

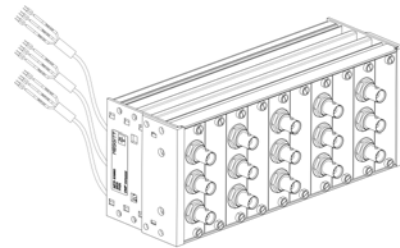


## VibroSmart® DMS BNC cable assemblies and patch panels

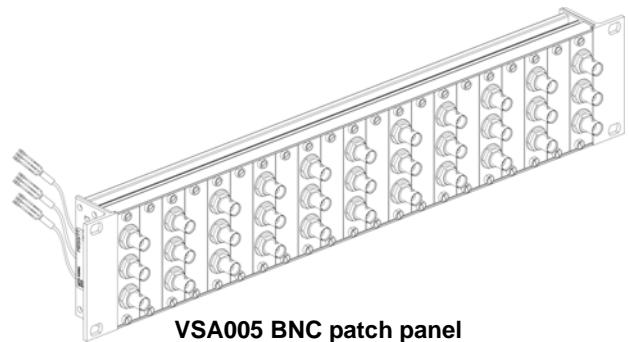
## VSA002, VSA003, VSA004 and VSA005

### FEATURES

- » From the Vibro-Meter® product line
- » Designed for operation with VSV300 vibration monitoring modules
- » VSA002 cable assembly for use with standard test and measurement equipment
- » VSA003 cable assembly for use with VSA004 and VSA005 BNC patch panels
- » Flexible and durable cables with stranded centre conductors and braided shields, terminated with BNC connectors
- » VSA004 DIN rail mounting BNC patch panel with 10 slots
- » VSA005 19" rack mounting BNC patch panel with 21 slots
- » Robust aluminium construction



**VSA004 BNC patch panel  
with 5 populated slots**



**VSA005 BNC patch panel  
with 11 populated slots**

### APPLICATIONS

- » Simplifies installation and wiring of a VibroSmart DMS when signal sharing of VSV300 buffered transducer ("raw") signals via front-panel BNC connectors is required
- » Machinery protection, condition monitoring, analysis and diagnostics for rotating and reciprocating machinery



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## DESCRIPTION

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### 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 VibroSmart is designed and certified to work in extremes, such as harsh industrial environments characterized by potentially explosive atmospheres (Ex Zone 2), high temperatures (70 °C) and high mechanical stress. VibroSmart supplements the VM600 series of rack-based solutions from Meggitt Sensing Systems' Vibro-Meter® product line and is compatible with the same VibroSight® software.

The VibroSmart VSA002, VSA003, VSA004 and VSA005 are accessories designed primarily for operation with the VibroSmart VSV300 vibration monitoring module.

### VSV300 vibration monitoring module

The VSV300 vibration monitoring module has two independent dynamic vibration channels (CH1 and CH2) and one auxiliary channel (AUX). The VSV300 makes the corresponding transducer input signals available as buffered "raw" outputs so that the signals can be shared with other systems.

These buffered transducer outputs are available from the J2 connector of a VSV300 module / VSB300 terminal base, which is a 10-pin terminal strip header (male) that is compatible with 10-pin BCF plug-in connectors (female) with PUSH IN spring connections.

In order to simplify installation and wiring of a VibroSmart DMS when signal sharing of VSV300 buffered output signals is required via front-panel BNC connectors, the VibroSmart VSA002, VSA003, VSA004 and VSA005 accessories can be used.

### VSA002 and VSA003 BNC cable assemblies

The VSA002 and VSA003 BNC cable assemblies are designed to connect the buffered transducer outputs available from the J2 connector of a VSV300 module / VSB300 terminal base to other systems.

For both of these 2 m long cables, one end is terminated with flying leads crimped with wire-end

ferrules for easy connection to a VSV300 module / VSB300 J2 connector.

For the VSA002, the other end of the cable is terminated with male BNC connectors for direct connection to standard test and measurement equipment.

For the VSA003, the other end of the cable is terminated with female BNC connectors for use with VSA004 and VSA005 BNC patch panels.

### VSA004 and VSA005 BNC patch panels

The VSA004 and VSA005 BNC patch panels are designed to provide permanently installed patch panels that make the buffered outputs from a VSV300 module available on BNC connectors in a rack, panel or other enclosure.

