



VibroSmart® DMS communications interface module

VSI010

FEATURES

- » VibroSight® compatible hardware from the Vibro-Meter® product line
- » Communications interfaces for industry standard fieldbuses: Modbus RTU, Profibus and Modbus TCP
- » Profisafe safety layer to ensure more reliable Profibus and Profinet communications
- » Two VSI010 modules per measurement block allows redundant operation
- » Redundant communications and redundant power supply inputs for improved availability
- » AND, OR and majority voting logic functions for the combination of alarm and status information for a measurement block
- » Discrete outputs: 2 local SPDT relays
- » Real-time Ethernet communications
- » Live insertion and removal of modules (hot-swappable) with automatic reconfiguration
- » Fully software configurable
- » Robust enclosures with DIN rail mounting adaptor (on terminal base)

APPLICATIONS

- » Communications bridge between a VibroSmart DMS and third-party systems, such as a DCS or PLC
- » Machinery protection and/or condition monitoring



VSI010
communications interface module
(in a VSB010 terminal base)



(Some certifications pending)



Information contained in this document may be subject to Export Control Regulations of the European Union, USA or other countries. Each recipient of this document is responsible for ensuring that transfer or use of any information contained in this document complies with all relevant Export Control Regulations. ECN N/A.

DESCRIPTION

Introduction

The VibroSmart® distributed monitoring system (DMS) is a system of modular and scalable products designed for condition monitoring and machinery protection applications for power generation turbines, oil and gas applications and auxiliary balance-of-plant equipment.

VibroSmart DMS modules can be mounted directly on machinery, eliminating the need for costly cabling, because they are designed and certified to work in extremes, such as harsh industrial environments characterised by potentially explosive atmospheres (Ex Zone 2), high temperatures (70°C) and high mechanical stress. VibroSmart complements the VM600 series of rack-based solutions from Meggitt Sensing Systems' Vibro-Meter® product line and is compatible with the same VibroSight® software.

The VSI010 communications interface module is an optional communications module for use with other VibroSmart modules in a DMS. The VSI010 module supports up to two fieldbus channels and allows the data from the VibroSmart modules in a measurement block to be read by fieldbus master devices.

VibroSmart DMS

A Meggitt Sensing Systems VibroSmart DMS is a network of small and economical modules (providing measurement, communications or other functions) that are connected together in measurement blocks in order to provide the functionality normally offered by rack-based machinery monitoring systems. A VibroSmart DMS consists of one or more measurement blocks, each containing up to 16 VibroSmart modules, a power supply and an optional host computer running the VibroSight software.

A measurement block is a logical grouping of VibroSmart modules that allows data such as tachometer, trigger and alarm information to be shared, for example, in order to monitor the same machine. Measurement blocks are configured using the VibroSight software.

Note: A VibroSmart DMS is limited to a maximum of two VSI010 modules per measurement block.

A VibroSmart DMS module consists of an electronics module (providing configurable machinery monitoring functions) that clips into a VibroSmart terminal base, which mounts on a DIN rail. A range of plug-in signal conditioners and plug-in communications interfaces

that interface directly with VibroSmart modules will be available to provide an integrated solution for interfacing to sensors and fieldbuses.

VibroSmart terminal bases incorporate buses and connectors to provide all of the I/O connections required to interface to a VibroSmart module. Terminal bases also include non-volatile memory to store the configuration of the attached VibroSmart module, which allows modules to be hot-swapped. Modules and terminal bases use mechanical key-coding for a system that is simple to operate and use.

Different VibroSmart modules, terminal bases, plug-in signal conditioners and plug-in communications interfaces can be combined to offer unique combinations of functionality, versatility and safety assurance. In this way, a monitoring system can be built to meet the exact needs of an application resulting in a more cost-effective and reliable solution.

VSI010 communications interface module

The VibroSmart VSI010 communications interface module acts as a data communications bridge between a measurement block and external devices that use fieldbus networks. To do this, the VSI010 acts as a fieldbus slave device and obtains data from the other VibroSmart modules in the same measurement block, such as VSV300 vibration monitoring modules.

The VSI010 module then shares this data with third-party systems such as a DCS or PLC over one of the many types of industrial fieldbuses supported. The VSI010 can support up to two fieldbuses: either two serial fieldbuses, or one serial-based fieldbus and one Ethernet-based fieldbus, or one Ethernet-based fieldbus can be active at any one time.

