# TopWorx™ D-Series

with 4-20mA Transmitter & HART™ Protocol

Installation, Operation & Maintenance Manual

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Installation on Actuator

Orientations, Normal and Reverse Acting

*Normal acting* is full CW when the process valve is closed and CCW when the process valve is open. *Reverse acting* is full CW when the process valve is open and CCW when the process valve is closed.

90° indicator dome assemblies are designed to accommodate any mounting arrangement and can be adjusted up to 9° off axis if needed. 45° indicator dome assemblies can only accommodate *normal acting* applications that are mounted *parallel* ±9°. Consult your local distributor or factory representative for 45° *reverse acting* or *mounted perpendicular* applications.

**Illustration #1**

The image to the left shows a TopWorx™ unit mounted *parallel* to the process valve in the closed position. The green arrow at the top shows the "normal acting" direction of travel to open the valve. This is the standard orientation and your unit unless otherwise specified will be factory set to operate in this fashion.

**Illustration #2**

The image to the right shows a TopWorx™ mounted *perpendicular* to the process valve in the closed position. The green arrow at the top shows the "normal acting" direction of travel to open the valve. Notice that the indicator dome has been rotated 90° compared to the unit above.
Installation on Actuator (continued)

Mounting

TopWorx has numerous mounting bracket kits available to meet your specific application, whether rotary or linear. Consult your local distributor or factory representative for ordering information. The illustration shows a direct Namur mount on a quarter turn valve. Refer to your mounting kit documentation for specific mounting instructions.

Storage

Until conduit, conduit cover, and any applicable spool valve port connections are properly installed, the TopWorx™ unit will not support its IP/NEMA rating as the unit ships with temporary covers. Ensure that it is stored in a dry environment with a relative humidity range between 10%-95% and a temperature ranging from -40°F (-40°C) to 160°F (71°C). Once properly installed, the temperature range listed on the nameplate will supersede this storage temperature range.

Illustration #3: Mounting Assembly

Installation Notes

1. Use caution not to allow undue axial (thrust) load on the shaft.

2. Cycle the valve a couple of times prior to final tightening of the mounting kit hardware. This allows the shaft to self-center in the pinion slot, or coupler. Refer to the dimensions and materials section of this document for appropriate tightening torque.

3. Always use sound mechanical practices when torquing down any hardware or making pneumatic connections. Refer to the Integrated Pneumatic Control Valves section for detailed information on pneumatic connections.

4. This product comes shipped with conduit covers over the conduit entries in an effort to protect the internal components from debris during shipment and handling. It is the responsibility of the receiving and/or installing personnel to provide appropriate permanent sealing devices to prevent the intrusion of debris, or moisture, when stored outdoors or when installed.

5. It is the responsibility of the installer, or end user, to install this product in accordance with the National Electrical Code (NFPA 70) or any other national or regional code defining proper practices.
Dimensions and Materials: TopWorx™ DXP

MATERIALS OF CONSTRUCTION

<table>
<thead>
<tr>
<th>Component</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure</td>
<td>Cast A360 aluminum with dichromate conversion coating inside &amp; out, epoxy coated exterior rated for 250 hrs salt spray per ASTM B117</td>
</tr>
<tr>
<td>Fasteners</td>
<td>304 Stainless Steel standard, 316 Stainless Steel optional</td>
</tr>
<tr>
<td>Shaft</td>
<td>304 Stainless Steel standard, 316 Stainless Steel optional</td>
</tr>
<tr>
<td>Shaft Bushing</td>
<td>Oilite Bronze</td>
</tr>
<tr>
<td>Indicator Dome</td>
<td>Polycarbonate, UV F1 rated</td>
</tr>
<tr>
<td>Seals</td>
<td>O-ring seals available in: Buna &amp; Silicone</td>
</tr>
</tbody>
</table>