Both of these BNC patch panels are robust aluminium enclosures with a standard height of 2U (HE). The panels provide a fixed number of individual slots with a standard width of 4 TE that can be populated with either a blank slot panel or a populated slot panel with cutouts for three BNC connectors (female), corresponding to the buffered outputs of a VibroSmart VSV300 vibration monitoring module, that is, the RAW CH1, RAW CH2 and RAW AUX signals.

The VSA004 is a DIN rail mounting patch panel with 10 slots and is particularly suitable for industrial environments, where equipment must be installed on DIN rails. Its compact dimensions allow it to be more easily deployed within an industrial housing with a particular IP or NEMA rating, in order to provide environmental protection.

The VSA005 is a 19" rack mounting patch panel with 21 slots and is particularly suitable for industrial environments, where equipment must be permanently installed in 19" cubicles or panels.

### Applications information

A VSA002 BNC cable assembly is used to connect a VibroSmart VSV300 module's buffered outputs directly to standard test and measurement equipment, and is typically ordered separately.

A VSA003 BNC cable assembly is used with a populated slot of a VSA004 or VSA005 BNC patch panel in order to make a VibroSmart VSV300 module's buffered outputs available on BNC connectors in a rack, panel or other permanent enclosure.

**DESCRIPTION** *(continued)*

As each populated BNC patch panel slot uses a VSA003 BNC cable assembly to connect to a VSV300 module / VSB300 terminal base, one VSA003 is automatically included for each populated panel slot in an order, although they can also be ordered separately.

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

**SPECIFICATIONS****BNC cable assemblies****VSA002 – BNC cable assembly with male BNC connectors**

Cable type	: RG316/U coaxial cable with 50 $\Omega$ impedance. This is a small cable (2.5 mm outer diameter) that is flexible and durable due to its stranded centre conductor, PTFE dielectric, braided shield and FEP outer jacket.
Cable number	: Each VSA002 cable assembly consists of 3x RG316/U coaxial cables, contained in a flexible braided PET sleeve that is attached to the coaxial cables using heat-shrink tubing
Connectors	: One end of the VSA002 cable is terminated with male BNC connectors and is suitable for use with standard test and measurement equipment. The other end of the VSA002 cable consists of flying leads crimped with wire-end ferrules, suitable for use with standard connectors such as spring connection or screw terminal.
Length	: Standard cable length of 2 m. See <b>Mechanical drawings on page 6.</b>
Weight	: 150 g (0.33 lb) approx.

**VSA003 – BNC cable assembly with female BNC connectors**

Cable type	: RG316/U coaxial cable with 50 $\Omega$ impedance. This is a small cable (2.5 mm outer diameter) that is flexible and durable due to its stranded centre conductor, PTFE dielectric, braided shield and FEP outer jacket.
Cable number	: Each VSA003 cable assembly consists of 3x RG316/U coaxial cables, contained in a flexible braided PET sleeve that is attached to the coaxial cables using heat-shrink tubing
Connectors	: One end of the VSA003 cable is terminated with female BNC connectors and is suitable for use with VSA004 and VSA005 BNC patch panels. The other end of the VSA002 cable consists of flying leads crimped with wire-end ferrules, suitable for use with standard connectors such as spring connection or screw terminal. Note: The VSA003 is provided with 3x two-part insulating bushings to help ensure that the cable assembly is electrically isolated from the VSA004 and VSA005 BNC patch panels.
Length	: Standard cable length of 2 m. See <b>Mechanical drawings on page 6.</b>
Weight	: 150 g (0.33 lb) approx.

**SPECIFICATIONS** *(continued)*

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**BNC patch panels**

**VSA004 – DIN rail mounting BNC patch panel**

Construction	: Extruded aluminium frame and solid aluminium structural parts
Number of slots	: 10. Each slot can be populated either with a populated slot panel with cutouts for 3 BNC connectors (female), or with a blank slot panel. Note: If all 10 slots are populated, it can be difficult for all of the cable assemblies to exit at the rear of the VSA004 patch panel's housing (depending on the distance between the rear of the VSA004 and the DIN rail). In this case, the cable assemblies can exit using the slots in the top and bottom of the VSA004 housing.
Mounting	: The VSA004 patch panel has a DIN rail mounting adaptor on the rear of the unit in order to allow installation on a TH 35-7.5 DIN rail (according to IEC 60715)
Dimensions	: Standard rack height of 2U x 223 mm. 2 HE (height units) x 04 TE (divider units). See <b>Mechanical drawings on page 6.</b>
Weight	: 750 g (1.7 lb) approx.

