# RS232 Readout Output

Readout Option 5b: Serial Output - RS232

## Contents

# 1. RS232 Interface
## Revision 1

The following details outline the parameters and format for the RS232 output.

## RS232 Port Parameters

***Data Bits:***         8
***Parity:***         None
***Stop Bits:***         1
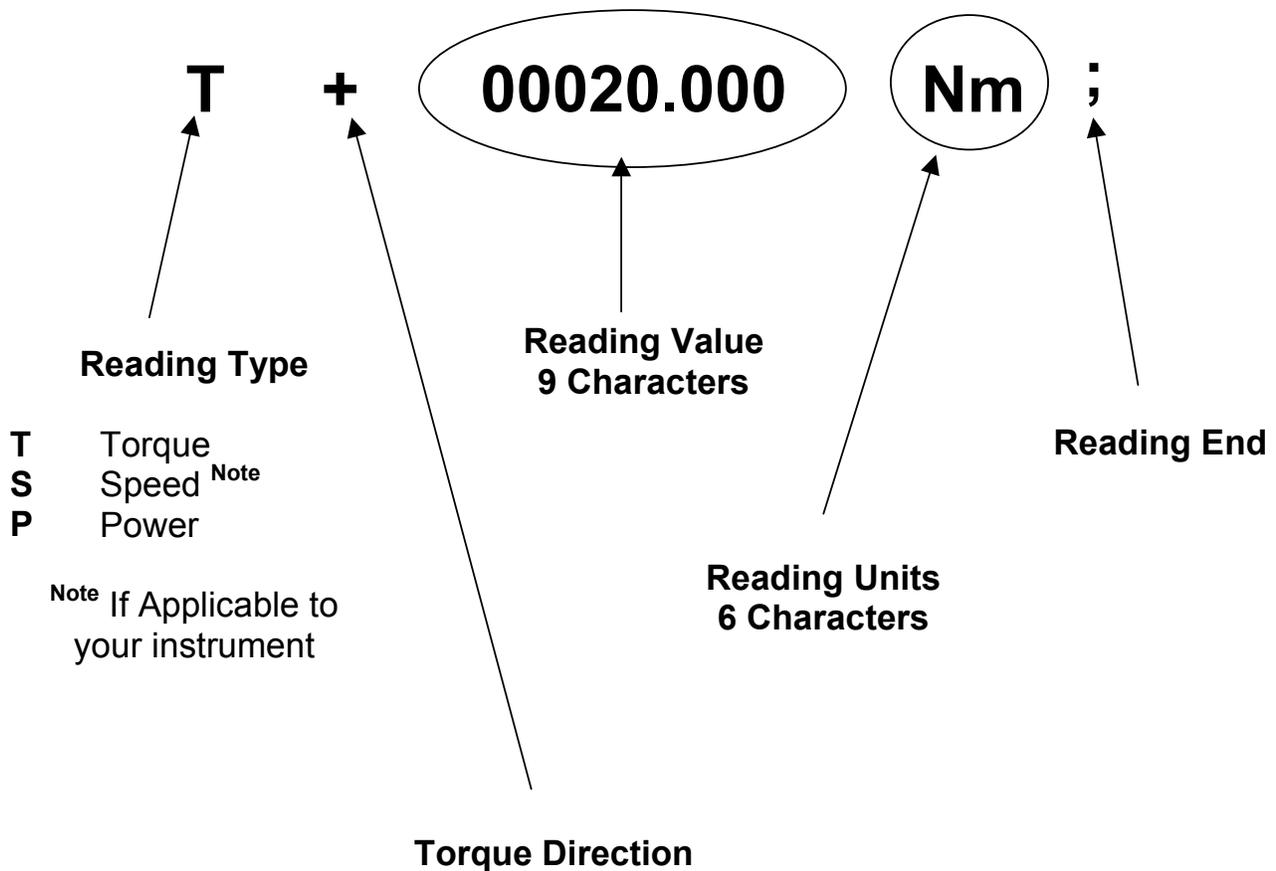***Flow Control:***         None

**Baud Rate**

The Baud Rate used for the RS232 transmissions is User configurable, and is set via the Windows interface software supplied (see section 2). Baud Rates of 2400bps, 4800bps and 9600bps are available. The table below shows the number of readings output per second at each of the specified speeds.

| Data Output | 9600bps | 4800bps | 2400bps |
|---|---|---|---|
| Torque | *4* | *4* | *2* |
| Torque, Speed | *4* | *4* | *2* |
| Torque, Power | *4* | *4* | *1* |
| Torque, Speed, Power | *4* | *4* | *1* |

## Output Format

The Readout transmits data on the RS232 using the following format.

