Why Smart Sensing is the Key to Smart Manufacturing

Scott DeVost – Horizon Industrial Control, Safety, and Sensor Specialist
Smart Sensors for Smart Machines

enabling The Connected Enterprise

The Connected Enterprise/Industry 4.0

Visualization
Design Environment
Information Software
Logix Programmable Automation Controller

Mobility

Proximity Sensors
Photoelectric Sensors
Ultrasoundic Sensors
Process Sensors
RFID
Code Readers
Encoders
Sensors – Are the Eyes and Ears of your Machine
What are they seeing and hearing?

- Is there a sensor problem we are running into?
- Temp Good
- Product Being Sensed
- Product Output Off (Normally Open)
- Pressure Good
- Line Running
- Part in Position
- Is the right sensor setup loaded?

Products moving

Product Being Sensed
How many minutes does it take per hour equates to 5% productivity?

Answer: 3 minutes
The impact of a product change over?

- 500 ppm
- 5 sensors per machine
- 5 min setup per sensor

- 2-3 changeovers per shift

Production loss:

- 12,500 products per change over
- 25,000 to 37,500 products
- 75,000 to 112,500 products

Integrated Smart Sensor Solution provides min. 5-10% production increase
The impact of an unexpected sensor replacement?

<table>
<thead>
<tr>
<th>The impact of an unexpected sensor replacement</th>
<th>Required time to fix it in min</th>
<th>Throughput / Products (500/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify a defect sensor</td>
<td>5</td>
<td>2,500</td>
</tr>
<tr>
<td>Identify sensor location</td>
<td>5</td>
<td>2,500</td>
</tr>
<tr>
<td>Dismanteling sensor</td>
<td>3</td>
<td>1,500</td>
</tr>
<tr>
<td>Getting new sensor</td>
<td>10</td>
<td>5,000</td>
</tr>
<tr>
<td>Installing new sensor</td>
<td>5</td>
<td>2,500</td>
</tr>
<tr>
<td>Setup new sensor</td>
<td>5</td>
<td>2,500</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>33</strong></td>
<td><strong>16,500</strong></td>
</tr>
</tbody>
</table>

Integrated Smart Sensor Solution provides min. 5-10% production increase.
Smart Sensors Enabling Smart Machines for the Connected Enterprise

Sensor - Premier Integration into Studio 5000

The integration of Allen-Bradley Integrated Smart Sensor Solution into the Logix control platform helps reduce your programming time, ease startup and commissioning, and streamline diagnostics. By providing consolidated controller programming and device system configuration, operation and maintenance in a single software environment – Studio 5000 Logix Designer® – Premier Integration helps reduce complication and errors.

One single development environment to configure and program sensors

Add-On-Profiles for simple machine development, use and maintenance

Mobility enabled, getting all relevant sensor data at the fingertip when you need it
Smart Sensors Overview

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>42JT</td>
<td>Photoelectric Sensors, small rectangular housing, IP60, Teachable, Red LED and Laser models</td>
</tr>
<tr>
<td>42EF</td>
<td>Photoelectric Sensors, universal M18 and square mounting, IP60, Teachable, Red LED, Temperature and Counter Function</td>
</tr>
<tr>
<td>45LMS</td>
<td>Laser Distance Sensors, 8m, 15m and 50m distance, discrete and analog output, Window Teach, IP67</td>
</tr>
<tr>
<td>45CRM</td>
<td>Colour Registration Mark Sensors, RGB Sensor, 10µs response time, 2 outputs, IP67</td>
</tr>
<tr>
<td>871C</td>
<td>Miniature Inductive Sensors, 3mm to 5mm dia, Temperature and Counter Function, IP67</td>
</tr>
<tr>
<td>671TM</td>
<td>Long Range Total Metal Sensors, M8,M12,M18, M30 Barrel, 3x sensing range, IP69K</td>
</tr>
<tr>
<td>871FM</td>
<td>Miniature Flat Pack Inductive Sensors, Temperature and Counter Function, IP67</td>
</tr>
<tr>
<td>873P</td>
<td>Ultrasonic Sensors, sensing range up to 6m, 1xPNP, 2xPNP, analog current and voltage output</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>836P</td>
<td>Solid State Pressure Sensors, -1 to 550 bar range, analog output, 1 or 2 discrete outputs</td>
</tr>
<tr>
<td>837T</td>
<td>Solid State Temperature Sensors, -50°C to 250°C range, analog output, 1 or 2 discrete outputs</td>
</tr>
<tr>
<td>1734</td>
<td>Point IO-Link Master, In Cabinet P20, 4x IO-Link channels,</td>
</tr>
<tr>
<td>1732</td>
<td>IP67 IO-Link Master, 4 ports M12, 8x IO-Link channels, EtherNet/IP, DLR and Time Stamp</td>
</tr>
<tr>
<td>56RF</td>
<td>Industrial RFIDHF, 13.56MHz IDE, standard, SLI and FRAM Tags, Transceivers, Handhelds, EtherNet/IP</td>
</tr>
<tr>
<td>46CR</td>
<td>Industrial Code Reader Camera, 1D and 2D codes, DPM Codes, EtherNet/IP</td>
</tr>
<tr>
<td>842E</td>
<td>EtherNet/IP Encoder, high resolution, single &amp; multturn, DLR</td>
</tr>
</tbody>
</table>
Operations Information

