

# SINEAX TV 808, 1 channel

## Isolating amplifier unipolar/bipolar

**For electrically insulating, amplifying and converting DC signals**

CE 0102 Ex II (1) G

### Application

The purpose of the isolating amplifier **SINEAX TV 808** (Fig. 1 and 2) is to electrically insulate input and output signals, respectively to amplify and/or change the signal level or type (current or voltage) of the input signals.

### Variants

- Ex and non-Ex isolating amplifiers
- 36 standard input and output combinations selected by plug-in jumpers
- User-specific input and/or output ranges
- Power supply 24...60 V DC/AC or 85...230 V DC/AC

Please request our data sheet TV 808-12 Le for two-channel versions.

### Features / Benefits

- Electric insulation between input, output (2.3 kV) and power supply (3.7 kV) / Prevents measurement errors due to potential leakage
- Flexibility provided by 36 different input and output combinations selected by simply positioning plug-in jumpers / No influence on accuracy / Reduced stocking
- Non-standard user-specific ranges available
- AC/DC power supply / Universal
- Available in type of protection "Intrinsic safety" [EEx ia] IIC (see "Table 5: Data on explosion protection")
- Provision for either snapping the isolating amplifier onto top-hat rails or securing it with screws to a wall or panel
- Housing only 17,5 mm (size S17 housing) / Low space requirement

### Standard versions

Input and output set to 0 ... 20 mA. Any of the standard ranges simply selected by positioning plug-in jumpers without influencing measurement accuracy.

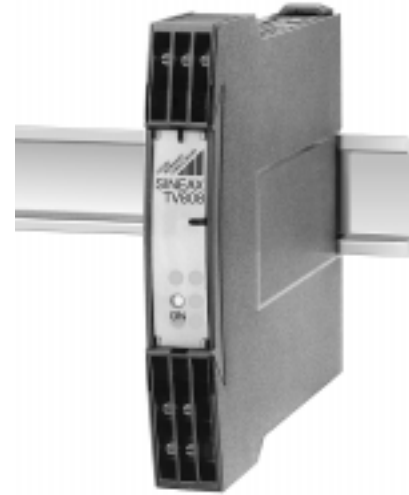


Fig. 1. Isolating amplifier SINEAX TV 808 in housing S17 clipped onto a top-hat rail.



Fig. 2. Isolating amplifier SINEAX TV 808 in housing S17, screw hole mounting brackets pulled out.

**Table 1: Standard (non-Ex) version**

Standard ranges		Power supply	Order No.
Input	Output		
0... 20 mA	0... 20 mA	24... 60 V DC/AC	124 404
4... 20 mA	4... 20 mA		
± 20 mA	± 20 mA		
0... 10 V	0... 10 V	85...230 V DC/AC	124 412
2... 10 V	2... 10 V		
± 10 V	± 10 V		

**Table 2: [EEx ia] IIC version, (input intrinsically safe)**

Standard ranges		Power supply	Order No.
Input	Output		
0... 20 mA	0... 20 mA	24... 60 V DC/AC	124 438
4... 20 mA	4... 20 mA		
± 20 mA	± 20 mA		
0... 10 V	0... 10 V	85...110 V DC/ 85...230 V AC	124 420
2... 10 V	2... 10 V		
± 10 V	± 10 V		

Please complete the Order Code 808-11.1 .. according to Table 4 "Ordering informations" for versions with user-specific input and/or output ranges.

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### Technical data

#### Measuring input $\rightarrow$

DC current:	Standard ranges 0...20 mA, 4...20 mA, $\pm 20$ mA Limit values 0...0.1 to 0...50 mA also live-zero, start value > 0 to $\leq 50\%$ final value -0.1...0...+ 0.1 to -50...0...+ 50 mA also bipolar asymmetrical $R_i = 15 \Omega$
DC voltage:	Standard ranges 0...10 V, 2...10 V, $\pm 10$ V Limit values 0...0.06 to 0...40, <b>Ex max. 30 V</b> also live-zero, start value > 0 to $\leq 50\%$ final value -0.06...0...+ 0.06 to -40...0...+ 40 V, <b>Ex max. -30...0...+ 30 V</b> $R_i = 100 \text{ k}\Omega$
Overload:	DC current continuously 2-fold DC voltage continuously 2-fold

