Brüel & Kjær Vibro
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Quickstart Guide

VIBROPORT 8000

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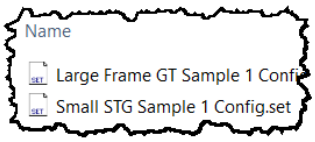
1 Included

1.1 VIBROPORT 8000 Hardware and Software Programs

The VIBROPORT 8000 is the same hardware as the VC-8000 Machinery Protection System (MPS). However, the VIBROPORT 8000 is packaged as a portable solution; This includes cables and adapters for simple connection to 3rd party vibration systems. The following hardware and software are included with the VIBROPORT 8000.

Picture (or Icon)	Name	Description
	VIBROPORT 8000 Configuration software	Spreadsheet style software for configuring the VIBROPORT 8000.
	Configuration Files	Example VIBROPORT 8000 configuration files.
	SETPOINT PI/XC Adapter software	Data collection software. Connects to the VIBROPORT 8000 and saves the data to the CMS-XC Database (Job sub-folder).
	SETPOINT CMS software	Visualizer for condition monitoring data and plots including Trends, Spectrums, Orbits, Timebase, etc.
	24 V DC Power Adapter (x1)	Use to power the VIBROPORT 8000.
	USB cable (A-Male to Mini-B) (x1)	Use to configure the VIBROPORT 8000 and to perform maintenance functions.
	Ethernet cable (x1)	Use for CMS-XC data collection and for VIBROPORT 8000 configuration.

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Picture (or Icon)	Name	Description
	BNC Breakout Cable (1 each per UMM ordered)	Used to connect to buffered outputs of 3rd party vibration systems.
	UMM to RJ45 Adapter (1 each per UMM ordered)	Provides an RJ45 connector (Signal and Common) for UMM module.

1.2 Additional Software

The VIBROPORT 8000 is the same hardware as the VC-8000 Machinery Protection System (MPS). The VC-8000 MPS software is provided because it is required for hardware maintenance and advanced troubleshooting such as password reset, and firmware upgrades.

Picture (or Icon)	Software	Description
	VC-8000 Rack Setup (Configuration) software	VIBROPORT 8000 users will normally not use this software.
	VC-8000 Rack Maintenance software	VIBROPORT 8000 users will need this software for advanced maintenance functions.
	VC-8000 Data Simulator	VIBROPORT 8000 users will normally not use this software.

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2 Start Here

2.1 Setup

This quick start guide will walk the user through a simple setup and configuration of the VIBROPORT 8000 using a laptop for field data collection.

To complete the quick start setup, you will need the following:

- Laptop (or PC)
- +24 V DC power adapter
- USB cable (A-Male to Mini-B)
- Ethernet cable
- VIBROPORT 8000 configuration software
- SETPOINT PI/XC Adapter software
- SETPOINT CMS software

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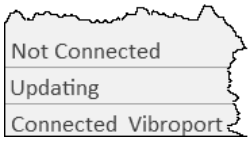
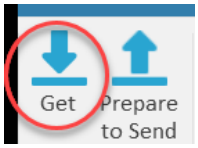
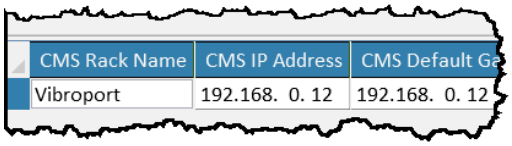
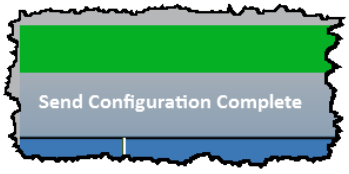
2.2 Start VIBROPORT 8000 Configuration Software

2.2.1 Configure the IP Address

The VIBROPORT 8000 needs an IP Address compatible with your laptop. In this section we configure the IP address using the USB connection to the rack. Once the IP is configured, you will use the Ethernet connection for both configuration and CMS-XC data collection.

Save the USB cable, it may be needed in the future for maintenance activities.

Action	Screen Capture
Install and start the VIBROPORT 8000 configuration software.	
Connect the USB cable to any UMM module.	
After connecting the USB cable, the software will connect automatically. (just wait about 15 seconds). The connection status is shown in the bottom left corner of the software.	
From the Home tab, select Get - to retrieve the existing configuration from the VIBROPORT 8000 (Or 'Open' a sample configuration).	
Select the Ethernet tab and set the new IP Address. If there is no default gateway, then set it to the same IP address.	
Select Prepare to Send, then Commit. Configuration errors will be shown on the Commit screen (if any).	
Enter the Administrator Password (The default password is: vibro) The configuration is sent, and the IP address will be updated.	
Done.	

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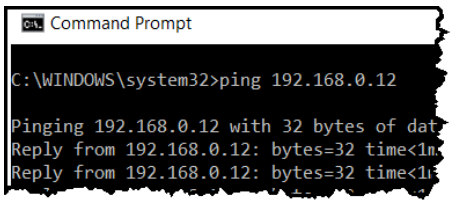
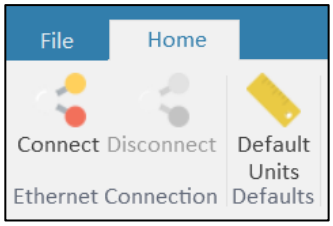
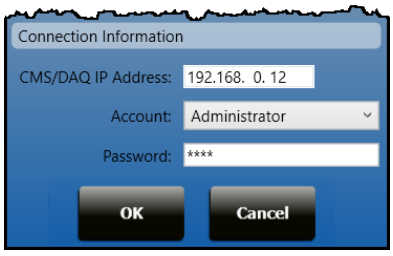
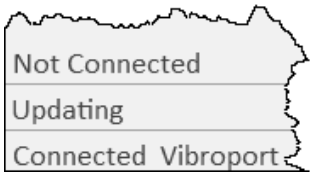
2.2.2 Connect Via Ethernet

Once established, the Ethernet connection can be used for both configuration and data collection.

Action	Screen Capture
Connect your laptop Ethernet port to the VIBROPORT 8000 CMS ethernet port on the SAM module.	
Use the command prompt on your computer to verify that you can ping the rack. **Note:** For troubleshooting the Ethernet connection see Section 5 Troubleshooting.	
Launch the VIBROPORT 8000 software. From the Home tab, select Connect. **Note:** Make sure the USB cable is not connected. When the USB cable is connected, the Ethernet Connect icon is disabled.	
Enter the following(example): • IP Address: 192.168.0.12 (or other) • Account: Administrator • Password: vibro (or other)	
Verify the connection: The connection status is shown in the bottom left corner of the software.	
Done.	