Maximum Fastener Torque Specifications

<table>
<thead>
<tr>
<th>Component</th>
<th>Torque Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure Housing Bolts</td>
<td>8 ft-lbs [10.8 N·m]</td>
</tr>
<tr>
<td>Indicator Dome Screws</td>
<td>320 in-oz [2.3 N·m]</td>
</tr>
<tr>
<td>Bottom Mounting Holes</td>
<td>10 ft-lbs [13.6 N·m]</td>
</tr>
</tbody>
</table>
Dimensions and Materials: TopWorx™ DXP - Flameproof Ex d IIC

### Materials of Construction

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Dimensions and Materials: TopWorx™ DXS

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<thead>
<tr>
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<tbody>
<tr>
<td>Enclosure</td>
<td>Cast 316 Stainless Steel</td>
</tr>
<tr>
<td>Fasteners</td>
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<tr>
<td>Shaft</td>
<td>304 Stainless Steel standard, 316 Stainless Steel optional</td>
</tr>
<tr>
<td>Shaft Bushing</td>
<td>N/A</td>
</tr>
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</table>
Dimensions and Materials: TopWorx™ DXR

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<thead>
<tr>
<th>MATERIALS OF CONSTRUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure</td>
</tr>
<tr>
<td>Valox™ 364</td>
</tr>
<tr>
<td>Fasteners</td>
</tr>
<tr>
<td>304 Stainless Steel standard</td>
</tr>
<tr>
<td>316 Stainless Steel optional</td>
</tr>
<tr>
<td>Shaft</td>
</tr>
<tr>
<td>304 Stainless Steel standard</td>
</tr>
<tr>
<td>316 Stainless Steel optional</td>
</tr>
<tr>
<td>Shaft Bushing</td>
</tr>
<tr>
<td>Delrin™ 500P white</td>
</tr>
<tr>
<td>Indicator Dome</td>
</tr>
<tr>
<td>Polycarbonate, UV F1 rated</td>
</tr>
<tr>
<td>Seals</td>
</tr>
<tr>
<td>Silicone</td>
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</tbody>
</table>

Maximum Fastener Torque Specifications

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<th>Torque Specifications</th>
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<tr>
<td>Bottom Mounting Holes</td>
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</tr>
</tbody>
</table>
Indicator Assembly

- Indicator Dome, ±5° adjustable
- Polycarbonate with keyed mask. Several rotation and form options
- 10 - 32 Captive screws, stainless steel (x4)
- Color-coded indicator is available in several coordinating rotations and forms for various valve types, such as 90°, 180°, and thru-divert applications

O-Ring
Available in Buna-N, Silicone

Shaft Assemblies

STANDARD

NAMUR
Features and Specifications

4-20mA Position with HART Protocol

The 2-wire 4-20mA transmitter with HART will generate a nominal 4-20mA 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.

Features:
1) Single push button easy calibration eliminates zero/span calibration interaction in both clockwise and counterclockwise actuator/valve rotation directions
2) Non-volatile memory of set points (set points remain after loss of power)
3) No internal backlash – direct shaft position feedback
4) No gear wear or mechanical binding
5) Position measurement range from 20 to 320 degrees. Factory set for 20 to 180 degrees operation in counter clockwise rotation to open and 20 to 90 degrees operation in clockwise rotation to open applications
6) Advanced diagnostics includes detection of dead band, out of range indication
7) Transmitter PCB is potted and sealed from the environment
8) Selectable +/- 3% over and under travel capability or full linear options set during calibration

HART Features:
1) Remote set point calibration
   – Example: Using a handheld device for calibration and monitoring
2) 4 to 20mA variable reading (PV)
3) Valve opening indication in percentage
4) Setting the range of the process variable
5) Monitoring and setting of alarms with advanced diagnostics. Includes detection of deadband, out of range indication
6) Selectable +/- 3% over and under travel capability (rotary) or full linear options*
7) Multi-drop functionality
8) Easy integration into AMS and DeltaV systems
9) DD files registered through HCF (HART Communication Foundation)

