Discrete Valve Controllers for On/Off Valves.

A complete line of TopWorx™ discrete valve controllers and monitors for every protocol, application, environment, and hazardous area.
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 TopWorx 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**
The technology advancements in TopWorx products are at the forefront of innovation in the process automation industry. TopWorx products use wireless technologies and fieldbus protocols such as FOUNDATION Fieldbus, DeviceNet, AS-Interface, Profinet, and HART to reduce installation costs and enable predictive maintenance.

**Global Hazardous Area Certifications**
In addition to high temperature +204 °C (+399 °F), cold temperature -50 °C (-58 °F), and sub-sea 7,010 m (23,000 ft) applications, TopWorx products are suitable for use in Flameproof/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, Emerson 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.
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 this 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, and Profibus.
• The most reliable and durable valve position sensor on the planet, the GO Switch.
• 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, PESO 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 Discrete Valve Controllers
Built for demanding applications

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.
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 Fieldbus, Profinet, DeviceNet, AS-Interface, HART
- GO™ Switch, Proximity, P+F™, Mechanical, 4-20mA Transmitter

Pilot Valves
- Aluminum or 316 Stainless Steel
- Low Power Solenoid or Ultra-Low Power Piezo
- Single or Dual Coil
- 1.06 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

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

Stainless Steel Shaft & Fasteners
- 1/4" 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, Div 1 & 2
- Class II, Div 1 & 2
- Ex ia IIC T6/T4
- Ex d IIB+H2 or IIC T6/T5/T4/T3
- Tamb: -60°C up to +175°C
- Ex tb IIIC
- Tamb: -50°C up to +92°C
- II2GD, Type 4X, IP66/67

DXS
- 316 Stainless Steel
- Flameproof/Explosion Proof
- Intrinsically Safe
- Class I, Div 1 & 2
- Class II, Div 1 & 2
- Ex ia IIC T6/T4
- Ex d IIB+H2 or IIC T6/T5/T4/T3
- Tamb: -60°C to +175°C
- Ex tb IIIC T135°C
- Tamb: -50°C to +92°C
- II2GD, IP66/67, Type 4X

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

DXR
- Composite Resin
- Non-Incendive/Intrinsically Safe
- Class I & II, Div 2
- Ex ia IIC T6/T4
- Ex e mb IIC T4
- Ex tb IIIC
- -40°C to +92°C T4
- II2GD, IP65, Type 4X

Note: Product certification markings will vary according to protection method and internal components specified.
TopWorx™ T-Series Switchboxes
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.

- **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.

- **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.

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

The T-Series direct mount feature helps to reduce cost by omitting the need for custom brackets.
Direct-Mount Aluminum Flameproof/Intrinsically Safe/Explosion Proof /Non-Incendive
Class I Div 1 & 2
Class II Div 1 & 2
Ex ia IIC T6/T4/T3
Ex d IIB or IIC T6/T4
Tamb -65°C to 100°C
Ex tb IIIC T135C
Tamb -50°C to 100°C
II2GD, IP66/67, Type 4X

Direct-Mount Stainless Steel Flameproof/Intrinsically Safe/Explosion Proof /Non-Incendive
Class I Div 1 & 2
Class II Div 1 & 2
Ex ia IIC T6/T4/T3
Ex d IIB or IIC T6/T4
Tamb -65°C to 100°C
Ex tb IIIC T135C
Tamb -50°C to 100°C
II2GD, IP66/67, Type 4X

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

Environmental Extremes
• Operating temperatures from -76°F/-60°C to +175°F/80°C
• Type 4, 4X, IP66/67

Stainless Steel Shaft and Fasteners
• NAMUR Shaft
• Captive cover bolts and indicator screws

Multiple T-Series Platforms for Every Environment

Solid Enclosures for Every Environment
• Aluminum, Composite, Stainless
• Up to four conduit entries (English or Metric)
• O-ring seals everywhere

Bus Networking / Sensor Options
• AS-Interface, Profinet
• GO Switch, Proximity, P+F, Mechanical

Pilot Valves
• Low Power Solenoid
• Single Coil
• 1.0 Cv
• Integrally mounted for extra protection

Note: Product certification markings will vary according to protection method and internal components specified.
TopWorx™ TV-Series Switchboxes
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

Up to (4) Four Sensors Inside
- Factory Sealed GO Switches
- Mechanical –SPDT or DPDT
- Inductive
- Proximity
- NAMUR

