



Operating Instructions Supply Isolation Amplifier 710 GVD

The supply isolation amplifier is used to supply a passive, intrinsically safe piece of equipment installed in the hazardous area / potentially explosive atmosphere. In addition, it is used to isolate an intrinsically safe signal that is to be transmitted via an intrinsically safe circuit of an active piece of equipment from the hazardous area / potentially explosive atmosphere to the non-hazardous area (safe area).

Ordering data

AD-STVEX 710 GVD

Option: Factory-software configuration as per customer specifications.

Safety instructions and installation information

- As associated equipment, the device must be installed outside of the hazardous area / potentially explosive atmosphere.
- Mounting, commissioning and maintenance may only be performed by properly trained experts.
- The device may only be connected to the voltage listed in the technical specifications and shown on the nameplate.
- For mounting and maintenance, the device must be disconnected from voltage.
- The device may only be operated under the conditions defined in the operating instructions.
- The installation and maintenance instructions for explosion-protected equipment as per EN 60079-14, EN 60079-17 must be complied with.
- The device may not be modified or tampered with in any way whatsoever.
- Repairs may only be performed by the vendor.
- The installation of Repeater Power Supply type AD-STVEX 710 GVD shall be carried out in such a way that the clearances to un-insulated conductors of intrinsically safe circuits to grounded metal parts of the enclosure are at least 3 mm, and to uninsulated conductors of non-intrinsically safe circuits of other apparatus are at least 50 mm from terminals for external intrinsically safe circuits, or are separated from them by an insulating barrier according to clause 6.2.1 of EN 60079-11:2007.

Properties

- DIN rail housing
- Supply of a 2-wire transducer or measurement of an active 0/4...20mA current signal from the hazardous area / potentially explosive atmosphere zone 0.
- Sensor error detection as per Namur recommendation NE 43
- Output of the measurement signal to a non-intrinsically safe current and voltage output.
- Configurable via software by customer or, upon request, by the manufacturer.
- Level conversion from, for example, 4...20mA to 0...20mA adjustable via configuration software.

Description

The supply isolation amplifier AD-STVEX 710 GVD is designed for operation of an intrinsically safe 2-wire measuring transducer (transmitter) and an mA current source installed in the hazardous area / potentially explosive atmosphere.

A 2-wire measuring transducer (intrinsically safe equipment) is supplied with power and the impressed intrinsically safe analog 4...20 mA measuring signal is galvanically isolated and transmitted from the hazardous area / potentially explosive atmosphere to the non-hazardous area.

Alternatively, the passive input current circuit (signal current circuit) of the supply isolation amplifier detects the 0/4...20 mA measuring signal from a current source from the hazardous area / potentially explosive atmosphere and isolates it galvanically to make it available at the non-intrinsically safe output of the device in the non-hazardous area. In this case, AD-STVEX 710 GVD operates as an isolation amplifier.

The output circuit of the supply isolation amplifier which is not intrinsically safe provides a current and voltage signal simultaneously.

The measuring range of the input and the output range of the two outputs can be adjusted by the customer via the configuration software, if required. In addition, other parameters such as filter, sensor error detection, etc. can also be adjusted.

The device features a universal mains supply unit so it can be used with various supply voltages.

The explosion-protected device is an associated piece of equipment and must be installed outside of the hazardous area / potentially explosive atmosphere.

The transmitter current supply circuit and the input current circuit (signal current) of the transmitter have the ignition protection type "Intrinsic Safety" with equipment protection level "Ex ia IIC".

adjustment

Adjustment of zero and full point

The device is adjusted and calibrated at the factory, a adjustment of zero or full point is therefore usually not necessary. If the zero or full point of the measuring range is still to be changed, this can be done with the zero and full-range buttons on the front. By pressing and holding the "zero" key, the applied signal is saved as the beginning of the measuring range. By pressing and holding the "Full" key, the applied signal is saved as the end of the measuring range. The acceptance of the signal is acknowledged by the interrupting of the green operating LED.

