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RELEASE NOTES

vibro-meter®

VibroSight® software version 7.7

VibroSight
Machinery Protection & Condition Monitoring Software

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REVISION RECORD SHEET

SW version / RN edition	Date of issue	Written and modified by	Description	Signature
7.7.0 / 1	28.03.2025	Peter Ward	This document corresponds to VibroSight version 7.7.0.	PW

	Department	Name	Date	Signature
Technical content approved by	Product Management	Alfonso Fernandez	28.03.2025	AF
	Software Engineering	Julien Grossrieder	---	---
Document released by	Technical Publications	Peter Ward	28.03.2025	PW

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PREFACE

About these release notes

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

- VibroSight software version 7.7.0
  (part numbers (PNRs) software license: 608-001-000-001/Codes
  and software: 609-010-000-001 on physical media (USB device (flash drive/key))).

This document contains information about changes to the software since the previously released version (VibroSight 7.6.x), 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 machinery protection system (MPS) and/or condition monitoring system (CMS), refer to the following Parker Meggitt documentation:

VibroSight® software data sheet
(document reference 660-020-005-228A)

Getting started with VibroSight® installation guide
(document reference 660-010-006-237A)

VibroSight® help

VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring module data sheet
(document reference 268-121)

VM600^{Mk2} RLC16^{Mk2} relay module data sheet
(document reference 268-125)

VM600^{Mk2} CPUM^{Mk2} + IOCN^{Mk2} rack controller and communications interface module data sheet
(document reference 268-135)

VM600^{Mk2}/VM600 XMx16 + XIO16T extended condition monitoring modules data sheet
(document reference 660-020-010-213A)

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 7.6.0 (document reference 660-010-013-239A)
- VibroSight 7.5.0 (document reference 660-010-013-238A)
- VibroSight 7.4.0 (document reference 660-010-013-237A)

- VibroSight 7.3.0 (document reference 660-010-013-236A)
- VibroSight 7.2.0 (document reference 660-010-013-235A)
- VibroSight 7.1.0 (document reference 660-010-013-234A)
- VibroSight 7.0.0 (document reference 660-010-013-233A)
- VibroSight 6.1.0 (document reference 660-010-013-232A)
- VibroSight 6.0.0 (document reference 660-010-013-231A)
- VibroSight 5.1.0 (document reference 660-010-013-230A)
- VibroSight 5.0.0 (document reference 660-010-013-229A)
- VibroSight 4.1.0 (document reference 660-010-013-228A)
- VibroSight 4.0.0 (document reference 660-010-013-227A)
- VibroSight 3.8.0 (document reference 660-010-013-226A)
- VibroSight 3.7.0 (document reference 660-010-013-225A)
- VibroSight 3.6.0 (document reference 660-010-013-224A)
- VibroSight 3.5.0 (document reference 660-010-013-223A)
- VibroSight 3.4.0 (document reference 660-010-013-222A)
- VibroSight 3.3.0 (document reference 660-010-013-221A)
- VibroSight 3.2.0 (document reference 660-010-013-220A)
- VibroSight 3.1.0 (document reference 660-010-013-219A)
- VibroSight 3.0.0 (document reference 660-010-013-218A)
- VibroSight 2.12.7 (document reference 660-010-013-217A)
- VibroSight 2.12.6 (document reference 660-010-013-216A)
- VibroSight 2.12.5 (document reference 660-010-013-215A)
- VibroSight 2.12.4 (document reference 660-010-013-214A)
- VibroSight 2.12.3 (document reference 660-010-013-213A)
- VibroSight 2.12.2 (document reference 660-010-013-212A)
- VibroSight 2.12.1 (document reference 660-010-013-211A)
- VibroSight 2.12.0 (document reference 660-010-013-210A)
- VibroSight 2.11.6 (document reference 660-010-013-209A)
- VibroSight 2.11.5 (document reference 660-010-013-208A)
- VibroSight 2.11.4 (document reference 660-010-013-207A)
- VibroSight 2.11.3 (document reference 660-010-013-206A)

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

Use of the release notes

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:

- **x**.x.x.x, major release identifier – typically incremented once per year.
- x.**x**.x.x, minor release identifier – incremented for each release with typically four scheduled releases per year.
- x.x.**x**.x, “hotfix” release identifier – 0 for a normally scheduled release and incremented for each hotfix release.
- x.x.x.**x**, software build number – for internal use.

For each scheduled release of VibroSight, at least one of the first two digits changes (**x**.**x**.x.x).
For unscheduled “hotfix” releases, which are occasionally required to solve urgent problems, the third 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 Parker Meggitt (Meggitt SA) products that can be used with the VibroSight® software, the following terminology is used in this document:

- VM600^{Mk2}/VM600 modules/card(s) – to refer to VibroSight compatible cards that are installed in a VM600^{Mk2}/VM600 rack (that is, the first generation of VM600 systems).

  The currently available VM600^{Mk2}/VM600 modules/cards that are designed for operation with the VibroSight software are the XMx16 card pairs (XMC16 / XIO16T, XMV16 / XIO16T and XMVS16 / XIO16T) and the CPUx card pairs (CPUR2/IOCR2 and CPUR/IOCR).

  Note: It is important to note that VibroSight Configurator is still used for the configuration of these VM600^{Mk2}/VM600 modules/cards/systems.

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

  Where CPUx is used in this document, it refers to CPUR2/IOCR2 and CPUR/IOCR cards, unless otherwise stated.

- VM600^{Mk2} module(s) – to refer to VibroSight compatible modules that are installed in a VM600^{Mk2} rack (that is, the second generation of VM600 systems).

  The currently available VM600^{Mk2} modules that are designed for operation with the VibroSight software are the MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring module (standard and SIL versions), the RLC16^{Mk2} relay module and the CPUM^{Mk2} + IOCN^{Mk2} rack controller and communications interface module.

  Note: It is important to note that VibroSight Protect is used for the configuration of VM600^{Mk2} modules/systems.

- VibroSmart® module(s) or VibroSmart® device(s) – to refer to VibroSight compatible VibroSmart modules or devices that are used in a VibroSmart 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.

  Where VSV30x is used in this document, it refers to VSV301 and VSV300 modules, unless otherwise stated.

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1 Licensing

Since VibroSight 4.0.0, the ability to install and run VibroSight software updates and upgrades depends on the purchased “Updates and support” package.

NOTE:	VibroSight 7.7.0 is a minor level release and a new license key file is not required for updates and upgrades from VibroSight 7.x.x. However, a new license key file is required for updates and upgrades from VibroSight 3.8.x or earlier.

For further information on licensing or to obtain a new VibroSight license key file, contact Parker Meggitt (Meggitt SA) customer support. See 7 Customer support.

2 Features

General

2.1 New filtering options in Waveform and Orbit plots

The Waveform and Orbit plots now support enhanced data filtering options, providing users with greater flexibility when visualizing vibration signals.

A new Filtering tab has been added to the Plot Properties dialog, allowing users to define and apply custom filters directly within the plot. Filters can be applied to all data items displayed in the plot and configured using one of two modes: Single frequency filter or Frequency band filter.

1. Single frequency filter

This mode allows the user to specify a single frequency to isolate in the signal.

The frequency can be defined in either Hertz (Hz) or Orders.

Useful for highlighting a specific frequency component of interest.

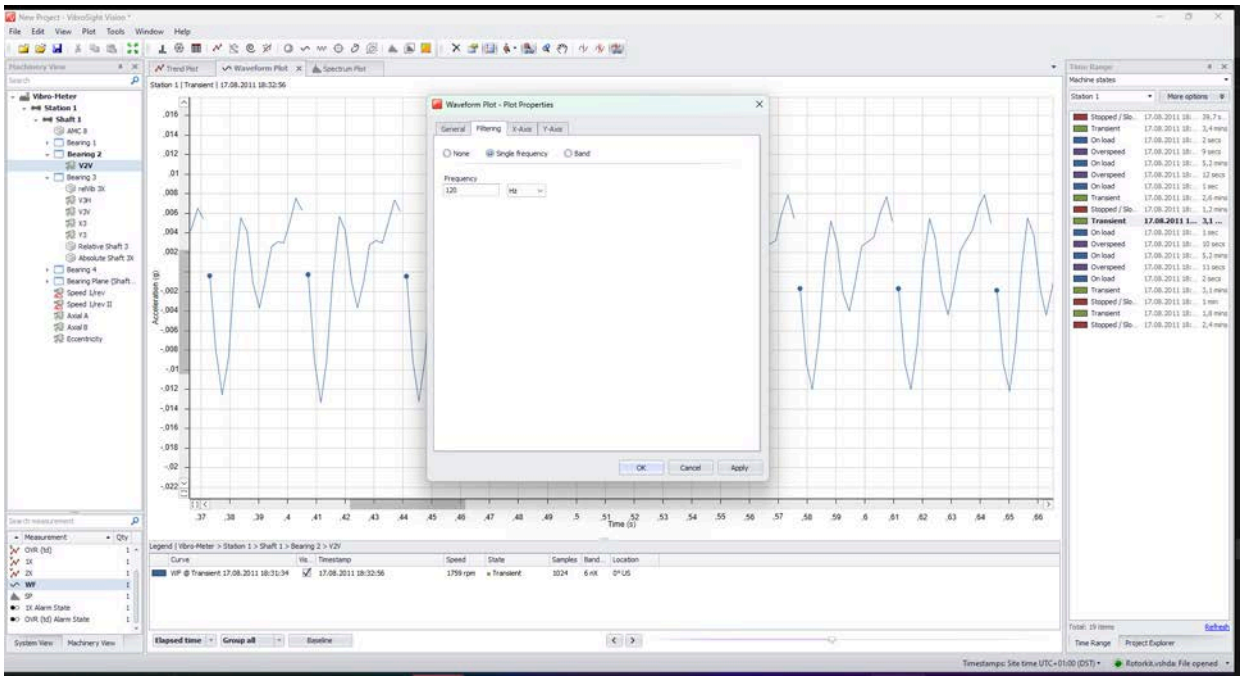

Figure 1: VibroSight Vision single frequency filter screenshot

2. Frequency band filter

This mode enables the configuration of a band-pass filter by specifying both high-pass and low-pass cutoff frequencies.

Each cutoff frequency can be defined independently in Hz or Orders.

Users can enable or disable the high-pass and low-pass components as needed.

A visual frequency response diagram helps illustrate the effect of the selected band configuration.

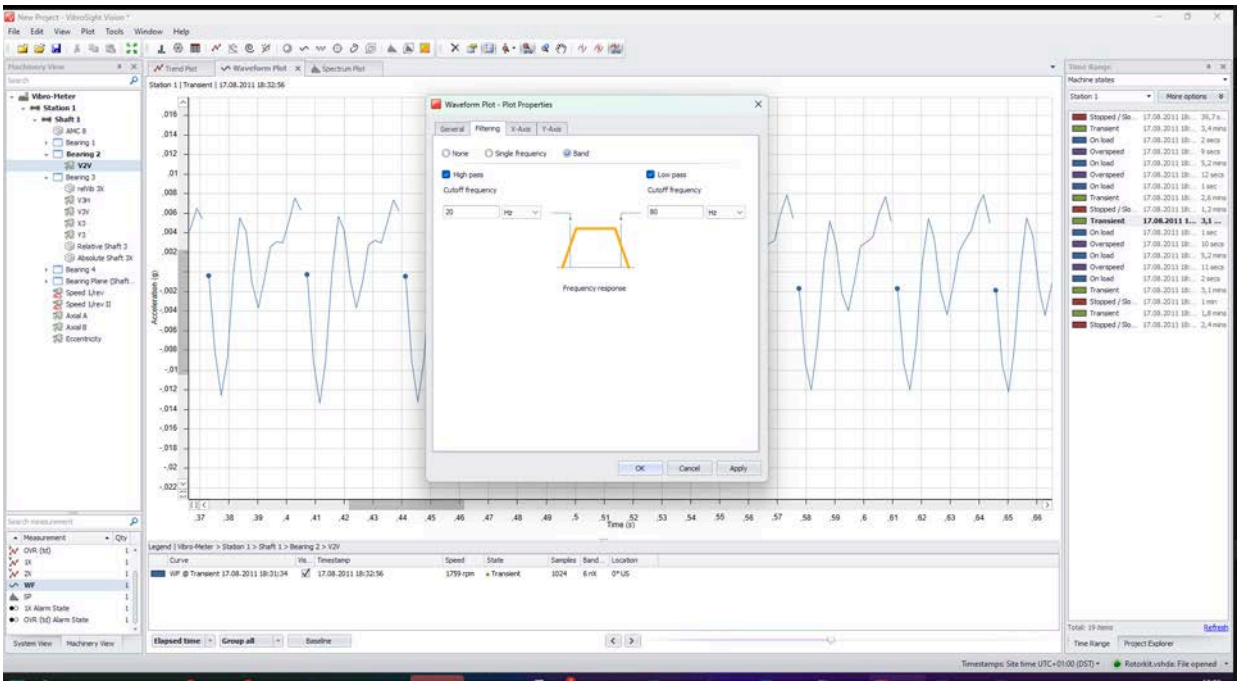

Figure 2: VibroSight Vision Frequency Band Filter screenshot

These filters make it easier to focus on specific frequency ranges or exclude unwanted components during waveform and orbit analysis, enhancing the clarity and relevance of displayed data.