**VSA005 – 19" rack mounting BNC patch panel**

Construction	: Extruded aluminium frame and solid aluminium structural parts
Number of slots	: 21. Each slot can be populated either with a populated slot panel with cutouts for 3 BNC connectors (female), or with a blank slot panel.
Mounting	: The VSA005 patch panel has a mounting bracket with 2 mounting holes on each side of the unit in order to allow installation in a standard 19" rack or panel
Dimensions	: Standard rack height of 2U x 583 mm. 2 HE (height units) x 84 TE (divider units). See <b>Mechanical drawings on page 6.</b>
Weight	: 625 g (1.4 lb) approx.

**Individual slot panels (VSA004 and VSA005)**

Construction	: Solid aluminium
Types	: <ul style="list-style-type: none"><li>• <i>Blank panel</i> : Blank (solid) slot panel.</li><li>• <i>Populated panel</i> : Populated slot panel with cutouts for 3 BNC connectors (female). Each populated panel is used to provide the buffered transducer ("raw") outputs from one VSV300 vibration monitoring module, with the signals ordered as per the channel LEDs on the front panel of a VSV300: CH1 (upper), CH2 (middle) and AUX (lower), when viewed from the front. Note: Insulating bushings are required to help ensure that installed BNC connectors and cable assemblies are electrically isolated from the VSA004 and VSA005 slot panels.</li></ul>
Mounting	: The slot panels have two captive screws to install the panel in a VSA004 or VSA005 BNC patch panel slot
Dimensions	: Standard rack height of 2U x 20 mm. 2 HE (height units) x 4 TE (divider units). See <b>Mechanical drawings on page 6.</b>

**SPECIFICATIONS** *(continued)*

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**General****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

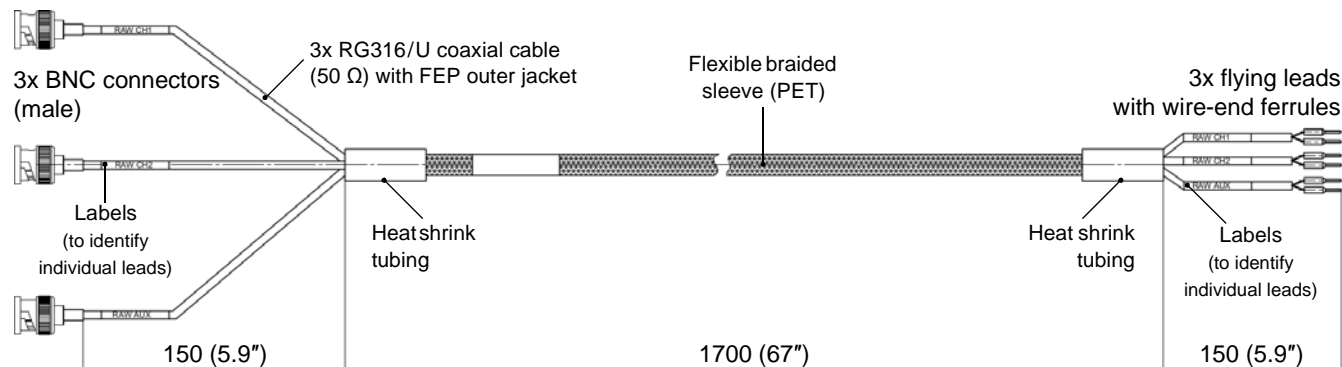
## Protection rating

: The VSA002, VSA003, VSA004 and VSA005 must be deployed within an industrial housing with a particular IP or NEMA rating, in order to provide the required environmental protection.  
Contact Meggitt Sensing Systems for additional information.