NOTE

Save the USB cable. The USB cable is used for configuration, maintenance, and is required for password resets (if you forget the password).

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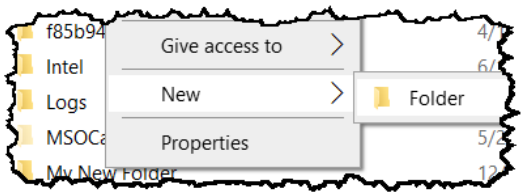
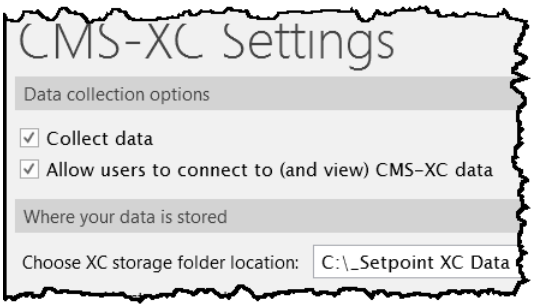
2.3 Start the SETPOINT PI/XC Adapter Software

VIBROPORT 8000 users will need a laptop for data collection and storage (CMS-XC). CMS-XC is a simple flat file format that is written to the laptop hard drive; CMS-XC does not use PI, or SQL or any other database.

To store CMS-XC data on your laptop you will need to install the SETPOINT PI/XC Adapter software. To set up the Adapter, complete the following steps.

Action	Screen Capture
Create a storage folder for CMS-XC Data. For example: “C:\Setpoint CMS-XC Data” This will be the main folder - for all jobs. **Tip:** Do not use a Desktop or a “My Documents” folder location. These folders are deleted if the user is removed from the computer. Use a folder on the main drive (C:\ or D:\).	
Install and start the SETPOINT PI/XC Adapter software	
Under the File tab, select CMS-XC and set the following: • Collect Data (Enabled) • Allow users to connect… (Enabled) • XC storage folder location (set to the folder you just created).	

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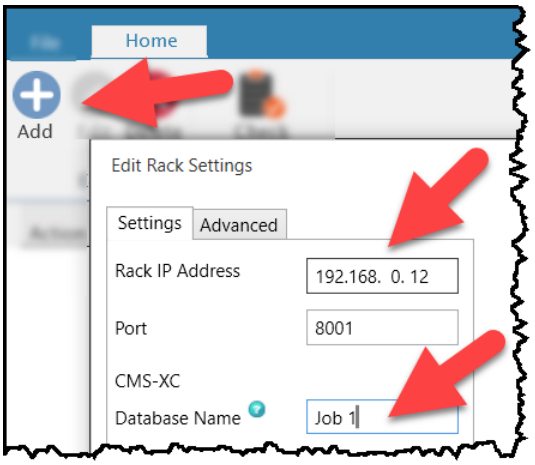
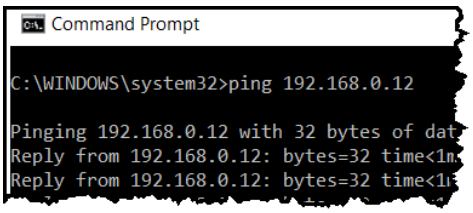
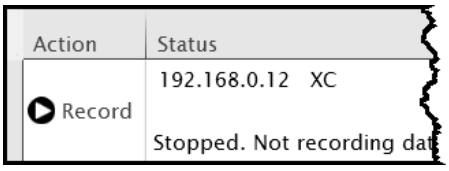
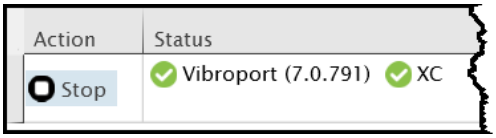
Action	Screen Capture
Under Home, select Add. • Enter the VIBROPORT 8000 IP address (i.e. 192.168.0.12) • Set the CMS-XC Database Name (i.e. Job 1) **Note:** When you start data collection the adapter will create the job sub-folder (i.e. Job 1). You will never need any of the Advanced settings.	
Connect your laptop to the VIBROPORT 8000 CMS Ethernet port (SAM module).	
Make sure you can ping the rack. **Note:** For troubleshooting the ethernet connection see Section 5 Troubleshooting.	
Press Record.	
Two green checkboxes indicate: • Successful connection to the VIBROPORT 8000 • Successful creation of (or connection to) the CMS-XC job sub-folder.	

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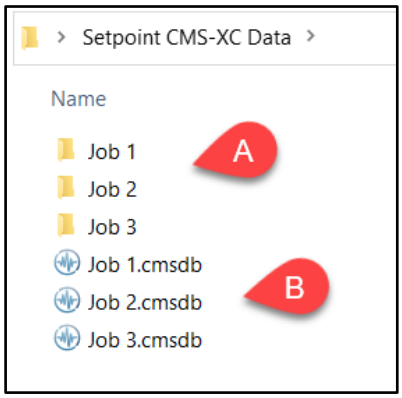
Action	Screen Capture
Note: Each time you start a new Job (i.e. enter a new CMS-XC database name): • A new sub-folder will be created (i.e. Job 1, Job 2, etc.) • A new shortcut (0-byte file) will be created. The shortcuts are used to open CMS data after a job is completed (i.e. not a live data connection).	
Done.	

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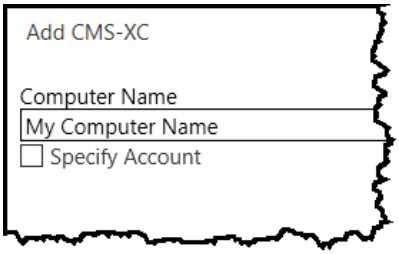
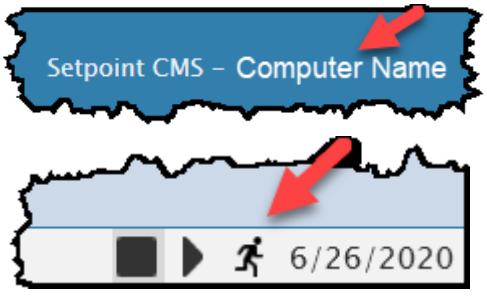
2.4 Start the SETPOINT CMS Software

To view and analyze CMS-XC data you will need to install the SETPOINT CMS software. CMS software can be used to view live data (current job), or to view data from previous jobs. It can also be used to view ".cms" export files sent to you for analysis (VIBROPORT 8000 or VC-8000).

