vibro–meter®

VibroSight® software version 7.5

VibroSight
Machinery Protection &
Condition Monitoring
Software

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REVISION RECORD SHEET

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PREFACE

About these release notes

This document provides important information about the VibroSight® software from 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 7.5.0
  (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 7.4.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 Meggitt SA documentation:

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

Getting started with VibroSight® installation guide
   (document reference 660-010-006-235A)

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 7.4.0 (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 Meggitt SA products that can be used with the VibroSight® software, the following terminology is used in this document:

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

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

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

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

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

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

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

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

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

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

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

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

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1   Licensing

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

NOTE:	VibroSight 7.5.0 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 Meggitt SA customer support. See 7 Customer support.

2   Features

General

2.1 VM600^{Mk2} SIL certification

We are thrilled to share the exciting news that our VM600^{Mk2} protection and condition monitoring system has received SIL2 certification, marking a significant milestone in our commitment to delivering high-quality and reliable products to our customers.

The SIL2 certification for VM600^{Mk2} is a testament to the dedication and hard work of our team, who have tirelessly worked to ensure that our product meets the stringent safety and reliability standards set forth by industry regulations.

This certification, issued by Exida on the 1st of March 2024, underscores our adherence to the relevant requirements of IEC61508:2010 Parts 1-3. It confirms that the VM600^{Mk2} provides a level of integrity that aligns with SIL2 standards, offering customers peace of mind knowing that our product meets the highest safety standards.

In achieving SIL2 certification, the VM600 Mk2 has demonstrated its systematic capability (SC 2), making it SIL 2 capable, as well as its random capability as a Type A element. Furthermore, it has been verified to operate at SIL 2 under specified conditions, ensuring reliability and performance in demanding environments.

The safety function of the VM600^{Mk2} includes detecting limit violations by comparing measured process values with thresholds and driving relays according to user-defined configurations. However, it is important to note that there are application restrictions, and the unit must be properly designed into a Safety Instrumented Function per the Safety Manual requirements to ensure optimal performance and safety.

In this VibroSight release is introduced the initial official certified Machinery Protection Firmware (FW) for the MPC4^{Mk2} SIL card, identified by part number (PNR) 640-024-001-000.

We are immensely proud of this achievement and remain committed to continuously improving our products and services to meet the evolving needs of our customers.

2.2 Redundancy Support for VM600^{Mk2} CPUM^{Mk2} + IOCN^{Mk2}

This new release introduces redundancy support for VM600^{Mk2} CPUM^{Mk2}, enhancing the reliability and fault tolerance of the VM600 6U rack machinery protection capabilities. Users now have the ability to incorporate two CPUM^{Mk2} cards into their system configuration, ensuring uninterrupted operation in critical environments.

Within the CPUM^{Mk2} fieldbus settings pane, users can easily configure custom fieldbus settings for each CPUM^{Mk2} or choose to apply identical fieldbus configurations to both CPUMs within the rack. This flexible approach allows for tailored configurations while simplifying setup and management tasks.
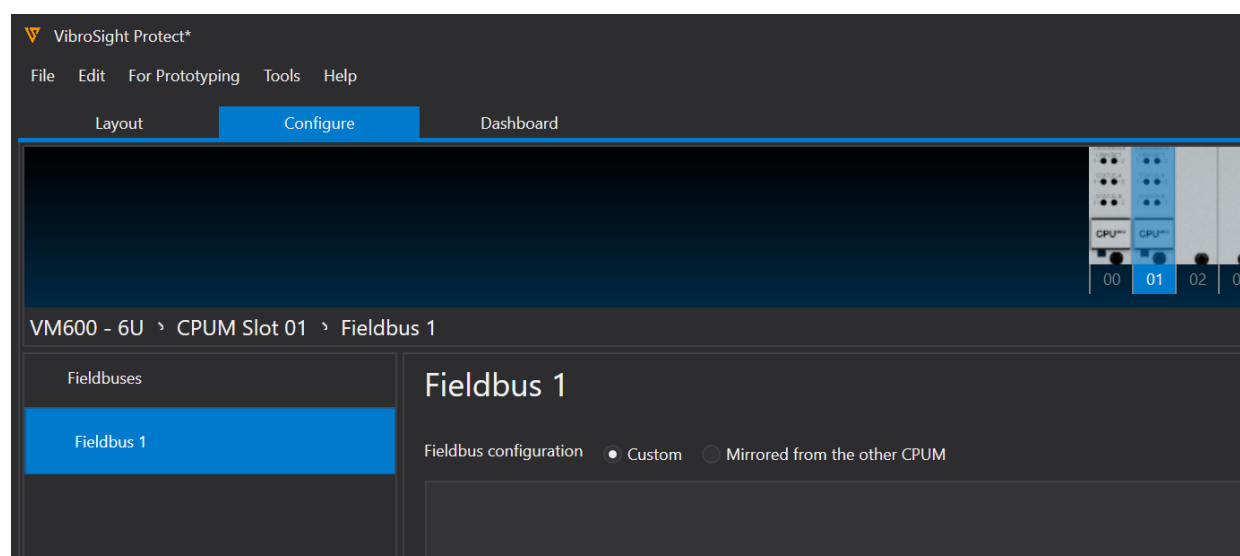
To maintain system integrity and prevent configuration conflicts, a consistency check has been implemented to restrict simultaneous configuration of both CPUMs as mirrored. This ensures that each CPUM operates independently or in a redundant configuration, contributing to enhanced system reliability and stability.

