



Products description and application

This FA13 wind speed sensor is specially designed for industrial application. Product has built-in anti radio frequency, anti-EMI and lightning surge protection circuit. Product also has built-in sensitive temperature sensor, automatic heating in freezing environment. Wind cup and housing adopts maze structure connection design. Product uses high grade bearing, stainless steel wind cup and aluminum alloy housing with polyester coating. Internal PCB uses conformal coating and glue to seal, protect from water, salt fog and sand-dust. It is easy to mount, maintenance free, has various signal output for option.

Application: wind monitoring and wind data collection for engineering machinery, container cranes, Meteorological , power plants, traffic and so on.

CMC License for Manufacturing Measuring Instruments has been approved.

Features

- Adopt non-contact magnetic measuring technology.
- High accuracy, high reliability
- Wide wind measuring range, low starting threshold.
- Metal housing, excellent corrosion resistant design, stainless steel wind cup, high anti-wind level.
- Wind cups use stainless steel, suit for harsh environment application.
- Compact design, include wind speed measuring and heating, ease to mount and maintain on site.
- Fault tolerant design, product not damage in wrong wiring connection.
- Multistage lightning surge design.
- Wide voltage design.

General Specifications

Electrical		Mechanical	
Rated voltage	DC12V~30V ¹	Housing material	Aluminum alloy+Polyester coating
Operating current	Max. 50mA ²	Wind cup	SS304
Heating voltage	DC12V~30V ³	Bearing	SS440C
Heating power	≤50W	Humidity	0%~100%RH
Heating type	PTC auto-heating	Operating temperature	Ta -40 °C ~ +70 °C
Lightning surge	IEC61000-4-5 4kV /2kA	IP rate	IEC60529 IP65
Electrostatic discharge	IEC61000-4-2 air discharge 16kV	Wiring	Aviation socket ⁴
	IEC61000-4-2 contact discharge 8kV	Housing color	Black RAL9005
		Weight	0.6 kg
Meteorological			
Starting threshold	≤0.5m/s Vu=20 °C		
Anti-wind level	>70m/s		
Range	0.5~50m/s		
Accuracy	±0.5m/s(V _L <5m/s) ±3% (V _L >5m/s)		
Resolution	0.1m/s		

1. Rated voltage, see How to Order.

2. Current at signal end.

3. Heating voltage, see How to Order.

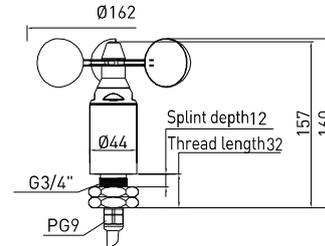
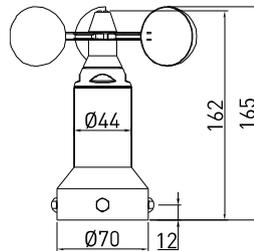
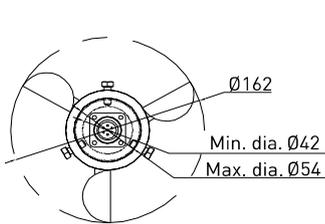
4. Default lead cable length is 3 meters.

FA13 Wind Speed Sensor



Mounting dimensions

Unit: mm



Mast tube mount

1. Connect and fix the aviation plug and socket.
2. Mount product on the top of equipment with 3 nos. M6 screws.

G3/4" thread mount

1. Connect and fix the aviation plug and socket.
2. Fix product with 2 nos. G3/4" thread

Caution: Mount the product on a flat surface, fix it well, prevent drop.

Wiring diagram



UART output: it is recommended to use RVVP/0.5mm²/copper core/high and low temperature resistant shielding cable, maximum communication distance is 200m.

Caution:

1. Product must be fit with Nanhua FA101C wind data logging kit.
2. Blue wire is the signal line, marked as *Signal*, indicates the wind speed signal output.
3. Actual communication distance is in accordance with onsite environment.

