Control cabinet solutions for the process industry

FESTO

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All advantages included – with control cabinet solutions from Festo

Build it yourself or have it built: it's your decision. But we can give you good reasons to decide in favour of "having it built".

Control cabinet solutions from Festo almost completely eliminate the complex working processes involved in the construction of a pneumatic sub-system. We construct, bolt, test and deliver pre-assembled control cabinets for the pneumatic actuation of your plant.

You concentrate on your core business and save time and money by as much as 50 %.

You will not have to plan your solution, order component parts or coordinate different suppliers.

You will not have to store parts, not even temporarily, or deliver them. Last but not least, you will not have to maintain an overview of often more than 200 component parts.

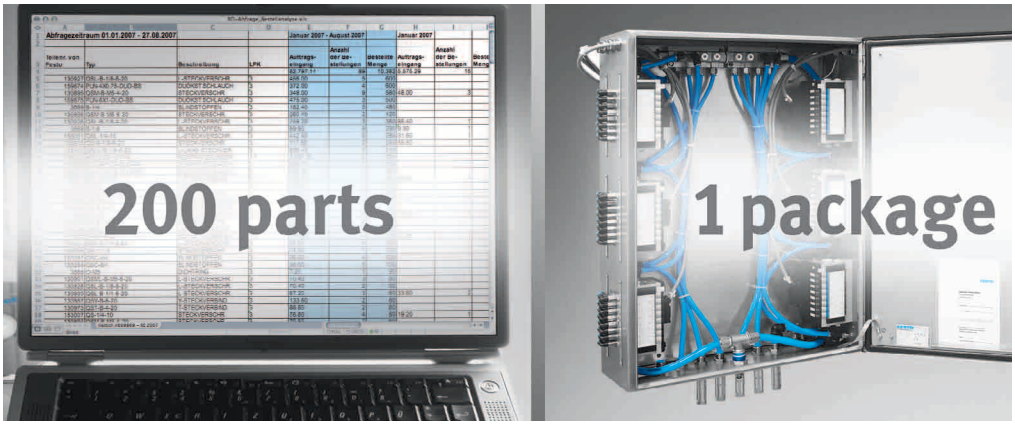
You will have one order, one date and one contact person so you can reduce purchasing costs, enhance process reliability and boost productivity – in a word, an all-inclusive offer.

We know that constructing and building production plants is highly complicated with many sub-contractors often working closely together. We coordinate all the partners who contribute to planning and building the pneumatic control cabinets for your project, thus relieving a lot of the pressure.

Additional benefits to you

- Punctual delivery of control cabinets to all recipients, even worldwide! Completely tested, of course, and to the familiar Festo quality standard.
- Whether you need one or several hundred control cabinets, Festo is always punctual and reliable.
- The uniform design of the control cabinet throughout the entire plant makes it easier to troubleshoot in the event of problems.

All in all,
a package that gives you a whole host of advantages.