Electrical Specifications:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Voltage</td>
<td>13.5VDC Analog Signal, 15.0V HART DC</td>
</tr>
<tr>
<td>Maximum Voltage</td>
<td>39.0 VDC</td>
</tr>
<tr>
<td>*Linearity (Absolute, Full Scale)</td>
<td>+/- 2% of output span</td>
</tr>
<tr>
<td>*Repeatability (Full Scale)</td>
<td>0.3% of full scale</td>
</tr>
<tr>
<td>*Hysteresis</td>
<td>0.3% of full scale</td>
</tr>
<tr>
<td>Temperature Range</td>
<td>-20º to 55º C</td>
</tr>
<tr>
<td>Input Polarity Protection</td>
<td>No dmg occurs from reversal of loop current</td>
</tr>
</tbody>
</table>

Electrical Data:
- Voltage Input Range: 15 - 39 Volts DC
- Standard Output Signal: Two wire 4-20mA with out of range indication
Operation of the 4-20mA Current Position Transmitter

During run mode, the 4-20mA position transmitter will output 4-20mA for valve positions between and including the set points. In the rotary mode, the module will provide an over or under travel correction if the valve position exceeds the high or low set point within +/-3% . In other words, the output will be 4mA for +/-3% over and under travel on the low end and 20mA for +/-3% over and under travel on the high end. If the valve position exceeds 3% of over travel, then values below 4mA or above 20mA will be output. In the linear mode, no under or over travel is compensated for. The device can be set to either linear or rotary mode during calibration using the on board push button switch, or remotely using HART communications.

Calibrating End Set Points Locally:
The 4-20mA current transmitter can be used for any rotation range between 20 and 320 degrees**.

Option #1: +/- 3% Over and Under Travel at the Set End Points (Rotary):
1) As the shaft rotates, make sure the potentiometer is not rotating through its deadband area. The red dot located on the potentiometer should not rotate past the area marked with red during the full rotation of the valve. If it does, reposition the shaft.
2) Apply power to unit (LED should be continuously on to indicate the unit has been calibrated or flashing the 4-1 code to indicate the unit has not been calibrated)
3) **Counter-clockwise calibration** - Press the button greater than 0.5 seconds and less than 3 seconds if you are going to calibrate using a counter-clockwise rotation from the 4mA position to the 20mA position. (LED will start flashing a 3-1 code indicating that calibration mode is active and the unit is waiting to calibrate the 4mA position).
4) **Clockwise calibration** - Press the button greater than 3 seconds and less than 5.5 seconds if you are going to calibrate using a clockwise rotation from the 4mA position to the 20mA position. (LED will start flashing a 3-2 code indicating that calibration mode is active and the unit is waiting to calibrate the 4mA position).
5) Rotate valve to the desired position corresponding to 4mA. (This can be the open or closed position) 
6) Press the button to capture the 4mA value (The LED will start flashing a 3-3 code indicating that the unit is waiting to calibrate the 20mA position)
7) Rotate valve to the desired position corresponding to 20mA (This will be the position opposite of the position in step 3 or step 4)
8) Press the button to capture the 20mA value (The LED will turn on continuously)

Option #2: No Under and Over Travel at the Set End Points (Full Linear):
1) As the shaft rotates, make sure the potentiometer is not rotating through its deadband area. The red dot located on the potentiometer should not rotate past the area marked with red during the full rotation of the valve. If it does, reposition the shaft.
2) Apply power to unit (LED should be continuously on to indicate the unit has been calibrated or flashing the 4-1 code to indicate the unit has not been calibrated)
3) **Counter-clockwise calibration** - Press the button greater than 5.5 seconds and less than 8 seconds if you are going to calibrate using a counter-clockwise rotation from the 4mA position to the 20mA position. (LED will start flashing a 5-1 code indicating that calibration mode is active and the unit is waiting to calibrate the 4mA position).
4) **Clockwise calibration** - Press the button greater than 8 seconds if you are going to calibrate using a clockwise rotation from the 4mA position to the 20mA position. (LED will start flashing a 5-2 code indicating that calibration mode is active and the unit is waiting to calibrate the 4mA position).
5) Rotate valve to the desired position corresponding to 4mA. (This can be the open or closed position) 
6) Press the button to capture the 4mA value (The LED will start flashing a 3-3 code indicating that the unit is waiting to calibrate the 20mA position)
7) Rotate valve to the desired position corresponding to 20mA (This will be the position opposite of the position in step 3 or step 4)
8) Press the button to capture the 20mA value (The LED will turn on continuously)

