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Valve Control Solutions

Valve Control 101

The Evolution of Valve Control

Shifts in process control technology drive shifts in valve control technology

During the past century, the methods of controlling plant processes have progressed through several major stages of automation. Each stage has lasted approximately twenty years before being supplanted by a significant shift in technology.

Not surprisingly, the world of on/off valves has followed a similar pattern of technological change. As process control systems have evolved, the on/off valves have followed a corresponding path of innovations.



"The old way" Plant operators are required to manually turn valves to proper

position

"automated valve" Pneumatic actuators drive valves open and closed automatically ("Look Ma - no hands!")

DCS valve position provided by limit switches

PLC Advancements in control The introduction of the systems create the need "switchbox" adds visual for electrical feedback of display of valve position to the electrical feedback and helps reduce wiring costs

Reduction in plant personnel and pressure for more productivity leads to adoption of fieldbus process control architec- devices ("Look Ma - no tures – and compatible wires!") on/off devices

More pressure to reduce capital expenditures and operating costs will introduce wireless field

Today's customer requirements are different

The birth of the

Fundamental shift from conventional switchboxes to digital valve controllers

In the past, when the conventional switchbox was the common method of feedback for on/off valves, engineers did not spend much time specifying the type of limit switchboxes they preferred, instead accepting whatever types the valve or actuator vendor supplied. The result? Process plants around the world are now filled with a variety of types and brands of switchboxes, with little standardization and considerable variability in quality, features, durability, and price.

Today, however, is different. Process plants have increasingly higher goals to be more productive while using fewer people. To accomplish this, plants must place more emphasis on two things: global product standardization and networking architectures. The combination of the two delivers substantial results and helps achieve the goals of process plants.



Standardization drives costs down by minimizing operator training and maximizing purchasing power. And fieldbus networking techniques deliver proven economic benefits by shortening commissioning cycles, simplifying wiring, and reducing maintenance costs.

As process plants shift to global product standardization and fieldbus networking, they must be careful to shift their view of vendors as

well, particularly when it comes to on/off valves. Gone are the days when engineers at process plants can leave it up to valve and actuator vendors to supply whatever type of limit switchboxes they have in stock

> Instead, as field devices become more sophisticated, process plant engineers must seek out key suppliers that can provide expertise and solutions not just pricing and product.

Which suppliers can deliver on today's new requirements?

The supplier base of existing switchboxes for on/off valve controllers is highly fragmented and mostly regional. Many of the suppliers are "stuck in switchbox mode." That is, they are adequately adept at designing and manufacturing conventional switchboxes, but they are not ready for the

new world of digital valve control.



This new world of digital valve control requires a new set of skills and expertise not found in traditional switchbox suppliers.

Today's process manufactures need switchbox suppliers to demonstrate a solid working knowledge of process control systems and the ability to deliver appropriate, complete solutions anywhere in the world.

To meet new customer requirements and to be truly valuable to end users, a supplier must break away from the old "switchbox mode" and prove clearly that it is capable of true "digital valve control."

What to look for in a Digital Valve Control supplier

Choose suppliers with deep expertise

If your plant processes are shifting to a fieldbus-based process control system, do not assume that your existing switchbox supplier can deliver the capabilities you'll need for digital valve control. Just because they have been valuable in the past does not guarantee that they have responded well to recent shifts in technology.

> Instead, consider other suppliers with proven expertise and experience in providing digital valve controllers, not just conventional switchboxes.



Switchpak DXS

Choose suppliers with multiple busses

Because most plant sites deploy multiple bus protocols within the same process or location, it is helpful to work with suppliers that have a breadth of knowledge across several busses, not just the simple sensor bus networks.

> Choose suppliers that have extensive knowledge in multiple busses. Several manufacturers claim expertise in valve networking but are often limited in scope to only the simplest bus protocols.

Choose suppliers with complete solutions

The actual installation of a new process control fieldbusbased architecture goes well beyond the field devices themselves. Often it requires an array of field networking solutions to ease the installation and accelerate the commissioning.

umitech DVC

So make sure your supplier of discrete valve controllers has a deep understanding of the process control system and the willingness and capability to take ownership of the critical links between the system and the devices.

Choose suppliers who have global approvals and extensive selection

If your company has plants scattered around the world, it will be important to begin standardizing on products that operate the processes. This minimizes training required and maximizes purchasing power. But before you buy digital valve controllers, make sure the supplier can deliver and support them everywhere you'll be using them.

The TopWorx Valve Control Program

TopWorx has listened to customers about the three things that matter most – simplicity, selection, and savings – and combined them into one all-encompassing valve control program.

Simplicity

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TopWorx valve controllers and monitors offer unmatched simplicity – they're simple to order, simple to install, and simple to operate. By offering solutions with unique features like potted electronics, direct mounting, LED early warning indicators, and a modular design, TopWorx has ushered in a different way of doing valve control.

Savings

TopWorx valve controllers and monitors all have one thing in common: they save you money. For instance, when you choose a Lumitech valve controller with networking capability, you eliminate the cost of mounting kits and reap the proven economic benefits of today's bus technologies. And our modular, integrated platforms that combine position sensors, pilot valves, and bus communication save engineering time as well as procurement and inventory costs.

Did You Know?

TopWorx sensor communication modules for AS-i, FOUNDATION Fieldbus, DeviceNet, Profibus and Modbus can be used in a variety of enclosures suitable for use in any process environment.

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Selection

Whether you're in Alberta, Saudi Arabia, or the Pacific Rim, TopWorx has a valve control solution that will work for you. With a variety of enclosures to tackle any harsh environment, global approvals to satisfy any hazardous area classification, and your choice of sensors and communications inside, TopWorx has every application covered.



Valve Control Solutions Overview

Discrete Valve Controllers

Discrete Valve Monitors

TopWorx discrete valve controllers integrate sensors, bus communications, pilot valve, and termination points into a variety of enclosures, delivering the ultimate in modularity.

Options include

Enclosures Lumitech: direct-mount. non-incendive Switchpak: explosion-proof

Sensors

GO Switch leverless limit switches Proximity sensors Mechanical switches

Bus Communications

AS-Interface FOUNDATION Fieldbus DeviceNet Profibus DP Modbus

Pilot Valves Low Power Solenoids Ultra Low Power Piezos

TopWorx discrete valve monitors integrate sensors, bus communications, and termination points into a variety of enclosures suitable for any process environment.

Options include

Enclosures Lumitech: direct-mount, non-incendive Switchpak: explosion-proof

Sensors

GO Switch leverless limit switches Proximity sensors Mechanical switches

Bus Communications

AS-Interface FOUNDATION Fieldbus DeviceNet Profibus DP Modbus

Sensor-Communications Modules

TopWorx Sensor-Communications Modules are micro-processor based 'brains' that mount inside Lumitech or Switchpak 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 Lumitech and Switchpak enclosures.

Options include

Enclosures Lumitech: direct-mount, non-incendive Switchpak: explosion-proof

Sensors GO Switch leverless limit switches Proximity sensors

Bus Communications AS-Interface FOUNDATION Fieldbus DeviceNet Profibus DP Modbus

Puck Position Sensors

TopWorx Puck Position Sensors provide reliable valve position monitoring while saving space, time, and money. These devices mount directly to rotary valve actuators and are less than 1/3 the size of conventional switchboxes.

Options include

Sensors Proximity sensors

Bus Communications AS-Interface

Linear Valve Monitors & Sensors

awareness.

Options





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Backpak valve position monitors are designed specifically for linear valve applications. They use a unique shaftless design to mount snuggly under the bonnet of control valves and are suitable for all hazardous areas.

GO Switch leverless limit switches are the sensor of choice for linear valves around the world. New options like built-in green or red LEDs provide increased plant safety and

Backpak explosion-proof enclosures GO Switch leverless limit switches

Mounting Kits

The TopWorx VIP bracket program offers the world's largest selection of mounting kits for valve controllers and monitors. After several decades of designing bracket systems for all types of valves and actuators, TopWorx has accumulated over 1,200 different designs.

Options

Stainless Steel kits Custom designs Rotary, linear, diaphragm, or knifegate valves









Rotary Valve Solutions

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Linear Valve Solutions

Bus Networking Solutions for Rotary Valves



Valvetop When it comes to networking automated rotary valves, there is a need for experience and expertise.

With over fifty years experience serving the process industries and proven expertise in multiple bus networks, TopWorx is uniquely positioned to deliver the right solution for any protocol on any valve in any process environment.

Enclosures for all process

environments:

Aluminum

Engineered resin

Solutions for all rotary valves and actuators:

Ball valves Butterfly valves Manual valves Dampers Rack and pinion actuators Scotch yoke actuators Vane actuators

Zone 0 intrinsically safe

Zone 1 explosion proof

Zone 2 non-incendive

enclosures

Approvals for all hazardous areas:

Stainless steel Sensor-Communications Modules

for all bus networks: AS-Interface FOUNDATION Fieldbus DeviceNet Profibus Modbus

Other options: Integral solenoid valves

NAMUR and non-NAMUR mounting Various visual display dome colors BriteLite early warning LEDs



Lumitech DVM - Zone 2 (Class I, Div 2) - Sensors, Bus, Terminals

networx products

Switchpak DXP - Zone 1 (Class I. Div 1) - Sensors, Bus, Solenoid, Terminals



TopWorx SCM's are available in all modern bus protocols in a variety of enclosures suitable for use in any process environment or hazardous area.





TopWorx offers several options that provide local feedback of a valve's position.



Lumitech Targe Available in: DVC, DVM

Shaft Options

Both Lumitech and Switchpak product lines can mount on any valve actuator, whether it has an ISO/NAMUR mounting pattern or not.



Pilot Valve Options

TopWorx leads the way in providing low power pilot valves suitable for corrosive service and Intrinsically Safe applications.



AVAILABLE OPTIONS







Britelite LEDs Available in: DVC, DVM



Switchnak Dome Available in: DXP, DXS



Non-NAMUR Shaft Available in: DXP, DXS



NAMUR Shaft Available in: DXP, DXS

Solenoid Valve Aluminum or Stainless Steel Available in: DVC, DXP, DXS



Piezo Valve Aluminum or Stainless Steel Available in: DVC, DXP, DXS (FF only)

Discrete Valve Control

INTRINSICALLY SAFE • NON-INCENDIVE



Lumitech DVC

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DVC: Discrete Valve Controller

The Lumitech DVC has set a new standard in discrete valve control. Feature-rich yet compact and affordable, its design delivers the ultimate combination of modularity and networking capabilities.

- Integral pilot valve Features: Direct mount with no brackets BriteLite early warning LEDs Zone 0 (Intrinsically Safe, FF) Zone 2 (Class I, Div 2)
- Options: AS-Interface FOUNDATION Fieldbus DeviceNet Profibus DP Modbus Stainless Steel pilot valve

ST TRACK DELIVER

DVC-ASZ2BPS44 AS-Interface Zone 2 (Class I, Div 2) 4-way solenoid valve

DVC-FFZ0BPP44 FOUNDATION Fieldbus Zone 0 (Class I, Div 1) Intrinsically Safe 4-way pilot valve

DVC-DNZ2BPS44 DeviceNet Zone 2 (Class I, Div 2) 4-way solenoid valve

Dimensions



Enclosure	Sensor-Communications Module	Area Classification	Visual Display	Wir
Enclosure Material: PBT blend Specifications: Flame UL94-0 & UV resistant Target Material: PBT blend	AS-Interface (Area Classification must be Z2) (See page 174 for SCM-ASi specifications)	$\underset{\text{LISTED}}{\overset{\text{c}}{\bigoplus}} US C C \hspace{0.5mm} \left\langle E_{\underline{X}} \right\rangle \hspace{0.5mm} \textcircled{D}$		 P 1/2" NPT conduit M M20 metric conduit (ir Mini-change quick dis
Specifications: Flame UL94-V0 & UV resistant Adjustment: 360° in 3° increments Dome: Polycarbonate, UV & impact resistant Conduit Entries: (2) ¹ /2" NPT standard; (2) M20 metric optional	FF FOUNDATION Fieldbus, standard 2-wire (See page 176 for SCM-FF specifications)	V Z0 Intrinsically Safe Zone 0 EEx ia IIC Class I, Div 1 & 2, Groups A,B,C,D Class II, Div 1 & 2, Groups E,F,G	Target Colors: Green and Red BriteLite Colors: Green and Red BriteLite Lens: Polycarbonate, UV resistant	 3 Euro-change quick dis 5 AS-i flat cable adapte (SCM option must be AS) (Not rated for hazardous
Cover Gasket: Silicone; Flame UL94-V0 & UV resistant Fasteners: All 303 series stainless steel	DN DeviceNet (Area Classification must be Z2)	Class III (SCM option must be FF) (Pilot Valve option must be P44 or P45) 22 Non-Incendive Zone 2	B Dome and BriteLite (90° Green/Red)N Dome only (90° Green/Red)	For Zone 2 (Class 1, Div 2) 1 & 3, see page 117 for c
Mounting NAMUR: Direct - no brackets or couplers Non-NAMUR: Interface plate. See page 171.	DA DeviceNet with analog input (Area Classification must be Z2) (See page 175 for SCM-DN specifications)	EEx nc IIC Class I, Div 2, Groups A,B,C,D Class II, Div 2, Groups E,F,G Class III	Consult factory for additional color and rotation options.	
Temperature Rating: Determined by other components Environment: NEMA Type 4, 4X; IP66	PB Profibus DP (Area Classification must be Z2) (See page 178 for SCM-PB specifications)	May be installed Intrinsically Safe per NEC Article 504 and with entity approved barrier. Install as Non-Incendive per NEC Article 501.		
Ordering Guide Fill in the boxes to create your 'ordering number.'	MB Modbus (Area Classification must be Z2) (See page 179 for SCM-MB specifications)			
Enclosure DVC	Sensor-Communications Module	Area Classification	Visual Display	Wiri



ring

- includes adapter fitting)
- isconnect
- isconnect
- ər locations)
- applications of Wiring options quick disconnect guards.

