DISCRETE VALVE CONTROLLERS

POSITION MONITORING AND CONTROL OF AUTOMATED ON/OFF VALVES

- Suitable for use on rotary and linear applications
- Certified for use in all hazardous areas
- Integrated solutions (bus + sensors + pilot)
- Technology leadership in fieldbus networks

EMERSON™

TopWorx,™ a business within Emerson™ Process Management, is a global leader in on/off valve control and position monitoring for the process industries. Our solutions enable plants, platforms, and pipelines to manage and control operations more intelligently and efficiently under the most demanding and extreme conditions.

GLOBAL TECHNOLOGY LEADERSHIP

TopWorx™ technology advancements are at the forefront of innovation in the process automation industry. TopWorx™ uses wireless technologies and fieldbus protocols such as FOUNDATION Fieldbus, DeviceNet, AS-Interface, Profibus, and HART to reduce installation costs and enable predictive maintenance.

GLOBAL HAZARDOUS AREA CERTIFICATIONS

In addition to high temperature (175°C), cold temperature (-60°C), and sub-sea (6,800 meters) applications, TopWorx™ products are suitable for use in Flame-proof/Explosion Proof, Non-Incendive, and Intrinsically Safe hazardous areas with IECEx, ATEX, EAC, InMetro, UL, CSA, KOSHA, and NEPSI certifications.

GLOBAL SERVICE & SUPPORT

With company locations in the United States, United Kingdom, South Africa, Bahrain, and Singapore, TopWorx™ is strategically positioned to provide outstanding support. In addition, over 200 Certified Product Partners throughout the world are available to provide competent local support when needed.

WWW.TOPWORX.COM

Visit **www.topworx.com** for comprehensive information on our company, capabilities, and products – including model numbers, data sheets, specifications, dimensions, and certifications.

DISCRETE VALVE CONTROLLERS FOR ON/OFF VALVES

TopWorx™ discrete valve controllers enable automated on/off valves to communicate via FOUNDATION Fieldbus, DeviceNet, AS-Interface, Profibus, HART and Wireless HART protocols. They attach to all rotary and linear valves and actuators, operate in the most demanding environmental conditions, and carry a variety of hazardous area certifications.

Discrete Valve Controllers for:
- Any bus network
- Any hazardous area
- Any valve or actuator
- Anywhere in the world

TopWorx™ valve control solutions deliver on today's new customer requirements. With the TopWorx™ program, customers enjoy:

- A complete line of valve controllers and monitors for every protocol, application, environment, and hazardous area.
- The world's leading selection of valve networking products, including FOUNDATION Fieldbus, DeviceNet, AS-Interface, Profibus, and Wireless HART.
- The most reliable and durable valve position sensor on the planet.
- On/Off valve control and indication through wireless technology.
- Quality products with global agency approvals including IECEx, ATEX, CE, UL, CSA, as well as NEPSI, KOSHA, InMetro, and EAC.
- The unmatched process experience and bus networking expertise of TopWorx™, the leading provider of valve control and position sensing solutions for the process industries.

TOPWORX™ D-SERIES

World-Class Discrete Valve Controllers with the Highest Technology Available

TopWorx™ D-Series discrete valve controllers are certified for use in every world area. They carry IECEx, ATEX, and UL certifications in a single model, making it easier for global customers to standardize across plants in multiple world areas. Other certifications available include NEPSI, KOSHA, InMetro, and EAC.

D-Series discrete valve controllers can survive in virtually any plant condition. Their heavy-duty construction and corrosion resistance enable superior performance in the most demanding applications.

The D-Series is Built Tough!

Designed to provide reliable service for a lifetime, the D-Series has been built to last in the most demanding applications, and endurance tested for over 3.5 million cycles to prove it.

Wet
Tested against intense water pressure blasts and complete submersion underwater for 96 hours at a depth of 30 meters.

Hot
Tested for long-term functionality in temperatures up to 176°F/80°C

Cold
Tested for endurance in temperatures down to -76°F/-60°C

Dirty
Tested in dust chamber and proven dust tight

Abusive
Tested against the "300 pound man step test" and proven impact and step resistant

Corrosive
Tested against hundreds of corrosive and caustic elements and proven to resist deterioration or chipping

Explosive
Tested by UL and Sira for use in explosive environments with no seal-off fittings required (DXP, DXS)

Chemical Compatibility
Tested against hundreds of chemicals with varying exposure times, temperatures, and concentrations. Please contact factory for compatibility information.

ATEX DeviceNet HART

"I like the fact that the D-Series has world wide approvals since we have projects throughout the world."
- Project Engineer, Global Engineering Firm

Visual Display
- Impact resistant polycarbonate
- Intuitive colors (Green/Red)
- Adjustable/customizable
- Pre-adjusted to 90° for easy installation
- Less than 1 3/4" tall

Rugged Enclosures for every environment
- Aluminum, Composite, Stainless
- Up to four conduit entries (English or Metric)
- O-ring seals everywhere
- Buna, Silicone o-ring options

Bus Networking / Sensor options
- FOUNDATION, Profibus, DeviceNet, AS-Interface, HART
- GO™ Switch, Proximity, P+F™, Mechanical, 4-20mA Transmitter

Pilot Valves
- Aluminum, 316 Stainless Steel available
- Low Power Solenoid or Ultra-Low Power Piezo
- Single or Dual Coil
- .86 Cv and 3.7 Cv
- Integrally mounted for extra protection
- Built-in filter protects the pilots against debris
- Fast, easy troubleshooting:
  - Pneumatic tubing is color-coded for trouble shooting while system is pressurized
  - Troubleshoot valve without removing the cover

Stainless Steel Shaft & Fasteners
- ¼" DD or NAMUR Shaft
- Captive cover bolts
- Captive dome screws

Environmental extremes
- Rated for environments from −76°F/−60°C to 347°F/175°C
- NEMA Type 4, 4X, IP66/67

MULTIPLE D-SERIES PLATFORMS FOR EVERY ENVIRONMENT

DXP

Tropicalized Aluminum
Flameproof/Explosion Proof/Intrinsically Safe
Class I Division 1 Groups A-D
Class I Division 2 Groups A-D
Class II Division 2 Groups F and G
Ex ia IIC T4 Tamb
-50°C to +50°C
Ex d IIB+H2 T6...T3 Tamb
-60°C to +175°C
Ex d IIC T6...T3 Tamb
-60°C to +175°C
Ex tb IIIC T135°C Tamb
-50°C to + 110°C
II2GD, IP66/67, Type 4X

DXS

316 Stainless Steel
Flameproof/Explosion Proof
/Intrinsically Safe
Class I Division 1 Groups A-D
Class I Division 2 Groups A-D
Ex ia IIC T6 Tamb
-50°C to 50°C
Ex d IIB+H2 T6...T3 Tamb
-60°C to +175°C
Ex tb IIIC T135°C Tamb
-50°C to + 110°C
II2GD, IP66/67, Type 4X

SIL-3
IEC 61508

D-ESD

Partial Stroke Testing for
Emergency Shutdown Valves
Suitable for use in SIL-3 applications
Stainless, Aluminum, or Resin
Flameproof/Explosion Proof
/Non-Incendive
Class I Division 1 Groups C & D
Class I Division 2 Groups A-D
Ex d IIB+H2 T6 Tamb -50°C
to +60°C
Ex tb IIIC T135°C Tamb
-50°C to + 110°C
II2GD, IP66/67, Type 4X

DXR

Composite Resin
Non-Incendive/Intrinsically Safe
Class I Division 2 Groups A-D
Class II Division 2 Groups F & G
Ex ia IIC T6 Tamb
-20°C to 50°C
Ex e mb IIC
-20°C to 44°C T4
Ex tb IIIC T66C II2D
II2GD, IP67, Type 4X

TOPWORX™ T-SERIES
High-Value Switchboxes with a Variety of Options

TopWorx™ T-Series switchboxes deliver outstanding value by providing full functionality in compact, direct-mount enclosures.

Available with a variety of position sensors, integral solenoid valves, and bus networks, the T-Series is suitable for use in all hazardous areas and carry IECEx, ATEX, and UL certifications.

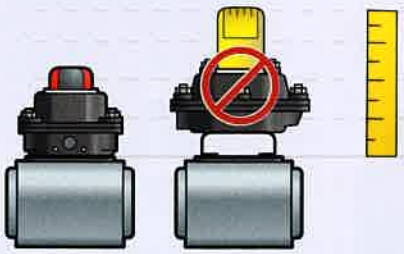
The TopWorx™ T-Series Delivers Outstanding Value!

Designed to provide maximum functionality in a compact form factor, the TopWorx™ T-Series has a number of unique features that save space, time, and money.

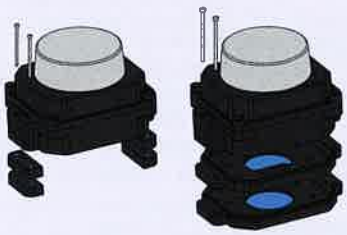
Optimum Use of Space
The unique layout supplies ample working space inside the enclosure for wiring and setting of the switches while taking up very little space above the actuator.

TwistSet™ Cams
Unique TwistSet cam design allows easy access and accurate stepless setting of sensor position with minimum hysteresis.

Color-coded strikers enable quick identification of open/closed switches. Includes locking feature to ensure no target migration.



Low Profile Design
The unique direct-mounting feature eliminates expensive mounting brackets while reducing the height of the switch-box and the overall footprint above the actuator.



Direct Mounting
Unique mounting design enables simple attachment to any ISO/NAMUR actuator without the need for expensive mounting brackets

" I like the features of the T-Series products. The direct mount feature saves money on the cost of brackets. "
- **President**, Valve Distributor

Solid Enclosures for Every Environment

- Aluminum, Composite, Stainless
- Up to four conduit entries (English or Metric)
- O-ring seals everywhere

Environmental Extremes

- Operating temperatures from -76°F/-60°C to +175°F/80°C
- NEMA 4, 4X, IP66/67

Pilot Valves

- Low Power Solenoid
- Single Coil
- 1.0 Cv
- Integrally mounted for extra protection

Visual Display

- Impact resistant polycarbonate
- Intuitive colors (Green/Red)
- Pre-adjusted to 90° for easy installation
- Low profile/High visibility
- Customizable

Bus Networking / Sensor Options

- AS-Interface, Profibus
- GO Switch, Proximity, P+F, Mechanical

Stainless Steel Shaft and Fasteners

- NAMUR Shaft
- Captive cover bolts and indicator screws

MULTIPLE T-SERIES PLATFORMS FOR EVERY ENVIRONMENT

TXS

Direct-Mount Stainless Steel
Flameproof/Intrinsically Safe/
Explosion Proof /Non-Incendive
Class I Division 1 Groups C & D
Class I Division 2 Groups A-D
Class II Division 1 Groups E-G
Class II Division 2 Groups F and G
Ex ia IIC T4 Tamb -50°C to 85°C
Ex d IIB T4 Tamb -60°C to 80°C
Ex d IIC T4 Tamb -60°C to 80°C
Ex tb IIIC T135C Tamb -50°C to 80°C
II2GD, IP66/67, Type 4X

TXP

Direct-Mount Aluminum
Flameproof/Intrinsically Safe/
Explosion Proof /Non-Incendive
Class I Division 1 Groups C & D
Class I Division 2 Groups A-D
Class II Division 1 Groups E-G
Class II Division 2 Groups F and G
Ex ia IIC T4 Tamb -50°C to 85°C
Ex d IIB T4 Tamb -60°C to 80°C
Ex d IIC T4 Tamb -60°C to 80°C
Ex tb IIIC T135C Tamb -50°C to 80°C
II2GD, IP66/67, Type 4X

TOPWORX™ TV-SERIES
High-Value Switchboxes with a Variety of Options

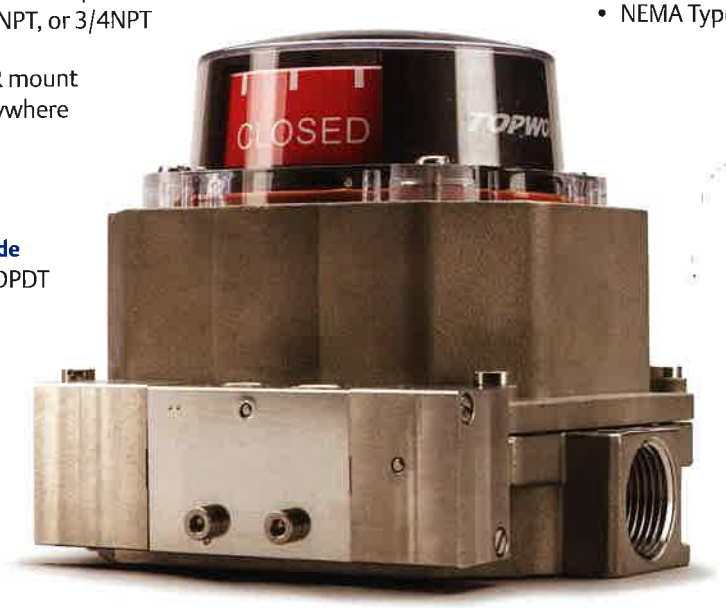
Compact, rugged, and dependable solution for discrete valve control and valve position monitoring where weight and real estate are at a premium. Light weight and robust enclosures specially designed for non-incendive, intrinsically safe and general purpose application. Each enclosure is suited for heavy wash down and corrosive environments and IP66/68 tested.

Light, Rugged and Compact Enclosure

- Aluminum, Stainless or Aluminum base with clear polycarbonate options
- (2) M20, M25, 1/2NPT, or 3/4NPT conduit options
- Direct ISO/NAMUR mount
- Silicone seals everywhere

Environmental Extremes

- Operating temperatures from -58°F/-50°C to + 185°F/95°C
- NEMA Type 4, 4X



Up to (4) Four Sensors Inside

- Mechanical –SPDT or DPDT
- Inductive
- Proximity
- NAMURl

Visual Display

- Impact resistant polycarbonate
- Pre-adjusted to 90° for easy installation
- Intuitive colors
- Customizable

Stainless Steel Shaft and Fasteners

- NAMUR Shaft
- Captive cover bolts and indicator screws

Pilot Valves

- Low or high power solenoid options
- Single of dual coil—single acting or double acting actuators
- Aluminum or Stainless Steel spool valve options

MULTIPLE TV-SERIES PLATFORMS FOR EVERY ENVIRONMENT

TVH

Stainless Steel
Intrinsically Safe/Non-Incendive
Class I & II Division 1 & 2
Ex ia IIC T4
Ex tb IIIC T135°C
Tamb -50°C to +85°C
Ex nA nC IIC T4
Tamb -40°C to +95°C

TVL

Tropicalized Aluminum
Intrinsically Safe/Non-Incendive
Class I & II Division 1 & 2
Ex ia IIC T4
Ex tb IIIC T135°C
Tamb -50°C to +85°C
Ex nA nC IIC T4
Tamb -40°C to +95°C

TVF

Tropicalized Aluminum Base with Polycarbonate Lid
Intrinsically Safe/Non-Incendive
Class I & II Division 1 & 2
Ex ia IIC T4
Tamb -20°C to +40°C

TVA

Direct-Mount Composite Resin
Intrinsically Safe
General Purpose
Ex ia IIC T4 II2G
Tamb -40°C to 60°C

TOPWORX™ BUS NETWORKS
Connectivity to Every Fieldbus Network

SENSOR-COMMUNICATION MODULES

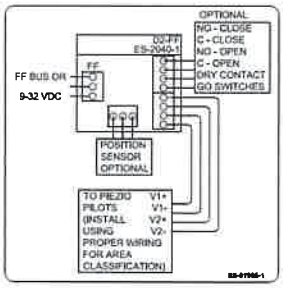
TopWorx™ Sensor-Communication Modules are microprocessor based 'brains' that mount inside TopWorx™ enclosures to deliver position sensing and bus networking functionality to on/off valves. They combine position sensors, bus communications, solenoid outputs, and wiring terminals into a compact, sealed module that drops into various TopWorx™ enclosures.