NOTE:**The potentiometer has been factory set for typical valve rotation ranges from 20 to 180 degrees in counter-clockwise rotation applications from the 4mA position to the 20mA position and from valve rotation ranges from 20 to 90 degrees in clockwise rotation applications from the 4mA position to the 20mA position. Please contact TopWorx for proper potentiometer set up for ranges greater than specified above.

NOTE: Schematics are for illustration purposes only. Refer to the wiring diagram on your product to determine actual pin out location.
Calibration Flow Chart

Apply power to device

Calibration required, LED flashes code 4-1

Is button pressed and held for at least 0.5 seconds?

[Yes]

Is button released before 3 seconds?

[Yes]

Calibrate counter clock wise, device waits for 4ma setpoint, LED flashes code 3-1, rotary

[No]

Is button released before 5.5 seconds?

[Yes]

Calibrate clock wise, device waits for 4ma setpoint, LED flashes code 3-2, rotary

[No]

Is button released before 8 seconds?

[Yes]

Calibrate counter clock wise, device waits for 4ma setpoint, LED flashes code 3-3

[No]

Is button released?

[Yes]

Calibrate clock wise, device waits for 4ma setpoint, LED flashes code 3-4, rotary

[No]

User moves valve to 4ma position

Is button pressed and released?

[Yes]

Is the set point within required range?

[Yes]

Device waits for 20ma setpoint, LED flashes code 3-3

[No]

User moves valve to 20ma position

Is button pressed and released?

[Yes]

Is the actual reading greater than maximum 4ma value?

[Yes]

Calibrated, LED on

[No]

Start position is too low or in deadband, LED flashes code 4-3

Is the actual reading greater than maximum 4ma value?

[No]

Start position is too high, LED flashes code 4-4

Has greater than maximum allowed rotation occurred?

[Yes]

Wrong direction of rotation occurred, LED flashes code 4-4

[No]

Has less than minimum allowed rotation occurred?

[Yes]

Less than allowed rotation has occurred, LED flashes code 4-5

[No]

Greater than allowed rotation has occurred, LED flashes code 4-6

Is calibration in handheld device successful?

[Yes]

Calibration in handheld device

[No]
## Table 1: LED Flash Code Diagram

<table>
<thead>
<tr>
<th>Flash Codes (first count – second count)</th>
<th>Interpretations</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-0</td>
<td>Calibrated</td>
</tr>
<tr>
<td>3-1</td>
<td>Counter-Clockwise Calibration, Rotary Mode</td>
</tr>
<tr>
<td>3-2</td>
<td>Clockwise Calibration, Rotary Mode</td>
</tr>
<tr>
<td>3-3</td>
<td>Waiting for 20mA Full Open Setting Button Press</td>
</tr>
<tr>
<td>4-1</td>
<td>Calibration Required</td>
</tr>
<tr>
<td>4-3</td>
<td>Calibration Start Value is Too Low</td>
</tr>
<tr>
<td>4-4</td>
<td>Calibration Start Value is Too High</td>
</tr>
<tr>
<td>4-5</td>
<td>End Value is Too Close to Start Value</td>
</tr>
<tr>
<td>4-6</td>
<td>Maximum Rotation Exceeded</td>
</tr>
<tr>
<td>4-7</td>
<td>Wrong Direction of Rotation</td>
</tr>
<tr>
<td>5-1</td>
<td>Counter-Clockwise Calibration, Linear Mode</td>
</tr>
<tr>
<td>5-2</td>
<td>Clockwise Calibration, Linear Mode</td>
</tr>
</tbody>
</table>

