V)  |                       |
| Current ratings                                  | 0.1...20 A 1 pole<br>0.1...16 A 2 and 3 pole  |                       |
| Typical life                                     | <b>1 pole</b><br>AC 240 V: 0.1...20 A 30,000 operations at $1 \times I_N$ , inductive<br>DC 50 V: 0.1...4 A 30,000 operations at $1 \times I_N$ , inductive<br>4.5...16 A 30,000 operations at $1 \times I_N$ , resistive<br>DC 28 V: 4.5...20 A 30,000 operations at $1 \times I_N$ , inductive<br><b>2 pole</b><br>AC 240 V: 0.1...16 A 50,000 operations at $1 \times I_N$ , inductive<br>DC 50 V: 0.1...16 A 50,000 operations at $1 \times I_N$ , inductive<br><b>3 pole</b><br>3 AC 415 V: 0.1...16 A 30,000 operations at $1 \times I_N$ , inductive |                       |
| Ambient temperature                              | -30...+60 °C (-22...+140 °F)  |                       |
| Insulation co-ordination (IEC 60664 and 60664 A) | rated impulse withstand voltage<br>2.5 kV<br>reinforced insulation in operating area  | pollution degree<br>2 |
| Dielectric strength (IEC 60664 and 60664A)       | test voltage<br>AC 3,000 V<br>operating area<br>current path/current path<br>AC 1,500 V   |                       |
| Insulation resistance                            | >100 M $\Omega$ (DC 500 V)  |                       |
| Interrupting capacity $I_{cn}$                   | 0.1...2 A $10 \times I_N$<br>2.5...20 A 150 A 1 pole<br>2.5...16 A 250 A 2 pole<br>2.5...12 A 150 A 3 pole<br>14 + 16 A 130 A 3 pole  |                       |
| Interrupting capacity (UL 1077)                  | $I_N$ 0.1...12 A 14...16 A<br>1 + 2 pole AC 250V/3500A AC 250V/3500A<br>3 pole 3AC 250V/5000A<br>1 + 2 pole DC 50V/2000A DC 50V/2000A   |                       |
| Degree of protection (IEC 60529/DIN 40050)       | operating area IP40<br>terminal area IP00   |                       |
| Vibration  | 5 g (57-500 Hz), $\pm 0.38$ mm (10-57 Hz)<br>to IEC 60068-2-6, test Fc<br>10 frequency cycles/axis  |                       |
| Shock  | 1 pole: 25 g (11 ms) 2 + 3 pole: 20 g (11 ms)<br>to IEC 60068-2-27, test Ea   |                       |
| Corrosion  | 96 hours at 5 % salt mist,<br>to IEC 60068-2-11, test Ka  |                       |
| Humidity   | 240 hours at 95 % RH,<br>to IEC 60068-2-3, test Ca  |                       |
| Mass   | approx. 45 g (three pole)<br>approx. 31 g (double pole)<br>approx. 17 g (single pole)   |                       |

## Ordering information - 1 pole

|  |        |  |
|--|--------|--|
| Type No.                               | 3130   | rocker switch/circuit breaker  |
| Mounting                               | F      | snap in frame  |
| Frame                                  | 1      | standard   |
|  | 3      | special single pole version  |
| Number of poles                        | 1      | single pole, thermally protected   |
|  | A      | 1 pole, unprotected**  |
| Frame mounting                         | 0      | panel thickness 1-2.5 mm (.039-.099 in) (only 3130-F1...)  |
|  | 1      | panel thickness 1.5-3.2 mm (.059-.126 in)(only 3130-F3.1...)   |
| Terminal design                        | P7     | blade terminals DIN 46244-C-Ms-S (QC 2x.110)   |
|  | H7     | for terminals 1.1, 2.1 3.1 terminal screws M 3.5 for terminals 1.2, 2.2, 3.1 blade terminals (QC 2x.110) |
|  | N7     | blade terminals (QC 2x.110), with shunt terminal   |
| Characteristic curve                   | T1     | thermal, 1.05-1.4 I <sub>N</sub>   |
|  | Q1     | switch, only with terminal design -N7  |
| Switch style                           | W      | rocker   |
|  | U      | momentary switch function  |
| Switch colour designation              |        | opaque translucent   |
|  | 01     | black  |
|  | 02     | white  |
|  | 04     | red  |
|  | 09     | green  |
|  | 12     | white  |
|  | 14     | red  |
|  | 19     | green  |
|  | 29     | black, rocker with green dot   |
| Rocker markings                        | A      | dot (ON position)  |
|  | Q      | "I" and "O" moulded in   |
| Rocker illumination (optional)         |        |  |
|  | 12 Q Y | white rocker, yellow LED, AC/DC  |
|  | 14 Q R | red rocker, red LED, AC/DC   |
|  | 19 Q Y | green rocker, yellow LED, AC/DC  |
|  | 29 A G | black rocker with dot, green LED   |
| Illumination voltage range* (optional) | 1      | 4 - 7 V (G,R,Y)  |
|  | 2      | 10 - 14 V (G,R,Y)  |
|  | 3      | 20 - 28 V (G,R,Y)  |
|  | 4      | 42 - 54 V (R,Y)  |
|  | 6      | 90 - 140 V (R,Y)   |
|  | 7      | 185 - 275 V (R,Y)  |
|  | X      | LED, DC 8 - 10 mA ***  |
| Current ratings                        |        | 0.1...20 A   |

