

## TCM-Prime

### Tilt-Compensated Digital Compass

#### *General Description*

PNI's TCM-Prime digital compass combines PNI's patented magneto-inductive sensors with a 3-axis MEMS accelerometer in a single temperature and noise-stabilized design that's inherently free of offset drift.

Using PNI's proprietary hard and soft iron calibration algorithms, magnetic anomalies encountered in the field can be accounted for, resulting in reliable and consistent heading readings.

The TCM-Prime excels in reduced power consumption by combining the magneto-inductive sensors' inherently low current usage with intelligent electronics that reduce current consumption to <1mA when not sampling.

With its many potential applications, the TCM-Prime provides a command set designed with flexibility and adaptability in mind. Many parameters are user-programmable, including reporting units, sampling configuration, output damping, and more.

#### *Features*

- Hard and soft iron correction with quality of calibration score
- Small form factor
- Low power consumption
- Binary RS232 interface
- RoHS compliant

#### *Applications*

- Unmanned ground, aerial, or undersea vehicles (ROVs, AUVs, UAVs, etc.)
- Sonobuoys
- Robotic systems
- Binoculars & Telescopes
- Seismic monitoring systems
- Acoustic Doppler current profilers (ADCPs)
- Downhole directional drilling equipment



Parameter		Value
<b>Performance Specifications</b>		
Heading	Range	360°
	Accuracy (tilt ≤45°)	<2° rms
	Resolution	0.1°
	Repeatability	± 0.05°
Tilt (Pitch & Roll)	Range	± 180°
	Accuracy	<1° rms
	Resolution	0.1°
	Repeatability	0.05°
Maximum Dip Angle		85°
Magnetometers	Calibrated Field Range	± 85 μT
	Resolution	± 0.05 μT
	Repeatability	± 0.1 μT
<b>I/O Characteristics</b>		
Latency from Power On		<50 ms
Latency from Sleep Mode		<1 ms
Maximum Sample Rate		>20 samples/sec
RS-232 Communication Rate		300 to 115,200 baud
Output Format		Binary Protocol
<b>Mechanical Characteristics</b>		
Dimensions (l x w x h)		3.3 x 3.1 x 1.3 cm
Weight		5 gm
Mounting Options		Screw mount / standoff, horizontal or vertical
Connector for RS-232		Ribbon
<b>Power Requirements</b>		
DC Supply Voltage		3.6 - 5 V (unregulated)
Current Draw (under continuous operation)	Maximum	22 mA
	Typical	<20 mA
Sleep Mode		0.6 mA
<b>Environmental Requirements</b>		
Operating Temperature		-40C to +85C
Storage Temperature		-40C to +85C

**Product specifications are preliminary and subject to change.**