

## Description

The E-T-A Solid State Remote Power Controller E-1048-7.. is a transistorised switching device providing both protection and signalisation. It is suitable for all applications where the capabilities of the existing PLC outputs are not sufficient or where no protection against overload and short circuit or wire breakage monitoring of connected loads is provided. The use of a costly, high-capacity output card becomes superfluous when only one or two powerful outputs are necessary.

Using the SSRPC E-1048-7.. in combination with the module 17plus creates a new, very flexible system capable of being subsequently changed or extended. Busbars, pre-wired signal contacts and spring-loaded terminals reduce installation times considerably (see accessories).

## Typical applications

### Automation

- interface module providing inexpensive power amplification at PLC outputs
- optimum protection of individual loads by monitoring the load circuit

### Protection and control of

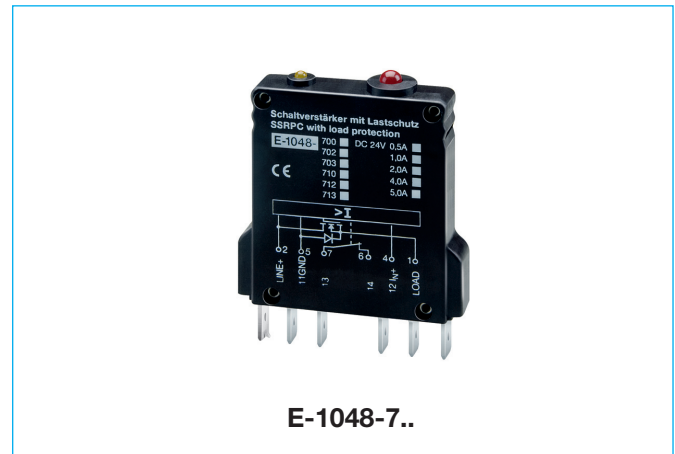
- motors
- solenoids
- lamps

## Features

- Optimum load protection. Available in current ratings of 0.5 A; 1 A; 2 A; 4 A; 5 A. No derating required over entire temperature range!
- Fast short-circuit limitation and disconnection
- Time/current dependent overload disconnection (simulating thermal-magnetic CBE trip curve)
- Remote control
- Fault indication: LED and signal output for overload/short-circuit signalisation, and wire break indication in the OFF condition (version -700) and in the OFF and ON condition (version -702 and -712)
- Fault storage: version -710 and -712
- Physically isolated fault indication
- Compact plug-in type
- Plug-in design for use with power distribution system module 17plus
- Integral pre-wiring of common supply and signal contacts

## Ordering information

Type No.	SSRPC for PLC outputs
<b>E-1048</b>	SSRPC for PLC outputs
<b>Version</b>	
<b>700</b>	wire break indication in OFF condition (standard)
<b>702</b>	permanent wire break indication
<b>712</b>	permanent wire break indication and fault storage
<b>703</b>	without wire break indication
<b>Voltage rating</b>	
<b>DC24 V</b>	DC 24 V (standard)
<b>Current ratings</b>	
<b>0.5 A</b>	
<b>1.0 A</b>	
<b>2.0 A</b>	
<b>4.0 A</b>	
<b>5.0 A</b>	
<b>E-1048 - 700</b>	<b>DC24 V 1.0 A</b> ordering example



E-1048-7..

## Technical data (T<sub>ambient</sub> = 25 °C; at U<sub>N</sub>)

### Load circuit

Voltage rating U <sub>S</sub>	DC 24 V (18...36 V)
Current rating I <sub>N</sub>	0.5 A; 1 A; 2 A; 4 A; 5 A (other ratings to special order)
Closed-circuit current I <sub>Contr</sub>	typically 0.3 mA
Min. load current	
<b>Version -700/-710:</b>	
wire break indication in OFF condition	
<b>Optional: wire break indication in OFF and ON condition</b>	
wire break ind. in OFF cond. R <sub>load</sub> typically 500 kΩ	
wire break ind. in ON cond. I <sub>load</sub> < typ. 130 mA (0.5/1 A unit)	
I <sub>load</sub> < typ. 500 mA (2/4/5 A unit)	
Voltage drop U <sub>DSmax</sub>	0.15 V; 0.3 V; 0.1 V; 0.2 V; 0.3 V
Switch-on/switch-off time t <sub>on</sub> /t <sub>off</sub>	typ. 300 μs/700 μs with resistive load
Overload disconnection	approx. 1.5 (± 0.3) × I <sub>N</sub> after approx. 100 ms
Short-circuit current (self-limiting)	max. 25 A (with 0.5 A and 1 A current ratings) max. 75 A (with 2 A/4 A/5 A current ratings)
Short-circuit disconnection	< 250 μs

