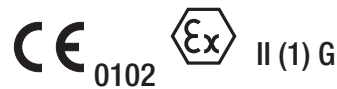


# Plug-in module SIRAX TV 808, 1 channel Isolating Amplifier unipolar/bipolar

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



## Application

The purpose of the isolating amplifier **SIRAX TV 808** (Fig. 1) 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.


The instrument fulfils all the important requirements and regulations concerning electromagnetic compatibility **EMC** and **Safety** (IEC 1010 resp. EN 61 010). It was developed and is manufactured and tested in strict accordance with the **quality assurance standard** ISO 9001.

An explosion-proof “Intrinsically safe” [Ex ia] IIC version rounds off the series of SIRAX TV 808. Production QA is also certified according to guideline 94/9/EG.



Fig. 1. Steck-Modul SIRAX TV 808-61 for plugging onto backplane BP 902.

## Variants

-  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 808-62 Le for two-channel versions.

## Features / Benefits

- **Isolating amplifier plugs onto backplane** (mechanically latched by fasteners), all electrical connections made to the backplane and not to the SIRAX TV 808 / Thus no wiring when replacing devices
- **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” [Ex ia] IIC** (see Table 3: Data on explosion protection)

## 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**  
 $R_i = 100 \text{ k}\Omega$

# Plug-in module SIRAX TV 808, 1 channel

## Isolating Amplifier unipolar/bipolar

Overload: DC current continuously 2-fold  
DC voltage continuously 2-fold

### Measuring output $\ominus$

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:  $R_{ext} \text{ max. [k}\Omega\text{]} = \frac{12 \text{ V}}{I_{AN} \text{ [mA]}}$   
 $I_{AN}$  = 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:  $\geq 2 \text{ k}\Omega$

Current limiter at  $R_{ext} \text{ max.}$ : Approx.  $1.1 \times I_{AN}$  for current output

Voltage limiter at  $R_{ext} = \infty$ : 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 1: Nominal voltages and tolerances

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

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

### 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:  $0.5 \cdot R_{ext} \text{ max.}$   
Voltage:  $2 \cdot R_{ext} \text{ min.}$

### Influencing factors:

Temperature  $< \pm 0.1\%$  per 10 K  
Burden influence  $< \pm 0.1\%$  for current output  
 $< 0.2\%$  for voltage output, if  $R_{ext} < 2 \cdot R_{ext} \text{ min.}$   
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: Isolating amplifier in housing B17 for plugging onto backplane BP 902. Refer to Section "Dimensional drawing" for dimensions

Material of housing: Lexan 940 (polycarbonate) flammability class V-0 acc. to UL 94, self-extinguishing, non-dripping, free of halogen

Designation: SIRAX TV 808

Mounting position: Any

Electrical connections: 96-pin connector acc. to DIN 41 612, pattern C  
Layout see Section "Electrical connections"

Coding: Isolating amplifier supplied already coded. The rack is coded by the user by fitting the coding inserts supplied

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

Intrinsically safe: Acc. to EN 50 020: 1996-04

Housing protection (acc. to IEC 529 resp. EN 60 529): Housing IP 40  
Terminals IP 00

# Plug-in module SIRAX TV 808, 1 channel Isolating Amplifier unipolar/bipolar

Electrical standards:	Acc. to IEC 1010 resp. EN 61 010	<b>Environmental conditions</b>	
Operating voltage:	< 300 V between all insulated circuits	Climatic rating:	Climate class 3Z acc. to VDI/VDE 3540
Contamination level:	2	Commissioning temperature:	- 10 to + 40 °C
Overvoltage category acc. to IEC 664:	III for power supply II for measuring input and measuring output	Operating temperature:	-25 to + 40 °C, <b>Ex -20</b> to + 40 °C
Double insulation:	- Power supply versus all circuits - Measuring input versus measuring output	Storage temperature:	-40 to + 70 °C
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.	Annual mean relative humidity:	≤ 75%
		Altitude:	2000 m max.
		Indoor use statement!	