SCM Features:

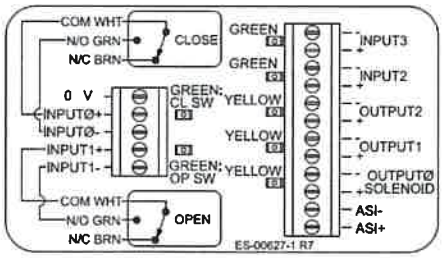
- Short-circuit protection
- Resistant to impact, moisture, shock, vibration, contamination
- LEDs indicate valve position and facilitate sensor set-up

BUS NETWORKS

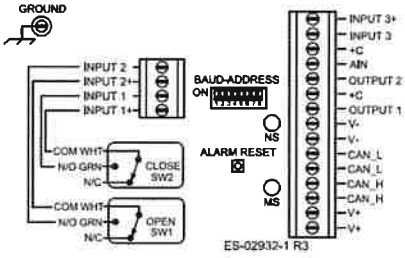
TopWorx™ Sensor-Communication Modules make it easy to connect automated on/off valves to modern bus networking protocols such as FOUNDATION Fieldbus, DeviceNet, AS-interface, Profibus, and HART.



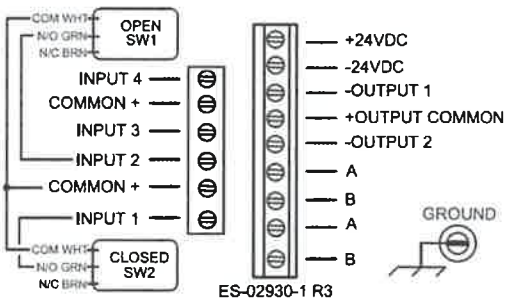
FOUNDATION Fieldbus



ASi



DeviceNet



Profibus

FOUNDATION FIELDBUS

- Factory programed with: (2) DI, (1) DO, (1) AI, (1) PID, with the ability to add any additional 10 function blocks.
- Emerson DeltaV, Honeywell, Yokogawa, ABB, Invensys approved
- Pre-defined templates, on-board diagnostics, and EDDL-enhanced on-board diagnostics.
- Consumes only 17mA to operate, reduces VCRs and DSTs required
- Local calibration button for factory setting of GO switches.
- Position feedback via DO read back reduces number of function blocks.

BEST-IN-CLASS CAPABILITIES

- Reduced macrocycle times with 15 to 20ms block execution times
- Reduced VCR Links (Publisher/ Subscriber)
- ITK 6.0 registered guaranteeing the latest advancements in field diagnostics per NAMUR NE 107, with 17 diagnostics and alerts.
- Live updates without process interruptions - Device Descriptions (DD's) can be updated without taking the device offline.
- Link Active Scheduler (LAS) capable, allowing for communication backup.

MONITORING FEATURES

- The two built in cycle counters, a life cycle counter and adjustable counter, with high limit alarm that gives the user needed information to implement a preventative maintenance strategy.
- With built in timers that record valve time in open position, open travel time, and close travel time allowed for failure prediction by trending opening and closing times.

CALIBRATION SWITCH

The D2-FF is equipped with a local calibration button for pre-installation function testing of the valve actuator package. This ensures that all valve automators can function test packages before installation without having to purchase expensive test equipment. LEDs indicate correct position setting of the switches.

ASCO® PIEZO TECHNOLOGY

TopWorx™ discrete valve controllers incorporate the best piezo technology available on the market today. With a response time of under 50mS and a high flow rate, we ensure the spool valve reacts immediately to a change in signal.

DeviceNet

- 3 Discrete Inputs, 2 Discrete Outputs, 1 Analog Input
- Rockwell, Emerson DeltaV approved
- On-board diagnostics and early warning LEDs

ASi

- ASi 2.1 with up to 4 Discrete Inputs and 3 Discrete Outputs
- Early warning LEDs

PROFIBUS

- Profibus DP V0
- 4 Discrete Inputs 2 Discrete Outputs
- Early warning LEDs

HART COMMUNICATION PROTOCOL

- Digital confirmation of analog signal
- Auto-calibration via handheld

TOPWORX™ POSITION SENSORS
The Industry's Leading Selection of Position Sensors

TopWorx™ provides the industry's leading selection of valve position sensors, including GO™ Switch leverless limit switches, proximity sensors, mechanical limit switches, potentiometers, and 4-20mA position transmitters.

SENSORS & SWITCHES
- GO™ Switch leverless limit switches
- 4-20mA position transmitters with HART protocol
- Proximity
- Reed
- Mechanical

All in one proximity sensor and limit switch

GO Switches are hermetically sealed to outperform all other position sensors in hot, cold, wet, dirty, abusive, corrosive, and explosive conditions. GO Switches deliver best-in-class capabilities:

- Highest amp rating (4amp/120vac, 3amp/24vdc)
- Highest temperature rating: 105°C
- Up to four GO Switches inside
- Hermetically Sealed contacts
- SPDT, DPDT, and Stainless Steel options
- Proximity operation – nothing to jam, bend, break, or wear out
- Resistant to electrical noise, radio frequency interference, dust, dirt, and most chemicals
- No leakage current, not voltage or polarity sensitive
- Simple device – inherently intrinsically safe with barrier
- Unlike Reed Switches, Gold flashed contacts allow for use in both low and high current applications within a single switch

PUSHSET CAM

Unique pushset cam design allows quick and accurate setting of the GO Switch positions reducing deadband and hysteresis to a minimum. Switches can easily be set in the mid-position for control applications such as 3-way ball valves or diverter valves.

4-20mA POSITION TRANSMITTER

- Fully potted electronic module with LEDs and Auto Calibration feature
- Precise setting of the zero and span can be done in seconds for both CW and CCW rotation with a simple push button
- Position feedback sensor is mounted directly to the switchbox shaft eliminating backlash caused by traditional gear train
- Up to 300° rotation for choke valve applications
- The need for re-calibration is eliminated
- Available with GO Switches and HART Protocol

PROXIMITY SENSORS

Choose from a variety of proximity sensors including reed switches and inductive proximity sensors such as Pepperl+Fuchs™ and others.
- Up to 6 proximity sensors
- AC, DC, Namur versions available

MECHANICAL LIMIT SWITCHES

- Up to 6 mechanical switches
- 15A/120vac
- SPDT and DPDT contacts available
- Up to 6 mechanical switches

GO SWITCH GO Gets It.

TOPWORX™ PILOT VALVES
Solenoid Valves to Pilot Any Actuator

TopWorx™ provides a portfolio of self-contained ASCO pilots and spool valves to control pneumatic actuators. ASCO spool valves are specially designed to stay open for long periods of time and close when needed. The ASCO unique design combines hard T-seal and flexible o-rings, provides bubble-tight shutoff, resistance to dirt, and mutimillion cycle life controlling air or inert gas, making them a perfect fit for any application.

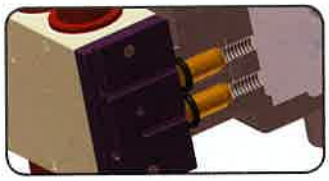
SOLENOID VALVES
- 24vdc, 120vac, 220vac
- Aluminum, 316 Stainless, 304 Stainless
- Single Coil, Dual Coil, Blocked Center
- High Flow up to 3.7Cv
- Low Power Consumption (solenoid 0.5 watts; piezo 12mw)

PILOTS
- Internally mounted for protection from the environment
- Low Power Solenoid or Ultra-Low Power Piezo pilots
- Single or Dual Pilots
- Fail open, Fail closed, Fail in last position
- 50 million cycle minimum life
- Class F coil insulation (Class H available on request)
- Response time 10mS

VALVE BODIES
- Anodized Aluminum
- 316 Stainless Steel
- 304 Stainless Steel

Flow Rates
- 1.0 Cv

MANUAL OVERRIDES
- Momentary/Latchingw



FLAME ARRESTORS

These double as in line filters, protecting the pilot against damage caused by dirty air. This design also allows the users to replace or work on the external valve in situ without affecting the integrity of the explosion proof enclosure.

Integrated metal manifold with color coded tubing for supply and work to allow for easy of trouble shooting. In case of a solenoid failure easily diagnose the failed component: pilot or spool.

Special ASCO seal design with T-Seals are designed to:
- Reduce leakage by applying more pressure to a smaller area around the spool sealing surface
- Self-cleaning design and less sensitive to particulate contamination in the medium
- Provide a dynamic wiping action making them better suited to spool valves than plain "o-rings"
- Eliminate "stiction" with smaller contact area and higher contact pressure provided by the cushioning rings located behind the T-seal

TOPWORX™ D-ESD
SIL-3 Partial Stroke Test Solutions

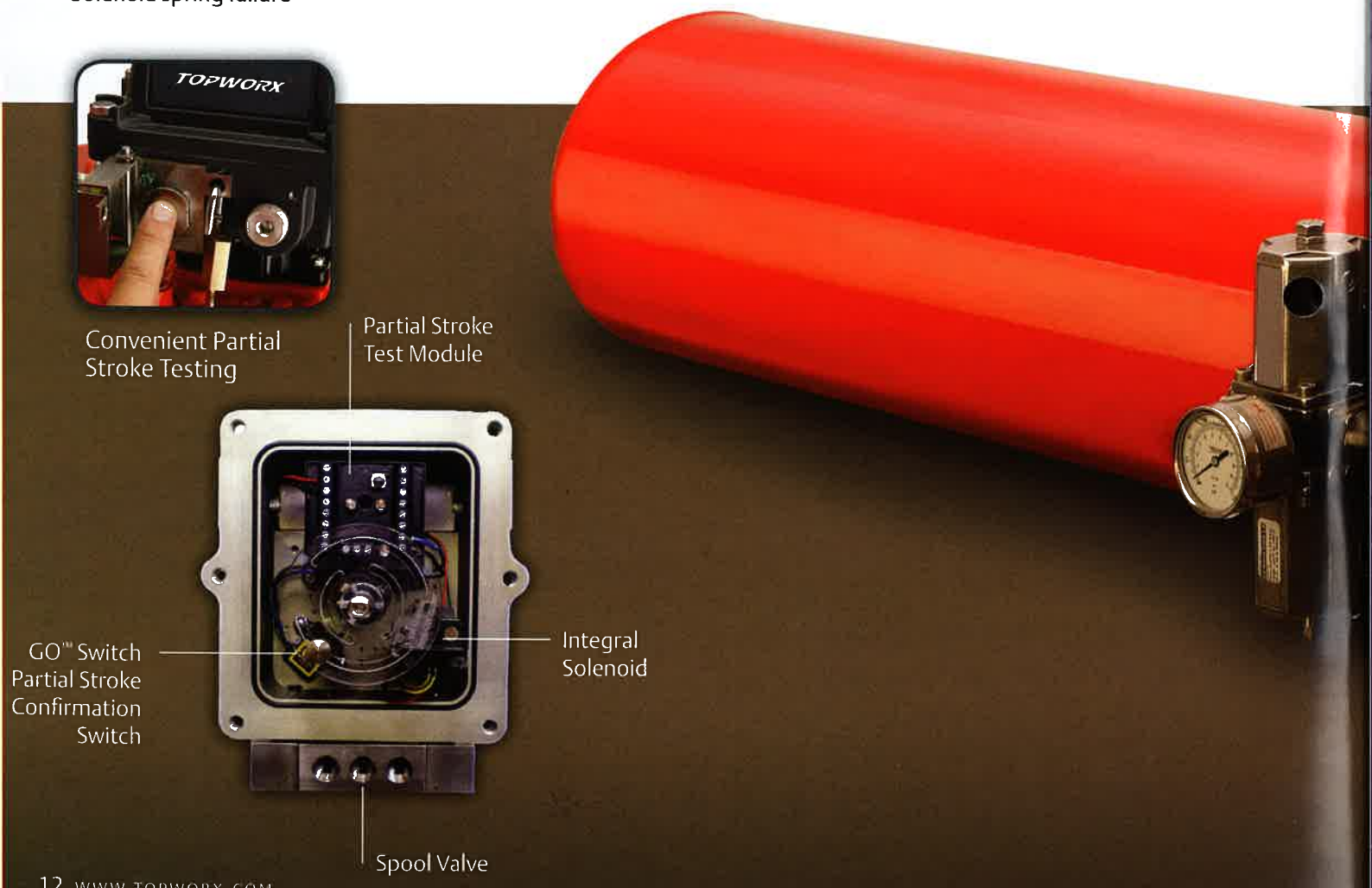
TopWorx™ SIL-3 ESD Valve Controllers provide a complete Partial Stroke Test Solution with unique features and functionality that enable partial stroke testing of emergency shutdown valves without disrupting or shutting down the process.

