Enabling the Extraordinary
To Fly To Power To Live

MEGGITT

RELEASE NOTES

vibro-meter®

VibroSight® software version 7.6

VibroSight
Machinery Protection & Condition Monitoring Software

Parker Meggitt,
Motion, Power & Sensing Division (MPSD)
Meggitt SA, Route de Moncor 4, Case postale, 1701 Fribourg, Switzerland

Tel: +41 26 407 1111
Fax: +41 26 407 1301
energy@ch.meggitt.com
www.meggittsensing.com/energy
www.meggitt.com
www.parker.com

REVISION RECORD SHEET

SW version / RN edition	Date of issue	Written and modified by	Description	Signature
7.6.0 / 1	27.09.2024	Peter Ward	This document corresponds to VibroSight version 7.6.0.	PW
7.6.0 / 2	08.10.2024	Peter Ward	This document corresponds to VibroSight version 7.6.0. For the VM600^{Mk2} MPC4^{Mk2} SIL module, the required versions of condition monitoring firmware (640-033-006-000, not 640-033-005-000) and protection test (proof test) firmware (640-032-004-001, not 640-032-004-000) have been corrected. See 5.2 VM600Mk2/VM600 modules (cards) on page 43 and Table 3 on page 53. The term “protection test” is now preferred (was “proof test”).	PW
7.6.0 / 3	25.10.2024	Peter Ward	This document corresponds to VibroSight version 7.6.0. For the VM600^{Mk2} CPUM^{Mk2} module, the latest version of firmware has been corrected (640-034-004-000, not 640-034-003-001). See 5.2 VM600Mk2/VM600 modules (cards) on page 43 and Table 4 on page 54.	PW

	Department	Name	Date	Signature
Technical content approved by	Product Management	Alfonso Fernandez	27.09.2024	AF
	Software Engineering	Julien Grossrieder	---	---
Document released by	Technical Publications	Peter Ward	25.10.2024	PW

The duly signed master copy of this page is stored by the Technical publications department of Parker Meggitt (Meggitt SA) and can be obtained by writing to the Technical publications department.

IMPORTANT NOTICE

All information in this document, such as descriptions, specifications, drawings, recommendations and other statements, is believed to be correct and reliable. Although given in good faith, the accuracy and/or completeness of such data is not guaranteed or legally binding on Parker Meggitt (Meggitt SA) and we reserve the right to alter any part of this document/publication without prior notice. Before acquiring and/or using this product, you should evaluate it and determine if it is suitable for your intended application. You should also check our website at www.meggittsensing.com/energy to ensure that the latest versions of documentation are being used. For example, data sheets, certificates, product drawings, user manuals, service bulletins and/or other instructions affecting the product.

Unless expressly agreed in writing with Parker Meggitt, you assume all risks and liability associated with use of the product. Any recommendations and advice given without charge, whilst given in good faith, are not legally binding. We take no responsibility for any statements related to the product which are not contained in a current Parker Meggitt publication, nor for any statements contained in extracts, summaries, translations or any other documents not authored and produced by us.

The certifications and warranties applicable to the products supplied by Parker Meggitt are valid only for new products purchased directly from us or an authorized distributor.

Parker Meggitt reserves the right to alter any part of this publication without prior notice.

EXPORT CONTROL

The information contained in this document may be subject to export control regulations of the European Community, USA or other countries. Each recipient of this document is responsible for ensuring that the transfer or use of any information contained in this document complies with all relevant export control regulations. ECN N /A.

COPYRIGHT

Published and printed by Parker Meggitt (Meggitt SA) in Fribourg, Switzerland.

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 7.6.0
  (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 7.5.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 660-010-006-236A)

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 7.5.0 (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.

TABLE OF CONTENTS

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 7.6.0 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 Automatic configuration of Windows Firewall by VibroSight

When the VibroSight software is installed on a computer, the VibroSight software installer will now automatically add the required VibroSight software modules to the list of programs allowed to communicate through the Windows Firewall (Microsoft Defender Firewall in Windows 10).

Accordingly, it is no longer required to manually configure the Windows Firewall after installing VibroSight, as described in the software installation guide (*Getting started with VibroSight® installation guide*).

2.2 VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} support for smaller spectra

VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring modules (standard and SIL versions) now have the option to configure spectra of 100, 200, 400 or 800 lines for machinery protection and/or condition monitoring.

Note: This is in addition to the existing support for spectra of 1600, 3200 or 6400 lines for condition monitoring.

2.3 VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} frequency domain band measurement qualifiers

For VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring modules (standard and SIL versions), frequency domain band measurements now support peak, peak-to-peak and average qualifiers (rectifiers).

Note: This is in addition to the existing support for the RMS qualifier (rectifier).

2.4 VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} measurement bad data quality flag

For VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring modules (standard and SIL versions), measurements now have an associated bad data quality flag that can be used as an input to logical functions and/or relays in order to indicate when a measurement is not OK.

