

RELEASE NOTES

VibroSight[®] software
version 3.4.0



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PREFACE

About these release notes

This document provides important information about the VibroSight® software from Meggitt Sensing Systems. It is applicable to all VibroSight-based condition monitoring systems using the versions of software described by this document, namely:

- VibroSight software version 3.4.0 (CD part number 609-004-000-041).

This document contains information about changes to the software since the previously released version (VibroSight 3.3.0), such as new features and improvements, solved problems and bug fixes, and hardware and software compatibility.

For more general information on the actual software, or the entire condition monitoring system (CMS), refer to the following Meggitt Sensing Systems (MSS) documentation:



VibroSight software data sheet
(MSS document ref. 660-020-005-218A)



Getting started with VibroSight installation guide
(MSS document ref. 660-010-006-221A)



VibroSight help



VM600 XMV16 / XIO16T extended vibration monitoring card pair data sheet
(MSS document ref. 660-020-010-208A)










VibroSight application notes and technical notes.

Users who are familiar with VibroSight may also find it useful to refer to the release notes included in earlier versions of the software:

- VibroSight 2.9.0 (MSS document ref. VIBROSIGHT-RN/E)
- VibroSight 2.9.1 (MSS document ref. VIBROSIGHT-RN/E)
- VibroSight 2.9.2 (MSS document ref. VIBROSIGHT-RN/E)
- VibroSight 2.9.4 (MSS document ref. VIBROSIGHT-RN/E)
- VibroSight 2.9.5 (MSS document ref. VIBROSIGHT-RN/E)
- VibroSight 2.9.6 (MSS document ref. VIBROSIGHT-RN/E)
- VibroSight 2.9.7 (MSS document ref. VIBROSIGHT-RN/E)
- VibroSight 2.10.0 (MSS document ref. VIBROSIGHT-RN/E)
- VibroSight 2.10.1 (MSS document ref. 660-010-013-201A)
- VibroSight 2.11.0 (MSS document ref. 660-010-013-203A)
- VibroSight 2.11.1 (MSS document ref. 660-010-013-204A)
- VibroSight 2.11.2 (MSS document ref. 660-010-013-205A)

- VibroSight 2.11.3 (MSS document ref. 660-010-013-206A)
- VibroSight 2.11.4 (MSS document ref. 660-010-013-207A)
- VibroSight 2.11.5 (MSS document ref. 660-010-013-208A)
- VibroSight 2.11.6 (MSS document ref. 660-010-013-209A)
- VibroSight 2.12.0 (MSS document ref. 660-010-013-210A)
- VibroSight 2.12.1 (MSS document ref. 660-010-013-211A)
- VibroSight 2.12.2 (MSS document ref. 660-010-013-212A)
- VibroSight 2.12.3 (MSS document ref. 660-010-013-213A)
- VibroSight 2.12.4 (MSS document ref. 660-010-013-214A)
- VibroSight 2.12.5 (MSS document ref. 660-010-013-215A)
- VibroSight 2.12.6 (MSS document ref. 660-010-013-216A)
- VibroSight 2.12.7 (MSS document ref. 660-010-013-217A)
- VibroSight 3.0.0 (MSS document ref. 660-010-013-218A)
- VibroSight 3.1.0 (MSS document ref. 660-010-013-219A)
- VibroSight 3.2.0 (MSS document ref. 660-010-013-220A)
- VibroSight 3.3.0 (MSS document ref. 660-010-013-221A).

Structure of the release notes

This document presents information in the following order: general items first, then in terms of the software modules that constitute VibroSight, such as  Configurator,  Event Viewer,  Mimic,  Scope,  Server,  System Manager and  Vision.

You should read those sections that are most relevant to you and then keep the document for future reference.

Version identifiers

A complete VibroSight software version number has four components that provide the following information:

- Major release identifier: **x.x.x.x**
- Minor release identifier: **x.x.x.x**
- Update release identifier: **x.x.x.x**
- Maintenance (build) release identifier: **x.x.x.x**

For each scheduled release of VibroSight, at least one of the first three digits changes (x.x.x.x). For unscheduled releases, that are occasionally required to solve urgent problems, only the fourth digit changes (x.x.x.x).

The version identifiers for installed software appear in the Help About box (obtained using **Help > About ...** in any VibroSight software module).

Terminology

To distinguish between the different Meggitt Sensing System products that can be used with the VibroSight® software, the following terminology is used in this document:

- VM600 card – to refer to the VibroSight-software compatible cards that are installed in a VM600 rack. The currently available VM600 cards that are designed for operation with the VibroSight software are the XMx16 card pairs (XMC16 / XIO16T, XMV16 / XIO16T and XMVS16 / XIO16T) and the new CPUR/IOCR card pair.

Where CPUx card is used in this document, it refers to CPUM and CPUR cards, and where IOCx card is used in this document, it refers to IOCN and IOCR cards, unless otherwise stated.

Where XMx16 card is used in this document, it refers to XMC16 / XIO16T, XMV16 / XIO16T and XMVS16 / XIO16T cards, unless otherwise stated.

- VibroSmart® module or VibroSmart® device – to refer to VibroSight-software compatible modules or devices that are used in a distributed monitoring system. The currently available VibroSmart modules and devices that are designed for operation with the VibroSight software are the VSI010, VSN010 and VSV30x.

Where VibroSmart module is used in this document, it refers to the VSI010 and VSV30x modules, unless otherwise stated.

Where VibroSmart device is used in this document, it can refer to the VSN010 device only, or to the VSI010 and VSV30x modules and the VSN010 device, unless otherwise stated.

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1 Licensing

In general, the licence required to enable purchased product options remains unchanged between update and/or maintenance level releases, for example, from version 3.3.0 to version 3.4.0. However, a new licence is always required for upgrades between major level releases, for example, from version 2.x.x to version 3.x.x.

NOTE: VibroSight 3.4.0 is a minor level release and a new licence key file is not required for upgrades from VibroSight 3.3.0. However, a new licence key file is required for upgrades from VibroSight 2.x.x.

To obtain a new VibroSight licence key file or for further information on licence keys, contact Meggitt Sensing Systems customer support. See 7 Customer support.

2 Features

General

2.1 VibroSmart VSV30x support for hydro air-gap monitoring

VibroSight 3.4.0 and the latest VibroSmart VSV30x firmware add support for air-gap monitoring and analysis with the VibroSight software's 'Hydro air-gap monitoring' application specific package.

(Previously, the "Hydro air-gap monitoring" application specific package could be used with VM600 XMV16 and XMVS16 cards only.)

The "Hydro air-gap monitoring" application specific package allows the air gap between rotor and stator, and the rotor and stator shapes (geometrical data) to be monitored for hydroelectric generators and other large motors and generators.

NOTE: A new licence key file is required to enable optional packages, such as Hydro air-gap monitoring.

Basically, air-gap measurement is used to quantify the radial distance between the poles of a rotating rotor inside a stator bore of a hydroelectric generator. The air gap is important since the distance is very small relative to the hydropower generator diameter (<0.5%) and a contact between the stator and rotor can be catastrophic. Additionally, the air gap in a hydropower generator tends to be smaller as the efficiency increases with a smaller air gap. The geometric parameters calculated from the air-gap sensors allow monitoring the generator air gap and trending of change or evolution of these values overtime.

In order to monitor the air gap around the circumference of the generator, several air-gap sensors (probes) are mounted at regular intervals on the stator, on a horizontal plane for a vertical axis machine. At least located 90° apart are required to give reasonable and representative values. However, for large diameters, this is not sufficient to represent all variations of the shape of the stator.

For example, 6 sensors are recommended for distances over 7 metres, 8 sensors for distances over 10 metres and 12 sensors are recommended for distances over 13 meters.)

Along the rotor axis, vertically for a vertical axis machine, as many as 3 layers (or planes) of sensors may be defined. Case histories of rotor rub show that the upper layer on the generator is the most sensitive. After the upper layer has been fully equipped, a lower layer can then be considered, as well as a layer in the middle, if justified by the generator height.

In the future, the “Hydro air-gap monitoring” application specific package will be expanded to include other measurement such as rotor magnetic flux monitoring in order to provide a more comprehensive monitoring solution for larger machines.

To use the Hydro air-gap monitoring package with VibroSmart VSV30x monitoring modules:

- VibroSight Configurator is used to configure the VibroSmart VSV30x modules for the measurement chain being used, for example, the LS12x and ILS73x air-gap measuring systems from Meggitt Sensing Systems Vibro-Meter product line.
- VibroSight Vision is used to display the resultant air-gap measurements using the existing VibroSight Vision plots.

NOTE: At least four stator sensors are required to calculate stator and rotor shapes (geometrical data) and provide reasonable and representative values, therefore at least two VSV30x monitoring modules are required.

To configure hydro air-gap monitoring for VibroSmart VSV30x monitoring modules using VibroSight Configurator:

1. Start VibroSight Configurator, log in at the Admin user level and create a new VibroSight Server configuration (as usual).
2. In the Hardware view, at the VibroSight Server Configuration node level, add a new VibroSmart measurement block and the new VSV30x modules (as usual).
3. Under a VSV30x module, at the Input channels level, add and configure an Auxiliary input channel as a Tacho input channel in order to generate the 1/rev pulse required for Hydro air-gap monitoring.

NOTE: Although hydro air-gap monitoring can be used without a tacho (1/rev pulse) (for example, to get an overview of a hydroelectric generator), it is required in order to identify the individual rotor poles.

4. Under a VSV30x module, at the Input channels level, add and configure the Dynamic input channels to interface with the air-gap measurement chain being used.

NOTE: The Dynamic input channels used for Hydro air-gap monitoring must be configured as follows:

Physical Quantity: Airgap.

Coupling: AC+DC.

Sensitivity: As required (depends on the **Signal Transmission Mode** and the air-gap measuring system being used). For example: 0.32 V/mm.

Note: The LS120 and ILS730 air-gap measuring system has an offset of 1.875 mm and a sensitivity of $10 \text{ V} / (33.125 \text{ mm} - 1.875 \text{ mm}) = 0.32 \text{ V/mm}$.

Other parameters are configured depending on the requirements of the application. At least four stator sensors are required, therefore at least four Dynamic input channels must be configured.

5. Under a VSV30x module, at the Processing blocks level, add and configure the Shaft relative vibration processing blocks used by a VSV30x to generate the waveforms that the Air-Gap Processing Block (VibroSight Server) requires.

NOTE: The Shaft relative vibration processing blocks used by a VSV30x for Hydro air-gap monitoring must be configured as follows:

Input channel: Select the associated Dynamic input channel (one per processing block).

Reference speed: Select the associated Tacho input channel (one per measurement block).

Other parameters are configured depending on the requirements of the application. At least four stator sensors are required, therefore at least four Shaft relative vibration processing blocks must be configured. However, all processing blocks used for hydro air-gap monitoring must use the same reference speed (tacho).

6. Under each configured Shaft relative vibration processing blocks level, use the Gap extraction to configure the 'offset' depending on the air-gap measurement chain being used.

NOTE: Under each Shaft relative vibration processing block, the Gap extraction must be configured as follows:

Gap units: Physical value (engineering units).

Initial gap: As required (depends on the **Signal Transmission Mode** and the air-gap measuring system being used). For example: 1.875 mm.

Alternatively, the initial gap can be entered as an electrical value (V or I) by using

Gap units: Electrical value.