#### Measuring output $\rightarrow$

DC current:	Standard ranges 0...20 mA, 4...20 mA, $\pm 20$ mA Limit values 0...1 to 0...20 mA 0.2...1 to 4...20 mA -1...0...+ 1 to -20...0...+ 20 mA
Burden voltage:	12 V
External resistance:	$R_{\text{ext}} \text{ max. } [\text{k}\Omega] = \frac{12 \text{ V}}{I_{\text{AN}} [\text{mA}]}$ $I_{\text{AN}} = \text{Output circuit full-scale value}$
DC voltage:	Standard ranges 0...10 V, 2...10 V, $\pm 10$ V Limit values 0...1 to 0...10 V 0.2...1 to 2...10 V -1...0...+ 1 to -10...0...+ 10 V
Burden:	$R_{\text{ext}} \text{ min. } [\text{k}\Omega] \geq \frac{U_{\text{AN}} [\text{V}]}{5 \text{ mA}}$
Current limiter at $R_{\text{ext}} \text{ max.}$ :	Approx. $1.1 \times I_{\text{AN}}$ for current output
Voltage limiter at $R_{\text{ext}} = \infty$ :	Approx. 13 V
Residual ripple in output current:	< 0.5% p.p.
Response time:	< 50 ms

#### Power supply H $\rightarrow \bigcirc$

AC/DC power pack (DC and 45...400 Hz)

Table 3: Nominal voltages and tolerances

Nominal voltage $U_N$	Tolerance	Instrument version
24... 60 V DC / AC	DC -15...+ 33% AC $\pm 15\%$	Standard (non-Ex)
85...230 V <sup>1</sup> DC / AC		
24... 60 V DC / AC	DC -15...+ 33% AC $\pm 15\%$	Type of protection "intrinsically safe" [Ex ia] IIC
85...230 V AC		
85...110 V DC	-15...+ 10%	

Power input:  $\leq 1.2 \text{ W}$  resp.  $\leq 3 \text{ VA}$

#### Accuracy data (acc. to DIN/IEC 770)

Basic accuracy: Limit error  $\leq \pm 0.2\%$   
Including linearity and reproducibility errors

#### Reference conditions:

Ambient temperature: 23 °C,  $\pm 2 \text{ K}$   
Power supply: 24 V DC  $\pm 10\%$  and 230 V AC  $\pm 10\%$   
Output burden: Current:  $0.5 \cdot R_{\text{ext}} \text{ max.}$   
Voltage:  $2 \cdot R_{\text{ext}} \text{ min.}$

#### Influencing factors:

Temperature:  $< \pm 0.1\%$  per 10 K  
Burden influence:  $< \pm 0.1\%$  for current output  
 $< \pm 0.2\%$  for voltage output  
if  $R_{\text{ext}} < 2 \cdot R_{\text{ext}} \text{ min.}$   
Longtime drift:  $< \pm 0.3\%$  / 12 months  
Switch-on drift:  $< \pm 0.2\%$   
Common and transverse mode influence:  $< \pm 0.2\%$   
Output + or - connected to ground:  $< \pm 0.2\%$

#### Installation data

Housing: Housing S17  
See section "Dimensional drawings" for dimensions  
Material of housing: Lexan 940 (polycarbonate)  
flammability class V-0 acc. to UL 94,  
self-extinguishing, non-dripping, free of halogen

<sup>1</sup> For power supplies > 125 V, the auxiliary circuit should include an external fuse with a rating  $\leq 20 \text{ A DC}$ .