In addition, the VSI010 module has 8 basic and 4 advanced logic functions that can be used to combine alarm and status information from other VibroSmart modules in the same measurement block in order to drive one of the VSI010 relays.

Like all VibroSmart DMS modules, the VSI010 is fully software configurable using the VibroSight software. The data to be shared from the other VibroSmart modules is selected and assigned to fieldbus registers using a flexible memory map in VibroSight.

Communications

All VibroSmart DMS modules and devices communicate using a system bus (SBUS), based on

DESCRIPTION *(continued)*

Ethernet technology, that supports data transfer rates of 100 Mbps at distances up to 100 m. The SBUS ensures the transfer of both non-real-time (standard) and real-time (time critical) information between VibroSmart modules, and supports communication with the host computer running the VibroSight software. The SBUS also communicates with the network time server that is required when a VibroSmart DMS uses the VibroSight software for data logging.

VibroSmart modules can either be located side-by-side (adjacent to each other) or separate from one another. This flexibility allows the logic functionality of the DMS to be physically distributed, for example, depending on the size of and access to the machine being monitored.

VibroSmart modules that are located side-by-side can communicate directly (no Ethernet cabling required) using the sidebus connectors on the terminal base that support both SBUS and redundant power supply distribution. VibroSmart modules that are mounted separate from one another can communicate over standard and redundant Ethernet networks of shielded twisted-pair Ethernet cable using the Ethernet connectors on the terminal base. However,

using these Ethernet connectors does require that the power supply is distributed separately.

Discrete signal interface (DSI) inputs and tachometer signals can be connected directly to individual modules (locally). Alternatively, to eliminate external wiring, these signals can be connected to a single VibroSmart module and shared among modules in the same measurement block using the SBUS.

Software

The VibroSight software platform, from Meggitt Sensing Systems, supports the configuration of the VibroSmart modules and the subsequent presentation, storage and further processing of live data and historical data for analysis.

Applications information

The VSI010 communications interface module is ideal for sharing the data generated by measurement blocks that monitor, protect, analyse and diagnose critical assets such as gas turbines, steam turbines and other rotating machines.

For specific applications, contact your nearest Meggitt Sensing Systems representative.

SPECIFICATIONS**Processing functions**

Communications

- *Number of channels*
- *Number of registers*

Logic functions

Relay outputs

: Fieldbus slave device acting as a data bridge between the modules in a measurement block and fieldbus master devices (third-party systems)

: Up to 2 fieldbus ports

: Up to 750 outputs (registers) per fieldbus port

: Combination of alarm and status information from the modules in a measurement block

: Actuation based on logic function outputs and relay settings such as normally energised or de-energised, and latched or unlatched

SPECIFICATIONS *(continued)*

Fieldbus interfaces – serial

Network interface	: RS-485 (half-duplex). RS-422 (full-duplex) or CAN, subject to demand.
Number	: Up to 2, available on J5 and J6 of the terminal base (see Connectors on page 8)
Data transfer rate	: Up to 12 Mbps
Distance between serial fieldbus devices	: According to the relevant standard
Network topologies	: Linear (daisy-chained) for half-duplex (RS-485) networks. Point-to-point for full-duplex (RS-422) can also be supported, subject to demand.
Protocols	: Modbus RTU or Profibus. DeviceNET, subject to demand. Note: A Profibus slot can be selected as ProfiSafe to ensure more reliable communications.

Fieldbus interfaces – Ethernet (pending)

Network interface	: 100BASE-TX
Number	: 1, available on J4 of the terminal base (see Connectors on page 8)
Data transfer rate	: Up to 100 Mbps
Distance between Ethernet fieldbus devices	: Up to 100 m
Network topologies	: Linear and star. Note: The available network topologies also depend on the protocol (fieldbus standard) used.
Protocols	: Modbus TCP. Profinet or ControlNET, subject to demand. Note: A Profinet slot can be selected as ProfiSafe to ensure more reliable communications.

Note: A maximum of two fieldbus protocols (serial and Ethernet) are supported by a VSI010 module at any one time. The permitted fieldbus combinations are:

- *Up to two serial fieldbuses*
- *One serial fieldbus and one Ethernet fieldbus*
- *One Ethernet fieldbus.*

The fieldbus protocols must belong to the same family, for example, Modbus RTU and/or Modbus TCP for a VSI010 supporting the Modbus protocol, Profibus and/or Profinet for a VSI010 supporting the Profibus protocol (see **Ordering information on page 13**).

