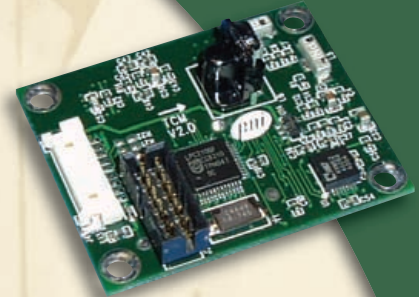


# TCM™ 2.6

## Tilt Compensated 3-Axis Compass Module



The TCM2.6 has all the features of the TCM2.5, but is about **half the size and weight**, 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.

### Applications

- ROV/AUV's
- Remote terrestrial antenna direction indicators
- Side-scan sonar
- Survey equipment
- Robotics systems
- Vehicle detection
- Weather stations

### 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  $\mu$ T (+/- 0.8 Gauss)
- High resolution magnetic field measurement: 0.05  $\mu$ T (0.0005 Gauss)
- **Extended temperature range:** -40° to 85°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
- **Backwards compatible digital interface:** RS-232

### Ordering Information

NAME	PART NUMBER
TCM2.6 Module	12477
TCM2.6 Interface Kit	90012
TCM2.6 Evaluation Kit	90019

Interface kit includes: module, manual, evaluation software and 18" pigtail cable

Evaluation kit includes: module, manual, evaluation software, 18" pigtail cable and 6ft finished DB-9 cable with power supply



## TCM2.6 Specifications

Parameter	TCM2.6	Units
<b>Heading Specifications</b>		
Accuracy	0.8°	Deg RMS
Resolution	0.1°	Deg
Repeatability (1)	0.1°	Deg RMS
Max Dip Angle	85°	Deg
<b>Magnetometer Specifications</b>		
Calibrated Field Measurement Range	± 80	μT
Magnetic Resolution	± .05	
Magnetic Repeatability	± .1	
<b>Tilt Specifications</b>		
Pitch Accuracy	0.2°	Deg RMS
Roll Accuracy	0.2°	
Tilt Range	± 50°	Deg
Tilt Resolution	0.1°	
Tilt Repeatability (1)	0.1°	
<b>Calibration</b>		
Hard Iron Calibration	Yes	
Soft Iron Calibration	No	
Limited Tilt User Calibration	No	
<b>Mechanical Specifications</b>		
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 Interface	9-pin	
<b>I/O Specifications</b>		
Latency from Power-On	< 50	mSec
Latency from Sleep Mode	< 1	
Maximum Sample Rate	20	samples/sec
RS-232 Communication Rate	300 to 115200	baud
Output Formats	TCM2 Protocol NMEA0183	
<b>Power Specifications</b>		
Supply Voltage	3.6 to 5 V (Unregulated)	VDC
Typical Current Draw (Continuous Output)	Maximum	22
	Typical	< 20
Idle Mode	18	mA
Sleep Mode	0.6	
<b>Environmental Specifications</b>		
Operating Temperature	-40° to 85°	C
Storage Temperature	-40° to 125°	
Shock	50–2500 G's, Half Sine Wave Shock with 2 drops at each level	
Vibration	Z-Axis, Skewed Block, at 1, 2 & 4 Grms @ 10–1000 KHz for 30 min. per level	
Humidity	70°C with 95% R.H. for 168 hrs.	

(1) Repeatability is based on statistical data at ± 3 sigma limit about the mean.

These specifications are preliminary and are subject to change without notice.  
For the most current specifications, please visit our website at [www.pnicorp.com](http://www.pnicorp.com).