Stainless Steel Shaft and Fasteners
- NAMUR Shaft
- Captive cover bolts and indicator screws

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

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

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, Div 2
Ex ia IIIC T6/T4/T3
-65°C up to +100°C
Ex nA nC T4/T3
Tamb -40°C up to +95°C
Ex tc IIIC
-50°C up to +85°C
II2GD, IP66/67, Type 4X,

TVF
Tropicalized Aluminum Base with Polycarbonate Lid
Intrinsically Safe/Non-Incendive
Class I & II, Div 2
Ex ia IIIC T6/T4/T3
-65°C up to +100°C
Ex nA nC T4/T3
-40°C up to +95°C
II2GD, IP66/67, Type 4X

TVL
Tropicalized Aluminum Intrinsically Safe/Non-Incendive
Class I & II, Div 2
Ex ia IIIC T6/T4/T3
-65°C up to +100°C
Ex nA nC T4/T3
-40°C up to +95°C
Ex tc IIIC
-50°C up to +85°C
II2GD, IP66/67, Type 4X

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

Note: Product certification markings will vary according to protection method and internal components specified.
Compact and robust product solution that conforms to the latest European Directives. The use of quality materials and attention to detailed design and manufacturing has resulted in an excellent reputation for reliability.

TopWorx™ K-Series Switchboxes
Minimal Maintenance Required

Compact and robust product solution that conforms to the latest European Directives. The use of quality materials and attention to detailed design and manufacturing has resulted in an excellent reputation for reliability.
**Solid Enclosures for Every Environment**

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

**Engineered for Dependability**

- Available in Aluminum or 316 Stainless Steel
- Unique coating for hazardous locations with Aluminum option
- Red coating for Explosion Proof/Flameproof installations
- Blue coating for Intrinsically Safe installations, including blue terminal strip
- Aluminum enclosures are fully anodized
- RoHS 2 Compliant

**Environmental Extremes**

- Operating temperatures from -76°F/-60°C to 248°F/120°C
- IP66/67 standard rating
- IP68 to 30 or 150 meters on request
- Type 4, 4X, 6, 6P

**316 Stainless Steel Shaft and Fasteners**

- VDI/VDE 3845 F05 Mounting
- Special lever options available for linear applications

**Visual Display**

- Impact resistance polycarbonate
- Static free indicators
- No need to clean with a damp cloth in Hazardous Locations
- Flat-top Options

**K1 AND K2 SERIES**

**K1P**
- K1P = Aluminum
- K1S = 316 Stainless Steel
- Class I & II, Div 1 & 2
- Class I, Zone 1, Ex/AEx d IIC T6/T4
- Class II, Zone 21, Ex//AEx tb/tD IIIC
- Ex ia IIC T6/T4
- Ex d IIC T6/T4
- Ex tb IIIC
- -50°C up to +100°C
- Type 4X, IP66/67/68
- Conduit Entries: (2)1/2 NPT or M20
- Available with (2) switches or a 4-20mA analog or HART transmitter
- Unique two point cover reduces commissioning time

**K2P**
- K2P = Aluminum
- K2S = 316 Stainless Steel
- Class I & II, Div 1 & 2
- Class I, Zone 1, Ex/AEx d IIC T6/T4
- Class II, Zone 21, Ex//AEx tb/tD IIIC
- Ex ia IIC T6/T4
- Ex d IIC T6/T4
- Ex tb IIIC
- -50°C up to +100°C
- Type 4X, IP66/67/68
- Conduit Entries: (4)1/2NPT, 3/4NPT, M20 or M25
- Available with (4) switch or (2) switches and analog or HART transmitter

Note: Product certification markings will vary according to protection method and internal components specified.
TopWorx™ K-Series
Confidence that your switchbox will work on demand

Robust, Low Profile and Compact
• RoHS 2 compliant
• (2) M20 or 1/2NPT conduits
• Highly accessible internals
• Aluminum enclosure, fully anodized and polyester coated inside and out
• Blue coating for Intrinsically Safe installations, including terminal strip
• Black coating for Ordinary Locations
• Special lever options for linear applications, maximum travel option of 230mm

Visual Display
• Impact resistant polycarbonate
• Static free paint
• Pre-adjusted to 90° for easy installation
• Flat-top options

Environmental Extremes
• Operating temperatures from -58°F/-50°C to 158°F/70°C
• IP66/67