Example: The measuring and output range is 4 ... 20mA each. Due to its inaccuracy at the beginning of the measuring range, the connected transmitter does not output 4.00mA but 4.05mA. Press the "zero" key for a long time and the applied signal is accepted and stored as the start of the measuring range. The measuring range is now 4.05 ... 20mA, the output remains unchanged at 4 ... 20mA.

In the event of a faulty input, the factory value for the measuring range can be restored if both keys are pressed long. Acceptance of the factory values of the measuring range is acknowledged by interrupting the green operating LED.

Sensor Break

The measurement and output range is factory set to 0 ... 20mA. Thus, a sensor break can be detected by the following devices. If this is not desired, the measuring and output range can be configured to 4 ... 20mA. The output clamps the signal on 4mA, if the input falls below 4mA.

NE43

If the function "Signal evaluation according to Namur recommendation 43" (NE43) is activated, the input signal is always monitored for sensor breakage and short circuit. The valid measuring range is between 3.8 mA and 20.5 mA. An adjustment of the measuring range only works in the valid measuring range.

Sensor break: Input signal four seconds < 3.6 mA -> output: 0.0 mA.

Short circuit: Input signal four seconds > 21mA -> output: 21.5mA.

Mounting

1. Snap the device onto a DIN rail as per EN 50022.
2. Connect the voltage-free signal input wires, the signal output wires and the supply voltage as required for the type of use.
3. Switch on the supply voltage and the signals.

Technical specifications**General data**

Degree of protection housing and connection terminals	IP20 as per EN 60529
Mounting	Snap-on mounting to DIN rails as per EN 50022. The device must be mounted outside of the hazardous area / potentially explosive atmosphere.
Ambient temperature range	-20°C < T _a < +60°C

Inputs, intrinsically safe**Transmitter supply (supply circuit) at terminals 6(+) and 7(-)**

Measuring range	4...20 mA
Supply voltage at 4mA	23 V
Supply voltage at 20mA	16 V
Short circuit current	< 68 mA
Safety-related maximum values as per ATEX 95	see EC-Type Examination Certificate in appendix.

Passive current input (signal current input) at terminals 7(+) and 5(-)

Measuring range	0/4...20 mA
Input resistance	50 Ohm
Safety-related maximum values as per ATEX 95	see EC-Type Examination Certificate in appendix.

Outputs, not intrinsically safe**Current output active at terminals 9(+) and 10(-)**

Output range	0/4...20 mA
Maximum resistance	500 Ohm

Current output passive at terminals 10(+) and 12(-)

Output range	0/4...20 mA
External supply	$U_{\text{ext}} < 25 \text{ VDC}$
Maximum resistance	$< (U_{\text{ext}} - 2\text{V}) / 20\text{mA}$

Voltage output at terminals 11(+) and 12(-)

Output range	0...10 V
Minimum resistance	$> 2 \text{ kOhm}$

Supply at terminals 13 and 14

Voltage range	20...120 VDC or 50...250 VAC
Power input	max. 75 mA at 24 VDC supply isolation amplifier max. 15 mA at 230 VAC as supply isolation amplifier

Approvals and Conformities

See appendix.

Connection data

Wire cross section	max. 2.5 mm ²
Connection type	Plug-in connection terminals

Revisions

Revision	Comment
02.02.2011	Document created.
29.03.2011	Added chapter "Adjustment of zero and full point".
08.02.2012	EC declaration of conformity added.
06.11.2015	EC declaration of conformity updated. Approvals and conformity removed from the technical data.
07.12.2017	Description for learning the zero and full point specified in details
02.08.2018	EC declaration of conformity updated.
12.10.2020	Chapter "Adjustment of zero and full point" revised and chapters "Sensor break" and "NE43" added.
20.10.2022	Addition of the safety instructions and installation information in the upper section.

Appendix: EC Type Examination Certificate BVS 11 ATEX E 013 X



Translation

(1) **EC-Type Examination Certificate**

(2) Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC

(3) No. of EC-Type Examination Certificate: **BVS 11 ATEX E 013 X**(4) Equipment: **Repeater Power Supply type AD-STVEX 710 GVD**(5) Manufacturer: **Adamczewski Elektronische Messtechnik GmbH**(6) Address: **74374 Zaberfeld, Germany**

(7) The design and construction of this equipment and any acceptable variation thereto are specified in the appendix to this type examination certificate.

