MEGGiTT
smart engineering for
extreme environments

GSI127

Galvanic separation unit

FEATURES

- 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
- Compatible with constant-current voltage-output sensors
- Certified for use in potentially explosive atmospheres
- Removable screw-terminal connectors
- DIN-rail mounting
- No ground connection needed

GSI127
(Ex approved and standard versions)

DESCRIPTION

The GSI127 is a galvanic separation unit from Meggitt Sensing Systems' Vibro-Meter product line. It is designed for operation with the charge amplifiers, signal conditioners and electronics (attached or integrated) used by various Vibro-Meter measurement chains.

This includes the IPC704 signal conditioners (charge amplifiers) used by CAxxx piezoelectric accelerometers and CPxxx dynamic pressure sensors, the attached or integrated electronics used by CExxx piezoelectric accelerometers, the integrated electronics used by constant-current voltage-output sensors such as the CE110I, PV102 and CE680Mx11, the integrated electronics used by VE210 velocity sensor, and the IQS4xx signal conditioners used by TQ4xx proximity sensors.

DESCRIPTION *(continued)*

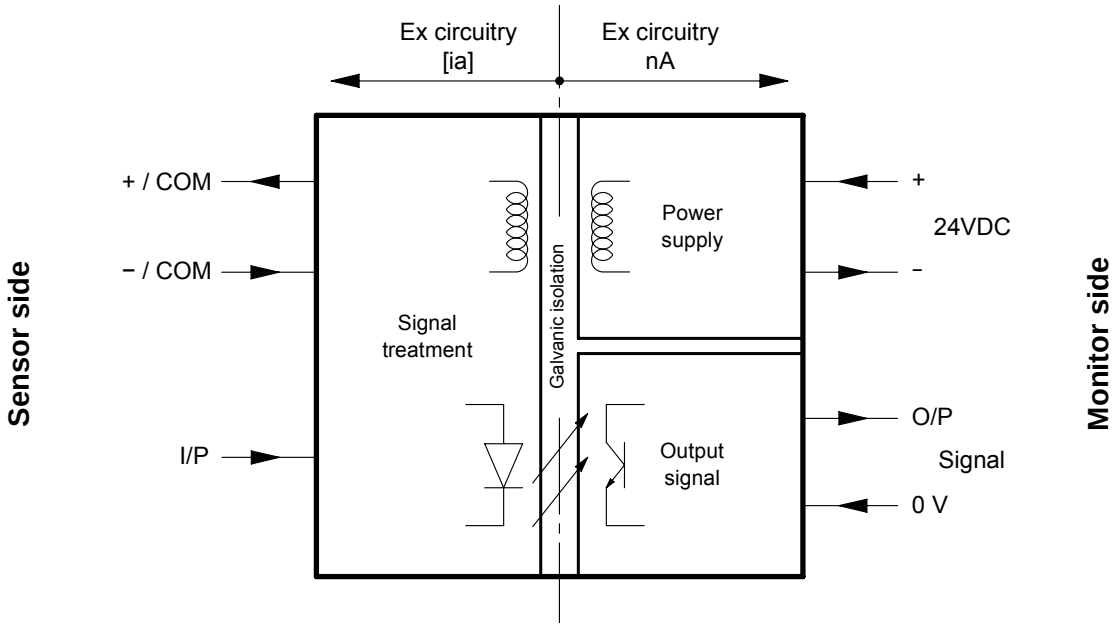
The GSI127 is a versatile unit that can is used for the transmission of high-frequency AC signals over long distances in measurement chains using current-signal transmission or as a safety barrier unit in measurement chains using voltage-signal transmission. More generally, it may be used to supply any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

The GSI 127 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.

BLOCK DIAGRAM



SPECIFICATIONS

Environmental

General

Temperature

- *Operating* : −40 to 70 °C (−40 to 158 °F)
- *Storage* : −40 to 85 °C (−40 to 185 °F)

Humidity
(according to IEC 60068-2-30)

- *Operating* : Up to 90%, non-condensing
- *Storage* : Up to 95%, 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

Potentially explosive atmospheres (ordering option A2)

Available in Ex approved versions for use in hazardous areas

Type of protection Ex i: intrinsic safety		
Europe	EC type examination certificate	LCIE 13 ATEX 3037 X II 3 (1) G (Zone 2) Ex nA [ia Ga] IIC T4 Gc
North America	cCSAus certificate of compliance	cCSAus 70001999 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
International	IECEx certificate of conformity	IECEx LCIE 13.0026X Ex nA [ia Ga] IIC T4 Gc
Korea	KGS certificate of conformity	KGS 15-GA4BO-0572X Ex nA [ia] IIC T4
Russian Federation	TR CU certificate of conformity	TC RU C-CH.МШ06.B.00134 2Ex nA [ia Ga] IIC T4 Gc

⚠ **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*) that is available from Meggitt SA.**

SPECIFICATIONS *(continued)*

Approvals

Conformity	: CE marking, European Union (EU) 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
Hazardous areas	: Ex (see **Potentially explosive atmospheres on page 3**)

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 - 2.5 mm^2
- *UL* : 300 V / 10 A / 26 - 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 : TH 35-7.5 DIN rail (according to IEC 60715)

Electrical connections : Removable screw-terminal connectors (see **Connectors on page 5**)

Housing

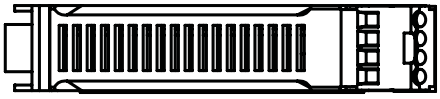
- *Material* : Polyamide (PA 66 GF 30)
- *Colour* : Standard versions: Grey.
  Ex approved versions: Grey with the electrical connections to the sensor side indicated by blue.

