Temposonics
AN AMPHENOL COMPANY

Operation Manual

MH-Series Test kit CANopen

Magnetostrictive Linear Position Sensors

Table of Contents

1. Overview

The CAN test software supports the display of live data and configuring parameters of Temposonics sensors with CANopen, CANopen Safety, SAE J1939 and SAE 1939-76 sensor outputs. To use the software interface, the sensor will need to be connected to a compatible PC running Windows 10 (or later) by utilizing the hardware contents supplied in the MH CAN Test kit (see section 1.1). Connecting the sensor to the computer is covered in Section 2.
The CAN Test kit AC/DC convertor provides power directly to the sensor. If the sensor is installed in a cylinder on a machine, this kit will isolate the sensor from the rest of the vehicle. This is useful in situations where a vehicle harness is miswired or an error in the software makes the sensor appear to be malfunctioning. By isolating the sensor, the operator can quickly verify if it is functioning properly. This eliminates time wasted on replacing a functional sensor.

Software Features:
- Sensor identification:
- - Sensor model
- - Serial number
- - Firmware revision
- Automatic detection of sensor protocol
- Numerical display of position and velocity data
- Configuration of the following sensor parameters:
  - Node ID
  - Baud rate
  - Cycle time

1.1 Requirements

- Windows PC running Windows 10 or greater
- Access to internet for downloading drivers and Temposonics CAN software
- Temposonics® model numbers matching:
  - SM x xxxxM xxxx 3 C01 x xx x (MH-Series SLIM CANopen)
  - SM x xxxxM xxxx 3 J01 x xx x (MH-Series SLIM SAE J1939)
  - FM2 x xxxxxM NF A S02 x xx x (MH-Series FLEX Safety CANopen Safety)
  - FM2 x xxxxxM NF A J91 x xx x (MH-Series FLEX Safety SAE J1939-76)
  - FM2 L NF S02 x xx x (MH-Series FLEX Safety CANopen Safety)
  - FM2 L NF J91 x xx x (MH-Series FLEX Safety J1939-76)
  - MHx xxxxM xxxx 3 S02 xxx (MH-Series SAFETY CANopen Safety)
  - MHx xxxxM xxxx 3 J91 xxx (MH-Series SAFETY J1939-76)

NOTICE

For other MH-Series sensors not listed above, please refer to Temposonics® CAN Test Interface (v2.35) available under the sensor's download section on the Temposonics website
www.temposonics.com
or contact your regional Temposonics office for assistance (www.temposonics.com/contact/GlobalContacts/Contact)

1.2 Contents of MH CAN Test kit

The MH CAN Test Kit includes the following items:

- PCAN USB Assembly:
  - PCAN adapter with USB integral cable
  - Connection to CANbus via D-Sub, 9 pin (acc. CiA® 102)
- M12 test cable with D-Sub, 9 pin connector end (for use with Temposonics M12 connector system)
- M12 to DT adapter (for use with Temposonics DT connector system)
- Multi-plug 12 Vdc power supply with power plug adapters
- Carrying case

Fig. 1: PCAN USB Assembly

2. Installation

2.1 Downloading and installing the USB-CAN module driver

1. The USB-CAN Module driver must be installed to the windows PC before you connect the CAN interface.
   Download the device driver setup from the following website:
   http://www.peak-system.com/quick/DL-Driver-E
   You can also find a link to this download from the Temposonics website at www.temposonics.com by selecting the “Products” tab and navigate to your sensor in the section “Mobile Hydraulics Position Sensors.”
2. Unpack the file PEAK-System_Driver-Setup.zip
3. Double-click the file PeakOemDrv.exe
4. The driver setup starts.
5. Follow the program instructions (for additional information see the Peak documentation at website above)