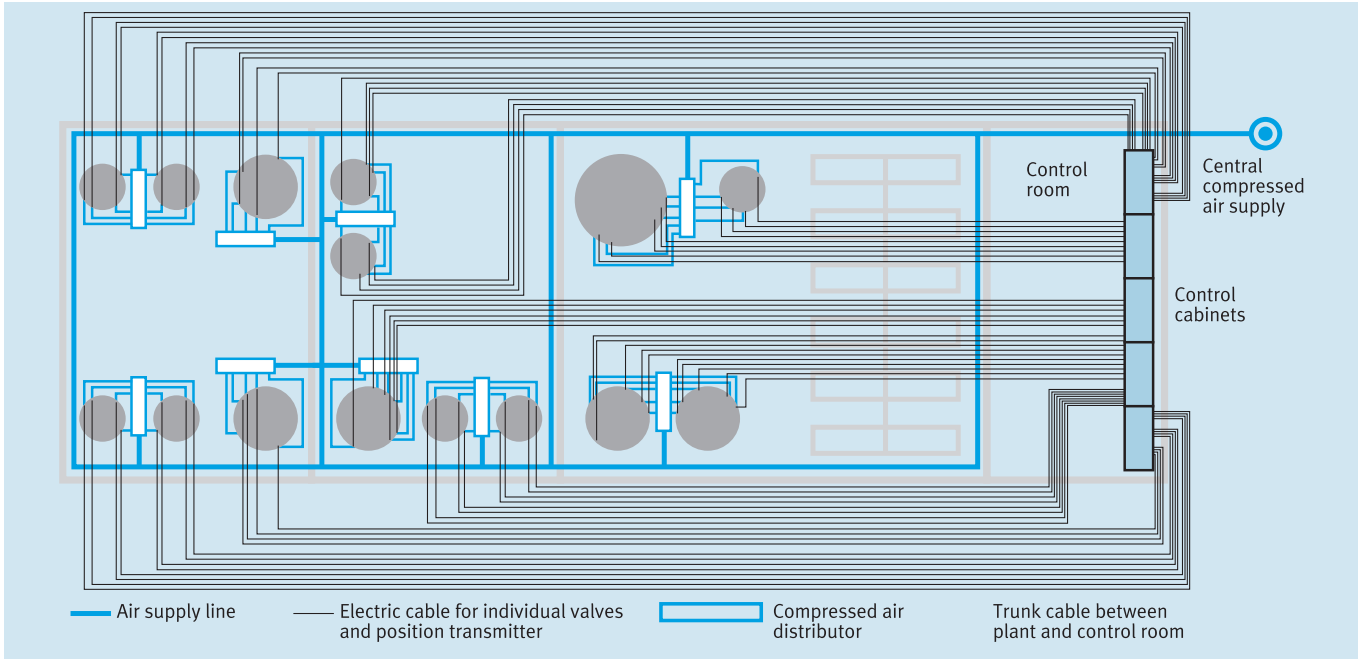
Control cabinet solutions from Festo: convenient and cost-effective.

Automation concepts – centralised or decentralised?

A question of requirements!
Illustrated using the example of a process engineering plant.

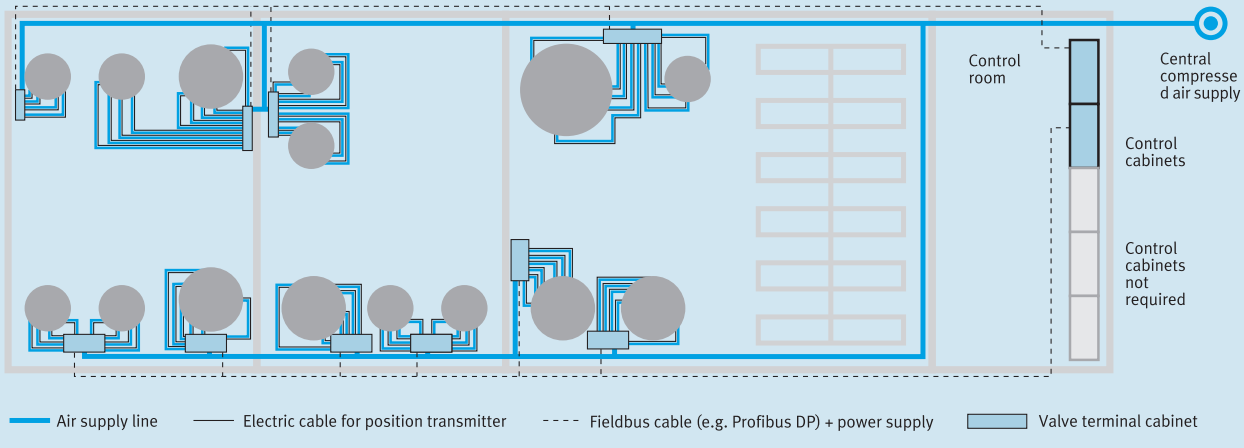
Central configuration with individual valve technology
Individual solenoid valves are mounted directly on the pneumatic actuators of the process valves. For operation, each of these individual valves requires a supply port and an electrical signal for activation.

The compressed air supply is often designed as a loop system in which the tubes are guided to the individual valves via compressed air distributors. In addition, the electrical signals of the position transmitter have to be routed via trunk cables to the I/O cards of the process control system in the control room.



Decentralised configuration with valve terminals
In addition to the power cabinets in the control room, smaller cabinets are placed in a decentralised configuration in the plant. The remote I/Os installed inside them process the electrical signals while valve terminals activate the actuators pneumatically. Flexible tubing bridge the few meters that generally separate the actuators of the process valves.

The process control system is still centrally configured. It communicates with the remote I/Os and valve terminals by means of a continuous fieldbus line such as, for example, Profibus DP.