3130 - F 1 1 0 - P7 T1 - W 12 Q Y 7 - 5 A ordering example

\* N/A for non-illuminated version  
 \*\* unprotected poles have to ordered with terminal design N7  
 \*\*\* without series resistor and diode, to be selected by customer.  
 Recommendation:  
 4-7 V Rv 0.43 kΩ  
 10-14 V Rv 1.1 kΩ  
 20-28 V RV 2.7 kΩ  
 diode 1N4007

## Ordering information - multipole

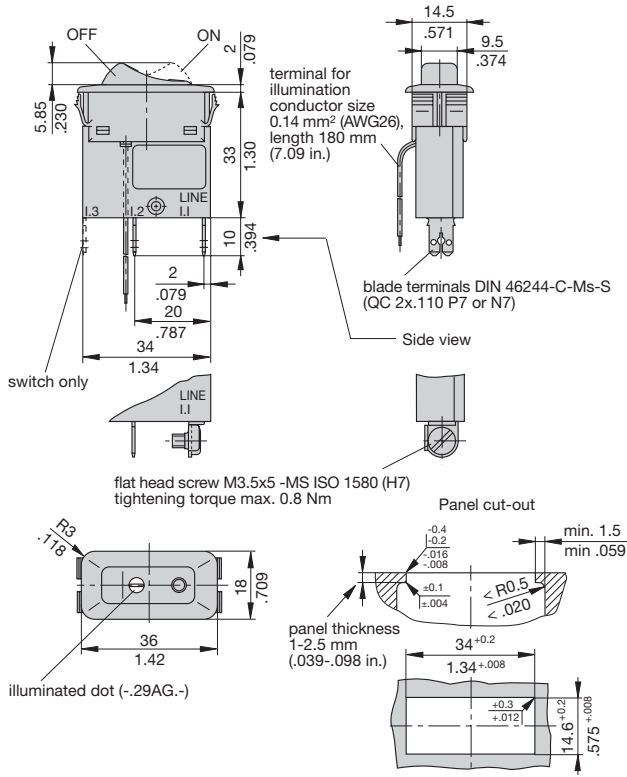
|  |      |   |
|--|------|---|
| Type No.                               | 3130 | rocker switch/circuit breaker multipole   |
| Mounting                               | F    | snap in frame   |
| Frame                                  | 1    | standard  |
| Number of poles                        | 2    | 2 pole, thermally protected   |
|  | 3    | 3 pole, thermally protected   |
|  | 5    | 2 pole, thermally protected on one pole only  |
|  | 6    | 3 pole, thermally protected on two poles only   |
|  | B    | 2 pole, unprotected**   |
|  | C    | 3 pole, unprotected**   |
| Frame mounting                         | 0    | panel thickness 1-2.5 mm (.039-.099 in) (only 3130-F1...)   |
| Terminal design                        | P7   | blade terminals DIN 46244-C-Ms-S (QC 2x.110)  |
|  | H7   | for terminals 1.1, 2.1 3.1 terminal screws M 3.5; for terminals 1.2, 2.2, 3.1 blade terminals (QC 2x.110) |
|  | N7   | blade terminals DIN 46244-C-Ms-S (QC 2x.110), with shunt terminal   |
| Characteristic curve                   | T1   | thermal, 1.05-1.4 I <sub>N</sub>  |
|  | Q1   | switch, only with terminal design -N7   |
| Switch style                           | W    | rocker  |
|  | U    | momentary switch function   |
| Switch colour designation              |      | opaque translucent  |
|  | 01   | black   |
|  | 02   | white   |
|  | 04   | red   |
|  | 09   | green   |
|  | 12   | white   |
|  | 14   | red   |
|  | 19   | green   |
|  | 29   | black, rocker with green dot  |
| Rocker markings                        | Q    | "I" and "O" moulded in  |
| Rocker illumination (optional)         |      |   |
|  | B    | filament (≤ AC/DC 48 V), neon (≥ AC 115 V)  |
|  | G    | green LED, DC   |
|  | R    | red LED, DC   |
|  | Y    | yellow LED, DC  |
| Illumination voltage range* (optional) | 1    | 4 - 7 V (B,G,R,Y)   |
|  | 2    | 10 - 14 V (B,G,R,Y)   |
|  | 3    | 20 - 28 V (B,G,R,Y)   |
|  | 4    | 42 - 54 V (B,R,Y)   |
|  | 6    | 90 - 140 V (B)  |
|  | 7    | 185 - 275 V (B)   |
|  | 8    | 320 - 450 V (B)   |
| Current ratings                        |      | 0.1...16 A  |