Pilot Valve





Solenoid Valve

- S44 Solenoid valve with 24VDC, 1.2 Cv, 0.6 watt, aluminum, 4-way (not available with FF SCM option)
- S45 Solenoid valve with 24VDC, 1.2 Cv, 0.6 watt, stainless steel, 4-way (not available with FF SCM option)
- 1.2 Cv, 0.005 watt, aluminum, 4-way (SCM option must be FF)
- P45 Piezo valve with 1.2 Cv, 0.005 watt, stainless steel, 4-way (SCM option must be FF)



Filtered air is required for proper valve operation. See our Air Filter on page 170.

ing

Pilot Valve

ST TRACK DELIVER

Discrete Valve Control

Dimensions



Lumitech DVM INTRINSICALLY SAFE • NON-INCENDIVE



Enclosure

Specifications: Flame UL94-0 & UV resistant

Specifications: Flame UL94-V0 & UV resistant Adjustment: 360° in 3° increments

Dome: Polycarbonate, UV & impact resistant

Cover Gasket: Silicone: Flame UL94-V0 & UV

Fasteners: All 303 series stainless steel

NAMUR: Direct - no brackets or couplers

Non-NAMUR: Interface plate. See page 171.

Conduit Entries: (2) 1/2" NPT standard; (2) M20 metric

Enclosure Material: PBT blend

Target

optional

resistant

Mounting

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Material: PBT blend

DVM: Discrete Valve Monitor

The Lumitech DVM offers the same functionality as the DVC, less the onboard pilot valve. The DVM is the best choice for customers who prefer a specific brand of solenoid, which can be wired directly to the spare terminals in the DVM.

Features: Terminals to wire in external solenoid Direct mount with no brackets BriteLite early warning LEDs Zone 0 (Intrinsically Safe, FF) Zone 2 (Class I, Div 2)

AS-Interface Options: FOUNDATION Fieldbus DeviceNet

DVM-DNZ2BP DeviceNet Zone 2 (Class I, Div 2) Dome & BriteLite

DVM-ASZ2BP

Dome & BriteLite

FOUNDATION Fieldbus

Zone 2 (Class I, Div 1)

Dome & BriteLite

DVM-FFZ0BP

AS-Interface Zone 2 (Class I, Div 2)

te, UV resistant

ual Display

l color and rotation options.

Temperature Rating: Determined by other components

Environment: NEMA Type 4, 4X; IP66

DVM Discrete Valve Monitor

Ordering Guide Fill in the boxes to create your 'ordering number.'

Enclosure

Profibus DP Modbus		
Sensor-Communications Module	Area Classification	Visual Display
AS AS-Interface (Area Classification must be Z2) (See page 174 for SCM-ASi specifications)	$\underset{\text{LISTED}}{\overset{\text{C}}{\bigoplus}} C \in \langle \xi_{\chi} \rangle $	
FF FOUNDATION Fieldbus, standard 2-wire (See page 176 for SCM-FF specifications) With FF Cube option, a TopWorx bolt-on or NAMUR mount pilot valve is required. See page 177 for model numbers.	 Intrinsically Safe Zone 0 EEx ia IIc Class I, Div 1 & 2, Groups A,B,C,D Class II, Div 1 & 2, Groups E,F,G Class III (SCM option must be FF) 	Target Colors: Green and Red BriteLite Colors: Green and Red BriteLite Lens: Polycarbonate, UV resistant Image: B Dome and BriteLite (90° Green/Red)
DN DeviceNet (Area Classification must be Z2) DA DeviceNet with analog input (Area Classification must be Z2) (See page 175 for SCM-DN specifications)	V2 Non-Incendive Zone 2 EEx nc IIc Class I, Div 2, Groups A,B,C,D Class II, Div 2, Groups E,F,G Class III May be installed Intrinsically Safe per NEC Article 504 and with entity approved barrier.	N Dome only (90° Green/Red) Consult factory for additional color and rotation
PB Profibus DP (Area Classification must be Z2) (See page 175 for SCM-PB specifications)	Install as Non-Incendive per NEC Article 501.	
MB Modbus (Area Classification must be Z2) (See page 179 for SCM-MB specifications)		
Sensor-Communications Module	Area Classification	Visual Display

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TOPWORX



Wiring V P 1/2" NPT conduit M M20 metric conduit (includes adapter fitting) 1 Mini-change quick disconnect 3 Euro-change quick disconnect 5 AS-i flat cable adapter (Cube option must be AS) (Not rated for hazardous locations) For Zone 2 (Class 1, Div 2) applications of Wiring options 1 & 3, see page 117 for quick disconnect guards.

Switchpak DXP

EXPLOSION PROOF • INTRINSICALLY SAFE



Switchpak DXP

The Switchpak DXP combines sensors, bus communication, and a solenoid valve into an aluminum Zone 1 (Class I, Div 1) enclosure.

Features: Zone 0 (Intrinsically Safe, FF) Zone 1 (Class I, Div 1) Aluminum enclosure

Options: AS-Interface FOUNDATION Fieldbus DeviceNet Profibus DP Modbus

DXP-ASZ1GR S84 AS-Interface Zone 1 (Class I, Div 1) 4-way solenoid Aluminum enclosure

DXP-DNZ1GR S84 DeviceNet Zone 1 (Class I, Div 1) 4-way solenoid Aluminum enclosure

 For Shaft, choose S or N (both in stock)

502.969.8000

ST TRACK DELIVERY

Discrete Valve Control

Dimensions









-

Standard

M NAMUR shaft

Enclosure

Enclosure: Die-cast aluminum; 0-ring sealed

Coating: Dichromate conversion or anodize inside; powder polyester coating outside

O-rings: Buna N; Viton optional

Cover Bolts: 6 captive socket head stainless steel screws

Conduit Entries: Two 3/4" NPT (Four optional)

Terminal Strip Contacts: Located on SCM

Temperature Rating: Determined by other components

Environment: NEMA Type 4, 4X, 7, 9; IP66

DXP Switchpak DXP

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Ordering Guide Fill in the boxes to create your 'ordering number.'

> Enclosure DXP

S	ensor-Communications Module	Area Classification	Visual Display
S 📎	AS-Interface (Area Classification must be Z1) (See page 174 for SCM-ASi specifications)	$\underset{\text{usted}}{\overset{\text{(b)}}{\longrightarrow}} c \in \langle \xi_{\chi} \rangle \textcircled{D}$	
FF	FOUNDATION Fieldbus, standard 2-wire (See page 176 for SCM-FF specifications)	Z0 Intrinsically Safe Zone 0 EEx ia IIC Class I, Div 1 & 2, Groups A,B,C,D Class II, Div 1 & 2, Groups E,F,G Class III	Visual Display: Impact resistant polycarbonate; O-ring sealed; 360° adjustable; bolt-on V GR Green/Red indicator dome, 90°
™ d	DeviceNet. I DeviceNet (Area Classification must be Z1)	(SCM option must be FF) (Pilot Valve option must be P84 or P85) Z1 Explosion Proof/Flame Proof Zone 1	BY Black/Yellow indicator dome, 90°TD 120° through divert indicator dome
D	A DeviceNet with analog input (Area Classification must be Z1) (See page 175 for SCM-DN specifications)	EEx d IIB Class I, Div 1 & 2, Groups C,D Class II, Div 1 & 2, Groups F,G Class III	
PE	Profibus DP (Area Classification must be Z1) (See page 178 for SCM-PB specifications)	May be installed Intrinsically Safe per NEC Article 504 and with entity approved barrier.	
М	Modbus (Area Classification must be Z1) (See page 179 for SCM-MB specifications)		
 -	Sensor-Communications Module	Area Classification	Visual Display

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TOPWORX



Shaft



- Shaft: Stainless steel; 0-ring sealed
- Shaft Retainer: Stainless steel

S Standard 1/4" flat shaft





Pilot Valve

So	plenoid Valve		Piezo Valve
000	No pneuma	tic valve	
🧭 S84	24VDC, alur (not available	ninum, 4-wa with FF SCM)	у
S85	24VDC, stai (not available	nless steel, 4 with FF SCM)	I-way
P84	Piezo pilot, a (SCM option r	aluminum, 4 nust be FF)	-way
P85	Piezo pilot, s (SCM option r	stainless stee nust be FF)	el, 4-way
	filterent) Filt	ered air is requeration. See ou	uired for proper valve r Air Filter on page 170.

Shaft

Pilot Valve

Switchpak DXS

EXPLOSION PROOF • INTRINSICALLY SAFE



Switchpak DXS

The Switchpak DXS combines sensors, bus communication, and a solenoid valve into a stainless steel Zone 1 (Class I, Div 1) enclosure.

- Features: Zone 0 (Intrinsically Safe, FF) Zone 1 (Class I, Div 1) Stainless Steel enclosure
- AS-Interface Options: FOUNDATION Fieldbus DeviceNet Profibus DP Modbus



Dimensions







Area Classification Enclosure **Sensor-Communications Module Visual Display** Enclosure: Stainless steel; 0-ring sealed (D) CE c(UL)us Coating: Powder polyester outside AS AS-Interface (Area Classification must be Z1) **0-rings:** Buna N; Viton optional (See page 174 for SCM-ASi specifications) Standard Cover Bolts: 6 captive socket head stainless steel **ZO** Intrinsically Safe Visual Display: Impact resistant polycarbonate; Shaft: Stainless steel; O-ring sealed screws Zone 0 O-ring sealed; 360° adjustable; bolt-on F. Shaft Retainer: Stainless steel EEx ia IIC Conduit Entries: Two 3/4" NPT (Four optional) Class I, Div 1 & 2, Groups A,B,C,D FF FOUNDATION Fieldbus, standard 2-wire Class II, Div 1 & 2, Groups E,F,G **GR** Green/Red indicator dome Terminal Strip Contacts: Located on SCM (See page176 for SCM-FF specifications) NAMUR shaft Class III Ν (SCM option must be FF) BY Black/Yellow indicator dome Temperature Rating: Determined by other Standard 1/4" flat shaft (Pilot Valve option must be P84 or P85) S components DesketNet. **TD** 120° through divert indicator dome **DN** DeviceNet Environment: NEMA Type 4, 4X, 7, 9; IP66 (Area Classification must be Z1) Z1 Explosion Proof/Flame Proof Zone 1 **DA** DeviceNet with analog input EEx d IIB (Area Classification must be Z1) Class I, Div 1 & 2, Groups C,D DXS Switchpak DXS Class II, Div 1 & 2, Groups F,G (See page 175 for SCM-DN specifications) Class III May be installed Intrinsically Safe per NEC Article PB Profibus DP 504 and with entity approved barrier. (Area Classification must be Z1) (See page 178 for SCM-PB specifications) MODBUS MB Modbus (Area Classification must be Z1) (See page 179 for SCM-MB specifications) Fill in the boxes to create your

502.969.8000

Sensor-Communications Module

Area Classification

Visual Display

Ordering Guide 'ordering number.'

Enclosure

TOPWORX





Shaft







Pilot Valve





- 000 No pneumatic valve
- **S84** 24VDC, aluminum, 4-way (not available with FF SCM)
- S85 24VDC, stainless steel, 4-way (not available with FF SCM)
- **P84** Piezo pilot, aluminum, 4-way (SCM option must be FF)
- **P85** Piezo pilot, stainless steel, 4-way (SCM option must be FF)



Filtered air is required for proper valve operation. See our Air Filter on page 170.

Pilot Valve

ST TRACK DELIVER

DXP-ASZ1GRDS84

Zone 1 (Class I, Div 1)

DXP-DNZ1GRDS84

Zone 1 (Class I, Div 1)

Aluminum enclosure

For Shaft, choose S or N

(both in stock)

4-way solenoid

AS-Interface

DeviceNet

4-way solenoid Aluminum enclosure

Discrete Valve Control

Dimensions







Enclosure

Enclosure: Die-cast aluminum; 0-ri

Coating: Dichromate conversion or powder polyester coating outside

O-rings: Buna N; Viton optional

Cover Bolts: 6 captive socket head screws

Conduit Entries: Two 3/4" NPT (Four

Terminal Strip Contacts: Located of

Temperature Rating: Determined b components

Environment: NEMA Type 4, 4X, 7, 9

Switchpak DXP

134

Ordering Guide Fill in the boxes to create 'ordering number.'

Enclosur

				(6.35) .375 (9.525)	7.008 (178)
ing sealed anodize inside;	Se ∕∕∕as	AS-Interface (Area Classification must be Z1) (See page 174 for SCM-ASi experifications)	Area Classification $\mathfrak{C} \bigoplus_{LISTED} \mathfrak{C} \in \langle \mathfrak{C}_{\chi} \rangle \mathfrak{D}$	Visual Display	Shaft
stainless steel optional) on SCM by other 9; IP66	FF ♥ DN DA PB	FOUNDATION Fieldbus, standard 2-wire (See page 176 for SCM-FF specifications) Contract DeviceNet (Area Classification must be Z1) DeviceNet with analog input (Area Classification must be Z1) (See page 175 for SCM-DN specifications) Profibus DP (Area Classification must be Z1) (See page 178 for SCM-PB specifications)	 20 Intrinsically Safe Zone 0 EEx ia IIC Class I, Div 1 & 2, Groups A,B,C,D Class II, Div 1 & 2, Groups E,F,G Class III (SCM option must be FF) (Pilot Valve option must be P84 or P85) ✓ 21 Explosion Proof/Flame Proof Zone 1 EEx d IIB Class I, Div 1 & 2, Groups A,B,C,D Class II, Div 1 & 2, Groups E,F,G Class III May be installed Intrinsically Safe per NEC Article 504 and with entity approved barrier. 	 Visual Display: Impact resistant polycarbonate; O-ring sealed; 360° adjustable; bolt-on ✓ GR Green/Red indicator dome, 90° BY Black/Yellow indicator dome, 90° TD 120° through divert indicator dome 	Shaft: Stainless steel; O-ring Shaft Retainer: Stainless stee N NAMUR shaft S Standard 1/4" flat shaft
your e	MB	Modbus (Area Classification must be Z1) (See page 179 for SCM-MB specifications)	Area Classification	Visual Display	Shaft

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Switchpak DXP

EXPLOSION PROOF • INTRINSICALLY SAFE

Switchpak DXP

Features:

Options:

The Switchpak DXP combines sensors, bus

communication, and a solenoid valve into an

Zone 0 (Intrinsically Safe, FF)

aluminum Zone 1 (Class I, Div 1) enclosure.

