GLOBAL LEADERSHIP IN VALVE CONTROL AND POSITION SENSING TECHNOLOGY

TOPWORX

Control Without Compromise

TopWorx is the global leader in valve control and position sensing for the process industries. Our solutions help plants, platforms, and pipelines improve productivity and increase safety in the harshest environments and toughest applications.

valvetop Valvetop® discrete valve controllers enable automated on/off valves to communicate via FOUNDATION Fieldbus, DeviceNet, AS-Interface, Profibus, and HART protocols.

GO SWITCH GO® Switch leverless limit switches provide reliable position sensing in extremely hot, cold, wet, dirty, abusive, corrosive, and explosive environments.

Valvetop® Partial Stroke Test Device for emergency shutdown valves

TOPWORX

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 at many of the world's leading companies.

GLOBAL HAZARDOUS AREA CERTIFICATIONS

TopWorx valve controllers and position sensors are globally certified for use in any hazardous location anywhere in the world. In addition to high temperature (up to 204°C), cold temperature (-50°C), and sub-sea (depths to 6,800 meters) applications, TopWorx products are suitable for use in Zone 0 (Intrinsically Safe), Zone 1 (Flameproof/Explosion Proof), and Zone 2 (Non-Incendive) hazardous areas with IECEx, ATEX, GOST, InMetro, UL, CSA, JIS, 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 the kind of support that a world without compromise demands. In addition, over 150 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.

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DISCRETE VALVE CONTROLLERS FOR ON/OFF VALVES

valvetop Valvetop® discrete valve controllers and switchboxes monitor and control the position of automated on/off valves. Valvetop solutions support multiple fieldbus protocols, operate in the most demanding plant conditions, and carry a variety of hazardous area certifications.

IECEx Ex ATEX CE FM APPROVED SP UL

DISCRETE VALVE CONTROLLERS FOR
- Any bus network
- Any hazardous area
- Any valve or actuator
- Anywhere in the world

VALVETOP D-SERIES
World-class discrete valve controllers with the highest technology available

DXP | Tropicalized Aluminum
Flameproof/Explosion Proof/
 Intrinsically Safe
Class I Division 1 Groups C & D
Class I Division 2 Groups A-D
EEx/Ex ia IIC T6 Tamb -50°C
 to 60°C II1GD
EEx/Ex d IIB+H2 T6 Tamb -50°C
 to +60°C II2G

DXR | Composite Resin
Non-Incendive/Intrinsically Safe
Class I Division 2 Groups A-D
EEx/Ex ia IIC T6 II1GD
EEx/Ex me [ia] IIC T6 II2G

DXS | 316L Stainless Steel
Flameproof/Explosion Proof/
 Intrinsically Safe
Class I Division 1 Groups C & D
Class I Division 2 Groups A-D
EEx/Ex ia IIC T6 Tamb -50°C
 to 60°C II1GD
EEx/Ex d IIB+H2 T6 Tamb -50°C
 to +60°C II2G

VALVETOP T-SERIES
High-value switchboxes with a variety of options

TVG | Direct-Mount Composite Resin
General Purpose
Ordinary Locations

TVC | Direct-Mount Composite Resin
Non-Incendive/Intrinsically Safe
Class 1 Division 2 Groups A-D
EExia IIC T4 Tamb -50°C II2G

TXP | Direct-Mount Aluminum
Flameproof/Non-Incendive/
Intrinsically Safe
Class I Division 2 Groups A-D
EExia IIC T4 Tamb -50°C II2G
EEx/Ex d IIB T6 Tamb -50°C II2G
EExd IIB+H2 T6 Tamb -50°C II2GD (Flat top)
Ex d IIC T4 Tamb -50°C to 80°C (Flat top)

TXS | Direct-Mount Stainless Steel
Flameproof/Non-Incendive/Intrinsically Safe
Class I Division 2 Groups A-D
EExia IIC T4 Tamb -50°C II2G
EEx/Ex d IIB T6 Tamb -50°C II2G
EExd IIB+H2 T6 Tamb -50°C II2GD (Flat top)
Ex d IIC T4 Tamb -50°C to 80°C (Flat top)

