



**Brüel & Kjær Vibro**

A member of the NSK Group



Product specifications and ordering information

## **VC-8000**

Machinery Protection System (MPS) Setup & Maintenance

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## Overview

SETPOINT® hardware is fully programmable using our Microsoft® Windows-based *SETPOINT Setup & Maintenance Software*. The software consists of three separate utilities as follows:

- **Setup Utility\***

This utility is used when configuring the rack. The utility can be used to create new configurations for a rack, retrieve and view (and/or modify) existing configurations from a rack, and send configurations to a rack. When retrieving configuration information from a connected rack, comprehensive diagnostic information is also provided from the hardware, such as error codes, module serial numbers and firmware levels, etc. The software can be used offline, allowing the user to create a complete configuration file without being connected to a SETPOINT rack, and has robust error checking capabilities to flag incompatible configuration options, ensuring an invalid configuration cannot be created or uploaded.

- **Maintenance Utility\***

This utility is used only when actually connected to a rack and allows the user to perform maintenance activities such as upgrading firmware, temporarily bypassing channels/relays, auditing installed hardware, and retrieving instrument diagnostic and log files. The maintenance utility software is able to emulate the same screens as the rack's (optional) integral touchscreen. This is useful for racks without a display or in situations where the display is temporarily unavailable.



The Maintenance Utility can also be used to manually set the rack's internal clock, to manually force the rack to collect waveform data, to create an SD Card image for updating touchscreen firmware, and to force a reboot of a System Access Module's processor(s) without removing the SAM from the rack.

- **Front Panel Simulator Utility**

This utility is primarily for training and demonstration purposes. It allows users to simulate front panel operation without physical inputs connected or channels configured. When run on a computer and projected on a screen, it is useful for group training. When enabled via the SAM's configuration settings, it can run inside the rack and populate the integral touchscreen with simulated data.

Capabilities	Software Utility	
	Maintenance	Setup
Change alarm setpoints		•
Change all channel settings		•
Turn channels on/off		•
Turn relays on/off		•
Configure alarm/relay logic		•
Bypass channels	•	
Bypass relays	•	
Retrieve rack diagnostics	•	
Upgrade module firmware	•	
Emulate rack touchscreen	•	

**\* NOTE:**

Racks without an installed System Access Module (SAM) are not able to provide rack-wide information simultaneously, such as bargraphs, alarm and event lists, and firmware/hardware installed. They instead return information from only the module to which the USB cable is connected. Refer to SETPOINT Operation & Maintenance manual (doc S1079330) for additional information.