(8) The certification body of DEKRA EXAM GmbH, notified body no. 0158 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament and the Council of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive. The examination and test results are recorded in the test and assessment report BVS PP 11.2045 EG.

(9) The Essential Health and Safety Requirements are assured by compliance with:

EN 60079-0:2009	General requirements
EN 60079-11:2007	Intrinsic safety 'I'
EN 60079-26:2007	Equipment with equipment protection level (EPL) Ga
EN 61241-11:2006	Protection by IS

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the appendix to this certificate.

(11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment shall include the following:

 **II (1)G [Ex ia Ga] IIC**
II (1)D [Ex ia Da] IIIC

DEKRA EXAM GmbH
 Bochum, dated 21.02.2011

Signed: Simanski

Certification body

Signed: Dr. Eickhoff

Special services unit



- (13) Appendix to
- (14) **EC-Type Examination Certificate**
BVS 11 ATEX E 013 X
- (15) 15.1 Subject and type

Repeater Power Supply type AD-STVEX 710 GVD

15.2 Description

The Repeater Power Supply type AD-STVEX 710 GVD provides single channel intrinsically safe power supply for measuring transmitters and repeat a 4 - 20 mA analogue signal in non intrinsically safe 4-20 mA or 0 -10 V circuits.

Electronic components of the Repeater Power Supply are arranged on a printed-circuit-board (PCB) packaged in plastic enclosures suitable for installation on T35 DIN Rails.

The Repeater Power Supply provides safe galvanic separation between intrinsically safe circuits and non intrinsically safe signal circuits and power supply on the PCB up to a sum of peak values of rated voltages of 375 V.

The Repeater Power Supply is designated for installation in the safe area.

15.3 Parameters

15.3.1 Non intrinsically safe circuits

15.3.1.1 Power supply circuit, terminals no. 13, 14

Nominal voltage	DC $20\text{ V} \leq U \leq 120\text{ V}$ AC $50\text{ V} \leq U \leq 250\text{ V}$
Nominal current	$U_m = \text{AC } 250\text{ V} / \text{DC } 120\text{ V}$ 75 mA (DC 24 V) 15 mA (AC 230 V)

15.3.1.2 Signal circuits

Current output (active), terminals no. 9 (+), 10 (-)	
Nominal voltage	$U_m = \text{AC } 250\text{ V} / \text{DC } 120\text{ V}$
Nominal current	$0/4\text{ mA V} \leq I \leq 20\text{ mA}$
Current output (passive), terminals no. 10 (+), 12 (-)	
Nominal voltage	$U \leq \text{DC } 25\text{ V}$ $U_m = \text{AC } 250\text{ V} / \text{DC } 120\text{ V}$
Nominal current	$0/4\text{ mA V} \leq I \leq 20\text{ mA}$
Voltage output, terminals no. 11(+), 12 (-)	
Nominal voltage	DC $0\text{ V} \leq U \leq 10\text{ V}$ $U_m = \text{AC } 250\text{ V} / \text{DC } 120\text{ V}$



15.3.2 IS circuits type of protection Ex ia IIC / IIB

Parameters	Circuit	
	Supply	Signal
Klemmen - Terminals	Kl. 6 (+) Kl. 7 (-)	Kl. 7 (+) Kl. 5 (-)
Voltage U_o	DC 27,72 V	DC 5,36 V
Current I_o	90,62 mA	1,1 mA
Power P_o	628 mW	1,45 mW
Voltage U_i	N / A	DC 30 V
Current I_i	N / A	100 mA
Power P_i	N / A	750 mW
Effective internal capacitance C_i	N / A	N / A
Effective internal inductance L_i	N / A	N / A
Max. external capacitance C_o	IIC	84 nF
	IIB	659 nF
Max. external inductance L_o	IIC	4,33 mH
	IIB	17,32 mH
Max. external capacitance C_o and Inductance L_o (combined installation)	IIC	69 nF / 0,5 mH
		84 nF / 0,2 mH
	IIB	300 nF / 2 mH
		360 nF / 1 mH
Max. inductance / resistance ratio L_o/R_o	IIC	47,5 μ H/ Ω
	IIB	190 μ H/ Ω
Characteristics	linear	
Ambient temperature range	-20 °C \leq T _a \leq +60 °C	
Remark:		
N / A = not applicable		