It is worth noting that each CPUM^{Mk2} can accommodate entirely different configurations, providing versatility in deployment scenarios. While there is no check to enforce fully mirrored configurations, users are encouraged to adhere to best practices to optimize system performance and reliability.

With redundancy support for VM600^{Mk2} CPUM^{Mk2}, users can confidently deploy the VM600 in critical applications, knowing that their system is equipped to handle unforeseen failures and maintain continuous operation.

2.3 Support for XMV16 and XMVS16 in VibroSight Capture

VibroSight 7.5 introduces a groundbreaking advancement that significantly expands the capabilities of our platform. With this release, we've enhanced compatibility between VibroSight Capture and condition monitoring cards, opening up new possibilities for users.

Previously, the only card compatible with VibroSight Capture for configuration was the VM600^{Mk2} MPC4^{Mk2} card. However, in response to user feedback and evolving industry demands, we've extended compatibility to include the XMV16 and XMVS16 condition monitoring cards. These cards were previously exclusively configurable using the VibroSight Configurator software, but now users can seamlessly integrate them into their VibroSight Capture workflows.

This enhancement unlocks a world of potential for our users. Now, you can effortlessly manage a mixed array of MPC4^{Mk2} cards and XMV16 or XMVS16 cards within a single VibroSight Capture configuration. This streamlines data management processes and enables the logging of data into a unified VibroSight database using just one VibroSight Server instance.

For users working with VM600^{Mk2} racks containing only XMV16 or XMVS16 cards, the process is now simpler than ever. You no need to utilize VibroSight Protect. Instead, you can create a new VM600^{Mk2} rack directly within VibroSight Capture and proceed to add and configure the necessary XMV16 or XMVS16 cards with ease.

In instances where a VM600^{Mk2} rack comprises a mix of MPC4^{Mk2} cards and XMV16 or XMVS16 cards, our workflow ensures smooth integration. Begin by creating the rack with MPC4^{Mk2} cards using Protect, then effortlessly import the Protect configuration into VibroSight Capture. From there, add and configure the required XMV16 or XMVS16 cards, with VibroSight Capture seamlessly managing signal routing and addressing any potential conflicts through the VM600^{Mk2} internal buses.
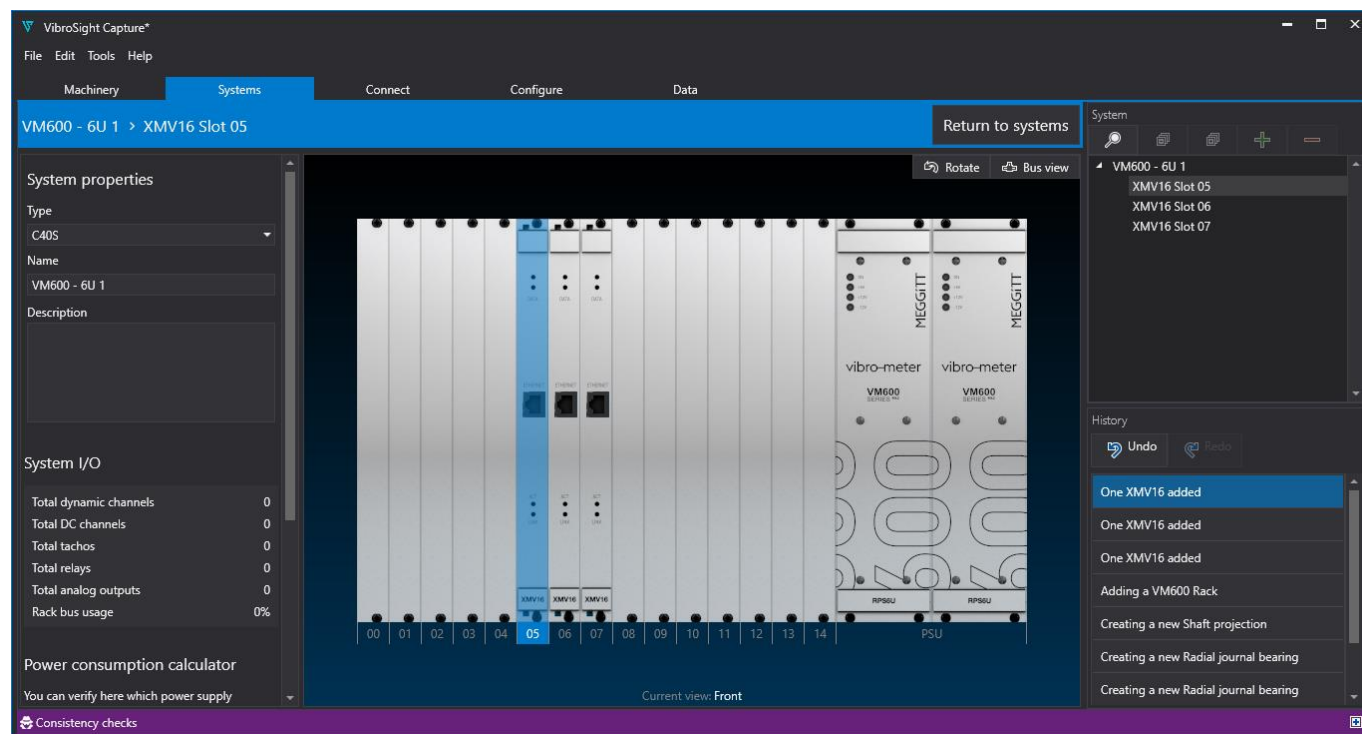
Moreover, our solution remains user-centric. Should modifications be required to the Protection configuration settings, VibroSight Capture simplifies the process by allowing users to reimport the Protect file seamlessly. This

ensures users are promptly alerted to any potential conflicts in the condition monitoring configuration resulting from changes made to the protection configuration.

