

Galvanic separation unit

FEATURES

- Power supply for 2-wires types of transducers and signal conditioners
- μA to mV conversion for long distance signal transmission
- Certified for use with measuring chains in potentially explosive atmospheres
- Galvanic separation voltage: 4 kV_{RMS}
- High rejection of frame voltage
- DIN-Rail mounting



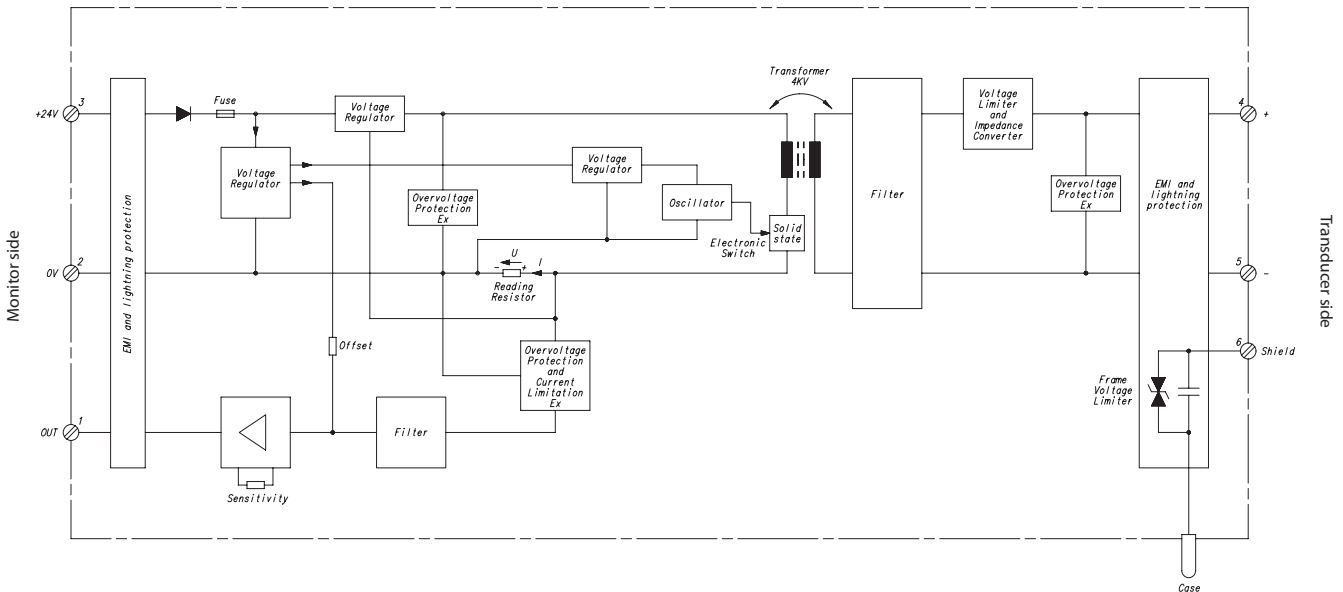
DESCRIPTION

The versatile GSI 124 galvanic separation unit replaces its predecessors: GSI 122, GSI 123 and GSI 130. The GSI 124 is for use with piezo-electric transducers with integrated electronics (eg. CE XXX), piezo-electric transducer signal conditioners (eg. IPC XXX) and proximity probe signal conditioners (eg. IQS 4XX series).

The unit is intended for use in 2-wire transmission systems at high frequencies. More generally, it may be used to supply any electronic system having a consumption of less than 20 mA.

The GSI 124 avoids the use of Zener barriers for Exi applications. It allows the transmission of AC signals over long distances. The unit rejects a large amount of the RMS voltage of ground noise and avoids AC noise pickup which can occur between the sensor case and the poles of the sensor.

