

M5600/U5600 Software Manual

Wireless Pressure Transducers



Contents

1	Introduction	Description	3
2	Manual	Smartphone/Tablet Software Installation and Operation Manual	3
3	Manual	Windows Version Software Installation and Operation Manual	4
4	Protocol	Software Protocol Specification	16

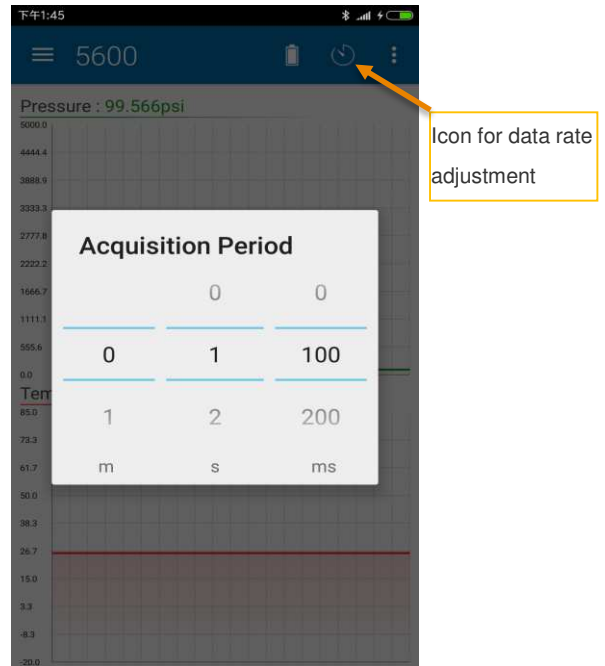
1 Introduction

The M5600 and U5600 pressure transducers use standard 2.4GHz wireless communication tag. The long battery life and integration design make these transducers a perfect fit for many industrial and commercial applications including marine, residential, campers, water, hydraulic, irrigation, pool, medical and sprinkler systems, or anywhere you would need to monitor pressure without the need for wires.

By installing the Windows® version software on your PC or embedding the wireless signal in your integrated system, you can monitor pressure and temperature in real time.

2 Smartphone/Tablet Software Installation

1. Download and install the “TE Sensor Tag” app for iOS or Android™ from the Apple App Store or Google Play Store.
2. Install the battery into the transducer.
3. Turn on standard 2.4GHz wireless communication tag for smartphone/tablet.
4. Run “TE Sensor Tag” app on smartphone/tablet and it will start searching for the transducer.
5. Select the transducer (M5600 or U5600) found by the app to pair it to your smartphone/tablet.
6. Once paired, the pressure and temperature charting will begin automatically. Data is collected every 5 seconds (default interval for best battery life). Data collecting rate can be adjusted from 0.1s to 5s by step 0.1s.



3 Windows Version Software Installation and Operation Manual

Hardware & System Requirement

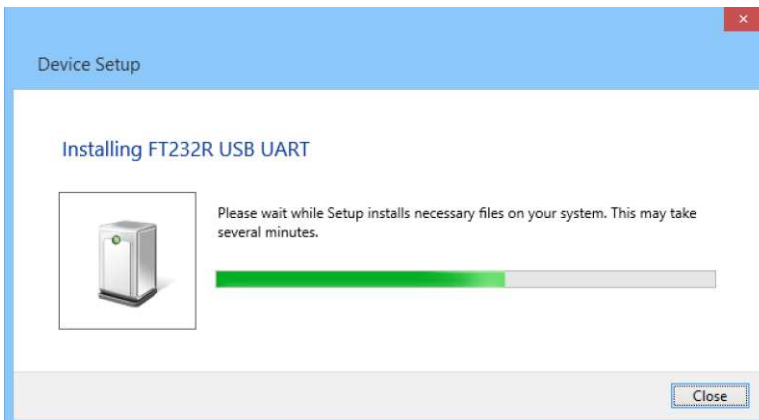
- ◆ PC with USB serial port support
- ◆ USB Dongle: BT900-US
- ◆ Operation system: Windows XP, Windows 7 or above
- ◆ Microsoft .NET Framework4.5 or above

Dongle Installation and Programming

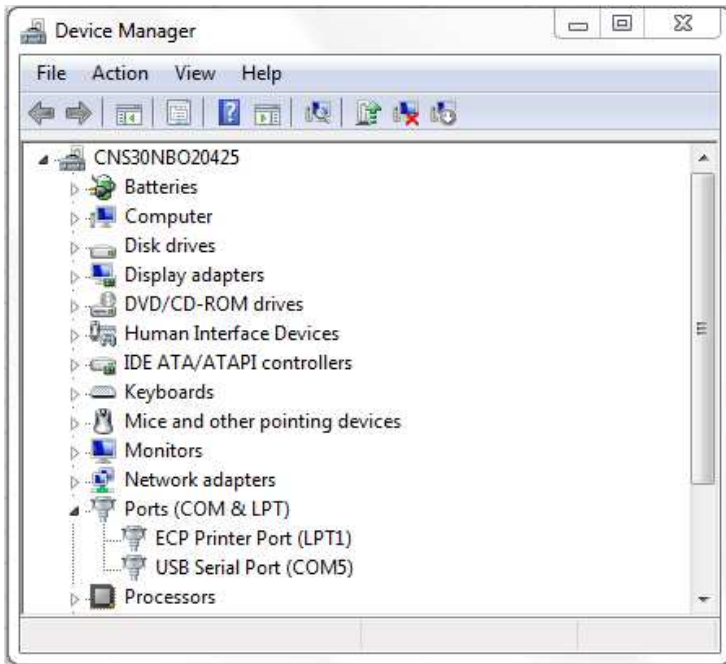
1. Insert the USB Dongle (BT900-US) into the USB socket of the PC.



The PC will install the related USB drivers automatically.



