

Automation and Control

ITT is a world leader in the design and manufacture of aseptic diaphragm valves. We also strive to offer our customers the latest technology for the networking, monitoring and control of these valves. Whether it be as simple as on/off switch or a more complicated positioner or networked feedback device, we can supply our customer's needs for a complete automated valve with precise control requirements.

Our accessories are simple to mount and set, and are compact enough to be easily installed and maintained where space is at a premium.

Many of our accessories have been installed in other industries such as oil and petrochemical, chemical, pulp and paper, mining and power plants across the world, as well as in less demanding environments.

Our accessory portfolio includes our VSP and SP2 switch devices as well as our Moore positioners. To handle our customers' network

needs, we are introducing the ConnectITT series of network hardware. This product line was designed to offer the customer a tremendous savings on their network needs. Where required, we can also provide control devices for more demanding hazardous location applications.

While ITT strives for "One Valve – One Source – One Solution" for our customers' valve needs, we recognize that we may need to offer alternative solutions for their valve controls. We continue to utilize the latest emerging technologies in our product offerings. Along with our dedicated and experienced engineering staff, we can combine our own products with those of 3rd party suppliers to provide the customer with the best and most economical solution for their particular needs.

Providing a valve to fit your application and not your application to fit our valve; this is what ITT is all about.



Value Switch Package (VSP)

The VSP is a switch package engineered with cost effectiveness, simplicity and flexibility in mind. The VSP maintains a small dimensional envelope for process piping installations where space is at a premium. The VSP is offered with a complete range of mechanical switches and proximity sensors to meet your electrical and control system specifications.

The VSP is a perfect compliment to both the Advantage® and Advantage® Piston Actuator lines of pneumatic actuation.



Specifications

	US	Metric
Size Range	0.25–2"	DN8-DN50
Temperature	140°F	60°C
Switch Selection	Mechanical and Proximity (see chart)	
Housing Material	Polyamide, FDA compliant	
Cover Material	Polysulfone, FDA compliant	
Wire Gauge	12 Gauge max. input	
Conduit Port	One M20 conduit port, located radially at any position, 360° (1/2"-NPT adapter available)	
Enclosure Rating	Nema: Nema 4X Ingress Protection Rating: IP66	
Switch Certifications	VSPN: CE, cCSAus, FM, ATEX VSPP Sensor: CE, cULus VSPZ: CE, cULus VSPS48, VSPG30: cULus Terminal Strip: CE, cULus	
Hazardous Ratings for VSPN with Approved Amplifier/Barrier	Intrinsically Safe - FM, ATEX, cCSAus approved Group II, category 1D T6 Group II, category 1G/2G T6 Class I, II & III, Division 1, Groups A-G T6 Entity Parameters: Vmax=15V, Imax=50mA, Pmax=120mW, Ci=80nF, Li=110µH	

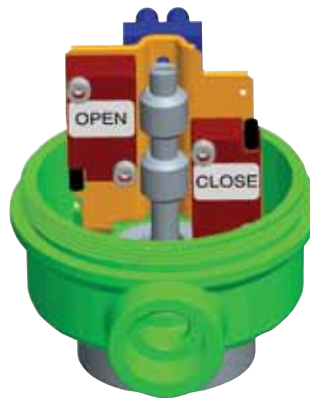
Note: VSP is not autoclavable

Value Switch Package (VSP)

Order Code	Switch Type	Switch Contact/Output	Amperage	Voltage
VSPS48	Mechanical	Silver SPDT	6A	12-48 VAC/DC
VSPG30	Mechanical	Gold SPDT	100 mA	30 VAC/DC
VSPZ	Proximity	2 Wire "Z"	200 mA	5-36 VDC
VSPN	Proximity	2 Wire Namur	1 mA	7.5-30 VDC
VSPPP	Proximity	3 Wire PNP	200 mA	10-36 VDC

