MEGGiTT
smart engineering for
extreme environments

GSI 127

Galvanic separation unit

FEATURES

- From the Vibro-Meter® product line
- Power supply for sensors and signal conditioners used in 2-wire and 3-wire signal transmission systems
- 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 conversion for long-distance (2-wire) signal transmission
- V to V conversion for short-distance (3-wire) signal transmission
- Certified for use in potentially explosive atmospheres
- Removable screw terminals
- DIN-rail mounting
- No ground connection needed

GSI 127
(Ex approved and standard versions)

CE Ex IECEx c SP us (Pending)

DESCRIPTION

The GSI 127 is the latest galvanic separation unit from Meggitt Sensing Systems' Vibro-Meter product line. It is designed for operation with the charge amplifiers and signal conditioners used by the majority of measurement systems from Meggitt Sensing Systems. This includes the external IPC xxx charge amplifiers used by CA xxx piezoelectric accelerometers and CP xxx dynamic pressure transducers, the attached or integrated electronics used by CE xxx piezoelectric accelerometers (with a current output signal), the IQS xxx signal conditioners used by TQ 4xx proximity probes and the IVC xxx signal conditioners used by CV xxx velocity sensors.

DESCRIPTION *(continued)*

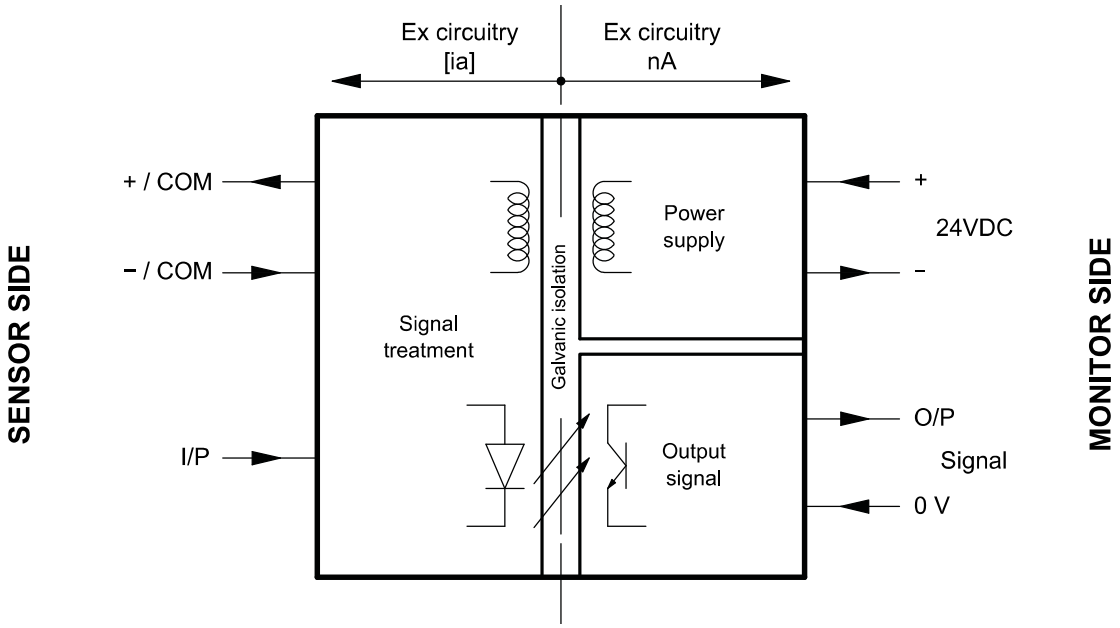
The GSI 127 is a versatile unit intended primarily for the transmission of high-frequency AC signals over long distances in current (2-wire) signal transmission systems. However, it can also be used to replace the GSV 14x power supply and safety barrier unit in voltage (3-wire) signal transmission systems. More generally, it may be used to supply any electronic system (sensor side) having a consumption of up to 22 mA.

In addition, the GSI 127 rejects a large amount of the frame voltage that can introduce noise into a measuring chain. (Frame voltage is the ground noise and AC noise pickup that can occur between the sensor case (sensor ground) and the electronic monitoring system (electronic ground)). While its redesigned internal power supply results in a floating output signal, eliminating the need for an additional power supply such as the APF 19x.

The GSI 127 is certified to be installed in an Ex zone 2 (nA) when supplying measuring 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.

Finally, the housing features removable screw terminals and can be mounted directly on a DIN rail, simplifying mounting.

BLOCK DIAGRAM



SPECIFICATIONS

Environmental

General

Temperature

- *Operating* : 0 to 70 °C (32 to 158 °F)
- *Storage* : −20 to +85 °C (−4 to 185 °F)

Humidity
(according to IEC 60068-2-30)

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

SPECIFICATIONS *(continued)*

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

Environmental – explosive atmospheres (ordering option A2)

Available in Ex approved versions for use in hazardous locations

Type of protection Ex i: intrinsic safety		
Europe	EC type examination certificate	LCIE 13 ATEX 3037 X II 3 (1) G Ex nA [ia Ga] IIC T4 Gc
International	IECEx certificate of conformity	LCIE 13.0026X Ex nA [ia Ga] IIC T4 Gc
North America	cCSAus certificate of compliance	--Pending-- Class I, Division 2, Groups A, B, C and D Ex nA [ia] T4