Automation concepts – centralised or decentralised?

A question of requirements!
That is the answer to your question on which automation concept is best for you.

Centralised concepts: process safety in focus
Companies that have to fulfil maximum safety requirements, as is usually the case in continuous processes in the chemical industry, often prefer to use central concepts. For them explosion protection, hardware and systematic safety integrity as per IEC 61508 (SIL) and other safety-relevant aspects such as access to all the hardware from one location are paramount – and justify the higher cost.

Decentralised concepts: faster, easier, resource-saving
In most cases, a decentralised concept is more appropriate. It is usually faster to implement and commission, it is easier and saves on resources at the same time. And our decentralised automation solutions are also absolutely safe.

Centralised design

Advantages
- Fast venting of the actuator during switch-off
- Access to entire control system hardware possible from one location

Disadvantages
- Complex installation of compressed air network
- Very complex wiring with increased risk of error
- Long cable lengths, thick trunk cables require a lot of space on cable trays
- High material costs for cabling
- Digital output modules required for actuation of valves
- Difficult, complex troubleshooting in the event of a fault
- Poor expandability

Decentralised design

Advantages
- Minimised cable runs and quantity of copper used
- Reduced installation time due to fewer cable connections
- Simplified pneumatic installation: compressed air network only has to be routed to the control cabinets in the field; process valves are connected to valve terminals by means of flexible, robust tubing
- Good expandability
- Distributed intelligence: control system can be integrated into valve terminal
- No digital output cards required for actuation of valves
- Remote I/O and valve terminal can be combined in a sub-system
- Direct integration of additional functions into the valve terminal possible without any additional installation or wiring time: e.g. pressure zones, proportional valves or pressure sensors

Disadvantages
- Hardware of control system is no longer concentrated in one location
- Distribution and positioning of cabinets define subsequent cabling complexity. Expert know-how reduces planning time.

The concept: reap the benefits right from the start

The earlier you involve Festo in your planning process, the better. Our experts not only know where to look for the hidden risks that are often discovered too late. Based on years of practical experience, they also take a high level of economic and technical care to create a concept that can be implemented economically and that provides process reliability.

The focus at Festo is firmly on meeting deadlines, reliable delivery and providing optimal technical solutions, whether for specific small series or large series production. That is why Festo has created a procedure that guarantees a fast, economical solution and avoids misunderstandings due to a variety of contact people, for example. From the first proposal to the final delivery, you are supported by an experienced contact person who is there to answer all your questions.

The benefits to you in each individual phase

Concept design
- Even at this early stage of the project, expert advice on pneumatics helps save money
- Together with you, our specialists lay the foundation for a comprehensive control cabinet concept
- Highest possible degree of standardisation and development of customised model control cabinets even before tenders are requested from individual plant builders

Basic design
- Standardisation of pneumatic control cabinets as part of the user requirement specifications (URS) enable the offers of individual suppliers to be compared more accurately since they are all basing themselves on the same components and systems

Detailed design
- Circuit diagram creation for pneumatic control cabinets in optimal quality
- Uniform appearance of circuit diagrams throughout the project
- Plant builders and system integrators save time and can concentrate on their core activities
- Expertise and experience in pneumatics and electronics guarantee optimal cabinet design

Construction
- Efficient pneumatic control cabinet construction
- Uniform, consistently high quality of workmanship
- Ability to delivery: no bottlenecks in the production of the control cabinets

Installation
- Completely assembled, ready-to-install control cabinets for a time-saving, efficient installation

Commissioning
- Control cabinets completely pretested – electrically and pneumatically
- Fast, smooth and fault-free commissioning

Operation and maintenance
- Festo is represented worldwide
- Reliable, sturdy products for long, trouble-free operation
- Quick 24-hour service for spare parts from the core range

Control cabinets for the pharmaceutical industry

For the various production processes in the biotech/pharmaceutical industry, stringent requirements for cleanliness and hygiene are an indispensable prerequisite for the quality of the products.

The ingredients and the final dosage forms are primarily synthesised in continuous processes, while batch processes are used in product development and biotechnology. Laboratory automation and micro-production systems are additional areas of application for Festo control cabinets.
They make a large contribution to increasing process reliability in production.