Alarm combination

Logic functions	: AND, OR and majority voting logic, with optional inversion of individual inputs
Basic logic functions	
• <i>Number</i>	: 8
• <i>Configurable inputs</i>	: Up to 32 inputs from the sensor OK checks, measurement alarms (Danger+, Alert+, Alert-, Danger-) and validity indicators, logic function outputs, DSI inputs and module operating modes of the modules in the same measurement block as the VSI010.
Advanced logic functions	
• <i>Number</i>	: 4
• <i>Configurable inputs</i>	: From the basic logic function outputs of the module

SPECIFICATIONS *(continued)***Discrete signal interface (DSI) inputs**

Control signal

- *Alarm bypass (AB)* : A closed contact between the DSI AB and RET inputs inhibits the local relay outputs
- *Alarm reset (AR)* : A closed contact between the DSI AR and RET inputs resets the alarms latched by the module
- *Trip multiply (TM)* : A closed contact between the DSI TM and RET inputs multiplies the alarm levels by a scale factor (software configurable), to enable trip multiplier-based adaptive monitoring
- *Fieldbus communication stop (FBCS)* : A closed contact between the DSI FBCS and RET inputs stops the module's fieldbus communications

Operating principle

: Detection of an open circuit or a closed circuit on the input. These control signals can be connected directly to individual modules (locally) or connected to a single module (the DSI Master) and shared among modules in the same measurement block using the SBUS (remotely).

Discrete outputs

Local relays

- *Number* : 2
 - *Configurable functions* : Normally energised (NE) or normally de-energised (NDE). Latched or unlatched.
 - *Configurable inputs* : From the logic function outputs of the module
- Number of additional (remote) relays : Up to 12, using VSR0x0 relay modules (under development)

Maximum switching voltage

: $\pm 30 V_{RMS} / \pm 42.4 V_{AC(PEAK)}$ or $60 V_{DC}$ 

For Ex Zone 2 applications, the voltage and the current must be limited in accordance with Table A.1 of EN 60079-11.

Relay characteristics

Manufacturer

: Panasonic

Type and contact arrangement

: Single-pole double-throw (SPDT), with all contacts available on J3 of the terminal base (see **Connectors on page 8**)

Nominal switching capacity (resistive load)

: 0.5 A 125 V AC / 2 A 30 V DC

Maximum switching power (resistive load)

: 60 W (62.5 VA)

Maximum switching current

: 1 A_{AC} / 2 A_{DC}

Operate / release time

: 4 ms (max.) / 4 ms (max.)

Breakdown voltages

- *Between open contacts* : 250 V_{AC} (353 V_{PEAK})
- *Between contact and coil* : 250 V_{AC} (353 V_{PEAK})

Mechanical / electrical life

: 10⁸ operations (min.) / 10⁵ operations (min.)

SPECIFICATIONS *(continued)*

Environmental

Operating

- *Temperature* : -20 to +70°C (-4 to +158°F)
- *Humidity* : 0 to 90% non-condensing

Storage

- *Temperature* : -40 to +85°C (-40 to +185°F)
- *Humidity* : 0 to 95% non-condensing

Protection rating

: IP20 according to IEC 60529.


It is also possible to deploy VibroSmart DMS modules and devices within an industrial housing in order to attain a rating of IP56. Contact Meggitt Sensing Systems for more information.

 **For Ex Zone 2 applications, a protection rating of at least IP54 (or equivalent) is mandatory.**

Explosive atmospheres

Available in Ex approved versions for use in hazardous locations

Type of protection Ex nA: non sparking		
Europe	EC type examination certificate	LCIE 14 ATEX 1027 X II 3 G (Zone 2) Ex nA IIC T6 ... T4 Gc
International	IECEx certificate of conformity	IECEx LCIE 14.0056X Ex nA IIC T6 ... T4 Gc
North America	cCSAUS certificate of compliance	Pending

 **When using protection mode 'nA' (non-sparking), the user shall ensure that the communications interface module is installed in an enclosure that ensures a protection rating of at least IP54 (or equivalent).**

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

Approvals

- Conformity : CE marking
- Electromagnetic compatibility : EN 61000-6-2 Edition 2.
EN 61000-6-4 Edition 2.
EN 61326-3-1 Edition 1.