### Control input

Control level	between IN+ and GND
Voltage rating	DC 24 V
Voltage controlled input U <sub>E</sub>	DC 0 V < low level < 5 V DC 8.5 V < high level < 36 V
Input current I <sub>E</sub>	1...10 mA (8.5...36 V)
Max. switching frequency f <sub>max</sub>	1 kHz
Reset time after short-circuit/overload disconnection	1 ms

### Fault indication output F relay contact

max. switching voltage	DC 150 V AC 125 V
max. interrupting capacity	DC 30 W AC 60 W
limiting continuous current	1 A

### General data

Temperature range	0 °C...+60 °C
Insulation voltage (IEC 60664/VDE 0110)	DC 500 V > 10 MΩ
Mass	28 g

## Preferred types

**NEW**

Preferred types	Standard current ratings (A)				
	0.5	1	2	4	5
E-1048-700-DC24V-	x	x	x	x	x
E-1048-702-DC24V-	x	x	x	x	x

## Technical description

At the correct input voltage ( $> 8.5\text{ V}$ ), the SSRPC will switch on a power transistor to connect the load to the plus pole of the load circuit supply ( $U_S$ ).

The transistor will switch off when

- the control voltage ( $U_E$ ) is removed
- there is a short-circuit/overload in the load circuit.

Status indication is provided by two LEDs (red and yellow).

Simulated thermal-magnetic overload protection occurs at approx. 1.5 times rated current. See time/current characteristic curves.

The SSRPC is fitted with blade terminals DIN 46244-A6.3-0.8 and is suitable for plug-in mounting with various E-T-A sockets or **module 17plus** (see Accessories).

### Control circuit

#### ON condition:

If a voltage higher than 8.5 V is applied to the input terminals (+ $I_N$  against GND), the control current (from the PLC) will flow through the opto coupler. The output transistor will be conductive, status indication by yellow LED.

#### OFF condition:

A control voltage lower than 5 V will switch the output transistor off.

### Load circuit

The load circuit switches depending on the control signal ("0" or "1"). It is electronically monitored for faults. In the event of a short-circuit the circuit is disconnected after max. 250  $\mu\text{s}$  whilst upon inadmissible overload it is disconnected according to the time/current curves shown.

### Fault indication output F

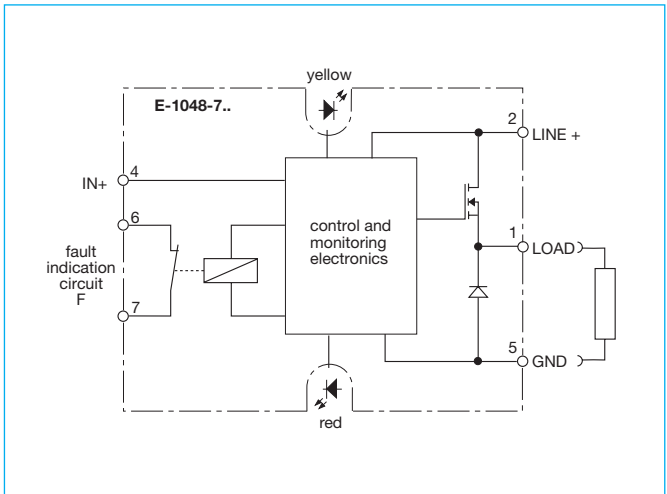
The fault indication circuit is physically isolated from the load and control circuits via a relay.

In the OFF condition, this circuit (with closed contact) will provide wire break indication, with the transistor output being open.

The versions with fault storage (712) store the fault signal until the control voltage is re-applied.