3130 - F 1 3 0 - P7 T1 - W 12 Q B 7 - 5 A ordering example

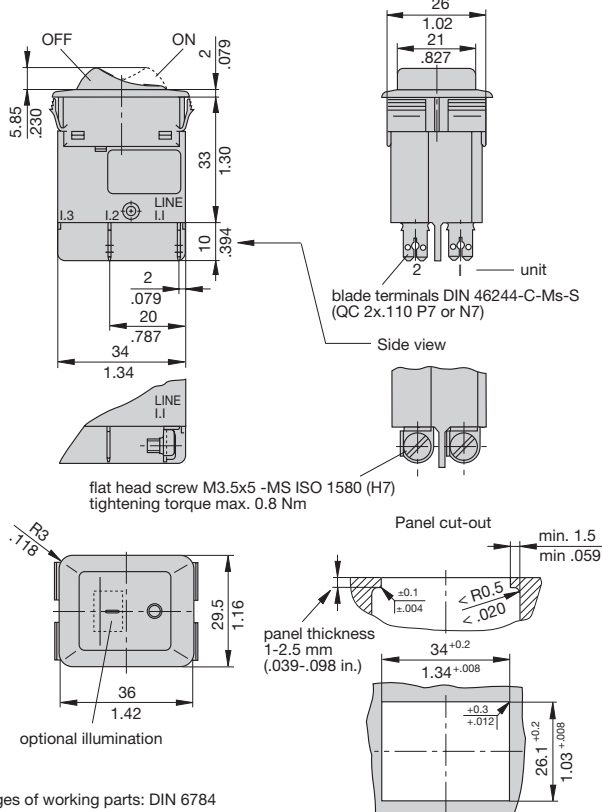
\* N/A for non-illuminated version  
 \*\* unprotected poles have to ordered with terminal design N7

## Dimensions

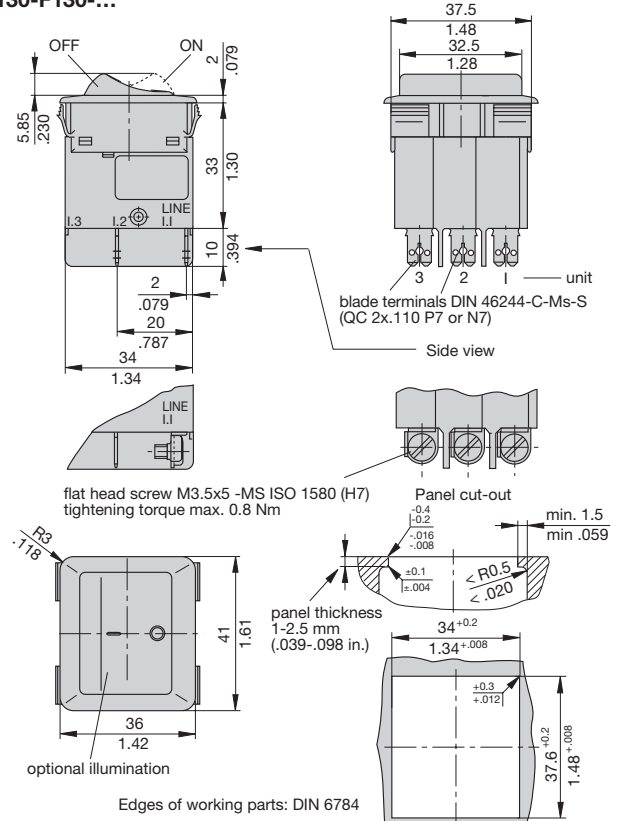
### 3130-F110-...



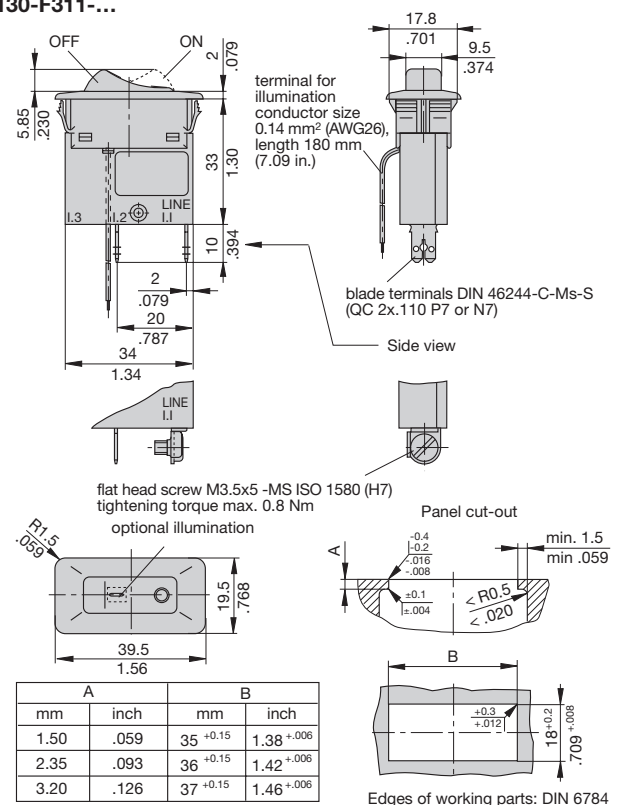
### 3130-F120-...