INSIDE THE BOX

BUS NETWORKS
:: FOUNDATION Fieldbus
:: DeviceNet
:: AS-Interface
:: Profibus
:: HART

SENSORS & SWITCHES
:: Partial Stroke Test for
 emergency shutdown valves
:: GO Switch inside
:: 4-20mA Transmitter
:: Pepperl & Fuchs
:: Proximity
:: Reed
:: Mechanical

SOLENOID VALVES
:: 24VDC, 110VAC, 220VAC
:: Aluminum, 304 Stainless, 316 Stainless
:: Single Coil, Dual Coil, Blocked Center
:: High Flow up to 3.0Cv
:: Low Power

VALVETOP® ORDERING GUIDE
Choose one option from each category to build a complete model number.

✓ Denotes *FastTrack Delivery* option most likely to be available for immediate shipment.

Enclosure

D SERIES

✓ **DXP** Tropicalized Aluminum

✓ **DXR** Composite Resin

DXS 316L Stainless Steel

T SERIES

✓ **TVC** Composite Resin Direct Mount

TXP Aluminum Direct Mount

TXS Stainless Steel Direct Mount

Bus/Sensor

AS AS-Interface

✓ **FF** FOUNDATION Fieldbus (D Series only)

DN DeviceNet

MB Modbus (D Series only)

ES ESD Module (D Series only)

HL ESD Module w/ HART & GO Switches (D Series only)

GO Switches
✓ **L2** (2) GO Switches SPDT hermetic seal

L4 (4) GO Switches SPDT hermetic seal (D Series only)

Mechanical Switches
✓ **M2** (2) Mech SPDT

M4 (4) Mech SPDT

M6 (6) Mech DPDT (D series only)

T2 (2) Mech DPDT

K2 (2) Mech SPDT gold contacts

K4 (4) Mech SPDT gold contacts

Proximity Switches
P2 (2) SPDT Proximity Switches 3A max

P4 (4) SPDT Proximity Switches 3A max

R2 (2) SPDT Proximity Switches 250mA max

R4 (4) SPDT Proximity Switches 250mA max

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,M,K,E & T) (R switches also availble for T Series)
_X 4-20mA transmitter

0X 4-20mA transmitter (no switches)

_H 4-20mA transmitter w/ HART (D Series Only)

Area Classification

D SERIES
0 Intrinsically Safe* Class I, Div 1 & 2 Groups A,B,C,D Zone 0 (ATEX) EEx ia IIC II1G IP67; Type 4

B 90° Black OPEN, Yellow CLOSED

✓ **1** Flameproof/Explosion Proof Class I, Div 1 & 2 Groups C & D Class I, Div. 2 Groups A,B,C,D (Hermetic seal only) Zone 1 (ATEX/IECEx) EEx/Ex d IIB+H2 II2G IP67; Type 4, 7

✓ **2** Non-Incendive Class I, Div 2 Groups A-D Class II, Div 2 Groups E-G Zone 2 (ATEX/IECEx) Ex/EEx nA IIC II3G Ex/EEx tD II3D IP67; Type 4 (DXR only)

G General Purpose Ordinary Locations Type 4, 4X (DXR only)

C (ATEX/IECEx) Ex/EEx d IIC II2G IP67 (DXP only)

W IP67/No approvals

T SERIES
0 Intrinsically Safe (ATEX) Zone 1 EEx ia IIC II2G IP67

1 Flameproof (ATEX / IECEx) Zone 1 EEx/Ex d IIB II2G IP67

H Flameproof (ATEX IECEx) Zone 1 EEx/Ex d IIB+H2 II2GD IP67 (TXP & TXS Flat-top only) (No pilot valve)

C Flameproof (IECEx) Ex d IIC IP67 (TXP & TXS Flat-top only) (No pilot valve)