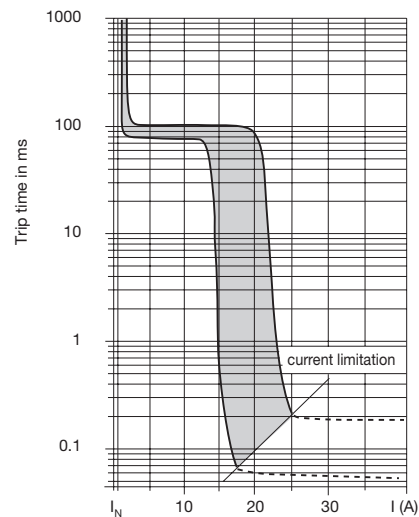
Visual fault indication by red LED.

## Connection diagram

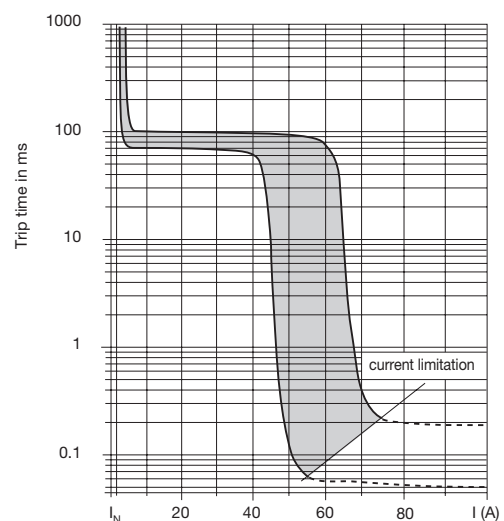


## Typical time/current characteristics ( $T_A = 25\text{ }^\circ\text{C}$ )

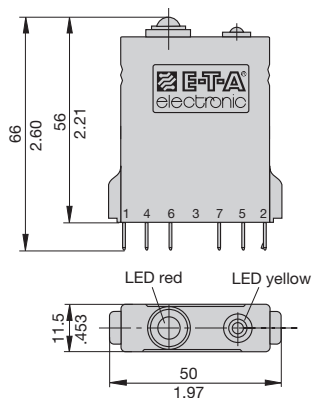
### 0.5 A and 1 A



### 2 A and 4 A



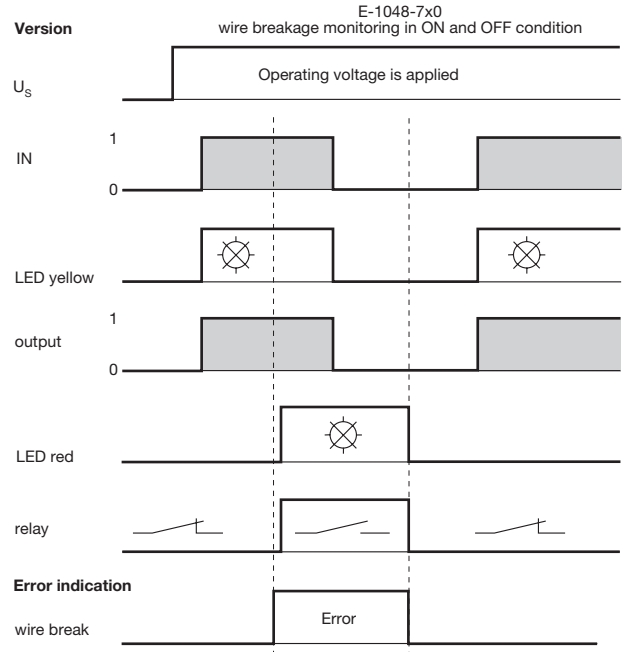
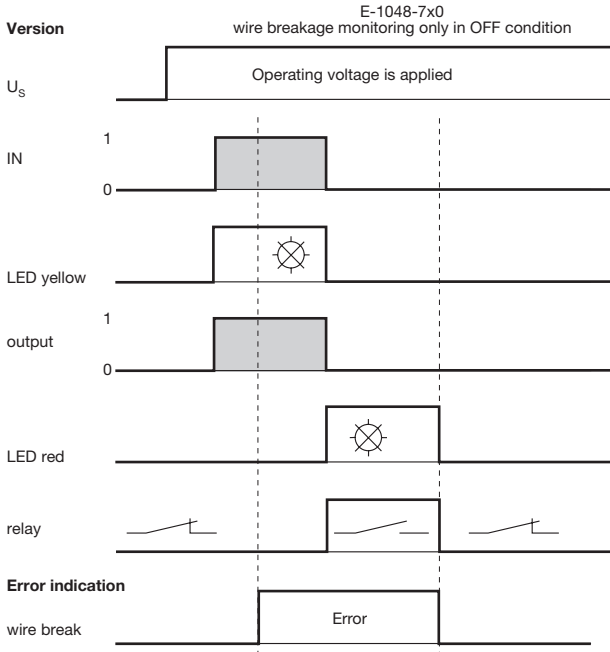
## Dimensions



