Enabling the Extraordinary
To Fly To Power To Live

MEGGiTT

TECHNICAL NOTE

vibro-meter®

Upgrading VM600^{Mk2} system firmware

Meggitt SA, Route de Moncor 4, Case postale, 1701 Fribourg, Switzerland

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

REVISION RECORD SHEET

Version	Date of issue	Written or modified by	Description	Signature
1	07.11.2023	Peter Ward	Original edition.	PW

	Department	Name	Signature	Date
Technical content approved by	Product Management	Michaël Hafner	MH	07.11.2023
	Engineering	---	---	---
Document released by	Technical Publications	Peter Ward	PW	07.11.2023

The duly signed master copy of this page is stored by the Technical Publications Department of Meggitt SA and can be obtained by writing to the Technical Publications Manager.

IMPORTANT NOTICE

All statements, technical information, and recommendations in this document which relate to the products supplied by Meggitt SA are based on information believed to be reliable, but unless otherwise expressly agreed in writing with Meggitt SA the accuracy or completeness of such data is not guaranteed. Before using this product, you must evaluate it and determine if it is suitable for your intended application. You should also check our website at www.meggittsensing.com/energy for any updates to data sheets, Ex certificates, product drawings, user manuals, service bulletins and/or other instructions affecting the product.

Unless otherwise expressly agreed in writing with Meggitt SA, you assume all risks and liability associated with use of the product. Meggitt SA takes no responsibility for any statements related to the product which are not contained in a current English language Meggitt SA publication, nor for any statements contained in extracts, summaries, translations or any other documents not authored and produced by Meggitt SA.

The certifications and warranties applicable to the products supplied by Meggitt SA are valid only for new products purchased directly from Meggitt SA or from an authorised distributor of Meggitt SA.

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

EXPORT CONTROL

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

COPYRIGHT

Published and printed by Meggitt SA in Fribourg, Switzerland

TABLE OF CONTENTS

1 Introduction

This technical note describes the procedure for upgrading the firmware (embedded software) running on VM600^{Mk2} modules, such as MPC4^{Mk2} and/or CPUM^{Mk2} modules, in a VM600^{Mk2} system.

In general, the procedure is the same for a VM600^{Mk2}/VM600 system rack (6U, ABE04x) that can contain up to 12 processing cards and for a VM600^{Mk2}/VM600 slimline rack (1U, ABE056) that contains 1 processing card only.

Although, an important difference is that for a VM600^{Mk2}/VM600 system rack, multiple VM600^{Mk2} MPC4^{Mk2} modules can be upgraded in parallel (that is, at the same time).

NOTE:	Information on the most recent versions of VM600^{Mk2} module firmware can be found in the latest version of the *VibroSight® software release notes*, which also provide firmware/software compatibility information.

2 Warnings

Upgrading the firmware of a VM600^{Mk2} system / module(s) is a special task that can, if used unintentionally or incorrectly, lead to malfunctioning of the system and affect the machinery protection and/or condition monitoring functionality.

For example, during the Machinery protection firmware upgrade of a MPC4^{Mk2} module, the system cannot provide its normal machinery protection system (MPS) functionality because its outputs (alarms and relays) can go to undetermined states, irrespective of how they have been configured.

It is therefore strongly recommended to change VM600^{Mk2} system firmware only when it is necessary. For example, when the modules must be updated to be compatible with a VibroSight software upgrade.

WARNING:	It is strongly recommended that firmware upgrades 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.

WARNING:	It is strongly recommended to ensure that a backup copy of the configuration running on a VM600^{Mk2} system (MPC4^{Mk2} and/or CPUM^{Mk2} modules) is available before upgrading the firmware of any of the modules in the system.

3 Firmware upgrade procedure

3.1 Prerequisites

- Computer running the VibroSight® software, and VM600Mk2 module firmware file(s).
- VM600Mk2 system / VM600Mk2 module(s).
- Ethernet cable.

When the VibroSight® software is installed on a computer, the latest versions of the VM600Mk2 module firmware that are compatible with that version of VibroSight are also provided.

The default location for VM600Mk2 module firmware files is typically:
`C:\Program Files\Meggitt\VibroSight\Firmware\VM600`

3.2 Connect the computer running the VibroSight® software to the VM600Mk2 system

For a VM600Mk2 system consisting of multiple VM600Mk2 modules (VM600Mk2/VM600 system rack), the computer can be connected to all of the modules at once via a network switch (switches, or equivalent). Alternatively, the computer can be connected to one module at a time via a direct one-to-one connection between the computer and a module, as is done for a VM600Mk2/VM600 slimline rack.

