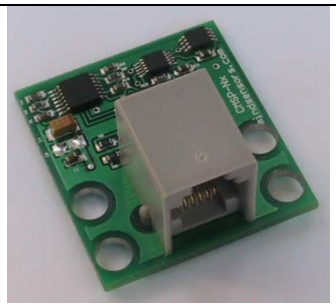
Digital Compass Sensors Review – mindsensors.com vs. HiTechnic

NXTasy.org | a LEGO Mindstorms NXT community

As you all probably know, one of the first third party products available (very soon) for the NXT is the digital compass sensor. The compass sensor measures the magnetic field around the sensor and calculates the sensor's orientation relative to the magnetic north pole. One has to remember, however, that motors and AC current systems generate magnetic fields which may interfere with the sensors operation, requiring a calibration procedure. In this review I compare two digital compass sensors from two different vendors: mindsensors.com and HiTechnic. All technical data was supplied by the companies, and could not be checked personally.

First, the bare figures:

	mindsensors.com	**HiTechnic**
Image		
Packing and mounting	Bare IC with 4 technic holes	NXT-like with 3 technic holes
Connector	Regular phone RJ-12 plug *Compatible cable supplied*	NXT plug, compatible with NXT cables
Accuracy	1 degree absolute	Better then +/- 5 degrees
Angular Resolution	0.1 degrees relative	1 degree
Time Resolution (in continuous mode)	25 readings per second	100 readings per second
Trigger mode time delay	40ms after trigger command	N/A
Raw magnetic field readout	Supported	N/A
Software Calibration	Supported	Supported
Manual Calibration	Supported	N/A

AC noise filter	50Hz and 60Hz filter, software selectable	N/A
Use with NXT-G	Planned for the future	Supported
Use with NBC	Supported	Supported
Use with RobotC	Supported	Supported
Features	Supports parallel sensors architecture, allowing multiple sensors to connect to a single port via I2C bus.	Returns sensor type and other information as per the NXT specification for Digital sensors. "Plug and Play" design in the style of the standard NXT sensors.
Part number	CMP2N	TBD
Availability	Now shipping	Within the next 60-75 days
Price	49$	TBD, targeted below 50$
Web site	http://www.mindsensors.com/	http://www.hitechnic.com/

As expected each of the two products has its advantages and disadvantages. The mindsensors.com compass sensor has a better resolution specifications, but lower rate of update – this may be problematic if your robot rotates fast. HiTechnic sensor has NXT-G support which mindsensors.com still lacks (but would probably bridge this gap after LEGO publish the NXT mindstorms SDK soon). Mindsensors.com compass sensor supports parallel sensors architecture via I2C bus, a two-wire digital communication protocol (which would be a topic for a separate review in the near future), but there is still no complimentary products announced for parallel sensors attachment. Last, but not least, the HiTechnic sensor is enclosed in an NXT-style packing which would matter if you're interested in how your robot looks like, and not only in how good it works.

Reviewed by Guy Ziv
Published online July 25, 2006

Thanks to Dr. Nitin Patil from mindsensors.com and Stephen Barker from HiTechnic for sharing information regarding the new compass sensors of their companies.