ERBESSD INSTRUMENTS®

PHANTOM SYSTEM

SETUP GUIDE

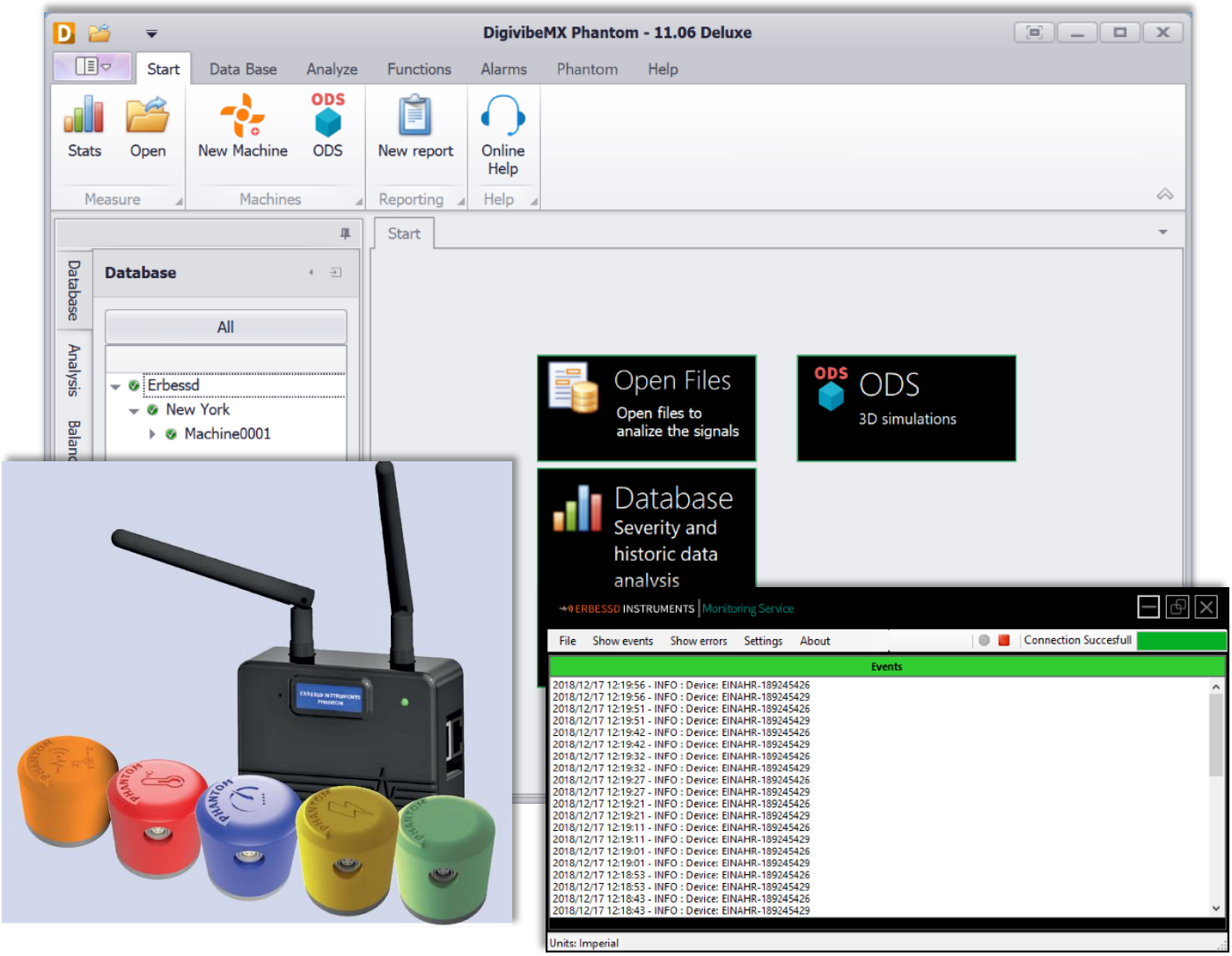


TABLE OF CONTENTS

About Erbessd Instruments Phantom..... 1
What is Phantom?..... 1
Phantom Component Specifications..... 2
System Requirements for DigivibeMX Phantom Software..... 3
Before Installing a New Phantom System..... 4
Familiarization and Preparation..... 4
Every Phantom is Unique..... 4
Fast and Easy Installation..... 4
Setup Preparation..... 4
Phantom Hardware Configuration..... 5
Prepare the EI-Gateway..... 5
Configure the EI-Gateway Using a WiFi Connection..... 5
Configure the EI-Gateway Using a Wired Internet Connection..... 7
Activate the Phantom Sensors..... 7
Phantom Software Installation and Configuration..... 8
Software Required to Operate a Phantom System..... 8
DigvibeMX Phantom Software Installation..... 8
Preparing DigivibeMX Phantom and EI-Monitor to Assign Phantoms..... 9
Creating a new Machine Database in DigivibeMX Phantom..... 9
Connect EI-Monitor to the DigivibeMX Phantom Database..... 10
Configure Phantom Sensors in the DigivibeMX Phantom Software..... 13
Creating Machines and Analysis Points in DigivibeMX Phantom..... 22
Configure Machine Analysis Points..... 26
Assign Phantom Sensors to Analysis Points..... 31
Viewing Phantom Sensor Information in EI-Monitor..... 33
Database Functions in DigivibeMX Phantom..... 36

About Erbessd Instruments Phantom®

What are Phantoms?

Phantoms are our versatile line of IP-67/MIL-STD-810g machine health monitoring sensors equipped with BLE 5.0 wireless communications. Phantoms are available for continuously monitoring machine vibration, speed, temperature or current. There is also a Phantom sensor capable of wirelessly transmitting data from 3-24V analog sensors. Phantoms transmit their data to an Ethernet-capable EI-Gateway, which can store the data in an SQL database located on our EI-Analytic hosted storage service - or any other desired network location.



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Phantom Component Specifications

Phantom – V (Vibration)

Sensor Type	Accelerometer
Sensor Range	Triaxial: 8/16/32g; Biaxial: 20g
Sensor Accuracy	± 3dB
Triaxial Freq Range	10Hz–10 kHz (x,y), 5.1kHz (z)
Biaxial Freq Range	0.5Hz-10kHz (x,y)
Sampling Rate	Triaxial: 25600 S/s; Biaxial 44100 S/s
Floor Noise V122	0.12mg/√Hz (x,y), 0.2mg/√Hz (z)
Floor Noise V222	0.63mg/√Hz (x,y), 0.9mg/√Hz (z)
Internal Temperature Accuracy	±1°C (±1.8°F)
Operating Temperatures	-40 to 85°C (-40 to 185°F)
Storage Temperatures	-60 to 105°C (-76 to 221°F)
Size	47 x 33mm (1.85 x 1.3in)
Weight	100grams (3.5oz)
Battery Type	3.6V Li-TL-5935
Battery Life	2-4 years
Transmission Type	2.4 GHz BLE 5.0
Distance Range	150m, Line of Sight
Distance with Repeaters	Unlimited
Product Ratings	IP67 / MIL-STD-810G

Phantom – S (Speed)

Sensor Type	Tachometer
Switching Speed	Up to 10kHz
RPM Range	0-200,000 RPM
Sensor GAP	1-15mm
Sensor Type	Hall Effect – Omnipolar (included)
Sensor Connection	5-pin LEMO
Magnet Type	Neodynium
Operating Temperatures	-40 to 85°C (-40 to 185°F)
Storage Temperatures	-60 to 105°C (-76 to 221°F)
Size	47 x 39mm (1.85 x 1.3in)
Weight	100grams (3.5oz)
Battery Type	3.6V Li-TL-5935
Battery Life	5-9 years
Transmission Type	2.4 GHz BLE 5.0
Distance Range	150m, Line of Sight
Distance with Repeaters	Unlimited
Product Ratings	IP67 / MIL-STD-810G

Phantom – T (Temperature)

Sensor Type	Temperature
Temp Range (Thermocouple)	-210 to 1800°C -346 to 3272°F
Thermocouple Types (5-pin LEMO)	K/J/N/R/S/T/E/B
Max Wire Length	25m
Sensor Max Temp (IR Non-Contact)	Target: 380°C (716°F) Ambient: 125°C (257°F)
Sensor Accuracy	0.15%
Resolution	0.25°C (0.45°F)
Operating Temperatures	-40 to 85°C (-40 to 185°F)
Storage Temperatures	-60 to 105°C (-76 to 221°F)
Size	47 x 39mm (1.85 x 1.3in)
Weight	100grams (3.5oz)
Battery Type	3.6V Li-TL-5935
Battery Life	5-9 years
Transmission Type	2.4 GHz BLE 5.0
Distance Range	150m, Line of Sight
Distance with Repeaters	Unlimited
Product Ratings	IP67 / MIL-STD-810G

Phantom – C (Current)

Sensor Type	Current (3 phase)
Sensor Range (5-pin LEMO)	50/150/500/1000 A
Frequency	50/60Hz up to 400Hz
Sensor Accuracy	±0.5/±1.5/±1/±1%
Operating Temperatures	-40 to 85°C (-40 to 185°F)
Storage Temperatures	-60 to 105°C (-76 to 221°F)
Size	47 x 39mm (1.85 x 1.3in)
Weight	100grams (3.5oz)
Battery Type	3.6V Li-TL-5935
Battery Life	5-9 years
Transmission Type	2.4 GHz BLE 5.0
Distance Range	150m, Line of Sight
Distance with Repeaters	Unlimited
Product Ratings	IP67 / MIL-STD-810G

Phantom Component Specifications

Phantom – A (Analog Signal)	
Sensor Type	Analog Signal/General Purpose Input
Input Range	±3 Volts/± 24 Volts
Amplitude Range	24 Bits – 108 dB
Channels	2 Simultaneous
Sampling Rate	44100Hz
Internal Temperature Accuracy	±1°C (±1.8°F)
Operating Temperatures	-40 to 85°C (-40 to 185°F)
Storage Temperatures	-60 to 105°C (-76 to 221°F)
Size	47 x 39mm (1.85 x 1.3in)
Weight	100grams (3.5oz)
Battery Type	3.6V Li-TL-5935
Battery Life	5-9 years
Transmission Type	2.4 GHz BLE 5.0
Distance Range	150m, Line of Sight
Distance with Repeaters	Unlimited
Product Ratings	IP67 / MIL-STD-810G
Included Equipment	5-pin LEMO Cable adaptor

EI-Gateway	
Receiver Type	2.4 GHz BLE 5.0
Distance Range	150m, Line of Sight
Distance with Repeaters	Unlimited
Sensor Accuracy	±0.5/±1.5/±1/±1%
Operating Temperatures	-40 to 85°C (-40 to 185°F)
Storage Temperatures	-60 to 105°C (-76 to 221°F)
Size	86 x 63 x 31mm (3.4 x 2.5 x 1.2in)
Weight	153grams (5.4oz)
Input Power Source	100-240VAC / 50-60Hz
Output Signal	5VCC-1A (via Ethernet)
Mounting	Din Rail
Product Ratings	None

System Requirements for DigivibeMX Phantom Software

Minimum desktop PC, laptop or tablet computer system requirements for *DigivibeMX Phantom* software installation:
* Not compatible with Windows RT operating system

- 64-bit (x64) system is required. 32-bit (x86) systems are not compatible with DigivibeMX Phantom
- Windows 10 (supported in Windows 7, 8 and 8.1 *)
- Intel® Celeron® processor (1.60 GHz / 400MHz) or higher
- 4GB DDR2 or higher RAM
- SVGA or higher monitor (touch screens are supported)
- 4GB of minimum disk space
- Internet connection (for software installation and activation)
- Ethernet/WiFi connection (for communication with EI-Gateway)

Other Required Software:

- **EI Monitor** device network monitoring software (Included with system purchase)
- **MySQL Connector Net 6.5.4** (Included with system purchase)
- **SSCERuntime_x64** (Included with system purchase)
- **Acrobat Reader 7.0** or higher (for opening user manual and reports)

Before Installing a New Phantom System

Familiarization and Preparation

Phantom system components and software are designed to install easily and integrate seamlessly. However, a little bit of preparation and product familiarization can save time and prevent frustration during the installation and setup process.

Every Phantom is Unique

We recognize that industrial areas could potentially require hundreds of Phantoms transmitting machine health data from various points. To precisely identify which sensor may be detecting a change, every Phantom sensor is encoded with a unique ID number – which is translated to QR Code for scanning.



The product type for the Phantom shown is: **EINAHR** (vibration)

The associated product code for all **EINAHR** sensors is: **11**

The unique ID for the sensor pictured is: **189245426**

Fast and Easy Installation

Phantom sensors are designed with a common 1/4”-28 thread receptacle. This makes them a fast and easy replacement for any wired sensors currently installed on a threaded stud. Phantoms are shipped with a stud installed, so they can also be attached to a magnetic base for portability.

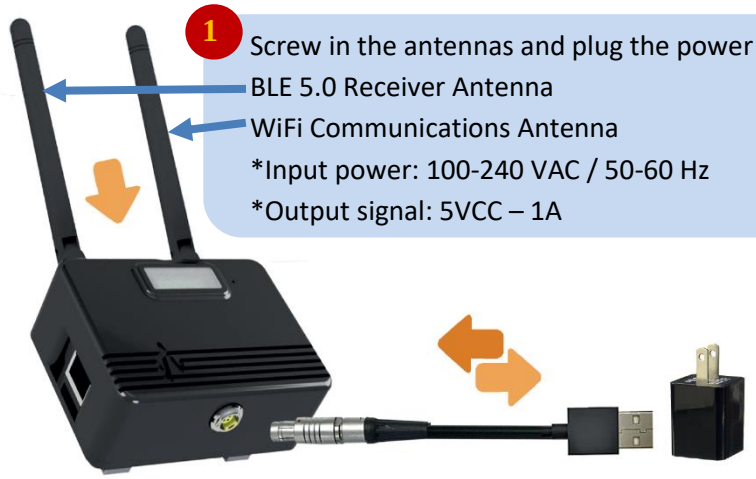
Setup Preparation

DigivibeMX Phantom software assigns collected data to a machine health monitoring location based on the sensor ID assigned to that location. **BEFORE** beginning the hardware and software configuration process, Erbessd Instruments recommends documenting the unique ID number of each Phantom (Auto-detected or Manually-entered) and its machine health monitoring location. This will prevent a great deal of running back and forth to identify sensor IDs and their locations later – especially when building the machine database and assigning sensors in DigivibeMX Phantom software.

Auto-Detected Sensor ID in DigivibeMX	Manually Entered Sensor ID	Installed Location
EINAHR|189345426	11189345426	PressurePump001 – Motor Non Drive End
EINAHR|189345427	11189345427	PressurePump001 – Motor Drive End
EINAHR|189345428	11189345428	PressurePump001 – Pump Driven End
EINAHR|189345429	11189345429	PressurePump001 – Pump Non Driven End

Phantom® Hardware Configuration

Prepare the EI-Gateway



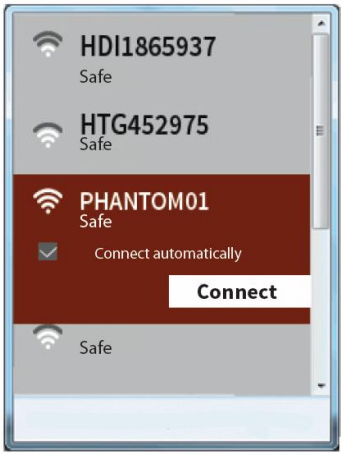
1. Screw in the antennas and plug the power cord into the EI-Gateway:
   BLE 5.0 Receiver Antenna
   WiFi Communications Antenna
   *Input power: 100-240 VAC / 50-60 Hz
   *Output signal: 5VCC – 1A

2. Connect EI-Gateway to a computer to complete setup.
   Use either WiFi or wired Ethernet connection, as follows:

Configure the EI-Gateway Using a WiFi Connection

1. Click your computer's WiFi Network icon to select a new WiFi network.

2. Connect to the PHANTOMxx network. Enter the default network password: 88888888 (the number 8 eight times)



3. Open an Internet browser. Enter the following IP number in the address bar: **192.168.4.1**

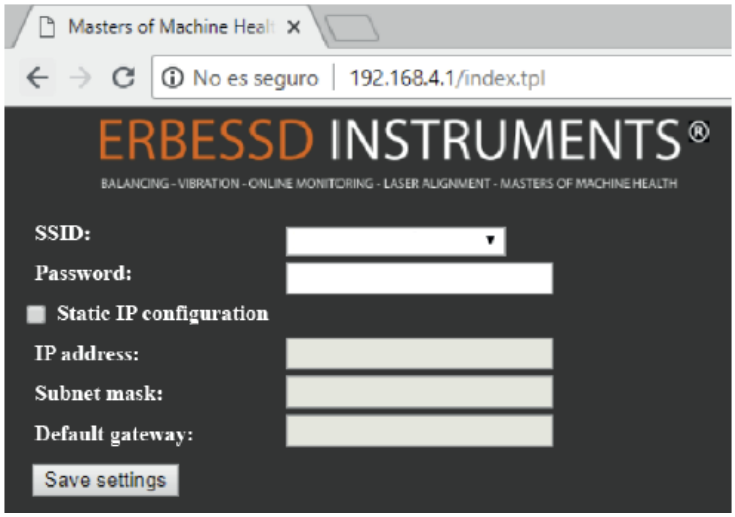


Configure the EI-Gateway Using a WiFi Connection (cont.)

