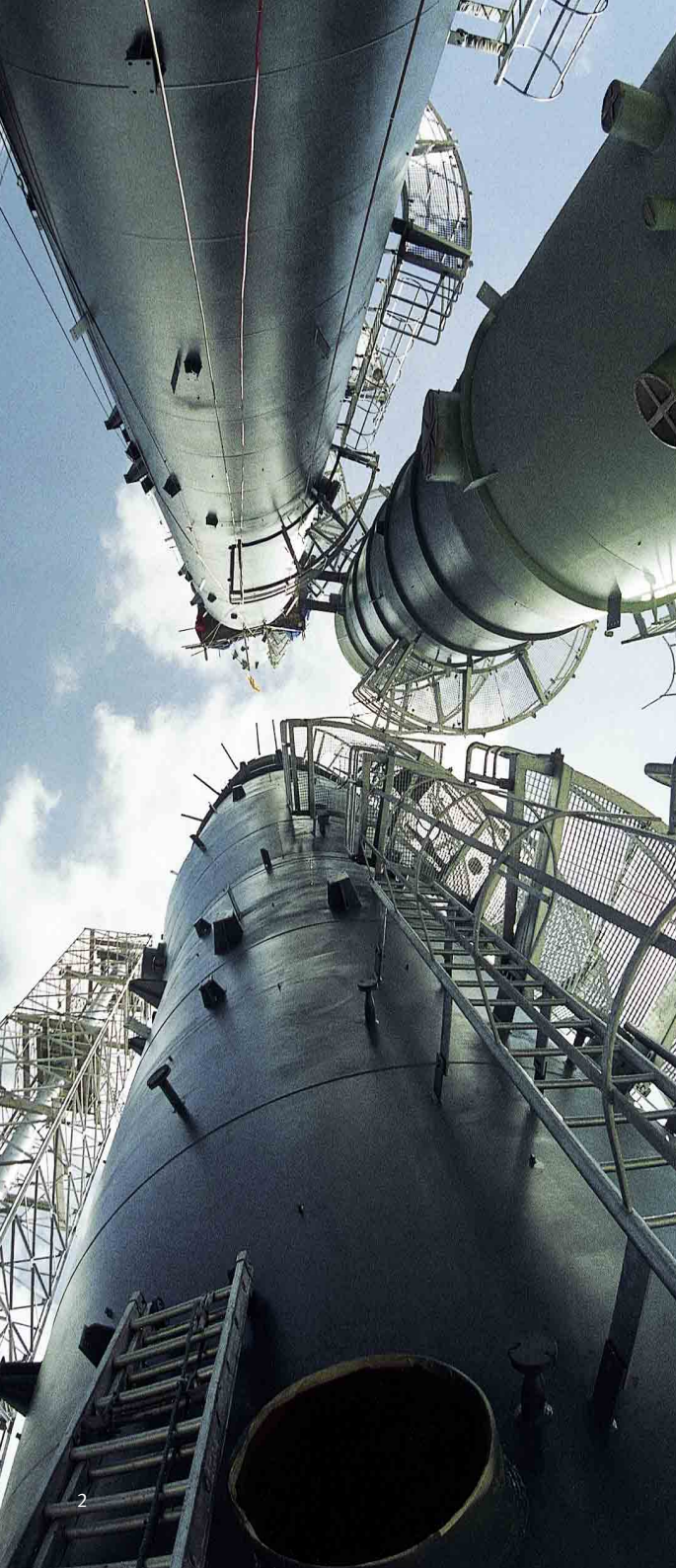


**Partner to the oil/gas, petrochemical
and chemical industry**

FESTO





50 years of experience in automation

This is the solid base on which our range of products for the process industry is built. For more than 50 years, Festo has been the brand name in automation technology. Over 13,500 employees across the globe contribute to innovation and progress in factory and process automation as well as in basic and further training in industry.

With Festo's portfolio of solutions and services you're always on the safe side. Everything is designed according to strict safety and reliability requirements. Furthermore, the components, systems and service packages fulfil all the criteria for maximum efficiency. This includes corrosion resistance and explosion protection for a high level of safety and reliability as well as optimum system availability.

Refined process reliability thanks to safe product design

High system availability and the safety of people and the environment are top priorities for systems in the oil and gas, petrochemical and chemical industries. Festo offers automation components which have been tried and tested in operation and have all the required approvals and certifications.

Our services

- Explosion protection
- SIL – Safety Integrity Level (IEC61508/61511)
- IP protection
- Corrosion resistance
- Extended temperature ranges
- Outdoor use



Quarter-turn actuator Type DAPS



First choice for a process valve with high breakaway torques: the low-cost quarter-turn actuator DAPS with scotch yoke for butterfly valves and ball valves.

- Scotch yoke principle
- Torques of 8 to 8,000 Nm at 6 bar
- Double and single-acting
- Interfaces to ISO 5211 and VDI/VDE 3845 (NAMUR)
- Stainless steel shaft, with octagon at the bottom
- With type approval for the chemical industry

Quarter-turn actuator Type DFPB



The DFPB series is the next step up from the DRD/DRE series. The result is a cost-optimised series with innovative, detailed solutions.