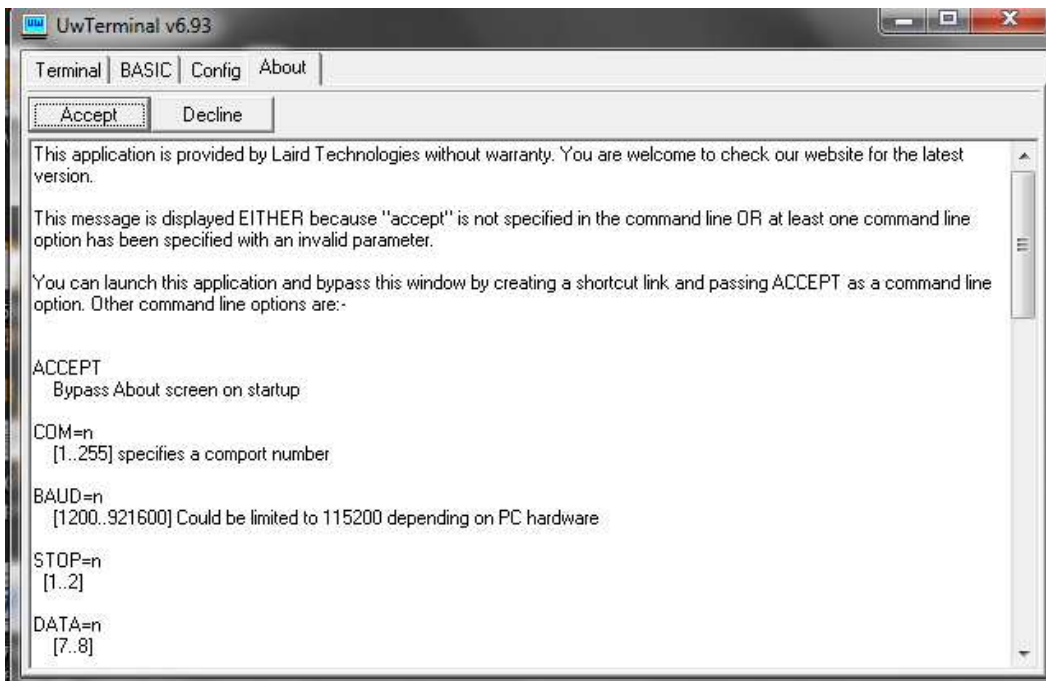
2. After installing FT232R USB UART, open the PC's Device Manager and check if the USB Dongle has the port number assigned as below (COM5 in this example):



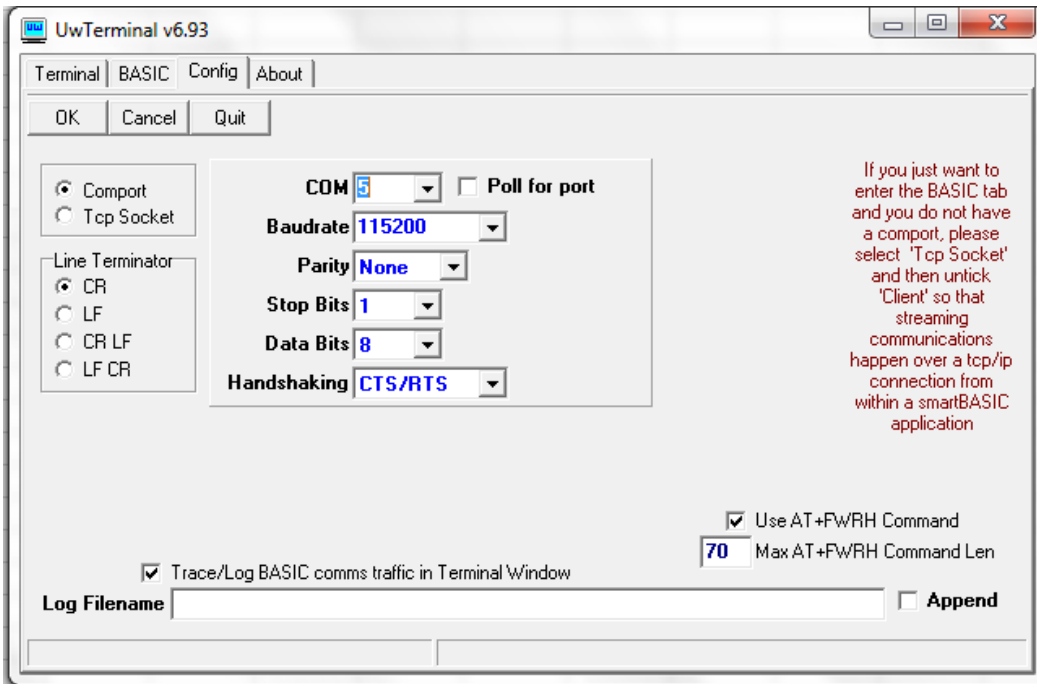
If not assigned, then it is necessary to install the FTDI FT232 USB Serial Converter Driver following instructions from the below link:
<https://learn.sparkfun.com/tutorials/how-to-install-ftdi-drivers/windows---in-depth>

Verify COM port is assigned to the Dongle in the Device Manager before proceeding to the next step.

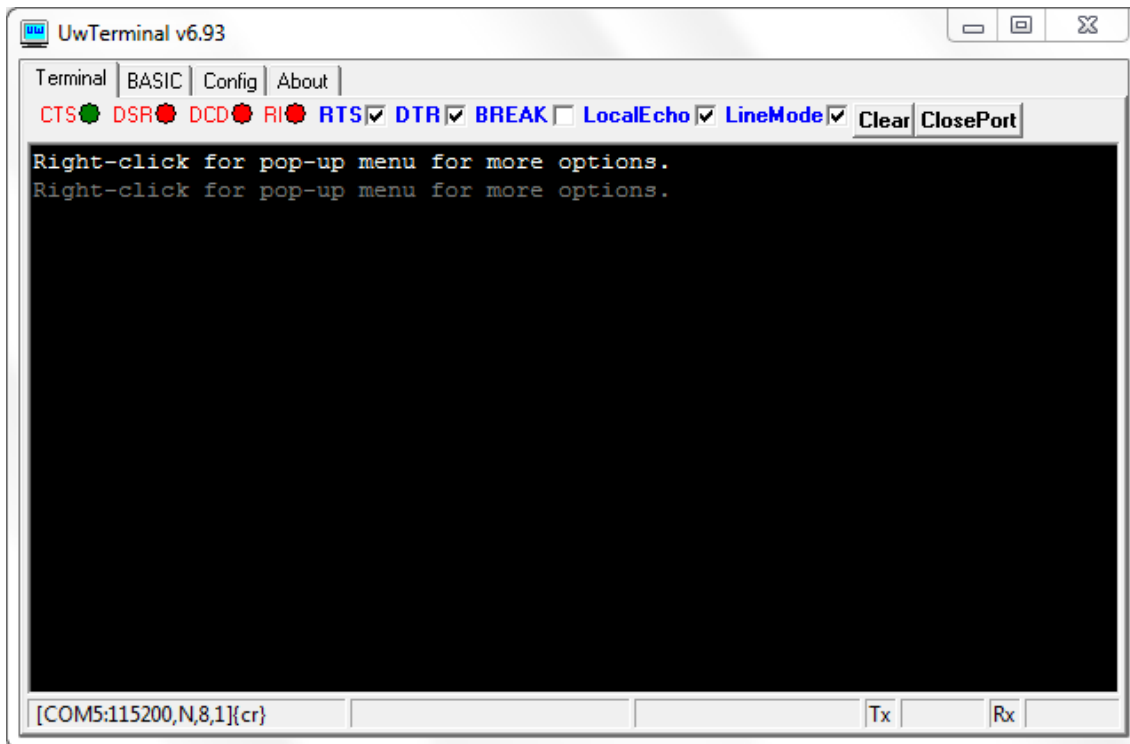
3. Copy Window's client software "TESS-M5600_U5600_Software.zip" to the PC and unzip it. Double-click to run UwTerminal in folder: TESS 5600\UwTerminal\. User interface should display as below:



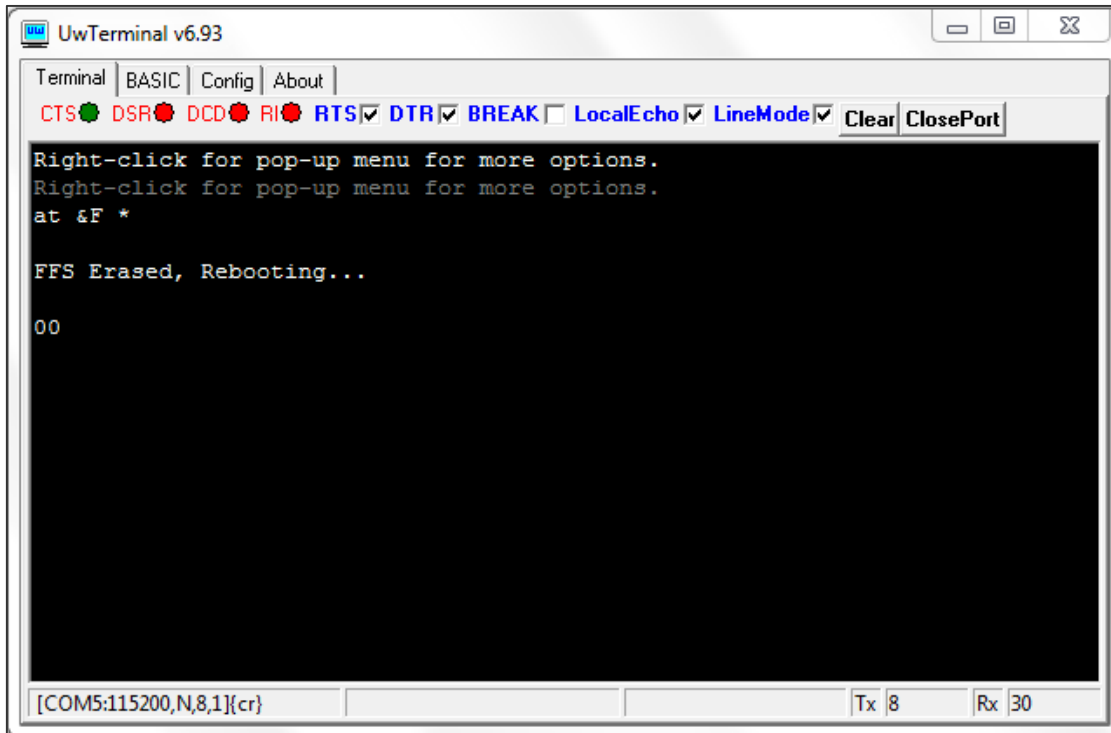
- Click "Accept" to enter the configuration interface. Select the proper COM port where the Dongle is installed and leave the others at default settings.



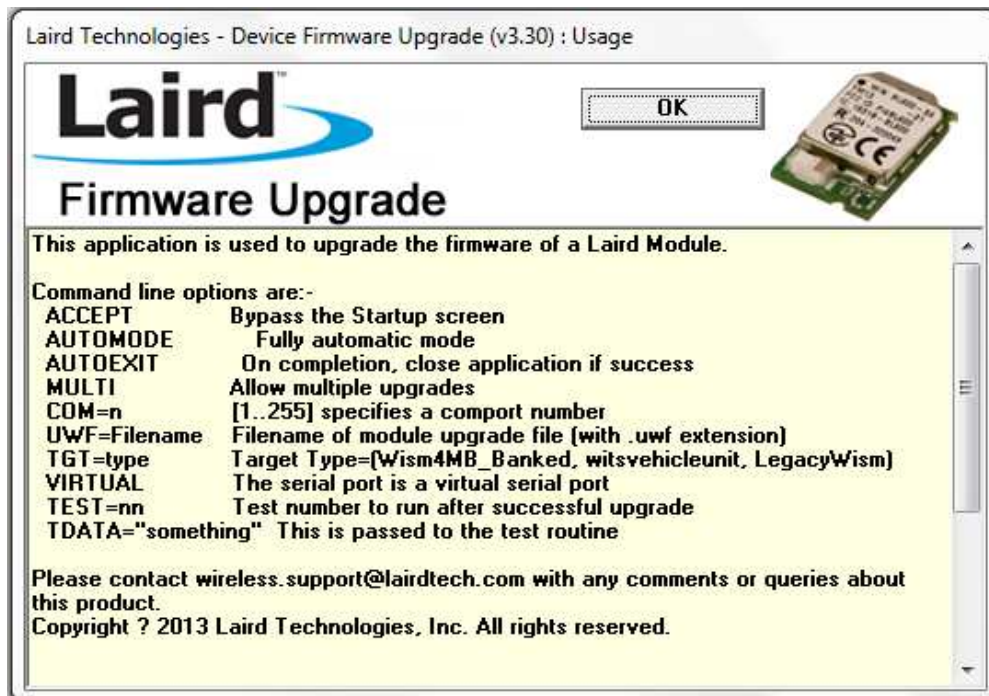
Then click "OK" to enter the command-line interface:

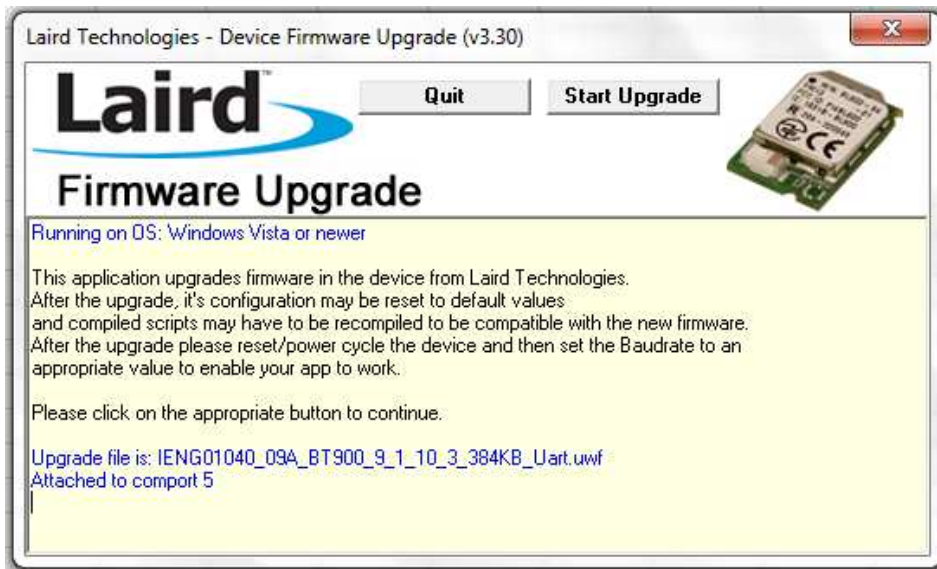
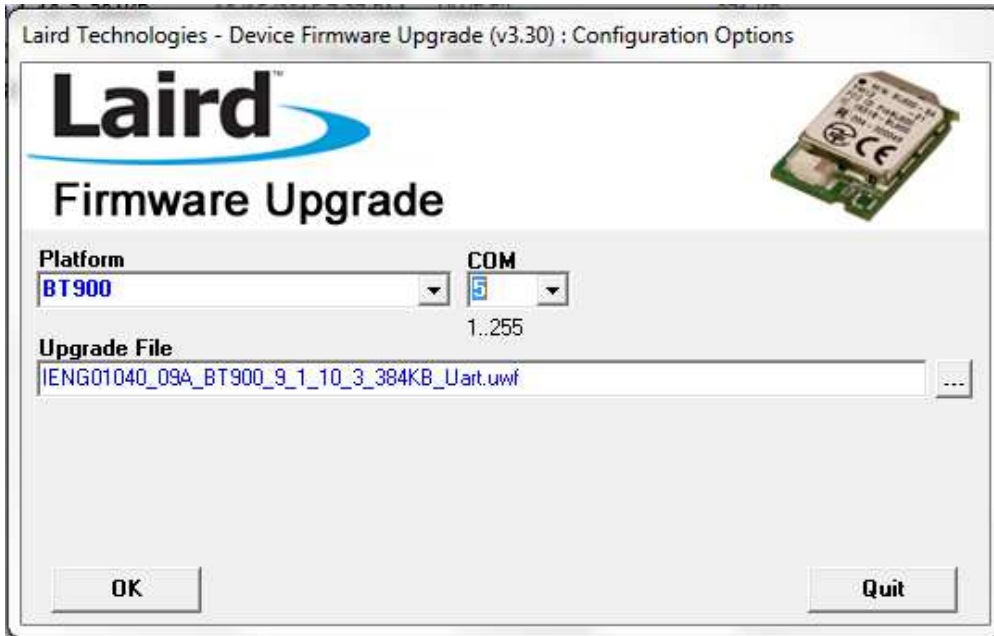


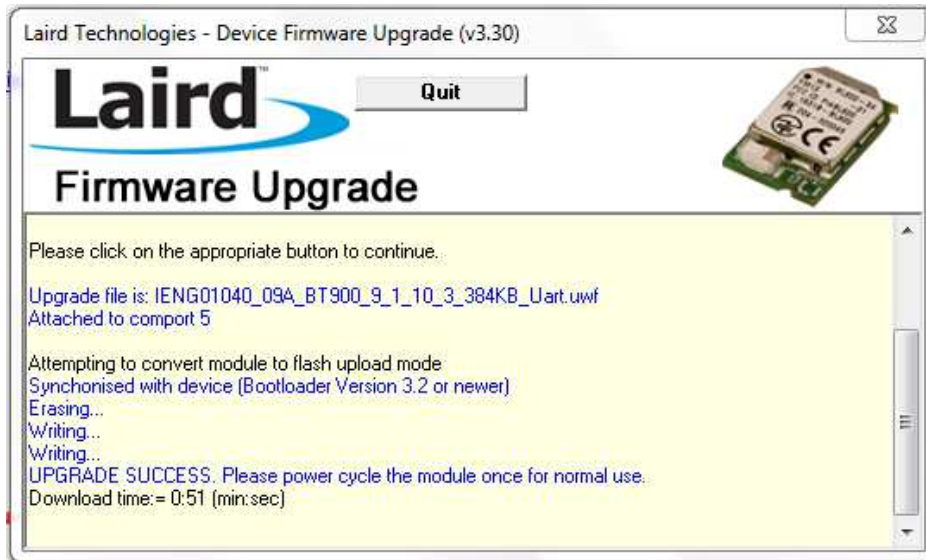
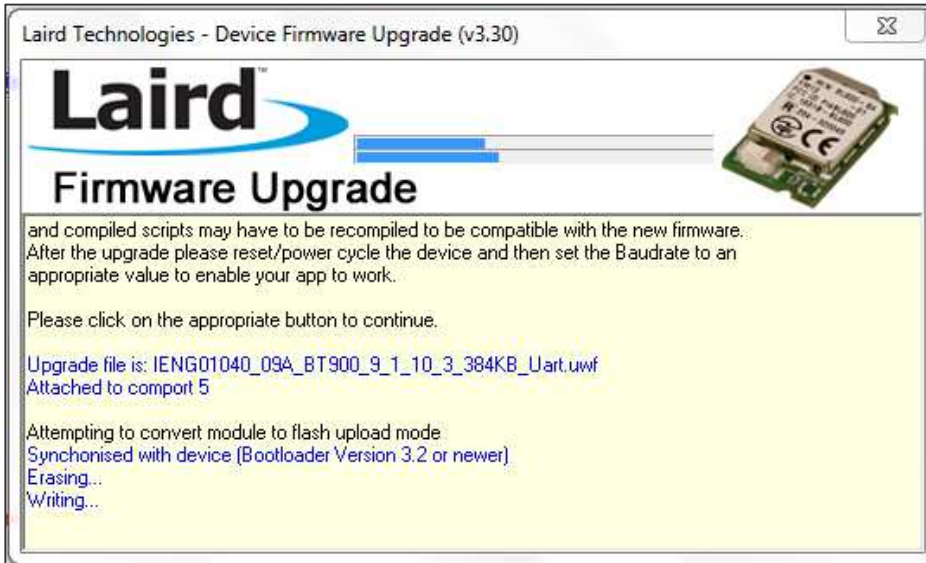
- Input "at &F *" (at space &F space *) and press "Enter". The screen will display " FFS Erased, Rebooting..." Close the window by clicking the "X" at the upper right corner.