Furthermore, VibroSight Capture boasts support for a diverse range of processings for the XMV16 or XMVS16 cards. From single-channel to quad-channel processings, including shaft relative vibration, bearing absolute vibration, custom dynamic (including demodulation), custom quasi-static, airgap, magnetic flux, and speed, our platform equips users with unparalleled flexibility and capability.
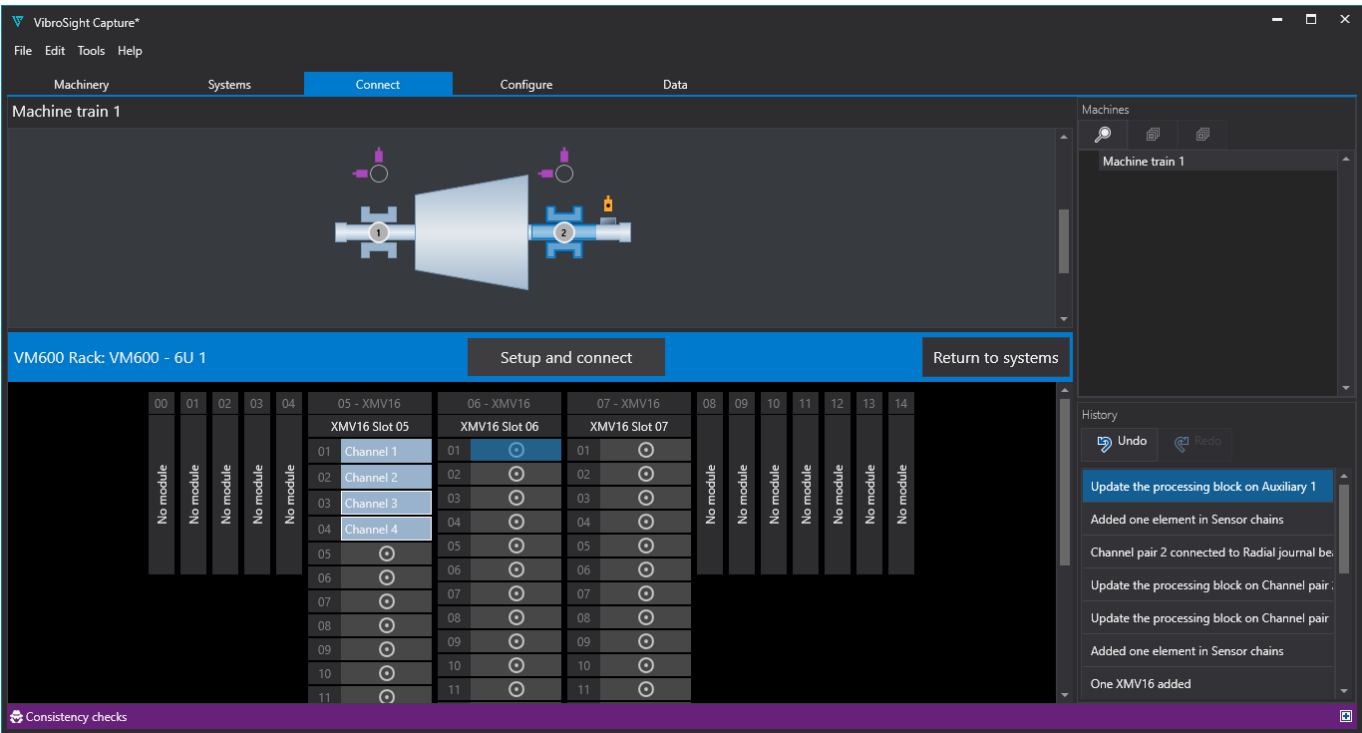
The XMV16 and XMVS16 cards offer 16 dynamic input channels and 4 speed input channels, providing users with extensive connectivity options for machine trains. These channels can be connected to the machine trains in the same manner as with MPC4^{Mk2} cards, ensuring seamless integration into existing setups.