Multiple Switch Options
• Potential Free
• Inductive
• Proximity
• NAMUR

316 Stainless Steel Shaft and Fasteners
• Two point cover fixing
• Captive lid bolts
• VDI/VDE 3845 F05 Mounting

K5L with Indicator
KSL
Available with (2) switches and (2) conduit entries
Ex ia IIC T6/T4
Ex tb IIIC
-50°C up to +70°C
IP66/67

K7L
Available with (4) switches and (2) conduit entries along with 4-20 and HART transmitter options
Ex ia IIC T6/T4
Ex tb IIIC
-50°C up to +70°C
High Temperature Options available up to 400°C

Note: Product certification markings will vary according to protection method and internal components specified.
Ensure your damper is shut down in the event of a fire or power loss. The TopWorx K7L has been specially engineered for high temperature application reliability. Tested by a third party to operate at multiple high temperatures with a varied exposure time for Smoke Dampers or On/Off Valves. With a compact design the K7L provides field proven assurance and accurate process feedback.

<table>
<thead>
<tr>
<th>Operating Temperature</th>
<th>Exposure Time</th>
<th>Independently Tested</th>
</tr>
</thead>
<tbody>
<tr>
<td>250°C</td>
<td>3 hours</td>
<td>Yes</td>
</tr>
<tr>
<td>300°C</td>
<td>3 hours</td>
<td>Yes</td>
</tr>
<tr>
<td>350°C</td>
<td>3 hours</td>
<td>Yes</td>
</tr>
<tr>
<td>400°C</td>
<td>3 hours</td>
<td>Yes</td>
</tr>
</tbody>
</table>
**TopWorx™ Custom Products**

**Engineered for your special application**

**Sub-Sea**
KSS - DUPLEX and SUPER DUPLEX  
KCS - Carbon steel with custom specified coating

**Applications**

Depths up to 2500 meters.

Enclosures are available in a range of materials including carbon steel, 316L stainless steel, 254SMO stainless steel (20%Cr–18%Ni–6%Mo), Duplex 2205 and Super Duplex

Available with a wide variety of switches in combination with a 4-20ma transmitters and HART

Custom penetrations can be accommodated to accept a customer specified sub-sea connector or cable entry

**Applications**

- Rig positioning
- Sub-sea emergency shut down
- Manifold valves and taker loading or balancing
High Vibration
• Custom #7338
• Engineered for high vibration applications
• Locked-in target magnets
• Samarium Cobalt target magnets provide a powerful magnetic field that will ensure strong contact pressure
• Available with (2) SPDT GO™ Switches

Applications
• Compressor Stations
• Pump Stations
• Pipes with water hammer
• Flow induced vibration

Example: DXS-L21GNEB000007338
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**

- Factory programmed with: (2) DI, (1) DO, (1) AI, (1) PID, with the ability to add 10 new function blocks.
- 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 open and closed position.
- Position feedback via DO readback reduces number of function blocks.

**HART**

- Local user interface via graphic LCD
- Selectable endpoint hysteresis +/− 3%
- Internal device temperature monitoring
- Supports NE-107 and NE-43
- Five-point valve position calibration
- Polarity and overvoltage protection
- Full options of alarms and counters to diagnose potential device problems
- Burst Mode and Event Notification
- Point to Point and Multi-drop mode

**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**

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.

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**Bus Networking**

<table>
<thead>
<tr>
<th>DeviceNet</th>
<th>ASi 2.1</th>
<th>Profibus DP V0</th>
<th>HART</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Discrete Inputs, 2 Discrete Outputs, 1 Analog Input</td>
<td>ASi 2.1 with up to 4 Discrete Inputs and 3 Discrete Outputs</td>
<td>Profibus DP V0</td>
<td>4 Discrete Inputs 2 Discrete Outputs</td>
</tr>
<tr>
<td>Rockwell, Emerson DeltaV approved</td>
<td>Early warning LEDs</td>
<td>Early warning LEDs</td>
<td>Digital confirmation of analog signal</td>
</tr>
<tr>
<td>On-board diagnostics and early warning LEDs</td>
<td></td>
<td></td>
<td>Auto-calibration via handheld</td>
</tr>
</tbody>
</table>
Emerson provides the industry’s leading selection of TopWorx valve position sensors, including GO™ Switch leverless limit switches, proximity sensors, mechanical limit switches, potentiometers, and 4-20mA position transmitters.

**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

**New GO Switch Option in T-Series**

Introducing an exciting new GO Switch offering in the T-Series line. This new GO Switch offers the same reliability as existing GO Switches with improved features and benefits. The 36 GO Switch will offer the option of 2 or 4 switch configurations for the TX and TV Enclosures. Integrated solenoid valves are optional in the 2-switch configuration for even more control.