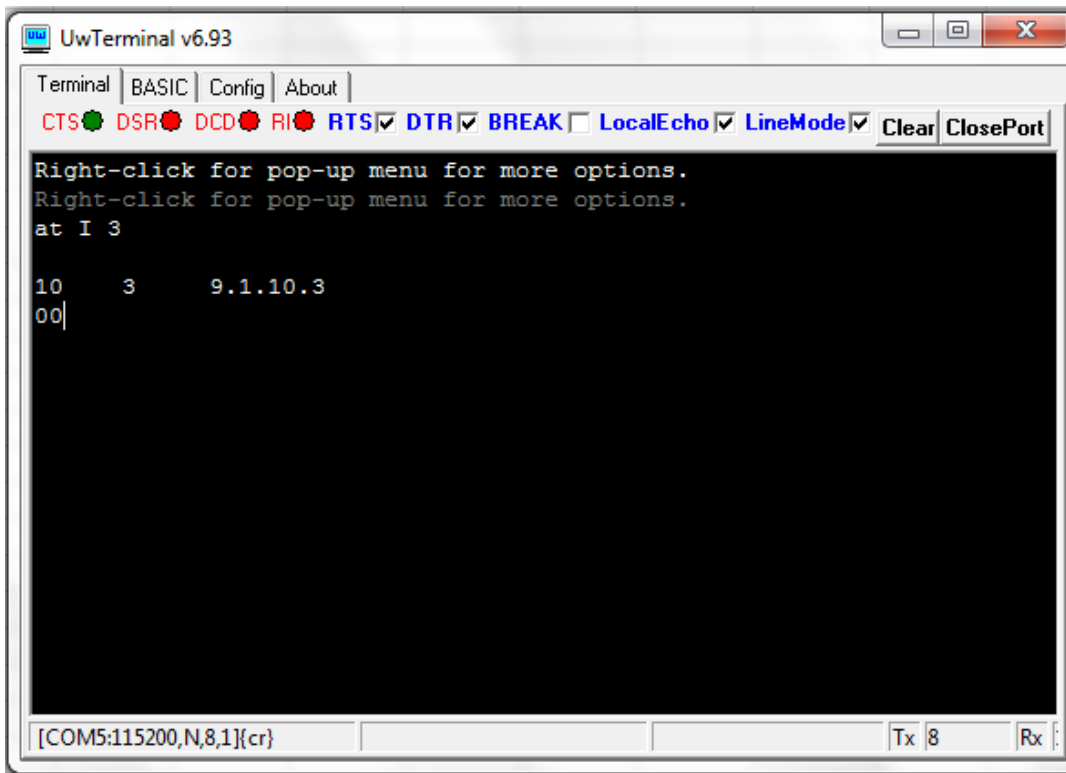
- Run "BT900UartFwUpgrade.exe" in folder: `TESS 5600\BT900_9.1.10.3` to update the firmware. Follow these steps: Press "OK" → specify the correct COM port → press "OK" → press "Start Upgrade" → let it run until finish → pressing "Quit."







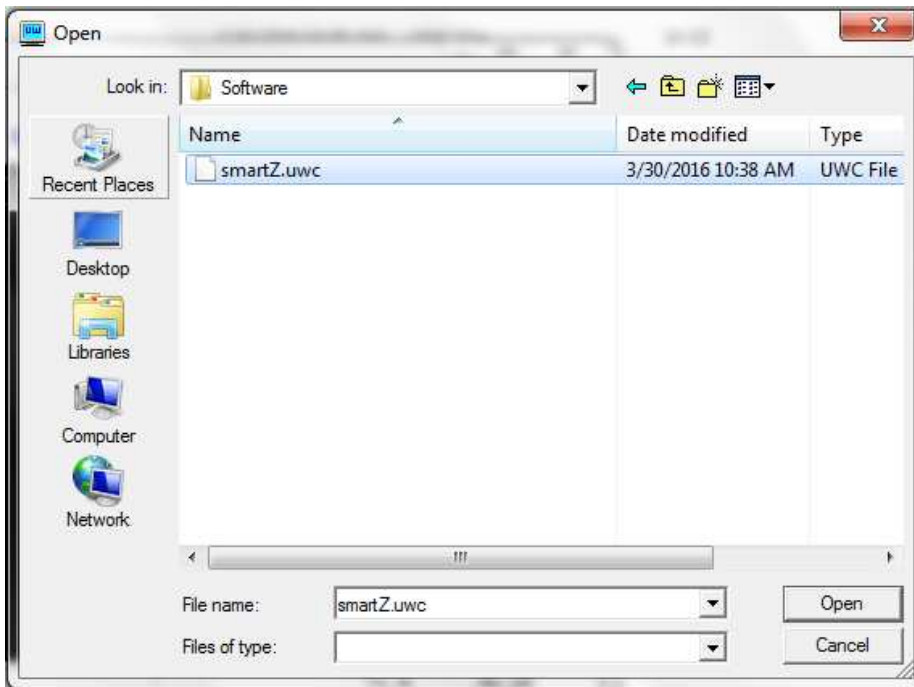
- Remove the USB Dongle and re-insert, repeat above steps 3 & 4.
Input "at I 3" and press "Enter," displaying "9.1.10.3" which is the latest version of the firmware.



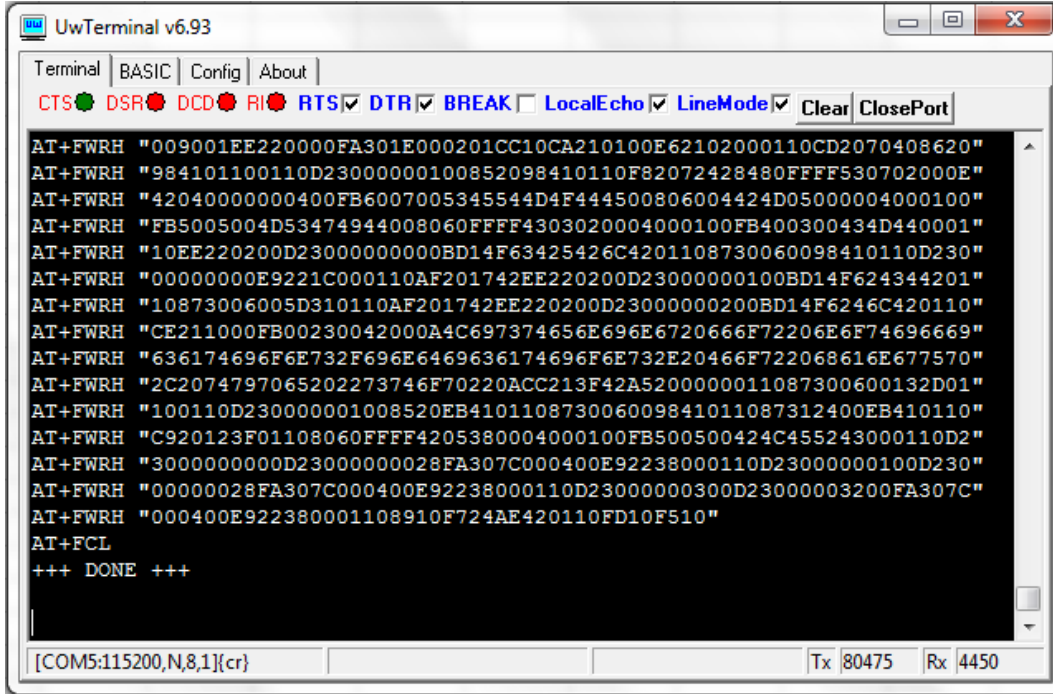
Input "at &F *" and press "Enter." Screen will display "FFS Erased, Rebooting..."