(16) Test and assessment report

BVS PP 11.2045 EG as of 21.02.2011

(17) Special conditions for safe use

- 17.1 The Repeater Power Supply type AD-STVEX 710 GVD shall be installed outside the hazardous area
- 17.2 The installation of Repeater Power Supply type AD-STVEX 710 GVD shall be carried out in such a way that the clearances to un-insulated conductors of intrinsically safe circuits to grounded metal parts of the enclosure are at least 3 mm, and to un-insulated conductors of non-intrinsically safe circuits of other apparatus are at least 50 mm from terminals for external intrinsically safe circuits, or are separated from them by an insulating barrier according to clause 6.2.1 of EN 60079-11:2007.

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

DEKRA EXAM GmbH
44809 Bochum, 21.02.2011
BVS-Scha/Schae A 20100431



Certification body



Special services unit

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EG-Konformitätserklärung des Herstellers

Manufacturer's EC-Declaration of Conformity

Aussteller (*issuer*): ADAMCZEWSKI Elektronische Messtechnik GmbH
Anschritt (*address*): Felix-Wankel-Str. 13
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Produktbezeichnung <i>product identification</i>	Produktbeschreibung	<i>product description</i>
AD-STVEX 710 GVD	EX- Speisetrennverstärker	EX-Supply Isolation Amplifier
Hersteller (<i>manufacturer</i>)		Adamczewski Elektronische Messtechnik GmbH
Zertifizierungsstelle/-Nummer <i>Certification laboratory/-number</i>		DEKRA EXAM GmbH Dinnendahlstr. 9 44809 Bochum Nr. 0158
Nr. Baumusterprüfbescheinigung <i>No type examination certificate</i>		BVS 11 ATEX E 013 X

Das vorstehend bezeichnete Produkt stimmt mit den wesentlichen Anforderungen der nachfolgenden Richtlinie(n) und deren Änderungsrichtlinien überein.

The above mentioned product is in line with the essential requirements of the below directive(s) and their modification directive(s):

ATEX Richtlinie - <i>ATEX directive</i>	2014/34/EU
Niederspannungsrichtlinie - <i>low-voltage directive</i>	2014/35/EU
EMV-Richtlinie (Elektromagnetische Verträglichkeit) <i>electromagnetic compatibility directive (EMC)</i>	2014/30/EU

Für die Beurteilung der Übereinstimmung wurden folgende einschlägige Normen herangezogen:
For evaluation of the conformity following relevant standards were consulted:

Harmonisierte Normen – ATEX <i>Harmonic standards – ATEX</i>	EN 60079-0: 2009 EN 60079-11: 2007 EN 60079-26: 2007 EN 61241-11: 2006
Harmonisierte Normen – Elektrische Sicherheit <i>harmonic standards – electric safety</i>	EN 61010-1: Juli 2011
Harmonisierte Normen – EMV - <i>harmonic standards – EMC</i>	EN 61326-1: Juli 2013

Diese Erklärung gilt weltweit als Erklärung des Herstellers zur Übereinstimmung mit den oben genannten internationalen und nationalen Normen.

The declaration is world-wide valid as the manufacturer's declaration of compliance with the requirements of the above mentioned international and national standards.

Dokumenten-Nr. - <i>Document - no.</i>	KB 3018
Ausstellungsdatum EG-Konformitätserklärung - <i>Date of Issue EC-Declaration of Conformity</i>	20.04.2016

ADAMCZEWSKI Elektronische Messtechnik GmbH

Dipl.-Ing Harry Biehler,
Geschäftsführer (*General Manager*)

.....
Name, Funktion (name, function / Nom, fonction)

.....
rechtsgültige Unterschrift (authorized signature / signature autorisée)

Geschäftsführer: Hartmut Adamczewski, Harry Biehler
Handelsregister Amtsgericht Heilbronn (HRB 320159)

USt.IdNr.: DE 145 763 826
Zertifiziert nach ISO 9001:2008