

# ZIEGLER transducer TI 807

## Passive DC signal isolator

without power supply,  
Non-Ex version, in housing S17  
for rail and wall mounting

### Application

The signal isolator Ziegler TI 807 serves to electrically insulate the analogue DC signal in the range 0...20 mA which depending on version is then converted to a current or voltage signal (0...20 mA or 0...10 V). It operates passively and does not require a separate power supply, but derives the little auxiliary energy it needs from the DC signal.

### Features / Benefits

- ☆ Electrically insulated analogue DC signals 0...20 mA / Prevents the transfer of interference voltages and currents. Solves grounding problems in meshed signal networks
- ☆ Highly accurate / Performs its isolating function with negligible transmission error
- ☆ No power supply needed / Saves wiring costs and is easy to install in existing plants
- ☆ Snaps onto a DIN rail or screws onto a wall or panel / Adaptable to the circumstances at the place of installation
- ☆ Compact and narrow. Housing only 17.5 mm wide / Low space requirement, high packing density. 27 devices fit into a 19" rack

### Layout and mode of operation

The DC signal isolator comprises a DC chopper Z, an isolating stage T, a rectifier G and an oscillator O.

The chopper converts the DC input signal  $E = 0...20 \text{ mA}$  to an AC signal which is transformed with electrical insulation, rectified, smoothed and appears at the output as a DC current signal  $A = 0...20 \text{ mA}$  (Fig. 2, left). Versions with a DC output voltage

signal  $A = 0...10 \text{ V}$  have a resistive burden of 500  $\Omega$  through which the current flows (Fig. 2).

The chopper is controlled by the oscillator which obtains its power from the DC signal.

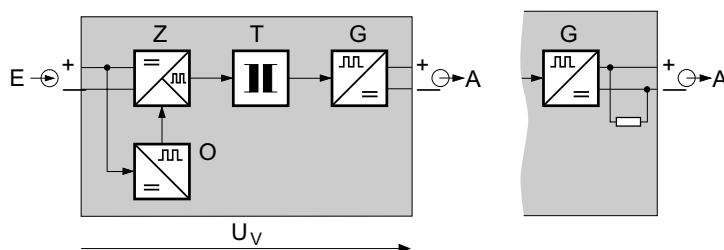


Fig. 2. Block diagram for a function unit.



Fig. 1. Ziegler TI 807 with two or three isolation and transmission channels, in housing S17, screw hole mounting brackets pulled out.

## Technical data

### Input signal E $\ominus \rightarrow$

DC current signal $I_E$ :	0...20 mA
Max. permissible current:	50 mA
Voltage limiter:	Non-Ex version: 27 V $\pm$ 5% (with zener diode)

### Output signal A $\ominus \rightarrow$

(DC current or DC voltage)

DC current signal $I_A$ :	0...20 mA
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Voltage drop  $U_V$ :

< 2.6 V	with standard (non-Ex) version
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Max. burden:

1000	with standard (non-Ex) version
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Limit:	Approx. 40 mA
Residual ripple:	< 20 mV ss
Time constant:	Approx. 3 ms
Response time <sup>1</sup> acc. to IEC 770:	Approx. 15 ms
DC voltage signal $U_A$ :	0...10 V

Voltage drop  $U_V$ :

< 2.6 V	with standard (non-Ex) version
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Internal resistance: 500

Limit:

< 26 V	with standard (non-Ex) version
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Residual ripple:	< 20 mV ss
Time constant:	Approx. 3 ms
Response time <sup>1</sup> acc. to IEC 770:	Approx. 15 ms

### Accuracy data

Error limits:	$\pm 0.1\%$ (Reference value 20 mA of output signal, typical linearity error included)
	$\pm 0.2\%$ (Reference value 10 V of output signal, typical linearity error included)

### Reference conditions

DC current signal $I_E$ :	0... 20 mA
Ambient temperature:	23°C $\pm$ 1 K
Output burden:	250 W (at DC current output signal) $\geq 5 M$ (at DC voltage output signal)

### Additional error :

Burden influence:	< 0.05% / 100W (at DC current output signal)
Temperature coefficient:	< 50 ppm/K