Zone 1 (Class I, Div 1)

Aluminum enclosure

FOUNDATION Fieldbus

AS-Interface

DeviceNet

Profibus DP Modbus

TOPWORX

174)





Pilot Valve

.118





Pilot Valve

Discrete Valve Control

Dimensions





.250 FLATS

(6.35)

.375 (9.525) .500

(127)





Visual Display Enclosure **Sensor-Communications Module Area Classification** Shaft Enclosure: Stainless steel; O-ring sealed ¢∰us C€ (D) ás 🗋 **Coating:** Powder polyester outside AS AS-Interface (Area Classification must be Z1) (See page 174 for SCM-ASi specifications) Standard Cover Bolts: 6 captive socket head stainless steel **ZO** Intrinsically Safe Visual Display: Impact resistant polycarbonate; Shaft: Stainless steel; O-ring sealed Zone 0 0-ring sealed; 360° adjustable; bolt-on EEx ia IIC Shaft Retainer: Stainless steel Conduit Entries: Two 3/4" NPT (Four optional) Class I, Div 1 & 2, Groups A,B,C,D FF FOUNDATION Fieldbus. standard 2-wire Class II, Div 1 & 2, Groups E,F,G GR Green/Red indicator dome Terminal Strip Contacts: Located on SCM (See page176 for SCM-FF specifications) N NAMUR shaft Class III (SCM option must be FF) BY Black/Yellow indicator dome Temperature Rating: Determined by other (Pilot Valve option must be P84 or P85) **S** Standard ¹/₄" flat shaft DesiceNet. **TD** 120° through divert indicator dome DN DeviceNet (Area Classification must be Z1) Z1 Explosion Proof/Flame Proof Zone 1 **DA** DeviceNet with analog input EEx d IIB (Area Classification must be Z1) Class I, Div 1 & 2, Groups A,B,C,D Class II, Div 1 & 2, Groups E,F,G (See page 175 for SCM-DN specifications) Class III May be installed Intrinsically Safe per NEC Article PB Profibus DP 504 and with entity approved barrier. (Area Classification must be Z1) (See page 178 for SCM-PB specifications) MODBUS MB Modbus (Area Classification must be Z1) **Ordering Guide** (See page 179 for SCM-MB specifications) Fill in the boxes to create your 'ordering number.' Enclosure **Sensor-Communications Module Area Classification** Visual Display Shaft

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EXPLOSION PROOF • INTRINSICALLY SAFE

Switchpak DXS

The Switchpak DXS combines sensors, bus communication, and a solenoid valve into a stainless steel Zone 1 (Class I, Div 1) enclosure.

- Features: Zone 0 (Intrinsically Safe, FF) Zone 1 (Class I, Div 1) Stainless Steel enclosure
- Options: AS-Interface FOUNDATION Fieldbus DeviceNet Profibus DP Modbus

Switchpak DXS

20

O-rings: Buna N; Viton optional

screws

components

Environment: NEMA Type 4, 4X, 7, 9; IP66

DXS Switchpak DXS

TOPWORX







NAMUR





Rotary Solutions



Pilot Valve





Piezo Valve

- 000 No pneumatic valve
- S84 24VDC, aluminum, 4-way (not available with FF SCM)
- S85 24VDC, stainless steel, 4-way (not available with FF SCM)
- P84 Piezo pilot, aluminum, 4-way (SCM option must be FF)
- **P85** Piezo pilot, stainless steel, 4-way (SCM option must be FF)



Filtered air is required for proper valve operation. See our Air Filter on page 170.

Pilot Valve

Conventional Solutions for Rotary Valves



Valvetop When it comes to topworks for automated rotary valves, there is a need for selection, simplicity, and savings.

With a large selection of modular enclosures and a variety of options that deliver the ultimate in simplicity, TopWorx is sure to have a solution that can generate big savings for you.

Solutions for all rotary valves and actuators:

Ball valves Butterfly valves Manual valves Dampers Rack and pinion actuators Scotch yoke actuators Vane actuators

Zone 0 intrinsically safe

Zone 1 explosion proof

Zone 2 non-incendive

enclosures

Approvals for all hazardous areas:

Enclosures for all process

environments: Engineered resin Aluminum Stainless steel Severe service Corrosive atmospheres High temperature Low temperature Heavy washdown Sanitary Salt water spray Underwater

Sensors for all applications: GO Switch leverless limit switches Potted sensor modules Mechanical limit switches Proximity sensors

4-20mA position transmitters 0-1k & 0-10k potentiometers Other options:

Integral solenoid valves NAMUR and non-NAMUR mounting Various visual display dome colors BriteLite early warning LEDs



Sensor Options

Of course, the GO Switch leverless limit switch stands above all others!





Mechanical SPDT SXP, SXS, SSP, SRP, SEP, SUP

Mechanical DPDT SXP, SXS, SSP, SRP, SEP

Visual Display Options

TopWorx offers several options that provide local feedback of a valve's position.



Lumitech Target Available in: IVC, IVM

Shaft Options

Both Lumitech and Switchpak product lines can mount on any valve actuator, whether it has an ISO/NAMUR mounting pattern or not.



Non-NAMUR Shaft Available in: SXP, SXS, SSP, SRP, SEP

Analog Output Options

TopWorx analog output options provide continuous valve position feedback.





Lumitech IVC - Non-Incendive - Integral Solenoid Valve



Lumitech IVM - Non-Incendive



Switchpak SXP Explosion Proof 138



Switchpak SUP - General Purpose NAMUR



Lumitech PPS - General Purpose Direct Mount



Switchpak SXS Stainless Stee



Switchpak SEP

Switchpak SSP - Explosion Proof



Switchpak SRP - Non-Incendive





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AVAILABLE OPTIONS



35 Series GO Switches IVC, IVM, SXP, SXS, SSP, SRP



Potted Sensor Module IVC, IVM, SXP, SXS





Proximity SPDT, SPST SSP. SRP. SEP. SUP



Pepperl + Fuchs Proximity SXP. SXS. SUP



Britelite LEDs Available in: IVC. IVM



Switchpak Dome Available in: SXP, SXS



Switchpak Dome Available in: SSP, SRP, SEP, SUP

Solenoid Valve Options



Available in:

SXP, SXS, SSP,

SRP, SUP, SEP

TopWorx leads the way in providing low power pilot valves suitable for corrosive service and Intrinsically Safe applications.



Solenoid Valve Aluminum or Stainless Steel Available in: IVC, SXP, SXS



4-20mA Transmitter Available in: SXP, SXS, SSP, SRP



Potentiometer Available in: SXP, SXS, SSP, SRP

 \bigcirc

ST TRACK DELIVER

DVM-ASZ2BP

Dome & BriteLite

FOUNDATION Fieldbus

Zone 2 (Class I, Div 1)

Zone 2 (Class I, Div 2)

Dome & BriteLite

Dome & BriteLite

DVM-DNZ2BP

DeviceNet

DVM-FFZ0BP

AS-Interface Zone 2 (Class I, Div 2)

Discrete Valve Control

Dimensions



Visual Display



Target Colors: Green and Red BriteLite Colors: Green and Red

BriteLite Lens: Polycarbonate, UV resistant

- **B** Dome and BriteLite (90° Green/Red)
- N Dome only (90° Green/Red)

Consult factory for additional color and rotation options.

Lumitech DVM INTRINSICALLY SAFE • NON-INCENDIVE



Enclosure

Enclosure Material: PBT blend Specifications: Flame UL94-0 & UV resistant

Target

Material: PBT blend Specifications: Flame UL94-V0 & UV resistant Adjustment: 360° in 3° increments Dome: Polycarbonate, UV & impact resistant

Conduit Entries: (2) 1/2" NPT standard; (2) M20 metric optional

Cover Gasket: Silicone: Flame UL94-V0 & UV resistant

Fasteners: All 303 series stainless steel

Mounting NAMUR: Direct - no brackets or couplers Non-NAMUR: Interface plate. See page 171.

Temperature Rating: Determined by other components

Environment: NEMA Type 4, 4X; IP66

DVM Discrete Valve Monitor

Ordering Guide Fill in the boxes to create your 'ordering number.'

> Enclosure DVN

)	Options:	AS-Interface FOUNDATION Fieldbus DeviceNet Profibus DP Modbus				
Sei	nsor-Com	munications Module		Area C	lassificat	ion
∛ AS	AS-Interface (Area Classifica (See page 174	tion must be Z2) for SCM-ASi specifications))us C€	$\langle \xi_X \rangle$	(
∛ FF	FOUNDATION F (See page 176) With FF Cube o pilot valve is rea	ieldbus, standard 2-wire for SCM-FF specifications) ption, a TopWorx bolt-on or NAMUR mount juired. See page 177 for model numbers.	∛ zo	Intrinsically Sa Zone 0 EEx ia IIc Class I, Div 1 & Class II, Div 1 & Class III (SCM option mus	fe 2, Groups A,B, & 2, Groups E,F, t be FF)	C,D G
S DN DA	DeviceNet (Area Classifica DeviceNet wi (Area Classifica	et. ttion must be Z2) th analog input ttion must be Z2)	𝒞 72	Non-Incendive Zone 2 EEx nc IIc Class I, Div 2, C Class II, Div 2, Class III	Groups A,B,C,D Groups E,F,G	
	(See page 175	for SCM-DN specifications)		May be installed 504 and w	Intrinsically Safe µ vith entity approve	per NI ed bar
	PROFT BUS			Install as Non-Inc	cendive per NEC A	rticle
PB	Profibus DP (Area Classifica (See page 175	tion must be Z2) for SCM-PB specifications)				
МВ	Modbus (Area Classifica (See page 179	S tion must be Z2) for SCM-MB specifications)				
S	ensor-Con	nmunications Module		Area (Classificatio	on

DVM: Discrete Valve Monitor

The Lumitech DVM offers the same

valve. The DVM is the best choice for

spare terminals in the DVM.

Features:

customers who prefer a specific brand of

solenoid, which can be wired directly to the

functionality as the DVC, less the onboard pilot

Terminals to wire in external solenoid

Direct mount with no brackets

BriteLite early warning LEDs

Zone 0 (Intrinsically Safe, FF)

Zone 2 (Class I, Div 2)

e , Groups A,B,C,D Groups E,F,G

- I Intrinsically Safe per NEC Article with entity approved barrier.
- cendive per NEC Article 501.

Visual Display

TOPWORX



Wiring

- ✓ P 1/2" NPT conduit
 - M M20 metric conduit (includes adapter fitting)
 - 1 Mini-change quick disconnect
 - 3 Euro-change quick disconnect
 - 5 AS-i flat cable adapter (Cube option must be AS) (Not rated for hazardous locations)

For Zone 2 (Class 1, Div 2) applications of Wiring options 1 & 3, see page 117 for quick disconnect guards.

Wiring

ST TRACK DELIVER

DVC-ASZ2BPS44

AS-Interface Zone 2 (Class I, Div 2)

Intrinsically Safe

4-way pilot valve

DVC-DNZ2BPS44

Zone 2 (Class I, Div 2)

DeviceNet

Discrete Valve Control

Visual Display

Target Colors: Green and Red

BriteLite Colors: Green and Red

B Dome and BriteLite (90° Green/Red)

N Dome only (90° Green/Red)

options.

BriteLite Lens: Polycarbonate, UV resistant

Consult factory for additional color and rotation

Dimensions



Lumitech DVC INTRINSICALLY SAFE • NON-INCENDIVE



Enclosure

Specifications: Flame UL94-0 & UV resistant

Specifications: Flame UL94-V0 & UV resistant

Dome: Polycarbonate, UV & impact resistant

Cover Gasket: Silicone: Flame UL94-V0 & UV

Fasteners: All 303 series stainless steel

NAMUR: Direct - no brackets or couplers

Non-NAMUR: Interface plate. See page 171.

Temperature Rating: Determined by other

Environment: NEMA Type 4, 4X: IP66

Ordering Guide Fill in the boxes to create your

Enclosure

DVC Discrete Valve Controller

Conduit Entries: (2) 1/2" NPT standard; (2) M20 metric

Adjustment: 360° in 3° increments

Enclosure

Target

optional

resistant

Mounting

components

Material: PBT blend

Material: PBT blend

Modbus

Sensor-Communications Module

DVC: Discrete Valve Controller

The Lumitech DVC has set a new standard in

discrete valve control. Feature-rich vet

networking capabilities.

Features:

- compact and affordable, its design delivers 4-way solenoid valve the ultimate combination of modularity and DVC-FFZ0BPP44 FOUNDATION Fieldbus Zone 0 (Class I, Div 1)
 - Integral pilot valve Direct mount with no brackets BriteLite early warning LEDs Zone 0 (Intrinsically Safe, FF) Zone 2 (Class I, Div 2)
- AS-Interface Options: FOUNDATION Fieldbus DeviceNet Profibus DP Stainless Steel pilot valve







De√iceNet

V DN DeviceNet (Area Classification must be Z2)

DA DeviceNet with analog input (Area Classification must be Z2)

(See page 175 for SCM-DN specifications)

PB Profibus DP (Area Classification must be Z2) (See page 178 for SCM-PB specifications)

MODEUS

MB Modbus (Area Classification must be Z2) (See page 179 for SCM-MB specifications)

Sensor-Communications Module



Zone 0 EEx ia IIC Class I. Div 1 & 2. Groups A.B.C.D Class II, Div 1 & 2, Groups E,F,G Class III (SCM option must be FF) (Pilot Valve option must be P44 or P45)

V Z2 Non-Incendive Zone 2 EEx nc IIC Class I, Div 2, Groups A,B,C,D Class II, Div 2, Groups E,F,G Class III

> May be installed Intrinsically Safe per NEC Article 504 and with entity approved barrier.

Install as Non-Incendive per NEC Article 501.

Area Classification

Visual Display

'ordering number.'





Wiring

- M M20 metric conduit (includes adapter fitting)
- 1 Mini-change quick disconnect
- 3 Euro-change quick disconnect
- 5 AS-i flat cable adapter (SCM option must be AS) (Not rated for hazardous locations)
 - For Zone 2 (Class 1, Div 2) applications of Wiring options 1 & 3, see page 117 for quick disconnect guards.

Pilot Valve





Solenoid Valve

- V S44 Solenoid valve with 24VDC, 1.2 Cv, 0.6 watt, aluminum, 4-way (not available with FF SCM option)
- S45 Solenoid valve with 24VDC, 1.2 Cv, 0.6 watt, stainless steel, 4-way (not available with FF SCM option)
- Y P44 Piezo valve with 1.2 Cv, 0.005 watt, aluminum, 4-way (SCM option must be FF)
- P45 Piezo valve with 1.2 Cv, 0.005 watt, stainless steel, 4-way (SCM option must be FF)

Filtered air is required for proper valve operation. See our Air Filter on page 170.

