

**Version**

**5.0.2**

MICROSTRAIN, INC.

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Microminiature Sensors

3DM Data Acquisition & Display Software

**MicroStrain, Inc.**

**3DM® Data Acquisition and Display Software**

**Version 5.0.2**

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## **About**

*Main > Help > About*

The About screen is for information purposes only and relates 1) the software name and version, 2) the copyright, and 3) the company name, address, website and telephone.

### **To return to Main screen:**

- Click <OK> to return to Main screen.

## **Configuration**

*Main > Tools > Configuration*

The Configuration screen allows the user to read and write certain parameters maintained in memory on-board the 3DM. These parameters include filtering, tares, baud rate and mode. The parameters are used to condition the 3DM for particular situations and should only be changed after a thorough understanding of their effect on the device.

**Note:** See the *Using the Parameters on the Configuration Screen* section of this Help file for details of each setting.

### **To read settings:**

- Click <File>.
- Click <Read>. The program will retrieve the parameters from the on-board memory of the 3DM and display them.
- You will receive a confirming message indicating that the read was successful. Click <OK>.

### **To write settings:**

- Change particular parameters by scrolling values up/down or by entering values through the keyboard. In the case of baud rate, select the appropriate radio button.
- Click <File>.
- Click <Write>. The new parameters will be written to the on-board memory of the 3DM. You will receive a confirming message indicating that the write was successful. Click <OK>.
- You will receive an informational message indicating what to do if you changed the baud rate. Click <OK>.
- The software will re-read the parameters from the on-board memory of the 3DM and display them.

### **To return to Main screen:**

- Click <File>.
- Click <Return>.

## **Connect**

*Main > File > Connect*

The Connect screen allows the user to set the serial port and the baud rate for communication with the 3DM and to auto-detect the 3DM.

### **To set comm port and baud rate:**

- Using your mouse, click the radio button of the host comm port which is connected to the 3DM.
- Using your mouse, click the radio button of the baud rate which was previously set for the 3DM. The factory default is 9600 baud.
- Click <OK>. The application will attempt communication with the 3DM.
- If communication is successful, you will receive a confirming message. Click <OK> and the Connect screen will disappear. You may then proceed with the application.
- If communication is unsuccessful, you will receive a message indicating various possibilities for the failure. Click <OK> and the Connect screen will disappear. You may then proceed with determining and correcting the cause for failure. You must achieve a successful connection to proceed with the application.

### **To auto detect the 3DM:**

- If you do not know what comm port and/or baud rate to set for the 3DM, click <Auto Detect>.
- The application will automatically test all comm ports and all baud rates until communication is established with the 3DM.
- If auto detection is successful, a confirming message will appear indicating which comm port and baud rate were detected. Click the message box <OK> and the appropriate radio buttons will be automatically selected. Click <OK> again and a connection will be established as normal.
- If auto detection is unsuccessful, you will receive a message indicating that the 3DM was not detected. Click the message box <OK>. Click <OK> again and a message will appear indicating various possibilities for the failure. Click the message box <OK> and the Connect screen will disappear. You should then proceed with determining and correcting the cause for failure. You must achieve a successful connection to proceed with the application.

## **Euler Angles**

*Main > Display > Euler Angles*

The Euler Angles screen allows the user to visualize an aircraft angles data acquisition session through a “pitch” dial, a “yaw” dial and a “roll” dial. The screen allows the user to start a session, record a session and stop a session.

### **To begin sampling a 3DM:**

- Click <Data>.
- Click <Sample>. A check will occur to the left of the menu item indicating sampling is in progress.
- The application will begin sampling the 3DM and will display the pitch, yaw and roll angles of the unit.

### **To stop sampling a 3DM:**

- Click <Data>.
- Click <Sample>. The check to the left of the menu item will disappear indicating sampling has stopped.

### **To save data to a file:**

- Click <Data>.
- Click <Save>.
- A “common dialog” box named Save As will appear.
- You may create a new name for the data file in the File Name textbox and select a file type in the Save As Type textbox or you may select an existing file as the data file. Click the Save button. The common dialog will disappear.
- A check will now appear to the left of the <Save> menu item indicating that a file is in place to receive data anytime sampling is active.

### **To stop saving data to a file:**

- Click <Data>.
- Click <Save>. The check to the left of the menu item will disappear indicating saving has stopped.

### **To return to Main screen:**

- Click <Data>.
- Click <Return>.

## **Get Firmware and Serial**

*Main > Tools > Get Firmware and Serial*

The Get Firmware and Serial screen is for information purposes only and relates 1) the firmware version of the 3DM and 2) the serial number of the 3DM.