Note: The LS120 and ILS730 air-gap measuring system has an offset of 1.875 mm and a sensitivity of $10 \text{ V} / (33.125 \text{ mm} - 1.875 \text{ mm}) = 0.32 \text{ V/mm}$.

VibroSight implements the Hydro air-gap monitoring package at the VibroSight Server level, that is, it is post-processing performed by the VibroSight Server on the waveforms received from the Shaft relative vibration processing blocks used by a VSV30x.

(When the Hydro air-gap monitoring package is used with VM600 XMV16 and XMVS16 cards, the post-processing is performed by the VibroSight Server on the principal mode waveforms received from the Dynamic processing blocks used by the XMV16 and XMVS16.)

7. In the Hardware view, at the VibroSight Server node level, add a new Air-gap processing block to configure the hydro air-gap monitoring for the application.

By default, three layers (Top, Middle and Bottom) are created, corresponding to planes perpendicular to the rotor axis, which allows for up to three layers of stator sensors to be defined for an Air-gap processing block. However, smaller machines typically require only one layer so unrequired layers can be deleted (for example, cases histories show that the upper layer on a generator is the most important for detecting rubs).

8. At the server Air-gap processing block level, configure the basic parameters for the machine in order to allow the Air-gap processing block to understand the waveform signals and generate the hydro air-gap measurement data.

NOTE:

The Air-gap processing block must be configured as follows:

Poles: The number of poles on the rotor of the machine.

(**Pole pairs** is updated automatically depending on the poles.)

Line frequency: The utility (mains power line) frequency of the machine.

(**Nominal speed** is updated automatically depending on the poles and line frequency.)

Maximum airgap: The maximum expected distance between the rotor and stator.

Nominal airgap: The typical expected distance between the rotor and stator.

Note: The Maximum and Nominal airgap values are used by VibroSight software to calculate the 'threshold' values used for pole detection.

Numbering direction: The individual rotor poles are automatically numbered – after the 1/rev pulse – starting from 1 and increasing in the specified direction (viewing the machine from above and independently of the direction of rotation of the machine).

Angle ref to notch (CW): By default, the 1/rev pulse produced by the timing reference mark on the rotor shaft and monitored by the associated Tacho input channel is located halfway between the first and the last poles. This parameter can be changed if a different pole numbering scheme is required.

9. Under the server Air-gap processing block level, for each Layer, configure each of the stator sensors (**Probe 1 to Probe n**).

NOTE: Each **Probe** must be configured as follows:

Input channel: Select the associated Dynamic input channel for the stator sensor.

Input waveform: Select the associated waveform from the Shaft relative vibration processing block used by a VSV30x module that corresponds to the input channel.

Sensor thickness: The combined thickness of the sensor and any glue used to install it on the surface of the stator (that is, the distance between the surface of the stator and the surface of the sensor facing the rotor).

For example, an LS120 air-gap sensor has a thickness of 3.8 mm \pm 0.2 mm.
Glue thickness depends on the particular adhesive used and the installation.

10. Under the server Air-gap processing block level, for each Layer, configure the individual probe measurements available under each of the stator sensors (**Probe 1 to Probe n**): Rotor shape, Rotor signature, Gap P_n , Min gap, Avg gap, Rotor eccentricity, Rotor ellipticity, Rotor circularity.

Full display range is available for all measurements but alarms can only be configured for “extracted” measurements (that is, alarms are not available for the Rotor shape or Rotor signature).

11. Under the server Air-gap processing block level, for each Layer, configure the layer measurements available under each of the planes used (Top, Middle and Bottom): Layer rotor signature, Layer gap P_n , Layer min gap, Layer avg gap, Layer rotor eccentricity, Layer rotor ellipticity, Layer rotor circularity, Layer rotor shape, Layer stator eccentricity, Layer stator ellipticity, Layer stator circularity.

Full display range is available for all measurements but alarms can only be configured for “extracted” measurements (that is, alarms are not available for the Layer rotor shape or Layer rotor signature).

The VibroSight Hydro air-gap monitoring package requires that the air-gap measurements are added to a Shaft node in the Machinery view, so that the direction of rotation of the hydroelectric generator can be configured. (If the direction of rotation is not available, the air-gap measurements that require the direction of rotation in order to be calculated are flagged as bad quality and populated with zero values.)

12. In the Machinery view, at the VibroSight server configuration node level, add a new Shaft (under a Machine unit and/or under a Facility unit, as required).

13. At the Shaft node level, configure the Global parameters for the hydroelectric generator's shaft.

NOTE: The **Direction of rotation** can be configured in one of two ways:

- Predefined:** Allows the direction of rotation to be permanently configured as either Clockwise, Counter Clockwise or Clockwise and Counter Clockwise.
- Input Driven:** Allows the direction of rotation to be configured as a function of an external system input.

14. At the Shaft node level, add a new Air-gap measurements node.
15. At the Air-gap measurements node level, use the **Point** control to select the Air-gap processing block configured in the Hardware view as the input.

The configuration is now complete but must be saved as a 'server / database' before it can be used. For VibroSight Hydro air-gap monitoring, the VibroSight configuration is saved and activated as usual.

Since VibroSight implements the Hydro air-gap monitoring package as post-processing at the VibroSight Server level, once the VibroSight Server is running, the air-gap processing (Server feature) must be enabled:

For the VibroSight Server:

- On the Status tab, under Device drivers, ensure that **VibroSmart** is enabled.
- On the Status tab, under Server features, ensure that **Air-gap** is enabled.

To display hydro air-gap monitoring measurements using VibroSight Vision:

For VibroSight Hydro air-gap monitoring, VibroSight Vision is used to display the measurement data in the usual way:

- Using the Machinery view or Hardware view to select the measurement or measurements to display.
- Using the Time Range to select historical or live data (and the time period of interest for historical data).

VibroSight Vision plot types are used to display hydro air-gap monitoring measurements. For example:

- Bar Chart plots, Bode plots, Table plots and Trend plots can be used to display scalar "pole data" such as gaps and circularities, and vector "pole data" such as eccentricities and ellipticities.

Typically, Bar Chart plots, Bode plots, Table plots and Trend plots display Airgap (amplitude) and additional pole information is automatically included in the plot legend.

- Waveform plots can be used to display "waveform" and "rotor data" such as rotor shapes, rotor signatures, layer rotor signatures and layer stator shapes. For "rotor data", a constructed

waveform is displayed where every pole is a constant amplitude value (the value measured for that pole).

The Waveform plot's x-axis can be configured as Time, Revolutions or Poles, as required, and additional gap information is automatically included in the plot legend.

- Polar Waveform plots can be used to display “waveform” and “rotor data” such as rotor shapes, rotor signatures, layer rotor signatures and layer stator shapes. For “rotor data”, a constructed waveform is displayed where every pole is a constant amplitude value (the value measured for that pole).

When displaying any gap related curve, the amplitude axis is automatically reversed so that the amplitude decreases radially going from the centre of the plot outwards. A gap related curve is plotted as a best-fit circle with a corresponding centre marker: “+” for rotor-related curves and “x” for stator-related curves. The centre marker and the curve will be the same colour.

The Polar Waveform plot's x-axis can be configured as Angle or Poles, as required, and additional gap, circularity, eccentricity and ellipticity automatically included is included in the plot legend.

Application tips and tricks

While the VibroSight software's Hydro air-gap monitoring application specific package can be used with VM600 XMx16 cards and VibroSmart VSV30x modules, each solution has its advantages and disadvantages.

For Hydro air-gap monitoring solutions using VibroSmart VSV30x modules:

- One set of measurements (data) is provided per revolution of the machine (that is, effectively continuous data).

For Hydro air-gap monitoring solutions using VM600 XMx16 cards:

- One set of measurements (data) is provided every 100 milliseconds (that is, per principal measurement mode waveform).

In general, VibroSmart VSV30x modules can be used to monitor slower machines with lower rotational speeds.

See also 2.11 VSV30x modules: Support for hydro air-gap monitoring.

2.2 Interprocess communication – WCF replaces .Net Remoting

The VibroSight software has been improved to completely replace the use of .Net Remoting with WCF (Windows Communication Foundation) for all interprocess communication required by the underlying client-server architecture of VibroSight. For example, this includes communication between a VibroSight Server and clients such as VibroSight Vision and VibroSight Mimic, and communication between VibroSight and other servers such as a VibroSight Modbus Server or a VibroSight OPC Server.

WCF has been used to replace .Net Remoting in order to:

- Improve performance, reliability and security.
- Increase interoperability and extensibility.

Now that VibroSight Mimic and VibroSight System Manager have also been migrated to WCF, the migration is complete (this work had started with and was mostly complete for VibroSight 3.3.0).

Note: .Net Remoting had effectively become a “legacy” product that is supported by Microsoft for reasons of backward compatibility only.

2.3 Latest GSD files for VM600 CPUx cards

The VibroSight software has been updated to include the latest general station description (GSD) files for use with VM600 CPUx cards.

NOTE: A general station description (GSD) file is a device description file provided with PROFIBUS and PROFINET devices. It is a text file that contains information about the basic capabilities and characteristics of a PROFIBUS or PROFINET device, and must be provided with the device.

With a GSD file, system integrators can determine basic data such as the communications options and the available diagnostics, and the supervision software (PROFIBUS or PROFINET “master” device) can plan the configuration of the system.

A GSE file is an English language specific version of a GSD file.

The new CPUx GSD files are available from the default firmware (embedded software) folder after VibroSight is installed: `C:\Program Files\Meggitt\VibroSight\Firmware\VM600\CPUR`

NOTE: The default location for the Windows program files folder depends on the operating system installed on the computer:

- `C:\Program Files (x86)` is used by 64-bit versions of Windows.
- `C:\Program Files` is used by 32-bit versions of Windows.

As a result, all references to the `Program Files` folder should be adapted by removing or adding `(x86)` as required.

The correct GSD file to use depends on the CPUx rack controller and communications interface card used by the VM600 rack to support PROFIBUS communications:

- The `MGGCPUR2.GSD` file should be used for PROFIBUS communications with a CPUR card (PNR 600-026-xxx-xxx). This CPUR card (also known as the CPUR2) includes integrated support for PROFIBUS.
- The `vm600m.gse` file should be used for PROFIBUS communications with a CPUM card (PNR 200-595-xxx-xxx). The CPUM card requires a Molex PROFIBUS interface card (PNR 600-018-000-001) to support PROFIBUS.

Previously, the CPUx GSD file distributed with VibroSight was:

- The `MGGT0FBE.GSD` file for PROFIBUS communications with earlier versions of the CPUR card (PNR 600-026-xxx-xxx).
The latest `MGGCPUR2.GSD` file replaces this earlier `MGGT0FBE.GSD` file.

2.4 Redundant Ethernet communications with VM600 XMx16 cards

In order to improve the availability of a machinery monitoring system, the VibroSight software has been updated to support redundant Ethernet communication between a VM600 XMx16 / XIO16T card pair and a VibroSight Server.

As before, when one Ethernet port of a VM600 XMx16 / XIO16T card pair is enabled, the VibroSight software automatically detects this and uses the Ethernet port for all communication with the card pair.

But now, when both Ethernet ports of a VM600 XMx16 / XIO16T card pair are enabled and networked to the computer running the VibroSight Server, the VibroSight software automatically detects this and selects one of the Ethernet ports as the primary (active) and the other Ethernet port as the secondary (inactive/backup).