Once an input channel is connected, users gain access to a comprehensive array of configuration settings within the "Configure" main tab. Here, they can fine-tune various parameters and settings to optimize performance and tailor the configuration to their specific needs. This level of customization empowers users to achieve precise monitoring and analysis, enhancing overall efficiency and effectiveness in condition monitoring processes.
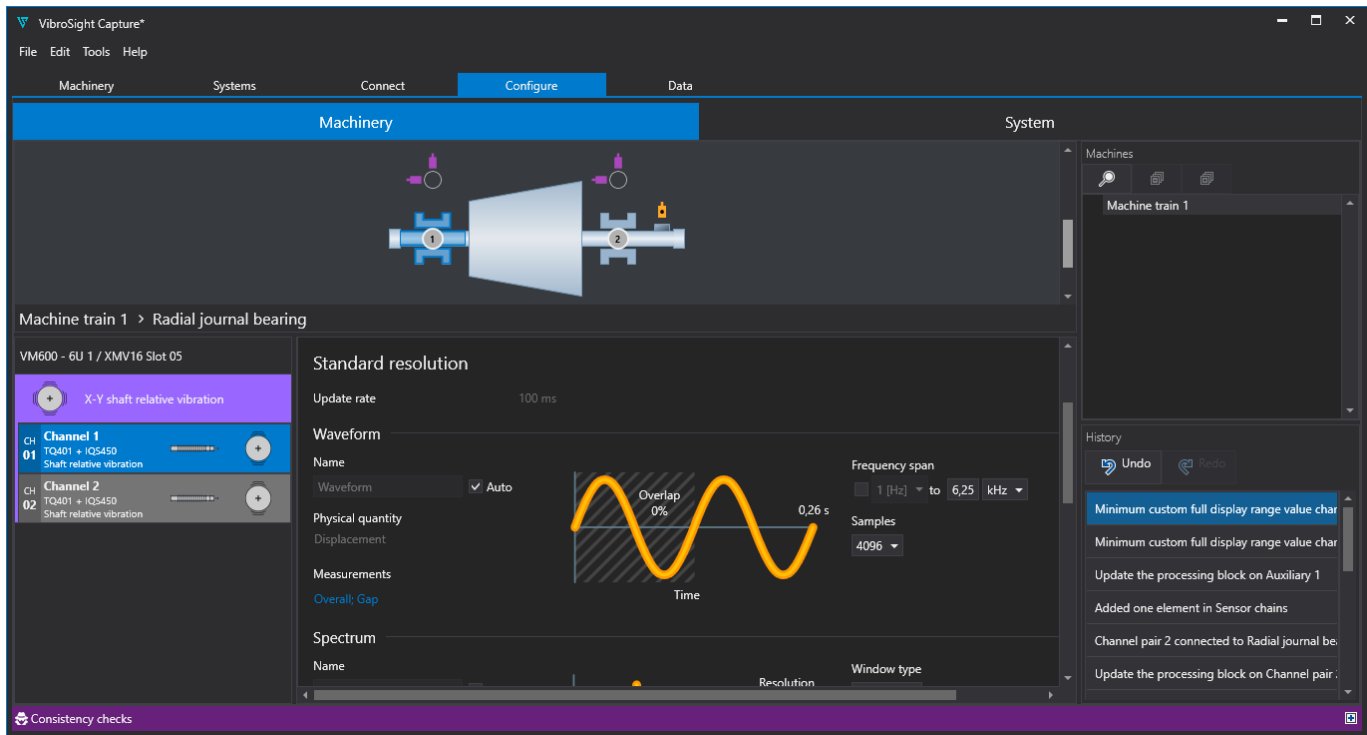
With these enhancements, VibroSight continues to lead the way in condition monitoring, offering users unmatched compatibility, flexibility, and efficiency in configuring their systems.

2.4 Full Display Range Customization in VibroSight Protect and Capture

Users now have enhanced control over the display settings with the introduction of the "Full Display Range" feature. For each configured input channel or dual channel, a new tab titled "Full Display Range" has been added alongside the existing "Alarms" tab.
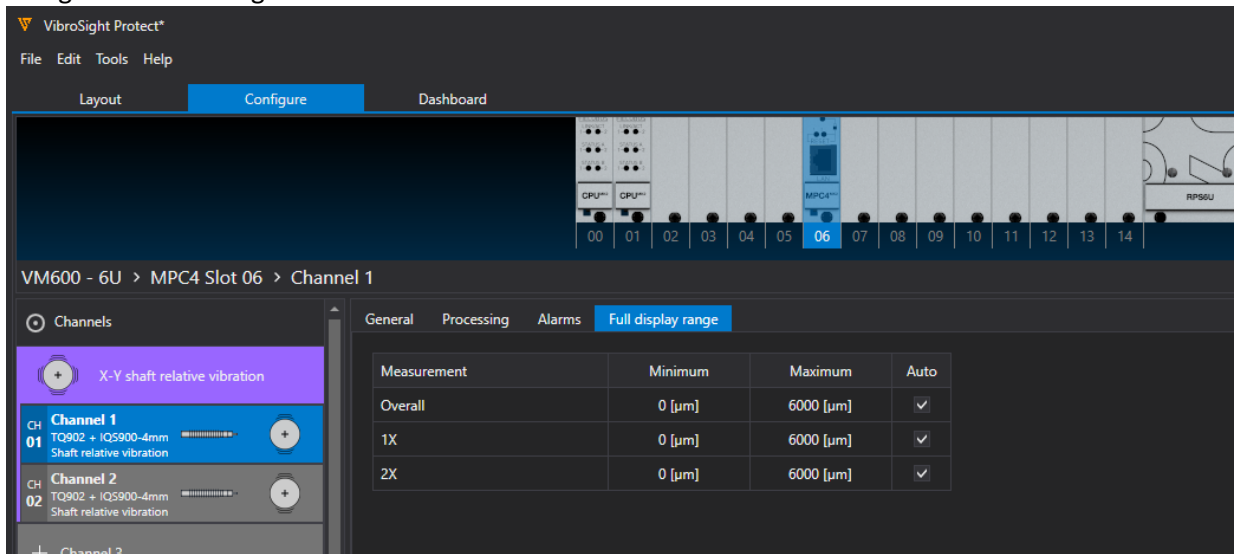
The "Full Display Range" tab presents users with a comprehensive grid displaying the full display settings associated with each processing output measurement. By default, the minimum and maximum values of the Full Display Range are automatically assigned based on the channel input range. However, users have the flexibility to manually adjust these values within the grid as needed.

This table includes all configured measurements, ensuring easy access to and management of display settings. Additionally, measurements configured in Protection are seamlessly integrated into Capture, though their Full Display Range values remain read-only to maintain data integrity.