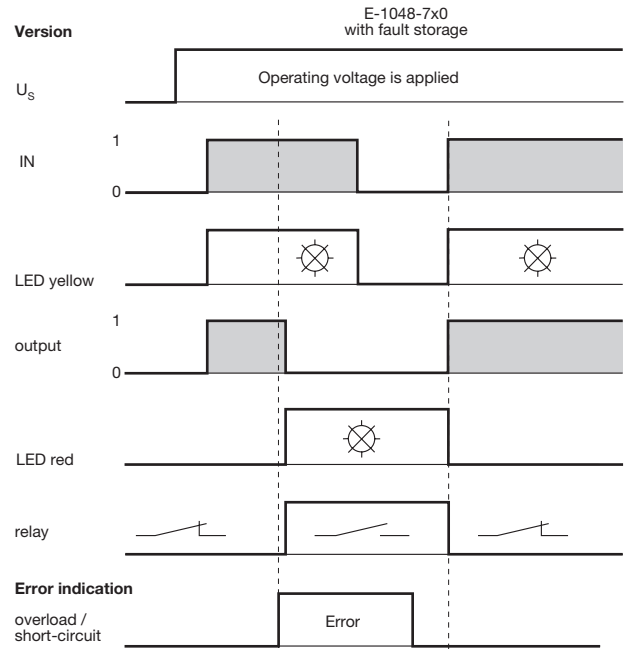
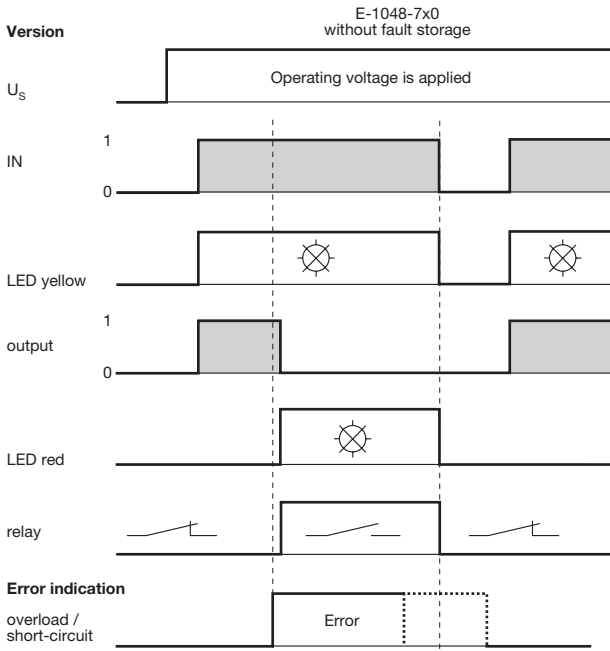
This is a metric design and millimeter dimensions take precedence ( $\frac{\text{mm}}{\text{inch}}$ )