## Features and Benefits

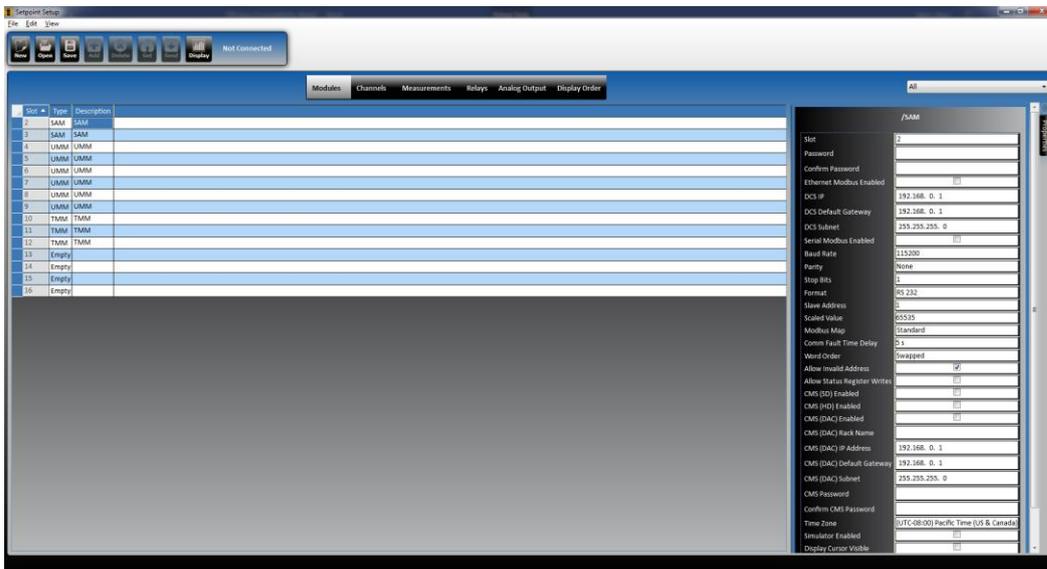
- **Unparalleled ease of configuration.**  
SETPOINT® configuration software features an intuitive spreadsheet-like user interface – easily cut and paste to/from Microsoft® Excel® and most other programs. Because many vibration monitoring installations have clusters of identical channels that differ only by tag name and description, SETPOINT® allows users to “clone” channels or groups of channels, and then simply edit the things that are different – rather than forcing the user to manually enter the same settings over and over again. Arrange multiple channels by attributes like alarm settings, channel types, or transducer types to quickly compare information that should be identical and spot anomalies.
- **Fewer mistakes.**  
Project documentation comes together faster, easier, and less error-prone because configuration information no longer must be manually transcribed between configuration screens and project as-built datasheets. Simply cut and paste.
- **Reduced spare parts requirements.**  
SETPOINT hardware uses just three generic module types: one for temperature, one for communications, and one for everything else. All module settings are fully programmable.
- **Secure.**  
Configuration is performed via USB cable connection only – not via the rack’s communication network ports. Thus, physical access to the rack (not cyber access) must be used to defeat machinery protection functionality or change settings.
- **Simple.**  
The software is highly intuitive and simple to use. If incorrect or incompatible configuration settings are entered, the software immediately flags this and alerts the user with descriptive text boxes that explain the error and offer advice. Users are prevented from loading invalid configurations into a rack.
- **Freely distributed.**  
Many other providers charge for their configuration software. Their users have repeatedly told us that it isn’t the cost of the software that is objectionable, it is the hassle of licensing and sharing the software with everyone that needs it, when they need it. We created a distinctly different – and better – user experience by making all our software and documentation available at no charge, accessible from [www.setpointvibration.com](http://www.setpointvibration.com). It’s part of our SETPOINT philosophy where we charge for hardware – not software – because without the underlying hardware, the software is essentially inert. Our approach means you can easily share and collaborate with colleagues when you want others to view rack configuration and diagnostic information. It also means that you can familiarize yourself with many of SETPOINT’s hardware capabilities by simply downloading and exploring the thousands of configurable options exposed via the software.
- **Designed to move data, not people.**  
Users can easily retrieve rack diagnostic information and log files that help SETPOINT service personnel remotely diagnose instrument issues, should they arise. Comprehensive hardware information is also provided, allowing the factory to know exactly what versions of circuit boards and firmware you have installed and what upgradeable options are available. Through use of a special key file provided by the factory and tied to the user’s hardware serial numbers, field upgrades of many features are possible without a service visit and without swapping out hardware, such as enabling Condition Monitoring functionality and activating the rack’s embedded Solid-State Hard Drive and/or SD Card when “flight recorder” functionality is desired.\*

\* Flight recorder functionality requires eSAM v1.5 or later hardware. Refer to SAM datasheet S1077786 for additional information.

## Typical Screens

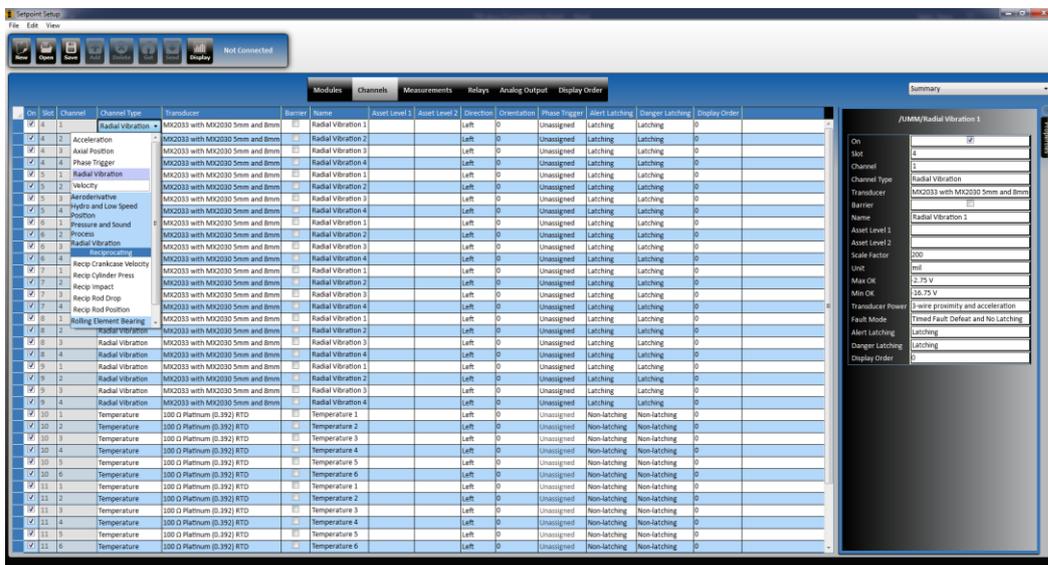
### Setup Utility – Modules

Used to populate the rack with the desired modules in the desired slots. Also used to view and configure the System Access Module (SAM) settings.



