

Description

The 8546 current sensor works with 24V DC and measures the magnetic field around a conductor (busbar).

The sensor switches if the magnetic field, and thus also the current passing through the busbar, exceeds a threshold value that can be set as desired.

The polarity of the current (DC \pm or AC) makes no difference.

Due to the special technology, despite its high triggering sensitivity the sensor still remains functional even when encountering extremely high magnetic fields as caused by a lightning strike, for example.

The sensitivity of the sensor (switching threshold) can be set by means of an internal potentiometer. If the current is exceeded, a electronic switching output (positive switching with regard to 24V DC) is set.

The current sensor 8546 is applicable in a wide range of current sensing. The lower limit is about 10A. The upper limit is dependent from the mechanical distance between busbar and sensor.

If the mechanical distance is fixed the range between the lower and upper limit for adjust the switching point is a factor of 4 (e.g. 10A-40A, or 75A-300A).

A test button in the sensor increases the sensitivity by a factor of 4. In this way damage to the components can be detected at an early stage in maintenance work (advance warning failure test). Furthermore, it makes it easier to set the threshold switching point, since the test current for comparison can be lower by this factor.

The sensor works as a “latch”, meaning that the switching signal of the output is still present even after a brief overcurrent until the sensor is reset via a digital input. If this input is permanently switched, the sensor works as a normal overcurrent sensor (without a “latch” function).

The switching output works as “low active”, meaning that in a non-operated condition it is switched with respect to +24V DC. It switches off if the threshold current is exceeded, hence being high resistance.

A cable break is handled in exact the same way as an overcurrent in the subsequent evaluation.

The status of the sensor is shown by two display LED's:

- Green LED: power supply OK
- Orange LED: switching threshold exceeded (output switched off)

Other design variants of coil connections, fixing, operate values and cable lead lengths on request.



Technical Data

Dimensions	housing 65x50x55mm copper busbar 150x35x5mm
Fixing connections	max. M10
Connections	+24VDC, DC GND, Reset, Output
Cross-section	35 x 5 mm ² Cu
Potting	PU
Contact	electronic switching contact
Operate value	adjustable from ≥ 10 A
Switching voltage	max. DC 30V
Switching current	max. DC 200 mA
Switching power	max. 4 W
Ambient temperature	-25°C to +80°C, 5-95% humidity
Connection	4 screw clamps, max 1,5 mm ²
Limiting dynamic value	60kA (8/20 μ s)
Lightning stroke current	25kA (10/350 μ s)

Ordering Information

Type	Order No.
8546-30	720100
8546-100	720105

2. Technical data

2.1 Limit data

(absolute maximum values)

Parameter	Symbol	Limit values	Condition	Additional description
Supply voltage	U_B -min U_B -max	16 V DC +30 V DC	Residual ripple <100 mV _{SS}	
Switching output	I_L -max U_{L-CP}	200 mA 62 V		permanently resistant to short circuiting, overload protection
Control input	U_E -max	± 30 V DC		
Ambient temperature	$T_a(B)$	-25 °C to +80 °C	rel. humidity 5-95%	non-condensing
Storage temperature	$T_a(L)$	-40 °C to +85 °C	rel. humidity 5-95%	non-condensing

2.2 Electrical data, supply

Tension d'alimentation	U_B	24 V DC	Tolerance ±20%	
Consommation en courant	I_B	21 mA	$U_B = 24$ V DC	
Puissance dissipée	P_B	500 mW	$U_B = 24$ V DC	

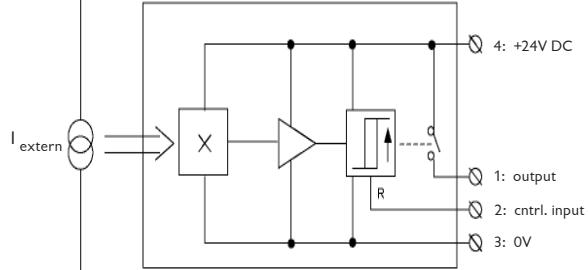
2.3 Electrical data, switching output

Type de sortie		PNP		Positive switching
Logique de commutation		low active		+24V = switched off 0V (high resist.) = switched on
Charge	I_L	0 mA to 200 mA	$U_B = 24$ V DC	
Protection de surintensité		yes		permanently
Protection de court-circuit		yes		permanently
Courant de court-circuit	I_{L-SC}	1.2 A	$T_a(B) = -25^\circ\text{C}$	
Chute de tension	$U_{A\text{-max}}$	< 1 V	$I_L < I_{L\text{-max}}$	

2.4 Electrical data, control input

Input voltage - logical „0“ - logical „1“	$U_{E0\text{-max}}$ $U_{E1\text{-min}}$	< +10 V DC > +20 V DC	$U_B = 24$ V DC $U_B = 24$ V DC	or unswitched (open)
Drive current	I_E -max	< 1 mA	$U_E = 24$ V DC	
Min. pulse length	T_E -min	150 ms		Internal filtering to suppress interference pulses

3. Block circuit diagram



4. Dimensions, connection scheme