## MECHANICAL DRAWINGS

### BNC cable assemblies

#### VSA002 – BNC cable assembly with male BNC connectors

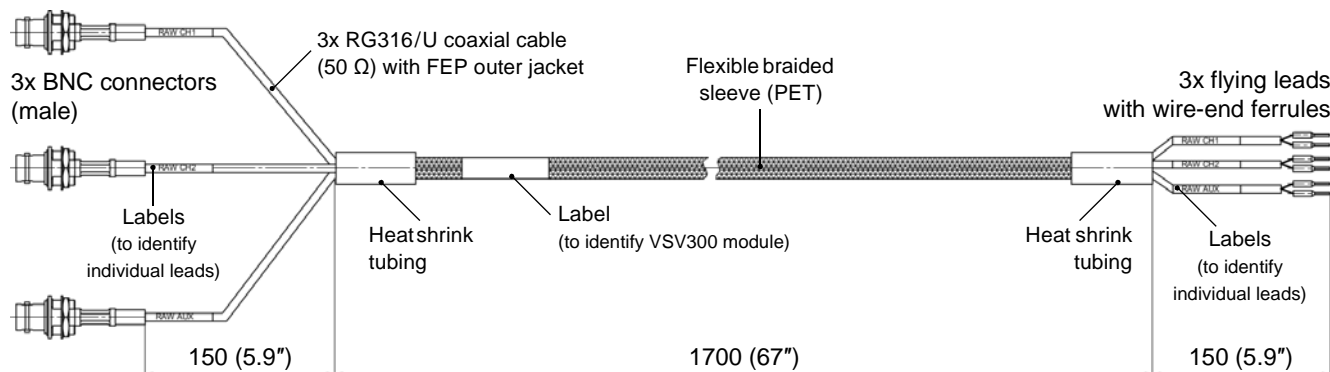


#### Notes

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

Labels (RAW CH1, RAW CH2 and RAW AUX) are located at the ends of each individual cable to help identify BNC connectors and flying leads.

#### VSA003 – BNC cable assembly with female BNC connectors



#### Notes

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

Labels (RAW CH1, RAW CH2 and RAW AUX) are located at the ends of each individual cable to help identify BNC connectors and flying leads.

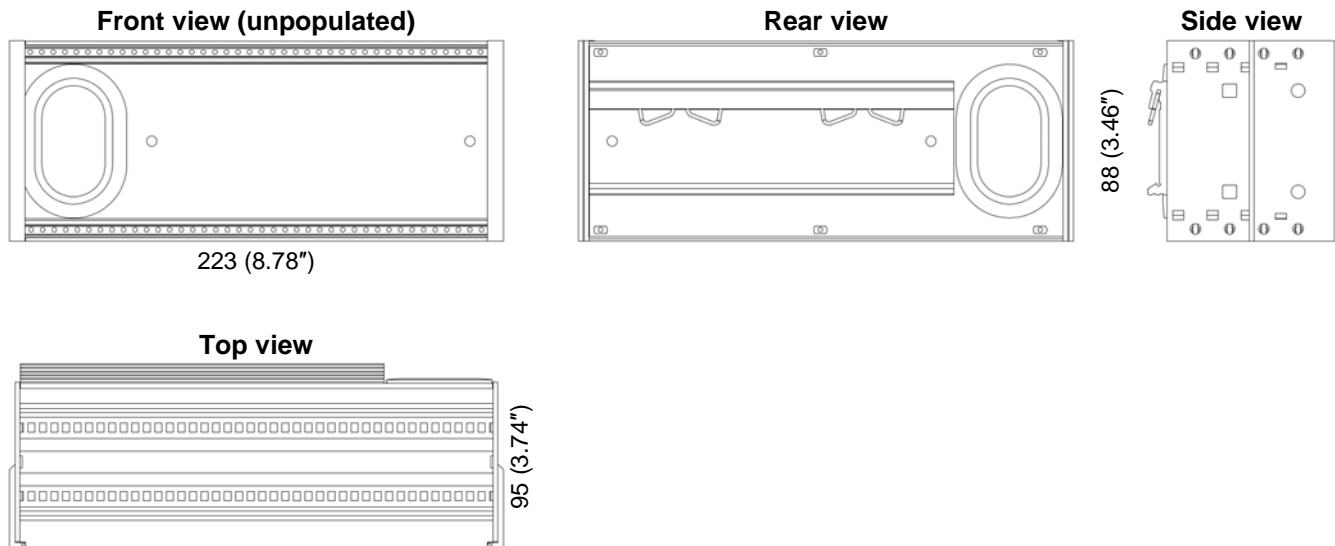
Another label is used on the BNC cable assembly to help identify the VSV300 module used as the signal source for the populated BNC patch panel slot. This label is specified in a tagging file (see **Ordering information on page 10**).

As the VSA003 BNC cable assembly is designed for use with the VSA004 and VSA005 BNC patch panels, the VSA003 is provided with insulating bushings to help ensure that the cable assembly is electrically isolated from the BNC patch panel.