Advantages

- Compact design
- Valve terminals – with and without integrated remote I/Os, as required
- Stainless steel cabinets on request, e.g. for mounting in clean rooms
- Exhaust air routed outside for venting into the technology area, if mounted in a clean room
- Pharmaceutical industry-compliant documentation on paper and data carrier; single or multiple copies, as required
- Support for the creation of the hardware design specification (HDS) if needed

Control cabinets for the food industry

From receiving and processing raw materials to the actual food production process and the associated secondary processes such as, for example, media supply process of water or technical gases, the requirements differ significantly. Festo provides ideal control cabinet solutions for all production areas.

Stringent hygiene requirements and special standards have to be met in the food production area. The materials used must be resistant to both cleaning agents and food components, such as fruit acids. Hygiene certificates are often required for parts that come into contact with food products.

Advantages

- Compact design for a large number of valve functions
- Integration of pneumatic and electrical signals saves space and costs since only one field-bus interface is required
- Use of suitable control cabinet materials: easy to clean, even when the hygiene require-ments are stringent
- "The smallest control cabinet in the world": valve terminal CPV with stainless steel housing for direct installation in the field – ideal to clean

Control cabinets for the water/wastewater treatment industry

Whether for municipal or industrial water and wastewater treatment, Festo offers individual automation solutions that are economical, reliable and sturdy!

And all from a single source: from actuator technology to the field level, as individual components or a pre-assembled system. Automate more intelligently together: from concept creation to smooth operation.

Valve terminals

- Sturdy valves
- Higher flow for larger actuators
- With and without integrated remote I/Os, as required
- Modular plant concepts possible through integrated control system for decentralised intelligence
- Explosion-proof designs for sludge treatment or digestion tanks, for example

For process, drinking water and wastewater technology

- Actuation ranging from small ball valves to large knife gate valves
- Design in protection class IP65 possible
- Design for outdoor installation possible

Control cabinets for the chemical industry

Festo provides ideal and reliable solutions with maximum process safety for all sectors, be it petrochemicals, basic chemicals or fine and specialty chemicals, whether for operators or OEMs, planners and general contractors in the construction area.

Sophisticated process safety
Special materials such as high-alloy stainless steel and corrosion-protected coatings make the solutions suitable for almost all environments.

Safe product design
Products from Festo are designed to be resistant to aggressive media. They are also protected from penetration by moisture and foreign matter like dust, for example. As a rule, they comply with protection classes IP65 and IP66.

- Control cabinets for ATEX zone 1 with remote I/Os of well-known manufacturers
- Control cabinets for zone 2 with integrated remote I/O valve terminal combination
- Processing of intrinsically safe signals
- Intrinsically safe valve terminal technology
- Pneumatic multiple connector plate for compact, economical design
- Sturdy stainless steel design

Control cabinets for mining

Dust and water, heat and cold, contamination and pressure – automation products have to be able to take a lot of abuse in the mining sector. Hardly any other sector has such rigorous requirements.

Maximised process reliability and industrial safety
Robust control cabinets from Festo protect individual components very effectively. They safeguard maximum process reliability – and also industrial safety!

- Use of corrosion-protected PVC coatings or stainless steel
- Protection from penetration by dust or liquids as per protection class IP66
- Your choice of valve terminal technology or the efficient connection of individual valves
- Integrated service unit

Reliable

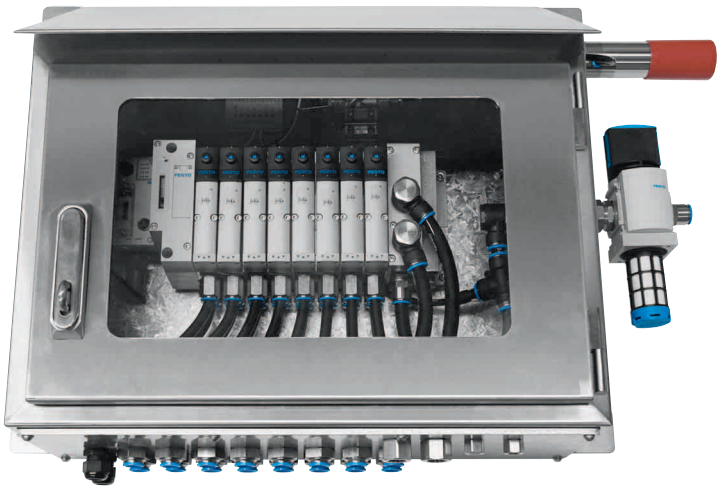
- Hot swap – for changing individual valves on the terminal during operation
- Inspection window for checking without opening the cabinet in dusty environments
- Control elements on the outside
- Pneumatic connections underneath to reduce contamination
- Installation of heating or cooling elements for use in areas with extreme temperature fluctuations

