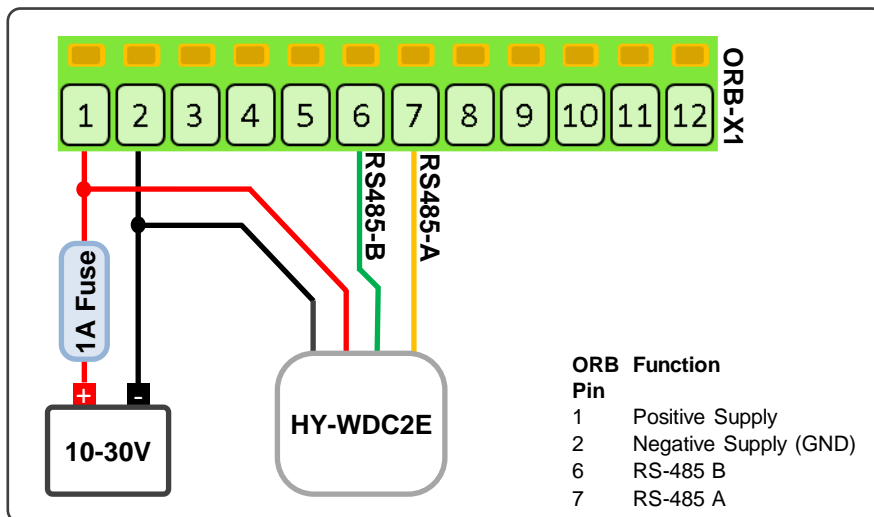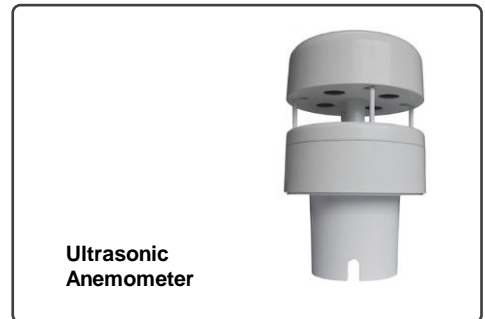# TT008: RS485 Ultrasonic Anemometer

This technical tip shows how to connect an Ultrasonic Anemometer to the ORB-X1 using RS485. RS485 is the default output of the anemometer but it can also operate in MODBUS mode and so could be connected to the ORB using MODBUS.

When in RS485 mode, the anemometer outputs data using the NMEA-0183 protocol. The format of the output is as follows: $WIMWV,180,R,0.01,M,A*06<CR><LF> where $WIMWV is a standard header, 180 is wind direction (0-359), R is for relative wind speed (T is actual wind speed), 0.01 is the wind speed (0-60), M is the unit (M for m/s and K for km/h) and everything after the * is a checksum and end of message delimeter.

Sensor Parameters

Part Number	HY-WDC2E
Type	Ultrasonic 2D Anemometer
Operating Range	-40ºC to 80ºC; 0-100% RH
Supply Voltage	3V to 30V DC, 18mA at 12V
Output	RS485, NMEA-0183
Supplied by	Instrument Choice (www.instrumentchoice.com.au)

Ultrasonic Anemometer

ORB Pin	Function
1	Positive Supply
2	Negative Supply (GND)
6	RS-485 B
7	RS-485 A

ORB-X1

Setting (Serial 1)	Value	Comment
Name	Anemometer	A meaningful name for the sensor data
Interval	1	1 means the sensor is sampled on every base interval
Type	RS485	The sensor uses RS485
Termination Resistor	Disabled	May need to be enabled for if the sensor is a long way from the ORB
Mode	Capture	The anemometer sends serial that needs to be captured
Baud Rate	9600	9600 is the default. Can be modified on the sensor.
Settings	8E1	From the datasheet, even parity is specified
Start String	$WIMWV	All messages from the sensor start with this sequence
End String	\r\n	All messages end with Carriage Return (\r) and Line Feed (\n)