- Operations Information with Mobility
  - Comprehensive real time data on production
  - Diagnostic data on sensor health and communication status
  - Device profile data including set point and threshold data
  - Monitoring and trending data on signal strength, contrast, gain
Sensor Replacement

- Sensor replacement with Automatic device Configuration
  - Sensor heartbeat information optimizes operational reliability
  - Easily locate defects even in the largest machine
  - Automatic Device Configuration (ADC) minimizes downtime
  - Application Specific naming (ASN) pinpoints device needing attention
Product Changeover

- Multiple sensor profiles stored in the Logix controller
- Extensive range of Sensor parameters available
- Downtime minimized and machine throughput increased by 5%-10%
- Minimizes the scrapping of products
Smart Tracking and Tracing

- **Radio Frequency Identification/RFID**
  - Increased production efficiency and supply chain visibility with detailed tracking of who, when, where and what was done to build products

- **Barcode readers**
  - High performance item level tracking for increased efficiency and better supply chain visibility

- **Integrated identification products**
  - Intuitive programming
  - EtherNet/IP with Device Level Ring (DLR) assures redundant network
  - Integrated in Studio5000 offering a single design and programming environment
  - The modular, integrated FactoryTalk Production Centre software suite delivers comprehensive production management functionality
Smart Sensor Architecture – IP20 Solution
Smart Sensor Architecture – On Machine Solution
Device Integration - AOP
Smart Inductive Sensors
**Smart 871C Miniature Inductive Sensors**

- **Triggered (Output status):** provides indication when the target is detected
- **Margin status:** provides indication when the target is detected within or beyond 80% of the specified maximum operating range (i.e., the application may become unreliable/unstable)
- **Timer functions:** enables the manipulation of the sensor’s output signal (i.e., On Delay, Off Delay…etc.)
- **Switching mode polarity** allows the device output type (i.e., N.O. or N.C.) to be changed for use in standard IO mode
- **Detection counter:** tallies the number of switching operations
- **Temperature function:** identifies the actual internal temperature of the sensor and the maximum internal temperature recorded over its operating life as an indication of sensor/application health

Select from 3mm, 4mm and 5mm barrel diameter

![Product Selection - 871C Miniature, IO-Link Models](image_url)
- **Triggered (Output status):** provides indication when the target is detected.
- **Margin status:** provides indication when the target is detected beyond 80% of the specified operating range (i.e., the application may become unreliable/unstable).
- **Timer functions:** enable the manipulation of the sensor’s output signal (i.e., Delay On, Stretch On…etc.)
- **Switching mode polarity:** allows the device output type (i.e., N.O. or N.C.) to be changed for use in standard IO mode.