For example, the bad data quality flag associated with a speed measurement could be used to detect when the reference speed required by order tracking measurements is not OK.

2.5 VibroSight Protect Dashboard behaviour when a VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} module is in safe state

In VibroSight Protect, on the Dashboard tab/page, when a VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring module is in a safe sate (that is, fail-safe mode) due to a Error class 1 fatal-level problem or a Error class 2 error-level problem, then the Dashboard no longer displays the alarm controls section for the module (since in this situation it is not possible to perform any actions related to alarm controls).

When a “Class 2: Error” is triggered, the user shall be able to acknowledge the fail-safe condition and force the module back to the operational (running) mode by pressing a new “Re-arm module” button that is displayed in the Dashboard module, in the Module status section.

When a “Class 1: Fatal Error” is triggered, then a replacement or repair of the MPC4^{Mk2} + IOC4^{Mk2} module is necessary, so the “Re-arm module” button is not displayed.

When the user presses the “Re-arm module“ button then an Alarm reset (XNP) command will is sent to the MPC4^{Mk2} + IOC4^{Mk2} module.

Note: This Alarm Reset (XNP) command on top of resetting the alarms also brings the module out of the safe sate (fail-safe mode) to the operational (running) mode.

2.6 VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} magnetic flux measurements in VibroSight Protect

VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring modules (standard and SIL versions) now have the option to configure measurements for magnetic flux sensors in VibroSight Protect.

Magnetic flux measurements can either be in the time domain or frequency domain, and can be fixed frequency or order tracking based (data acquisition). By default, “Flux” measurements are configured as fixed frequency, 30 to 500 Hz, with a flat-top window.

As a result, magnetic flux measurements can now be shared with external third-party systems such as a DCS, PLC or SCADA system via the fieldbus interface(s) of a VM600^{Mk2} CPUM^{Mk2} + IOCN^{Mk2} rack controller and communications interface module.

Previously, it was not possible to configure magnetic flux measurements in VibroSight Protect, as they are not primarily considered as machinery protection measurements and so were only configurable in VibroSight Capture.

2.7 VibroSight System Manager and VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} configuration information

When VibroSight system Manager displays the machinery protection configuration information for a selected VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring module (standard version), this now includes a date and time stamp, and a cyclic redundancy check (CRC) value.

Note: This is the same as the equivalent information already displayed for the VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} (SIL version) and is intended to allow users to more easily identify/verify the version of a machinery protection configuration running on a VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} module.

In VibroSight system Manager, when a device is selected in the System explorer (left), this information is available in the main window (centre), under General information, Machinery protection configuration.

2.8 VibroSight Protect and VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} diagnostic options

In VibroSight Protect, when configuring a VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring module (standard and SIL versions), diagnostic options for the module are now managed/organised and displayed in a slightly different manner.

In VibroSight Protect, on the Configure tab/page, when a module is selected (top), the configurable diagnostic information is available under Diagnostic options, on the General tab.

These Diagnostic options are:

- Watch speed input DC saturation
  This is a new option that allows the module to monitor auxiliary input channels configured for speed measurements for non-normal operation, that is, saturation at one of the extremes of the sensor /measurement chains input range (DC or mA) – if for longer than 1 hour.
  For example, for a speed measurement using a proximity probe as the tacho sensor (for a shaft with a notch or teeth), the DC value (average below 1 Hz) is within the saturation levels when the machine is rotating (that is, normal operation). But the DC value saturates if the machine stops with its sensor teeth above the proximity probe or could saturate depending on a sensor / measurement chain failure.
- Watch RLC16 SIL relay status
  This option was previously available elsewhere on the General tab.
  Note: Monitoring the status of an associated RLC16^{Mk2} relay module by a MPC4^{Mk2} module is optional for the standard versions of the modules but was compulsory for the SIL versions of the modules. That is, it is required in safety-related applications (functional safety contexts).
  See also 2.16 VM600^{Mk2} VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} SIL and the “Watch RLC16 SIL relay status”.

Please note that during normal operation of a VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} module (SIL version), detection of either one of these diagnostic options (if selected) will result in the module entering the safe state (fail-safe mode).

2.9 VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} dual taper ramp angles

For VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring modules (standard and SIL versions), for the differential expansion (dual taper) and rotor expansion (dual taper) measurements, the range of the ramp angles (α_1 and α_2) used by these processing functions has been increased to 1 to 60°.

Previously, the range of these ramp angles (α_1 and α_2) was limited to 5 to 60°.

2.10 VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} digital filtering

For VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring modules (standard and SIL versions), for the digital filtering implemented by processing functions, a new Low latency mode control has been added in order to allow digital high-pass filtering with a faster response to be selected, as required.

In VibroSight Protect, when configuring a measurement/processing, the filter settings window (including the Low latency mode control), are displayed by clicking the Frequency span settings (blue) on the Processing tab, on the Configure tab/page.