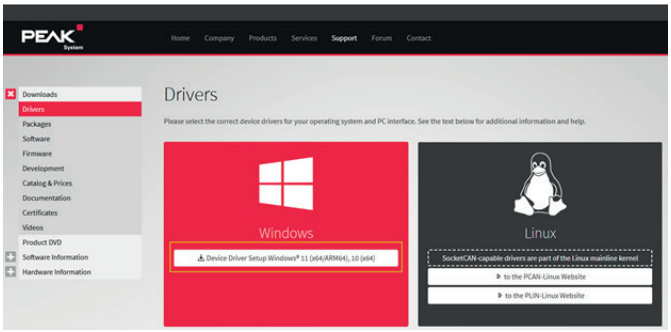


Fig. 2: Driver Download Screen

2.2 Hardware Setup

1. Connect the CAN interface to a USB port of the computer or of a connected USB hub. The computer can remain powered on.
   Note: Do not use a USB extension cable to connect the PCAN USB assembly to the computer to avoid the risk of compatibility issues.
2. On first use, Windows will detect the new hardware and complete the driver installation.
3. Check the LED on the CAN interface. If the LED is on, then the driver was initialized successfully. If LED fails to illuminate, repeat the steps to install the driver in 2.1 and try again.
4. Connect the 12 Vdc power supply to the mating receptacle on the M12 test cable with D-Sub, 9 pin connector end
5. Connect the M12 test cable’s D-Sub connector to the mating receptacle on the PCAN USB Assembly
6. Connect the sensor to the mating M12 test cable directly or with the supplied Temposonics DT Connector System M12 to DT adapter.

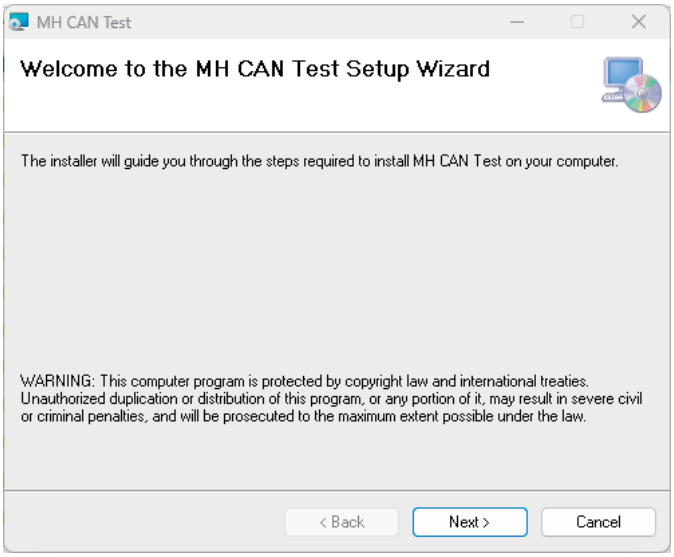
2.3 Downloading and installing the Temposonics MH CAN test v3.xx software

The Temposonics MH CAN software must be downloaded from the Temposonics website and installed before you connect the CAN interface.

1. To find the correct downloads associated with your product, go the Temposonics website at www.temposonics.com and select the “Products” tab and navigate to your sensor in the section “Mobile Hydraulics Position Sensors.” The file will be listed as "Digital Test Kit Software Installation for MH SLIM and Safety Outputs (J91 S02)"
2. Unpack the file "MH_CAN_V3_0.zip"
3. Double-click the file “MH CAN Setup.msi”
4. The software setup starts
5. Follow the program instructions to install the software in your desired location and access level (Everyone who uses the computer or only the active account).

ANALOG & CANBUS	DOCUMENT PART NO.	REVISION	LANGUAGE	DOWNLOAD
Data Sheet	552179	C	EN	
Installation Manual	552184	B	EN	
Electrical Data Sheet MH SLIM (EDS-File)				
Digital Test Kit Software Installation for MH SLIM and Safety Outputs (J91 S02)				
PCAN-USB driver (for Windows 7 to 10)				www.peak-system.com

Fig. 3: Example of software download location



3. Operation

3.1 Startup

Double-click the desktop icon to start the CAN test interface software.