MPC4Mk2: For VM600Mk2 MPC4Mk2 + IOC4Mk2 modules with an Ethernet connector on the panel of the MPC4Mk2 module only (front of rack), this “LAN” connector on the MPC4Mk2 should be used for the Ethernet network connection.
For VM600Mk2 MPC4Mk2 + IOC4Mk2 modules with one Ethernet connector on the panel of the MPC4Mk2 module (front of rack) and one Ethernet connector on the panel of the IOC4Mk2 module (rear of rack), either “LAN” connector (front or rear) can be used for the Ethernet network connection.

Note: For VM600Mk2 MPC4Mk2 + IOC4Mk2 modules with two Ethernet connectors, only one connector/port (MPC4Mk2 or IOC4Mk2 “LAN”) is active at any one time, depending on how the module has been configured. The “LAN” connector/port with its LEDs on is the active one that should be used for Ethernet connections, while the “LAN” connector/port with its LEDs off is the inactive one. (The active “LAN” connector/port can be changed using the VibroSight System Manager software, as follows: in the Actions window (right), click IP settings (under Configuration) and change/save the settings as required.)

CPUMMk2: For VM600Mk2 CPUMMk2 + IOCNMk2 modules, one of the “ETHERNET*x*” (J6 or J7) connectors on the panel of the IOCNMk2 module (rear of rack) should be used for the Ethernet network connection.

3.3 Use VibroSight System Manager to access the VM600Mk2 system

VibroSight System Manager is the VibroSight software module used to manage compatible machinery monitoring system hardware, such as VM600Mk2 systems.

Run/start VibroSight System Manager, for example, from the Windows Start menu by clicking `Start > Meggitt > System Manager`

In VibroSight System Manager, in the System Explorer window (left), click Devices (bottom) in order to display all of the different types of VibroSight-compatible hardware (top) that can be seen on the network. This is shown in Figure 1.