### Installation data

Mechanical design:	Housing S17 Dimensions see section "Dimensional Drawings"
Material of housing:	Lexan 940 (polycarbonate). Flammability Class V-0 acc. to UL 94, self-extinguishing, non-dripping, free of halogen
Mounting:	directly onto a wall with 2 screws and — pull-out screw hole brackets
Mounting position:	Any
Electrical connections:	Screw terminals with wire guards for light PVC wiring and max. 2 x 0.75 mm <sup>2</sup> or 1 x 2.5 mm <sup>2</sup>

Weight:

approx. 180 g	TI 807-1.... (housing S17) with 2 isolation and transmission channels
approx. 200 g	TI 807-1.... (housing S17) with 3 isolation and transmission channels

### Regulations

Test voltage kV, 50 Hz, 1 min.:

2.3 kV	TI 807.... (housing S17)	Input versus output
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Surge voltage kV, 1.2/50 s:

4.25 kV	TI 807.... (housing S17)	Input versus output
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Electromagnetic compatibility:	The standards DIN EN 50 081-2 and DIN EN 50 082-2 are observed
Electrical design:	Acc. to IEC 1010 resp. EN 61 010
Contamination level:	2
Overvoltage category:	II
Protection (acc. to IEC 529 resp. EN 60529):	Housing IP 40 Terminals IP 20

<sup>1</sup> This is the time which transpires before the output signal reaches the error limit of 1% for a step change of the input signal from 0  $\square$  90%.

### Ambient conditions

Climatic rating: Climate class 3Z acc. to VDI/VDE 3540

Operating temperature: -25 to + 55°C

Storage temperature: -40 to + 70°C

Annual mean relative humidity: 75% standard climatic rating

Seismic test: 5 g, < 200 Hz, 2 h in each of 3 directions

Shock: 50 g, 10 shocks in each of 3 directions

### Table 1: Electromagnetic compatibility

Reference was made to the general standards EN 50 081-2 and EN 50 082-2

Conducted interference from the instrument	EN 55 011	Group 1, Class A
HF radiation from complete instrument	EN 55 011	Group 1, Class A
Electrostatic discharge	IEC 1000-4-2	Direct : ± 8kV air Indirect : ± 6kV contact
HF field influence on instrument	IEC 1000-4-3	80 MHz... 1000MHz: 10 V/m, 80% AM 1kHz (ITU-frequencies, 3V/m)
Transient burst via connections	IEC 1000-4-4	± 2 kV, 5/50 ns, 5kHz, > 1 min. Capacitively coupled
HF interference via connections	IEC 1000-4-6	0.15 to 230 MHz: 10 V, 80% AM 1kHz (ITU-frequencies, 3V)

The device fulfills the protection requirements of the EMC guidelines (89/336/EWG).

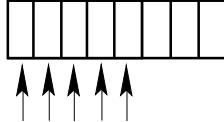
### Standard version in housing S17 for wall mounting

The following signal isolator versions are available as standard versions.

Table 2:

Description	Number of channels	Output channels
Passive DC signal isolator, standard version, input signal 0...20 mA, standard climatic rating	2 channel	0...20 mA
	3 channel	0...20 mA
	2 channel	0...10 V
	3 channel	0...10 V

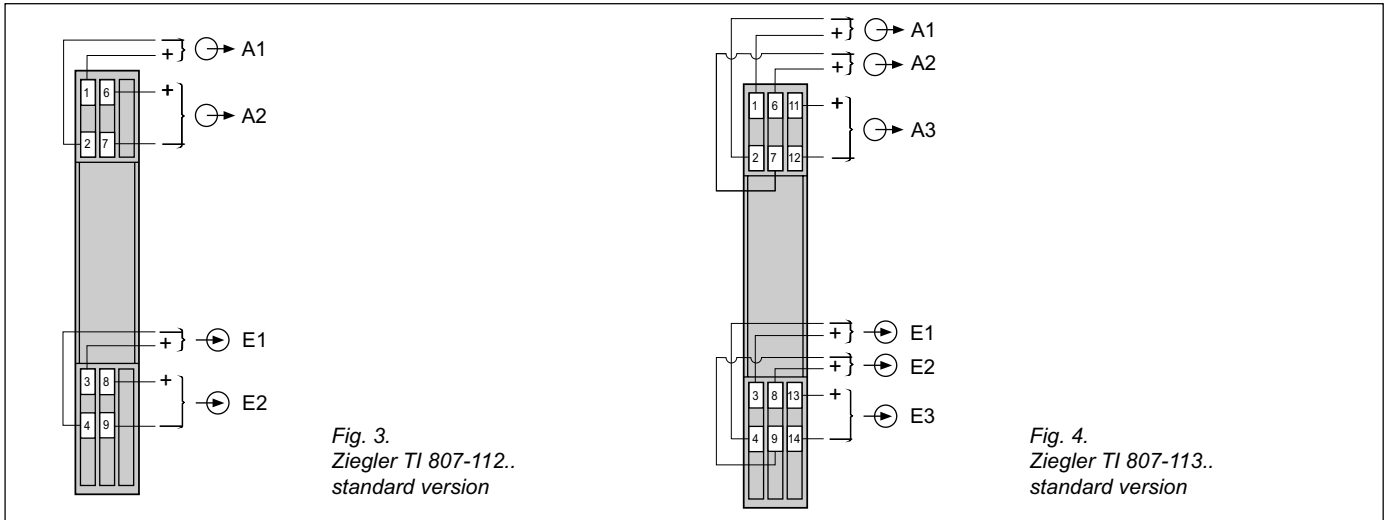
Table 7: Specification and ordering information

