

SINEAX TV 808, 1 channel

Isolating amplifier unipolar/bipolar

GOSEN
METRAWATT
CAMILLE BAUER

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.

Table 1: Standard (non-Ex) version

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

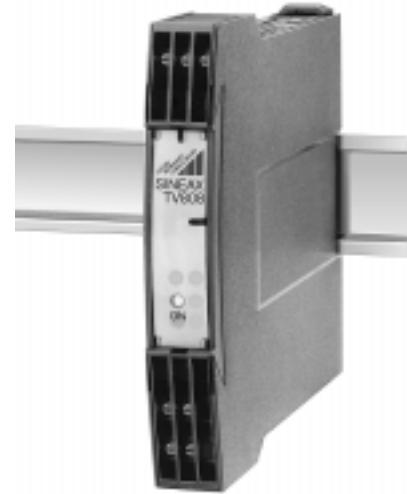


Fig. 1. Isolating amplifier SINEAX TV 808 in housing **S17** clipped onto a top-hat rail.



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

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

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

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Technical data

Measuring input

DC current:

Standard ranges
0...20 mA, 4...20 mA, ± 20 mA
Limit values
0...0.1 to 0...50 mA
also live-zero,
start value > 0 to ≤ 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, ± 10 V
Limit values
0...0.06 to 0...40, **Ex max. 30 V**
also live-zero,
start value > 0 to ≤ 50% final value
- 0.06...0...+ 0.06 to
- 40...0...+ 40 V,
Ex max. -30...0...+ 30 V
 $R_i = 100 \text{ k}\Omega$

Overload:

DC current
continuously 2-fold
DC voltage
continuously 2-fold

Measuring output

DC current:

Standard ranges
0...20 mA, 4...20 mA, ± 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_{AN} = Output circuit full-scale value

DC voltage:

Standard ranges
0...10 V, 2...10 V, ± 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

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 ± 15%	Standard (non-Ex)
85...230 V ¹ DC / AC		
24... 60 V DC / AC	DC - 15...+ 33% AC ± 15%	Type of protection "intrinsically safe" [EEx ia] IIC
85...230 V AC	± 10%	
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 $23 \text{ }^{\circ}\text{C}, \pm 2 \text{ K}$
Power supply $24 \text{ V DC} \pm 10\%$ and $230 \text{ V AC} \pm 10\%$
Output burden Current: $0.5 \cdot R_{\text{ext}}$ max.
Voltage: $2 \cdot R_{\text{ext}}$ 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 $R_{\text{ext}} < 2 \cdot R_{\text{ext}}$ min.
Longtime drift $< \pm 0.3\% / 12 \text{ months}$
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

¹ 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: Operating voltages: Contamination level: Overvoltage category acc. to IEC 664:	Acc. to IEC 1010 resp. EN 61 010 < 300 V between all insulated circuits 2 III for power supply II for measuring input and measuring output
Position of use:	Any		
Terminals:	DIN/VDE 0609 Screw terminals with wire guards, for light PVC wiring and max. 2 × 0.75 mm ² or 1 × 2.5 mm ²	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.
Shock:	3 × 50 g 3 shocks each in 6 directions acc. to EN 60 068-2-27		Measuring output versus: – power supply 3.7 kV, 50 Hz, 1 min.
Weight:	Approx. 0.18 kg		
Electrical insulation:	All circuits (measuring input / measuring output / power supply) are electrically insulated		
Regulations			
Electromagnetic compatibility:	The standards DIN EN 50 081-2 and DIN EN 50 082-2 are observed	Climatic rating:	Climate class 3Z acc. to VDI/VDE 3540
Intrinsically safe:	Acc. to DIN EN 50 020: 1996-04	Commissioning temperature:	– 10 to + 55 °C
Protection (acc. to IEC 529 resp. EN 60 529):	Housing IP 40 Terminals IP 20	Operating temperature:	– 25 to + 55 °C, Ex – 20 to + 55 °C
		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
1. Mechanical design Housing S17 for rail and wall mounting	808 - 1
2. Number of channels 1) 1 channel	1
3. Version / Power supply 1) Standard, 24 ... 60 V DC/AC 2) Standard, 85 ... 230 V DC/AC 3) [EEx ia] IIC, (Input intrinsically safe) 24 ... 60 V DC/AC 4) [EEx ia] IIC, (Input intrinsically safe) 85 ... 110 V DC / 230 V AC	1 2 3 4
4. Function 1) 1 input, 1 electrically insulated output	1