The **TopWorx™ Partial Stroke Test Solution** comes complete with:

- Sensor Control Module to partially close the valve without disrupting the process
- Pass/Fail indication via high/low response on the return signal
- Open and Closed position sensors for feedback to the DCS or PLC
- Onboard Diagnostics to enable predictive maintenance and early-warning alerts
- Aluminum, Composite, and 316 Stainless Steel platforms certified for use in Flameproof/ Explosion Proof, or Non-Incendive hazardous areas
- An optional local, lockable partial stroke Test Button integral to the unit

The **TopWorx™ Partial Stroke Test Solution** provides Onboard Diagnostics to alert the user to the following Dangerous Failures:

- Valve packing/shaft damage
- Actuator spring fatigue/breakage
- Solenoid pilot exhaust blockage
- Solenoid spring failure



DXP | Tropicalized Aluminum
Flameproof/Explosion Proof

DXS | 316 Stainless Steel
Flameproof/Explosion Proof

SIL-3
IEC 61508

Capabilities

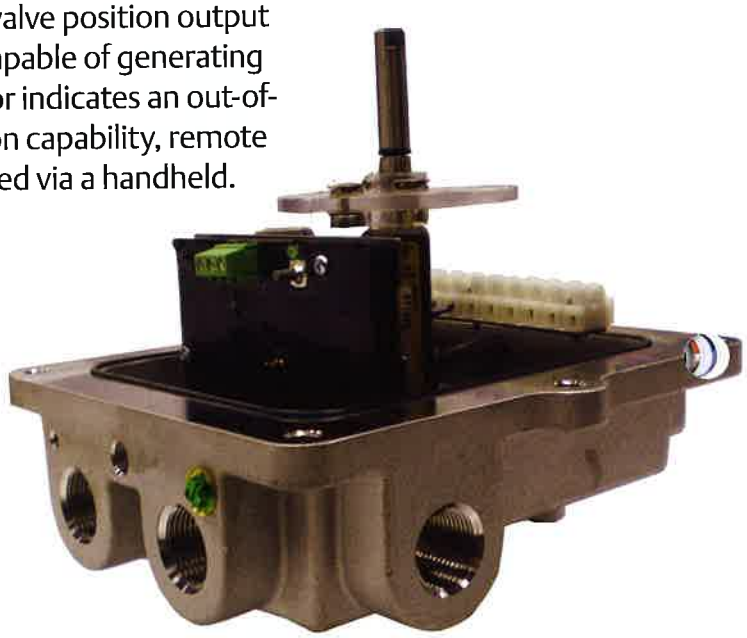
- Suitable for use in SIL-3 applications
- Certified for use in hazardous areas
- Integrated solution with all controls in a single housing
- Onboard diagnostics for performance validation

TOPWORX™ APPLICATIONS
Valve Control Solutions for Every Application

4-20mA TRANSMITTERS WITH HART PROTOCOL

HART COMMUNICATION PROTOCOL

The 2-wire position transmitter with HART will generate a nominal 4-20mA signal proportional to valve position output for full-range actuation of the valve. The transmitter is capable of generating signals below 4mA and above 20mA if the position sensor indicates an out-of-range value. With the added HART digital communication capability, remote calibration and parameter configuration can be performed via a handheld.



Features:

- Remote set point calibration using a handheld device for calibration and monitoring
- Selectable over and under travel settings
- 4 to 20mA variable reading
- Monitoring and setting of alarms with advanced diagnostics. Includes deadband detection, out of range indication and detection of internal memory errors

THE STAINLESS STEEL, 35-SERIES GO™ SWITCH
Hermetically-Sealed, Stainless Steel, DPDT Proximity Switch

GO Gets It.

For over fifty years, GO™ Switch, all in one proximity sensor and limit switches, have set the standard for reliability and durability in the process industries. Their unique operating principle and best-in-class capabilities have made them the most specified switch in the world for demanding process applications.

TopWorx™ has once again improved on greatness.
The 35-Series GO™ Switch is available in two versions: The original Single Pole Double Throw GO™ Switch or the stainless steel, Double Pole Double Throw, version.

Features:

- One-piece, stainless steel housing
- Hermetically-sealed, Double Pole Double Throw contacts
- Suitable for both Ex d and Intrinsically Safe applications
- Up to four (4) switches in a single enclosure
- Extremely low hysteresis
- PLC and higher current ratings with AC/DC - NO/NC wiring flexibility
- 4amp/120vac and 3amp/24vdc
- Available with SOV and HART options

LINEAR VALVE MONITORS & SENSORS

TopWorx™ discrete valve controllers are the products of choice for linear valves of all types. Their precision sensing and proven reliability deliver the best position feedback available. Options such as 4-20mA transmitters with end-of-stroke sensors and HART protocol provide continuous monitoring and confirmation of valve position. Custom mounting kits are available to ensure reliable operation for the life of the valve package.

TopWorx™ D-Series on linear control valves

DXP AND DXS WITH IEC/ATEX IIC CERTIFICATION
The Only IIC Valve Controller with an Integral Solenoid.

Most ATEX Ex d IIC valve controllers have small containers with screw-top lids and very few options. Often the threads on the screw-top lids bind up, causing safety issues on multiple levels. TopWorx™ is changing all of that with the IIC-certified DXP valve controller.

There is no competition.

The unique modular design of the TopWorx™ DXP discrete valve controller combines bus networking, pilot valve and position sensors into a globally certified, explosion proof enclosure that attaches to any automated valve package.

Serrated Flange

Features:
- Serrated Flange (No binding of threads)
- Improved ingress protection
- IECEx, ATEX, & Ex d Group IIC
- The only IIC Box with integral solenoid
- Available with all Bus & Sensor options!

TOPWORX™ APPLICATIONS
Valve Control Solutions for Every Application

TOPWORX™ VISUAL INDICATORS
A variety of indicators to fit every application, including multiple color combinations such as Green/Red and Yellow/Black, plus three-way, 90° and 180° flow paths. Other languages are also available upon request.

COLD TEMP TO -60°C/-76°F
The TopWorx™ D-Series will give accurate position indication down to -60°C with the use of the GO Switch.

" We replaced all of a competitor's switchbox with the TopWorx™ DXP using GO Switches. We can set the DXPs and walk away from them knowing that they work great. "
- I&C Leader, Japanese Chemical Company

" The TopWorx™ product was attractive to us because the enclosure was resilient and able to survive in a hazardous and corrosive environment. "
- Process Engineer, German Chemical Company

TOPWORX™ MOUNTING KITS

VIP™ Brackets to Fit Any Rotary Valve or Actuator

VIP MOUNTING KIT

TopWorx™ valve controllers can be mounted on any rack-n-pinion, scotch-yoke, or vane actuator, quarter-turn manual valves, linear knifegate and control valves, and positioners. Visit www.topworx.com for a complete list of available kits or to request a custom design.

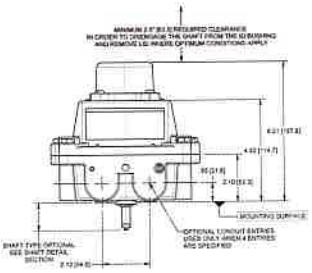
TopWorx™ offers thousands of mounting kits to fit a wide variety of valves and actuators. Each kit comes complete with a parts list and installation instructions.

3Z Valve	Larox
Actreg	Ledeen
Airtorque	MAGNETROL
ANCHOR DARLING	Marwin
Apollo	Masoneilan
Automax	Mogas
AXELSON	Neles-Jamesbury
Baumann	Neway
Bettis	Newcon Valve
Biffi	Orbinox
Bray	Orbit
BROOKS BRODIE	PBM
Cameron	PBV
CCI	Poyam
ChemValve	Protech
Clarkson	PVC
Compaq	QTRCO
Conbraco	Radius
Contromatics	RCS
COPES VULCAN	Remote Control
Crane	RF Technologies
DeZurik	Rhino
Durco	Rotork
El-O-Matic	SAMSON
Fabri Valve	Severn Glocon
Fisher	SPEAKMAN
Flowbus	TBV
Flowserve	Triac
General Valve	Trutorq
Grinnell	Unitorq
HAWS	Valtek
HONEYWELL	Valvtechnologies
Hytork	Vanessa
ITT	Velan
KENNETH ELLIOT	VTI
Keystone-Morin	Watts
Kinetrol	WKM
Kitz	Worcester
KTM	Xomox-Matryx
KTM	

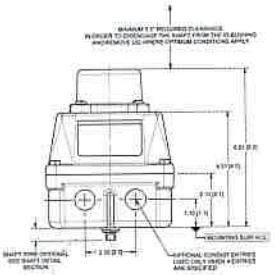
TOPWORX™ TECHNICAL INFORMATION
Dimensional Drawings, Electrical Ratings

D-SERIES DIAGRAMS

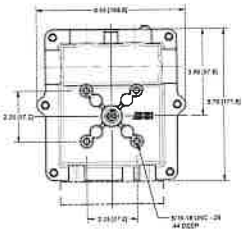
DXP

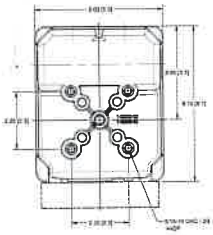


DXR



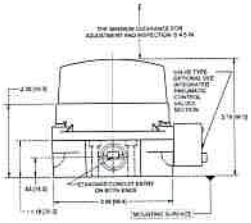
DXS

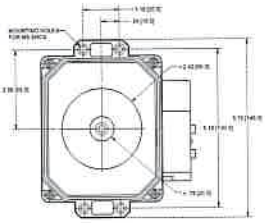




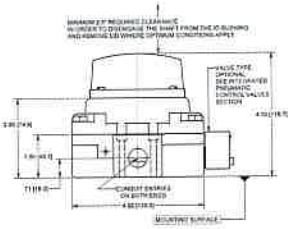
T-SERIES DIAGRAMS

TVA

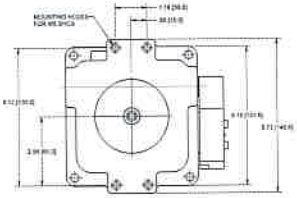




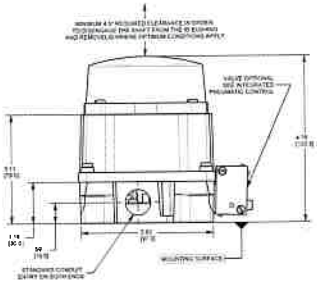
TXS



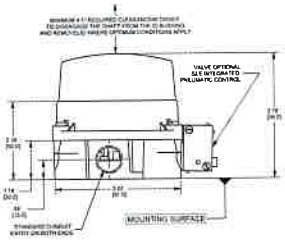
TXP



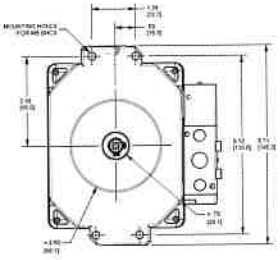
TVH

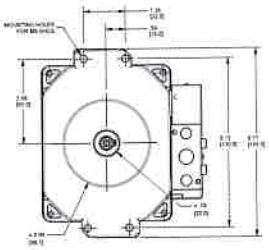


TVF



TVL

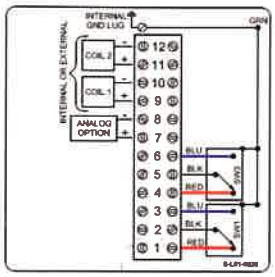




Please see Installation and Operation Manual for complete product dimensions or contact TopWorx™ for additional information at info.TopWorx@Emerson.com

GO Switches

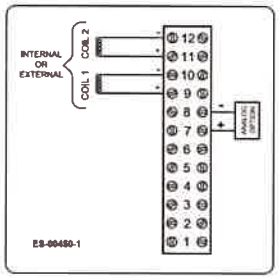
Option	Contact Type	Contact Form	Electrical Rating
L	Gold-Flashed, Dry-Contact	SPDT	4A@120VAC, 3A@24VDC
Z	Palladium Silver, Dry-Contact	DPDT	4A@120VAC, 3A@24VDC



_L2

Transmitters

Option	Type	Signal	Electrical Rating
_X	Potentiometer	4-20mA	8.5-34VDC
_H	Potentiometer	4-20mA, HART	15-39VDC



_X

Solenoid Valves

D-Series

Voltage	Power Consumption	Pressure Rating
24VDC	.5W	45-150 PSI
110VAC	3VA	45-150 PSI
220VAC	3VA	45-150 PSI
Piezo	12mW	45-150 PSI

T-Series

Voltage	Power Consumption	Pressure Rating
24VDC	.5W (I.S.), 1W (non-I.S.)	30-100 PSI
110VAC	3VA	30-100 PSI
220VAC	3VA	30-100 PSI

TOPWORX™ D-SERIES, DXP, DXR, DXS ORDERING GUIDE

Choose one option from each category to build a complete model number. Consult factory for options not shown below.

Enclosure

DXP Tropicalized Aluminum

DXR Composite Resin ("S" Silicone O-Rings only; Stainless steel conduit entries) (Area Classification "0" only available with ATEX/IECEx approvals) 232

DXS 316 Stainless steel (Only available with "R" or "M" shaft options)

Bus/Sensor

Bus Network

AS AS-Interface (Area class cannot be 0)

***FF** Foundation Fieldbus w/ 0 -10K Pot

***FL** Foundation Fieldbus w/(2) SPDT GO Switches

***FP** Foundation Fieldbus w/(2) SPDT GO Switches and 0-10K Pot

DN DeviceNet (Area class cannot be 0)

Partial Stroke Test

ES ESD/PST Module w/GO Switch (Area class cannot be 0)

GO Switches

L2 (2)GO Switches SPDT hermetic seal

L4 (4)GO Switches SPDT hermetic seal(not available with pilot)

Z2 (2)GO Switches DPDT hermetic seal

Z4 (4)GO Switches DPDT hermetic seal, (not available with pilot)

Mechanical Switches

(Area class cannot be 2, DXR with G approval not available with pilot)

M2 (2)Mech SPDT No Adder

M4 (4)Mech SPDT

M6 (6)Mech SPDT

T2 (2)Mech DPDT

K2 (2)Mech SPDT gold contacts

K4 (4)Mech SPDT gold contacts

Proximity Switches

R2 (2) SPDT Prox switches

R4 (4) SPDT Prox switches

(R2 & R4 only available with **DXR** and Ex me certification)

Inductive Sensors

E2 (2) p+f NJ2-V3-N

inductive NAMUR

E4 (4) p+f NJ2-V3-N

inductive NAMUR

Analog Output

(Available with 2-switch options only for L,Z,M,K,E,T)

_X 4-20mA transmitter

_H 4-20mA transmitter with HART (Not available with switch option T; LH not available w/pilot valve) (LH, ZH Not available with DXR)

Example:

LH =(2) GO Switches with HART™ transmitter

* *FF, *FL and *FP with Area Classification "0" has an ib protection

Area Classification

0 Intrinsically safe (Bus/sensor cannot be AS, DN, ES, or _X; Requires appropriate I.S. barrier)
- North America
  Class I Div 1&2
  Groups A, B, C, D
  Type 4, 4X
- ATEX/IECEx
  Zone 0
  II2GD, T6/T4
  Ex ia IIC
  Ex tb IIIC, IP66/67
(Foundation Fieldbus)
Zone 1, Ex ib IIC T4, IP67

1 Explosion proof / Flame proof (DXP/S only)
- North America
Class I Div 1
Groups C, D;
Class I Div 2,
Groups A, B, C, D.
(Groups A & B must be hermetically sealed)
Type 4, 4X,
- ATEX/IECEx
Zone 1
II2G, II2GD, T6/T4/T3
Ex d IIB+H2
Ex tb IIIC IP66/67
(O-Rings must be S for DUST certification)

2 Non-incendive (Bus/sensor must be L, Z, P, E, AS, FF, _X, _H, _E or DN)
- North America
  Class I Div 2
  Groups A, B, C, D;
  Class II Div 2
  Groups F,G
- ATEX (DXP/S only)
  II3G Ex nA nC tb, IP66/67
  (O-Rings must be S for DUST certification)

G General Purpose Type 4, 4X (not available with DXR with mechanical switches)

C Flameproof (DXS not available with valve; Conduit entries must be E or M) ATEX/IECEx II2G, II2GD, T6/T4/T3 Ex d IIC Ex tb IIIC IP66/67

M Flameproof (only available with R2 and R4 sensor options) (DXR only) ATEX/IECEx Zone 1, II2GD Ex e mb IIC T4, Ex tb IIIC T66 IP67

W No approvals; Type 4, 4X IP66/68

For complete information on certification options, go to *www.topworx.com* and download the applicable product certificate.