Mounting:	For snapping onto top-hat rail (35 × 15 mm or 35 × 7.5 mm) acc. to EN 50 022 or directly onto a wall or panel using the pull-out screw hole brackets	Electrical standards:	Acc. to IEC 1010 resp. EN 61 010
		Operating voltages:	< 300 V between all insulated circuits
		Contamination level:	2
Position of use:	Any	Overvoltage category acc. to IEC 664:	III for power supply II for measuring input and measuring output
Terminals:	DIN/VDE 0609 Screw terminals with wire guards, for light PVC wiring and max. 2 × 0.75 mm <sup>2</sup> or 1 × 2.5 mm <sup>2</sup>	Double insulation:	– Power supply versus all other circuits – Measuring input versus measuring output
Permissible vibrations:	2 g acc. to EN 60 068-2-6	Test voltage:	Measuring input versus: – measuring output 2.3 kV, 50 Hz, 1 min. – power supply 3.7 kV, 50 Hz, 1 min. Measuring output versus: – power supply 3.7 kV, 50 Hz, 1 min.
Shock:	3 × 50 g 3 shocks each in 6 directions acc. to EN 60 068-2-27		
Weight:	Approx. 0.18 kg		
<b>Electrical insulation:</b>	All circuits (measuring input / measuring output / power supply) are electrically insulated	<b>Environmental conditions</b>	
<b>Regulations</b>		Climatic rating:	Climate class 3Z acc. to VDI/VDE 3540
Electromagnetic compatibility:	The standards DIN EN 50 081-2 and DIN EN 50 082-2 are observed	Commissioning temperature:	– 10 to + 55 °C
Intrinsically safe:	Acc. to DIN EN 50 020: 1996-04	Operating temperature:	– 25 to + 55 °C, <b>Ex – 20</b> to + 55 °C
Protection (acc. to IEC 529 resp. EN 60 529):	Housing IP 40 Terminals IP 20	Storage temperature:	– 40 to + 70 °C
		Annual mean relative humidity:	≤ 75%

**Table 4: Ordering informations** (see also Table 1 and 2: “Standard versions”)

DESCRIPTION	MARKING
<b>1. Mechanical design</b> Housing S17 for rail and wall mounting	808 - 1
<b>2. Number of channels</b> 1) 1 channel	1
<b>3. Version / Power supply</b> 1) Standard, 24 ... 60 V DC/AC 2) Standard, 85 ... 230 V DC/AC 3) [EEx ia] IIC, 24 ... 60 V DC/AC (Input intrinsically safe) 4) [EEx ia] IIC, 85 ... 110 V DC / 230 V AC (Input intrinsically safe)	1 2 3 4
<b>4. Function</b> 1) 1 input, 1 electrically insulated output	1

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## Isolating amplifier unipolar/bipolar

DESCRIPTION	MARKING
<b>5. Input signal</b> 9) Input [V] <input type="text"/> Z) Input [mA] <input type="text"/> Line 9: [V] 0 ... 0.06 to 0 ... 40, <b>Ex max. 30</b> also live-zero, start value > 0 to ≤ 50% final value [M] -0.06 ... 0 ... + 0.06 to -40 ... 0 ... + 40, <b>Ex max. -30 ... 0 ... + 30</b> also bipolar asymmetrical Line Z: [mA] 0 ... 0.1 to 0 ... 50 also live-zero, start value > 0 to ≤ 50% final value [mA] -0.1 ... 0 ... + 0.1 to -50 ... 0 ... + 50 also bipolar asymmetrical	9 Z
<b>6. Output signal</b> 9) Output [V] <input type="text"/> Z) Output [mA] <input type="text"/> Line 9: [V] 0 ... 1 to 0 ... 10 0.2 ... 1 to 2 ... 10 -1 ... 0 ... + 1 to -10 ... 0 ... + 10 Line Z: [mA] 0 ... 1 to 0 ... 20 0.2 ... 1 to 4 ... 20 -1 ... 0 ... + 1 to -20 ... 0 ... + 20	9 Z

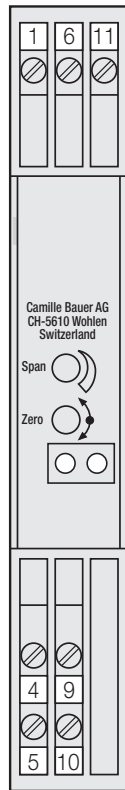
Possible special versions, e.g. increased climatic rating on inquiry.

