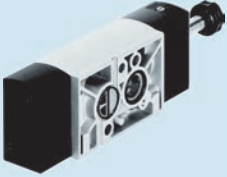


17 Process automation



- + Electronic controllers and remote I/O
- + Valve modules with electrical individual, multi-pin or fieldbus connections or integrated control
- + Solenoid valves with Namur interface (VDI/VDE3845)
- + Electropneumatic positioning controllers for quarter turn actuators
- + Pneumatic linear actuators with integrated positioner
- + Pneumatic quarter turn actuators
- + Ball valves with pneumatic actuator
- + Pneumatically or solenoid actuated media valves


Highlights



VSNC
Solenoid valve

- + Versatile Ex solenoid systems
- + Sturdy and capable of high flow rates

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DFPI
Linear actuator

- + Mounting interface to ISO 15552 or DIN 3358
- + Position sensing via built-in displacement encoder

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Product overview 1244

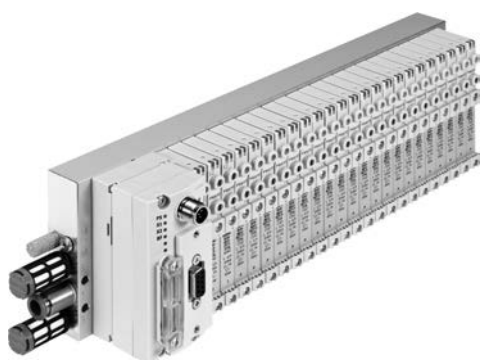
Control technology and remote I/O



- Electronic controllers and remote I/Os including electrical peripherals for standard and potentially explosives atmospheres.

→ www.festo.com/pa/control





Valve terminals





- Valve modules with electrical multi-pin, individual, or fieldbus connections or integrated control, with or without electrical inputs and outputs

→ www.festo.com/pa/valveterminals





Pilot valves

Type				
Valve function	5/2 double-solenoid, 5/2 or 3/2 convertible, 5/3 pressurised, 5/3 exhausted, 5/3 closed	5/2-way or 3/2-way, single solenoid	5/2-way, double-solenoid, and 3/2-way, single-solenoid, 8/2-way, single-solenoid	5/2-way, single-solenoid
Operating pressure	1.5 ... 10 bar	2 ... 10 bar	2.5 ... 8 bar	2 ... 10 bar
Ambient temperature	-20 ... 60 °C	-5 ... 40 °C	-10 ... 60 °C	-5 ... 40 °C
Pneumatic port 1	G1/4, NPT1/4-18	G1/4	G1/4	Sub-base
Standard nominal flow rate	950 ... 1350 l/min	900 l/min	950 l/min	400 ... 1000 l/min
Explosion prevention and protection	ATEX category gas: II 2G, ATEX category dust: II 2D, type of ignition protection gas: Ex ia IIC T6 Ga, type of ignition protection dust: Ex t IIIC T80°C Db	ATEX category gas: II 2G, ATEX category dust: II 2D, type of ignition protection gas: c T6, type of ignition protection dust: c 40°C	ATEX category gas: II 2G, ATEX category dust: II 2D, type of ignition protection gas: Ex ia IIC T6 X, type of ignition protection dust: Ex tD A21 IP65 T80°CX	
Description	<ul style="list-style-type: none"> • Operating voltage: 12, 24, 48 V DC, 24, 48, 120, 230 V AC • Port pattern to NAMUR VDI/VDE 3845 • Solenoid actuated, piloted • Mechanical spring return • All solenoid coils can be used on an armature tube • Wide choice of EX solenoid systems, IEC Ex, FM EX 	<ul style="list-style-type: none"> • Voltage 12, 24, 42, 48 V DC, 24, 42, 48, 110, 230, 240 V AC • Port pattern to NAMUR VDI/VDE 3845 • Solenoid actuated, piloted • Mechanical spring return • Can be converted from 5/2 to 3/2-way function 	<ul style="list-style-type: none"> • Voltage 24 V DC • Port pattern to NAMUR VDI/VDE 3845 • Solenoid actuated, piloted • Mechanical spring return • Can be converted from 5/2 to 3/2-way function 	<ul style="list-style-type: none"> • Voltage 24 V DC, 110, 230 V AC • Port pattern as per NAMUR as per VDI/VDE 3845 • Solenoid actuated, piloted • Mechanical spring return • Can be converted from 5/2 to 3/2-way function
→ Page/online	vsnc	nvf3	vsnb	mgtbh


