

## Description

Four pole switch or three pole switch/thermal circuit breaker (S-type TO CBE to EN 60934) with trip-free mechanism and red/green two button operation. Designed for snap-in panel mounting. Integral splash water protection to meet protection degree IP 66 in the operating area (option). Optional with under voltage release module. Complies with CBE standard EN 60934 (IEC 60934).

## Typical applications

High-pressure cleaners, shredders, pumps, power saws, electric tools, motors, processing systems.

## Ordering information

### Type No.

**3140** four pole switch or three pole switch/circuit breaker

### Mounting

**F** snap in frame

### Frame

**1** standard

**2** splash water protected version

### Number of poles

**3** 3-pole, thermally protected

**7** 4-pole, thermally protected on 3 poles only

### Frame mounting

**0** panel thickness 1-6.35 mm (.04-.25 in)

### Terminal design

**P7** blade terminals 2x2.8x0.8 mm (QC 2x.110), DIN 46244-C

**H7** as P7, but for terminals x.1 terminal screws M3.5 (required with X3140 fitted)

### Characteristic curve

**T1** thermal

### Switch style

**S** 2 push buttons (ON/OFF)

### Switch colour

**GRX** green/red

### Current rating range

**0.1...16 A**

**3140 - F 1 3 0 - P7 T1 - S GRX - 10 A** ordering example

Please be informed that we have minimum ordering quantities to be observed.

## 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                | 0.0595                           |
| 0.2                | 24                               | 4                  | 0.0435                           |
| 0.3                | 12                               | 4.5                | 0.0325                           |
| 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                  | 0.0125                           |
| 1                  | 0.9                              | 10                 | < 0.02                           |
| 1.2                | 0.80                             | 12                 | < 0.02                           |
| 1.5                | 0.45                             | 14                 | < 0.02                           |
| 2                  | 0.27                             | 15                 | < 0.02                           |
| 2.5                | 0.0785                           | 16                 | < 0.02                           |
| 3                  | 0.0595                           |                    |                                  |

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.



**3140**

## Technical data

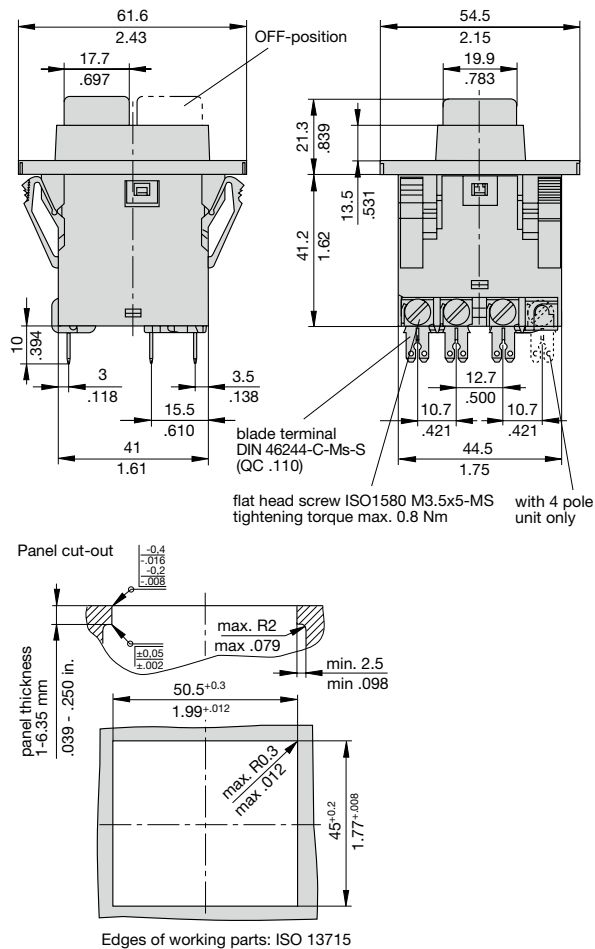
For further details please see: [http://www.e-t-a.de/ti\\_e](http://www.e-t-a.de/ti_e)