Select from M8, M12,M18 and M30 barrel diameter.
Key Features

- **IO-Link enabled Normally Open, PNP models**
  - Available in 12 and 18mm diameter barrels

- **Rugged stainless steel design to prevent damage to sensor**
  - Ideal for harsh or extremely demanding environments
  - Resist abrasion and chemical wear

- **Rated IP68/IP69K**
  - Withstand immersion in liquid and high pressure wash-down

- **Long range sensing**
  - 2…3x standard sensing range
  - Sensor can be placed further away from target - reducing the risk of the sensor being hit and damaged by the target

- **Margin status**
  - Communicates when target is 80% of the maximum sensing range or further
  - Status available in standard mode via LED or from controller tag in IO-Link mode
### Smart 871FM Inductive Sensors

- **Triggered (Output status):** provides indication when the target is detected
- **Margin status:** provides indication when the target is detected within or beyond 80% of the specified maximum operating range (i.e. the application may become unreliable/unstable)
- **Timer functions:** enables the manipulation of the sensor’s output signal (i.e., On Delay, Off Delay…etc.)
- **Switching mode polarity** allows the device output type (i.e., N.O. or N.C.) to be changed for use in standard IO mode
- **Detection counter:** tallies the number of switching operations
- **Temperature function:** identifies the actual internal temperature of the sensor and the maximum internal temperature recorded over its operating life as an indication of sensor/application health

<table>
<thead>
<tr>
<th>Types</th>
<th>Number of IO-Link models (6)</th>
<th>Catalog #</th>
</tr>
</thead>
<tbody>
<tr>
<td>20x30x8 Housing Dimension</td>
<td>4</td>
<td>871FM-M<em>7BA20-</em></td>
</tr>
<tr>
<td>30x52x14 Housing Dimension</td>
<td>2</td>
<td>871FM-M<em>10BA30-</em></td>
</tr>
</tbody>
</table>
Smart Photoelectric Sensors
Smart 42EF RightSight Photo Sensors

- **Triggered (Output status):** provides indication when the target is detected
- **Margin Low Alarm:** provides indication when the target signal is very marginal and the sensor is about to fail
- **Proximity Alarm:** Indicates to the operator if there is a target in the background that may be in close proximity to the threshold
- **Signal Strength:** provides the raw signal strength value reflected by the target (diffuse) or the reflector (-Retro)
- **Location Indication:** helps customers distinguish sensors in applications where you need to identify in a large machine
- **Alignment Mode:** aids operator ensure optimal alignment of the sensor in diffuse and polarized retroreflective applications
- **Internal Temperature:** provides the sensor’s internal temperature which helps customers determine if the sensor is operating close to its minimum and maximum temperature
- **Counter:** when enabled this parameter counts the amount of times the target has been detected
- **Timer:** Indicates the amount of time the output was present or absent which can be used to determine the how fast your system is operating
42EF Key Features

- Embedded IO-Link communication protocol helps minimize downtime and increase productivity
- Two ultra-bright, 360° visible status LEDs provide clear indication during setup, operation and troubleshooting
- Visible red light source on Diffuse and Transmitted Beam models simplifies alignment
- Universal 18 mm threaded base and nose for enhanced flexibility and ease of mounting
- Linear sensing range adjustment on models with sensitivity knob
- Improved high frequency ballast immunity
- IP69K rated enclosure
Smart 42JT VisiSight Photo Sensors

- **Triggered (Output status):** provides indication when the target is detected
- **Margin Low Alarm:** provides indication when the target signal is marginal and the sensor is about to fail
- **Uniquely identifiable serial number:** helps ensure sensors are installed in proper locations during commissioning
- **Remote Teach Operations:** allows users to perform Static Teach, Precision Teach and Dynamic Teach Procedures
- **Lock/Unlock Pushbutton:** prevents unauthorized changes of parameters by locking the push button.
Key Features 42JT

- Embedded IO-Link communication protocol helps minimize downtime and increase productivity
- IO-Link functionality and unique Auto PNP/NPN output reduce stocking cost and simplify installation and maintenance
- Class 1 “Eye Safe” red laser and visible red LED models
- Teach pushbutton for sensitivity and LO/DO selection (can be locked out)
- Alignment indication in long range models
- Industry standard mounting holes plus unique dove-tail mounting option
- IP69K and ECOLAB rated enclosure
Smart 45CRM Color Mark Sensors

- **Triggered (Output status):** provides indication when the target is detected
- **Teaching the sensor:** can be accomplished with IO-Link via the Add-on-Profile or by using the teach button on the sensor
- **Multiple profiles:** can be setup and stored to support multiple machine configurations. Multiple profiles enable setting up the sensor one time and having the capability to change products instantly without manual intervention
- **Location indication:** helps the user to identify the location of the sensor on the machine by temporarily causing the LEDs to flash in a specific rhythm
- **Locking:** options are available to lock local settings when operating in IO-Link mode, and therefore any user changes will not change the settings of the sensor