NOTE: VibroSight selects the primary (active) and the secondary (inactive/backup) Ethernet ports based on the order in which the ports are detected and registered by the VibroSight software's network device discovery mechanism. And the first port detected is the first one used (that is, the primary).

During normal operation, the VibroSight software uses the primary (active) Ethernet port for all communication with the VM600 XMx16 / XIO16T card pair. However, if the card pair becomes unavailable via the primary (active) Ethernet port, then the VibroSight software detects this and automatically switches to the secondary (inactive) Ethernet port. That is, the primary (active) Ethernet port becomes inactive/backup and the secondary (inactive) Ethernet port becomes active.

(Should the card pair subsequently become unavailable via the secondary Ethernet port, then the VibroSight software detects this and automatically switches to the primary and so on.)

NOTE: The time required by the VibroSight software to detect a problem and switch Ethernet ports depends factors such as the network configuration so it is difficult to be precise. However, it typically takes less than 30 seconds.

(Previously, for applications such as condition monitoring, only one Ethernet port of a VM600 XMx16 / XIO16T card pair was typically used: either the XIO16T card's Ethernet port (ETHERNET) at the rear of the VM600 rack or the XMx16 card's Ethernet port (ETHERNET) at the front of the VM600 rack. And the unused Ethernet port of the VM600 XMx16/XIO16T card pair was disabled.)

It is important to remember that when both Ethernet ports of an VM600 XMx16 / XIO16T card pair are enabled, a different subnet mask must be used for each Ethernet port in order to partition the networks used and ensure that the communications on each Ethernet port are kept separate from one another.

NOTE: When both Ethernet ports of an XMx16/XIO16T card pair are required by an application, then a different subnet mask must be used for each Ethernet port in order to partition the networks used and ensure that the communications on each Ethernet port are kept separate from one another.

VibroSight System Manager is used to configure (enable/disable) the Ethernet ports of a VM600 XMx16 / XIO16T card pair, as follows:

1. In the System Explorer window, select an XMx16 card (XMC16, XMV16 or XMVS16).
An XMx16 card's listing indicates the number of Ethernet ports that are enabled and networked for a card pair. For example:
E123456 (xxx.xxx.xxx.xxx) indicates that one port is enabled.
E123456 (xxx.xxx.xxx.xxx; xxx.xxx.xxx.xxx) indicates that both ports are enabled.
2. In the Actions windows, click **IP settings**.
3. In the IP settings window:

If one Ethernet port of a VM600 XMx16 / XIO16T card pair is required by the application, use the XIO16T tab and the XMx16 tab to configure and enable one port, and disable the other port.

NOTE: When only one Ethernet port of an XMx16 / XIO16T card pair is required by an application, the unused Ethernet port should be disabled.

If both Ethernet ports of a VM600 XMx16 / XIO16T card pair are required by the application, use the XIO16T tab and the XMx16 tab to configure and enable both ports, ensuring that the **IP address** and **Subnet mask** are different for each port.

NOTE: When both Ethernet ports of an XMx16/XIO16T card pair are required by an application, then a different subnet mask must be used for each Ethernet port in order to partition the networks used and ensure that the communications on each Ethernet port are kept separate from one another.

In the IP settings window, the error indication symbol (red circle containing a white x) is displayed against the **IP address** and **Subnet mask** fields to indicate any Ethernet port problems detected by VibroSight System Manager. Similarly, the **Finish** button becomes unavailable (greyed out) to prevent the Ethernet ports from being incorrectly configured.

VibroSight Configurator is used to configure (connection mode) the Ethernet ports used by a VM600 XMx16 card in a VibroSight Server Configuration, as follows:

1. In the Hardware view window, select an XMx16 card (XMC16, XMV16 or XMVS16).
The XMx16 card's parameters (centre) indicate the **Serial number**, **Connection mode**, **IP address 1** and **IP address 2** for a card pair.
 - If the **Connection mode** is configured as **Automatic discovery**, then the VibroSight software's network device discovery mechanism will automatically detect the Ethernet ports that are enabled and networked for a card pair (identified using the **Serial number**) and display them in **IP address 1** and **IP address 2**.
 - If the **Connection mode** is configured as **IP address**, then the Ethernet ports that are enabled and networked for a card pair must be manually entered in **IP address 1** and **IP address 2**.

NOTE: When the **Connection mode** is configured as **Automatic discovery**, VibroSight displays the Ethernet ports in **IP address 1** and **IP address 2** based on the order in which the ports are detected and registered by the VibroSight software's network device discovery mechanism. And the first port detected is the first one used (that is, **IP address 1**, the primary).

2.5 Support for Direct measurement mode (direct data) removed

Support for the Direct measurement mode (direct data) used by VM600 XMx16 cards has been removed as the VibroSight historical data repositories now used by VibroSight enable equivalent functionality. That is, VibroSight historical data repositories are so fast that the Principal measurement mode can be configured to provide continuous direct data (effectively a digitised continuous long-duration waveform) of the type that was originally only available via the Direct measurement mode.

Continuous direct data from the Principal measurement mode also has the important advantage that is native to VibroSight and can be quickly and directly displayed in VibroSight Vision, for example, using the Long Waveform plot. (Continuous direct data from the Direct measurement mode was not native to VibroSight and required third-party software in order to be displayed.)

NOTE: In a VibroSight Server configuration, the different measurement modes for a VM600 XMx16 card are configured at the **Spectra And Waveforms** node level for a dynamic processing block using the corresponding **Principal Mode** and **Auxiliary Mode** tabs under **Waveform and Spectrum Processing**. (The **Direct Mode** tab previously available for the configuration of Direct measurement mode (direct data) has been removed.)

By default, the principal measurement mode is enabled, while the auxiliary measurement mode is disabled.

(Previously, when VibroSight used databases based on Sybase® SQL Anywhere, the Direct measurement mode (direct data) was used to obtain a digitised waveform for up to 10 minutes before an event (depending on an Alarm Event Based data logging rule). The special Direct measurement mode was required because of the speed and data handling limitations of the underlying database technology. The direct data waveforms obtained were encoded in the TDMS (technical data management streaming) file format from National Instruments, so the presentation of this direct data was not directly supported in VibroSight Vision: third-party software supporting the TDMS file format was required for data visualisation.)

In order for the dynamic channel of a VM600 XMx16 card to provide continuous direct data (equivalent to the Direct measurement mode), VibroSight Configurator is used to configure the associated Dynamic processing block as follows:

- At the Spectra and Waveforms node level, under **Waveform and spectrum processing**, on the **Principal Mode** (Principal measurement mode) tab, the **Output State** must be Enabled and the **Overlap** must be greater than 0%.

NOTE: If there is no overlap in waveforms (**Overlap** less than or equal to 0%), then the data provided will not be continuous, that is, there will be gaps between the provided waveforms.

The **Overlap** field is not editable; it displays the percentage waveform data overlap automatically calculated by VibroSight using values entered in the **Bandwidth** field (at the Dynamic processing block node level) and the **Waveform size** field (at the Spectra and Waveforms node level).

VibroSight Configurator

2.6 Data logging rule changes

In VibroSight Configurator, the data logging rules available for use in the Data Storage view have changed as follows:

- The existing **Value based** data logging rule has been renamed as **Single-value based**.
- A new **Value based** data logging rule has been added.

The new **Value based** data logging rule has been added in order to support the logging (recording) of data to a VibroSight historical data folder (*.vshdf) by a VibroSight Server based on changes to individual data values with respect to their previously logged values.

That is, when the new **Value based** data logging rule is used, values are only written to the VibroSight data repository when they are different from the previously written values. In this way, the size and growth rate of a VibroSight data repository can be significantly reduced.

For the new **Value based** data logging rule, the new specific parameters that can be configured are:

- **Delta % FDR** – the % change to the associated data values (**Data entities**) in terms of their individual full display ranges (FDR) that is required to trigger the logging of new data values.
- **Delta frequency** – the absolute change to the frequency of the associated data values (**Data entities**) that is required to trigger the logging of new data values.
- **Fastest logging rate** – the fastest data rate that will be used to log (record) new data values to the VibroSight data repository, irrespective of the rate at which data value changes are detected.
- **Logging scope** – the scope of the data logging rule, that is, the data values to log measurement data for when data value changes are detected.
Select either the individual data entity that triggered this data logging rule, the data entities in the same processing block as the data entity that triggered this data logging rule (**Processing block**), or all of the associated data values in the **Data entities** folder of the data storage group containing this data logging rule (**Logging group**).

Once configured, the following rules apply:

- For scalar measurements (data entities), data values are logged when the difference between the previously logged scalar value and the current scalar value exceeds the configured Delta % FDR.
- For vector measurements (data entities), data values are logged when the amplitude of the vector difference between the previously logged vector value and the current vector value exceeds the configured Delta % FDR.
- For phasor measurements (data entities), data values are logged when at least one of the following conditions are met:
 - The difference between the previously logged frequency value and the current frequency value exceeds the configured Delta frequency.
 - The amplitude of the phasor vector resulting from the vector difference between the previously recorded phasor vector and the current phasor vector value exceeds the configured %FDR. Note that a phasor is the addition of a vector and a frequency value.
- Other measurements (data entities) cannot trigger a Value based data logging rule. However, they can be added to a Value based data logging rule as associated data values (Data entities) so that they are logged if the Logging scope is configured as Processing block or Logging group.

Concerning data logging, every time the new **Value based** data logging rule is triggered, both the previous data value (below the logging threshold) and the latest data value (above the logging threshold) are logged (recorded) to the VibroSight data repository.

Application tips and tricks

In general, the VibroSight Configurator data logging rules should now be used as follows:

- **Time based** – recommended for the logging of data at fixed time intervals.
- **Single-value based** – recommended for the logging of data depending on the change in value of particular measurements with respect to their previously logged (recorded) values.
- **Value based** – recommended for the logging of data depending on the value or change in value of a particular measurement.
- **Alarm-event based** – recommended for the logging of data depending on the severity level or levels associated with a particular measurement.

VibroSight Vision

2.7 Displaying data against speed in a Trend plot

The Trend plot and the optimised data handling implemented by the VibroSight software have been updated to support the plotting of measurement data against speed.

More specifically, when a Trend plot is configured as **Speed/Bode** (as opposed to **Time/APHT**) so that the measurement data (Y-axis) is displayed against speed (X-axis), VibroSight's optimised data handling algorithm now reduces (decimates) and optimises the data selected for display more intelligently in order to provide a 'picture' of measurement data against speed that is more correct and easier to work with.

(Previously, the VibroSight's optimised data handling algorithm was correct and easier to work with when measurement data against time.)

2.8 Displaying phase data in a Spectrum plot

The Spectrum plot has been updated to support the plotting of phase data.

By default, when a Spectrum plot is displayed, the amplitude spectrum is displayed and the phase spectrum is not displayed.

(Previously, the Spectrum plot supported the display of amplitude data only, equivalent to the default behaviour.)

To configure the plotting of phase data in an individual Spectrum plot, the properties of the plot can be changed as follows:

1. Right-click the plot, then click **Plot properties**, or click the **Plot > Plot properties** menu command. The **Plot properties** window for the Spectrum plot is displayed.

2. In the **Plot properties** window, on the **General** tab, under **Layout**, notice that the **Amplitude** control is selected by default to enable the display of amplitude data. Select (or clear) the **Phase** control as required to display (or not display) amplitude data, then click **Apply** or **OK**.

The updated settings configured for the individual Spectrum plot are immediately applied to the plot.