4

Specify the local network EI-Gateway will connect to
- SSID: Name of local WiFi network
- Password: Local WiFi network password

Then click Save Settings button



IMPORTANT: Some organizations require WiFi device connection via Static IP. Consult a local network administrator for the required addresses to Static IP configure EI-Gateway:

- Check the "Static IP configuration" box



- Input IP address: xxx.xxx.xxx.xxx
- Input Subnet mask: xxx.xxx.xxx.xxx
- Input Default gateway: xxx.xxx.xxx.xxx
- Click Save Settings button

5

When EI-Gateway has successfully connected to the local network, its LCD screen will display the message: **CONNECTED USING WIFI**

NOTE: To reset the WiFi configuration, insert a paperclip into the small hole beside the EI-Gateway LED screen (as shown)



Configure the EI-Gateway Using a wired Ethernet Connection

1. Connect the EI-Gateway to a Switch/Router/Modem using an Ethernet cable.



2. When EI-Gateway has successfully connected to the local network, its LCD screen will display the message: **CONNECTED USING CABLE**

Activate the Phantom Sensors

1. Place the magnet key on the Phantom sensor, on the opposite side of the QR code sticker (or next to the LED).

2. Hold the magnet key in place approximately 5 seconds.

3. Remove the magnet key when the LED illuminates







Phantom® Software Installation and Configuration

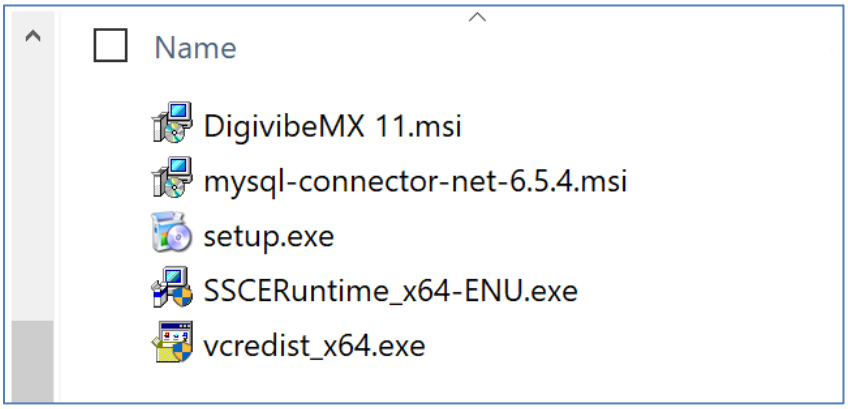
Software Required to Operate a Phantom System

- **DigivibeMX Phantom** (Included with system purchase)
- **MySQL Connector Net 6.5.4** (Included with system purchase)
- **SSCERuntime_x64 (64 bit)** (Included with system purchase)
- **EI Monitor** (Included with system purchase)
- **Acrobat Reader 7.0** or higher (for opening reports and DigivibeMX user manual)

DigivibeMX Phantom Software Installation

Phantom systems are shipped with a USB flashdrive containing **DigivibeMX Phantom** and **EI-Monitor** software.

The **DigivibeMX Phantom** folder contains the program files pictured below:



Run/install in the following order:

1. **SSCERuntime_x64-ENU.exe** (installs SQL CE)
2. **mysql-connector-net-6.5.4.msi** (installs MySQL)
3. **setup.exe** (installs DigivibeMX Phantom)

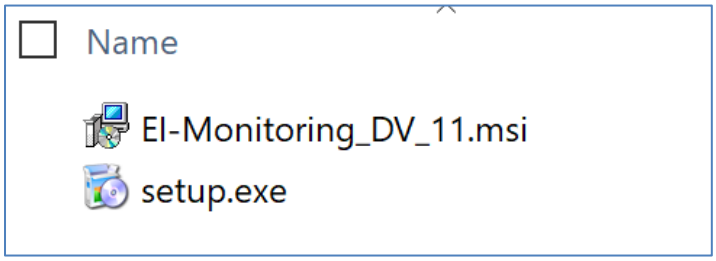
Return to your computer's desktop and launch DigivibeMX Phantom.

*** If DigivibeMX Phantom fails to open - or begins to open and immediately closes

1. run and install **vcredist_x64.exe** (installs Microsoft Visual C++)
2. reattempt to launch DigivibeMX Phantom
3. if installation problems persist, contact Erbessd Instruments technical support via
    a. website chat www.erbessd-instruments.com
    b. email at info@erbessdreliability.com
    c. by phone at +1 (877) 223-4606 (international toll free)

DigivibeMX Phantom Software Installation (cont.)

The **EI-Monitor** folder contains the program files pictured below. Run **setup.exe** (installs EI-Monitor software):

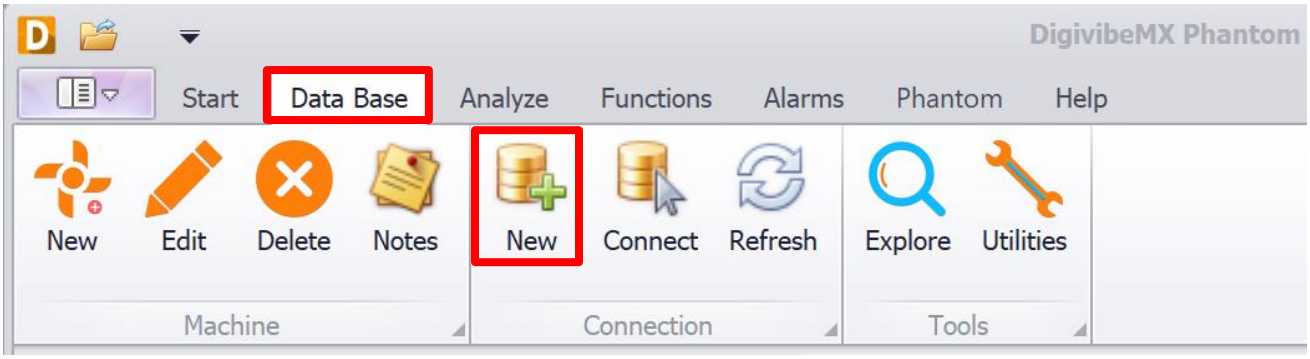


Preparing DigivibeMX Phantom and EI-Monitor to Assign Phantoms

Before configuring Phantom sensors for machine health monitoring, DigivibeMX Phantom and EI-Monitor must be linked to a common SQL machine database. These databases are created in DigivibeMX Phantom, then EI-Monitor is mapped to the database location. If the machine database has already been created, skip ahead to the **Preparing EI-Monitor** section. Otherwise, create a new machine database as follows:

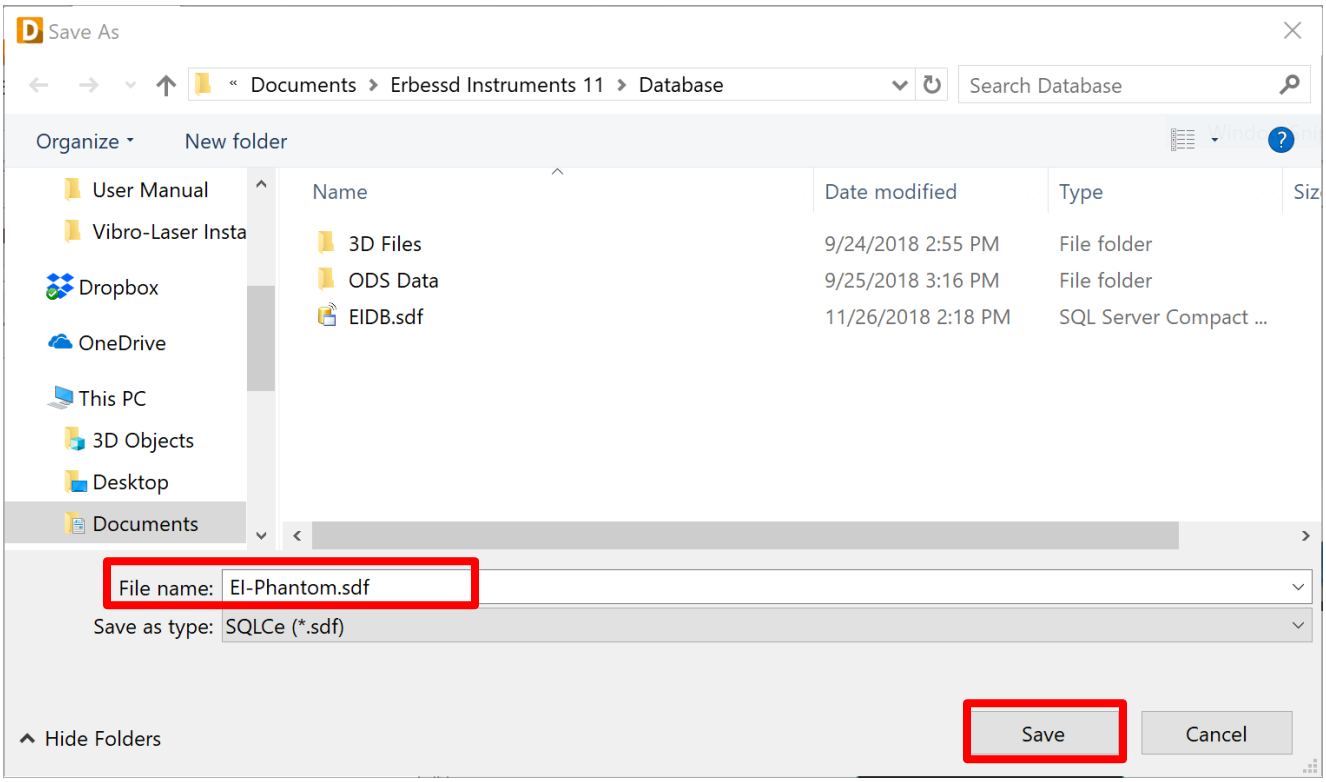
Creating a new Machine Database in DigivibeMX Phantom

Open the **Data Base** Menu. Select **New** Connection:



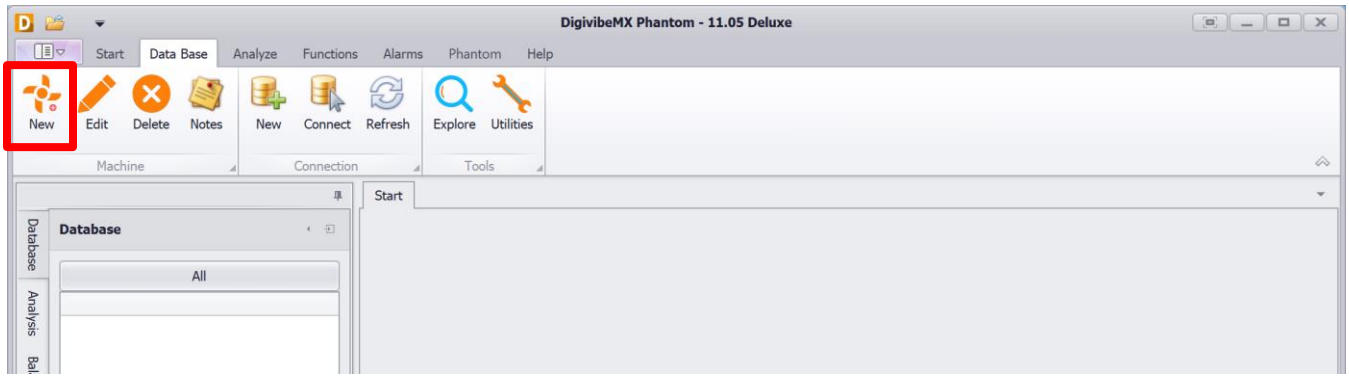
Creating a new Machine Database in DigivibeMX Phantom (cont.)

The **Save As** window opens to the default database location (Documents > Erbessd Instruments 11 > Database). Specify an alternate location, if desired. Enter the name of the new database in the **File Name** text field and click the **Save** button.



*Click Yes for any notification boxes that may appear after the database file is created.

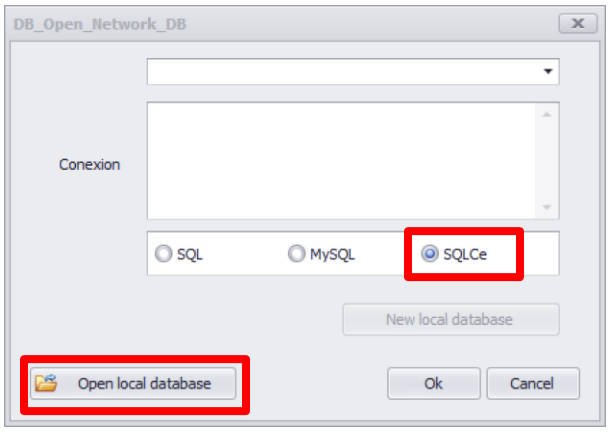
DigivibeMX Phantom is now connected to the newly-created database. **New** machines can be created in the database now, or at any time in the future. However, Phantom sensors cannot be assigned to machine health monitoring points until EI-Monitor has been connected to the database and the Phantoms have been configured in DigivibeMX Phantom.



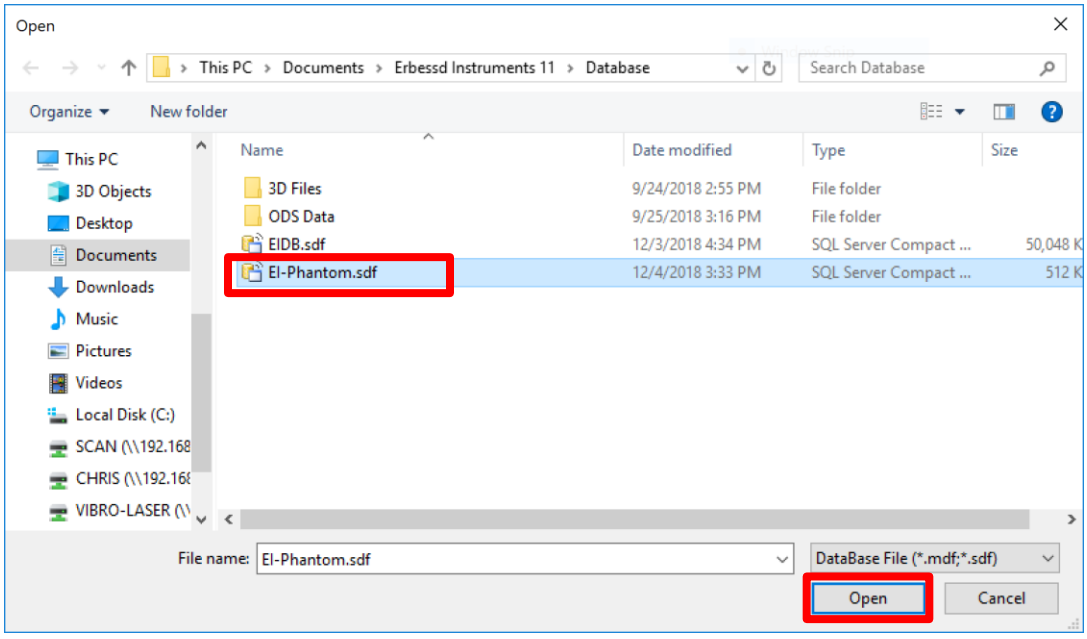
Connect EI-Monitor to the DigivibeMX Phantom Database

EI-Monitor software continuously monitors the connectivity between the individual Phantom sensors and the Gateway. It also manages communications between the Gateway and DigivibeMX Phantom software through the database. For this reason, it is important to realize that Phantom sensors will only be accessible to the DigivibeMX Phantom software through this shared database. The database can be copied to any local machine, portable storage media, etc. All collected data in the copied database will still be fully accessible for analysis and reporting. But EI-Monitor will not be communicating with that copied database in its new location, so the Phantom sensors will not be accessible from it.

Open EI-Monitor. The software first opens to the Open_Network_DB window. Select **SQLCe** and click **Open local database** to connect EI-Monitor to the DigivibeMX Phantom Database.

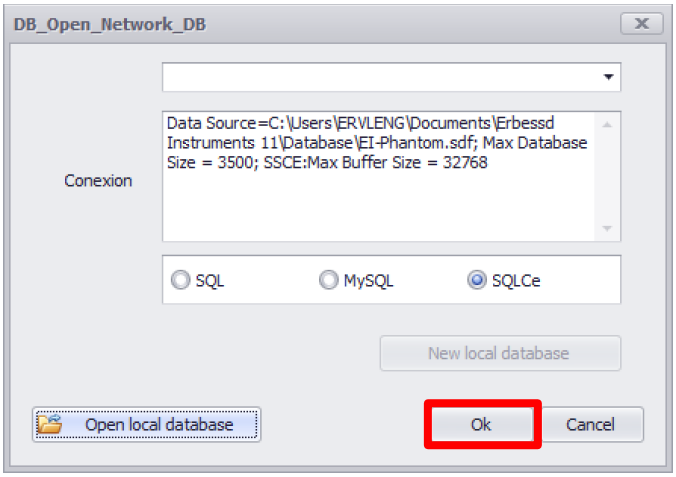


Select the desired DigivibeMX Phantom SQL database and click **Open**

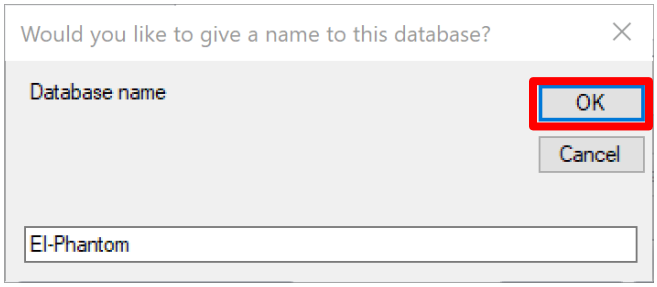


Connect EI-Monitor to the DigivibeMX Phantom Database (cont.)

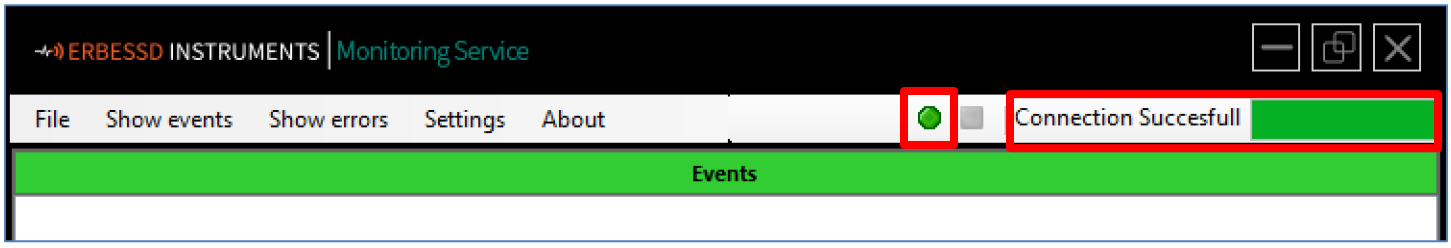
The Open_Network_DB window updates to show the Data Source connection string. Click **Ok** to connect the database.