Approvals (pending)

- Electrical safety : IEC/EN 61010-1 Edition 3
- Hazardous area : Ex (see **Explosive atmospheres on page 6**)
- Other : DNV (maritime) and GOST

SPECIFICATIONS *(continued)***SBUS communications (VibroSmart DMS)**

Type	: Real-time Ethernet
Network interface	: 100BASE-TX
Data transfer rate	: Up to 100 Mbps
Distance between devices	: Up to 100 m at 100 Mbps (100BASE-T compliant)
Network topologies	: Linear and HSR ring
Number of modules	: Up to 128 modules per VibroSmart DMS (without using VSN010 real-time Ethernet switches): <ul style="list-style-type: none"> • Up to 16 modules per measurement block (2 VSI010 modules max.) • Up to 8 measurement blocks per VibroSmart DMS.
Signals shared across a measurement block	
• <i>Real-time</i>	: Tachometric time-stamp, trigger and alarm messages
• <i>Non-real-time</i>	: Remote DSI inputs. Measurement data (processed outputs and extracted data).

Note: SBUS is the system bus, based on real-time Ethernet, used by a VibroSmart DMS for all communications. The SBUS supports inter-module communication between VibroSmart modules such as the transfer of non-real-time information and real-time information such as tachometric time-stamps, triggers and alarms. The SBUS supports extra-module communications such as the exchange of commands, configuration information and measurement data between VibroSmart modules and a host computer running the VibroSight software, and communication between VibroSmart modules and a network time server.

Configuration

VibroSmart modules	: Fully software configurable over Ethernet, using a host computer running the VibroSight software
Terminal bases	: A DIP switch on the terminal base selects either the sidebus connector (J1x) or the Ethernet connector (Ethx) as the active SBUS port for each side of the terminal base. Only two physical ports can be active at any one time, that is, either J11 or Eth1 (right side) and either J10 or Eth2 (left side).

Time synchronisation

Local synchronisation between VibroSmart devices (inter-module)	
• <i>Protocol</i>	: Precision time protocol (PTP)
• <i>Accuracy</i>	: <1 μ s between VibroSmart modules in the same measurement block
• <i>Required</i>	: Yes (mandatory). For each measurement block, one module automatically acts as the PTP master for the other (slave) modules in the measurement block.
Global synchronisation between VibroSmart and other systems (extra-module)	
• <i>Protocol</i>	: Network time protocol (NTP)
• <i>Accuracy</i>	: <10 ms between VibroSmart modules and an NTP server
• <i>Required</i>	: No (optional). For a system, an NTP server can be manually configured as a common time reference in order to synchronise VibroSmart devices and a host computer and/or third-party systems, such as a DCS or PLC.

Power supply (input)

Voltage	: +24 V _{DC} nominal (+16 to +32 V _{DC} input range)
Redundancy	: Two separate inputs for connection to different external power supplies

SPECIFICATIONS *(continued)*

Power supply to fieldbuses (output)

Constant voltage : +5V_{DC} ±2% (90 mA max.)

Power consumption

Total power consumption : <8 W, including fieldbus power supply

LED indicators

Status : Diag – indicates the status of the module, such as normal operation, configuration status or internal hardware or firmware failures.
 Network – indicates Ethernet link activity and status, and network time server synchronisation.
 Safety – indicates the status of the module's safety function and any active adaptive monitoring functions (AB or TM).

Fieldbus 1 and Fieldbus 2 : Link – indicates the link status for each fieldbus.
 Activity – indicates the activity status for each fieldbus.

Connectors

J1 to J6 : 10-pin terminal strip headers (male).
 Compatible with 10-pin BCF plug-in connectors (female) with PUSH IN spring connections having a clamping range from 0.14 to 1.5 mm² (26 to 16 AWG) and a recommended stripping length of 9 mm.
 See **Recommendations for reliable connections on page 14.**

- J1, bottom rear : Redundant power supply inputs and local DSI inputs
- J2, bottom centre : Reserved for future use
- J3, bottom front : Local relay contacts (COM, NC and NO)
- J4, top front : Ethernet-based fieldbuses 1 and 2 that support communication between the VSI010 module (fieldbus slave) and a fieldbus master.
 Note: A VibroSmart plug-in communications interface or other external adaptor with suitable Ethernet magnetics is required.
- J5, top centre : Serial-based fieldbus 1 that supports communication between the VSI010 module (fieldbus slave) and a fieldbus master.
 Note: A VibroSmart plug-in communications interface or other external adaptor may be required.
- J6, top rear : Serial-based fieldbus 2 that supports communication between the VSI010 module (fieldbus slave) and a fieldbus master.
 Note: A VibroSmart plug-in communications interface or other external adaptor may be required.