Pilot valves

Type	 Solenoid valve VOFC	 Solenoid valve VOFD
Valve function	3/2-way, single solenoid, closed, 5/2-way, double solenoid, 5/2-way, single solenoid	3/2-way, closed, monostable, semi-automatic, 3/2-way, closed, monostable
Operating pressure	0 ... 8 bar	0 ... 12 bar
Ambient temperature	-25 ... 60 °C	-50 ... 60 °C
Pneumatic port 1	G1/4, port pattern as per NAMUR, NPT1/4-18	G1/4, port pattern as per NAMUR, NPT1/4-18
Standard nominal flow rate	738 ... 3000 l/min	52 .. 1900 l/min
Explosion prevention and protection	ATEX category gas: II 2G, ATEX category dust: II 2D, type of ignition protection gas: Ex emb II T6, T5, type of ignition protection dust: Ex tD A21 IP65 T80°C, T95°C	ATEX category gas: II 2G, ATEX category dust: II 2D, type of ignition protection gas: Ex emb II T6, T5, type of ignition protection dust: Ex tD A21 IP65 T80°C, T95°C
Description	<ul style="list-style-type: none"> Internal/external pilot air reversing via internal shuttle valve Voltage 24, 110, 230 V DC, UC Sturdy and corrosion-resistant thanks to tough enamel surface 	<ul style="list-style-type: none"> Voltage 24, 110, 230 V DC, AC, UC Sturdy and corrosion-resistant thanks to tough enamel surface SIL certificate for ESD applications.
→ Page/online	vofc	vofd



Sensor boxes

Type	 Limit switch attachment SRBF	 Limit switch attachment SRAP	 Limit switch attachment DAPZ	 Limit switch attachment QH-DR-E
Information on materials - housing	Painted die-cast aluminium	Wrought aluminium alloy		PC, PA
Operating voltage range AC	0 ... 250 V		0 ... 250 V	0 ... 250 V
Operating voltage range DC	0 ... 24 V	15 ... 30 V	0 ... 250 V	0 ... 250 V
Measuring principle	For mechanical/electric proximity sensor		Inductive, mechanical/electrical	Pneumatic (with stem actuated micro valve S-3-PK-3B)
Switching element function	Changeover contact		N/C contact, N/O contact, changeover switch	
Description	<ul style="list-style-type: none"> Limit switch attachment with two mechanical switches in painted aluminium housing Connection via an 8-pin terminal block Yellow-red visual indicator 	<ul style="list-style-type: none"> Analogue sensor box For monitoring the position of quarter turn actuators Output signal 4 ... 20 mA ATEX category gas: II 2G, ATEX category dust: II 2D, type of ignition protection gas: Ex nA IIC T5 X Gc, type of ignition protection dust: Ex tc IIC T90°C X Dc IP65 	<ul style="list-style-type: none"> Actuator interface as per NAMUR VDI/VDE 3845 Quick and easy assembly and connection Integrated solenoid valve actuation DAPZ-SB-I-... with AS-interface. ATEX category gas: II 2G X, type of ignition protection gas: Ex ia IIC T6, Ex d e IIC T6 Gb 	<ul style="list-style-type: none"> Square design
→ Page/online	srbf	srp	dapz	qh-dr



Positioners

	
Type	Positioner CMSX
Standard nominal flow rate	50 ... 130 l/min
Ambient temperature	-5 ... 60° C
Setpoint value	0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA
Operating pressure	3 ... 8 bar
Safety note	Adjustable; holding, opening, closing
Operating voltage range DC	21.6 ... 26.4 V
Description	<ul style="list-style-type: none"> • Positioner for double-acting quarter turn actuators for actuating shut-off valves or ball valves in process automation • Suitable for quarter turn actuators with a swivel angle of approx. 90° and a mechanical interface in accordance with VDI/VDE Directive 3845 • Simple and efficient position control based on the PID control algorithm
→ Page/online	cmsx