Wiring

Pilot Valve

EXPLOSION PROOF • INTRINSICALLY SAFE

Valvetop DXP

DevlaceNet.	Image: Second state of the second s	ombines position sensors, d an integral pilot valve roof enclosure with UL/CSA (Intrinsically Safe) Explosion Proof im enclosure DN Fieldbus let ch leverless limit switches ical limit switches & Fuchs prox sensors	DXP-FFEIG_EBPA2 FOUNDATION Fieldbus Exp. Proof or Intr. Safe 5/4 Aluminum pilot valve DXP-FFEIG_EB* FOUNDATION Fieldbus Exp. Proof or Intr. Safe "TopWorx bolt-on or NAMUR pilot valve is required if DXP-FF is intended to control actuator directly. DXP-DN1G_EB1A2 DeviceNet Explosion Proof 5/4 Aluminum pilot valve DXP-DN1G_EB DeviceNet Explosion Proof G For Area Class, choose For Shaft, choose S or	DXP-AS16_EB1A2 AS-Interface Explosion Proof 5/4 Aluminum pilot valve DXP-AS16_EB AS-Interface Explosion Proof DXP-L216_EB1A2 (2) GO Switches Explosion Proof 24VDC 5/4 Aluminum pilot valve DXP-L216_EB (2) GO Switches Explosion Proof DXP-M216_EB (2) Mechanical Switches Explosion Proof 0 (I.S. or 1 (Exp. Proof) N (both in stock)	6 214 [157.84 mm] 4.515 [114.66 9
 Enclosure DXP Valvetop DXP Enclosure: Die-cast aluminum; O-ring sealed Coating: Tropicalized inside and out Cover bolts: 6 captive slotted stainless steel screws Terminal Strip: Standard 12 pt. molded nylon Temperature Rating: Determined by internal components - Consult Factory Environment: Designed for NEMA Type 4, 4X, 7, 9; IP67 	Bus/SensorWeilerASAS-Interface (Area class must be 1)FFFOUNDATION FieldDUS (Pilot must be P, R, or U)DNDeviceNet (Area class must be 1)DNDeviceNet (Area class must be 1)DNModbus (Area class must be 1)DNDeviceNet (Area class must be 1)DNMechanical SPDTT2Mechanical SPDTT2Mechanical SPDT - gold contactsDNMechanical SPDT - gold contactsDNMechanical SPDT - gold contactsDPalot Aransmitter (0-90) (Norks for 45')D4-20mA transmitter (0-90) (Norks for 45')D0-10k Ohm pot.DNo switchesDNo switchesDNo switches	Area Classification ✓ 0 Intrinsically Safe* Class I, Div.1 & 2, Groups A,B,C,D Zone 0 EEx ia IIC T4, II1G IP67 ✓ 1 Explosion Proof Class I, Div.1 & 2, Groups C and D Zone 1 EEx d IIB T4, II2G IP67 * With approved I.S. barrier COUSTED ATEX	Visual Display: Impact resistant polycarbonate; 0-ring sealed; 360° adjustable; bolt-on Impact resistant polycarbonate; 0-ring seale; 0-ring s	Shaft Shaft Shaft Shaft Retainer: Stainless steel Image: Stainless steel Image: Standard Standard Image: Stainless steel Image: Standard Imag	Conduit Entries Image: Colspan="2">Image: Colspan="2">Image: Colspan="2">Image: Colspan="2">Image: Colspan="2">Image: Colspan="2">Image: Colspan="2">Image: Colspan="2" Image: Colspan="">Image: Colspan="2" Image: Colspan=
134 Enclosure	Bus/Sensor	Area Classification	Visual Display	Shaft	Conduit Entries

Discrete Valve Control

Dimensions

502.969.8000



O-Rings

O-Rings

📝 B 🛛 Buna-N

Pilot

TOPWORX



Rotary Solutions





Pilot	Spool Valve	Valve Cv	Manual Override
Blank - No pilot device(s)	Blank - No spool valve	Blank - No spool valve	Blank - No override
 (1) 24Vdc pilot, .6W, fail open/ closed (2) 24Vdc pilots, .6W, fail last position (2) 24Vdc pilots, .6W, block center (1) 110Vac pilot, 1.1W, fail open/ closed (2) 110Vac pilots, 1.1W, fail last position (2) 110Vac pilots, 1.1W, fail last position (2) 110Vac pilots, 1.1W, block center (1) piezo pilot, fail open/ closed (FF only) (2) piezo pilots, fail last position (2) piezo pilots, block center (FF only) (2) piezo pilots, block center (FF only) 	 A Aluminum - black hard coat anodized S 304 Stainless G 316 Stainless G 316 Stainless 	✓ 2 1.2 Cv	 Single Pushbutton Momentary/Latching Dual Pushbutton Momentary/Latching Single Pushbutton Momentary Dual Pushbutton Momentary Dual Pushbutton Momentary Single palm actuator Momentary/Latching Dual palm actuator Momentary C Single palm actuator Momentary Dual palm actuator Momentary Dual palm actuator Momentary Dual palm actuator Momentary
	valve operation. Reference the TopWorx catalog for additional air filter information.		
Pilot	Spool Valve	Valve Cv	Manual Override 135

Discrete Valve Control

Lumitech IVC INTRINSICALLY SAFE • NON-INCENDIVE



IVC: Integrated Valve Controller

The Lumitech IVC combines position sensors and an onboard solenoid valve into a unique direct-mount enclosure that saves space and installation costs.

Integral solenoid valve Features: Direct mount with no brackets BriteLite early warning LEDs Zone 0 (Intrinsically Safe) Zone 2 (Class I, Div 2)

Options: GO Switch leverless limit switches Proximity sensors Stainless steel solenoid valve

ST TRACK DELIVER

IVC-G2Z2BPD (2) GO Switches Zone 2 (Class I, Div 2) 4-way AC or DC solenoid valve

IVC-D2Z2BPD (2) Proximity sensors Zone 2 (Class I, Div 2) 4-way AC or DC solenoid valve

For Solenoid Valve, choose S44 or 144 (both in stock)

Dimensions







Viring	Solenoid Valve
it (includes adapter fitting)	
	📝 S44 24VDC with 1.2 Cv, 0.6 watt, aluminum, 4-way
	S45 24VDC with 1.2 Cv, 0.6 watt, stainless steel, 4-way
	144 120VAC with 1.2 Cv, 1.1 watt, aluminum, 4-way
	145 120VAC with 1.2 Cv, 1.1 watt, stainless steel, 4-way
	Exert Exerct Filtered air is required for proper valve operation. See our Air Filter on page 170.
Viring	Solenoid Valve

Discrete Valve Control

Dimensions

 INTRINSICALLY SAFE • NON-INCENDIVE

 INTRINSICALLY SAFE • NON-INCENDIVE

 IVM: Integrated Valve Monitor

 The lumpitude NM efforts the event for size



The Lumitech IVM offers the same functionality as the IVC, less the onboard solenoid valve. Choose the IVM when you prefer a specific brand of solenoid, which can be wired directly to spare terminals in the IVM.

Features: Terminals to wire in external solenoid Direct mount with no brackets BriteLite early warning LEDs Zone 0 (Intrinsically Safe) Zone 2 (Class I, Div 2)

Options: GO Switch leverless limit switches Proximity sensors



IVM-G2Z2BP (2) GO Switches Zone 2 (Class I, Div 2)

IVM-D2Z2BP (2) Proximity sensors Zone 2 (Class I, Div 2)



Enclosure	Sensor	Area Classification	Visual Display
Enclosure Material: PBT blend Specifications: Flame UL94-0 & UV resistant Target Material: PBT blend Specifications: Flame UL94-V0 & UV resistant Adjustment: 360° in 3° increments	GO Switches © G2 (2) GO Switches, hermetically sealed SPDT	$\mathbb{E}_{\mathbf{LBTED}} \mathbb{E} \mathbb{C} \mathbb{E} \mathbb{E} \mathbb{E} \mathbb{E} \mathbb{E} \mathbb{E} \mathbb{E} E$	Tarnet Colors: Green and Bed
Conduit Entries: (2) ¹ /2" NPT standard; (2) M20 metric optional	Without BriteLite: 4A/120VAC; 3A/24VDC With BriteLite: 0.25A/120VAC; 0.25A/24VDC	Zone 0 EEx ia IIC Class I, Div 1 & 2, Groups A,B,C,D Class II, Div 1 & 2, Groups E,F,G Class III	BriteLite Colors: Green and Red BriteLite Lens: Polycarbonate, UV resistant
Cover Gasket: Silicone; Flame UL94-V0 & UV resistant Fasteners: All 303 series stainless steel Mounting NAMUR: Direct - no brackets or couplers Non-NAMUR: Interface plate. See page 171.	Proximity Sensors 2 (2) Hermetically sealed SPDT	Variable Var	Image: Second
Operating Temperature: Determined by other components Environment: NEMA Type 4, 4X; IP66	Without BriteLite: 1A/120VAC; 0.5A/24VDC With BriteLite: 0.25A/120VAC; 0.25A/24VDC	NOTE: GO Switch and Proximity Sensor options are classified as "simple devices," and are suitable for Intrinsically Safe applications. May be installed Intrinsically Safe per NEC Article	
IVM Integrated Valve Monitor	See page 180 for wiring diagrams and page 192 for GO Switch specifications.	504 and with entity approved barrier. Install as Non-Incendive per NEC Article 501.	
Ordering Guide Fill in the boxes to create your 'ordering number.'			
142 Enclosure	- Sensor	Area Classification	Visual Display

TOPWORX

Rotary Solutions

		Wiring	
	🧭 Р	1/2" NPT conduit	
	М	M20 metric conduit (includes adapter fitting)	
I		Wiring	_
		1	43

Discrete Valve Control

Lumitech PPS GENERAL PURPOSE



PPS: Puck Position Sensor

The Lumitech PPS is the choice for simple valve position monitoring in general purpose environments.

Its space-saving design and resin enclosure make it the ideal choice for heavy washdown applications, often found in the food and beverage industries.

Features: A third the size of switchboxes BriteLite early warning LEDs

Options: AS-Interface Proximity sensors

FAST TRACK DELIVERY

PPS-ASGPT1

IP67 AS-Interface protocol Inductive sensors 90° fixed target

PPS-3SGPT1 IP67 DC 3-wire inductive sensors 90° fixed target

PPS-NSZ0T1 Intrinsically Safe Inductive proximity sensors 90° fixed target



With Sensor option 3S or NS

EnclosureOperating Temperature: -13° to 158°F (-25° to 70°C)Housing Material: Polypropylene (PP)Connector Material: CuZn, chrome platedProtection: IP67Image: PPS Puck Position Sensor

Ordering Guide Fill in the boxes to create your 'ordering number.'

Enclosure

144

Sensor



AS AS-Interface protocol & inductive sensors 2 inputs, 1 output (open sensor, close sensor, output open) No-load Current: ≤ 30mA Supply Voltage: 18 to 33VDC Supply Current ≤ 110mA Output Current ≤ 80mA

 Image: With State
 DC 3-wire inductive sensors

 Supply Voltage:
 10-65VDC, PNP inputs

 Rated Operational Current:
 200mA

 No-load Current:
 ≤ 15mA

INS (2) Inductive proximity sensors NAMUR Intrinsically Safe, EEx ia IIC T6 Supply Voltage: 8.2VDC Output Activated: ≤ 1mA Output Non-activated: ≥ 2.2mA

See page 182 for wiring diagrams.

Sensor

Area Classification

20 Instrinsically Safe Zone 1 Class I, Div 1 (Sensor option must be NS)

GP For use in ordinary environments

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With Sensor option AS

Target

- V T1 90° fixed Polyoxymethylene (POM) Stainless steel targets 20 or 30 mm shaft
 - T2 Adjustable position Polyoxymethylene (POM) Stainless steel targets 20 mm shaft
- T3 Adjustable position Polyoxymethylene (POM) Stainless steel targets 30 mm shaft
- T4 90° fixed Aluminum Polyoxymethylene targets 20 or 30 mm shaft (Select this target for normally closed operation)

Target

Switchpak SSP

502.969.8000

Discrete Valve Control

EXPLOSION PROOF • INTRINSICALLY SAFE



Switchpak SSP

Area Classification

The Switchpak SSP is the classic valve position monitor, offering superb visual display, simple operation, and easy installation in a rugged metal enclosure.

- Rugged aluminum enclosure Features: Zone 1 (Class I, Div 1)
- GO Switch leverless limit switches Options: Mechanical limit switches Proximity sensors

SSP-XPL2GR□00 (2) GO Switches Zone 1 (Class I, Div 1) Aluminum enclosure

ST TRACK DELIVER

SSP-XPM2GR□00 (2) Mechanical SPDT switches Zone 1 (Class I, Div 1) Aluminum enclosure

SSP-XPT2GR□00 (2) Mechanical DPDT switches Zone 1 (Class I, Div 1) Aluminum enclosure

For Shaft, choose S or N (both in stock)



Enclosure

Enclosure: Die-cast aluminum: O-ring sealed

Coating: Dichromate conversion inside and out; powder polyester coating outside

O-rings: Buna N; Viton optional

Cover Bolts: 4 captive hex stainless steel screws

Conduit Outlets: Two 3/4" NPT

Terminal Strip Contacts: Standard 12 or 16-point with minimum of 2 open contacts provided for accessories

Temperature Rating: Determined by sensor option

Environment: NEMA Type 4, 4X, 7 and 9

SSP Switchpak SSP

Ord	leri	ng	Gui	ide	
Fill ir	ו the	e box	es to) crea	te

te your 'ordering number.'

Enclosure 146

Area orassineation		
	00	None
✓ XP Explosion Proof Zone 1 Class I, Div 1 & 2, Groups C,D Class II, Div 1 & 2, Groups E,F,G (Class I, Div 2, Groups A,B with hermetically-sealed	<u>GO S</u> L4 𝒇 L2	Switches (4) GO Swit (2) GO Swit
switches only) CE Marking EMC Directive 89/336/EEC	<u>Mec</u> M4 ♂ M2 ♂ T2	hanical Switc (4) Mechan (2) Mechan (2) Mechan (2) Mechan
May be installed Intrinsically Safe per NEC Article 504 and with entity approved barrier. Install per Article 501 as Explosion Proof.	Prox D4 D2 W4 W2	imity Sensors (4) Hermeti (2) Hermeti (4) Hermeti (2) Hermeti (2) Hermeti

Sensor 60 tches, hermetically sealed SPDT tches, hermetically sealed SPDT

ches (Groups C & D only) nical SPDT ical SPDT

ical DPDT

ically sealed SPDT ically sealed SPDT ically sealed SPST

ically sealed SPST

92-193 for sensor specifications.