**Table 2: Ordering informations**

Description	Marking	Description	Marking
<b>1. Mechanical design</b> Housing B17 (for plugging onto backplane BP 902, see data sheets BP 902)	808 - 6	<b>6. Output signal</b>	
<b>2. Number of channels</b> 1 channel	1	Output [V] <input type="text"/>	9
<b>3. Version / Power supply</b>		[V] 0 ... 1 to 0 ... 10 0.2 ... 1 to 2 ... 10 - 1 ... 0 ... + 1 to - 10 ... 0 ... + 10	
Standard / 24 ... 60 V DC/AC	1	Output [mA] <input type="text"/>	Z
Standard / 85 ... 230 V DC/AC	2	[mA] 0 ... 1 to 0 ... 20 0.2 ... 1 to 4 ... 20 - 1 ... 0 ... + 1 to - 20 ... 0 ... + 20	
[EEx ia] IIC / 24 ... 60 V DC/AC (input intrinsically safe)	3	Possible special versions, e.g. increased climatic rating on inquiry.	
[EEx ia] IIC / 85 ... 110 V DC / 230 V AC (input intrinsically safe)	4		
<b>4. Function</b> 1 input, 1 electrically insulated output	1		
<b>5. Input signal</b>			
Input [V] <input type="text"/>	9		
[V] 0 ... 0.06 to 0 ... 40, <b>Ex max. 30</b> also live-zero, start value > 0 to ≤ 50% final value [V] - 0.06 ... 0 ... + 0.06 to - 40 ... 0 ... + 40, <b>Ex max. - 30 ... 0 ... + 30</b> also bipolar asymmetrical			
Input [mA] <input type="text"/>	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			

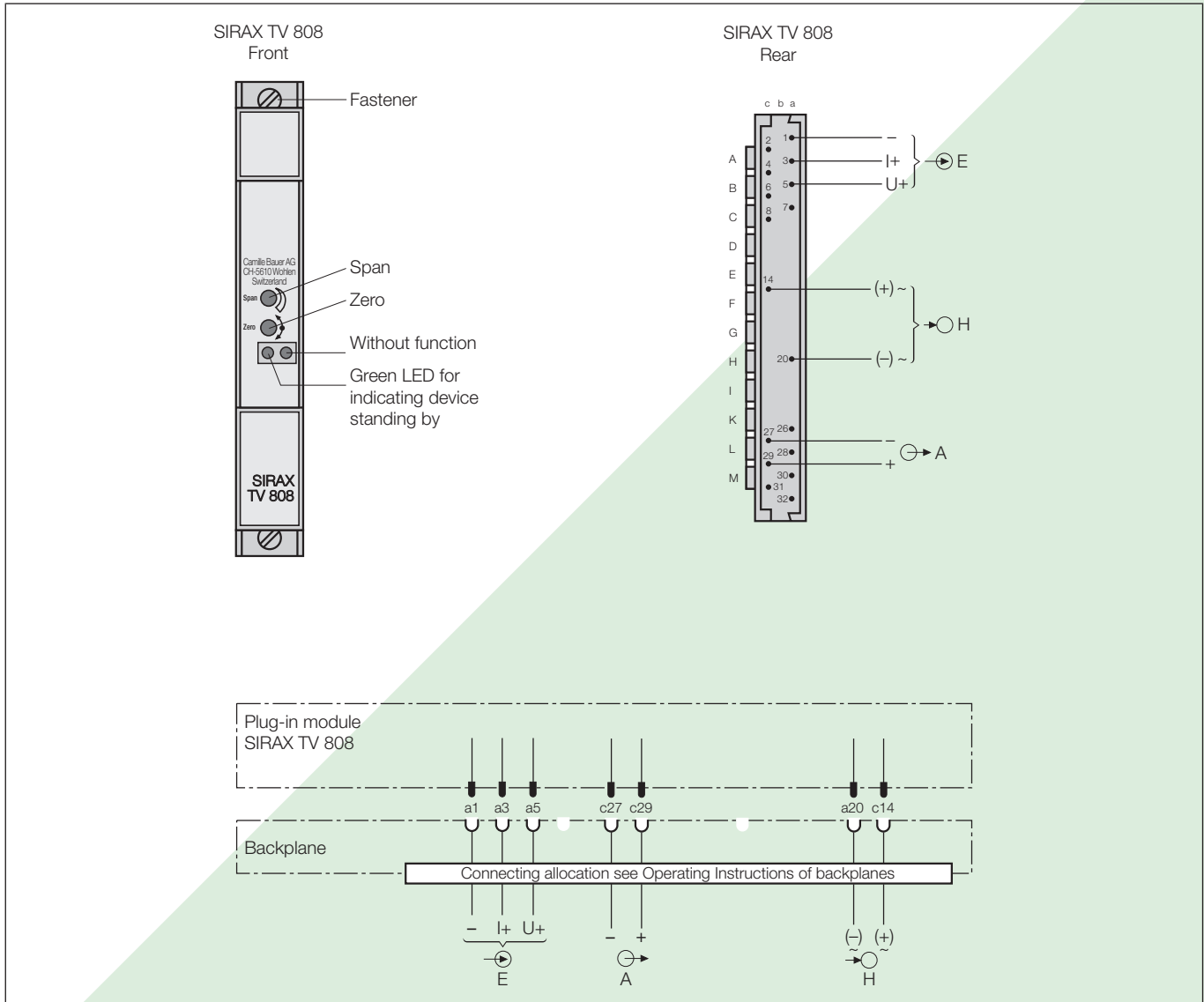
# Plug-in module SIRAX TV 808, 1 channel