J10, right side : Proprietary connectors.
 J11, left side : Sidebus connectors for SBUS communications (extra-module and inter-module) to a VibroSmart network and for the distribution of power to modules (redundant physical paths).

Eth1, bottom right : 8P8C (RJ45) connectors, female.
 Eth2, bottom left : Ethernet connectors for SBUS communications (extra-module and inter-module) to a VibroSmart network.
 The Ethernet connectors (Ethx) are IEEE 802.3 Ethernet compatible with an isolation voltage of 1500 V_{RMS}.

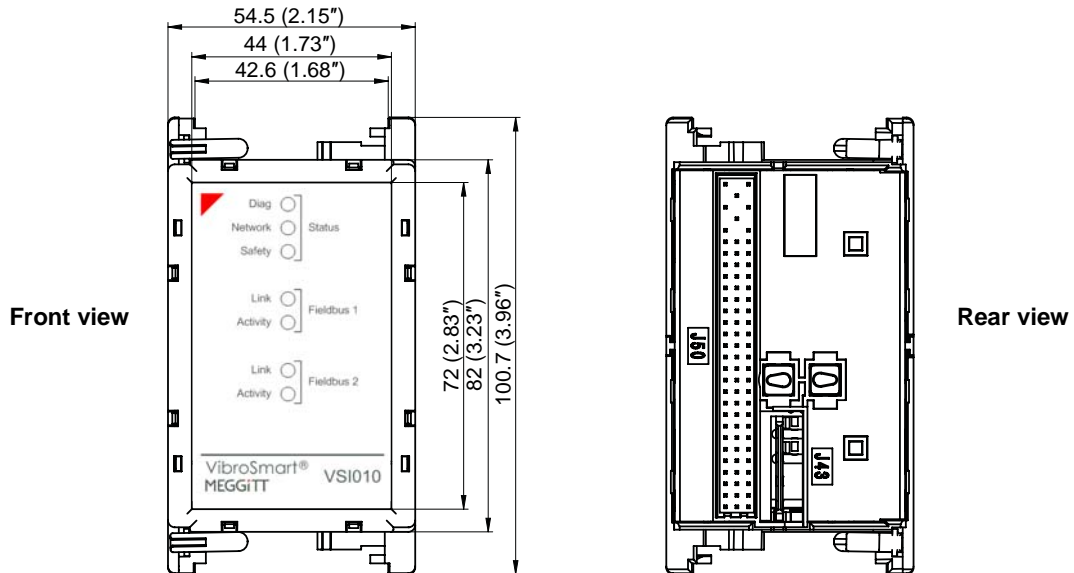
SPECIFICATIONS *(continued)*

Physical

Module mounting	: The VSI010 module clips into the VSB010 terminal base, which mounts on a TH 35-7.5 DIN rail.
Connection to other modules	: Sidebus connectors J10 and J11 allow direct connections between modules that are located side-by-side. Ethernet connectors Eth1 and Eth2 allow connections between modules mounted further apart, using twisted-pair Ethernet cable.
Connection to a host computer	: Ethernet connectors Eth1 and Eth2 allow connections to a host computer or network, using twisted-pair Ethernet cable
Ethernet cabling	
• <i>Cable lengths (network segments) less than 50 m</i>	: Category 5 enhanced (Cat 5e) cable of type SF/UTP. A SF/UTP cable has overall (outer) screening using braided or foil shielding.
• <i>Cable lengths (network segments) up to 100 m</i>	: Augmented category 6 (Cat 6a) or augmented category 7 (Cat 7a) cable of type S/FTP. A S/FTP cable has overall (outer) screening using braided shielding and individual pair shielding using foil.
Connection to a fieldbus (third-party system)	: Connector J4 is dedicated to Ethernet-based fieldbuses, while connector J5 and J6 are dedicated to serial-based fieldbuses. See Fieldbus interfaces – serial on page 4.
Connection to a power supply	: VibroSmart modules that are located side-by-side can distribute the power supply via the sidebus connectors J10 and J11 when at least one module is connected to the external +24 V _{DC} supply. VibroSmart modules that are mounted separate from one another require that each module is connected to the external +24 V _{DC} supply via its J1 connector.
Dimensions	
• <i>VSI010 module</i>	: See Mechanical drawings on page 10
• <i>VSB010 terminal base</i>	: See Mechanical drawings on page 10
Weight	
• <i>VSI010 module</i>	: 300 g (0.66 lb) approx.
• <i>VSB010 terminal base</i>	: 550 g (1.21 lb) approx.

