valvetop®

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

TOPWORX®

EMERSON™
Process Management

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, Viton, EPDM, Silicone o-ring options

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

Pilot Valves
- Aluminum, 304, 316 Stainless Steel available
- Low Power Solenoid or Ultra-Low Power Piezo
- Single or Dual Coil
- 1.2 Cv or 3.0 Cv
- Integrally mounted for extra protection
- Built-in, 5-micron 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
- Operating temperatures from –58°F/–50°C to 176°F/80°C
- NEMA Type 4, 4X, 7 plus IP67

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
Ex ia IIC T4 Tamb
-40°C to 55°C II2GD
Ex d IIB+H2 T6 Tamb
-50°C to +60°C II2GD
Ex d IIC T6 Tamb
-50°C to +60°C II2GD

DXS

316L Stainless Steel
Flameproof/Explosion Proof /Intrinsically Safe
Class I Division 1 Groups A-D
Class I Division 2 Groups A-D
Ex ia IIC T4 Tamb
-40°C to 55°C II2GD
Ex d IIC T6 Tamb
-50°C to +60°C II2GD
Ex d IIB+H2 T6 Tamb
-50°C to +60°C II2GD

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 II2GD

DXR

Composite Resin
Non-Incendive/Intrinsically Safe
Class I Division 2 Groups A-D
Class II Division 2 Groups F & G
Ex ia IIC T4 Tamb
-20°C to 53°C II2GD
Ex me [ia]IIC Tamb
-20°C to 44°C T4 II2G

VALVETOP™ BUS NETWORKS
Connectivity to Every Fieldbus Network

SENSOR-COMMUNICATION MODULES

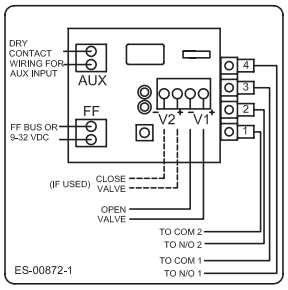
TopWorx Sensor-Communication Modules are microprocessor based 'brains' that mount inside Valvetop enclosures to deliver position sensing and bus networking functionality to on/off valves. They combine position sensors, bus communications, solenoid outputs, and wiring terminals into a compact, sealed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

SCM Features:

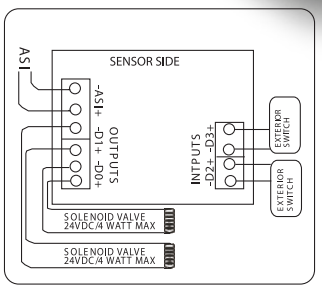
- Short-circuit protection
- Resistant to impact, moisture, shock, vibration, contamination
- LEDs indicate valve position and facilitate sensor set-up

BUS NETWORKS

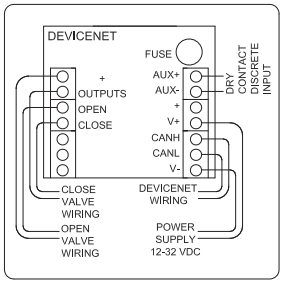
TopWorx Sensor-Communication Modules make it easy to connect automated on/off valves to modern bus networking protocols such as FOUNDATION Fieldbus, DeviceNet, AS-interface, Profibus, and HART.