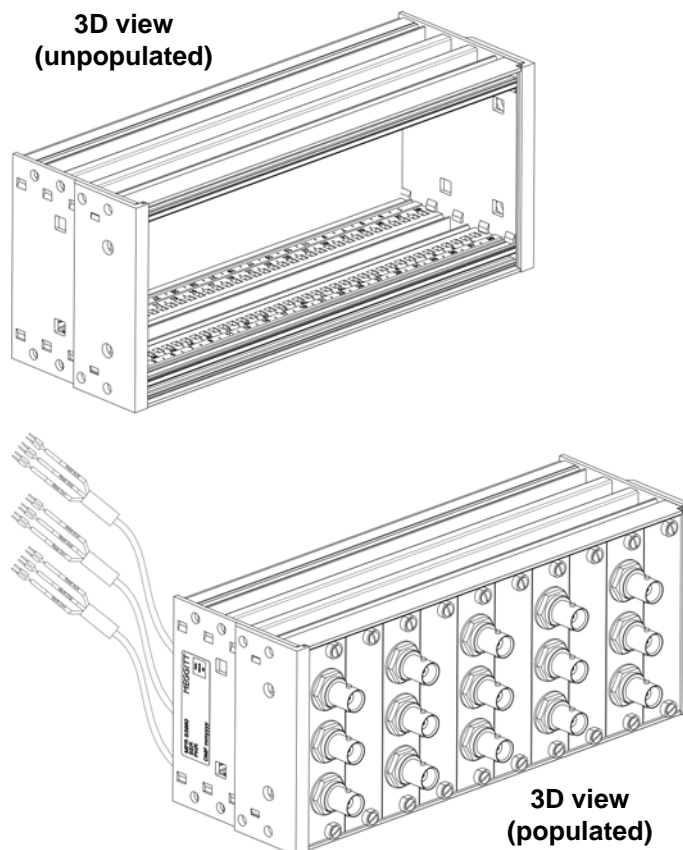
### MECHANICAL DRAWINGS *(continued)*

#### BNC patch panels

##### VSA004 – DIN rail mounting BNC patch panel with 10 slots



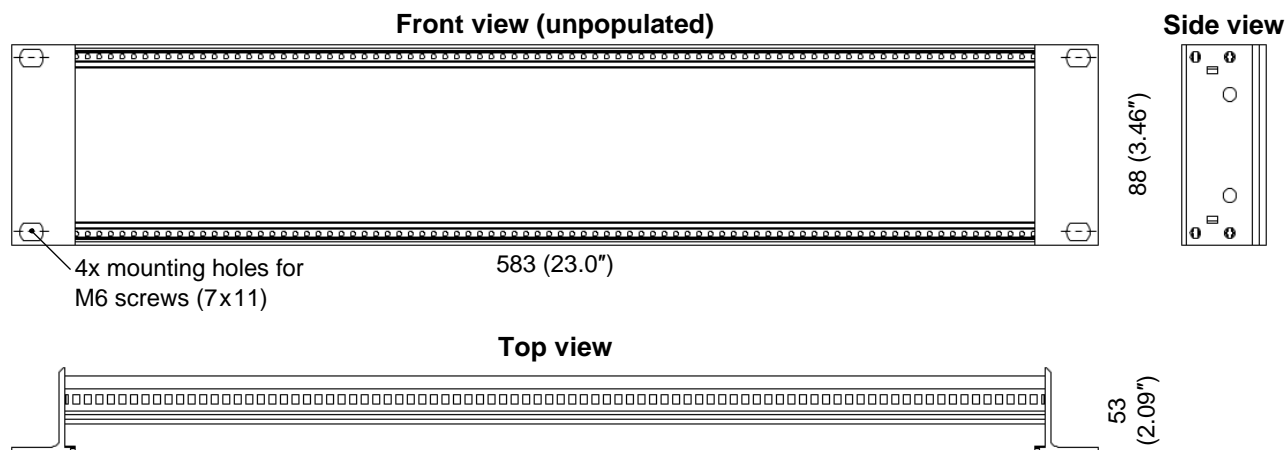
Note: All dimensions are in mm (in) unless otherwise stated.