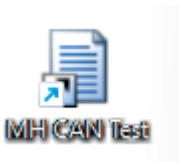


Fig. 4: Desktop Icon

3.2 Familiarizing yourself with the GUI

Double-click the desktop icon to start the CAN test interface software.

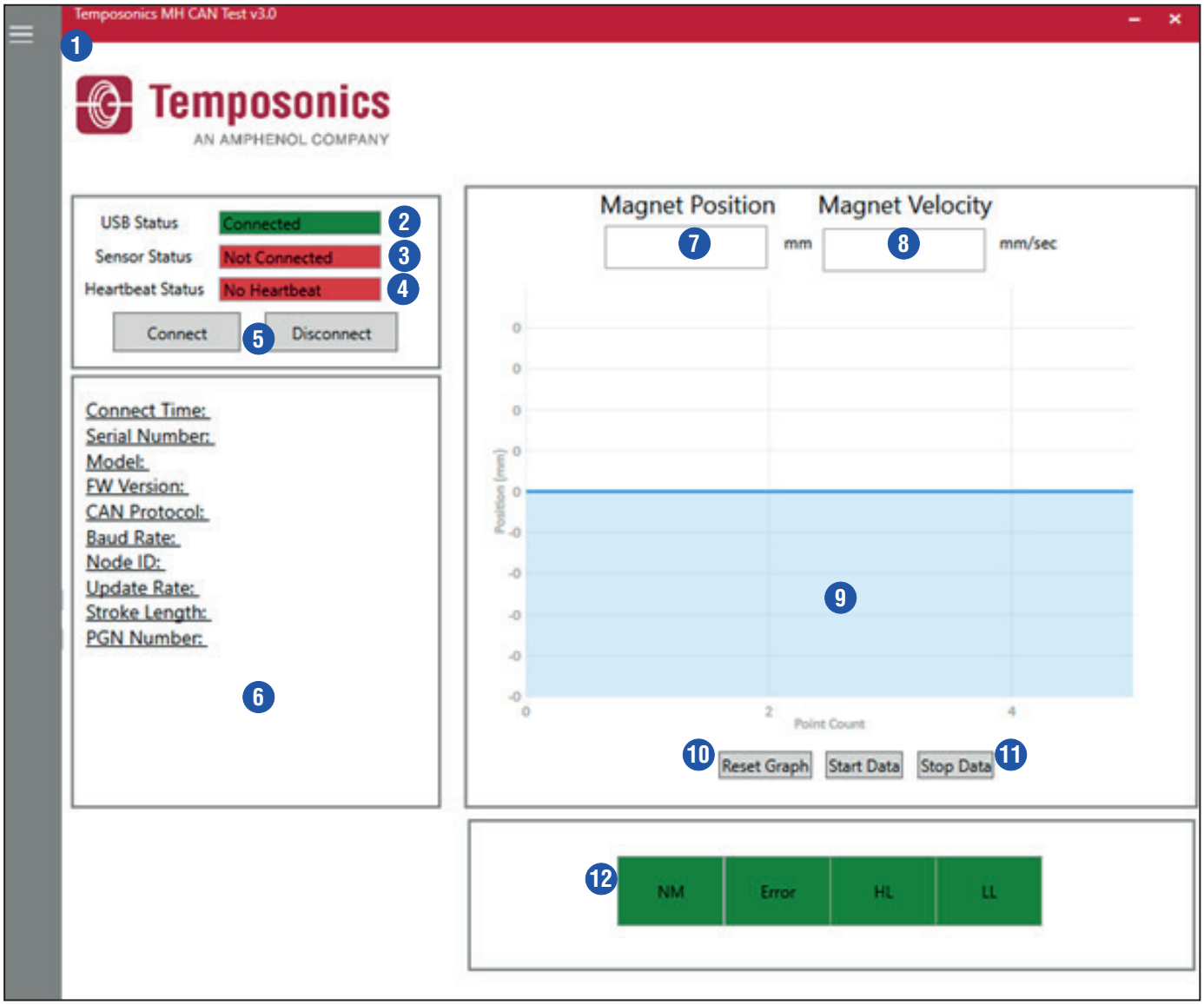


Fig. 5: Startup Screenshot

1. **Additional features menu**
2. **USB status**
3. **Sensor status**
4. **Heartbeat status (CANopen)**
5. **Connection controls**
6. **Sensor information**
7. **Magnet position display**
   Displays sensor position output in mm
8. **Magnet velocity display**
   Displays sensor velocity output in mm/s
9. **Graph display**
   Displays sensor position output
10. **Reset graph**
    Allows the user to reset graph default Y-Axis and buffer size and clear the data buffer
11. **Start/Stop data**
    Enable/disable display of live data from the sensor