## Isolating Amplifier unipolar/bipolar

**Table 3: Data on explosion protection**  **II (1) G**

Order code	Type of protection	input	Output	Type Examination Certificate	Mounting location
808 - 613. ... 808 - 614. ...	[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. $125 \text{ V DC}$	PTB 97 ATEX 2191	<b>Outside</b> the hazardous area

### Electrical connections



E = Input      A = Output      H = Power supply





# Plug-in module SIRAX TV 808, 1 channel Isolating Amplifier unipolar/bipolar

## Configuration

The SIRAX 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. 2).

Output $\rightarrow$	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.

$\rightarrow$ $\leftarrow$	$\rightarrow$ 4...20 mA	<b>0...20 mA</b>	$\leftarrow$ -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
<b>0 ... 20 mA</b>	B1, B5	<b>B2, B5</b>	B3, B5	B1, B5	<b>B2, B5</b>	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

## Dimensional drawing

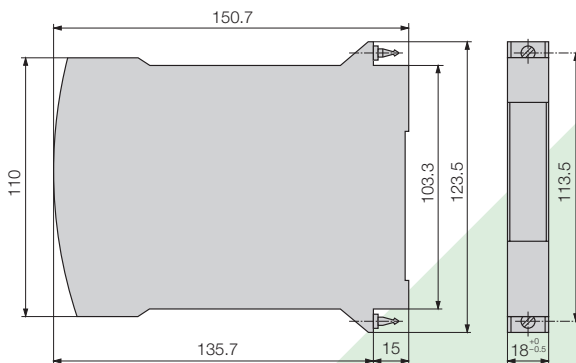


Fig. 3. SIRAX TV 808 in housing **B17**.

## Standard accessories

- 1 Operating Instructions for SIRAX TV 808 in three languages: German, French, English
- 1 Coding comb with 12 sets of codes
- 3 Data cards (for recording configured settings)
- 1 Type Examination Certificate (for instruments in type of protection "Intrinsically safe" only)

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".

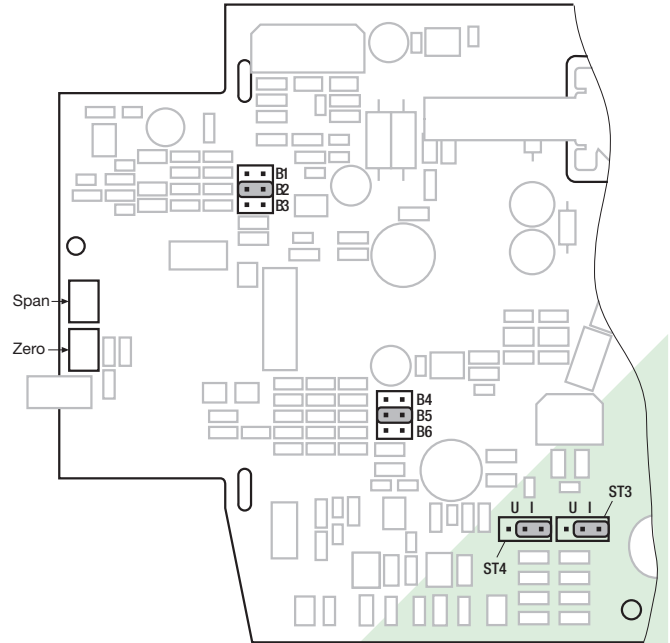


Fig. 2. Position of the jumpers **ST 4** and **ST 3**, **B1** to **B6** and the potentiometers "Span" and "Zero".

## Table 4: Accessories and spare parts

Description	Order No.
<b>Coding comb with 12 sets of codes</b> (for coding the backplane BP 902)	107 971
<b>Operating Instructions TV 808-61</b> Bd-f-e	125 171
<b>Data card</b> (for recording configured settings)	130 956

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