**Features:**

- Fully encapsulated switch cluster
- Sealed contact
- Screw type terminals into the switch cluster
- 1A@24VDC, 3A@24VDC, and 4A@120VAC options
- Tested to 1-million cycles at PLC loads
- Immune to electrical noise

**Sensors & Switches**

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

Unique 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.
Emerson 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,
- Single Coil, Dual Coil,
- High Flow up to 3.7Cv
- Low Power Consumption (solenoid 0.5 watts; piezo 12mw)

### Pilot Valves

#### 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

#### Flow Rates
- 1.06 Cv and 3.7 Cv

#### Manual Overrides
- Momentary/Latching

### 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

### 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.
TopWorx™ D-ESD Valve Controllers
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
**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
The stainless steel, 35-Series GO Switch
Hermetically-Sealed, Stainless Steel, DPDT Proximity Switch

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.

Once again, we have 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

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.
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

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 DXS valve controller.

There is no competition.
The unique modular design of the TopWorx™ 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.

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!

Applications
Valve control solutions for every application

Serrated Flange
**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.

**TopWorx TVF Now Available with LED’s**
The TVF with high intensity LEDs will give you a clear and bright visual indication of your valve state in the darkest of conditions. Have the confidence you need to ensure your valve is in the proper state visually and electrically with TopWorx.

**Benefits:**
- Intrinsically Safe or Zone 2/Div 2 approved
- Available with GO Switches, reeds, or mechanical
- 10 point terminal strip
- Fully integrated options with internal pneumatics
- Conformal coated PCB board for enhanced reliability
- 24VDC or 120VAC @ 250mA
- Type 4X, IP67 Rated
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.

We 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  Poyam
CCI  Protech
ChemValve  PVC
Clarkson  QTRCO
Compaq  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  Valvetronics
Hytork  Vanessa
ITT  Velan
KENNETH ELLIOT  VTI
Keystone-Morin  Watts
Kinetrain  WM
Kinetrol  WKM
Kitz  Worcester
KTM  Xomox-Matryx
**Technical Information**  
**Dimensional Drawings, Electrical Ratings**

**D-Series MODELS**

- DXP
- DXR
- DXS

**TX-Series MODELS**

- TXP
- TXS

**K-Series MODELS**

- K2P/S
- K1P/S
- K7L
- K5L

**TV-Series Models**

- TVA
- TVF
- TVH
- TVL

*Technical information with dimensional drawings are available at Emerson.com/topworx  
Please see Installation and Operation Manual for complete product dimensions or contact us for additional information at info.TopWorx@Emerson.com*
**Online product configurator**

Product datasheets can be generated using the Online Product Configurator. By walking through the selection process, you can easily create the part number and datasheet that meets your application needs. Product datasheets include dimensional data, product options, a wiring diagram, a visual indicator image, and nameplate information.

### Example Datasheet for model DXP-L21GNEB:

#### MODEL NUMBER

<table>
<thead>
<tr>
<th>MODEL NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>DXP-L21GNEB</td>
</tr>
</tbody>
</table>

#### PRODUCT LINE

Switchbox DXP and DXS

#### SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure</td>
<td>Topped lexel aluminum</td>
</tr>
<tr>
<td>Bus/Sensor</td>
<td>(2) G0™ Switches SPDT hermetic seal</td>
</tr>
<tr>
<td>Area Classification</td>
<td>Fossation proof / Flame proof</td>
</tr>
<tr>
<td>Visual Display</td>
<td>Standard 90° Green OPEN, Red CLOSED</td>
</tr>
<tr>
<td>Shaft</td>
<td>NAMUR 306 stainless steel</td>
</tr>
<tr>
<td>Cord End Entries</td>
<td>(2) 3/8” NPT</td>
</tr>
<tr>
<td>O-Rings</td>
<td>Buna-N</td>
</tr>
<tr>
<td>Pilot</td>
<td>No pilot device(s)</td>
</tr>
<tr>
<td>Spool Valve</td>
<td>No spool valve</td>
</tr>
<tr>
<td>Valve Cv</td>
<td>No valve Cv</td>
</tr>
<tr>
<td>Manual Override</td>
<td>No manual override</td>
</tr>
<tr>
<td>Regional Certification</td>
<td>No regional certification</td>
</tr>
<tr>
<td>N Switch</td>
<td>No N Switch</td>
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</table>