Rename the database in EI-Monitor if desired. Click **Ok**



The EI-Monitor now displays **Connection Successful**. Click the green **Start Service** button to start EI-Monitor communications with the Gateway and DigivibeMX Phantom. (green button dims, red Stop Service button illuminates) EI-Monitor may now be minimized. It will disappear from view but continues operating in the Windows program tray.



IMPORTANT: **NEVER** close the EI-Monitor program. This will sever all communications between the Phantoms, Gateway and SQL database. EI-Monitor must always be operating in the background. If the computer running EI-Monitor is shut down or restarted, the Phantom network will be interrupted until EI-Monitor is reopened and the service is restarted.

Connect EI-Monitor to the DigivibeMX Phantom Database (cont.)

After EI-Monitor is configured, the Gateway LED display updates to show **Monitor IP** address. It also displays **Phantom Nodes** and the number of Phantom sensors currently connected. Phantoms are pre-programmed to ping the Gateway once every 6 hours until they successfully connect. Therefore, it may take up to 6 hours before all Phantoms are detected by the Gateway and EI-Monitor. To expedite this process, Phantoms can be manually reset with the same magnetic key used to activate them. To reset a Phantom sensor: reapply the magnetic key until its LED light illuminates.

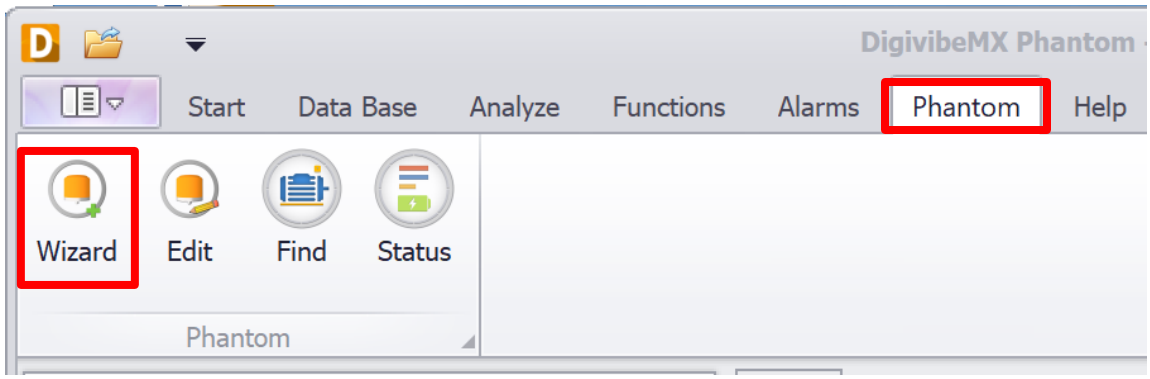


NOTE: The number of connected Phantom sensors (nodes) will be indicated on the Gateway's **Phantom Nodes** screen. However, the Phantoms will not appear in EI-Monitor until they have been assigned to a machine point in DigivibeMX Phantom software. To view all Phantoms that have successfully connected with the Gateway, continue on to **Configure Phantom Sensors in the DigivibeMX Phantom Software**

Configure Phantom Sensors in the DigivibeMX Phantom Software

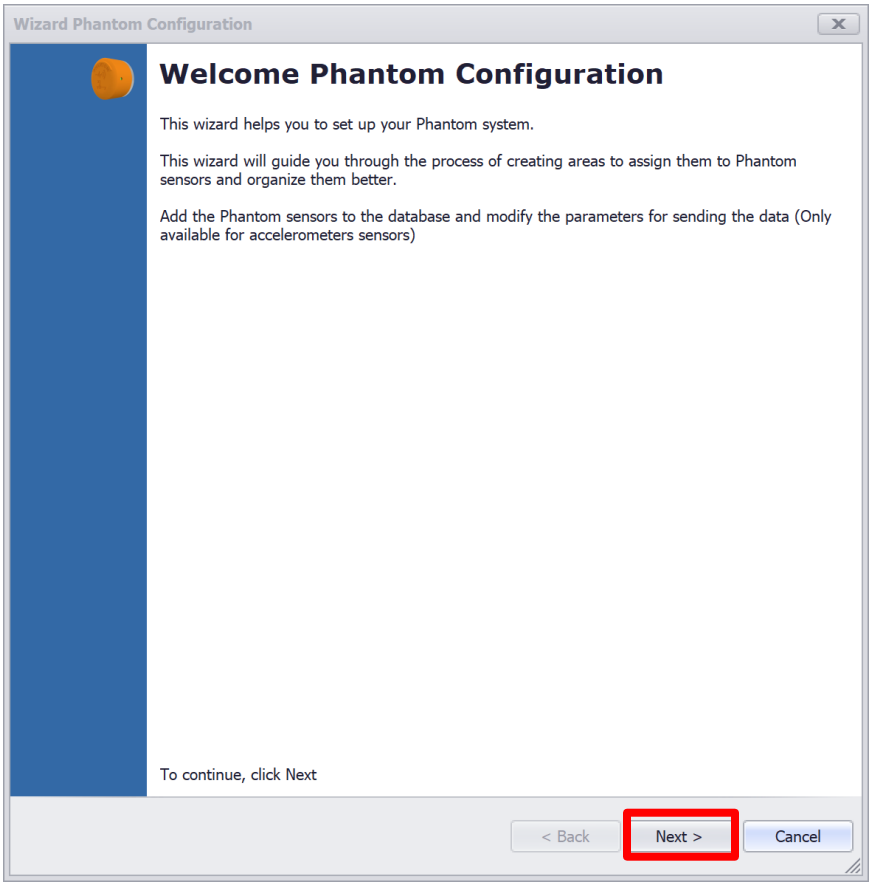
Before Phantoms can be assigned to machine health monitoring points, they must first be detected and configured in DigivibeMX Phantom software as follows:

On the **Phantom** menu, select **Wizard**.



Configure Phantom Sensors in the DigivibeMX Phantom Software (cont.)

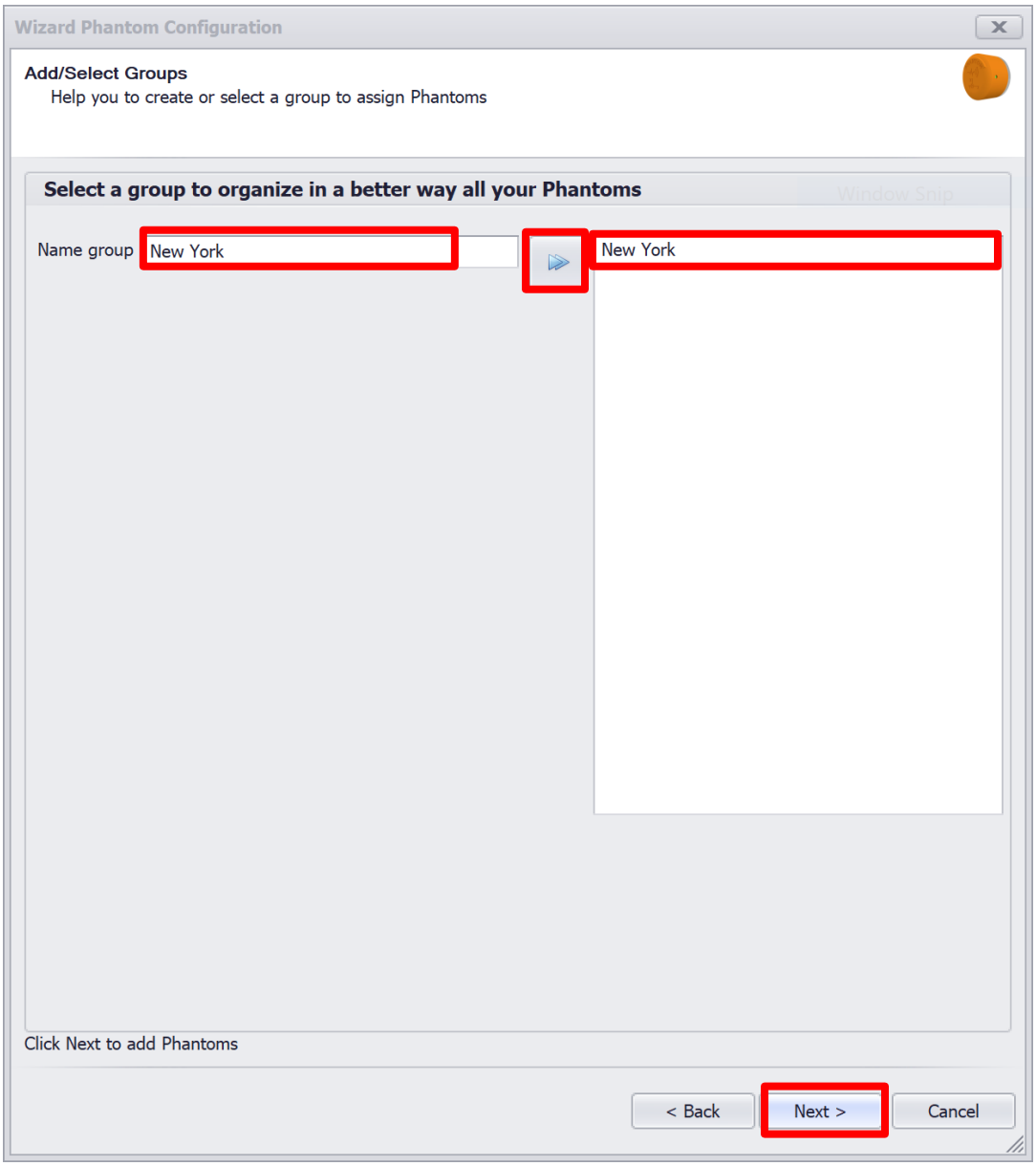
The **Phantom Configuration** Wizard screen opens in a new window. Click the **Next >** button.



Configure Phantom Sensors in the DigivibeMX Phantom Software (cont.)

The **Add/Select Groups** screen allows users to group Phantom sensors together in the database for convenient reference – by facility, production area, machine, sensor function or any other grouping convention the user may desire.

Type the group name into the **Name group** text field, then click the button to move the new group name into the available groups list. After a desired group is created and/or selected f he groups list, click **Next >**



Configure Phantom Sensors in the DigivibeMX Phantom Software (cont.)

The **Add Phantom** screen provides several options for users to add Phantom sensors to the database group created/selected on the previous screen. Select one of the following buttons for the option desired:



Displays all Phantom sensors currently detected by the Gateway.

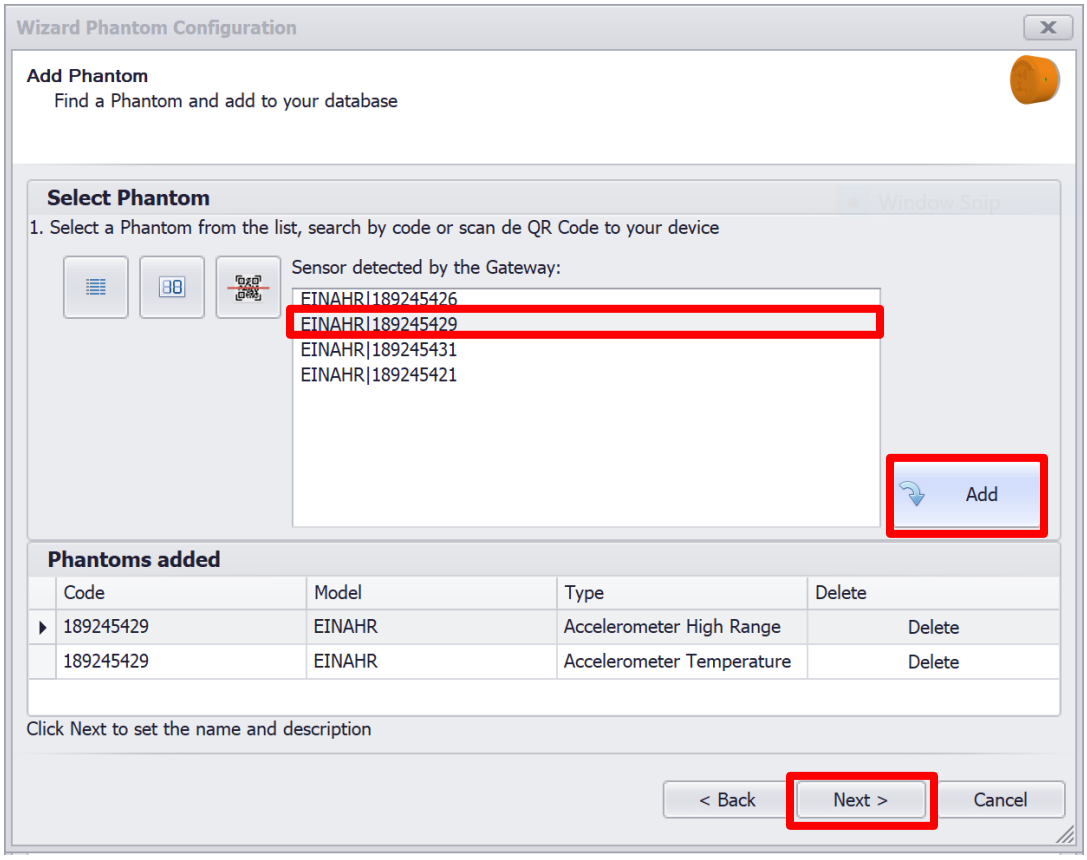


Allows users to add Phantoms by manually entering their 11-digit ID code from the sensor's QR label.



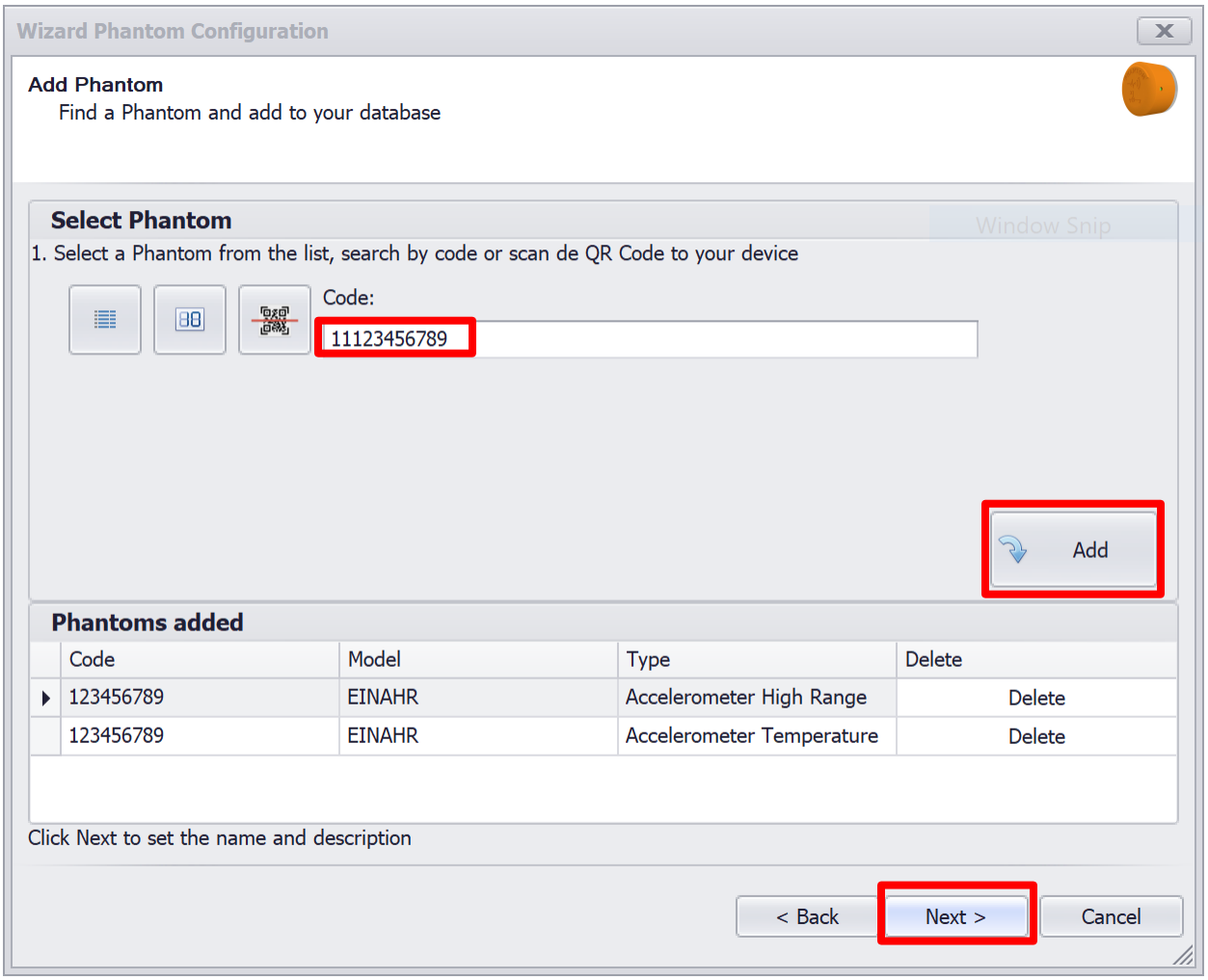
Allows users to add Phantoms using a laptop or tablet camera to scan the QR code.

To add Phantoms detected by the gateway: **Highlight** desired sensors from the list (multiple sensors may be selected) and click the **Add** button. Selected sensors will appear in the **Phantoms added** section. Sensors may be removed from the group using the Delete option. Click **Next** to continue.