Linear actuators

		
Type	Linear actuators Copac DLP	Linear actuator with displacement encoder DFPI
Piston diameter	80, 100, 125, 160, 200, 250, 320 mm	0, 125, 160, 200, 250, 320 mm
Stroke	40 ... 600 mm	40 ... 990 mm
Theoretical force at 6 bar, advancing	3016 ... 48255 N	4712 ... 48255 N
Position sensing	For proximity sensor	With integrated displacement encoder
Description	<ul style="list-style-type: none"> • Integrated air supply • Piston rod with male thread • NAMUR port pattern for solenoid valves to VDI/VDE 3845 • Connection for process valves to DIN 3358 	<ul style="list-style-type: none"> • Optionally with integrated positioning controller and valve block • Piston rod with male thread • Based on standard ISO 3358 or ISO 15552 • ATEX category gas: II 3G, ATEX category dust: II 3D, type of ignition protection gas: Ex nA IIC T4 X Gc, c T4 X, type of ignition protection dust: Ex tc IIIC T120°C X Dc, c 120°C X
→ Page/online	dlp	dfpi




Quarter turn actuators

		
Type	Quarter turn actuators DAPS	Quarter turn actuators DFPB
Design	Scotch yoke system	Rack and pinion
Mode of operation	Double-acting, single-acting	Double-acting, single-acting
Size of valve actuator	8 ... 8000	10 ... 1050
Flange hole pattern	F03, F04, F05, F07, F10, F12, F14, F16, F25	F03, F04, F05, F14, F0710, F0507, F1012,
Operating pressure	1 ... 8.4 bar	1 ... 8 bar
Ambient temperature	-50 ... 150 °C	-20 ... 80 °C
Description	<ul style="list-style-type: none"> • Torque 7 ... 8000 N • Swivel angle 0 ... 90° • Flange hole pattern to ISO 5211 • Port pattern as per NAMUR for solenoid valves/sensor boxes to VDI/VDE 3845 • ATEX category gas: II 2G, ATEX category dust: II 2D, type of ignition protection gas: c TX X, type of ignition protection dust: c TX X 	<ul style="list-style-type: none"> • Torque 7 ... 945 N • Swivel angle 0 ... 90° • Flange hole pattern to ISO 5211 • Port pattern as per NAMUR for solenoid valves/sensor boxes to VDI/VDE 3845 • ATEX category gas: II 2G, ATEX category dust: II 2D, type of ignition protection gas: c T4 X, type of ignition protection dust: c 125°C X
→ Page/online	daps	dfpb




Ball valves and ball valve units

			
Type	Ball valve VAPB	Ball valve VZBC	Ball valve actuator unit VZBC
Design	2-way ball valve	2-way ball valve	2-way ball valve, quarter turn actuator
Type of actuation	Mechanical	Mechanical	Pneumatic
Nominal width	15, 20, 25, 32, 40, 50, 63	15, 20, 25, 32, 40, 50, 65, 80, 100	15, 20, 25, 32, 40, 50, 65, 80, 100
Process valve connection	Rp1/4, Rp3/8, Rp1, Rp1 1/4, Rp1 1/2, Rp1/2, Rp3/4, Rp2, Rp2 1/2	Ring housing with threaded flange	Ring housing with threaded flange
Flow rate Kv	5.9 ... 535 m³/h	19.4 ... 1414 m³/h	19.4 ... 1414 m³/h
Medium pressure			6 ... 8.4 bar
Temperature of medium	-10 ... 150 °C	-10 ... 200 °C	-10 ... 200 °C
Description	<ul style="list-style-type: none"> • Automatable 2-way ball valve • Brass design • Blow-out proof shaft • Manual operation possible using hand lever • Connecting thread to DIN 2999 or DIN ISO 228-1 • Mounting flange according to ISO 5211 	<ul style="list-style-type: none"> • Automatable 2-way ball valve with compact flange • Stainless steel design • Short installed length • Blow-out proof shaft • Manual operation possible using hand lever • Connecting thread to DIN 2999 or DIN ISO 228-1 • Mounting flange according to ISO 5211 	<ul style="list-style-type: none"> • Ball valve actuator unit with double-acting or single-acting quarter turn actuator • Stainless steel ball valve in compact design • Port pattern as per NAMUR for solenoid valves/sensor boxes to VDI/VDE 3845 • Flow is fully opened or closed in both directions • ATEX category gas: II 2G, ATEX category dust: II 2D
→ Page/online	vapb	vzbc	vzbc