|                                                                                           |                                                                                                                                                                                                                                                                                                                             |                              |                          |
|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|--------------------------|
| Voltage rating                                                                            | 3 AC 415 V; DC 50 V                                                                                                                                                                                                                                                                                                         |                              |                          |
| Current rating range                                                                      | 0.1...16 A                                                                                                                                                                                                                                                                                                                  |                              |                          |
| Typical life                                                                              | <b>3-pole</b><br>3 AC 415 V: 0.1...14 A 10,000 operations at 1 x I <sub>N</sub> , inductive<br>15...16 A 10,000 operations at 1 x I <sub>N</sub> , resistive<br><b>4-pole</b><br>3 AC 415 V 0.1...14 A 10,000 operations at 1 x I <sub>N</sub> , inductive<br>15...16 A 10,000 operations at 1 x I <sub>N</sub> , resistive |                              |                          |
| Ambient temperature                                                                       | -30...+60 °C (-22...+140 °F)                                                                                                                                                                                                                                                                                                |                              |                          |
| Insulation co-ordination<br>(IEC 60664 and 60664A)                                        | rated impulse<br>withstand voltage<br>2.5 kV<br>reinforced insulation in operating area                                                                                                                                                                                                                                     | pollution<br>degree<br>2     |                          |
| Dielectric strength<br>(IEC 60664 and 60664A)<br>operating area<br>between poles (3-pole) | test voltage<br>AC 3,000 V<br>AC 1,500 V                                                                                                                                                                                                                                                                                    |                              |                          |
| Insulation resistance                                                                     | > 100 MΩ (DC 500 V)                                                                                                                                                                                                                                                                                                         |                              |                          |
| Interrupting capacity I <sub>cn</sub>                                                     | 0.1...2 A<br>2.5...16 A                                                                                                                                                                                                                                                                                                     | 10 x I <sub>N</sub><br>150 A |                          |
| Interrupting capacity<br>(UL 1077)                                                        | I <sub>N</sub><br>0.1...16 A                                                                                                                                                                                                                                                                                                | U <sub>N</sub><br>AC 250 V   | 3- and 4-pole<br>5,000 A |
| Degree of protection<br>(IEC 60529/DIN 40050)                                             | operating area IP40<br>(IP66 with water splash protection)<br>terminal area IP00                                                                                                                                                                                                                                            |                              |                          |
| Vibration                                                                                 | 5 g (57-500 Hz) ± 0.38 mm (10-57 Hz)<br>to IEC 60068-2-6, test Fc,<br>10 frequency cycles/axis                                                                                                                                                                                                                              |                              |                          |
| Shock                                                                                     | 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 60068-2-78, test Cab                                                                                                                                                                                                                                                                        |                              |                          |
| Mass                                                                                      | approx. 68                                                                                                                                                                                                                                                                                                                  |                              |                          |

## Approvals

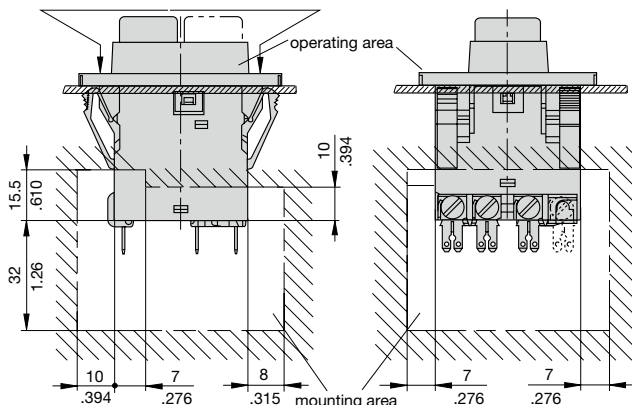
| Prüfstelle | Prüfnorm           | Nennspannung        | Nennstrombereich        |
|------------|--------------------|---------------------|-------------------------|
| UL         | UL1077             | AC 250 V<br>DC 50 V | 0,1...16 A (3-4 pole)   |
| VDE        | IEC/EN 60934       | 3 AC 415 V          | 0,1 A...16 A (3-4 pole) |
| CQC        | GB 17701           | AC 240/415 V        | 0,1 A...16 A (3-4 pole) |
| CSA        | CSA C22.2, No. 235 | AC 250 V<br>DC 50 V | 0,1 A...16 A (3-4 pole) |