Visual Display

G Standard 90° Green OPEN, Red CLOSED

R Standard 90° Green CLOSED, Red OPEN

B 90° Black OPEN, Yellow CLOSED No Adder

Y 90° Yellow OPEN, Black CLOSED

1 3 way, 90° L Port

3 3 way, 90° T Port

5 3 way, 90° T Port

7 3 way, 180° T Port 3 position

9 3 way, 180° T Port 3 position

Shaft

S 1/4" DD 304 stainless steel

N NAMUR 304 stainless steel

R 1/4" DD 316 stainless steel (Shaft & external hardware)

M NAMUR 316 stainless steel (Shaft & external hardware)

Conduit Entries

DXP/DXS

(Metal Conduit Entries)

E (2) 3/4" NPT

4 (2) 3/4" NPT (2) 1/2" NPT

M (2) M20

3 (4) M20

6 (4) 3/4" NPT

DXR

(Stainless Conduit Entries Required for North American approval)

P (2) 1/2" NPT

E (2) 3/4" NPT

M (2) M20

DXR

(Resin Conduit Entries)

A (2) 1/2" NPT

B (2) 3/4" NPT

C (2) M20

Ordering Guide

Fill in the boxes to create your 'ordering number.'

Enclosure	Bus/Sensor	Area Classification	Visual Display	Shaft	Conduit Entries
___ ___ ___	___ ___	___	___	___	___

Ordering Examples:
DXP-FF0GNEBPA2
DXP-L21GNEB1A2

O-Rings

B Buna-N
No Adder

S Silicone
No Adder

NOTE:
For Temperatures below -40°C, Silicone o-rings are recommended

Pilot

Blank
No pilot device(s)

1 (1) 24 Vdc pilot, fail open/closed
0.5 W (non- I.S.)

0.5W (I.S)

2 (2) 24 Vdc pilots, fail last position
0.5W (non-I.S)

0.5W (I.S)

4 (1) 220 Vac pilot, 2W, fail open/closed

5 (2) 220 Vac pilots, 2W, fail last position

7 (1) 110 Vac pilot, 1.1W, fail open/closed

8 (2) 110 Vac pilots, 1.1W, fail last position

P (1) piezo pilot, fail open/closed (FF only)

R (2) piezo pilots, fail last position (FF only)

Spool Valve

Blank
No Spool Valve

A Aluminum
Hard coat anodized

6 316 Stainless steel

Valve Cv

Blank
No Spool Valve

2 .86 Cv (1/4" NPT Ports)

3 3.7 Cv (1/2" NPT Ports)
(For manual override consult factory)
(Spool Valve A)
(Spool Valve 6)

Manual Override

Blank
No override

1 Single Pushbutton Momentary/Latching

2 Dual Pushbutton Momentary/Latching

T Partial stroke test button with lockable cover (Sensor ES only) (Not avail w/ Area Class C) (DXP/S - Conduit Entries 4 or 3 only. DXR - consult factory)

Regional Certs

Blank
No Regional Cert

B InMetro (Area Class 0,1 and C only)

N NEPSI

F FISCO
(Bus/Sensor must be FF; Area Class must be 0)

K KOSHA
(DXP/S only)
(Area class 1 or C)

R EAC (DXP/S only)(O-Rings must be B or S,B=Gas Approved;S=Gas/Dust Approved)

A ANZEx
Ex d IIC,
Ex d IIB+H2
(DXP/S only)

P PESO (India)
(Gas approval only)

O-Rings	Pilot	Spool	Valve Cv	Override	Regional Certs

TOPWORX™ ACCESSORIES

Description	Part Number
Pneumatic Accessories	
Flow Control, 1/4" NPT (1 per kit) (DXP/TXP/TVA)	AL-M21
Flow Control, 1/2" NPT (1 per kit) (DXP w/3.0Cv spool valve)	AL-M22
Breathers, 1/4" NPT (2 per kit) (DXP)	AL-M31

TOPWORX™ T-SERIES, TXP, TXS, TVA ORDERING GUIDE

Choose one option from each category to build a complete model number.
Consult factory for options not shown below.

Enclosure

TXP Tropicalized Aluminum

TXS 316 Stainless Steel

TVA and TXP mounting accessories now sold separately.
See listing below for kit #s and description.

Bus/Sensor

Bus Network
AS AS-Interface
(Area class cannot be 0)
PB Profibus DP
(Area class must be 1, C or W)

Mechanical Switches
(Area class cannot be 2)
M2 (2) Mech SPDT
M4 (4) Mech SPDT
K2 (2) Mech SPDT w/gold contacts
T2 (2) Mech DPDT

Proximity Switches
R2 (2) SPDT 200mA max
R4 (4) SPDT 200mA max
P2 (2) SPDT 3A max
P4 (4) SPDT 3A max

GO Switches
L2 (2) GO™ Switches SPDT hermetically sealed (TXP/TXS w/o pilot valve only)

Inductive Sensors
E2 (2) p+f NJ2-V3-N inductive NAMUR

Analog Output
0X 4-20 mA Transmitter with no switches

Examples:
AS = AS-i with "R" type reed switches

Area Classification

0 Intrinsically safe
ATEX/IECEx
Zone 1
II2GD Ex ia IIC
Ex tb IIIC, IP66/67

C Flame Proof
ATEX/IECEx
II2GD Ex d IIC
Ex tb IIIC, IP66/67
(w/o pilot valve)

1 Explosion proof
Cl I Div 1 Grps C,D
Cl II Div 1 Grps E-G (NEC aprovals w/o pilot valve)
ATEX/IECEx
Zone 1
II2GD Ex d IIB
Ex tb IIIC, IP66/67

2 Non-incendive
Cl I Div 2 Grps A-D
Cl II Div 2 Grps F&G (NEC aprovals w/o pilot valve)
ATEX II3GD (Not available with all sensing options)
Ex nA nC IIC, IP66/67
Ex tb IIIC

G General Purpose
Type 4X

W No approvals
Type 4, 4x
IP66/68

For complete information on certification options, go to *www.topworx.com* and download the applicable product certificate.

Visual Display

G Standard 90°
Green OPEN,
Red CLOSED

R Standard 90°
Green CLOSED,
Red OPEN

B 90O Black OPEN,
Yellow CLOSED

F Flat-top with skirt indicator
(TXP & TXS only)
(Indicator not provided with "L" Shaft option)

Y 90O Yellow OPEN,
Black CLOSED

J 3 Way T Port,
Green/Red

K 3 Way L Port,
Green/Red

Shaft

N NAMUR
304 stainless steel

L 1" Extended
Linear Shaft

Conduit Entries

TXP/TXS
P (2) 1/2" NPT

M (2) M20

E (2) 3/4" NPT
(Not available with pilot valve)

3 (4) M20
(Not available with pilot valve)

4 (2) 3/4" NPT
(2) 1/2" NPT
(Not available with pilot valve)

Ordering Guide

Fill in the boxes to create your 'ordering number.'

Enclosure	Bus/Sensor	Area Classification	Visual Display	Shaft	Conduit Entries
___ ___ ___	___ ___	___	___	___	___

Ordering Examples:
TXS-ASCGNPM1A1
TXP-M21GNPB1A1

O-Rings	Pilot	Spool Valve	Valve Cv	Manual Override	Regional Certs
M Silicone	**Blank** No pilot device(s)	**Blank** No spool valve	**Blank** No spool valve	**Blank** No override	**Blank** No Regional Cert
	1 (1) 24Vdc pilot, fail open/closed 1W (non I.S)	**A** Aluminum Hard coat anodized	**1** 1.0 Cv (1/4" NPT Ports)	**1** Single Pushbutton Momentary/Latching	**N** NEPSI
	0.5 W (I.S)	**6** 316 Stainless steel	**8** 1.0 Cv (1/4" BSP Ports)		**R** EAC
	7 (1) 110Vac pilot, 3VA, fail open/closed				**B** InMetro (Area Class 0,1 and C only)
	4 (1) 220Vac pilot, 3VA fail open/closed				**P** PESO (Gas approval only)

Don't Forget!

Filtered air is required for proper valve operation. Reference www.topworx.com for additional Air Filter information.

O-Rings	Pilot	Spool	Valve Cv	Override	Regional Certs
____	____	____	____	____	____

T-SERIES MOUNTING KITS

Description	Part Number
Resin Mounting Kits for TVA	
Mounting Kit for 20 x 80	AL-TR01
Mounting Kit for 30 x 80	AL-TR04
Mounting Kit for 30 x 130	AL-TR07
Mounting Kit for 50 x 130	AL-TR09
Mounting Kits for TXP	
Mounting Kit for 20 x 80	AV-TA09
Mounting Kit for 20 x 80 (flattop only)	AV-TA10
Mounting Kit for 30 x 80	AV-TA11
Mounting Kit for 30 x 80 (flattop only)	AV-TA12
Mounting Kit for 30 x 130	AV-TA13
Mounting Kit for 30 x 130 (flattop only)	AV-TA14
Mounting Kit for 50 x 130	AV-TA15
Mounting Kit for 50 x 130 (flattop only)	AV-TA16

Description	Part Number
Stainless Steel Mounting Kits for TXS	
Non-NAMUR Interface Kit	Z001205
Mounting Kit for 20 x 80	AV-TS09
Mounting Kit for 20 x 80 (flattop only)	AV-TS10
Mounting Kit for 30 x 80	AV-TS11
Mounting Kit for 30 x 80 (flattop only)	AV-TS12
Mounting Kit for 30 x 130	AV-TS13
Mounting Kit for 30 x 130 (flattop only)	AV-TS14
Mounting Kit for 50 x 130	AV-TS15
Mounting Kit for 50 x 130 (TXS flattop only)	AV-TS16

TOPWORX™ T-SERIES, TVF, TVL, TVH ORDERING GUIDE

Choose one option from each category to build a complete model number. Consult factory for options not shown below.

Enclosure

TVF Tropicalized Aluminum base with clear resin lid

TVL Tropicalized Aluminum base and Lid

TVH 316 Stainless Steel base and lid

TVA Engineered Resin (Area Class must be W or 0), (Only available with Bus/Sensors AS, AM (with or w/o pilot valve) M, K, T, R, P or E (w/o pilot valve)

Bus/Sensor

Bus Network
(area class cannot be 0)

AS AS-Interface
DN DeviceNet
PB Profibus DP

Mechanical Switches
(Area class cannot be 2)
M2 (2) Mech SPDT
M4 (4) Mech SPDT
K2 (2) Mech SPDT w/ gold contacts
T2 (2) Mech DPDT

Proximity Switches
R2 (2) SPDT 200mA max
R4 (4) SPDT 200mA max
P2 (2) SPDT 3A max

Analog Output
(Available with M, K, T, E)(Not available w/ pilot/spool valve)
_X 4-20 mA Transmitter

Inductive Sensors
E2 (2) p+f NJ2-V3-N inductive NAMUR
12 (2) Ind prox PNP N/O (Area class can only be "W")

Examples:
0X 4-20 mA Transmitter with no switches

MX 4-20 mA Transmitter with mechanical switches

AS AS-i with "R" type reed switches

Area Classification

0 Intrinsically safe
ATEX/IECEx Zone 1
II2GD Ex ia IIC
Ex tb IIIC, IP66/68 (Dust groups TVL/TVH only)
Cl I Div 1 Grps- A-D; Cl II Div 1 Grps E-G (TVA ATEX/IECEx Only)

2 Non-incendive
ATEX/IECEx Zone 2
II3GD Ex nA nC IIC
Ex tc IIIC, IP66/68
Cl I Div 2 Grps A-D;
Cl I Div 2 Grps F & G

W No approvals, Type 4, 4X IP66/68

G General Purpose Type 4X (Not available on TVA)

TVF, TVL & TVH
10pt. terminal strip w/ pilots
12pt. terminal strip w/o pilots

TVA
8pt. terminal strip w/o pilots

For complete information on certification options, go to *www.topworx.com* and download the applicable product certificate.

Visual Display

G Standard 90° Green OPEN, Red CLOSED

R Standard 90° Green CLOSED, Red OPEN

B 90O Black OPEN, Yellow CLOSED

F Flat-top with skirt indicator
(TVL & TVH only)
(Indicator not provided with "L" Shaft option)

Y 90O Yellow OPEN, Black CLOSED

T Green THRU, Red DIVERT

K 3 Way L Port, Green/Red

Shaft

N NAMUR 304 stainless steel

L 1" Extended Linear Shaft (TVL/TVH only)

Conduit Entries

(TVF/TVL/TVH
P (2) 1/2" NPT

M (2) M20

E (2) 3/4" NPT

1 (2) M25

TVA
A (2) 1/2"NPT Resin

C (2) M20 Resin

Ordering Guide

Fill in the boxes to create your 'ordering number.'

Enclosure	Bus/Sensor	Area Classification	Visual Display	Shaft	Conduit Entries
___ ___ ___	___ ___	___	___	___	___

Ordering Examples:
TVF-M20GNPM1A1
TVL-R4WGNPM

O-Rings	Pilot	Spool Valve	Valve Cv	Manual Override	Regionals
M Silicone	**Blank** No pilot device(s)	**Blank** No spool valve	**Blank** No spool valve	**Blank** No override	N NEPSI
	1 (1) 24Vdc pilot, fail open/closed 1W (non I.S) 0.5 W (I.S)	A Aluminum Hard coat anodized	1 1.0 Cv (1/4" NPT Ports)	1 Single Pushbutton Momentary/Latching	R EAC (Not available in TVA)
	2 (2) 24Vdc pilots fail last position 1W (non-I.S.) 0.5 W (I.S.)	6 316 Stainless steel	8 1.0 Cv (1/4" BSP Ports)	2 Dual Pushbutton Momentary Latching	B InMetro (Area Class "0" only)
	4 (1) 220Vac pilot, 3VA fail open/closed				P Peso (Gas approval only)
	5 (2) 220Vac pilots, 3VA fail last position				
	7 (1) 110Vac pilot, 3VA, fail open/closed				
	8 (2) 110Vac pilots, 3VA fail last position				
O-Rings	Pilot	Spool	Valve Cv	Override	Regionals

-Series Mounting Kits (All hardware included)

Description	Part Number	List Price
Mounting Kits for TVF/TVL		
Mounting Kit for 20 x 80	AV-TA01	
Mounting Kit for 20 x 80 (flattop only)	AV-TA02	
Mounting Kit for 30 x 80	AV-TA03	
Mounting Kit for 30 x 80 (flattop only)	AV-TA04	
Mounting Kit for 30 x 130	AV-TA05	
Mounting Kit for 30 x 130 (flattop only)	AV-TA06	
Mounting Kit for 50 x 130	AV-TA07	
Mounting Kit for 50 x 130 (flattop only)	AV-TA08	
Mounting Kit for existing standard shaft brackets	AV-PL001-1	
Resin Mounting Kits for TVA		
Mounting Kit for 20 x 80	AL-TR01	
Mounting Kit for 30 x 80	AL-TR04	
Mounting Kit for 30 x 130	AL-TR07	
Mounting Kit for 50 x 130	AL-TR09	

Description	Part Number	List Price
Stainless Steel Mounting Kits for TVH		
Mounting Kit for 20 x 80	AV-TS01	
Mounting Kit for 20 x 80 (flattop only)	AV-TS02	
Mounting Kit for 30 x 80	AV-TS03	
Mounting Kit for 30 x 80 (flattop only)	AV-TS04	
Mounting Kit for 30 x 130	AV-TS05	
Mounting Kit for 30 x 130 (flattop only)	AV-TS06	
Mounting Kit for 50 x 130	AV-TS07	
Mounting Kit for 50 x 130 (flattop only)	AV-TS08	

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About Emerson Process Management

Emerson Process Management is a powerful, global, single source of process improvement technology and expertise. We help major companies in selected industries optimize their plants and processes to achieve higher quality, greater reliability and faster time to market, while steadily advancing productivity and profitability. We can build it – providing experienced project management, engineering and a single point of accountability for the entire instrumentation and automation system. We can connect it – seamlessly integrating people and technology at every level of the process. We can improve it – creating more efficient utilization of energy and raw materials. And we can sustain it – producing greater reliability, month after month, year after year. From the field, to the plant, to the bottom line – where performance is the question, Emerson is the answer.