12. **Sensor status**
    Displays messages for user regarding the sensor and the software communication when using a sensor with J1939 or J1939-76 output

3.3 Connecting to the sensor

Clicking the “Connect” button in the connection controls section of the interface will automatically discover the sensor and begin communication. Once communication with the sensor is established, the user interface will initialize and display sensor information.
Note: Position data will not begin until the “Start Data” button is pressed

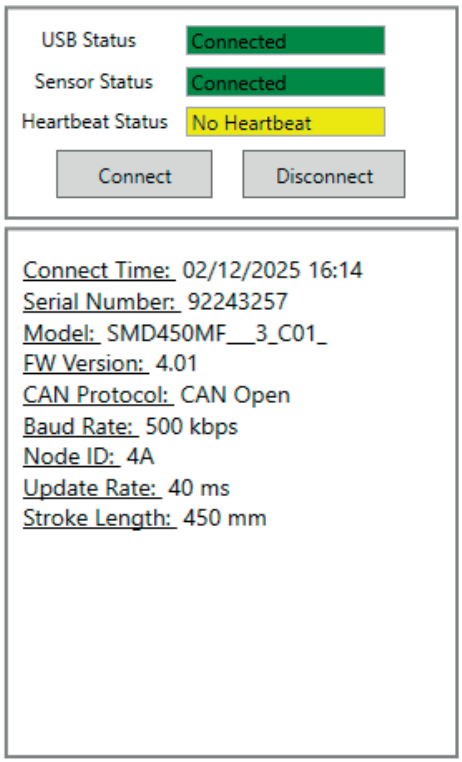


Fig. 6: Sensor information is displayed when connected

3.4 Position data

Click the “Start Data” button below the graph display to begin reporting position and velocity data.