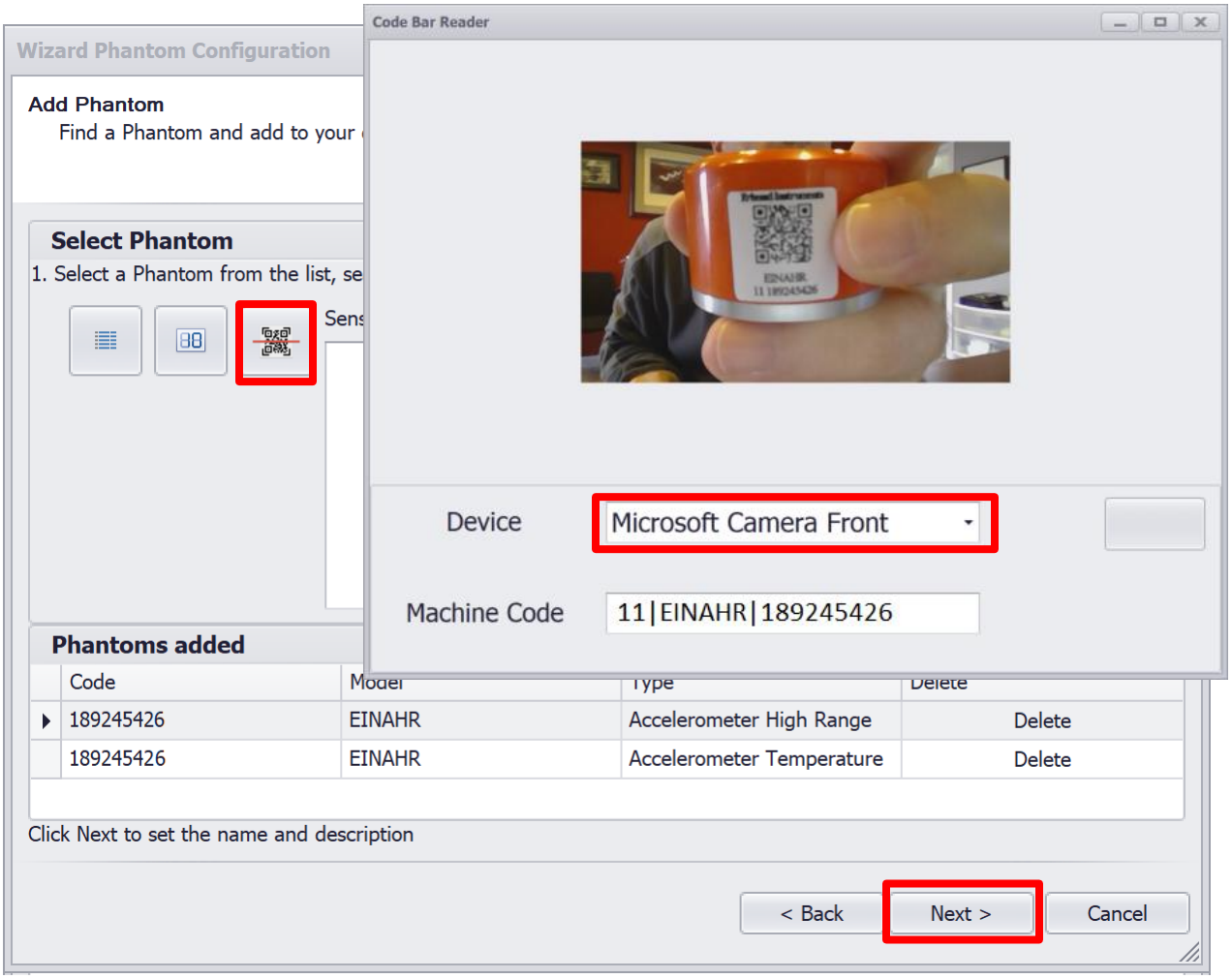
Configure Phantom Sensors in the DigivibeMX Phantom Software (cont.)

To add Phantoms manually using 11-digit ID code: Manually type the 11-digit Phantom ID code from the sensor's QR label (2-digit sensor model code + 9-digit sensor serial number) into the **Code** text field. Then click the **Add** button. The manually entered sensor will appear in the **Phantoms added** section. Sensors may be removed from the group using the Delete option. Click **Next** to continue.



Configure Phantom Sensors in the DigivibeMX Phantom Software (cont.)

To add sensors by scanning the QR code (PC, laptop or tablet computer camera required): Click the **QR Code Reader** button. The Code Bar Reader window opens. Select the desired camera from the **Device** dropdown list. Position the QR label in front of the camera – squarely and close enough to be clearly read. The Code Bar Reader window will automatically capture the image, momentarily turn green and document the sensor when it has read the QR code. It will then close automatically, and the scanned sensor will appear in the **Phantoms added** section. Sensors may be removed from the group using the Delete option. Click **Next** to continue.

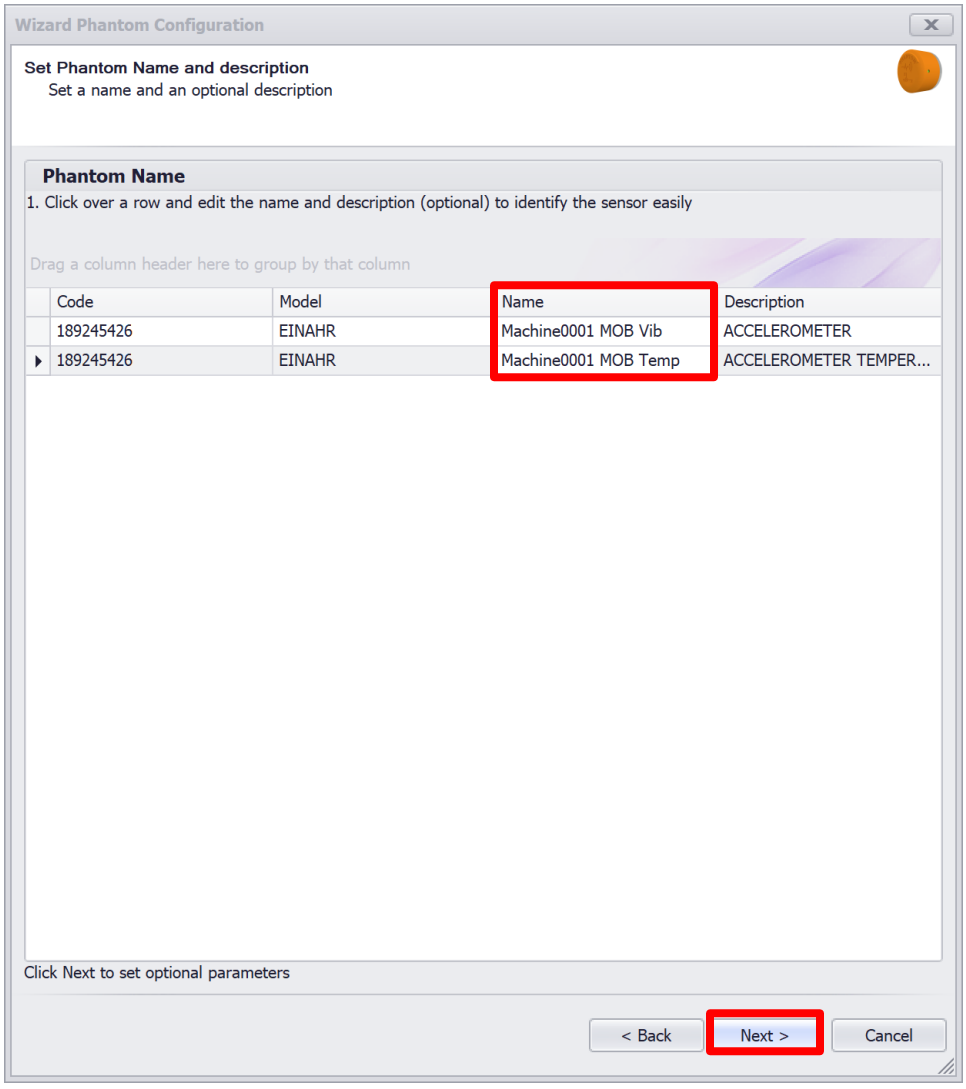


Configure Phantom Sensors in the DigivibeMX Phantom Software (cont.)

The **Set Phantom Name and Description** screen allows users to identify Phantoms using common nomenclature, for easier identification in DigivibeMX Phantom. This example uses a "machine number – monitoring point (MOB=Motor Outboard Bearing) – sensor function" naming convention. However, the field is simply a text entry that may read whatever the user desires.

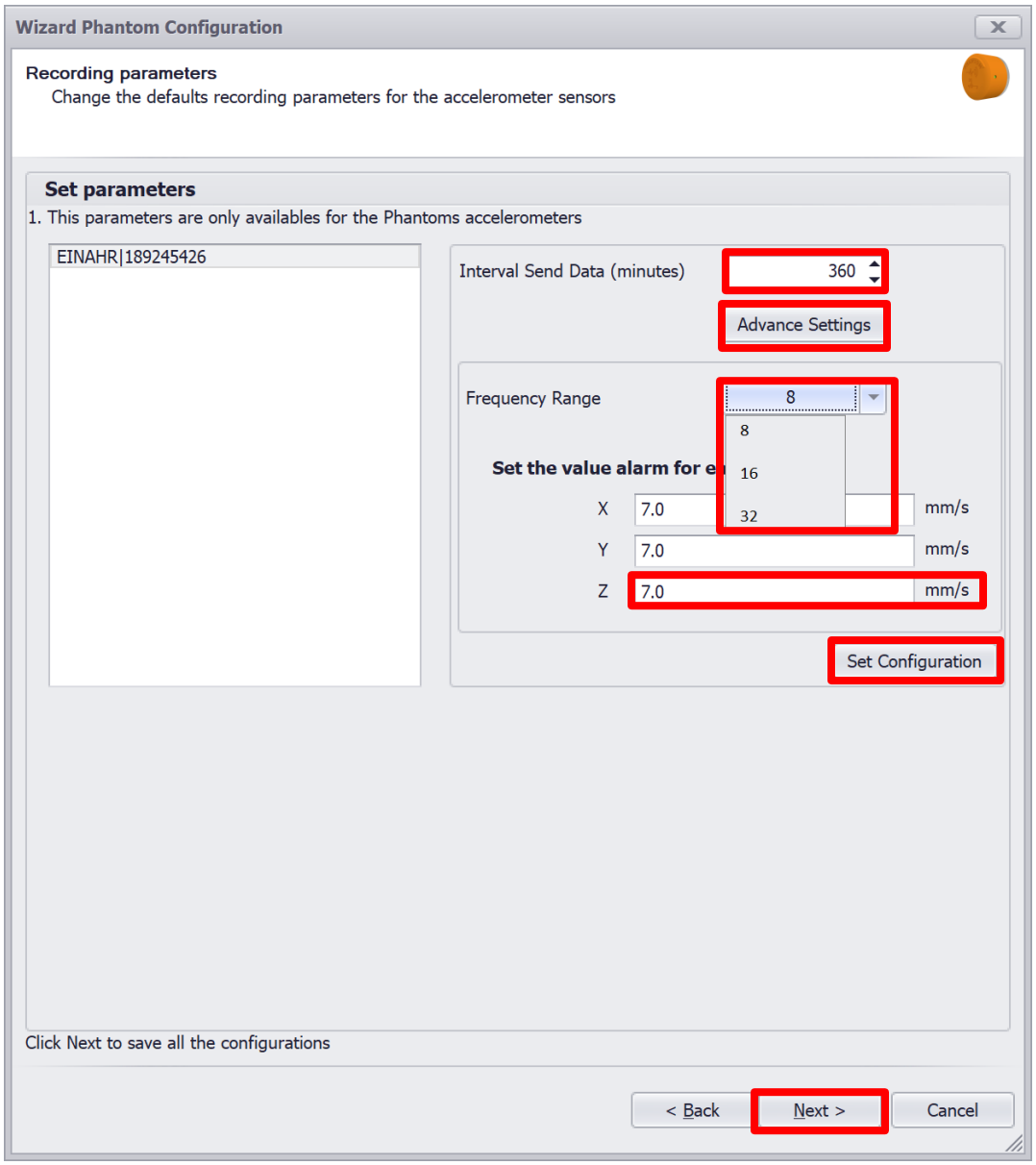
To name a Phantom, click in the **Name** text entry field and manually enter the desired name for each sensor data function. Click **Next** when finished.

NOTE: The example sensor is a Triaxial Accelerometer. It provides two simultaneous data collection functions - vibration and surface temperature data. Each of these functions is named separately.



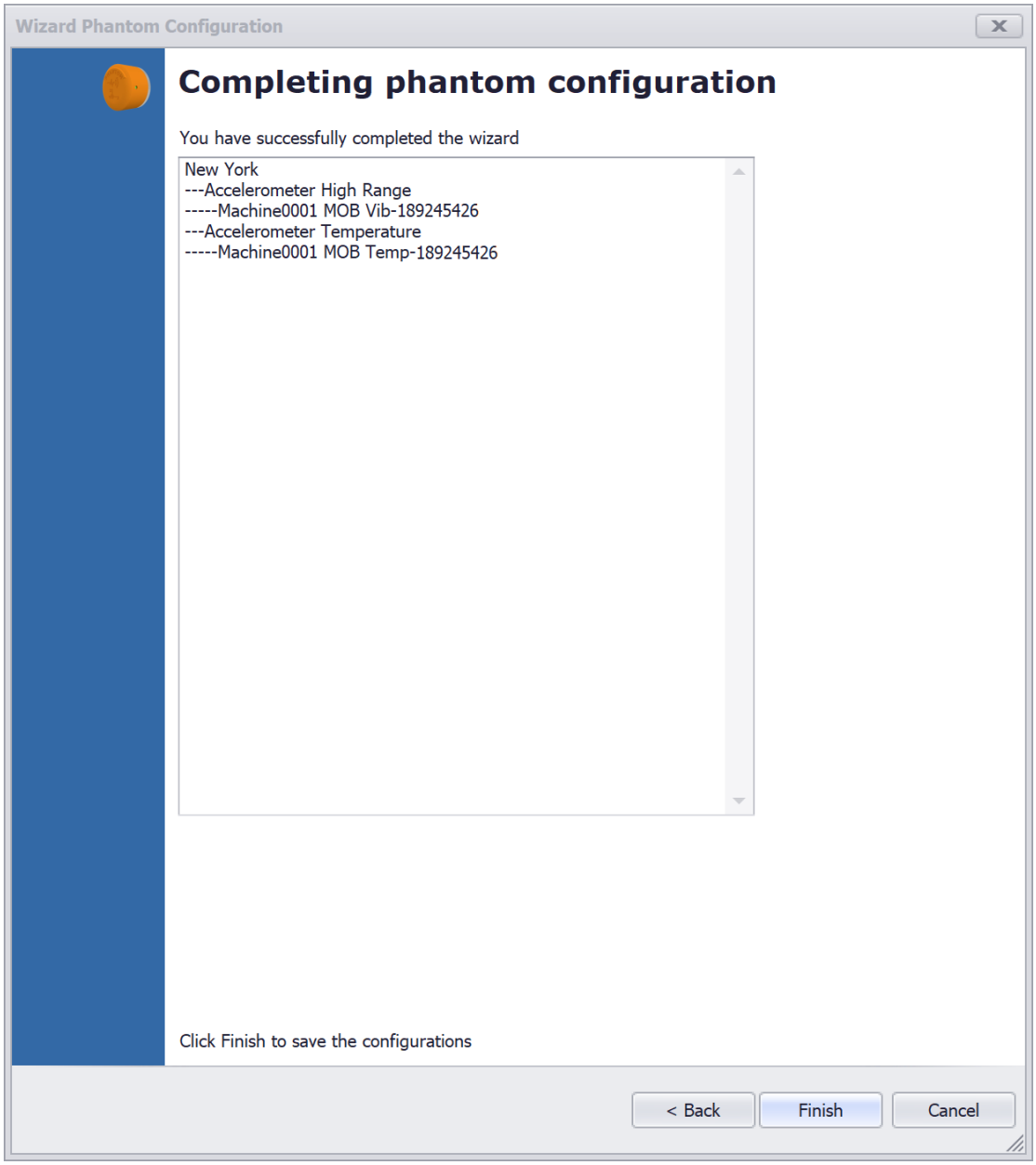
Configure Phantom Sensors in the DigivibeMX Phantom Software (cont.)

The **Recording Parameters** screen is used to configure the operating parameters for each Phantom sensor. To begin, select a Phantom from the list. **Interval Send Data (minutes)** establishes the sensor's collection interval. The default setting of 360 would trigger a data collection every 6 hours. The minimum allowable setting is 10 minutes. The **Advance Settings** button enables changes to the sensor **Frequency Range** (8g, 16g or 32g). Alarm thresholds can also be set for the sensors, if desired. Click **Set Configuration** to save changes to Advanced Settings. Click **Next** when finished.



Configure Phantom Sensors in the DigivibeMX Phantom Software (cont.)

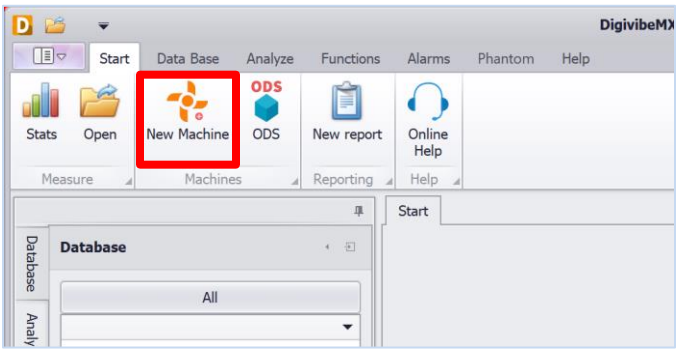
The **Completing Phantom Configuration** screen provides a final opportunity to review the sensor identification information before saving all changes made in the Phantom Configuration Wizard. If corrections need to be made, the **< Back** button can be used. If satisfied with the configuration, click **Finish** to save all changes and close the wizard. Changes can be abandoned by closing the window or clicking **Cancel**.

