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 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.

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 176ºF/80ºC

Cold
Tested for endurance in temperatures down to -76ºF/-60ºC

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.

" 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

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

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

**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 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.
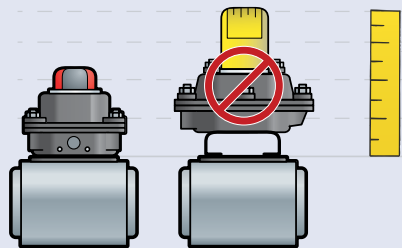
Low Profile Design
The unique direct-mounting feature eliminates expensive mounting brackets while reducing the height of the switchbox and the overall footprint above the actuator.
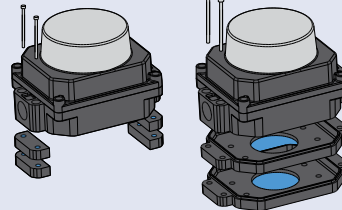
Direct Mounting
Unique mounting design enables simple attachment to any ISO/NAMUR actuator without the need for expensive mounting brackets

" 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

Up to (4) Four Sensors Inside

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

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 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

SENSOR-COMMUNICATION MODULES

TopWorx™ Sensor-Communication Modules are microprocessor based 'brains' that mount inside TopWorx™ enclosures to deliver position sensing and bus net-working 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
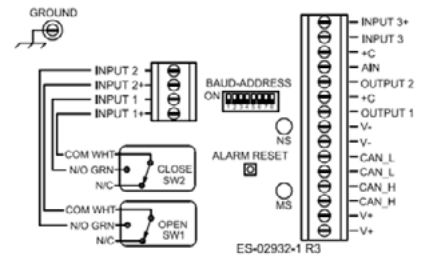
BUS NETWORKS

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.
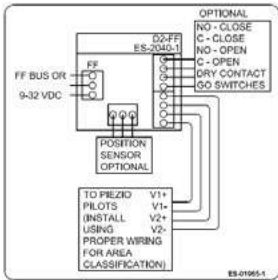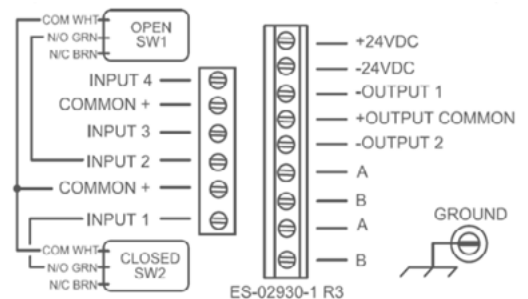
FOUNDATION Fieldbus
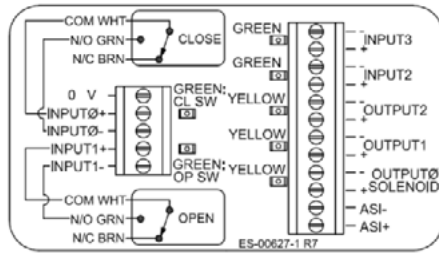
ASi

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 lnput

- Rockwell, Emerson DeltaV approved

- On-board diagnostics and early warning LEDs

ASi INTERFACE®

- 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™ 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

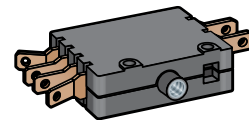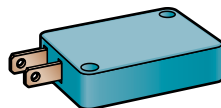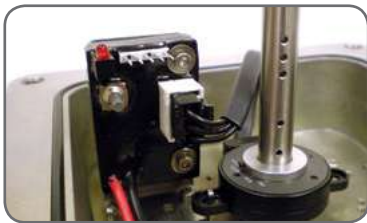Unique pushset cam design allows quick and accurate setting of the GO Switch positions reducing deadband and hysteresis to a minimum. Switches can easily be set in the mid-position for control applications such as 3-way ball valves or diverter valves.