Ball valves and ball valve units

Type	 Ball valve VZBA	 Ball valve actuator unit VZBA	 Ball valve actuator unit VZPR
Design	2-way ball valve, 3-way ball valve, L-shaped hole, T-shaped hole	2-way ball valve, 3-way ball valve, L-shaped hole, quarter turn actuator, T-shaped hole	2-way ball valve, quarter turn actuator
Type of actuation	Mechanical	Pneumatic	Electric, pneumatic
Nominal width	8, 10, 15, 20, 25, 32, 40, 50, 65, 80, 100	8, 10, 15, 20, 25, 32, 40, 50, 65, 80, 100	15, 20, 25, 32, 40, 50, 63
Process valve connection	Rp1/4, Rp3/8, Rp1/2, Rp3/4, Rp1, Rp1 1/4, Rp1 1/2, Rp2, Rp2 1/2, Rp3, Rp4, weld-on ends/weld-on ends	Rp1, Rp1 1/2, Rp1 1/4, Rp1/2, Rp1/4, Rp2, Rp2 1/2, Rp3, Rp3/4, Rp3/8, Rp4, weld-on ends/weld-on ends	Rp1/4, Rp3/8, Rp1/2, Rp3/4, Rp1, Rp1 1/4, Rp1 1/2, Rp2, Rp2 1/2
Flow rate Kv	7 ... 1414 m³/h	7 ... 1,414 m³/h	5.9 ... 535 m³/h
Medium pressure		6 ... 8.4 bar	1 ... 8.4 bar
Temperature of medium	-10 ... 200 °C	-10 ... 200 °C	-20 ... 150 °C
Description	<ul style="list-style-type: none"> • Automatable 2-way or 3-way ball valve • Stainless steel design • Blow-out proof shaft • Manual operation possible using hand lever • Connecting thread to DIN 2999 or DIN ISO 228-1 • Mounting flange according to ISO 5211 	<ul style="list-style-type: none"> • Ball valve actuator unit with double-acting or single-acting quarter turn actuator • Stainless steel ball valve • Port pattern as per NAMUR for solenoid valves/sensor boxes to VDI/VDE 3845 • Flow is fully opened or closed in both directions • ATEX category gas: II 2G, ATEX category dust: II 2D 	<ul style="list-style-type: none"> • Ball valve actuator unit with double-acting quarter turn actuator • Brass ball valve • Port pattern as per NAMUR for solenoid valves/sensor boxes to VDI/VDE 3845 • Flow is fully opened or closed in both directions
→ Page/online	vzba	vzba	vzpr




Solenoid-actuated media valves

Type	 Solenoid valve VZWD	 Solenoid valve VZWM	 Solenoid valve MN1H2
Design	Directly actuated poppet valve	Poppet valve with diaphragm seal	Diaphragm valve
Type of actuation	Electrical	Electrical	Electrical
Nominal width	1 ... 6 mm	13 ... 50 mm	13 ... 40 mm
Process valve connection	G1/8, G1/4, NPT1/4, NPT1/8	G1/4, G3/8, G1/2, G3/4, G1, G1 1/4, G1 1/2, G2	G1/4, G3/8, G1/2, G3/4, G1, G1 1/2
Flow rate Kv	0.06 ... 0.4 m³/h	1.6 ... 39 m³/h	2000 ... 30500 l/min
Medium pressure	0 ... 90 bar	0.5 ... 10 bar	0.5 ... 10 bar
Temperature of medium	-10 ... 80 °C	-10 ... 60 °C	-10 ... 60 °C
Description	<ul style="list-style-type: none"> • Suitable for applications with high pressure and low flow rates • No pressure difference required • Can also be used in vacuum technology • Operating voltage: 24 V DC; 110, 230 V AC 	<ul style="list-style-type: none"> • Diaphragm valve • Servo controlled • For control of gaseous and liquid media • Brass or stainless steel casting design • Wide range of coils • Electrical connection via solenoid armature tube system 8 or 13 • Operating voltage: 24 V DC; 110/230 V AC • Coil can be ordered separately 	<ul style="list-style-type: none"> • Diaphragm valve • Piloted • Brass design • Can only be used for gaseous media • Adjustable closing cushioning, in-line mounting or through-hole • Operating voltage 24 V DC, 110/230 V AC
→ Page/online	vzwd	vzwm	mn1h-2