2.4.1 Initial CMS Setup

The first time you start CMS you will need to complete the following steps.

Action	Screen Capture
Install and start CMS Software **Note:** Registration of the software is required (there is 30-day trial period).	
Select File, Open Database, Add Database	
Select Add CMS-XC This will add your laptop (as a live connection) for CMS-XC data.	
The pop-up screen will show your computer name. Select OK. **Note:** There is no need to specify an account.	
CMS will start and connect. Notice (at the top of the screen) that CMS is connected to" the laptop". This is a "live data connection" which brings data in from the current Job (XC-Database) configured in the PI/XC Adapter. Also, notice (bottom right) that the "running man" icon is active, indicating that live data is available.	
Done.	

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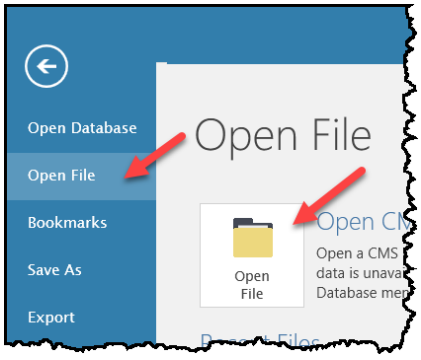
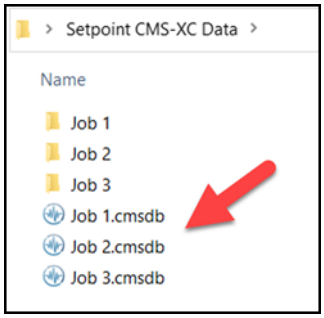
2.4.2 View CMS Data (Current Job)

The next time you open CMS software it will connect to the “Live” database automatically. If it does not you can reconnect as shown here:

Action	Screen Capture
1. Start CMS Software 2. Select File, Open Database. 3. Select your Computer Name. 4. Select the Job (XC-Database) name. **Note:** If CMS has not yet updated the Job name, go ahead, and select it anyway. The Job name will update eventually… Also, make sure the PI/XC Adapter is running.	
Done.	

2.4.3 View CMS Data (Previous Job)

You can view data from previous jobs as follows:

Action	Screen Capture
Start CMS Software From the File menu select Open File, and then select the Open File icon. **Note:** This doesn’t require the PI/XC Adapter to be running; the data is already stored.	
Browse to the CMS-XC Storage folder and select the Job shortcut.	
Done.	

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2.5 Connecting the Cables to the Signal Source

Use the UMM to RJ45 Adapter (1) and the BNC to CAT5 cable (4) to connect to the field device (i.e. Bently Nevada 3300 protection rack). If additional cable length is needed, use a standard ethernet (CAT5) cable (2) and an ethernet cable joiner (3) (not provided).

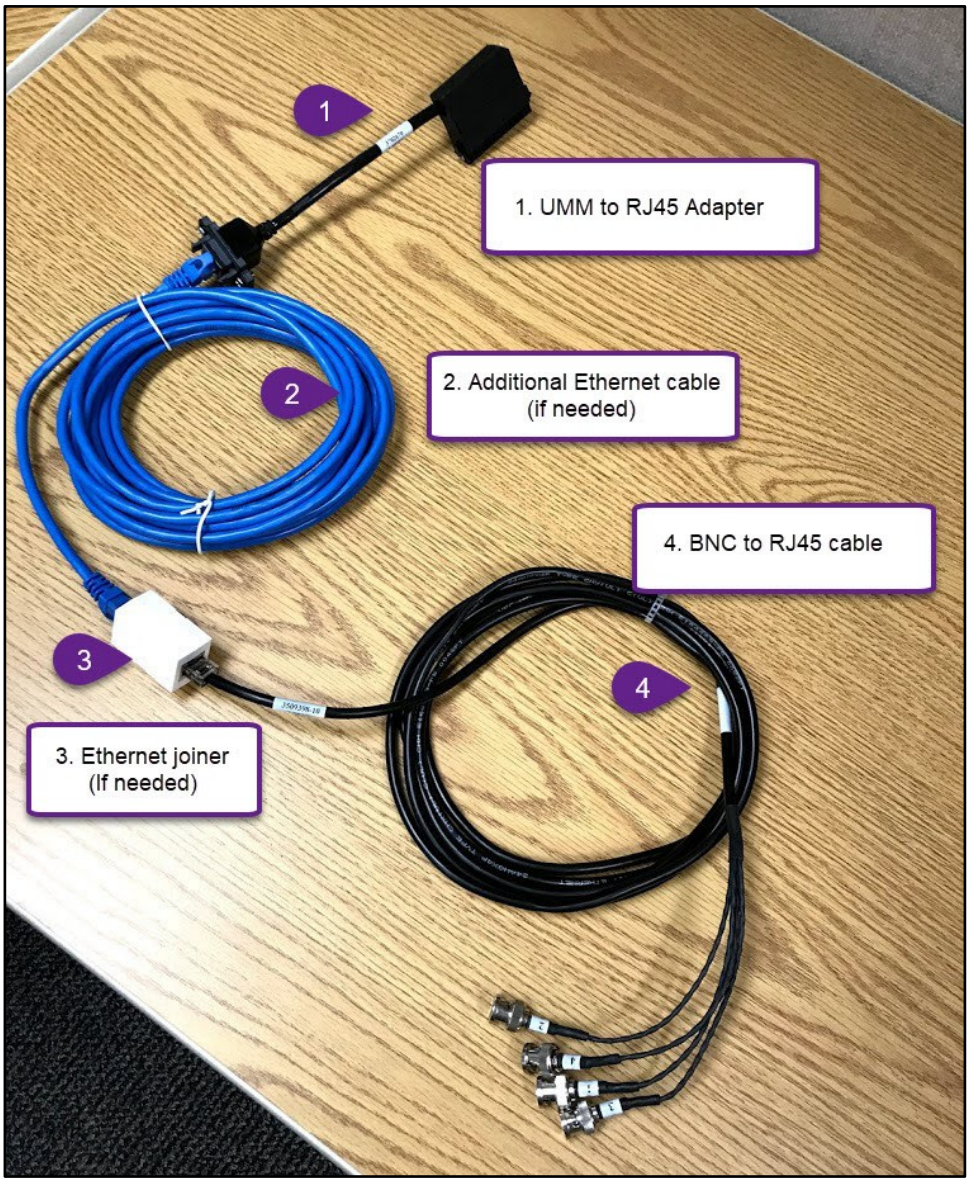

Figure 2-1) *Cabling*

TIP

Ethernet (CAT5) cables combine multiple conductors into a single cable. To minimize signal cross-talk, keep total Ethernet cable lengths less than 10 meters (30 feet).