EMERSON.

ES-01257-1 R8

GO™ SWITCH

THE ALL IN ONE PROXIMITY SENSOR AND LIMIT SWITCH.
GO Gets It.

GO™ Switch is the most versatile sensing solution. It detects like a proximity switch and functions like a limit switch, providing higher reliability when conventional switches fail.

EMERSON™

A GLOBAL LEADER IN VALVE CONTROL AND PROXIMITY SENSING

Emerson™ is a global leader in valve control and proximity sensing for the process industries. Our solutions enable plants, platforms, and pipelines to manage and control operations more intelligently and efficiently under the most demanding and extreme conditions.

GLOBAL TECHNOLOGY LEADERSHIP

TopWorx technology advancements are at the forefront of innovation in the process automation industry. TopWorx uses wireless technologies and fieldbus protocols such as FOUNDATION Fieldbus, DeviceNet, AS-Interface, Profibus, and HART to reduce installation costs and enable predictive maintenance.

GLOBAL HAZARDOUS AREA CERTIFICATIONS

In addition to high temperature (204°C), cold temperature (-50°C), and sub-sea (7,010 meters) applications, TopWorx products are suitable for use in Flame-proof/Explosion Proof, Non-Incendive, Intrinsically Safe hazardous areas with IECEx, ATEX, GOST, InMetro, UL, CSA, KOSHA, and NEPSI certifications.

GLOBAL SERVICE & SUPPORT

With company locations in the United States, United Kingdom, South Africa, Bahrain, and Singapore, TopWorx is strategically positioned to provide out-standing support. In addition, over 200 Certified Product Partners throughout the world are available to provide competent local support when needed.

WWW.TOPWORX.COM

Visit **www.topworx.com** for comprehensive information on our company, capabilities, and products – including model numbers, data sheets, specifications, dimensions, and certifications.

HIGH RELIABILITY APPLICATIONS

GO™ Switch provides reliable, durable proximity sensing in the most demanding conditions. Using unique technology, GO™ Switch outperforms all other types of sensors in applications that require high reliability and durability.

CAPABILITIES

- Superior current rating
- Superior pressure rating
- Superior temperature rating
- Superior hazardous area ratings
- Superior resistance to physical abuse
- Superior resistance to corrosives, salt water

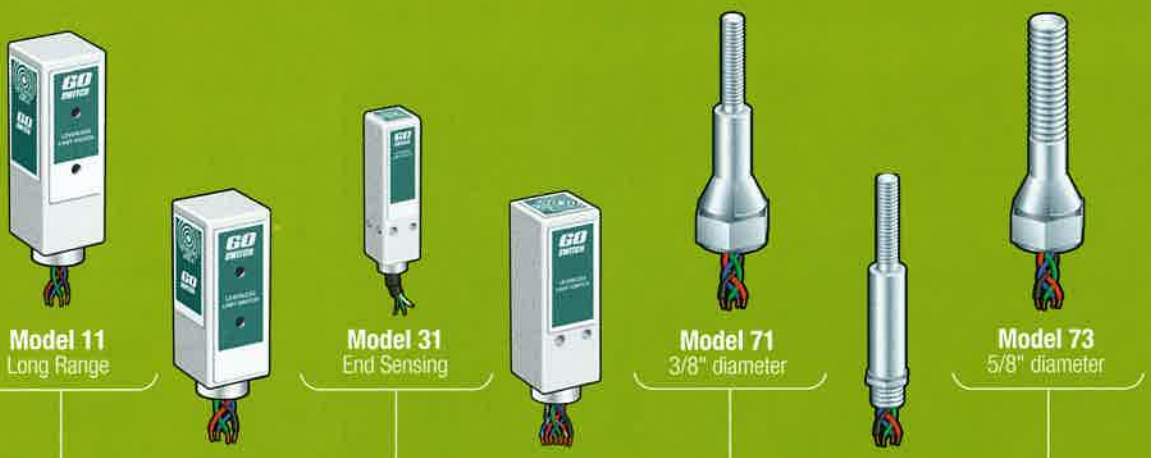
With GO™ Switch, customers enjoy:

- One-of-a-kind technology that offers high current ratings, AC/DC and NO/NC wiring flexibility and non-contact detection of ferrous metal and magnetic targets.
- Global certifications for use in Zone 0 (intrinsically safe), Zone 1 (explosion proof), Zone 2 (non-incendive) Class I, Div 1 & 2, Class II, Div 1 & 2 and Class III hazardous areas.
- Proven reliability in power generation, chemical, refineries, steel & aluminum, water & wastewater, oil & gas, petrochemical, food & beverage, pulp & paper, heavy equipment, mining, military vehicles, manufacturing, amusement parks, and material handling industries.
- Durability in mission-critical applications in extremely hot, cold, wet, dirty, abusive, corrosive, and explosive environments.

GO™ SWITCH CAPABILITIES
Common Features & Benefits

Using a unique technology, GO™ Switch outperforms conventional limit switches and proximity sensors in the toughest applications.

GO™ Switch Quick Selection Guide



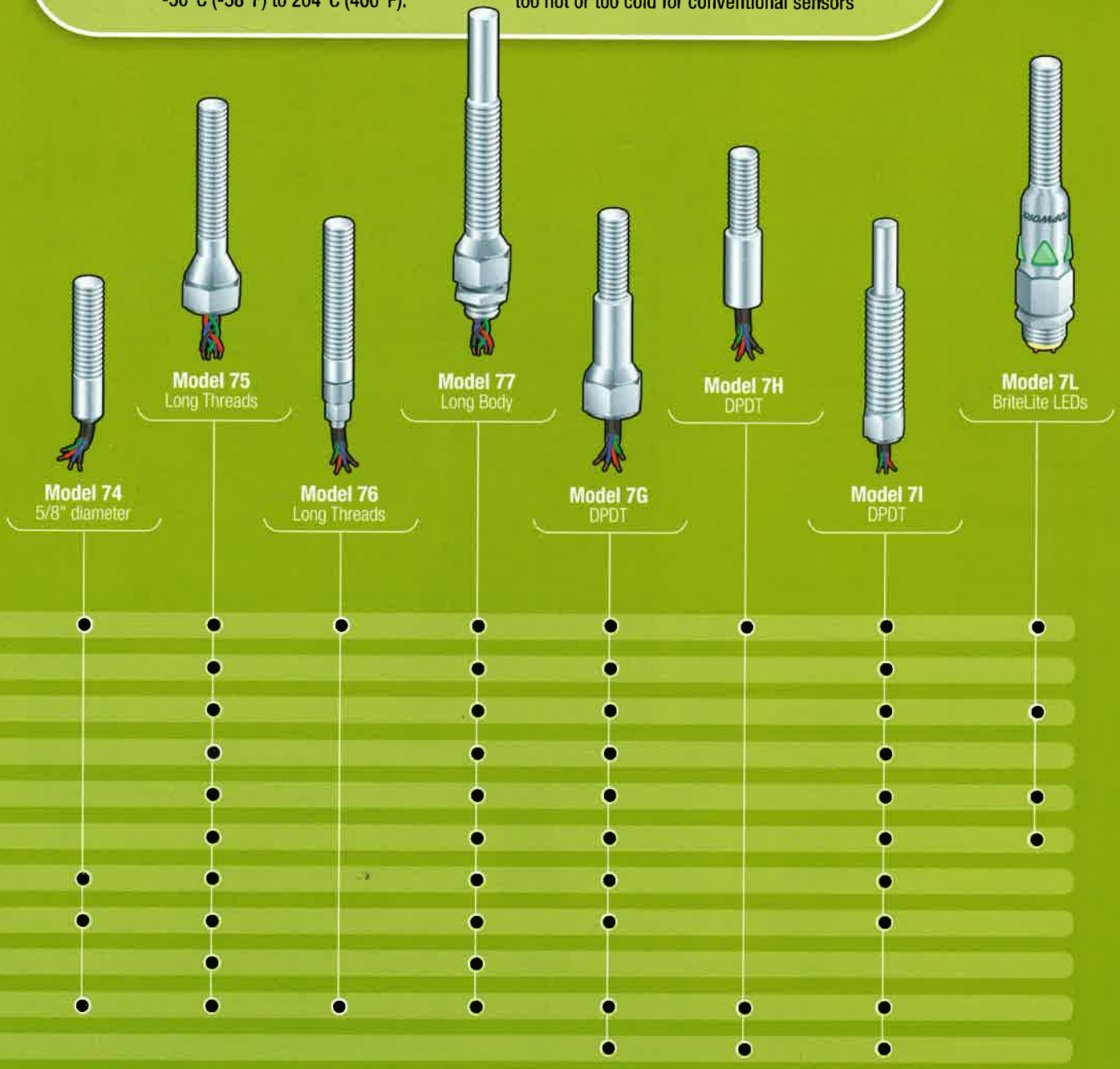
Model 11 Long Range
Model 21 Side Sensing
Model 31 End Sensing
Model 81 DPDT
Model 71 3/8" diameter
Model 72 3/8" diameter
Model 73 5/8" diameter

GO SWITCH

	Model 11	Model 21	Model 31	Model 81	Model 71	Model 72	Model 73
General Purpose	●	●	●	●	●	●	●
Class I, Div 1	●	●	●	●	●		●
Class I, Div 2	●	●	●	●	●		●
Class II, Div 1	●	●	●	●	●		●
Class II, Div 2	●	●	●	●	●		●
Class III	●	●	●	●	●		●
Zone 0, Intrinsically Safe	●	●	●	●			●
Zone 1, Flameproof	●	●					●
Underwater	●	●		●			●
High Temperature	●			●	●	●	●
DPDT				●			
	Extended Sensing				**Precision Sensing**		

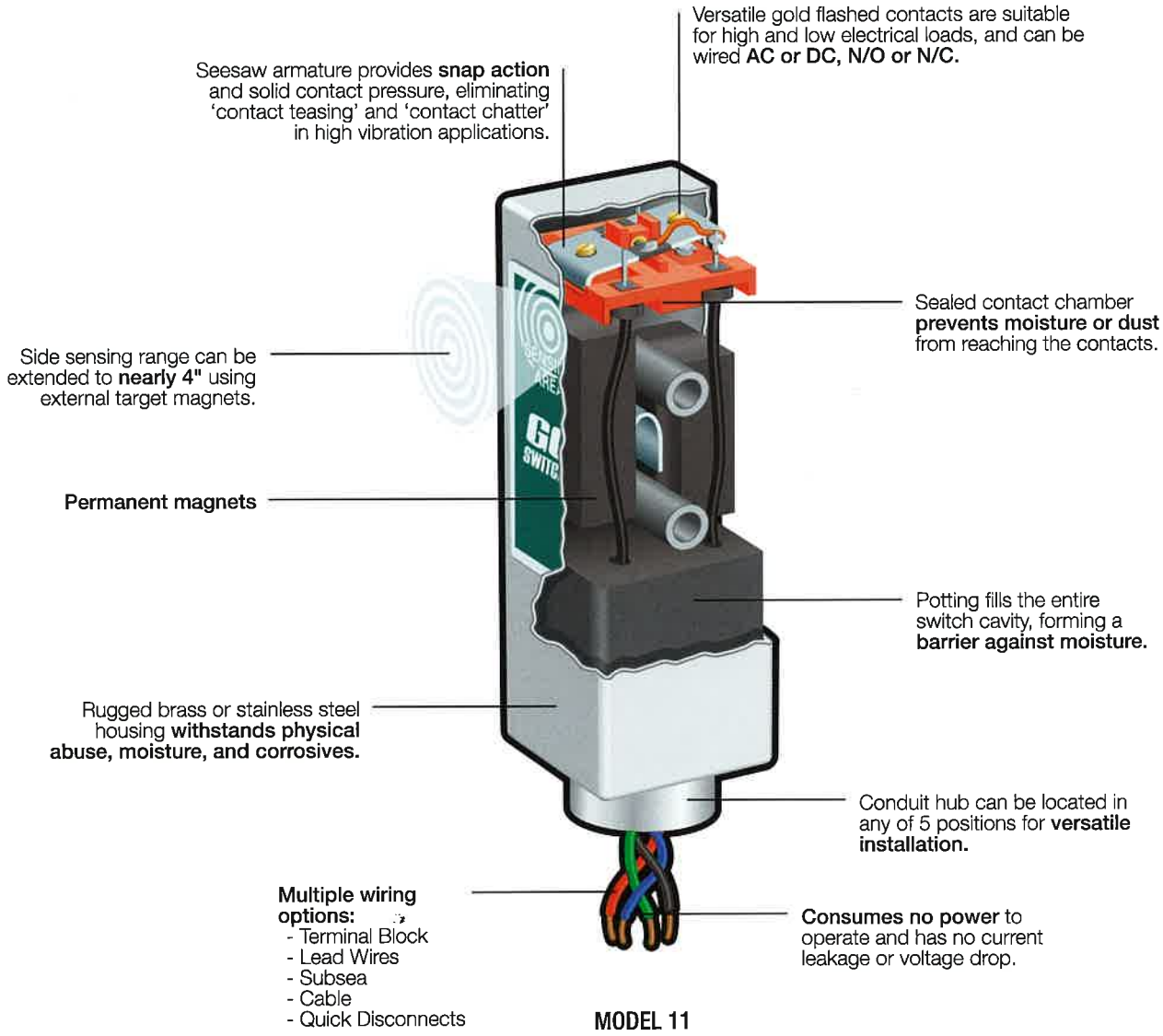
GO Switches offer the following features and benefits:

Features	Solutions
Proximity triggering with ferrous metal and magnetic targets - no exposed moving parts	Eliminate broken or bent lever arms, poor mechanical alignment, and poor repeatability
Extended sensing with use of target magnets	Eliminates the need to purchase/acquire a different device to obtain extended sensing
Immune to electrical noise, weld fields, and radio frequency interference	Eliminate electrical problems common to inductive proximity sensors
Consume no power to operate	Eliminate leakage current and voltage drops
Can be wired AC or DC, N/O or N/C, in series or parallel	Flexibility to cover a variety of application needs with fewer part numbers
All-metal housings with contacts potted and sealed from the environment	Performance is not affected by dust, dirt, moisture, or most caustics, corrosives, or chemicals
Multiple wiring options, including lead wires, cables, quick disconnects, etc.	Easy installation and seamless integration into your existing plant wiring standards
A wide variety of hazardous area certifications for Zone 0, 1, and 2	Compliance with intrinsically safe, explosion proof, and non-incendive requirements
Operating temperatures ranging from -50°C (-58°F) to 204°C (400°F).	Ability to monitor plant processes in areas too hot or too cold for conventional sensors



GO™ SWITCH - EXTENDED SENSING
Built to last in the most demanding conditions

GO™ Switch models 11, 21, 31 and 81 are the ideal replacements for traditional mechanical limit switches. Sealed contacts, rugged housings, non-contact detection of ferrous metal & magnetic targets, and snap action response make these switches the ultimate problem solvers for troublesome mechanical limit switch applications.