### 3130-F130-...

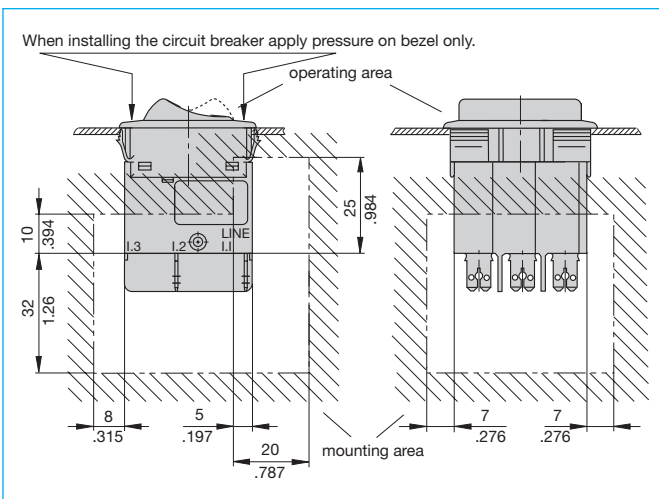


### 3130-F311-...



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

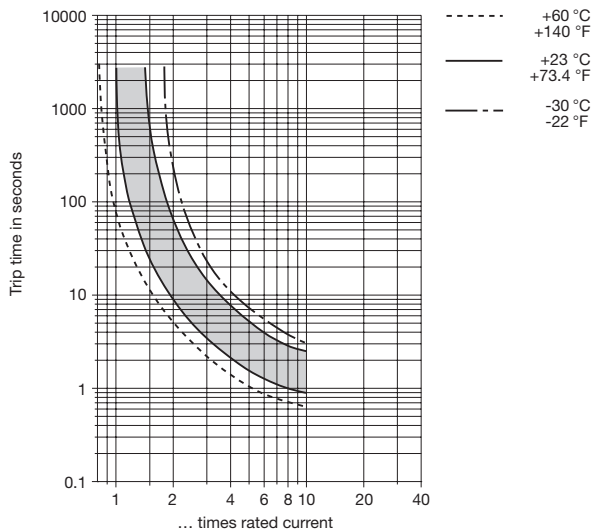
## Installation drawing 3130-F1...



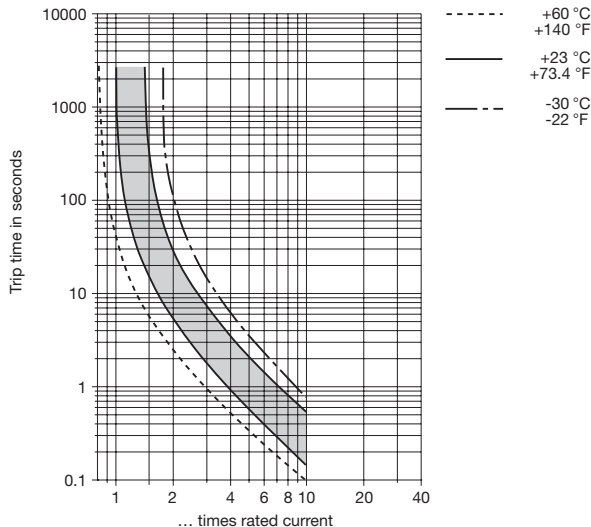
## Typical time/current characteristics

Multipole types: all poles symmetrically loaded.  
With single pole overload, thermal tripping will be at approx.  $1.54 \times I_N$  with 2 pole devices and at approx.  $1.68 \times I_N$  with 3 pole devices.