### **To return to Main screen:**

- Click <OK> to return to Main screen.

## **Get Temperature**

*Main > Tools > Get Temperature*

The Get Temperature screen allows the user to retrieve the instantaneous temperature from the temperature sensor on-board the 3DM circuit board.

### **To get the temperature:**

- Click <Get>. The instantaneous temperature will be displayed. Repeated clicks of the <Get> button will retrieve new temperature readings.

### **To return to Main screen:**

- Click <OK> to return to Main screen.



## **Main**

### *First screen on program launch*

The Main screen allows the user to navigate to all program functions including connection, display, configuration, settings and program exit.

#### **To connect to the 3DM:**

- Click <File>.
- Click <Connect>. Follow the instructions for the Connect screen given elsewhere in this Help file.

#### **To display angles, matrix, vectors or bits:**

- Click <Display>.
- Click either <Euler Angles> or <Orientation Matrix> or <Orientation Matrix and Vectors> or <Sensor Bits> or <Vectors>. Follow the instructions for the particular screen given elsewhere in this Help file.

#### **To configure the 3DM:**

- Click <Tools>.
- Click <Configuration>. Follow the instructions for the Configuration screen given elsewhere in this Help file.

#### **To set sampling rate:**

- Click <Tools>.
- Click < Set Sampling Rate>. Follow the instructions for the Set Sampling Rate screen given elsewhere in this Help file.

#### **To set continuous/pollled mode:**

- Click <Tools>.
- Click <Set Continuous/Polled Mode>. Follow the instructions for the Set Continuous/Polled Mode screen given elsewhere in this Help file.

#### **To get the 3DM's on-board temperature:**

- Click <Tools>.
- Click <Get Temperature>. Follow the instructions for the Get Temperature screen given elsewhere in this Help file.

#### **To get firmware version and serial number:**

- Click <Tools>.
- Click <Get Firmware and Serial>. Follow the instructions for the Get Firmware and Serial screen given elsewhere in this Help file.

#### **To read about software:**

- Click <Help>.

- Click <About>. Follow the instructions for the About screen given elsewhere in this Help file.

**To exit the program:**

- Click <File>.
- Click <Exit>. The program will terminate and communication between the 3DM and the host computer will cease.

## **Orientation Matrix**

*Main > Display > Orientation Matrix*

The Orientation Matrix screen allows the user to visualize an orientation matrix data acquisition session through a 3 X 3 grid. The screen allows the user to start a session, record a session and stop a session.

### **To begin sampling a 3DM:**

- Click <Data>.
- Click <Sample>. A check will occur to the left of the menu item indicating sampling is in progress.
- The application will begin sampling the 3DM and will display the 3 X 3 orientation matrix of the unit.

### **To stop sampling a 3DM:**

- Click <Data>.
- Click <Sample>. The check to the left of the menu item will disappear indicating sampling has stopped.

### **To save data to a file:**

- Click <Data>.
- Click <Save>.
- A “common dialog” box named Save As will appear.
- You may create a new name for the data file in the File Name textbox and select a file type in the Save As Type textbox or you may select an existing file as the data file. Click the Save button. The common dialog will disappear.
- A check will now appear to the left of the <Save> menu item indicating that a file is in place to receive data anytime sampling is active.

### **To stop saving data to a file:**

- Click <Data>.
- Click <Save>. The check to the left of the menu item will disappear indicating saving has stopped.

### **To return to Main screen:**

- Click <Data>.
- Click <Return>.

## **Orientation Matrix and Vectors**

*Main > Display > Orientation Matrix and Vectors*

The Orientation Matrix and Vectors screen allows the user to visualize a data acquisition session which gathers both orientation matrix and vectors from the 3DM. The screen allows the user to start a session, record a session and stop a session.

### **To begin sampling a 3DM:**

- Click <Data>.
- Click <Sample>. A check will occur to the left of the menu item indicating sampling is in progress.
- The application will begin sampling the 3DM and will display the orientation matrix and vectors of the unit.

### **To stop sampling a 3DM:**

- Click <Data>.
- Click <Sample>. The check to the left of the menu item will disappear indicating sampling has stopped.

### **To save data to a file:**

- Click <Data>.
- Click <Save>.
- A “common dialog” box named Save As will appear.
- You may create a new name for the data file in the File Name textbox and select a file type in the Save As Type textbox or you may select an existing file as the data file. Click the Save button. The common dialog will disappear.
- A check will now appear to the left of the <Save> menu item indicating that a file is in place to receive data anytime sampling is active.