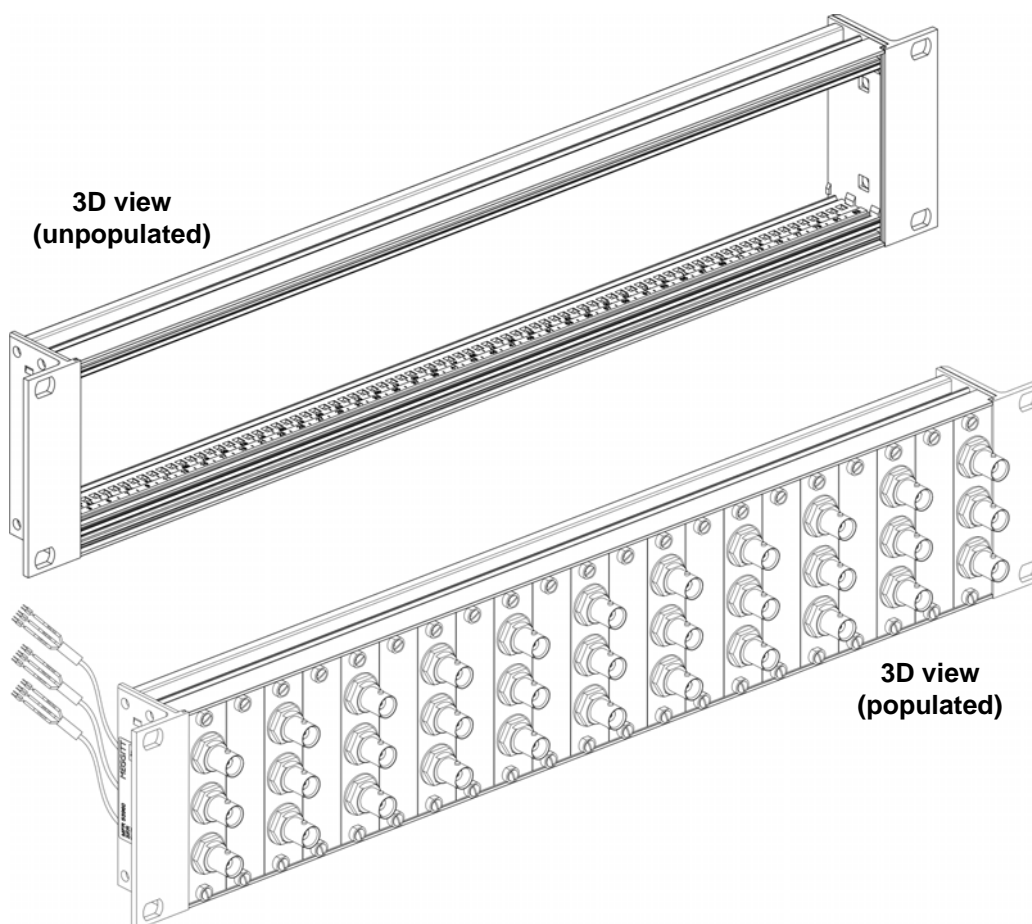


MECHANICAL DRAWINGS *(continued)*

VSA005 – 19" rack mounting BNC patch panel with 21 slots



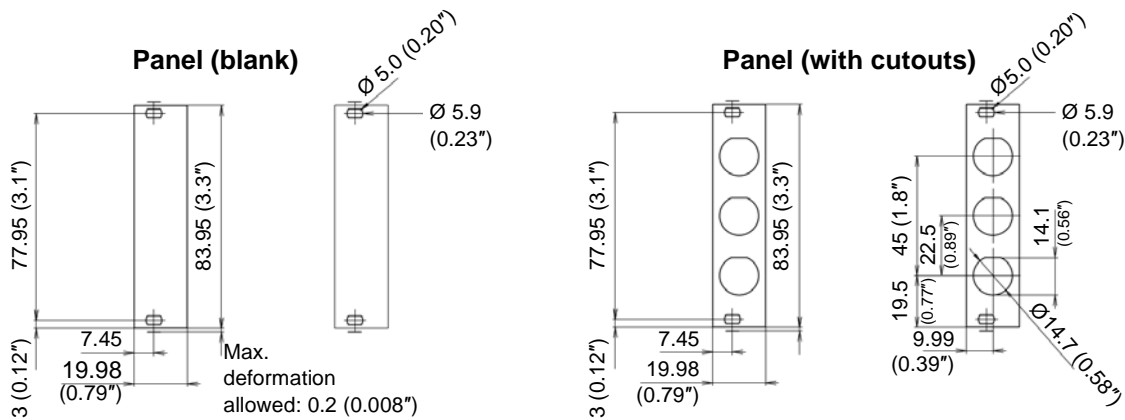
Note: All dimensions are in mm (in) unless otherwise stated.