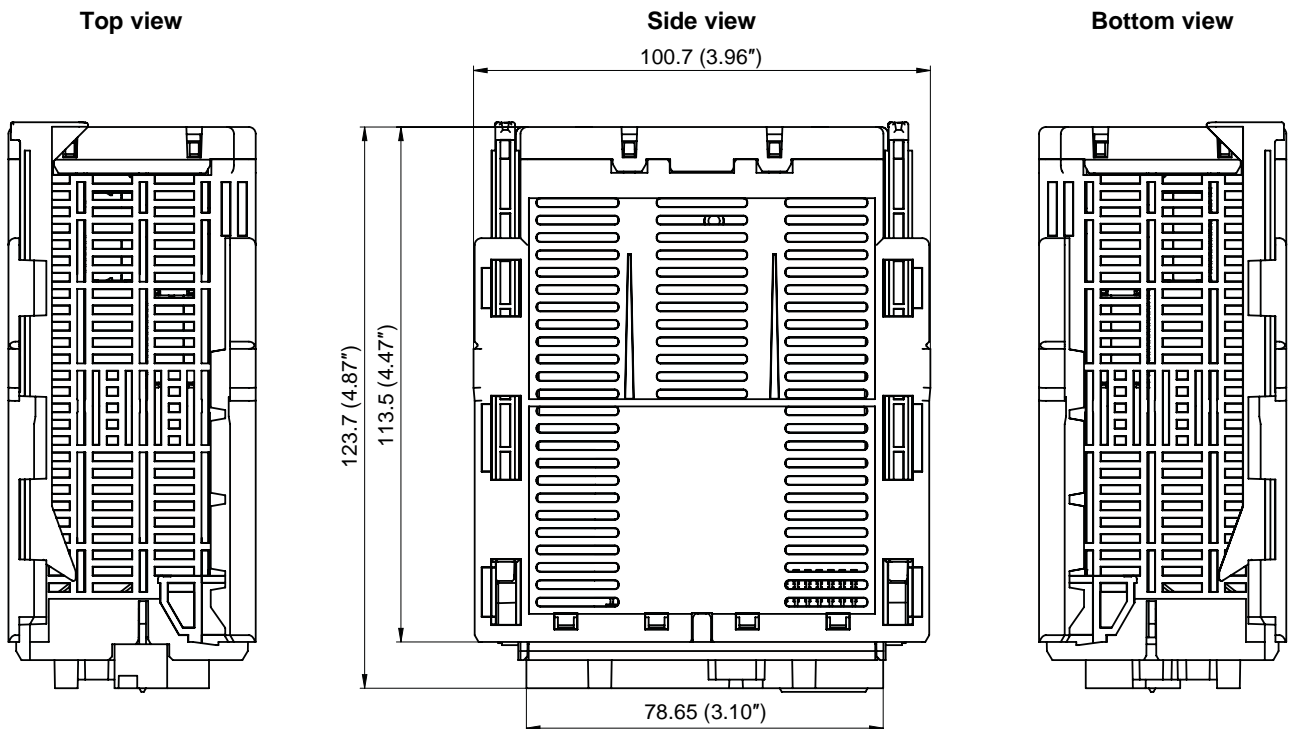
MECHANICAL DRAWINGS

VSI010 module – front view



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

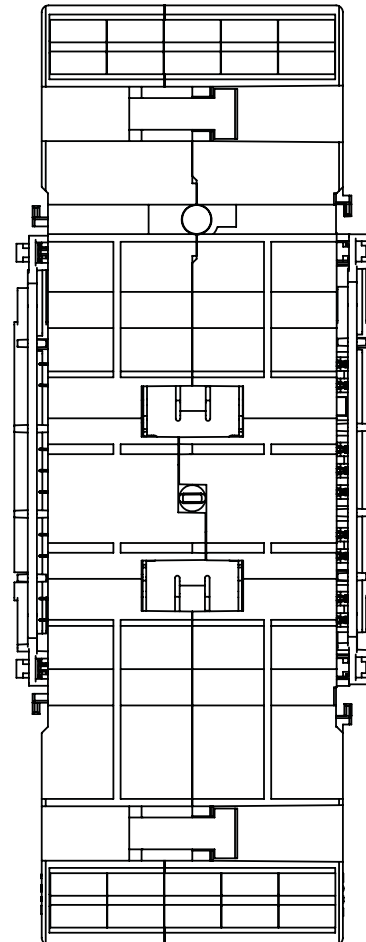
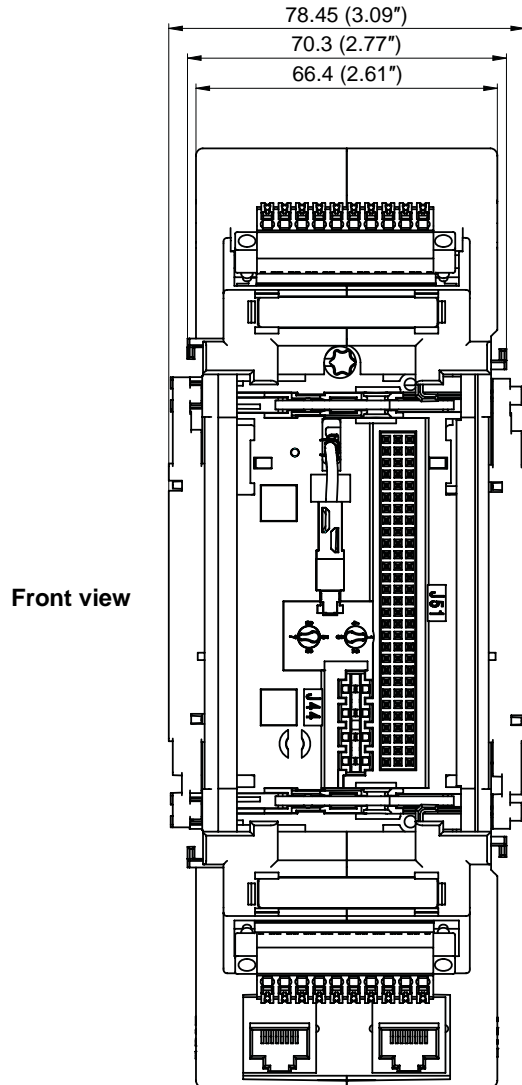