### Setup Utility – Channels

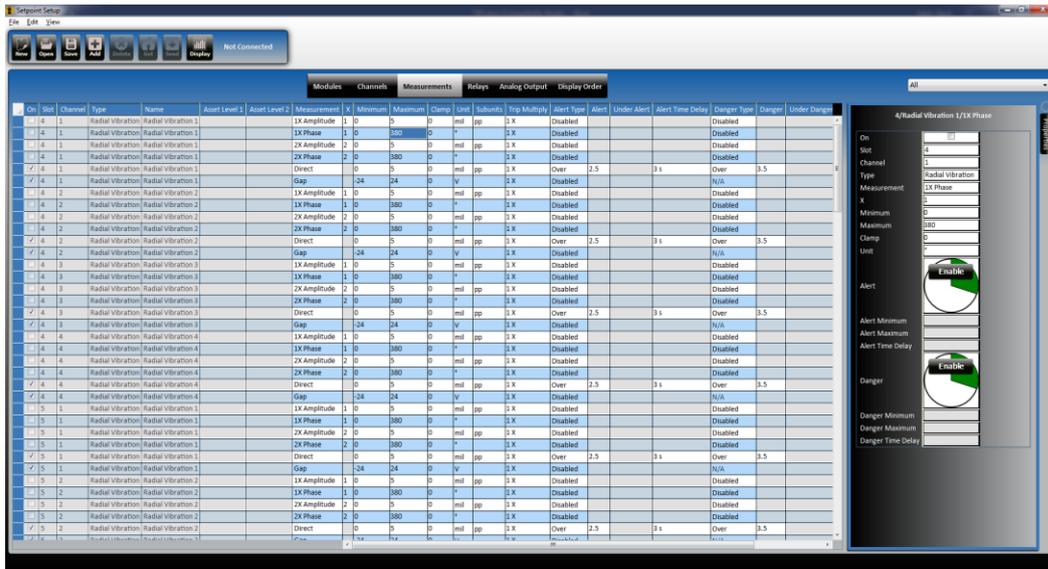
Used to configure individual channels – channel type, transducer type, and dozens of other channel-specific settings.





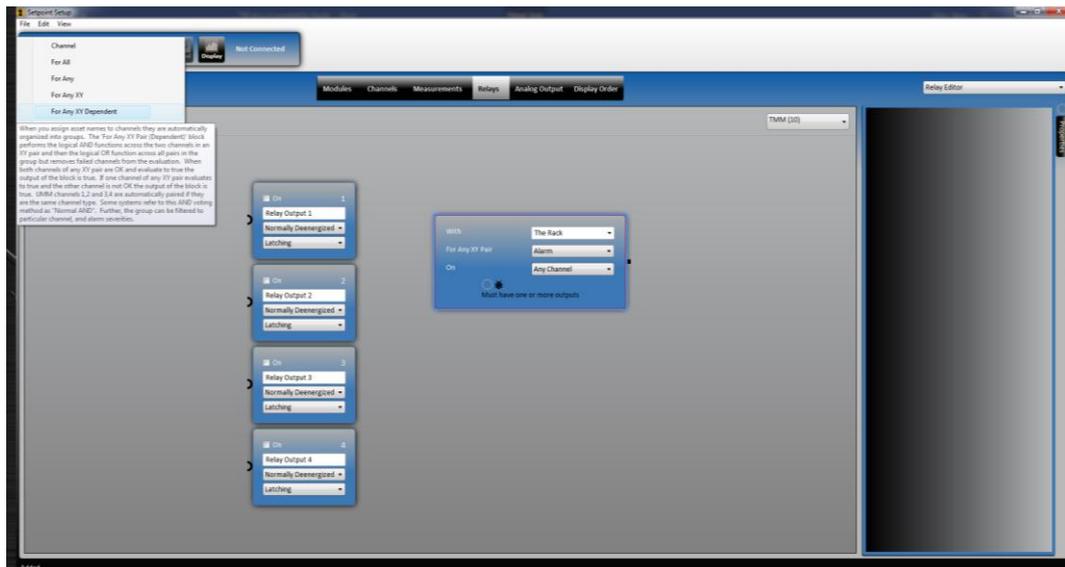
### Setup Utility – Measurements

Used to configure individual measurements within a channel. Each channel can have numerous measurements, each with its own alarm settings, filter corners, engineering units, and many other details.



### Setup Utility – Relays

Used to configure the four relays on each UMM and TMM. Relays on one card can be driven by conditions in other cards, using complex voting logic, but are configured via simple and intuitive combinations of graphical function blocks.