Note: This functionality is currently available for Waveform and Orbit plots. Future versions of VibroSight will extend filtering support to the Corbit and Long Waveform plots.

2.2 Dual-channel reverse rotation processing for VM600^{Mk2} MPC4^{Mk2} modules

A new dual-channel reverse rotation processing block has been added to VibroSight Protect and VibroSight Capture, extending the software's support for reverse rotation detection using two tachometers. This processing is now available for the standard version of the VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring module (that is, reverse rotation processing is not supported by the SIL version of the module).

VibroSight Protect – input channel configuration

The dual channel reverse rotation processing can be configured using the input channel configuration wizard, now available under the Tachometers sensor family:

- A new processing option labeled Reverse rotation has been added to the dual channel processings catalog.
- Users can assign the leading and lagging transducers from auxiliary speed channels.

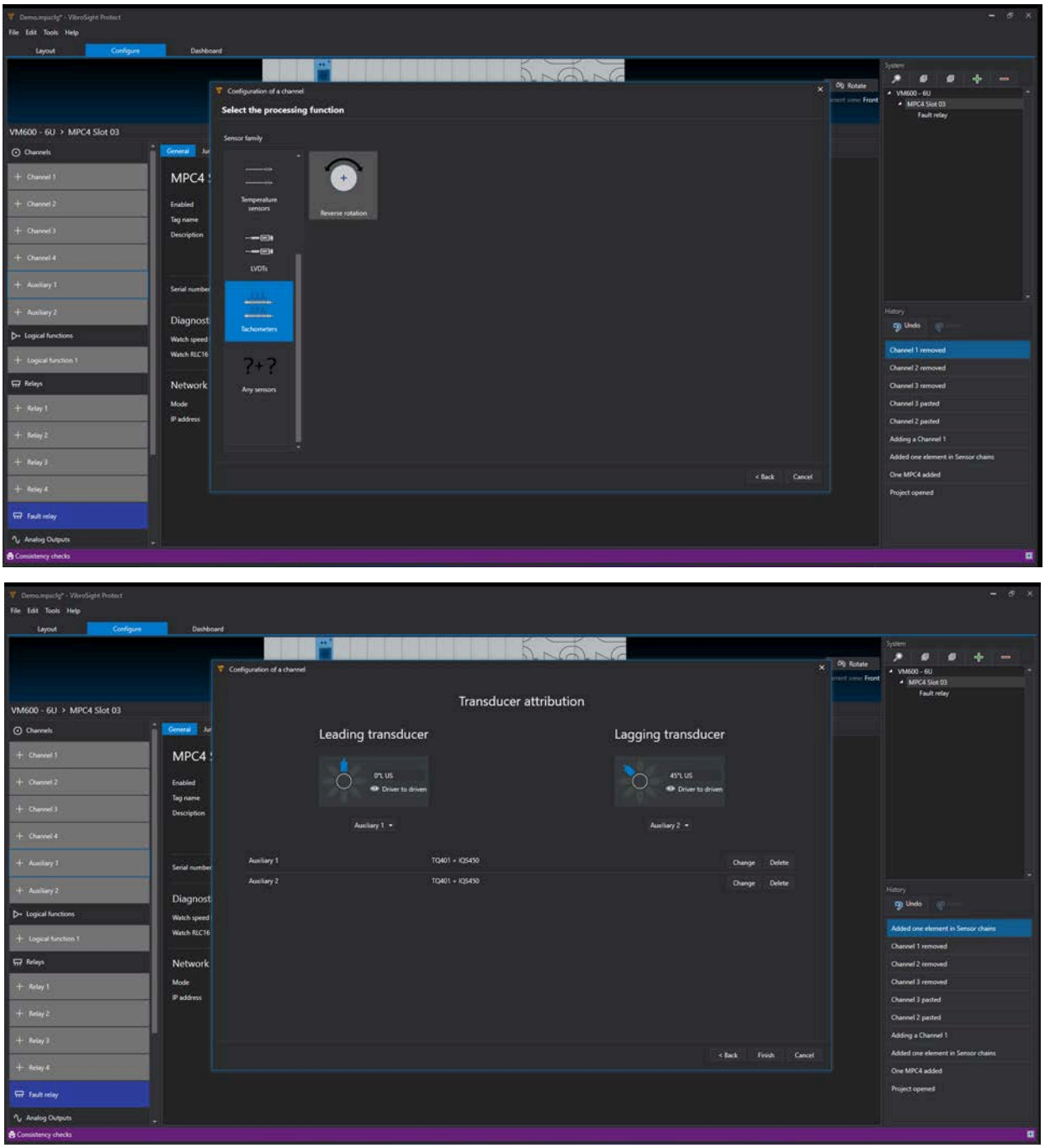

Figure 3: VibroSight Protect reverse rotation processing input channel configuration screenshots

VibroSight Protect – processing configuration

The Processing pane allows full configuration of output measurement names, units, and additional properties:

- Forward speed.
- Reverse speed.
- Reverse peak speed.
    - Tooltip: Holds the maximum speed read in the reverse direction. Reset using the Dashboard peak hold reset button.
- Number of reverse rotations.
    - Tooltip: *A cumulative count of the number of rotations in the reverse direction. Reset using the Dashboard peak hold reset button.*

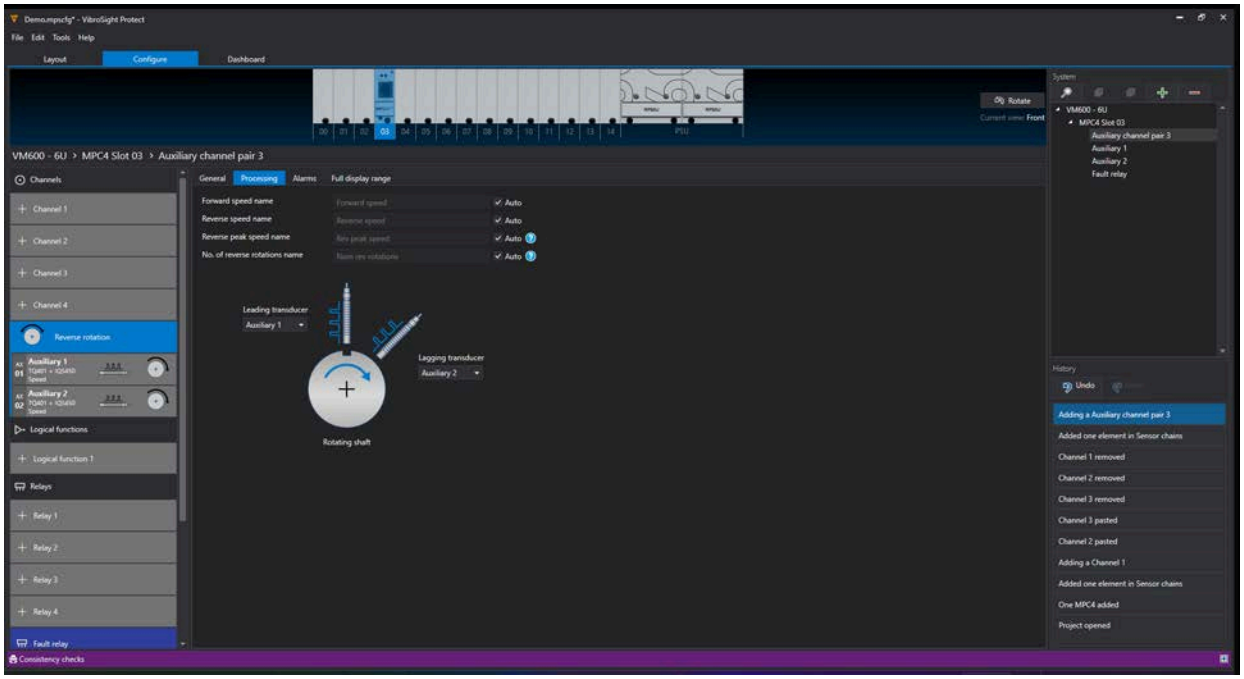

Figure 4: VibroSight Protect reverse rotation processing processing configuration screenshot

VibroSight Protect – Dashboard integration

Each configured dual channel reverse rotation block includes a “Peak hold reset” button on the Dashboard, which resets:

- Reverse peak speed.
- Number of reverse rotations.

The command is sent directly to the VM600^{Mk2} MPC4^{Mk2} module to trigger the reset.

VibroSight Capture – integration with machine train components

In VibroSight Capture, the new processing can be connected to the following machine train components:

- Shaft projection.
- Shaft notch.
- Toothed wheel.

This integration allows accurate modeling and visualization of reverse rotation monitoring across compatible mechanical configurations.

2.3 Modbus TCP server configuration support in VibroSight Capture

The VibroSight Capture module now supports configuration of a Modbus TCP server, enabling integration with third-party systems via the widely used Modbus protocol. This enhancement aligns the VibroSight Capture module with functionality previously available in VibroSight Configurator, offering consistent and flexible server setup across platforms.

New Server creation

Users can create one or multiple Modbus TCP servers under the "Data > Sharing" tab. While multiple servers are supported, only a single server is required for most use cases.

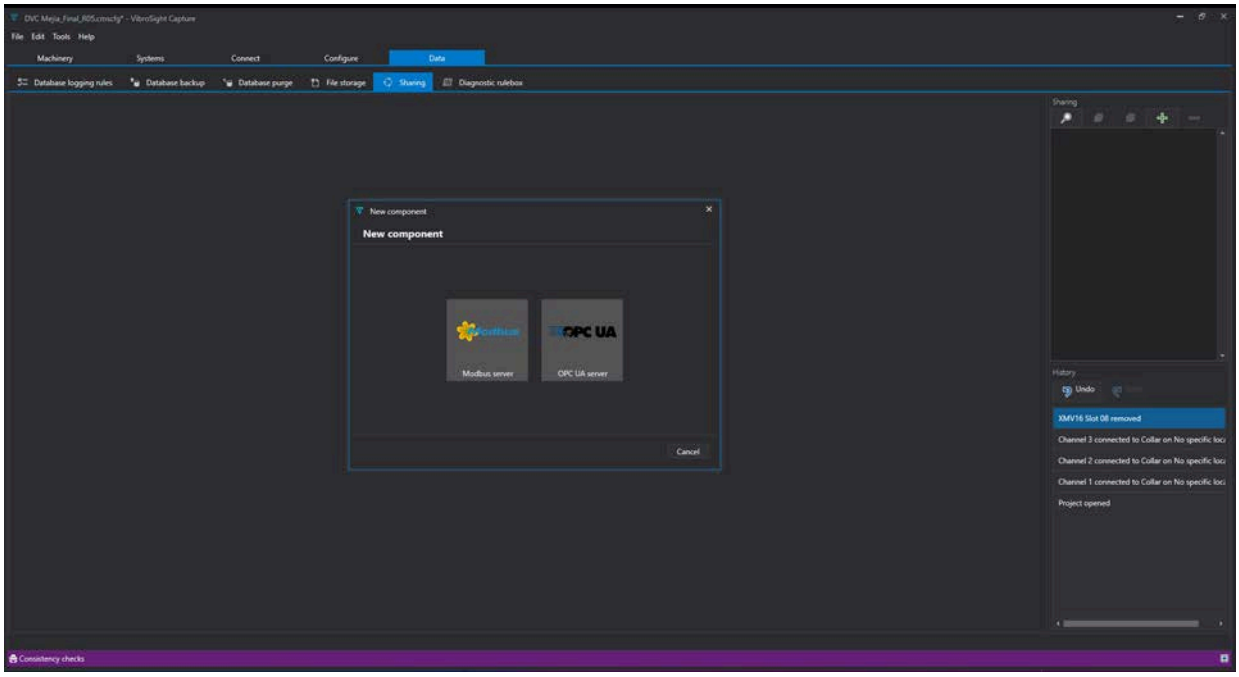

Figure 5: VibroSight Capture Modbus TCP server creation screenshot

Modbus Server configuration pane

The Modbus server configuration pane includes the following general settings:

- Enabled.
- Tag name and Description.
- Output interface (e.g., Any_Tcp502).
- Slave ID.
- Update rate and Data validity.
    - Tooltip for Data validity: "If the Modbus server is requested data whose validity timeout has expired, Modbus exception code 04 SLAVE DEVICE FAILURE will be returned."
- Default output units and default phase qualifier.