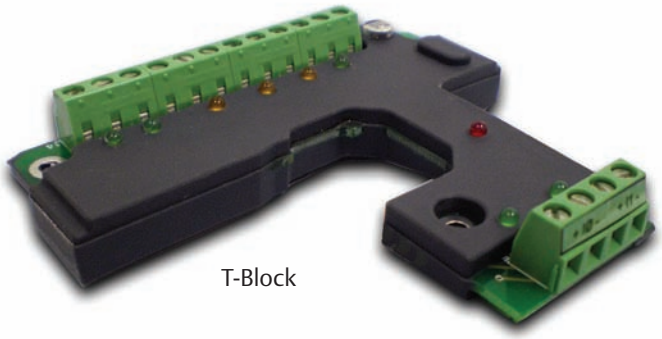
FOUNDATION Fieldbus



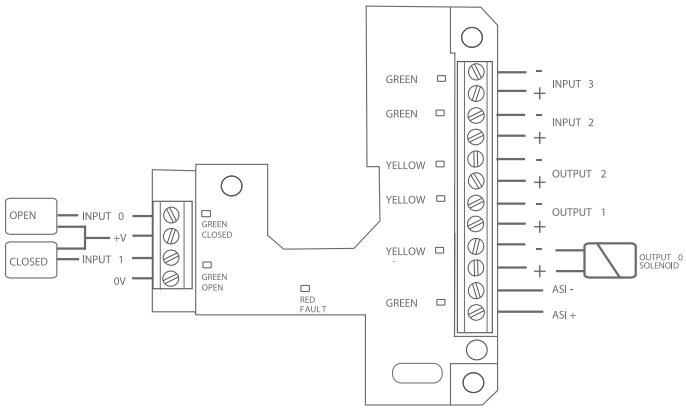
ASi



DeviceNet



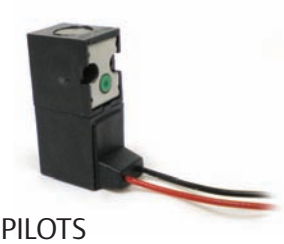
T-Block



VALVETOP™ PILOT VALVES
Solenoid Valves to Pilot Any Actuator

Valvetop provides a portfolio of self-contained pilot valves to control pneumatic actuators. These compact, high flow spool valves are all low power and can deliver significant operating cost savings. Integral pilot valve options include solenoid and piezo pilots, aluminum and 316 or 304 stainless steel valve bodies, and pushbutton or palm actuated manual overrides.

SOLENOID VALVES
- 24Vdc, 120vac, 220vac
- Aluminum, 316 Stainless, 304 Stainless
- Single Coil, Dual Coil, Blocked Center
- High Flow up to 3.0Cv
- Low Power Consumption (solenoid 0.5 watts; piezo 12mw)
- Low temperature rating -50°C (-58°F) (on request)



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

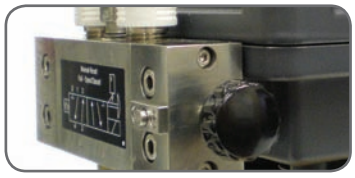
Flow Rates
- 1.2 Cv
- 3.0 Cv

MANUAL OVERRIDES

- Momentary
- Latching
- Manual Reset
  - Prevents accidental opening of a tripped ESD valve
  - Local operator intervention is required before valve can be re-opened

DUAL VALVE

- Two integral solenoid valves configured in series or parallel
- For applications where a redundant solenoid is required
- For ESD valves or control of 3-position actuators



MANUAL RESET SOLENOID VALVE

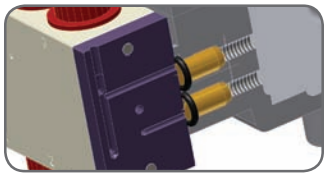
- Designed for Critical Service or Emergency Shutdown Valve applications which often require operators to manually verify a system prior to restarting a process
- Features a 1.2 Cv flow rate and rugged 316 stainless steel housing, ideal for offshore applications

How It Works

a) The pushbutton on the Manual Reset solenoid valve is manually pushed and latched. The inward movement of the pushbutton causes the valve to shift.

b) The pilot is then energized, which unlatches the manual pushbutton, but does not change the valve state.

c) When the coil is de-energized, the valve is returned to its original fail-safe mode.



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.