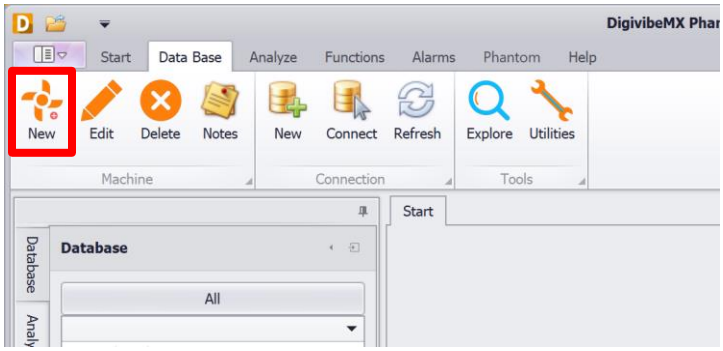


Creating Machines and Analysis Points in DigivibeMX Phantom

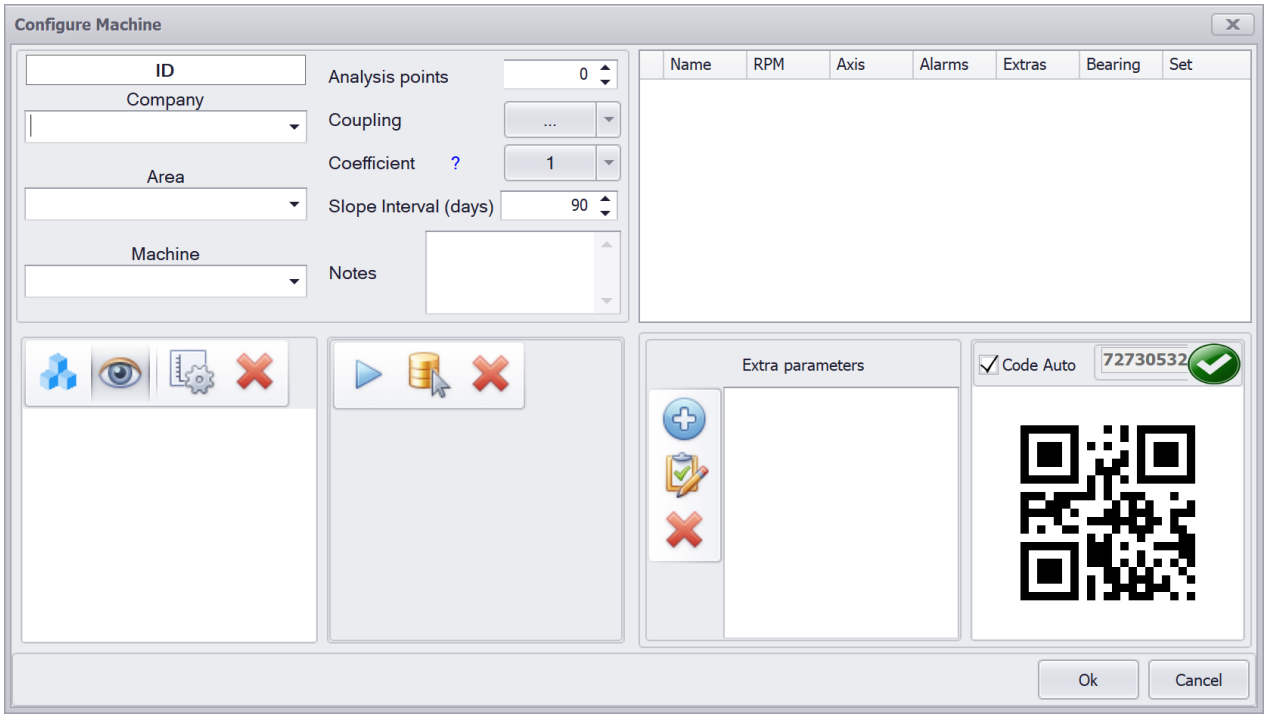
After a Phantom sensor has been configured in the software, it can be assigned to a machine Analysis Point in the DigivibeMX Phantom database. This section is intended for users who have an empty DigivibeMX Phantom database and require guidance about creating machines and machine health monitoring points. If your database structure is already populated with machines and analysis points, proceed to the **Assign Phantom Sensors to Analysis Points** section.

New levels of DigivibeMX Phantom database structure can be created when new machines are added to the database. Phantom sensors are also assigned to machine health monitoring points at the Machine level. To begin creating a new machine in the database, click **New Machine** on the Start menu, or click **New** on the Data Base menu.



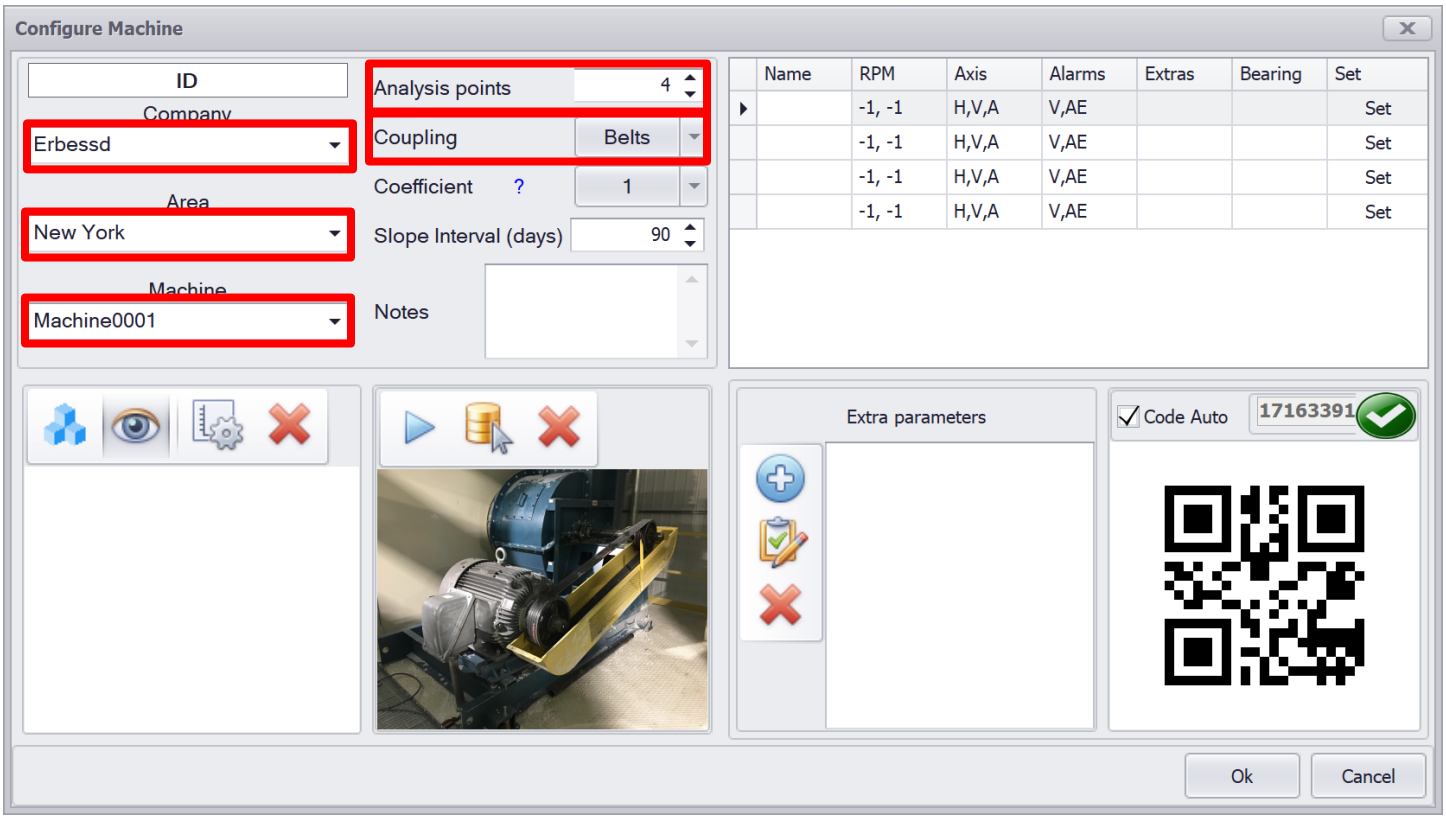


The **Configure Machine** window opens.



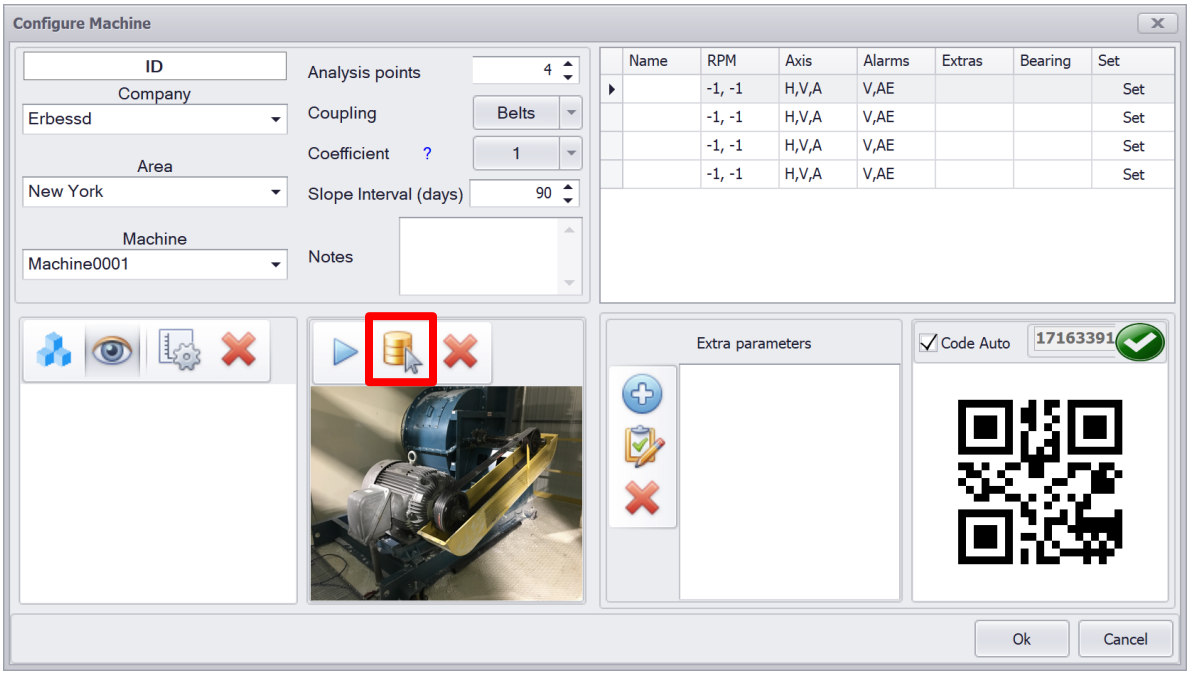
Creating Machines and Analysis Points in DigivibeMX Phantom (cont.)

Enter the **Company**, **Area** and **Machine** names for the new machine. This will create a new Company and Area in the database to which other machines may be assigned. Specify the number of **Analysis Points** and **Coupling** type. The upper right field will update with point data to reflect the specified number of Analysis Points. The Coefficient and Slope Interval (days) settings are used for calculating database statistics, which will be explained in a later section of the manual.

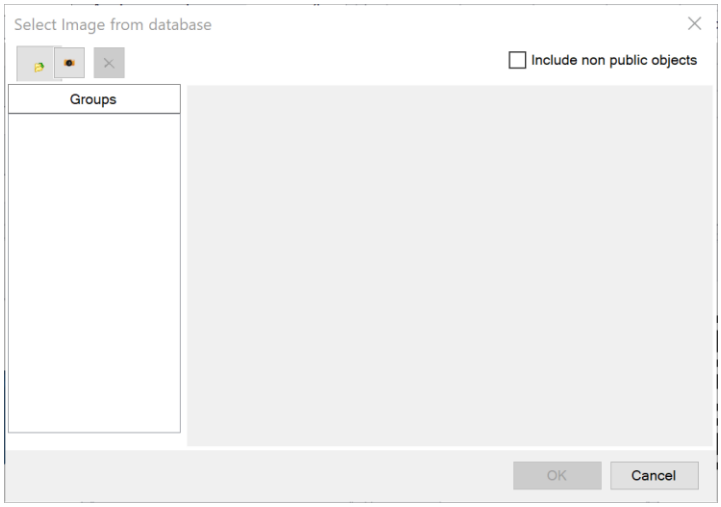


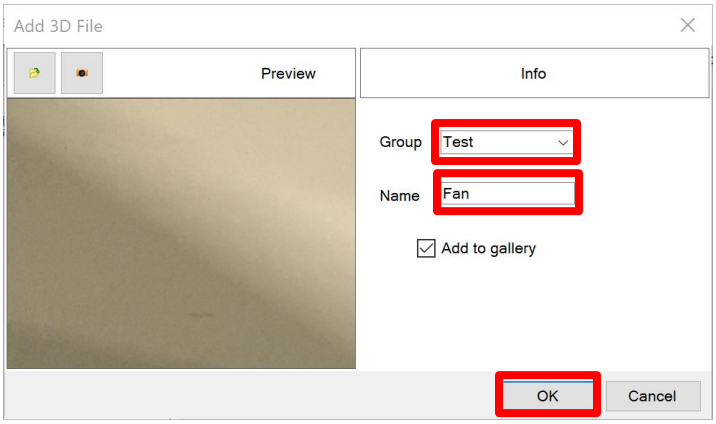
Creating Machines and Analysis Points in DigivibeMX Phantom (cont.)

To set a 2D image for the machine click the **File Stack** icon.



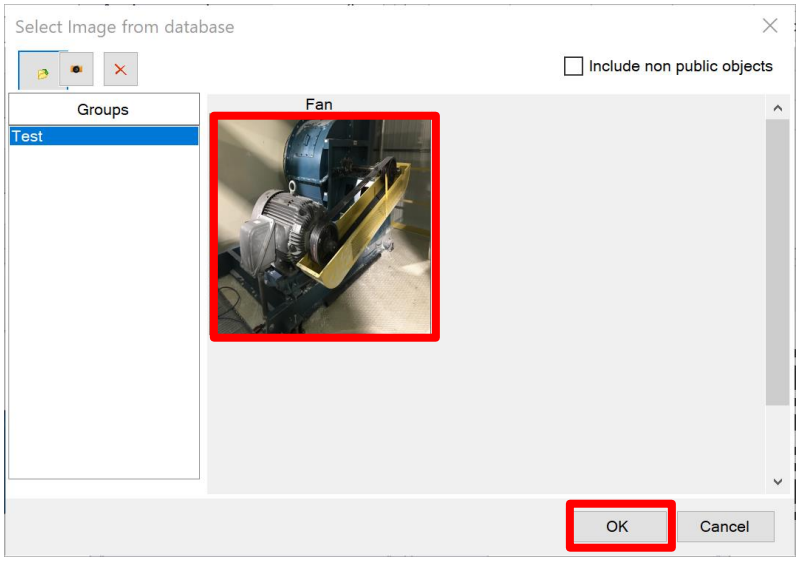
The **Select Image from Database** window opens. Use the File Folder icon to select a saved image from the computer. Use the Camera icon to take a picture using a Laptop or Tablet camera. Save the machine image to a **Group** in DigivibeMX Phantom under any **Name**. Check the Add to Gallery box. Click **OK**.



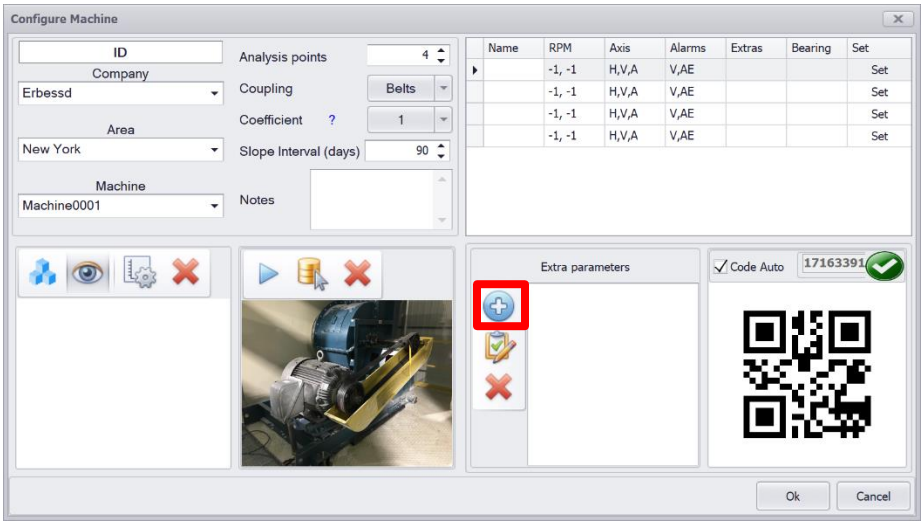


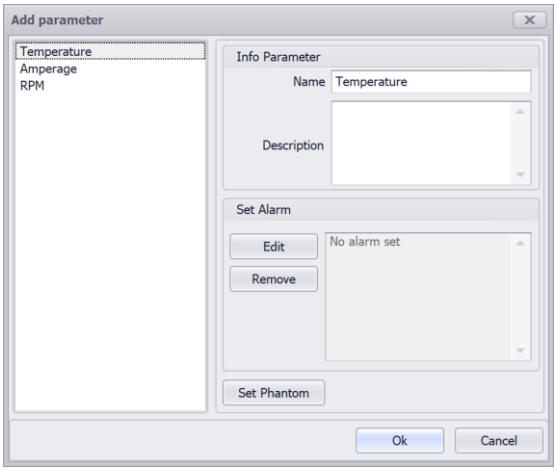
Creating Machines and Analysis Points in DigivibeMX Phantom (cont.)