### 0.1 ... 2 A

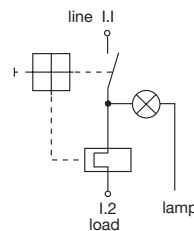


### 2.5 ... 20 A 1 pole 2.5 ... 16 A 2 and 3 pole

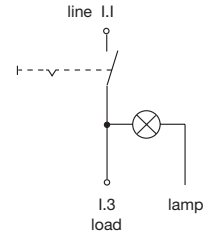


## Internal connection diagrams

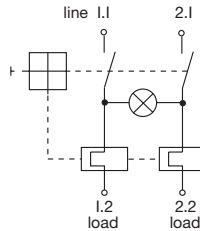
### 1 pole



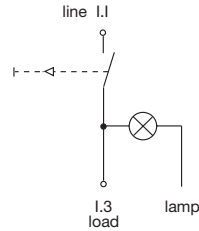
### 1 pole switch



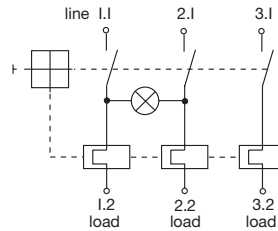
### 2 pole



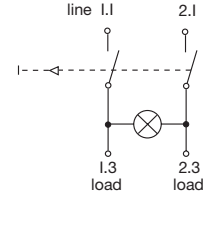
### 1 pole momentary switch



### 3 pole

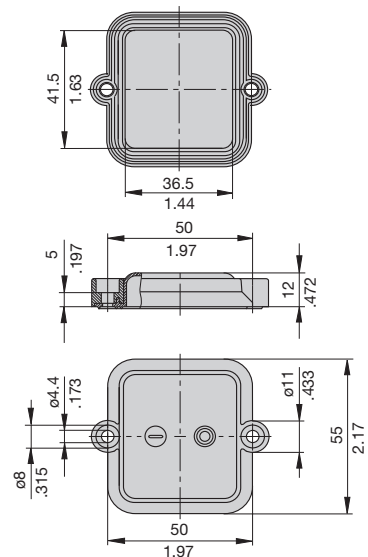


### 2 pole momentary switch



## Accessories 3130-F130-...

**Splash cover, transparent, for 3 pole version**  
**X 221 258 01** (IP54), comprising bezel Y 306 109 01  
and transparent cover Y 306 108 01



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

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 |
|------------------------|-----|------|------|------|-------|------|------|------|
| Ambient 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 |

## Description

Single pole rocker switch/thermal trip free circuit breakers (S-type TO CBE to EN 60934) of compact design for snap-in panel mounting. Available either with protection on one/both/all poles or, in the case of the double pole version, protection on one pole only. Illumination is optional and there is a choice of rocker colours. Approved to CBE standard EN 60934 (IEC 60934).

## Typical applications

Motors, transformers, solenoids, household and office machines, electrical tools, mobile homes, boating, construction vehicles, medical equipment to EN 60601.

## Standard current ratings and typical internal resistance values

| Current rating (A) | Internal resistance per pole ( $\Omega$ ) | Current rating (A) | Internal resistance per pole ( $\Omega$ ) |
|--------------------|---|--------------------|---|
| 0.1                | 94  | 4                  | 0.0435                                    |
| 0.2                | 24  | 5                  | 0.0325                                    |
| 0.3                | 12  | 6                  | 0.0215                                    |
| 0.4                | 5.30                                      | 7                  | 0.0165                                    |
| 0.5                | 4.20                                      | 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 |               |
|-------------------|-------------------|---------------|
|                   | filament/neon (B) | LED (G, R, Y) |
| 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 |

## Approvals

| Authority      | Voltage rating    | Current rating |
|----------------|-------------------|----------------|
| VDE (EN 60934) | AC 240/415 V      | 0.1...20 A     |
|                | DC 50 V           | 0.1...8 A      |
|                | DC 28 V           | 0.1...20 A     |
| UL, CSA        | AC 250 V, DC 50 V | 0.1...16 A     |



## Technical data

For further details please see chapter: Technical Information

|  |   |  |
|--|---|--|
| Voltage rating                                   | AC 240 V; DC 50 V<br>(UL: AC 250 V; DC 50 V)  |  |
| Current ratings                                  | 0.1...20 A  |  |
| Typical life                                     | AC 240 V: 0.1...20 A 30,000 operations at $1 \times I_N$ , inductive<br>DC 50 V: 0.1...4 A 30,000 operations at $1 \times I_N$ , inductive<br>4.5...16 A 30,000 operations at $1 \times I_N$ , resistive<br>DC 28 V: 4.5...20 A 30,000 operations at $1 \times I_N$ , inductive |  |
| Ambient temperature                              | -30...+60 °C (-22...+140 °F)  |  |
| Insulation co-ordination (IEC 60664 and 60664 A) | rated impulse withstand voltage<br>2.5 kV<br>reinforced insulation in operating area  | pollution degree<br>2                      |
| Dielectric strength (IEC 60664 and 60664A)       | test voltage<br>operating area<br>current path/current path   | AC 3,000 V<br>AC 1,500 V                   |
| Insulation resistance                            | >100 M $\Omega$ (DC 500 V)  |  |
| Interrupting capacity $I_{cn}$                   | 0.1...2 A<br>2.5...20 A   | 10 $\times I_N$<br>150 A                   |
| Interrupting capacity (UL 1077)                  | 0.1...12 A<br>AC 250V/3500A<br>DC 50V/2000A   | 14...16 A<br>AC 250V/3500A<br>DC 50V/2000A |
| Degree of protection (IEC 60529/DIN 40050)       | operating area IP66<br>terminal area IP00   |  |
| Vibration  | 5 g (57-500 Hz), $\pm 0.38$ mm (10-57 Hz)<br>to IEC 60068-2-6, test Fc<br>10 frequency cycles/axis  |  |
| Shock  | 25 g (11 ms)<br>to IEC 60068-2-27, test Ea  |  |
| Corrosion  | 96 hours at 5 % salt mist,<br>to IEC 60068-2-11, test Ka  |  |
| Humidity   | 240 hours at 95 % RH,<br>to IEC 60068-2-3, test Ca  |  |
| Mass   | approx. 17 g  |  |

