DATA SHEET

vibro-meter®

GSI127
galvanic separation unit

GSI127 (Ex version)

GSI127 (standard version)

KEY FEATURES AND BENEFITS

- From the vibro-meter® product line
- Power supply for sensors and signal conditioners with a current output or a voltage output
- 4 kV_{RMS} galvanic separation between the sensor side and the monitor side
- 50 V_{RMS} galvanic separation between the power supply and the output signal (floating output)
- High rejection of frame voltage
- µA to mV transfer function for current-signal transmission over longer distances
- V to V transfer function for voltage-signal transmission over shorter distances
- Ex certified for use in potentially explosive atmospheres (hazardous areas)
- Compatible with industry standard IEPE (integrated electronics piezo electric) vibration sensors

KEY BENEFITS AND FEATURES *(continued)*

- Removable screw-terminal connectors
- DIN-rail mounting
- No ground connection needed

APPLICATIONS

- All vibro-meter® measurement chains with current or voltage outputs
- Safety-related applications

DESCRIPTION

The GSI127 is a galvanic separation unit from Meggitt's vibro-meter® product line. It is designed for operation with the signal conditioners, charge amplifiers and electronics (attached or integrated) used by various vibro-meter® measurement chains and/or sensors.

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DESCRIPTION *(continued)*

Compatible devices include the IPC707 signal conditioners (charge amplifiers) used by CAxxx piezoelectric accelerometers and CPxxx dynamic pressure sensors (and older IPC704 signal conditioners too), the IQS9xx signal conditioners used by TQ9xx proximity sensors (and older IQS4xx signal conditioners too), the attached or integrated electronics used by CExxx piezoelectric accelerometers, and the integrated electronics used by the VE210 velocity sensor. The GSI127 is also compatible with industry standard IEPE (integrated electronics piezo electric) vibration sensors, that is, the integrated electronics used by constant-current voltage-output sensors such as the CE620 and PV660 (and older CE680, CE110I and PV102 sensors too).

The GSI127 galvanic separation unit is a versatile unit that can is used for the transmission of high-frequency AC signals over long distances in measurement chains using current-signal transmission or as a safety barrier unit in measurement chains using voltage-signal transmission. More generally, it may be used to supply any electronic system (sensor side) having a consumption of up to 22 mA.

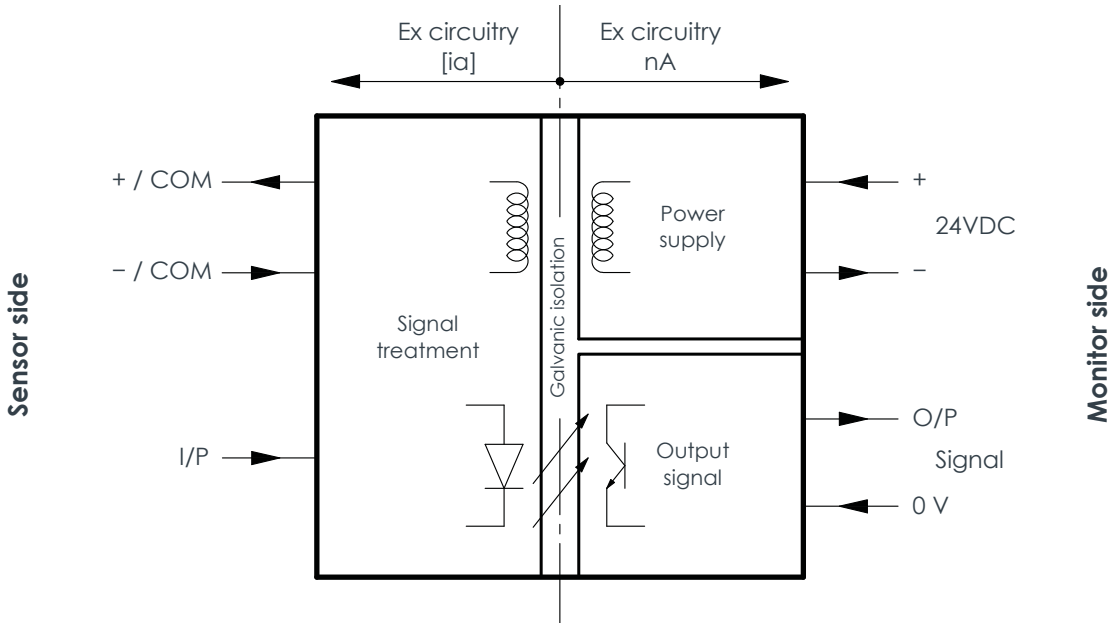
The GSI127 also rejects a large amount of the frame voltage that can introduce noise into a measurement chain. (Frame voltage is the ground noise and AC noise pickup that can occur between the sensor case (sensor ground) and the monitoring system (electronic ground)). In addition, its redesigned internal power supply results in a floating output signal, eliminating the need for an additional external power supply such as an APF19x.