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
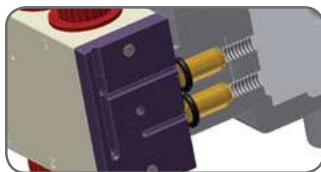- 316 Stainless Steel
- 304 Stainless Steel

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™ 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

Convenient Partial Stroke Testing

Partial Stroke Test Module
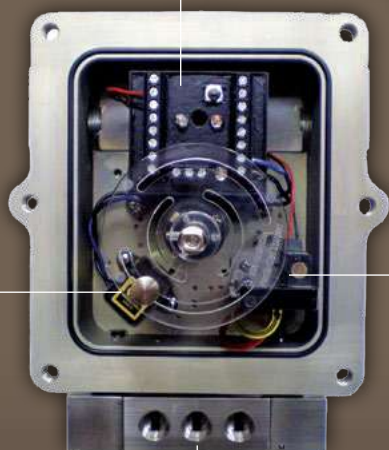
GO™ Switch Partial Stroke Confirmation Switch

Integral Solenoid

Spool Valve

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

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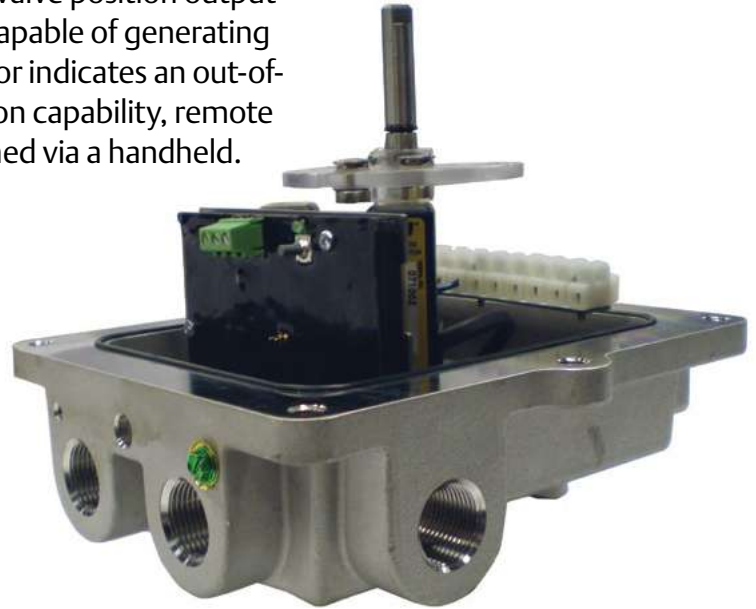
THE STAINLESS STEEL, 35-SERIES GO™ SWITCH
Hermetically-Sealed, Stainless Steel, DPDT Proximity Switch

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.

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!
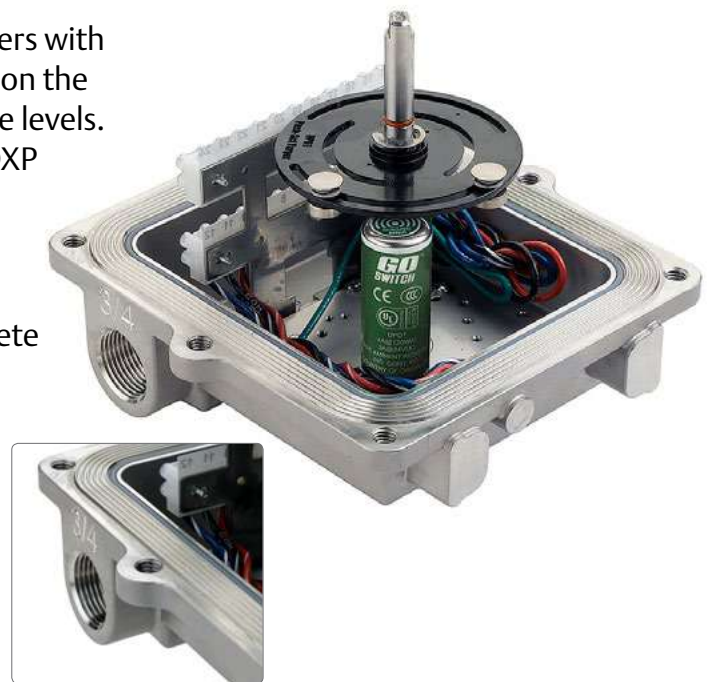
Serrated Flange

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	

D-SERIES DIAGRAMS

DXP
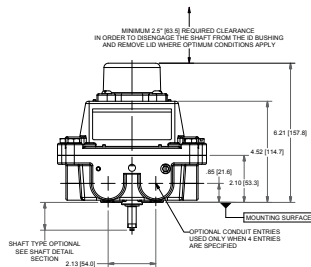
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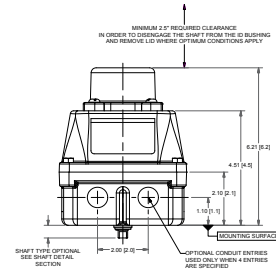
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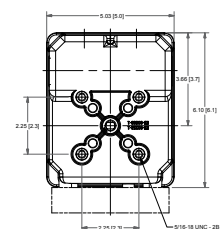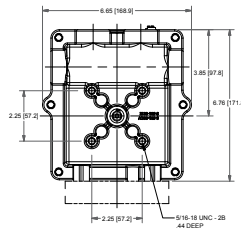
T-SERIES DIAGRAMS