**Table 5: Data on explosion protection**  **II (1) G**

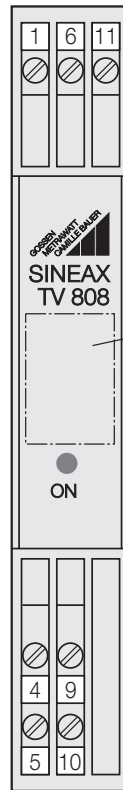
Order code	Type of protection	Input	Output	Type Examination Certificate	Mounting location
808-113. ... 808-114. ...	[EEx ia] IIC	$U_o = 6 \text{ V}$ $I_o = 63 \text{ } \mu\text{A}$ $L_i = 20 \text{ } \mu\text{H}$ $C_i = 20 \text{ nF}$ only for connection to certified intrinsically safe circuits with following maximum value: $U_o = 30 \text{ V}$	$U_m = 253 \text{ V AC}$ resp. $125 \text{ V DC}$	PTB 97 ATEX 2191	<b>Outside</b> the hazardous area

## Electrical connections

Front



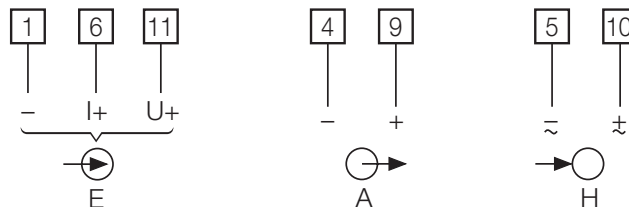
Without transparent cover



With transparent cover

Space e.g. for MSK designation

● ON  
Green LED for device standing by



E = Input  
A = Output  
H = Power supply

# SINEAX TV 808, 1 channel

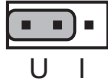
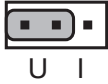


## Isolating amplifier unipolar/bipolar

### Configuration

The SINEAX TV 808 unit has to be opened before it can be configured.

### Type of output signal (voltage or current)

The output can be configured for a voltage or current signal by inserting the plug-in jumpers **ST 4** and **ST 3** in position “U” or “I” (Fig. 3).

Output $\ominus \rightarrow$	Jumpers	
	ST 4	ST 3
Voltage [V]	 U I	 U I
Current [mA]	 U I	 U I

### Standard input and output ranges

Two of the six plug-in jumpers **B1** to **B6** are used for selecting the standard ranges of the isolating amplifiers. Providing the potentiometers “Span” and “Zero” are not moved, changing the range has no influence on amplifier accuracy.

$\ominus \rightarrow$	$4 \dots 20$ mA	<b><math>0 \dots 20</math> mA</b>	$-20 \dots 20$ mA	$2 \dots 10$ V	$0 \dots 10$ V	$-10 \dots 10$ V
$4 \dots 20$ mA	B1, B4	B2, B4	B3, B4	B1, B4	B2, B4	B3, B4
<b><math>0 \dots 20</math> mA</b>	B1, B5	<b>B2, B5</b>	B3, B5	B1, B5	B2, B5	B3, B5
$-20 \dots 20$ mA	B1, B6	B2, B6	B3, B6	B1, B6	B2, B6	B3, B6
$2 \dots 10$ V	B1, B4	B2, B4	B3, B4	B1, B4	B2, B4	B3, B4
$0 \dots 10$ V	B1, B5	B2, B5	B3, B5	B1, B5	B2, B5	B3, B5
$-10 \dots 10$ V	B1, B6	B2, B6	B3, B6	B1, B6	B2, B6	B3, B6

The default setting of the preferred versions ex stock is  $0 \dots 20$  mA for input and output, i.e. jumpers are inserted in positions B2 and B5 and jumpers ST 4 and ST 3 are in position “I”.