Sensor

Visual Display: Impact resistant polycarbonate; 0-

Visual Display

Shaft: Stainless ste ring sealed; 360° adjustable; EaStar™ optional Shaft Retainer: Sta (green/red indicator standard) Indicator dome 📝 N -NAMUR shaft V S Standard 1/4" fla FT Flat top cover (no visual indication) BY Black/Yellow indicator dome 2 Standard shaft 2.2° dead band **TD** 120° through divert indicator dome (mechanical swit **01** 90° 2 position, 3 way indicator dome

3 NAMUR shaft w 2.2° dead band (mechanical swite

Þ

Standard

Visual Display

Multi-function, 2 position/3 position, 3 way

13 180° 3 position block center indicator dome

RG Red/Green indicator dome (Red=open,

ES EaStar™ Green/Red indicator dome

45° 4 position indicator dome

05

indicator dome

Green=closed)





Rotary

Solutions

Shaft		Analog Output			
NAMUR	-	4-20mA	Potentiometer		
el; O-ring sealed	00 🥑	None			
inless steel	42	4-20mA transmitter (sensors L4, M4, D4 &)	W4 excluded)		
	01	Potentiometer 0-1K (sensors L4, M4, D4 &	W4 excluded)		
at shaft with high resolution cams	10	Potentiometer 0-10k (sensors L4, M4, D4 &)	K W4 excluded)		
r ches only)	50	Potentiometer 0-50k (sensors L4, M4, D4 &)	K W4 excluded)		
i ches only)					

Shaft

Analog Output

Switchpak SXP

502.969.8000

Discrete Valve Control

EXPLOSION PROOF • INTRINSICALLY SAFE



Switchpak SXP

The Switchpak SXP combines position sensors and an onboard solenoid valve into a rugged aluminum explosion-proof enclosure that is Cenelec rated and suitable for Zone 1 applications.

Features: Cenelec rated Zone 1 (Class I, Div 1) Aluminum enclosure

Options: GO Switch leverless limit switches Mechanical switches Proximity sensors Analog output Integral solenoid valve Up to four conduit entries

FAST TRACK DELIVERY

SXP-L2Z1GR 00000 (2) GO Switches Zone 1 (Class I, Div 1) Aluminum enclosure

SXP-M2Z1GR 00000 (2) Mechanical SPDT switches Zone 1 (Class I, Div 1) Aluminum enclosure

 For Shaft, choose S or N (both in stock)









Endlocard	0011501		Aica	Glassificati			V	Sual Display		Shan	
closure: Die-cast aluminum; O-ring sealed ating: Dichromate conversion or anodize inside; wder polyester coating outside rings: Buna N: Viton optional	00 None		ıs C€	(Ex)	D					Standard	
 ver Bolts: 6 captive socket head stainless steel ews induit Entries: Two ³/₄" NPT (Four optional) minal Strip Contacts: Located on SCM mperature Rating: Determined by sensor option vironment: NEMA Type 4, 4X, 7, 9; IP66 P Switchpak SXP 	GO Switches Image: Second system Image: State Image: Second system Image: Second system	∛ 21 E 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Explosion Pro Zone 1 EEx d IIB Class I, Div 1 Class II, Div 1 Class III May be installe 504 and	oof/Flame Proof & 2, Groups A,B,C & 2, Groups E,F,G d Intrinsically Safe p I with entity approved	C,D G Her NEC Article d barrier.		Visu polyc adjus GR BY TD	al Display: Impact resistant carbonate; O-ring sealed; 360° stable; bolt-on Green/Red indicator dome Black/Yellow indicator dome 120° through divert indicator dome	୍ ଟ :	Shaft: Stainless steel; Shaft Retainer: Stainle N NAMUR shaft S Standard 1/4" flat s	D-ring sealed xs steel haft
Ordering Guide Fill in the boxes to create your 'ordering number.' Enclosure	Sensor		Area	Classificatio	on) (V	isual Display		Shaft	
	closure: Die-cast aluminum; O-ring sealed ating: Dichromate conversion or anodize inside; vider polyester coating outside ings: Buna N; Viton optional ter Bolts: 6 captive socket head stainless steel eves atuit Entries: Two ³ / ₄ " NPT (Four optional) minal Strip Contacts: Located on SCM aperature Rating: Determined by sensor option atronment: NEMA Type 4, 4X, 7, 9; IP66 P Switchpak SXP Offeering Guide Bil in the boxes to create your cordering number.'	closure: Die-cast aluminum; 0-ring sealed ating: Dichromate conversion or anodize inside; vier polyester coating outside ings: Buna N; Viton optional wer Bolts: 6 captive socket head stainless steel ews minal Strip Contacts: Located on SCM mperature Rating: Determined by sensor option rironment: NEMA Type 4, 4X, 7, 9; IP66 P Switchpak SXP O None O O None O None O None O None O O None O None O	Absure: Die-cast aluminum; 0-ring sealed ating: Dichromate conversion or anodize inside; vder polyester coating outside ings: Buna N; Viton optional wer Bolts: 6 captive socket head stainless steel wers nduit Entries: Two ¾/* NPT (four optional) minal Strip Contacts: Located on SCM mperature Rating: Determined by sensor option Aironment: NEMA Type 4, 4X, 7, 9; IP66 P Switchpak SXP P Switchpak SXP Defering Guide Fill in the boxes to create your ordering number.' Enclosure SXP	 Advance of the case aluminum; 0-ring sealed straines; view polyester coating outside inside; view polyester coating outside inside; single; Buna N; Viton optional mere Bolts; 6 captive socket head stainless steel evs. Induit Entries: Two ½⁴ NPT (Four optional) minal Strip Contacts; Located on SCM mere atting: Determined by sensor option informent: NEMA Type 4, 4X, 7, 9; IP66 I Switchpak SXP O More <	 Advance Die-cast aluminum; O-ring sealed Attigg: Dichromate conversion or anodize inside; wer polyester coating outside Arge Solts: 6 captive socket head stainless steel ews Advit Entries: Two ¼, 'NPT (Four optional) Minal Strip Contacts: Located on SCM Apperature Rating: Determined by sensor option Arge Ax, 7, 9; IPG6 P Switchpak SXP O Mone Advit AType 4, 4X, 7, 9; IPG6 P Switchpak SXP O Mone Continue Sensors D Advanced SPDT Continue Sensors D Inductive non-NAMUR sensors 	 Advance: Die-cast aluminum; C-ring sealed thing: Eluchromate conversion or anodoze inside; were polyester coating outside there bolts: 6 captive socket head stainless stele met bolts: 6 captive socket head stainless stele met bolts: 10 contacts: Located on SCM. mperature Rating: Determined by sensor option mperature Rating: Determined by sensor option moment: NEMA Type 4, 4X, 7, 9; PFG Methanical SPTE Methanical Methanical SPTE Methanical SPTE	 Advance: Die-cast aluminum; 0-ring sealed. Attributionate conversion or anodize inside; where polyster coading outside Ange foot the coater basic state is series. Ange f	Adsaure: Die cast aduminum; Dring saeld Antige: Dichornate conversion or anodize inside; inge: Bun & Viton optional were Boths: 6 captive socket head stainless steel with Entrine: Two Vit* NPT Four optional minal Strip Contacts: Located on SCM more Boths: 6 captive socket head stainless steel with Entrine: Two Vit* NPT Four optional more Boths: 6 captive socket head stainless steel minal Strip Contacts: Located on SCM more ment: NEMA Type 4, 4X, 7, 9; IP66 P Switchgak SXP O None O None O None O Support O None O None O Support O Support O None O Non	 Hanker Electrical adminimum, 0-fing shadt Hindre produced condex obtained and two indexides developed behaviors obtained as the reproduced condex obtained condex obtained as the reproduced condex obtained as the reproduced condex obtained condex obtain	 Indexare: Directant aluminum: 0-ring seaded thing: Dichorante conversion on monotice indiv- dive projects conduction (addition) If the project is conductive conduction (addition) If the project is conductive condu	 And an information of a space of the information of the

TOPWORX



Pilot Valve

🕑 000 No Pilot Valve

Consult factory for a variety of solenoid valve options for single coil, dual coil, and dribble control options.





Analog Output





4-20mA

Potentiometer

🥑 00 None

- 42 4-20mA transmitter
- 01 Potentiometer 0-1K
- **10** Potentiometer 0-10K

Pilot Valve

Switchpak SXS

150

EXPLOSION PROOF • INTRINSICALLY SAFE



Switchpak SXS

The Switchpak SXS combines position sensors and an onboard solenoid valve into a rugged stainless steel explosion-proof enclosure that is Cenelec rated and suitable for Zone 1 applications.

Features: Cenelec rated Zone 1 (Class I, Div 1) Stainless Steel enclosure

Options: GO Switch leverless limit switches Mechanical SPDT switches Proximity sensors Analog output Integral solenoid valve Up to four conduit entries



Dimensions

502.969.8000









Enclosure	Sensor and Analog Output	Area Classification	Visual Display	Shaft
Enclosure: Stainless steel; O-ring sealed Coating: Powder polyester coating outside O-rings: Buna N; Viton optional	00 None	$\underset{\text{LETED}}{\overset{\text{(II)}}{\longrightarrow}} C \in \langle \xi_{\chi} \rangle $		V
Cover Bolts: 6 captive socket head stainless steel screwsConduit Entries: Two ³/4" NPT (Four optional)Terminal Strip Contacts: Located on SCMTemperature Rating: Determined by sensor optionEnvironment: NEMA Type 4, 4X, 7, 9; IP66✓ SXS Switchpak SXS	GO Switches V 12 (2) GO Switches, hermetically sealed SPDT (2) GO Switches, hermetically sealed SPDT (2) Mechanical Switches (3) Mechanical SPDT (4) Mechanical SPDT (2) Mechanical DPDT (2) Mechanical DPDT (2) Mechanical SPDT (3) C (4) Mechanical SPDT (5) C (2) Mechanical SPDT (2) Pepperl + Fuchs NJ2-V3-N (2) Pepperl + Fuchs NJ2-SPR (2) Pepperl + Fuchs NJ2-SPR (2) Inductive non-NAMUR sensors See pages 192-193 for sensor specifications.	 ✓ 21 Explosion Proof/Flame Proof Zone 1 EEx d IIB Class I, Div 1 & 2, Groups A,B,C,D Class II, Div 1 & 2, Groups E,F,G Class III May be installed Intrinsically Safe per NEC Article 504 and with entity approved barrier. 	 Visual Display: Impact resistant polycarbonate; O-ring sealed; 360° adjustable; bolt-on ✓ GR Green/Red indicator dome BY Black/Yellow indicator dome TD 120° through divert indicator dome 	Shaft: Stainless steel; O-ring sealed Shaft Retainer: Stainless steel
Ordering Guide Fill in the boxes to create your 'ordering number.'				
150 Enclosure	Sensor and Analog Output	Area Classification	Visual Display	Shaft

TOPWORX





Pilot Valve

📝 000 No Pilot Valve

Consult factory for a variety of solenoid valve options for single coil, dual coil, and dribble control options.





Analog Output





Potentiomete

00 None

- 42 4-20mA transmitter
- 01 Potentiometer 0-1K
- **10** Potentiometer 0-10K

Pilot Valve

Switchpak SRP

NON-INCENDIVE • INTRINSICALLY SAFE

502.969.8000

Discrete Valve Control

Dimensions Switchpak SRP AST TRACK DELIVER The Switchpak SRP delivers the same SRP-4XL2GRD00 features, benefits, and options as the SSP in a (2) GO Switches USED 9.12 (232 mm) MINIMUM CLEARANCE FOR ADJUSTMENT & INSPECTION Zone 2 (Class I, Div 2) chemical resistant resin enclosure. The SRP is 3/4-14 NPT CONDUIT ENTRANCE (2) PLACES Engineered resin enclosure an excellent choice in corrosive or washdown SRP-4XM2GR□00 applications. (2) Mechnical SPDT switches .38 Zone 2 (Class I, Div 2) Features: Engineered resin enclosure Engineered resin enclosure TOPWORX Zone 2 (Class I, Div 2) /---| 1.50 |--38mm -5/16-18 UNC x 3/8 DEEP (2) PLACES □ For Shaft, choose S or N Options: GO Switch leverless limit switches (both in stock) Mechanical limit switches Proximity sensors 9 ø375 86 **Area Classification** Enclosure Sensor Visual Display Enclosure: Zytel[™] engineered resin; 33% glass filled 00 None reinforced Nylon with UV inhibitor; tongue-in-groove CE 0-ring sealed O-rings: Buna N; Viton optional Standard GO Switches Cover Bolts: 4 captive phillips head stainless steel L4 (4) GO Switches, hermetically sealed SPDT **W** 4X Non-Incendive Visual Display: Impact resistant polycarbonate; Shaft: Stainless steel; O-ring sealed 🧭 L2 screws (2) GO Switches, hermetically sealed SPDT Zone 2 O-ring sealed; 360° adjustable; EaStar[™] optional Class I, Div 2, Groups A,B,C,D Shaft Retainer: Stainless steel Conduit Outlets: Two 3/4" NPT (green/red indicator standard) Class II, Div 2, Groups E,F,G (Analog Output option must be 00) Terminal Strip Contacts: Standard 12-point with 🗹 N -(Not rated for hazardous locations with Mechanical GR Green/Red indicator dome NAMUR shaft minimum of 2 open contacts provided for accessories Sensor option) Mechanical Switches ✓ S Standard 1/4" flat shaft FT Flat top cover (no visual indication) Mounting: Nickel plated brass inserts M4 (4) Mechanical SPDT CE Marking M2 (2) Mechanical SPDT EMC Directive 89/336/EEC BY Black/Yellow indicator dome 2 T2 (2) Mechanical DPDT 2.2° dead band Temperature Rating: Determined by sensor option Not rated for hazardous locations. TD 120° through divert indicator dome (mechanical switches only) Environment: NEMA Type 4, 4X May be installed Intrinsically Safe per NEC Article **01** 90° 2 position, 3 way indicator dome 3 504 and with entity approved barrier. 2.2° dead band 05 Multi-function, 2 position/3 position, 3 way (mechanical switches only) Install per NEC Article 501 as non-incendive. indicator dome SRP Switchpak SRP Proximity Sensors Ø. D4 (4) Hermetically sealed SPDT 13 180° 3 position block center indicator dome D2 (2) Hermetically sealed SPDT W4 (4) Hermetically sealed SPST Red/Green indicator dome (Red=open, RG W2 (2) Hermetically sealed SPST Green=closed) ES EaStar™ Green/Red indicator dome **45** 45° 4 position indicator dome See pages 192-193 for sensor specifications. **Ordering Guide** Fill in the boxes to create your 'ordering number.' Enclosure **Area Classification** Sensor **Visual Display** 152



Rotary **Solutions**



+.250 A.



