

Current Monitors Type STW

adjustable

General

The STW is an electronic current monitoring relay. Depending on the model, one or more consumers can be monitored using only one instrument.

Specific applications, where current monitors can be used are:

- obstacle lights
- stone- and woodworking machines
- chemical plants
- machine tools of all kinds

and wherever it is necessary to monitor currents for over- or undercurrent.

Funktion und Eigenschaften

According to the application, the current-relays are connected into the current-line to the load directly or via a current-transformer. The built-in relay picks up after supply-

voltage is switched on. It releases, when the limit is exceeded and the switching delay has run down.

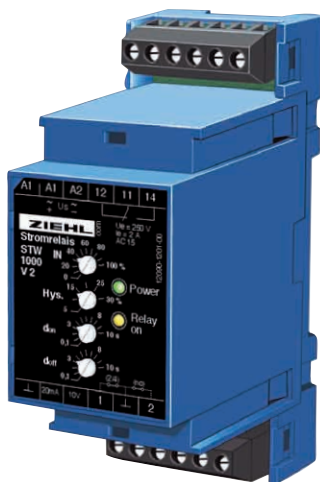
Summary

Current Monitor	DC	DC	AC/DC	AC
Type	STW1000V2	TR210	STW1000	STW200
Connection current direct	X	X	X	X
External shunt	-	-	X	-
External transformer	-	-	X	-
Number of circuits	1	1	1	1
Response values adjustable	0 / 4 - 20 mA 0 / 2 - 10 V	0 - 20 mA 4 - 20 mA 0 - 10 V	0,1 - 1 A 0,5 - 5A 1 - 10 A 6 - 60 mV	15 - 150 mA 0,1 - 1 A
Analog output	-	X	-	-
Housing	V2	V4	V4	V4

DC-Limit Value Switch Type STW1000V2

DC 0/4 - 20 mA, 0/2 - 10 V

STW1000V2



ZIEHL current-relays STW1000V2 monitor standard-signals from measuring transducers if a limit is exceeded. For monitoring of more than 1 signal, multiple relays can be connected in series (current) or in parallel (voltage).

Measuring inputs for 0/4-20 mA and 0-10 V, adjustable hysteresis and switching delay and the choice between operating- and closed-current mode of the relay make it a very universal limit switch.

- Measuring inputs 0-20 mA / 0-10 V, switchable to 4-20 mA / 2-10 V
- Limit adjustable 0-100 %
- Hysteresis adjustable 5-30 %
- Start-up delay adjustable 0,1 ... 10 s
- Switching delay adjustable 0,1 ... 10 s
- Output-relay 1 changeover-contact (co)
- Operating- or closed-circuit-mode for relay selectable with bridge
- LEDs for display state of operation
- Universal supply-voltage AC/DC 24-240 V
- Housing for mounting in switchgear cabinets or fuse-boxes, 35 mm wide

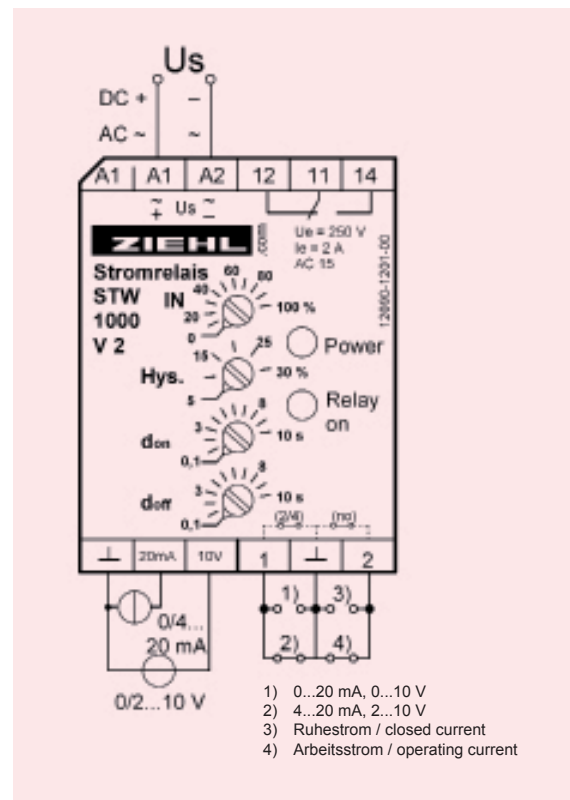
Applications:

Monitoring of different values in combination with measuring transducers, e.g. in machines and controls.