RS485 signal output: it is recommended to use RVVP/0.5mm²/copper core/high and low temperature resistant shielding cable, maximum communication distance is 1000m.

Caution:

1. Green signal line be marked as A+, Blue signal line be marked as B-.
2. Actual communication distance is in accordance with onsite environment.

4-20mA current signal output: it is recommended to use RVVP/0.5mm²/copper core/high and low temperature resistant shielding cable, maximum communication distance is 1000m.

Caution:

1. Blue wire is the signal line, marked as *Signal*, indicates the wind speed signal output.
2. Actual communication distance is in accordance with onsite environment.

NPN signal output: it is recommended to use RVVP/0.5mm²/copper core/high and low temperature resistant shielding cable, maximum communication distance is 1000m.

Caution:

1. Blue wire is the signal line, marked as *Signal*, indicates the wind speed signal output.
2. Actual communication distance is in accordance with onsite environment.

Caution:

1. Ensure cable connection is correct before power on.
2. Cable shield layer and housing must be well grounded.
3. Its suggested to return product to factory for calibrating every 18 months.

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UART Protocol

Baud rate:

300bit/s, 8bit data, no parity check, one stop bit, signal amplitude0~VCC.

Data definition: auto-output a frame per 1s, total 6 bytes.

0xAA	0x03	0xXX	0xXX	0x00	checksum
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Byte definition: 0xAA is synchronous head, 0x03 is message length, next two bytes combine a word which indicate wind speed, checksum=0x03+0xXX+0xXX+0x00, indicate checksum.

For example: 0xAA 0x030x00 0x6A 0x000x6D

Wind speed is 0x006A = 10.6m/s (data is binary number, convert to decimal number indicate wind speed)

Checksum is 0x6D=0x03+0x00+0x6A+0x00

Caution:

1. Product output signal only, signal transmission distance is maximum 200m by using low baud rate.
2. Product must be fit with Nanhua FA101C wind data logging kit.

RS485 protocol (Baud rate: 9600bit/s(factory setting), 8bit data, no parity check, one stop bit.)

Factory setting baud rate: 9600bit/s

Factory setting wind speed sensor address: 21H

Factory setting wind direction sensor address: 23H

1 Protocol description

1.1 Query wind speed data

1.1.1 Data definition (default address: 21H):

Command: xxH 04H 00H 06H 00H 01H CRCH CRCH

Response: xxH 04H 02H xxH xxH CRCH CRCH

1.1.2 Byte definition

xxH is slave address in the command, 04H is function code, 00H, 06H are the high and low address of the first register, 00H, 01H are the high and low quantity of register, CRCH, CRCL are the high and low of previous six bytes' CRC check code.

xxH is slave address in the response, 04H is function code, 02H is byte, xxH, xxH are high and low byte of returned wind speed data, e.g. 01H, 31H it is 305, indicate wind speed 30.5m/s, CRCH, CRCL are high and low of previous five returned bytes' CRC check code.

1.2 Modify address command

1.2.1 Data definition

Command: xxH 06H 00H 00H 00H xxH CRCH CRCH

Response: xxH 06H 00H 00H 00H xxH CRCH CRCH

1.2.2 Byte definition

xxH is original address in the command, 06H is function code, 00H, 00H are the address register, 00H, xxH are the new address (01H~7FH can be used), CRCH, CRCL are the high and low of previous six bytes' CRC check code.

xxH is new slave address in the response, 06H is function code, 00H, 00H are the address register, CRCH, CRCL are high and low of previous five returned bytes' CRC check code.

1.3 Broadcast to return factory setting command

1.3.1 Data definition:

Command: 00H 06H 00H 00H 21H 23H CRCH CRCH

1.3.2 Byte definition

00H is broadcast address in the command, 06H is function code, 00H, 00H are the address register, 21H, 23H are the default address of sensor (wind speed sensor default address is 21H, wind direction sensor default address is 23H), CRCH, CRCL are the high and low of previous six bytes' CRC check code.