There are 18 characters in every reading; at the end of each reading set (e.g. Torque, Speed & Power, or, Torque Only) a Line Feed (ASCII: 10) character is sent.

**T    +    00020.000    Nm    ;**

**Reading Type**

**T**    Torque
**S**    Speed **Note**
**P**    Power

**Note** If Applicable to your instrument

**Reading Value
9 Characters**

**Reading End**

**Reading Units
6 Characters**

**Torque Direction**

Only Applicable for Torque Readings; the Direction Character is replaced with ASCII Character 32 or Space Character for *Speed* & *Power*.

*Symbols*

**+**    Clockwise Torque
**-**    Counter Clockwise Torque

Ignore Character If Torque Value 00.00

## Output Options

The actual content and mode in which the data is output is configurable by the User and is done by using the Windows interface software supplied (see section 2).

This configuration allows you to select whether Torque, Speed **Note** and/or Power is output via the RS232 interface.

**Note** If Applicable to your instrument.

The following output modes are available:

**Continuous Mode:** Readings are continuously output from the Readout, with no control necessary.

**Request Data Mode:** The individual Data Readings (Torque, Speed & Power) are output on the request of the User or application. The request may specify a single reading output or continuous output until a stop command is sent.

Below are the commands for the Request Mode:

> **T:** Request Torque, One Reading returned.
>
> **TC:** Request Continuous Torque, Continuously returns Torque until stopped.
>
> **S:** Request Speed, One Reading returned.
>
> **SC:** Request Continuous Speed, Continuously returns Speed until stopped.
>
> **P:** Request Power, One Reading returned.
>
> **PC:** Request Continuous Power, Continuously returns Power until stopped.
>
> **S:** Stops a Continuous Request

***Please note Speed and Power will only output if they are available on your unit.***

**Run On Command:** The Run On Command Mode Starts and Stops the data being Output from the Readout. The commands for Start and Stop are user definable and set via the Windows interface software. When stopping the output make sure that the stop command is sent after a record has been received. If you encounter any problems try reducing the amount of characters in the Start and Stop words.

## Serial Port Wiring

The RS232 port on your Readout is wired as shown in the diagram below.

