ZCC211N-232 Electronic Compass Module

General Description

ZCC211N-232 is a low cost plane electronic compass module with low input voltage and power consumption(< 20mA),small size(22*22mm). The working principle: two axis which are perpendicular with each other in magnetic sensor induce the earth′ s magnetic component ,then get the azimuth angle. It communicates with PC through RS232 full-duplex (or please customize 485/TTL communication node if needed.) with high accuracy and stable performance. It features calibration function so you can get accurate azimuth angles wherever. Its Baud rate is 9600bp/s （if need 4800 or 19200 ,please contact us in advance ） .There are both continuous and inquiry output mode. At the same time it has declination angle and deviation angle compensation function. It can suit different working conditions.

Features

- Small size:22*22mm.
- Light weight.
- Cost effective
- Ease of integration.
- Support ASCII output format.

Applications

- Handheld instruments and meters.
- Robots navigation and position.
- Navigation system.
- Auto helm rudder.
- Aerial position.
- Automobile GPS navigation.
- Aero model position.

Ordering Information：ZCC211N-232

Specifications

Parameter	Value	Unit	Remark
Measuring Range	0° ～360°	degree	Compass placed horizontally
Display Resolution	1	degree	
Accuracy	2	degree	
Response Frequency	18	Hz	Variable within 30HZ (customize in advance).
Non-linear	±1%		
Repeatability	<1	degree	
Voltage	5v	VDC	
Operating Current	<20	mA	5V continuous output
Operating Temperature	-40 -- 85	℃	
Storage Temperature	-45 -- 125	℃	
Size	22*22	mm	

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Communication Protocol ： (Output in ASC11 format)

1 ASC11 format

One set of data has 11 bytes.

Byte1：$(0x24)

Byte2：H(0x48)

Byte3：,(0x2C)

Byte4：hundreds digit of angle

Byte5：tens digit of angle

Byte6：units digit of angle

Byte7： *(0x2A)

Byte8：First parity bit

Byte9：Second parity bit

Byte10：0x0D（Enter）

Byte11：0x0A（New line）

2 User instructions

- Output version of software to pc first after powered on: ZCcM 2.5c
- Enter angle output mode automatically.

3 Command word related (Please distinguish lower case and capitalization)

“***Bau=4800**” ——set baud rate 4800 .

“***Bau=9600**” —— set baud rate 9600 .

“***Bau=19200**” —— set baud rate 19200.

“***P**” ——Single output .When it sends once system will output a set of data.

“***n**” ——Continuous output.

“***z**” ——Zero setting. Sets zero degree as datum mark and angle output based on the datum mark.

Absolute angle output mode could be restored by deviation angle clearing.

“p” ——Calibration .After calibrated the compass will circularly output “studing…”

“r” ——Finish calibration.

“b???” ——Set declination angle. Enter wait condition after system has accepted it and PC will output declination angle among 000-360 degrees.

“c” ——Read declination angle.

“d???” ——Set deviation angle . It will wait after system has accepted it and PC will output deviation angle among 000-360 degrees.

“e” ——Read deviation angle.

4 Parity bit arithmetic

Byte4^ Byte5^ Byte6^0x32

The value of the Higher 4 digits is the first parity bit and the Lower 4bits is the second parity bit.

Eg: $ZC, 211*30

2^1=3, 3^1=2, 2^0x32=0x30: The first parity bit: 0x33.The second: 0x30.

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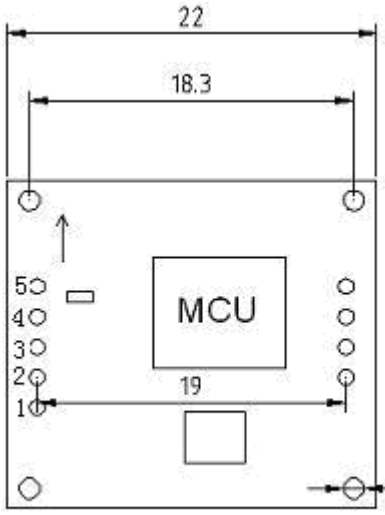
Installing Size and Definition of Connection（Unit: mm）



Definition of Connection:
1:VCC 5V power supply
2:GND
3:NC
4:TXD Pin3 of COM1
5:RXD Pin2 of COM1

Right-hand side of MCU is only used for factory debugging.

Technical Terms

1 Declination Angle

It is the angle between magnetic north and true north. Declination angle of different place are different, even at the same place declination angle varies with the time. When we use compass to navigate, we get directions relative to magnetic north. So we can get directions relative to true north through declination angle compensation. For example, the current direction counted by compass is north by east 30 degrees and the declination angle is 5 degrees. So the direction relative to true north is 35 degrees (30+5° =35°)

2 Deviation Angle

There is an arrowhead on the compass module meaning directions. When installed, it is requested that heading direction of the measured object is consistent with the arrowhead. So the direction counted by the compass is the right direction. If installing direction is not consistent with the arrowhead, there is a included angle and it is the deviation angle. Only after compensation the compass outputs the true direction.

3 Calibration

It's also called hard iron compensation. All digital compasses must be calibrated before used. Once hard iron conditions change, the magnetic field conditions will be changed too. At this time angle information counted by the compass will be inaccurate. In order to remove the influence, it's necessary to calibrate the compass.

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4 Calibrating Methods and Functions

When magnetic field is changed, angle information counted by compass will be inaccurate. This time it is necessary to calibrate the compass to remove the influence .Methods：Send “P ”command，then rotate the compass two circles slowly, equably and flatly, fast not allowed. One cycle needs more than one minute. Then send “r” command to finish calibration.

Specifications subject to change without notice!

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