## Table 2: LED Error Codes

<table>
<thead>
<tr>
<th>Problem</th>
<th>Probable Cause/Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmitter Module has no current output</td>
<td>If the LED on the Transmitter Module is not lit</td>
</tr>
<tr>
<td></td>
<td>- Loose or shorted signal connection (fix connection)</td>
</tr>
<tr>
<td></td>
<td>- Controller Board not responding (Replace Transmitter Module)</td>
</tr>
<tr>
<td></td>
<td>If the LED on the Circuit Board is lit</td>
</tr>
<tr>
<td></td>
<td>- Potentiometer is disengaged from shaft (must be returned for repair)</td>
</tr>
<tr>
<td></td>
<td>- Defective controller board (Replace Transmitter Module)</td>
</tr>
<tr>
<td>Transmitter does not output 4 or 20mA (+/-1%) at desired end of travel</td>
<td>Unit not calibrated (calibrate)</td>
</tr>
<tr>
<td></td>
<td>Unit is calibrated (recalibrate - if still fails, replace board)</td>
</tr>
<tr>
<td>Output is not linear or does not track valve position or rotation</td>
<td>Input signal is not linear</td>
</tr>
<tr>
<td></td>
<td>- Linkage or drive mechanism is introducing non-linearity</td>
</tr>
<tr>
<td></td>
<td>- Unit is not calibrated (calibrate)</td>
</tr>
<tr>
<td>Error Code 4-3</td>
<td>Start position is too low or in the dead-band position. (See illustration 9)</td>
</tr>
<tr>
<td>Error Code 4-4</td>
<td>Start Position is too high</td>
</tr>
<tr>
<td>Error Code 4-5</td>
<td>Start and stop positions are less than 20°, increase valve rotation between start and stop positions to greater than 20°.</td>
</tr>
<tr>
<td>Error Code 4-6</td>
<td>Rotation has exceeded the 320° limit. Decrease valve rotation between start and stop positions to less than 320°.</td>
</tr>
<tr>
<td>Error Code 4-7</td>
<td>Calibration rotation was in the wrong direction or the potentiometer passed through the dead-band position.</td>
</tr>
<tr>
<td>Error Code 4-1</td>
<td>Internal Error has occurred. Recalibrate, if error continues, replace module.</td>
</tr>
</tbody>
</table>
Calibrating Remotely using the Emerson 375/475 Field Communicator:

1) Make sure that the HART power is not activated before attaching the signal/power wires to the HART device.
2) If not already connected, connect the device to the two HART signal/power lines. Pin 1 on the terminal block is the positive input and pin 2 is the negative input. Pin 1 is the first pin on the left of the module and pin 2 is the middle pin (see picture below). Once connected, activate the HART power/signal from the control system.

![PIN#1 Positive Input](image)

3) Connect the Emerson 375 Handheld device to the HART signal lines. Red marked lead to the positive signal line and the black lead to the negative signal line.
4) Activate the 375.
5) Select the HART Application option from the menu selections.
6) If a warning screen is shown. Disregard and hit “CONTINUE”.
7) If the “Modification has been made to the configuration” screen is shown, hit “OK”.
8) ANYTIME the non-zero status code(s) screen is shown, hit “YES”.
   The main menu should now be shown indicating:
   - Process Variable
   - Device Service
   - Review
10) Select the “2. Device Service” option.
11) Select the “5. Calibrate” option.
12) Select “OK” when the “You are to set the valve operation ranges” screen is shown.
13) Select either the “1. Counter clockwise” or “2. Clockwise” options depending on the application.
14) Make sure the potentiometer is not rotating through its deadband area.
15) Follow the on screen instructions. Select “OK” when the valve is at the 4mA setpoint (Is the valve fully closed?)
16) After the first set point is saved, rotate the valve to the 20mA position.
17) Select “OK”.
18) The set points are now calibrated.
19) If error occurs, the screen will display the error type and abort.
20) Re-calibrate if an error occurs and again make sure the potentiometer is not rotating through its deadband area.
Safe Use

User instructions (in compliance with ATEX 94/9/EC Directive, Annex II, 1.0.6)

The following instructions apply to the DXP/DXS Switchbox covered by certificate number IECEx SIR 09.0098X, Sira 07ATEX2214X.

