

TCM[®] 2.6

Tilt Compensated 3-Axis Compass Module

The TCM2.6 has all the features of the TCM2.5, but is about half the size and width, making it ideal for today's size sensitive applications. It uses the same RS-232 interface protocol, which allows for easy integration into existing systems, but has the addition of an extended temperature range of -40 to 85°C.

The TCM2.6 integrates 3-axis magnetic field sensing, 2-axis tilt sensing and compass heading into a single module. Advantages include protocol compatibility with existing systems, low power consumption, large signal noise immunity under all conditions, and a large magnetic field measurement range in a small package. The TCM2.6 combines PNI Corporation's patented Magneto-Inductive (MI) magnetic sensors and a MEMS accelerometer in a single module, offering unparalleled cost effectiveness and performance. MI sensors change inductance by 100% over the wide field measurement range. This variable inductance property is used in a cost and space efficient ASIC incorporating a temperature and noise stabilized oscillator/counter circuit which is inherently free from offset drift.



Features

- High accuracy compass heading: 0.8°
- High resolution compass heading: 0.1°
- High repeatability: 0.1°
- Wide tilt range: ±50°
- Multiple measurement modes: compass heading, magnetic field and 2-axis tilt
- Calibrated magnetic field measurement range: ±80 μT (±0.8 Gauss)
- High resolution magnetic field measurement: 0.05 μT (±0.8 Gauss)
- Extended temperature range: -20° to 70°C
- Small size: 3.5 x 4.3 x 1.3 cm
- Reliable calibration: hard-iron calibration with quality of calibration score
- Low Power: <20 mA typical current draw
- RS-232 compatible digital interface

Applications

- ROVs/AUVs
- Remote terrestrial antenna direction indicators
- Side-scan sonar
- Survey equipment
- Robotics systems
- Vehicle detection
- Weather stations

Ordering Information

Description	Part Number
TCM2.6 Module Only	12606
TCM2.6 Interface Kit	90012
TCM2.6 Evaluation Kit	90019

Interface kit includes module, pigtail cable and evaluation software.

Evaluation kits includes module, pigtail cable, finished DB-9 cable with power and evaluation software.

Specifications

Parameter	Typical	Units
Heading Specifications		
Accuracy over tilt range	0.8°	Deg RMS
Resolution	0.1°	Deg
Repeatability ^[1]	0.1°	Deg RMS
Max Dip Angle	85°	Deg
Magnetometer Specifications		
Calibrated Field Measurement Range	±80	μT
Magnetic Resolution	±0.05	
Magnetic Repeatability	±.1	
Tilt Specifications		
Pitch Accuracy	0.2°	Deg RMS
Roll Accuracy	0.2°	
Tilt Range	± 50°	Deg
Tilt Resolution	0.1°	
Tilt Repeatability ^[1]	0.1°	
Calibration		
Hard Iron Calibration	Yes	
Soft Iron Calibration	No	
Mechanical Specifications		
Dimensions (L x W x H)	3.5 x 4.3 x 1.3	cm
Weight	12	grams
Mounting Options	Screw Mounts/Standoffs horizontal	
Connector for RS-232	9-pin	
I/O Specifications		
Latency from Power-On	< 50	mSec
Latency from Sleep Mode	< 1	
Maximum Sample Rate	8	samples/sec
RS-232 Communication Rate	300 to 115200	baud
Output Formats	TCM2 ASCII Protocol	
Power Specifications		
Supply Voltage	3.6 to 5 V (unregulated)	
Current Draw (continuous output)	Max: 22 Typ: <20	mA
Idle Mode	18	
Sleep Mode	0.6	
Environmental Specifications		
Operating Temperature	- 20 to 70	
Storage Temperature	- 40 to 85	

[1] Repeatability is based on statistical data at ±3 sigma about the mean.