BLOCK DIAGRAM



SPECIFICATIONS

Environmental characteristics

General

Temperature

- *Operating* : 0°C to 70°C
- *Storage* : -20°C to +85°C

Vibration (according to IEC68.2.6) : 5Hz to 35 Hz, 90 minutes/axis
0.15 mm peak below resonance frequency, 1 g peak above

Humidity (according to IEC68.2.30) : Up to 90%, non-condensing

• *Storage* : Up to 95%, non-condensing

Shock : Half-sine, 6 g peak, 11 ms, 3 shocks/axis

(according to IEC68.2.27)

Induced signal susceptibility : Performance criteria B

(according to IEC61000-4-4/5)

RF susceptibility : Performance criteria A

(according to IEC61000-4-3)

RF Emissions

(according to IEC61000-4-3)

- *Limits at 1 m* : 30 MHz to 230 MHz < 60 dB μ V/m (quasi-peak)
- : 230 MHz to 1000 MHz < 67 dB μ V/m (quasi-peak)

Electrostatic discharge : Performance criteria B

(according to IEC61000-4-2)

Explosive atmospheres (ordering option A2)

- *EC type examination certificate* : LCIE 05 ATEX 6033 X
II (2) G (outside potentially explosive zone) [EEx ib] IIC

⚠ For specific parameters of the mode of protection concerned and special conditions for safe use, please refer to the “EC type examination certificate” that is available from Vibro-Meter SA on demand.

- *cCSAus certificate* : cCSAus certificate 1699234
Class I, Div 1, Groups A,B,C,D [Ex ia]

Vibro-Meter

SPECIFICATIONS (Continued)

Electrical Characteristics**Power supply (user side)**

Supply voltage

- With IPC XXX and CE XXX : $20 V_{DC}$ to $30 V_{DC}$
- With IQS 4XX : $22.5 V_{DC}$ to $30 V_{DC}$

Current consumption (with $24 V_{DC}$ supply)

- Without load on transducer side : ≤ 20 mA
- With 12 mA on transducer side : ≤ 50 mA
- With 20 mA on transducer side : ≤ 70 mA
- With a short-circuit on transducer side : ≤ 70 mA

Output signal (monitor side)

- Voltage output dynamic range (with $10\text{ k}\Omega$ load) : $\geq 2 V_{DC}$
 $\leq U_{\text{supply}} - 2.5 V_{DC}$
- Output impedance : $\leq 1\ \Omega$ protected against short-circuits
- Power supply voltage rejection ratio
- Standard (ordering option A1) : ≥ 55 dB at 10 Hz to 400 Hz
 ≥ 35 dB at 400 Hz to 100 kHz
 - Explosive (ordering option A2) : ≥ 55 dB at 10 Hz to 400 Hz
 ≥ 35 dB at 400 Hz to 5 kHz
 ≥ 28 dB at 5 kHz to 100 kHz
- Thermal output signal offset drift (0 ... 70°C) : ≤ 4 mV/ $^\circ\text{C}$ (200 ppm/ $^\circ\text{C}$)
- Thermal output signal sensibility drift (0 ... 70°C) : ≤ 100 ppm/ $^\circ\text{C}$
- AC output signal residual noise
- Band width: 0 to 1 kHz : $\leq 2\ \mu\text{V}_{RMS}/\sqrt{\text{Hz}}$
 - Band width: >1 kHz : $\leq 4\ \mu\text{V}_{RMS}/\sqrt{\text{Hz}}$

Input signal (transducer side)

- Output supply voltage on 2-wires transmitting line : $21.5 V_{DC} \pm 2.5 V_{DC}$ (without load)
- Impedance : $\leq 90\ \Omega$
- Current dynamic range on 2-wires transmitting line : 0 mA to 20 mA
- Short-circuit current limit on 2-wires transmitting line : ≤ 30 mA
- Maximal load capacitance
- Standard : $C_{\text{max}} = 200$ nF
 - Explosive atmospheres : $C_{\text{max}} = 99$ nF
- Maximal load inductance
- Standard : $L_{\text{max}} = 30$ mH
 - Explosive atmospheres : $L_{\text{max}} = 25$ mH

Transfer Characteristics (ordering option B)