## Ordering information - IP 66

|  |   |   |
|--|---|---|
| <b>Type No.</b>                            | 3130                                    | rocker switch/circuit breaker   |
| <b>Mounting</b>                            | F                                       | snap in frame   |
| <b>Frame</b>                               | 2                                       | splash water protected  |
| <b>Number of poles</b>                     | 1                                       | single pole, thermally protected  |
| <b>A</b>                                   | 1                                       | pole, unprotected **  |
| <b>Frame mounting</b>                      | 2                                       | panel thickness 2-3.5 mm  |
| <b>Terminal design</b>                     | P7                                      | blade terminals DIN 46244-C-Ms-S (QC 2x.110)  |
| <b>H7</b>                                  |   | for terminals 1.1 terminal screws M 3.5<br>for terminals 1.2 2 x .110 blade terminals                         |
| <b>N7</b>                                  |   | blade terminals DIN 46244-C-Ms-S (QC 2x.110),<br>with shunt terminal or for switch only                       |
| <b>Characteristic curve</b>                | T1                                      | thermal, 1.05-1.4 I <sub>N</sub>  |
| <b>Q1</b>                                  |   | switch, only with terminal design -N7   |
| <b>Switch style</b>                        | S 00                                    | without actuator rocker X 222 420 ..<br>must be ordered separately.<br>Available symbols see following pages. |
| <b>S</b>                                   |   | rocker  |
| <b>P</b>                                   |   | momentary switch  |
| <b>Switch colour designation (not S00)</b> |   | opaque                      translucent   |
|  | 01                                      | black   |
|  | 02                                      | white   |
|  | 04                                      | red   |
|  | 09                                      | green   |
|  | 12                                      | white   |
|  | 14                                      | red   |
|  | 19                                      | green   |
| <b>Switch markings</b>                     | 0                                       | without actuator  |
|  | Q                                       | "I" and "O" moulded in  |
| <b>Switch illumination</b>                 | 12 Q Y                                  | white rocker, yellow LED, AC/DC   |
|  | 14 Q R                                  | red rocker, red LED, AC/DC  |
|  | 19 Q Y                                  | green rocker, yellow LED, AC/DC   |
|  | S 00 0 Y                                | without rocker, LED yellow, AC/DC   |
| <b>Illumination voltage range*</b>         | 1                                       | 4 - 7 V (R,Y)   |
|  | 2                                       | 10 - 14 V (R,Y)   |
|  | 3                                       | 20 - 28 V (R,Y)   |
|  | 4                                       | 42 - 54 V (R,Y)   |
|  | 6                                       | 90 - 140 V (R,Y)  |
|  | 7                                       | 185 - 275 V (R,Y)   |
|  | X                                       | LED, DC 8-10 mA ***   |
| <b>Current ratings</b>                     | 0.1...20 A                              |   |
| <b>Ordering example</b>                    | 3130 F 2 1 2 - P7 T1 - S 12 Q Y 7 - 5 A |   |

\* N/A for non-illuminated version

\*\* unprotected poles have to ordered with terminal design N7

\*\*\* without series resistor and diode, to be selected by customer.

Recommendation:

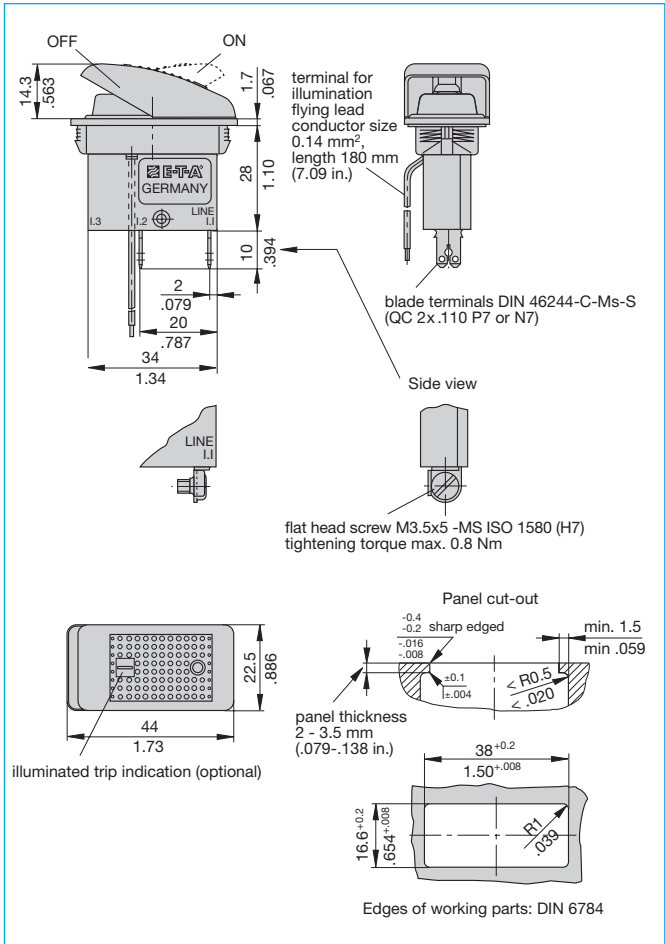
4-7 V Rv 0,43 kΩ

10-14 V Rv 1,1 kΩ

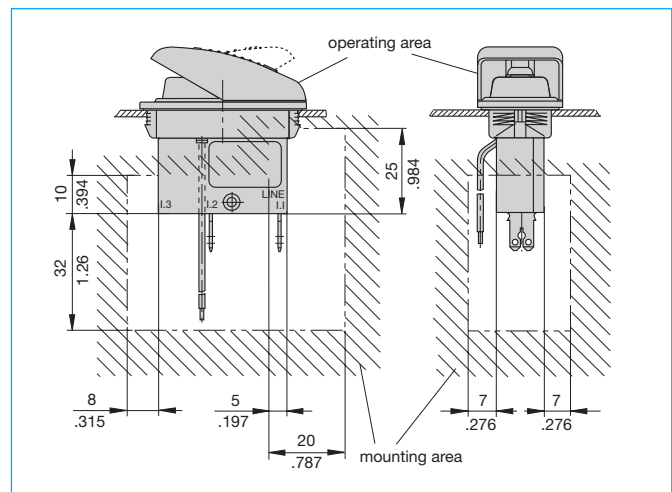
20-28 V RV 2,7 kΩ

diode 1N4007

## Dimensions 3130-F212-...

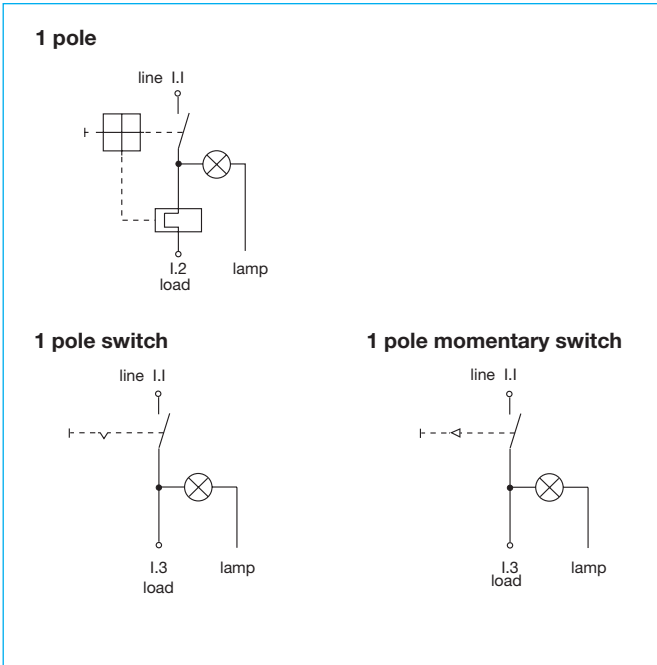


## Installation drawing 3130-F212-...



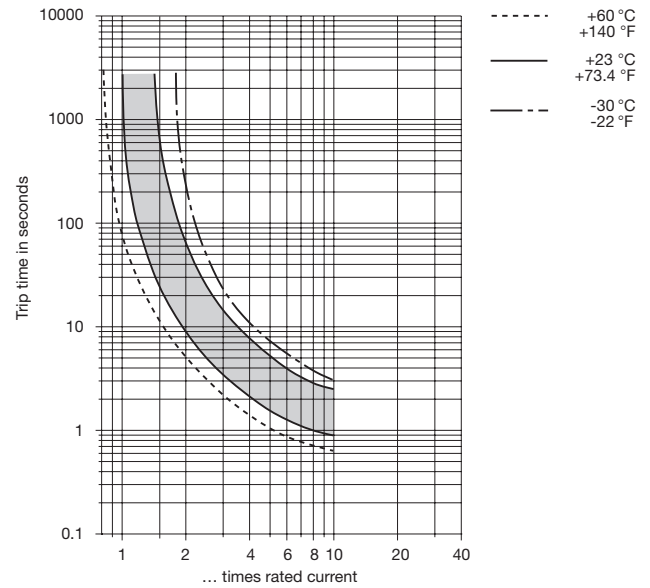
This is a metric design and millimeter dimensions take precedence (mm/inch)