### Product Selection

<table>
<thead>
<tr>
<th>Description</th>
<th>Spot Size [mm (in.)]</th>
<th>Cat. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parallel beam</td>
<td>1 x 3 (0.04 x 0.12)</td>
<td>45CRM-4LHT1-D4</td>
</tr>
<tr>
<td>Perpendicular beam</td>
<td>3 x 1 (0.12 x 0.04)</td>
<td>45CRM-4LHT2-D4</td>
</tr>
</tbody>
</table>

Note: I/O-Link POINT I/O™ Master (Catalog No. 1734-4IOL) is required for a premier IO-Link integration experience.
Smart 45LMS Laser Distance Sensors

- **Triggered (Output status):** provides indication when the target is detected
- **Teaching the sensor:** can be accomplished with IO-Link via the Add-on-Profile or by using the teach button on the sensor
- **Multiple profiles:** can be setup and stored to support multiple machine configurations. Multiple profiles enable setting up the sensor one time and having the capability to change products instantly without manual intervention
- **Location indication:** helps the user to identify the location of the sensor on the machine by temporarily causing the LEDs to flash in a specific rhythm
- **Locking:** options are available to lock local settings when operating in IO-Link mode, and therefore any user changes will not change the settings of the sensor

### Product Selection

<table>
<thead>
<tr>
<th>Description</th>
<th>Sensing Distance</th>
<th>Cat. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diffuse</td>
<td>0.2...8 m (0.66...26.25 ft)</td>
<td>45LMS-D8LGC1-D4</td>
</tr>
<tr>
<td>Diffuse</td>
<td>0.2...15 m (0.66...49.21 ft)</td>
<td>45LMS-D8LGC2-D4</td>
</tr>
<tr>
<td>Retroreflective</td>
<td>0.2...50 m (0.66...164.04 ft)</td>
<td>45LMS-U8LGC3-D4</td>
</tr>
</tbody>
</table>

Note: IO-Link POINT I/O™ Master (Catalog No. 1734-4IOL) is required for a premier IO-Link integration experience.
Smart Ultrasonic Sensors
Smart 873P Ultrasonic Sensors

Coming soon on IO-Link!

<table>
<thead>
<tr>
<th>Range</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>800 mm</td>
<td>100</td>
</tr>
<tr>
<td>3.500 mm</td>
<td>200</td>
</tr>
<tr>
<td>6.000 mm</td>
<td>280</td>
</tr>
<tr>
<td>Long Range</td>
<td>450</td>
</tr>
</tbody>
</table>

873M
Compact Analog & Discrete

873P
Analog & Discrete

873P
Analog & Discrete
Long Range
Key Features 873P

- Up to 6 Meter sensing range
  - Six meter sensing for applications requiring long distance sensing of target

- Small Profile
  - Sensor can fit in tighter spaces with reduced head size compared to competition

- Pushbutton allows for full functionality in teaching sensor
  - Faster teach-in means shorter time to commission machine / application

- Teach button lockout
  - No unwanted teaching of sensor by unauthorized user
  - Discrete, Dual Discrete, Analog outputs available
1734 Point IO-link Master
The 1734-4IOL IO-Link Master module enables connection of up to 4 IO-Link devices.

Parameterization of IO-Link devices is handled via Add-on Profile (Rockwell Automation® and Encompass Partners only).

I/O wiring topologies between existing POINT terminal and IO-Link devices are maintained.

Supported by all POINT Series B Ethernet adapters (FW 5.012 and above).