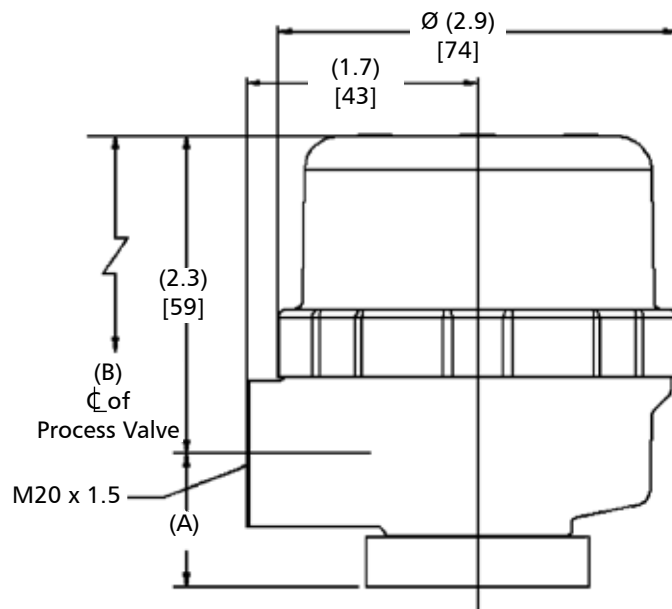


Mechanical



Proximity

Dimensions



Valve Size	A		B			
			APA Actuator		Advantage Actuator	
	in	mm	in	mm	in	mm
BT	1.00	25.4	7.51	190.8	7.39	187.7
0.5	1.00	25.4	7.79	197.9	7.83	198.9
0.75	1.00	25.4	8.63	219.2	8.82	224.0
1	1.00	25.4	9.18	233.2	9.28	235.7
1.5	1.50	38.1	13.30	337.8	13.45	341.6
2	1.50	38.1	13.84	351.5	14.07	357.4

Note: Dimensions are with elastomer diaphragm and butt-weld forged bodies.

Switch Package SP2

As automation becomes increasingly more important, the need for an accurate and reliable control system for your system is vital. The SP2 switch not only complies with industry standards but is a great solution for your automation needs. The SP2 product line is complete with a full range of mechanical switches and proximity sensors to meet your valve control system requirements.



