

Manual of UART digital anemometer



1. Parameters

operating current			
unit	minimum	typical	maximum
mA	7	8	10
operating voltage			
unit	minimum	typical	maximum
V	3.6	5	9.5

2. Error

wind speed measuring error				
unit	range	resolution	Threshold	precision
m/s	0~4.5	0.1	0.8	±3%±0.1 dgts
ft / min	0~8800	19	157	±3%±10dgts
knots	0~8.8	0.2	1.6	±3%±0.1 dgts
km/hr	0~14.0	0.3	2.9	±3%±0.1 dgts
mph	0~10.0	0.7	1.8	±3%±0.1 dgts
Wind temperature measuring error				
unit	range	resolution	precision	
°C	-10°C~50°C	0.2	±0.2°C	
°F	14°F~122°F	0.36	±3.6°F	

3. Communication port

port definiton	
red	DC power supply(3.6~5V)
green	RXD
white	TXD
black	GND

4. Specification

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Adopting asynchronous mode with one starting position and 8 data position

5.4.3 data transfer rate

19200bps, Supporting baud rate up to 19200 bps.

5.5 communication mode

5.5.1 basic mode

The upper computer is master node and the module slave node, the module is in receiving state after power on or reset.

The module reports the upper computer in format requested by the upper computer after receiving the request by the upper computer.

5.5.2 frame format of the command information:

length	command	data field	check in code
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among which:

Length: the whole length of a byte which equals to the addition of length + command character + data field + check in code

command: one byte of command information;

Data field: command parameter 0 or more bytes.

check in code: 1 One byte that is the accumulated number of frames.

among which:

BIT: 7 6 5 4 3 2 1 0

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BIT7: When BIT7 is one that means to reset the maxium/minimum/average values.

BIT6: When BIT6 is 1 that means the unit is Celsius unit while 0 for Fahrenheit unit

BIT5—4: 00 00 of

BIT5—4 means current wind speed value and 01 for maximum reading 10 for minium wind speed and 11 for average wind speed.

BIT3: 0 not defined as 0.

BIT2—0: wind speed unit

000 M/S , 001 Km/h, 010 Ft/min,

000 for M/S 001 for Km/h and 010 for Ft/min, 011 for Knots and 100 for Mph, 011 Knots, 100 Mph.

Data field: upper computer not applied.

module definition:

size	66 * 29.5 * 178mm
weight	83.7g
Operating temperature	0°C ~ 50°C (32°F ~ 122°F)
Storage temperature	-20°C 60°C (-4°F 140°F)

5. Communication protocols

5.1 Brief

This protocol is to manipulate the commands and data exchange between the lower machine(the device) and the upper computer, and adopts UART standards to facilitate the re-development for the programmer.

5.2 Range involed

the functions regulated in this protocol are:

- 1) the upper computer to control the wind speed measuring mode to carry out the specified tasks such as measuring wind speed and temperature via commands.
- 2). Resending the command due to communication failure such as receiving overtime/mis-response received/receiving calibration and mistake/unauthorized receiving character length.

5.3 Terms

upper computer: the specialized intelligent equipment to manage the wind speed measuring mode.

lower machine: this device

RS232: a kind of 2-wire serial communication standard compatible with bi-serial short distance communication.

5.4 physical sockets

5.4.1 Serial communication electronic standards

the mode with 3.3 volt communicates with upper computer via RS232 protocol.

5.4.2 Data transfer mode

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The 1st and 2nd bytes are wind speed reading while high byte is put at front and low byte at back and the dimension is 0.1.

The 3rd byte is the value of Beaufort wind scale.

The 4th and 5th bytes are wind temperature value while the high byte is put at front and the low byte back with dimension of 0.1.

5.5.3 1: Example 1

the upper computer sending: 03 80 83

the module sending: 08 80 00 0C 01 02 F3 8A

result: **current wind speed** is 1.2M/S, Beaufort scale degree 1 and Fahrenheit temperature at 75.5°C.

And the maximum wind speed will be reset and the average wind speed and minimum wind speed will be current wind speed reading.

2: Example 2:

the upper computer sending: 03 51 54

module sending: 08 51 01 0C 08 00 FC 6A

result: 26.8Km/h, maximum wind speed is 26.8KM/h 8, Beaufort scale degree 8 25.2 Celsius degree.

this device is purchased with the following items included

1. the software for communication between the device and the computer.
2. serial commissioning tool.