

Mtech Product Update



Product News

www.turck-usa.com

High Resolution Linear Position Sensors

TURCK's new LI-Q25 series linear position sensors replace magnetostrictive and potentiometer devices to deliver precise, repeatable measurements in metal processing machines, rolling mills or injection molding machines. Unlike magnetostrictive or magnetic inductive position sensors, LI-Q25 sensors do not require a magnetic positioning device; thus, they are unaffected by metal debris. The sensors provide up to 1 µm resolution and



can achieve measuring ranges between 100 and 1,000 mm with analog voltage/ current, SSI or I/O Link outputs. The linear position sensor has emitter and receiver coil systems, precisely placed onto a printed circuit board, that are activated with a high frequency AC field and produce an inductive RLC circuit with the positioning element (resonator). As a result, the resonator is inductively coupled with the receiver coils. The receiver coils are arranged in a pattern so that different voltages are induced into the coils depending on the position of the resonator. These voltages serve as a measure for the sensor signal.

To increase the speed and accuracy of measurement, the sensor has a coarse and a fine measuring coil system that is microprocessor controlled. An integrated processor provides an output signal in different formats: 0 to 10 V, 4 to 20 mA, IO-Link or SSI.

The linear position sensor has extremely short blind zones of only 29 mm on each side, along with a wide temperature range of -25 to 70°C, and the option to program the sensor for different measuring ranges.

Product Strengths

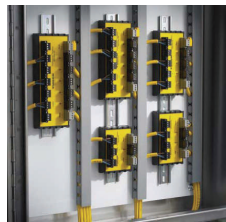
- Programmable measuring range using teach wire
- Analog outputs: 4-20 mA and 0-10 V in one package
- Short blind zones of 29 mm on each end of the sensor
- M12 eurofast® connection: 5-pin (analog, IO-Link), 8-pin (SSI)
- Two diagnostic LEDs: 1. Power indication: Green; 2. Measuring range indication: Green/Yellow multifunctional
- Able to include position element and mounting feet as one part number
- IO-Link
- -25 to 70°C
- SSI (synchronous serial interface)
- IP67 sealed housing standard

Specifications

- Resolution: 12 bit (analog), 20 bit (SSI), 16 bit (IO-Link)
- Vibration resistance to 55 Hz (1mm)
- Measuring ranges available 100 to 1,000 mm in 100 mm increments
- High noise immunity: All products in this family meet IEC 60529 and EN 60529 standards for noise immunity
- Sampling rate: 500 Hz (analog), 1kHz (SSI and IO-Link)
- 15-30 VDC operating voltage
- Shock resistance to 30g (11ms)

JRBS Junction Bricks Approved for Use with Emerson's DeltaV Digital Automation System

TURCK's JRBS junction bricks for FOUNDATION fieldbus™ are now approved for use with the Emerson Process Management's DeltaV Digital Automation System. The full line of JRBS junction brick products will be listed in Emerson's Third Party Alliance Program, and the details will be available on the Fieldbus Third Party Products Web site: www.easydeltav.com/keytechnologies/fieldbus/vendors.asp in the near future. If you require a statement of approval in the meantime, please contact your Mtech representative.



TURCK's JRBS junction brick family is an innovative product that provides quick and easy connection of multiple devices to the main fieldbus trunk. JRBS junction bricks are available with 4, 6, 8, 10 or 12 ports and feature removable terminals for simple, efficient installation and wiring modification in tight spaces. These terminals are located on both sides of the brick to enable easy access for wiring from either direction – and they securely screw into place – eliminating the risk of becoming disconnected in high vibration environments. Plus, JRBS junction boxes can be DIN-mounted vertically or horizontally.