5.84 148mm

€) €

NAMUR

- Standard shaft with high resolution cams
- NAMUR shaft with high resolution cams

Analog Output

-5/16-18UNC x 3/8 DEEP (4) PLACES

2.250

BOTTOM VIEW





Potentiometer

4-20mA

- 🥑 00 None
- 42 4-20mA transmitter (sensors L4, M4, D4 & W4 excluded)
- 01 Potentiometer 0-1K (sensors L4, M4, D4 & W4 excluded)
- 10 Potentiometer 0-10K (sensors L4, M4, D4 & W4 excluded)
- 50 Potentiometer 0-50K (sensors L4, M4, D4 & W4 excluded)

(Only 00 option retains ratings for hazardous locations)

For analog output in hazardous areas, see Switchpak SSP on page 146.

Shaft

Analog Output

Discrete Valve Control

GENERAL PURPOSE • INTRINSICALLY SAFE



Switchpak SUP

1

Switchpak SUP

The Switchpak SUP is a unique, compact, and cost-effective valve position monitor designed especially for NAMUR rack and pinion actuators. Mounting brackets are included, saving significant time and money.

Features: Anodized aluminum enclosure Includes mounting brackets General purpose

Options: Mechanical limit switches Pepperl + Fuchs proximity sensors



SUP-GPM2GRN00 (2) Mechnical SPDT switches IP66/IP67 Aluminum enclosure



Dimensions





STANDARD EXECUTION (WITH MOUNTING ANGLES AND SHORT SHAFT)

	Enclosure	Area Classification	Sensor	Visual Display	Shaft	Analog Output
Encl	osure: Anodized aluminum	GP For use in ordinary environments	00 None			🧭 00 None
Coat O-rii	ing: Powder polyester coating (inside & outside) Igs: Buna N	May be installed Intrinsically Safe per NEC Article 504		CL23		
Cove screv	r Bolts: 4 captive phillips head stainless steel vs	and with entity approved barrier and Sensor option E2.	Mechanical Switches M2 (2) Mechanical SPDT	Visual Display: Polycarbonate dome with green/ red indicators; flat polycarbonate cover with Nylon	NAMUR Shaft: Stainless steel; O-ring sealed	
Conc	luit Outlets: Two PG 13, 5			arrow indicator	Shaft Retainer: Stainless steel	
strip soler	for switch connection, one pass through for loid option		Proximity Sensors	GR Green/Red indicator dome	𝗭 N NAMUR shaft	
Mou (brac	nting: Direct mount to any ISO/NAMUR actuator ket included)		V3 proximity, 2 wire, non-amplified NAMUR EExia IIC certified		For non-NAMUR applications, see Switchpak SEP on page 156.	
Tem	perature Rating: Determined by sensor option		See names 192-193 for sensor specifications			
EIIVI	onnent iet 329, iP00/iP07					
🧭 SUP	Switchpak SUP					
	Drdering Guide Fill in the boxes to create your ordering number.'					
154	Enclosure	Area Classification GP	Sensor	Visual Display	Shaft N	Analog Output 00 155

TOPWORX

NR 4 THREAD HOL

\U+ 220550

Rotary Solutions



ELECTRICAL CONNECTIONS PG 13.5 (NR 2 PORTSSTANDARD EXECUTION NR 3 PORTS OPTIONAL EXECUTION)

Discrete Valve Control



Switchpak SEP

156

GENERAL PURPOSE • INTRINSICALLY SAFE



Shaft			Analog Outp	ut	
Ţ	𝗭 00	None			
NAMUR					
through bronze bearings; O-ring					
nless steel					
t shaft					
rith high resolution cams					
ies only)					
h high resolution cams					
ies only)					
Shaft		Α	nalog Output		

Analog Output

Monitoring Solutions for Linear Valves



Value for When it comes to linear values, TopWorx has all the applications covered. Whether it's a control value, gate value, globe value, or diaphragm value. Whether it's a control valve, gate valve, globe valve, or diaphragm valve, TopWorx can provide reliable position monitoring in any hazardous area or process environment.

Solutions for all linear valves and actuators:

Control valves Globe valves Pinch valves Knifegate valves Diaphragm valves Sanitary valves

Approvals for all hazardous areas:

Zone 0 intrinsically safe

Enclosures for all process environments: Engineered resin Aluminum Stainless steel

Sensors for all applications: GO Switch leverless limit switches Proximity sensors

Sensor-Communications Modules for all bus networks: AS-Interface FOUNDATION Fieldbus DeviceNet

Profibus Modbus Other options:

Green/Red BriteLite LEDs



Conventional

Linear valve monitoring all starts with GO Switch leverless limit switches, suitable for all hazardous areas and process environments.



Switchpak SBP Zone 1 (Class I, Div 1) GO Switch Inside



GO Switch 7L & Lumitech LPS Zone 0, 1, or 2 Green or Red LEDs



SPDT or DPDT Contacts HiTemp option to 400°F

Bus Networking

Using TopWorx HazLink I/O Modules coupled with GO Switch leverless limit switches, you can connect your linear valves to a variety of bus protocols.







Discrete Valve Control

Dimensions

EXPLOSION PROOF • INTRINSICALLY SAFE



Switchpak SBP

Switchpak SBP

The Switchpak SBP fits snuggly under the bonnet of linear valve actuators to provide reliable position feedback of linear control valves up to a 4" stroke.

- Features: No linkages required Designed for linear valve actuators Rugged aluminum enclosure Zone 1 (Class I, Div 1)
- Options: GO Switch leverless limit switches Proximity sensors

FAST TRACK DELIVERY

SBP-XPL2 (2) GO Switches Zone 1 (Class I, Div 1) Aluminum enclosure



MINIMUM CLEARANCE FOR ADJUSTMENTS AND INSPECTIONS





Linear Solutions

#5.000 COVER





Model 73 and 7G

Models 73 and 7G

The GO Switch Model 73 is our most popular leverless limit switch. Its solid stainless steel construction and global certifications make it the ideal choice for a variety of applications. Model 7G adds hermetic seal and Double Pole Double Throw contact options.

Features: SPDT or DPDT 4A contacts Intrinsically Safe -40° to 221°F operating temperature

Options: Suitable for Zone 0, 1, or 2 explosion proof -40° to 400°F high temperature Hermetic Seal Quick Disconnect connector Underwater capabilities English or Metric threads

ST TRACK DELIVER

Dimensions



Model 73

Approvals Model **Contact Form** Sensing Range **Outlet Position Enclosure Material** (U_) Ð BASEEFA SAA Conduit Outlet: 1/2" NPT Repeatability: .002" (.05mm) typical Target Material: Ferrous steel Contact Material: Palladium silver with 303 stainless steel sawtooth surface configuration (rated 2,000 PSI) (Sensing 2 High temperature to 400°F (204°C) with **Besponse Time:** 8 milliseconds Sensing Range: Approx. 5 Bottom of enclosure must be 3) Teflon[™] insulated leads (Wiring must be Form: SPDT, Form C .100" (2.5 mm) end sensing (2,000 PSI) Differential: Approx. 020" (.51 mm) F) .072" (1.8 mm) end sensing (5,000 PSI) 3 HiPressure - 303 stainless Ratings: Resistive 3 UL listed explosion proof for Cl I, Div 1 & 2; .060" (1.5 mm) end sensing (10,000 PSI) Operating Temperature: -40° to 221°F steel (rated 5,000 PSI) Grps A,B,C,D; Cl II, Div 1 & 2, Grps E-G; AC DC (-40° to 105°C). Hi Temp to 400°F (204°C) Sensing Range with Target Magnet: (Sensing must be 4) Its Amps Volts Amps CI III (Lead seal req'd within 18") 120 4 24 3 up to .35" (9 mm) (Approval must be 2. 📝 ४ CSA certified explosion proof for CI I, Div 1 73 Model 73 240 2 48 1.25 7. 8. or 9) (Model 73) Grps A,B,C,D; Cl II, Div 1; Grps E-G; Cl III 125 0.5 📝 3 Standard sensing - approx. .100" ⁵/8" (16 mm) dia. x 3⁵/8" (92 mm) (Lead seal reg'd within 18") (3 mm) end sensing (Enclosure 4 HiPressure - 303 stainless UNF long with 5/8"-18 9 📝 CSA certified CI I, Div 2; Grps A,B,C,D; must be 2 or 6) steel (rated 10.000 PSI) x 1⁷/8" (48 CI II, Div 2; Grps E-G; CI III (Wiring must be 1 4 HiPressure sensing - approx. mm) threads and 1/2" NPT Single Pole Double Throw (Form C) (Sensing must be 5) (Approval B, or F) (Lead seal reg'd A. conduit hub .072" (2 mm) end sensing Environmental Seal (Model 73) must be 2, 7, 8, or 9) (Model 73) within 18") (Enclosure must be 3 and Approvals Hermetic Seal (Model 7G) (Lead 73M Model 73 7 CSA certified General Purpose must be 2, 7, 8, or 9) (Model 73) 6 316 stainless steel seal not required for hazardous locations) M18 x 1.5 external metric thread 5 HiPressure sensing - approx. (rated 2,000 PSI) (Model 73) 8 UL listed General Purpose 2 Double Pole Double Throw .060" (2 mm) end sensing 7G Model 7G 9 CENELEC: EExdIIC T6 Zone 1. (Enclosure must be 4 and Approvals (Form CC) (Model 7G) M18 x 1.5 external metric (EN 50 014 & EN 50 018, BASEEFA must be 2, 7, or 8) (Model 73) thread Certificate Ex89C1233X) (Wiring must be A or B) A SAA: Ex s IIC T6 IP65; CI I Zone 1 & 2; EX S IIC T6 IP65; CI I Zone 0; DIP CI II (Intrin-**Extended Sensing Range with Need Accessories?** sically safe with entity approved barrier. ×. **External Target Magnets** Install per NEC Article 501.) (Wiring must be (See Accessories for External Target Magnets) **≜___**₀ See pp. 224-229 for: Form C - SPDT B SAA: High Temp 350°F (176°C): EX S IIC Range Extending Target Magnets T6 IP65; CI I Zone 1 & 2; EX S IIC T6 IP65; Mounting Brackets CI I Zone 0; DIP CI II (Intrinsically safe with Connectors and more! entity approved barrier. Install per NEC **Ordering Guide** Article 501.) (Wiring must be F) (Model 73) Fill in the boxes to create your 'ordering number.' Model **Enclosure Material Contact Form** Sensing Range **Outlet Position** Approvals 162

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73-13523-A2 Class I Div 1, 3 ft. leads

73-13524-A2 Class I Div 1, 3 ft. leads

73-13526-A2 Class I Div 2, 3 ft. leads

7G-23523-A2 DPDT Class I Div 1, 3 ft. leads

7G-23526-A2 DPDT Class I Div 2, 3 ft. leads

Discrete Valve Control

TOPWORX



Model 7G

Wiring Options

Lead Wires

Model 73 18 Gauge (.110" dia) potted-in PVC insulated AWM / TEW stranded lead wires, rated at 221°F (105°C) 600V UL / CSA listed Model 7G 20 Gauge (.100" dia) potted-in PVC insulated AWM / TEW stranded lead wires, rated at 221°F (105°C) 300V UL / CSA listed (Model 7G) 🧭 A2 36" (914 mm) A3 72" (1829 mm) Δ4 144" (3658 mm) A___ Lengths greater than 144" (Specify length in feet (e.g. A150 = 150 ft. of leads)) Model 73 18 Gauge (.250" dia.) potted-in PVC cable, rated at 176°F (80°C) 300V, UL / CSA listed Model 7G 22 Gauge (.215" dia) potted-in PVC cable, rated at 176°F (80°C) 300V, UL / CSA listed B2 36" (914 mm) B3 72" (1829 mm) 144" (3658 mm) **B**____ Lengths greater than 144" (Specify length in feet (e.g. B150 = 150 ft. of cable)) Quick Disconnect Male Quick Disconnect only, potted-in connector. (CSA requires a case ground) (Approvals must be 7 or 8) Refer to pp. 224-229 for mating cable assemblies. Micro-change[®] (Model 73) Mini-change® (Model 73) DCA 3 - pin Mini-change® type DRΔ 3 - pin Micro-change® type DCD 4 - pin Mini-change® type DBD 4 - pin Micro-change® type DBG 5 - pin Micro-change® type DCG 5 - pin Mini-change[®] type DCH 7 - pin Mini-change® type (Model 7G) SubSea Underwater Connector (Model 73) 3DD 3 pin, certified not to leak underwater 4DD 4 pin, certified not to leak underwater 3 pin right-angle, certified not to leak underwater 3DE 4DE 4 pin right-angle, certified not to leak underwater HiTemp Leads 18 gauge (.070" dia. potted-in Teflon™ insulated leads rated at 482°F (250°C) 600V UL / CSA listed (Approval must be 2, 3, 4, 6, 7, 8 or B) 36" (914 mm) F2 F3 72" (1829 mm) F4 144" (3658 mm) Lengths greater than 144" (Specify length in feet (e.g. F150 = 150 ft. of leads)) F___ Wiring Options 163

New!

Model 7L

The new GO Switch Model 7L offers the same proven

with the addition of Red or Green BriteLite LEDs. The

the reliability of the 70 Series.