Available in two platforms suitable for your particular application:

DXP | Tropicalized Aluminum
Flameproof/Explosion Proof

DXS | 316L Stainless Steel
Flameproof/Explosion Proof

SIL-3
IEC 61508

Capabilities

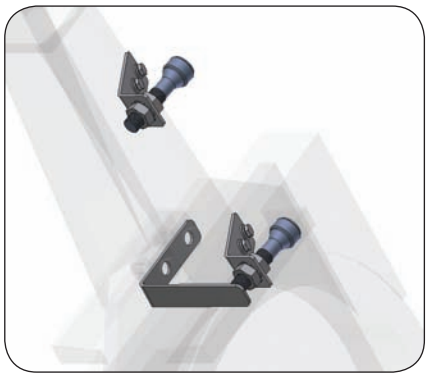
- Suitable for use in SIL-3 applications
- Certified for use in all hazardous areas
- Integrated solution with all controls in a single housing
- Onboard diagnostics for performance validation

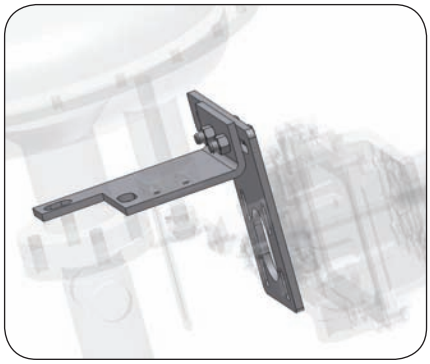
VALVETOP™ MOUNTING KITS

VIP™ Brackets to Fit Any Rotary Valve or Actuator

VIP MOUNTING KIT

With over 1,500 mounting kit designs, Valvetop 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 has thousands of mounting kits available to fit Valvetop and GO Switch products to a wide variety of valves and actuators. Each kit comes complete with parts list and installation instructions.

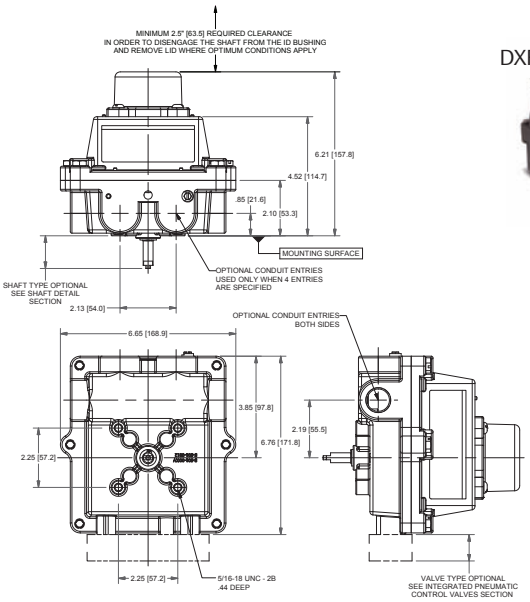
3Z Valve
Actreg
Airtorque
ANCHOR DARLING
Apollo
Automax
AXELSON
Baumann
Bettis
Biffi
Bray
BROOKS BRODIE
Cameron
CCI
ChemValve
Clarkson
Compaq
Conbraco
Contromatics
COPES VULCAN
Crane
DeZurik
Durco
El-O-Matic
Fabri Valve
Fisher
Flowbus
Flowserve
General Valve
Grinnell
HAWS
HONEYWELL
Hytork
ITT
KENNETH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

