

5.0 Modbus Commands

WSD contains a Modbus slave port, the Modbus host must request data from the sensor.

The following describes the Modbus commands and messages. The basic instructions should be adequate for Modbus host programming. For embedded developers, additional protocol details are contained in the Modbus Appendix.

The default configuration:

Modbus address 01
Serial Data Parameters 19200, 8-bit data, no parity, 1 stop bit

Supported Functions and Exception Codes

Function	Description	Supported Error and Exception codes*
3	Read Holding Register	0x83: 01, 02, 03, 04
4	Read Input Register	0x84: 01, 02, 03, 04
6	Write Single Register	0x86: 01, 02, 03, 04
16	Write Multiple Registers	0x90: 01, 02, 03, 04

* See Error Code table below for more information.

Sensor Data Requests

Address	Register	Access Type	Response Range	Data Type	Description
200	201	Read	0 to 15†	16-bit Signed Int	System Status†
201	202	Read	0 to 500*	16-bit Signed Int	Wind speed (m/s)
202	203	Read	0 to 3599*	16-bit Signed Int	Wind direction (°)
203	204	Read	0 to 500	16-bit Signed Int	2 min avg wind speed
204	205	Read	0 to 3599	16-bit Signed Int	2 min avg wind direction
205	206	Read	0 to 500	16-bit Signed Int	10 min avg wind speed
206	207	Read	0 to 3599	16-bit Signed Int	10 min avg wind direction
207	208	Read	0 to 500	16-bit Signed Int	Wind gust speed
208	209	Read	0 to 3599	16-bit Signed Int	Wind gust direction

† See System Status Code section below.

* See Data Format section for numeric conversions.

Basic Configuration Messages

The following commands can be used to change the serial port parameters of the air sensor.

Address	Register	Access Type	Range	Data Type	Description
100	101	Read		16-bit Signed Int	MM = Product ID YY = Product Variation
101	102	Read		16-bit Unsigned Int	Serial Number
102	103	Read		16-bit Signed Int	Firmware Version
103	104	Read/Write	1-247 Default: 1	16-bit Signed Int	Modbus slave address.
104	105	Read/Write	0 = 1200 bps 1 = 2400 bps 2 = 4800 bps 3 = 9600 bps 4 = 19200 bps 5 = 38400 bps Default: 4	16-bit Signed Int	Baud rate.
105	106	Read/Write	0 = None 1 = Odd 2 = Even Default: 0	16-bit Signed Int	Parity

* Refer to Power Saving section for more details.

Calibration Settings

Calibration values are entered as slope and offset (mx+b). The following calibration settings are user accessible.

Address	Register	Access Type	Default	Data Type	Description
110	111+112	Read/Write	1	32-bit Single-precision Float	Speed Slope
112	113+114	Read/Write	0	32-bit Single-precision Float	Speed Offset
114	115+116	Read/Write	0	32-bit Single-precision Float*	Direction Offset**

* 32-bit single-precision floating point (IEEE-754) numbers are restricted to about 7 significant decimal figures. 32-bit values are transmitted most significant word (MSW) first.

** Direction offset can be used to set the north position. For example, if sensor measures 37.6 degrees pointing north, enter -37.6 degrees in the offset. Offset values will cause the wind direction value to roll over when the maximum value exceeds 359.9°. Due to the absolute positional encoding of the wind direction, no slope value is used.