MECHANICAL DRAWINGS (continued)

Individual slot panels (VSA004 and VSA005)



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

3D view  
(blank)



3D view  
(with cutouts)



## **ORDERING INFORMATION**

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To order please specify

<b>Type</b>	<b>Designation</b>	<b>Ordering number</b>
VSA002	BNC cable assembly – Cable assembly terminated with BNC connectors (male) for use with standard test and measurement equipment.	934-129-000-011
VSA003	BNC cable assembly – Cable assembly terminated with BNC connectors (female) for use with VSA004 and VSA005 BNC patch panels.	934-128-000-011

ORDERING INFORMATION (continued)

To order please specify

Type	Designation	Ordering number
VSA004	BNC patch panel – DIN rail mounting BNC patch panel with 10 slots.	600-023/x

Notes

In the ordering number for a DIN rail mounting BNC patch panel, the x indicates the number of populated slots that will require BNC panels. For each populated slot, a VSA003 cable assembly is automatically included in the order and all remaining slots are fitted with blank panels. For a DIN rail mounting BNC patch panel, the populated slots are automatically allocated to the 10 available slots of the patch panel in accordance with the following table:

Number of populated slots (x)	BNC patch panel slot number									
	1	2	3	4	5	6	7	8	9	10
1	BNC									
2	BNC		BNC							
3	BNC		BNC		BNC					
4	BNC		BNC		BNC		BNC			
5	BNC		BNC		BNC		BNC		BNC	
6	BNC	BNC		BNC	BNC		BNC	BNC		
7	BNC	BNC		BNC	BNC		BNC	BNC		BNC
8	BNC	BNC		BNC	BNC	BNC		BNC	BNC	BNC
9	BNC	BNC	BNC	BNC	BNC		BNC	BNC	BNC	BNC
10	BNC	BNC	BNC	BNC	BNC	BNC	BNC	BNC	BNC	BNC

BNC patch panel slot number 1 is on the left of the BNC patch panel and patch panel slot number 10 is on the right of the patch panel, when viewed from the front. For example:

If 1 populated BNC panel is required, slot 1 (left) is fitted with a BNC panel and slots 2 to 10 are fitted with blank panels.

If 5 populated BNC panels are required, slot 1 and every alternate slot thereafter are fitted with BNC panels, and the remaining slots are fitted with blank panels.

If 8 populated BNC panels are required, slots 1 and 2, slots 4, 5 and 6, and slots 8, 9 and 10 are fitted with BNC panels. The remaining slots are fitted with blank panels.

Labelling for signal identification

In order to help simplify the installation and use of BNC cable assemblies and patch panels, labels are added to (i) each populated BNC patch panel slot and (ii) its associated BNC cable assembly, as follows:

(i) Three labels, each up to 11 characters long, are used on the front panel of each populated BNC patch panel slot. Each label is located above the BNC connector corresponding to its signal. Signal names (TAGs) that help identify the individual VSV300 channels used as the signal sources for the BNC connectors are recommended for these labels.

(i) One label, up to 40 characters long, is used on the associated VSA003 BNC cable assembly. A VSV300 module name (TAG) that helps identify the VSV300 used as the signal source for the populated BNC patch panel slot is recommended for this label.

A tagging file ("BNC Panel – TAGs definition" spreadsheet) is used to provide the text to be used for these labels. The tagging file should be completed for the populated slots only. If the tagging file is not completed, then generic names will be used for the front panel labels and the PNR of the cable (934-12x-000-011) will be used as the cable label. Contact your nearest Meggitt Sensing Systems representative for additional information.