JRBS junction bricks provide short circuit protection for all ports, as well as visual status with bright LED indicators located on each spur. This allows devices to be added and removed without disruption to the network. An optional overmolded, pluggable terminating resistor is also available for use with the three pole terminal blocks. In addition, several features of the JRBS junction box make it particularly simple to set-up and use:

- Delivers a complete FOUNDATION fieldbus solution from field devices to control systems
- Available in 4, 6, 8, 10 or 12 port models
- Features removable terminals for easier access and wiring in confined areas
- Offers simple vertical or horizontal DIN-rail mounting configuration
- Pluggable terminating resistor available
- Incorporates short circuit protection with LED indication on each spur
- Features IP 20-rated housing
- Offers cage-clamp terminals, screw terminals
- Hazardous location approvals permit installation in a variety of configurations



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Congratulations

To the winner of the Free Banner SureCross DX70 Kit
The drawing was held at the March 25th Minnesota ISA show

Name: Brad Anderson
Company: Product Development

Thanks to all that attended and registered for the drawing at the Banner / Mtech booth.



iVu Software 2010R1

Banner has released the iVu 2010R1 software that introduces a new Blemish Sensor Type that can be used to find imperfections or to verify the presence of a feature on a part. Selecting this sensor type is a better option when dealing with variable materials or uneven lighting.

New Features:

- Added 'Blemish' sensor type
- Added 'Circle' and 'Ellipse' ROI types for Area and Blemish sensor types
- Updated Discrete IO to support two outputs (Output 1 and Output 2) and pulsed output signals
- Added zoom capability on slider bar for tool parameters with large min/max ranges
- Improved display/touchscreen response during long inspection times or fast triggers -- this can be disabled
- Reorganized Results screens
- Reorganized System Menu
- Added ability to edit Sensor Name on the device
- Increased Fail Hold Time to 3600 sec
- Removed 'Area with Motion' sensor type selection -- replaced with Motion enable/disable
- Added Motion Enable/Disable under system settings, now supports Area and Blemish sensor types

Resolved issues:

- Number of firmware files supported on USB increased to 64

Software Download

- Go to [Software downloads](http://www.bannerengineering.com) on www.bannerengineering.com



PresencePLUS® Software 2010R1

Banner has released their new 2010R1 software which supports two new software vision tools, the Circle Detect and the Line Detect tools.

The Circle Detect tool determines radius, center point and other characteristics of a circle or arc.

The Line Detect tool determines length, end points and other characteristics of a line segment.

The new tools are available on all Proll and P4 Omni sensor models.

In addition, a number of other functional and performance improvements have been incorporated into the new release.

Major Features

- Line Detect Determines length, end points, and other characteristics of a line segment.
- Circle Detect Determines radius, center point, and other characteristics of a circle or arc.

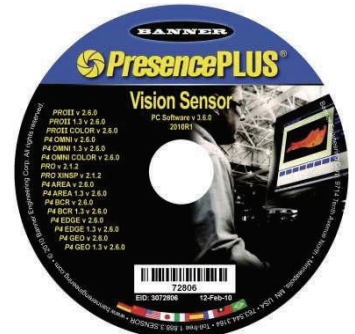
Minor Features

- OCV Tool OCV text now being displayed on NTSC monitor
- Geo and Pattern Count Tools Pattern Percent Match value is now available for evaluation in the Math Tool and for comparison in the Test Tool
- Barcode Tool Default barcode selection is changed from Any to Multiple to improve performance
PDF-417 decoder now supports fast and robust options

Several know issues have been corrected in this release as well

Software Download

- Go to [Software downloads](http://www.bannerengineering.com) on www.bannerengineering.com



Motor Temperature Monitoring

The heat generated by failing motors and bearings can be detected before the devices shut down, minimizing facility downtime and machine damage.

FlexPower Nodes equipped with thermocouple or RTD sensors can be mounted near the monitored motors or can be mounted on AGVs for a mobile temperature monitoring system.

Description

A FlexPower Node equipped with a thermocouple or RTD collect temperature readings to monitor the environmental conditions near motors or bearings.

The sensor data is sent to a Gateway installed in a central control location. When predetermined temperature levels

are detected, the red light of a stack light connected to a Gateway lights up, alerting personnel that maintenance is required. With this information, maintenance personnel can more accurately predict failure and service the machine based on performance indicators to minimize down time and damage.

The outputs from one thermocouple/Node combination can be mapped to one light or many thermocouple/Node combinations can be mapped to many lights through the Modbus host connection on the Gateway.