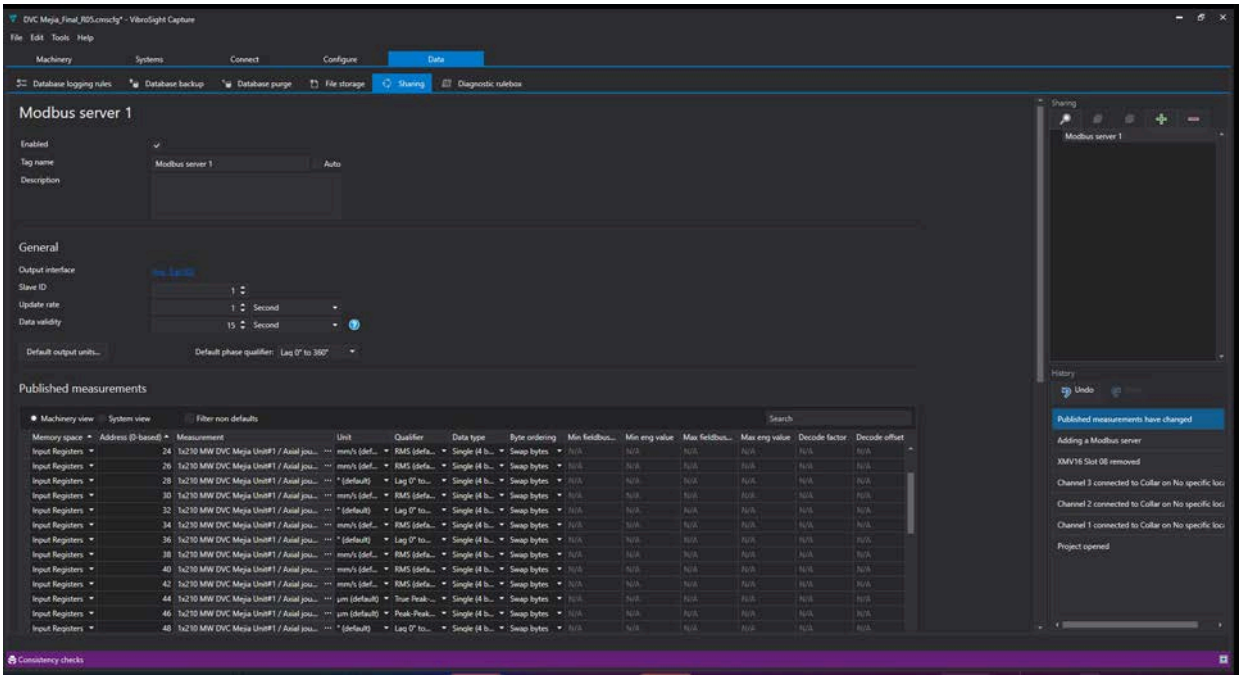

Figure 6: VibroSight Capture Modbus TCP server configuration screenshot

Published measurements table

A list of published measurements can be populated using the "Add..." button. Each entry includes the following attributes:

- Address (0-based).
- Measurement.
- Unit.
- Qualifier.
- Data type.
- Byte ordering.
- Min fieldbus value.
- Min engineering value.

- Max fieldbus value.
- Max engineering value.
- Decode factor.
- Decode offset.

Additional features:

- When new registers are added, addresses are assigned automatically starting from the next available address.
- Addresses can be reassigned according to the row order, starting from address 0.

The interface allows measurements to be filtered by Machinery view or System view, and optionally limited to non-defaults only.

This new functionality enables users to publish vibration and condition monitoring data directly from Capture to Modbus-compatible supervisory systems such as SCADA, DCS, and HMI platforms.

Note: This feature covers Modbus TCP only. Support for Modbus Serial will be added in the future – if there is enough customer demand for it.

2.4 Improved modeling of redundant axial position sensors in VibroSight Capture

The VibroSight Capture module now supports connecting multiple “Shaft axial position (collar)” processings to a single collar component in the machinery train diagram. This enhancement improves the accuracy and realism of machine configuration, particularly in systems equipped with redundant axial position sensors.

With this update:

- Users can now connect multiple axial position processings (single or dual) to the same collar.
- The number of connected sensors is clearly displayed on the collar component in the machine train diagram, improving visibility and ease of configuration.

This feature enhances modeling flexibility and ensures the digital representation of the machine aligns more closely with real-world instrumentation.

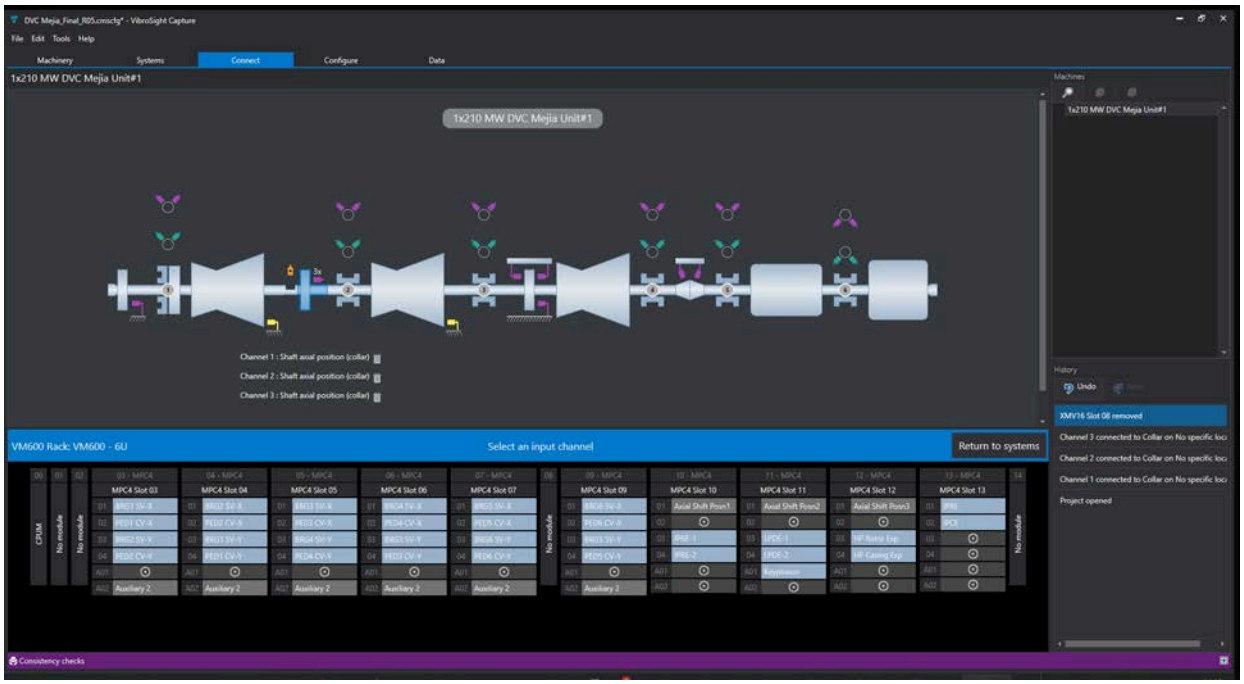

Figure 7: VibroSight Capture Shaft axial position (collar) screenshot

Previously, it was only possible to connect one single or dual "Shaft axial position (collar)" processing to each collar. As a workaround, users had to add multiple collar components—one for each sensor—which did not reflect the actual machine configuration and introduced unnecessary complexity in the model.

2.5 VibroSight Protect and VibroSight Capture user interface improvement

In the VibroSight Protect and VibroSight Capture user interfaces, the leftmost and rightmost panes on most tabs/pages now feature independently adjustable widths.

For example, in VibroSight Protect, on the Configure tab/page, this includes the module feature selection pane (Channels, Logical functions, Relays, etc.) on the left, and the System and History control panes on the right.

For example, in VibroSight Capture, on the Machinery tab/page, this includes the Machine train properties pane on the left, and the Machines and History control panes on the right.

This new feature allows the widths of these panes to be increased (or decreased) as required, for example, to make it easier to read longer tag names, and to otherwise optimize the usage of display area as a function of the type/size of screen available and/or user preferences.

2.6 VibroSight Protect, VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} module custom dynamic processing and new time domain measurements

In VibroSight Protect, for VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring modules, when using custom dynamic processing on dynamic input channels, it is now possible to configure three new types of time domain measurement as part of the processing for the channel (in addition to the existing support for time domain measurements).

Please note that using any of the new types of time domain measurement – Amplitude at angle, Amplitude range at angle and RMS at angle – requires that the Acquisition mode for the channel is configured as order tracking and that the Reference speed is specified (both on the Processing tab).

In more detail, the three new types of time domain measurement are:

- Amplitude at angle

  A measurement of the average amplitude over an averaging range specified using a trigger angle and averaging range (in degrees). For example, a measurement could be specified as the average amplitude between 90° and 100°.

- Amplitude range at angle

  A measurement of the amplitude range over an averaging range specified using a trigger angle and averaging range (in degrees). For example, a measurement could be specified as the amplitude range between 90° and 100°.

- RMS at angle

  A measurement of the RMS amplitude over an averaging range specified using a trigger angle and averaging range (in degrees). For example, a measurement could be specified as the RMS amplitude between 90° and 100°.

Adding Amplitude at angle, Amplitude range at angle and/or RMS at angle measurements to the custom dynamic processing block allows a wider range of new applications to be covered, notably rod-drop monitoring.

For example, Amplitude at angle, Amplitude range at angle and/or RMS at angle measurements can easily be used by configuring a dynamic channel as follows:

- Processing type: Single, Sensor family: Other sensors, Processing function: Custom dynamic, …
- Processing, Acquisition: Order tracking, Processing, Reference speed: …, Processing, Measurements: adding Time domain measurements and configuring the Measurement type(s) as Amplitude at angle, Amplitude range at angle and/or RMS at angle, as required.

Previously, VibroSight Protect and VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} module custom dynamic processing only supported the following Time domain measurement types: True RMS, True Peak, True Peak Peak and True Average.

2.7 VibroSight Protect, VibroSight Capture, VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} module “gap” measurements

In VibroSight Protect and VibroSight Capture, for VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring modules, when using processing blocks that feature a gap or DC measurement, it is now possible to configure the gap or DC measurement in electrical units, that is, in terms of “gap current” or “gap voltage”, depending on the electrical output signal from the sensor / measurement chain.

This is in addition to the existing support for gap or DC measurement as a gap (for Shaft relative vibration processing) or sensor sensitivity engineering physical quantity (for other processings), that is, in terms of an initial value (that is, and offset) and a value range that can be inverted, as required.

2.8 VibroSight Protect, VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} module custom dynamic processing and DC measurements

In VibroSight Protect, for VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring modules, when using custom dynamic processing on dynamic input channels, it is now possible to configure DC measurements as part of the processing for the channel (in addition to the existing support for frequency domain measurements and time domain measurements).

Please note that using DC measurements requires that the Signal coupling for the channel is configured as AC+DC (on the General tab).

Adding DC measurements to the custom dynamic processing block allows a wider range of sensors to be used, thereby increasing system flexibility.

For example, a pressure sensor that provides both static (DC) and dynamic (AC) outputs can now easily be used by configuring a dynamic channel as follows:

- Processing type: Single, Sensor family: Other sensors, Processing function: Custom dynamic, …
- General, Signal coupling: AC+DC, Processing, Measurements: adding Frequency domain, Time domain and/or DC measurements, as required.

Previously, VibroSight Protect and VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} module custom dynamic processing only supported Frequency domain measurements and Time domain measurements.

2.9 VibroSight Capture and data logging step-based rates

In VibroSight Capture, when configuring data logging rules for a VibroSight database, the data Logging rate in terms of the Step based rate, which is specified in % FDR (that is, % of full deflection), can now be configured with values between >0 and 100%.

However, please note that only values greater than 0% are allowed (that is, 0% is not allowed) and the value can also be a decimal (that is, integer not required). For example, 0.001% and 5.77% are valid values.

Previously, it was only possible to configure the Step based rate with values between 1 and 100% (that is, >1%).

2.10 VibroSight Capture and VM600^{Mk2}/VM600 XMV16 + XIO16T module redundant communications

Since VibroSight 7.5, VibroSight Capture has been able to configure and operate VM600^{Mk2}/VM600 XMV16 + XIO16T extended condition monitoring modules for vibration – making it possible to manage a mixed array of VM600^{Mk2} MPC4^{Mk2} modules and VM600^{Mk2} /VM600 XMV16 and/or XMVS16 modules within a single VibroSight Capture configuration. This streamlines system data management processes and enables data logging into a unified VibroSight database using just one VibroSight Server instance.

In VibroSight Capture, when configuring a VM600^{Mk2}/VM600 XMV16 module, it is now possible to configure two IP addresses for the module in order enable redundant communications with it. (Whereas previously, it was necessary to use VibroSight Configurator in order to configure two IP addresses for a VM600^{Mk2}/VM600 XMV16 module.)

To configure two IP addresses for a VM600^{Mk2}/VM600 XMV16 module:

- In VibroSight Capture, on the Configure tab/page, select the System view (top right) to display the VM600^{Mk2}/VM600 rack/system (top).
- On the VM600^{Mk2}/VM600 rack/system (top), select the VM600^{Mk2}/VM600 XMV16 module, then in the General tab (below), use the Network settings controls to configure the two IP addresses for the module (IP address 1 and IP address 2).