VSI010 module – other views



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

MECHANICAL DRAWINGS (continued)

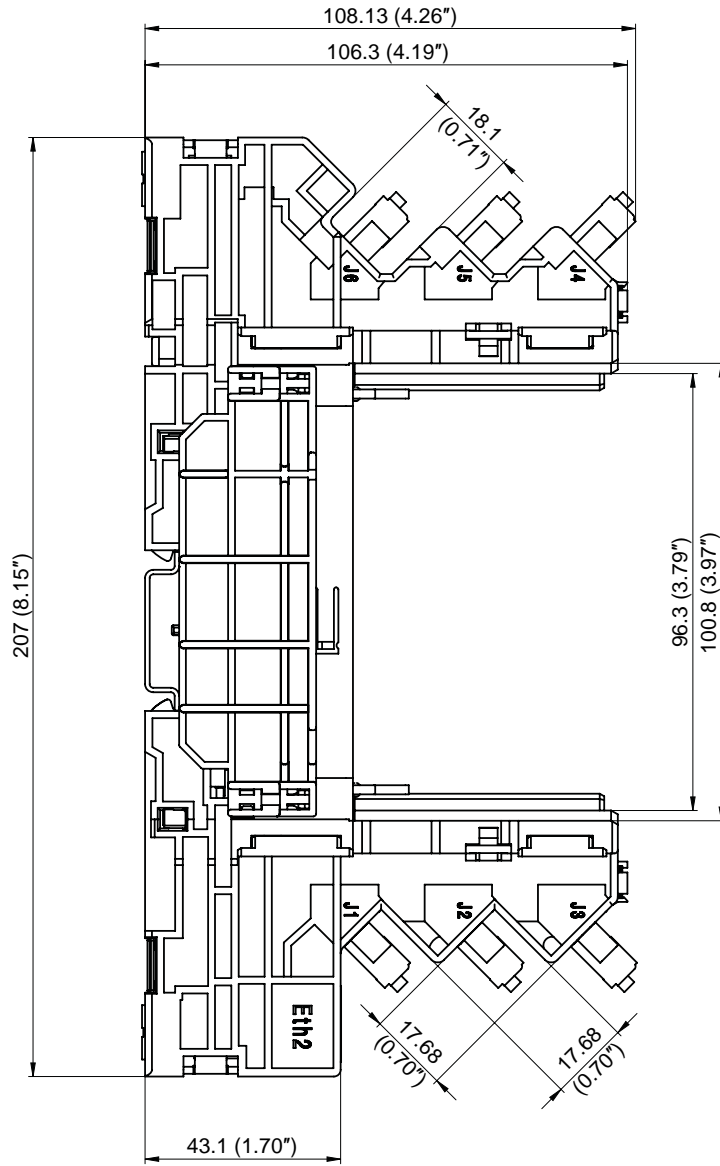
VSB010 terminal base – front and rear views



