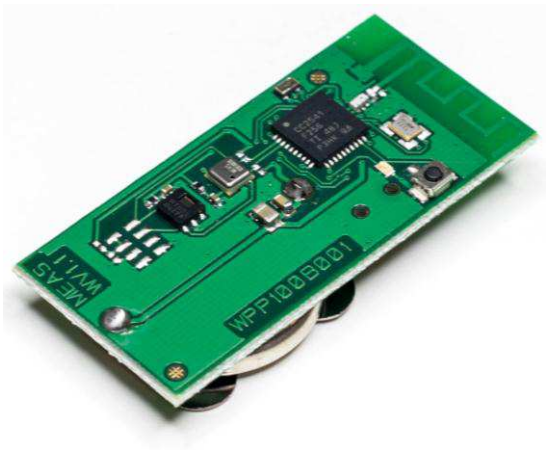

TESS WIRELESS SENSOR TAG DEMO V1.1

Standard 2.4GHz Wireless Communication Tag

Humidity: 0 - 100% RH

Temperature: -20°C to +85°C

Pressure: 300 to 1,200mBar

iOS, Android™ and Windows® PC Compatible

Applications

- Smart building
- Smart home
- HVAC controller
- Maintenance
- Smartphones and tablets accessories

The sensor tag demo V1.1 reports humidity, temperature and barometric pressure through a standard low power 2.4GHz wireless communication protocol.

It is based on the MEAS low power digital component sensors HTU21D(F) for RH/T (datasheet HPC199) and MEAS ultra-compact micro-altimeter MS5637 (datasheet DA5637-02BA03).

The mobile application is available for free download using the Google Play™ Store for Android™ or the App Store for iOS. It will turn your smart phone or tablet into a display and datalog terminal. Refer to the WPC001 and WPC005 for installation guidelines and user manual

An optional USB dongle is available to connect the sensor tag to your personal laptop. Refer to the WPC002 for Windows® application installation.

The tag has been designed for an expected life time of 1 year on a standard CR2032 cell battery at one acquisition per second.

BLE Services

HTU21D SERVICE

UUID	F000AA20-0451-4000-B000-000000000000

AVAILABLE CHARACTERISTICS

Name	UUID	Bytes	Read / Write	Notified
Data	F000AA21-0451-4000-B000-000000000000	6	Read	YES
Status	F000AA2F-0451-4000-B000-000000000000	1	Read	NO

DATA CHARACTERISTIC BYTES FIELDS

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5
Temperature Word MSB	Temperature Word LSB	Temperature CRC	Humidity Word MSB	Humidity Word LSB	Humidity CRC

CONVERSION

Temperature (°C) = -46.85 + 175.72 x Temperature Word / 2^{16}

Humidity (%RH) = -6 + 125 x Humidity Word / 2^{16}

CRC

Generator polynomial	$X^8 + X^5 + X^4 + 1$
Initialization value	0x00
Final operation	None

Please refer to HTU21D (F) Sensor Datasheet for more information.

STATUS

0x00	OK
0x01	Sensor error

MS5637 SERVICE

UUID	F000AA40-0451-4000-B000-000000000000

AVAILABLE CHARACTERISTICS

Name	UUID	Bytes	Read / Write	Notified
Data	F000AA41-0451-4000-B000-000000000000	6	Read	YES
Calibration	F000AA43-0451-4000-B000-000000000000	12	Read	NO
Status	F000AA4F-0451-4000-B000-000000000000	1	Read	NO

DATA CHARACTERISTIC BYTES FIELDS

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5
D1 MSB	D1	D1 LSB	D2 MSB	D2	D2 LSB

D1 and D2 are both 24 bits words.

CALIBRATION CHARACTERISTIC BYTES FIELDS

Byte 0	C1 MSB
Byte 1	C1 LSB
Byte 2	C2 MSB
Byte 3	C2 LSB
Byte 4	C3 MSB
Byte 5	C3 LSB

Byte 6	C4 MSB
Byte 7	C4 LSB
Byte 8	C5 MSB
Byte 9	C5 LSB
Byte 10	C6 MSB
Byte 11	C6 LSB

CONVERSION

$dT = D2 - C5 \times 2^8$

$TEMP = 2000 + dT \times C6 / 2^{23}$

$OFF = C2 \times 2^{17} + (C4 \times dT) / 2^6$

$SENS = C1 \times 2^{16} + (C3 \times dT) / 2^7$

$P = (D1 \times SENS / 2^{21} - OFF) / 2^{15}$

Temperature (°C) = TEMP / 100

Pressure (hPa) = P / 100

Please refer to MS5637 Sensor Datasheet for more information.

STATUS

0x00	OK
0x01	Sensor error

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

CONVERSION

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

STATUS

0x00	Discharging
0x01	Charging