Select the imported machine image and click **OK.**



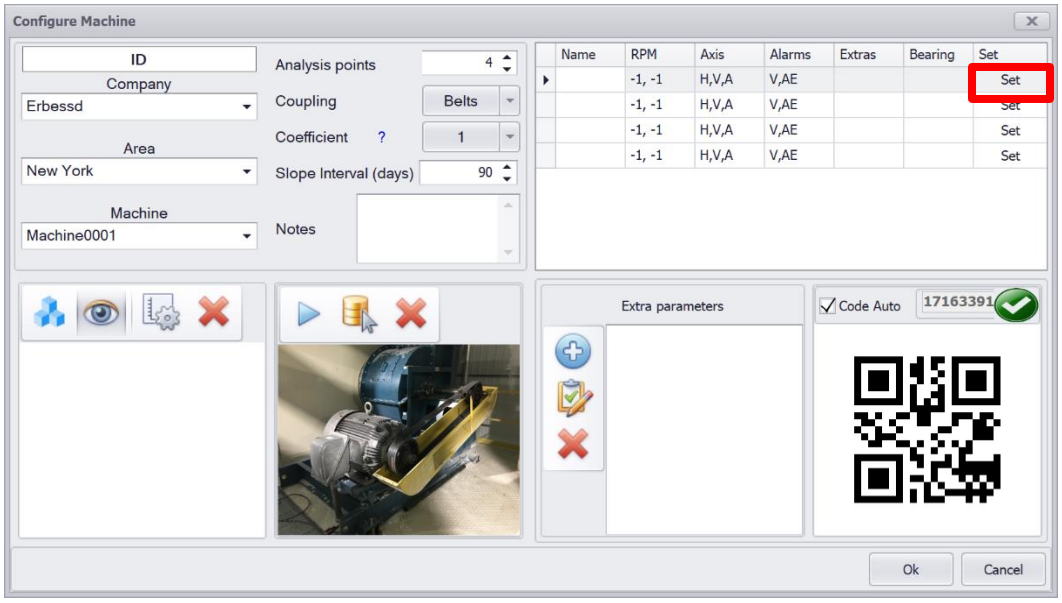
The **Configure Machine** screen now displays an image of the machine being collected that can be included on reports. **Extra Parameters** can be used to specify other parameter data which may be collected for this machine. Also note that a QR Code has been automatically generated for the machine. The code can printed and applied to the machine for QR Code identification with DigivibeMX or any other QR Code compatible software.



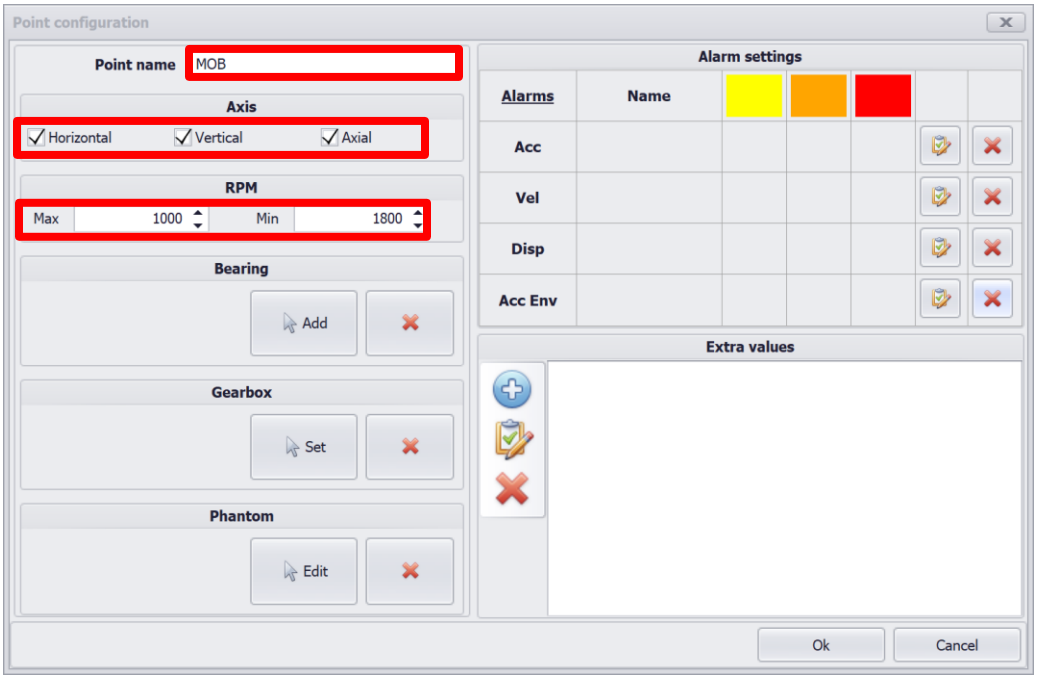


Configure Machine Analysis Points

With the rest of the **Configure Machine** information entered, we can now **Set** the parameters and information at each Machine Analysis point – including assigning a Phantom sensor to provide data at each Analysis Point.



The **Point Configuration** window opens. Enter the **Point Name** (example uses MOB for Motor Outboard Bearing), check all desires **Axis** to collect, enter the normal operating **RPM** range for the machine.



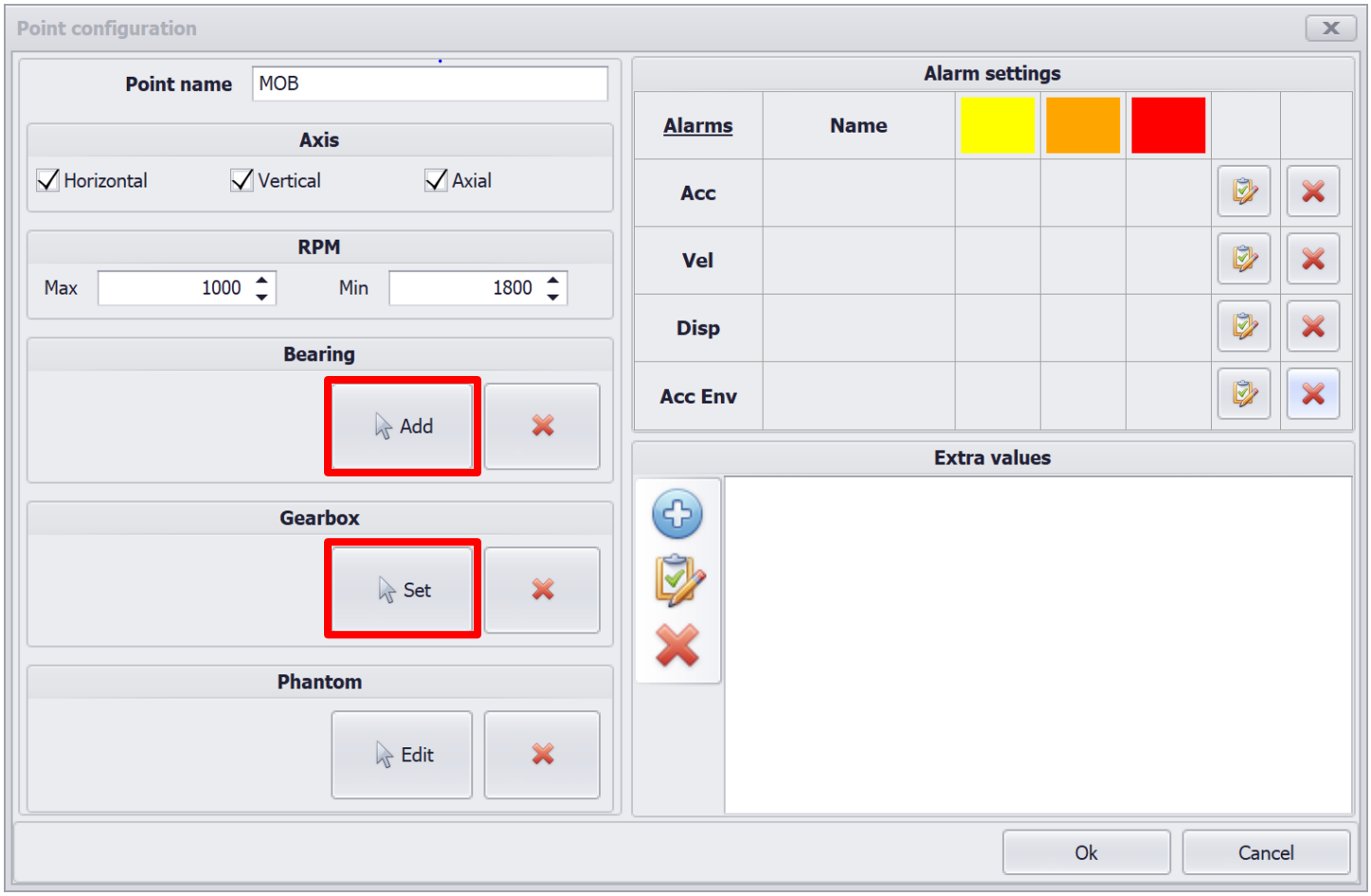
Configure Machine Analysis Points (cont.)

Bearings and **Gearbox** frequencies can be assigned to the Analysis Point, as applicable. Once assigned, the frequencies will then be available to view on the FFT spectrum during data analysis.

To specify a **Bearing** at the Analysis Point, click **Add** – the **Bearing Finder** window opens.

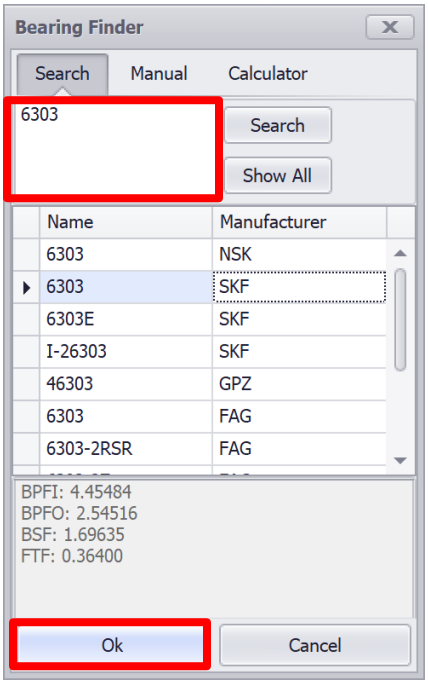
To specify **Gearbox** frequencies at the Analysis Point, click **Set** – the **Routes** window opens.

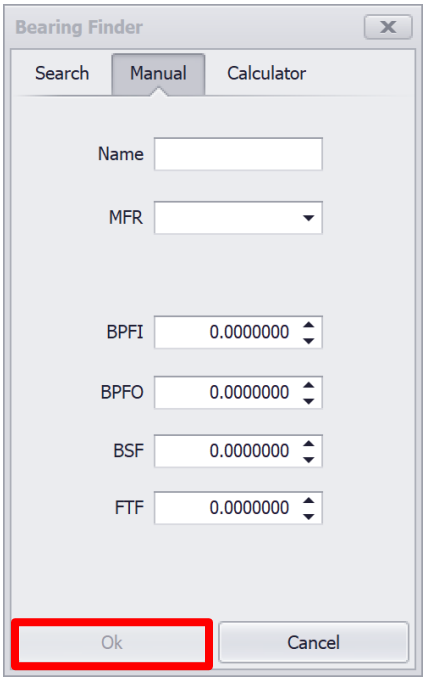
To specify **Extra Values** click the button and specify desired extra values to be documented.

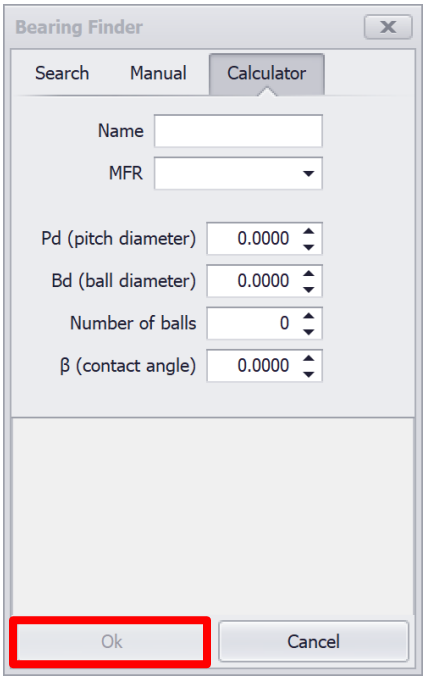


Configure Machine Analysis Points (cont.)

Adding a Bearing: The **Bearing Finder** contains a searchable database of nearly 35,000 common bearings by part number and manufacturer. To **Search** for an installed bearing, enter a complete or partial bearing part number in the search field. A list of bearings containing that part number will automatically populate, including manufacturer information. If a bearing is not included in the database, its fault frequency information can be manually added to the bearing database using the **Manual** tab. If the fault frequencies of the bearing are not known, they can be calculated using manufacturer technical information on the **Calculator** tab. Click **Ok** to save bearing information to the Analysis Point.

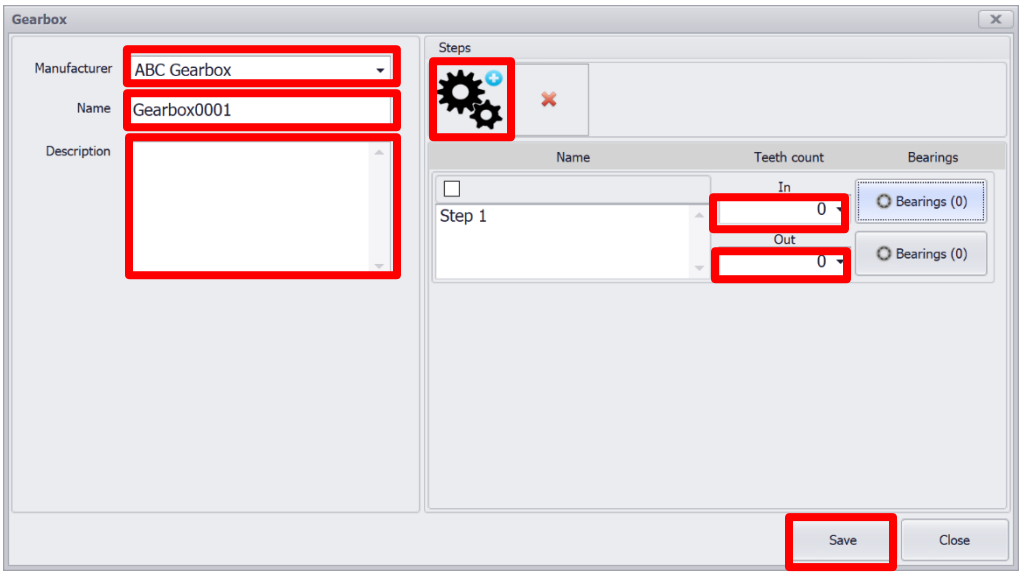






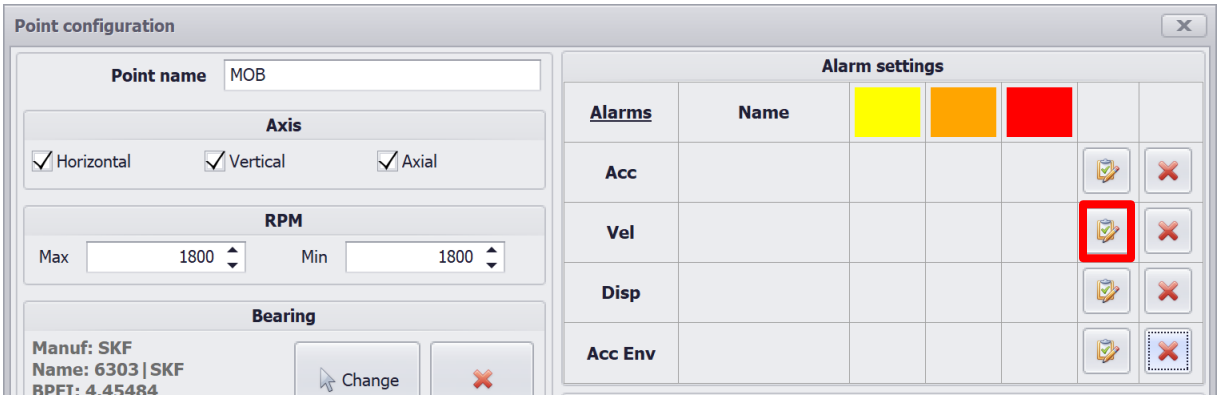
Configure Machine Analysis Points (cont.)

Adding a Gearbox: The **Gearbox** window allows users to create gearboxes and specify input/output gear teeth configurations to identify gear mesh fault frequencies in the FFT spectrum. Enter the **Manufacturer, Name** and **Description** (as desired). Click the **Add Steps** button to add as many gear mesh steps as the gearbox requires. Enter the number of **Input** and **Output** teeth at each stage. Bearings can also be specified at each Input and Output as required. Click **Save** to save **Gearbox** information to the Analysis Point.