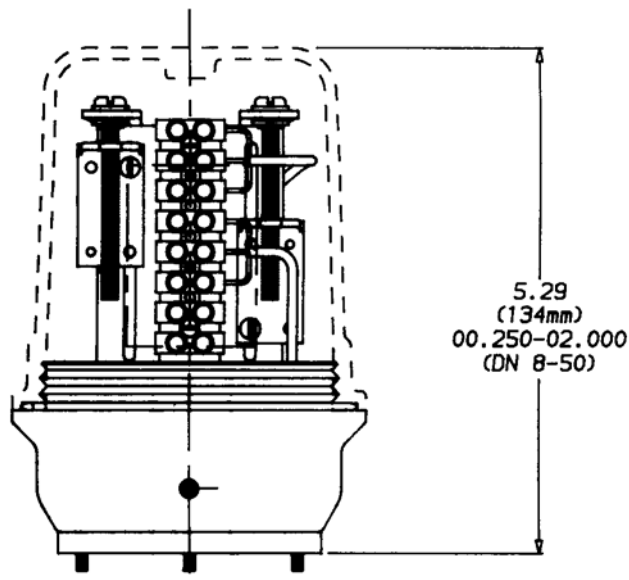
Specifications

	US	Metric
Size Range	0.25–4"	DN8-DN100
Temperature	150°F	65°C
Switch Selection	Mechanical and Proximity (see chart)	
Housing Material	Polyarylsulfone (PAS) Thermoplastic FDA compliant. Maximum temperature is 300°F (149°C).	
Cover Material	Polyarylsulfone (PAS) Thermoplastic FDA compliant. Maximum temperature is 300°F (149°C).	
Wire Gauge	12 Gauge Max	
Conduit Port	Two 1/2" NPT conduit ports. Package can be rotated at 45° increments.	
Enclosure Rating	Nema: Nema 4x Ingress Protection Rating: IP66	
Switch Certifications	SP2S:CSA, UL SP2G:CSA, UL SP2Z:CE, cULus SP2N:CE, cCSAus, FM, ATEX SP2P:ce, cULus SP2B:CE, CSA, cULus, CCC Terminal strip: UL, CSA	
Hazardous Ratings for SP2N with Approved Amplifier/Barrier	Intrinsically Safe - FM, ATEX, cCSAus Approved Group II, category 1D T6 Group II, category 1G/2G T6 Class I, II & III, Division 1, Groups A-G T6 Entity Parameters: Vmax=15V, Imax=50mA, Pmax=120mW, Ci=80nF, Li=110µH	

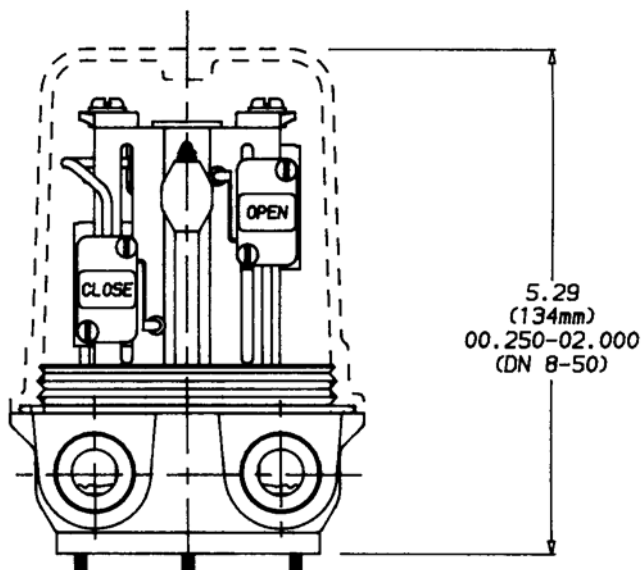
Note: SP2 is not autoclavable

Switch Package SP2

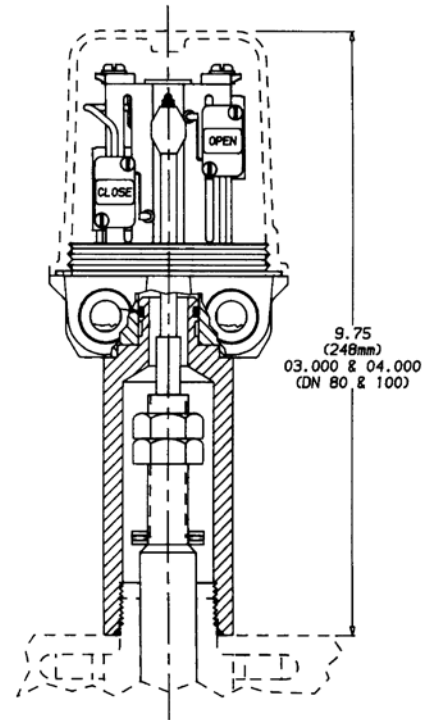
Order Code	Switch Type	Switch Contact/ Output	Amperage	Voltage
SP2S	Mechanical	Silver	10A	250 VAC
			250 mA	250 VDC
SP2G	Mechanical	Gold	1 A	125 VAC
SP2Z	Proximity	2 Wire "Z"	100 mA	30 VDC
SP2N	Proximity	2 Wire Namur	3 mA	24 VDC
SP2P	Proximity	3 Wire PNP	100 mA	30 VDC
SP2NP	Proximity	3 Wire NPN	100 mA	30 VDC



Bio-Tek - 2" (DN 8-50) and Series 33 Back View



Bio-Tek - 2" (DN 8-50) and Series 33 Front View



3" - 4" (DN 80-100) Series 47 Only

Switch Package SP3

The SP3 is specifically designed for a broad range of Pharmaceutical and Bio-Processing applications. The SP3 provides a small dimensional envelope while increasing the design flexibility. The SP3 is offered in a variety of options including mechanical switches and proximity sensors in both 2 and 3 wire.