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2.5.1 Grounding

The On-Line Protection System signal COM will be the reference COM for both systems (see **Figure 2-2**). Both the VIBROPORT 8000 COM and the laptop (or PC) COM should be floating.

An Ethernet connection from your laptop to the VIBROPORT 8000 will not affect grounding. However, a USB connection can affect grounding. USB connectors in laptops and PC's tie Chassis GND to Signal COM; Do not use the USB cable when connecting to an On-Line Protection System.

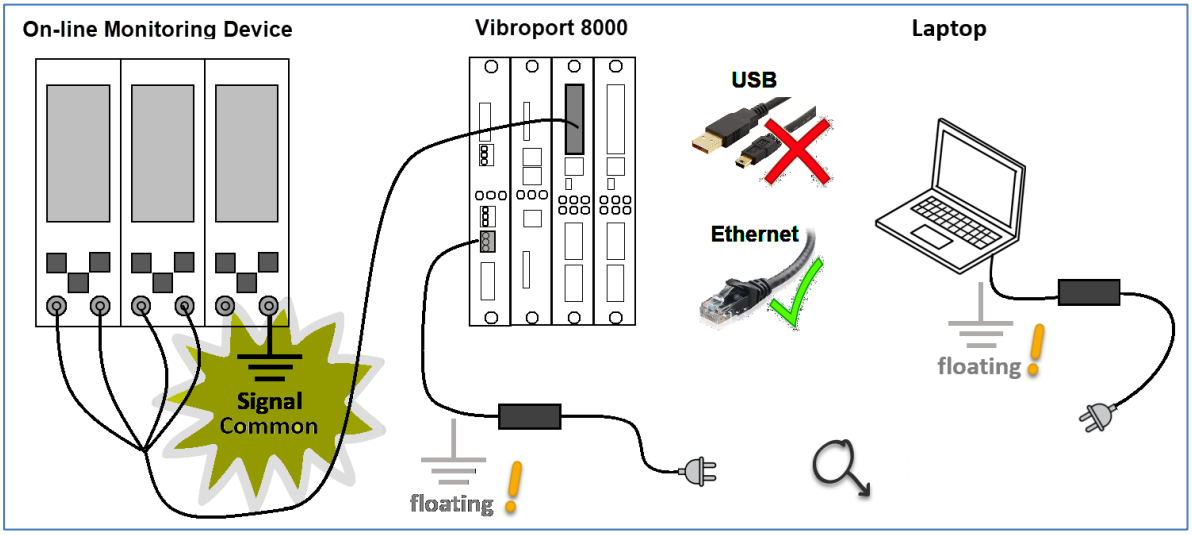

Figure 2-2) *Device signal COM will be the reference COM for both systems*

The COM to GND jumper should be removed when connecting VIBROPORT 8000 to an On-Line Protection System. The COM to GND jumper should only be installed if the VIBROPORT 8000 is connected directly to sensors in the field.

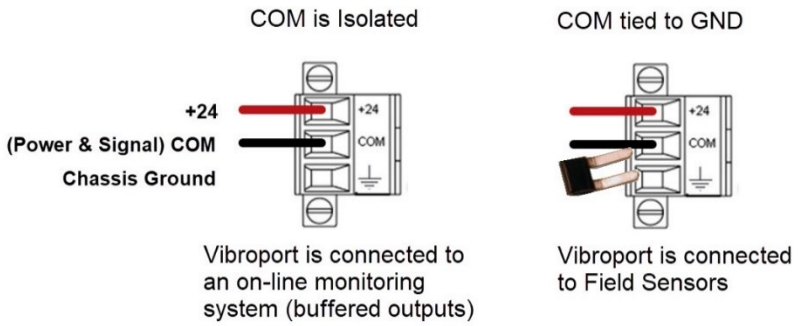

Figure 2-3) *Shorting COM to GND (only when using VIBROPORT 8000 with field sensors)*

WARNING!

To avoid ground loops and potentially tripping the unit, proper grounding must be checked before connecting VIBROPORT 8000 to any on-line monitoring protection system

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2.6 Beginners Job Checklist

This checklist may be helpful as you set up your first job.

#	Connection Checklist	X
1.	VP-8000 COM is floating (See Section 2.5.1).	
2.	Laptop COM is floating (See Section 2.5.1).	
3.	All cables are secure and out of the way – no tripping hazards.	
4.	Laptop sleep/hibernation settings have been modified (See Section 5.6).	
#	Configuration Checklist	X
5.	Phase Trigger located in Channel 4 (any slot 4-8).	
6.	XY Pairs are in channels 1,2 or 3,4.	
7.	'Group Channels' is selected (usually for all RV, and Phase Trigger channels).	
8.	CMS Navigation Path (or Group) is assigned for every channel.	
9.	Asynch and synch waveform settings are acceptable for this machine. Note: For fast speed machines (> 12,500 RPM) the sample rate must be reduced, or synchronous waveforms will not be collected (see section 7.4.1.3 – Configuring Synch Waveforms for max speeds).	
10.	Machine Direction of Rotation is correct (Channels tab, Phase Trigger view)	
11.	All channels in OK (green) – with good Gap voltages.	
12.	SD card is installed (as a backup).	
13.	Use numbers in the names (01, 02, etc.) to force the order of tags (and groups) in CMS software (see section 3.6).	
#	PI/XC Adapter Checklist	X
14.	Collect XC Data is set (File Menu).	
15.	Rack IP Address is correct (Home, Edit, IP Address).	
16.	Job name/folder is correct (Home, Edit, XC Database Name).	
17.	PI/XC Adapter is started and two green checkmarks are shown.	
#	CMS Checklist	X
18.	Verify Computer Name is shown (live data connection), and the correct Job Name is shown in the Navigation Pane.	
19.	Verify Running Man Icon is active, and data is coming in…	

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2.7 More Information

For more information on the VC-8000 hardware capabilities, please see the following manuals available for download at the BK Vibro website (look for the link to “Product Instructions” in the Downloads section).