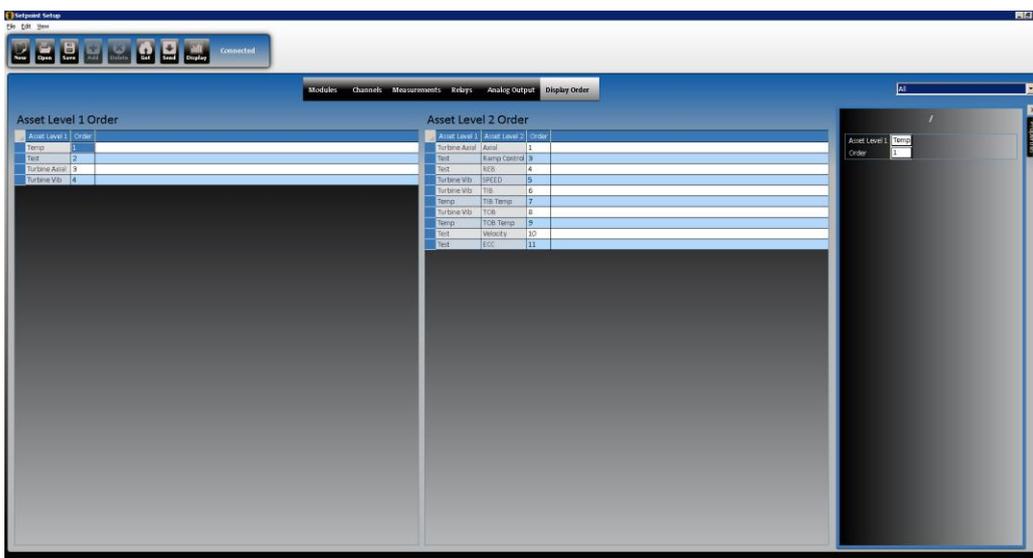
## Setup Utility - Analog Output

Used to assign a measurement to one of the 4-20 mA outputs on the module. An output can be driven by any measurement on any channel connected to the module – not just the direct value.



## Setup Utility – Display Order

Used to arrange bargraphs on the rack’s integral touchscreen into the desired groupings.





### Maintenance Utility – Alarm Events

Retrieves the Alarm Events list from the rack; identical to list displayed on rack's (optional) touchscreen display. Logs both when a rack enters and leaves a particular condition, such as a channel ALERT or DANGER, or when a relay changes state. The list can be sorted by severity, time, channel, and any other on-screen attribute.

Severity	Direction	Date Time	Event Type	Source	Slot	Channel	Type
Out		02/09/2017 05:51:45-29 PM	Alert	Turbine VIB/SPEED/TPHS 63E0518/Speed	4	4	Phase Trigger
In		02/09/2017 05:50:33:04 PM	Alert	Turbine VIB/SPEED/TPHS 63E0518/Speed	4	4	Phase Trigger
In		02/09/2017 05:50:32:52 PM	Alert	Test/Ramp Control/Discrete Input 3/Digital State10	10	3	Discrete Input
In		02/09/2017 05:50:30:64 PM	Relay Activated	Manual Ramp Down Relay1	10	1	Relay
In		02/09/2017 05:50:30:64 PM	Danger	Test/Ramp Control/Discrete Input 3/Digital State10	10	3	Discrete Input
Out		02/09/2017 05:48:01:71 PM	Relay Activated	Auto Ramp Relay	10	3	Relay
Out		02/09/2017 05:48:01:68 PM	Alert	Turbine VIB/SPEED/TPHS 63E0518/Speed	4	4	Phase Trigger
Out		02/09/2017 05:48:01:68 PM	Danger	Turbine VIB/SPEED/TPHS 63E0518/Speed	4	4	Phase Trigger
Out		02/09/2017 05:48:00:59 PM	Alert	Test/Ramp Control/Discrete Input 3/Digital State10	10	3	Discrete Input
In		02/09/2017 05:47:58:59 PM	Relay Activated	Manual Ramp Down Relay1	10	1	Relay
In		02/09/2017 05:47:58:59 PM	Danger	Test/Ramp Control/Discrete Input 3/Digital State10	10	3	Discrete Input
Out		02/09/2017 01:00:31:62 PM	Relay Activated	Relay Output 1	3	1	Relay
Out		02/09/2017 01:00:31:62 PM	Alert	Turbine VIB/TOR/TOR1 63VE2903A/Direct	3	1	Radial Vibration
Out		02/09/2017 01:00:29:58 PM	Alert	Turbine VIB/TOR/TOR1 63VE2903A/Direct	3	3	Radial Vibration
Out		02/09/2017 01:00:26:62 PM	Relay Activated	Relay Output 2	3	2	Relay
Out		02/09/2017 01:00:26:62 PM	Danger	Turbine VIB/TOR/TOR1 63VE2903A/Direct	3	1	Radial Vibration
In		02/09/2017 01:00:22:82 PM	Relay Activated	Relay Output 2	3	2	Relay
In		02/09/2017 01:00:22:82 PM	Danger	Turbine VIB/TOR/TOR1 63VE2903A/Direct	3	1	Radial Vibration
In		02/09/2017 01:00:20:02 PM	Alert	Turbine VIB/TOR/TOR1 63VE2903A/Direct	3	3	Radial Vibration
In		02/09/2017 01:00:14:26 PM	Relay Activated	Relay Output 1	3	1	Relay
In		02/09/2017 01:00:14:26 PM	Alert	Turbine VIB/TOR/TOR1 63VE2903A/Direct	3	1	Radial Vibration
In		02/09/2017 12:58:59:63 PM	Relay Activated	Auto Ramp Relay	10	3	Relay
In		02/09/2017 12:58:59:63 PM	Danger	Turbine VIB/SPEED/TPHS 63E0518/Speed	4	4	Phase Trigger
Out		02/09/2017 12:48:20:63 PM	Relay Activated	Relay Output 1	3	1	Relay
Out		02/09/2017 12:48:20:63 PM	Alert	Turbine VIB/TOR/TOR1 63VE2903A/Direct	3	1	Radial Vibration
Out		02/09/2017 12:48:11:95 PM	Alert	Turbine VIB/TOR/TOR1 63VE2903A/Direct	3	3	Radial Vibration
Out		02/09/2017 12:48:11:79 PM	Relay Activated	Relay Output 2	3	2	Relay
Out		02/09/2017 12:48:11:79 PM	Danger	Turbine VIB/TOR/TOR1 63VE2903A/Direct	3	1	Radial Vibration
In		02/09/2017 12:48:05:31 PM	Relay Activated	Relay Output 2	3	2	Relay
In		02/09/2017 12:48:05:31 PM	Danger	Turbine VIB/TOR/TOR1 63VE2903A/Direct	3	1	Radial Vibration
In		02/09/2017 12:48:00:75 PM	Alert	Turbine VIB/TOR/TOR1 63VE2903A/Direct	3	3	Radial Vibration
In		02/09/2017 12:48:00:04 PM	Relay Activated	Relay Output 1	3	1	Relay
In		02/09/2017 12:48:00:04 PM	Alert	Turbine VIB/TOR/TOR1 63VE2903A/Direct	3	1	Radial Vibration