Features: 316 stainless steel enclosure

Red or Green BriteLite LEDs

Leverless Limit Switch design

H.

new 7L brings increased plant safety and awareness to

internals as our other 70 Series leverless limit switches,



AST TRACK DELIVERY

7LR-1356E-A2

7LG-1356E-A2

Class I Div 2 Green LED, 3 ft. leads

Red LED, 3 ft. leads

Class I Div 2

Discrete Valve Control





Model	Contact Form	Sensing Range	Outlet Position	Enclosure Material	Approvals	Wiring Options
 Repeatability: .002" (.05 mm) typical Response Time: 8 milliseconds Differential: Approx. 020" (.51 mm) Operating Temperature: -40° to 221 (.40° to 105°C) ✓ 7LG Model 7LG 5%" (16 mm) dia. x 4 ³/₄" (121 mm long, with ⁵/₈"-18 UNF x 2.13" (.54 mm) threads and ¹/₂" NPT conduit hub ✓ 7LR Model 7LR 5/₈" (16 mm) dia. x 4 ³/₄" (121 mm long, with ⁵/₈"-18 UNF x 2.13" (.54 mm) threads and ¹/₂" NPT conduit hub 	 Contact Material: Palladium silver with sawtooth surface configuration Form: SPDT, Form C Ratings: .25A @ 24VDC/120VAC Resistive ✓ 1 Single Pole Double Throw (Form C) 	 Target Material: Ferrous Sensing Range: 0.100" nominal ✓ 6 Standard sensing - approx100" (2.5 mm) end sensing 	Conduit Outlet: 1/2" NPT	Stainless Steel type 316 Stainless steel (rated 2,000 PS))	 ↓ E C-UL listed General Purpose ■ C-UL listed Class I, Div 2, All groups Class II, Div 1 & 2, All groups Class III 	Lead Wires 18 Gauge (.110" dia) potted-in PVC insulated AWM / TEW stranded lead wires, rated at 221°F (105°C) 600V UL / CSA listed ✓ A2 36" (914 mm) A3 72" (1829 mm) A4 144" (3658 mm) A Lengths greater than 144" (Specify length in feet (e.g. A150 = 150 ft. of leads)) Cable 18 Gauge (3 cond .250" dia; 4 cond .250" dia.) potted-in PVC cable, rated at 176°F (80°C) 300V, UL / CSA listed B2 36" (914 mm) B3 72" (1829 mm) B4 144" (3658 mm) B Lengths greater than 144" (Specify length in feet (e.g. B150 = 150 ft. of cable)) Quick Disconnect Male Quick Disconnect only, potted-in connector. (Approval must be 8) Refer to pp. 224-229 for mating cable assemblies. Mini-change® type DCA 3 - pin Mini-change® type DBA 3 - pin Micro-change® type DCG 5 - pin Mini-change® type DBD 4 - pin Micro-change® type DCG 5 - pin Mini-change® type DBG 5 - pin Micro-change® type
Ordering Guide Fill in the boxes to create your 'ordering number.' Model	Contact Form	Sensing Range	Need Accessories? See pp. 224-229 for: Range Extending Target Magnets Mounting Brackets Connectors and more!	Enclosure Material	Approvals	Wiring Options
164	-	6	5	6]-[]165

Courtesy of Steven Engineering, Inc. • 230 Ryan Way, South San Francisco, CA 94080-6370 • Main Office: (650) 588-9200 • Outside Local Area: (800) 258-9200 • www.stevenengineering.com



Discrete Valve Control

EXPLOSION PROOF • NON-INCENDIVE • INTRINSICALLY SAFE **Dimensions** LPS: Linear Position Sensor -0.200" NOMINAL ST TRACK DELIVER 1/2" NPT CONDUIT - 1.18 - 2.21-OUTLET The Luminator LPS is specifically designed to LPS-DZ2GA2 .75 provide position feedback on linear control Zone 1 (Class 1, Div 2) Green BriteLite valves and knifegate valves. Onboard Green or \geq Red LEDs increase safety and awareness for LPS-DZ2RA2 plant operators. Zone 1 (Class 1, Div 2) Red BriteLite 5/8-18 🛆 lock 1" HEX HEAD AMS 8 THREAD TARGET MAGNET 3/8-16 THREAD Features: 316 stainless steel enclosure Green or Red BriteLite LEDs Hermetically sealed sensors Snap-action contacts Model Sensor **Area Classification Visual Display** CE **D** (1) Hermetically sealed SPDT BriteLite: Triaxial LEDs Enclosure: 3.96" x 1", 316 series stainless steel Without BriteLite: 1A/120VAC; 0.5A/24VDC BriteLite Colors: Green or Red Target: 1.05" x 0.65", 316 series stainless steel With BriteLite: 0.25A/120VAC; 0.25A/24VDC Conduit Outlet: 1/2" NPT **G** Green BriteLite 360° triaxial LED visual position indicator (Z0 & Z2 only) W (1) Hermetically sealed SPST Z1 Explosion Proof **Operating Temperature:** -40° to 160°F (-40°to 71°C) Zone 1 Without BriteLite: 3A/120VAC; 2A/24VDC **R** Red BriteLite 360° triaxial LED visual position indicator (Z0 & Z2 only) Class I, Div 1 & 2, Groups A,B,C,D With BriteLite: 0.25A/120VAC; 0.25/24VDC Mounting: QuickMount VIP Bracket Kits. See pages Class II, Div 1 & 2, Groups E,F,G N No visual indication 172-173 for selection. Class III (Visual Display option must be N) Environment Zone 1 (Class I, Div 1): NEMA Type 4, 4X, 7 and 9 View State Non-Incendive Zone 2 (Class I, Div 2): NEMA Type 4, 4X Zone 2 Class I, Div 2, Groups A,B,C,D Class II, Div 1 & 2, Groups E,F,G Class III **W** LPS Luminator Linear Position Sensor May be installed Intrinsically Safe per NEC Article 504. **Ordering Guide** Fill in the boxes to create your 'ordering number.' Model Sensor **Area Classification** Visual Display 166

Luminator LPS





Wiring

Accessories valvetop

Accessories



ASCO Solenoid Valves



These common solenoid valves are industry standards that can be used to automate on/off process valves. TopWorx offers 3- and 4-way flow options in standard, explosion proof, or intrinsically safe packages, with various power requirements.

General Specifications

3-way AC	32° to 125°F (0° to 52°C)
3-way DC	32° to 104°F (0° to 40°C)
4-way	32° to 125°F (0° to 52°C)
Low Power	-4° to 140°F (-20° to 60°C)
I.S.	-4° to 140°F (-20° to 60°C)

24VDC Solenoid Valves (10.6 to 11.1 Watt)						
	Air Flow	Material	Housing			
8320G202	3 way	SS	Туре 4			
EF8320G202	3 way	SS	Туре 7			
8320G184	3 way	Brass	Type 4			
EF8320G184	3 way	Brass	Type 7			
8345G81	4 way, 1 pilot	SS	Type 4			
EV8345G81	4 way, 1 pilot	SS	Type 7			
8345G1	4 way, 1 pilot	Brass	Type 4			
EF8345G1	4 way, 1 pilot	Brass	Type 7			
8344G80	4 way, 2 pilots	Brass	Type 4			
EF8344G80	4 way, 2 pilots	Brass	Type 7			

Part Number & Description

Part Number & Description 24VDC Low Power Solenoid Valves (1.4 Watt) <u>Air Flow</u> <u>Material</u> Housing SS 8316G381V 3 way Type 4 EV8316G381V SS 3 way Type 7 8316G301 3 way Brass Type 4 EF8316G301 3 way Brass Type 7 EV8345G381 SS 4 way, 1 pilot Type 7 8344G370 Brass 4 way, 1 pilot Type 4 EF8344G370 4 way, 1 pilot Brass Type 7 8551G355 4 way, 2 pilots SS Type 4 4 way, 2 pilots SS EV8551G355 Type 7 8344G344 Brass Type 4 4 way, 2 pilots EF8344G344 4 way, 2 pilots Brass Type 7



Part Number & Description

24VDC Intrinsically Safe Solenoid Valves (0.46 Watt nominal)

	<u>Air Flow</u>	<u>Material</u>	Housing
WSIS8316A381V	3 way	SS	Type 4
WPIS8316A301	3 way	Brass	Type 4
WSIS8345A381	4 way, 1 pilot	SS	Type 4
WPIS8344A370	4 way, 1 pilot	Brass	Type 4
WPIS8344A344	4 way, 2 pilots	Brass	Type 4

120VAC Solenoid Valves

(20.1 Watt)

	<u>Air Flow</u>	<u>Material</u>	<u>Housing</u>
8342G701	3 way	SS	Type 4
EF8342G701	3 way	SS	Type 7
8342G1	3 way	Brass	Type 4
EF8342G1	3 way	Brass	Type 7

Accessories valvetop

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Accessories



Item		Part Nu	umber & Descripti	on	Item
Air Filter Regulator	AL-M41	Filter regulator with	automatic drain and press	sure gauge	Non-NAMUR Interface Plate
		- Bracket included			This Interface Plate enables easy adaptation of Lumitech NAMUR mount valve position controllers and monitors to non-NAMUR actuator brackets.
					Materials: 1/4" thick stainless steel plate and stainless steel intermediate shaft with bronze bushing.
					Flow Controls These stainless steel flow controls provide a means to adjust the speed of operation and the air
Good quality air is essential for the proper operation of Discrete Valve Controllers, pneumatic solenoid valves, and pneumatic actuators. TopWorx recommends these filter regulators in environments where clean, dry air is not available.					exhaust rate of a pneumatic actuator. Breathers within the flow controls quiet the actuator's exhaust air and provide some protection against debris entering the air valve ports.
General Specifications Operating Temperature: 23° to 140°F (-5° to 60°C) Port Size: 1/4" NPT					Broothers
Max. Operating pressure psig: 150 (1.0MPa) Filtration: 5 μm					These plastic breathers quiet an actuator's exhaust air and provide protection against debris entering the air valve ports.
Wiring Kits	Create your V size, and wire	Viring Kit part number b e protection needed for	y selecting the number of p	pilots, conduit box entry	
These Wiring Kits provide an easy way to wire TopWorx spool valves with pneumatic valve pilot electrical connections.	<u>Example</u> WK-1TC = W	iring kit with one pilot,	3/4" conduit box entry, and	l cable gland wire	1A Fuse Kit
Note: Conduit Box Entry option "T" is for use with TopWorx HazLink I/O (pages 38, 58, 76, 96 & 112) and option "H" is for use with TopWorx Discrete Valve Monitors (pages 130-134 & 140-143).	protection.	No. of Pilots*	Conduit Poy Entry	Wire Protection	This 1 amp circuit board fuse kit provides replacement fuses for devices that feature TopWorx DeviceNet Sensor-Communications Modules
	WK-	1 One	T 3/4"	L Liquid Tight IP65, NEMA 4x	(SCM-DN), including the DVC-DN, DVM-DN, DXP-DN, DXS-DN, and HazLink.
		2 Two	H 1/2"	C Cable gland	
70	* Pilot = elec	tro-pneumatic operator			



Part Number & Description

Z001205

Non-NAMUR Interface Plate

AL-M20 Flow controls, 1/8" NPT (2 per kit) AL-M21 Flow controls, 1/4" NPT (2 per kit)

AL-M30 Breathers, 1/8" NPT (2 per kit) AL-M31 Breathers, 1/4" NPT (2 per kit)

ND601 1A fuse kit (10 pcs.)

Mounting Kits

Value to Over the years, customers have asked us to mount our value controllers and monitors to just about every type and brand of value and actuator on the planet.

As a result, TopWorx has amassed over 1,200 different mounting kit designs.

So whether your valve application is rotary or linear, NAMUR or non-NAMUR, in production or obsolete, TopWorx is sure to have a mounting kit that fits your need.



Stainless Steel NAMUR



Knifegate Valves



Rotary Vane Actuators



NAMUR Mounting Kits

The vast majority of rack and pinion valve actuators come with an ISO/NAMUR mounting pattern. This worldwide standard provides a consistent bolt pattern and shaft height regardless of the actuator brand. As a result, there is less need for expensive, custom made mounting kits, making it easier and less expensive to mount topworks accessories.

TopWorx offers several cast aluminum and stainless steel mounting kits that make it easy to attach our products to rack and pinion actuators.

Note: TopWorx Lumitech discrete valve controllers take full advantage of the ISO/NAMUR standard. They are uniquely designed to attach directly to any rack and pinion actuator WITHOUT mounting kits! This eliminates the hassle and expense of purchasing and installing mounting kits - saving time, money, and space.

Custom (Non-NAMUR) Mounting Kits

Rotary valve actuators that do not use the ISO/NAMUR standard, such as scotch-yoke or vane actuators, require custom designed mounting kits to attach topworks accessories.

This can be a complex procedure that should not be overlooked by the end user. Since there are no standards, it is more difficult to ensure the proper fit and function of brackets, and consequently the automated valve system itself.

TopWorx has a team of designers experienced at solving this problem, making it easy to mount our products to scotch-yoke and vane actuators. With an existing library of over 1,200 different designs, there is probably already a design ready for your application.

Note: TopWorx custom mounting kits are always made of heavy-gauge stainless steel, ensuring the proper amount of support in the field.

Linear Valve Mounting Kits

Linear valves, such as control valves, globe valves, knifegate valves, or diaphragm valves, do not conform to any standard mounting patterns. Therefore, custom designed mounting kits are necessary to attach valve position monitors and sensors.

Since TopWorx has been mounting GO Switches onto linear valves and actuators for several decades, there is probably already a design ready for your application - if not, we will create one.





AS-Interface DVC, DVM, DXP & DXS

AS-Interface Sensor-Communications Module (SCM) Layout

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DeviceNet DVC, DVM, DXP & DXS



DeviceNet Sensor-Communications Module (SCM) Layout

DVC-DN, DVM-DN DXP-DN, DXS-DN



DeviceNet SCM Specifications

Electrical Specifications		
Voltage	24VDC	
Cube Current	45mA + solenoid	
Max. Solenoid Current	0.5A	
Protection	1A fuse	

DeviceNet Quick Disconnect Connector Wiring Diagram (DVC & DVM only)

The DVC-DN and DVM-DN connect to a DeviceNet trunk line or drop line using a standard 5-in round mini or micro male (with pins) connector, as shown below.



4 1

Mini Connector Male View

Close ASI Open 2 1 $\widetilde{\mathbb{O}}$)Close Open \mathbb{O}

AS-Interface SCM Specifications

DVC-AS, DVM-AS

DXP-AS, DXS-AS

25

Electrical	Specifications
Device ID Device I/O	0 Free Profile 3 2 inputs/2 outputs
Inputs	D0 Closed limit switch 0 Switch open D1 Open limit switch 1 Switch closed
Outputs	D2 Solenoid #1 (open) 0 De-energize solenoid D3 Solenoid #2 (closed) 1 Energize solenoid
Current	DVC max current = 65mA DVM (40mA + open solenoid current + closed solenoid current) max solenoid current = 170mA







PIN 1 = Not connected **PIN 2** = V+ $\mathbf{PIN} \ \mathbf{3} = \mathsf{V} \mathbf{-}$ PIN 4 = CANH PIN 5 = CANL

FOUNDATION Fieldbus DVC, DVM, DXP & DXS

FOUNDATION Fieldbus Sensor-Communications Module (SCM) Layout

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FOUNDATION Fieldbus DVC & DVM



FOUNDATION Fieldbus DVC-FF Integral Piezo Pilot Valve



DVC-FF Integrated Piezo Pilot Valve Specifications					
Fluid	Air, Inert Gas	Flow Coefficient (Cv)	1.2 (Bare valve)		
Max. Operating Pressure	100 PSI (0.7 MPa)	Weight with fittings & bracket	0.42 lb.		
Min. Operating Pressure	22 PSI (0.15 MPa)	Mounting	None required - integrated		
Lubrication	None required	NEMA Rating	Designed to meet 4, 4X - dust tight, weatherproof		
Pilot Operator Manual Override	Non-locking push type (flush)	Temperature	14° to 122°F (-10° to 50°C)		
Port Size	1/4" NPT (supply & work); 1/8" (exhaust)	Filtration	3-5 micron point-of-use		

FOUNDATION Fieldbus DVM-FF Piezo Pilot Valves

A TopWorx bolt-on or NAMUR mount pilot valve is required for DVM-FF models. Care should be taken to order the correct pilot valve for applications that require the valve to fail in a certain position on loss of air.