Document Number	Title
S000022001	VIBROPORT 8000 Quick Start Guide (this document)
S1079330	VC-8000 Operation & Maintenance Manual
S1176125	SETPOINT Condition Monitoring System Operation Manual
S1342998	Reciprocating Machines Applications Manual
S00002001	Rolling Element Bearing Applications Manual

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3 Configuration Tips

3.1 Default Units

Set the default units (imperial or metric) from the Home ribbon. New channels will default to these units.

This setting does not affect existing configuration settings, only new channels.

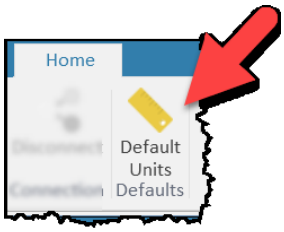

Figure 3-1) *Default Units*

3.2 Select Tab (and View)

The software navigation is grid based (very similar to Microsoft Excel). There are six tabs, select a tab to edit the properties.

- Channels (with multiple Views)
  - Summary
  - Data Collection
  - Phase Trigger
  - Others…
- Waveforms
- Measurements
- Live Data
- Ethernet
- Modules

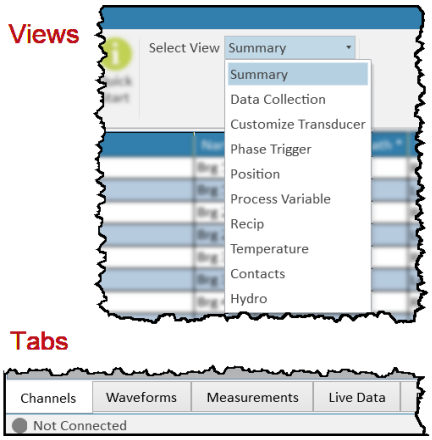

Figure 3-2) *Select Tab and/or View*

The Channels tab has multiple views. The view allows different channel types (with different settings) to be grouped together and edited more easily.

3.3 Copy and Paste

The software supports copy and paste functions. You can copy a single cell and paste to multiple cells. You can also copy a block of cells (i.e. 4 cells) and paste to a block of cells (i.e. 4 cells). You can also copy and paste from Microsoft Excel.

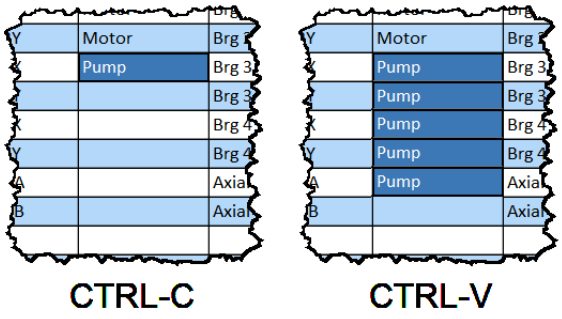

Figure 3-3) *Pasting Across Multiple Cells*

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NOTE

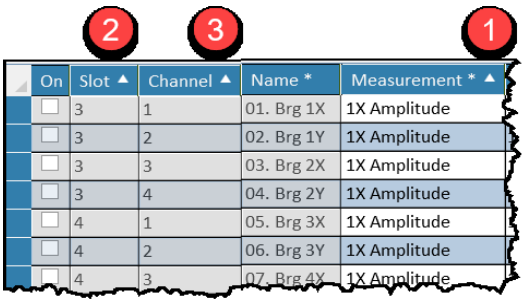
Some cells do not support 'paste' functionality.

3.4 Sort and Multiple Column Sort

Click the mouse on the column header to sort by that column. Click on the column label again to change the order of the sort.

You can sort multiple columns. Sort the first column by clicking the mouse on the column header. Then press the SHIFT key and click the second column header. Then press the SHIFT key and click the third column header.

In the screen capture, the grid was sorted first by Measurement, second, by Slot, and then third, by Channel.



On	Slot	Channel	Name *	Measurement *
☐	3	1	01. Brg 1X	1X Amplitude
☐	3	2	02. Brg 1Y	1X Amplitude
☐	3	3	03. Brg 2X	1X Amplitude
☐	3	4	04. Brg 2Y	1X Amplitude
☐	4	1	05. Brg 3X	1X Amplitude
☐	4	2	06. Brg 3Y	1X Amplitude
☐	4	3	07. Brg 4X	1X Amplitude

Figure 3-4) *Use SHIFT + mouse click to multi-sort*

3.5 Grid Filter

Use the filter to show only the rows you are interested in seeing. The filter is not case sensitive and applies (simultaneously) to all column headers marked with an asterisk.

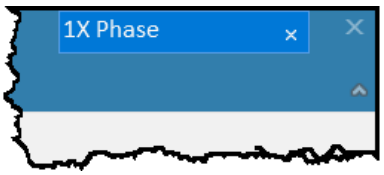


Figure 3-5) *Grid Filter*

3.6 Disable Unused (Spare) Channels

Disable unused channels from the Channels Tab. Deselect the box in the 'On' column.

3.7 Naming Convention

CMS sorts the list of Tag and Asset (Navigation Path) Names alphabetically. To force CMS software to sort names in the order you prefer, use a prefix in front of the name.

3.8 Orbit (XY) Pairs

All XY pairs need to be in channels 1 & 2 (or channels 3 & 4) of the same UMM.

All XY pairs must have the same CMS Navigation Path name.

Name *	CMS Navigation Path *	Direction	Orien
01. Brg 1X	01. Motor	Right	45
02. Brg 1Y	01. Motor	Left	45
03. Brg 2X	01. Motor	Right	45
04. Brg 2Y	01. Motor	Left	45
05. Brg 3X	02. GB LS	Right	45
06. Brg 3Y	02. GB LS	Left	45
07. Brg 4X	02. GB LS	Right	45
08. Brg 4Y	02. GB LS	Left	45
09. Brg 5X	03. GB-HS	Right	45
10. Brg 5Y	03. GB-HS	Left	45

Figure 3-6) *Naming Convention*

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3.9 Phase Trigger Channels

The VIBROPORT 8000 (8P rack) rack allows for five Phase Trigger channels maximum. Phase Trigger channels can only be configured in channel 4 of a UMM (slots 4-8). Slot 3 does not support a phase trigger.