NOTE: Any combination of amplitude data and/or phase data can be displayed in a Spectrum plot.

By default, the amplitude spectrum is displayed as a single chart in the plot.

When both the amplitude and phase data are selected, the amplitude spectrum and the phase spectrum are displayed as two separate charts in the plot with the amplitude spectrum above the phase spectrum.

Similarly, the phase spectrum can be displayed as a single chart in the plot.

Alternatively, the default plot settings for all Spectrum plots can be changed as follows:

1. Click the **Tools > Options** menu command.

The **Options** window for VibroSight Vision is displayed.

2. In the **Options** window, select **Spectrum plot** (left pane), and under **General** (right pane), select or clear the **Amplitude** and/or **Phase** controls as required, then click **OK**.

The updated default settings configured for all Spectrum plots are used the next time that a Spectrum plot is created.

2.9 Display of units and qualifiers in plots

VibroSight Vision plots have been updated to use the default units and qualifiers configured for a measurement (data entity).

The units and qualifiers now used and displayed in a VibroSight Vision plot are those configured for the data entity in VibroSight Configurator, in accordance with the following rules:

- For plots arranged to display one Y-axis per measurement (single curve), the Y-axis displays the unit and/or qualifier configured for the measurement in VibroSight Configurator. If no unit and/or qualifier is configured for the measurement in VibroSight Configurator, then the default values from the VibroSight Unit Preferences are used.
- For plots arranged to display one Y-axis for measurements with the same physical quantity (multiple curves) and the units and/or qualifiers configured in VibroSight Configurator are the same, the Y-axis displays the common unit and/or qualifier configured for the measurements in VibroSight Configurator.

For plots arranged to display one Y-axis for measurements with the same physical quantity (multiple curves) and the units and/or qualifiers configured in VibroSight Configurator are different, multiple Y-axes are used to group and display the common units and/or qualifiers configured for the measurements in VibroSight Configurator.

2.10 Improved zooming in plots

The zoom functionality in VibroSight Vision plots has been further improved to support zooming using the mouse wheel, as follows:

- Rotating the mouse wheel forwards will zoom in on the plot, centered around the position of the pointer. This is the mouse wheel equivalent of Frame zoom using the pointer.

Similarly, CTRL + rotating the mouse wheel forwards will zoom in vertically on the plot (that is, the X-axis remains as it was and the Y-axis zooms). This is the mouse wheel equivalent of Vertical zoom using the pointer.

Similarly, SHIFT + rotating the mouse wheel forwards will zoom in horizontally on the plot (that is, the X-axis zooms and the Y-axis remains as it was). This is the mouse wheel equivalent of Horizontal zoom using the pointer.

- Rotating the mouse wheel backwards will zoom out on the plot, centered around the position of the pointer.

Similarly, CTRL + rotating the mouse wheel backwards will zoom out vertically on the plot (that is, the X-axis remains as it was and the Y-axis zooms).

Similarly, SHIFT + rotating the mouse wheel backwards will zoom out horizontally on the plot (that is, the X-axis zooms and the Y-axis remains as it was).

NOTE: When zoomed on a plot, clicking on the small icon that appears at the left of the X-axis and/or the bottom of the Y-axis left resets the zoom for that axis.

Note: This new zoom functionality is available in all VibroSight Vision plots except for the Polar plot and the Polar Waveform plots, which are currently planned to support zooming using the mouse wheel for the next release of VibroSight.

VibroSmart modules

2.11 VSV30x modules: Support for hydro air-gap monitoring

The VibroSmart VSV30x firmware now includes support for hydro-air-gap monitoring.

The ways in which a VibroSmart VSV30x module provides data to a VibroSight Server have been improved to provide the continuous direct data (effectively a digitised continuous long-duration waveform) supported by the VibroSight software's 'Hydro air-gap monitoring' application specific package.

NOTE: In order to run VibroSight 3.4.0 for machinery monitoring systems containing VibroSmart VSV30x modules, a firmware upgrade to the latest version of VSV30x firmware is required. See 5.3 VibroSmart devices.

See also 2.1 VibroSmart VSV30x support for hydro air-gap monitoring.

3 Solved problems and bug fixes

General

3.1 Improvements and bug fixes

General stability improvements across the VibroSight 3.4.0 software.

3.2 VM600 XMx16 card auxiliary measurement mode processing

Under certain circumstances, VM600 XMx16 cards configured to use the auxiliary measurement mode processing to provide waveforms could experience communication errors with a VibroSight Server.

3.3 VM600 XMC16 card combustion monitoring processing

Under certain circumstances, VM600 XMC16 cards configured to use 1 s spectral data aggregation processing and the combustion monitoring processing block to provide aggregated spectra and associated measurements (extracted data) could provide incorrect values.

4 Known issues

4.1 Display of timestamps in VibroSight Vision

In VibroSight Vision, when the timestamps (date and time) are configured to be displayed as Site time or Local computer time and the site time or local computer time is subsequently changed on the relevant computer (for example, using Windows > Control Panel > Date and Time), this change is not reflected in the VibroSight Vision user interface until the user clicks on the **Timestamp** displayed in the VibroSight Vision status bar.

4.2 VibroSight Server and Host Service restart required after changes to network adapter

If the configuration of a network adapter is changed (for example, enabled or disabled, connected or disconnected) on a computer running VibroSight, then the VibroSight Servers and Host Services running on the computer must be restarted in order for the network adapter to be recognized by the VibroSight discovery mechanism.

4.3 Length limitation of VibroSight Server instance names

Since VibroSight 2.9.6, VibroSight Server instance names are limited to 18 characters, whereas up to 27 characters were allowed in previous versions. This constraint is enforced during the creation of new server instances with VibroSight 2.9.6 or later.

NOTE: VibroSight allows only alphanumeric characters (A to Z, a to z, 0 to 9), the hyphen-minus character (-) and the underscore character (_) to be used for VibroSight Server names.

However, existing server instances may be non-compliant (too long) and no longer run after an upgrade of the VibroSight software. In such cases, the file names used for the VibroSight Server database file (`*.vssrvdb` or `*.db`) and the VibroSight Server configuration file (`*.vssrvcfg` or `*.config`) should be updated (and manually edited in the VibroSight configuration file) to be 18 characters or less. Changes may also be required in any VibroSight software that references the server instance name, such as VibroSight Vision projects.

Where used, the automated database copies append a timestamp (`_yyyyMMddHHmmss`) to the Server instance name which reduces the number of file name characters that remain available for VibroSight Server instance names to three. Alternatively, the server instance name can be shorted after the database copy is complete.

Also, depending on the VibroSight Server database file names used and any truncation performed by VibroSight, it is possible that servers are created with names that contain non-allowed characters (such as spaces), with the result that these servers will not be accessible by VibroSight software clients. Similarly, duplicate VibroSight Server names are also possible.

NOTE: Choose appropriate VibroSight Server names in order to avoid name conflicts arising due to truncation and/or additional databases being created during automatic data management.

This is particularly important for systems with automated data management and system backup procedures that use script files containing database commands (such as copy and backup) that can automatically generate VibroSight Server database files.

4.4 Display of timestamps in VibroSight clients other than VibroSight Vision

Although VibroSight Vision now supports the display of timestamps (date and time) as either Site time, UTC time or Local computer time, all other VibroSight client software modules continue to display timestamps in local computer time only (that is, the date and time according to the local clock of the computer running the VibroSight software module).

4.5 Display of devices in VibroSight System Manager

In the System Explorer window of VibroSight System Manager, the Devices tree-view does not always update correctly to show all of the devices (VM600 cards and VibroSmart devices) available on the network.

In particular, this has been seen when changing the firmware of a device, and can persist even after a refresh (using the **Refresh** toolbar button or **View > Refresh**).

If this behaviour is seen, the recommended workaround is to:

- Wait a few minutes and refresh again.
- Restart VibroSight System Manager.

4.6 VibroSight Mimic backwards compatibility

VibroSight 2.10.0 contained significant improvements and changes, including a separate VibroSight Mimic client software module for mimics (that were previously available in VibroSight Vision). As a result, VibroSight Vision mimics created with VibroSight 2.9.7 or earlier are not compatible with VibroSight 2.10.0 or later.

VibroSight 2.11.0 contained significant improvements and changes to the VibroSight Mimic client software module. As a result, VibroSight Vision mimics created with VibroSight 2.10.1 or earlier are not compatible with VibroSight 2.11.0 or later.

VibroSight 2.11.5 contained significant improvements to the VibroSight Mimic project framework to include version information, in order to improve the compatibility between projects created with different versions of VibroSight Mimic and eliminate the requirement for the recreation of Mimics. Starting with VibroSight 2.11.5, Mimic projects automatically detect any changes in the VibroSight Mimic software that affect project compatibility, inform the user and update the project as required.

NOTE: VibroSight 2.11.5 is also able to open and work with Mimic projects created with VibroSight 2.11.0 or later, if the corresponding database had been updated as required.

NOTE: When updating existing machinery monitoring projects created with VibroSight 2.12.x to VibroSight 3.x.x, a new data repository created by copying a VibroSight database (*.vssrvdb) to a VibroSight historical data folder (*.vshdf) must use the same server file name as the existing server in order for existing VibroSight Mimics to maintain links with the data repository and continue to work (without manual corrections).
In addition, the VibroSight Server using the new data repository must be running before the existing VibroSight Mimics are run for the first time, after the update.

4.7 VibroSight OPC Clients not recovering

When a VibroSight OPC Client is being used to import information from an external OPC server into a VibroSight system and the external OPC server becomes unavailable, the VibroSight OPC Client may not always recover automatically when the OPC server becomes available again.

This is typically characterised by the VibroSight OPC Client continuing to show connection error messages even when OPC server is available and can result in permanent loss of the imported data if not noticed.

NOTE: The external OPC data can be permanently lost if it is not imported into VibroSight as expected.

Any VibroSight system feature or configuration element relying on the imported OPC data will not behave as expected, for example, alarms, machinery operating conditions and data logging rules.

If this behaviour is seen, the recommended workaround is to:

- Stop and restart the VibroSight OPC Client from either the VibroSight Server (**Data > Acquisition > OPC Device Driver**) or VibroSight System Manager.
- Stop and restart the VibroSight Server, if required.

4.8 Duplicate events

For VibroSight systems using VM600 XMx16 cards, VibroSight Event Viewer retrieves all of the event information available from the data buffers on the cards.

For VibroSight systems using VibroSmart modules, VibroSight Event Viewer retrieves the event information available from the current time only (no buffered events).

Accordingly, for a VibroSight system using VM600 XMx16 cards, there is the possibility of duplicate events being listed in the Event Viewer, particularly for VibroSight systems being operated without an NTP server (where events are not recognised as duplicates due to time drift).

4.9 VibroSight Server status indicators

The status indicators (performance counter monitors) on the Status tab of the new VibroSight Server are not correctly displayed and updated when an NVIDIA WMI driver is installed on the same computer as the VibroSight Server.

NOTE: The NVIDIA Enterprise Management Toolkit (NVWMI) is a graphics and display management and control technology that interfaces to Microsoft's Windows Management Instrumentation (WMI) infrastructure, specific to NVIDIA graphics processing units (GPUs).

This is because NVIDIA WMI prevents the Microsoft .NET Framework from obtaining the required counter values from the underlying operating system / computer.