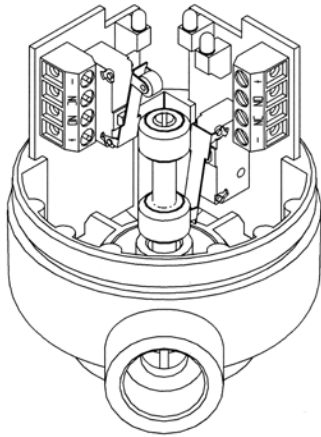
Specifications

	US	Metric
Size Range	0.25–2"	DN8-DN50
Temperature	140°F	60°C
Switch Selection	Mechanical and Proximity (see chart)	
Housing Material	Polyamide, FDA compliant.	
Cover Material	Polysulfone, FDA compliant. Maximum temperature is 140°F (60°C).	
Wire Gauge	16 Gauge Max	
Conduit Port	One 1/2" NPT conduit port, located radially at any position, 360°.	
Enclosure Rating	Nema: Nema 4x Ingress Protection Rating: IP65	
Switch Certifications	SP3S48:NF, UL, cUL SP3S110:NF, UL, cUL SP3S240:NF, UL, cUL SP3G30:NF, UL, cUL SP3GSA:NF, UL, cUL SP3Z:cULus, cCSAus, FM SP3N:cULus, FM, cCSAus, Ex Cenelec SP3P:CE SP3NP:CE Terminal strip: UL, CSA	
Hazardous Ratings for SP3N with Approved Amplifier/Barrier	Intrinsically Safe - FM, Ex Cenelec cCSAus Approved Class I, II & III, Division 1, Groups A-G T6 Entity Parameters: $V_{max}=16V$, $I_{max}=25mA$, $P_{max}=34mW$, $C_i=40nF$, $L_i=50\mu H$	

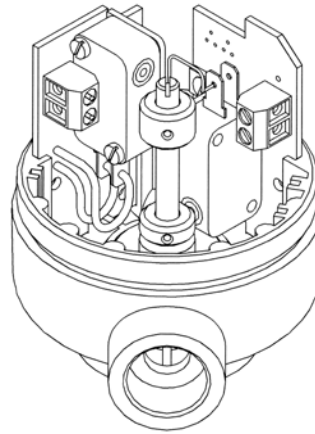
Note: SP3 is not autoclavable

Switch Package SP3

Order Code	Switch Type	Switch Contact/Output	Amperage	Voltage
SP3S240	Mechanical	Silver	10 A	110-230 VAC/DC
SP3S110	Mechanical	Silver	10 A	48-110 VAC/DC
SP3S48	Mechanical	Silver	12A	12-48 VAC/DC
SP3G30	Mechanical	Gold	100 mA	12-30 VAC/DC
SP3Z	Proximity	2 Wire "Z"	100 mA	10-30 VDC
SP3N	Proximity	2 Wire Namur	3 mA	5-25 VDC
SP3P	Proximity	3 Wire PNP	200 mA	10-30 VDC
SP3NP	Proximity	3 Wire NPN	200 mA	10-30 VDC