Receive Data Input → Transmit Data Output → GND →

1  2  3  4  5
6  7  8  9
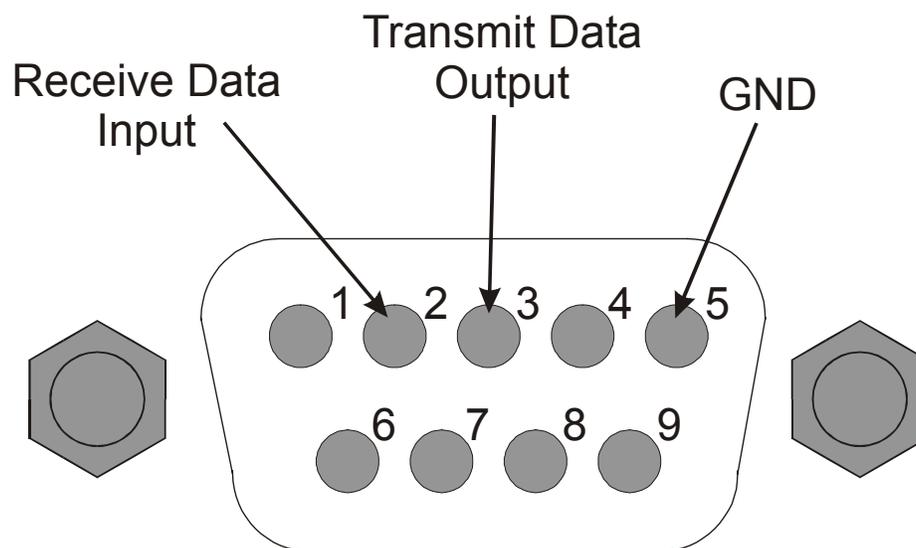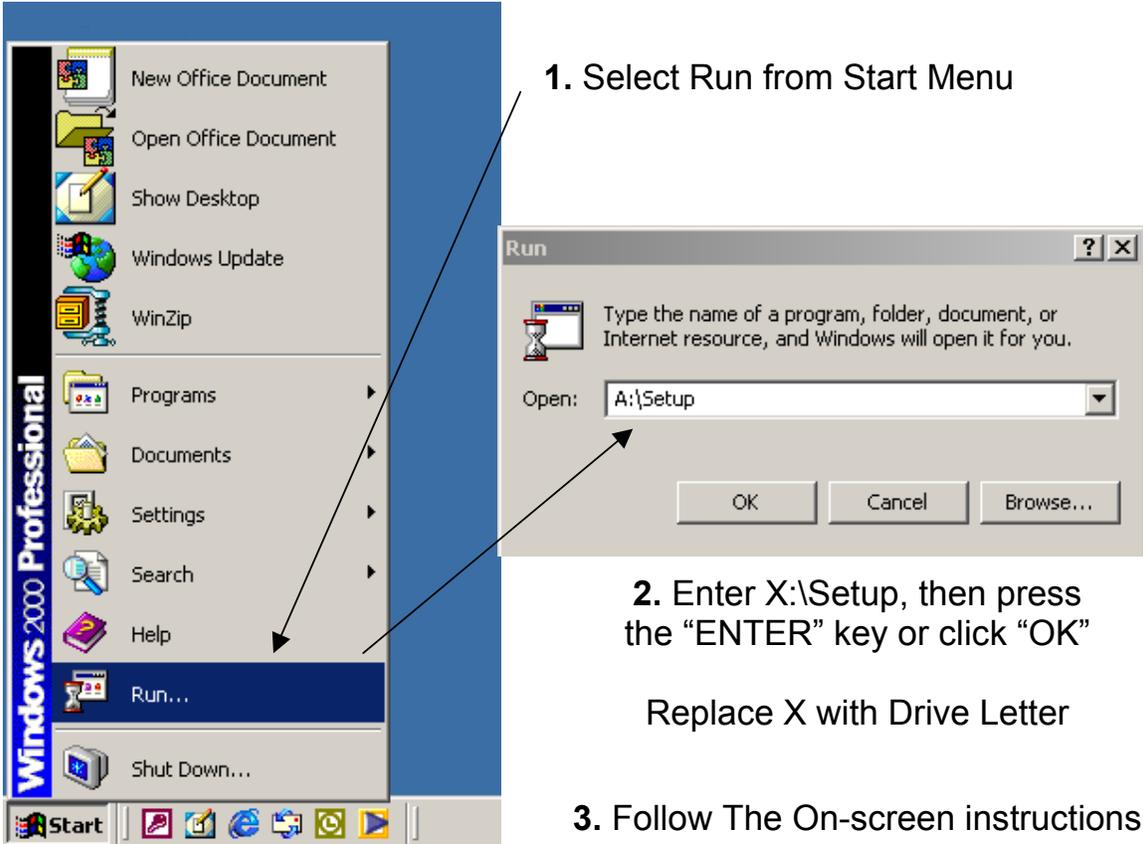
# 2. RS232 Setup Utility
## Version 1b

## Introduction

The RS232 Setup Utility allows configuration of the RS232 channel on your E-series Readout. The User may configure the Baud Rate, Output Data and Run Mode. The software also allows you test the configuration and provides a simple logger.

## Installation

Put the RS232 disk in to your PC's Floppy Disk Drive, Select "Run" from the "Start Menu" in Microsoft Windows. Type the drive letter of your disk drive, followed by "Setup" (e.g. "A:\SETUP"). Once done, press the "ENTER" key or select "OK" and simply follow the on-screen instructions.