In VibroSight Mimic, the value indicator control has been enhanced to address previous limitations. With the integration of the Full Display Range customization feature, users now have the ability to customize the scaling of value indicators, resolving issues related to auto-scale display. This improvement ensures greater accuracy and flexibility in visualizing data within the Mimic environment.

Furthermore, in VibroSight Vision, the Full Display Range functionality extends to plot scaling, providing users with more suitable default scaling options for enhanced visualization of data trends.

With these enhancements, users can optimize their workflow efficiency and gain deeper insights from their data visualization processes across VibroSight Protect, Capture, Mimic, and Vision modules.

2.5 Duplication of VibroSight Protect configurations

In response to the common need for streamlined configuration management across VM600^{Mk2} racks, we're introducing a powerful new feature in this release: the ability to duplicate configurations within VibroSight Protect.

Managing configurations across multiple racks can be a daunting task, especially when configurations are identical or very similar. After meticulously preparing the Protect configuration for one rack, it's highly advantageous to replicate that configuration for additional racks, minimizing duplication of effort and reducing the risk of errors.

Previously, attempting to replicate configurations by manually copying and pasting files using the Windows file explorer proved impractical. Internal identifiers for VM600^{Mk2} racks remained unchanged, leading to complications when importing these files into VibroSight Capture for further configuration. As a result, it was imposible to differentiate between racks, causing confusion and inefficiencies.

To address this challenge, we've introduced a new menu entry, "Duplicate Protect file," accessible directly from the VibroSight Protect main menu. This feature simplifies the process of duplicating a Protect configuration, enabling users to effortlessly create copies to serve as templates for configuring additional VM600^{Mk2} racks.
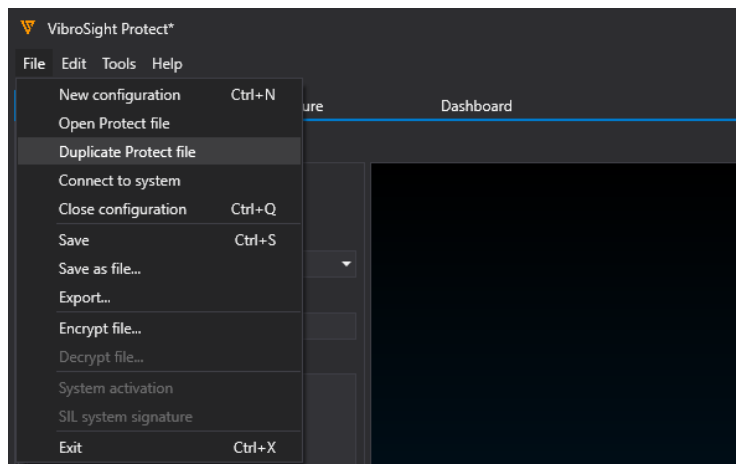
With the "Duplicate Protect File" feature, users can now seamlessly replicate configurations across multiple racks with confidence and ease. By eliminating redundant manual tasks, this enhancement enhances productivity, reduces errors, and empowers users to efficiently manage their configuration workflows within VibroSight Protect.

2.6 Configuration dual ethernet connector in the VM600^{Mk2} MPC4^{Mk2} STD and SIL modules

With this latest release, we're introducing an advanced networking feature that empowers users to configure dual Ethernet connectors within the VM600^{Mk2} MPC4^{Mk2} STD and SIL modules.

Our MPC4^{Mk2} + IOC4T^{Mk2} card pair is available in two variants: standard and SIL. Historically, both the MPC4^{Mk2} SIL and standard versions, along with the IOC4T^{Mk2} SIL, included an RJ45 Ethernet adapter. However, the IOC4T^{Mk2} standard version lacked this functionality upon its initial market release.

In previous VibroSight versions (prior to 7.5), users were limited to utilizing only the MPC4^{Mk2} standard and SIL front Ethernet adapters, as the IOC4T^{Mk2} SIL Ethernet adapter remained non-functional. However, with the rollout of VibroSight 7.5, users will now have access to a fully functional IOC4T^{Mk2} SIL Ethernet adapter following the upgrade of the MPC4^{Mk2} SIL card firmware.

Furthermore, we've taken steps to enhance the IOC4T^{Mk2} standard version, ensuring it aligns with our commitment to providing comprehensive networking capabilities. In conjunction with this release, the IOC4T^{Mk2} standard card underwent an upgrade to include an RJ45 Ethernet connector. This enhancement ensures compatibility with the dual Ethernet port functionality and results in a part number change from 600-043-000-002 to 600-043-000-003.

It's crucial to understand that within the MPC4^{Mk2} + IOC4T^{Mk2} SIL and standard card pair, only one of the front or rear Ethernet adapters can be active at any given time. To streamline network configuration, the VibroSight SystemManager offers users the flexibility to designate which Ethernet adapter will be active.

By incorporating these advancements, we're providing our users with enhanced networking flexibility, enabling optimized performance, and simplified connectivity management within the VM600^{Mk2} MPC4^{Mk2} STD and SIL modules.

2.7 Protect warning message for shared sensor chains

VibroSight Protect introduces a significant enhancement to its configuration management capabilities with the implementation of a warning message for shared sensor chains.

In the realm of VibroSight Protect, sensor chains are meticulously cataloged for streamlined configuration. As users craft their VM600^{Mk2} rack setups, they have the flexibility to assign identical sensor chains to multiple MPC4^{Mk2} input channels. However, the ripple effect of this approach becomes apparent when modifications are made to a shared sensor chain—any changes will reverberate across all input channels linked to that chain. This inherent complexity poses a risk of oversight, potentially leading to unintended alterations to multiple input channels.