Industrial safety

- Through a lock system to the service unit: to switch off, all the employees responsible have to remove their locks

Designed for the future

- Sufficient space reserved for future expansion



Control cabinets for power engineering

Customised and ready-to-install: Festo control cabinet solutions are optimally adapted to the application. Because of the very large number of process valves, the variety of circuits in power engineering requires a clear, logical automation structure. The best way to implement them is with user-specific pneumatic solutions from Festo.

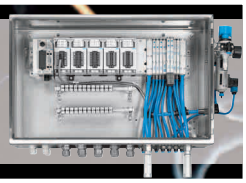
Whether for desulphurisation, ash handling or coal milling and feeding – our experts combine the ideal solution for your control cabinet from a multitude of Festo valve terminal types, control and service units.

- Valves with a high flow rate for the activation of large actuators
- Valve terminal CPV for compact design and direct mounting on the control cabinet wall
- Pre-assembled mounting plates with valve terminals and remote I/O for direct installation in the field, without a control cabinet

Solutions for potentially explosive areas

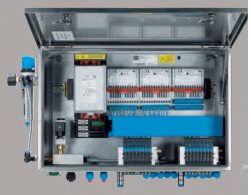
ATEX zone 2

- Integrated remote I/O and valve terminal combination CPX/MPA
- Connection of sensors and actuators from zone 2 possible



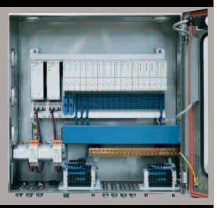
ATEX zone 1

- Intrinsically safe remote I/O type **Stahl IS1**
- Intrinsically safe valve terminals type CPV10-EX
- Pneumatic multiple connector plate for compact, economical connections
- Control cabinet made of stainless steel or conductive polymer material
- Versions with or without inspection window

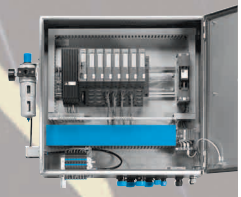


- Intrinsically safe remote I/O type **Pepperl + Fuchs FB**
- Intrinsically safe valve terminals type CPV10-EX
- Pneumatic multiple connector plate for compact, economical connections
- Control cabinet made of stainless steel or conductive polymer material

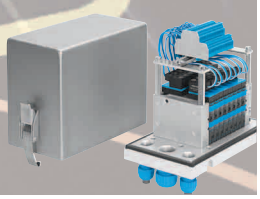
- Intrinsically safe remote I/O type **ABB S900**
- Intrinsically safe valve terminals type CPV10-EX
- Pneumatic multiple connector plate for compact, economical connections



- Intrinsically safe remote I/O type **Siemens ET200iSP**
- Intrinsically safe valve terminals type CPV10-EX
- Pneumatic multiple connector plate for compact, economical connections
- Control cabinet made of stainless steel or conductive polymer material
- Versions with or without inspection window



- Intrinsically safe valve terminals type CPV10-EX
- Stainless steel cover for direct connection in the field
- Splash-proof as per protection class IP65
- Extremely compact design
- Cost-saving separation of pneumatic and electrical components



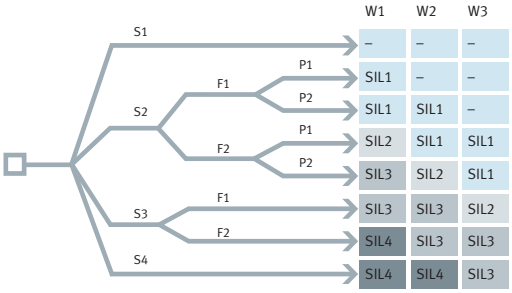
SIL – Safety Integrity Level

Evaluating systems
Process engineering systems usually pose a potential hazard for employees, residents or the environment.

That's why systems are allocated an SIL level according to IEC 61508. The following factors are taken into account for the allocation:

- Degree of damage in case of a hazardous event
- Frequency and duration of time for which people occupy the danger area
- Possibility of averting the hazardous event
- Probability of the hazardous event occurring

Festo offers advice and support
Selected Festo products and systems conform to the requirements for safety-orientated equipment. Festo provides the documentation and the characteristic values necessary for the calculation and helps you to select the right components.



