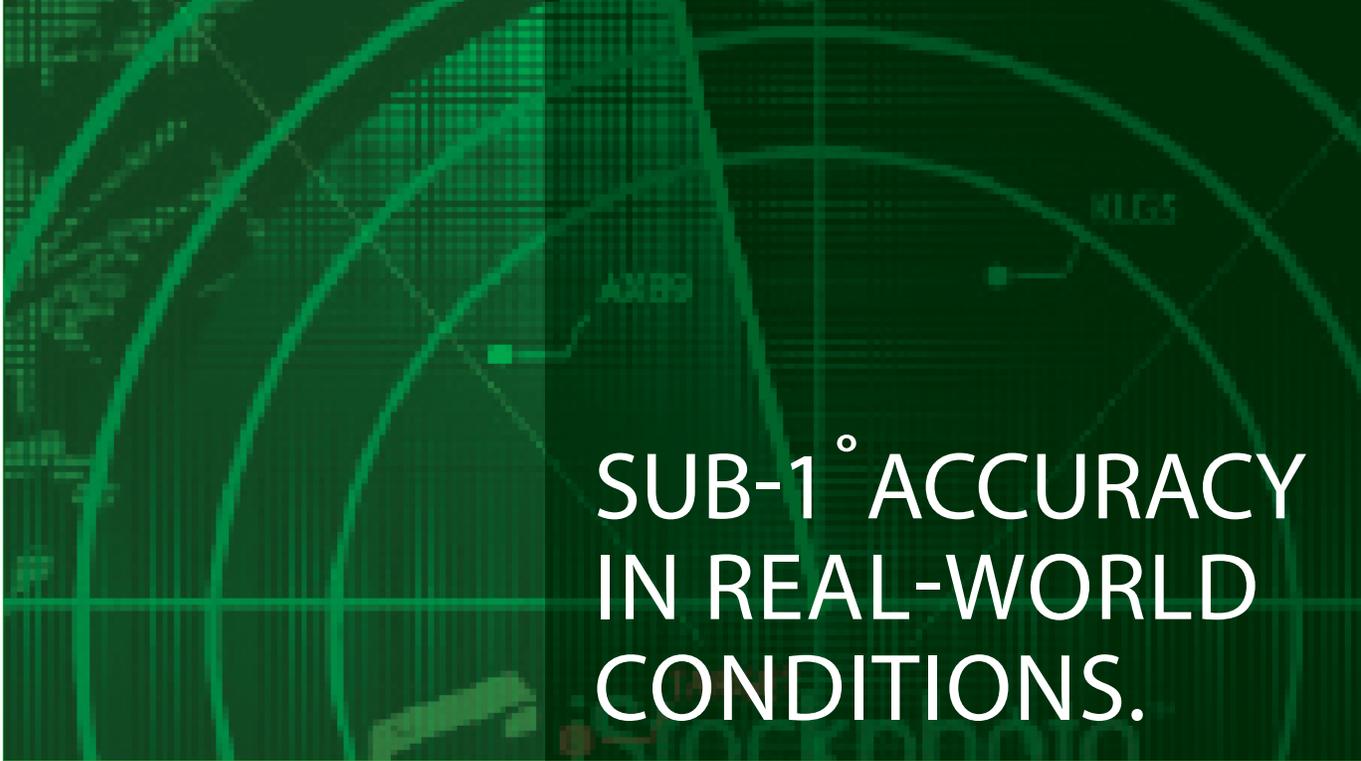


# FieldForce TCM

High performance compass modules



## SUB-1° ACCURACY IN REAL-WORLD CONDITIONS.



### WHERE GPS IS COMPROMISED OR UNAVAILABLE —

whether underwater or underground, beneath a bridge or inside a building — PNI's FieldForce® TCM tilt-compensated compass modules provide reliable, pinpoint-accurate pitch, roll and compass heading.

The TCMs use advanced algorithms to counter the effects of hard and soft iron interference, providing highly accurate heading information in most any environment and any orientation. PNI's patented magneto-inductive sensors and pioneering measurement technology combine to provide all this performance under a low power budget that extends mission duration.

The TCMs' unmatched performance in real-world conditions makes them ideal for applications that require consistency and accuracy in the field — far target location, object tracking, and more.

## Sub - 1° accuracy...

The TCM is a high-performance, low-power consumption, tilt-compensated electronic compass module that provides industry-leading heading accuracy. The TCM combines PNI's patented magneto-inductive sensors and a 3-axis MEMS accelerometer with PNI's proprietary factory calibration and advanced field calibration algorithms to ensure absolute accuracy.



## ...in real-world conditions.

PNI recognizes there's a difference between performing well in the factory and performing well in the field. The TCM's advanced field calibration algorithms account for these differences by correcting for local magnetic distortions. And since applications may have physical constraints for doing calibration, the TCM provides 4 different calibration methods, as well as the ability to recalibrate the accelerometers to ensure long-term accuracy.

The TCM's measurement technology inherently ensures the module is free from offset drift and provides high measurement resolution, which is critically important at high and low latitudes where the dip angle (inclination) limits the usefulness of other compasses. So the TCM performs well in the field, not just in the factory.

## Specifications\*

Heading	Static Accuracy	<0.3°rms ≤65° of tilt after full range calibration
		<0.5°rms ≤80° of tilt after full range calibration
		<2.0°rms ≤5° of tilt after full range calibration
		<2.0°rms ≤2 times the calibration tilt angle when using limited-tilt calibration
Tilt	Repeatability	0.05° rms
	Resolution	0.1°
	Accuracy	0.2° rms
	Range	±90° pitch, ±180° roll
Power Requirements	Repeatability	0.05° rms
	Resolution	0.01°
	Maximum Dip Angle (operational)	85°
Calibrated Field Measurement Range		±125 µT
Maximum Sample Rate		≈30 samples/second
Communication Interface - TCM MB		Binary CMOS/TTL UART
Communication Interface - TCM XB		Binary RS232
Power Requirements	XB Current Draw (continuous output)	20 mA
	MB Current Draw (continuous output)	17 mA
	XB Current Draw in Sleep Mode	0.3 mA
	MB Current Draw in Sleep Mode	0.1 mA
	Supply Voltage TCM XB	3.6 - 5 V DC (unregulated)
	Supply Voltage TCM MB	3.3 - 5 V DC (unregulated)
Dimensions (l x w x h) - TCM XB		3.5 x 4.3 x 1.3 cm
Dimensions (l x w x h) - TCM MB		3.3 x 3.1 x 1.3 cm

## FieldForce TCM

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2 - AXIS



3 - AXIS



HIGHEST RESOLUTION/  
HIGHEST ACCURACY



HARD AND SOFT-IRON  
CORRECTION



INTEGRATED  
PROCESSOR



LOW POWER



3D ORIENTATION

PNI MAGNETO-INDUCTIVE ORIENTATION SENSORS can tell you if something is up or down, sideways or facing east. They can tell you where in space your handheld is, or track movement across a screen or down a ravine. They're reliably accurate underwater, in space, in a car, and at extreme temperatures — all with pin-point accuracy, and using far less power than other technologies.

PNI uses the existing power of the earth's magnetic field to measure position, orientation and heading, applying its patented Magneto-Inductive technology in each of its sensors and modules.

Many of today's leading companies are using PNI technology in their marquee products and across a wide spectrum of applications, including compassing, surveying equipment, sonar, robotics, vehicles and oceanography equipment.

\*For ordering information and most current specifications, please visit [www.pnicorp.com](http://www.pnicorp.com)

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