Product Description

The GY-26 is a low cost flat digital compass module. The input voltage is low, the power consumption is small, and the volume is small. The working principle is that the magnetic component of the earth's magnetic field is simultaneously induced by two mutually perpendicular axes in the magnetic sensor to obtain an azimuth angle. The compass communicates with other devices by the RS232 protocol and the IIC protocol. The product has high precision and high stability. It has the function of recalibration and can get accurate azimuth at any position. The baud rate of the output is 9600bps. The data is output in the inquiry mode. It has the function of magnetic declination compensation of hard iron calibration function to adapt to different working environments.

Technical Parameters

Measuring range: 0°~ 360°
Resolution: 0.1 °
Measurement accuracy: 2 °
Repeatability: 1 °
Response frequency: 15 HZ
Working voltage: 3~5 V
Working current: 5 V--15mA 3V--8 mA
Working temperature: -20 ° ~ 85 °
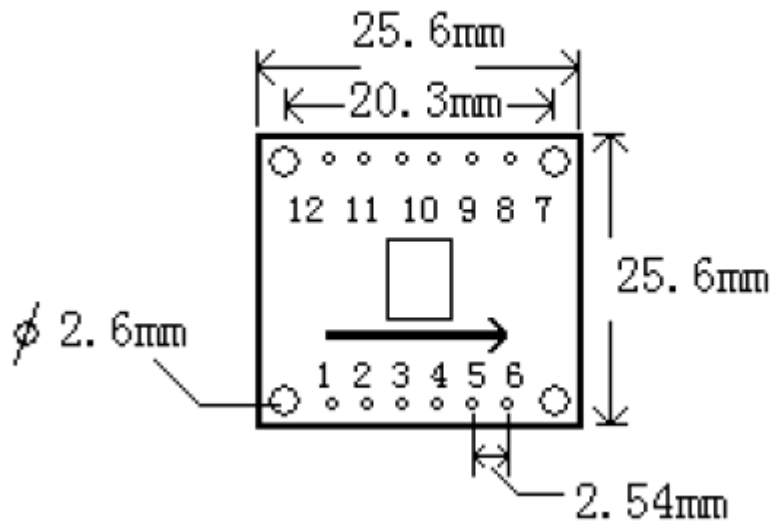Storage temperature: -40°~ 125°
Size: 25.6mm × 25.6mm

Features

small volume
Cost-effective
Serial port and IIC output format

Applications

Handheld instrumentation
Robot navigation, positioning
Navigation system
Marine automatic rudder
Yagi antenna positioning
Car GPS cable
Model orientation

Product Size

Serial communication protocol

1. Serial communication parameters
Baud rate: 9600 bps
Check digit: N
Data bits: 8
Stop position: 1

2. Module output format, containing 8 bytes per frame:
1.Byte0: 0x0D (ASCII code carriage return)
2.Byte1: 0x0A (ASCII code wrap)
3.Byte2: 0x30~0x33 Angle hundred digits (ASCII 0~3)
4.Byte3: 0x30~0x39 Angle ten digits (ASCII 0~9)
5.Byte4: 0x30~0x39 angle one digit (ASCII 0~9)
6.Byte5: 0x2E (ASCII decimal point)
7.Byte6: 0x30~0x39 Angle decimal places (ASCII 0~9)
8.Byte7: 0x00~0xFF checksum (lower 8bit only)
Note: Checksum Byte7 = (Byte0 + Byte1 +……. Byte6) results only take 8bit lower
Example: One frame data <0x0D-0x0A-0x33-0x35-0x39-0x2E-0x36-0x1C> = 359.6°

3. Command byte, sent by the external controller to the module (hex)
1. 0x31: Perform an angle measurement -------- return value reference output format
2 .0xC0: Calibration Magnetic Field Start --------- Return Value Reference Output

Format (000.0°)

3.0xC1: Calibration magnetic field ends -------------- Return value refers to hard iron compensation '2'

4.0xA0-0XAA-0XA5-0XC5 :

Restore factory settings---------------------- Return value reference output format (000.0°)

5. 0xA0-0XAA-0XA5-IIC_ADDR:

Module IIC address modification ------------- Return value reference output format (000.0°)

IIC address range reference "IIC communication protocol (3)"

6. 0x03 + magnetic high 8 bits:

Magnetic declination setting, north direction setting--return value reference output format (000.0°)

7. 0x04 + magnetic lower 8 bits:

Magnetic declination setting, north direction setting--return value reference output format (000.0°)

Example: When sending 0XC0 to the module, the module answers the following 1 frame.

<0x0D-0x0A-0x30-0x30-0x30-0x2E-0x30-0x05> indicates success

The Led light illuminates and enters calibration

Example: When sending 0x03, 0x00, 0x04, 0x64 to the module, the module answers the following 1 frame (2 times)

<0x0D-0x0A-0x30-0x30-0x30-0x2E-0x30-0x05> indicates success

The magnetic declination is modified to 10.0 degrees

IIC communication protocol

1. When performing IIC communication, the module is equivalent to 24C04, EEPROM memory, and communication is very simple.

The data corresponding to the address inside the module (equivalent to the data of each address of the EEPROM), mapping each parameter, please refer to the following:

0x00: not used

0x01: Angle value is 8 bits high

0x02: Angle value is lower 8 bits

0x03: Magnetic declination is 8 bits high

0x04: Magnetic declination is lower 8 bits

0x05: not used

0x06: not used

0x07: Calibration level value

2.The actual current angle value is 16-bit data synthesized in the above table "8-bit angle value high" and "8-bit angle value lower", the data range is 0-3599 (because the resolution is 0.1°)

The actual current magnetic declination value is 16-bit data synthesized with "magnetic declination high 8 bits" and "magnetic declination low 8 bits", and the data range is 0-3599 (because the resolution is 0.1°)

3.The command table of the module is written into the module via the IIC bus.

0x00+0x31: Angle measurement

0x00+0xC0: Calibration

0x00+0xC1: Stop calibration

0x00+(0xA0+0XAA+0XA5+0XC5): Restore factory settings

0x00+(0xA0+0XAA+0XA5+IIC_ADDR): IIC address modification

0x03 + magnetic high 8 bit value: magnetic declination modification

0x04+ magnetic low 8 bit value: magnetic declination modification

The value of the magnetic declination, the range 0-3599 (because the resolution is 0.1°), is composed of two 8-bit data. When modifying the module's magnetic declination, it is divided into high 8-bit value, low 8-bit value, and write. Into the module.

4.The module's IIC address can be modified. The factory default is 0xe0. When the module is powered on, the LED corresponding to the IIC address flashes. The number of flashing is illuminated by the module power-on LED, and the LED is turned off to start recording.

If the module sends a command to the module immediately after power-on, the LED does not flash. When writing an address to a module, the module only receives the following 16 data addresses, and the others are invalid.

Precautions

Module parameters are based on a standard 5V state. It is recommended to use a power supply with a small ripple.

The flashing of the LED during module measurement corresponds to the frequency of the measurement. The LED is always on when calibrating.

When the module is measured and calibrated, keep it level and get the best accuracy. Keep it away from the magnet as much as 30 cm.

The module has a memory function inside, which can be used to power down the memory calibration coefficient and magnetic declination.

Restore the factory settings, that is, restore the factory calibration coefficient and magnetic bias angle, and will not modify the module's current IIC address.

Module input and output of high and low level 3-5V, can be directly connected to the microcontroller serial port, microcontroller IO, can be directly connected with PL2303, CH340, FT232 and other chips, but can not be directly connected to the computer serial port.

STC51 GY-26 serial port wiring diagram