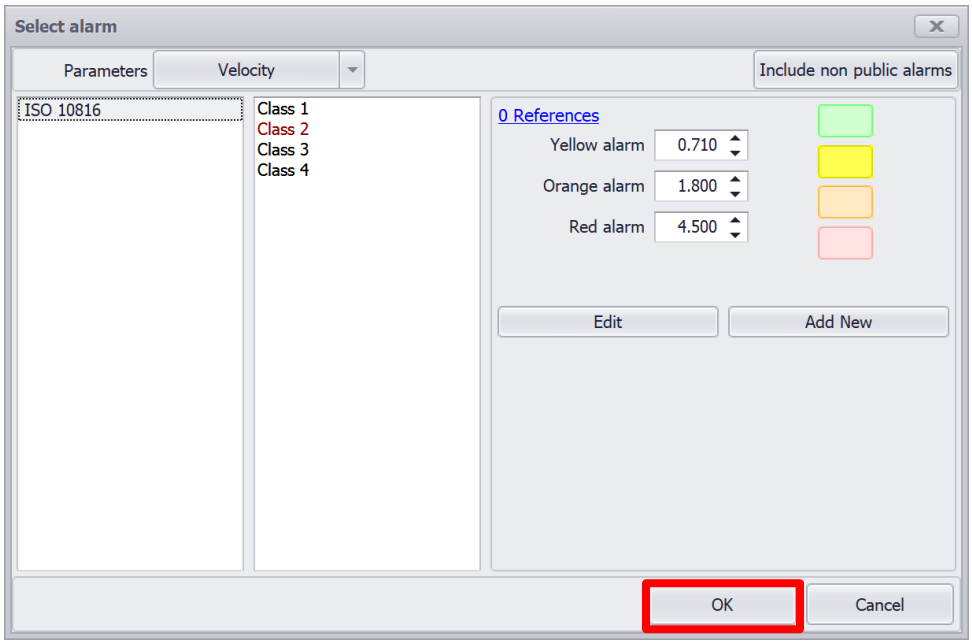
Alarm values for the Analysis Point can be established in **Alarm Settings.** Click the **Clipboard** icon for:

Acc: To set acceleration alarm threshold values
Vel: To set velocity alarm threshold values
Disp: To set displacement alarm threshold values
Acc Env: To set acceleration enveloping alarm threshold values

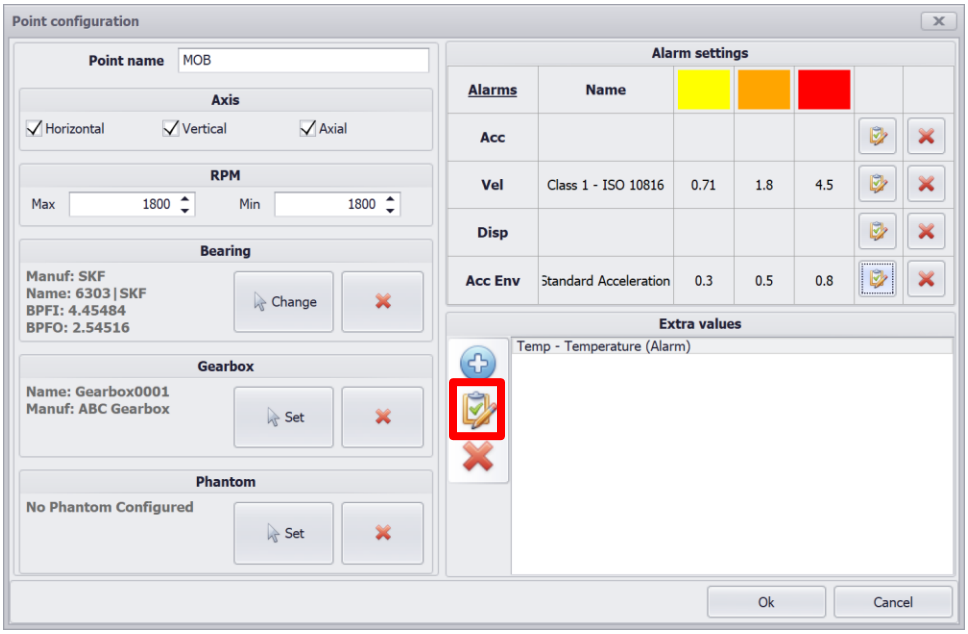


Configure Machine Analysis Points (cont.)

The **Select Alarm** window opens to establish the selected alarm threshold values. **Vel** and **Acc Env** alarms have associated preset ISO 10816 alarm threshold values by machine class. Individual Yellow, Orange and Red alarm thresholds can be set to any value the user desires. The **Parameters** drop-down allows changing between different alarm parameter categories. When satisfied with the alarm threshold values, click **Ok** to save the alarm values.

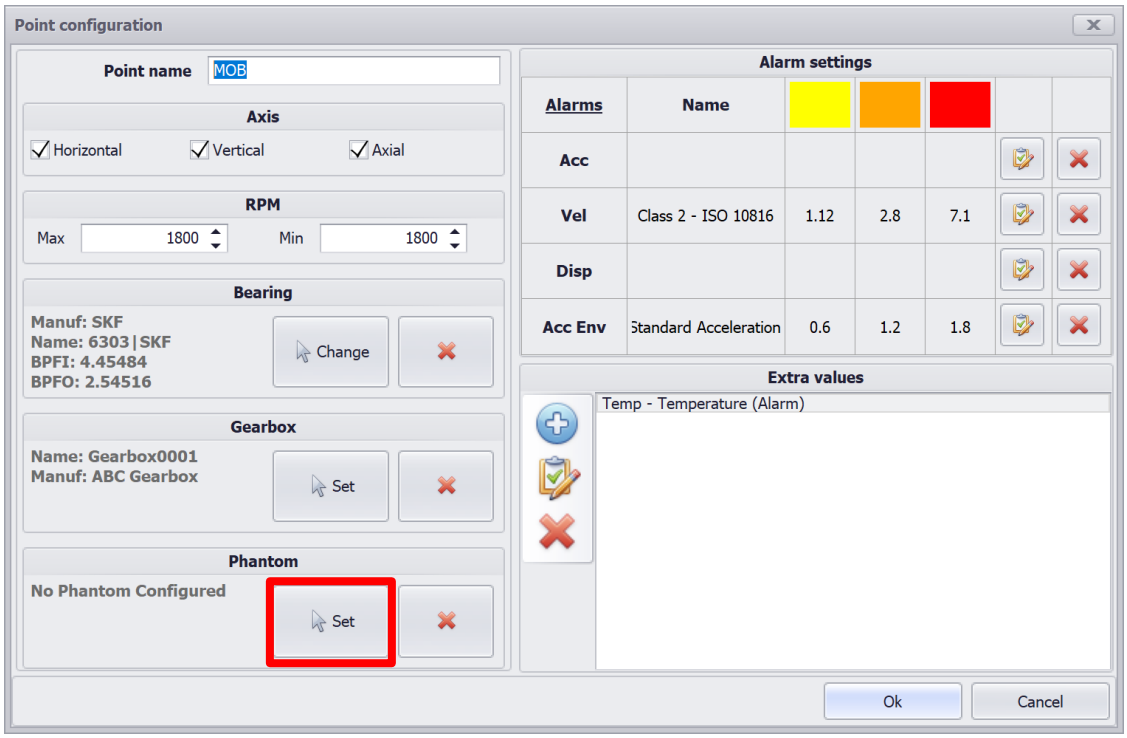


The **Clipboard** icon in **Extra Values** can be similarly used to establish alarm value thresholds for any extra values.

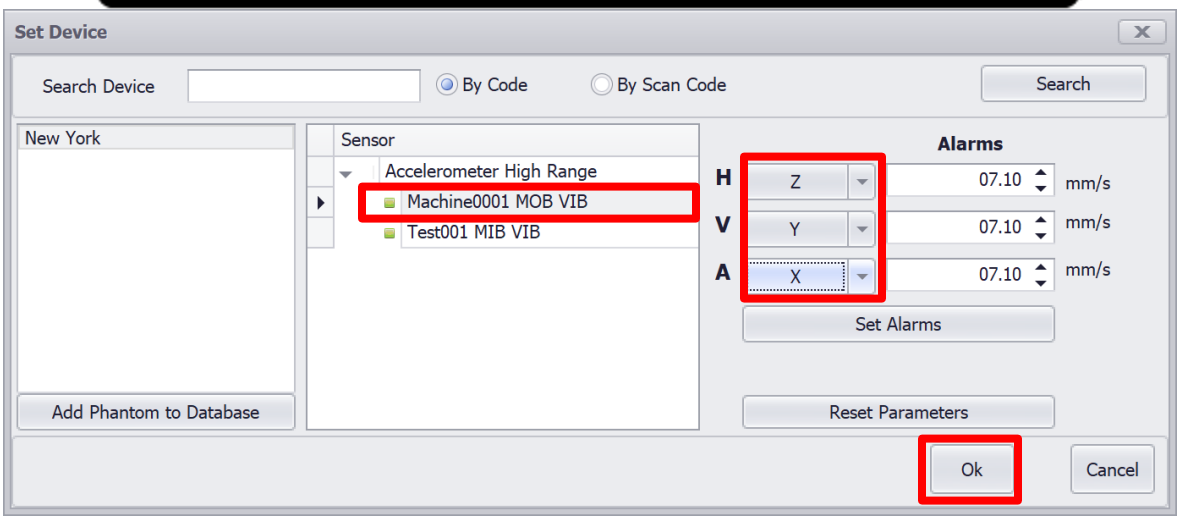


Assign Phantom Sensors to Analysis Points

To assign a **Phantom** sensor at this Analysis Point, click the **Set** button.

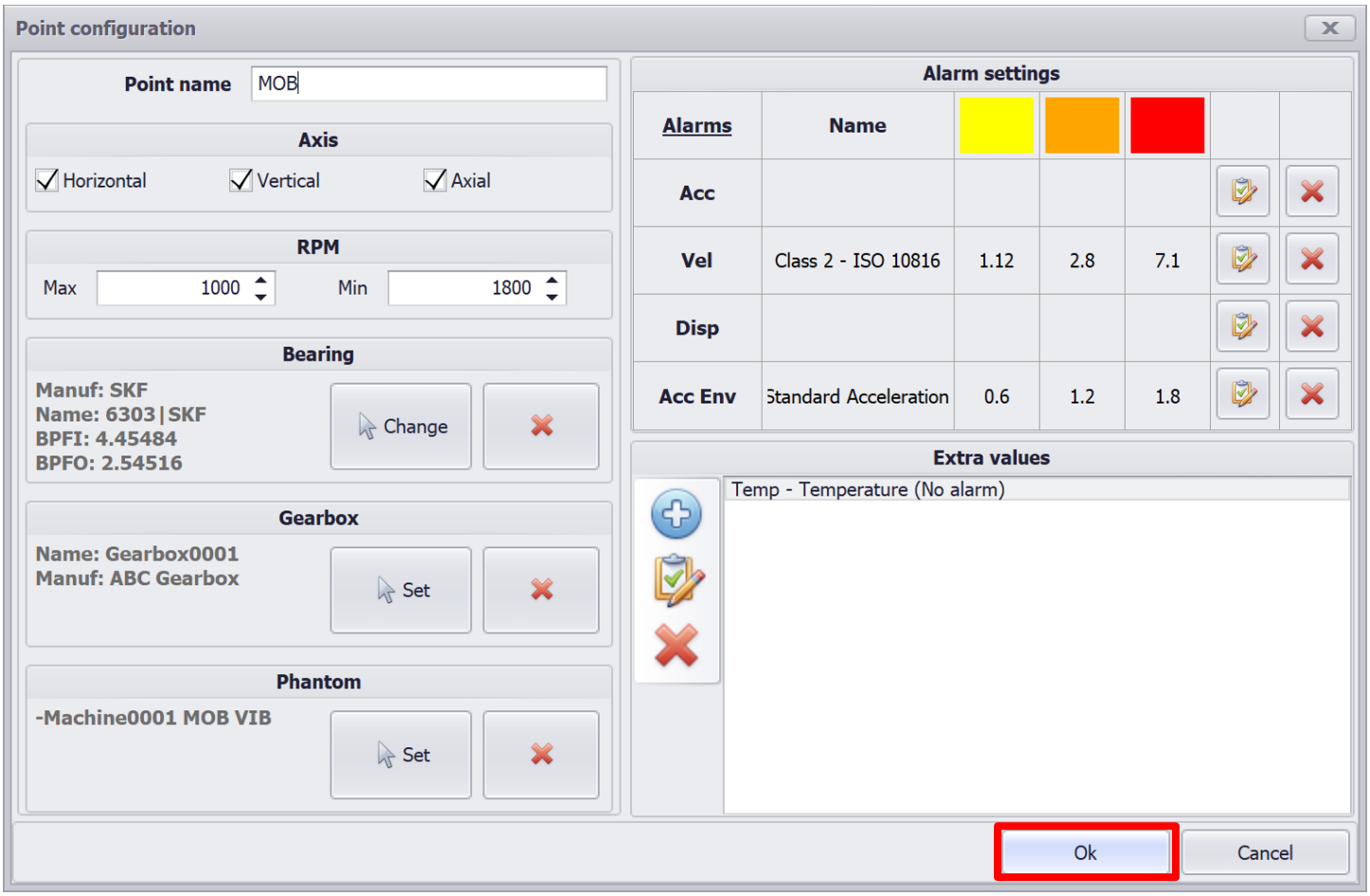


Available Phantom groups will appear in the **left-hand panel**. Select the desired Phantom group. All Phantoms assigned to that group will appear in the Sensor panel. Phantoms can also be searched by 9-digit serial number or by scanning the QR Code sticker. Highlight the desired **Phantom sensor** to assign at this Analysis Point. Define the sensor's **Horizontal, Vertical** and **Axial** axis orientation (X, Y and Z for Triaxial). Set alarm thresholds, if desired. Click **Ok** to assign the sensor.


Set Device
Search Device
By Code
By Scan Code
Search
New York
Sensor
Accelerometer High Range
Machine0001 MOB VIB
Test001 MIB VIB
Alarms
H
Z
07.10
mm/s
V
Y
07.10
mm/s
A
X
07.10
mm/s
Set Alarms
Add Phantom to Database
Reset Parameters
Ok
Cancel

Assign Phantom Sensors to Analysis Points (cont.)

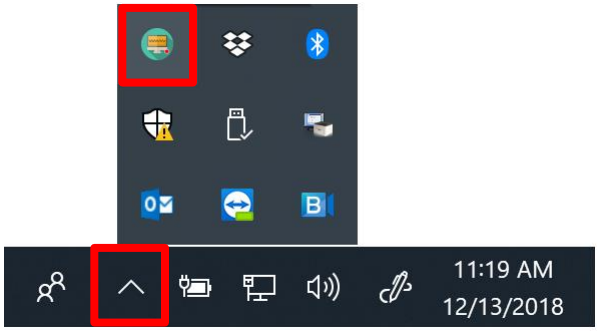
The **Point Configuration** window now displays the assigned Phantom sensor in the **Phantom** section. Click **Ok** to save the point configuration. Phantom sensor data collections at each axis will begin appearing under this point in the database, according to the sensor's specified collection interval.



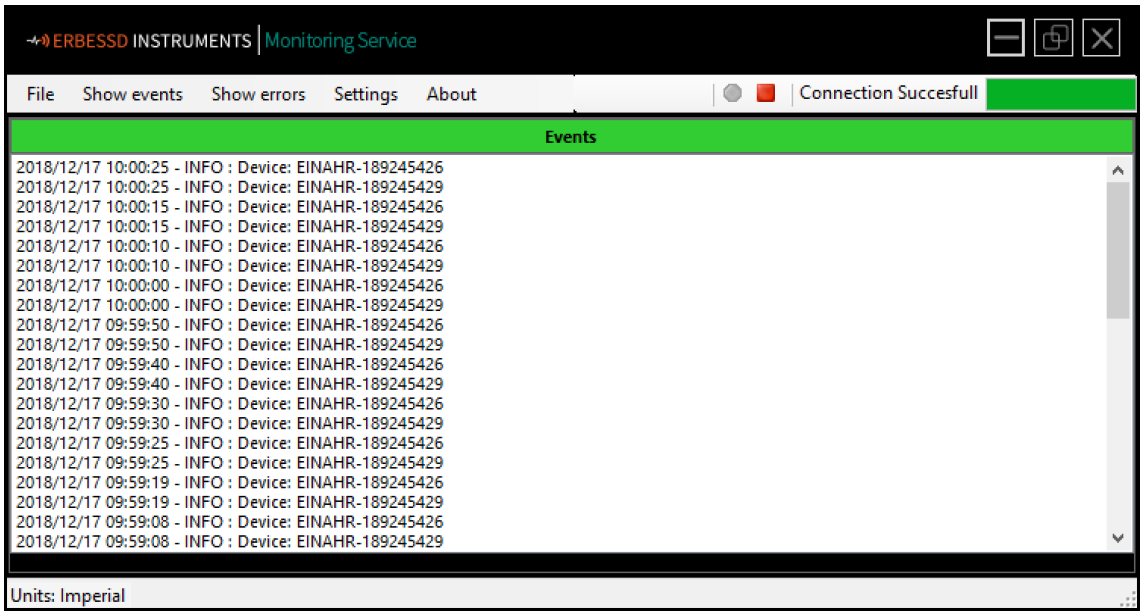
Repeat this process as required for all other Analysis Points on the machine, and for all other machines in the database.

Viewing Phantom Sensor Information in EI-Monitor

To this point, EI-Monitor has been running invisibly in the background. After Phantom sensors have been assigned to an Analysis Point in DigivibeMX Phantom software, they become visible in EI-Monitor. The program can be reopened from the Windows background program tray. Find the EI-Monitor icon. Double click to open (or right-click and select Open).