MODEL 11

Models 11, 21, 31, and 81 were the world's original GO Switches. Their simple design, rugged housings, long sensing ranges, and global approvals make these switches the ideal choice wherever reliable proximity sensing is needed. Some features common to all these models include a standard operating temperature range of -58°F to 221°F (-50°C to 105°C) and gold-plated SPDT dry contacts.

Model 11

Features

- Single Pole Double Throw (SPDT) 5A/240VAC, 10A/120VAC, 3A/24VDC
- AC/DC, NO/NC Wiring Flexibility
- -58°F to 221°F (-50°C to 105°C) operating temperature
- 3/8" (10mm) sensing distance (ferrous metal)
- Dry Contact
- Intrinsically Safe
- Side sensing
- Gold Plated Contacts

Options

- High Temperature: -58°F to +350°F (-50°C to +176°C)
- Brass or Stainless Steel 304 Housings
- Extended Sensing: 9/16" (14mm)
- Terminal Block, Lead Wires, or Cables
- Latching Contacts
- SubSea Connectors
- Quick Disconnects - Micro or Mini
- Global Hazardous Area Approvals

Model 81

Features

- Double Pole Double Throw (DPDT) 5A/240VAC, 10A/120VAC, 3A/24VDC
- AC/DC, NO/NC Wiring Flexibility
- -58°F to 221°F (-50°C to 105°C) operating temperature
- 1/4" (6mm) Sensing Distance (Ferrous metal)
- Dry Contact
- Intrinsically Safe
- End Sensing
- Gold Plated Contacts

Options

- High temperature: -58°F to 350°F (-50°C to 176°C)
- Single Pole Double Throw (SPDT) 10A/120VAC, 3A/24VDC
- Brass or Stainless Steel 304 Housings
- Lead Wires or Cables
- SubSea Connectors
- Quick Disconnects – Mini
- CSA/UL Hazardous Area Approvals

Model 21

Features

- Single Pole Double Throw (SPDT) 5A/240VAC, 10A/120VAC, 3A/24VDC
- AC/DC, NO/NC Wiring Flexibility
- -58°F to 221°F (-50°C to 105°C) operating temperature
- 3/8" (10mm) Sensing Distance (Ferrous Metal)
- Dry Contact
- Intrinsically Safe
- Side sensing
- Gold Plated Contacts

Options

- Brass or Stainless Steel 304 Housings
- Terminal Block, Lead Wires, or Cables
- Latching Contacts
- SubSea Connectors
- Quick Disconnects - Micro or Mini
- Global Hazardous Area Approvals

Model 31

Features

- Single Pole Double Throw (SPDT) 3A/240VAC, 6A/120VAC, 2A/24VDC
- AC/DC, NO/NC Wiring Flexibility
- -58°F to 221°F (-50°C to 105°C) operating temperature
- 1/4" (6mm) Sensing Distance (Ferrous metal)
- Dry Contact
- Intrinsically Safe
- End sensing
- Gold Plated Contacts

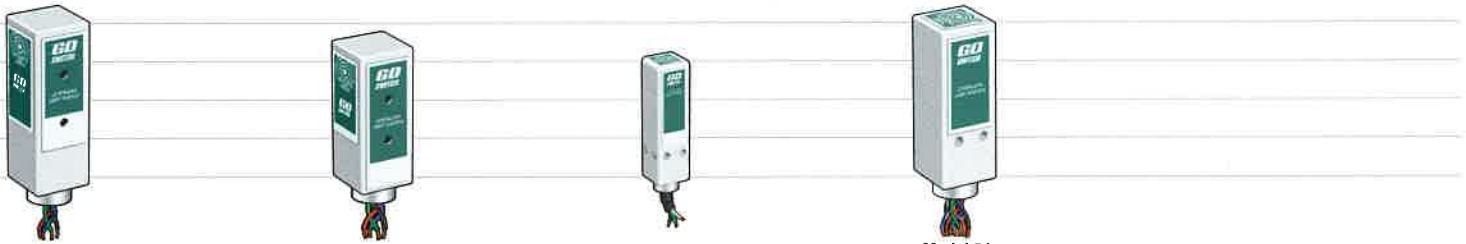
Options

- Lead Wires or Cables
- Quick Disconnects - Micro or Mini
- CSA/FM Hazardous Area Approvals

GO™ SWITCH ORDERING GUIDE - EXTENDED SENSING

Choose one option from each category to build a complete model number.

✓ Most popular options



Model 11
Long Range

Model 21
Side Sensing

Models 31
End Sensing

Model 81
DPDT

Model

Models 11, 21 & 81

✓ **11** 1 1/2" square x 4 9/16" overall. (Add 1/2" for bottom conduit outlet)

✓ **21** 1 1/2" square x 3 13/16" overall. (Add 1/2" for bottom conduit outlet)

31 1" square x 3 1/4" overall

81 1 1/2" square x 4 3/8" overall. (Add 1/2" for bottom conduit outlet)

Ordering Guide
Fill in each box to create a complete model number.

Model

Contact Form

✓ **1** Single Pole Double Throw (Form C)

✓ **2** Double Pole Double Throw (Form CC) (Model 81 Only)

3 Single Pole Double Throw (Form C) Latching (Maintained contact) (Models 11 & 21 only) (Outlet 2, 4 or 5 only)

Contact Form

Sensing Range

✓ **0** 1/4" end sensing (Model 81 only)

✓ **1** Standard sensing - 3/8" side sensing (Model 11 & 21 only)

✓ **2** Extended sensing - 9/16" side sensing (Contact form must be 1 or 3) (Model 11 only)

7 Precision sensing - 1/4" side sensing (Minimal differential) (Models 11, 21 & 31 only)

Sensing Range

Outlet Position

1 Behind sensing area (Models 11, 21 & 81 only)

2 Left of sensing area (Models 11 & 21 only)

3 Right of sensing area (Models 11 & 21 only)

4 Same side as sensing area (Models 11 & 21 only)

5 Bottom of enclosure

Outlet Position

Enclosure Materials

✓ **1** Brass with flat black lacquer coating (Models 11, 21 & 81 only)

✓ **2** Stainless steel*

3 Brass with corrosion resistant coating (Models 11, 21 & 81 only)

4 Stainless steel - corrosion resistant coating (polyurethane)*

* All-welded stainless steel switches are recommended for wet or harsh environments.

Enclosure Materials

Approvals

✓ **0** CSA / FM Cl I, Div 2, Grps A-D; Cl II, Div 2, Grps F & G, Cl III Terminal Block (Contact form must be 1 or 3) (Wiring must be 00) (Models 11 & 21 only)

2 High temperature to 350°F (Models 11 & 81; Contact Form 1 or 3 (1 or 2 for Model 81) (Sensing 1; Enclosure 2; Wiring F only) (Models 11, 21 and 81 only)

3 UL Cl I, Div 1 & 2; Grps A-D; Cl II, Div 1 & 2, Grps E-G; Cl III (Enclosure must be 2 or 4) (Lead seal required) (Wiring A, B, and F only)

✓ **4** CSA / FM Cl I, Div 1; Grps A-D; Cl II, Div 1; Grps E-G; Cl III. (Enclosure must be 2 or 4) (Lead seal required) (Wiring A, B, and F only)

5 MSHA approved "Explosion Proof" (Enclosure 2 only) (Wiring B3 or longer) (Models 11 & 21 only) (Wiring A, B, and F only)

✓ **6** CSA / FM Cl I, Div 2; Grps A-D; Cl II, Div 2; Grps E-G; Cl III. (Lead seal required)

7 CSA General Purpose

✓ **8** UL General Purpose

Approvals

Wiring Options

✓ **Terminal Block**
00 (Models 11 & 21 only)

✓ **Lead Wires** - 18 Gauge
A2 36"
A3 72"
A4 144"
A_ _ _ Greater than 144" - specify length in 5ft increments

Cable - 16 Gauge (Model 81 contact form 1 only)
B2 36"
B3 72"
B4 144"
B_ _ _ Greater than 144" - specify length in 5ft increments

Mini Change Connector (Models 11, 21, 31, 81)
(Approval 7 or 8 only; 3 pin is 8 only)
DCA 3 pin
DCD 4 pin
DCG 5 pin
DCH 7 pin (Model 81 only)

Micro Change Connector (Models 11, 21, 31, 81)
(Approval 7 or 8 only; 3 pin is 8 only)
DBA 3 pin
DBD 4 pin
DBG 5 pin

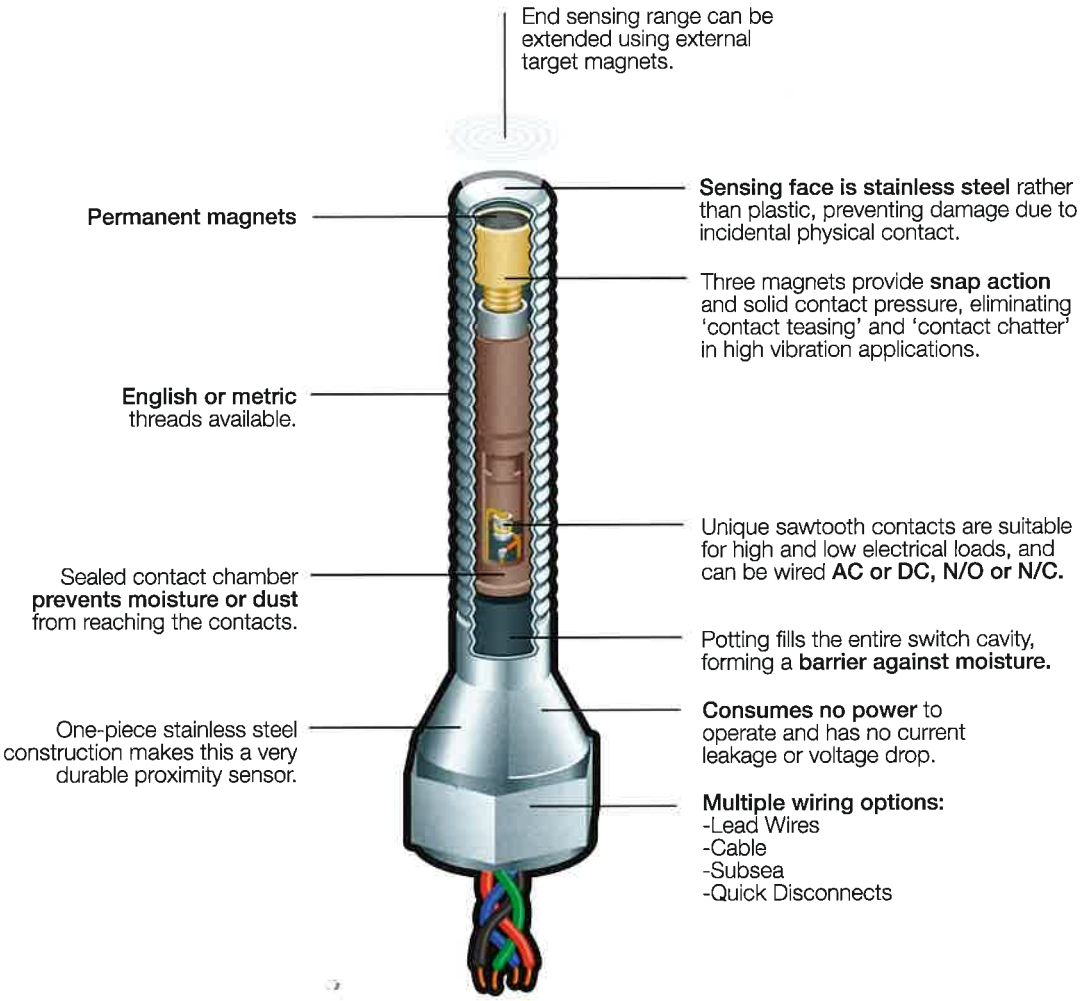
SubSea Connector
(Models 11, 21, 81) (Enclosure 2 or 4 only)
(Approval 7 or 8 only; 3 pin is 8 only)
3DD 3 pin
4DD 4 pin
8DD 8 pin (Model 81 only)
3DE 3 pin 90°
4DE 4 pin 90°

Hi-Temp™ Leads (Teflon insulated) 18 Gauge
F2 36"
F3 72"
F4 144"
F_ _ _ Greater than 144" - specify length in 5ft increments

Wiring Options

GO™ SWITCH - PRECISION SENSING
Built to last in the most demanding conditions

With all stainless steel construction, flexible AC/DC, NO/NC, and SPDT/DPDT contact configurations, superior corrosion resistance, and global certifications for all hazardous areas, 70 Series GO Switches outperform inductive proximity switches in the toughest applications.