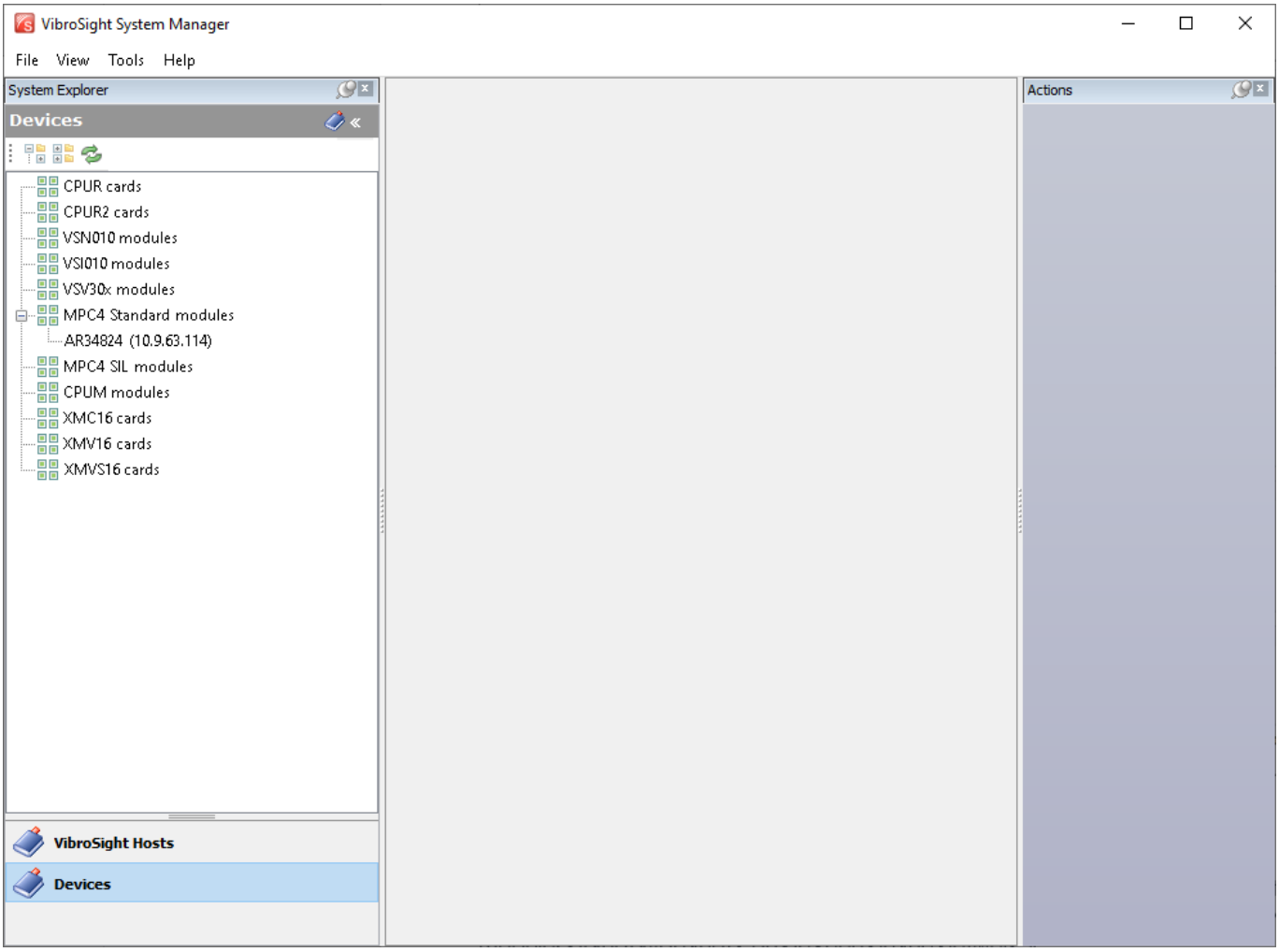

Figure 1: VibroSight System Manager – displaying VibroSight-compatible hardware (Devices)

In the System Explorer window (left, top), double-click or expand/collapse a particular type of device, such as MPC4 (for MPC4Mk2 modules) and/or CPUM (for CPUMMk2 modules), in order to display all of the individual VM600Mk2 modules of that type that can be seen on the network.

3.4 Display VM600^{Mk2} module information, including firmware versions

In VibroSight System Manager's System Explorer window (left), a VM600^{Mk2} module is identified using its serial number and IP address, for example, ARxxxxx (xxx.xxx.xxx.xxx). See Figures 1 and 2.

NOTE: For a VM600^{Mk2} module, the serial number is also available from the module itself: see the labels located/visible on the upper handle on the panel of the module (front of rack) or on the printed circuit board / hardware.

MPC4^{Mk2}: For VM600^{Mk2} MPC4^{Mk2} + IOC4^{Mk2} modules, click on a particular MPC4^{Mk2} module in the System Explorer window (left, top) in order to display all of the available information for that module in the main window (center).

For MPC4^{Mk2} + IOC4^{Mk2} modules, detailed information is displayed under groupings/headings such as General information, Time synchronization, Network, Diagnostics and Firmware versions.

Under Firmware versions, the firmware(s) running on the MPC4^{Mk2} module are listed in a name/version format. For example:

```
Machinery protection  640-025-009-001
Condition monitoring  640-033-005-000
Recovery              640-031-006-000
Proof test            640-032-004-000
```

CPUM^{Mk2}: For VM600^{Mk2} CPUM^{Mk2} + IOCN^{Mk2} modules, click on a particular CPUM^{Mk2} module in the System Explorer window (left, top), then in the Actions window (right), click Change firmware (under Maintenance) in order to display the available information for that module in a window.

For CPUM^{Mk2} + IOCN^{Mk2} modules, the firmware running on the CPUM^{Mk2} module is displayed under Firmware status (bottom) in a name/version format. For example:

```
Boot loader           630-011-000-001
Base system           640-034-003-001
```

An example for a MPC4^{Mk2} module is shown in Figure 2.