Instructions for safe selection, installation, use, maintenance and repair

1) The equipment may be used in zones 0, 1 or 2.
2) The equipment may be used in the presence of flammable gases and vapors with apparatus groups IIC or IIB or IIA and with temperature classes T4 or T6.
3) The equipment is certified for use in ambient temperatures in the range of -60°C to +175°C and should not be used outside this range.
4) The equipment is to be installed by suitably trained personnel in accordance with the applicable code of practice (typically IEC 60079-14)
5) Under certain extreme circumstances, the plastic cover over the valve position indicator may generate an ignition-capable level of electrostatic charge. Therefore, particularly in the event of an installation in zone 0, the equipment shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge, e.g. wind-blown dust, etc. Additionally the equipment shall only be cleaned with a damp cloth.
6) Periodic inspection of the equipment and system should be performed by suitably trained personnel in accordance with the applicable code of practice (typically IEC 60079-17) to ensure it is maintained in a satisfactory condition.
7) The equipment does not require assembly or dismantling.
8) The equipment is not intended to be repaired by the user. Repair of the equipment is to be carried out by the manufacturer, or their approved agents, in accordance with the applicable code of practice.

Special Conditions of Safe Use (All installations)
Clean only with a damp cloth to prevent possibility of electrostatic discharge.

For Explosion Proof installations, the internal ground connection shall be used and the external ground connection, if supplied in addition, is supplemental bonding allowed where local authorities permit, or is required.

When installing with a third party listed nipple-mount solenoid, it is the responsibility of the installer to provide fittings, and apparatus, suitable for the area classification in accordance with the National Electrical Code.

All cable entry devices or conduit stopping boxes shall be certified in type of explosion protection ‘d’, suitable for the conditions of use and correctly installed.

The IIC enclosures are excluded from use in carbon disulphide atmospheres.

The air pressure to the valve block, when fitted, shall not exceed 7bar.

Preventative Maintenance
The TopWorx Discrete Valve Controller is designed to operate for one million cycles without servicing. Call TopWorx when you are approaching this milestone for a preventative maintenance kit and instructions.
Certifications & Approvals

**D-SERIES METAL (DXP/ DXS)**

**INTRINSICALLY SAFE (WITHOUT THE VALVE OPTION)**

Ex ia IIC T6/ T4 Ga, Ex ic IIC T70°C/ Db IP66/P67
Ex ia IIC T6/ T4 Ga, Ex ic IIC T70°C/ Db IP66/P67
Ex ia IIC T4, DIP A211 Ta, 85°C Db IP65/P67 (marking for GOSt)
Ex ib IIC T4 Gb, Ex ib IIC T80°C/ Db IP67 (marking for FF and FF with FISCO)
Class I Div 1, Groups A,B,C,D, Type 4X, IP67
Ex ia IIC T6 Ga, DIP A211 TA, T87/4 Db IP65/P67 (marking for NEPSI)
-60°C ≤ Tamb ≤ +40°C (maximum)
SIRA 0AT4EX214X
ICES Ex SR 05.9006X
IECEx Ex SR 11.0022X (FF and FF with FISCO)
NEPSI GY/13.1295X

* Reference certificates for variations to Tamb and ELP due to sensing and/or o-ring material options.