Note: The Low latency mode control is unavailable (greyed out) when the According to ISO-2954 control is selected. By default, the According to ISO-2954 control is selected and the Low latency mode control is not selected.

When the Low latency mode control is selected, digital high-pass filtering with a faster response (about half the delay) will be implemented, although this trade-off results in lower quality (reduced accuracy) filtering. Also, with Low latency mode, the maximum high-pass filter cutoff frequency is reduced to 200 Hz.

2.11 VibroSight Protect and VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} speed measurement filtering

For VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring modules (standard and SIL versions), for auxiliary input channels configured for speed measurements, new “debounce” filtering options have been added in order to support the improved filtering of speed measurements and avoid measuring wrong speed values.

In VibroSight Protect, when configuring speed measurement/processing, the debounce filter options are available on the General tab, on the Configure tab/page.

The debounce filter options are:

- Debounce filter enabled
  The Debounce filter enabled control is not selected by default but must be enabled in order to make the other debounce filter controls (Shaft circumference, Shaft projection or notch length, Fastest measurable speed, and Debounce time) available.
- Shaft circumference
  A mechanical dimension of the shaft monitored by the speed sensor / measurement chain. This value is to be entered by the user.
- Shaft projection or notch length
  A mechanical dimension of the shaft monitored by the speed sensor / measurement chain. This value is to be entered by the user.
- Fastest measurable speed
  The fastest speed expected to be monitored by the speed sensor / measurement chain. This value is to be entered by the user.

- Debounce time
  The Debounce time is automatically calculated by the VibroSight software, based on the Shaft circumference, Shaft projection or notch length, and Fastest measurable speed values entered. It is this value that is used to implement the debounce filter on the MPC4^{Mk2} + IOC4^{Mk2} module.

In general, the debounce filter can be used to suppress noise, glitches, and other unwanted signals from the analogue sensor signal input to a measurement channel.

2.12 VibroSight Configurator and VibroSmart VSV30x + VSB300 speed measurement filtering

For VibroSmart VSV30x + VSB300 monitoring modules, for auxiliary input channels configured for speed measurements, new “debounce” filtering options have been added in order to support the improved filtering of speed measurements and avoid measuring wrong speed values.

In VibroSight Configurator, when configuring speed measurement/processing, the debounce filter options are available on the Tacho input channel page, under the Input channels.

The debounce filter options are:

- Debounce filter enabled
  The Debounce filter enabled control is not selected by default but must be enabled in order to make the other debounce filter controls (Shaft circumference, Shaft projection or notch length, Fastest measurable speed, and Debounce time) available.
- Shaft circumference
  A mechanical dimension of the shaft monitored by the speed sensor / measurement chain. This value is to be entered by the user.
- Shaft projection or notch length
  A mechanical dimension of the shaft monitored by the speed sensor / measurement chain. This value is to be entered by the user.
- Fastest measurable speed
  The fastest speed expected to be monitored by the speed sensor / measurement chain. This value is to be entered by the user.
- Debounce time
  The Debounce time is automatically calculated by the VibroSight software, based on the Shaft circumference, Shaft projection or notch length, and Fastest measurable speed values entered. It is this value that is used to implement the debounce filter on the VSV30x + VSB300 module.

In general, the debounce filter can be used to suppress noise, glitches, and other unwanted signals from the analogue sensor signal input to a measurement channel.

2.13 VSV30x + VSB300 support for full spectrum

The VibroSmart VSV30x + VSB300 monitoring module now supports a full spectrum measurement.

Accordingly, when VibroSight Configurator is being used to configure a Dual shaft relative processing block, right-click on the processing block in the System view in order to select and configure a New full spectrum data entity.

2.14 VSV30x + VSB300 support for shaft centerline

The VibroSmart VSV30x + VSB300 monitoring module now supports a shaft centerline measurement.

Accordingly, when VibroSight Configurator is being used to configure a Dual shaft relative processing block, right-click on the processing block in the System view in order to select and configure a Shaft centerline data entity data entity.

2.15 VSI010 + VSB010 support for PROFINET

The VibroSmart VSI010 + VSB010 communications interface module now supports the PROFINET fieldbus communications interface.

Note: This is in addition to the existing support for PROFIBUS, Modbus (RTU and TCP) and GOOSE (IEC 61850).

The VSI010 + VSB010 module now provides a GSDML file for the PROFINET and a GSD file for the PROFIUS, which are archived into a single `tar.gz` file.

Accordingly, VibroSight System Manager can be used to connect to a VSI010 + VSB010 module and download the latest version of these files directly from the module, as required.

SIL safety related

2.16 VM600^{Mk2} VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} SIL and the “Watch RLC16 SIL relay status”

For the VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} SIL machinery protection and condition monitoring module, use of the Watch RLC16 SIL relay status diagnostic option can now be configured as either enabled or disabled, as required. That is, VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} SIL modules now support watch RLC16 (SIL) relay status, as per the MPC4^{Mk2} + IOC4^{Mk2} module (standard version).