The RS232 program can be run by clicking on the "RS232 Interface" shortcut, which is placed in the "Start Menu" under "Programs".
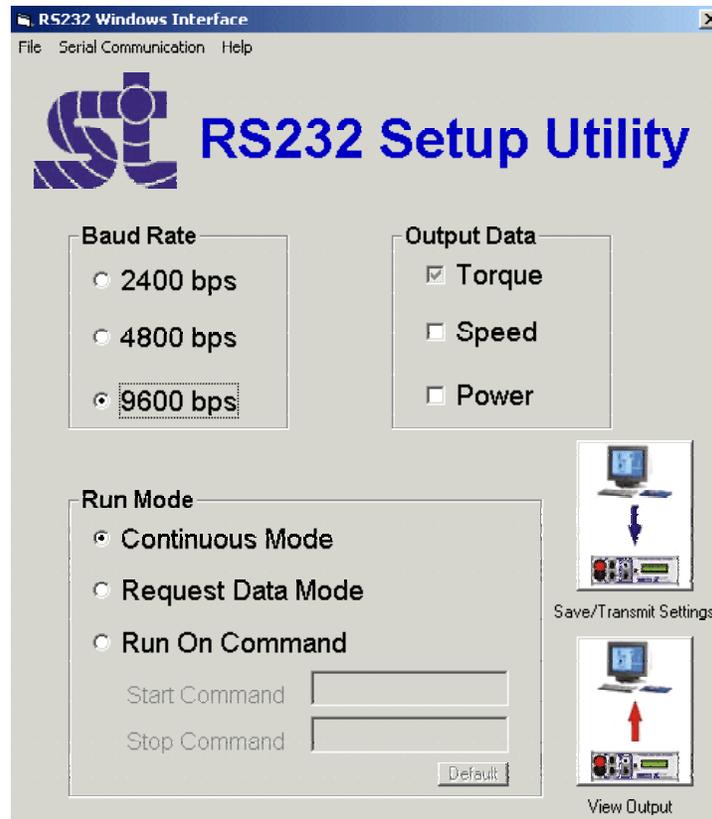


**1.** Select Run from Start Menu

**2.** Enter X:\Setup, then press the "ENTER" key or click "OK"

Replace X with Drive Letter

**3.** Follow The On-screen instructions

## RS232 Setup Utility Main



The main screen allows you to select your desired RS232 configuration; many options have been included to give you a wide range of possibilities. Each of the options is outlined below with the appropriate descriptions.

## Baud Rate

The RS232 output can be configured to one of three different Baud Rates:

- 2400bps
- 4800bps
- 9600bps

To select just click on the speed that you require.

## Output Data

The Output Data section of the configuration allows you to select which data is output when readings are made. Torque is output by

default, but you can select to output Speed and/or Power if required. To select an option simply check the relevant box.

This section is not applicable if the Run mode is set to Request Data Mode.

## Run Mode

There are many ways in which the readings can be output, see below for descriptions.

**Continuous Mode:** If this mode is selected then the Readings that are made by the readout are output one after another, with no control possible from the User.

**Request Data Mode:** If this mode is selected then the individual Data Readings (Torque, Speed & Power) are output on the request of the User or application. The request may specify a single reading output or continuous output until a stop command is sent.

**Run On Command:** If this mode is selected then the Data Readings will be output on a Start command, and stopped by a Stop command. The data that is output is that which is selected in the Data Output section of the configuration, unlike the request mode.

*Start Command:* Specify the command that will start the Data Output

*Stop Command:* Specify the command that will stop the Data Output

*Default:* Sets the Start & Stop commands to the defaults ("Start" & "Stop")

## Save/Transmit Settings

The Save/Transmit Settings button transmits the selected configuration to the readout, where it is read in and stored in its internal memory. On successful firmware update the program will return a successful message and store the configuration to disk.

Please ensure the Readout is powered up and transducer connected, otherwise the configuration transmission will fail.

## View Output

The View Output button gives you a window where you can monitor the output coming from the Readout, it also allows you to test out the configuration that you have loaded in. It gives you access to the commands necessary for the Output Option Selected.

You will only be able to enter this option if the currently selected configuration matches that of the readout.