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

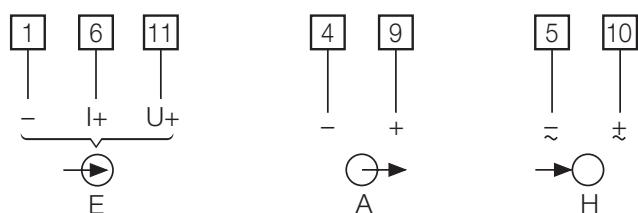
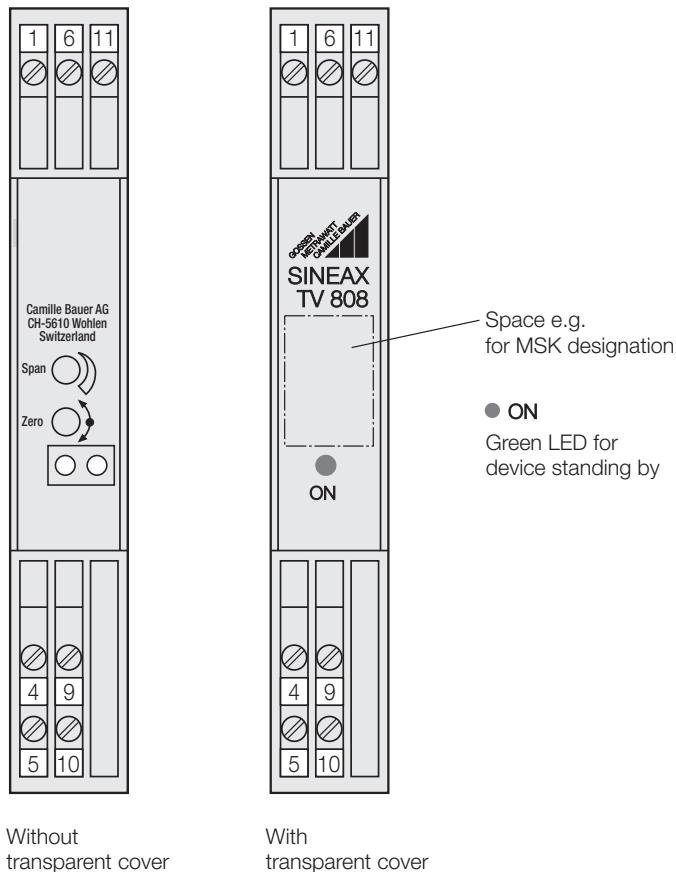
Possible special versions, e.g. increased climatic rating on inquiry.

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

Order code	Type of protection	Input	Output	Type Examination Certificate	Mounting location
808-113. ... 808-114. ...	[EEx ia] IIC	$U_o = 6 \text{ V}$ $I_o = 63 \mu\text{A}$ $L_i = 20 \mu\text{H}$ $C_i = 20 \text{ nF}$ 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 V DC	PTB 97 ATEX 2191	Outside the hazardous area

Electrical connections

Front



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Configuration

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

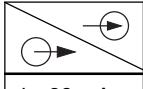
Type of output signal (voltage or current)

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 	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.

	4...20 mA	0...20 mA	-20...20 mA	2...10 V	0...10 V	-10...10 V
4...20 mA	B1, B4	B2, B4	B3, B4	B1, B4	B2, B4	B3, B4
0...20 mA	B1, B5	B2, B5	B3, B5	B1, B5	B2, B5	B3, B5
-20...20 mA	B1, B6	B2, B6	B3, B6	B1, B6	B2, B6	B3, B6
2...10 V	B1, B4	B2, B4	B3, B4	B1, B4	B2, B4	B3, B4
0...10 V	B1, B5	B2, B5	B3, B5	B1, B5	B2, B5	B3, B5
-10...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 ... 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”.