Input "at+dir" and press "Enter."

- Right-click inside the window and click "load precompiled BASIC"
After the "Open" window pops up, select "smartZ.umc" in folder "TESS 5600\" and press "Open"



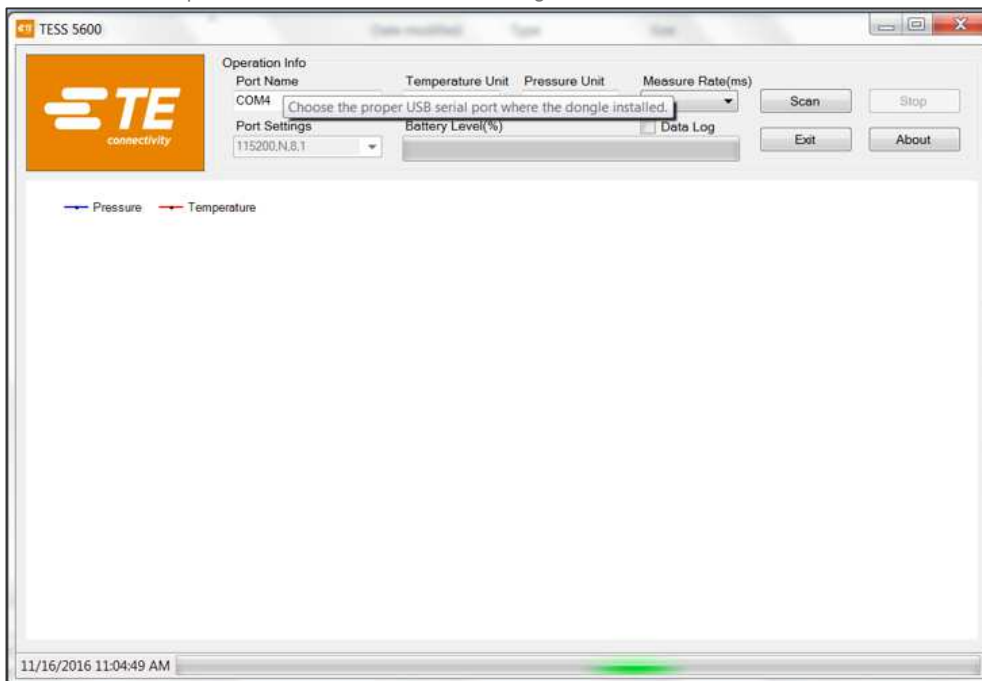
Text will scroll and after 1-2 minutes, it will display "DONE."



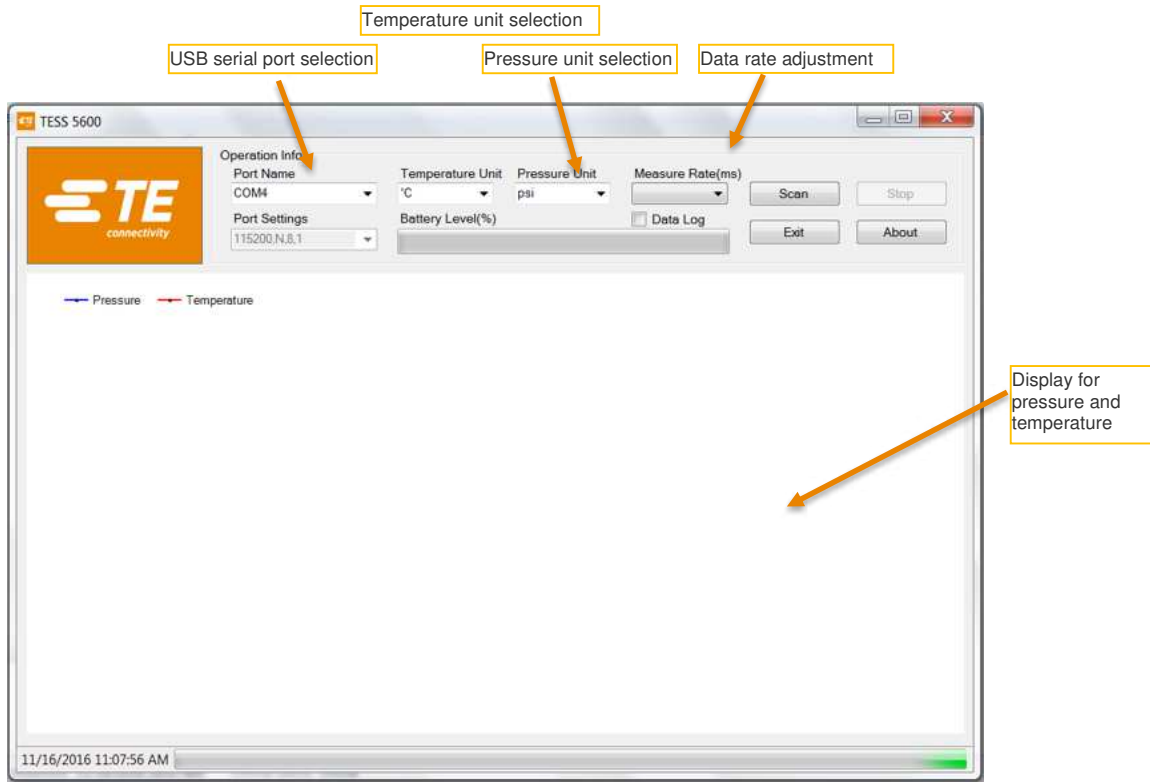
Close the "UwTerminal" window. Remove the USB Dongle and re-insert.

Monitoring Software Operation Manual

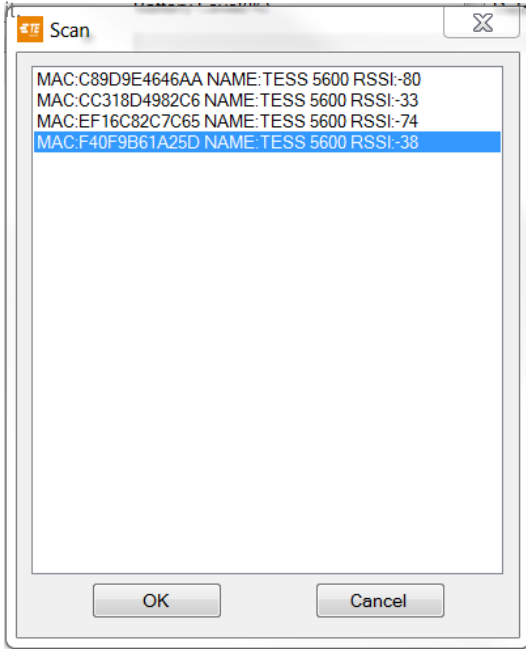
1. Double-click to run TESS 5600 for Windows in folder: TESS 5600\bin\Release\. The client software user interface should display as below. Certain explanations can be found when moving the cursor onto the words.