**Functional diagrams E-1048-7..**

**Functional diagram E-1048-7..**  
wire break indication



**Functional diagram E-1048-7..**  
overload /short-circuit indication



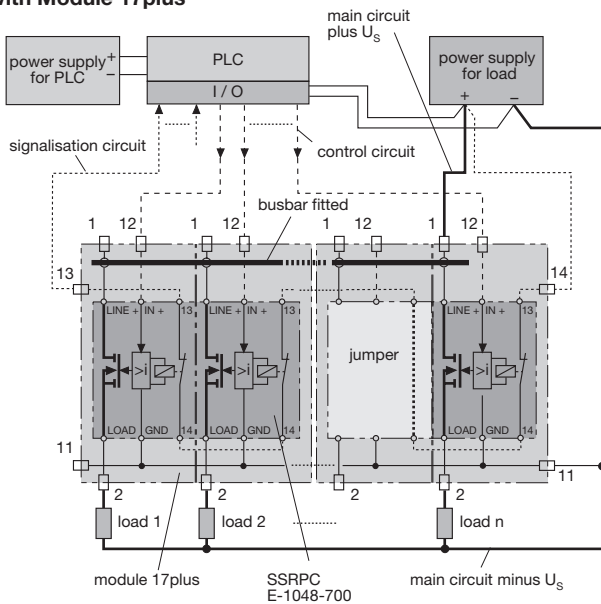
1  
0

IN = input set / output = switched through

LED lights

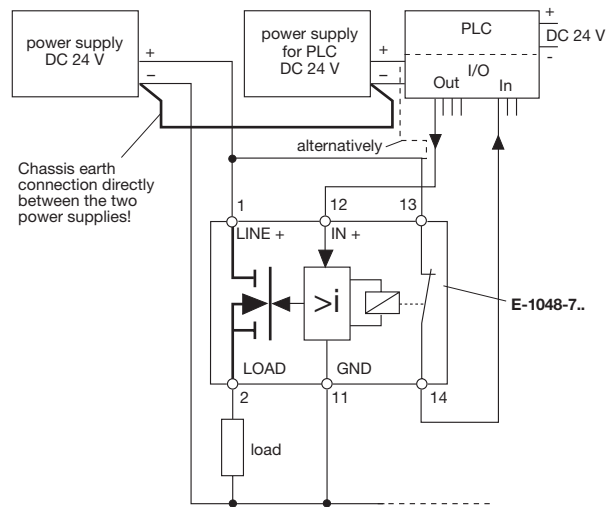
## Connection diagram

### Solid State Remote Power Controller E-1048-700 with Module 17plus



## Wiring diagram

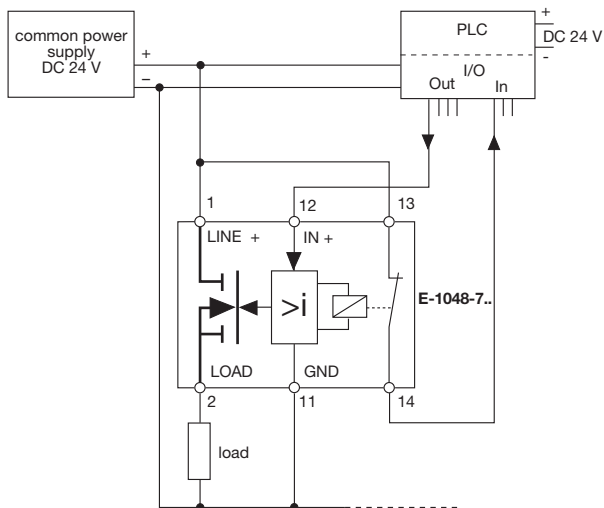
### Separate power supply for load, PLC I/O and signal loop



**Caution:** If there is no firm chassis earth connection when using several separate power supplies, the connected fault indication loop may lead to intermittent operation of the SSRPC and resultant operational hazards.

## Wiring diagram

### Common power supply for load, PLC I/O and signal loop



Accessories for E-1048-7..