TVA
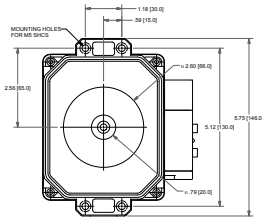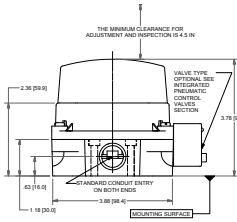
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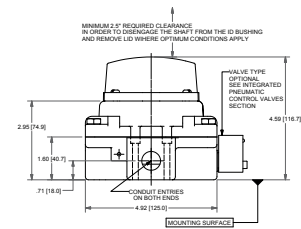
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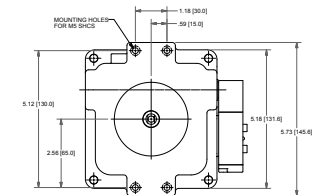
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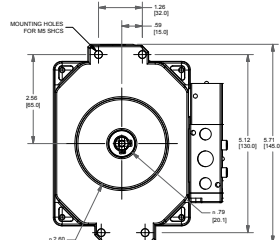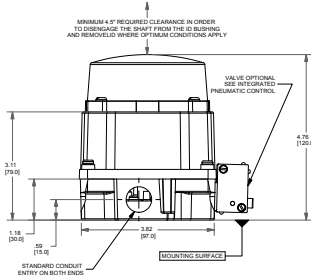
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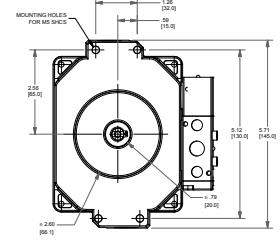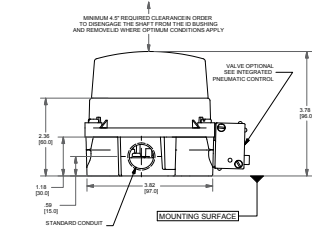
TVL
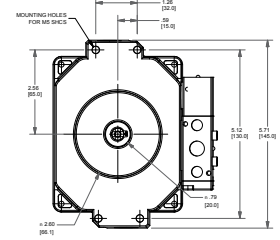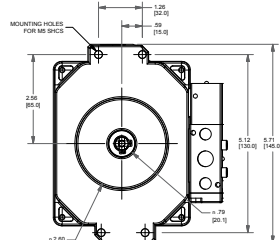
GO Switches

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
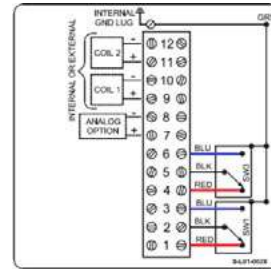
L2

Transmitters

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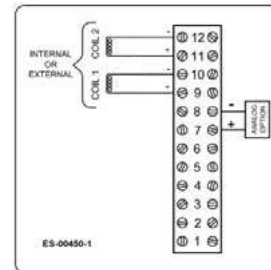
_X

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

O-Rings	Pilot	Spool Valve	Valve Cv	Manual Override	Regional Certs
B Buna-N **No Adder**	**Blank** No pilot device(s)	**Blank** No Spool Valve	**Blank** No Spool Valve	**Blank** No override	**Blank** No Regional Cert
S Silicone **No Adder**	**1** (1) 24 Vdc pilot, fail open/closed 0.5 W (non- I.S.)	**A** Aluminum Hard coat anodized	**2** .86 Cv (1/4" NPT Ports)	**1** Single Pushbutton Momentary/Latching	**B** InMetro (Area Class 0,1 and C only)
	0.5W (I.S)	**6** 316 Stainless steel	**3** 3.7 Cv (1/2" NPT Ports) (For manual override consult factory) (Spool Valve A) (Spool Valve 6)	**2** Dual Pushbutton Momentary/Latching	**N** NEPSI
NOTE: For Temperatures below -40°C, Silicone o-rings are recommended	**2** (2) 24 Vdc pilots, fail last position 0.5W (non-I.S)			**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)	**F** FISCO (Bus/Sensor must be FF; Area Class must be 0)
	0.5W (I.S)				**K** KOSHA (DXP/S only) (Area class 1 or C)
	4 (1) 220 Vac pilot, 2W, fail open/closed				**R** EAC (DXP/S only)(O-Rings must be B or S,B=Gas Approved;S= Gas/Dust Approved)
	5 (2) 220 Vac pilots, 2W, fail last position				**A** ANZEx Ex d IIC, Ex d IIB+H2 (DXP/S only)
	7 (1) 110 Vac pilot, 1.1W, fail open/closed				**P** PESO (India) (Gas approval only)
	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)				