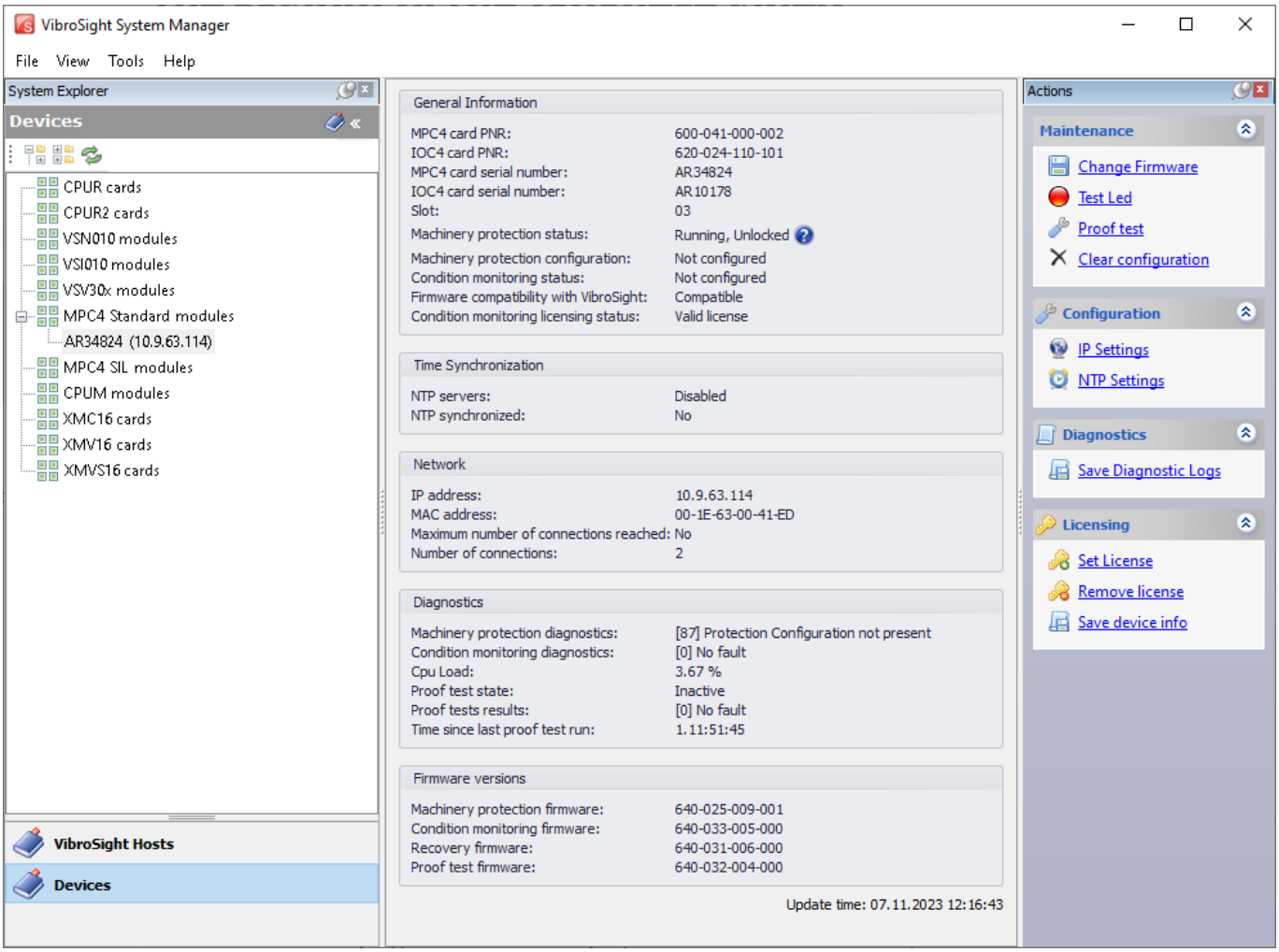

Figure 2: VibroSight System Manager – displaying the available information for a module, including firmware versions (MPC4^{Mk2}: MPC4 Standard modules, AR34824)

3.5 Upgrade VM600Mk2 module firmware

In VibroSight System Manager's Actions window (right), the Change `firmware` command is used to upgrade firmware running on VM600Mk2 modules (VM600Mk2 system).

3.5.1 To upgrade the firmware running on a VM600Mk2 MPC4Mk2 module or modules

MPC4Mk2:

1. Select the MPC4Mk2 module(s) in the System Explorer window (left, top), then click Change `firmware` (under `Maintenance`) in the Actions window (right). (CTRL+click and/or SHIFT+click can be used to select more than one MPC4Mk2 module.)

Note that in the Firmware upgrade window that appears, the firmware running on the selected MPC4Mk2 module(s) is also listed under `Firmware status` (bottom). This is shown in Figure 3.