Order-number

AC/DC 24-240 V:

S225677



Technical Data

Supply voltage U_s

AC/DC 24 - 240 V, 0/50/60 Hz, < 2W, < 3VA
(DC 20,4 - 297 V, AC 20 - 264 V)

Relay output
Type of contact
Test conditions

1 change-over contact (co)
type 3 see "general technical informations"
siehe "general technical informations"

Function
Measuring signals

Maximum limit switch
DC 0/4 ... 20 mA, 20 Ω
DC 0...10 V, 63 kΩ

Switching point
Hysteresis
Error of setting
Repeat error
Temperature-dependence
Start-up-delay d_{Enable}
Switching delay d_{AL}

adjustable 0...100%
adjustable 5...30% of set limit
< 10% of fullscale
< 0,2%
≤ 0,05 %/K
adjustable 0,1...10 sec.
adjustable 0,1...10 sec.

Rated ambient temperature range

-20°C...+55°C

Dimensions (H x W x D)
Attachment

design V2: 90x35x58 [mm], mounting height 55 mm
on 35 mm DIN-rail according to EN 60 715 or
with screws M4

Protection housing/terminals
Weight

IP 30 / IP 20
approx. 130 g

DC-Universal-Limit Value Switch TR210

for 2 Temperature-sensors or 0/4-20 mA, 0-10 V, 2 Limits, Analog output

TR210



The limit value switch TR210 monitors up to 2 measuring inputs for Pt100 (RTD), Pt1000, thermocouples, or standard-signals 0/4-20 mA, 0-10 V.

The signals are monitored for up to 4 limits. The value of one or of both inputs can be read out at an analog output.

Application:

The TR210 is very versatile and can thus be used in many applications. Nevertheless multiple preset programs allow an easy setting.

It can be used as a limit switch or as a controller for 2 limits (with day/night shift up to 4 limits).

As a measuring transducer it can convert signals from the temperature-sensors to standard-signals or change the scaling of standard-signals. The user can also select, if minimum or maximum of 2 signals or the difference of 2 signals is connected to the analog output.

For more applications see basic programs.

2

Function

- Measuring and monitoring range -170...+1820 °C
- resolution 0,1°C (to 999.9 °C)
- Analog output (scaleable) for 1 input, min./max. of 2 inputs or difference of 2 sensors (no isolation between inputs and output)
- 2 relay outputs
- Shifting of day/night (selectable with contact at terminals Y1/Y2)
- Universal power supply AC/DC 24-240 V
- Easy setting with 3 buttons and preset programs
- Storing of min- and max-values of inputs
- Code-lock against manipulation of settings
- Terminals pluggable

2 Measuring-Inputs:

- Resistance-sensors Pt100 (RTD), Pt1000, KTY83/84 in 2- or 3-wire-connection
- Thermocouples types B, E, J, K, L, N, R, S or T
- different sensors at both inputs possible
- Standard-signals 0/4-20 mA, 0-10 V (scaleable)

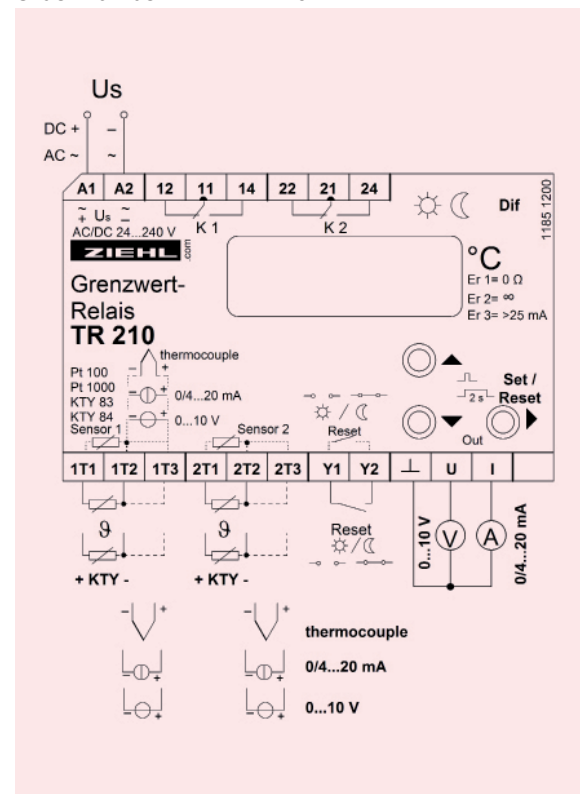
Displays:

- 4-digit for measuring value
- 2 LEDs for state of relays
- 3 LEDs sensor/difference
- 2 LEDs day/night

Switching-Functions:

- 2 relays (co-contacts)
- 2-4 limits
- Warmest/coldest sensor switches relay
- Programmable for every relay:
 - hysteresis (+ or - = MIN- or MAX-function)
 - 199.9...999.9 s
 - autoreset or electronic reclosing lock
 - delay-time for switching and switching back 0...9999 s
 - operating- or closed current-mode
 - cyclic check of function
- Monitoring of difference in temperature
- Preset basic programs

Order-number: T224071



Basic Programs

Program 1:

**1 Temperature-sensor,
2 Limits**

Application: Monitoring of a temperature for 2 limits, e.g. over-temperature with warning and switching off or monitoring of a temperature-range (min/max).

Program 2:

**2 Temperature-Sensors,
1 Limit for each Sensor**

Application: Monitoring of 2 temperatures for 1 limit each, e.g. over-temperature or as double electronic controller.

Program 3:

**1 Temperature-Sensor,
2 Limits each day/night**

Application: Controlling of a temperature with first limit, different for day and night.

Monitoring of the same temperature with second limit, different for day and night.

Program 4:

**2 Temperature-Sensors,
each 1 Limit for day/night**

Application: Monitoring or controlling of 2 temperatures for 2 limits, depending on operation mode, e.g. controlling of 2 circulation pumps (day/night) or of processes (active/stand-by).

Program 5:

**2 Temperature-Sensors for
monitoring of differences in
temperature, 2 Limits**

Application: Regulation or monitoring of the difference of 2 measuring-points for 2 limits, e.g. circulation pumps in solar systems.

Program 6:

1 Standard-Signal 0/4-20 mA or 0-10 V, 2 Limits

Display can be scaled, e.g. measuring input 4-20 mA = display 0...1200 l/h.

Application: Monitoring of signals from a measuring transducer for 2 limits, e.g. over- or under- exceeding of limits with pre-alarm and alarm or monitoring of a signal-range (min/max) and/or as measuring-transducer.

In combination with any measuring-transducers, signals like pressure, volume-flow, pH-value, ... can be monitored.

Program 7:

**2 Standard-Signals 0/4-20 mA or 0-10 V,
1 Limit each**

Display can be scaled, e.g. measuring input 4-20 mA = display 0...1200 l/h.

Application: Monitoring of signals from 2 measuring transducers, each for 1 limit, e.g. over- or under- exceeding of a limit as double electronic controller.

Program 8:

**2 Standard-Signals 0/4-20 mA or 0-10 V for
monitoring of differences of signals**

Application: Regulation or monitoring of the difference of 2 analog signals for 2 limits, e.g. levels of liquids.

Program 9:

22 Temperature-Sensors, 2 shared Limits

Application: Coldest (MIN) or warmest (MAX) sensor switches relay. Monitoring of 2 bearings for pre-alarm and alarm.

Application as Measuring-Transducer:

At programs **with 1 measuring-input** the output can be scaled for this input, e.g. 0...200.0 = 4-20 mA.

At programs **with 2 measuring-inputs** the output can be scaled for 1 input or min- or max- value of both inputs.

At programs **for measuring of differences** output can be scaled for 1 signal or for the difference input 2 minus input or for min- or max- value of both inputs.

Thus the TR 210 can be used as limit value switch and/or measuring-transducer simultaneously. The measured values can be forwarded to e.g. a remote display or a superior control.