- Swivel angle and adjustment up to 94°
- Anodised aluminium driveshaft
- High corrosion resistance (CRC class 3)
- End-position adjustment for all sizes with external and internal sealed and encased lock nuts
- Self-lubricating and excellent dry-run properties thanks to carbon-impregnated PTFE (30% carbon) running tracks
- Octagonal interface to process valve
- Can be set for clockwise or anti-clockwise rotation without conversion
- SIL approval to IEC 61508
- ATEX II 2 GD

Linear actuator Type DLP



When in doubt, choose pneumatics: linear pneumatic actuator for process valves with explosion protection. DLP for knife gate valves and penstock valves.

- Force 2,888 to 47,500 N at 6 bar
- Piston diameter 80 to 320 mm
- Stroke length 40 to 2,000 mm
- Namur interface
- Internal air supply
- Direct mounting of sensors

Sensor boxes

Sensor boxes Type DAPZ, QH-DR-E



Systematic safety in the process automation industry: safe, overload-proof and durable end-position sensing for process valves, also suitable for explosion protection areas thanks to DAPZ.

- Inductive, pneumatic or electrical (micro switch)
- Large optical display
- Flexible mounting on quarter-turn actuators
- AS-interface variant available
- Also applicable for 3-way ball valves
- ATEX II 2 GD

Solenoid valves

Pilot valves

Type VOFD/VOFC



Thanks to their robust, solid design and high corrosion resistance, VOFC and VOFD valves are very well suited for use in chemical and petrochemical plants.

- 3/2 and 5/2-way valve with NAMUR flange hole pattern or threaded connection
- Sturdy and very corrosion resistant thanks to tough hardematal coated surface
- Proven in use: durable, reliable and safe, e.g. for ESD applications*
- Temperature range from -25 °C to +60 °C

- Simple combination of the required coil with the corresponding valve
- Solenoids in ignition protection classes: EEx emb, EEx d and EEx ia
- Global explosion protection for zone 1 (ATEX, Nepsi, IEC, Inmetro etc.)
- For safety-related systems up to Safety Integrity Level 4 (SIL 4) as per IEC 61508
- Piloted version
- Version for high flow rates

* ESD = Emergency Shut Down

Pilot valves

Type VSNB



Conforming to NAMUR port pattern to VDE/VI 3845. Explosion-proof variants according to ATEX directives available.

- Flow rate 900 l/min
- Convertible from 3/2 to 5/2-way function

- Corrosion-resistant
- Explosion protection for ATEX zone 1
- Ignition protection classes: EExm and EExia
- Piloted version
- Modular pilot system

Pilot valves

Type NVF3



Conforming to NAMUR port pattern to VDE/VI 3845. Ideal for process automation applications. Includes explosion protection in accordance with ATEX directives.

- Flow rate 900 l/min
- Convertible from 3/2 to 5/2-way function
- Corrosion-resistant
- Ignition protection classes: EExm and EExia
- 12, 24, 42, 48 V DC
- 24, 42, 48, 110, 230, 240 V AC

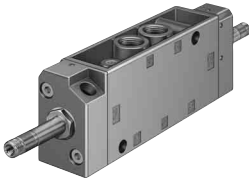
Pilot valves for standard applications Type Tiger 2000



The all-round valve, available in a comprehensive range. Used and trusted all over the world.

- Flow rate 750 to 2,600 l/min
- 5/2 and 5/3-way
- V solenoid coil: low power consumption
- F solenoid coil: explosion protection in accordance with ATEX directives, free choice of voltage
- Pneumatic valves
- Side and front mountable
- Manifold sub-base available

Pilot valves for standard applications Type Tiger Classic



The classic valve with sturdy poppet valve principle. And optimised switching times with patented U-ring. Manifold assembly on PAL or PRS rails.

- Flow rate 500 to 7,500 l/min
- 3/2 and 5/2-way
- Pneumatic valves
- Voltage: 12 to 48 V DC, 24 to 240 V AC
- Explosion protection in accordance with ATEX directives

Valve terminals for controlling pneumatically actuated process valves Type MPA1/MPA2



Fieldbus terminal, multi-pin terminal or individual valve in IP65 – solid-metal valve body and manifold block.

- Diagnostic messages via fieldbus
- Flexible pressure supply, variable pressure zones, additional power supply at any position
- Up to 64 valve positions or 128 solenoid coils
- Pressure range -0.9 to 10 bar
- Flow rate 360 to 700 l/min
- 2 x 2/2, 2 x 3/2, 5/2, 5/2-double solenoid, 5/3-way, 1 x 3/2 with external supply
- Electrical I/O and fieldbus connection through modular electrical terminal type CPX/CPX-P
- For ATEX Zone 2/22

Valve terminals for controlling pneumatically actuated process valves Type CPV and CPV EExi



Maximum performance in the smallest of spaces. Direct integration of all current bus interfaces.