2. In the Firmware upgrade window, use the `Firmware file` browse (…) control (top) to navigate the folders on the computer and select the appropriate MPC4Mk2 firmware file (such as Machinery protection or Condition monitoring) by part number (PNR) / version and click Open.

NOTE:	The default location for MPC4Mk2 module firmware files is typically: `C:\Program Files\Meggitt\VibroSight\Firmware\VM600\MPC4 Mk2`

Note that the Firmware upgrade window updates to show the selected firmware upgrade as `From version xxx-xxx-xxx-xxx to version xxx-xxx-xxx-xxx` (bottom) for each of the selected module(s).

3. Click `Next` to start the firmware upgrade.

Note that the Firmware upgrade window updates to show the status (`Progress`) of the upgrade, which takes 2 minutes (approx.) for Machinery protection firmware but is quicker for other firmware (such as Condition monitoring). This includes 30 seconds (approx.) for an automatic reboot of the MPC4Mk2 module(s).

4. At the end of a successful upgrade, the Firmware upgrade window will report:
`Firmware upgrade finished`
`The firmware has been upgraded successfully on the module(s).`

If required, the steps described in "3.4. Display VM600Mk2 module information, including firmware versions" for the MPC4Mk2 module can be used to verify the version(s) of firmware now running on the module(s).

