FA220C Wind Data Display

Products description and application

FA220C is a smart wind data display and alarm device, specially designed for large machinery. It has unique design, durable and reliable, high interference resistant capacity, ease to mount.

Features

- All NANHUA FA series wind sensors are compatible.
- Two-way relay alarm output, buzzer alarm, alarm point setting is available.
- Mini display panel, four digits, 16 wind direction indication, wind speed and wind scale display is switchable.
- Logging function, 8G SD card, built-in timing system, and continuous logging wind data more than 3 years.
- RS485 interface, PC connection, display, logging, analysis wind data on PC by using the software (download from NANHUA website).
- 4-20mA current output, PLC connection is available.

General Specifications

| Electrical		Mechanical	
Rated voltage	AC85V～AC265V[1]	Housing material	ABS
Wind speed alarm	Two-way relay alarm output (Pre-alarm – NO, Alarm – NO)	Application	Indoor
	Built-in buzzer alarm	Humidity	0~100% RH
	RS485 protocol	Operating temperature	Ta-30℃ ~ +70℃
	4～20mA current signal, linearly proportional to wind speed	Housing color	Black RAL9005
	Load less than 500Ω	Weight	0.5kg
Diaplay	Wins speed display – 3 digits 16 wind direction 1 frequency per second		
SD card logging	Built-in timing system, time checkingisavailable At normal temperature 25℃, time deviation is ±2.5min, timing system is charging by built-in rechargeablebattery No need to set time when systempower off within 6 months. Standard SD card, data logging, format is TXT		
Signal input	4～20mA current		
Meteorological			
Range (wind speed)	0～99.9m/s	Range(wind direction)	0～359°
Resolution (wind speed)	0.1m/s	Resolution(wind direction)	1°

1. Rated voltage, see How to Order

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Mounting dimensions

Unit: mm

- SD Card
- RS485 interface
- Ø5.54-Mounting hole
- Rocker Switch
- 4-M20×1.5 Cable gland
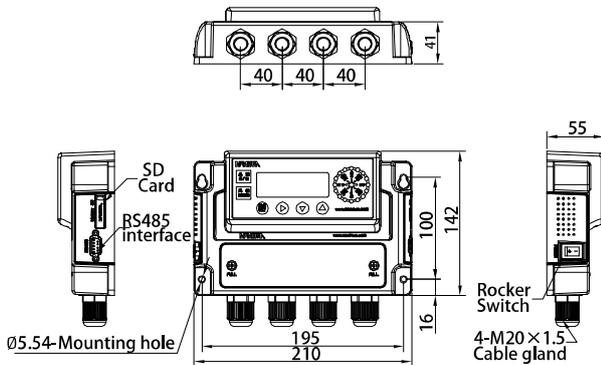
Installation

1.Ensure that the input voltage is correct.

2. Ensure mount face is flat.

3. Fix product to mount face by using four nos. M5 screws(not provided), ensure mount face is flat and has enough mechanical strength.

4. Remove screws from front cover, see terminal blocks.

5. Insert the cable through cable gland, correctly connect power line, data line and control line and control line to terminals according to the indication tags on wires (wiring diagram is provide on the left).

6.Product start to operate when power on, display wind data when wind speed sensor is operating.

7. To prevent short circuit, fix well the unused terminals.

Caution

1. Ensure cable connection is correct before power on

2. Cable shield layer and housing must be well grouded.

3. Manage and fix wind speed sensor cables well.

4. Indoor application, work with UART signal wind speed sensor only.

Wiring diagram
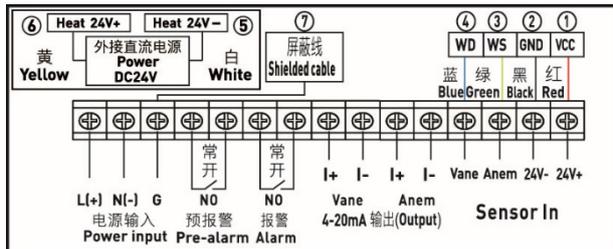
Wind speed sensor connect to Red, Black, Blue wire to *VCC, GND, WD* terminals.

Wind speed and direction sensor connect to Red, Black, Green, Blue wires to *VCC, GND, WS, WD* terminals.

It is recommended to use RVVP/0.5mm^2 /copper core/high and low temperature resistant shielding cable

RS485 protocol

1. Baud rate: 9600 bit/s, 8 bit data, no parity check, one stop bit .

2.Data definition: auto-output a frame per 1s, total 7 bytes.

0xAA	0x04	0xXX	0xXX	0xZZ	0xZZ	checksum

3. Byte definition: 0xAA is synchronoushead, 0x04 is message length, next 0xXX bytes combine a word which indicate wind speed, the next two bytes combine a word which indicate wind direction, checksum = 0xXX+0xXX+0xZZ+0xZZ, indicate checksum.

4. For example 0xAA 0x04 0x01 0x6A 0x01 0x2C 0x98

Indicate: Wind speed is 0x016A = 36.2m/s, wind direction is 0x012C =300° 。

Caution: RS485 interface is standard 9-pin DB9 connector. Foot 1 is A line of RS485, foot 2 is B line。

Operating and Debugging

1. Mode and parameter setting:

1) A is wind speed and scale: A00.0 is wind speed (see fig.1), A10.0 is wind scale (see fig.2).

2) b is Pre-alarm setting: For example, if display "b18.0", wind speed indicator is lit up, wind speed is 18m/s (see fig. 3). When wind speed or wind scale reach the set value, product output pre-alarm signal, built-in buzzer start to alarm, frequency is 1HZ.

3) C is Alarm setting: For example, if display "c09.0", wind scale indicator is lit up, wind scale is 9 (see fig. 4). When wind speed or wind scale reach the set value, product output alarm signal, built-in buzzer start to alarm, frequency is 2HZ.