## Main Screen Menu

### File

**Exit:** Exits the Program, this can also be achieved by clicking on the "X" in the Top-Right of the screen

### Serial Communication

**Configure Readout**: See Save/Transmit Settings above
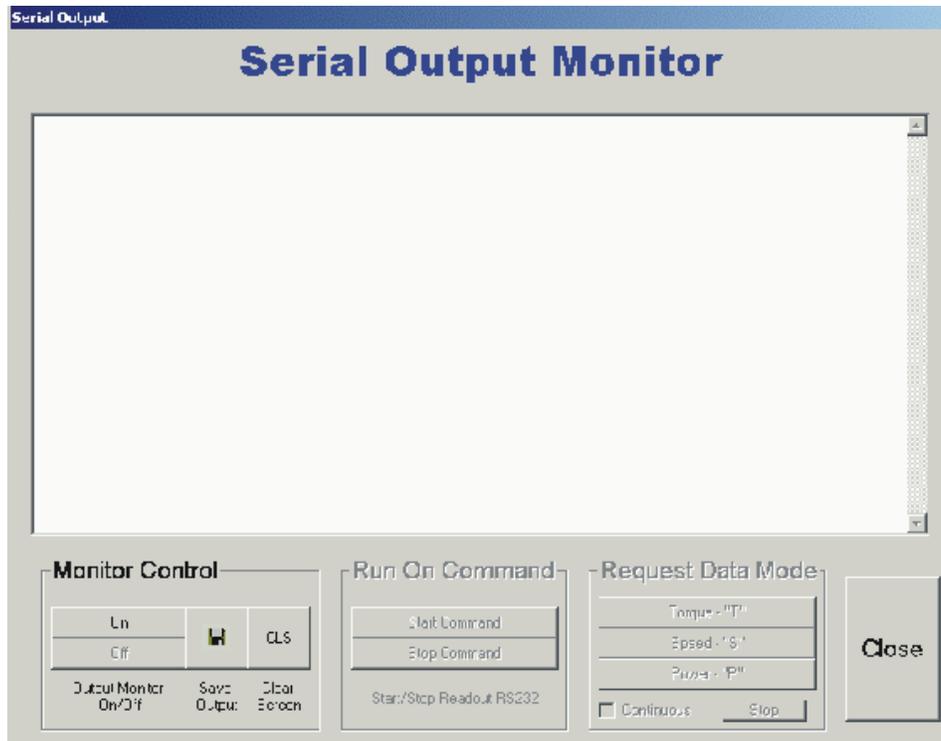
**Setup Serial Port:** This menu option allows you to configure the communications port that the Readout is connected to.

### Help

**Help:** Loads Help Service

**About:** Program Details

## Output Monitor



The Serial Output Monitor displays all the data that is being sent via RS232 from the Readout. There are various different panels that are enabled or disabled depending on the configuration selected in the main window.

The main text window will display the data coming in on the Com Port; the data is displayed in descending order with the latest result at the top. When the text window reaches 60KB, readings will be deleted from the display, as a new reading comes in the oldest is deleted. The data is not lost though, if you chose to save the output, you will save the whole run.

***Please ensure the Readout is powered up and transducer connected for this feature to work.***

### Monitor Control

The Monitor Control panel enables control over the output window.

> **On/Off Button:** Switches the User between Online and Offline mode, as well as switching the output window on and off.

**Save Output:** Saves the data received in to the file that is selected in the **Setup Serial Port** menu. You can only save the data when offline.

**CLS – Clear Screen & Buffer:** Clears the Output Screen and buffer.

## Run On Command

If the RS232 firmware in the readout is setup to "Run On Command" then this panel is enabled, the start and stop words chosen are written on to the appropriate buttons. The buttons start and stop the data being output from the Readout.

**Start – "*User Defined Start Word*":** Starts Readout Data Output

**Stop – "*User Defined Stop Word*":** Stops Readout Data Output

## Request Data Mode

If the RS232 firmware in the readout is setup in "Run On Command" mode then this panel is enabled, when the request buttons are selected the requested data is sent from the readout and displayed on the screen.

**Torque – "T":** Requests Torque, Readout Outputs One Torque Reading, unless the Continuous check box is checked in which case the Torque Readings will be output.

**Speed – "S":** Requests Speed, Readout Outputs One Speed Reading, unless the Continuous check box is checked in which case the Speed Readings will be output.

**Power – "P":** Requests Power, Readout Outputs One Power Reading, unless the Continuous check box is checked in which case the Power Readings will be output.

**Continuous:** If this box is checked then the Readout is told to continuously output requested data. When a reading is requested and the continuous box is checked then the readings made will be continuously output until the stop button is pressed, no other data may be requested while data is being continuously output.

**Stop:** Stops the Readout outputting data when in continuous request mode.

## Close

Closes the Serial Output Monitor screen and returns to the Main screen.