Note: For VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} SIL modules, Watch RLC16 SIL relay status is enabled (selected) by default. While for VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} modules, Watch RLC16 relay status is disabled (not selected) by default.

Previously, for the VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} SIL module, the Watch RLC16 SIL relay status diagnostic option was fixed as enabled and could not be changed (that is, it was not user-configurable).

SAFETY NOTE:	Even though the VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} SIL machinery protection and condition monitoring module now allows the Watch RLC16 SIL relay status option to be disabled, use of the “Watch RLC16 SIL relay status” is required by the VM600^{Mk2} safety manual and therefore it is recommended. This is important for safety-related applications (functional safety contexts).

2.17 VM600^{Mk2} VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} SIL to RLC16^{Mk2} SIL relay connections

For connections/communications between the VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} SIL machinery protection and condition monitoring module and the VM600^{Mk2} RLC16^{Mk2} SIL relay module, the VM600^{MK2}/VM600 rack's Open Collector (OC) bus and the Raw bus can now be used, as required. That is, VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} SIL modules can now use the Raw bus, as per the MPC4^{Mk2} + IOC4^{Mk2} module (standard version).

Previously, for communications between the VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} SIL module and the VM600^{Mk2} RLC16^{Mk2} SIL module, the Raw bus was restricted to the Watch RLC16 SIL relay status signals and the OC bus was restricted to the logical function signals used to drive relays.

The Watch RLC16 SIL relay status signals ("Status" and "Redline") are still restricted to the Raw bus and the logical function signals used to drive relays still use the OC bus by default. However, it is now possible to change the routing of the logical function signals to use the OC bus or the Raw bus, as required. Changing of the routing (bus selection) is made by selecting a particular bus in the Bus view on the Layout tab/page, and clicking Route via … under Routing.

SAFETY NOTE:	Even though the VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} SIL machinery protection and condition monitoring module now allows the Raw bus to be used to connect to / drive a relay on the VM600^{Mk2} RLC16^{Mk2} SIL relay module, use of the Open Collector (OC) bus is required by the VM600^{Mk2} safety manual and therefore it is recommended. This is important for safety-related applications (functional safety contexts).

2.18 VM600^{Mk2} RLC16^{Mk2} SIL and logical functions

For the VM600^{Mk2} RLC16^{Mk2} SIL relay module, the use of logical functions is now supported. That is, RLC16^{Mk2} SIL modules now support logical functions, as per the RLC16^{Mk2} relay module (standard version).

Previously, the VM600^{Mk2} RLC16^{Mk2} SIL module did not support logical functions and so a relay on a VM600^{Mk2} RLC16^{Mk2} SIL module could only be driven by a single VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} SIL module.

SAFETY NOTE:	Even though the VM600^{Mk2} RLC16^{Mk2} SIL relay module now supports logical functions, the use of RLC16^{Mk2} SIL logical functions is not supported by the VM600^{Mk2} safety manual and therefore it is not recommended. This is important for safety-related applications (functional safety contexts).

2.19 VM600^{Mk2} RLC16^{Mk2} SIL and relay settings – NE versus NDE

For the VM600^{Mk2} RLC16^{Mk2} SIL relay module, the mode of operation for relays can now be configured as either normally energized (NE) or normally de-energized (NDE), as required. That is, RLC16^{Mk2} SIL modules now support mode of operation for relays, as per like the RLC16^{Mk2} module (standard version).

Previously, for the VM600^{Mk2} RLC16^{Mk2} SIL module, the mode of operation for relays was fixed as normally energized (NE) and could not be changed (that is, it was not user-configurable).

SAFETY NOTE:	Even though the VM600^{Mk2} RLC16^{Mk2} SIL relay module now allows the mode of operation of a relay to be configured as normally de-energized (NDE), the use of RLC16^{Mk2} SIL normally de-energized (NDE) relays is not supported by the VM600^{Mk2} safety manual and therefore it is not recommended. This is important for safety-related applications (functional safety contexts).

2.20 Interoperation of standard and SIL versions of VM600^{Mk2} modules

The standard and SIL versions of VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring modules can now connected to and used with the standard and SIL versions of VM600^{Mk2} RLC16^{Mk2} relay modules.

More specifically, it is now possible to use:

- A VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} module to control the relays on a VM600^{Mk2} RLC16^{Mk2} SIL module.
- A VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} SIL module to control the relays on a VM600^{Mk2} RLC16^{Mk2} SIL module.

Previously, no interoperation between the standard and SIL versions of VM600^{Mk2} modules was possible, that is, the VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} module could only control the relays on a VM600^{Mk2} RLC16^{Mk2} module (standard with standard), and the VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} SIL module could only control the relays on a VM600^{Mk2} RLC16^{Mk2} SIL module (SIL with SIL).