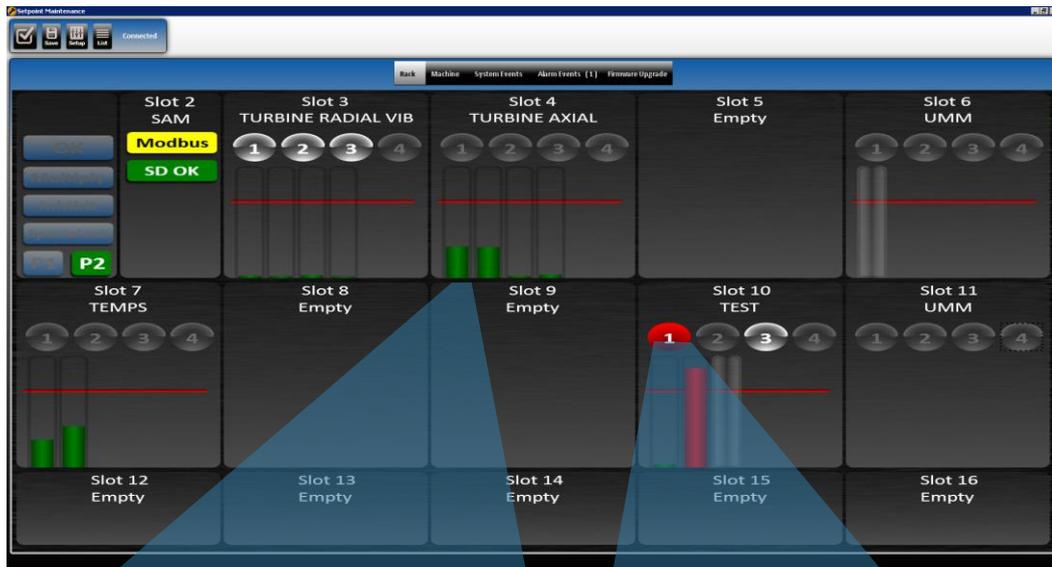
### Maintenance Utility – System Events

Retrieves the System Events list from the rack; identical to list displayed on rack's (optional) touchscreen display. Logs both when a rack enters and leaves a particular condition, such as a channel fault (NOT OK). The list can be sorted by event type, time, channel, and any other on-screen attribute.