The GSI127 is certified to be installed in an Ex Zone 2 (nA) when supplying measurement chains installed in Ex environments up to Zone 0 ([ia]). The unit also eliminates the need for additional external Zener barriers in intrinsic safety (Ex i) applications.

The GSI127 housing features removable screw-terminal connectors that can unplugged from the main body of the housing to simplify installation and mounting. It also features a DIN-rail mounting adaptor that allows it to be mounted directly on a DIN rail.

For specific applications, contact your local Meggitt representative.

BLOCK DIAGRAM



SPECIFICATIONS

Environmental

General

Temperature	
• Operating	: 0 to 70°C (32 to 158°F)
• Storage	: −40 to 85°C (−40 to 185°F)
Humidity (according to IEC 60068-2-30)	
• Operating	: 90% max. non-condensing
• Storage	: 95% max. non-condensing
Vibration (according to IEC 60068-2-6)	: 1 g peak above resonant frequency and 0.15 mm peak below (5 to 35 Hz, 90 minutes/axis)
Shock acceleration (according to IEC 60068-2-27)	: 6 g peak (half sine-wave, 11 ms duration, 3 shocks/axis)
Induced signal susceptibility (according to IEC 61000-4-4/5)	: Performance criteria B
RF susceptibility (according to IEC 61000-4-3)	: Performance criteria A
RF emissions – limits at 1 m (according to IEC 61000-4-3)	: <60 dBµV/m (quasi-peak) from 30 to 230 MHz. <67 dBµV/m (quasi-peak) from 230 to 1000 MHz.
Electrostatic discharge (according to IEC 61000-4-2)	: Performance criteria B

SPECIFICATIONS *(continued)*

Potentially explosive atmospheres (ordering option code A2)

Available in Ex approved versions for use in hazardous areas

Type of protection Ex i: intrinsic safety		
Europe	EC type examination certificate	Ex II 3 (1) G (Zone 2) Ex nA [ia Ga] IIC T4 Gc LCIE 13 ATEX 3037 X
International	IECEx certificate of conformity	Ex nA [ia Ga] IIC T4 Gc IECEx LCIE 13.0026X
North America	cCSAus certificate of compliance	Class I, Division 2, Groups A, B, C, D Ex nA [ia Ga] IIC T4 Gc Class I, Zone 2 AEx nA [ia Ga] IIC T4 Gc cCSAus 70001999
South Korea	KGS certificate of conformity	Ex nA [ia] IIC T4 KGS 17-GA4BO-0325X
United Kingdom	Type examination certificate*	Ex II 3 (1) G Ex nA [ia Ga] IIC T4 Gc CML 21 UKEX 4542 X
Russian Federation	EAЭC RU certificate of conformity	2Ex nA [ia Ga] IIC T4 Gc X EAЭC RU C-CH.AД07.B.03008/21

*Not engraved/marked on the product.

⚠ **For specific parameters of the mode of protection concerned and special conditions for safe use, refer to the Ex certificates that are available from Meggitt SA.**

⚠ **For the most recent information on the Ex certifications that are applicable to this product, refer to the *Ex product register (PL-1511) document* that is available from Meggitt SA.**

Approvals

Conformity	: European Union (EU) declaration of conformity (CE marking). United Kingdom (UKCA) declaration of conformity. EAC marking, Eurasian Customs Union (EACU) certificate/ declaration of conformity.
Electromagnetic compatibility	: EN 61000-6-2:2005. EN 61000-6-4:2007 + A1:2011. TR CU 020/2011.
Electrical safety	: EN 61010-1:2010
Environmental management	: RoHS compliant (2011/65/EU)
Hazardous areas	: Ex (see **Potentially explosive atmospheres on page 4**)

SPECIFICATIONS *(continued)*

Electrical

Power supply (to GSI127)

Input voltage range	: 18 to 30 V_{DC}
Current consumption (with nominal 24 V_{DC} supply)	
• No load on sensor side	: ≤80 mA
• 20 mA load on sensor side	: ≤120 mA

Input signal (sensor side)

Supply	
• Ordering options B0x	: 20 V_{DC} ±1 V_{DC}
• Ordering options B21	: 8 mA ± 0.5 mA
Impedance	
• Ordering options B0x	: ≤30 Ω
• Ordering options B21	: ≥50 kΩ
Dynamic range	
• Ordering options B0x	: 0 to 20 mA
• Ordering options B21	: 0 to 20 V_{DC}
Overload protection	
• Ordering options B0x	: 26 mA
• Ordering options B21	: 22 V_{DC}