One of the following models should be ordered to accompany all DVM-FF models:

Single Piezo Pilot Valves

LP2-Z0P44 Single pilot NAMUR mount valve; fail full open or full close

LP2-Z0P64 Single pilot bolt mount valve; fail full open or full close



Dual Piezo Pilot Valves

LP2-Z0Q44 Dual pilot NAMUR mount valve; fail in last position Dual pilot bolt mount valve; fail in last position LP2-Z0Q64



Block Center Dribble Control Piezo Pilot Valve

LP2-ZOR64 Dual pilot bolt mount block center valve; fail in place





FOUNDATION Fieldbus Specifications

DVC-FF, DVM-FF

DXP-FF, DXS-FF

Electrical Specifications		
Function Block Execution Times	D0 60mS DI 60mS	
Valve Drivers	6VDC with 500 $\!\Omega$ series load output	
Current Consumption	LEDs disabled <17mA LEDs enabled <22mA	
Maximum Applied Voltage	35DC	
Operating Voltage	9-32VDC	
FM Approved Entity Par	ameters	
Vmax	24V	
Imax	250mA	
Ci	2.5nF	
Li	192uH	
Pmax	1.2W	







DVM-FF Piezo Pilot Valve Specifications		
Mounting	2 screws M5	
Port size	1/4" NPT	
Weight	Single Pilot - 1.2 lbs, Dual Pilot - 1.4 lbs	
Installation	Mountable in any position	
Ambient Temperature	14° to 140°F (-10° to 60°C)	
Pneumatic		
Operating Pressure Range	37 to 145 PSI	
Nominal Flow	1.3 Cv	
Electrical		
Nominal Current	1.3mA	
Switching Voltage	4.2 to 9V	
Duty Cycle	100%	
Electrical Protection	IP54	
Connection	Plug to DIN 43650B - industry norm	

Profibus DP DVC, DVM, DXP & DXS

PROFIL IBIUISI

Profibus DP Sensor-Communications Module (SCM) Layout

DVC-PB, DVM-PB DXP-PB, DXS-PB

> STATUS 2 CALIBRAT SWITCH POSITION $\bigcirc\bigcirc$ \mathbb{O} 0 OPTIONS ADDRES \oslash m

Profibus DP SCM Specifications

Electrical Specifications		
Max. Solenoid Power	12 Watts	
Operating Voltage	24V ± 10%	
Current	< 100mA + solenoid power	
Short Circuit Protection	Fused input power	
Addressing	Dip switch selected	
Additional Features	Calibration switch; open and close timers and time out alarms; cycle counter and cycle count alarm; 2 auxilliary inputs; local LED feedback for board status; board position	

Modbus DVC, DVM, DXP & DXS

MODBUS

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Modbus Sensor-Communications Module (SCM) Layout

DVC-MB, DVM-MB DXP-MB, DXS-MB



Modbus SCM Specifications

Electrical Specifi Voltage

Cube Current

Max. Solenoid Curren

Protection



ca	cations	
	24VDC	
	45mA + solenoid	
t	0.5A	
	1A fuse	

ValveTop Technical Reference

IVC & IVM - Integrated Valve Controller & Monitor

TOP SW

BOTTOM SW

Lumitech

IVC & IVM Wiring Diagram

Sensor option G2



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RED

-BLK WHI RED

-BLK

-WHT-

IVC & IVM Circuit Board Wiring Diagrams

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Sensor option D2

GND GND CLOSE

Circuit Board Wiring without BriteLite

BTM-SW

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TOP-SW

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Circuit Board Wiring with BriteLite

BTM-SW

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TOP-SW

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S1- S1+ ENOID

s1+ SOL

GND GND C



Allowable Voltage Range	+/- 10% of rated voltage
Coil Insulation	Class B
Power Consumption (AC)	1.2 VA (60 Hz)
Power Consumption (DC)	0.6 Watts



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IVC Spool Valve Specifications

IVC Integrated Valve Controller

Valve Specifications
Fluid
Max. Operating Pressure
Min. Operating Pressure
Lubrication
Pilot Operator Manual Override
Port Size
Flow Coefficient (Cv)
Weight with fittings & bracket
Mounting
NEMA Rating
Temperature



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SoleNoid Valve 1

S2+ TERMIN



Air, Inert Gas
100 PSI (0.7 MPa)
22 PSI (0.15 MPa)
None required
Non-locking push type (flush)
1/4" NPT (supply & work); 1/8" (exhaust)
1.2 (Bare valve)
0.42 lb.
None required - integrated
Designed to meet 4, 4X - dust tight, weatherproof
14° to 122°F (-10° to 50°C)

ValveTop Technical Reference

IVC Pneumatic Drawing



BN (+) BK (-) CH1

AS-Interface & inductive sensors

PPS Puck Position Sensor

PPS Puck Position Sensor Wiring Diagrams

umitech



Sensor Option NS

Intrinsically safe inductive sensors

BN (+) '⊕ BU (-) ² BK A1 WH A2

WH (+)

BU (-)

SHORFCIRCUIT AND OVERLOAD PROTECTED

CH 2

PNP (SOURCING)

(4)

(3)

1

2



Lumitech

Wiring options DCA and DCD 3-pin and 4-pin mini change connector (available with Sensor option W only)







Load

SPDT Load 4 N AS-i (-) Power Source SHORFCIRCUIT AND OVERLOAD PROTECTED SHORFCIRCUITAND OVERLOAD PROTECTED

Sensor Option AS







LPS Linear Position Sensors





O Blue or White	
	b
OM Black	
	v

'C I	Red	-	
ОМ	Black		
0	Blue or White		Ŷ

Switchpak Wiring Diagrams

TOP

14

13

12

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-0

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SW

BOTTOM

SW

OPTIONAL DEVICES

Option L4

(4) SPDT GO Switches

(SSP, SRP)

BRN

PUR YEL

ORG

-BLI

RFD

RRN

-PUR

YEL

ORG

BLU

.RED

0160

SWITCHPAK

9

10

SW 1

SW 2

SW 3

SW 4

184

0-



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Option L2 (2) SPDT GO Switches (SSP, SXP, SXS, SRP, SBP)

BRN

YEL

ORG-

BLU-

RED

0100 Ø11 Ø12 Ø

___0

TOP SW

BOTTOM SW

SOLENOID

ACK

WHITE

ACK







OPTIONAL

SOLENOID



SWITCHPAK







Option M2 with Analog Output option 42 (2) SPDT Mechanical Switches with 4-20mA Transmitter (SSP, SXP, SXS, SRP)

Option M2 with Analog Output option 01 or 10 (2) SPDT Mechanical Switches with 1K or 10K ohm potentiometer (SSP, SXP, SXS, SRP)

Switchpak Wiring Diagrams

SWITCHPAK

Switchpak Wiring Diagrams

SWITCHPAK



Option T2 (2) DPDT Mechanical Switches (SSP, SXP, SXS, SRP, SEP)

Option D2 (2) SPDT Hermetically Sealed Switches (SXP, SXS)

RED-SW1 -BLK-RED-SW2 BLK-RED-SW3 BLK-RED-SW4 BLK ↓ ↓ ● OPTIONAL SOLENOID

Option W4 (4) SPST Hermetically Sealed Switches (SSP, SRP)



Option D4 (4) SPDT Hermetically Sealed Switches (SSP, SRP)

OPTIONAL SOLENOID

3

0-

-BLM

-RED

-WHT

_BLK

RED

e

010 011 012 0

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TOP SW

BOTTOM SW









Option W2 (2) SPST Hermetically Sealed Switches (SSP, SRP, SEP, SBP)

Switchpak Wiring Diagrams

SWITCHPAK

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Switchpak Wiring Diagrams

SWITCHPAK







Option E2 (2) Pepperl + Fuchs NJ2-V3-N Switches (SXP, SXS, SUP)



(2) Pepperl + Fuchs NJ2-V3-N Switches with 4-20mA Transmitter (SXP, SXS)





Option E2 with Analog Output option 01 or 10 (2) Pepperl + Fuchs NJ2-V3-N Switches

with 1K or 10K ohm potentiometer (SXP, SXS)







Option F2 & P2 with Analog Output option 42

(2) P+F NJ2-11-SN-G switches (F2) or (2) Inductive non-NAMUR sensors (P2) with 4-20mA Transmitter (SXP, SXS)

Option F2 and P2 with Analog Output option 01 or 10 (2) P+F NJ2-11-SN-G switches (F2) or (2) Inductive non-NAMUR sensors (P2) with 1K or 10K ohm potentiometer (SXP, SXS)

Common Options (SSP, SRP, SEP)

SWITCHPAK

Potting Compartment

Within the housing at the conduit entries are two potting compartments available for factory sealed leads. They are designed to UL and CSA specifications, eliminating the need to add a sealed potting compartment within 18" of the Switchpak. Sealing of these compartments in the filed also prevents moisture ingression through the conduit.

available for areas with high heat, moisture, and

corrosion. All Switchpaks have O-ring seals



- Dome shape provides superior strength

- Snap on design for fast, precise 360°
- EaStar material optional

- Custom text options available
- 3-way valve indication available
- Fluorocarbon rubber -15° to 400°F (-26° to 204°C)

0-rings Standard O-rings are Buna-N and are acceptable for most applications. Viton O-rings are

between the uppers and lower switch housing, at each end of the shaft, and under the outer dome. Buna-N: Nitrile rubber -65° to 275°F (-53° to 135°C)

Viton:



Analog Output option 01 or 10 with no sensors (SSP, SXP, SXS, SRP)

SWITCHPAK



OPTIONAL

SOLENOID

Analog Output Option 42 with no sensors

(SSP, SXP, SXS, SRP)

4-20mA

TRANSMITTER

120

<u>__0</u>



ValveTop Technical Reference

Visual Indication



adjustment to actual valve position

- Impact resistant Lexan polycarbonate material

- O-ring sealed from moisture and contamination

- Highly visible Green/Red, Open/Closed indication eliminates guesswork

Shafts and Cams

Adjustment cams allow switch positions to be quickly set to valve position.

Shafts are 300 series stainless steel with stainless steel retaining rings top and bottom and are O-ring sealed though bronze/ composite Teflon bearings. O-rings are standard Buna-N with Viton optional.

Shafts are available in NAMUR or standard configuration. NAMUR shaft mates directly with NAMUR actuator output shafts without couplers.

Cams are molded Nylon-6 on 4° splines and spring-loaded for easy calibration. Target magnet inserts are used for prox switch options.

A precision gear is mated to the shaft for 4-20mA transmitter and potentiometer options.

Terminal Strips

A pre-wired, 12-point numbered terminal strip is standard for most options. There are two open contacts for an integral solenoid valve connection in all Switchpaks.

- Standard 12-point terminal strip is Nylon Euro style
- Terminal strip will receive maximum 14AWG wire
- Terminal screws and contacts are nickelplated brass
- A minimum of two terminals are available for accessory mounting with any switch option

Switchpak Sensor Options

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Switchpak Sensor Options

SWITCHPAK

GO Switch - Model 35 Sensor options L2 & L4 (SSP, SXP, SXS, SRP, SBP)



The model 35 GO Switch features large contacts with a snap action to switch heavy loads. Model 35 Switches are gold flashed with a built-in wiping action and high contact pressure to switch low loads. All this and hermetic sealing to maintain a clean, dry atmosphere make the Model 35 GO Switch the top choice for critical processes.

Contacts: SPDT, Form C. Silver cadmium oxide, gold flashed.

Contact chamber: Hermetically sealed

Response time: 8 milliseconds

Temperature rating: -40° to 221°F (-40 to 105°C)

AC		DC		
Volts	Amps	Volts	Amps	
120	4	24	3	
240	2	48	1	
480	*	125	0.5	
		250	*	

Housing: Copper/black lacquer Repeatability: .002" (.05 mm) typical Differential: 5/32" (4 mm)

Approvals: UL listed and CSA certified

Proximity Sensors Sensor options W2, W4, D2 & D4



The double-hinged design and snap action make this switch excellent for high and low current applications. It is literally the best reed available.

Contact chamber: Hermetically sealed

Temperature rating: -40° to 180°F (-40 to 82°C)

Tube atmosphere: Vacuum

SPST - Bifurcated Sensor options W2 & W4 (SSP, SRP, SEP, SBP)

Contacts: SPST, Form A. Silver cadmium oxide; 3.0A/120VAC; 0.5A/24VDC

<u>SPDT</u> Sensor options D2 & D4 (SSP, SXP, SXS, SRP, SEP, SBP)

Contacts: SPDT, Form C. Silver cadmium oxide; 1.0A/120VAC; 0.5A/24VDC

Proximity Sensors Sensor options E2, F2 & P2

SWITCHPAK

Pepperl + Fuchs NJ2-V3-N Sensor option E2 (SXP, SXS, SUP only)



V3 proximity, 2 wire, non-amplified NAMUR EExia IIC certified

Protection: IP67 Voltage Range: 0 to 25VDC Housing Material: PBT/PPS Operating Distance: 2 mm

Pepperl + Fuchs NJ2-11-SN-G Sensor option F2 (SXP, SXS only)

Protection: IP68 Voltage Range: 5 to 25VDC Housing Material: High grade steel Sensing face: PBT Operating Distance: 2 mm

Inductive Non-NAMUR Sensors Sensor option P2 (SXP, SXS only)

Voltage Range: 10 to 30VDC **Operating Distance:** 5 mm



Mechanical Switches Sensor options M2, M4 & T2

- Economical
- SPDT and DPDT contacts
- High current carrying capability
- Temperature rating: -40° to 300°F (-40 to 148°C)
- UL reconized and CSA certified

SPDT

Sensor options M2, M3 & M4 (SSP, SXP, SXS, SRP, SUP, SEP)



Contacts: SPDT. Form C

- 15A/125VAC. 0.5 HP
- 10A/250VAC
- 0.5A/125VDC
- -0.25A/250VDC



DPDT Sensor option T2 (SSP, SXP, SXS, SRP, SEP)

Contacts: DPDT, 2 Form C

- 15A/125VAC. 0.75 HP