4.10 XMx16 card pre-logging

For an XMx16 card pair, if Dynamic Input Channel 16 is used as an input to a Dynamic Processing Block that is used as an input to a Dual Shaft Relative Processing Block which is configured to provide an Orbit and/or Full Spectrum output, then any pre-logging configured for the principal mode Waveform and/or Spectrum of Dynamic Input Channel 16 will not actually log any of the data from the same pre-logging scope.

4.11 Problems creating new VibroSight OPC Servers

Users who have upgraded from an earlier version of VibroSight to a later version (for example, from VibroSight 2.x.x or 3.0.0 to VibroSight 3.1.0) can experience problems when creating new VibroSight OPC Servers.

Such problems are typically characterised by the **OPC Server Create** command in VibroSight System Manager displaying an error message such as

```
"The type initializer for 'ch.VibroMeter.Xms.OpcServer.Utills.OpcServerUtills' threw an exception".
```

This typically occurs because an earlier version of the `OpcServer.config` file required by VibroSight OPC Servers is being used by the later installation of VibroSight, which can happen in one of two ways:

- When a later version of VibroSight 3.x.x is installed on a computer that was running an earlier version of VibroSight 2.x.x, the VibroSight installer automatically checks existing VibroSight folders (such as **C:\ProgramData\Meggitt\VibroSight 2**) in order to copy relevant system and/or user preference files across to the new VibroSight folders (such as **C:\ProgramData\Meggitt\VibroSight**), including an earlier `OpcServer.config` file.
- When VibroSight 3.1.0 is installed on a computer that was running VibroSight 3.0.0, the creation of a VibroSight OPC installer using VibroSight 3.0.0 automatically created an earlier `OpcServer.config` file.

As shown below, the first few lines of a typical `OpcServer.config` file contains version specific information that is incompatible with later versions of VibroSight:

```
<?xml version="1.0" encoding="utf-8"?>
<configuration>
  <configSections>
    <section name="opcServersConfiguration"
type="ch.VibroMeter.Xms.OpcServer.Utills.OpcServersSystemConfiguration,
XmsOpcServerUtills, Version=2.0.0.0, Culture=neutral,
PublicKeyToken=2db2a2387bac0a0a" />
  </configSections>
  ...
</configuration>
```

So for users who have upgraded from an earlier version of VibroSight to a later version, if problems are experienced when creating new VibroSight OPC Servers, the workaround is to:

1. Use an XML-compatible text editor program to edit the `OpcServer.config` file and remove the version specific information. That is, change the line containing the `section name` from:

```
<section name="opcServersConfiguration"
type="ch.VibroMeter.Xms.OpcServer.Utills.OpcServersSystemConfiguration,
XmsOpcServerUtills, Version=2.0.0.0, Culture=neutral,
PublicKeyToken=2db2a2387bac0a0a" />
```


to:

```
<section name="opcServersConfiguration"
type="ch.VibroMeter.Xms.OpcServer.Utills.OpcServersSystemConfiguration,
XmsOpcServerUtills, Culture=neutral, PublicKeyToken=2db2a2387bac0a0a" />
```

2. Restart the computer.

Note: The computer must be restarted to ensure that the edited version of the `OpcServer.config` file is used (and not some other version from cache memory).

3. Use the **OPC Server Create** command in VibroSight System as required.

NOTE: The manual migration of existing VibroSight OPC Servers to VibroSight 3.x.x is described in detail in the "VibroSight OPC Server migration" section of the latest  *Getting started with VibroSight* installation guide.

4.12 Potential TCP port 50000 conflict

The VibroSight Host Service (XmsHostService.exe) requires TCP port 50000 for communication with the VibroSight software. So if the computer running the VibroSight software is running other software which also requires TCP port 50000, this results in a TCP port conflict which can prevent VibroSight (or the other software) from running.

During the VibroSight software installation process, the VibroSight 3.4.x installer will typically detect other software on the computer that is using TCP port 50000 and report this. For example: "The port 50000 cannot be used. Please close all application using this port before manually starting the host service."



Accordingly, any potential TCP port 5000 conflict should be resolved before the VibroSight software can be successfully installed and run.

5 Compatibility

As part of the VibroSight software installation process, the VibroSight installer will automatically check to see if the required Microsoft .NET Framework, Microsoft Visual C++ Redistributable Package and OPC Core Components Redistributable software are pre-installed on the computer:

- The required Microsoft Visual C++ Redistributable Package (see section 5.1.3) must be manually installed before VibroSight can be installed. If it is not detected, then the VibroSight installer will exit the installation and VibroSight is not installed.
- The required Microsoft .NET Framework (see section 5.1.2) is automatically installed by the VibroSight installer if it is not detected.
- The required OPC Core Components Redistributable (see section 5.1.4) software is automatically installed on the computer by the VibroSight installer if it is not detected.

NOTE:

Refer to the latest version of the  *Getting started with VibroSight* installation guide or the  *VibroSight software* data sheet for further information on VibroSight's prerequisites and compatibility.

5.1 VibroSight software

VibroSight 3.4.0 is a minor level release and replaces VibroSight 3.3.0.


Compatibility with existing VibroSight data repositories (databases) is achieved using a specific data migration process from any existing databases based on Sybase SQL Anywhere (*.vssrvdb) to data repositories based on the VibroSight historical data repositories (VibroSight historical data folders (*.vshdf) for operation with a VibroSight Server (live data) and VibroSight historical data archives (*.vshda) for operation with historical data).

Compatibility with existing VibroSight machinery monitoring projects using VibroSight OPC Servers that were created using VibroSight 2.12.7 or earlier is achieved using a specific VibroSight OPC Server migration process for these VibroSight OPC Servers.

Therefore, it is important to note that:

- New machinery monitoring projects created with VibroSight 3.x.x will automatically use VibroSight historical data repositories.
- Existing machinery monitoring projects created with versions of VibroSight earlier than VibroSight 3.0.0 must be manually migrated from Sybase SQL Anywhere databases to VibroSight historical data repositories before they can be used with VibroSight 3.x.x.
- Existing machinery monitoring projects using VibroSight OPC Servers that were created with versions of VibroSight earlier than VibroSight 2.12.7 must manually migrate their VibroSight OPC Servers before they can be used with VibroSight 3.x.x.

It is very important to note that migrating a VibroSight OPC Server from VibroSight 2.12.7 or earlier to VibroSight 3.x.x requires that certain steps must be performed using the existing version of VibroSight (that is, VibroSight 2.12.7 or earlier) BEFORE it is removed (uninstalled).

NOTE: The manual migration of an existing machinery monitoring project to VibroSight 3.x.x is described in detail in the “Data migration” and “VibroSight OPC Server migration” sections of the latest  *Getting started with VibroSight* installation guide.

5.1.1 Microsoft Windows operating systems

VibroSight 3.x.x is compatible with 32-bit versions and 64-bit versions of Microsoft® Windows® operating systems.

NOTE: Starting with VibroSight 3.0.0, VibroSight software is now available as 64-bit software for 64-bit Windows and 32-bit software for 32-bit Windows. The 64-bit version of VibroSight can be installed on 64-bit Windows computers only. The 32-bit version of VibroSight can be installed on 32-bit Windows computers only. Only a single version of VibroSight can be installed and exist on a computer at any one time

See the Appendix of these release notes for further information on VibroSight software and Windows operating system compatibility.

5.1.2 Microsoft .NET Framework

For most Windows operating systems, VibroSight 3.4.0 or later requires that the Microsoft .NET Framework 4.7.1 or later is installed.

NOTE: VibroSight 3.4.0 requires Microsoft .NET Framework 4.7.1.

If the required Microsoft .NET Framework is not pre-installed, then the VibroSight installer will detect this and automatically install it as part of the VibroSight software installation.

See the Appendix of these release notes for further information on VibroSight software and Microsoft .NET Framework requirements.

5.1.3 Microsoft Visual C++ Redistributable Package

VibroSight 3.x.x requires that the Microsoft Visual C++ Redistributable Package for Visual Studio 2015 is installed, in order to install and register the Visual C++ libraries used by VibroSight.

NOTE: The 64-bit version of the Microsoft Visual C++ Redistributable Package (“Microsoft Visual C++ 2015 Redistributable (x64)”) must be installed on 64-bit Windows computers.

The 32-bit version of the Microsoft Visual C++ Redistributable Package (“Microsoft Visual C++ 2015 Redistributable (x86)”) must be installed on 32-bit Windows computers.

If the required Microsoft Visual C++ Redistributable Package is not pre-installed, then the VibroSight installer will detect this and exit the installation.

5.1.4 OPC Core Components Redistributable

VibroSight 3.x.x requires that the OPC Core Components Redistributable is installed, in order to configure and run VibroSight OPC Clients and VibroSight OPC Servers correctly: the redistributable must be installed on OPC client computers in order to allow connections to remote OPC servers and it must be installed on OPC server computers in order to allow OPC clients to browse for running OPC servers.

NOTE: The 64-bit version of the OPC Core Components Redistributable (“OPC Core Components Redistributable (x64) 106.0”) must be installed on 64-bit Windows computers.

The 32-bit version of the OPC Core Components Redistributable (“OPC Core Components Redistributable (x86) 106.0”) must be installed on 32-bit Windows computers.

If the required OPC Core Components Redistributable is not pre-installed, then the VibroSight installer will detect this and automatically install it as part of the VibroSight software installation.

5.1.5 Sybase SQL Anywhere 11 software


Starting with VibroSight 3.0.0, the VibroSight historical data repositories (VibroSight historical data folders (*.vshdf) for operation with a VibroSight Server (live data) and VibroSight historical data archives (*.vshda) for operation with historical data) are exclusively used for the required data repositories.

A VibroSight database based on Sybase SQL Anywhere (*.vssrvdb) can no longer be used as a data repository. Accordingly, the Sybase SQL Anywhere 11 database software is no longer included and distributed as part of the VibroSight software.

NOTE: VibroSight 3.x.x exclusively uses data repositories based on the VibroSight historical data system.

VibroSight 2.12.7 used data repositories based on Sybase SQL Anywhere databases and introduced initial support for working with data repositories based on the VibroSight historical data repositories for data analysis.

VibroSight 2.12.6 or earlier exclusively used data repositories based on Sybase SQL Anywhere databases.

NOTE: The manual migration of an existing machinery monitoring project to VibroSight 3.x.x is described in detail in the “Data migration” section of the latest  *Getting started with VibroSight* installation guide.

5.1.6 VM600 CMS software

The VM600 CMS software from Meggitt Sensing Systems uses Sybase SQL Anywhere 8. Both Sybase SQL Anywhere 8 (VM600 CMS) and Sybase SQL Anywhere 11 (VibroSight) can be installed on the same computer.

However, while SQL Anywhere 8 and SQL Anywhere 11 can be installed on the same computer and run at the same time for standard database operations, certain administrative tasks are mutually exclusive and may block one another.

More specifically, all operations that refer to Sybase SQL (a command-line Interactive SQL utility) in the background could be directed to the wrong version of Sybase SQL Anywhere. For example, this impacts all user operations and system operations involving the creation, copying and updating of databases.

NOTE: It is recommended to install and use VibroSight 3.x.x or earlier on a computer that does not have VM600 CMS software installed.

5.1.7 SIMATIC Step 7 software

The SIMATIC Step 7 software from Siemens typically uses Sybase SQL Anywhere 9. Both Sybase SQL Anywhere 9 (SIMATIC Step 7) and Sybase SQL Anywhere 11 (VibroSight) can be installed on the same computer.