## Serial Port Setup
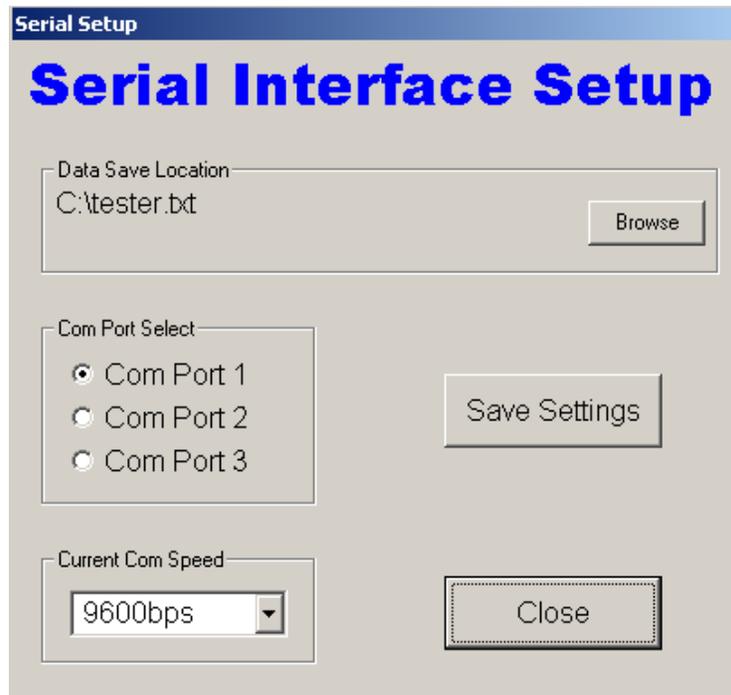


The Serial Interface Setup window allows configuration of the negotiation speed with the RS232 interface in the readout, as well as what port to use.

## Data Save Location

The Data Save Location refers to the location where data received in the output monitor is stored if the save option is selected.

> **Browse:** This button brings up a file browser (below), navigate to the location required and enter or select a file name.
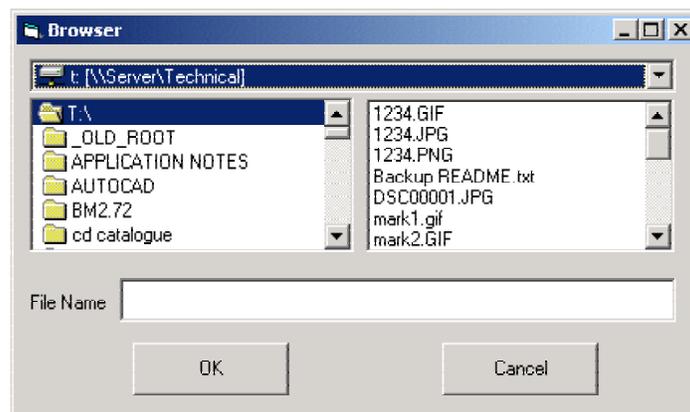
**Com Port Select**

The Com Port Select allows you to select the Com Port that the readout is connected to. Just click on the desired option. If you have multiple Com Ports and require a Com 4 or higher, please contact us at Software@sensors.co.uk.

**Current Com Speed (Baud Rate)**

The Current Com Speed is the speed that the software is currently setup for negotiation with the Readout, It is usually configured automatically when different speed settings are selected from the main configuration screen (i.e. when a new speed is selected it is sent to the readout using the previously selected speed, on successful transmission the current port speed is changed to the new speed, this is then saved ready for the next time), problems may occur if the program is used on multiple PC's, meaning the that the configuration of one may change but not on the other, so it may try and negotiate at the wrong speed. This option is basically an override of the speed saved in the setup file.
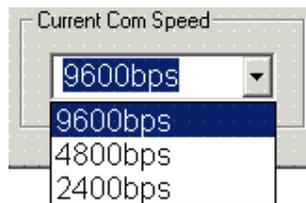


Click on the down arrow to the right of the box, a list will appear, select the desired speed.

**Save settings**

This button takes the settings and saves them to the settings file (the Baud rate/speed override is not saved, but applied to the current session only); once saved you are returned to the main screen.

**Close**

The Close button closes the setup window and returns you to the main screen.

## Technical Support



If you have any problems with regard to the operation of this software or the RS232 option of the readout, Please contact Sensor Technology's Software department at [Software@sensors.co.uk](mailto:Software@sensors.co.uk).