SAFETY NOTE:	Even though the standard and SIL versions of VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} machinery protection and condition monitoring modules can now connected to and used with the standard and SIL versions of VM600^{Mk2} RLC16^{Mk2} relay modules, the interoperation between the standard and SIL versions of VM600^{Mk2} modules is not supported by the VM600^{Mk2} safety manual and therefore it is not recommended. This is important for safety-related applications (functional safety contexts).

VM600^{Mk2} modules

2.21MPC4^{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 2.22 MPC4^{Mk2} + IOC4^{Mk2} module firmware and 2.23 MPC4^{Mk2} + IOC4^{Mk2} SIL module firmware.

2.22MPC4^{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: 640-025-010-000

NOTE:	VM600^{Mk2} MPC4^{Mk2} machinery protection firmware (640-025-010-000) is compatible with both versions of the MPC4^{Mk2} module (PNRs 600-041-000-vvv and 600-041-001-vvv).

New features:

- Support for “Magnetic flux” single channel processing.
- Support for rear Ethernet connector (on IOC4^{Mk2}).
- Allow "Alarm Validity" to be used as relay or logical function input.
- Generate a warning if debug log rate is too high.
- Add Peak, Peak-to-Peak and Average qualifiers (rectifiers) to band measurements.
- Condition-based adaptive monitoring.

- Manage the protection configuration cyclic redundancy check (CRC) and configuration activation timestamp.
- Align the input DC and AC saturation detection time to safe card.
- Improve status feedback when MPC4^{Mk2} configured from IOC4^{Mk2} for hot-swap use case.
- For tacho, allow disabling of module AUX diagnostic saturation checks.
- Integrated FPGA supporting VM burst mode.
- Protection spectrum configurable with fewer lines (100, 200, 400 and 800 lines).
- The speed shall be considered zero (0) with good quality when no tacho pulses are received for a certain time.
- Add "Amplitude, Amplitude range and RMS at angle" measurement in the time domain.
- Remove XML InternalCardValidityMask attribute.
- Improve speed extraction precision.
- Modify protection air-gap processing to replicate ILS730 signal conditioner min gap output.
- Expand DSI statues and cmd.
- Add a low latency HP filter (SigProcLib).
- Digital band pass filter enhancements to interpolation delay (SigProcLib).
- Digital band pass filter configurability of design parameters (SigProcLib).
- Add historical events to the event logger at startup.
- 180° phase shift for signals acquired using bearing absolute vibration processing.

Bug fixes:

- Lag is preventing re-sampling (SigProcLib).
- Resampler fatal exception.
- Logical function output in statuses are not updated for config without processing (using trip multiply (TM) for example).
- Logical functions are not computed when no alarms are configured.
- DSI alarm reset (AR) button needs to be pushed 2 times to reset a relay linked to a common alarm.
- Documentation of gear ratio limitations is not up to date.
- Response to CPUM^{Mk2} data request is taking more than 10 msec.
- IOC4^{Mk2} absence is not correctly detected at runtime.
- Incorrect initialization of configuration parser context data.
- Phase extraction is saturating the analog output.
- Auxiliary channels swapping algorithm fails to assign auxiliary channel to the expected channel group.
- The initial time is wrong when there is a cyclic redundancy check (CRC) error in reading the IVP data from the NVM.

Restrictions:

- Compatible with VibroSight 7.6 only.

See also 5.2 VM600Mk2/VM600 modules (cards.

Condition monitoring firmware: 640-033-006-000

New features:

- Support for “Magnetic flux” single channel processing.
- Add the option to configure spectra with 100, 200, 400 and 800 lines.
- Add Peak, Peak-to-Peak and Average qualifiers (rectifiers) to band measurements.
- Add "Amplitude and Amplitude range at angle" measurement in the time domain.
- Add "RMS at angle" measurement in the time domain.
- Remove XML InternalCardValidityMask attribute.
- Increase the number of orders up to 200.
- 180° phase shift for signals acquired using bearing absolute vibration processing.

Bug fixes:

- SAV incorrect spectrum amplitude.
- SAV missing outputs.
- SAV no compensation for windowing is applied to measurements.
- XY processing measurements are incorrect.
- XY processing excessive leakage on full spectrum.
- Protection alarms not calculated correctly in case of hysteresis.
- Problems with re-sampling when high-pass filter is active.
- Block RMS extraction not implementing qualifiers.
- Data not available when AUX6 active.
- Gear ratio consistency checks are not according to the specification.
- Incorrect initialization of configuration parser context data.

Restrictions:

- Compatible with VibroSight 7.6 only.

See also 5.2 VM600Mk2/VM600 modules (cards.

Recovery firmware: 640-031-007-000

New features:

- Add historical events to the event logger at startup.

Bug fixes:

- Recovery firmware (FW) is not passing the correct task parameter to the protection test RTP.
- The initial time is wrong when there is a cyclic redundancy check (CRC) error in reading the IVP data from the NVM.

Restrictions:

- Compatible with VibroSight 7.6 only.