4) d is wind speed range: For example, if display"d50.0", it means wind speed range is 0-50m/s (see fig.5)

If wind speed range is linearly proportional to wind speed 0-50m/s, please set d mode as „d50.0"

If wind speed range is linearly proportional to wind speed 0-30m/s, please set d mode as „d30.0"

5) Mode setting (Automatic return to normal mode and don't save changing data if no action within 10 seconds in SETTING mode.)

Mode A: Press the SET button for 3 seconds untill digit **A** flash.

Mode b: When character C or A is flashing, shore press ▼ or ▲ unitl digit **b** flash.

Mode C: While character A or b is flashing, shore press ▼ or ▲ unitl digit **C** flash.

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Mode d: While character A or C is flashing, shore press ▼ or ▲ unitl digit **d** flash.

6) Parameter setting (Switching wind speed to wind scale is not linear, wind speed number has a little change when switch wind speed to wind scale.)

(In mode setting, short press ▶ and move the cursor to the required position, then short press ▼ or ▲ to change the number, when the setting is compeleted, press SET button for 3 seconds to save and quit.)

2. Wind direction setting

Product displays 16 wind direction. In normal mode, press ▶ a second, enter into wind direction mode, it displays 0~359 degree and 16 wind direction; press ▶ a second again, quit wind direction mode, return to normal mode (see fig. 6).

3. Setting timing system and checking

Time service is used for SD card data logger; there is no need to set when you do not request record data.

If require data logger, power interrupts over 6 months or used in another time zone, please set the time.

Manual or auto set time (auto set should only be achieved by NANHUA's software)

Manual set process:

1)   Under A mode & inputting password "A16.3", turns to time set and shows access time.
2)   Under time set mode, displays "1—12",and "1" flashes, which means year-2012
3)   Then press▲, displays "2—02",and "2" flashes, which means month-February;
4)   Then press▲, displays "3—24",and "3" flashes, which means date-24th
5)   Then press▲, displays "4—13",and "4" flashes, which means H-13;
6)   Then press▲, displays "5—58",and "5" flashes, which means Min-58
7)   Then press▲, displays "6—26",and "6" flashes, which means Sec-26
8)   Press ▲or▼, you can re-check the time. Once the tolerance is over 3 mins, please revise the time; otherwise wait 10s and quit.
9)   Setting device timing system, short push▶ to move cursor, short push ▲or▼ to revise data, finish setting push SET button 3S to save and quit.

SD card data logger:

1) Under normal mode and SD card inserted, the displayer will take sample with 10s interval and store it into SD card per 20 mins and so forth.

2) SD card storage format:

★ Total folder "WINDYDAT"under SD card directory

★ Year folder "YEAR20xx" under "WINDYDAT"

★ Monthly folder "MONTHxx" under "YEAR20xx"

★ Day folder "DAYxx.TXT" under "MONTHxx"

★ Each day's data stored under "DAYxx.TXT". Ex. 15:01:30 167 230 means the wind speed is 16.7m/s and direction of 230° at 15:01:30 of that day.

3)SD card Operation and troubleshooting:

★ Once the SD card extracted, the displayer screen will flash 4 times with buzzing, which mean the SD card is extracted.

★ Once the wrong SD card inserted, the displayer screen will flash 4 times with buzzing, which means the SD card faults.

★ If the normal SD card inserted, the displayer screen will not flash but alarm once, which means the SD card is right.

★ SD card problems and solutions:

① SD card write-protection: unlock the SD card write-protection.

② SD card capacity less than 30M: ensure the capacity is over 30M.

③ Before SD card used, please format it as FAT32 file system.

④ If the SD card meets above requirements but the displayer also shows SD card fault, please re-start the displayer.

4) SD card and principal computer analysis software:

★ Attached 4G standard SD card.

★ 4G SD card has store FA220C computer analysis software, software manual, USD to RS485 UT890 driver software.

Nos.	Parameter	Value
1	Wind speed range	0~50m/s
2	Pre-alarm	18m/s, scale 8
3	Alarm	22m/s, scale 9
4	Display	Wind speed

Caution:

1. Long press ▼ and ▲ for 3 seconds to reset product to factory default configuration.

2.Entering into or quitting parameter setting and resting product to factory default configuration come with a "Di" sound.

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FA220C display panel diagram:
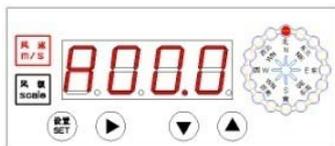
Fig.1: wind speed

Fig. 2: wind scale

Fig. 3: Pre-alarm setting

Fig .4: Alarm setting

Fig. 5: wind speed range setting

Fig.6: Wind direction setting

You can download FA220S Wind data logging and analysis software on our website.

Trouble shooting:

Nos	Failure description	Possible cause	Solution
1	Display panel not work	Wiring error	Check power cable, ensure line L, N, G connection is correct
		Rocker switch is OFF position	Check Rocker switch and turn it on
2	Product display " ----"	24V power output is failure	Use multimeter to check product 24V power(see wiring diagram)
		Wind sensor does not have signal output	Check wind sensor's wiring connection, if wiring is good, then wind sensor is failure

How to Order

P/N	Model	Rated voltage	Signal input	Output
1000265-001	FA220C	AC85V-AC265V	4-20mA current signal	Wind speed 4-20mA current signal, Wind direction 4-20mA current signal, RS485 (Baud rate 9600bps)
1000265-002	FA220C	DC24V	4-20mA current signal	Wind speed 4-20mA current signal, Wind direction 4-20mA current signal, RS485 (Baud rate 9600bps)