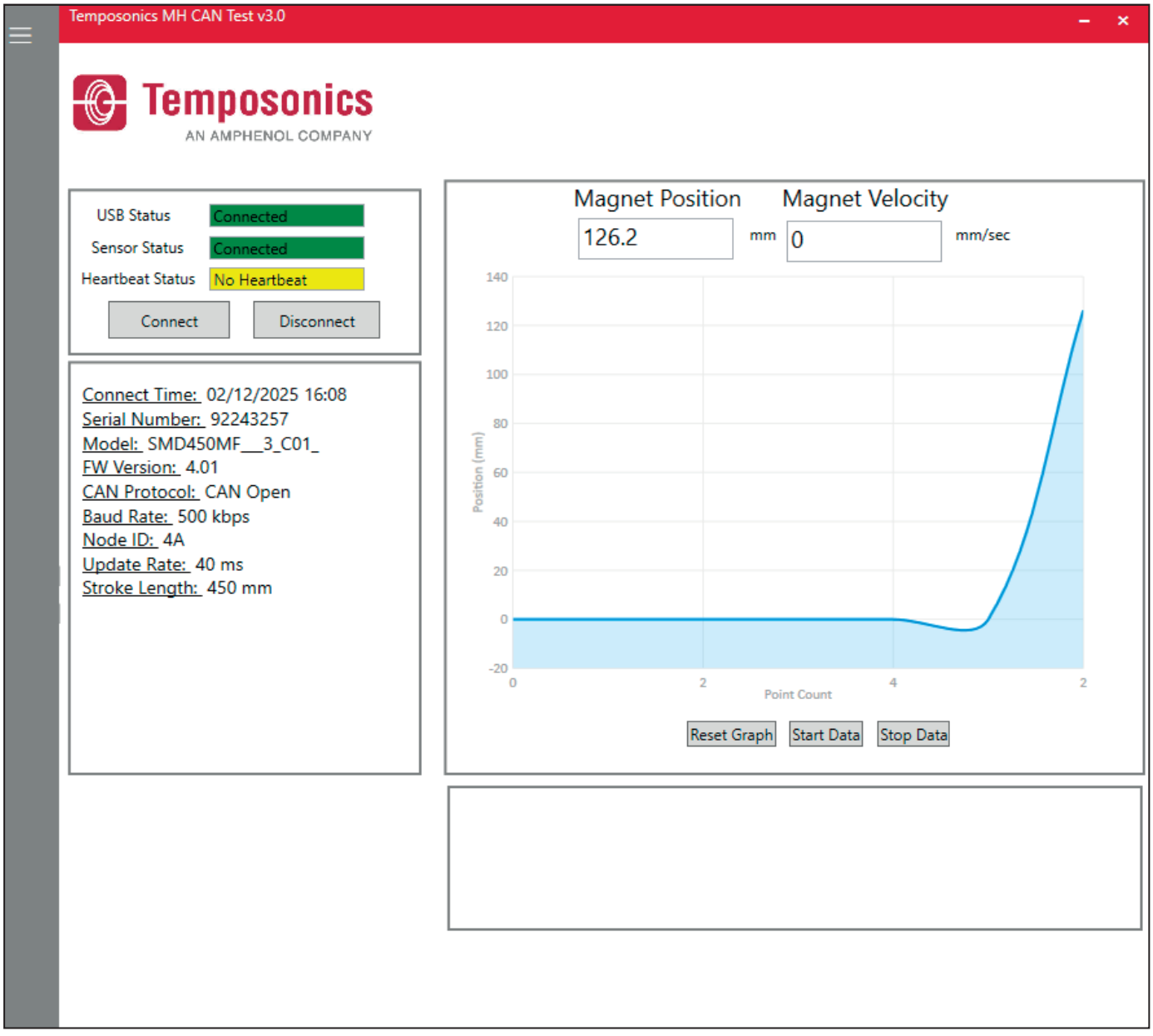


Fig. 7: Start Data

3.4.1 Graph display

The Graph Display will show the position of the magnet as it moves and auto-scale as points are collected.
Clicking the Reset Graph button will reset the point collection to zero.

3.4.2 Sensor status display

The sensor status provides information displays messages for user regarding the sensor and the software communication when using a sensor with J1939 or J1939-76 output.

The display will not appear if using a sensor with output protocols that are not based on J1939 (ie. CANopen).

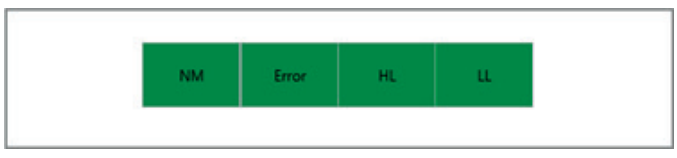


Fig. 8: Start Data

Status	Description	Notes
NM	No Magnet	Sensor cannot detect magnet
Error	General Error	Sensor is not able to determine magnet position. Disconnect the sensor, check the setup and try again. If error persists. contact your regional Temposonics office for assistance (www.temposonics.com/contact/GlobalContacts/Contact).
LL	Low Limit	Sensor has reached the lower limit but is still able to detect the magnet
HL	High Limit	Sensor has reached the high limit but is still able to detect the magnet