SIL (Safety Integrity Level)
Four discrete steps (SIL1 to SIL4). The higher the SIL of a safety-related system, the lower the probability of the system not being able to execute the necessary safety functions.

S Consequence
- S1 Minor injuries to a person
- S2 Severe injury to multiple persons up to death of a person
- S3 Multiple deaths
- S4 Catastrophic effects with many deaths

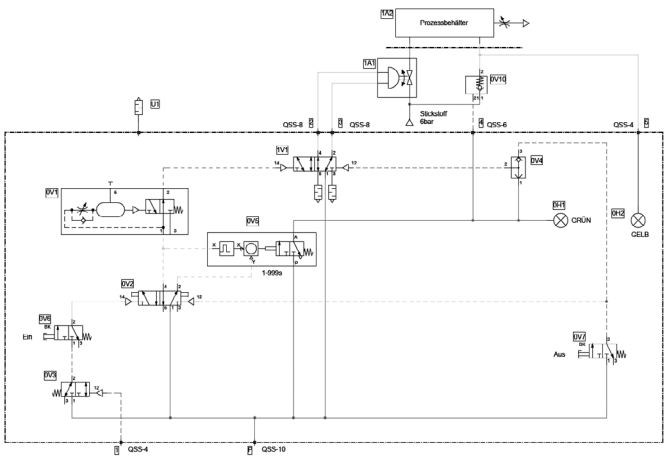
F Frequency
- F1 Seldom to reasonably frequent
- F2 Frequent to continuous

P Possibility of avoidance
- P1 Possible under certain conditions
- P2 Scarcely possible

W Probability of occurrence
- W1 Relatively high
- W2 Low
- W3 Very low

Example: nitrogen inerting of a tank

Services provided by Festo:
- Design of the pneumatic control system in the control cabinet
- Design of the ball valve unit
- SIL evaluation of the planned control chain
- Calculation and documentation of PFH (Probability of Failure per Hour) and SFF (Safe Failure Fraction)



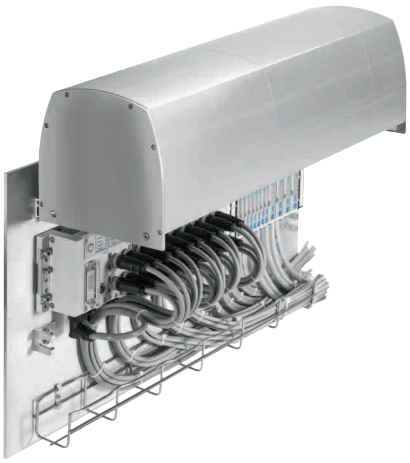
ATEX made easy – the hood for CPX

ATEX up to zone 2/22 without control cabinet, but up to 70% less expensive with the hood CAFC-X1-GAL for CPX.
Convenient and easy to install, it ensures that the special conditions when using the modular electrical terminal CPX with the valve terminals MPA in the ATEX zone are easy to meet. Also available on request as a complete solution from Festo, e.g. as a pre-assembled mounting plate.

Benefits
- Significant cost saving of 50–70% compared to the control cabinet thanks to reduced installation costs
- Can be installed in ATEX zone 2/22 without a control cabinet thanks to tested impact protection as per ATEX directive
- Can also be used as an additional protection mechanism
- Assembly close to the process
- Space-saving
- No design costs – just order a suitable size
- Convenient wall through-feed for tubing and cables, thus avoiding complex installations
- Alternative to the "pneumatic multiple connector plate" on modular valve terminals

Modular electrical terminal type CPX
Open to all common fieldbus standards and all electrical installation standards. Actuation of the entire pneumatic control system using a fieldbus connection.
- Profibus-DP, Interbus, CANopen, DeviceNet, CC link
- Ethernet/IP, Modbus/TCP, Profinet IO, EtherCat
- Stand-alone with built-in CoDeSys control system CPX-CEC, as an intelligent slave or as a remote I/O up to 512 I/O
- Integrated diagnostic concept

Particularly valuable in combination with MPA or VTSA, page 19
→ PSI+ CPX-terminal/CPI-system



Inside: Valve terminals

Only briefly touched upon, even if they are usually the centre-piece of a control cabinet: the valve terminals from Festo. Available in a wide variety and an unbelievable number of variants for every requirement in process automation.