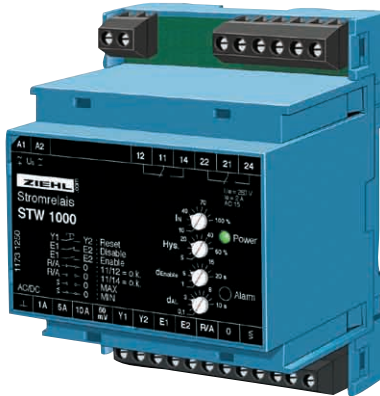
Technical Data

Rated supply voltageUs	AC/DC 24-240V, <3W, <5VA (AC 20-264 V, DC 20,4-297 V)
2 Measuring inputs	Pt100, Pt1000 according to EN 60 751 Thermocouples types B, E, J, K, L, N, R, S, according to EN 60 584, DIN 43 710 0/4-20 mA (22Ω), 0-10 V (13 kΩ)
Measuring-time	<2,5s to 5s, depending on speed of change of signal
Analog output	0/4-20 mA, max. 500 Ω. 0-10 V, max. 10 mA (without isolation to inputs)
Relay output	type 3, see "general technical informations" 2 x 1 co- (change-over) contact
Test conditions	see "general technical informations"
Rated ambient temperature range	-20...+60°C
Dimensions h x w x d	design V4: 90x70x58 [mm], mounting height 55 mm
Protection housing / terminals	IP 30 / IP 20 (terminals pluggable)
Weight	app. 200 g
Attachment	on 35 mm DIN-rail or with screws M 4

Stromrelais für Gleich- und Wechselstrom

AC/DC 0,1 - 10 A, 60 mV mit externem Shunt

STW1000



ZIEHL current-relays STW1000 have 4 measuring-ranges. They monitor most of the common AC- and DC-currents for over- or undercurrent.

Currents up to 10 A can be connected directly to the STW. For higher currents external transformers (to inputs 1/5 A) or Shunts (input 60 mV) can be connected.

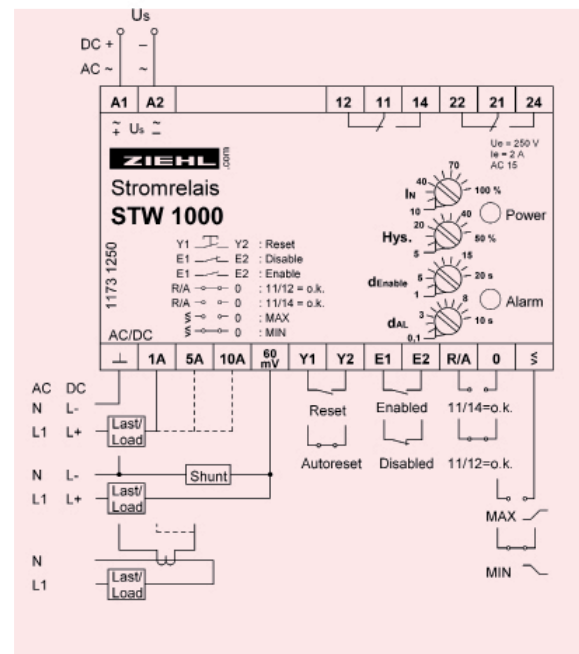
- Measuring inputs 1 A, 5 A, 10 A, direct or via transformer
- Measuring input 60 mV for ext. Shunt
- Automatic detection of AC/DC
- Monitoring of over- or undercurrent
- Adjustable range 10...100% I_N
- Hysteresis adjustable 5...50%
- Start-up delay 1...20s (input enable)
- Switching delay 0,1...10s for fading of short peaks
- Output-relay 2 changeover-contacts (co)
- Operating- or closed-circuit-mode for relays selectable with bridge

- Universal supply-voltage AC/DC 24-240 V
- Interlocked switching selectable with bridge LEDs for display state of relay
- Housing for mounting in switchgear cabinets or fuse boxes, 70 mm wide, mounting height 55 mm
- option: other supply voltages

Order-number

AC/DC 24-240 V

S225684



Technical Data

supply voltage U_s

AC/DC 24-240 V, <3W, <5VA
(AC 20-264 V, DC 20,4...297 V)

relay output
type of contact
test conditions

2 change-over contacts
type 2 see "general technical informations"
siehe "general technical informations"

function
frequency of measured current
internal resistance
overload capacity/continuously
max. 10s

Over- or undercurrent, DC or AC (1-phase)
0 / 40 ... 400 Hz
60 mV: 40 k Ω , 1A: 0,1 Ω , 5A: 20 m Ω , 10 A: 10 m Ω
60 mV: 10 V, 1A: 2 A, 5A: 7,5 A, 10 A: 11 A
60 mV: 10 V, 1A: 5 A, 5A: 15 A, 10 A: 20 A

switching point
hysteresis
error of setting
repeat error
temperature-dependence
start-up-delay d_{enable}
switching delay d_{al}

adjustable 10...100% I_N
adjustable 5...50% of switching point
< 10%
 $\pm 0,2\%$
 $\leq 0,05 \%/K$
adjustable 1...20 sec.
adjustable 0,1...10 sec.