## Dimensions



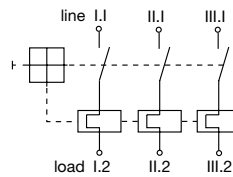
## Installation drawing

When installing the circuit breaker apply pressure on bezel only

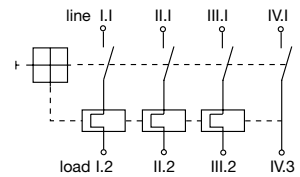


## Internal connection diagrams

### 3-pole thermally protected

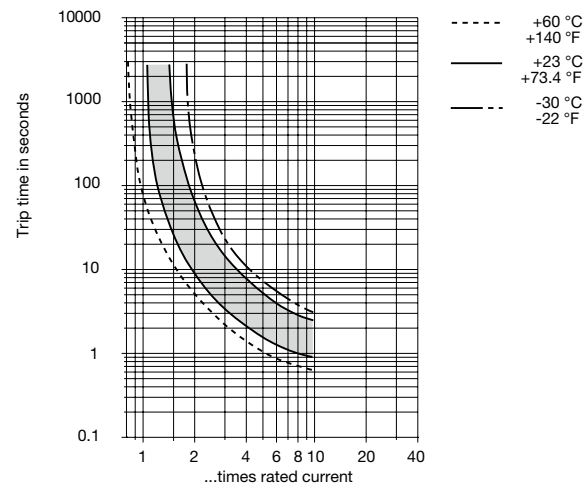


### 4-pole 3-poles thermally protected

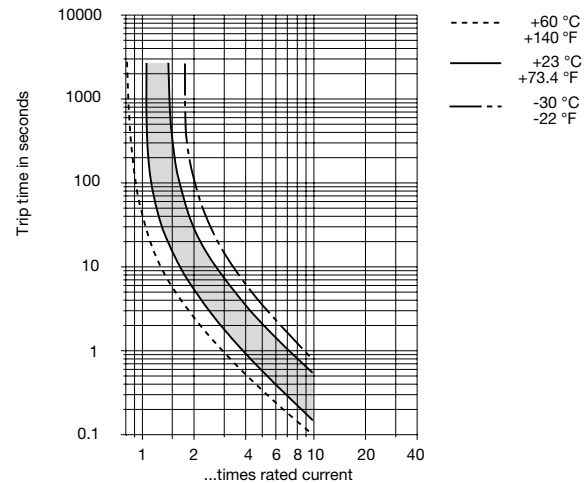


## Typical time/current characteristics

### 0.1...2 A



### 2.5...16 A



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

| Ambient temp. °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 |

## Description

A module suitable for all versions of type 3140 to trip the main switch/circuit breaker mechanism in the event of loss of voltage of the connected phases. When the voltage is restored the switch must be reset to reconnect the load, thereby avoiding the safety hazards associated with automatic re-starting of machinery.