Minimum RSLogix 5000® V20 and above.
Key Features of the 1734 POINT IO-Link Master

- Add-On-Profile (AOP)
  - Seamless configuration in Studio 5000® and integration into Logix controller
- Auto Device Configuration (ADC) Support on EtherNet/IP
  - IO-Link Master module configurations are automatically downloaded to Master and Devices during replacement without software tool
- Replacement and Insertion Under Power (RIUP)
  - “Hot swap” of IO-Link Master module without power interruption to other modules and devices
- Widest Standard Operating Temperature range in entire DIO offering
  - -20 degC to +55 degC
1732E IP67 IO-link Master
IO-Link IP67 ArmorBlock
1732E-8IOLM12R Architecture and Wiring Diagram

- CompactLogix Controller
- DC Micro Splitter 879D-F4DM
- 42JT Photoelectric Sensor
- 83FP Pressure Sensor
- 1606 Auxiliary Power
- 45CLR Color Sensor
- 45LMS Laser Measurement Sensor
- Patchcords 889D-F4ACDM-2
- Standard 4-Pin Wiring Diagram
- Sensor 1
- 20m Max IO-link Sensor to IO-link Master
- Multiple Profiles
- Descriptive Tags
- ADC
- Correlation
- Real-time Diagnostics
- Application Specific Names

NEW

Event Timestamp
Input Timestamp

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ArmorBlock IO-Link Master
1732E-8IOLM12R

- Enables connection of up to 8 IO-Link devices on four M12 connectors
- Support any combination of up to
  - 8 IO-Link sensors,
  - 8 Digital inputs,
  - 8 Digital outputs
- Type A IO-Link connectors
  - Supports up to 250 mA per sensor
- Input timestamping on IO-Link mode and Digital Input mode for any COS transitions of input data for IO-Link process and discrete input data
- IO-Link Master and IO-Link device events timestamping
- Parameterization of IO-Link devices is handled via Add-on Profile
Capturing “Triggered” bit (output from sensor):
OFF-ON transitions with Timestamp
ON-OFF transitions with Timestamp

Capturing “LowMarginAlarm” bit (Margin from sensor):
OFF-ON transitions with Timestamp
ON-OFF transitions with Timestamp
IO-Link IP67 ArmorBlock - Event Timestamping

Parameter Change Event
1) User can validate the sensor parameter values were modified during a line change
2) Can be linked to verify if production yield changes as a result of set point changes
Event Data Timestamping

- Each channel (total of 8) has its unique time stamp value
- All IO-Link Master device events will be timestamped
  - Sensor disconnected/Connected
  - Short circuits
  - Over/under temperature alarms on sensors
  - Monitor when supply voltages out of spec
  - Proximity sensor circuit failure (LC Oscillator)
  - Overall parameter changes
    - 45CRM sends an event to the controller if any parameter has been successfully changed
Smart Process Sensors
Pressure, Temperature, Flow, Level
Smart 836P Solid State Pressure Sensors

- Pressure Ranges: -14.5...8,000 psi
- Available in Gauge, Absolute and Vacuum pressure measurement types
- Compact Housing: 316L SS
- Sensing Element: 316L SS
- Process Connections:
  - ¼"NPT (Male/Female)
  - G ¼ BSPP (Male/Female)
  - G ½ B
  - SAE 7/16-20 UNF Male
- Outputs: 2 x PNP, 1 PNP + 4...20mA
- Easy-readable and robust display
- Intuitive + Fast setup
- IP67 rated enclosure
836P Solid State Pressure
Non Display Transducer Overview – non IO-Link

- Pressure Ranges: -14.7 (-30 inHg)…10,000 psi
- Available in Gauge, Absolute and Vacuum pressure measurement types
- Enclosure Housing – 316L SS
- Wetted Parts: 316L Stainless Steel
- Process Connections:
  - ¼”NPT (Male/Female)
  - G ¼ BSPP (Male / Female)
  - G ½ B
  - SAE 7/16-20 UNF Male
- Electrical Outputs: 4…20mA
- IP67 rated enclosure
Smart 837T- Temperature Sensors

837T-D* & 837T-N*

- Available in Display , Non-Display version and Resistance thermometers.
- Probe Lengths from 25…400 mm
- Multiple Process Connections
- Measuring Element: Pt1000
- Stainless Steel housing
- Measuring Range: -50….+250 °C (-58….+482 °F)
- Outputs: Dual PNP, 1 + PNP + Analog, Analog
- Display model on IO-Link
- Enclosure Rating: IP65 and IP67
- Cost effective
RFID 13,56MHz Series on Ethernet/IP
RFID Portfolio 13.56 MHz ICODE