Description

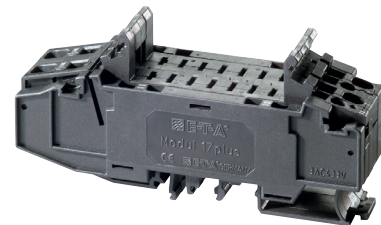
Module 17plus is a power distribution system for use with SSRPC E-1048-7.. for PLC outputs. Each module accommodates two SSRPCs with an individual housing width of only 12.5 mm and fits onto all industry standard mounting rails. The two-way modules can be interconnected to provide as many ways as required with a terminal block fitted at each end for connection of signalling circuits. A distribution busbar can be fitted on the supply side of the modules (positive pole) though each pole of multipole circuit breakers must be individually connected. Electrical connections are by means of spring-loaded terminals. The reference potential for the electronic amplifiers (GND pin 11) is also looped through and to the terminals connected at the sides. Control of the amplifiers (IN+), referenced to GND, is per channel via the separate terminal 12 beside the LOAD terminal. The SSRPC has an integral signal contact (break contact) used for group signalisation. Therefore the terminals of all break contacts are connected in series in the module 17plus and are connected to the terminal blocks via two terminals (13, 14). The module is designed to accommodate a probe for series connection continuity tests. When multipole circuit breakers are fitted auxiliary contacts are required for each pole. Individual circuit breaker signalisation is achieved through use of the break contacts (which close in the event of failure) connected in parallel by means of terminals on each module. The signalling circuitry between modules and the internal prewiring for the potential is automatically connected when the modules are linked together.

Ordering information

17PLUS-Q02-00	Module 17plus, centre piece, two-way
17PLUS-QA0-LR	one each left- and right-side terminal block for supply feed from the side by means of screw terminal, connection of signalisation etc.

Approvals

Authority	Voltage ratings	Current ratings
UL 60950	AC 250 V; DC 80 V	50 A



17plus

Technical data

Connection Spring-loaded terminals for solid conductors and stranded cables with and without wire end ferrules. Please use appropriate screw driver size (SD) for removing the spring loaded terminals.

cable	cross section of connecting cable	screw driver	stripped length
Line feed (1)	1.5-10 mm <sup>2</sup>	3 (1.0 x 5.5)	12 mm
Load output (2)	0.25-4 mm <sup>2</sup>	1 (0.6 x 3.5)	12 mm
Signalisation terminals (11, 13, 14)	0.25-2.5 mm <sup>2</sup>	1 (0,6 x 3.5)	10 mm
Signalisation terminal (12)	0.25-1.5 mm <sup>2</sup>	0 (0.4 x 2.5)	9 mm

Test probe for testing the group signal for line interruption: ≤ 2 mm ø

Voltage rating (without SSRPC): AC 250 V; 3 AC 433 V; DC 65 V

Current rating (without SSRPC)  
 LINE feed (1) 50 A  
 LOAD output (2) 25 A  
 Reference potential GND (11) 10 A  
 Control IN+ (12) 1 A  
 Group signal /(13-14) 1 A

Internal resistance values (without SSRPC)  
 LINE-LOAD (1-2) ≤ 5 mΩ  
 Group signal (13-14) ≤ 8 mΩ/per pole + 5 mΩ for each additional module

Vibration 5 g (57-500 Hz) ± 0.38 mm (10-57 Hz), to IEC 60068-2-6, test Fc, 10 frequency cycles/axis

Shock 25 g (11 ms) to IEC 60068-2-27, test Ea 11 ms half sine

Corrosion 96 hours at 5 % salt mist, to IEC 60068-2-11, test Ka

Humidity 240 hours at 95 % RH to IEC 60068-2-78, test Cab

Dielectric strength  
 between main circuits (without busbar): 1,500 V  
 main circuit to auxiliary circuit: 1,500 V  
 between auxiliary circuits: 1,500 V

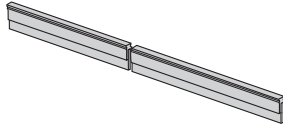
Mass: Module 17plus (centre piece) approx. 85 g  
 terminal blocks (pair) approx. 30 g



**Accessories**

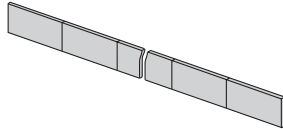
**Busbar 32 A**

X 222 005 01 blue insulation, 500 mm/19.68 in.  
 X 222 005 02 red insulation, 500 mm/19.68 in.  
 X 222 005 03 grey insulation, 500 mm/19.68 in.  
 "up to 32 A continuous load"



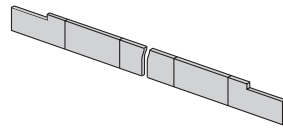
**Busbar 50 A**

Y 307 016 01 non-insulated, 500 mm/19.68 in.  
 "up to 50 A continuous load; plugged in completely, protected against brush contact"