VALVETOP™ TECHNICAL INFORMATION
Dimensional Drawings, Electrical Ratings, Etc

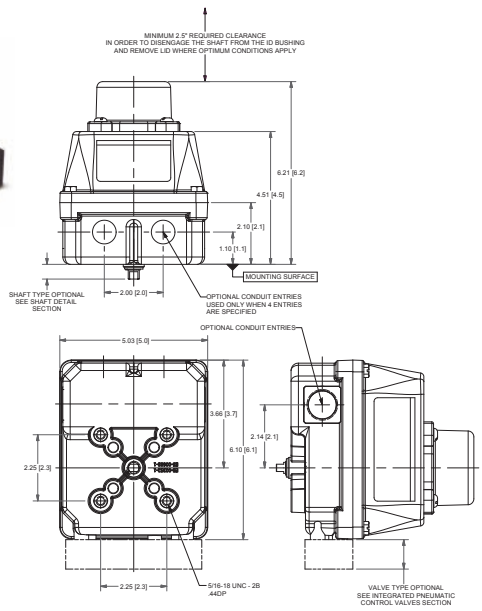
D-SERIES DIAGRAMS

DXP

DXS

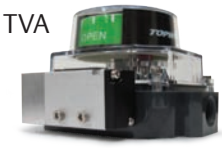


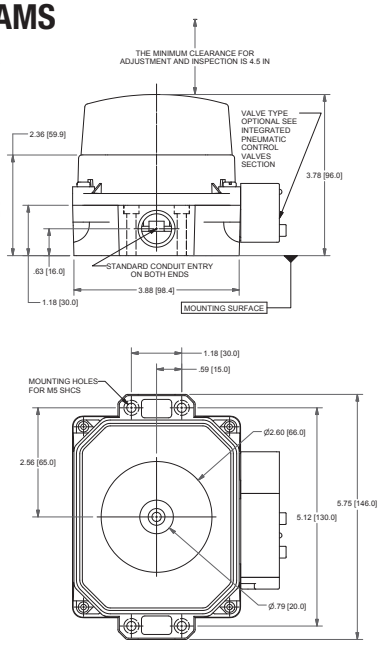
DXR



T-SERIES DIAGRAMS

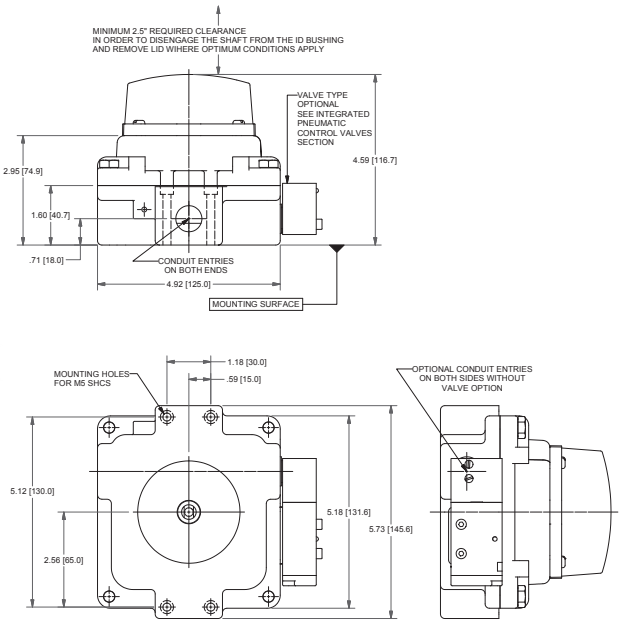
TVA





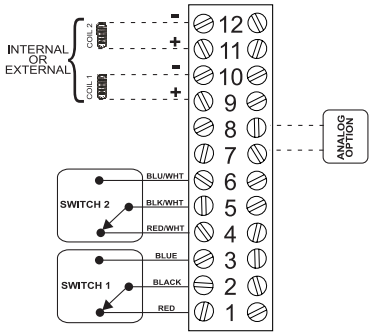
TXP

TXS

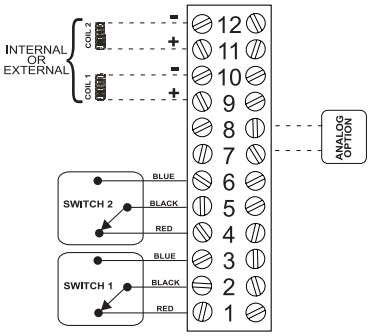


DRY-CONTACT POSITION SENSORS

Electrical ratings:
- L (GO Switch): 4amp/120vac, 3amp/24vdc
- P (Hi-Amp Prox): 3amp/120vac, 2amp/24vdc
- R (Low-Amp Prox): .2amp/30vdc
- M (Mechanical Switch) 15A/120vac
- _X (4-20mA Transmitter) 8.5-34vdc