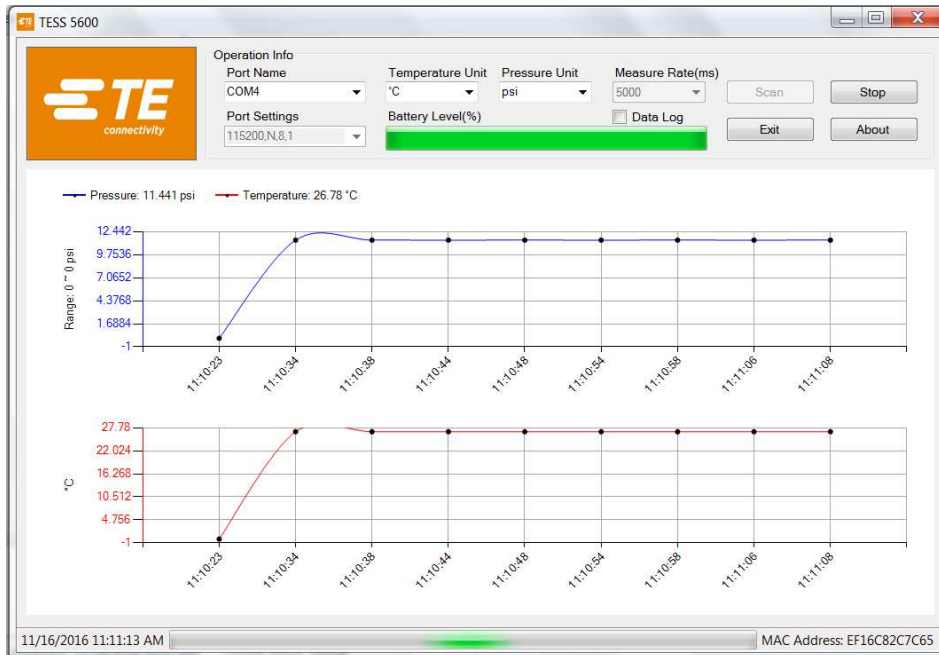
More explanations are provided as below:



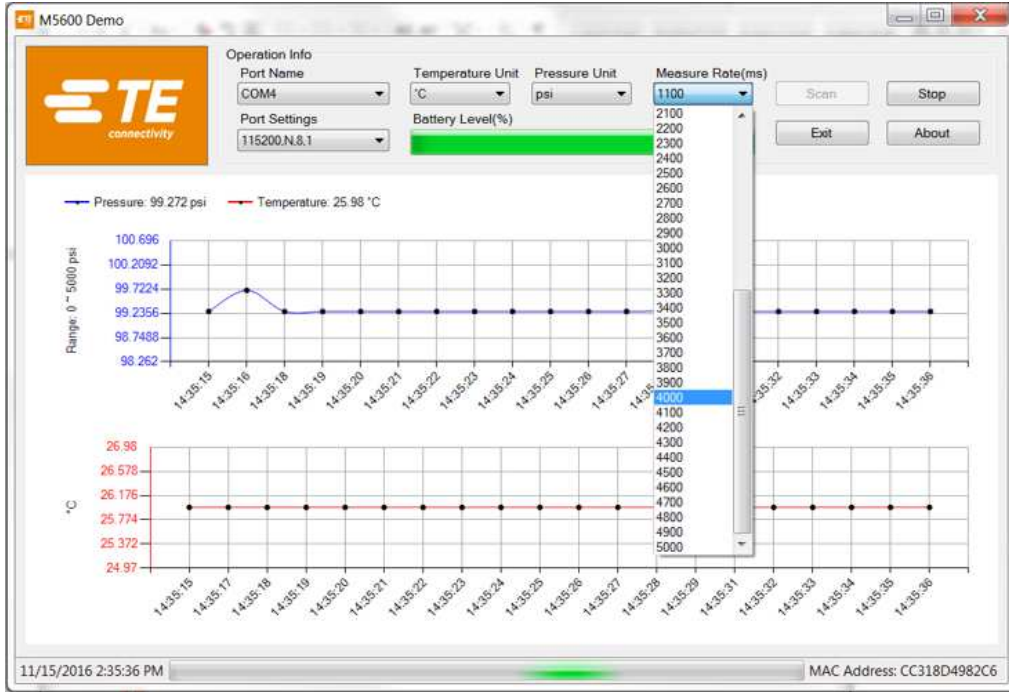
2. Ensure the Port Name matches the COM number in the Device Manager. Click the "Scan" button, and then a "Scan" window will pop up to search for available wireless devices. Double-click the MAC number or click the OK button matching the target device to select



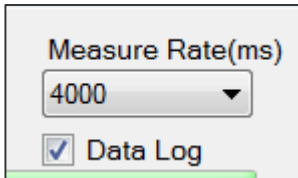
3. The software will start receiving and recording data on battery level and real-time pressure and temperature. Clicking the "Stop" button will stop the data taking process.



- Data rate can be adjusted by clicking icon “measuring rate” and selecting value from 100 to 5000ms. (Default value is 5000ms)



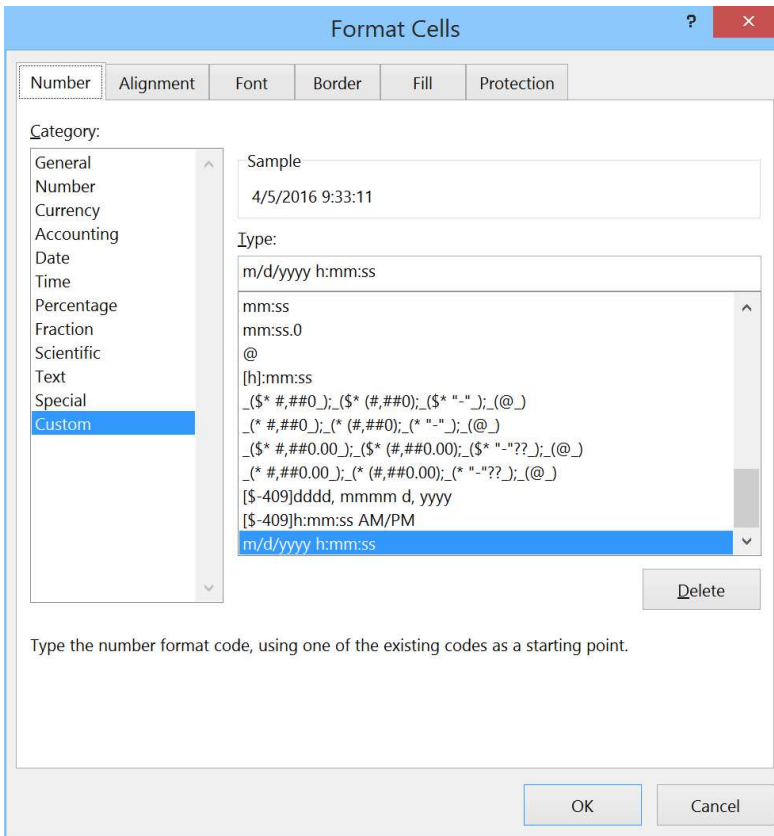
- When “Data Log ” is enabled and the interval set , all data will be saved in the folder (default: \\TESS\data\\) as a *.dat file which can be opened with MS Excel.