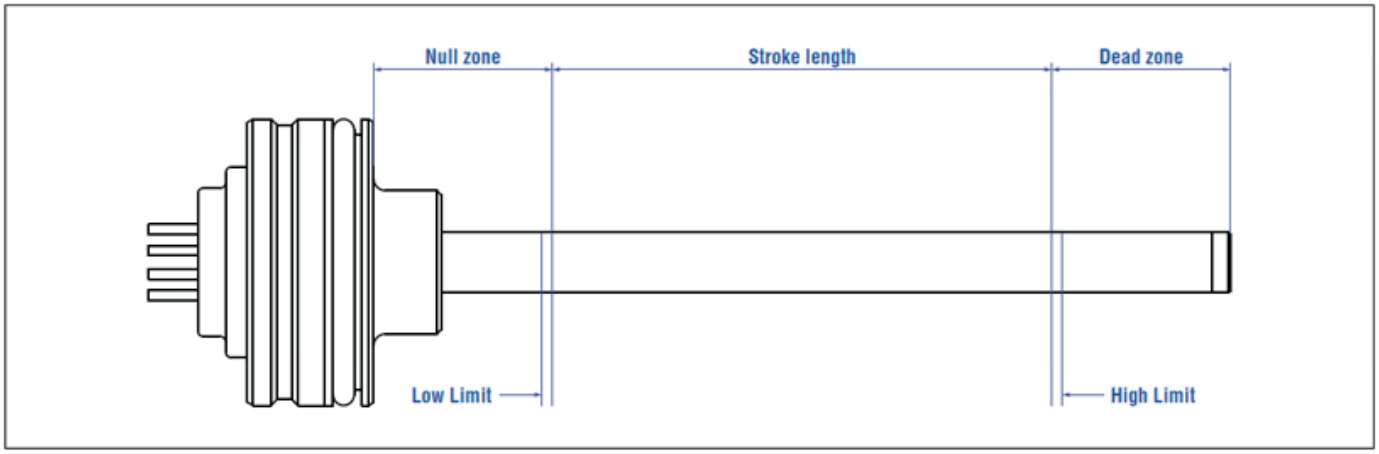


Fig. 9: Low and high limit positions

3.5 Additional Featues Menu

Click the three lines on the top left of the interface to slide open the Additional Features Menu. Items include:

- Sensor Settings
  - Set Node ID
  - Set Baud Rate
  - Set Cycle Time
  - Parameter Group No. (PGN, only for J1939-protocols)
- Advanced Features
  - Update Firmware
- About
  - Software Version

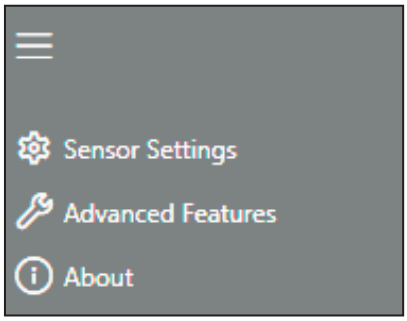


Fig. 10: Additional Featues Menu

3.5.1 Sensor Settings

The senor settings window allows the user to adjust values for the sensor Node ID, Baud Rate and Cycle Time.

- The “Read” button will update the window to show the current values from the sensor
- The “Write” button will save the values shown in window to the sensor

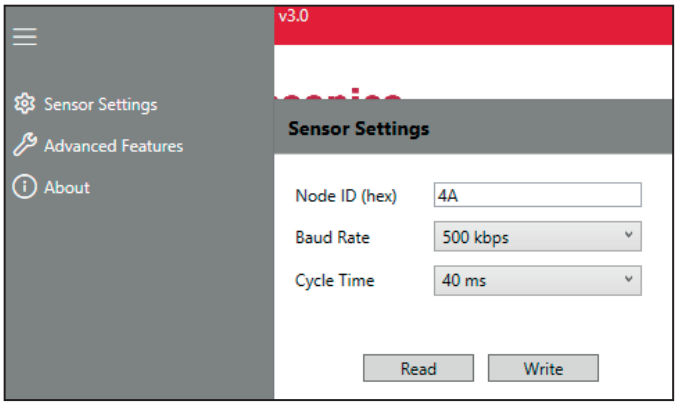


Fig. 11: Sensor Settings Window

3.5.2 Advanced Features

The Advanced Features window has controls for updating the sensor firmware.