However, while SQL Anywhere 9 and SQL Anywhere 11 can be installed on the same computer, they cannot run at the same time.

More specifically, if SIMATIC Step 7 and VibroSight are both installed, certain administrative tasks, such as all user operations and system operations involving the creation, copying and updating of databases, may not work correctly. If this behaviour is seen, the recommended workaround is to manually change or remove the SQLANY environmental variable in order to allow VibroSight to work correctly.

Note: The SQLANY environment variable is used to contain the directory where Sybase SQL Anywhere is installed.

NOTE: It is recommended to install and use VibroSight 3.x.x or earlier on a computer that does not have SIMATIC Step 7 software installed.

5.1.8 Dell Backup and Recovery software

Some Dell™ computers running versions of Dell Backup and Recovery software can experience problems running the VibroSight software, characterised by the VibroSight software not running or running incorrectly. This is because the Dell Backup and Recovery software can use a version of SQLite and associated libraries (DLLs) that prevent the VibroSight Host Service from running correctly.

For example, VibroSight clients can stop running (crash), VibroSight clients can be unable to connect to data sources and/or VibroSight System manager may not display all of the commands expected to be available in the Actions window.

If this behaviour is seen, the recommended workaround is to uninstall the Dell Backup and Recovery software.

NOTE: It is recommended to install and use VibroSight 3.x.x or earlier on a computer that does not have Dell Backup and Recovery software installed.

5.1.9 MatrikonOPC software

Both MatrikonOPC™ software and the VibroSight software can be installed and run on the same computer.

However, if the MatrikonOPC software is installed after the VibroSight software, this can result in problems related to credentials (access rights). These problems are typically characterised by an unhandled exception in VibroSight Configurator when trying to configure an OPC device in the Hardware view or an unhandled exception in a VibroSight Server when trying to handle/process OPC data.

MatrikonOPC software and the VibroSight software must be installed on the same computer in the following order:

1. Install the MatrikonOPC software.
2. Install the Microsoft Visual C++ Redistributable Package for Visual Studio 2010 (version 40219).
Note: This redistributable package is required by the MatrikonOPC software.
3. Install the Microsoft Visual C++ Redistributable Package for Visual Studio 2015 (version 23026 or later). Note: This redistributable package is required by the VibroSight software.
4. Install VibroSight 3.x.x.

5.2 VM600 cards

5.2.1 Firmware

There are firmware updates for some VM600 cards corresponding to VibroSight 3.4.0.

The latest firmware for the CPUR is now:

- Base System: base-system-640-014-001-002.tgz
- Applications: applications-640-015-001-002.tgz.

The latest firmware for the XMC16, XMV16 and XMVS16 remains:

- Base System: base-system-640-003-001-016.tgz
- Applications: applications-640-010-001-016.tgz.

Therefore, for current versions of VM600 CPUR cards, firmware upgrades are strongly recommended.

Improvements to this latest VM600 CPUR firmware includes a fix for a known time counter wraparound (overflow) issue. Refer to the '*VM600 CPUx time counter wraparound (overflow)*' service bulletin (CPUx-001) for further information.

NOTE: In order to run VibroSight 3.4.0 for machinery monitoring systems containing VM600 CPUR cards, a firmware upgrade to the latest version of CPUR firmware is strongly recommended.

5.3 VibroSmart devices

5.3.1 Firmware

There are firmware updates for some VibroSmart modules and devices corresponding to VibroSight 3.4.0.

The latest firmware for the VSI010 module remains:

- 642-002-000-009.xmsifw.

The latest firmware for the VSN010 device remains:

- 642-004-000-011.redboxfw.

Therefore, for current versions of VibroSmart VSI010 and VSN010 devices, firmware upgrades are not required.

The latest firmware for the VSV30x module is now:

- 642-001-000-015.xtranfw.

Improvements to this latest VibroSmart VSV30x firmware include support for hydro-air-gap monitoring (see 2.11 VSV30x modules: Support for hydro air-gap monitoring).

NOTE: In order to run VibroSight 3.4.0 for machinery monitoring systems containing VibroSmart VSV30x modules, a firmware upgrade to the latest version of VSV30x firmware is required.

6 Upgrade procedure

This section describes the procedure for upgrading a VibroSight system from a previous version. Perform the steps in the given sequence in order to complete a system upgrade.

NOTE: It is strongly recommended to verify the version of firmware running in the related hardware (XMx16 cards and VibroSmart modules and devices) before starting a VibroSight system upgrade, in order to establish if any firmware updates are also required.
See 6.2.3 Updating the firmware using VibroSight System Manager.

NOTE: It is strongly recommended to ensure that a copy of the configuration for a VibroSmart is available before updating the firmware of any of the VibroSmart modules used in the distributed monitoring system. See 6.2.3 Updating the firmware using VibroSight System Manager.

6.1 VibroSight software user settings

The VibroSight Software generates and uses some files on the storage device of the computer running VibroSight to keep track of user-configurable settings, so that these settings are remembered and applied for the VibroSight installation.

These settings files have an `.xmssettings` file name extension and on a computer running Windows 7, can be found here:

C:\Users*username*\AppData\Roaming\Meggitt\VibroSight, where *username* is the Windows account name.

For example, the `VibroSightVision.xmssettings` file records the user-configurable default settings for VibroSight Vision, such as default settings for plots.

NOTE: VibroSight software updates and upgrades do not replace these settings files, so:

- For a computer on which VibroSight was previously installed, an update, upgrade or a re-installation of VibroSight will continue to use the previous defaults recorded in the `.xmssettings` files.
- For a computer on which VibroSight was not previously installed, the installation of VibroSight will generate and use new `.xmssettings` files, which use the latest VibroSight software defaults.

If a settings file is deleted for any reason, VibroSight will generate and use a new settings file, which uses the latest VibroSight software defaults.

6.2 Updating VibroSight-compatible hardware

Appropriate files and tools are included in the installation package to allow VM600 cards (XMx16) and VibroSmart devices (VSI010, VSN010 and VSV30x) to be updated to the latest firmware, in order to take advantage of improvements to the VibroSight software.

Updating the firmware VM600 cards or VibroSmart devices is a special task that can, if used unintentionally or incorrectly, lead to malfunctioning of the device and affect proper function of data acquisition.

During the firmware update of a device, the card or module being updated cannot provide its normal machinery monitoring functions because its outputs (alarms and relays) can go to undetermined states, irrespective of how they have been configured.

For VibroSmart modules, the machinery being monitored is not protected for the duration of a firmware update and the restart (reboot) that is triggered automatically after the firmware update (which can take up to 5 minutes).

NOTE: It is highly recommended that firmware updates are only performed in accordance with the operating procedures for the machinery being monitored and that appropriate precautions are taken at the control system level (such as DCS or PLC).

For example, alarms and relay outputs should be ignored (bypassed or inhibited) in order to avoid false trips of the machinery being monitored.

6.2.1 VM600 card firmware

The latest VM600 card firmware files are copied to a directory on your computer as part of the VibroSight software installation process.

NOTE: For example, the default firmware directory for VM600 cards is:
`C:\Program Files\Meggitt\VibroSight\Firmware\VM600`

The firmware files for a VM600 card can be found in the appropriate subfolder and identified by their .tgz file name extension. For example, the `XMV16` subfolder contains the applications and base system firmware for use by XMV16 cards. Any additional firmware updates received from Meggitt Sensing Systems should also be stored in these directories.

Table 1 shows the compatibility between VibroSight software and VM600 CPUR card hardware (that is, CPUR firmware).

Table 2 shows the compatibility between VibroSight software and VM600 XMx16 card hardware (that is, XMC16, XMV16 and XMVS16 firmware).

NOTE: It is strongly recommended to use the most recent version of the VM600 CPUR firmware and VM600 XMx16 firmware that is compatible with the version of VibroSight software being used.

Table 1: VibroSight software and VM600 CPUR firmware compatibility

VibroSight software version CD part number	VM600 CPUR firmware. See note 1	
	Base-system (*.tgz)	
	640-014-001-001	640-014-001-002
	Applications (*.tgz)	
	640-015-001-001	640-015-001-002
2.12.7 609-004-000-036	✓ See note 2	✓ See note 3
3.0.0 609-004-000-037	✓	✓
3.1.0 609-004-000-038	✓	✓
3.2.0 609-004-000-039	✓	✓
3.3.0 609-004-000-040	✓	✓
3.4.0 609-004-000-041	✓	✓

Notes for Table 1

1. VM600 CPUR firmware is packaged and distributed as a .tgz file (a compressed archive file format) with PNRs such as 640-014-001-xxx for the Base System and 640-015-001-xxx for the (Applications) Firmware. In these PNRs, the xxx-xxx-001-xxx denotes the firmware is packaged in the tgz file format.

After the .tgz file is unpacked by VibroSight System Manager and the firmware is uploaded to a VM600 CPUR card, the dialog box displayed by the VibroSight System Manager's Change Firmware command shows the current version of firmware using PNRs such as 640-014-000-xxx for the Base System and 640-015-000-xxx for the Firmware, which correspond to the actual unpacked firmware that is running on the card.

2. This is the first official release of VM600 CPUR firmware and includes features such as the management of XMx16 card configurations for applications such as control systems and the implementation of the PROFIBUS protocol for the fieldbus interfaces. A firmware upgrade is required in order to run VibroSight 2.12.7 or later.

3. This version of VM600 CPUR firmware includes a fix for a known time counter wraparound (overflow) issue. A firmware upgrade is strongly recommended in order to run VibroSight 3.4.0 or later.

Table 2: VibroSight software and VM600 XMx16 firmware compatibility

		VM600 XMx16 firmware. See note 1				
VibroSight software version	Base-system (*.tgz)					
	640-003-001-011	640-003-001-012	640-003-001-013	640-003-001-014	640-003-001-016	
	Applications (*.tgz)					
CD part number	640-010-001-010	640-010-001-011	640-010-001-012	640-010-001-013	640-010-001-014	640-010-001-016
2.12.0 609-004-000-027	✓ See note 2					
2.12.1 609-004-000-028		✓ See note 3				
2.12.2 609-004-000-029		✓				
2.12.3 609-004-000-030		✓				
2.12.4 609-004-000-032		✓				
2.12.5 609-004-000-033		✓	✓ See note 4			
2.12.6 609-004-000-034		✓	✓			
2.12.7 609-004-000-036				✓ See note 5		
3.0.0 609-004-000-037					✓ See note 6	
3.1.0 609-004-000-038					✓	
3.2.0 609-004-000-039					✓	
3.3.0 609-004-000-040						✓ See note 7
3.4.0 609-004-000-041						✓

Notes for Table 2 (see the next page)

Notes for Table 2

1. VM600 XMx16 firmware is packaged and distributed as a *.tgz* file (a compressed archive file format) with PNRs such as *640-003-001-xxx* for the Base System and *640-010-001-xxx* for the (Applications) Firmware. In these PNRs, the *xxx-xxx-001-xxx* denotes the firmware is packaged in the *tgz* file format.

After the *.tgz* file is unpacked by VibroSight System Manager and the firmware is uploaded to a VM600 XMx16 card, the dialog box displayed by the VibroSight System Manager's Change Firmware command shows the current version of firmware using PNRs such as *640-010-000-xxx* for the Firmware and *640-003-000-xxx* for the Base System, which correspond to the actual unpacked firmware that is running on the card.