Note: The Mode control must be set to Manual IP address in order for IP address 1 and IP address 2 to be changed. When the Mode control is set to Automatic discovery from serial number, both IP addresses are retrieved from the module and displayed as read-only values.

2.11 VibroSight Capture, VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} module condition monitoring and order tracking frequency span

In VibroSight Capture, for VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring modules, when using condition monitoring on dynamic input channels configured with order tracking, it is now possible to configure the frequency span up to DC to 200 orders (in addition to the existing frequency span ranges from DC to 3.125 orders, up to DC to 100 orders).

Please note that using frequency span measurements requires that the Acquisition mode for the channel is configured as order tracking and that the Reference speed is specified (both on the Processing tab).

Increasing the maximum frequency span up to DC to 200 orders allows for wider spectra (both Spectrum and Full Spectrum plots) and more detailed analysis, in order allow wider range of machinery conditions to be diagnosed, and is particularly applicable to slower speed machinery such as hydro turbines.

2.12 VibroSight Capture and VM600^{Mk2}/VM600 XMV16 + XIO16T module bearing absolute vibration with accelerometers

Since VibroSight 7.5, VibroSight Capture has been able to configure and operate VM600^{Mk2}/VM600 XMV16 + XIO16T extended condition monitoring modules for vibration – making it possible to manage a mixed array of VM600^{Mk2} MPC4^{Mk2} modules and VM600^{Mk2} /VM600 XMV16 and/or XMVS16 modules within a single VibroSight Capture configuration. This streamlines system data management processes and enables data logging into a unified VibroSight database using just one VibroSight Server instance.

In VibroSight Capture, when configuring a VM600^{Mk2}/VM600 XMV16 module, it is now possible to configure bearing absolute vibration processing with an accelerometer as the sensor. (Whereas previously in VibroSight Capture, it was only possible to configure bearing absolute vibration processing with a velocity sensor or velocimeter as the sensor.)

To configure bearing absolute vibration processing with an accelerometer as the sensor for a VM600^{Mk2}/VM600 XMV16 module:

- In VibroSight Capture, on the Configure tab/page, select the System view (top right) to display the VM600^{Mk2}/VM600 rack/system (top).
- On the VM600^{Mk2}/VM600 rack/system (top), select the VM600^{Mk2}/VM600 XMV16 module, then in the Channels pane (left), click a channel to select it, then configure it as follows:
    - Processing type: Single, Sensor family: Accelerometers, Processing function: Bearing absolute vibration, …

Note: In general, bearing absolute vibration functionality and measurements are the same whether an accelerometer or a velocity sensor or velocimeter is used as the sensor. The main difference is the physical quantity used for the measurements: acceleration for accelerometers, and velocity for velocity sensors or velocimeters.

2.13 VibroSight Protect and VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} module CRC checksums

In VibroSight Protect, for VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring modules, it is now possible to display a cyclic redundancy check (CRC) checksum value that corresponds to the machinery protection functionality configured for and running on the module.

NOTE: Module CRC checksum values are intended to allow users to more easily identify/verify and manage the versions of machinery protection configuration running on VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} modules.

To display the CRC checksum for a module, in VibroSight Protect, click File > CRC checksums… and a System window will be displayed showing the CRC checksum values for all of the configured modules in the rack/system.

Further, in this System window, when the pointer is held over the tooltip icon corresponding to a particular module, a message will be displayed to indicate if the machinery protection configuration running on the module corresponds to the machinery protection configuration that is currently open in VibroSight Protect (that is, whether the CRC checksum values on the module and in VibroSight Protect are the same or not).

Please note that the module CRC checksum values displayed in VibroSight Protect in this way are the same as the CRC checksum values also available from VibroSight system Manager.
(In VibroSight system Manager, when a device is selected in the System explorer (left), the CRC checksum values is available in the main window (centre), under General information, Machinery protection configuration, where it is listed as a CRC32 value.)

2.14 VibroSight Capture and machine trains for Pelton turbines

In VibroSight Capture, it is now possible to develop machine trains for hydro turbine applications using Pelton wheels in a much wider variety of machinery configurations.

More specifically, in VibroSight Capture machine trains, the Pelton machinery component has been improved to incorporate two connection points (both left and right), in order to help support the wide range of different hydro turbine configurations in use worldwide. For example, this allows a hydro turbine using Pelton wheels on either side of a generator to be easily represented.

Previously, the Pelton machinery component provided a single connection point only (on the left), which prevented certain configurations.

2.15 VibroSight Protect Dashboard has improved handling of VM600^{Mk2} MPC4^{Mk2} modules in Recovery mode

In VibroSight Protect, the behaviour and functionality of the Dashboard tab/page has been improved to work better with VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring modules that are in the Recovery mode.

NOTE: For a VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring module, the Recovery mode is a mode of operation that allows the end-user/operator to change/upload MPC4^{Mk2} module firmware (which is required for a module delivered as a spare part).
The Recovery mode also allows a module to be recovered in the unlikely event of a problem such as corrupted operational firmware (machinery protection and/or condition monitoring) or a corrupted configuration.
It is important to note that entering the Recovery mode automatically clears the module's configuration, which means that the module (system) must be reconfigured after leaving the Recovery mode – before normal system operation can be resumed.

On the Dashboard tab/page, when a VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} module in Recovery mode is selected in a rack slot position (top) or System pane (right), VibroSight Protect will periodically check the module (approx. every 15-30 seconds) to see if the status of the module changes. For example, to see if the module is still in Recovery mode or if the module firmware has been updated and/or if the module has been rebooted (restarted).
In addition, the messages displayed by the Dashboard tab/page have been improved in order to be more correct and useful. For example, when VibroSight Protect detects a VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} module in recovery mode, it now displays the message:
"The selected device is using a firmware that is incompatible with this version of Protect or the device is currently in recovery mode. Please update the firmware or exit recovery mode".

Previously, when VibroSight Protect detected a VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} module in recovery mode, it simply displayed an erroneous message: "The selected device contains a firmware that is not compatible with this version of Protect" and would not re-check the module to see if the situation changed.

2.16 VibroSight Protect Dashboard has improved display of Alarm controls information for VM600^{Mk2} MPC4^{Mk2} modules

In VibroSight Protect, the behaviour and functionality of the Dashboard tab/page has been improved to work better with the Alarm controls information for VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring modules, specifically, the discrete signal interface (DSI) signals and the channel bypass control signals.

NOTE: For the VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} module, Alarm controls consist of discrete signal interface (DSI) signals and channel bypass signals.

There are three DSI control signals: Alarm bypass (AB), Alarm reset (AR) and Trip Multiply (TM).

There are channel bypass signals for each measurement channel: 4 dynamic channels and 2 auxiliary channels.

These signals are a mixture of VibroSight Protect Dashboard control switches, DSI physical inputs (rear of VM600^{Mk2}/VM600 rack) and/or VME bus commands.

On the Dashboard tab/page, when a VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} module is selected in a rack slot position (top) or System pane (right), VibroSight Protect now displays the Alarm controls (that is, DSI and channel bypass) information in an improved way in order to provide the user with better visibility and control of these signals.

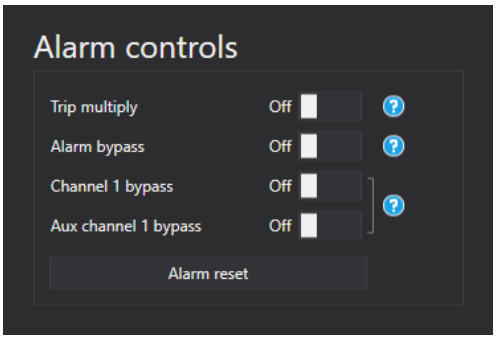

Figure 8: VibroSight Protect Dashboard Alarm controls information

In VibroSight Protect Dashboard, the associated tooltips can be used to learn more about each Alarm controls function.

Trip multiply

The Trip multiply (TM) function can be controlled via the VibroSight Protect Dashboard Trip multiply switch, the VM600^{Mk2} IOC4^{Mk2} control input signal or a VME bus command from a VM600^{Mk2} CPUM^{Mk2} module.

A Trip multiply combined switch/indicator is displayed on the VibroSight Protect Dashboard, under Alarm controls, according to the following logic:

VM600^{Mk2} IOC4^{Mk2} Trip multiply (TM) DSI control input	**VME bus command**	**VibroSight Protect Dashboard Trip multiply control**
Off	Off	The on/off switch can control the function
Off	On	“On via CPUM command” is displayed
On	---	“On via IOC4 digital input” is displayed

Alarm bypass

The Alarm bypass (AB) function can be controlled via the VibroSight Protect Dashboard Alarm bypass switch, the VM600^{Mk2} IOC4^{Mk2} control input signal or a VME bus command from a VM600^{Mk2} CPUM^{Mk2} module.

An Alarm bypass combined switch/indicator is displayed on the VibroSight Protect Dashboard, under Alarm controls, according to the following logic:

VM600^{Mk2} IOC4^{Mk2} Alarm bypass (AB) DSI control input	**VME bus command**	**VibroSight Protect Dashboard Alarm bypass control**
Off	Off	The on/off switch can control the function
Off	On	“On via CPUM command” is displayed
On	---	“On via IOC4 digital input” is displayed

Channel bypass

Channel bypass functions can be controlled via a VibroSight Protect Dashboard Channel *x* bypass switch, or a VME bus command from a VM600^{Mk2} CPUM^{Mk2} module.

A Channel *x* bypass combined switch/indicator is displayed on the VibroSight Protect Dashboard (for each configured channel), under Alarm controls, according to the following logic:

VME bus command	VibroSight Protect Dashboard Alarm bypass control
Off	The on/off switch can control the function
On	“On via CPUM command” is displayed

NOTE: The Alarm bypass (AB) function is a module-wide function that is equivalent to the use of a channel bypass function on each individual channel of the module, and vice versa.

VM600^{Mk2} modules

2.17MPC4^{Mk2} + IOC4^{Mk2} module hardware (standard and SIL versions)

The MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring module and the RLC16^{Mk2} relay module are available in different versions – standard and SIL – as follows:

- MPC4^{Mk2} + IOC4^{Mk2} and RLC16^{Mk2} – these are the standard versions of the modules, suitable for most applications.
  Note: PNRs 600-041 for the MPC4^{Mk2}, 600-043 for the IOC4^{Mk2} and 600-045 for the RLC16^{Mk2}.
- MPC4^{Mk2} + IOC4^{Mk2} SIL and RLC16^{Mk2} SIL – these are the SIL safety versions of the modules, suitable for critical applications demanding the highest level of protection.
  Note: PNRs 600-040 for the MPC4^{Mk2} SIL, 600-042 for the IOC4^{Mk2} SIL and 600-044 for the RLC16^{Mk2} SIL.

See also 2.18 MPC4^{Mk2} + IOC4^{Mk2} module firmware and 2.19 MPC4^{Mk2} + IOC4^{Mk2} SIL module firmware.

2.18MPC4^{Mk2} + IOC4^{Mk2} module firmware (standard)

NOTE:	Standard versions of firmware are for use with the MPC4^{Mk2} + IOC4^{Mk2} module only (that is, PNR 600-041 for the MPC4^{Mk2}).

Updated VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring module firmware with the following main improvements:

Machinery protection firmware: 640-025-011-000

NOTE:	VM600^{Mk2} MPC4^{Mk2} machinery protection firmware (640-025-011-000) is compatible with both versions of the MPC4^{Mk2} module (PNRs 600-041-000-vvv and 600-041-001-vvv).

New features:

- Support for “Reverse rotation” processing (dual-channel).
- Support for discrete signal interface (DSI) information (Alarm bypass (AB), Alarm reset (AR) and Trip multiply (TM)) to be shared with VM600^{Mk2} CPUM^{Mk2} via VME.
- Alarm reset (AR) status created and maintained for 5 seconds.
- VME to provide diagnostic code and error class (global status information).

- Module CRC checksum (“signature”) corresponding to the configuration of the protection function (that is, the machinery protection functionality configured for and running on the module).
- Enhanced Alarm event reporting (with outputID argument).

Bug fixes:

- Handling, storage and use of IP address, subnet mask and default gateway addresses.
- Data availability and channel masks for condition monitoring data (Data Availability for XNP dataclass CMSP returned the first DUAL channel when the AUX was requested).
- Spikes in decay of speed when no pulses are received for configurations with more pulses per rotation (SigProcLib).

Restrictions:

- Compatible with VibroSight 7.7 only.

See also 5.2 VM600^{Mk2}/VM600 modules (cards).

Condition monitoring firmware: 640-033-007-000

New features:

- Support for “Reverse rotation” processing (dual-channel).

Bug fixes:

- Alarms layer seems to differ from process data implementation (condition monitoring).
- Spikes in decay of speed when no pulses are received for configurations with more pulses per rotation (SigProcLib).

Restrictions:

- Compatible with VibroSight 7.7 only.

See also 5.2 VM600^{Mk2}/VM600 modules (cards).

Recovery firmware: 640-031-007-001

Bug fixes:

- Handling, storage and use of IP address, subnet mask and default gateway addresses.