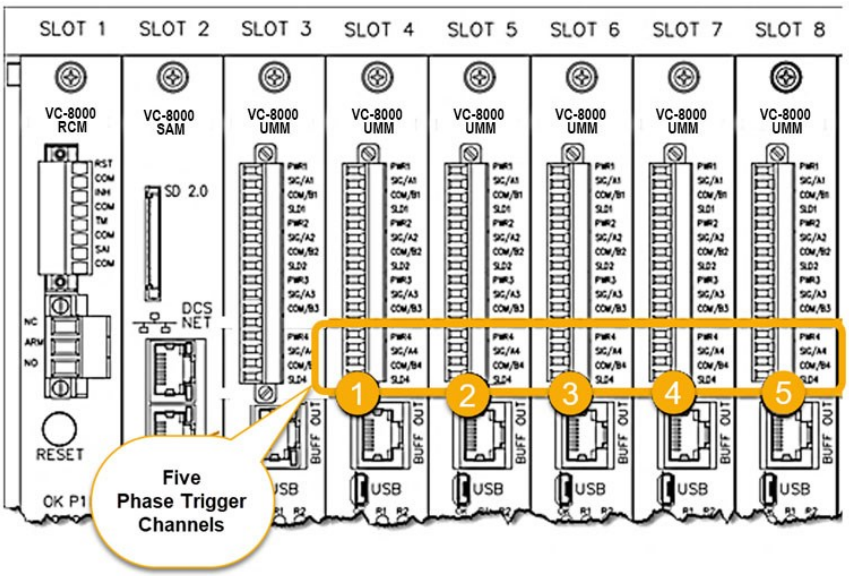

Figure 3-7) *Phase Trigger channels selection.*

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4 Job Management

The following sections will help you with Job, configuration, and data management.

4.1 Start a New Job

Each time VIBROPORT 8000 is being setup for a new job you will need to enter a new CMS-XC Database Name, as follows:

- Start the SETPOINT PI/XC Adapter software
- Select Edit
- Enter the new CMS-XC Database name (Job name)

When data collection is started, the Adapter will create the new job sub-folder automatically. The new sub-folder will be located under the main data storage folder.

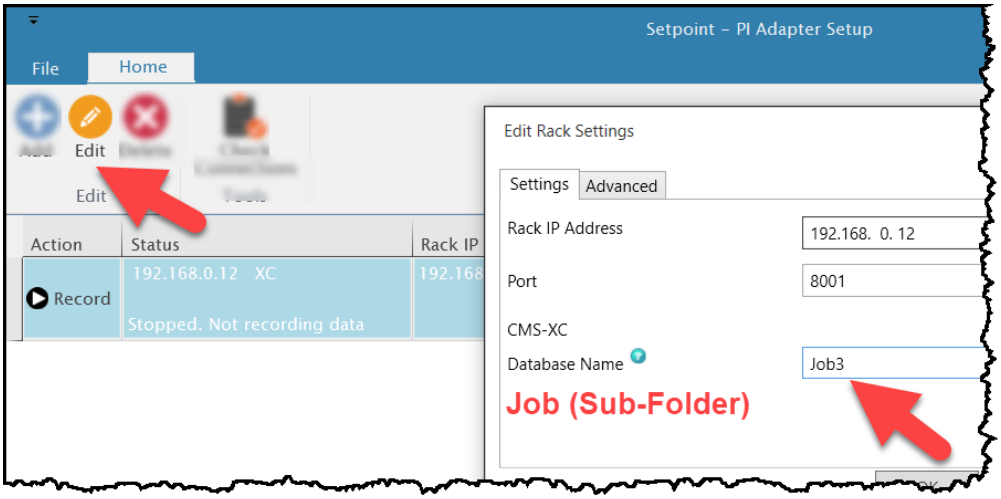

Figure 4-1) *Create a New Job (Sub-Folder)*

Job (data) sub-folders are separate from each other. For example, the data in the “Job 3” folder cannot be merged with data in the “Job 2” folder. CMS can only view data from one folder at a time.

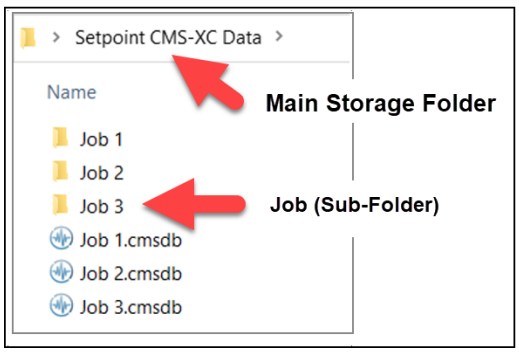

Figure 4-2) *Job (Sub-Folder)*

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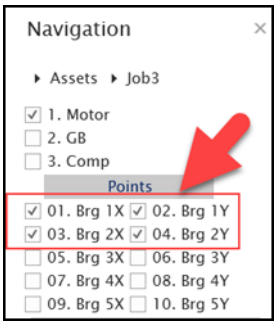
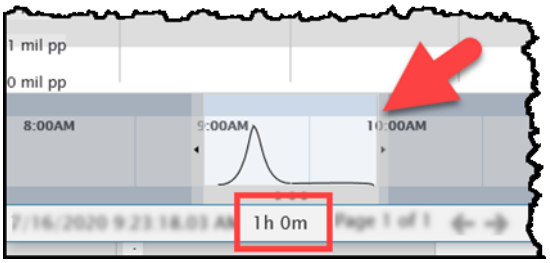
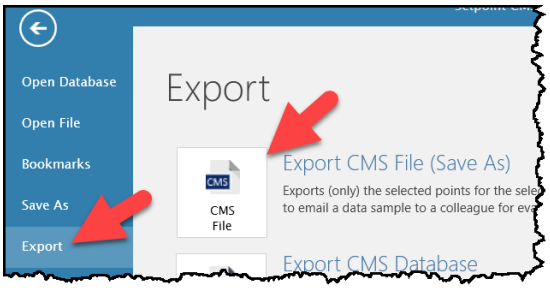
4.2 Share CMS Data

With SETPOINT CMS software it is very easy to share data. SETPOINT CMS software is free, so any person can download the software.