#### WIRING DIAGRAM

![Wiring Diagram](image)

**NAMEPLATE**

![Nameplate Image](image)
**Technical Information**

**Dimensional Drawings, Electrical Ratings**

### GO Switches

<table>
<thead>
<tr>
<th>Option</th>
<th>Contact Type</th>
<th>Contact Form</th>
<th>Electrical Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>Gold-Flashed, Dry-Contact</td>
<td>SPDT</td>
<td>4A@120VAC, 3A@24VDC</td>
</tr>
<tr>
<td>Z</td>
<td>Palladium Silver, Dry-Contact</td>
<td>DPDT</td>
<td>4A@120VAC, 3A@24VDC</td>
</tr>
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</table>

### Transmitters

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Signal</th>
<th>Electrical Rating</th>
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</thead>
<tbody>
<tr>
<td>_X</td>
<td>Potentiometer</td>
<td>4-20mA</td>
<td>8.5-34VDC</td>
</tr>
<tr>
<td>_H</td>
<td>Potentiometer</td>
<td>4-20mA, HART</td>
<td>15-39VDC</td>
</tr>
</tbody>
</table>

### HART

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Signal</th>
<th>Electrical Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>_H</td>
<td>Potentiometer</td>
<td>4-20mA, HART</td>
<td>15-39VDC</td>
</tr>
</tbody>
</table>

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

#### D-Series

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Power Consumption</th>
<th>Pressure Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>24VDC</td>
<td>.5W</td>
<td>45-150 PSI</td>
</tr>
<tr>
<td>110VAC</td>
<td>3VA</td>
<td>45-150 PSI</td>
</tr>
<tr>
<td>220VAC</td>
<td>3VA</td>
<td>45-150 PSI</td>
</tr>
<tr>
<td>Piezo</td>
<td>12mW</td>
<td>45-150 PSI</td>
</tr>
</tbody>
</table>

#### T-Series

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Power Consumption</th>
<th>Pressure Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>24VDC</td>
<td>.5W (I.S.), 1W (non-I.S.)</td>
<td>30-100 PSI</td>
</tr>
<tr>
<td>110VAC</td>
<td>3VA</td>
<td>30-100 PSI</td>
</tr>
<tr>
<td>220VAC</td>
<td>3VA</td>
<td>30-100 PSI</td>
</tr>
</tbody>
</table>
Ordering Guide
How to configure the right product for your application.

We recommend you call your local sales representative, inside sales, or use the online configurator tool at Emerson.com/TopWorx to ensure you choose the right product for your application.

The following is an example of how to configure your product using the TopWorx Ordering Guide. A switchbox part number can be configured by following a number of sequential steps. The ordering guide is organized in a number of categories which are setup as columns. By moving from right to left and filling in the boxes at he bottom of each column you will create a valid switchbox part number.

The following example is for reference and does not reflect all the available options of a TopWorx switchbox. Refer to the full ordering guide for full product options.

Product part number example: DXP-L21GNEB1A21
When configuring a valve monitor, the part number is considered complete once the “o-ring” option is specified and the rest of the options can be left blank, i.e., DXP-L21GNEB. If a on/off valve controller is configured the part number is considered complete once the “Valve Cv” option is specified, i.e, DXP-L21GNEB1A2. “Regional Certs” and “Manual Override” options can be left blank or specified. If a “Regional Certs” options is specified and “Manual Override” is left blank the part number will look as follows: DXP-L21GNEB1A20N.

Product part number example:
DXP-L21GNEB1A21

<table>
<thead>
<tr>
<th>O-Rings</th>
<th>Pilot</th>
<th>Spool Valve</th>
<th>Valve Cv</th>
<th>Manual Override</th>
<th>Regional Certs</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td></td>
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<tr>
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</tr>
<tr>
<td>B</td>
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</tr>
</tbody>
</table>

Ordering Examples:
DXP-F09GNEBPA2
DXP-L21GNEB1A2

NOTE: For Temperatures below -40°C, Silicone o-rings are recommended.
Enabling communication with your automated on/off valves.

TopWorx discrete valve control and GO Switch position sensing technology provides absolute assurance in the most challenging applications by increasing reliability, profitability and reducing down time. Engineered to meet tough applications while offering high reliability and installation flexibility, these rugged, dependable, and affordable models are designed to provide dependability in all environments.

Visit us: Emerson.com/TopWorx
Your local contact: Emerson.com/contactus