Restrictions:

- Compatible with VibroSight 7.7 only.

See also 5.2 VM600^{Mk2}/VM600 modules (cards).

2.19MPC4^{Mk2} + IOC4^{Mk2} SIL module firmware (SIL)

NOTE:	SIL versions of firmware are for use with the MPC4^{Mk2} + IOC4^{Mk2} SIL module only (that is, PNR 600-040 for the MPC4^{Mk2} SIL).

Updated VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} SIL machinery protection and condition monitoring module firmware with the following main improvements:

SIL machinery protection firmware: 640-024-002T004

New features:

- Support for discrete signal interface (DSI) information (Alarm bypass (AB), Alarm reset (AR) and Trip multiply (TM)) to be shared with VM600^{Mk2} CPUM^{Mk2} via VME.
- VME to provide diagnostic code and error class (global status information).

Bug fixes:

- Handling, storage and use of IP address, subnet mask and default gateway addresses.
- Data availability and channel masks for condition monitoring data (Data Availability for XNP dataclass CMSP returned the first DUAL channel when the AUX was requested).

Restrictions:

- Compatible with VibroSight 7.7 only.

See also 5.2 VM600Mk2/VM600 modules (cards.

NOTE:	It is important to be aware that this latest SIL machinery protection firmware (640-024-002T004) is a “beta” release for the future 640-024-002-000 – intended for test and evaluation only. SIL re-certification is *pending.* Accordingly, with this latest SIL machinery protection firmware the MPC4^{Mk2} module cannot be Locked (that is, cannot be put into the safety/secure operating mode (of the Operational mode)). Firmware upgrades to final versions of SIL-specific firmware will be required before a VM600^{Mk2} SIL system containing MPC4^{Mk2} + IOC4^{Mk2} SIL modules can be used in critical safety-related applications.

SIL recovery firmware: 640-026-002-001

Bug fixes:

- Handling, storage and use of IP address, subnet mask and default gateway addresses.

Restrictions:

- Compatible with VibroSight 7.7 only.

See also 5.2 VM600^{Mk2}/VM600 modules (cards).

VM600 modules

2.20CPUM^{Mk2} + IOCN^{Mk2} module firmware

Updated VM600^{Mk2} CPUM^{Mk2} + IOCN^{Mk2} rack controller and communications interface module firmware with the following main improvements:

Base-system / Applications firmware: base-system-640-034-005-001

New features:

- Added support for voting logic in the Modbus configuration file (Modbus VOTE function).
- Improved updating of password file (atomic operation).
- Improved error handling for more robust communications with VM600^{Mk2} MPC4^{Mk2} modules.
- Improved reporting of module errors via Modbus with new fail-safe error acknowledgment (Modbus ACKNOWLEDGE_FAILSAFE function).
- VM600^{Mk2} CPUM^{Mk2} Modbus data now includes the status of all VM600^{Mk2} MPC4^{Mk2} discrete signal interface (DSI) signal (Alarm bypass (AB), Alarm reset (AR) and Trip multiply (TM)), and the status of the VM600^{Mk2} CPUM^{Mk2} alarm reset button.
  Note: This allows external third-party devices such as a DCS or PLC to monitor that commands have been executed.

Bug fixes:

- Fix the status delay operator.
  Note: The SFI check delay on the lower limit did not work correctly, causing the “Bad Sensor” status to be set immediately after an event, without waiting for it to keep the bad state for the configured time.
- Not accepting Modbus configuration files with lines ending with a CR only (instead of CR+LF).
- Problem when re-configuring a CPUM^{Mk2} to no longer handle/manage a VM600Mk2/VM600 XMx16 + XIO16T extended condition monitoring module (that is, the XMx16 pairing was not being properly released).
- Special characters (such as an ampersand (&)) in the rack / system name do not allow the XNP main service to start (effectively blocking communications).

Restrictions:

- Compatible with the following VM600^{Mk2} MPC4^{Mk2} modules: standard version running machinery protection firmware 640-025-011-000 or later, and SIL version running machinery protection firmware 640-024-002T004 or later.

See also 5.2 VM600^{Mk2}/VM600 modules (cards).

2.21XMx16 + XIO16T module firmware

Updated VM600^{Mk2}/VM600 XMx16 + XIO16T extended condition monitoring module firmware with the following main improvements:

Applications firmware: applications-640-010-001-018 and
Base-system firmware: base-system-640-003-001-018

Bug fixes:

- Application exits after a series of tmp_HFSD overflow messages (in the log).
- NTPD (Network Time Protocol daemon) not able to update system time.

Restrictions:

- Compatible with VibroSight 7.5 or later.

See also 5.2 VM600^{Mk2}/VM600 modules (cards).

VibroSmart modules

2.22VSI010 + VSB010 module firmware

Updated VibroSmart VSI010 + VSB010 communications interface module firmware with the following main improvements:

642-002-000-016

Bug fixes:

- Profinet MAC address send to the netX interface chip incorrectly converted from the module's UniqueID.

Restrictions:

- Compatible with VibroSight 7.6 or later.

See also 5.3 VibroSmart devices.

3 Solved problems and bug fixes

3.1 General improvements and bug fixes

General stability improvements and bug fixes across the VibroSight 7.7.0 software.

3.2 VibroSight Server problem with CSV data import

When trying to import data into a VibroSight Server via a CSV data file, the data was not imported.

Instead, error and warning messages about the (in)validity of the CSV file were displayed, for example:
“Error: Error during CSV data importation when checking validity of file.”
“Warning: File can’t be processed because it is not valid : ‘C:\Users\ …\CSV data file.csv’”

3.3 VibroSight Vision problem with the scaling of X and Y axes in plots

In VibroSight Vision, the appearance of the X and Y axes in plots had changed with larger font/text sizes used and the axes seeming not to scale properly with overlapping/truncated text, particularly with multiple plots in a single window – leading to problems with legibility.

Note: This problem was first noticed in VibroSight 7.4, with the switch to .NET core (.NET 7.0 SDK v7.0.306). The main problem was an underlying graphics library (LightningChart) which had some compatibility issues but has since been updated.

3.4 VibroSight Vision removing VM600^{Mk2} MPC4^{Mk2} module protection measurements from plots after configuration changes

When VibroSight Vision is connected directly to a VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring module, and a machinery protection measurement was added to a plot, when VibroSight Protect was used to make subsequent changes to the module’s configuration, the measurement was inadvertently removed from the plot when the configuration was activated.

3.5 VibroSight Server using a NTP server as a time reference stops logging data following large time differences between the VibroSight Server and NTP server

For a VibroSight Server using a NTP server as a time reference, when the external time reference (NTP server) moved forward abruptly (for example, +1 hour), then the VibroSight server stopped logging data, and live data was no longer available in VibroSight Vision.

3.6 VibroSight Protect using the wrong image for VM600Mk2 MPC4Mk2 module's dual-channel shaft axial position (collar) processing

When configuring dual-channel shaft axial position (collar) processing for a VM600Mk2 MPC4Mk2 + IOC4Mk2 machinery protection and condition monitoring module, VibroSight Protect displayed/used the wrong image in the channel configuration wizard (and elsewhere).

3.7 VibroSight Vision X orbit not consistent with OVR orbit

In VibroSight Vision, when using orbit plots to display filtered orbit data, waveform data (such as 1X, 3X) was not "aligned" with the OVR waveform data, that is, the data seemed to be incorrectly displayed with an inversion or phase offset.

Note: This issue is for a configuration created using VibroSight Capture (that is, it is not present for a configuration created using VibroSight Confgurator).

3.8 VibroSight Protect reporting that an update rate is not supported

In VibroSight Protect, when editing a configuration, the consistency checker incorrectly reported that an update rate was not supported even though this parameter is only configurable via VibroSight Capture. For example:

"Update rate 0.00.00 is not supported. The allowed update rates are 0.00.00.1, 0.00.00.2, 0.00.00.5, 0.00.01, 0.00.02, 0.00.05, 0.00.10, 0.00.20, 0.00.30, 0.01.00."

3.9 VibroSight Capture problem connecting a reference speed measurement channel to a machine train

In VibroSight Capture, when connecting a reference speed measurement channel (that is, speed processing) to a machine train component (on the Connect tab/page), the reference speed field (on the Machinery tab/page, left) was not automatically completed/updated (as it should be).

Note: A workaround being that the VibroSight Capture configuration had to be saved, then closed and reopened in order for the reference speed field to be correctly displayed.

3.10 VibroSight Protect Dashboard not resuming normal operation after a VM600Mk2 MPC4Mk2 SIL module reboots

In VibroSight Protect, on the Dashboard tab/page, when a VM600Mk2 MPC4Mk2 SIL + IOC4Mk2 SIL machinery protection and condition monitoring module was reset using the two front panel buttons (that is, forced to reboot), the Dashboard did not resume display of the module information as expected, rather it reported that the module was not configured.

3.11 VibroSight Vision plots not displaying historical data correctly

In VibroSight Vision, different plot types (such as Trend plots, Long Waveform plots and Waveform plots) were not displaying historical data in the plots, rather the plots displayed “There is no available data to display” even though data was known to be available.

This could happen when the data Measurements (left) were dragged and dropped into the plot and/or when the Time Range (right) was set to Custom historical, and Apply control was clicked.

3.12 VibroSight Configurator not allowing OPC UA tags with double data type to be selected

In VibroSight Configurator, when configuring an OPC UA client to import data from an external data source into a VibroSight Server database, OPC UA tags using the “double” data type could not be selected, that is, the OK control used for node selection became unavailable / grayed out.

3.13 VibroSight Protect logical functions not always easy to configure

In VibroSight Protect, when configuring logical functions in the main window (center), the configuration of larger and/or more complex logical functions becomes difficult as the required components (Shapes: Input, And, Not, Or and Vote) remain on the top left of the main window as the working area automatically extends downwards to accommodate more components as they are added, resulting in lots of scrolling up and down.

3.14 VibroSight Server problem communicating with VM600^{Mk2}/VM600 XMx16T module

When a VibroSight Server is connected to a VM600^{Mk2}/VM600 XMx16 + XIO16T extended condition monitoring module and the module’s configuration is cleared/deleted and then the module is restarted, the VibroSight Server re-establishes communications with the module, but after connecting the VibroSight Server incorrectly considers that the local (Server) and remote (module) configurations are still the same.

This is typically characterised by the VibroSight Server displaying a message such as the following:

Date	Time	Logger	Message
2/14/2025	10:20:35.630	Xmc.Driver.XmcDeviceDriver	VM600 Card Driver: XMx Card E136044 paired successfully.
2/14/2025	10:20:35.630	Xmc.Driver.XmcDeviceDriver	VM600 Card Driver: Get the configuration of the card E136044.
2/14/2025	10:20:35.719	Xmc.Driver.XmcDeviceDriver	VM600 Card Driver: Configuration got from the card E136044 to check if it is required to set it again.
2/14/2025	10:20:35.829	Xmc.Driver.XmcDeviceDriver	VM600 Card Driver: Current configuration set on card E136044 matches the server's one, no need to set a new configuration.
2/14/2025	10:20:38.524	Xmc.Driver.XmcDeviceDriver	The version contained in the data is invalid. Configuration version: 0, data version: 1178711696. The version contained in the data is invalid. Configuration version: 11511177, data version: 1178711696.

4 Known issues

4.1 Security risks

A number of Open web application security project (OWASP) security risks have been identified related to a UPC UA library used by the VibroSight software. This UPC UA library is from a third-party (Softing AG, Softing Industrial Automation GmbH), who have recently implemented a fix. However the improved UPC UA library is not included in the latest release of VibroSight.

For information, the specific issues that have been identified are:

- CVE-2022-29862: An infinite loop in OPC UA .NET Standard Stack 1.04.368 allows a remote attackers to cause the application to hang via a crafted message
- CVE-2022-29863: OPC UA .NET Standard Stack 1.04.368 allows remote attacker to cause a crash via a crafted message that triggers excessive memory allocation.
- CVE-2022-29864: OPC UA .NET Standard Stack 1.04.368 allows a remote attacker to cause a server to crash via a large number of messages that trigger Uncontrolled Resource Consumption.
- CVE-2022-29865 : OPC UA .NET Standard Stack 1.04.368 allows a remote attacker to bypass the application authentication check via crafted fake credentials
- CVE-2022-29866: OPC UA .NET Standard Stack 1.04.368 allows a remote attacker to exhaust the memory resources of a server via a crafted request that triggers Uncontrolled Resource Consumption.

4.2 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.

4.3 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.

4.4 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 a VibroSight Server database file (*.vssrvdb or *.db) and a 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 data management commands and operations that append a timestamp (_yyyyMMddHHmmss) to the Server instance name 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 data repository command or operation is complete.

Also, depending on the VibroSight Server data repository (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 data repositories being created during automatic data management. This is particularly important for systems with automated data management and system backup procedures that can generate VibroSight Server data repositories with different file names.

4.5 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).

4.6 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 modules/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.

4.7 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 or later, 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.

4.8 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.

4.9 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).

