SINEAX SV 824
Isolating switch amplifier

Output with relay contacts
in housing S17 for rail and wall mounting

CE 0102 Ex II (1) G

*Fig. 1. SINEAX SV 824 in housing **S17** clipped onto a top-hat rail.*

*Fig. 2. SINEAX SV 824 in housing **S17** screw hole mounting brackets pulled out.*

Application

The isolating switch amplifier **SINEAX SV 824** (Figs. 1 and 2) is available in two-channel version and is used for transferring binary signals from fail-safe circuits to non-fail-safe circuits.

The amplifier input may be either a sensor conforming to DIN EN 50 227 or a mechanical contact. Input and output signals are electrically insulated. Output signals available are relay contacts.

Yellow LED's on the front of the unit signal energised output relays. The direction of action of the output can be configured with the aid of switches which are also located on the front of the unit.

Provision is made for monitoring the input with respect to open and short-circuits. Should one of these faults occur, the output relay of the channel concerned resets and the fault is signalled by the red LED on the front of the unit. The monitoring circuit is enabled by a switch (e.g. for use with mechanical transmitter contacts).

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.

Production QA is also certified according to guideline 94/9/EG.

Features / Benefits

- **Two channels according to DIN EN 50 227 (substitute for DIN 19 234: 1990-06)**
- **Output relays**
- **Electrical isolation between input, output and power supply according to IEC 1010 resp. EN 61 010**
- **AC/DC power supply / Universal**
- **In type of protection "Intrinsic safety" [EEx ia] IIC** (see "Table 4: Data on explosion protection")
- **Indication of the switching status by LED's**
- **Configurable input circuit monitor for detecting open and short-circuits**
- **Switch for setting the direction of action**
- **Green LED signals a power supply failure**
- **Compact and narrow**

SINEAX SV 824
Isolating switch amplifier

Technical data

Signal inputs (for channels I and II)

Type: Binary signals, preferably from contactless sensors acc. to DIN EN 50 227, in type of protection "Intrinsic safety" EEx ia IIC

Number: 2 (S1 and S2) signal inputs S1 and S2 have a common ground

Operating data

Open-circuit voltage: Approx. 8.5 V DC

Internal resistance: Approx. 1.1 kΩ

Short-circuit current: Approx. 8 mA

Switching level: Off I ≤ 1.2 mA, On I ≥ 2.1 mA

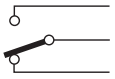
Hysteresis: 0.2 mA

Line resistance: Max. 50 Ω

Output contacts

Output A1 and A2: Output contacts for channels I and II galvanically isolated

Table 1: Version of the output contacts **A1** and **A2**

Symbol	Material	Contact rating
	Gold flashed silver alloy	AC: ≤ 2 A / 250 V (100 VA) DC: ≤ 2 A / 5…125 V (40 W)

Relay approved by UL, CSA, SEV, VDE, SEMKO, ÖVE, EI, BSI, FIMKO

Mechanical life: > 5 · 10^6 operations

Switching delay: Approx. 50 ms

Direction of action of the output contacts **A1** and **A2**: Adjustable by switch

Maximum switching frequency

Input-relay output: ≤ 10 Hz

Signal input monitoring

Behaviour: Circuit break and shorting are signalled by the red LED and the output of the corresponding channel is disabled.

Pick-up level according to DIN 19 234: Short-circuit I > approx. 6.3 mA
Open-circuit I < approx. 0.15 mA

Effectiveness of input monitoring: Enabled or disabled by switch .

If the amplifier is a contact instead of an active sensor and the input circuit has to be monitored, two resistors must be fitted close to the contact as shown in Fig. 3.

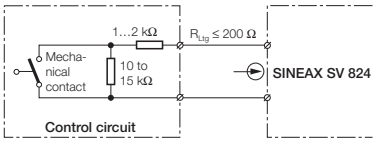


Fig. 3. Input contact circuit.

Power supply H

AC/DC module (DC and 45...400 Hz)

Table 2: Nominal voltages and tolerances

Nominal voltage U_N	Tolerance
24... 60 V DC / AC	DC – 15...+ 33% AC ± 15%
85...230 V AC	± 10%
85...110 V DC	– 15...+ 10%

Power input: ≤ 1.4 W resp. ≤ 2.7 VA

Electrical isolation: Signal inputs to output contacts and power supply

Regulations

Electromagnetic compatibility: The standards DIN EN 50 081-2 and DIN EN 50 082-2 are observed

Intrinsically safe: Acc. to DIN EN 50 020: 1994

Electrical standards: Acc. to IEC 1010 resp. EN 61 010

Protection (acc. to IEC 529 resp. EN 60 529): Housing IP 40
Terminals IP 20

Operating voltages: < 300 V between all circuits

Contamination level: 2

Overvoltage category: Output contacts and signal inputs II, power supply III

Double insulation:
- Power supply to signal inputs and output contacts
- Signal inputs to outputs
- Output contacts to each other

Test voltage:	Signal inputs to output contacts 2.3 kV, 50 Hz, 1 min. Signal inputs to power supply 3.7 kV, 50 Hz, 1 min. Output contacts to power supply 3,7 kV, 50 Hz, 1 min. Output contact 1 to output contact 2 2,3 kV, 50 Hz, 1 min.