rated ambient temp. range

-20°C...+55°C

dimensions (h x w x d)
attachment

design V4: 90 x 70 x 58 [mm]
on 35 mm DIN-rail according to EN 60 715 or
with screws M4

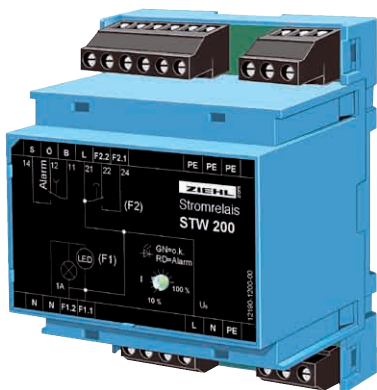
protection housing/terminals
weight

IP 30 / IP 20
ca. 180 g

Current-Relay for Obstacle Lights

AC 12 - 120 mA for LED-Lamps, 0,1...1 A for light bulbs

STW200



Current-relays STW200 monitor AC-currents for falling below an adjusted limit. The ranges 12 ... 120 mA and 0,1 ... 1 A allow the monitoring of LED-Lamps as well as incandescent lamps in obstruction lights. In case of main lamp failure a relay switches on the reserve lamp. An alarm contact is available for signaling a lamp failure. If an alarm is required in case of failure of reserve lamp, a second STW200 is used.

Application:

Monitoring of LED-Lamps or light-bulbs in twin obstacle lights with alarm (lamp failure) and switching on a reserve lamp.

Monitoring of the function of single obstacle lights.

At conventional solutions with a change-over contact, there is a short on-pulse at the reserve lamp everytime when the system is switched on. The STW200 switches it on only in case of a failure of the main lamp.

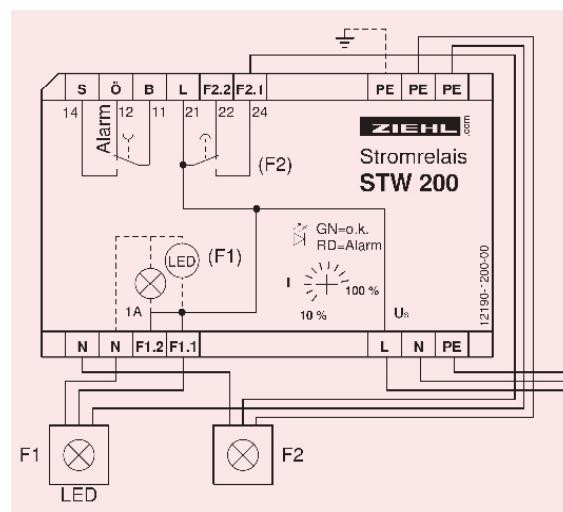
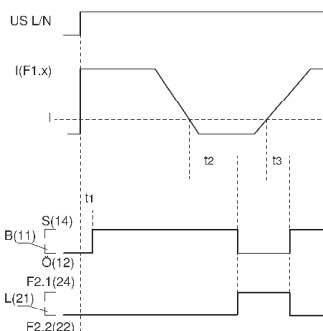
LED-lamps can also be monitored with long cables between relay and lamp.

When monitoring LED-lamps a total failure is detected. Failures of single LEDs are not detected.

Order-number:

S225530

- Measuring input 12...120 mA for LED-lamps
- Measuring input 0,1...1 A for incandescent lamps (bulbs)
- withstands current-peaks when switching on lamp
- Adjustment range 10...100 %
- Relay for switching on reserve light in operating-current mode
- Relay for alarm in closed-current mode
- Cable-length from relay to lamp up to 500 m
- Display green = o.k., red = low current alarm
- Housing 70 mm wide, mounting height 55 mm



Technical Data

Supply voltage U_s
Tolerance

AC 230 V 50/60 Hz, < 3 VA
0,85 ... 1,1 U_s

Relay output
Type of contact

2 x 1 change-over contact
type 2 see "General Technical Informations"