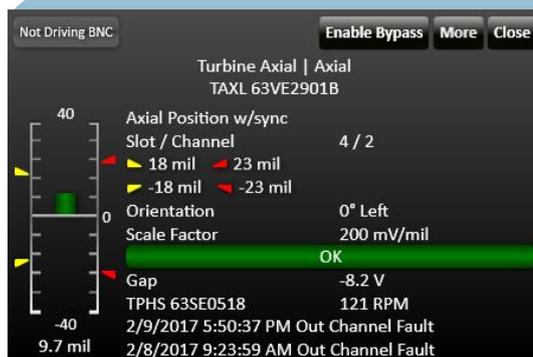
Severity	Direction	Date Time	Event Type	Source	Slot	Channel	Type
		02/09/2017 05:51:45:21 PM	Latched Statuses Reset		1		RCM
Out		02/09/2017 05:51:30:49 PM	Channel Fault	Test/ECC/Eccentricity	4	3	Eccentricity
Out		02/09/2017 05:51:16:43 PM	Channel Fault	Turbine VIB/TOR/TOR1 63VE2903B	3	4	Radial Vibration
Out		02/09/2017 05:51:16:43 PM	Channel Fault	Turbine VIB/TOR/TOR1 63VE2903A	3	3	Radial Vibration
Out		02/09/2017 05:51:16:43 PM	Channel Fault	Turbine VIB/TOR/TOR1 63VE2902B	3	2	Radial Vibration
Out		02/09/2017 05:51:16:43 PM	Channel Fault	Turbine VIB/TOR/TOR1 63VE2902A	3	1	Radial Vibration
Out		02/09/2017 05:50:59:45 PM	Channel Fault	Test/Velocity/Velocity 2	10	2	Velocity
In		02/09/2017 05:50:49:18 PM	Module Inserted Into System		3		UMM
Out		02/09/2017 05:50:47:28 PM	Module Rebooted		3		UMM
Out		02/09/2017 05:50:42:56 PM	Channel Fault	Turbine VIB/SPEED/TPHS 63E0518	4	4	Phase Trigger
Out		02/09/2017 05:50:40:33 PM	Module Inserted Into System		5		UMM
Out		02/09/2017 05:50:38:49 PM	Module Rebooted		5		UMM
Out		02/09/2017 05:50:37:92 PM	Channel Fault	Turbine Axial/Axial/AXAL 63VE2901B4	2		Axial Position w/ync
Out		02/09/2017 05:50:37:92 PM	Channel Fault	Turbine Axial/Axial/AXAL 63VE2901A4	1		Axial Position w/ync
In		02/09/2017 05:50:33:83 PM	Module Inserted Into System		11		UMM
Out		02/09/2017 05:50:32:79 PM	Module Removed From System		11		UMM
In		02/09/2017 05:50:32:44 PM	Module Inserted Into System		11		UMM
Out		02/09/2017 05:50:31:59 PM	Module Rebooted		10		UMM
Out		02/09/2017 05:50:31:13 PM	Module Rebooted		4		UMM
Out		02/09/2017 05:50:30:20 PM	Channel Fault	Test/Ramp Control/Discrete Input 3	10	3	Discrete Input
Out		02/09/2017 05:50:30:20 PM	Module Rebooted		10		UMM
Out		02/09/2017 05:49:45:17 PM	Module Removed From System		6		UMM
Out		02/09/2017 05:49:44:08 PM	Module Removed From System		3		UMM
Out		02/09/2017 05:49:43:53 PM	Module Removed From System		11		UMM
Out		02/09/2017 05:49:39:95 PM	Module Removed From System		10		UMM
Out		02/09/2017 05:49:38:39 PM	Module Removed From System		4		UMM
Out		02/09/2017 05:48:01:69 PM	Latched Statuses Reset		1		RCM
Out		02/09/2017 12:46:11:92 PM	Latched Statuses Reset		1		RCM
Out		02/09/2017 12:46:10:41 PM	Latched Statuses Reset		1		RCM
Out		02/08/2017 04:48:13:38 PM	SC Card Installed		2		SAM
Out		02/08/2017 04:48:13:23 PM	SC Card Not Installed		2		SAM
Out		02/08/2017 09:24:58:24 AM	Latched Statuses Reset		1		RCM
Out		02/08/2017 09:24:52:57 AM	Channel Fault	Test/ECC/Eccentricity	4	3	Eccentricity

## Maintenance Utility – Rack Display (bargraph)

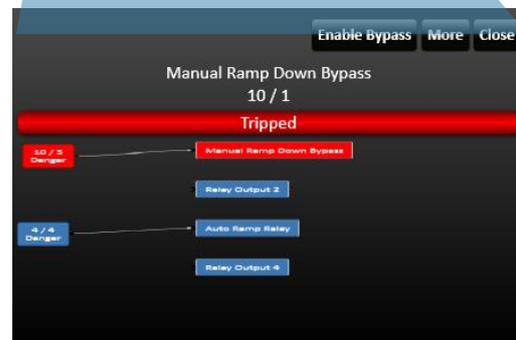
Provides same display as available from rack's (optional) touchscreen display. Organizes information by slot/channel. Additional information can be viewed by selecting a channel or relay, which opens the detail window. The window can be expanded to full screen size for additional detail and clarity. The detail window also exposes the button to enable/disable Maintenance Bypass for the selected channel or relay. User can toggle between bargraph and list modes. List mode (not shown) displays the current value of all channels simultaneously in text along with color-coded alarm status – useful when doing loop checks and verifications.