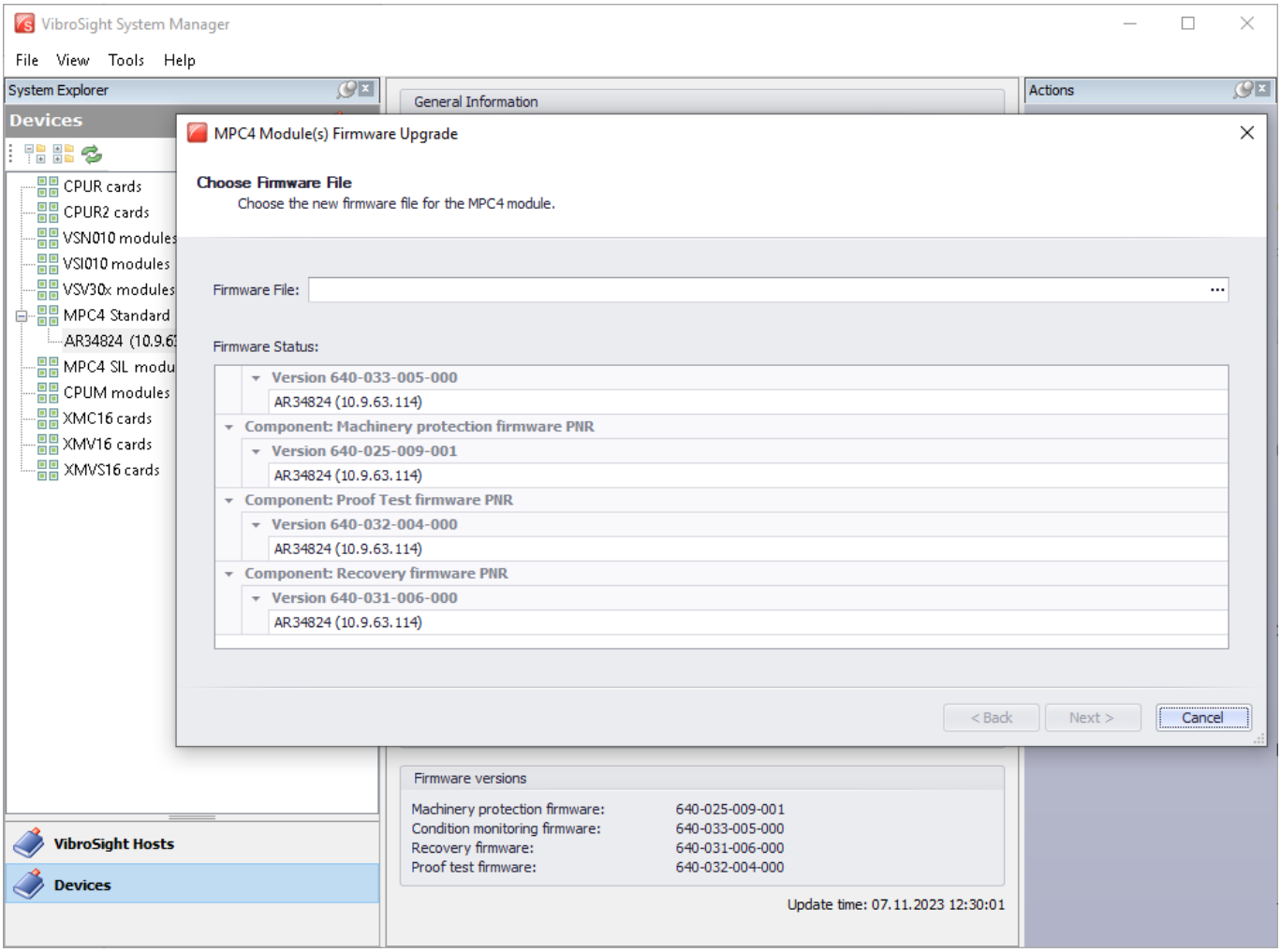

Figure 3: VibroSight System Manager – upgrading the firmware running on a module (Change `firmware`)

Important notes on upgrading VM600^{Mk2} MPC4^{Mk2} module firmware

Before changing the firmware running on a VM600^{Mk2} MPC4^{Mk2} module, see “2 Warnings”.

Please note that for a VM600^{Mk2} system consisting of multiple MPC4^{Mk2} modules, with the computer connected to all of the modules via a network, it is possible to upgrade the firmware running on multiple MPC4^{Mk2} modules in parallel. For VM600^{Mk2} system racks populated with lots of MPC4^{Mk2} modules, this can save a lot of time during upgrades.

To upgrade MPC4^{Mk2} modules in parallel, simply follow the steps described above but at step 1, when selecting a MPC4^{Mk2} module in the VibroSight System Manager System Explorer window (left, top), use CTRL+click and/or SHIFT+click to select multiple VM600^{Mk2} modules of the same type before clicking Change `firmware` in the Actions window.

It is also important to note that a MPC4^{Mk2} module must be running certain firmware in a certain mode in order to upgrade firmware.

In general:

- In order to change the Machinery protection firmware, a MPC4^{Mk2} module must be running Machinery protection firmware and Unlocked (in the maintenance operating mode), or running the Recovery firmware.

NOTE: For a MPC4^{Mk2} module delivered as a spare part, the module normally runs the latest version of the Recovery firmware only, that is, it is not pre-configured before delivery.
Accordingly, the end-user/operator must change/upload the different versions of the firmware, as required by the application.

- In order to change the Condition monitoring firmware, a MPC4^{Mk2} module must be running Machinery protection firmware either Unlocked (that is, in the maintenance operating mode) or Locked (that is, in the safety/secure operating mode).

NOTE: As the MPC4^{Mk2} module implements complete separation ("segregation") of machinery protection (MPS) and condition monitoring (CMS) functionality, it is possible to change the Condition monitoring firmware (or configuration) when machinery protection is running, even when machinery protection is running in the safety/secure operating mode.

Figure 4 provides more detailed information on the firmware/mode logic that is applicable when updating the firmware running on a MPC4^{Mk2} module.

Finally, it is very important to note that entering the Recovery mode automatically clears a MPC4^{Mk2} module's configuration, so always ensure that a backup copy of the configuration has been made and is available **before** entering the Recovery mode.