### **To stop saving data to a file:**

- Click <Data>.
- Click <Save>. The check to the left of the menu item will disappear indicating saving has stopped.

### **To return to Main screen:**

- Click <Data>.
- Click <Return>.

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## **Sensor Bits**

*Main > Display > Sensor Bits*

The Sensor Bits screen allows the user to visualize a raw magnetometer and raw accelerometer bits data acquisition session through “vertical pointer slides”. The screen allows the user to start a session, record a session and stop a session.

### **To begin sampling a 3DM:**

- Click <Data>.
- Click <Sample>. A check will occur to the left of the menu item indicating sampling is in progress.
- The application will begin sampling the 3DM and will display the sensor bits of the unit.

### **To stop sampling a 3DM:**

- Click <Data>.
- Click <Sample>. The check to the left of the menu item will disappear indicating sampling has stopped.

### **To save data to a file:**

- Click <Data>.
- Click <Save>.
- A “common dialog” box named Save As will appear.
- You may create a new name for the data file in the File Name textbox and select a file type in the Save As Type textbox or you may select an existing file as the data file. Click the Save button. The common dialog will disappear.
- A check will now appear to the left of the <Save> menu item indicating that a file is in place to receive data anytime sampling is active.

### **To stop saving data to a file:**

- Click <Data>.
- Click <Save>. The check to the left of the menu item will disappear indicating saving has stopped.

### **To return to Main screen:**

- Click <Data>.
- Click <Return>.

## **Set Continuous/Polled Mode**

*Main > Tools > Set Continuous/Polled Mode*

The Set Continuous/Polled Mode screen allows the user to configure the 3DM so that it is operating in 1 of 5 continuous modes or in Polled Mode. The Continuous Mode causes the 3DM to output its data sets on a continuous basis. The Polled Mode causes the 3DM to only output a single data set when requested by the host computer. The purpose of this function is to allow the user to set the 3DM in whatever mode so that the 3DM can be used in a fashion other than communicating with this software. When the 3DM is operated by this software, it is always in Polled Mode. Please refer to the 3DM User Manual for protocol details of the various modes.

### **To select a mode:**

- Using your mouse, click the radio button of the mode of operation.
- Click <OK>. The 3DM will be set to the mode selected.
- A confirming message will appear. Click <OK>. The Set Continuous/Polled Mode screen will disappear and you will be returned to the Main screen.

### **To cancel a mode change:**

- Click <Cancel>. The mode in effect will not be changed, the Set Continuous/Polled Mode screen will disappear and you will be returned to the Main screen.

## **Set Sampling Rate**

*Main > Tools > Set Sampling Rate*

The Set Sampling Rate screen allows the user to set the rate at which the 3DM is polled for data. By default the application will poll for data as fast as the 3DM and host hardware will operate. The user can also set the rate at which the application polls and writes data to file.

### **To set the sampling rate at maximum (default):**

- With your mouse, click the check box next to Maximum so that a check mark appears.
- Click <OK>. The sampling rate will be set at maximum and the Set Sampling Rate screen will disappear.

### **To set a specific sampling rate per second:**

- With your mouse, click the check box next to Maximum so that no check mark appears.
- Enter a value by scrolling values up/down or by entering values through the keyboard into the Samples Per Second scroll box.
- Click <OK>. The sampling rate will be set to the value entered and the Set Sampling Rate screen will disappear.

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## **Vectors**

*Main > Display > Vectors*

The Vectors screen allows the user to visualize a magnetometer and accelerometer vectors data acquisition session. The screen allows the user to start a session, record a session and stop a session.

### **To begin sampling a 3DM:**

- Click <Data>.
- Click <Sample>. A check will occur to the left of the menu item indicating sampling is in progress.
- The application will begin sampling the 3DM and will display the magnetometer and accelerometer vectors of the unit.

### **To stop sampling a 3DM:**

- Click <Data>.
- Click <Sample>. The check to the left of the menu item will disappear indicating sampling has stopped.

### **To save data to a file:**

- Click <Data>.
- Click <Save>.
- A “common dialog” box named Save As will appear.
- You may create a new name for the data file in the File Name textbox and select a file type in the Save As Type textbox or you may select an existing file as the data file. Click the Save button. The common dialog will disappear.
- A check will now appear to the left of the <Save> menu item indicating that a file is in place to receive data anytime sampling is active.

### **To stop saving data to a file:**

- Click <Data>.
- Click <Save>. The check to the left of the menu item will disappear indicating saving has stopped.

### **To return to Main screen:**

- Click <Data>.
- Click <Return>.