To address this challenge head-on, Protect now incorporates a proactive warning mechanism. When users initiate modifications to either a vibro-meter or generic sensor chain, a conspicuous warning message is dynamically displayed at the bottom of the sensor chain selection dialog. This warning message serves as a safeguard, alerting users under the following scenarios:

- o   When the affected input channel differs from the currently selected input channel.
- o   When the affected input channel is not the currently selected input channel, and more than one input channel is impacted.
- o   When modifications extend to multiple input channels simultaneously.

Vibro-Meter sensor system - Properties

General | Sensor OK check

Name: TQ401 + IQS450 ☑ Auto
Description:

Family: Proximity probes

Transducer: TQ401 Conditioner: IQS450 Galvanic separator: None

TQ401   IQS450

Components sensitivity: -8 mV/µm

Sensor system sensitivity: -8 mV/µm

⚠ Any changes to this sensor chain will modify the configuration of the currently selected input channel and 2 input channels more.

OK | Cancel

By proactively notifying users of the potential ramifications of their actions, this feature empowers users to navigate configuration adjustments with heightened awareness. With greater visibility into the interconnected nature of shared sensor chains, users can confidently navigate their configuration workflows within VibroSight Protect, fostering accuracy and reliability in every operation.

2.8 In System Manager the term "Proof test" was renamed as "Protection test"

In System Manager, an update has been made to enhance clarity and usability, particularly in the Safety Integrity Level (SIL) context. Previously, the term "Proof test" could be misleading and confusing for users. To address this, the term "Proof test" was renamed to "Protection Test". This modification aims to provide users with a more intuitive understanding of the functionality, ensuring smoother navigation and more accurate interpretation within the SIL framework.

2.9 Enhanced Security: Update to Softing Libraries for OPC UA Integration

In this release, we've implemented updates to address security vulnerabilities identified by OWASP in the Softing libraries used for OPC UA. Previously, these libraries had been flagged with issues, including CVE-2022-29862, CVE-2022-29863, CVE-2022-29864, CVE-2022-29865, and CVE-2022-29866. Due to these vulnerabilities, we temporarily disregarded the recommendations until a fix was provided by the library provider. With this update, we've integrated the latest version of the libraries, which include patches to resolve the identified security concerns. For more detailed information on each CVE, you can refer to the National Vulnerability Database (NVD) website, such as the example provided: https://nvd.nist.gov/vuln/detail/CVE-2022-29862.

2.10MPC4^{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 **Error! Reference source not found. Error! Reference source not found.** and 2.11 MPC4^{Mk2} + IOC4^{Mk2} SIL module – firmware.

2.11MPC4^{Mk2} + IOC4^{Mk2} SIL module – firmware

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: 640-024-001-000

Features:

- SIL2 certification.

Restrictions:

- Compatible with VibroSight 7.4 or later.

See also 5.2 VM600Mk2/VM600 modules/cards.

NOTE:	It is important to be aware that a firmware upgrade to this new certified version of SIL-specific firmware is required before a VM600^{Mk2} SIL system containing MPC4^{Mk2} + IOC4^{Mk2} SIL modules can be used in critical safety-related applications.

2.12 CPUM^Mk2 + IOCN^Mk2 module – firmware

Updated VM600^Mk2 CPUM^Mk2 + IOCN^Mk2 firmware with the following main improvements:

Machinery protection firmware: 640-034-004-000

Features:

- Redundancy support.

- Support the VME burst mode for the MPC4^Mk2.

Restrictions:

- Compatible with VibroSight 7.5.

- Incompatible with previous CPUM^Mk2 firmware versions or CPUR2

See also 5.2 VM600Mk2/VM600 modules/cards.

WARNING:	It's important to note that this firmware version is incompatible with previous CPUM^Mk2 firmware versions or CPUR2, and may cause hardware damage if installed. To ensure compatibility and prevent any issues, the rack should only contain CPUM cards with firmware version 640-034-004-000 or above. During the upgrade process, it's crucial to remove all other CPUM^Mk2 or CPUR2 cards from the rack to avoid <u>potential damage</u>. Make sure that only the CPUM^Mk2 card receiving the upgrade is present in the rack during the upgrade process.

2.13 XMx16 + XIO16T^Mk2 module – firmware

Updated VM600^Mk2 XMx16 + XIO16T firmware with the following main improvements:

Condition monitoring firmware: 640-010-001-017

Features:

- Support new interface for configuration via VibroSight Capture.

Restrictions:

- Compatible with VibroSight 7.5.

See also 5.2 VM600Mk2/VM600 modules/cards.

2.14 VSV30x module – firmware

Updated VibroSmart VSV30x firmware with the following main improvements:

Condition monitoring firmware: 642-001-000-021

Bug fixes:

- The module tends to enter a fail-safe state randomly when configuring a tacho ratio, even in the absence of consistency check warnings.

- The log is inundated with "RB ANNOUNCE FAILED" messages from the "BestMaster" application, causing clutter and potential oversight of critical issues.

- STM errors are constantly logged due to the presence of multiple DSI masters, contributing to system instability.

- Certain modules encounter difficulties in firmware upgrades as the DSI Master intervenes in the process.

- The persistence of XNP DSI and SensorBypass statuses after reconfiguration poses challenges in maintaining accurate system states.

- Despite attempts to use Channel Bypass, relays and logical functions tied to the Sensor OK check remain unaffected, rendering the feature ineffective.

Restrictions:

- Compatible with VibroSight 7.5.

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 7.5.0 software.