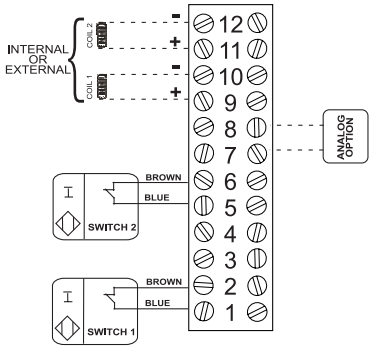
M2, P2, R2



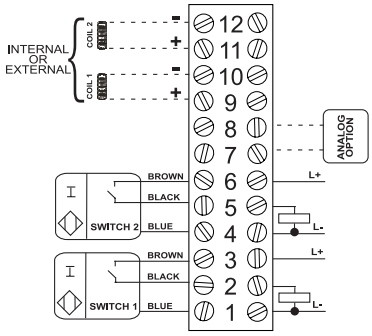
L2

INDUCTIVE PROXIMITY SENSORS

- Available with all types of inductive proximity sensors, including Pepperl & Fuchs™, IFM™, and Turck™
- 3-Wire PNP/NPN:
  : Voltage: 10-30vdc
  : Power Consumption: 15mA
  : Operating Current: 0- 200mA
- 2-Wire N/O & N/C
  : Voltage: 5-250vac/vdc
  : Power Consumption <0.5mA
  : Operating Current: 0- 200mA
- Namur Output:
  : 8vdc
  : Current consumption:
  : Switched: <1mA
  : Unswitched: >3mA



Namur/2-Wire



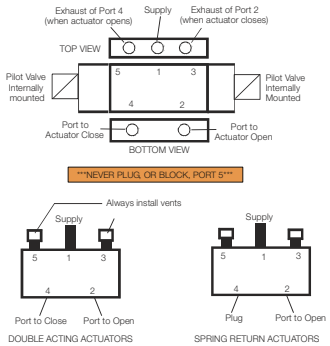
3-Wire PNP

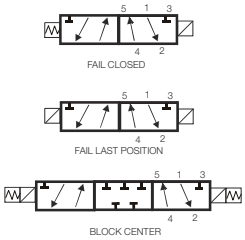
SOLENOID VALVES

Pressure rating: 30-100psi (2 - 8 bar)
Temperature rating:
- Standard -20°C - +60°C
- Low Temp: -50°C to +60°C
- Standard Piezo: -20°C to +60°C
- Cold Temp. Piezo: -30°C to +60°C

Power consumption:
- Standard: 0.5Watts
- Piezo: 12mWatts

Voltages:
- 12/24vdc
- 110vac
- 220vac





VALVETOP™ ORDERING GUIDE

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

Enclosure

D SERIES

- **DXP Tropicalized Aluminum**
- **DXR Composite Resin**
  ("S" Silicone O-Rings only; Stainless steel conduit entries required for North American Approvals)
- **DXS 316L**
  Stainless steel

T SERIES

- **TXP Aluminum**
- **TXS 316 Stainless Steel**
- **TVA Engineered Resin**
  (Area Class must be W or 0)

Bus/Sensor

- **AS AS-Interface**
  (Area class cannot be 0)
- **FF FOUNDATION Fieldbus**
  (D-Series only; Pilot P or R)
- **DN DeviceNet**
  (Area class cannot be 0)
- **PB Profibus DP** (T-Series only; Area class must be 1, C or W)

Partial Stroke Test

- **ES** ESD/PST Module w/GO Switch
  (D-Series only; Area class cannot be 0 or 2)

GO Switches

- **L2** (2)GO Switches SPDT hermetic seal
- **L4** (4)GO Switches SPDT hermetic seal
  (D-Series only)
- **Z2** (2)GO Switches DPDT hermetic seal
  (D-Series only)
- **Z4** (4)GO Switches DPDT hermetic seal
  (D-Series only)

Mechanical Switches
(Area class cannot be 2)

- **M2** (2)Mech SPDT
- **M4** (4)Mech SPDT
- **M6** (6)Mech SPDT (D-Series only)
- **T2** (2)Mech DPDT
- **K2** (2)Mech SPDT gold contacts
- **K4** (4)Mech SPDT gold contacts