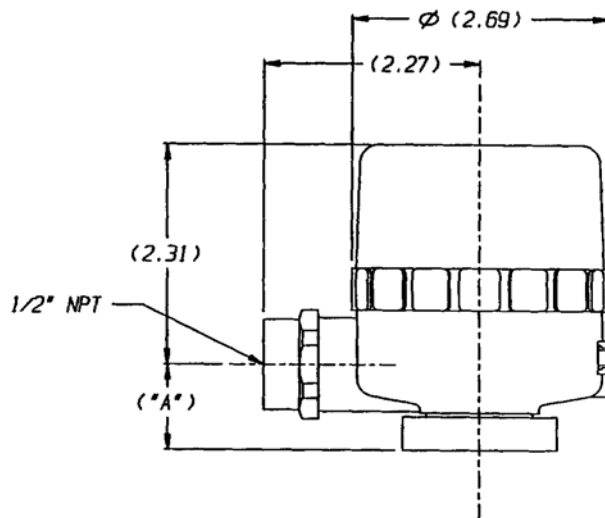


Mechanical



Proximity

Dimensions



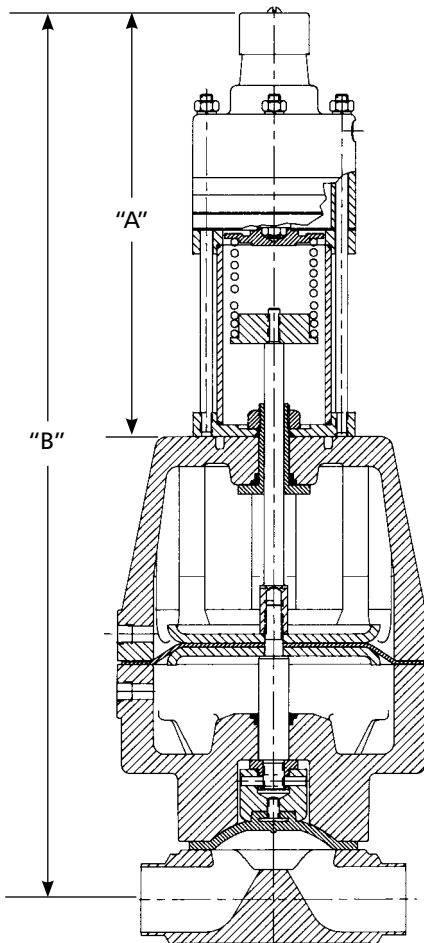
Actuator Size	"A"	
	Inch	mm
Bio-Tek - 1.0	0.98	24,9
1.5 - 2.0	1.46	37,1

Positioner

For throttling and flow control applications, the direct mounted Siemens (formerly Moore) Positioner with Advantage® Actuator is a compact and reliable solution.

Features:

- Pneumatic Siemens 73-series positioner
- Operates on 3-15 psi (0.2-1.0 bar)
- A transducer can be adapted to handle an I/P conversion from a typical 4-20 mA
- Close-coupled design allows for direct air loading from the Siemens positioner to the upper actuator chamber in Air to Open - Air to Close and Fail Open actuators
- The transparent tubing and red spring disc allows for visual position verification



Valve Size		A		B	
Inch	DN	Inch	cm	Inch	cm
0.75	20	8.34	212	14.06	357
1.00	25	8.34	212	14.06	367
1.50	40	9.06	230	18.81	478
2.00	50	9.06	230	19.28	490
3.00 ¹	80	9.81	249	27.03	687
4.00 ¹	100	9.81	249	28.23	717

¹ Dimensions reflect 47 acuator

ConnectITT - Network Block

The ITT Network Block combines standard discrete ITT switches to create a network for valves. The installed cost of this simple network is significantly less than traditional networked valves with DeviceNet nodes built in. Networked valves are not really “smart” and have no diagnostics or intelligence built in. If you need to know if the valve is open or closed and be able to turn the valve on and off, the Network Block is your solution.

The Network Block will also allow you to retrofit existing discrete valve installations so they can communicate with network systems. The Network Block is capable of connecting up to four valve switches. Additionally, it can power up to four additional devices requiring up to 0.5 A.