4.10VibroSight 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.

4.11 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.

4.12 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 or later 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 50000 conflicts should be resolved before the VibroSight software can be successfully run.

NOTE:	The VibroSight software’s TCP and UDP port requirements are described in detail in the “Software installation” section of the latest *Getting started with VibroSight installation guide*. See section *4. After installing VibroSight*.

4.13 Problems using shared network drives/locations for VibroSight data management

On computers running Windows 10 or Windows Server 2016, problems can be experienced using shared network drives/locations with VibroSight’s integrated data management operations such as Offline data storage and Database backup (configured in VibroSight Configurator) due to Windows security policies and restrictions.

Such problems are typically characterised by the individual copy commands scheduled and run on a VibroSight Server (corresponding to Offline data storage and Database backup operations) failing to run correctly. More specifically, on the Data Management tab of a VibroSight Server, scheduled incremental copy jobs (Type: Copy) are typically displayed with Status: Error, while the Log Messages tab of the server display typically displays messages such as “Errors during the copy operation” and “Uncaught error IOException occurred in task ‘Task “DataRepositoryCopyDataMan…”.

NOTE:	For Windows 10 and Windows Server 2016, Microsoft improved network security with a change to the rules governing shared network drives/locations. More specifically, a shared network drive/location is now only accessible and visible to the user who created the shared network drive/location, even if the user is an Administrator.

Accordingly, in order to avoid such problems, a shared network drive/location on Windows 10 and Windows Server 2016 computers that is required to be used by VibroSight’s integrated data management operations should be created as a “system account” in order to ensure that the required Windows Services can access the shared resource (drive/location).

This can easily be done using Microsoft's PsExec utility. For example, by running the following command (as an Administrator):

PsExec.exe -i -s cmd.exe /C "net use Z: \\server\share"

Where the net use command is used to map the \\computer name\sharename (\\server\share) to the devicename (Z:).

NOTE:	For Windows 10 and Windows Server 2016, Microsoft improved network security with a change to the rules governing shared network drives/locations. More specifically, a shared network drive/location is now only accessible and visible to the user who created the shared network drive/location, even if the user is an Administrator.

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, OPC Core Components Redistributable software and OPC UA Local Discovery Server are pre-installed on the computer:

- The required Microsoft Visual C++ Redistributable Package (see section 0) 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 0) software is automatically installed on the computer by the VibroSight installer if it is not detected.
- The required OPC UA Local Discovery Server (see section 0) 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 7.7.0 is a minor level release and replaces VibroSight 7.6.x.

Compatibility with existing VibroSight data repositories (databases) is achieved by automatically applying an internal data migration process from existing VibroSight databases (VibroSight historical data folders (*.vshdf) and/or VibroSight historical data archives (*.vshda)), if and when required.

NOTE: Since VibroSight 7.4.0, it is no longer possible to migrate older machinery monitoring projects using Sybase SQL Anywhere databases to VibroSight historical data repositories.

In order to migrate such older projects using Sybase SQL Anywhere databases to VibroSight historical data repositories, VibroSight 7.3.x or earlier (also VibroSight 3.x.x or later) must be used.

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 7.x.x (VibroSight 3.x.x or later) will automatically use VibroSight historical data repositories.

- For existing machinery monitoring projects using VibroSight historical data repositories, the VibroSight historical data repositories are automatically updated if and when required (for example, to support new features).
- For existing machinery monitoring projects using Sybase SQL Anywhere databases (that is, created with versions of VibroSight earlier than VibroSight 3.0.0), the project must be manually migrated from Sybase SQL Anywhere databases to VibroSight historical data repositories.

  Note: This data migration must be done using VibroSight 7.3.x or earlier (also VibroSight 3.x.x or later) – before they can be used with VibroSight 7.x.x (also VibroSight 3.x.x or later).
- 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 7.x.x (VibroSight 3.x.x or later).
  It is very important to note that migrating a VibroSight OPC Server from VibroSight 2.12.7 or earlier to VibroSight 7.x.x (VibroSight 3.x.x or later) or later 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 7.3.x or earlier (also VibroSight 3.x.x or later) is described in detail in the "Data migration" section of the *Getting started with VibroSight installation guide*
(Note: For example, using the VibroSight 7.3.x software – see the earlier version of the installation guide: version 33.)

The manual migration of a VibroSight OPC server is described in detail in the "VibroSight OPC Server migration" sections of the latest *Getting started with VibroSight installation guide*
(Note: For example, using the VibroSight 7.4.x software – see the earlier version of the installation guide: version 34.)

5.1.1 Microsoft Windows operating systems

VibroSight 7.x.x (VibroSight 3.x.x or later) or later 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 7.4.x or later requires that the .NET 7.0 SDK and the Microsoft .NET Framework 4.7.2 or later is installed.

NOTE:	VibroSight 7.4.x or later requires Microsoft .NET 7.0 SDK (v7.0.306 or later). VibroSight 7.x.x requires the Microsoft .NET Framework 4.7.2.

If Microsoft .NET SDK v7.0.306 or later is not already installed on the computer that will run VibroSight, then it must be installed manually by the user using one of Microsoft's .NET SDK installers.

If Microsoft .NET Framework 4.7.2 is not already installed on the computer that will run VibroSight, then the VibroSight installer will detect this and automatically install it as part of the VibroSight software installation process.

See the Appendix of these release notes for further information on VibroSight software and Microsoft .NET requirements. Refer also to the latest  *Getting started with VibroSight installation guide*.

5.1.3 Microsoft Visual C++ Redistributable Package

VibroSight 7.x.x (VibroSight 3.x.x or later) 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 7.x.x (VibroSight 3.x.x or later) 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 OPC UA Local Discovery Server

VibroSight 7.x.x or later requires that the OPC UA Local Discovery Server is installed, in order to expose OPC UA servers for discovery and enable communications with OPC UA clients.

If the required OPC UA Local Discovery Server is not pre-installed, then the VibroSight installer will detect this and automatically install it as part of the VibroSight software installation.

5.1.6 Sybase SQL Anywhere 11 software

VibroSight 7.x.x (VibroSight 3.x.x or later) does not include any Sybase SQL database software.

Since VibroSight 7.4.0, it is no longer possible to migrate older machinery monitoring projects using Sybase SQL Anywhere databases to VibroSight historical data repositories.

For further information on VibroSight and Sybase SQL Anywhere, including the manual migration of older projects using Sybase SQL Anywhere to VibroSight, refer to VibroSight 7.3.x or earlier release notes and/or installation guide.

See also 5.1 VibroSight software.

5.1.7 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.

5.1.8 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 or later.

5.2 VM600^{Mk2}/VM600 modules (cards)

5.2.1 Module (card) firmware

There are some firmware upgrades for VM600^{Mk2}/VM600 modules (cards) corresponding to VibroSight 7.7.0.

The latest firmware for the VM600^{Mk2} MPC4^{Mk2} module is now:

- Machinery protection: `640-025-011-000.Mpc4g2Fw` (updated)
- Condition monitoring: `640-033-007-000.VxeFw` (updated)
- Recovery: `640-031-007-001.Mpc4g2Fw` (updated)
- Protection test: `640-032-004-001.VxeFw`.

See 2.17 MPC4^{Mk2} + IOC4^{Mk2} module hardware (standard and SIL versions) and 2.18 MPC4^{Mk2} + IOC4^{Mk2} module firmware (standard).

The latest firmware for the VM600^{Mk2} MPC4^{Mk2} SIL module is now:

- Machinery protection: `640-024-002T004.SafeMpc4g2Fw` (updated)
- Condition monitoring: `640-033-007-000.VxeFw` (updated)
- Recovery: `640-026-002-001.SafeMpc4g2Fw` (updated)
- Protection test: `640-032-004-001.VxeFw`.

See 2.17 MPC4^{Mk2} + IOC4^{Mk2} module hardware (standard and SIL versions) and 2.19 MPC4^{Mk2} + IOC4^{Mk2} SIL module firmware (SIL).

The latest firmware for the VM600^{Mk2} CPUM^{Mk2} module is now:

- Base-system: `base-system-640-034-005-001.tgz`.

See 2.20 CPUM^{Mk2} + IOCN^{Mk2} module firmware.

The latest firmware for the VM600 CPUR2 card remains:

- Applications: `applications-640-015-001-007.tgz`
- Base-system : `base-system-640-014-001-007.tgz`.

The latest firmware for the VM600 CPUR card remains:

- Applications: `applications-640-012-001-005.tgz`
- Base-system: `base-system-640-011-001-005.tgz`.

The latest firmware for the VM600^{Mk2}/VM600 XMC16, XMV16 and XMVS16 cards is now:

- Applications: `applications-640-010-001-018.tgz`
- Base-system: `base-system-640-003-001-018.tgz`.

See 2.21 XMx16 + XIO16T module firmware.

Therefore, for current versions of VibroSight and VM600^{Mk2}/VM600 systems, firmware upgrades are required.

5.3 VibroSmart devices

5.3.1 Module firmware

There are some firmware upgrades for VibroSmart modules and devices corresponding to VibroSight 7.7.0.

The latest firmware for the VSV30x module remains:

- `642-001-000-022.xtranfw`

The latest firmware for the VSI010 module is now:

- `642-002-000-016.xmsifw`

See 2.22 VSI010 + VSB010 module firmware.

The latest firmware for the VSN010 device remains:

- `642-004-000-013.redboxfw`

Therefore, for current versions of VibroSmart modules and devices, firmware upgrades are recommended.

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:	Before starting a VibroSight system update, it is strongly recommended to verify the version of firmware(s) running on the related hardware (VM600^{Mk2}/VM600 and/or VibroSmart modules/devices) in order to establish if any firmware changes/upgrades are also required. See 6.2.3 Updating the firmware using VibroSight System Manager.

IMPORTANT NOTE:	Before upgrading the firmware of any of the hardware (VM600^{Mk2}/VM600 and/or VibroSmart modules/devices) used in a VibroSight system, it is strongly recommended to ensure that a copy of the configuration for the system is available – in case it is necessary to reconfigure the system after the upgrade. 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^{Mk2}/VM600 and/or VibroSmart modules/devices to be upgraded to the latest firmware, in order to take advantage of improvements to the VibroSight software.

NOTE:	Updating the firmware for VM600^{Mk2}/VM600 and/or VibroSmart modules/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. It is therefore strongly recommended to change the firmware of VibroSight-compatible hardware only when it is necessary. For example, when the devices must be updated to be compatible with a VibroSight software upgrade. 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.

IMPORTANT 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.

For example, 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).

6.2.1 VM600^{Mk2}/VM600 module/card firmware

The latest VM600^{Mk2}/VM600 module/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^{Mk2}/VM600 modules/cards is: C:\Program Files\Meggitt\VibroSight\Firmware\VM600

The firmware files for a VM600^{Mk2}/VM600 module/card can be found in the appropriate subfolder and identified by their .tgz file name extension.

For example, the MPC4 Mk2 subfolder contains the firmware components for use by the MPC4^{Mk2} module (standard versions) and the MPC4 Mk2 SIL subfolder contains the firmware components for use by the MPC4^{Mk2} SIL module (SIL versions). Any additional firmware updates received from parker Meggitt (Meggitt SA) should also be stored in these directories.

Table 1 shows the compatibility between VibroSight software and VM600^{Mk2} MPC4^{Mk2} module hardware (that is, MPC4^{Mk2} firmware) for later versions of the MPC4^{Mk2} (PNRs 600-041-001-002 and 600-041-000-002).

Table 2 shows the compatibility between VibroSight software and VM600^{Mk2} MPC4^{Mk2} module hardware (that is, MPC4^{Mk2} firmware) for the original version of the MPC4^{Mk2} (PNR 600-041-000-001) – no longer supported. See 2.17 MPC4^{Mk2} + IOC4^{Mk2} module hardware.

Table 3 shows the compatibility between VibroSight software and VM600^{Mk2} MPC4^{Mk2} SIL module hardware (that is, MPC4^{Mk2} SIL firmware).

IMPORTANT NOTE:	When changing (upgrading) all firmware components on a VM600^{Mk2} MPC4^{Mk2} module, the module must be in the Recovery mode in order to change the protection test firmware. It is important to note that entering the Recovery mode clears the modules configuration, which means that the module (system) must be reconfigured after leaving the Recovery mode – before normal system operation can be resumed. Accordingly, it is strongly recommended to ensure that a copy of the configuration for the system is available before upgrading a system. For example, the VibroSight software can be used to connect to a system (which will automatically read/download the system configuration) and save a copy of the configuration.

Table 4 shows the compatibility between VibroSight software and VM600^{Mk2} CPUM^{Mk2} module hardware (that is, CPUM^{Mk2} firmware).

Table 5 shows the compatibility between VibroSight software and VM600 CPUR2 card hardware (that is, CPUR2 firmware).

Table 6 shows the compatibility between VibroSight software and VM600 CPUR card hardware (that is, CPUR firmware).

