BMI160 6-axis inertial motion sensor

Product introduction

The module uses Bosch's new BMI160 6-axis inertial motion sensor in a MEMS sensor package that integrates the top 16-bit 3-axis accelerometer with an ultra-low-power 3-axis gyroscope. The module can output acceleration data (acceleration values detected by the device in the X, Y, and Z directions) and gyroscope data (the speed at which the device rotates around the X, Y, and Z axes). When accelerometers and gyroscopes operate in full-speed mode, typical power consumption is as low as 950μA, which is only 50% or less of the power consumption of similar products on the market.
Designed for smartphones, tablets, and wearable devices, the Bosch BMI160 includes a built-in smart step counter algorithm that reads the number of steps directly through the registers. The built-in 3-axis acceleration and 3-axis gyroscope enable motion detection such as running and fitness. Module built-in LDO power management chip, VIN supports 3.2~6V wide voltage supply, also has a separate 3.3V interface, compatible with Arduino 3.3V and 5V controller direct drive.

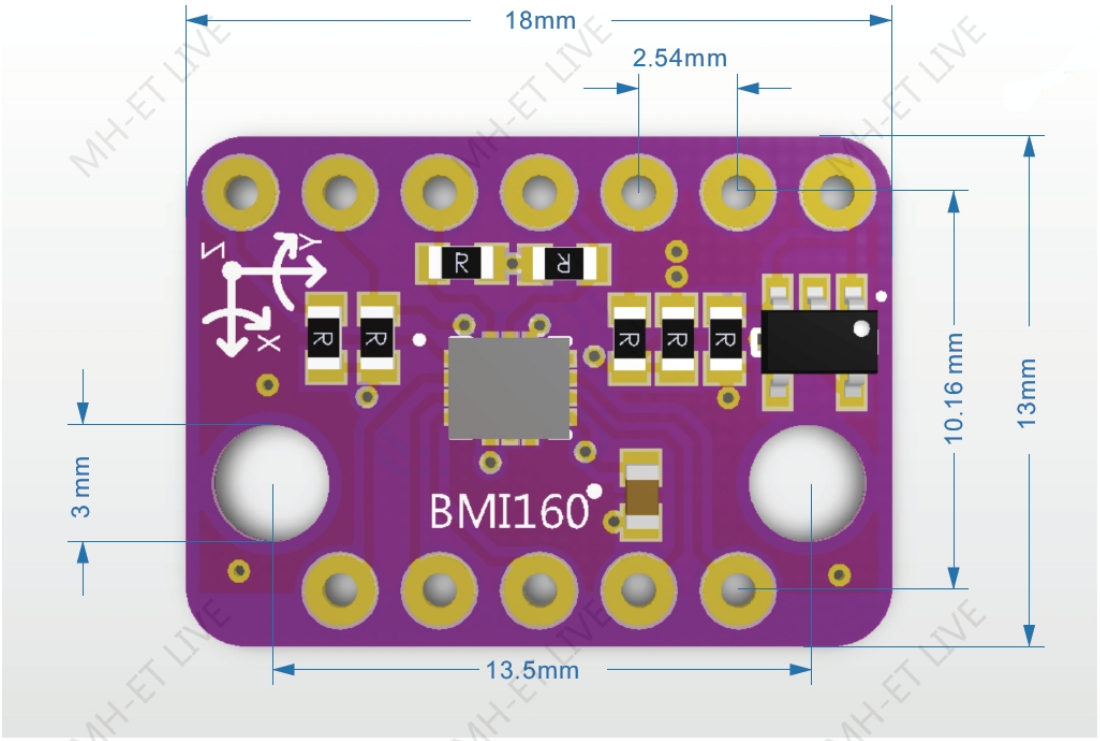
Application

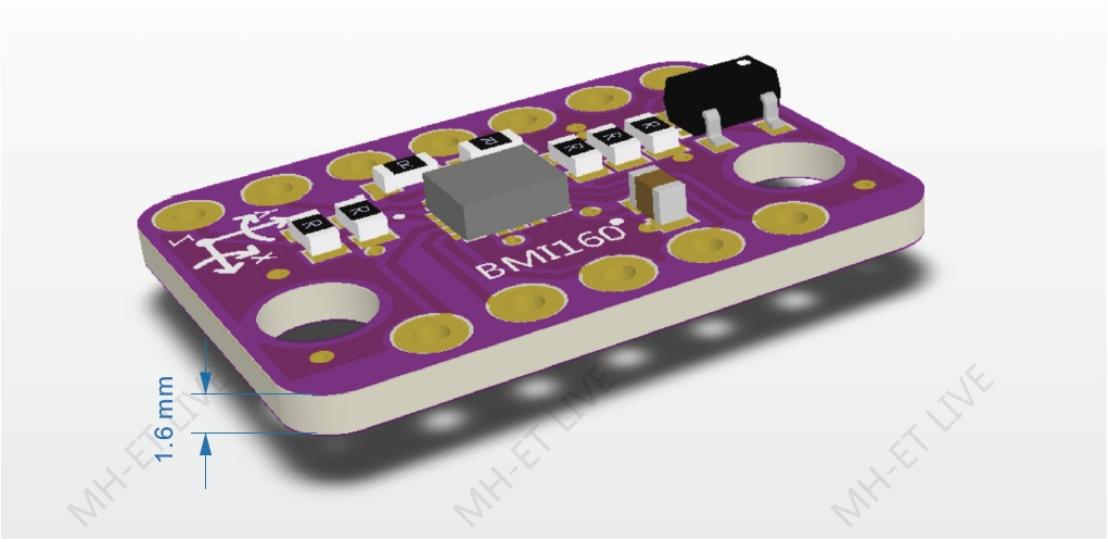
1. Walking step 2. Acceleration detection 3. Inclination measurement 4. Display screen switching horizontal / vertical mode

Technical specifications

Working voltage: 3.2V~6V
Current consumption: <1mA
Interface mode: 2.54 pitch pin header
Acceleration optional ruler: ±2g/±4g/±8g/±16g
Gyro optional scale: ±125°/s, ±250°/s, ±500°/s, ±1000°/s, ±2000°/s
Accelerometer zero drift: ±40mg
Gyroscope zero drift: ±10°/s
Programmable frequency: 25/32Hz~1600Hz
6D detection and positioning
16-bit data output
Impact resistance: 10,000 gx 200μs
2 independent programmable interrupt generators

Built-in 1024 byte FIFO
Working temperature: -40 ° C ~ +85 ° C

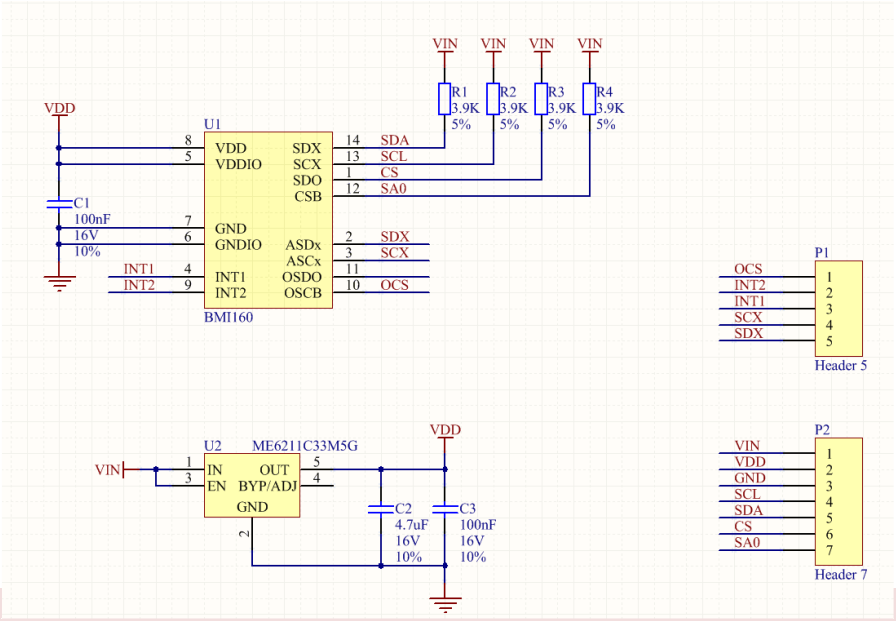




Pin definition:

BMI160 PINOUT					
	名称	I/O 类型	功能描述	IIC	SPI
1	VIN	Power Supply	Digital I/O supply voltage (3.3V -- 6V)	VCC	VCC
2	3v3	Power Supply	Digital I/O supply voltage(3.3V)	VCC	VCC
3	GND	Ground	Ground for digital & analog	GND	GND
4	SDX/ASDx	Digital I/O	Magnetometer interface*)		
5	SCX/ASCx	Digital out	Magnetometer interface		
6	INT1	Digital I/O	Interrupt pin 1 *) 可配置中断1	INT1	INT1
7	INT2	Digital I/O	Interrupt pin 2 *) 可配置中断2	INT2	INT2
8	OCS	Digital I/O	OIS interface		
9	CS	Digital in	Chip select for SPI mode / Protocol selection pin片选		SS
10	SCL/SCx	Digital in	SCK for SPI serial clock SCL for I²C serial clock	SCL	SCK
11	SDA/SDx	Digital I/O	SDA serial data I/O in I2C MOSI serial data input in SPI 4W SISO serial data I/O in SPI 3W	SDA	MOSI
12	SAO/SDO	Digital I/O	Serial data output in SPI(MISO) Address select in I2C mode	Address select1 I2C地址选择： [接GND：0x68 默认上拉到VCC：0x69]	MISO

Schematic:

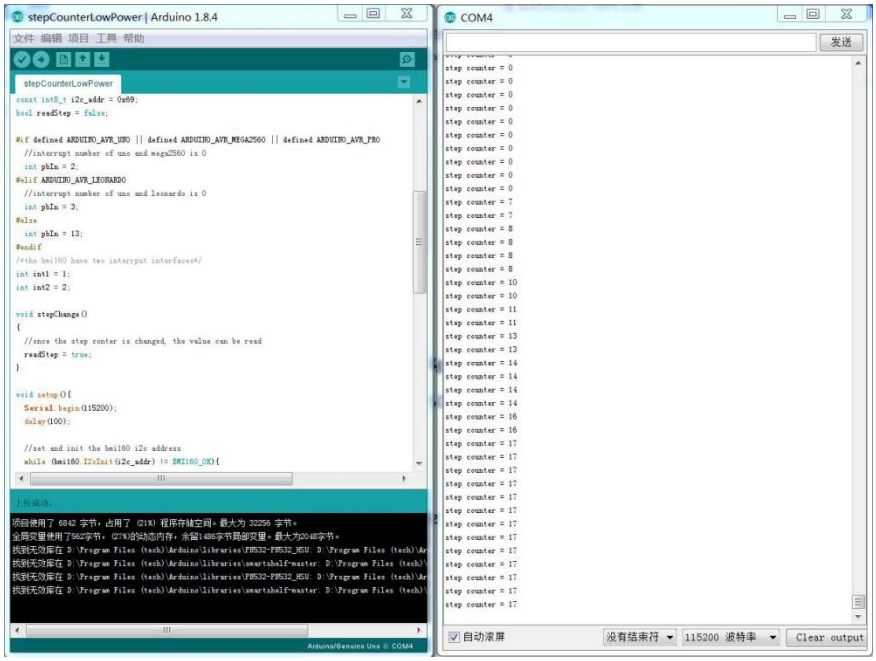


计步 **测**

量示 **例**

特别注意：I2C 的地址有两个，即为 0x69，0x68。当程序中设置 I2C 的地址为 0x68 时需要将 BMI160 上的 SDO 与 GND 短接

程序例程见附件



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