2 Non-Incendive Class I & II Div 2 Groups A-G Zone 2 (ATEX/IECEx) Ex/EEx nA IIC II3G Ex/EEx tD II3D IP67; Type 4

G General Purpose Ordinary Locations Type 4

W IP67/No approvals

* With appropriate I.S. barrier

Visual Display

✓ **G** Standard 90° Green OPEN, Red CLOSED

B 90° Black OPEN, Yellow CLOSED

4 45° Green OPEN, Red CLOSED

Y 90° Yellow OPEN, Black CLOSED

X 45° Black OPEN, Yellow CLOSED

1 3 way, 90°

3 3 way, 90°

5 3 way, 90°

7 3 way, 180°

9 3 way, 180°
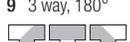
F Flat-top w/ skirt indicator (T Series Only)

Shaft

✓ **S** 1/4" DD 304 SS

✓ **N** NAMUR 304 SS

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 (Resin conduit entries)
A (2) 1/2" NPT

B (2) 3/4" NPT

C (2) M20

Note: Resin conduit entries are recommended for end of line device only.

DXR (Stainless Conduit Entries)
P (2) 1/2" NPT

✓ **E** (2) 3/4" NPT (DXR Only)

M (2) M20

T SERIES
✓ **P** (2) 1/2" NPT

M (2) M20

O-Rings

✓ **B** Buna-N

E EPDM

S Silicone

V Viton

M Buna/EPDM (T Series Only)

Pilot

✓ **Blank** No pilot devices

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

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

3 (2) 24Vdc pilot, .5W, block center (D Series Only)

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

5 (1) 220Vac pilot, 1.9W fail last position

6 (2) 220Vac pilot, 1.9W block center (D Series Only)

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

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

9 (2) 110Vac pilots, 1.1W, block center (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)

U (2) piezo pilots, block center, (FF only) (D Series only)

Spool

✓ **Blank** No spool valve

✓ **A** Aluminum hard coat anodized

S 304 SS

✓ **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)

C Cold Temp valve to -50° C 1.0 Cv (1/4" NPT Ports) (O-ring must be E or S) (D Series Only)

Override

✓ **Blank** No override (All manual override options for D Series only)

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 (Spool Valve 6 only) (Valve Cv 2 only)

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 (Spool valve 6 only) (Valve Cv 2 only)

T Partial stroke test button with lockable cover (Sensor ES or HL only)

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

LEVERLESS LIMIT SWITCHES FOR HARSH ENVIRONMENTS

GO SWITCH

GO® Switch leverless limit switches provide reliable, durable position sensing in the most demanding plant conditions. Using a completely unique technology, GO Switches outperform all other sensors in applications that are extremely hot, cold, wet, dirty, abusive, corrosive and explosive.

BEST-IN-CLASS CAPABILITIES

▫ Highest amp rating
▫ Highest pressure rating
▫ Highest temperature rating
▫ Highest hazardous area ratings
▫ Highest resistance to physical abuse
▫ Highest resistance to corrosives, salt water

GO SWITCH
Ultra-durable proximity sensors

70 Series | Flameproof/Explosion Proof/
Intrinsically Safe
Class I Division 1 & 2 Groups A-D
Class II Div 1 & 2 Grps E-G
EEx/Ex ia IIC T6 II1GD
EEx/Ex d IIC T6 Tamb -50°C to 80°C
  (For T3 Tamb -50°C to 190°C) II2GD
EEx/Ex de IIC T6 Tamb -50°C to 80°C
  (For T3 Tamb -50°C to 190°C) II2GD

10/20/80 Series | Flameproof/Explosion Proof/
Intrinsically Safe
Class I Division 1 & 2 Groups A-D
Class II Div 1 & 2 Grps E-G
EEx/Ex ia IIC T6 II1GD
EEx/Ex d IIC T6 Tamb -50C to 80°C
  (For T3 Tamb -50°C to 190°C) II2GD
EEx/Ex de IIC T6 Tamb -50°C to 80°C
  (For T3 Tamb -50°C to 190°C) II2GD