1769 CompactLogix™

Interface
- Ethernet Switch
- Another Ethernet device
- Up to 100m cable length
- General I/O
- Power Pass through

Transceivers

Tags
- Flat Pack
- VersaCube™
- M30 Cylindrical
- M18 Cylindrical

RSLogix™ 5000 Software Configuration (AOP)

PanelView™ Plus

ISO 15693 / ISO 18000-3 M1
Open Standard, Anti-Collision
up to 4 tags simultaneously
Ethernet/IP w DLR

Another Ethernet device
RFID Tag Overview

ICODE ISO 15693 compliant
- Multiple physical and memory sizes available
- Passive tags (no battery)
- 64 to 8K Bytes tags

<table>
<thead>
<tr>
<th>Outline</th>
<th>Type</th>
<th>Memory Size</th>
<th>Dimensions (mm)</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disc</td>
<td>SLI</td>
<td>128 Bytes</td>
<td>16</td>
<td>56RF-TG-16</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>20</td>
<td>56RF-TG-20</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30</td>
<td>56RF-TG-30</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>50</td>
<td>56RF-TG-50</td>
</tr>
<tr>
<td></td>
<td>SLI-L</td>
<td>64 Bytes</td>
<td>16</td>
<td>56RF-TG-16-64B</td>
</tr>
<tr>
<td></td>
<td>SLI-S</td>
<td>256 Bytes</td>
<td>10</td>
<td>56RF-TG-10-256B</td>
</tr>
<tr>
<td>Disc – High-Impact Resistant (Extreme Durability)</td>
<td>SLI</td>
<td>128 Bytes</td>
<td>35</td>
<td>56RF-TG-35HIR</td>
</tr>
<tr>
<td>Disc – Mount on Metal</td>
<td>SLI</td>
<td>128 Bytes</td>
<td>20</td>
<td>56RF-TG-20MOM</td>
</tr>
<tr>
<td>Disc – FRAM</td>
<td>FRAM</td>
<td>2K Bytes</td>
<td>20</td>
<td>56RF-TG-20-2KB</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30</td>
<td>56RF-TG-30-2KB</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>50</td>
<td>56RF-TG-50-2KB</td>
</tr>
<tr>
<td>Label (Adhesive Backing)</td>
<td>SLI</td>
<td>128 Bytes</td>
<td>54 x 86</td>
<td>56RF-TG-5486</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>50 x 50</td>
<td>56RF-TG-5050</td>
</tr>
<tr>
<td>Smart Card</td>
<td>SLI</td>
<td>128 Bytes</td>
<td>54 x 86</td>
<td>56RF-TG-5486SC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>50 x 50</td>
<td>56RF-TG-50HT</td>
</tr>
<tr>
<td>Square – High Temperature (240°C Max)</td>
<td>SLI</td>
<td>128 Bytes</td>
<td>54 x 86</td>
<td>56RF-TG-5486SC</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>50 x 50</td>
<td>56RF-TG-50HT</td>
</tr>
</tbody>
</table>
Ethernet Encoders 842E Series
EtherNet/IP™ Encoder - Features

- EtherNet/IP™ Interface
- Embedded switch
- DLR (Device Level Ring)*
- High Resolution Absolute Encoder
  - 18 bit single turn
  - 30 bit multi turn
- DEC switches for IP addressing
- Endless Shaft Functionality
- Flash upgradeable firmware
- M12 connectors and IP67 packaging
- Solid and hollow shaft options
- Status indication LED’s
- RSLogix™ 5000 Add-On-Profile
- CE and UL certification

Solid shaft

Hollow shaft

Power supply

Status LED’s

EtherNet port 1

EtherNet port 2

IP Addressing switches
Ethernet Media
Portfolio - Ethernet Media Cat 5e & 6

RJ45 Connectivity IP20

M12 Field Connectivity IP67

MICE 1
MICE 2
MICE 3 Rockwell
Let us help and guide you

- Maine – Tom Hopkins - Horizon Solutions
  - thopkins@hs-e.com
- New Hampshire – Scott DeVost - Horizon Solutions
  - sdevost@hs-e.com
- Western MA / Eastern NY / VT – Robert Serrano - Horizon
  - rserrano@hs-e.com
- All the above – Jim Drew - Rockwell Automation
  - jndrew@ra.rockwell.com
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