**Internal connection diagrams**

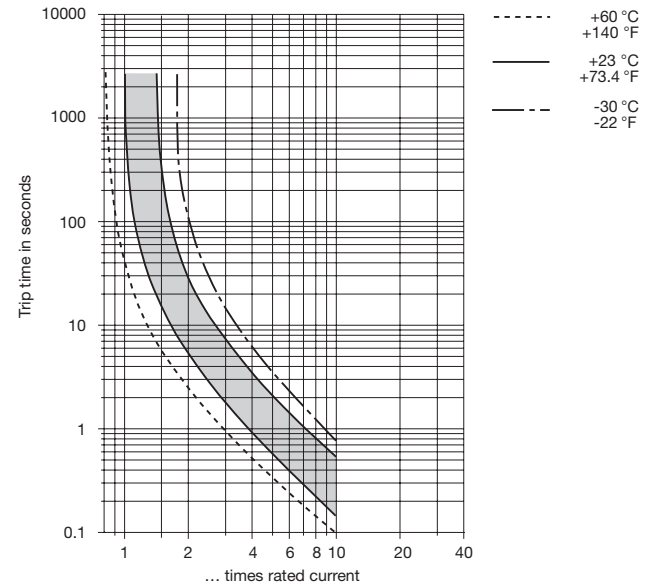


**Typical time/current characteristics**

**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.

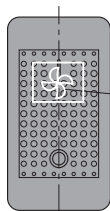
|                        |     |      |      |      |       |      |      |      |
|------------------------|-----|------|------|------|-------|------|------|------|
| Ambient temperature °F | -22 | -4   | +14  | +32  | +73.4 | +104 | +122 | +140 |
| °C                     | -30 | -20  | -10  | 0   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

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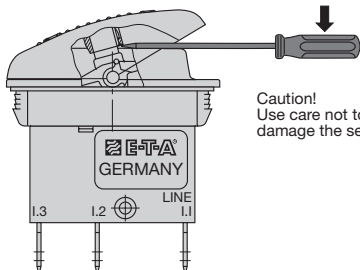
## Accessories

### Rocker X 222 420 ..

### How to exchange rockers



symbol  
X 222 420 12



Caution!  
Use care not to  
damage the seal.

### Symbols/legends available

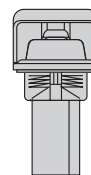
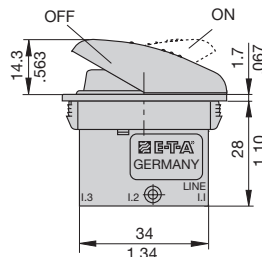
|                            |  |              |
|----------------------------|--|--------------|
| Interior light             |  | X 222 420 01 |
| Anchor light               |  | X 222 420 02 |
| Cockpit light              |  | X 222 420 03 |
| Navigation light           |  | X 222 420 04 |
| VHF radio                  |  | X 222 420 05 |
| Refrigerator               |  | X 222 420 06 |
| Anchor                     |  | X 222 420 07 |
| Windshield wiper           |  | X 222 420 08 |
| Bilge pump                 |  | X 222 420 09 |
| Potable water              |  | X 222 420 10 |
| Horn                       |  | X 222 420 11 |
| Ventilation fan            |  | X 222 420 12 |
| Panel light                |  | X 222 420 13 |
| Navigation instruments     |  | X 222 420 14 |
| Music                      |  | X 222 420 15 |
| Heating                    |  | X 222 420 16 |
| Shower pump                |  | X 222 420 17 |
|                            |  | X 222 420 18 |
| Icebox                     |  | X 222 420 19 |
| Water for windshield wiper |  | X 222 420 20 |
| Weigh anchor               |  | X 222 420 21 |
| Drop anchor                |  | X 222 420 22 |

Further symbols upon request.

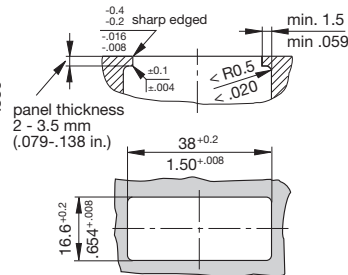
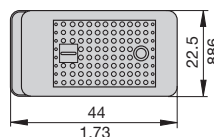
### S00 switch style:

white translucent rocker coated with black lacquer  
with laser marked symbols that appear in white translucent.

### Blanking piece (black) 3130-387012



Panel cut-out



panel thickness  
2 - 3.5 mm  
(.079-.138 in.)

Edges of working parts: DIN 6784

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.