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

MECHANICAL DRAWINGS (continued)

VSB010 terminal base – side view



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

ORDERING INFORMATION

To order please specify

Type	Designation	Ordering number
VSI010	VibroSmart communications interface module	600-010/Codes
VSB010	Terminal base for a VSI010 module	600-011

Notes:

The VSB010 is supplied with a set of 6x terminal base BCF plug-in connectors for J1 to J6 that are labelled and mechanically key-coded for the VSI010 / VSB010. Sets of additional connectors can be ordered as VSK003 (see **Accessories on page 13**).

The fieldbus communications protocol (Ix) to be supported by the VSI010 must be specified when ordering, using the codes given below, in the format 600-010/Ix.

For applications using an Ethernet-based fieldbus, the VSF002 communications adaptor is supplied with the VSB010. Contact Meggitt Sensing Systems for more information.

Code	Description	Feature
IA	Modbus protocol supporting Modbus RTU and Modbus TCP	Fieldbus communications protocol
IB	Profibus protocol supporting Profibus DP, including the Profisafe safety layer	

ACCESSORIES

A number of accessories including connectors, plug-in communications interfaces, DIN rails, cables and screws will be available to order.

Type	Designation	Ordering number
VSA001	T30 Torx driver with a length of 150 mm (suitable for the DIN rail adaptor screw in terminal bases)	975.51.54.0030
VSF001	Serial fieldbus communications adaptor with two 9-pin D-sub connectors (under development)	600-031
VSF002	Ethernet fieldbus communications adaptor with two 8P8C (RJ45) connectors	600-032
VSK003	Set of 6x terminal base BCF plug-in connectors for J1 to J6 (labelled and mechanically key-coded for VSI010 / VSB010)	622-019-200-001

Notes:

The VSF001 serial fieldbus communications adaptor plugs directly in to the VSB010 terminal base. The relatively slow speed of serial fieldbuses (up to 12 Mbps) means that the VSF001 communications adaptor is optional, that is, it is possible for users to use their own serial adaptors.

The VSF002 Ethernet fieldbus communications adaptor plugs directly in to the VSB010 terminal base. The relatively high speed of Ethernet fieldbuses (up to 100 Mbps) means that the VSF002 communications adaptor is mandatory, that is, it is not possible for users to develop their own Ethernet adaptors.

Only one communications adaptor (VSF001 or VSF002) can be plugged in at a time (mechanical restriction), so either serial-based or Ethernet-based fieldbus communications interfaces can be used at any one time. However, swapping the VSF00x communications adaptor and changing the VSI010's configuration is all that is required to change the fieldbus from serial-based to Ethernet-based (or vice versa).

RELATED PRODUCTS

APF 19x	AC-DC converters	: Refer to corresponding data sheets
APF 20x	AC-DC converters with Ex approval	: Refer to corresponding data sheets
VSN010	Real-time Ethernet switch	: Refer to corresponding data sheet
VSV300	Vibration monitoring module	: Refer to corresponding data sheets

RECOMMENDATIONS FOR RELIABLE CONNECTIONS

It is highly recommended to terminate all wires connected to the BCF plug-in connectors (female) used by J1 to J6 of the VSB010 terminal base by crimping them with the appropriate industry standard wire-end ferrules, in order to help ensure consistent and reliable connections.

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, Endevo, 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.



All statements, technical information, drawings, performance rates and descriptions in this document, whilst stated in good faith, are issued for the sole purpose of giving an approximate indication of the products described in them, and are not binding on Meggitt SA unless expressly agreed in writing. Before acquiring this product, you must evaluate it and determine if it is suitable for your intended application. Unless otherwise expressly agreed in writing with Meggitt SA, you assume all risks and liability associated with its use. Any recommendations and advice given without charge, whilst given in good faith, are not binding on Meggitt SA.

Meggitt Sensing Systems takes no responsibility for any statements related to the product which are not contained in a current Meggitt Sensing Systems publication, nor for any statements contained in extracts, summaries, translations or any other documents not authored by Meggitt Sensing Systems. We reserve the right to alter any part of this publication without prior notice.

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



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