New 2010 Banner Products Catalog

Banner has combined the sensor and safety catalog into one catalog to include products from all divisions, including Sensors Vision Wireless Indicators Machine Safety.

The new 2010 catalog is 832 pages printed on full color, divided into five product categories

Please let us know if you have not received your new catalog and we will get you one.



SmartBlock I/O

Horner is introducing a new remote I/O structure to their powerful OCS family. The OCS products are a unique integrated control solution that includes Operator Interface (HMI), Logic Control, Integrated I/O and Networking. The OCS family has always utilized remote I/O over the CsCAN network to their SmartStix I/O blocks. SmartStix I/O has been and still is a great solution for discrete I/O. The addition of SmartBlock I/O adds Specialty / Analog modular I/O to do Remote I/O easily over the CsCAN network to most OCS products.

Some of the new features of SmartBlock I/O are:

- 500V isolation (3kV test)
- High Resolution Analog (24 bit RTD and TC)(14 bit Isolated for Analog) 0.1% accuracy
- Removable Spring Clamp Terminals
- Plug and Play configuration with CsCAPE—just like SmartStix

I/O Selections:

- 3 phase Power Monitor I/O block
- 4 and 8 channel Thermocouple
- 4 and 8 channel RTD
- 12 DC in + 6 relay out + 4 analog in
- 12 DC in + 12 DC out + 2 analog in + 2 analog out
- 4 analog in + 2 analog out
- 8 analog in + 4 analog out
- 6 and 12 analog in or Thermistor in
- 4 analog out
- 8 analog out



The Power Monitor, RTD and Thermocouple SmartBlock products will be introduced in April. Others will be released throughout 2010 - Prices will range from \$395 to \$595

Call your Mtech Representative to see the new SmartBlock I/O and discuss how it will fit in your applications

Specialty High Amperage SmartBlock I/O

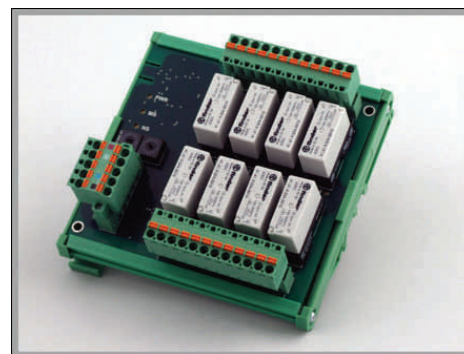
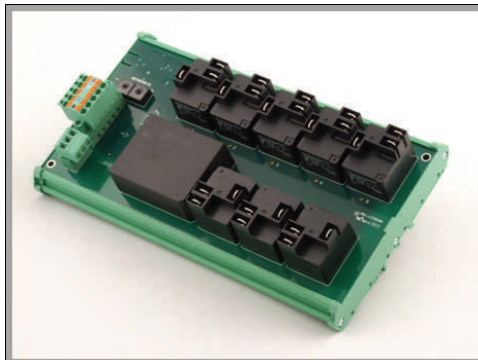
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These modules will offer Plug and Play configuration with CsCAPE the same as SmartStix

I/O Selections:

- High Current Relay Output Modules
- 8—30A form C Relays
 - Field wiring straight to Relay spades
 - CsCAN Connected

- Field Replaceable High Current Output Module
- 8—10 Amp mechanical relay outputs
 - 8—5 Amp DC solid state outputs
 - 8—3 Amp AC solid state outputs



These high amperage SmartBlock product will be available for orders in April - Prices will range from \$215 to \$195

Call your Mtech Representative to see the new SmartBlock I/O and discuss how it will fit in your applications

Try the 4-Parameter Thermal Model for Servomotors

Visit the [Design News blog](#) to learn more about Thermal Models for Servo Motors and find out why Exlar's motor technology is superior to the competition!

(Dick Welch is Exlar's principal motor design engineer and one of the World's leaders in electric motor technology and design).

design
news

Dick Welch, a motor consultant, sent me four papers on thermal issues associated with servomotors or brushless-DC (BLDC) motors. We have posted these papers on the Design News site and you'll find the links below. Welch also has written a 58-page Thermal Tutorial Book that deserves a look.