See also 5.2 VM600Mk2/VM600 modules (cards.

Protection test firmware: 640-032-004-001

Bug fixes:

- Not receiving the correct task parameter from the Recovery firmware (FW).

Restrictions:

- Compatible with VibroSight 7.6 only.

See also 5.2 VM600Mk2/VM600 modules (cards.

2.23MPC4^{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: 640-024-002T002

New features:

- Support for “Magnetic flux” single channel processing.
- Generate a warning if debug log rate is too high.
- Add Peak, Peak-to-Peak and Average qualifiers (rectifiers) to band measurements.
- Condition-based adaptive monitoring.
- For tacho, allow disabling of module AUX diagnostic saturation checks.
- Integrated FPGA supporting VM burst mode.
- Diagnostics of channels disabled when not configured.
- Activate tacho diagnostics in maintenance mode.
- Allow use of Raw bus to route relay signals to relay cards.
- Allow use of NDE relays for non-safe applications.
- Protection spectrum configurable with fewer lines (100, 200, 400 and 800 lines).
- The speed shall be considered zero (0) with good quality when no tacho pulses are received for a certain time.
- Add "Amplitude, Amplitude range and RMS at angle" measurement in the time domain.
- Remove XML InternalCardValidityMask attribute.
- Improve speed extraction precision.
- Modify protection air-gap processing to replicate ILS730 signal conditioner min gap output.
- Expand DSI statues and cmd.
- Digital band pass filter enhancements to interpolation delay (SigProcLib).
- Digital band pass filter configurability of design parameters (SigProcLib).
- Add historical events to the event logger at startup.
- 180° phase shift for signals acquired using bearing absolute vibration processing.
- Allow disabling of RLC16^{Mk2} SIL status diagnostics for non-safe applications.

Bug fixes:

- Lag is preventing re-sampling (SigProcLib).
- Resampler fatal exception.
- Logical function output in statuses are not updated for config without processing (using trip multiply (TM) for example).
- Logical functions are not computed when no alarms are configured.
- SVP - POST diagnostic on firmware (FW) cyclic redundancy check (CRC) not running.
- DSI alarm reset (AR) button needs to be pushed 2 times to reset a relay linked to a common alarm.
- Response to CPUM^{Mk2} data request is taking more than 10 msec.
- IOC4^{Mk2} SIL absence is not correctly detected at runtime.
- Incorrect initialization of configuration parser context data.
- Phase extraction is saturating the analog output.
- Auxiliary channels swapping algorithm fails to assign auxiliary channel to the expected channel group.
- The initial time is wrong when there is a cyclic redundancy check (CRC) error in reading the IVP data from the NVM.

Restrictions:

- Compatible with VibroSight 7.6 only.

See also 5.2 VM600Mk2/VM600 modules (cards.

NOTE: It is important to be aware that this latest SIL machinery protection firmware (640-024-002T002) 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: 640-026-002-000

New features:

- Add historical events to the event logger at startup.

Bug fixes:

- Recovery firmware (FW) is not passing the correct task parameter to the protection test RTP.
- The initial time is wrong when there is a cyclic redundancy check (CRC) error in reading the IVP data from the NVM.

Restrictions:

- Compatible with VibroSight 7.6 only.

See also 5.2 VM600Mk2/VM600 modules (cards.

VM600 modules

2.24CPUR2 + IOCR2 module firmware

Updated VM600 CPUR2 + IOCR2 rack controller and communications interface module firmware with the following main improvements:

Applications firmware: applications-640-015-001-007 and
Base System firmware: base-system-640-014-001-007

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.

Restrictions:

- None (no compatibility regression).

See also 5.2 VM600Mk2/VM600 modules (cards.

VibroSmart modules

2.25VSV30x + VSB300 module firmware

Updated VibroSmart VSV30x + VSB300 monitoring module firmware with the following main improvements:

642-001-000-022

New features:

- Added configurable “debounce” filtering on the tacho.
- Allow module reset from VibroSight System Manager in all operating modes (that is, XNP reset).
- Allow a faster time resynchronization during external time jump above 10 minutes.

Restrictions:

- Compatible with VibroSight 7.6 only.

See also 5.3 VibroSmart devices.

2.26VSI010 + VSB010 module firmware

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

642-002-000-015

New features:

- Updated Avahi (zero-configuration networking) to release 0.6.32.
- Allow module reset from VibroSight System Manager in all operating modes (that is, XNP reset).
- Allow a faster time resynchronization during external time jump above 10 minutes.
- For the GOOSE (IEC 61850) fieldbus interface, make the timestamp optional for data packets.
- Support for the PROFINET fieldbus interface.

Bug fixes:

- BestMaster – RB announce failed.
- GOOSE protocol cannot be disabled.
- GOOSE protocol quality bit wrong bit string.
- GOOSE interface, VLAN IDs above 255 are overflowed back to 0, etc.

Restrictions:

- Compatible with VibroSight 7.6 only.