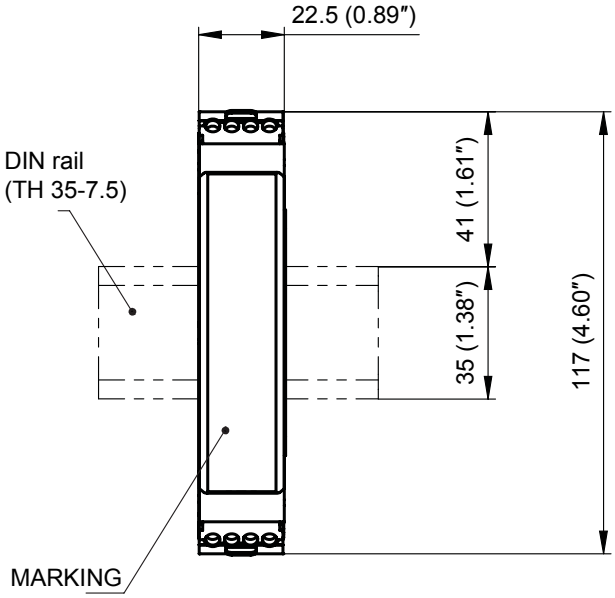
Dimensions : See **Mechanical drawing on page 6**

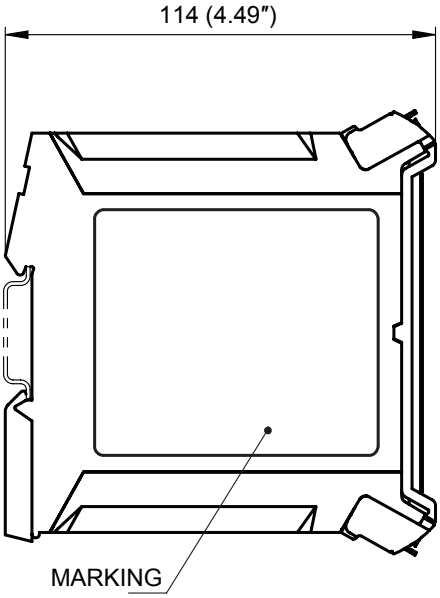
Weight : 140 g (4.9 oz) approx.

MECHANICAL DRAWING

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	Ordering number
GSI127	Galvanic separation unit	See below

Ordering number:

244-127-000-017– A | | – B | | |

Environment	
Standard	1
Explosive	2

	Sensitivity	Zero	Description
01	1 V/mA	5 mA → 7 V	For CExxx[1]
02	1 V/mA	12 mA → 7 V	For IPCxxx and VE210
03	3.2 V/mA	15 mA → 0 V	For IQS4xx
04	1 V/V	---	For IPCxxx[2]
05	−1 V/V	---	For IQS4xx and VE210[2]
21	1 V/V	---	For constant-current voltage-output sensors[3]

1. Only CE xxx piezoelectric accelerometers with a current output signal require a GSI127. For example, the CE134, CE281, CE311 and CE312.
2. For voltage-signal transmission over shorter distances.
3. For constant-current voltage-output sensors such as the CE110I, PV102 and CE680Mx11.

Headquartered in the UK, Meggitt PLC is a global engineering group specializing in extreme environment components and smart sub-systems for aerospace, defence and energy markets.

Meggitt Sensing Systems is the operating division of Meggitt specializing in sensing and monitoring systems, which has operated through its antecedents since 1927 under the names of ECET, Endevco, Ferroperm Piezoceramics, Lodge Ignition, Sensorex, Vibro-Meter and Wilcoxon Research. Today, these operations are integrated under one strategic business unit called Meggitt Sensing Systems, headquartered in Switzerland and providing complete systems, using these renowned brands, from a single supply base.

The Meggitt Sensing Systems facility in Fribourg, Switzerland was formerly known as Vibro-Meter SA, but is now Meggitt SA. This site produces a wide range of vibration and dynamic pressure sensors capable of operation in extreme environments, leading-edge microwave sensors, electronics monitoring systems and innovative software for aerospace and land-based turbo-machinery.

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

Sales offices

Meggitt Sensing Systems has offices in more than 30 countries. For a complete list, please visit our website.

ISO 9001
FS 584089

ISO 14001
BUREAU VERITAS Certification

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