MODEL 73

GO™ SWITCH - PRECISION SENSING
Built to last in the most demanding conditions

Model 71

Features
- Single Pole Double Throw (SPDT) 2A/240VAC, 4A/120VAC, 3A/24VDC
- AC/DC, NO/NC Wiring Flexibility
- -58°F to 221°F (-50°C to 105°C) operating temperature
- 0.040" (1mm) Sensing Distance (Ferrous metal)
- Dry Contact
- Intrinsically Safe
- End Sensing
- Palladium Silver Contacts

Options
- High Temperature: -58°F to +400°F (-50°C to +204°C)
- Stainless Steel 303 or 316 Housings
- Lead Wires or Cables
- Quick Disconnects – Micro
- 3/8" or M12 metric thread
- CSA/UL Hazardous Area Approvals

Model 72

Features
- Single Pole Double Throw (SPDT) 2A/240VAC, 4A/120VAC, 3A/24VDC
- AC/DC, NO/NC Wiring Flexibility
- -58°F to 221°F (-50°C to 105°C) operating temperature
- 0.040" (1mm) Sensing Distance (Ferrous metal)
- Dry Contact
- Intrinsically Safe
- End Sensing
- Palladium Silver Contacts

Options
- High Temperature: -58°F to +400°F (-50°C to +204°C)
- Stainless Steel 303 or 316 Housings
- Lead Wires or Cables
- Quick Disconnects – Micro
- 3/8" or M12 metric thread

Model 73

Features
- Single Pole Double Throw (SPDT) 2A/240VAC, 4A/120VAC, 3A/24VDC
- AC/DC, NO/NC Wiring Flexibility
- -58°F to 221°F (-50°C to 105°C) operating temperature
- 0.100" (2.5mm) Sensing Distance (Ferrous metal)
- Dry Contact
- Intrinsically Safe
- End Sensing
- Palladium Silver Contacts

Options
- High Temperature: -58°F to +400°F (-50°C to +204°C)
- Stainless Steel 303 or 316 Housings
- Pressure Rating: 2,000, 3,500, 5,000, 10,000 PSI, (140, 240, 345, 690 bars)
- Lead Wires or Cables
- SubSea Connectors
- Hermetic Seal
- Quick Disconnects – Micro or Mini
- 5/8" or M18 metric thread
- Global Hazardous Area Approvals

Model 74

Features
- Single Pole Double Throw (SPDT) 2A/240VAC, 4A/120VAC, 3A/24VDC
- AC/DC, NO/NC Wiring Flexibility
- -58°F to 221°F (-50°C to 105°C) operating temperature
- 0.100" (2.5mm) Sensing Distance (Ferrous metal)
- Dry Contact
- Intrinsically Safe
- End Sensing
- Palladium Silver Contacts

Options
- High Temperature: -58°F to +400°F (-50°C to +204°C)
- Stainless Steel 303 or 316 Housings
- Pressure Rating: 2,000, 5,000, 10,000 PSI (140, 240, 690 bars)
- Lead Wires or Cables
- Water Resistant Squeeze Connectors
- Quick Disconnects – Micro
- 5/8" or M18 metric thread
- ATEX/IECEx Hazardous Area Approvals

Model 75

Features
- Single Pole Double Throw (SPDT) 2A/240VAC, 4A/120VAC, 3A/24VDC
- AC/DC, NO/NC Wiring Flexibility
- -58°F to 221°F (-50°C to 105°C) operating temperature
- 0.100" (2.5mm) Sensing Distance (Ferrous metal)
- Dry Contact
- Intrinsically Safe
- End Sensing
- Palladium Silver Contacts

Options
- High Temperature: -58°F to +400°F (-50°C to +204°C)
- Stainless Steel 303 or 316 Housings
- Pressure Rating: 2,000, 5,000, 10,000 PSI (140, 240, 690 bars)
- Lead Wires or Cables
- SubSea Connectors
- Hermetic Seal
- Quick Disconnects – Micro or Mini
- 5/8" or M18 metric thread
- Global Hazardous Area Approvals

Model 76

Features
- Single Pole Double Throw (SPDT) 2A/240VAC, 4A/120VAC, 3A/24VDC
- AC/DC, NO/NC Wiring Flexibility
- -58°F to 221°F (-50°C to 105°C) operating temperature
- 0.100" (2.5mm) Sensing Distance (Ferrous metal)
- Dry Contact
- Intrinsically Safe
- End Sensing
- Palladium Silver Contacts

Options
- High Temperature: -58°F to +400°F (-50°C to +204°C)
- Stainless Steel 303 or 316 Housings
- Pressure Rating: 2,000, 5,000, 10,000 PSI (140, 240, 690 bars)
- Lead Wires or Cables
- Water Resistant Squeeze Connectors
- Quick Disconnects – MicrO
- 5/8" or M18 metric thread

Model 7A

Features

- 3.5 SCFM nominal flow rate
- 60 PSI (4 bars) max air supply
- -40°F to 221°F (-40°C to 105°C) operating temperature
- 0.062" (1.5mm) Sensing Distance (Ferrous metal)
- End Sensing
- Stainless Steel 303 Housing
- 5/8" Thread
- Plunger

Options

- 303 Stainless Steel base

Model 7H

Features

- Double Pole Double Throw (DPDT) 1.5A/240VAC, 3A/120VAC, 1A/24VDC
- AC/DC, NO/NC Wiring Flexibility
- -58°F to 221°F (-50°C to 105°C) operating temperature
- 0.090" (2.3mm) Sensing Distance (Ferrous metal)
- Dry Contact
- Intrinsically Safe
- End Sensing
- Palladium Silver Contacts

Options

- High Temperature: -58°F to +400°F (-50°C to +204°C)
- Stainless Steel 303 or 316 Housings
- Lead Wires or Cables
- Quick Disconnects – Mini
- 5/8" thread

Model 7G

Features

- Double Pole Double Throw (DPDT) 1.5A/240VAC, 3A/120VAC, 1A/24VDC
- AC/DC, NO/NC Wiring Flexibility
- -58°F to 221°F (-50°C to 105°C) operating temperature
- 0.090" (2.3mm) Sensing Distance (Ferrous metal)
- Dry Contact
- Intrinsically Safe
- End Sensing
- Palladium Silver Contacts

Options

- Single Pole Double Throw (SPDT) 2A/240VAC, 4A/120VAC, 1A/24VDC
- High Temperature: -58°F to +400°F (-50°C to +204°C)
- Stainless Steel 303 or 316 Housings
- Lead Wires or Cables
- Hermetic Seal
- Quick Disconnects – Mini
- 5/8" or M18 metric thread
- Global Hazardous Area Approvals

Model 77

Features

- Single Pole Double Throw (SPDT), 2A/240VAC, 4A/120VAC, 3A/24VDC
- AC/DC, NO/NC Wiring Flexibility
- -58°F to 221°F (-50°C to 105°C) operating temperature
- 0.100" (2.5mm) Sensing Distance (Ferrous metal)
- Dry Contact
- Intrinsically Safe
- End Sensing
- Palladium Silver Contacts

Options

- High Temperature: -58°F to +400°F (-50°C to +204°C)
- Stainless Steel 303 or 316 Housings
- Pressure Rating: 2,000, 5,000, 10,000 PSI (140, 240, 690 bars)
- Lead Wires or Cables
- SubSea Connectors
- Quick Disconnects – Micro or Mini
- 5/8" or M18 metric thread
- Global Hazardous Area Approvals

Model 7I

Features

- Double Pole Double Throw (DPDT) 1.5A/240VAC, 3A/120VAC, 1A/24VDC
- AC/DC, NO/NC Wiring Flexibility
- -58°F to 221°F (-50°C to 105°C) operating temperature
- 0.090" (2.3mm) Sensing Distance (Ferrous metal)
- Dry Contact
- Intrinsically Safe
- End Sensing
- Palladium Silver Contacts

Options

- High Temperature: -58°F to +400°F (-50°C to +204°C)
- Stainless Steel 303 or 316 Housings
- Lead Wires or Cables
- Quick Disconnects – Mini
- 5/8" thread
- Global Hazardous Area Approvals

Model 7L

Features

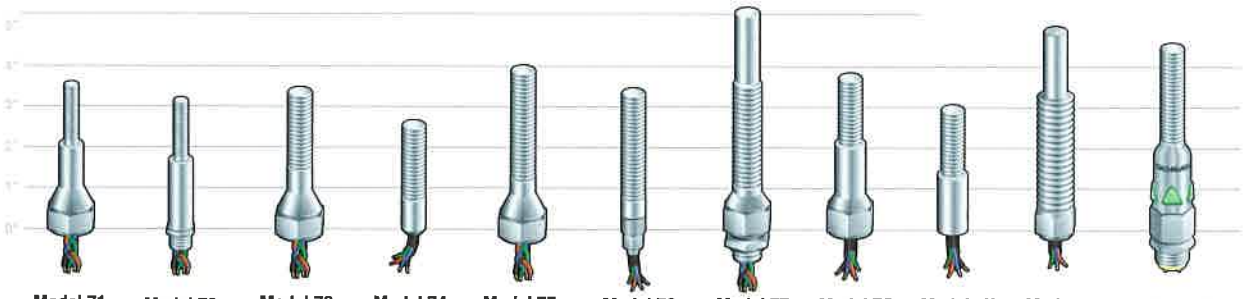
- Single Pole Double Throw (SPDT) 0.25A/120VAC, 0.25A/24VDC
- AC/DC, NO/NC Wiring Flexibility
- -40°F to 160°F (-40°C to 71°C) operating temperature
- 0.100" (2.5mm) Sensing Distance (Ferrous metal)
- End Sensing
- Stainless Steel 316 Housing
- Palladium Silver Contacts

Options

- Lead Wires or Cables
- Quick Disconnects – Mini or Micro
- 5/8" thread
- CSA/UL Hazardous Area Approvals

GO™ SWITCH ORDERING GUIDE - PRECISION SENSING

Choose one option from each category to build a complete model number.



Model 71 3/8" diameter | **Model 72** 3/8" diameter | **Model 73** 5/8" diameter | **Model 74** 5/8" diameter | **Model 75** Long Threads | **Model 76** Long Threads | **Model 77** Long Body | **Model 7G** DPDT | **Model 7H** DPDT | **Model 7I** DPDT | **Model 7L** BriteLite LEDs

✓ Most popular options

Model

71 3/8" x 3 15/16" - 1/2" NPT conduit
71M 12M x 100mm - 1/2" NPT conduit
✓ **72** 3/8" x 3 3/8" - No conduit
72M 12M x 86mm - No conduit
73 5/8" x 3 5/8" - 1/2 NPT conduit
73M 18M x 92mm - 1/2" NPT conduit
74 5/8" x 2 3/4" - No conduit
74M 18M x 70mm - No conduit
75 5/8" x 4 5/16" - 1/2" NPT conduit
75M 18M x 110mm - 1/2" NPT conduit
76 5/8" x 3 3/16" - No conduit
76M 18M x 81mm - No conduit hub
77 3/4" x 5 13/16" - 1/2" NPT conduit
7G 5/8" x 4" - 1/2" NPT conduit
7GM 18M x 102mm - 1/2" NPT conduit
7H 5/8" x 3 1/4" - No conduit
7I 1" x 5 5/8" - 1/2" NPT conduit
7LG 5/8" x 4 3/4" - 1/2" NPT conduit
7LR 5/8" x 4 3/4" - 1/2" NPT conduit

Ordering Guide
Fill in each box to create a complete model number.

Model

Contact Form

✓ **1** Single Pole Double Throw (Form C)

2 Double Pole Double Throw (Form CC) (Model 7G, 7H only)

Contact Form

Sensing Range

✓ **3** Standard sensing - .100" end sensing (Models 73-77, 7L; Enclosure 2 or 6 only)

Standard sensing - .090" end sensing (Models 7G-7H; Enclosure 2 or 6 only)

4 .072" end sensing (Models 73-77; Enclosure 3 or 7 only) (Approvals 2, 7 or 8 only) (Approval 3 if enclosure is 7)

5 .060" end sensing (Models 73-77 only; Enclosure 4; Approvals 2, 7, or 8 only)

6 .040" end sensing (Models 71 & 72 only)

Sensing Range

Outlet Position

✓ **5** Bottom of enclosure

Outlet Position

Enclosure Materials

✓ **2** 303 stainless steel (rated 2,000 psi) (Sensing 3 or 6 only)

3 HiPressure - 303 stainless steel (rated 5,000psi) (Models 73-77; Sensing4)

4 HiPressure - 303 stainless steel (rated 10,000 psi) (Models 73-77; Sensing 5; Approval 2, 7, 8 only)

6 316 stainless steel (rated 2,000 psi)

7 HiPressure - 303 stainless steel (rated 3,500psi) (Models 73, 75, 77; Sensing 4; Approval 3 only)

Enclosure Materials

Approvals

2 HiTemp to 400ºF (Wiring must be F)

3 UL Cl I Div 1 & 2 Groups A-D; Cl II Div 1 & 2, Groups E-G (Models 71, 73, 75, 77 & 7G) (Wiring A, B, or F) (Lead seal req'd within 18")

✓ **4** CSA Cl I Div 1 Groups A-D; Cl II Div 1, Groups E-G; Cl III (Models 71, 73, 75, 77 & 7G) (Wiring A, B, or F) (Lead seal req'd within 18")

6 CSA Cl I, Div 2 Groups A-D; Cl II, Div 2 Groups E-G; Cl III (Models 71, 73, 75, 77 & 7G) (Wiring A, B, or F) (Lead seal req'd within 18")

7 CSA General Purpose

8 UL General Purpose

9 ATEX/IEC Ex Zone 1 Ex d IIC; Ex tD; A21; IP66 T85C (-20C to +50C) (Model 73, 75, 77, 7G & 7I) (Wiring H for HiTemp to +150C)

T ATEX/IEC Ex Zone 1 Ex d IIC; Ex tD; A21; IP66 T85C (-20C to +50C) (Hermetically Sealed) (Model 73 & 7G-1 only) (Wiring H for HiTemp to +150C)

F ATEX/IEC Ex Zone 0Ex ia IIC T6 Ga Ex iD IIIC T85C Da (Tamb = -20C to +50C) (Hermetically sealed) (Model 73 & 7G-1 only)

G ATEX/IEC Ex Zone 0, Ex ia IIC T4 Ga, Ex iD IIIC T135C Da (-20C to +100C) (Hermetically Sealed) (Model 73 & 7G-1 only; Wiring must be H)

H ATEX/IEC Ex Zone 0, Ex ia IIC T3 Ga (-20C to +150C) (Hermetically Sealed) (Model 73 & 7G-1 only; Wiring must be H)

L INMETRO BR-Ex d Gb,BR-Ex tD A21 T85C (-20C to +50C) (Hermetically sealed, Model 73 & 7G-1 only) (Wiring H for HiTemp to +150C)

M INMETRO BR-Ex d Gb, BR-Ex tD A21 T850C (-20C to +50C) (Models 73, 75, 77, 7G & 7I) (Wiring H for HiTemp to +150C)

N NEPSI Ex d IIC T3/T6 (Model 73 only) (Wiring H for HiTemp to +150C)

** Note: Lead seal not req'd for hermetically sealed contacts (Contact Form 1).

Approvals

Wiring Options

✓ **Lead Wires** - 18 Gauge (DPDT = 20 gauge)
A2 36"
A3 72"
A4 144"
A_ _ _ Greater than 144" - specify length in 5ft. increments

Cable - 18 Gauge (DPDT = 22 guage)
B2 36"
B3 72"
B4 144"
B_ _ _ Greater than 144" - specify length in 5ft. increments

Water Resistant Squeeze Connector (Models 72, 74, 76 only) (Approval 7 or 8 only)
C2 36"
C3 72"
C4 144"
C_ _ _ Greater than 144" - specify length in 5ft. increments

Mini Change Connector (Models 71, 73, 75, 77, 7G only) (Approval 7 or 8 only; 3 pin is 8 only)
DCA 3 pin
DCD 4 pin
DCG 5 pin
DCH 7 pin (7G only)

Micro Change Connector (Models 72, 74, 76) (Approval 7 or 8 only; 3 pin is 8 only)
DBA 3 pin
DBD 4 pin

SubSea Connector (Models 73, 75, 77) (Approval 7 or 8 only; 3 pin is 8 only)
3DD 3 pin
4DD 4 pin
8DD 8 pin (7G only)
3DE 3 pin 90º
4DE 4 pin 90º