See also 5.3 VibroSmart devices.

2.27VSN010 module firmware

Updated VibroSmart VSN010 real-time Ethernet switch module firmware with the following main improvements:

642-004-000-013

New features:

- Updated Avahi (zero-configuration networking) to release 0.6.32.

Bug fixes:

- BestMaster – RB announce failed.

Restrictions:

- Compatible with VibroSight 7.6 only.

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 7.6.0 software.

3.2 VibroSight Server and daylight saving time

When starting a VibroSight Server, the option "Adjust for Daylight Saving Time" is always reset (that is, it cannot stay disabled).

3.3 VibroSight Protect, VibroSight Capture and VM600^{Mk2}/VM600 bus links

In ViboSight Protect and VibroSight Capture, nothing happens when clicking on open collector (OC) bus or Raw bus links.

3.4 VibroSight Protect exception error after duplicating a protect file

In ViboSight Protect, after duplicating a protect file (File > Duplicate protect file), selecting a VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} module on the Configure tab/page results in an unhandled exception error.

3.5 VibroSight Protect analog outputs dial indicator not working

In ViboSight Protect, on the Dashboard tab/page, the analog outputs dial indicator needle remains at zero (or appears to) even for non-zero measurement values. And the indicator needle can be moved with the mouse.

3.6 VibroSight Capture problem connecting components and channels

In ViboSight Capture, on the Connect tab/page, it is not possible to connect a particular machine component to its input channel (specifically, a shaft collar element and a rotor position (collar)).

3.7 VibroSight Capture incorrectly configures filtered orbit for a VM600^{Mk2}/VM600 XMV16

In ViboSight Capture, the configuration of a filtered orbit for a VM600^{Mk2}/VM600 XMV16 module uses the incorrect Y signal (same as X).

3.8 VibroSight Capture OPC UA object problem for XMV16 custom sensor channel in OPC UA server

In ViboSight Capture, for a OPC UA server for a VM600^{Mk2}/VM600 XMV16 module, with measuemnt channel configured to Custom Sensor\Custom dynamic, the Overall measurements and waveform in the OPC UA Object list are missing.

3.9 VibroSight Capture Position processing output is linked with the Gap

In ViboSight Capture, the Position processing output is incorrectly linked with the “Gap” physical quantity instead of the “Position” physical quantity.

3.10 VibroSight software not uninstalling correctly

After installing VibroSight 7.5.0, and uninstalling it, a lot of files remain in the program files folder (C:\Program Files\Meggitt\VibroSight\Bin folder).

This can cause issues because the Xms.DataRepository.RollingElementBearing assembly has been renamed to Xms.DataRepository.Demodulation, and this assembly is loaded dynamically. Hence both of the dynamic link libraries (DLLs) are loaded, which prevents VibroSight Servers from working properly.

Note: This may be linked to the XmsHostService.exe process that is not stopped before uninstallation.

3.11 VibroSight Capture problem configuring a full spectrum with negative frequency measurements

In VibroSight Capture, it is not possible to configure a full spectrum with negative frequency measurements due to an incorrect consistency check.

For example, when adding −1X and −2X measurements, the consistency check shows an error:
“The following measurements are not in the range of the frequency span: −1X; −2X”.

3.12 VibroSight System Manager problem copying a data repository containing imported data

In VibroSight System Manager, after copying a data repository (*.VSHDF to *.VSHDA), process data (imported from SCADA using a Modbus client connector) was missing in the generated VSHDA file.

Note: When copying using the system view in the copy wizard, it seems that not all devices are listed, notably Modbus devices from which process data is imported. Accordingly, data items are therefore not selected and not copied.

3.13 VibroSight Protect problem changing configured sensor chains

In VibroSight protect, after a MPC4^{Mk2} + IOC4^{Mk2} module channel has been configured (processing, signal input, etc.), it is not possible to correctly change the sensor / measurement chain by clicking Sensor chain, under Channel x on the General tab (Configure tab/page), as the Channels (left) does not change with / match the change made on the General tab.

3.14 File storage to VSHDA is blocked with a “Cancelling” message

With VibroSight File Storage set up for one-way communication to save data periodically (every x minutes) to a VSHDA file, an issue occurs irregularly with a "Cancelling" message appearing, and the data not being saved.

3.15 VibSight Capture qualifier problem with XMV16 modules

In ViboSight Capture, when working with VM600^{Mk2}/VM600 XMV16 modules, the qualifier (rectifier) used for measurements can be different for Measurement settings and the Alarm settings.

3.16 VibroSight Protect, VibroSight Capture fields listing extractions/measurements is not big enough to show all data

In ViboSight Protect and VibroSight Capture, the Measurements field used to list all of the extractions/measurements configured for a channel is not big enough to show all of the extractions/measurementsa.

For example, in VibroSight Capture, on the Configure tab/page, when a measurement channel is selected (left) and the Processing tab is selected (right), the Measurements field (bottom) can be too small to list all of the extractions/measurements configured.