Early on, Welch and others taught engineers about a 2-parameter thermal model that treats a motor as the equivalent of a parallel R/C circuit, where R represents the thermal resistance between the motor and ambient conditions, and the C represents the thermal capacity of the motor. Motor data sheets usually provide these two values so engineers can model motor behavior.

Welch wrote: After taking my tutorial, a couple of students wrote to say there must be something wrong because they used this model and equations but their servomotors burned up, although the 2-parameter calculations indicated this shouldn't happen! I asked them to verify they used the equivalent "total ambient condition" specified by the motor manufacturer and they assured me had... Furthermore, even though these servomotors had built-in temperature sensors/switches, the drive would not shut off power fast enough to keep the servomotor from overheating and even burning up.

He continued: I went into the lab, made extensive dynamic winding temperature measurements on servomotors from different manufactures and found when you apply more than the maximum continuous current to a servomotor, its winding heats up much faster than calculated by the 2-parameter model. I realized the motor's winding must have its own dynamic operating temperature and thermal time constant that differ from the rest of the motor and this became the basis for my 4-parameter thermal model. The four-parameter model I teach now agrees with actual measured dynamic winding temperature.

In Welch's tutorial book he discusses in detail how to obtain the correct 4-parameter model and how to extended it into a 6-, 8-, or higher-order model. "In the limit," said Welch, "you are solving the Laplace heat flow equation in three dimensions which is what a finite-element analysis does using a "Mesh analysis."

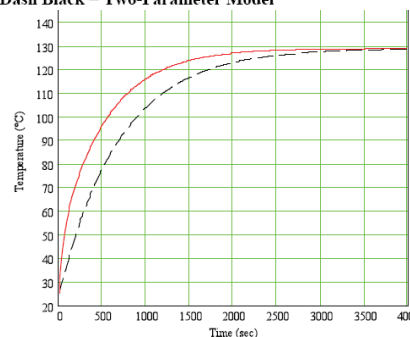
Here are the links to Welch's papers:

1. [Why a Servomotor Won't Always Output More Continuous Torque by Simply Increasing Its Operating Temperature.](#)
2. [Why a Servomotor's Dynamic Motion Response Changes with Rising Operating Temperature.](#)
3. [If You Think a Temperature Sensor Will Always Protect a Servomotor from Overheating – Think Again.](#)
4. [Why a Servomotor Must Have a "Hot Spot" Temperature Safety Margin During Times of Peak Torque Output.](#)

For the complete article and reader feedback to these papers, click on this link to the [Design News](#) Web Site

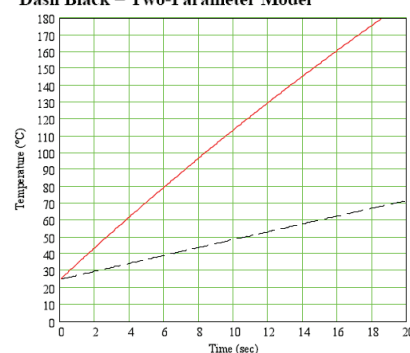
40 mm Motor, Winding Heat-Up with 1X Constant Power Dissipation

Solid Red = Four-Parameter Model
Dash Black = Two-Parameter Model



40mm Motor, Winding Heat-Up with 16X Power Dissipation

Solid Red = Four-Parameter Model
Dash Black = Two-Parameter Model



Mtech Represents
the following fine manufacturers



2010 Issue 4



OUR OBJECTIVE

Mtech is a manufacturer's representative dedicated to providing O.E.M.'s and users with solutions to their factory automation applications. This objective is accomplished by integrating over 70 years of experience with state of the art products to fill our customer requirements.

REGIONS SERVED

TURCK, BANNER, AMC & PULS
Minnesota, Western Wisconsin, North Dakota, & South Dakota
EXLAR and HORNER
Minnesota, Western Wisconsin, North Dakota, South Dakota, Iowa, & Nebraska

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Premium, world class products
and high caliber support
result in successful projects for
Factory and Process Automation

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