Proximity Switches

- **PN** (2) SPDT Module w/o LED's, 1A max
  (D-Series only)
- **PS** (2) SPDT Module w/LED's, 250mA max
  (D-Series only)
- **R2** (2) SPDT 250mA max
  (T-Series only)
- **R4** (4) SPDT 250mA max
  (T-Series only)
- **P2** (2) SPDT 3A max
  (T-Series only)

Inductive Sensors

- **E2** (2) p+f NJ2+V3-N inductive NAMUR
- **E4** (4) p+f NJ2+V3-N inductive NAMUR
  (D-Series only)
- **12** (2) Ind prox PNP N/O
  (T-Series only Area class cannot be 0)

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)

Area Classification

D SERIES

- **0** Intrinsically safe
  (Bus/sensor cannot be AS, DN, ES, or _X; Requires appropriate I.S. barrier)
  - North America
  Class I Div 1&2
  Grps A, B, C, D
  Type 4, 4X
  - ATEX/IECEx
  Zone 0
  II1G, II2D, II2GD
  Ex ia IIC
  Ex tb IIIC, Db IP6X
  (IP67 for DXP/S and IP64 for DXR)
- **1** Explosion proof/Flame proof (DXP/S only)
  - North America
  Class I Div 1&2 Grps C, D
  Class I Div 2 Grps A, B, C, D
  (Groups A & B must be hermetically sealed)
  Type 4, 4X, 7
  - ATEX/IECEx
  Zone 1
  II2G, II2GD
  Ex d IIB+H2
  Ex tb IIIC Db, IP67
  (O-Rings must be S or E for DUST certification)
- **2** Non-incendive
  (Bus/sensor must be L, Z, P, AS, FF or DN)
  - North America
  (DXR Only)
  Class I Div 2
  Grps A, B, C, D;
  Class II Div 2 Grps F,G
  - ATEX (DXP/S only)
  II3G Ex nC tD, IP67
  (O-Rings must be S or E for DUST certification)
- **G** General Purpose (DXR only)
  Type 4, 4X
- **C** Flameproof (DXP only; Conduit entries must be E or M)
  ATEX/IECEx II2G, II2GD
  Ex d IIC Ex tb IIIC Db, IP67
- **W** No approvals
  IP67 for DXP/S
  IP64 for DXR

T SERIES

- **0** Intrinsically safe
  ATEX Zone 1 II2GD Ex ia IIC
  Ex tb A21, IP67 (TXP/S only)
  II2G Ex ia IIC, T4 (TVA only)
- **C** Flame Proof (TXP & TXS w/o pilot valve only)
  ATEX/IECEx II2GD Ex d IIC
  Ex tD A21, IP67
- **1** Flame proof/Explosion Proof
  (TXP / TXS only)
  - North America
  Class I Div 1 Grps C, D
  Class I Div 2 Grps A-D
  Class II Grps E, F, G
  Type 4X, IP 67
  - ATEX/IECEx
  Zone 1
  II2GD Ex d IIB & IIC
  Ex tD A21, IP67
- **2** Non-incendive
  (TXP/TXS only)
  Cl I Div 2 Grps A-D
  Cl II Div 2 Grps F&G
  ATEX II3GD (Not available with all sensing options)
  Ex nA IIC, IP67; Ex tD
- **G** cCSAus General Purpose
  (TXP/TXS only)
- **W** No approvals
  Nema 4, 4x IP67

Visual Display

- **G** Standard 90°
  Green OPEN,
  Red CLOSED
- **B** 90°
  Black OPEN,
  Yellow CLOSED
- **Y** 90°
  Yellow OPEN
  Black CLOSED
- **J** 3 Way T Port,
  Green/Red
  (T-Series only)
- **K** 3 Way L Port,
  Green/Red
  (T-Series only)
- **1** 3 way, 90°
  (D-Series only)
- **3** 3 way, 90°
  (D-Series only)
- **5** 3 way, 90°
  (D-Series only)
- **7** 3 way, 180°
  (D-Series only)
- **9** 3 way, 180°
  (D-Series only)
- **F** Flat-top w/ skirt indicator
  (TXP/TXS only)