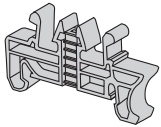


**Busbar 50 A**

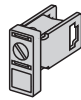
Y 307 016 11 non-insulated, 500 mm/19.68 in.  
 "up to 50 A continuous load"



**End bracket**  
 X 222 004 01  
 Width 10 mm

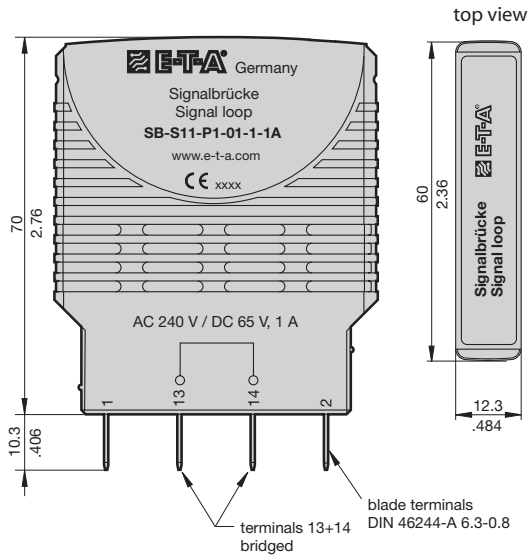


**Screw terminal for busbar**  
 X 211 156 01 non insulated

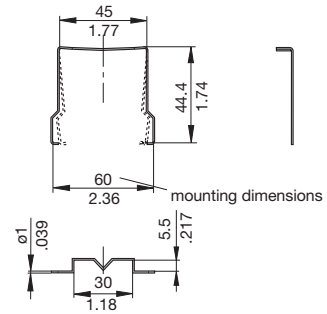


**Jumper**

SB-S11-P1-01-1-1A

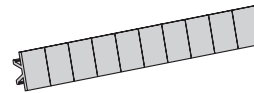


**Retaining clip for SSRPC E-1048-7..**  
 recommended for fitting the devices  
**Y 300 581 11**

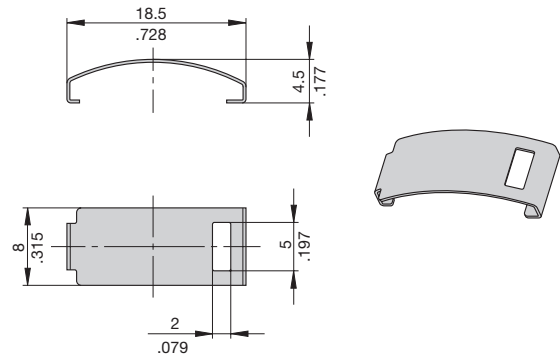


**Labels**

marking area 6 x 10 mm  
 (packing unit 10 pcs = 1 strip)  
**part. no. Y 307 942 61**



**Retaining clip Y 307 754 01**  
 with mounting



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

Accessories for E-1048-7..

**Single mounting sockets**

(up to 16 A max. load)

**17-P10-Si**

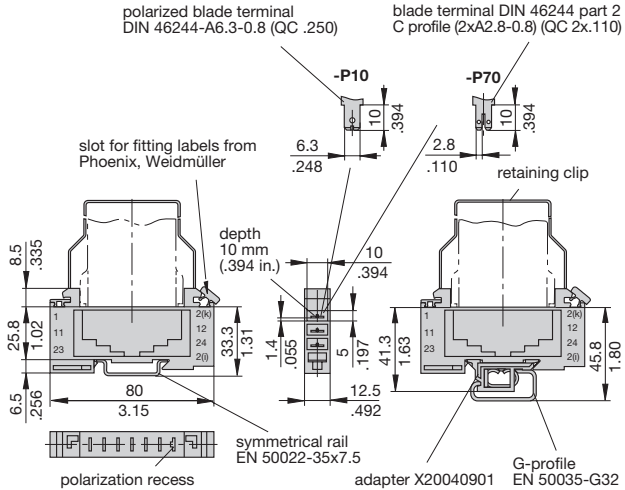
**17-P70-Si**

(retaining clip Y 300 581 11 available on request)