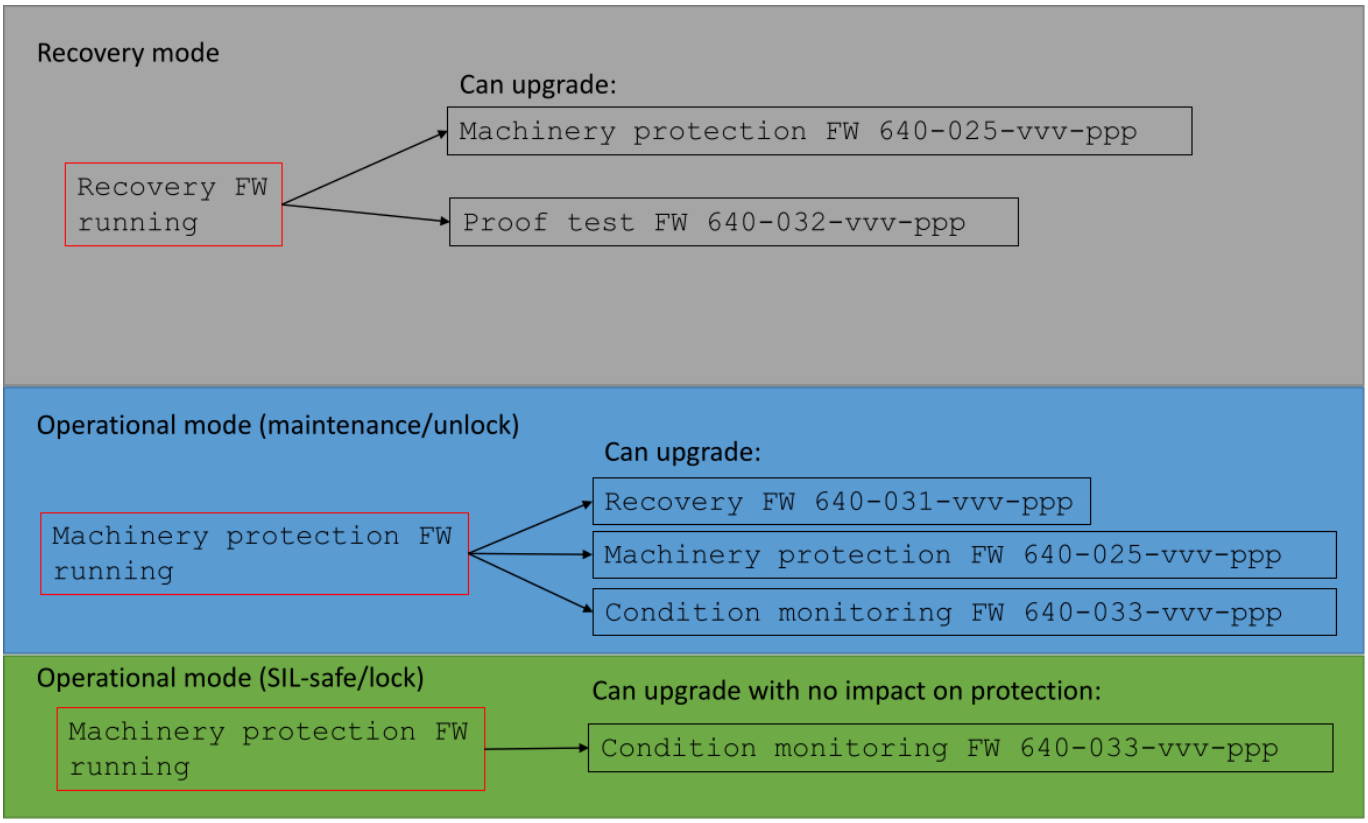

Figure 4: MPC4^{Mk2} module firmware upgrades – firmware/mode logic

3.5.2 To upgrade the firmware running on a VM600Mk2 CPUMMk2 module

CPUMMk2:

1. Select the CPUMMk2 module in the System Explorer window (left, top), then click Change `firmware` (under `Maintenance`) in the Actions window (right).

Note that in the Change firmware window that appears, the firmware running on the selected CPUMMk2 module is displayed under `Firmware status` (bottom).

2. In the Change firmware window, use the `Firmware files` Add control (top) to navigate the folders on the computer and select the appropriate CPUMMk2 firmware file (Base-System) by part number (PNR) / version and click `Open`.

NOTE:	The default location for CPUMMk2 module firmware files is typically: `C:\Program Files\Meggitt\VibroSight\Firmware\VM600\CPUM Mk2`

Note that the Change firmware window updates to show the selected firmware upgrade as `Current version xxx-xxx-xxx-xxx` `New version xxx-xxx-xxx-xxx` (bottom) for the module.

3. Click `Finish` to start the firmware upgrade.

Note that Change firmware window closes and the CPUMMk2 module temporarily disappears from the System Explorer window during the upgrade, which takes 3 minutes (approx.), including an automatic reboot of the CPUMMk2 module.

4. At the end of a successful upgrade, the CPUMMk2 module becomes visible again in the System Explorer window.

If required, the steps described in “3.4. Display VM600Mk2 module information, including firmware versions” for the CPUMMk2 module can be used to verify the version of firmware now running on the module.

4 Further information

4.1 Related documentation

- *VibroSight® software release notes.*
- *VM600Mk2 machinery protection system (MPS) quick start manual.*

4.2 Customer support

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