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

Enclosure	Bus/Sensor	Area Classification	Visual Display
___ ___ ___	___ ___	___	___

Ordering Examples:
DXP-FF0GNEBPA2
DXP-L21GNEB1A2
TXP-M21GNPB1A1

✓ **TopWorx preferred options.**

Shaft

✓ **S** 1/4" DD 304 SS
(D-Series only)

✓ **N** NAMUR 304 SS

L 1" Extended Linear Shaft
(TXP/TXS w/ Visual Display F only)

R 1/4" DD 316 SS
(Shaft & external hardware)
(D-Series Only)

M NAMUR 316 stainless steel
(Shaft & external hardware)
(D-Series Only)

Conduit

DXP/DXS
✓ **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)
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

T SERIES

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

M (2) M20

E (2) 3/4" NPT
(N/A with Pilot Valve)

3 (4) M20
(N/A with Pilot Valve)

4 (2) 3/4" NPT
(2) 1/2" NPT
(N/A with Pilot Valve)

TVA
A (2) 1/2" NPT
Resin (TVA only)

C (2) M20
Resin (TVA only)

O-Rings

✓ **D SERIES**
B Buna-N

E EPDM

S Silicone

V Viton

T SERIES
M Buna/EPDM mix (TVA)
Silicone (TXP/TXS)

Pilot

✓ **Blank**
No pilot devices

✓ **1** (1) 24Vdc pilot, .5W, fail open/ closed

2 (2) 24Vdc pilot, .5W, fail last position
(D Series Only)

4 (1) 220vac pilot, 1.9W fail open/ closed

5 (1) 220vac pilot, 1.9W fail last position
(D Series Only)

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

8 (2) 110vac pilot, 1.1W fail last position
(D Series Only)

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

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

Spool

✓ **Blank**
No spool valve

✓ **A** Aluminum hard coat anodized

S 304 SS
(D Series Only)

✓ **6** 316 SS

Valve Cv

✓ **Blank**
No spool valve

✓ **1** 1.0 Cv
(1/4" NPT Ports)
(T Series Only)

✓ **2** 1.2 Cv
(1/4" NPT ports)
(D Series Only)

3 3.0 Cv
(D Series Only)
(1/2" NPT ports)

C Cold Temp valve
1.0 Cv
(1/4" NPT Ports)
(D-Series Only)
(Sensors L2 and Z2, Pilot must be 1 or 2; Sensor FF, Pilot must be P or R)(O-Ring E or S only; Spool Valve S or 6 only)
Bus/sensor L or Z = -50ºC
Bus/sensor FF = -30ºC

8 1.0 Cv
(1/4" BSP Ports)
(T-Series Only)

Override

(All manual override options EXCEPT Option 1 are for D Series only)

✓ **Blank**
No override

1 Single Pushbutton Momentary/Latching

2 Dual Pushbutton Momentary/Latching

3 Single Pushbutton Momentary

4 Dual Pushbutton Momentary

5 Manual Reset
No voltage release latching with pushbutton
(Consult factory if used with ES sensor option)
(Spool valve must be 6)

A Single palm actuator Momentary/Latching

B Dual palm actuator Momentary/Latching

C Single palm actuator Momentary

D Dual palm actuator Momentary

E Manual Reset
No voltage release latching with palm actuator
(Consult factory if used with ES sensor option)
(Spool valve must be 6)

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
(DXP/S only)

N NEPSI

R GOST
(Cannot be DXR or TVA)

F FISCO
(D-Series Only)
(Bus/Sensor must be FF; Area Class must be 0)

K KOSHA

Shaft	Conduit	O-Rings	Pilot	Spool	Valve Cv	Override	Regional Certs
___	___	___	___	___	___	___	___