Measuring ranges
Tolerance / repeating error
Hysteresis
Delay alarm

AC 12...120 mA / AC 0,1...1 A
 ± 15 % / < 1 %
app. 5%
app. 2 s

rated ambient temp. range

-40°C...+55°C

Dimensions H x B x T
Line connection
Attachment
Protection housing/terminals
Weight

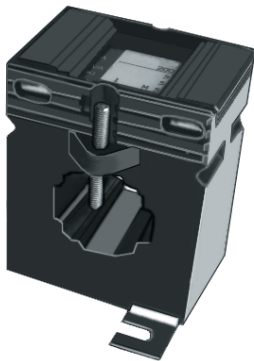
V 4: 90 x 70 x 58 mm, mounting height 55 mm
one wire: 4 mm², stranded with sleeves: 2,5 mm²
35 mm DIN-rail or 2 screws M4 (option)
IP 30/ IP 20
app. 210 g

Measuring-Transducer for AC-Current

WS and AS



Current-Transformer Type WS



Current-Transformer Type AS

These current monitors require a current transformer with a 1 or 5 A secondary and a rated capacity of 2.5 VA as signal transmitter. The primary rated current must be appropriate to the current to be monitored. Plug-in or winding current transformers can be used. We recommend the use of WS winding current transformers for primary rated currents of 5 to 30 A. For primary rated currents of 60 to 500 A we recommend using AS plug-in current transformers, suitable for the Cu-rail of 30 x 10 mm or 2 x 20 x 10 mm or round conductor of 28 mm. Both transformers have a Class 1 accuracy and a voltage resistance of up to 800 V. When ordering, please indicate desired type (WS or AS) and primary or secondary rated current.

Terminal designation
primary: K/L secondary: k/l

The following winding current transformers type WS are available:

Class 1, 2.5 A

WS5/1 A	S225178
WS10/1 A	S225179
WS20/1 A	S225180
WS30/1 A	S225688

WS5/5 A	S225182
WS10/5 A	S225183
WS20/5 A	S225184
WS30/5 A	S225689

The following **AS plug-in current transformers** are available:

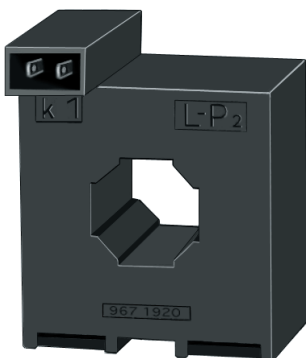
Class 1, 2.5 A

AS60/1 A	S225170
AS100/1 A	S225171
AS200/1 A	S225172
AS500/1 A	S225173

AS60/5 A	S225174
AS100/5 A	S225175
AS200/5 A	S225176
AS500/5 A	S225177

Weight approx. 300 g
Other values upon request!

Current-Voltage-Transformer ASS500/5 0 - 500 A, 5 mV/A



The ASS500/5 plug-in-current-voltage transformer is a measuring transformer with high linearity for currents up to AC 500 A and an output signal of 5 mV per ampere. Its maximum error is 1% of the measured value. The instrument is simply plugged onto the current-carrying conductor.

ZIEHL MINIPAN instrument panels are suitable for direct connection to the ASS500/5. Different primary current ranges can be monitored by ZIEHL current monitors, e.g. the STW201S and STWMU201S current measuring monitors with corresponding voltage inputs for the ASS500/5.

The ASS500/5V is not overloadable.

Order number: **S225168**

Application:

The ASS500/5 is of use where currents within a wide range need to be monitored, and high short-circuit currents can also occur. Currents up to 6 kA can be measured provided that an appropriate monitor range has been selected.

In practice, when capturing low currents in the monitored line, a distortion of the measuring value can occur due to high-level currents in adjoining conductors. This can be avoided by a suitable mechanical arrangement of current conductors and transformers.

The output voltage is dephased in quadrature (90°) compared to the current to be measured.

- 1 transformer type for rated currents of 0 - 10 A up to 0 - 500 A
- linear output signal even in case of multiple (up to 12-fold = 6 kA) overload
- output signal of 5 mV/A
- not overloadable
- error < 1 % of measuring value
- suitable for current rails of 10 x 20 mm or round conductors of \varnothing up to 22.5 mm
- Internal resistance < 450 Ω
- Input resistance of the evaluation instrument min. 10 k Ω (adjusted to 10 k Ω)
- Weight approx. 180 g