ISO valve terminal VTSA
Standards-based but highly modular with a sub-base concept that can be converted and expanded at a later date.

VTSA features
- Valves and sub-bases to ISO 15407-2 and 5599-2 (plug-in)
- Flow rate 550 to 3000 l/min;
- VTSA-F 700 ... 1800 l/min with ISO size 02, 01
- Mixture of sizes, ISO 26 mm (01), ISO 18 mm valves (02) and ISO 1 (42 mm) on one terminal
- Pressure shut-off plates (hot-swap) for changing valves under pressure

→ PSI+ ISO valve terminal VTSA, Info 242 and 248

Valve terminal MPA
Universally used as a fieldbus terminal, multi-pin terminal or individual valve, with excellent function integration. Suitable for comprehensive diagnostics and condition monitoring.

MPA-S and MPA-F features
- Flow rate 360 ... 700 l/min; MPA-F 360 ... 900 l/min
- Pressure shut-off plates (hot-swap) for valve changes under pressure
- Up to 64 valve positions or 128 solenoid coils
- Proportional-pressure regulators can be integrated directly
- Optional: built-in pressure sensor for monitoring the pilot air

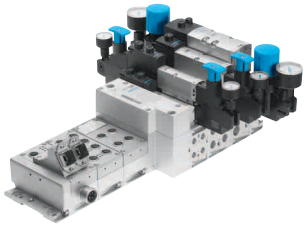
MPA-L features
- Expandable in single steps
- Up to 32 valve positions/solenoid coils

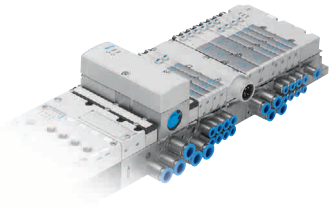
→ PSI+ valve terminal MPA, Info 227 und 250

Compact Performance valve terminal type CPV
Maximum performance in the smallest of spaces. Direct integration of many current bus interfaces.

CPV features
- Flow rate 400, 800 and 1,600 l/min
- 8 valve positions (16 coils)
- Pneumatic multiple connector plate for space-saving installation in control cabinet

→ Info 213





Bus technologies – an overview

You have selected one of the bus technologies presented below as your standard for controlling and monitoring your process automation. It doesn't matter which one: Festo is at home in all of them. And promotes, often in cooperation with leading organisations or companies, themes that define fieldbus technologies as one of its core businesses.

PROFIBUS
PROFIBUS distinguishes between active stations such as PLCs or PCs (master devices) and passive stations such as sensors or actuators (slave devices).

PROFIBUS-DP is universally suitable for factory and process automation and communicates between automation systems and decentralised peripheral equipment.

PROFIBUS-PA is ideal for process automation and supports the simultaneous transmission of data and energy to and from field devices.

PROFIBUS-FMS takes on communication tasks at cell level.

PROFINET
For data transmissions with a high rate of data exchange, for example real-time critical I/O data from sensors, actuators, robot controllers, PLCs or process equipment. Information on diagnostics or configurations that are not real-time critical can also be transmitted.

INTERBUS
INTERBUS uses a master/slave access method. This means that the bus master links to the superimposed control or bus system at the same time. INTERBUS has a ring topology, i.e. all stations are actively linked in a closed transmission path. INTERBUS consists of an I/O-oriented transmission method with a summation frame protocol.

Physical characteristics of the transmission method:
- Remote bus for longer distances
- Local bus for communication, e.g. in the control cabinet
- INTERBUS loop for components with few I/Os

EtherCAT
Data transmission with a focus on real-time capability. Short cycle times and very precise, almost jitter-free synchronisation are EtherCAT's primary characteristics. EtherCAT slave devices extract only the data directed to them from the standard Ethernet frame transmitted by the master and add receipt data to the telegram.

The definition of device profiles such as CoE (CANopen over EtherCAT) is integrated into EtherCAT.

CANopen
The CANopen communication protocol is characterised by the highest degree of transmission security and protection against interference. Different data transmission requirements can be implemented via PDOs (process data objects) and SDOs (service data objects). PDOs are fast real-time data and SDOs transmit parameter data such as time out intervals and masking or mapping parameters.

