

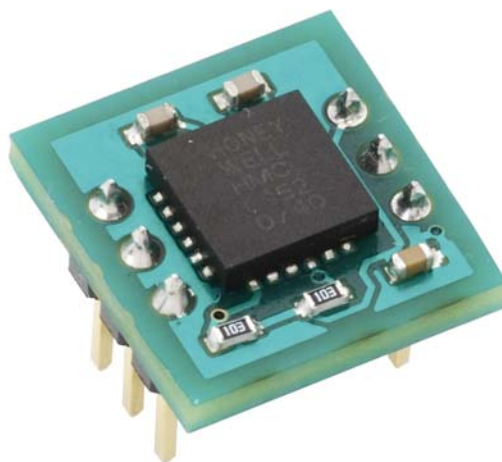
Honeywell HMC6352 Compass Module (#29323)

The HMC6352 Compass Module is fully integrated and combines 2-axis magneto-resistive sensors with the required analog, digital, microprocessor and algorithms required for heading computation.

The HMC6352 Compass Module provides a direct heading angle and includes internal calibration algorithms within its firmware. Temperature compensation and calibration are built in, as well as protection against stray magnetic fields.

Features

- Wide voltage supply range (2.7–5.0 VDC) for use with most microcontrollers
- Digital output (I²C) to nearest 0.1°
- Built-in calibration for an average error of 2.5°
- Internally calculates heading, simplifying software demands
- Stray magnetic field protection
- Low current consumption (typically 1 µA in standby mode, 1 mA full operation at 3 VDC)
- Compact, breadboard-friendly 6-pin DIP module package



Key Specifications

- Power requirements: 2.7–5.0 VDC; < 10 mA
- Communication: I²C; 100 kbps max.
- Operating temperature: -4 to +158 °F (-20 to +70 °C)
- Dimensions: 0.46 x 0.59 x 0.54 in (11.7 mm x 14.7 mm x 13.7 mm)

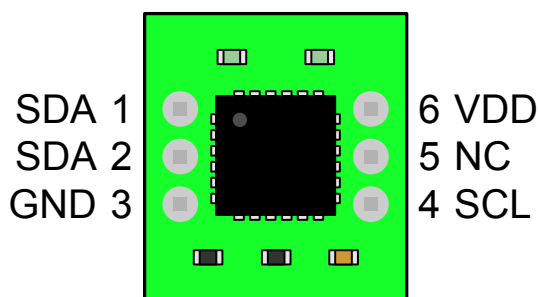
Application Ideas

- Provide headings when GPS signals cannot be used
- Use as a reference for orienting gyroscopes
- Heading detection for small robots and RC cars
- Model airplane heading hold

Package and Pin Descriptions

Pin #	Name	Description	Pin Type
1	SDA	I ² C Serial Data*	Input /Output
2	SDA	I ² C Serial Data*	Input /Output
3	GND	Ground	Power
4	SCL	I ² C Serial Clock	Input
5	NC	Not connected	n/a
6	VDD	Input supply voltage	Power

*Pin 1 and Pin 2 are internally connected.



Absolute Maximum Ratings

NOTE: Conditions beyond the absolute maximum rating may permanently damage the device; the device may not function properly throughout this range. For functional ranges, see Operating Conditions below.

Parameter	Minimum	Maximum	Unit
V _{DD} (Measured from GND)	0	5.2	V
Storage temperature	-55	+125	°C
Maximum Magnetic Field	—	10,000	gauss

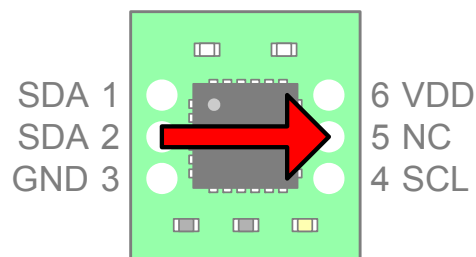
Operating Conditions

Parameter	Minimum	Typical	Maximum	Unit
V _{DD} Supply Voltage	2.7	—	5.2	V
Supply Current*				
Sleep Mode (V _{DD} = 3.0 V)	—	1	—	μA
Operational Mode (V _{DD} = 3.0 V)	—	1	—	mA
Operational Mode (V _{DD} = 5.0 V)	—	2	10	mA
Operating Temperature Range	-20	—	+70	°C

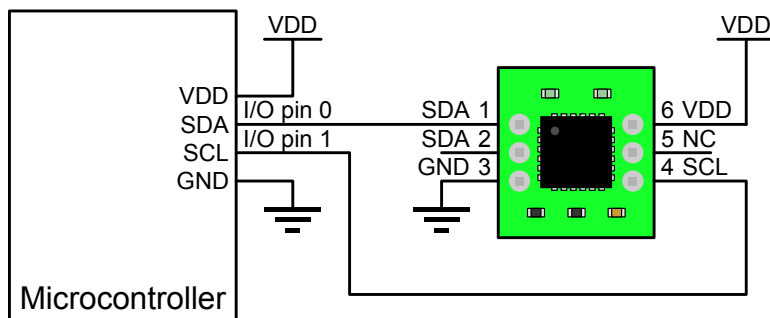
*All measurements from HMC6352 datasheet; tested at 25°C

Orientation

The heading will read 0° when the compass is oriented such that the arrow shown in this diagram is facing north.



Connection Diagram



Connecting and Calibrating

- From <http://www.parallax.com/> download and extract the example code:
- "HMC6352-Propeller-Examples-V1.0.zip" for the Propeller P8X32A.
- "HMC6352-BS2-Examples-V1.0.zip" for the BASIC Stamp 2.
- Connect the HMC6352 to the BASIC Stamp 2 or Propeller microcontroller, following the diagram above.
- Load HMC6352_Compass_Calibration file it into the BS2 or Propeller microcontroller, following the instructions in the file.
- After the program has finished loading, slowly and rotate the compass on a level plane for 20 seconds.
- The compass is now calibrated
- Demo programs are also included within the archive.

Please note that the Propeller test application uses the Parallax Serial Terminal for displaying the state of the sensor. The Parallax Serial Terminal is installed with the Propeller Tool v1.2.6, which is available from the Downloads link at www.parallax.com/Propeller.

Precautions

- Do not operate or store the Compass Module near sources of strong magnetic fields. Strong magnetic fields can be created by bar and ring magnets, electric motors, and other coil elements such as solenoids, relays, and large inductors.
- Do not apply magnetic fields in excess of 10,000 gauss to the Compass Module. Magnetic fields stronger than 10,000 gauss can permanently damage the sensor.
- Mount the Compass Module as far away as possible from magnetic field disturbances. These include magnets, motors, power cords, coils, metal boxes, and sometimes the ground.
- Do not apply voltages to the device that are outside the values stated in the Absolute Maximum Ratings section.