Table 7 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^{Mk2} MPC4^{Mk2} firmware compatibility
for later standard versions of the MPC4^{Mk2} (PNRs 600-041 / 600-041-001-002 and 600-041-000-002)

	VM600^{Mk2} MPC4^{Mk2} firmware							
VibroSight software version Part number (PNR)	Machinery protection firmware (`640-025-vvv-ppp.Mpc4g2Fw`)							
	`640-025-004-003`	`640-025-005-000`	`640-025-006-000`	`640-025-007-001`	`640-025-008-000`	`640-025-009-001`	`640-025-010-000`	`640-025-011-000`
	Condition monitoring firmware (`640-033-vvv-ppp.VxeFw`)							
	---	`640-033-001-000`	`640-033-002-000`	`640-033-003-000`	`640-033-004-000`	`640-033-005-000`	`640-033-006-000`	`640-033-007-000`
	Recovery firmware (`640-031-vvv-ppp.Mpc4g2Fw`)							
	`640-031-003-006`			`640-031-005-001`	`640-031-006-000`		`640-031-007-000`	`640-031-007-001`
	Protection test firmware (`640-032-vvv-ppp.VxeFw`)							
	`640-032-001-001`			`640-032-003-000`	`640-032-004-000`		`640-032-004-001`	
7.0.0 609-010-000-001	✓ See note 1a	✓ See note 1b						
7.1.0 609-010-000-001			✓ See note 2					
7.2.0 609-010-000-001				✓ See note 3				
7.3.0 609-010-000-001					✓ See note 4			
7.4.0 609-010-000-001						✓ See note 5		
7.5.0 609-010-000-001						✓		
7.6.0 609-010-000-001							✓ See note 6	
7.7.0 609-010-000-001								✓ See note 7

Notes for Table 1 (see the next page)

Notes for Table 1

1a. For information on these versions of VM600^{Mk2} MPC4^{Mk2} firmware, refer to the VibroSight 7.0 release notes.
A firmware upgrade is required in order to run VibroSight 7.0.0 or later.

1b. For information on these versions of VM600^{Mk2} MPC4^{Mk2} firmware, refer to the VibroSight 7.0 release notes.
A firmware upgrade is required in order to run VibroSight 7.0.0 or later.

2. For information on these versions of VM600^{Mk2} MPC4^{Mk2} firmware, refer to the VibroSight 7.1 release notes.
A firmware upgrade is required in order to run VibroSight 7.1.0 or later.

3. For information on these versions of VM600^{Mk2} MPC4^{Mk2} firmware, refer to the VibroSight 7.2 release notes.
A firmware upgrade is required in order to run VibroSight 7.2.0 or later.

4. For information on these versions of VM600^{Mk2} MPC4^{Mk2} firmware, refer to the VibroSight 7.3 release notes.
A firmware upgrade is required in order to run VibroSight 7.3.0 or later.

5. For information on these versions of VM600^{Mk2} MPC4^{Mk2} firmware, refer to the VibroSight 7.4 release notes.
A firmware upgrade is required in order to run VibroSight 7.4.0 or later.

6. For information on these versions of VM600^{Mk2} MPC4^{Mk2} firmware, refer to the VibroSight 7.6 release notes.
A firmware upgrade is required in order to run VibroSight 7.6.0 or later.

7. For information on these versions of VM600^{Mk2} MPC4^{Mk2} firmware, see 2.18 MPC4Mk2 + IOC4Mk2 module firmware.
A firmware upgrade is required in order to run VibroSight 7.7.0 or later.

Table 2: VibroSight software and VM600^{Mk2} MPC4^{Mk2} firmware compatibility
for the original standard version of MPC4^{Mk2} (PNRs 600-041 / 600-041-000-001) – no longer supported

	VM600^{Mk2} MPC4^{Mk2} firmware				
VibroSight software version Part number (PNR)	Machinery protection firmware (`640-025-vvv-ppp.Mpc4g2Fw`)				
	`640-025-003-002`	`640-025-004-000`	`640-025-004-003`	`640-025-005-000`	`640-025-006-000`
	Condition monitoring firmware (`640-033-vvv-ppp.VxeFw`)				
	---	---	---	`640-033-001-000`	`640-033-002-000`
	Recovery firmware (`640-031-vvv-ppp.Mpc4g2Fw`)				
	`640-031-003-002`	`640-031-003-004`	`640-031-003-006`		
	Protection test firmware (`640-032-vvv-ppp.VxeFw`)				
	`640-032-001-000`		`640-032-001-001`		
6.0.0 609-004-000-050	✓ See note 1				
6.1.0 609-004-000-051		✓ See note 2			
7.0.0 609-010-000-001			✓ See note 3a	✓ See note 3b	
7.1.0 609-010-000-001					✓ See note 4

Notes for Table 2 (see the next page)

Notes for Table 2

1. This version of VM600^{Mk2} MPC4^{Mk2} (previously referred to as VM600 MPC4G2) firmware is the official launch release of firmware supporting VibroSight Protect and VM600^{Mk2} systems. A firmware upgrade is required in order to run VibroSight 6.0.0 or later – that is, to use VM600^{Mk2} systems in “live” machinery protection system (MPS) applications. Contact Parker Meggitt (Meggitt SA) for further information.

2. This version of VM600^{Mk2} MPC4^{Mk2} firmware improves frequency domain measurements (the phase component can be used as the input signal for an analog output), differential expansion (dual taper) processing (the ramp angles for the taper on the shaft are configured separately), auxiliary input channels configured as tacho inputs (appropriate data quality indicators and warning messages, with automatic recovery), and the maximum tacho speed / frequency has been increased. It also includes a number of bug fixes. (Refer to the VibroSight 6.1 release notes for further information.) A firmware upgrade is required in order to run VibroSight 6.1.0 or later.

3a. For information on these versions of VM600^{Mk2} MPC4^{Mk2} firmware, refer to the VibroSight 7.0 release notes.
A firmware upgrade is required in order to run VibroSight 7.0.0 or later.

3b. For information on these versions of VM600^{Mk2} MPC4^{Mk2} firmware, refer to the VibroSight 7.0 release notes.
A firmware upgrade is required in order to run VibroSight 7.0.0 or later.

4. For information on these versions of VM600^{Mk2} MPC4^{Mk2} firmware, refer to the VibroSight 7.1 release notes.
A firmware upgrade is required in order to run VibroSight 7.1.0.

Table 3: VibroSight software and VM600^{Mk2} MPC4^{Mk2} SIL firmware compatibility for the SIL version of the MPC4^{Mk2} (PNRs 600-040 / 600-040-vvv-vvv)

	VM600^{Mk2} MPC4^{Mk2} SIL firmware				
VibroSight software version Part number (PNR)	SIL machinery protection firmware (640-024-vvv-ppp.SafeMpc4g2Fw)				
	640-024-001T005	640-024-001T006	640-024-001-000	640-024-002T002	640-024-002T004
	Condition monitoring firmware (640-033-vvv-ppp.VxeFw)				
	640-033-004-000	640-033-005-000		640-033-006-000	640-033-007-000
	SIL recovery firmware (640-026-vvv-ppp.SafeMpc4g2Fw)				
	640-026-001-000			640-026-002-000	640-026-002-001
	Protection test firmware (640-032-vvv-ppp.VxeFw)				
	640-032-004-000			640-032-004-001	
7.3.0 609-010-000-001	✓ See note 1				
7.4.0 609-010-000-001		✓ See note 2			
7.5.0 609-010-000-001			✓ See note 3		
7.6.0 609-010-000-001				✓ See note 4	
7.7.0 609-010-000-001					✓ See note 5

Notes for Table 3

1. For information on these versions of VM600^{Mk2} MPC4^{Mk2} SIL firmware, refer to the VibroSight 7.3 release notes. A firmware upgrade is required in order to run VibroSight 7.3.0 or later.

2. For information on these versions of VM600^{Mk2} MPC4^{Mk2} SIL firmware, refer to the VibroSight 7.4 release notes. A firmware upgrade is required in order to run VibroSight 7.4.0 or later.

3. For information on these versions of VM600^{Mk2} MPC4^{Mk2} SIL firmware, refer to the VibroSight 7.5 release notes. A firmware upgrade is required in order to run VibroSight 7.5.0 or later.

4. For information on these versions of VM600^{Mk2} MPC4^{Mk2} SIL firmware, refer to the VibroSight 7.6 release notes.
A firmware upgrade is required in order to run VibroSight 7.6.0 or later.

5. For information on these versions of VM600^{Mk2} MPC4^{Mk2} SIL firmware, see 2.19 MPC4Mk2 + IOC4Mk2 SIL module firmware.
A firmware upgrade is required in order to run VibroSight 7.7.0 or later.

Table 4: VibroSight software and VM600^{Mk2} CPUM^{Mk2} firmware compatibility

	VM600^{Mk2} CPUM^{Mk2} firmware						
VibroSight software version	Base-system / Applications firmware (`*.tgz`)						
Part number (PNR)	`640-034-001-000`	`640-034-001-001`	`640-034-002-000`	`640-034-003-000`	`640-034-003-001`	`640-034-004-000`	`640-034-005-001`
6.1.0 609-004-000-051	✓ See note 1						
7.0.0 609-010-000-001		✓ See note 2					
7.1.0 609-010-000-001			✓ See note 3				
7.2.0 609-010-000-001				✓ See note 4			
7.3.0 609-010-000-001					✓ See note 5		
7.4.0 609-010-000-001					✓		
7.5.0 609-010-000-001						✓ See note 6	
7.6.0 609-010-000-001						✓	
7.7.0 609-010-000-001							✓ See note 7

Notes for Table 4

1. This version of VM600^{Mk2} CPUM^{Mk2} firmware is the official launch release of firmware supporting VM600^{Mk2} systems. (Refer to the VibroSight 6.1 release notes for further information.) A firmware upgrade is required in order to run VibroSight 6.1.0 or later.

2. For information on this version of VM600^{Mk2} CPUM^{Mk2} firmware, refer to the VibroSight 7.0 release notes.
A firmware upgrade is required in order to run VibroSight 7.0.0 or later.

3. For information on this version of VM600^{Mk2} CPUM^{Mk2} firmware, refer to the VibroSight 7.1 release notes.
A firmware upgrade is required in order to run VibroSight 7.1.0 or later.

4. For information on this version of VM600^{Mk2} CPUM^{Mk2} firmware, refer to the VibroSight 7.2 release notes.
A firmware upgrade is required in order to run VibroSight 7.2.0 or later.

5. For information on this version of VM600^{Mk2} CPUM^{Mk2} firmware, refer to the VibroSight 7.3 release notes.
A firmware upgrade is not required but is strongly recommended in order to run VibroSight 7.3.0 or later.

6. For information on this version of VM600^{Mk2} CPUM^{Mk2} firmware, refer to the VibroSight 7.5 release notes.
It is important to note that this firmware version is incompatible with previous VM600^{Mk2} CPUM^{Mk2} firmware versions or the VM600 CPUR2 card and may cause hardware damage if installed. Therefore, to ensure compatibility and prevent any issues, a VM600^{Mk2}/VM600 rack should only contain CPUM^{Mk2} modules with firmware version 640-034-004-000 or later. Also, during the firmware upgrade process, it's crucial to remove all other VM600^{Mk2} CPUM^{Mk2} modules or VM600 CPUR2 cards from the rack in order to avoid potential damage. That is, ensure that only the VM600^{Mk2} CPUM^{Mk2} module receiving the firmware upgrade is present in the rack during the upgrade process.
A firmware upgrade is required in order to run VibroSight 7.5.0 or later.

7. For information on this version of VM600^{Mk2} CPUM^{Mk2} firmware, see 2.20 CPUMMk2 + IOCNMk2 module firmware.
A firmware upgrade is required in order to run VibroSight 7.7.0 or later.

Table 5: VibroSight software and VM600 CPUR2 firmware compatibility

	VM600 CPUR2 firmware See note 1				
VibroSight software version Part number (PNR)	Base-system firmware (`*.tgz`)				
	`640-014-001-002`	`640-014-001-003`	`640-014-001-005`	`640-014-001-006`	`640-014-001-007`
	Applications firmware (`*.tgz`)				
	`640-015-001-002`	`640-015-001-003`	`640-015-001-005`	`640-015-001-006`	`640-015-001-007`
5.0.0 609-004-000-048	✓ See note 2	✓ See note 3			
5.1.0 609-004-000-049	✓	✓			
6.0.0 609-004-000-050	✓	✓			
6.1.0 609-004-000-051	✓	✓			
7.0.0 609-010-000-001			✓ See note 4		
7.1.0 609-010-000-001				✓ See note 5	✓
7.2.0 609-010-000-001				✓	✓
7.3.0 609-010-000-001				✓	✓
7.4.0 609-010-000-001				✓	✓
7.5.0 609-010-000-001				✓	✓
7.6.0 609-010-000-001					✓ See note 6
7.7.0 609-010-000-001					✓

Notes for Table 5 (see the next page)

Notes for Table 5

1. VM600 CPUR2 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 CPUR2 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 version of VM600 CPUR2 firmware includes improvements such as overall performance, responsiveness and stability, and support for CPUR2/IOCR2 card pair relays, and the ability to download the GSD file directly from the card. A firmware upgrade is strongly recommended but is not required in order to run VibroSight 4.1.0 or later.
Note: VibroSight 4.1.0 or later must be used in order to download the VM600 CPUR2 GSD file directly from the CPUR2 card.