The easiest way to share data is to export the data to a ".cms" (or CMS) file. A CMS file is limited to one week of data maximum. Normally, the data files are focused on a specific event and are only 2-3 hours of data. To create a CMS file, follow these steps:

Action	Screen Capture
Open the CMS Software and connect to the appropriate database (or file). Select the points that you want included in the export.	
Select the time range that you want included in the export.	
Select File, Export. Enter a file name, and save the file. The file will have a ".cms" extension (i.e. job1.cms). The CMS file can be emailed or placed in a shared folder etc. Anyone with SETPOINT CMS software can open and view the file.	
Done.	

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4.2.1 Time Zone of CMS Data

CMS files contain time data in UTC time. When a user opens a CMS file on their laptop, the CMS software will show the data using the time zone of that laptop.

For example, if you send data to a colleague in a time zone that is +3 hours. The event that occurred at 2 AM, will be shown at 5 AM on his laptop.

If your colleague prefers to see the data displayed in the original time zone, he must change the time zone of his computer to match the time zone where the data was collected.

4.3 Archive a Job

To archive job data, copy the Job folder and the Job shortcut to the archive location. CMS Export files can also be created and archived for specific events.

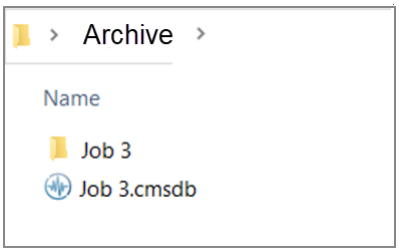

Figure 4-3) *Archive folder*

4.4 Modify Data Collection Parameters

The VIBROPORT 8000 is based on the VC-8000 on-line protection system. An on-line system gets configured once and will keep those settings for years. The VIBROPORT 8000 will be configured many times, for many different machines. It is important for the user to recognize some limitations with the VIBROPORT 8000 system when making configuration changes.

For example, the VIBROPORT 8000 does not track configuration changes made during the current job; it only remembers the most recent configuration settings. For example, if a user lowers the FMax setting from 2000 Hz to 1000 Hz, all the samples for that job (even those already collected) will now display as if the FMax was 1000 Hz.

Best practice is to always start a new Job (XC-Database sub-folder) whenever a configuration change is made.

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5 Troubleshooting

5.1 CMS Navigation path, or CMS Channel Name Errors

If a lot of configuration changes have been made, you might see duplicated channels in CMS, or a CMS Navigation Path (Asset) name that is incorrect. In this situation it is best to start a new job.

To start a new job. Open the PI/XC Adapter, stop data acquisition, and change the Job name (XC Database Name). This will create a new job sub-folder (with new data/config files). Data collected previously will stay in the old job folder.

5.2 Configuration Changes are not Updated in CMS

If you do not see your configuration changes updated in CMS, open a CMS export (.cms file) and then go back and re-connect to the CMS-XC (Live Database). This forces CMS to refresh and see the recent changes in the CMS config files.

5.3 No Live Data (Running Man Icon is Inactive)

VIBROPORT 8000 can only show live data with a connection to the live database (laptop computer name). The current (or live) database is defined in the Setpoint PI/XC Adapter (i.e. Job3). When CMS is connected to the live database:

1. Your computer name will be shown at the top of the CMS screen.
2. The CMS-XC Database (Job) name will be shown in the Navigation Pane.
3. The Running Man icon (live data) will be active

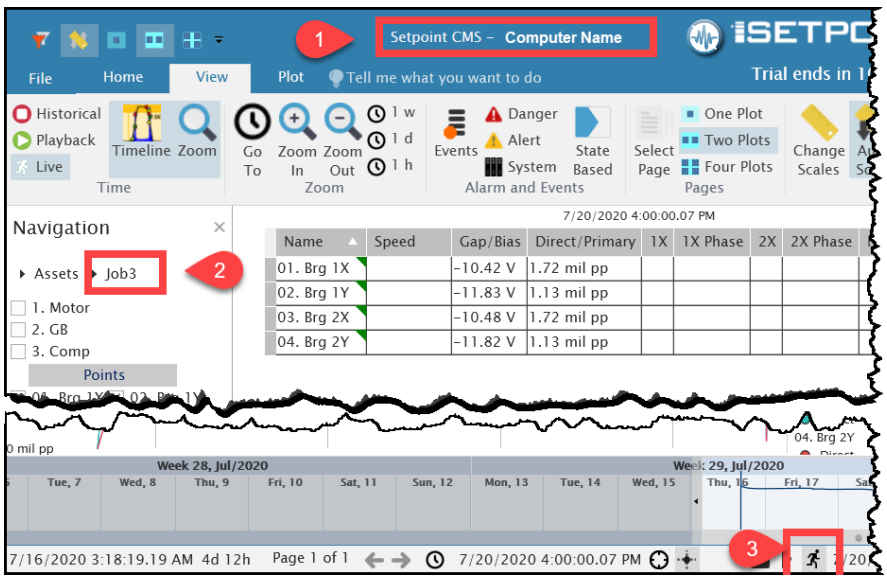

Figure 5-1) *Live Data Connection*

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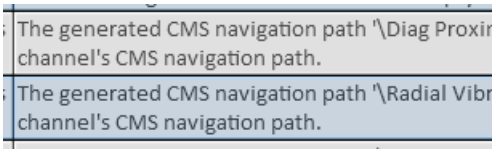
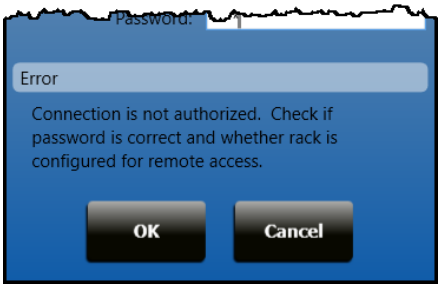
5.4 Software Errors

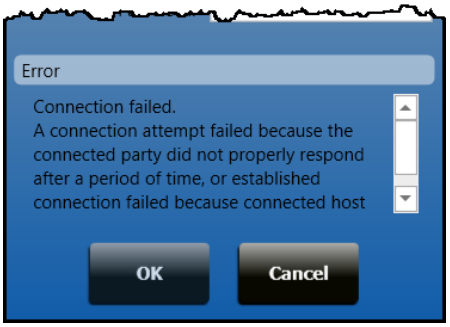
5.4.1 Duplicate CMS Navigation Path

Action	Screen Capture
This is caused by two channels with the same name. Every active channel must have a unique name.	