**ORDERING INFORMATION** *(continued)*

To order please specify

Type	Designation	Ordering number
VSA005	BNC patch panel – 19" rack mounting BNC patch panel with 21 slots.	600-024/x

**Notes**

In the ordering number for a 19" rack mounting BNC patch panel, the x indicates the number of populated slots that will require BNC panels. For each populated slot, a VSA003 cable assembly is automatically included in the order and all remaining slots are fitted with blank panels. For a 19" rack mounting BNC patch panel, the populated slots are automatically allocated to the 21 available slots of the patch panel in accordance with the following table:

Number of populated slots (x)	BNC patch panel slot number																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	BNC																				
2	BNC		BNC																		
3	BNC		BNC		BNC																
4	BNC		BNC		BNC		BNC														
5	BNC		BNC		BNC		BNC		BNC												
6	BNC		BNC		BNC		BNC		BNC		BNC										
7	BNC		BNC		BNC		BNC		BNC		BNC		BNC								
8	BNC		BNC		BNC		BNC		BNC		BNC		BNC		BNC						
9	BNC		BNC		BNC		BNC		BNC		BNC		BNC		BNC		BNC				
10	BNC		BNC		BNC		BNC		BNC		BNC		BNC		BNC		BNC		BNC		
11	BNC		BNC		BNC		BNC		BNC		BNC		BNC		BNC		BNC		BNC		BNC
12	BNC	BNC		BNC			BNC	BNC		BNC	BNC		BNC			BNC	BNC		BNC	BNC	
13	BNC	BNC		BNC	BNC		BNC	BNC		BNC	BNC		BNC			BNC	BNC		BNC	BNC	
14	BNC	BNC		BNC	BNC		BNC	BNC		BNC	BNC		BNC	BNC		BNC	BNC		BNC	BNC	
15	BNC	BNC	BNC		BNC	BNC	BNC		BNC	BNC	BNC		BNC	BNC	BNC		BNC	BNC	BNC		
16	BNC	BNC	BNC		BNC	BNC	BNC		BNC	BNC	BNC		BNC	BNC	BNC		BNC	BNC	BNC		BNC
17	BNC	BNC	BNC	BNC		BNC	BNC	BNC	BNC		BNC	BNC	BNC	BNC		BNC	BNC	BNC	BNC		BNC
18	BNC	BNC	BNC	BNC	BNC	BNC	BNC	BNC	BNC		BNC	BNC	BNC	BNC		BNC	BNC	BNC	BNC		BNC
19	BNC	BNC	BNC	BNC	BNC	BNC	BNC	BNC	BNC		BNC	BNC	BNC	BNC	BNC	BNC	BNC	BNC	BNC		BNC
20	BNC	BNC	BNC	BNC	BNC	BNC	BNC	BNC	BNC		BNC	BNC	BNC	BNC	BNC	BNC	BNC	BNC	BNC	BNC	BNC
21	BNC	BNC	BNC	BNC	BNC	BNC	BNC	BNC	BNC	BNC	BNC	BNC	BNC	BNC	BNC	BNC	BNC	BNC	BNC	BNC	BNC

BNC patch panel slot number 1 is on the left of the BNC patch panel and patch panel slot number 21 is on the right of the patch panel, when viewed from the front. For example:

If 1 populated BNC panel is required, slot 1 (left) is fitted with a BNC panel and slots 2 to 21 are fitted with blank panels.

If 11 populated BNC panels are required, slot 1 and every alternate slot thereafter are fitted with BNC panels, and the remaining slots are fitted with blank panels.

If 13 populated BNC panels are required, slots 1 and 2, slots 4 and 5, slots 7 and 8, slots 10 and 11, slot 13, slots 16 and 17, and slots 19 and 20 are fitted with BNC panels. The remaining slots are fitted with blank panels.

**Labelling for signal identification**

In order to help simplify the installation and use of BNC cable assemblies and patch panels, labels are added to (i) each populated BNC patch panel slot and (ii) its associated BNC cable assembly, as follows:

(i) Three labels, each up to 11 characters long, are used on the front panel of each populated BNC patch panel slot. Each label is located above the BNC connector corresponding to its signal. Signal names (TAGs) that help identify the individual VSV300 channels used as the signal sources for the BNC connectors are recommended for these labels.

(i) One label, up to 40 characters long, is used on the associated VSA003 BNC cable assembly cable assembly. A VSV300 module name (TAG) that helps identify the VSV300 used as the signal source for the populated BNC patch panel slot is recommend for this label.

A tagging file ("BNC Panel – TAGs definition" spreadsheet) is used to provide the text to be used for these labels. The tagging file should be completed for the populated slots only. If the tagging file is not completed, then generic names will be used for the front panel labels and the PNR of the cable (934-12x-000-011) will be used as the cable label. Contact your nearest Meggitt Sensing Systems representative for additional information.

## RELATED PRODUCTS

VSV300 Vibration monitoring module

: Refer to corresponding data sheets

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.



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