	A	B	C	D	E	F
1	Pressure Range Min(psi): -14.7					
2	Pressure Range Max(psi): 2					
3	Date Time	Mac Address	Product Nam	Battery Level(%)	Temperature Value(°C)	Pressure Value(psi)
4	9:42:27 AM	E42F33EB9336	TESS 5600	100	19.39	14.5292326
5	9:42:29 AM	E42F33EB9336	TESS 5600	100	19.39	14.5292326
6	9:42:31 AM	E42F33EB9336	TESS 5600	100	19.47	14.52869595
7	9:42:33 AM	E42F33EB9336	TESS 5600	100	19.47	14.52869595
8	9:42:35 AM	E42F33EB9336	TESS 5600	100	19.47	14.52869595
9	9:42:37 AM	E42F33EB9336	TESS 5600	100	19.48	14.52895702
10	9:42:39 AM	E42F33EB9336	TESS 5600	100	19.48	14.52895702
11	9:42:41 AM	E42F33EB9336	TESS 5600	100	19.48	14.52895702
12	9:42:43 AM	E42F33EB9336	TESS 5600	100	19.48	14.52895702

Note: Temperature unit is fixed centi-degree and pressure unit is fixed PSI in data file.

The "Date Time" column can be formatted to display seconds as shown below:



4 Software Protocol Specification

UUID for the M5600/U5600 is available, which allows the user to compile their own program to recognize the sensor's wireless signal and detect pressure, temperature and battery capacity.

Pressure and Temperature:

UUID	F000AB30-0451-4000-B000-000000000000
------	--------------------------------------

AVAILABLE CHARACTERISTICS

Name	UUID	Bytes	Read / Write	Notified
Data	F000AB31-0451-4000-B000-000000000000	14	Read	YES
Data Rate	F000AB31-0451-4000-B000-000000000000	12	Read/Write	YES
Status	F000AB3F-0451-4000-B000-000000000000	1	Read	NO

DATA CHARACTERISTIC BYTES FIELDS

0	1	2	3	4	5	6	7	8	9	10	11	12	13
T LSB	T MSB	P LSB	P	P	P MSB	Pmin LSB	Pmin	Pmin	Pmin MSB	Pmax LSB	Pmax	Pmax	Pmax MSB

T is a 16 bits signed word, equals 0x7FFF if erroneous.
 P, Pmin and Pmax are 32 bits signed words, equal 0x7FFFFFFF if erroneous.

T is a temperature value with 0.01°C resolution.
 P, Pmin and Pmax are pressure values with 0.1Pa resolution

CONVERSION

Temperature (°C) = T / 100

Pressure (Pa) = P / 10

Pressure (Psi) = P / 10 / 6894.7

DATA RATE CHARACTERISTIC BYTES FIELDS

0	1	2	3	4	5	6	7	8	9	10	11
Data rate LSB	Data rate	Data rate	Data rate MSB	Min LSB	Min	Min	Min MSB	Max LSB	Max	Max	Max MSB

Data rate, Min and Max are 32 bits unsigned integers.
 Data rate is the actual sensor data rate in milliseconds.
 Min is the minimum admissible data rate in milliseconds.
 Max is maximum minimum admissible data rate in milliseconds.
 NB. Only Data rate can be written.

STATUS

0x00	OK
0x01	Sensor error

NB. All signed integers use two's complement representation.

Battery Service:

UUID	F000180F-0451-4000-B000-000000000000
------	--------------------------------------

AVAILABLE CHARACTERISTICS

Name	UUID	Bytes	Read / Write	Notified
Data	F0002A19-0451-4000-B000-000000000000	2	Read	YES

DATA CHARACTERISTIC BYTES FIELDS

Byte 0	Byte 1
Battery Level (%)	Status

0% to 100% represents a supply voltage from 2.0V to 3.0V with 1%/bit resolution.

STATUS

0x00	Discharging
0x01	Charging

NORTH AMERICA

Measurement Specialties, Inc.,
a TE Connectivity company
45738 Northport Loop West
Fremont, CA 94538
Tel: +1 800 767 1888
Fax: +1 510 498 1578
customercare.frm1@te.com

EUROPE

MEAS France SAS,
a TE Connectivity company
4 Rue Gaye Marie
31027 Toulouse, France
Tel: +33 (5) 822 822 00
Fax: +33 (5) 820 821 51
customercare.tlse@te.com

ASIA

Measurement Specialties (China) Ltd.,
a TE Connectivity company
No. 26 Langshan Road
Shenzhen High-Tech Park (North) Nanshan District,
Shenzhen, 518057
China
Tel: +86 755 3330 5088
Fax: +86 755 3330 5099
customercare.shzn@te.com

te.com/sensorsolutions

Android is a trademark of Google Inc.
Google Play is a trademark of Google Inc.

iOS is a trademark or registered trademark of Cisco in the U.S. and other countries and is used under license.

Microsoft, Encarta, MSN, and Windows are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

Android and Windows are trademarks of their respective owners.

The Bluetooth® word mark and logos are registered trademarks owned by the Bluetooth SIG, Inc. and any use of such marks by TE Connectivity is under license. Other trademarks and trade names are those of their respective owners.

Measurement Specialties Inc., a TE Connectivity company.

Measurement Specialties (MEAS), American Sensor Technologies (AST), TE Connectivity, TE Connectivity (logo) and EVERY CONNECTION COUNTS are trademarks. All other logos, products and/or company names referred to herein might be trademarks of their respective owners.

The information given herein, including drawings, illustrations and schematics which are intended for illustration purposes only, is believed to be reliable. However, TE Connectivity makes no warranties as to its accuracy or completeness and disclaims any liability in connection with its use. TE Connectivity's obligations shall only be as set forth in TE Connectivity's Standard Terms and Conditions of Sale for this product and in no case will TE Connectivity be liable for any incidental, indirect or consequential damages arising out of the sale, resale, use or misuse of the product. Users of TE Connectivity products should make their own evaluation to determine the suitability of each such product for the specific application.

© 2016 TE Connectivity Ltd. family of companies All Rights Reserved.