Channel Detail Window - Condensed



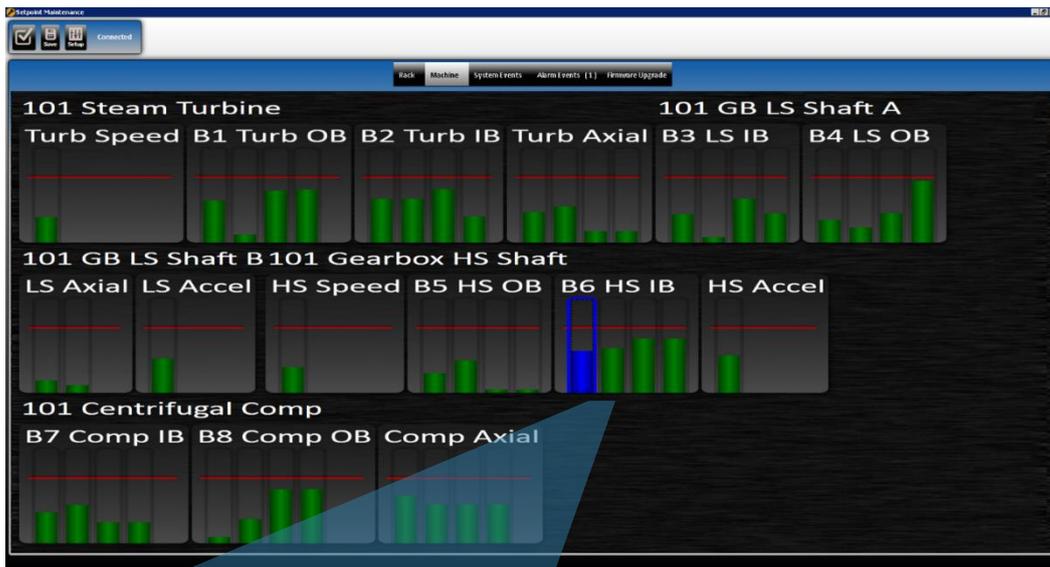
Relay Detail Window - Condensed



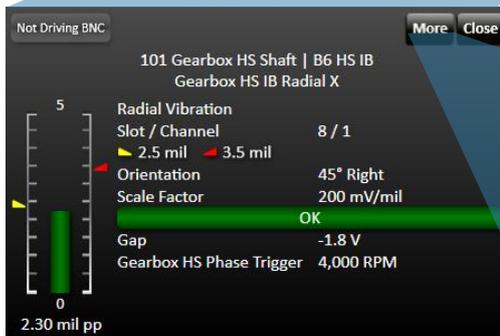


## Maintenance Utility – Machine Display

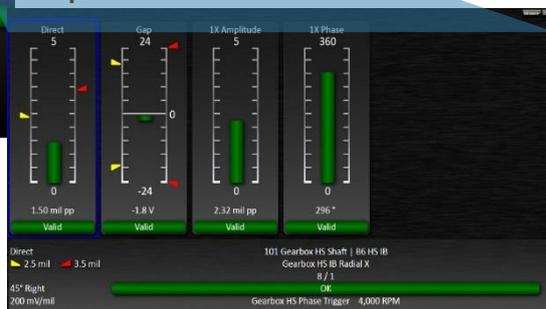
Provides same display as available from rack's (optional) touchscreen display. Organizes information by machine / case / bearing / transducer instead of by slot/channel. Additional information can be viewed by selecting a channel, which opens the detail window. The window can be expanded to full screen size for clarity. The window also exposes the button to enable/disable Maintenance Bypass for the selected channel or relay.



Channel Detail Window - Condensed



Channel Detail Window - Expanded



## Maintenance Utility – Firmware Upgrade

Displays the firmware currently installed in each module and allows the user to upgrade all or selected modules to newer firmware. Automatically detects the newest available firmware for the module, depending on installed options and hardware revision. Through use of a special .setk (SETPOINT Key) file supplied by the factory, this screen can be used to enable certain optional features, such as streaming of condition monitoring data to an OSIsoft® PI Server or other connected computer, or “flight recorder” data storage to the rack’s embedded hard drive and/or SD Card slot. For convenience, the Maintenance Utility contains all necessary firmware images for all possible modules and permutations, eliminating the need to download firmware as individual files.