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

Electrical

Power supply

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 voltage on 2-wire transmitting line	: 20 V_{DC} ±1 V_{DC}
Impedance	: ≤30 Ω
Dynamic current range on 2-wire transmission line	: 0 to 20 mA
Short-circuit current limit on 2-wire transmission line	: 26 mA
Voltage dynamic range on 3-wire transmission line	: 0 to 20 V_{DC}
Maximum load capacitance (for use in hazardous locations)	: ≤107 nF
Maximum load inductance (for use in hazardous locations)	: ≤5 mH

SPECIFICATIONS *(continued)*

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 (0 to 70°C)	: ≤2 mV/°C
Output signal sensitivity drift with temperature (0 to 70°C)	: ≤50 ppm/°C
AC output signal residual noise	: ≤3.5 $\mu V_{RMS}/\sqrt{Hz}$

Transfer characteristics (ordering options Bx)

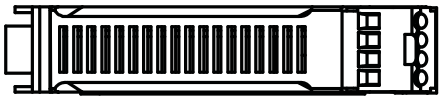
Sensitivity	
• *Ordering options B1 and B2*	: 1 V/mA ± 1%
• *Ordering option B3*	: 3.2 V/mA ± 1%
• *Ordering options B4*	: 1 V/V ± 1%
• *Ordering options B5*	: −1 V/V ± 1%
Output offset voltage (zero)	
• *Ordering option B1 (5 mA_{DC} on transmission line)*	: 7 V_{DC} ± 200 mV_{DC}
• *Ordering option B2 (12 mA_{DC} on transmission line)*	: 7 V_{DC} ± 200 mV_{DC}
• *Ordering option B3 (17.5 mA_{DC} on transmission line)*	: 8 V_{DC} ± 200 mV_{DC}
• *Ordering options B4 and B5 (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}

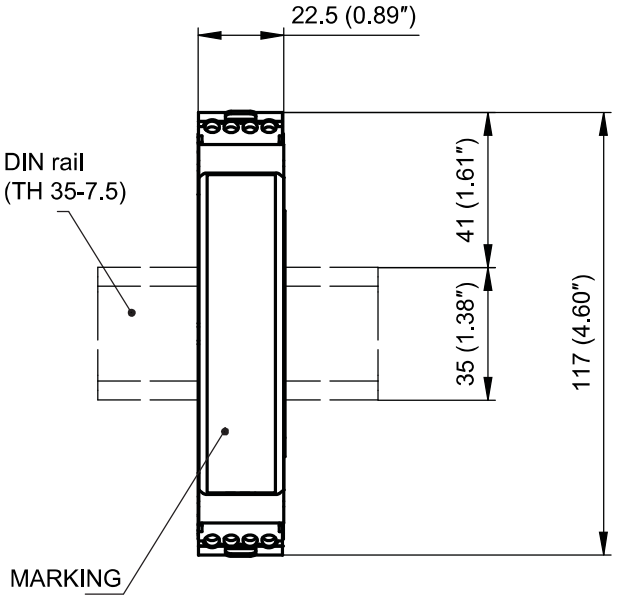
Physical

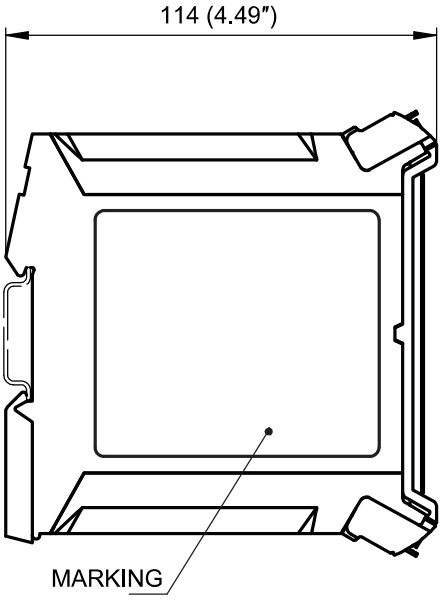
Mounting	: TH 35-7.5 DIN rail (according to IEC 60715)
Electrical connections	: With screw terminals (see Mechanical drawing)
Housing	
• *Material*	: Polyamide (PA 66 GF 30)
• *Colour*	: Standard versions: Grey. Ex approved versions: Grey with the electrical connections to the sensor side indicated by blue.
Dimensions	: See Mechanical drawing
Weight	: 140 g (0.31 lb)

MECHANICAL DRAWING

Notes:
All dimensions are in mm (in) unless otherwise stated.
For the standard versions of the GSI 127, the housing is grey.
For the Ex approved versions of the GSI 127, the housing is grey with the electrical connections to the sensor side indicated by blue.







ORDERING INFORMATION

To order please specify

Type	Designation	Ordering number
GSI 127	Galvanic separation unit	See below

Ordering number:
244-127-000-017–A–B

Environment	
Standard	1
Explosive	2

	Sensitivity	Zero	
01	1 V/mA	5 mA → 7 V	for CE xxx[1]
02	1 V/mA	12 mA → 7 V	for IPC xxx and IVC xxx
03	3.2 V/mA	15 mA → 0 V	for IQS 4xx
04[2]	1 V/V	0 V	for IPC xxx and IVC xxx
05[2]	−1 V/V	0 V	for IQS 4xx

1. Only CE xxx piezoelectric accelerometers with a current output signal require a GSI 127, for example, the CE 134, CE 281, CE 311 and CE 312.
2. For short-distance (3-wire) signal transmission.

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

Your local agent

Head office

Meggitt SA
Route de Moncor 4
PO Box 1616
CH - 1701 Fribourg
Switzerland

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

www.meggittsensingsystems.com
www.vibro-meter.com