CPV: compactness in a fixed grid.

- Widths 10, 14, 18 mm
- Flow rate 400, 800 and 1,600 l/min
- 2 x 2/2, 2 x 3/2, 5/2, 5/2-double solenoid, 5/3-way, + special functions and additional functions
- 8 valve positions (16 coils)
- Optimal for control cabinet installation
- Extensive range of valve and additional functions
- Individual wiring, multi-pin or bus connection
- Explosion protection to ATEX directives
- Intrinsically safe variants for ATEX-Zone 1 (CPV10 EExi)

Modular electrical terminal Type CPX

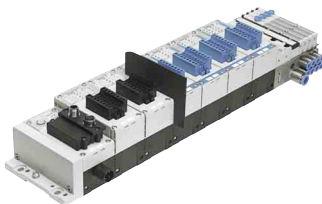


Open to all common fieldbus standards and all electrical installation standards.

Actuation of the entire pneumatic control chain using a fieldbus connection.

- Profibus-DP, Interbus, CANopen, DeviceNet, CC-Link, Ethernet
- M12 5-pin, M8 3-pin, M8 4-pin, CageClamp, Harax, D-Sub, M12 8-pin and M12 Speedcon
- Standalone as remote I/O up to 512 I/O
- Integrated diagnostics concept
- Reliable modular power supply M18 or 7/8"
- Protection class: IP20/IP65/IP67 depending on the connection technology
- Optional with front end controller CPX-FEC and web server
- Plain text diagnostics using handheld terminal CPX-MMI

Modular electrical terminal Type CPX-P



High modularity and flexibility guaranteed. The CPX-P terminal offers a complete, modular remote I/O system for process automation in protection class IP65.

- For use in potentially explosive environments up to zone 2
- Compact: combines remote I/O and valve terminal
- Versatile: can be integrated into almost all control systems
- Highly modular: up to 9 input modules on one terminal
- Trouble-free connection of binary analogue signals and HART devices – even in zone 1/I/O

- Available fieldbus systems: Device Net, Profibus DP, Ethernet/ IP, ProfiNet, Modbus
- Available modules: 4 analogue inputs with HART, 4 analogue outputs with HART, 4 temperature inputs, 4 digital outputs, 8 NAMUR inputs
- Combinable valve terminals: MPA 1/MPA 2, MPA-F
- Ex-certification for terminal as per ATEX: II 3G Ex nA II T4 X II 3D Ex tD A22 IP54 T90° C X
- Ex-certification (EX4 types) for modules: ATEX, IEC Ex, FM, each as associated equipment: II (1/2) GD [ia/ib] IIC T4

Service units Type D series, metal



Ideal for all standard applications. Very sturdy, consistent and standardised, always with suitable flow rate values. Can be ordered quickly and easily as a fully assembled combination.

- High flow rates of up to 12,500 l/min
- Wide range of fully assembled service units
- Robust due to metal bowl guard and sturdy connection technology
- 4 sizes: MICRO, MINI, MIDI, MAXI, e.g. as filter regulators, on-off valves fine and micro filters

Service units Type series MS – MS4, MS6, MS9, MS12



Whether in terms of product range, functionality of components or variety of services, the MS series from Festo offers a fully integrated concept for application-specific solutions to your compressed air preparation requirements. The newly integrated functions, such as flow sensors and remotely adjustable pressure regulators, open up new dimensions for problem-free operation of your systems in a flow range of up to 12,000 l/min

- Connection sizes 1/8 to 2"
- Quick assembly and dismantling thanks to systematic modularity
- Includes CAD models and configurator for easy selection of individual devices and combinations (MSB4 and MSB6)
- Size adaptations enable an efficient mix from MS4 to MS9

Stainless steel control cabinets



Festo control cabinets for use in explosion protection areas meet ATEX requirements for zone 2 and/or zone 1. Relevant components can be supplied on request

in the various explosion-proof designs, such as intrinsically safe and pressure-proof encapsulated.

The ideal solution

Services to standard.

The service of the future must be cost-effective, quick and highly efficient. Festo is already meeting these standards.

Festo's software design tools are one example. Another is the service packages at every stage of the value creation chain. Festo always offers the most suitable service, whether for advanced logistics, pre-assembly, optimisation of production plants or reduction of power consumption. The results are minimised expenses, shorter processes, lasting quality, compatible products, reduced warehousing. Festo services pay off – throughout the entire value creation process.



Festo – everything from a single source

One partner for all of today's automation tasks with pneumatic and electrical components. This has its advantages.

Innovative: 2,800 patents, 80 new products per year, 1 goal – meeting your needs.

Systematic and individual solutions from a single source. Worldwide presence, in person and online with 57 companies in 176 countries. Productive when it comes to installation, logistics and service. Approximately 30,000 products with long service life as standard.

See for yourself at www.festo.com

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