Sensitivity

- IPC XXX and CE XXX : $1\ \text{V}/\text{mA} \pm 10\ \text{mV}/\text{mA}$
- IQS 4XX : $3.2\ \text{V}/\text{mA} \pm 32\ \text{mV}/\text{mA}$

Output offset voltage (zero)

- IPC XXX (12 mA_{DC} on transmitting line) : $7 V_{DC} \pm 100\ \text{mV}_{DC}$
- CE XXX (5 mA_{DC} on transmitting line) : $7 V_{DC} \pm 100\ \text{mV}_{DC}$
- IQS 4XX (17.5 mA_{DC} on transmitting line) : $8 V_{DC} \pm 100\ \text{mV}_{DC}$

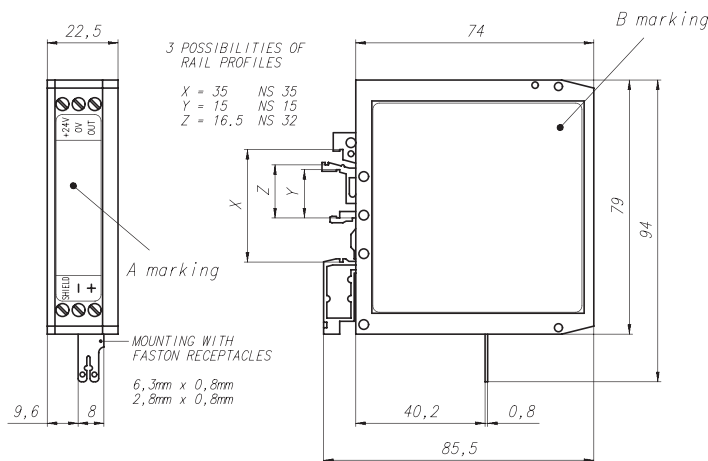
SPECIFICATIONS (Continued)

Band width	
<i>IPC XXX and CE XXX (ordering option B1 and B2)</i>	
• Frequency band with a transfer inside ± 0.5 dB	: DC to 20 kHz
• Typical frequency cut at -3 dB	: 30 kHz
<i>IQS 4XX (ordering option B3)</i>	
• Frequency band with a transfer inside ± 0.5 dB	: DC to 10 kHz
• Typical frequency cut at -3 dB	: 25 kHz
Linearity	: < 0.2%
Galvanic separation voltage	: 4 kV _{RMS}

Physical Characteristics

Dimensions	: See mechanical drawing
Weight	: 130 gr
Electronic housing material	: Polyamide (PA 6.6) green
Electrical connections	: With terminal screw - see mechanical drawing

MECHANICAL DRAWING

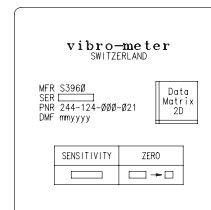


Standard

A marking



B marking

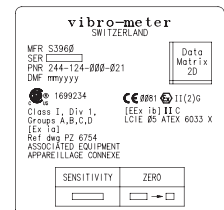


ATEX

A marking



B marking



ORDERING INFORMATION

To order please specify:

Type : GSI 124
 Designation : Galvanic separation unit
 Ordering number : 244-124-000-02X-A□-B□

ENVIRONMENT		SENSITIVITY		ZERO	
Standard	1	1	1V/mA	5mA → 7V	for (CEXXX)
Explosive	2	2	1V/mA	12mA → 7V	for (IPCXXX)
		3	3.2V/mA	15mA → 0V	for (IQS4XX)



In this publication, a dot (.) is used as the decimal separator and thousands are separated by spaces. Example : 12 345.678 90. Although care has been taken to assure the accuracy of the data presented in this publication, we do not assume liability for errors or omissions. We reserve the right to alter any part of this publication without prior notice.

Sales offices

Vibro-Meter has offices in more than 30 countries. For a complete list, please visit our website.

Your local agent

Head office

Vibro-Meter SA
 Rte de Moncor 4
 P.O. Box
 CH-1701 Fribourg
 Switzerland

Tel: +41 26 407 11 11
 Fax: +41 26 407 13 01

www.vibro-meter.com