35 Series | Valve Position
Sensors
4amp/120VAC
3amp/24VDC
Hermetically Sealed

Stroke-to-GO® | Cylinder Position Sensors

NuProx™ | Proximity Sensors qualified for use in nuclear power plants
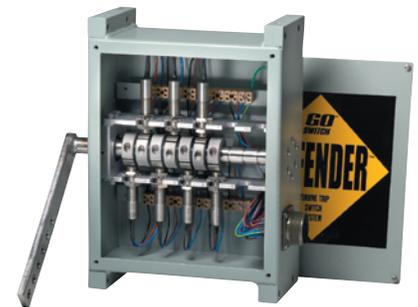
Defender™ | Turbine Trip Valve Monitoring System

UNIQUE CAPABILITIES

FEATURES AND BENEFITS
:: No exposed moving parts to bend or break
:: Can be wired AC or DC, N/O or N/C, in series or parallel
:: Not affected by electrical noise, weld fields, or radio frequency
:: Not affected by dust, dirt, moisture, or most caustics, corrosives, or chemicals
:: No leakage current or voltage drops
:: Multiple wiring options including lead wires, cables, quick disconnects
:: A wide variety of hazardous area certifications for Zone 0, 1, and 2
:: Operating temperatures ranging from -50°C to 204°C

OPTIONS AVAILABLE
:: Explosion Proof
:: Intrinsically Safe
:: SPDT, DPDT Contacts
:: SubSea/Underwater to 6,800 meters
:: High Temperature to 204°C

GO® SWITCH ORDERING GUIDE

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

✔ Denotes *FastTrack Delivery* option most likely to be available for immediate shipment.

Model	Contact Form	Sensing Range	Outlet Position	Enclosure Material	Approvals	Wiring Options

Model

Square Body

✔ **11** 1-1/2" square x 4 9/16" (Add 1/2" for bottom conduit outlet)

21 1-1/2" square x 3 13/16" (Add 1/2" for bottom conduit outlet)

81 1-1/2" square x 3 7/8" (Add 1/2" for bottom conduit outlet)

Round Body

71 3/8" x 3 15/16" - 1/2" NPT conduit

72 3/8" x 3 3/8" - No conduit

✔ **73** 5/8" x 3 5/8" - 1/2 NPT conduit

74 5/8" x 2 3/4" - No conduit

75 5/8" x 4 5/16" - 1/2" NPT conduit

76 5/8" x 3 3/16" - No conduit

77 3/4" x 5 13/16" - 1/2" NPT conduit

7G 5/8" x 4" - 1/2" NPT conduit

7H 5/8" x 3 1/4" - No conduit

Note: For metric threads add "M" after first group. Example: 73M-XXXXX-XX

Models 71-72 : 12mm

Models 73-76 : 18mm

Models 7G-7H : 18mm

Contact Form

Square Body

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

2 Double Pole Double Throw (Form CC) (Models 81)

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

5 Double Make Double Break (Form Z) Two-circuit (Models 11 & 21 only)

6 Double Make Double Break (Form Z) Two circuit, Latching (Maintained contact) (Models 11 & 21, Outlet 2, 4 or 5 only)

Round Body

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

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

Sensing Range

Square Body

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

1 Standard sensing - 3/8" side sensing (Models 11 & 21 only)

✔ **2** Extended sensing - 9/16" side sensing (Model 11 only, Contact Form 1 or 3 only)

7 Precise sensing - 1/4" side sensing (minimal differential) (Models 11 & 21 only)

Round Body

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

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

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

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

Outlet Position

Square Body

✔ **1** Behind sensing area

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

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

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

✔ **5** Bottom of Enclosure

Round Body

✔ **5** Bottom of enclosure

Enclosure Material

Square Body

✔ **1** Brass with flat black lacquer coating

✔ **2** Stainless steel*

3 Brass with corrosion resistant coating

4 Stainless steel with corrosion resistant coating

* Stainless steel switches are recommended for wet or harsh environments.