**INTRINSICALLY SAFE (WITH THE VALVE OPTION)**

Ex ia IIC T6/ T4 Ga, Ex ic IIC T70°C/ Db IP66/P67
Ex ia IIC T4, DIP A211 Ta, 85°C Db IP65/P67 (marking for GOSt)
Ex ib IIC T4 Gb, Ex ib IIC T80°C/ Db IP67 (marking for FF and FF with FISCO)
Class I Div 1, Groups A,B,C,D, Type 4X, IP67
Ex ia IIC T6/7/4 Ga, DIP A211 TA, T87/4 Db IP65/P67 (marking for NEPSI)
-60°C ≤ Tamb ≤ +60°C (maximum)
SIRA 0AT4EX214X
ICES Ex SR 05.9006X
IECEx Ex SR 11.0022X (FF and FF with FISCO)
NEPSI GY/13.1295X

* Reference certificates for variations to Tamb due to pilot options and ELP due to sensing and/or o-ring material options.

**FLAMEPROOF (WITH & WITHOUT THE VALVE OPTION)**

Ex d IIB/T4 Ga, Ex db IIC T6/ T5/7/4 Ga, Ex db IIC T70°C/ Db IP66/P67
Ex db IIC T6/ T5/7/4 Ga, Ex db IIC T70°C/ Db IP66/P67 (marking for GOSt)
Ex db IIC T4, DIP A211 Ta, 85°C Db IP65/P67 (marking for NEPSI)
Ex d IIB/T4 Ga, DIP A211 TA, T6/7/4 Db IP65/P67 (marking for NEPSI)
-60°C ≤ Tamb ≤ +60°C (maximum)
SIRA 0AT4EX2173X
ICES Ex SR 07.0006X
NEPSI GY/13.1295X

* Reference certificates for variations to Tamb.

**D-SERIES RESIN (DXR)**

**INTRINSICALLY SAFE (WITHOUT THE VALVE OPTION)**

Ex ia IIC T6/ T4 Ga, Ex ic IIC T70°C/ Db IP67 (Silicone o-rings only)
Ex ia IIC T6/ T4 Ga, Ex ic IIC T80°C/ Db IP67 (marking for FF)
Ex ia IIC T6 Ga, DIP A211 TA, T87/4 Db IP65/P67 (marking for NEPSI)
-40°C ≤ Tamb ≤ +40°C (maximum)
SIRA 07ATEX214X
Basecase 11ATEX0036X (FF and FF with FISCO)
IECEx Ex SR 09.0086X
IECEx BAE 11.0022X (FF and FF with FISCO)
NEPSI GY/13.1297X

* Reference certificates for variations to Tamb due to sensing options.

**INTRINSICALLY SAFE (WITH THE VALVE OPTION)**

Ex ia IIC T6/ T4 Ga, Ex ic IIC T70°C/ Db IP67 (Silicone o-rings only)
Ex ia IIC T6/ T4 Ga, Ex ic IIC T80°C/ Db IP67 (marking for FF)
Ex ia IIC T6 Ga, DIP A211 TA, T87/4 Db IP65/P67 (marking for NEPSI)
-20°C ≤ Tamb ≤ +40°C (maximum)
SIRA 07ATEK2005X
Basecase 11ATEX0036X (FF and FF with FISCO)
IECEx Ex SR 09.0086X
IECEx BAE 11.0022X (FF and FF with FISCO)
NEPSI GY/13.1297X

* Reference certificates for variations to Tamb due to pilot options.

**INCREASED SAFETY (WITH & WITHOUT THE VALVE OPTION)**

Ex e mb IIC T4 Gb
Ex e mb IIC T6/7/4 Cb, IP67 (Silicone o-rings only)
-30°C ≤ Tamb ≤ +44°C (maximum)
SIRA 09ATEX2056X
IECEx Ex SR 09.0086X
NEPSI GY/13.1297X

* Reference certificates for variations to Tamb due to pilot options.