Ambient conditions

Climatic rating:	Climate class 3Z acc. to VDI/VDE 3540
Commissioning temperature:	– 10 to + 55 °C
Operating temperature:	– 20 to + 55 °C
Storage temperature:	– 40 to + 70 °C
Relative humidity of annual mean:	≤ 75%

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
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
Position of use:	Any
Terminals:	DIN/VDE 0609 Screw terminals with wire guards, for light PVC wiring and max. 2 × 0.75 mm² or 1 × 2.5 mm²
Vibration:	2 g acc. to EN 60 068-2-6
Shock:	3 × 50 g 3 shocks each in 6 directions acc. to EN 60 068-2-27
Weight:	Approx. 185 g

Standard version

When ordering, it is only necessary to quote the **Order No.:**

Table 3: Instruments in [EEx ia] IIC version, (signal inputs intrinsically safe)

Description	Power supply (nominal voltage U_N)	Order No.
Two-channel **isolating switch amplifier** Signal inputs in type of protection “Intrinsic safety” EEx ia IIC*	24 … 60 V DC/AC	133 992
	85 … 110 V DC 85 … 230 V AC	134 007

* Max. values see “Table 4: Data on explosion protection”.

Basic configuration: Switch 1 in position “ON”
Switch 2 in position “ON”
Switch in position “ON”

Table 4: Data on explosion protection ⟨Ex⟩ II (1) G

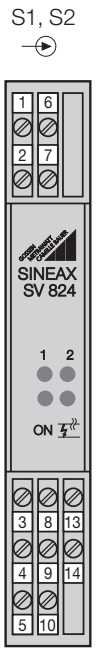
Type	Type of protection	Signal input	Type examination certificate	Mounting location of the instrument
824 – 133 824 – 134	[EEx ia] IIC	**U_o = 12 V** **I_o = 13 mA** **P_o = 39 mW** linear characteristic	PTB 97 ATEX 2272	**Outside** the hazardous area

	IIC	IIB
L_o	200 mH	730 mH
C_o	1.41 µF	9 µF

SINEAX SV 824
Isolating switch amplifier

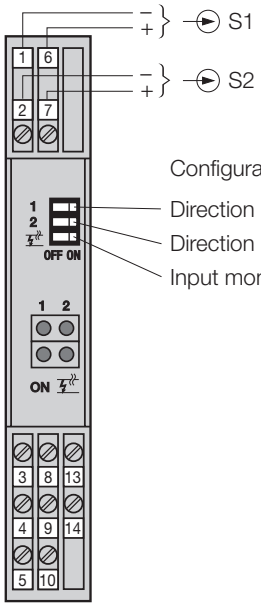
Electrical connections

Front



View **with**
transparent cover

- 1 Yellow LED 1
  Status display of relay A1
- 2 Yellow LED 2
  Status display of relay A2
- Red LED 3
  Open and short-circuit monitor (both inputs)
- ON Green LED 4
  Device standing by

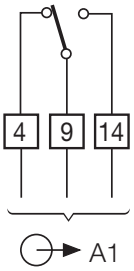


Configuration switch for:

Direction of action A1	INV/NORMAL
Direction of action A2	INV/NORMAL
Input monitor	OFF/ON

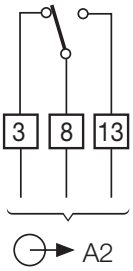
View **without**
transparent cover

Relay 1

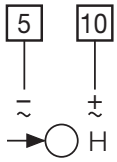


Energized: 14 – 9
De-energized: 4 – 9

Relay 2



Energized: 13 – 8
De-energized: 3 – 8



S1, S2 = Signal inputs for channels 1 and 2
A1, A2 = Output contacts for channels 1 and 2
H = Power supply

Switch positions:

Switch 1 resp. 2:	ON	Direction of action channel 1 resp. 2 normal
	OFF	Direction of action channel 1 resp. 2 inverse
	Normal	Relay contact closed for undamped NAMUR sensor or for closed mechanical contact
	Inverse	Relay contact open for undamped NAMUR sensor or for closed mechanical contact
Switch :	ON	Input monitor enabled
	OFF	Input monitor disabled

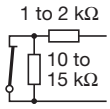
Operating sense

The statuses of outputs A1 and A2 and the LED's 1, 2 and ⚡ for the different operating senses and input signals are given in Table 5.