3. For information on this version of VM600^{Mk2} CPUR2 firmware, refer to the VibroSight 7.0 release notes.
A firmware upgrade is required in order to run VibroSight 7.0.0 or later.

4. For information on this version of VM600^{Mk2} CPUR2 firmware, refer to the VibroSight 7.0 release notes.
A firmware upgrade is required in order to run VibroSight 7.1.0 or later.

5. For information on this version of VM600^{Mk2} CPUR2 firmware, refer to the VibroSight 7.0 release notes.
A firmware upgrade is required in order to run VibroSight 7.1.0 or later.

6. For information on this version of VM600^{Mk2} CPUR2 firmware, refer to the VibroSight 7.6 release notes.

Table 6: VibroSight software and VM600 CPUR firmware compatibility

	VM600 CPUR firmware See note 1	
VibroSight software version Part number (PNR)	Base-system firmware (`*.tgz`)	
	`640-011-001-004`	`640-011-001-005`
	Applications firmware (`*.tgz`)	
	`640-012-001-004`	`640-012-001-005`
5.0.0 609-004-000-048	✓ See note 2	✓ See note 3
5.1.0 609-004-000-049	✓	✓
6.0.0 609-004-000-050	✓	✓
6.1.0 609-004-000-051	✓	✓
7.0.0 609-010-000-001	✓	✓
7.1.0 609-010-000-001	✓	✓
7.2.0 609-010-000-001	✓	✓
7.3.0 609-010-000-001	✓	✓
7.4.0 609-010-000-001	✓	✓
7.5.0 609-010-000-001	✓	✓
7.6.0 609-010-000-001	✓	✓
7.7.0 609-010-000-001	✓	✓

Notes for Table 6 (see the next page)

Notes for Table 6

1. VM600 CPUR firmware is packaged and distributed as a *.tgz* file (a compressed archive file format) with PNRs such as *640-011-001-xxx* for the Base-system and *640-012-001-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 *640-011-000-xxx* for the Base-system and *640-012-000-xxx* for the Firmware, which correspond to the actual unpacked firmware that is running on the card.

2. This is the latest official release of VM600 CPUR firmware (that is, the earlier version of the CPUx card with support for card pair redundancy (PNR 600-007-000-vvv)), which was discontinued in VibroSight 2.12.0 and reintroduced in VibroSight 4.0.x).

3. This version of VM600 CPUR firmware includes a bug fix for a known VM600 CPUx time counter wraparound (overflow) issue and the addition of relay outputs to the diagnostics logs. A firmware upgrade is strongly recommended but is not required in order to run VibroSight 4.1.0 or later.

Table 7: VibroSight software and VM600 XMx16 firmware compatibility

	VM600 XMx16 firmware See note 1		
VibroSight software version Part number (PNR)	Base-system firmware (`*.tgz`)		
	`640-003-001-016`	`640-003-001-017`	`640-003-001-018`
	Applications firmware (`*.tgz`)		
	`640-010-001-016`	`640-010-001-017`	`640-010-001-018`
5.0.0 609-004-000-048	✓ See note 2		
5.1.0 609-004-000-049	✓		
6.0.0 609-004-000-050	✓		
6.1.0 609-004-000-051	✓		
7.0.0 609-010-000-001	✓		
7.1.0 609-010-000-001	✓		
7.2.0 609-010-000-001	✓		
7.3.0 609-010-000-001	✓		
7.4.0 609-010-000-001	✓		
7.5.0 609-010-000-001		✓ See note 3	✓ See note 4
7.6.0 609-010-000-001		✓	✓
7.7.0 609-010-000-001			✓

Notes for Table 7 (see the next page)

Notes for Table 7

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 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.

3. For information on this version of VM600 XMx16 firmware, refer to the VibroSight 7.5 release notes.
A firmware upgrade is required in order to run VibroSight 7.5.0 or later.

4. For information on this version of VM600 XMx16 firmware, see 2.21 XMx16 + XIO16T module firmware.
A firmware upgrade is required in order to run VibroSight 7.7.0 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 Parker Meggitt (Meggitt SA) should also be stored in these directories.

Table 8 shows the compatibility between VibroSight software and the VibroSmart VSI010 firmware.

Table 9 shows the compatibility between VibroSight software and the VibroSmart VSN010 firmware.

Table 10 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 8: VibroSight software and VibroSmart VSI010 firmware compatibility

	VSI010 firmware (*.xmsifw) See note 1					
VibroSight software version Part number (PNR)	642-002-000-011	642-002-000-012	642-002-000-013	642-002-000-014	642-002-000-015	642-002-000-016
5.1.0 609-004-000-049	✓ See notes 2 and 3	✓ See notes 2 and 4				
6.0.0 609-004-000-050	✓	✓				
6.1.0 609-004-000-051			✓ See notes 2 and 5			
7.0.0 609-010-000-001			✓			
7.1.0 609-010-000-001				✓ See notes 2 and 6		
7.2.0 609-010-000-001				✓		
7.3.0 609-010-000-001				✓		
7.4.0 609-010-000-001				✓		
7.5.0 609-010-000-001				✓		
7.6.0 609-010-000-001					✓ See notes 2 and 7	✓ See notes 2 and 8
7.7.0 609-010-000-001						✓

Notes for Table 8 (see the next page)

Notes for Table 8

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)).

3. This version of VibroSmart VSI010 firmware adds support for Modbus function code 03.
A firmware upgrade is required in order to run VibroSight 5.0.0 or later.

4. This version of VibroSmart VSI010 firmware adds support for module lock and the GOOSE communications protocol (IEC 61850).
A firmware upgrade is required in order to run VibroSight 5.0.0 or later.

5. For information on this version of VibroSmart VSI010 firmware, refer to the VibroSight 6.1 release notes.
A firmware upgrade is required in order to run VibroSight 6.1.0 or later.

6. For information on this version of VibroSmart VSI010 firmware, refer to the VibroSight 7.1 release notes.
A firmware upgrade is required in order to run VibroSight 7.1.0 or later.

7. For information on this version of VibroSmart VSI010 firmware, refer to the VibroSight 7.6 release notes.
A firmware upgrade is required in order to run VibroSight 7.6.0 or later.

8. For information on this version of VibroSmart VSI010 firmware, see 2.22 VSI010 + VSB010 module firmware.
A firmware upgrade is required in order to run VibroSight 7.7.0 or later.

Table 9: VibroSight software and VibroSmart VSN010 firmware compatibility

	VSN010 firmware (`*.redboxfw`) See note 1		
VibroSight software version Part number (PNR)	`642-004-000-011`	`642-004-000-012`	`642-004-000-013`
5.1.0 609-004-000-049	✓ See note 2		
6.0.0 609-004-000-050	✓		
6.1.0 609-004-000-051	✓		
7.0.0 609-010-000-001	✓		
7.1.0 609-010-000-001		✓ See notes 2 and 3	
7.2.0 609-010-000-001		✓	
7.3.0 609-010-000-001		✓	
7.4.0 609-010-000-001		✓	
7.5.0 609-010-000-001		✓	
7.6.0 609-010-000-001			✓ See notes 2 and 4
7.7.0 609-010-000-001			✓

Notes for Table 9 (see the next page)

Notes for Table 9

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)).

3. For information on this version of VibroSmart VSN010 firmware, refer to the VibroSight 7.1 release notes.
A firmware upgrade is required in order to run VibroSight 7.1.0 or later.

4. For information on this version of VibroSmart VSN010 firmware, refer to the VibroSight 7.6 release notes.
A firmware upgrade is required in order to run VibroSight 7.6.0 or later.

Table 10: VibroSight software and VibroSmart VSV30x firmware compatibility

	VSV30x firmware (`*.xtranfw`) See note 1				
VibroSight software version Part number (PNR)	`642-001-000-000DEV_SVN14937_2020-05-20`	`642-001-000-019`	`642-001-000-020`	`642-001-000-021`	`642-001-000-022`
5.1.0 609-004-000-049	✓ See notes 2 and 3				
6.0.0 609-004-000-050	✓				
6.1.0 609-004-000-051		✓ See notes 2 and 4			
7.0.0 609-010-000-001		✓			
7.1.0 609-010-000-001			✓ See notes 2 and 5		
7.2.0 609-010-000-001			✓		
7.3.0 609-010-000-001			✓		
7.4.0 609-010-000-001			✓		
7.5.0 609-010-000-001				✓ See notes 2 and 6	
7.6.0 609-010-000-001					✓ See notes 2 and 7
7.7.0 609-010-000-001					✓

Notes for Table 10 (see the next page)

Notes for Table 10

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 improves support for hydro air-gap and magnetic-flux monitoring with a minor bug fix.
A firmware upgrade is required in order to run VibroSight 5.1.0 or later.

4. For information on this version of VibroSmart VSV30x firmware, refer to the VibroSight 6.1 release notes.
A firmware upgrade is required in order to run VibroSight 6.1.0 or later.

5. For information on this version of VibroSmart VSV30x firmware, refer to the VibroSight 7.1 release notes.
A firmware upgrade is required in order to run VibroSight 7.1.0 or later.

6. For information on this version of VibroSmart VSV30x firmware, refer to the VibroSight 7.5 release notes.
A firmware upgrade is required in order to run VibroSight 7.5.0 or later.

7. For information on this version of VibroSmart VSV30x firmware, refer to the VibroSight 7.6 release notes.
A firmware upgrade is required in order to run VibroSight 7.6.0 or later.

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^{Mk2}/VM600 and/or VibroSmart modules/devices to the latest compatible version.

Failure to perform a necessary VibroSight-compatible VM600^{Mk2}/VM600 and/or VibroSmart modules/devices 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 VM600^{Mk2}/VM600 and/or VibroSmart modules/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: Updating the firmware for VM600^{Mk2}/VM600 and/or VibroSmart modules/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. It is therefore strongly recommended to change the firmware of VibroSight-compatible hardware only when it is necessary. For example, when the devices must be updated to be compatible with a VibroSight software upgrade.

During the firmware update of a device, the module or card 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.

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.

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 (VM600^{Mk2}/VM600 and/or VibroSmart modules/devices) 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 VM600^{Mk2}/VM600 and/or VibroSmart modules/devices in the tree structure or some are missing, verify your network connections.
3. Select the module 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 VM600^{Mk2}/VM600 or VibroSmart modules/devices selected.
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, it is recommended to check that VibroSight has not been inadvertently modified and that it continues to operate normally.

In particular, it is recommended to check any VibroSight Servers in order to ensure that the data acquisition and external interfaces, data post-processing and/or logging are all configured as expected.

In a VibroSight Server user interface:

- On the Status tab under Device drivers, check that the VM600, VibroSmart, OPC and Modbus controls are enabled or disabled as required by your application.
- On the Status tab under Server features, check that the Basic math, Air gap, Combustion monitoring, Duration counters, VSHDA import and Data logging manager controls are enabled or disabled as required by your application.
- On the Log messages tab, check the listed messages (Info level) to ensure that the hardware (VM600^{Mk2}/VM600 modules/cards and /or VibroSmart modules) have been discovered and that data acquisition has resumed.

NOTE:	When a VibroSight Server is running as a Windows service, the usual VibroSight Server user interface is not displayed, so VibroSight System Manager must be used to work with the VibroSight Server. That is, VibroSight System Manager can be used to connect to a VibroSight Server in order to check and configure the operation of the server's drivers and features.

Finally, after an upgrade, it is strongly recommended to use VibroSight Vision to connect to any VibroSight Servers in order to verify that new live and/or historical data is available.

7 Customer support

7.1 Contacting us

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

Customer support
Parker Meggitt (Meggitt SA)
Route de Moncor 4
Case postale
1701 Fribourg
Switzerland

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

7.2 Technical support

Parker Meggitt 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

Parker Meggitt 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 11	Windows 10	Windows 8.1
VibroSight software compatible?	Yes	Yes	Yes but not recommended for new installations as Microsoft mainstream support ended in 2018 and extended support ended in 2023

VibroSight software and Windows® Server operating system compatibility

	Windows Server 2022	Windows Server 2016	Windows Server 2012
VibroSight software compatible?	Yes	Yes	Yes but not recommended for new installations as Microsoft mainstream support ended in 2018 and extended support ended in 2023

VibroSight software and Microsoft® .NET requirements

VibroSight software version	Microsoft .NET requirements
VibroSight 7.6.x or later	.NET 8.0 Desktop Runtime (v8.0.8) or later
VibroSight 7.4.x or later	.NET 7.0 SDK v7.0.306 or later
VibroSight 3.7.0 or later	.NET Framework 4.7.2 See note 1
VibroSight 3.4.0 or later	.NET Framework 4.7.1 See note 2
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 3
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 4.7.2 replaces .NET Framework versions 4.0 to 4.7.1.

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

3. 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).