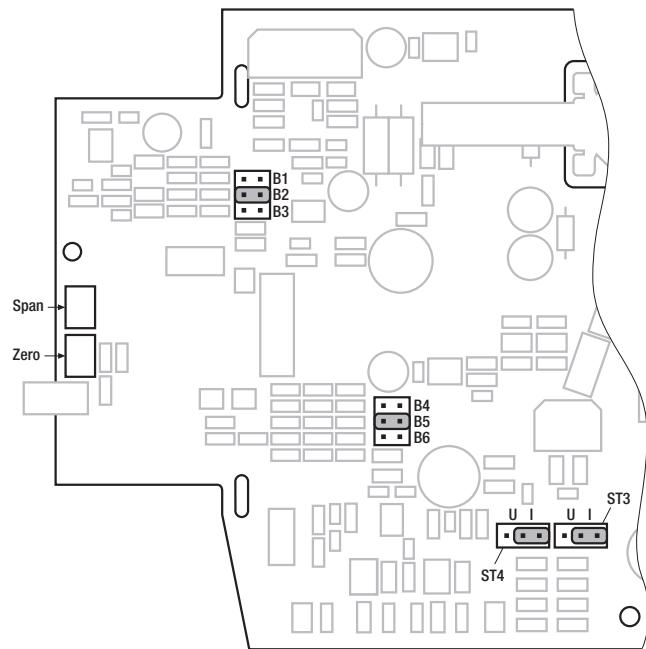


Fig. 3. Position of the jumpers ST 4 and ST 3, B1 to B6 and the potentiometers “Span” and “Zero”.

Dimensional drawings

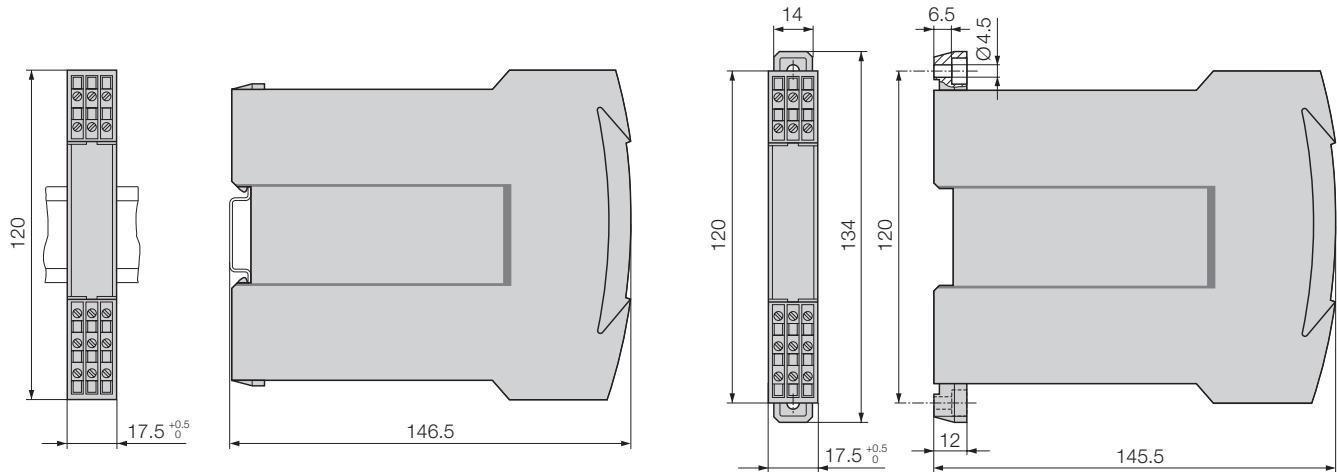


Fig. 4. SINEAX TV 808 in housing **S17** clipped onto a top-hat rail (35 x 15 mm or 35 x 7.5 mm, acc. to EN 50 022).

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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GOSSEN
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The logo consists of the company names 'GOSSEN', 'METRAWATT', and 'CAMILLE BAUER' stacked vertically. To the right of the text are four dark grey, slanted bars of increasing height from left to right, creating a graphic that looks like a stylized 'M' or a series of steps.