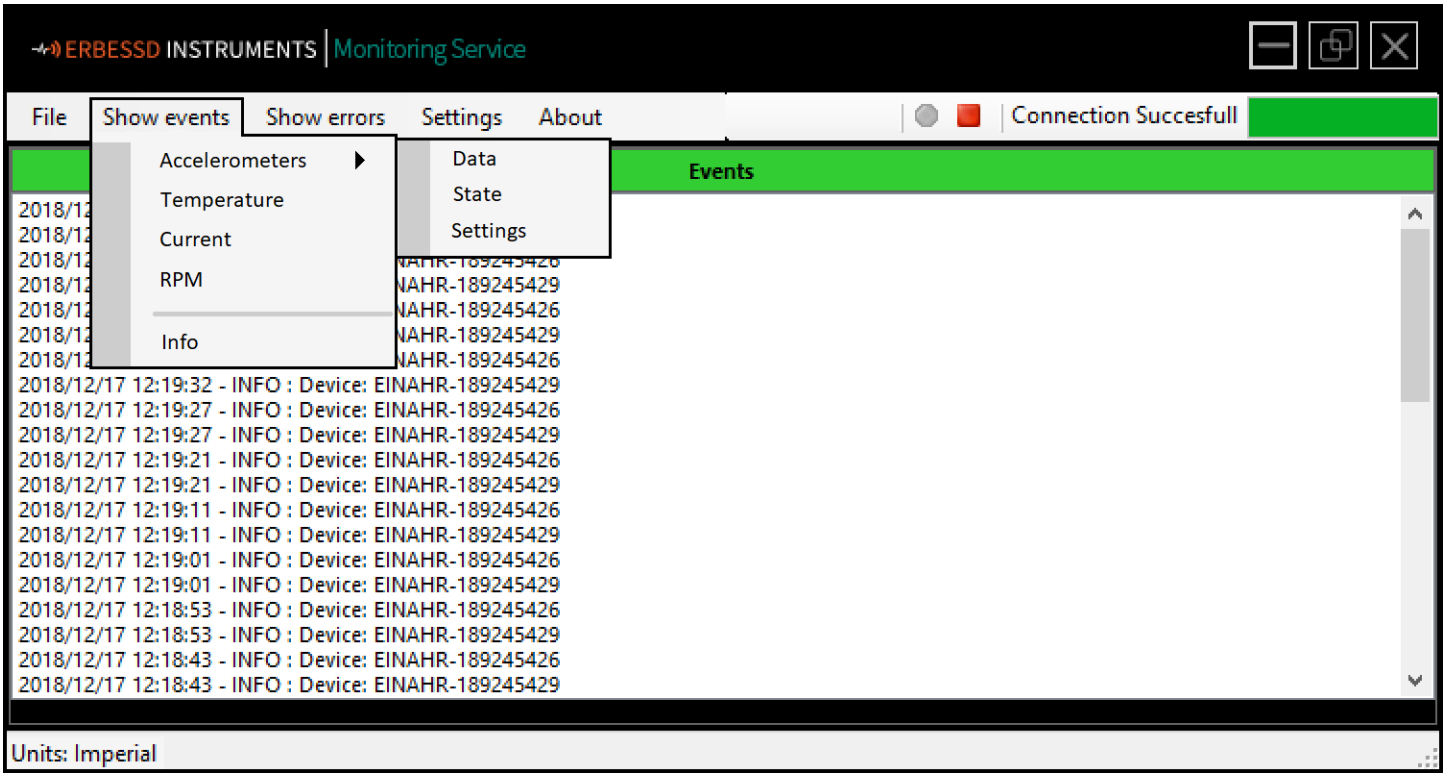
EI-Monitor opens to its default Info view. This view will only display Phantom sensors that are assigned to an Analysis Point in DigivibeMX Phantom software. This view continuously updates - approximately every 5-10 seconds – to confirm connectivity between Phantoms assigned to Analysis Points and the Gateway. These communications do not indicate Analysis Point data collections, which only occur at intervals specified in the DigivibeMX Phantom sensor setup.



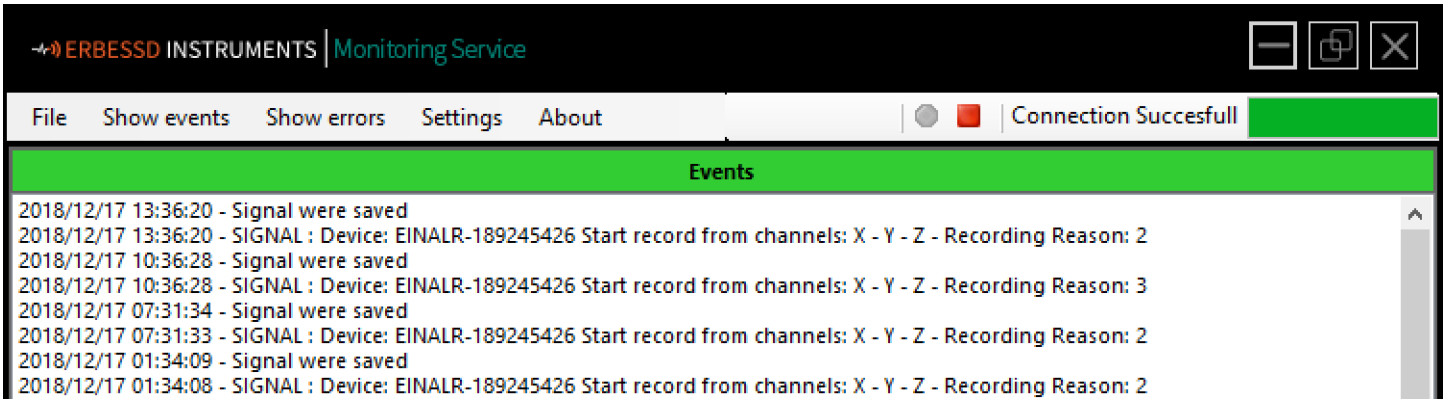
There are several other views available in EI-Monitor:

Viewing Phantom Sensor Information in EI-Monitor (cont.)

The **Show events** menu provides options to view the status of Accelerometer, Temperature, Current or RPM Phantoms. Accelerometer sensors have alternate views in EI-Monitor to display Data, current State and Settings information. To restore the default EI-Monitor general information view, select Info.



The Accelerometers/Data view provides confirmation that routine data collections (as specified in the DigivibeMX Phantom sensor setup – 6 hours in this example) were recorded and saved to the SQL database.

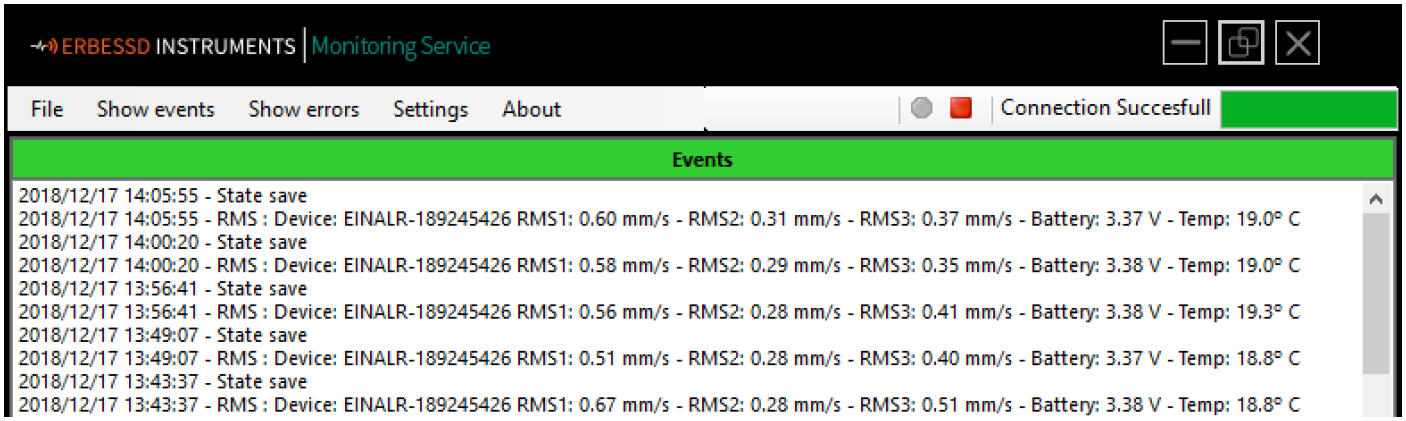


Viewing Phantom Sensor Information in EI-Monitor (cont.)

The Accelerometers/State view displays general information about the sensor's condition.

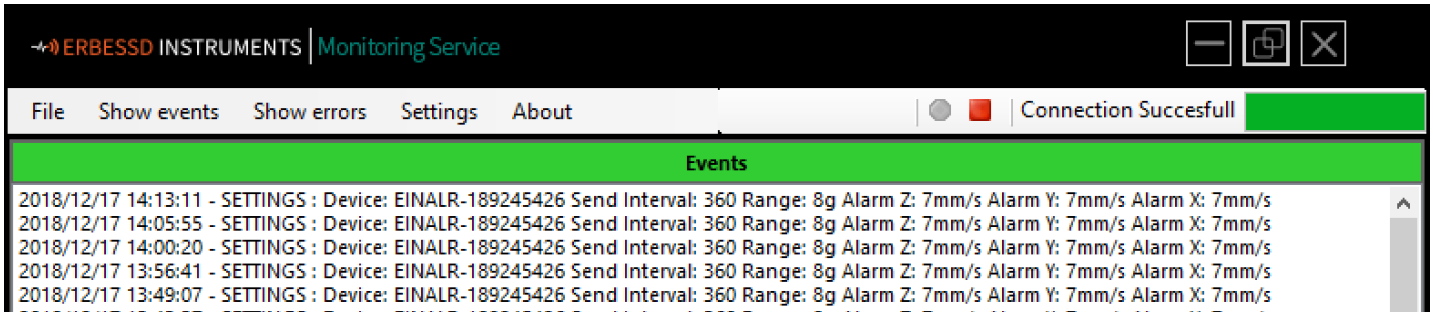
- The sensor ID
- RMS vibration value at each axis
- Remaining battery voltage
- Ambient temperature

These communications occur at approximately 5-minute intervals. However, the interval may increase slightly as more Phantoms are added to the network.



The Accelerometers/Settings view displays DigivibeMX Phantom setup information about the sensor.

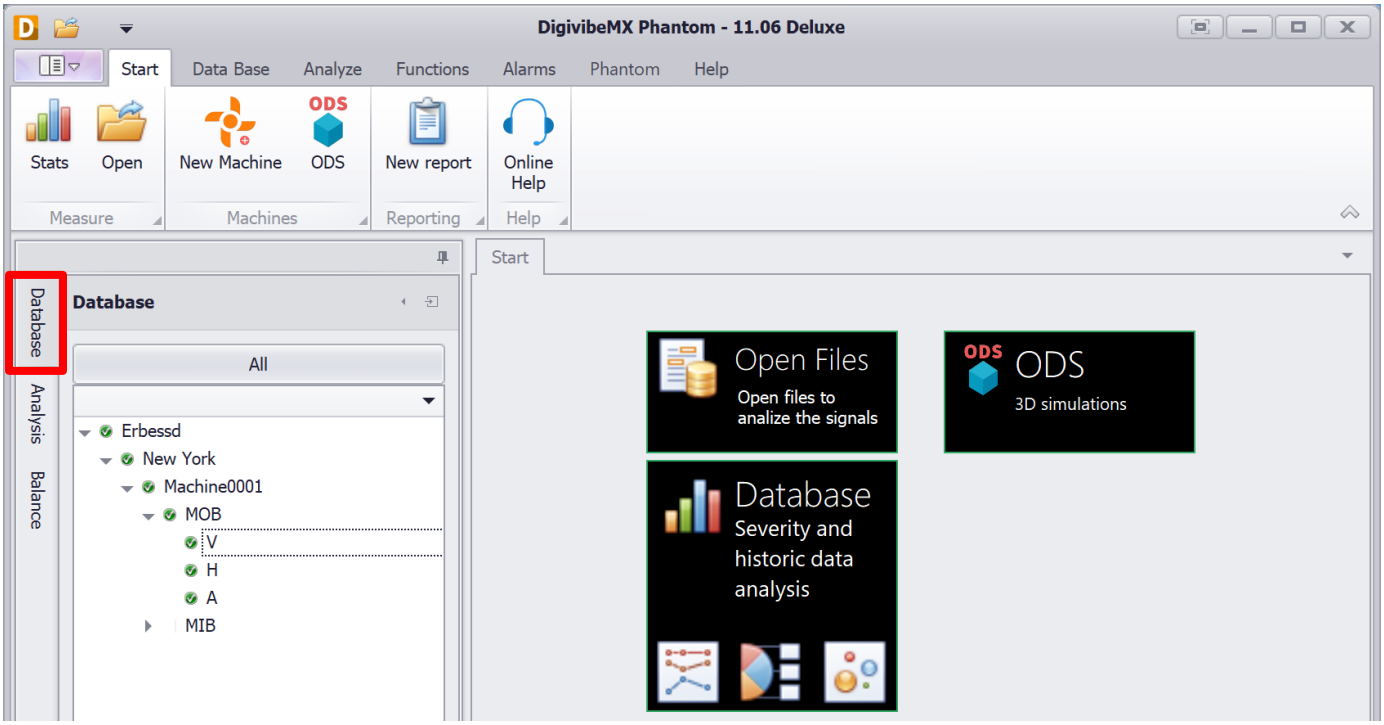
- Device: Sensor ID
- Send interval: Data recording interval in minutes
- Range: Maximum amplitude range for recordings
- Alarm: Vibration alarm threshold at each axis



Database Functions in DigivibeMX Phantom

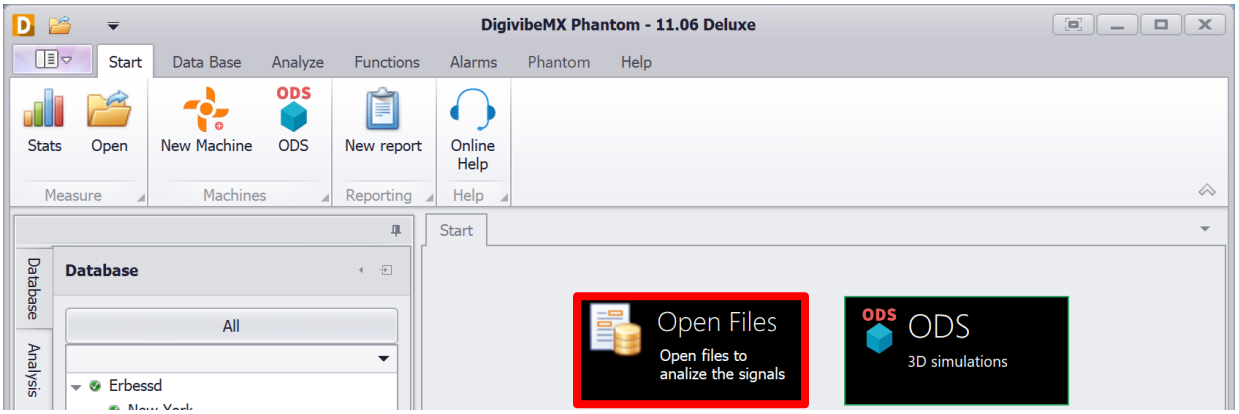
DigivibeMX Phantom databases have several levels of hierarchy to organize machine health monitoring data in an efficient manner. The levels of hierarchy are as follows:

1. **Database:** The database is the highest level of hierarchy. DigivibeMX Phantom can move easily between multiple databases. However, EI-Monitor and the Phantom sensors are database-specific. Information in the database is represented by the data tree in the left-hand pane. The Database **quick tab** on the left-hand side of the screen can be used to recall the data tree view. Each level of data tree can be expanded or collapsed.
2. **Company:** First level of data visible in the data tree – represented in the example picture as "Erbessd"
3. **Area:** Second level of data – represented in the example picture as "New York"
4. **Machine:** Third level of data – represented in the example picture as "Machine0001"
5. **Point:** Fourth level of data – Machine Health Monitoring point - represented in the example picture as "MOB"
6. **Axis:** Fifth level of data – indicates in which axis (direction) the data was collected

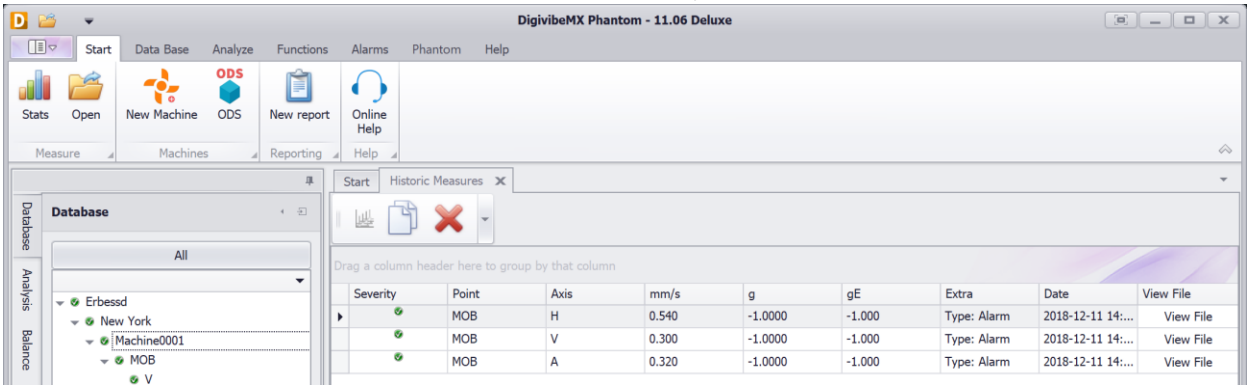


Database Functions in DigivibeMX Phantom (cont.)

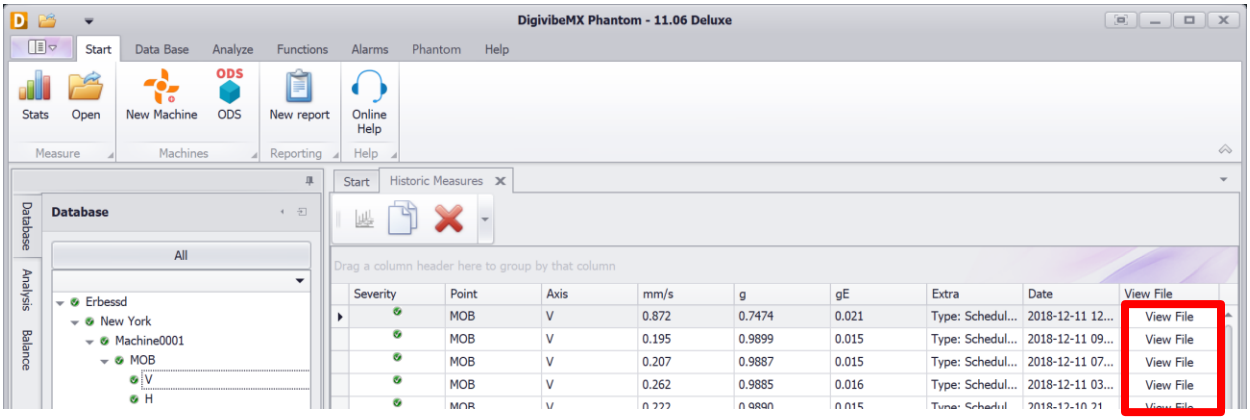
Data Collections are not visible in the data tree. To view available data collections, click the **Open Files** tile.



When the Machine or Point level of data tree are selected, the most recent collections for each Axis are displayed.



When the Axis level is selected, all collections at that Axis are listed.



Click **View File** on any recording to open for Analysis.