Hi-Temp™ Leads (Teflon insulated) 18 Gauge (DPDT = 20 gauge)
F2 36"
F3 72"
F4 144"
F_ _ _ Greater than 144" - specify length in 5ft. increments

Hi-Temp™ Leads (Peek insulated) (Models 71-77)
H2 36"
H3 72"
H4 144"
H_ _ _ Greater than 144" - specify length in 5ft. increments

Wiring Options

GO™ SWITCH SPECIALTY SENSORS

Sensing Solutions for Process and Factory Automation

DISCRETE VALVE CONTROL SENSORS

35 Series GO Switches have set the standard for reliable performance in valve monitors.

With hermetically sealed contacts, low hysteresis, and superior resistance to vibration, moisture, contaminants, and temperature extremes, the 35 Series clearly outperforms any other valve monitoring switch or sensor available. When ordering valve position monitors and switchboxes, be sure to specify **GO™ Switch.**

Features
- AC/DC, NO/NC flexibility
- Intrinslcally safe
- Hermetically sealed contacts

Options
- SPDT rated 4A/120VAC and 3A/24VDC (Copper coated with flat black lacquer)
- DPDT rated 4A/120VAC and 3A/24 VDC (Stainless steel housing)

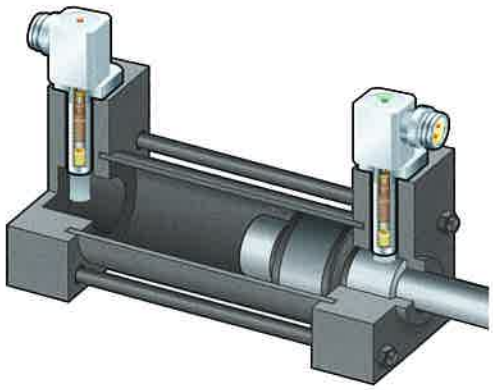
GO SWITCHES FOR TOPWORX™ VALVE CONTROLLERS
Hermetically Sealed
DPDT Contacts
Stainless Steel Housing

HYDRAULIC/PNEUMATIC CYLINDER END-OF-STROKE SENSORS

Stroke-To-GO cylinder proximity sensors provide precise end-of-stroke position indication on pneumatic and hydraulic cylinders. Designed to exceed automotive industry standards, the housing is machined from stainless steel bar stock to handle pressures to 3,000 PSI (206 bars) operating (tested to UL's 4X burst requirement) while withstanding the extreme external conditions such as weld slag, coolants, cutting fluids, physical abuse and even high temperatures. Stroke-to-GO incorporates the same 70 Series GO Switch mechanism that has been proven in the field in the most rigorous applications. This unique design offers the greatest benefits in cylinder position end-of-stroke indication.

Features
- SPST or SPDT contacts
- AC/DC, NO/NC flexibility
- Stainless steel housings
- 3,000 psi (206 bars) operating pressure
- -58°F to 221°F (-50°C to 105°C) operating temperature
- 360° adjustable

Options
- -58°F to 400°F (-50°C to 204°C) high temperature
- Quick disconnect connector
- Underwater capabilities
- LED indication



7C 7D 7E 7F

GO™ SWITCH SPECIALTY SENSORS
Sensing Solutions for Process and Factory Automation

HIGH TEMPERATURE SENSORS
GO™ Switch HiTemp™ sensors are rated for continuous operation in temperatures up to 204°C/400°F. This proves especially useful in steam turbines as well as other high heat applications such as driers, boilers, aluminum die-casting, steel processing and valve position monitoring on steam valves.

PNEUMATIC VALVE
GO™ Switch Model 7A is a pneumatic valve designed to work with a 60 PSI air pilot signal. Incorporating the same GO Switch technology found in our popular model 70 series GO Switches, the 7A offers reliable pneumatic control in air logic systems. The 7A uses three permanent magnets and a push-pull plunger assembly to control a poppet. The switch operates with a snap-action response and low hysteresis, providing precision airline switching. This unique technology allows for non-contact detection of ferrous metal and magnetic targets to switch from the outlet port to the exhaust port.

Features
- 3-port design (P = Supply, A = Outlet Port, E = Exhaust)
- .062" (1.5mm) Sensing distance (Ferrous metal)
- -40°F to 221°F (-40°C to 105°C) operating temperature
- Intrinsically safe
- Operates small cylinders
- 60 PSI (4 bars) max air supply
- 3.5 SCFM nominal flow rate

70 SERIES JUNCTION HEAD
GO™ Switch models 71, 73, 75, 77, 7G, and 7I are available with a junction head option. The junction head carries an ATEX/IECEx 'e' coding. Combined with the GO Switch's ATEX/IECEx 'd' coding, the complete GO Switch, junction head assembly carries an Ex 'de' coding. The Ex 'de' coding gives the GO™ Switch, junction head assembly an increased safety rating helping to reduce installation costs in Zone 1 hazardous areas. This option allows for termination directly into the switch.

Features
- Light-weight aluminum and stainless steel junction heads
- -40°F to 212°F (-40°C to 100°C) operating temperature
- Intrinsically safe
- Zone 1, Ex 'de'

SUBMERSIBLE SENSORS
GO™ Switch submersible sensors are submersible up to depths of 7,010m/23,000ft and offer trouble-free position sensing in applications such as offshore oil platforms, lock and dam gates, ships and vessels, pin placement detection, wastewater rendering areas, bilge level, high pressure washdown, draw bridges and subsea valve position monitoring.

GO™ SWITCH POWER PLANT SOLUTIONS

Sensing Solutions for the Power Generation Industry

GO Switches are the ideal solution for troublesome mechanical limit switch applications in power plants, including coal and ash handling equipment, soot blowers and wall blowers, dampers, igniters, feedwater heaters, hopper valves, water demineralization valves, and scrubber valves.

DEFENDER™ TURBINE TRIP MONITORS

In the power generation industry, reliability is a must. This is especially true when it comes to turbine control valves. But one of the more common difficulties in power plants is the typical limit switch arrangement on throttle, governor, intercept, and reheat stop valves. Conventional limit switches in this application are notorious for failing due to heat and physical abuse, and for falling out of tolerance and requiring readjustment.

The Defender provides dependable monitoring of throttle, governor, intercept, and reheat stop valves.

It is a self-contained, pre-wired system packed with up to ten GO Switches and is a drop-in replacement for existing limit switches on Westinghouse valves, and is easily adaptable to valves from General Electric and others.

Features

- Easy switch setting
- Switches rated to 400°F/204°C
- Mil spec quick disconnect
- Heavy duty 11 Guage Steel (12"x10"x5")

TURBINE TRIP MONITOR SWITCH SYSTEM

GO NUCLEAR QUALIFIED SENSORS

GO™ Switch Nuclear Globally Qualified Sensors are designed for maximum, long-life dependability in Containment LOCA, Containment Non-LOCA (Harsh Duty), and Mild Duty applications. Unique and robust, the GO™ Switch is a "Set and Forget" sensor that will replace and exceed the operation and reliability of lever arm mechanical switches in Nuclear and Commercial applications.

Advantages of GO™ Switch Nuclear Qualified Sensors

- By far the highest, most up to date environmental qualifications for qualified life, temperature, pressure, seismic and radiation
- Direct replacement for most mechanical switch applications – Contact output N/O N/C AC or DC
- No physical contact is required
- Only one internal moving part
- No lever arm to adjust
- Not affected by most caustics or chemicals
- Water-proof/submersible options
- Explosion-proof options
- Not influenced by RFI and EMC

C8 C7 SV7/H7/M7

QUICK DISCONNECTS & CORDSETS

Quality-engineered connectors and cordsets make installation and maintenance a snap. Standard designs are shown, with custom connectors available on special order. Refer to the Wiring Options portion of each GO™ Switch Ordering Guide for detailed information.

MICRO CHANGE™ QUICK DISCONNECT

22 gauge (3 pin .23" dia.; 4 pin .25 dia.; 5 pin .26 dia.) molded PVC anodized aluminum shell rated 221°F (105°C) 300V

Available on all GO Switches

MINI CHANGE™ QUICK DISCONNECT

16 gauge (3 pin .41" dia.; 4 pin .44" dia.; 5 pin .52" dia.; 7 pin .54 dia.) molded PVC anodized aluminum shell rated 221°F (105°C) 600V

Available on most GO Switches

WATER RESISTANT SQUEEZE CONNECTOR

Stainless steel water resistant strain relief. Approx. 1" (25 mm) in length.

Available on GO Switch Models 72, 74, 76, 7C, 7D, 7E and 7F

HIGH PRESSURE SUBSEA QUICK DISCONNECT

Molded Neoprene™ Quick Disconnect with Delrin™ lock-sleeves. Provides water-tight seal, safety and quick change-out. Overall length of connector is 2.9" (74 mm) X 1.23" (31 mm) dia.

Available on 10, 20, 70, 80 Series and Stroke to GO Switches

HIGH PRESSURE RIGHT ANGLE SUBSEA QUICK DISCONNECT

Overall length of connector is 2.85" (72 mm) X .65" (17 mm).

Available on 10, 20, 70, and 80 Series GO Switches

MOUNTING BRACKETS

Standard mounting brackets are available to cover most GO™ Switch installations. They are designed to provide secure installation without interfering with the operation of the switch.

HEAVY DUTY MOUNTING BRACKET
Side mount bracket for 10 Series GO Switches

UNIVERSAL MOUNTING BRACKET FOR 10/20 SERIES
Universal mounting bracket for 10 Series and 20 Series GO Switches

COMBINATION COVER PLATE AND MOUNTING BRACKET
Bottom mount for 10 or 20 Series GO Switches

UNIVERSAL MOUNTING BRACKET FOR 80 SERIES
Side mount bracket adapts 80 Series GO Switches for rotary valve position indication

STRAP BRACKET
Strap brackets for 30 Series GO Switches

HEAVY DUTY "L" MOUNTING BRACKET
"L" bracket for 70 Series Model 73, 74, 75, 76 & 7G GO Switches

COVER PLATES
Cover plate for 10 and 20 Series GO Switches. Bottom mount cover plate/conduit for 10 and 20 Series GO Switches. Furnished with gasket and screws

JAM NUTS
Nickel plated brass jam nuts for 70 Series GO Switches

PARKER SEAL NUT AND WASHER
ThredSeal Kits for 70 Series GO Switches. Zinc plated steel with nitrile rubber (standard) or Viton (hi-temp or hydraulic fluids detergent) washer

SEALANT TAPE
Grafoil sealant tape for 70 Series GO Switches. Forms a leak-tight temperature stable joint. Recommended for high pressure and/or high temperature

TARGET MAGNETS

Increase the Sensing Range of GO Switches

Standard magnets are available to increase the sensing distance of any GO™ Switch model. This feature gives the customer the flexibility of using the magnet as the target and increasing the sensing distance up to 10 times that of ferrous metal targets.

AMP3 MAGNET/RESIN COVER

AMC3 magnet in plastic molded bracket with mounting holes. 7/8" (22 mm) x 29/16" (65 mm) x 17/32" (13 mm) thick with 7/32" (6 mm) holes.

For all GO Switches

AMS7 MAGNET/STAINLESS

Magnet assembly. 2" (50 mm) x 1/2" (13mm) 7/16-20 UNC threads.

For 70 Series GO Switches

AMS4 MAGNET/STAINLESS COVER

AMC4 magnet molded into stainless steel cover, with mounting holes. 11/4" (32 mm) x 17/16" (37 mm) x 1" (25 mm) thick with 3/16" (5 mm) holes.

For all GO Switches

AMS12 MAGNET

Magnet assembly.
2 3/5" (66mm) x 7/8" (22mm) 7/16-20 UNF threads.

For 70 Series GO Switches

AMC5 MAGNET/STAINLESS COVER

AMC1 magnet molded into stainless cover with mounting holes. 7/8" (22 mm) x 29/16" (65 mm) x 17/32" (13 mm) thick with 7/32" (6 mm) holes.

For all square GO Switches

AMF6 MAGNET (MACHINABLE)

Flexible sensing amplifier/external magnet. 3" (76 mm) x 12" (305 mm) x 3/8" (10 mm) thick.

For all square GO Switches

TARGET MAGNETS
Increase the Sensing Range of GO Switches

Model	Ferrous Metal Sensing Distance	AMP3 Sensing Distance	AMS4 Sensing Distance	AMF6 Sensing Distance	AMC5 Sensing Distance	AMS7 Sensing Distance	AMS12 Sensing Distance
11	10mm (3/8")	25mm (1")	32mm (1-1/4")	62mm (2-7/16")	86mm (3-5/8")	-	-
21	10mm (3/8")	25mm (1")	35mm (1-3/8")	62mm (2-7/16")	86mm (3-3/8")	-	-
31	6mm (1/4")	19mm (3/4")	25mm (1")	41mm (1-5/8")	67mm (2-5/8")	-	-
71	1mm (.040")	3mm (.120")	4mm (.150")	-	-	3mm (.130")	11mm (7/16")
72	1mm (.040")	3mm (.120")	4mm (.150")	-	-	3mm (.130")	11mm (7/16")
73	2.5mm (.100")	5mm (.200")	9mm (.350")	-	-	5mm (.200")	13mm (1/2")
74	2.5mm (.100")	5mm (.200")	9mm (.350")	-	-	5mm (.200")	13mm (1/2")
75	2.5mm (.100")	5mm (.200")	9mm (.350")	-	-	5mm (.200")	13mm (1/2")
76	2.5mm (.100")	5mm (.200")	9mm (.350")	-	-	5mm (.200")	13mm (1/2")
77	2.5mm (.100")	5mm (.200")	9mm (.350")	-	-	5mm (.200")	13mm (1/2")
7G	2mm (.090")	4mm (.150")	5mm (.200")	-	-	4mm (.150")	13mm (1/2")
7H	2mm (.090")	4mm (.150")	5mm (.200")	-	-	4mm (.150")	13mm (1/2")
7I	2mm (.090")	4mm (.150")	5mm (.200")	-	-	4mm (.150")	13mm (1/2")
7L	2.5 (.100")	5mm (.200")	9mm (.350")	-	-	5mm (.200")	13mm (1/2")
81	6mm (1/4")	24mm (15/16")	35mm (1-3/8")	70mm (2-34")	98mm (3-7/8")	-	-

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GO Gets It.

Visit www.topworx.com for comprehensive information on our company, capabilities, and products – including model numbers, data sheets, specifications, dimensions, and certifications.

www.topworx.com

About Emerson Process Management

Emerson Process Management is a powerful, global, single source of process improvement technology and expertise. We help major companies in selected industries optimize their plants and processes to achieve higher quality, greater reliability and faster time to market, while steadily advancing productivity and profitability. We can build it - providing experienced project management, engineering and a single point of accountability for the entire instrumentation and automation system. We can connect it – seamlessly integrating people and technology at every level of the process. We can improve it – creating more efficient utilization of energy and raw materials. And we can sustain it – producing greater reliability, month after month, year after year. From the field, to the plant, to the bottom line -- where performance is the question, Emerson is the answer.

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