Output signal (monitor side)

Output voltage dynamic range (with 10 kΩ load)	: 2 to 20 V_{DC}
Output impedance	: 20 Ω, protected against short-circuits
Power supply voltage rejection ratio	
• 10 Hz to 400 Hz	: ≥60 dB
• 400 Hz to 100 kHz	: ≥30 dB
Output signal offset drift with temperature	: ≤2 mV/°C
Output signal sensitivity drift with temperature	: ≤50 ppm/°C
AC output signal residual noise	: ≤3.5 $\mu V_{RMS}/\sqrt{Hz}$

SPECIFICATIONS *(continued)*

Transfer characteristics

Sensitivity

- Ordering options B01 and B02 : 1 V/mA ±1%
- Ordering option B03 : 3.2 V/mA ±1%
- Ordering options B04 and B21 : 1 V/V ±1%
- Ordering options B05 : −1 V/V ±1%

Output offset voltage (zero)

- Ordering option B01 (5 mA_{DC} on transmission line) : 7 V_{DC} ±200 mV_{DC}
- Ordering option B02 (12 mA_{DC} on transmission line) : 7 V_{DC} ±200 mV_{DC}
- Ordering option B03 (17.5 mA_{DC} on transmission line) : 8 V_{DC} ±200 mV_{DC}
- Ordering options B04, B05 and B21 (10 V_{DC} on transmission line) : 10 V_{DC} ±200 mV_{DC}

Bandwidth

- Frequency band with a transfer inside ±0.5 dB : DC to 20 kHz
- Typical −3 dB cut-off frequency : 30 kHz

Linearity : <0.2%

Galvanic separation voltage

- Sensor side and monitor side : 4 kV_{RMS}
- Power supply and output signal : 50 V_{RMS}

Connectors

Screw-terminal connector (top) : 4 contacts for sensor-side signals

Screw-terminal connector (bottom) : 4 contacts for monitor-side signals

Electrical connections

- IEC : 400 V / 0.2 to 2.5 mm^2
- UL : 300 V / 10 A / 26 to 12 AWG

Clamping range : 3.31 mm^2 (max.), rated connection

Note: The GSI127 features removal screw-terminal connectors that can unplugged from the main body of the housing to simplify installation and mounting.

Physical

Mounting : Suitable for TH 35 DIN rails (according to EN 50022 / IEC 60715). For example, TH 35-7.5 or TH 35-15.

Electrical connections : Removable screw-terminal connectors (see **Connectors on page 6**)