5.4.2 Connection is not authorized

Action	Screen Capture
Normally this is a password error. The IP address is correct, the software communicated with the rack – but the connection was not authorized.	

5.4.3 Connection Failed

Action	Screen Capture
Normally this is an IP Address (or network connection) error. You will also get this error after a rack power cycle - if the SAM module is still rebooting. It takes a full 2 minutes for the SAM to fully reboot and accept a connection.	

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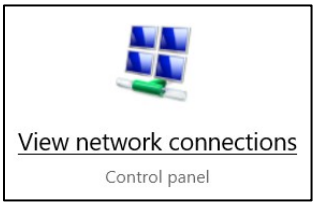
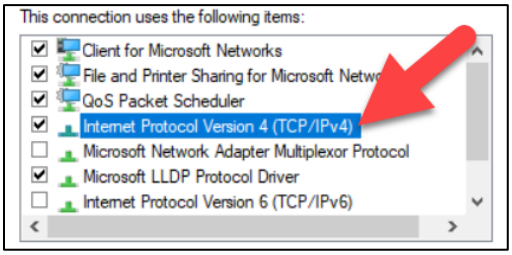
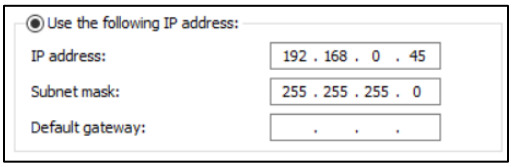
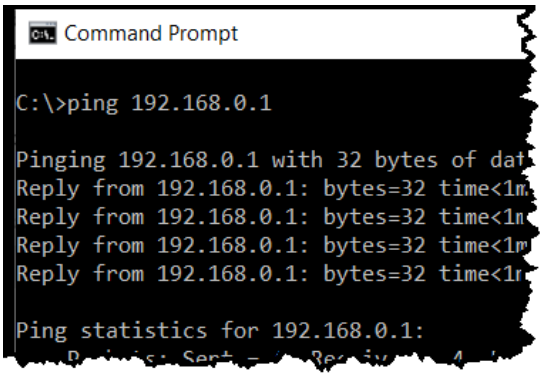
5.5 Troubleshoot the IP Address

Action	Screen Capture
Open Network Connections and view the properties of your network port.	
Select Internet Protocol Version 4.	
Verify your computer IP address. It should be similar (but not the same) as the VIBROPORT 8000 rack.	
Open the Command Prompt Type “ping 192.168.0.1“(for example) Verify the VIBROPORT 8000 responds. Unplug the ethernet cable Ping again, and verify the VIBROPORT 8000 does not respond. Plug the Ethernet cable back in.	
Done.	

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5.6 Laptop Hibernation Settings

Most laptops will hibernate when not in use. This will stop data collection. Before using a laptop to collect data, make sure that the following are set.

Option	Setting
Sleep (battery power)	Never
Sleep (plugged in)	Never
Hibernate after (battery powered)	Never
Hibernate after (plugged in)	Never
When I close the lid (on battery)	Do nothing.
When I close the lid (plugged in)	Do nothing.

5.7 Other (Requires VC-8000 MPS Software)

Some troubleshooting steps will require you to install the VC-8000 MPS software. This software was also included with the VIBROPORT 8000.

Please refer to the VC-8000 MPS software, and the VC-8000 Operation and Maintenance manual (Doc# S1079330). Both are available for download at the BK Vibro website (look for the link to “Product Instructions” or “Software” in the Downloads section of the website).

5.7.1 I Forgot the Password

Requesting a password reset file can take 24 hours (one working day). Data Collection is still possible, but rack configuration changes are not possible without the password.

Connect to the rack, upload the rack configuration, save the rack configuration while you are still connected to the rack. This will create a “Maintenance file”. Send the maintenance file to BK Vibro tech support (techsupport@bkvibro.com) requesting a password reset.

See the VC-8000 Operation and Maintenance manual (Doc# S1079330) for password reset instructions.

5.7.2 Update or View Firmware Revisions

See the VC-8000 Operation and Maintenance manual (Doc# S1079330)

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5.8 Frequently Asked Questions

5.8.1 Definitions

Setting	Definition
CMS Navigation Path (Asset)	The machine or machine train (i.e. Motor, or Unit 1).
Boost Mode Low Trigger (RPM) High Trigger (RPM)	(Rarely used) Collects waveforms as fast as possible (i.e. one long continuous waveform). This is useful for machines that start fast (i.e. seconds, rather than minutes). The Low/High triggers are used to activate/deactivate Boost Mode data collection.
Boost Waveforms	Collects 10 seconds of continuous waveforms.
CMS-SD	CMS data collection on the SD card on the VC-8000 SAM module. Provides a backup of data to ensure no data is lost.
CMS-XC	CMS data collection to an external computer (XC). This is the primary database used for portable data collection.
CMS-PI	CMS data collection to a PI Server. For permanently installed systems.
Group Channels	Forces simultaneous waveform collection for all selected channels with the same Phase Trigger association (i.e. waveforms will have the same timestamps).
High-Z Input	Raises the input impedance of the UMM. This is used when the input is coming from a buffered output – rather than a sensor.
I-Factor %	Percentage change required to trigger a waveform to be collected. Percentage is calculated from the Full-Scale setting, or on the Danger Alarm setting (if enabled). Direct, 1X, 2X are monitored and can trigger I-Factor waveform collection. Gap, and Phase do not trigger waveform collection. For more on I-Factor see application note S1224323.
Adaptive I-Factor	Used to automatically raise the I-Factor % if the channel starts to collect too many waveforms. Typically, only used on permanently installed systems.

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5.8.2 Do I Need PI?

No, you do not need PI installed on your laptop. The VIBROPORT 8000 will store data to a folder on your hard drive.

5.8.3 How Does the VIBROPORT 8000 Manage Time?

All data from the VIBROPORT 8000 is *stored* in UTC time. It is *displayed* using the time zone from your display computer.

For example: Data that is exported to a .CMS file (for sharing) will also be stored in UTC time. If you store data (you are in Pacific Time), and email it to a colleague (he is in Eastern Time), your colleagues computer will display the data in Eastern Time. For example, the “event” that occurred at 3:00 PM (Pacific) will be displayed (on your colleague’s computer) at 6:00 PM (Eastern). If your colleague wants to view the data converted to Pacific Time, he must change his laptop to Pacific Time, and restart the CMS software.

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