3.2 Data logging issue with unset reference speed

Fixed an issue where data logging malfunctioned when the reference speed of the machine train was not set.

3.3 Unsaved opcserver.config file after VibroSight update

Resolved an issue causing the opcserver.config file not to save after updating to VibroSight 7.4 or 7.4.1. Workaround: Unpublish and republish the OPC server from the System Manager.

3.4 CPUR2 cards missing from system manager devices tree

Corrected an issue where CPUR2 cards were no longer listed in the System Manager's devices tree.

3.5 Inaccurate checkbox activation

Fixed a checkbox activation issue, preventing accidental activation by clicking far away from the checkbox on the same line.

3.6 Corrupted excel export and vision export issues

Resolved corrupted Excel export issues and fixed Vision's export to Excel problems resulting in empty files and incorrect filenames.

3.7 Machine state condition selection error

Addressed an issue where selecting "State" in Machine state condition in time-based logging rule was not possible after updating to VibroSight 7.4.2.

3.8 Protect configuration fault relay disappearance

Fixed a bug where the fault relay disappeared in Protect configuration, hindering SIL card configuration.

3.9 OPC server data reception interruption

Corrected a problem where a client connected to a VibroSight OPC server stopped receiving data after some time.

3.10 Missing relay latching warning

Implemented a warning (not an activation error) when a relay of an MPC4^{Mk2} SIL card is not latched.

3.11 MPC4^{Mk2} air gap processing issue

Rectified a bug where the sensor thickness of the MPC4^{Mk2} air gap processing block was not considered in air gap and flux post-processing.

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).

4.10 VibroSight Server status indicators

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

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

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

4.11 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.

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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 7.5.0 is a minor level release and replaces VibroSight 7.4.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 7.5.0.

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

- Machinery protection: `640-025-009-001.Mpc4g2Fw` (no change)

- Condition monitoring: `640-033-005-000.VxeFw` (no change)

- Recovery: `640-031-006-000.Mpc4g2Fw` (no change)

- Protection test: `640-032-004-000.VxeFw` (no change).

See 2.10 MPC4^{Mk2} + IOC4^{Mk2} module – hardware and **Error! Reference source not found. Error! Reference source not found.**.

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

- Machinery protection: `640-024-001-000.SafeMpc4g2Fw` (updated)

- Condition monitoring: `640-033-005-000.VxeFw` (no change)

- Recovery: `640-026-001-000.SafeMpc4g2Fw` (no change)

- Protection test: `640-032-004-000.VxeFw` (no change).

See 2.10 MPC4^{Mk2} + IOC4^{Mk2} module – hardware and 0

MPC4^{Mk2} + IOC4^{Mk2} SIL module – firmware.

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

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

The latest firmware for the VM600 CPUR2 card remains:

- Applications: `applications-640-015-001-006.tgz` (no change)

- Base System : `base-system-640-014-001-006.tgz` (no change)

The latest firmware for the VM600 CPUR card remains:

- Applications: `applications-640-012-001-005.tgz` (no change)

- Base System: `base-system-640-011-001-005.tgz` (no change)

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

- Applications: `applications-640-010-001-017.tgz` (updated)

- Base System: `base-system-640-003-001-016.tgz` (no change)

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 corresponding to VibroSight 7.5.0.

The latest firmware for the VSI010 module remains:

- `642-002-000-014.xmsifw` (no change)

The latest firmware for the VSN010 device remains:

- `642-004-000-012.redboxfw` (no change)

The latest firmware for the VSV30x module is:

- `642-001-000-021.xtranfw` (updated)

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 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 2.10 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)

VibroSight software version Part number (PNR)	VM600^{Mk2} MPC4^{Mk2} firmware					
	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`
	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`
	Recovery firmware (`640-031-vvv-ppp.Mpc4g2Fw`)					
	`640-031-003-006`		`640-031-005-001`		`640-031-006-000`	
	Protection test firmware (`640-032-vvv-ppp.VxeFw`)					
	`640-032-001-001`		`640-032-003-000`		`640-032-004-000`	
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						✔ See note 5

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, see 2.10 MPC4Mk2 + IOC4Mk2 module – hardware (standard and SIL versions) and **Error! Reference source not found. Error! Reference source not found.**.
A firmware upgrade is required in order to run VibroSight 7.4.0 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

VibroSight software version Part number (PNR)	VM600^{Mk2} MPC4^{Mk2} firmware				
	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 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)

VibroSight software version Part number (PNR)	VM600^{Mk2} MPC4^{Mk2} SIL firmware		
	SIL machinery protection firmware (`640-024-vvv-ppp.SafeMpc4g2Fw`)		
	`640-024-001T005`	`640-024-001T006`	`640-024-001-000`
	Condition monitoring firmware (`640-033-vvv-ppp.VxeFw`)		
	`640-033-004-000`	`640-033-005-000`	
	SIL recovery firmware (`640-026-vvv-ppp.SafeMpc4g2Fw`)		
	`640-026-001-000`		
	Protection test firmware (`640-032-vvv-ppp.VxeFw`)		
	`640-032-004-000`		
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 2

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, see 2.10 MPC4Mk2 + IOC4Mk2 module – hardware (standard and SIL versions) and 0
MPC4Mk2 + IOC4Mk2 SIL module – firmware.
A firmware upgrade is required in order to run VibroSight 7.5.0 or later.

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

VibroSight software version Part number (PNR)	VM600^{Mk2} CPUM^{Mk2} firmware					
	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

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.