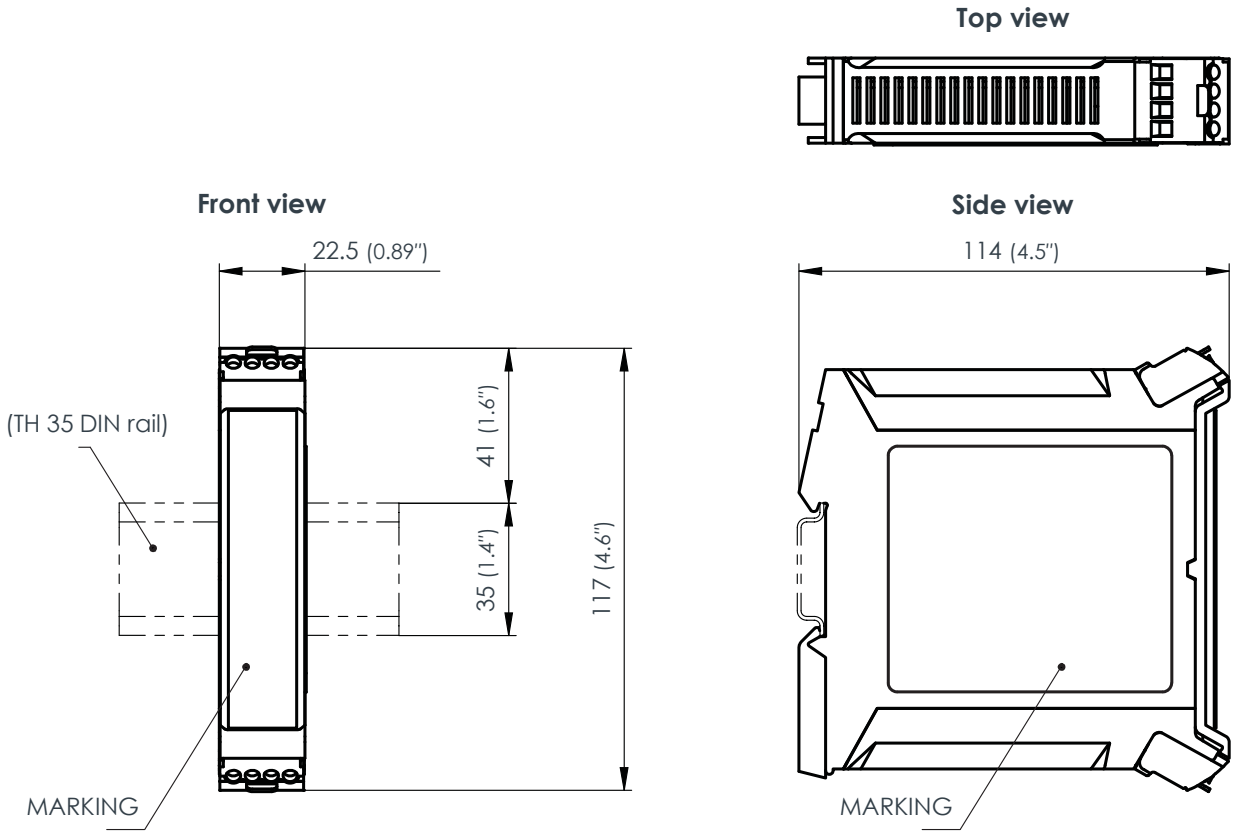
Housing

- Material : Polyamide (PA 66 GF 30)
- Colour : Standard versions: Grey. Ex approved versions: Grey with the electrical connections to the sensor side indicated by blue.

Dimensions : See **Mechanical drawings on page 7**

Weight : 140 g (0.31 lb) approx.

MECHANICAL DRAWINGS



Notes

All dimensions are in mm (in) unless otherwise stated.

For standard versions of the GSI127, the housing is completely grey in colour.

For Ex approved versions of the GSI127, the housing is grey in colour but with a screw-terminal connector (top) for sensor-side signals (electrical connections) that is blue in colour.

ORDERING INFORMATION

To order please specify

Type	Designation	Part number (PNR)
GSI127	Galvanic separation unit	See below

Part number (PNR):
244-127-000-017 — **A** — **B**

Environment	
Standard	1
Explosive (Ex)	2

	Sensitivity	Zero	Description
01	1 V/mA	5 mA → 7 V	For CExxx with a current output[1]
02	1 V/mA	12 mA → 7 V 13 mA → 8 V	For IPCxxx or VE210 with a current output[2]
03	3.2 V/mA	15 mA → 0 V	For IQSxxx with a current output[3]
04	1 V/V	---	For IPCxxx with a voltage output[4]
05	−1 V/V	---	For IQSxxx or VE210 with a voltage output[5]
21	1 V/V	---	For industry standard IEPE (integrated electronics piezo electric) vibration sensors[6]

1. Only CExxx piezoelectric accelerometers with a current output signal require a GSI127. For example, the CE134, CE281 and CE31x.

2. An IPCxxx signal conditioner or a VE210 velocity sensor with a current output signal is typically used for signal transmission over longer distances.
Note: For an IPC707 without diagnostics, the nominal current output signal (DC) is 12 mA (→ 7 V). For an IPC707 with diagnostics, the nominal current output signal (DC) is 13 mA (→ 8 V).
Refer to the IPC707 signal conditioner data sheet for further information.

3. An IQSxxx signal conditioner with a current output signal is typically used for signal transmission over longer distances.

4. An IPCxxx signal conditioner with a voltage output signal is typically used for signal transmission over shorter distances.
Note: For an IPC707 without diagnostics, the nominal voltage output signal (DC) is 7 V. For an IPC707 with diagnostics, the nominal voltage output signal (DC) is 8 V.
Refer to the IPC707 signal conditioner data sheet for further information.

5. An IQSxxx signal conditioner or a VE210 velocity sensor with a voltage output signal is typically used for signal transmission over shorter distances.

6. For use with industry standard IEPE (integrated electronics piezo electric) vibration sensors, that is, constant-current voltage-output sensors such as the CE620 and PV660 (and older CE680, CE110I and PV102 sensors).

Meggitt (Meggitt PLC) is a leading international engineering company, headquartered in England, that designs and delivers high-performance components and subsystems for aerospace, defence and selected energy markets. Meggitt comprises four customer-aligned divisions: Airframe Systems, Engine Systems, Energy & Equipment and Services & Support.

The Energy & Equipment division includes the Energy Sensing and Controls product group that specialises in sensing and monitoring solutions for a broad range of energy infrastructure, and control valves for industrial gas turbines, primarily for the Power Generation, Oil & Gas and Services markets. Energy & Equipment is headquartered in Switzerland (Meggitt SA) and incorporates the vibro-meter® product line, which has over 65 years of sensor and systems expertise and is trusted by original equipment manufacturers (OEMs) globally.

In this publication, a dot (.) is used as the decimal separator and thousands are separated by thin spaces. Example: 12345.67890.

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