



Products description and application

FA221C is a wireless 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

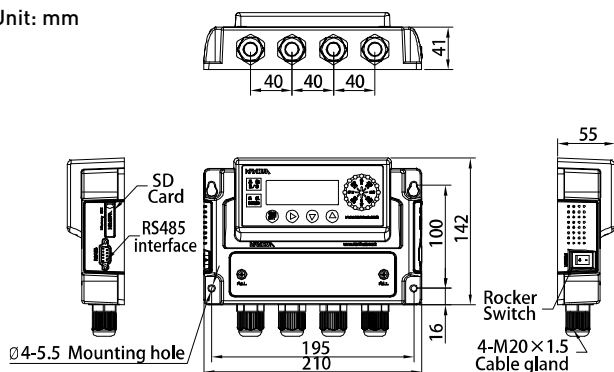
- NANHUA FA231W wireless transmitter is compatible.
- Two-way relay alarm output, buzzer alarm, alarm point setting is available.
- Mini display panel, four digits, 16 wind direction indication, wind speed and wind scale display is switchable.
- Logging function, 8G SD card, built-in timing system, and 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.
- Wide voltage range: AC85V~AC265V

General Specifications

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

Mounting dimensions

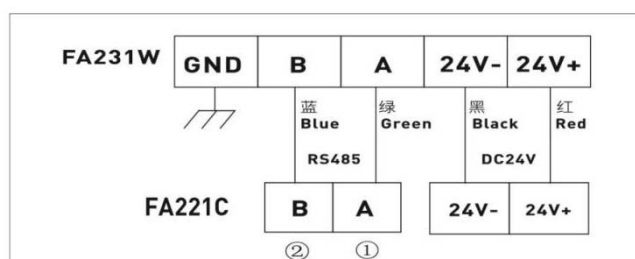
Unit: mm



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.

Wiring diagram



Wiring connection:

it is recommended to use RVVP/4 core/0.5mm²/copper core/high and low temperature resistant shielding cable

Caution

1. Ensure cable connection is correct before power on
2. Cable shield layer and housing must be well grounded.
3. Manage and fix wind speed sensor cables well.
4. Indoor application, work with UART signal wind speed sensor only.

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	0XX	0XX	0x00	0x00	checksum
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3. Byte definition: 0xAA is synchronous head, 0x04 is message length, next 0xXX bytes combine a word which indicate wind speed, the next two bytes are useless, checksum = 0xXX+0xXX+0x00+0x00, indicate checksum.
4. For example: 0xAA 0x04 0x01 0x6A 0x00 0x6B
Wind speed is 0x016A = 36.2m/s (data is binary number, convert to decimal number indicate wind speed)
Checksum is 0x6B=0x01+0x6A+0x00+0x00

Caution:

RS485 interface is standard 9-pin DB9 connector. Foot 1 is A line of RS485, foot 2 is B line, the others are useless.

Operating and Debugging

1. Wireless error:

FA221C display wind data when FA221C and FA231W connected, if display "___", go to check the connection, ensure no obstruct objects.

2. 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 until digit A flash.
Mode b: When character C or A is flashing, short press ▼ or ▲ until digit b flash.

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

Mode d: While character A or C is flashing, shore press ▼ or ▲ until 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 completed, press SET button for 3 seconds to save and quit.)

3. 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 display 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 display screen will flash 4 times with buzzing, which mean the SD card is extracted.
 - ★ Once the wrong SD card inserted, the display screen will flash 4 times with buzzing, which means the SD card faults.
 - ★ If the normal SD card inserted, the display 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 display also shows SD card fault, please re-start the display.
- 4) SD card and principal computer analysis software:
 - ★ Attached 4G standard SD card.
 - ★ 4G SD card has store FA220S computer analysis software, software manual, USD to RS485 UT890 driver software.

FA221C display panel diagram:



Fig. 1: wind speed



Fig. 2: wind scale



Fig. 3: Pre-alarm setting

FA221C Wireless Wind Data Display



Fig. 4: Alarm setting



Fig. 5: wind speed range setting



Fig. 6: Wind direction setting

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.

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



Ex-factory setting:

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

How to Order

P/N	Model	Rated voltage	Signal input	Output
1000266-001	FA221C	AC85V-AC265V	RS485	4-20mA current signal, RS485 (Baud rate 9600bps), Pre-alarm and Alarm output(NO), 8G SD card

Thanks for choosing our products, NANHUA Electronics is the professional brand of signal transmission and high quality industrial lighting which is trusted and loved by global users from various industries.

Read and understand these instructions completely and carefully. Wrong installation and operation may lead to fires, electric shock, and others. Due to our continued efforts to improve our products, product specifications are subject to change without notice. ©NANHUA Electronics Co., Ltd. All rights reserved. www.nanhua.com