ZCC211N-TTL Electronic Compass

General Description

ZCC211N-TTL is a low cost plane electronic compass module.The principle of its work through the reluctance sensors sensing the Earth's magnetic field component, so as to get an azimuth angle.It communicates with PC through TTL. It has high accuracy, stable performance and calibration function. Its Baud rate optional. 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.

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-TTL

Specifications

Parameter	Value	Unit	Remark
Measuring Range	0° ～ 360°	°	Compass placed horizontally
Resolution	1	°	
Accuracy	2	°	RMS
Response Frequency	30	Hz	
Repeatability	<1	°	
Voltage	5(+0.2-0.5)	VDC	
Operating Current	<20	mA	5V continuous output
Operating Temperature	-40 ～ 85	℃	
Storage Temperature	-45 ～ 125	℃	
Size	22*22	mm	

Address: 3F Compositive Building, No.1128Denghui Road, Minhang, Shanghai, China.
Tel：86 21 6490 8093 Ext.214; Fax: 86 21 6490 8096 ; Email:shining@zc-sensor.com

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 bit calibration

Byte9：Second bit calibration

Byte10：0x0D（Enter）

Byte11：0x0A（New line）

2 User instructions

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

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

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

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

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

“***P**” ——Single output .When it send 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.

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

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

“c” ——Reading declination angle.

“d???” ——Setting 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

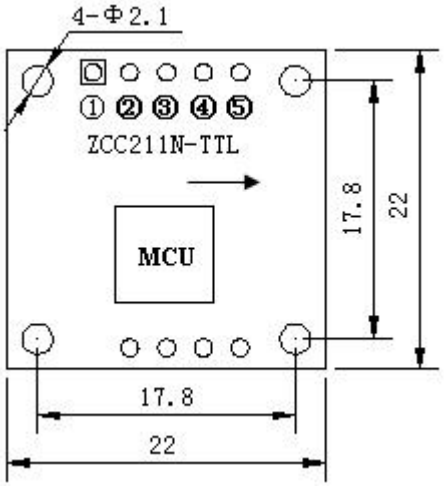
The value of the frontal 4 digits is the first parity bit and the latter is the second parity bit.

Eg: $ZC, 211*30

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

Address: 3F Compositive Building, No.1128Denghui Road, Minhang, Shanghai, China.
Tel：86 21 6490 8093 Ext.214; Fax: 86 21 6490 8096 ; Email:shining@zc-sensor.com

Installing Size and Definition of Connection（Unit: mm）



Connection definition：

① VCC +5Vdc
② GND
③ NC
④ TXD
⑤ RXD

Note： The below four holes of MCU is for factory debugging.Please hang it in the air when using,or else it will cause damage to the product.

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 navigating, 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 and it's used to denote directions. When installed, it requests that forward direction of the object surveyed 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 we compensate it 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.

4 Calibrating methods and functions

When magnetic field changes 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.

Specification subject to change without notice.

Address: 3F Compositive Building, No.1128Denghui Road, Minhang, Shanghai, China.
Tel：86 21 6490 8093 Ext.214; Fax: 86 21 6490 8096 ; Email:shining@zc-sensor.com