Order Code 807 —			
Features, Selection	*SCODE	no-go	
1. Mechanical design 1) Housing S17	B		1 . . . . .
2. Version 1) Standard (non-Ex) Input and output signals non intrinsically safe			. 1 . . . . .
3. Number of isolation channels 1) 2 channel (interface)		C	. . 2 . . . . .
2) 3 channels (interfaces)		C	. . 3 . . . . .
4. Output signals A1 or A2 and or A1 and A2 0) 0 ... 20 mA			. . . . 0 . . . . .
2) 0 ... 10 V, 2 channels			. . . . 2 . . . . .
3) 0 ... 10 V, 3 channels			. . . . 3 . . . . .
5. Climatic rating 0) Standard climatic rating			. . . . 0 . . . . .

\* Lines with letter(s) under "no-go" cannot be combined with preceding lines having the same letter under "SCODE".

## Electrical Connections

Signal isolator in housing in housing s17 with two/three isolation and transmission channels



## Dimensional Drawing

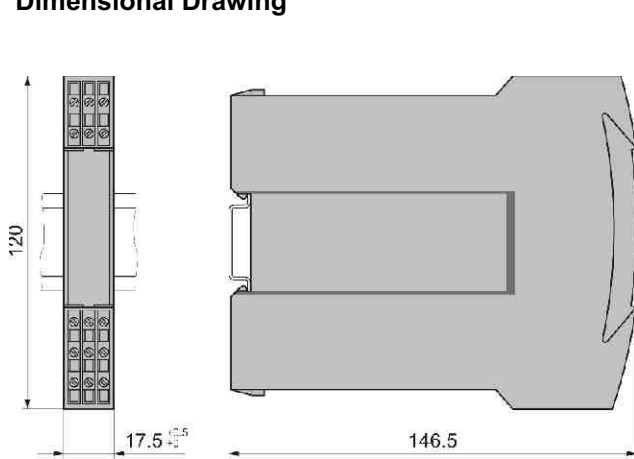


Fig. 5. Ziegler TI 807-1.... (housing S17) clipped on to a top-hat Rail (35 x 7.5 or 35 x 15 mm, acc. to EN 50 022)

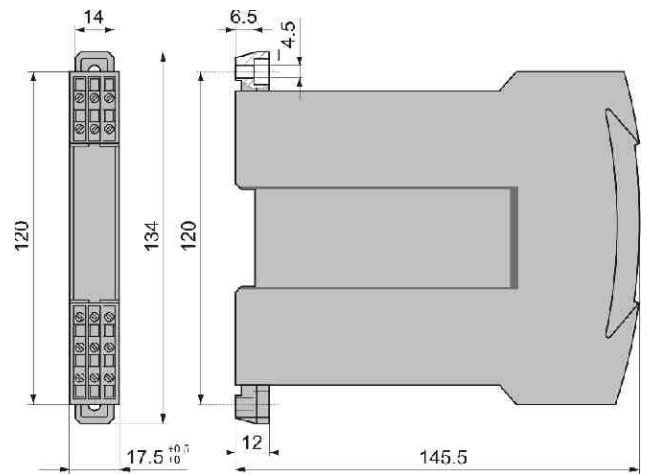


Fig. 6. Ziegler TI 807-1.... (housing S17) screw hole mounting. brackets pulled out.

## Standard accessories

1. Operating instructions
2. Pull out clamp S17 (for opening the house)
3. Front label.