**NON-INCENDIVE**

Class II Div 2, Groups A,B,C,D, Class II Div 2, Groups F,G, Type 4X, IP67
-40°C ≤ Tamb ≤ +60°C

**GENERAL PURPOSE**

Type 4X

Ex e mb IIC T6/7/4 Ga, IP67 (Silicone o-rings only)
-30°C ≤ Tamb ≤ +44°C (maximum)
SIRA 09ATEX2056X
IECEx Ex SR 09.0086X
NEPSI GY/13.1297X

* Reference certificates for variations to Tamb due to pilot options.

**D-SERIES METAL (DXP/ DXS)**

**NON-INCENDIVE**

Ex e mb IIC T6/7/4 Ga, IP67* (Silicone o-rings only)
-30°C ≤ Tamb ≤ +44°C (maximum)
SIRA 09ATEX2056X
IECEx Ex SR 09.0086X
NEPSI GY/13.1297X

* Consult factory for available sensing options.
Warranty

TERMS AND CONDITIONS OF SALE

These terms and conditions, the attendant quotation or acknowledgment, and all documents incorporated by reference therein, binds Topworx, Inc. herein referred to as the Seller, and the purchasing party referred to as the Buyer, constituting the entire agreement (Agreement) governing the sale by the Buyer to the Seller of the Goods (including, except as provided in Section 16) herein incorporated therein.

1. PRICES. Unless otherwise specified by Seller, Seller’s price for the Goods and/or Services shall remain in full force and effect from the date of Seller’s quotation until full payment of the Price has been made by Buyer. Each Buyer shall have the right to change the price for the Goods/Services to Seller’s price in effect for the Goods/Services at the time the order is received and final manufacture. Prices for Goods do not cover storage, installing, starting up or maintaining Goods unless expressly stated in Seller’s quotation. Notwithstanding the foregoing, the price for Goods/Services sold by Seller, but manufactured by others, shall be Seller’s price in effect at the time of shipment to Buyer.

2. DELIVERY, ORDER ACCEPTANCE AND DOCUMENTATION. All shipping dates are approximate and are based upon Seller’s prompt receipt of all necessary information from Buyer to process the order. Notwithstanding any provisions to the contrary in this or other documents related to this transaction, and regardless of how price was quoted, whether FOB, FAS, CIF or otherwise, legal title to the Goods and risk of loss thereto shall be transferred to Buyer 48 hours after delivery to the carrier at the point of manufacture of the Goods and/or provisions of Services pursuant to Seller’s standard order processing procedures are received and accepted by Seller within such time period. If such authorization is not received by Seller within such thirty (30) day period, Seller shall have the right to change the price for the Goods/Services to Seller’s price in effect for the Goods/Services at the time the order is received and final manufacture. Prices for Goods do not cover storage, installing, starting up or maintaining Goods unless expressly stated in Seller’s quotation. Notwithstanding the foregoing, the price for Goods/Services sold by Seller, but manufactured by others, shall be Seller’s price in effect at the time of shipment to Buyer.

3. EXCUSE OF PERFORMANCE. Seller shall not be liable for delays in performance for any cause, including but not limited to strikes, lockouts, acts of God, war, nor, fire, terrorism, labor trouble, unavailability of materials or components, governmental regulations, strikes, epidemics, governmental requirements, embargoes, strikes, lockouts, orders, acts or omissions, or other unforeseen circumstances or causes beyond Seller’s reasonable control. In the event of such delay, the time for performance shall be extended by a period of time reasonably necessary to overcome the effect of the delay.

4. TERMINATION AND SUSPENSION BY BUYER. Buyer may terminate or suspend this Agreement at any time prior to the delivery or acceptance of the Goods by Buyer, and may give Seller reasonable advance written notice of such termination or suspension and reimburse Seller for all losses, damages, costs and expenses arising from such termination or suspension.

5. LIMITED WARRANTY. Subject to the limitations contained in Section 6 herein, Seller warrants that the licensed firmware embe...
Visit www.topworx.com for comprehensive information on our company, capabilities, and products – including model numbers, data sheets, specifications, dimensions, and certifications.

info.topworx@emerson.com

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