“Intelligent” Sensing Solutions

Innovation/Technology/Solutions.

University of Warwick
8th February 2001
Intelligent Sensors for today’s applications and requirements.
Devicenet - Rightsight Photoelectric

- Series 42EF Package
- 1200 psi Washdown Rating
- All Sensing Modes
  - Transmitted Beam, Polarized Retro, Fiber-Optic, Standard Diffuse, Sharp Cutoff Diffuse, Background Suppression
- 24VDC Operation
- 5-pin Micro QD Connector
- C.O.S and Strobing Operating Modes
- Standard DeviceNet Features
  - Autobaud detect (125, 250, 500kb)
  - Supports 0-63 node addresses
  - Light/Dark-operate mode
- Logic Features
  - Timers (ON/OFF-delay, one-shot)
  - Counter
- Advanced Diagnostics
  - Low margin detection
    - static or dynamic (selectable)
  - Motion Detection
Applications

- Bag/Wrap
- Carton/Case
- Components/Controls
- Fill/Feed/Close
- Form/Fill/Seal
- Inspect/Weigh
- Label/Code/Imprint
- Material/Package
- Package Handling
- Seal/Band
- Shrink/Stretch

For...

- Material Handling
- Automotive
- Semiconductor
- Food & Beverage
Powered Roller Control

Conveyor Application using both standard and DeviceNet Photoelectric devices.
871TM Devicenet Proximity.

- All Stainless Steel construction.
- Direct Devicenet Connectivity.
- Discrete and Analogue output
- Diagnostic data
  - Object to close
  - Sensor operational
  - Object to far
- Timing functions
  (On, Off, One Shot Delay)
- Motion Detection
- Teach / Learn target capabilities
- Configurable Normally Open/Closed.
**Weld Field Immune - Copper Barrel**

- First copper barrel prox on market
- Superior weld splatter resistance
- Patented design
- Same specifications as 871Z AC/DC WFI but with copper barrel
- Copper barrel requires less maintenance
- 12/18/30mm devices available.
Microprocessor Based Prox

- Weld field immune
- Extended sensing distance
- Diagnostics
  - Target too close (weld slag)
  - Coil operational
- Copper barrel
- DC models -- 12, 18, 30mm
- Micro and mini QD
- Full electrical protection
Intelligent Motor Protection Devices.
MCS-E3 Electronic Overload.

MCS-E3 Overview

- 1...2250A Current Range
- DeviceNet® Ready
  ODVA Conformance Tested
- LED Indicators
- Test/Reset Button
- Adjustable Trip Class (5 to 30)
- General Purpose I/O
  E3: 2 In / 1 Out
  E3 Plus: 4 In / 2 Out
- Zero Sequence Ground Fault
  1...5A Range (MCS-E3 Plus)
- Thermistor (PTC) Input
  (MCS-E3 Plus)
- Programmable Trip and Warning Settings
- Diagnostic Functions
MCS-E3 - Key Features

• Programmable trip and warning levels for all protective functions:
  – Overload
  – Underload
  – Jam / Stall
  – Phase Loss/Imbalance
  – Ground Fault 1…5A (Plus Version)

• Enhanced protective function:
  – PTC (Plus Version)

• Inputs and Outputs
  – 2I / 1O
  – 4I / 2O (Plus Version)
Intelligent Motor Control Centre.

- Simple D.O.L.
- D.O.L Starter With Diagnostic Data.
- Large Star Delta with high Level protection.
- Soft Starter.
- Drives.
Advanced Warning when a problem occurs
What was the cause of the failure?
Trending analysis
# Historical record of events

## Alarm Summary

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<tr>
<th>Tagname</th>
<th>Tag Description</th>
<th>Alarm Label</th>
<th>Alarm Time</th>
<th>Alarm Date</th>
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<td>Emergency Stopped</td>
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<td>1/30/01</td>
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<td>Fault</td>
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</table>
On Line and up to date Manuals.
Local inspection and analysis.
De-Centralized Applications.
De-Centralized Starters.

140M Motor Protection Circuit Breaker

Devicenet Network Connection

Contactor

MCS-E3 Electronic Overload
DeviceNet Host Module

- **Hardware**
  - Supports up to 16 modules - on one node
  - Rotary node-address switches
  - Internal DeviceNet connector serves as pass-through for any internal devices
  - Watchdog circuitry
  - Class 1 power-limited supply capable
“Starter Module” - Key Features.

- Combination 2 Inputs and 1 Output in one module
  - 1 module per starter
- Designed to switch motor starters
  - Eliminates need for interposing relays
  - 5A rated relays
  - DC Starter rated for 2A
- Removable connectors
  - Allows cable harness, Simplifies replacement
- Software Selectable Input Filters
  - Eliminates false readings
  - No need to carry different products
- Available in AC and DC versions
  - 120V AC input and relay output: 198-IA2XOW1
  - 24V DC input and SS protected output: 198-IB2XOB1
  - DeviceNet-sourced input / 250V Relay Output: 198-IB2XOW1
“Sensor Module” - Key Features.

- **Micro (M12) “quick-connect” connector**
  - No mistakes, No unnecessary wiring
  - Rotating base allows positioning of connector to suit.

- **DC Sensors powered from DeviceNet**
  - Provides Class 2 Power Source for sensor
  - No additional wiring necessary to power device

- **IEC 1131-2 Type 1+ Compliant**
  - Operates with all DC sensors
  - Eliminates false/no-signal with some sensors

- **Short & open circuit notification**
  - Simplifies debugging

- **Sink/Source load switch**
  - Either NPN(Sink) or PNP(Source) - sensors
  - One module does both jobs
Other Modules - Key Features and Benefits

• DIN and Gland Modules
• Relay (2) Output Modules
  – Micro (3 Pin 1/2” thread) - Can handle 120V AC (198-OW2S)
  – DIN rail version (198-OW2)
• AC or DC DIN input modules
  – 198-IA2, 198-IB4
Gland Plate

- I/O mounted on Gland Plate
  - Typical: Through enclosure wall to terminal blocks to I/O. Individual wires for connection.
  - Modular DSA solution: Directly to I/O. Connections through M12 connectors - Saves time and reduces mistakes

- Gland plates simplifies connection to enclosures
  - Pre-assembly of modules outside enclosure
  - “Knockouts” for external connections

- Gland Plate maintains IP66 / NEMA 4 rating

- Gland Plate assures grounding scheme

- Offset knockouts maximize number of modules on one plate
Thank you for your time.