Explanation to the statuses of the signal inputs, contact outputs and LED displays

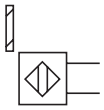
Signal inputs S1 and S2

means: "Closed" (mechanical) contact with one parallel and one series resistor

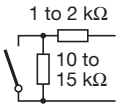


or

"Undamped" sensor in control circuit

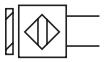


means: "Opened" (mechanical) contact with one parallel and one series resistor

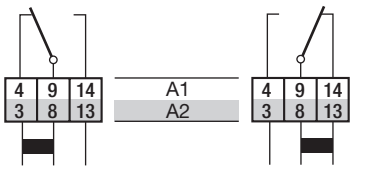


or

"Damped" sensor in control circuit



Output contacts A1 and A2



Relay de-energized
≙ status with power failure too

Relay energized

LED displays LED 1, LED 2 and LED ⚡

⊗ means: "OFF" (≙ status with power failure too)

● means: "ON"

Table 5: Function behaviour to connection of **sensors according to DIN 19 234 or mechanical contacts <u>with</u> one parallel and one series resistor**

Control circuit	Signal inputs S1 and S2 Status	LED display (red) Status	Output contacts A1 and A2 Status (A1/A2 · 4 9 14 / 3 8 13)	LED displays (yellow) LED 1 and LED 2 Status	Configuration switches ⚡ Position *	Configuration switches «1» and «2» Position
Normal operation		⊗		●		
Normal operation		⊗		⊗		
Normal operation		⊗		⊗		
Normal operation		⊗		●		
Open-circuit / short-circuit ⚡	(1)	●		⊗		(1)

(1) No influence

* Where mechanical contacts are used **<u>without</u> a parallel and series resistor,** the switch "⚡" for monitoring the input must be switched to "OFF" (to the left ▭). The settings for the logic are the same as for "normal operation".

If only one channel of a dual-channel version is being used, a resistor (1 … 15 kΩ) must be connected across the input which is not in use. This excludes any spurious operation in the red alarm LED.

SINEAX SV 824
Isolating switch amplifier

Dimensional drawings

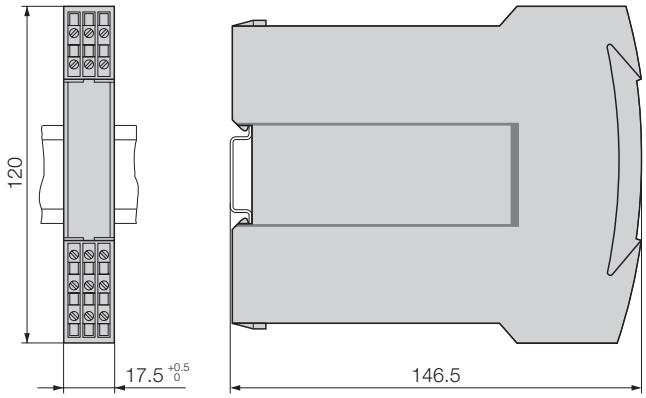


*Fig. 4. SINEAX SV 824 in housing **S17** clipped onto a top-hat rail (35×15 mm or 35×7.5 mm, acc. to EN 50 022).*

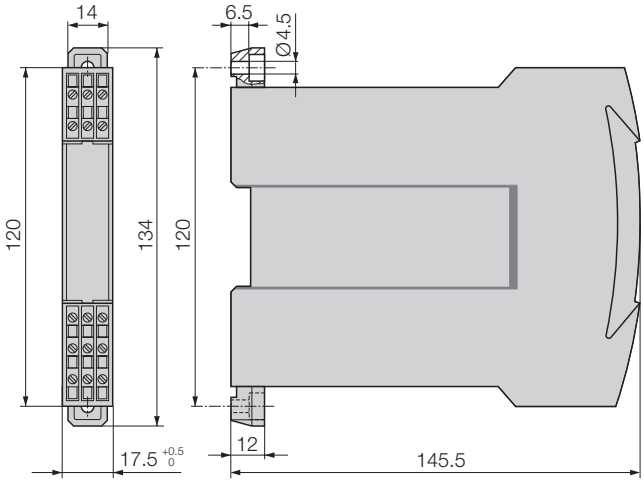


*Fig. 5. SINEAX SV 824 in housing **S17** screw hole mounting brackets pulled out.*

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

SINEAX SV 824
Isolating switch amplifier

Printed in Switzerland • Subject to change without notice • Edition 08.98 • Data sheet No. SV 824-1 Le

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