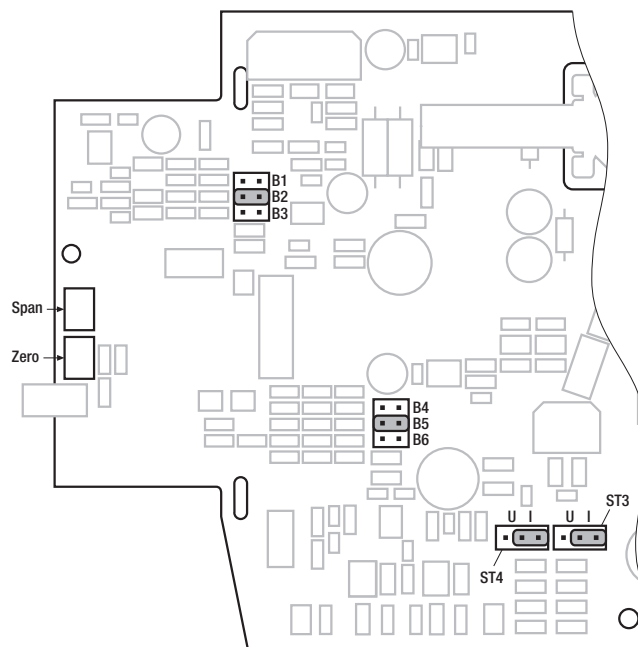


Fig. 3. Position of the jumpers ST 4 and ST 3, B1 to B6 and the potentiometers “Span” and “Zero”.

## Dimensional drawings

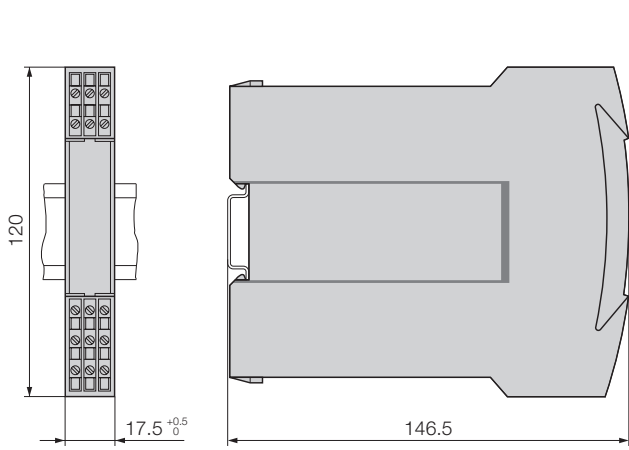


Fig. 4. SINEAX TV 808 in housing **S17** clipped onto a top-hat rail (35 × 15 mm or 35 × 7.5 mm, acc. to EN 50 022).

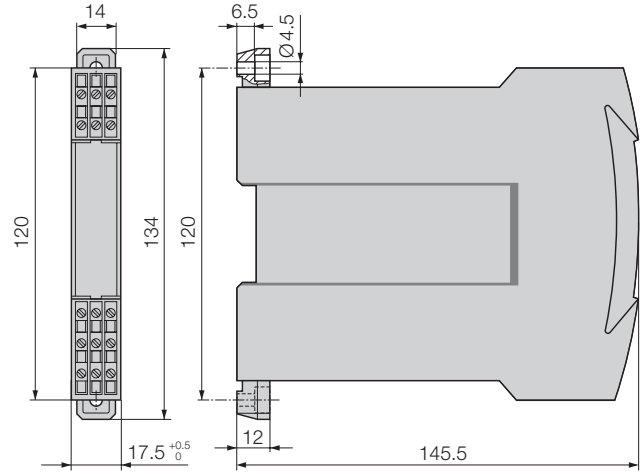


Fig. 5. SINEAX TV 808 in housing **S17**, screw hole mounting brackets pulled out.

## Standard accessories

- 1 Operating Instructions in three languages: German, French, English
- 2 Withdrawing handle (for opening the housing)
- 2 Labels (under transparent cover)
- 1 Type Examination Certificate (for instruments in type of protection "Intrinsically safe" only)

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Camille Bauer Ltd

Aargauerstrasse 7  
CH-5610 Wohlen/Switzerland  
Phone +41 56 618 21 11  
Fax +41 56 618 24 58  
Telex 827 901 cbm ch

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METRAWATT  
CAMILLE BAUER**