2. This version of VM600 XMx16 firmware introduces support for hydro air-gap monitoring.

3. This version of VM600 XMx16 firmware introduces support for 1 s time-boxed peak-hold processing (that is, spectral data aggregation).

4. This version of VM600 XMx16 firmware implements improved multi-rate digital resamplers (sample rate converters). A firmware upgrade is recommended but not required in order to run VibroSight 2.12.5 or 2.12.6.

5. This version of VM600 XMx16 firmware improves support for faster live data: 100 ms card update rate and up to 100 ms VibroSight Vision refresh rate. It also allows a VM600 XMx16 card to be managed by a VM600 CPUR card ("rack controller"), eliminating the XMx16 card's requirement for a VibroSight Server. A firmware upgrade is required in order to run VibroSight 2.12.7.

6. This version of VM600 XMx16 firmware adds support for customer-specific functionality that is enabled by a customer-specific VibroSight software licence. A firmware upgrade is required in order to run VibroSight 3.0.0 or later.

7. This version of VM600 XMx16 firmware includes relaxed constraints for dynamic data retention time, that is, optimised memory to reduce the possibility of missing data in data intensive VibroSight applications running on less powerful computers. A firmware upgrade is required in order to run VibroSight 3.3.0 or later.

6.2.2 VibroSmart device firmware

The latest VibroSmart device firmware files are copied to a directory on your computer as part of the VibroSight software installation process.

NOTE: The default firmware directory for VibroSmart devices is:
`C:\Program Files\Meggitt\VibroSight\Firmware\VibroSmart`

The firmware files for a VibroSmart device can be found in the appropriate subfolder and identified by their *.fw file name extension. For example, the VSV30x subfolder contains the firmware for use by VSV30x modules. Any additional firmware updates received from Meggitt Sensing Systems should also be stored in these directories.

Table 3 shows the compatibility between VibroSight software and the VibroSmart VSI010 firmware.

Table 4 shows the compatibility between VibroSight software and the VibroSmart VSN010 firmware.

Table 5 shows the compatibility between VibroSight software and the VibroSmart VSV30x firmware.

NOTE: It is strongly recommended to use the most recent version of the VibroSmart firmware that is compatible with the version of VibroSight software being used.

Table 3: VibroSight software and VibroSmart VSI010 firmware compatibility

VibroSight software version CD part number	VSI010 firmware (*.xmsifw). See note 1			
	642-002-000-006	642-002-000-007	642-002-000-008	642-002-000-009
2.12.0 609-004-000-027	✓ See note 2			
2.12.1 609-004-000-028		✓ See note 2		
2.12.2 609-004-000-029		✓		
2.12.3 609-004-000-030			✓ See note 2	
2.12.4 609-004-000-032			✓	
2.12.5 609-004-000-033			✓	
2.12.6 609-004-000-034				✓ See note 2
2.12.7 609-004-000-036				✓
3.0.0 609-004-000-037				✓
3.1.0 609-004-000-038				✓
3.2.0 609-004-000-039				✓
3.3.0 609-004-000-040				✓
3.4.0 609-004-000-041				✓

Notes for Table 3

1. VibroSmart VSI010 firmware is distributed as a single *.xmsifw* file (a proprietary file format) with a PNR such as *642-xxx-000-xxx*. In these PNRs, the *xxx-xxx-000-xxx* denotes that the firmware is not packaged (compressed or archived). VibroSight System Manager always uses and displays information about VibroSmart device firmware using PNRs such as *642-xxx-000-xxx*, which correspond to the actual firmware that is running on the device.

2. Updating to this version of VibroSmart VSI010 firmware requires a specific process:

Notes:

For a VibroSmart consisting of different types of device, the devices should be updated in the following order: first VSN010 real-time Ethernet switches, then VSV30x vibration monitoring modules and finally VSI010 communications interface modules. In addition, VibroSight System Manager should be exited (closed) and restarted after updating the firmware for each type of device, before continuing. And after updating the firmware, the configuration on the VibroSmart devices should be re-applied (re-activated) and the VibroSmart devices should be restarted.

Procedure:

(1) Ensure that a copy of the configuration for the VibroSmart is available before updating any device firmware. For example, using the currently installed version of VibroSight (that is, before any updates to the VibroSight software corresponding to updates to VibroSmart devices), VibroSight Configurator can be used to obtain a copy of the configuration as follows:

- For a VibroSmart using a VibroSight Server, the **File > Open > Server / Database** command can be used to read the configuration from the VibroSight Server.
- For a VibroSmart not using a VibroSight Server (that is, a “stand-alone” VibroSmart), the **File > Open > Device** command can be used to read the configuration directly from the VibroSmart modules.

Then the **File > Save As > File** command can be used to store a copy of the configuration for the VibroSmart.

(2) Start VibroSight System Manager, select the device or devices of the same type to be updated (for example, VSI010 modules) and run the Change Firmware command.

When updating multiple VibroSmart devices of the same type to use the same firmware, CTRL+click or SHIFT+click can be used to select multiple devices in the Devices tree structure of the System Explorer window. This way, when the Change Firmware command is run, all of devices that were selected will be updated at the same time. Otherwise, each device must be selected and updated individually.

(3) When the VibroSmart Module(s) Firmware Upgrade window displays a “Firmware upgrade terminated. The firmware has been upgraded successfully ...” message, click the **Finish** button to continue.

If after 10 minutes, the VibroSmart Module(s) Firmware Upgrade window does not display a successful message, click the **Cancel** button to close the window and continue.

Then exit (close) VibroSight System Manager.

(4) Restart VibroSight System Manager and verify that the correct version of firmware is reported for each device that was updated. (When a device is selected in the System Explorer window, this information is available in the main window (centre) under Module PNR. It is also available in the VibroSmart Module(s) Firmware Upgrade window when a device is selected and the Change Firmware command is run).

If a device does not report the correct version of firmware, rerun the Change Firmware command for this device.

Then exit (close) VibroSight System Manager.

(5) Repeat steps (2), (3) and (4) for each type of device to be updated (for example, VSN010 and VSV30x modules).

(6) Start VibroSight Configurator, open the configuration for the VibroSmart (see step (1)), then apply (activate) the configuration. (If required, VibroSight Configurator will automatically update the configuration to the latest version and inform the user.)

Then exit (close) VibroSight Configurator.

(7) Turn the power supply to the VibroSmart off and wait for a few seconds. Then turn the power supply back on and verify that the system operates as expected.

During this firmware update process, the behaviour of the LEDs on the front panel of the VibroSmart devices can be inconsistent and should be ignored. Normal LED behaviour resumes after the firmware update is complete (after step (7)).

Table 4: VibroSight software and VibroSmart VSN010 firmware compatibility

VibroSight software version CD part number	VSN010 firmware (* .redboxfw). See note 1			
	642-004-000-008	642-004-000-009	642-004-000-010	642-004-000-011
2.12.0 609-004-000-027	✓ See note 2			
2.12.1 609-004-000-028		✓ See note 2		
2.12.2 609-004-000-029		✓		
2.12.3 609-004-000-030			✓ See note 2	
2.12.4 609-004-000-032			✓	
2.12.5 609-004-000-033			✓	
2.12.6 609-004-000-034				✓ See note 2
2.12.7 609-004-000-036				✓
3.0.0 609-004-000-037				✓
3.1.0 609-004-000-038				✓
3.2.0 609-004-000-039				✓
3.3.0 609-004-000-040				✓
3.4.0 609-004-000-041				✓

Notes for Table 4

1. VibroSmart VSN010 firmware is distributed as a single *.redboxfw* file (a proprietary file format) with a PNR such as 642-xxx-000-xxx. In these PNRs, the xxx-xxx-000-xxx denotes that the firmware is not packaged (compressed or archived). VibroSight System Manager always uses and displays information about VibroSmart device firmware using PNRs such as 642-xxx-000-xxx, which correspond to the actual firmware that is running on the device.

2. Updating to this version of VibroSmart VSN010 firmware requires a specific process:

Notes:

For a VibroSmart consisting of different types of device, the devices should be updated in the following order: first VSN010 real-time Ethernet switches, then VSV30x vibration monitoring modules and finally VSI010 communications interface modules. In addition, VibroSight System Manager should be exited (closed) and restarted after updating the firmware for each type of device, before continuing. And after updating the firmware, the configuration on the VibroSmart devices should be re-applied (re-activated) and the VibroSmart devices should be restarted.

Procedure:

(1) Ensure that a copy of the configuration for the VibroSmart is available before updating any device firmware. For example, using the currently installed version of VibroSight (that is, before any updates to the VibroSight software corresponding to updates to VibroSmart devices), VibroSight Configurator can be used to obtain a copy of the configuration as follows:

- For a VibroSmart using a VibroSight Server, the **File > Open > Server / Database** command can be used to read the configuration from the VibroSight Server.
- For a VibroSmart not using a VibroSight Server (that is, a “stand-alone” VibroSmart), the **File > Open > Device** command can be used to read the configuration directly from the VibroSmart modules.

Then the **File > Save As > File** command can be used to store a copy of the configuration for the VibroSmart.

(2) Start VibroSight System Manager, select the device or devices of the same type to be updated (for example, VSN010 modules) and run the Change Firmware command.

When updating multiple VibroSmart devices of the same type to use the same firmware, CTRL+click or SHIFT+click can be used to select multiple devices in the Devices tree structure of the System Explorer window. This way, when the Change Firmware command is run, all of devices that were selected will be updated at the same time. Otherwise, each device must be selected and updated individually.

(3) When the VibroSmart Module(s) Firmware Upgrade window displays a “Firmware upgrade terminated. The firmware has been upgraded successfully ...” message, click the **Finish** button to continue.

If after 10 minutes, the VibroSmart Module(s) Firmware Upgrade window does not display a successful message, click the **Cancel** button to close the window and continue.

Then exit (close) VibroSight System Manager.

(4) Restart VibroSight System Manager and verify that the correct version of firmware is reported for each device that was updated. (When a device is selected in the System Explorer window, this information is available in the main window (centre) under Module PNR. It is also available in the VibroSmart Module(s) Firmware Upgrade window when a device is selected and the Change Firmware command is run).

If a device does not report the correct version of firmware, rerun the Change Firmware command for this device.

Then exit (close) VibroSight System Manager.

(5) Repeat steps (2), (3) and (4) for each type of device to be updated (for example, VSI010 and VSV30x modules).

(6) Start VibroSight Configurator, open the configuration for the VibroSmart (see step (1)), then apply (activate) the configuration. (If required, VibroSight Configurator will automatically update the configuration to the latest version and inform the user.)

Then exit (close) VibroSight Configurator.

(7) Turn the power supply to the VibroSmart off and wait for a few seconds. Then turn the power supply back on and verify that the system operates as expected.

During this firmware update process, the behaviour of the LEDs on the front panel of the VibroSmart devices can be inconsistent and should be ignored. Normal LED behaviour resumes after the firmware update is complete (after step (7)).