(with adapter)

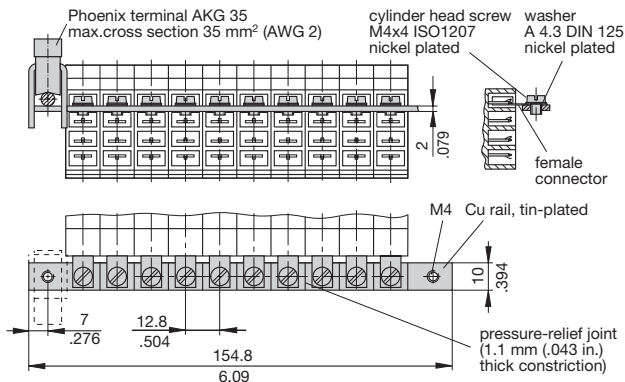
**17-P10-Si-20025**

**17-P70-Si-20025**

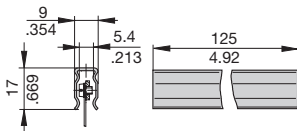


**Busbar (10-way)** (supplied as a complete package) for type 17 socket

(for max. 100 A continuous load), more positions available on request  
**X 211 157 01** with terminal  
**X 211 157 02** without terminal



**Insulating sleeving for busbar (10-way)**  
**Y 303 824 01**



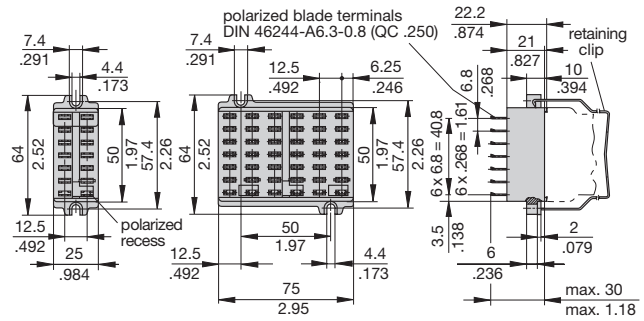
**2-way mounting socket**

**23-P10-Si**

(retaining clip Y 300 581 03 available on request)

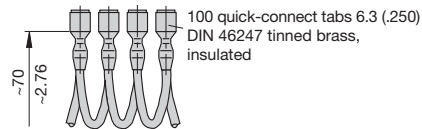
**6-way mounting socket**

**63-P10-Si**



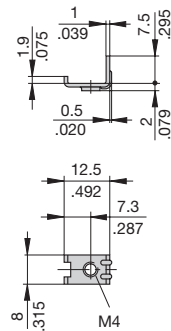
**Connector bus links -P10**

- X 210 588 01**/ 1.5 mm<sup>2</sup>, (AWG 16), brown (up to 13 A max. load)
- X 210 588 02**/ 2.5 mm<sup>2</sup>, (AWG 14), black (up to 20 A max. load)
- X 210 588 03**/ 2.5 mm<sup>2</sup>, (AWG 14), red (up to 20 A max. load)
- X 210 588 04**/ 2.5 mm<sup>2</sup>, (AWG 14), blau (up to 20 A max. load)

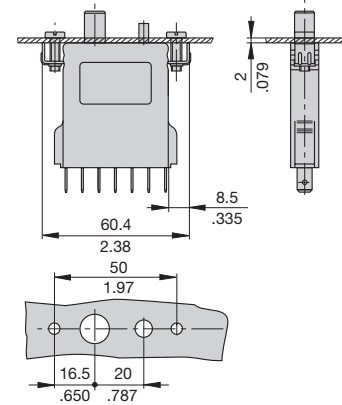


**2 mounting clips**

**Y 300 504 02**  
 (2 pcs needed per unit)



**Installation drawing with mounting clips Y 300 504 02**



**Pin selection 17-P10-Si, fitted with E-1048-7..**

E-1048-7..	17-P10-Si	
LINE + (2)	(2) [2(k)]	
GND (5)	(5) [12]	
F 7 (7)	(7) [24]	
	(3) [2(i)]	
F 6 (6)	(6) [23]	
IN+ (4)	(4) [11]	
LOAD (1)	(1) [1]	

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.