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PRODUCT SPECIFICATION FORM

Description

Our TC Central software (which can be found at http://www.omega.com/software/) when connected to a UWTC Series wireless receiver, can display data from our wide variety of wireless sensors which can measure temperature, pressure, flow, pH, humidity and more. While this turnkey solution meets many customers' needs, some have expressed a desire to write their own software to process the data, instead of using TC Central. The following description of the contents of the data from the receiver will allow them to do so.

Configuration

Our UWTC Series device, when connected to a PC USB port and using the FTDI VCP driver (http://www.ftdichip.com/Drivers/VCP.htm) will appear as a standard COM port. To properly read the binary data, the serial port should be configured as 9600 bps, 8 data bits, 1 stop bit, no parity, no flow control.

UWTC-REC Wireless Receiver Data Packet Format

Byte Number	Name	Value	Comments
0	Start of Frame (SOF)	0x7E	
1	Packet Length (LSB)	Variable	Most common are 0x0C, 0x0E
2	Packet Length (MSB)	Variable	
3	API Identifier	Variable	Most common is 0x81
4	Address MSB	Variable	
5	Address LSB	Variable	
6	Signal Strength (RSSI)	Variable	-dBm
7	Reserved	0x00	
8	Sensor Type	Variable	
9	Process MSB	Variable	
10	Process LSB	Variable	
11	Ambient MSB	Variable	
12	Ambient LSB	Variable	Degrees F
13	Battery MSB	Variable	
14	Battery LSB	Variable	millivolts
15	Checksum	Variable	

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For Sensor Type "X" Only

9	Process MSB	Variable	
10	Process Value	Variable	
11	Process Value	Variable	
12	Process LSB	Variable	
13	Ambient MSB	Variable	
14	Ambient LSB	Variable	Degrees F
15	Battery MSB	Variable	.
16	Battery LSB	Variable	millivolts
17	Checksum	Variable	See below.

Byte 0 – Start of Frame

This byte should always have the value of 0x7E

Byte 1 – Packet Length (LSB)
Byte 2 – Packet Length (MSB)

The number of bytes, following the length bytes and not including the checksum, that contain data. Calculated by taking (MSB * 256) + LSB

Byte 3 – API Identifier

This byte should always have the value of 0x81

Byte 4 – Address (LSB)
Byte 5 – Address (MSB)

This is the Transmitter Address of the end device that sent the data. Note that the end device must have the same RF Channel, Network ID and Receiver Address set as the receiver. Calculated by taking (MSB * 256) + LSB.

Byte 6 – Signal Strength

This is the strength of the RF signal being sent by the receiver, measured in -dBm.

Byte 7 – Reserved

This valued should always be 0x00.

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Byte 8 – Sensor Type

This is a single ASCII characters that describes the type of sensor sending the data. The currently defined values are 0, 1, 2, 3, A, B, C, E, H, I, J, K, N, O, P, R, S, T, V and X:

0 – 3	:	UWPC (Process Control)
A	:	UWPH (pH)
H	:	UWRH (Relative Humidity)
I	:	UWIR (Infrared Temperature)
O	:	OMEGASCOPE (Handheld Infrared Temperature)
P	:	UWRTD (Resistance Temperature Detector)
X	:	DPG409 (Digital Pressure Gauge)
V	:	HHF1000 (Handheld Flow)
Other	:	UWTC/MWTC (Wireless Thermocouple)

Byte 9 – Process Data MSB
Byte 10 – Process Data LSB

Data being measured by device. Calculated by taking (MSB * 256) + LSB.

OR

Byte 9 – Process Data MSB
Byte 10 – Process Data
Byte 11 – Process Data
Byte 12 – Process Data LSB

For Sensor Type "X" **only**, four bytes of data that represent a single precision floating point value, per IEEE 754.

Byte 11 (13) – Ambient Temperature MSB
Byte 12 (14) – Ambient Temperature LSB

Ambient temperature of sensor, in degrees F, multiplied by 10. Calculated by taking (MSB * 256) + LSB.

Byte 13 (15) – Battery Voltage MSB
Byte 14 (16) – Battery Voltage LSB

Voltage of transmitter's battery, in millivolts. Calculated by taking (MSB * 256) + LSB.

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Byte 15 (17) – Checksum

To calculate: Starting with Byte 3, add all bytes keeping only the lowest 8 bits of the result and subtract from 0xFF.

To verify: Starting with Byte 3, add all bytes. If the checksum is correct, the sum will equal 0xFF.

Version History

Version	Date	Notes	Author
1.0	September 4, 2012	Initial external release	JFB