1.4 Broadcast to modify baud rate command

1.4.1 Data definition

Command: 00H 06H 00H 01H 00H 0xH CRCH CRCH

1.4.2 Byte definition

00H is broadcast address in the command, 06H is function code, 00H, 01H are the address register, 00H, 0xH are the baud rate setting value of sensor (baud rate 00H=2400 bit/s, 01H=4800 bit/s, 02H=9600 bit/s, 03H=19200 bit/s), CRCH, CRCL are the high and low of previous six bytes' CRC check code.

2 Additional instruction

2.1 Please mark when modified the address, one bus can connect to 32 slave devices.

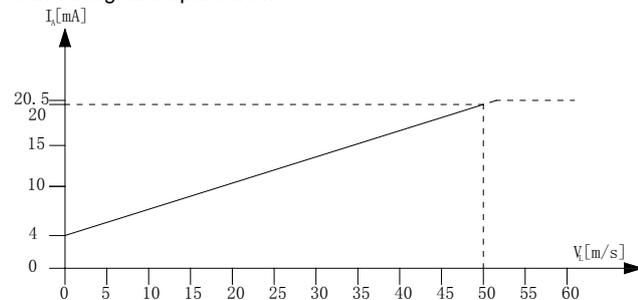
2.2 Error address and command not be responded.

2.3 CRC check uses ANSI CRC16: polynomial is $X^{16}+X^{15}+X^2+1$.

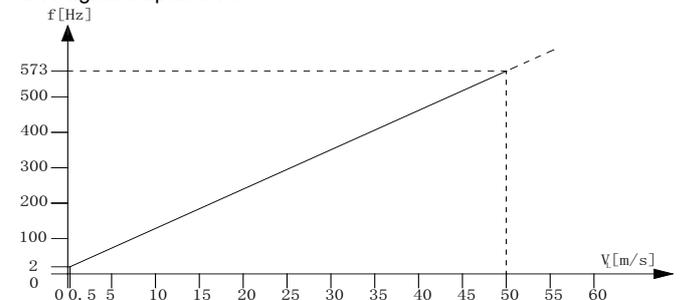
2.4 Interval is not less than 300ms between two frames.

2.5 All slave devices execute broadcast command, but they do not response data.

Current signal output curve:



NPN signal output curve:



How to Order

P/N	Model	Rated voltage	Signal output	Heating (heating power $\leq 50W$)	Mount	Remark
1000057-001	FA133	DC12V-DC30V	4-20mA current, 0-50m/s	Yes	Ø54 mast tube mount, 7-pin aviation socket	
1000057-017	FA133	DC12V-DC30V	4-20mA current, 0-50m/s	Yes	G3/4 threadmount, 7-pin aviation socket	
1000057-016	FA133	DC12V-DC30V	4-20mA current, 0-30m/s	Yes	Ø54 mast tube mount, 7-pin aviation socket	
1000057-004	FA133	DC12V-DC30V	4-20mA current, 0-30m/s	Yes	Ø80 flange mount, 3-core lead cable (L=3m)	Customized
1000057-002	FA135	DC12V-DC30V	NPN, 0-50m/s = 0-75Hz	Yes	Ø80 flange mount, 3-core lead cable (L=3m)	Customized
1000057-009	FA134	DC5V-DC30V	RS485, modbus protocol, Baud rate 9600bps	Yes	Ø54 mast tube mount, 7-pin aviation socket	
1000057-018	FA134	DC12V-DC30V	RS485, modbus protocol, address and baud rate can be set	Yes	Ø54 mast tube mount, 7-pin aviation socket	
1000057-008	FA131	DC12V-DC30V	UART, Baud rate 300bps	Yes	G3/4 threadmount, 7-pin aviation socket	
1000057-012	FA131	DC12V-DC30V	UART, Baud rate 300bps	Yes	Ø54 mast tube mount, 7-pin aviation socket	
1000057-015	FA131	DC12V-DC30V	UART, Baud rate 300bps	No	Ø54 mast tube mount, 5-pin aviation socket	

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