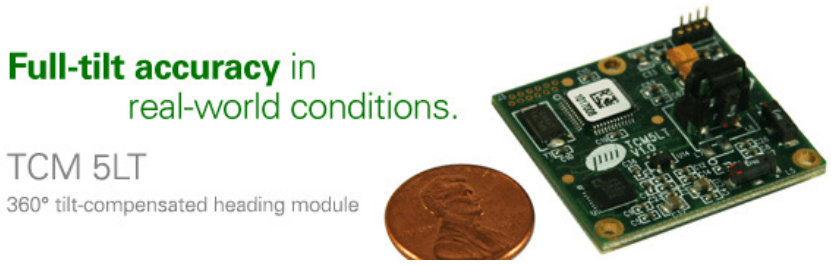

TCM 5LT

The TCM5LT combines a full 360 degrees of tilt compensation with transistor-to-transistor level (TTL) output — providing ultra-precise digital compass heading information and magnetometer measurements while using less power than any other tilt-compensated compass module.

The TCM5LT combines PNI's patented magneto-inductive sensors with a 3-axis MEMS accelerometer in a single temperature- and noise-stabilized ASIC that's inherently free of offset drift. And using its included hard- and soft-iron correction algorithms, the TCM5LT calibrates out most magnetic anomalies for repeatable, high-resolution measurement across a wide range of navigation and tracking applications.

3-AXIS MEASUREMENT

3D ORIENTATION

HARD-IRON CORRECTION

HIGH-RESOLUTION/ACCURACY

INTEGRATED PROCESSOR

MODULE

SOFT IRON CORRECTION

Flexible Mounting Options
Horizontal or vertical

Hard and Soft Iron Calibration
Customizable by user

High Resolution
Compass heading 0.1°

High Tilt Repeatability
0.05°

Low Power
7.2 to 11.5 mA typical draw;
85 to 220 µA in sleep mode

Wide Temperature Range
−40 to 85 °C (operational)

Compact Size
3.33 × 3.1 × 1.35 cm

RoHS Compliant

Full Tilt Compensation
± 90° pitch; ± 180° roll

High Precision
Heading accuracy 0.3°

High Resolution Field Measurement
0.05 µT (0.0005 Gauss)

Instant Startup
40 to 70 ms from power down for valid measurement;
10 to 25 ms from power down to power up ackn

Ultra-Compact Size
3.3 × 3.1 × 1.3 cm

Wide Field Measurement Range
± 80 µT (± 0.8 Gauss)

Binary Digital Interface
LVCMOS (UART)

Digital Interface
Binary

Heading Specifications

Accuracy (RMS)	0.5° (Tilt > 70°) 0.3° (Tilt < 70°)
Max Dip Angle	85°
Repeatability (RMS)[1]	0.05°
Resolution	0.1°

Magnetometer Specifications

Calibrated Field Measurement Range	± 80 µT
Magnetic Repeatability	± 0.1 µT

Purchase Options

TCM 5LT — Module only — $1,849.00

Product Information

Specifications

Downloads

Datasheet | Manual
Application Notes | Software

Support

FAQs | Request a Quote

Find Sensors & Modules

By Application
By Feature
All Products

Magnetic Resolution	± 0.05 µT

Tilt Specifications

Pitch Accuracy	0.2° RMS
Roll Accuracy (RMS)	0.2° (Pitch < 65°) 0.5° (Pitch < 80°) 1.0° (Pitch < 86°)
Tilt Range	± 90° Pitch ± 180° Roll
Tilt Repeatability[2]	0.1°
Tilt Resolution	0.1°

Calibration

Hard Iron Calibration	Yes
Soft Iron Calibration	Yes

Mechanical Specifications

Connector for RS-232 Interface	4-Pin
Dimensions (L × W × H)	3.3 × 3.1 × 1.3 cm
Mounting Options	Screw Mounts/Standoffs Horizontal
Weight	10 grams

I/O Specifications

Communication Rate	300 to 115200 baud
Latency from Power-On	≤ 25 ms
Latency from Sleep Mode	≤ 70 ms valid measure
Maximum Sample Rate	20 samples/sec
Output Formats	Binary High Performance Protocol

Power Specifications

Idle Mode	7.2 mA RMS (push mode) 11.5 mA RMS (poll mode)
Sleep Mode Current Draw	85 to 220 µA
Supply Voltage (VDC)	3.6 to 5 V (Unregulated)
Typical Current Draw (Continuous Output)	Maximum: 22 mA Typical: < 20 mA

Environmental Specifications

Humidity	Non-condensing / Qualified to MIL-STD-810F
Operating Temperature Range	−40 to 85 °C
Shock	2500 *g*, per MIL-STD-810F
Storage Temperature Range	−40 to 125 °C
Vibration	Qualified to MIL-STD-810F

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