Features and Benefits

- Connects four valves to the DeviceNet
- Valves are “Non-Smart” or standard issue
- Regularly stocked valves that you have always used can be part of the network
- Allows connection of PNP or 2 wire switches and low wattage solenoid with spring return
- Bottom four ports are available for solenoids only or for Double-Acting Solenoids
- Impossible to improperly connect the valve to the valve block
- The 5 pin receptacle is factory mounted or field mounted in the valve
- One cordset connects the valve to the valve block

Advantages

- Fast and easy to install
- Less wire and labor is required compared to traditional networked valves
- Commissioning and debugging time is less than traditional networked valves
- Cost Savings!
 - Switch costs less than a DeviceNet switch
 - Wiring cost is reduced
 - Installation cost is reduced
 - Less I/O points (each block is a node vs. each switch)
 - Less bandwidth on the network is required, which will reduce overhead cost



How DeviceNet™ Works

DeviceNet protocol is used to control and transfer data. It is a low cost communications protocol that connects and networks industrial devices such as limit switches, photoelectric sensors, valve manifolds, motor starters, process sensors, bar code readers, variable frequency drives, panel displays and operator interfaces, among other things.

The DeviceNet network eliminates point-to-point wiring by allowing direct connection to control devices. The direct connection provides improved communication between devices, as well as important device-level diagnostics not easily accessible or available through point-to-point I/O interfaces. DeviceNet is dedicated to the network and connected to PLCs by a single network cable. The stations obtain and transmit messages to the network via these PLCs and are typically programmed by a computer.

Devices connected to DeviceNet stations can also be hot swapped, which means they can be removed and replaced without affecting other operations connected to the station.

A DeviceNet network supports up to 64 nodes and virtually an unlimited amount of I/O. The bus uses a trunkline-dropline topology, where bus power and communication are supplied on a single cable. Bus power is 24 VDC and supplies current to operate the nodes and (typically) power input devices. Some DeviceNet stations require an additional 24 VDC auxiliary power to supply current for outputs.

DeviceNet is a flexible network with the capability of bridging other networks such as PROFIBUS®, As-interface®, RS485, etc. Further, multiple manufacturers’ products are compatible with DeviceNet, thereby allowing stations to be added to existing operations with the ability to connect to virtually any device.

ConnectITT - Network Block

Input Circuits	(8) PNP 3-wire sensors or dry contacts
Input Voltage	11-26 VDC
Input Short-Circuit	<700 mA (total, short-circuit protected)
Input Signal Current (Input)	OFF <2 mA ON 2.5-3.2 mA at 24 VDC
Input Delay	2.5 ms
Output Circuits	(8) DC actuators
Output Voltage	11-26 VDC
Output Load Current	0.5 A per output
Maximum Switching Frequency	100 Hz

I/O LED Indications

Off = Not Active
Green = Active

Module Status LED

Off = Power off
Green = Operating
Flashing Green = Autobaud
Flashing Red = I/O short

Network Status LED

Off = No connection
Green = Established connection
Flashing Green = Ready for connection
Flashing Red = Connection time-out
Red = Connection not possible

Adjustments

Address 0-63 via rotary switch

Housing

Material 220 x 60 x 40 (H x W x D)
Glass filled nylon with nickel plated brass connectors
Mounting Enclosure 4 through-holes, 5.3 diameter
NEMA 1, 3, 4, 6, 6P, 12, 13 and IP 67, 68, and 69K
Operating Temperature -40° to 70°C (-40° to 158° F)

Module Specifications

Supply Voltage

Bus Power 11-26 VDC, powers communication and I/O
Internal Current Consumption ≤75 mA plus sum of sensor and output currents (from bus power)

I/O Data Mapping

Item Number: F0148
Product Type/Code: 7/2369

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Input Data	0	I-7	I-6	I-5	I-4	I-3	I-2	I-1	I-0
	1	OS-7	OS-6	OS-5	OS-4	OS-3	OS-2	OS-1	OS-0
	2	IGS	OGS						
Output Data	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	O-7	O-6	O-5	O-4	O-3	O-2	O-1	O-0

Abbreviations

I = Input Data (0=OFF, 1=ON)
O = Output Data (0=OFF, 1=ON)
OGS = Output Group Status (0=Working, 1=Fault)
IGS = Input Group Status (0=Working, 1=Fault)