The screenshot shows the 'Setpoint Maintenance' application window. At the top, there is a toolbar with icons for Save, Setup, Apply, Write SD, Enable Hardware, Set Time, Force Waveforms, Reboot, and Force Boot Waveforms. Below the toolbar, there are tabs for Rack, Machine, System Events (50), Alarm Events (20), and Firmware Upgrade. The 'Firmware Upgrade' tab is active, displaying a table with the following data:

Apply	Slot	Module	CMS License	Serial Modbus	Firmware Revision	Available Revision	Serial Number	Status
<input type="checkbox"/>	2	SAM (CMS)	<input type="checkbox"/>	<input type="checkbox"/>	4.01.9005	4.01.9005		Firmware up to date.
<input type="checkbox"/>	2	SAM (MAIN FIRMWARE)	<input type="checkbox"/>	<input type="checkbox"/>	4.02.9121	4.02.9121		Firmware up to date.
<input type="checkbox"/>	2	SAM (ULTRA DISPLAY)	<input type="checkbox"/>	<input type="checkbox"/>	1.00.0000			No firmware upgrade available.
<input type="checkbox"/>	4	UMM	<input type="checkbox"/>	<input type="checkbox"/>	4.02.9046	4.02.9046	XY144925420	Firmware up to date.
<input type="checkbox"/>	5	UMM	<input type="checkbox"/>	<input type="checkbox"/>	4.02.9046	4.02.9046	XY144925369	Firmware up to date.
<input type="checkbox"/>	6	UMM	<input type="checkbox"/>	<input type="checkbox"/>	4.02.9046	4.02.9046	XY144925438	Firmware up to date.
<input type="checkbox"/>	7	TMM	<input type="checkbox"/>	<input type="checkbox"/>	4.02.9035	4.02.9035		Firmware up to date.



## Specifications

<b>Supported Operating Systems*</b>	<ul style="list-style-type: none"> <li>• Windows 10 Professional (32-bit and 64-bit)</li> <li>• Windows Server 2008 R2 (64-bit)</li> <li>• Windows Server 2012 (64-bit)</li> <li>• Windows Server 2016</li> </ul>
<b>Minimum Computer Requirements</b>	<ul style="list-style-type: none"> <li>• <i>SETPOINT Setup &amp; Maintenance Software</i> requirements do not exceed those of its host operating system (OS). Refer to microsoft.com for minimum computer requirements associated with each supported OS.</li> <li>• Approximately 150 MB of free hard disk space are required to install the software (120 MB for Microsoft .NET and 30 MB for SETPOINT Setup &amp; Maintenance).</li> <li>• USB 2.0 or 3.0 port<sup>1</sup></li> <li>• SDHC Card slot<sup>3,4</sup></li> </ul> <p><b>NOTES:</b></p> <ol style="list-style-type: none"> <li>1. The USB port is required only when connecting a SETPOINT rack to a computer running <i>SETPOINT Setup &amp; Maintenance Software</i>, and/or when installing the software from USB stick instead of the web.</li> </ol>
<b>Ground Select</b>	<ol style="list-style-type: none"> <li>2. Touchscreen firmware is upgraded via SD Card, not via USB cable. The SD Card writer/reader is used when creating a firmware image on SD card. The card is then inserted in the rack's System Access Module (SAM) and the firmware upgrade process commences automatically.</li> <li>3. The SAM supports only SD 1.0 (SDSC) and 2.0 (SDHC) media – not newer 3.0 (SDXC) media.</li> </ol>

## Ordering Information

The most recent version of *SETPOINT Setup & Maintenance Software* can be downloaded directly from our website. We also provide this software on USB memory stick\* at no extra charge with each hardware order. A 2m USB cable is included and does not need to be ordered separately



<b>VC-8000/CSW-AA</b>	
<b>SETPOINT Setup &amp; Maintenance Software</b>	
AA	Format
01	USB Memory Stick



## Accessories

### USB Cable

This cable is used to connect a SETPOINT® rack to a computer running *SETPOINT Setup & Maintenance Software*. The cable is included with part number VC-8000/CSW and does not need to be ordered separately. Order the item below only when replacing a lost or damaged cable.



#### NOTE:

The cable includes ferrite beads installed on each end (not shown in the photo).

**96014-012**

**2m (6') USB 2.0 A / Mini-B Cable**



### CAUTION

SETPOINT® hardware is shipped with default factory configuration settings which are not necessarily suitable for any particular application. Before use, each module must be configured properly for the application via the SETPOINT® Setup Utility.



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