**Note:** Basic unit 3140-... must be fitted with -H7 or -G7 screw terminals.

**US patent number:** US 6,714,396 B2

## Typical applications

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

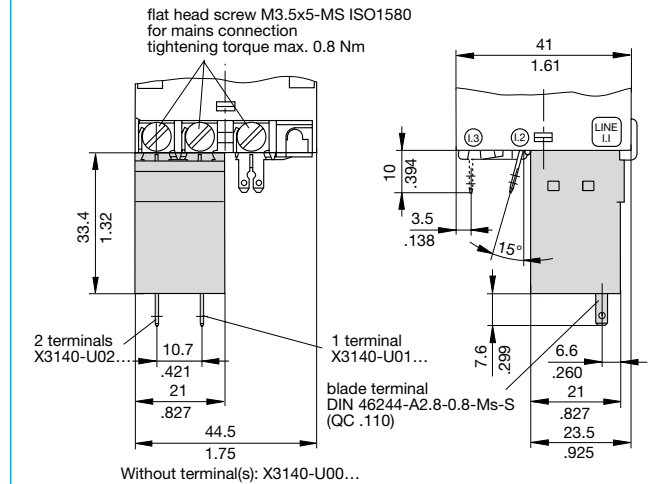
## Ordering information

| Type No.                 |                                         |
|--------------------------|-----------------------------------------|
| <b>X3140</b>             | Module for type 3140                    |
| <b>Function</b>          |                                         |
| <b>U</b>                 | undervoltage release module             |
| <b>Terminal design</b>   |                                         |
| <b>00</b>                | standard (without separate connections) |
| <b>01</b>                | one blade terminal 2.8x0.8 (QC .110)    |
| <b>Voltage ratings</b>   |                                         |
| <b>00</b>                | AC 400 V 50/60 Hz                       |
| <b>03</b>                | DC 24 V                                 |
| <b>09</b>                | AC 230 / 240 V 50/60 Hz                 |
| <b>Assembly status</b>   |                                         |
| <b>M</b>                 | module mounted to the circuit breaker   |
| <b>X3140 - U 00 00 M</b> | ordering example                        |

## Technical data

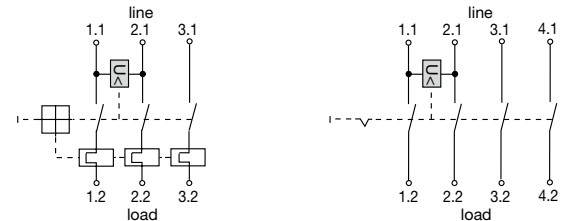
|                     |                                                                                                                                    |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Voltage ratings     | AC 400 V 50/60 Hz; AC 230 V; DC 24 V                                                                                               |
| Voltage tolerance   | +10%/-15%                                                                                                                          |
| Current consumption | approx. 2.0 mA                                                                                                                     |
| Release values      | $0.2 \times U_N < U < 0.7 \times U_N$<br>(at a rated voltage of AC 400 V the device may release at 280 V and must release at 80 V) |
| Release delay       | $t < 20 \text{ ms}$                                                                                                                |
| Latch-in values     | $\geq 85 \% U_N$                                                                                                                   |
| Ambient temperature | -30...+60 °C (-22...+140 °F)                                                                                                       |
| 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               | 20 g (11 ms)<br>to IEC 60068-2-27, test Ea                                                                                         |
| Corrosion           | 48 hours at 5 % salt mist,<br>to IEC 60068-2-11, test Ka                                                                           |
| Humidity            | 240 hours at 95 % RH<br>to IEC 60068-2-78, test Cab                                                                                |
| Mass                | approx. 90 g (complete assembly)                                                                                                   |

## Dimensions

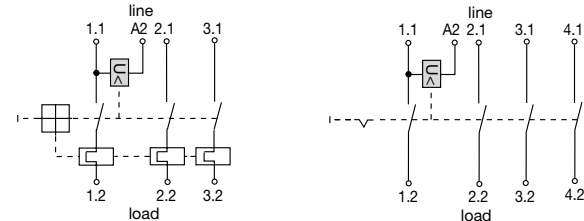


## Internal connection diagrams

### X3140-U00



### X3140-U01



## Approvals (complete circuit breaker/module assembly)

| Authority | Standard     | Rated voltage            | Current ratings |
|-----------|--------------|--------------------------|-----------------|
| VDE       | IEC/EN 60934 | AC 42...400 V<br>DC 24 V |                 |

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

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