

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 Corporations 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: $\pm 50^{\circ}$
- 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	
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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	.00		
Range	±80	<u></u> μT	
Magnetic Resolution	±0.05		
Magnetic Repeatability	±.1		
Tilt Specifications			
Pitch Accuracy	0.2°	Dog BMS	
Roll Accuracy	0.2°	—— Deg RMS	
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)	VDC	
Current Draw (continuous Max:	22	-	
output) Typ:	<20	—— mA	
Idle Mode	18		
Sleep Mode	0.6		
Environmental Specifications			
Operating Temperature	- 20 to 70	°C	
Storage Temperature	- 40 to 85		

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

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