3.17 VibroSight Capture name refresh problem working with XMV16 modules

In ViboSight Capture, after changing/updating channels of a XMV16 module, the name used in the rack view under the machine train on the Connect tab/page is not updated accordingly.

3.18 VibroSight Capture problem configuring reference speed for air-gap processing

In ViboSight Capture, when configuring air-gap processing for a hydro turbine, it is necessary to define a reference speed. However, it is not possible to configure the Reference speed on the Machinery tab/page even though the consistency check reports “The reference speed measurement of this processing must be added”.

3.19 VibroSight Server time delta not displayed on the user interface

For a ViboSight Server, the time delta between the site time and the reference clock time is not being displayed on the server user interface (under Site time on the Status tab/page), as the displayed Site time textblock overlaps the textblock displaying the Delta time.

3.20 VibroSight Server not connecting to VibroSmart system with PROFINET

When the configuration for a VibroSmart system containing a VSI010 + VSB010 communications interface module configured with a PROFINET interface was saved as a VibroSight Server and subsequently activated, the VibroSight Server did not connect to the system.

3.21 VibroSight Configurator exception error when configuring a VibroSmart system with PROFINET

In VibroSmart Configurator, when configuring a VibroSmart system containing a VSI010 + VSB010 communications interface module configured with a PROFINET interface, clicking on Set output unit for the PROFINET port results in an unhandled exception error.

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 7.6.0 is a minor level release and replaces VibroSight 7.5.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 7.6.0.

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

- Machinery protection: `640-025-010-000.Mpc4g2Fw` (updated)
- Condition monitoring: `640-033-006-000.VxeFw` (updated)
- Recovery: `640-031-007-000.Mpc4g2Fw` (updated)
- Protection test: `640-032-004-001.VxeFw` (updated).

See 2.21 MPC4^{Mk2} + IOC4^{Mk2} module hardware (standard and SIL versions) and 2.22 MPC4^{Mk2} + IOC4^{Mk2} module firmware (standard).

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

- Machinery protection: `640-024-002T002.SafeMpc4g2Fw` (updated)
- Condition monitoring: `640-033-006-000.VxeFw` (updated)
- Recovery: `640-026-002-000.SafeMpc4g2Fw` (updated)
- Protection test: `640-032-004-001.VxeFw` (updated).

See 2.21 MPC4^{Mk2} + IOC4^{Mk2} module hardware (standard and SIL versions) and 2.23 MPC4^{Mk2} + IOC4^{Mk2} SIL module firmware (SIL).

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

- Base system: `base-system-640-034-004-000.tgz`.

The latest firmware for the VM600 CPUR2 card is now:

- 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 remains:

- Applications: `applications-640-010-001-017.tgz`
- Base System: `base-system-640-003-001-017.tgz`.

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 7.6.0.

The latest firmware for the VSV30x module is now:

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

See 2.25 VSV30x + VSB300 module firmware.

The latest firmware for the VSI010 module is now:

- `642-002-000-015.xmsifw`

See 2.26 VSI010 + VSB010 module firmware.

The latest firmware for the VSN010 device is now:

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

See 2.27 VSN010 module firmware.

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

6 Upgrade procedure

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

NOTE:	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 2.21 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`
	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`
	Recovery firmware (`640-031-vvv-ppp.Mpc4g2Fw`)						
	`640-031-003-006`			`640-031-005-001`	`640-031-006-000`		`640-031-007-000`
	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

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, see 2.22 MPC4Mk2 + IOC4Mk2 module firmware.
A firmware upgrade is required in order to run VibroSight 7.6.0 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
	Condition monitoring firmware (640-033-vvv-ppp.VxeFw)			
	640-033-004-000	640-033-005-000		640-033-006-000
	SIL recovery firmware (640-026-vvv-ppp.SafeMpc4g2Fw)			
	640-026-001-000			640-026-002-000
	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

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, see 2.23 MPC4Mk2 + IOC4Mk2 SIL module firmware.
A firmware upgrade is required in order to run VibroSight 7.6.0 or later.

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

	VM600^{Mk2} CPUM^{Mk2} firmware					
VibroSight software version Part number (PNR)	Base-system / Applications firmware (`*.tgz`)					
	`640-034-001-000`	`640-034-001-001`	`640-034-002-000`	`640-034-003-000`	`640-034-003-001`	`640-034-004-000`
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						✓

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.

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

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, see 2.24 CPUR2 + IOCR2 module firmware.

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	✓	✓

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`
	Applications firmware (`*.tgz`)	
	`640-010-001-016`	`640-010-001-017`
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
7.6.0 609-010-000-001		✓

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.

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`
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

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, see 2.26 VSI010 + VSB010 module.
A firmware upgrade is required in order to run VibroSight 7.6.0 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

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, see 2.27 VSN010 module.
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

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, see 2.25 VSV30x + VSB300 module.
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).