Note: updating firmware should not be necessary unless directed by your Temposonics Representative.

To initiate the firmware update, click the Start button next to “Update Sensor Firmware” and follow the instructions on the screen.

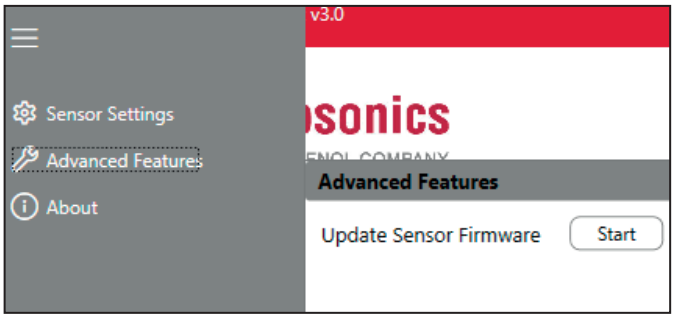


Fig. 12: Advanced Features Window

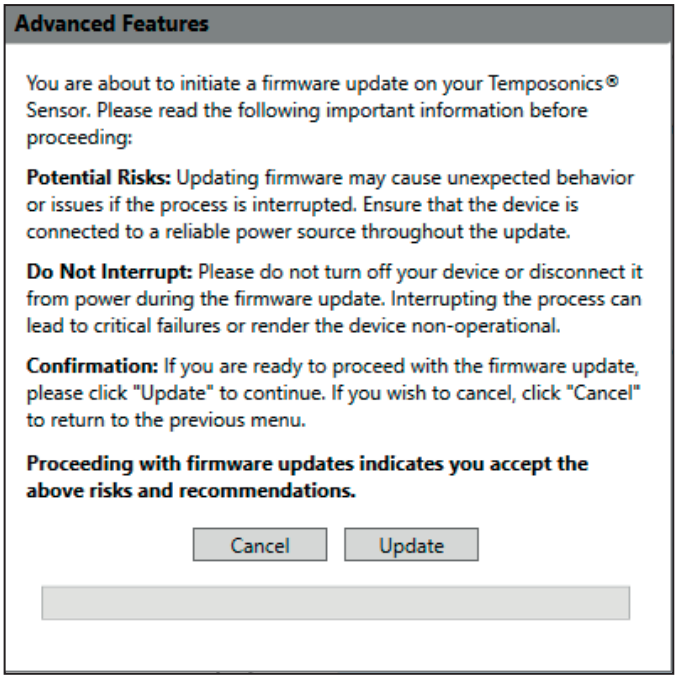


Fig. 13: Firmware update

3.5.3 About the software

The "About" window displays information related to the software.

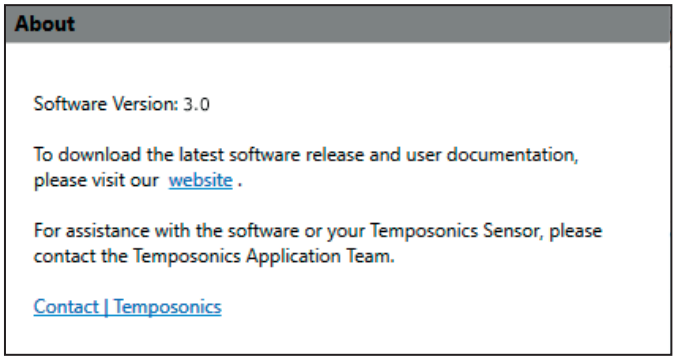


Fig. 14: About window

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