Solenoid-actuated media valves

Type	 Solenoid valve VZWP	 Solenoid valve VZWF	 Reverse jet pulse valve VZWE-E, VZWE-F
Design	Piloted piston poppet valve	Diaphragm valve, force pilot operated	Angled version, straight version with flange, diaphragm valve
Type of actuation	Electrical	Electrical	Electrical
Nominal width	13 ... 25 mm	13.5 ... 50 mm	20 ... 76 mm
Process valve connection	G1/4, G3/8, G1/2, G3/4, G1	G1/4, G3/8, G1/2, G3/4, G1, G11/4, G11/2, G2	G3/4, G1, G11/2, G2, G21/2, flange diameter 60 mm, 75 mm, 89 mm
Flow rate Kv	1.5 ... 11.5 m ³ /h	1.8 ... 28 m ³ /h	15 ... 210 m ³ /h
Medium pressure	0.5 ... 40 bar	0 ... 10 bar	0.35 ... 8 bar
Temperature of medium	-10 ... 80 °C	-10 ... 80 °C	-20 ... 60 °C
Description	<ul style="list-style-type: none"> For all applications with a differential pressure of 0.5 bar For high pressures and high flow rates with relatively small solenoids For controlling gaseous and liquid media in open circuits Operating voltage: 24 V DC; 110, 230 V AC 	<ul style="list-style-type: none"> High flow rates with large nominal sizes using relatively small solenoids No pressure difference required Suitable for closed applications such as cooling or filling systems Can also be used in vacuum technology Operating voltage: 24 V DC; 110, 230 V AC 	<ul style="list-style-type: none"> For mechanically cleaning filters and dust filter systems High flow rates Fast opening and closing times Sturdy pilot system Operating voltage: 24 V DC; 110, 230 V AC
→ Page/online	vzwp	vzwf	vzwe

Pneumatically actuated media valves

Type	 Proportional media valve VZQA	 Angle seat valve VZXF	 Pneumatic valve VLX
Design	Pinch valve, pneumatically actuated	Poppet valve with spring return	Diaphragm valve
Type of actuation	Pneumatic	Pneumatic	Pneumatic
Nominal width	DN 6, 15	12 ... 45 mm	13 ... 25 mm
Process valve connection	Clamp to ASME-BPE, clamp to DIN 32676, G1, G1/2, G1/4, NPT1/2, NPT1/4	G1/2, G3/4, G1, G1 1/4, G1 1/2, G2, NPT1, NPT1 1/2, NPT1 1/4, NPT1/2, NPT2, NPT3/4	G1/4, G3/8, G1/2, G3/4, G2
Flow rate Kv	0.7 ... 5 m ³ /h	3.3 ... 43 m ³ /h	2400 ... 14000 l/min
Medium pressure	0 ... 6 bar	-0.9 bar, 0 ... 40 bar	1 ... 10 bar
Temperature of medium	-5 ... 100 °C	-40 ... 200 °C	-10 ... 80 °C
Description	<ul style="list-style-type: none"> Modular design Quick and easy replacement of the diaphragm Selection of different materials for housing and connector caps Different connection cap designs (G and NPT thread), clamp ferrule to DIN 32676 and ASME-BPE For critical, abrasive and viscous media Tested service life of up to 2 million switching cycles FDA-compliant materials Easy-to-clean design Flow direction can be freely selected Completely round passage 	<ul style="list-style-type: none"> Sturdy design Stainless steel and gunmetal process valves with stainless steel, brass or aluminium actuators For operating pressures up to 40 bar Safety position "closing" Different actuator sizes and housing materials Selection of different seat and shaft seals Choice of flow directions For liquids, gases and other easily contaminated media Easy-to-clean design 	<ul style="list-style-type: none"> Poppet valve Indirectly actuated Brass design In-line mounting or via through-holes
→ Page/online	vzqa	vzxf	vlx

Air preparation



- Service unit combinations and individual units for compressed air preparation in two series: series MS and D (in metal or polymer)

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Pneumatic connection technology



- Pipes
- Tubing
- Plug connectors
- Couplings
- Distributor
- Protective tubing systems
- Accessories

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