

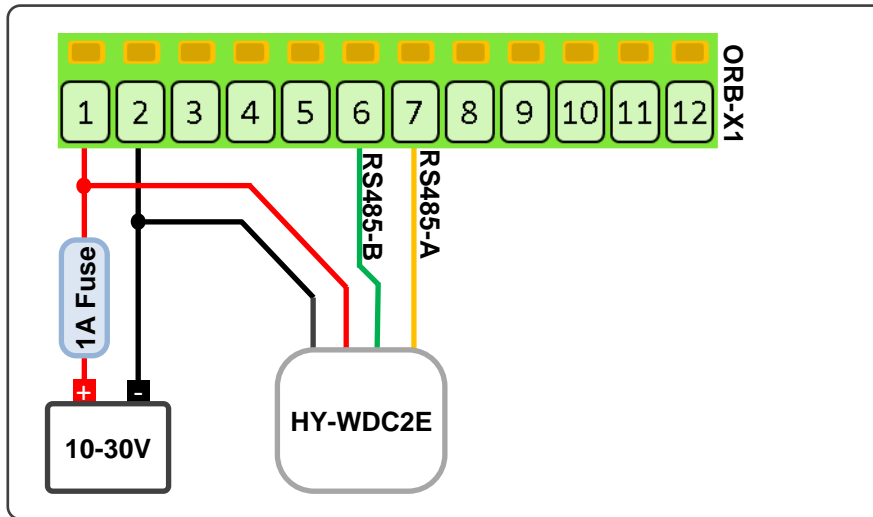
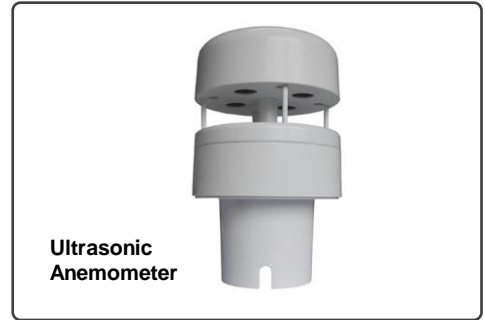
TT009: MODBUS Ultrasonic Anemometer

This technical tip shows how to connect an Ultrasonic Anemometer to the ORB-X1 using MODBUS over RS485. The anemometer is part of a family of weather measurement devices that operate on the same protocol and so comments made in this technical tip can be applied to other sensors like the full weather station.

Extensions: Add further instruments to the same MODBUS. Use the output to sound a warning or send an email. In solar applications, power the anemometer from one of the ORB current sources.

Sensor Parameters

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



Setting (Serial 1)	Value	Comment
Name	Port Entrance	A meaningful name for the sensor data
Interval	1	1 means the sensor is sampled on every base interval
Type	RS485	The sensor uses MODBUS over RS485
Termination Resistor	Disabled	May need to be enabled for if the sensor is a long way from the ORB
Mode	Modbus	The anemometer is a MODBUS sensor
Baud Rate	9600	From the datasheet
Settings	8E1	From the datasheet, note the Even parity
Modbus 1 / 2 Name	Speed / Direction	Modbus reading 1 will be configured for speed and 2 for direction
Function 1 / 2	3: Read Holding / 4: Read Holding 32 bit LE	Speed is a 16 bit value that is to be read from a holding register Direction is a 32 bit value that will be read from a holding register
Slave Address 1 / 2	1 / 1	Address of anemometer is specified as 1; this can be changed if required
Register Address 1 / 2	2 / 3	Register 2 holds wind speed and 3 holds direction
Calibration		Not required as units already correct i.e. speed in m/s and direction in degrees. Could use calibration to change speed to km/h or knots.
Warnings and Alarms		Warnings and Alarms can be set in the calibrated units