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

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	Description	Part Number
Resin Mounting Kits for TVA		**Stainless Steel Mounting Kits for TXS**	
Mounting Kit for 20 x 80	AL-TR01	Non-NAMUR Interface Kit	Z001205
Mounting Kit for 30 x 80	AL-TR04	Mounting Kit for 20 x 80	AV-TS09
Mounting Kit for 30 x 130	AL-TR07	Mounting Kit for 20 x 80 (flattop only)	AV-TS10
Mounting Kit for 50 x 130	AL-TR09	Mounting Kit for 30 x 80	AV-TS11
		Mounting Kit for 30 x 80 (flattop only)	AV-TS12
Mounting Kits for TXP		Mounting Kit for 30 x 130	AV-TS13
Mounting Kit for 20 x 80	AV-TA09	Mounting Kit for 30 x 130 (flattop only)	AV-TS14
Mounting Kit for 20 x 80 (flattop only)	AV-TA10	Mounting Kit for 50 x 130	AV-TS15
Mounting Kit for 30 x 80	AV-TA11	Mounting Kit for 50 x 130 (TXS flattop only)	AV-TS16
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		

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

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.'

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

Enclosure	Bus/Sensor	Area Classification	Visual Display	Shaft	Conduit Entries

O-Rings
M Silicone

Pilot
Blank No pilot device(s)
1 (1) 24Vdc pilot, fail open/closed 1W (non I.S) 0.5 W (I.S)
2 (2) 24Vdc pilots fail last position 1W (non-I.S.) 0.5 W (I.S.)
4 (1) 220Vac pilot, 3VA fail open/closed
5 (2) 220Vac pilots, 3VA fail last position
7 (1) 110Vac pilot, 3VA, fail open/closed
8 (2) 110Vac pilots, 3VA fail last position

Spool Valve
Blank No spool valve
A Aluminum Hard coat anodized
6 316 Stainless steel

Valve Cv
Blank No spool valve
1 1.0 Cv (1/4" NPT Ports)
8 1.0 Cv (1/4" BSP Ports)

Manual Override
Blank No override
1 Single Pushbutton Momentary/Latching
2 Dual Pushbutton Momentary Latching

Regionals
N NEPSI
R EAC (Not available in TVA)
B InMetro (Area Class "0"only)
P Peso (Gas approval only)

O-Rings	Pilot	Spool	Valve Cv	Override	Regionals
___	___	___	___	___	___

T-Series Mounting Kits (All hardware included)

Description	Part Number	List Price	Description	Part Number	List Price
Mounting Kits for TVF/TVL			**Stainless Steel Mounting Kits for TVH**		
Mounting Kit for 20 x 80	AV-TA01		Mounting Kit for 20 x 80	AV-TS01	
Mounting Kit for 20 x 80 (flattop only)	AV-TA02		Mounting Kit for 20 x 80 (flattop only)	AV-TS02	
Mounting Kit for 30 x 80	AV-TA03		Mounting Kit for 30 x 80	AV-TS03	
Mounting Kit for 30 x 80 (flattop only)	AV-TA04		Mounting Kit for 30 x 80 (flattop only)	AV-TS04	
Mounting Kit for 30 x 130	AV-TA05		Mounting Kit for 30 x 130	AV-TS05	
Mounting Kit for 30 x 130 (flattop only)	AV-TA06		Mounting Kit for 30 x 130 (flattop only)	AV-TS06	
Mounting Kit for 50 x 130	AV-TA07		Mounting Kit for 50 x 130	AV-TS07	
Mounting Kit for 50 x 130 (flattop only)	AV-TA08		Mounting Kit for 50 x 130 (flattop only)	AV-TS08	
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				

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