Table 5: VibroSight software and VibroSmart VSV30x firmware compatibility

VibroSight software version CD part number	VSV30x firmware (* .xtranfw). See note 1					
	642-001-000-010	642-001-000-011	642-001-000-012	642-001-000-013	642-001-000-014	642-001-000-015
2.12.0 609-004-000-027	✓ See note 2					
2.12.1 609-004-000-028		✓ See note 2				
2.12.2 609-004-000-029		✓				
2.12.3 609-004-000-030			✓ See note 2			
2.12.4 609-004-000-032			✓			
2.12.5 609-004-000-033			✓	✓ See note 2		
2.12.6 609-004-000-034			✓	✓	✓ See note 2	
2.12.7 609-004-000-036			✓	✓	✓	
3.0.0 609-004-000-037			✓	✓	✓	
3.1.0 609-004-000-038			✓	✓	✓	
3.2.0 609-004-000-039			✓	✓	✓	
3.3.0 609-004-000-040			✓	✓	✓	
3.4.0 609-004-000-041						✓ See notes 2 and 3

Notes for Table 5

1. VibroSmart VSV30x firmware is distributed as a single *.xtranfw* file (a proprietary file format) with a PNR such as *642-xxx-000-xxx*. In these PNRs, the *xxx-xxx-000-xxx* denotes that the firmware is not packaged (compressed or archived). VibroSight System Manager always uses and displays information about VibroSmart device firmware using PNRs such as *642-xxx-000-xxx*, which correspond to the actual firmware that is running on the device.

2. Updating to this version of VibroSmart VSV30x firmware requires a specific process:

Notes:

For a VibroSmart consisting of different types of device, the devices should be updated in the following order: first VSN010 real-time Ethernet switches, then VSV30x vibration monitoring modules and finally VSI010 communications interface modules. In addition, VibroSight System Manager should be exited (closed) and restarted after updating the firmware for each type of device, before continuing. And after updating the firmware, the configuration on the VibroSmart devices should be re-applied (re-activated) and the VibroSmart devices should be restarted.

Procedure:

(1) Ensure that a copy of the configuration for the VibroSmart is available before updating any device firmware. For example, using the currently installed version of VibroSight (that is, before any updates to the VibroSight software corresponding to updates to VibroSmart devices), VibroSight Configurator can be used to obtain a copy of the configuration as follows:

- For a VibroSmart using a VibroSight Server, the **File > Open > Server / Database** command can be used to read the configuration from the VibroSight Server.
- For a VibroSmart not using a VibroSight Server (that is, a “stand-alone” VibroSmart), the **File > Open > Device** command can be used to read the configuration directly from the VibroSmart modules.

Then the **File > Save As > File** command can be used to store a copy of the configuration for the VibroSmart.

(2) Start VibroSight System Manager, select the device or devices of the same type to be updated (for example, VSV30x modules) and run the Change Firmware command.

When updating multiple VibroSmart devices of the same type to use the same firmware, CTRL+click or SHIFT+click can be used to select multiple devices in the Devices tree structure of the System Explorer window. This way, when the Change Firmware command is run, all of devices that were selected will be updated at the same time. Otherwise, each device must be selected and updated individually.

(3) When the VibroSmart Module(s) Firmware Upgrade window displays a “Firmware upgrade terminated. The firmware has been upgraded successfully ...” message, click the **Finish** button to continue.

If after 10 minutes, the VibroSmart Module(s) Firmware Upgrade window does not display a successful message, click the **Cancel** button to close the window and continue.

Then exit (close) VibroSight System Manager.

(4) Restart VibroSight System Manager and verify that the correct version of firmware is reported for each device that was updated. (When a device is selected in the System Explorer window, this information is available in the main window (centre) under Module PNR. It is also available in the VibroSmart Module(s) Firmware Upgrade window when a device is selected and the Change Firmware command is run).

If a device does not report the correct version of firmware, rerun the Change Firmware command for this device.

Then exit (close) VibroSight System Manager.

(5) Repeat steps (2), (3) and (4) for each type of device to be updated (for example, VSI010 and VSN010 modules).

(6) Start VibroSight Configurator, open the configuration for the VibroSmart (see step (1)), then apply (activate) the configuration. (If required, VibroSight Configurator will automatically update the configuration to the latest version and inform the user.)

Then exit (close) VibroSight Configurator.

(7) Turn the power supply to the VibroSmart off and wait for a few seconds. Then turn the power supply back on and verify that the system operates as expected.

During this firmware update process, the behaviour of the LEDs on the front panel of the VibroSmart devices can be inconsistent and should be ignored. Normal LED behaviour resumes after the firmware update is complete (after step (7)).

3. This version of VibroSmart VSV30x firmware introduces support for hydro air-gap monitoring.

A firmware upgrade is required in order to run VibroSight 3.4.0.

6.2.3 Updating the firmware using VibroSight System Manager

When performing VibroSight software upgrades, it is strongly recommended to systematically upgrade the firmware of VM600 XMx16 cards and VibroSmart devices to the latest compatible version.

Failure to perform a necessary VibroSight-compatible VM600 card firmware update may lead to incoherent system behaviour and affect the proper functioning of data acquisition in a system. It is only in systems where the firmware running on the XMx16 cards and VibroSmart devices already corresponds to the latest available version that no firmware update is required. Therefore, it is strongly recommended to verify the version of firmware running on the hardware before starting a VibroSight system upgrade, in order to establish if a firmware update is also required.

NOTE: Changing the firmware of the VibroSight hardware is a special administrative task that can – if performed unintentionally – affect the proper functioning of data acquisition in a system.

It is therefore strongly recommended to change the firmware of the VibroSight hardware only when it is necessary. For example, when the devices must be updated to be compatible with a VibroSight software upgrade.

For VibroSmart modules, each module can be selected and its firmware updated individually. Alternatively, multiple modules of the same type (for example, VSV3x0) can be updated to the same version of firmware at the same time.


NOTE: It is strongly recommended to ensure that a copy of the configuration for a VibroSmart is available before updating the firmware of any of the VibroSmart modules used in the distributed monitoring system.

For example, using the currently installed version of VibroSight (that is, before any updates to the VibroSight software corresponding to updates to VibroSmart modules), VibroSight Configurator should be used to obtain a copy of the configuration as follows:

For a VibroSmart using a VibroSight Server, the **File > Open > Server / Database** command can be used to read the configuration from the VibroSight Server.

For a VibroSmart not using a VibroSight Server (that is, a “stand-alone” VibroSmart), the **File > Open > Device** command can be used to read the configuration directly from the VibroSmart modules.

Then the **File > Save As > File** command should be used to store a copy of the configuration for the VibroSmart distributed monitoring system.

Update the firmware on a VibroSight device using the  **Change Firmware** tool (from VibroSight System Manager’s **Maintenance** tools):

1. Ensure that the computer running the VibroSight software is on the same network as the hardware (XMx16 card or VibroSmart module or device) to be updated.
2. Start VibroSight System Manager and navigate to the Devices tree structure in the System Explorer window.

The Devices tree lists all of the VibroSight compatible hardware that VibroSight can see on the network. If there are no XMx16 cards or VibroSmart devices in the tree structure or some cards are missing, verify your network connections.

3. Select the card or device that requires its firmware to be changed.

The Actions tool window updates to show the available tools.

To change multiple VibroSmart to use the same version of firmware at the same time, use CTRL+click or SHIFT+click to select multiple devices from the Devices tree-view. (Then, when the Change Firmware command is run, all of the devices that were selected will be updated at the same time.)

4. Click  **Change Firmware** in the Maintenance tools group of the Actions window.

The Change Firmware dialog box appears.

5. Click the **Add** button and select the new firmware files for the card or new firmware file for the device.

NOTE: The Change Firmware dialog box automatically opens the firmware folder corresponding to the VibroSight-compatible VM600 card or VibroSmart device selected.


.tgz files are for VM600 cards and *.fw files are for VibroSmart devices.

6. Click the **Finish** button to start the firmware upgrade process.


For XMx16 cards and VibroSmart devices, the firmware upgrade process can take up to 5 minutes, during which:


- The IP address beside the device's serial number in the Devices tree structure can disappear.
- The LEDs on the front panel of the device can change to reflect the status of the upgrade.

7. Repeat steps 3 to 6 for each device that requires a firmware update.

NOTE: Although the firmware for each VibroSight device must be changed individually using the  **Change Firmware** tool, as each device updates its firmware independently of the VibroSight software (once the process has started), firmware updates can be performed on several devices in parallel.

8. After the firmware upgrade, verify that the VibroSight system is acquiring data from the cards.

NOTE: Refer also to the *Changing the firmware* topics in the  *VibroSight* help.

The  **Change Firmware** tool can be used to load a VibroSight device with any version of firmware. It is therefore possible to change a device's firmware to any previously available version, as well as the latest update.

This feature can be useful in certain situations, for example, swapping spare VibroSight hardware between different VM600 racks or VibroSmart distributed monitoring systems, where systems are operating with different versions of VibroSight.

6.3 Final checks

After upgrading the VibroSight software, the following checks are recommended to ensure that VibroSight has not been inadvertently modified and that it continues to operate as expected:

- Use VibroSight Configurator to run a consistency check on the configuration in order to ensure that the configuration has not been modified by any changes to the VibroSight software, internal database structure and firmware for the hardware (VM600 cards and VibroSmart modules).
- Use the VibroSight Server window to check that the data acquisition, data post-processing and data logging settings are as expected.
In VibroSight Server, under **Device drivers**, use the appropriate controls to enable communications with the VibroSight-compatible hardware, and under **Server features**, use the appropriate controls to enable the required post processing, for example, data logging.

7 Customer support

7.1 Contacting us

Meggitt Sensing Systems worldwide customer support network offers a range of support including Technical support and Sales and repairs support. For customer support, please contact your local Meggitt Sensing Systems representative. Alternatively, contact our main office:

Customer support
Meggitt SA
Route de Moncor 4
PO Box 1616
1701 Fribourg
Switzerland

Telephone: +41 (0) 26 407 11 11
Email: energysupport@ch.meggitt.com
Web: www.meggittsensing.com/energy

7.2 Technical support

Meggitt Sensing Systems technical support team provide both pre-sales and post-sales technical support, including:

- General advice
- Technical advice
- Troubleshooting
- Site visits.

7.3 Sales and repairs support

Meggitt Sensing Systems sales team provide both pre-sales and post-sales support, including advice on:

- New products
- Spare parts
- Repairs.

Appendix

VibroSight software and Windows operating system compatibility

	Windows 7	Windows 8.1	Windows 10
VibroSight software compatible?	Yes (but not recommended for new installations as Microsoft support for Windows 7 ends in January 2020).	Yes	Yes

VibroSight software and Windows Server operating system compatibility

	Windows Server 2008 R2	Windows Server 2012	Windows Server 2016
VibroSight software compatible?	Yes (but not recommended for new installations as Microsoft support for Windows Server 2008 R2 ends in January 2020)	Yes	Yes

VibroSight software and Microsoft .NET Framework requirements

VibroSight software version	Microsoft .NET Framework requirements
VibroSight 3.4.0 or later	.NET Framework 4.7.1 ^{See note 1}
VibroSight 3.0.0 or later	.NET Framework 4.6
VibroSight 2.12.0 or later	.NET Framework 4.5 and .NET Framework 2.0 ^{See note 2}
VibroSight 2.9.4 or later	.NET Framework 4.5
VibroSight 2.9.3 and 2.9.2	.NET Framework 4 (Standalone Installer)
VibroSight 2.9.1 or earlier	.NET Framework 3.5 SP1

Notes

1. Microsoft .NET Framework 4.7.1 replaces .NET Framework versions 4.0 to 4.7.

2. Since Microsoft .NET Framework 3.5 also includes .NET Framework 2.0 and .NET Framework 3.0, installing Microsoft .NET Framework 3.5 SP1 is the recommended solution for most computers (rather than installing Microsoft .NET Framework 2.0).