Round Body

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

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

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

6 316 stainless steel (rated 2,000 psi)

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

Approvals

Square Body

✔ **0** CSA / FM Cl I, Div 2, Grps A-D; Cl II, Div 2, Grps F & G; Cl III (Contact Form 1 or 3; Wiring 00 only)

2 High temp to 350ºF (Models 11 & 81; Contact Form 1 or 3 (1 or 2 for Model 81)) (Sensing 1 (0 for Model 81); Enclosure 2; Wiring F only)

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

✔ **4** CSA / FM Cl I, Div 1; Grps A-D; Cl II, Div 1, Grps E-G; Cl III (Enclosure 2 or 4 only) (Lead seal required)

5 MSHA approved "Explosion Proof" (Enclosure 2 only) (Wiring B3 or longer) (Models 11 & 21 only)

6 CSA FM Cl I, Div 2; Grps A-D; Cl II, Div 2, Grps E-G; Cl III (Lead seal req'd)

7 CSA General Purpose

8 UL General Purpose

Round Body

2 HiTemp to 400ºF (Wiring F only)

3 UL Cl I Div 1 & 2 Grps A-D; Cl II Div 1 & 2, Grps E-G (Models 71, 73, 75, 77 or 7G only) (Wiring A, B, or F only) (Lead seal required)

✔ **4** CSA Cl I Div 1; Grps A-D; Cl II Div 1, Grps E-G; Cl III (Models 71, 73, 75, 77 or 7G only) (Wiring A, B, or F only) (Lead seal required)

6 CSA Cl I, Div 2; Grps A-D; Cl II, Div 2; Grps E-G; Cl III (Models 71, 73, 75, 77, 7G only) (Wiring A, B, or F only) (Lead seal required)

✔ **7** CSA certified General Purpose

8 UL listed General Purpose

T ATEX Zone 1 EEx d IIC T6 (-20°C to +50°C), II 2G (Models 73 & 7G only) (Contact form 1 only) (-20°C to 50°C with Wiring A & B) (-40°C to 150°C with Wiring H)

Wiring Options

All options apply to both Square Body and Round Body

Terminal Block

✔ **00** (Models 11&21 only)

Lead Wires - 18 Gauge (7G - 7H = 20 gauge)

✔ **A2** 36"
A3 72"
A4 144"
A_ _ _ Greater than 144" - specify length in 5ft. Increments

Cable - 18 Gauge
B2 36"
B3 72"
B4 144"
B_ _ _ Greater than 144" - specify length in 5ft. Increments

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

Mini Change Connector (Models 11, 21, 81, 71, 73, 75, 77, 7G only) (Approval 7 or 8 only; 3 pin is 8 only)
DCA 3 pin
DCD 4 pin
DCG 5 pin
DCH 7 pin (7G and 81 only)

Micro Change Connector (Models 11, 21, 81, 72, 74, 76) (Approval 7 or 8 only; 3 pin is 8 only)
DBA 3 pin
DBD 4 pin

SubSea Connector (Models 11, 21, 81, 73, 75, 77) (11, 21, or 81 - Enclosure 2 or 4 only) (Approval 7 or 8 only; 3 pin is 8 only)
3DD 3 pin
4DD 4 pin
8DD 8 pin (7G and 81 only)
3DE 3 pin 90º
4DE 4 pin 90º

Hi-Temp™ Leads (Teflon insulated) 18 Gauge (7G - 7H = 20 gauge)
F2 36"
F3 72"
F4 144"
F_ _ _ Greater than 144" - specify length in 5ft. Increments

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

Model	Contact Form	Sensing Range	Outlet Position	Enclosure Material	Approvals	Wiring Options

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

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TOPWORX

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

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www.topworx.com

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valvetop GO SWITCH