5. It's important to note that this firmware version is incompatible with previous CPUM^{Mk2} firmware versions or CPUR2 and may cause hardware damage if installed. To ensure compatibility and prevent any issues, the rack should only contain CPUM cards with firmware version 640-034-004-000 or above. During the upgrade process, it's crucial to remove all other CPUM^{Mk2} or CPUR2 cards from the rack to avoid potential damage. Make sure that only the CPUM^{Mk2} card receiving the upgrade is present in the rack during the upgrade process.

Table 5: VibroSight software and VM600 CPUR2 firmware compatibility

VibroSight software version Part number (PNR)	VM600 CPUR2 firmware See note 1				
	Base-system firmware (`*.tgz`)				
	640-014-001-001	640-014-001-002	640-014-001-003	640-014-001-005	640-014-001-006
	Applications firmware (`*.tgz`)				
	640-015-001-001	640-015-001-002	640-015-001-003	640-015-001-005	640-015-001-006
4.0.0 609-004-000-046	✓ See note 2	✓ See note 3	✓		
4.1.0 609-004-000-047	✓	✓	✓ See note 4		
5.0.0 609-004-000-048	✓	✓	✓		
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 5	
7.1.0 609-010-000-001					✓ See note 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					✓

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 is the first official release of VM600 CPUR2 firmware and includes features such as the management of XMx16 card configurations for applications such as control systems and the implementation of the PROFIBUS protocol for the fieldbus interfaces. A firmware upgrade is required in order to run VibroSight 2.12.7 or later.

3. This version of VM600 CPUR2 firmware includes improvements such as changing the PROFIBUS polling rate for the Modbus server to 100 ms (was 200 ms) and a bug fix for a known VM600 CPUx time counter wraparound (overflow) issue. A firmware upgrade is strongly recommended in order to run VibroSight 3.4.0 or later.

4. 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.

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 7.0.0 or later.

6. 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.

Table 6: VibroSight software and VM600 CPUR firmware compatibility

VibroSight software version Part number (PNR)	VM600 CPUR firmware See note 1	
	Base-system firmware (`*.tgz`)	
	`640-011-001-004`	`640-011-001-005`
	Applications firmware (`*.tgz`)	
	`640-012-001-004`	`640-012-001-005`
4.0.0 609-004-000-046	✓ See note 2	✓
4.1.0 609-004-000-047	✓	✓ See note 3
5.0.0 609-004-000-048	✓	✓
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	✓	✓

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

VibroSight software version Part number (PNR)	VM600 XMx16 firmware See note 1	
	Base-system firmware (`*.tgz`)	
	`640-003-001-016`	
	Applications firmware (`*.tgz`)	
	`640-010-001-016`	`640-010-001-017`
4.0.0 609-004-000-046	✔ See note 2	
4.1.0 609-004-000-047	✔	
5.0.0 609-004-000-048	✔	
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		✔

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.

6.2.2   VibroSmart device firmware

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

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

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

VibroSight software version Part number (PNR)	VSI010 firmware (`*.xmsifw`) See note 1				
	642-002-000-010	642-002-000-011	642-002-000-012	642-002-000-013	642-002-000-014
5.0.0 609-004-000-048	✔ See notes 2 and 3	✔ See notes 2 and 4	✔ See notes 2 and 5		
5.1.0 609-004-000-049	✔	✔	✔		
6.0.0 609-004-000-050	✔	✔	✔		
6.1.0 609-004-000-051				✔ See notes 2 and 6	
7.0.0 609-010-000-001				✔	
7.1.0 609-010-000-001					✔ See notes 2 and 7
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					✔

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 has no limit on the number of constants per VSI010 module.
A firmware upgrade is recommended but is not required in order to run VibroSight 3.8.0 or later.

4. 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.

5. 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.

6. 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.

7. 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.

Table 9: VibroSight software and VibroSmart VSN010 firmware compatibility

VibroSight software version Part number (PNR)	VSN010 firmware (`*.redboxfw`) See note 1	
	`642-004-000-011`	`642-004-000-012`
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		✔ 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		✔

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.

Table 10: VibroSight software and VibroSmart VSV30x firmware compatibility

VibroSight software version Part number (PNR)	VSV30x firmware (`*.xtranfw`) See note 1					
	`642-001-000-017`	`642-001-000-018`	`642-001-000-000DEV_ SVN14937_ 2020-05-20`	`642-001-000-019`	`642-001-000-020`	`642-001-000-021`
5.0.0 609-004-000-048	✔ See notes 2 and 3	✔ See notes 2 and 4				
5.1.0 609-004-000-049	✔	✔	✔ See notes 2 and 5			
6.0.0 609-004-000-050	✔	✔	✔			
6.1.0 609-004-000-051				✔ See notes 2 and 6		
7.0.0 609-010-000-001				✔		
7.1.0 609-010-000-001					✔ See notes 2 and 7	✔ See notes 2 and 7
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					✔	✔

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 adds support for configurable tacho ratios, flexible input channel to processing block mapping, and up to two tacho processing blocks. A firmware upgrade is required in order to run VibroSight 5.0.0 or later.

4. This version of VibroSmart VSV30x firmware adds support for module lock, PTP (precision time protocol) time synchronisation, channel bypass and pre-trigger data logging. A firmware upgrade is required in order to run VibroSight 5.0.0 or later.

5. 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.

6. 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.

7. 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.

6.2.3 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 ![icon] *VibroSight* help.

The ![icon] **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

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

Customer support
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

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

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

7.3 Sales and repairs support

Meggitt SA 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 7.4.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).