MODBUS
MODBUS is based on master/slave (e.g. a PC) or, for more complex tasks, client/server architecture and is used in measuring and control systems. To support good data throughput, it transmits data in binary format inside TCP/IP packets. MODBUS can connect a master and several slaves. Two designs are available: one for serial interfaces and one for Ethernet.

DeviceNet
The fieldbus for industrial field devices such as proximity switches, optical sensors, valve terminals, frequency converters and control panels reduces expensive individual wiring and improves device-specific diagnostic functions. DeviceNet communication on the broadcast-oriented controller area network (CAN) meets the stringent requirements of vehicle construction and is not particularly temperature-sensitive.

Ethernet/IP
The open bus system as per standard Ethernet and TCP/IP technology. It communicates between electrical CPX terminals and Ethernet/IP networks, for example. Direct data access from the device is possible.

CC-Link
A bus system for high speed communication between electrical CPX terminals and a higher-order master for control & communication link (CC-Link) from Mitsubishi. The bus node, which receives system supply via the interlinking block, processes communication with the I/O modules.

AS-interface
For optimised work in decentralised solutions – with lower costs. At the actuator/sensor level, AS-interface is the ideal supplement to fieldbus systems or industrial Ethernet. Only one cable is needed for the data and energy transfer.

Which fieldbus is appropriate for you?

Our online brochures provide detailed information on how well these fieldbuses and the Festo portfolio work together. They can be found in the download area at www.festo.com

Bundled safety

From simpler solutions with “only” 15 parts to complex tasks such as control cabinets with up to 200 parts – we implement the most complex solutions for you. In advance and all inclusive.

It is only when all components are interacting that it becomes clear whether or not each individual component is harmonised with the others to the extent required for smooth functioning. And whether or not they will achieve the maximum process reliability and productivity possible.

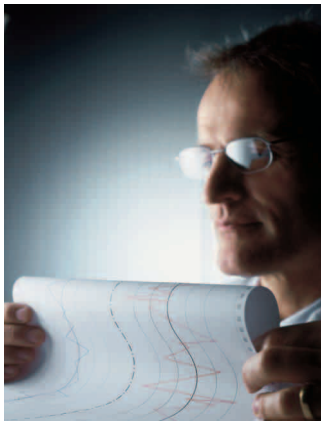
Last but not least, Festo uses the most modern components in its control cabinet solutions for process automation to keep the pneumatics in your plants up to date.

Concrete safety
All ready-to-install valve terminal cabinets are subjected to the following tests:

- Visual inspection of the pneumatics
- Visual inspection of the electrical system
- Leakage inspection of the entire pneumatic installation
- Functional test at the minimum and maximum permissible operating pressure
- Electrical and manual actuation of all valves
- Monitoring of EMC activities

Pure experience – for more than 25 years
The purchase and use of complete systems or sub-systems has many advantages. It provides access to, for example, the most up-to-date knowledge and to the latest generation of components.

Festo recognised this trend a long time ago and has provided unique solutions with its control cabinets for more than 25 years. That means you can concentrate on your core business.



Maximum transparency including: Documentation

We document your entire order so that the design of your control cabinet solution is always verifiable and transparent. When your control cabinets are delivered, you also receive complete documentation consisting of:

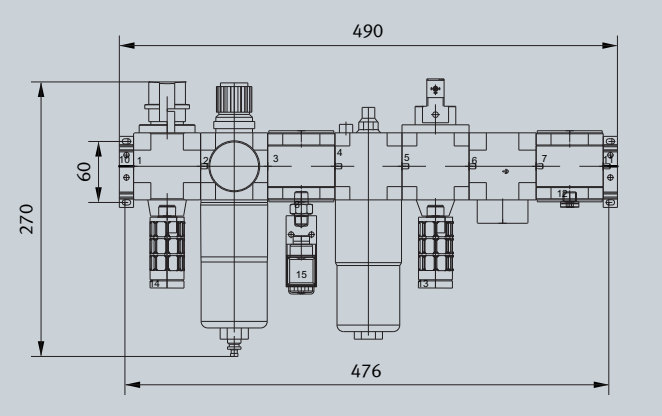
- Electrical and pneumatic circuit diagrams
- Parts lists
- Terminal diagrams
- Equipment assembly drawing
- Two-dimensional control cabinet drawings – in 3-D on request

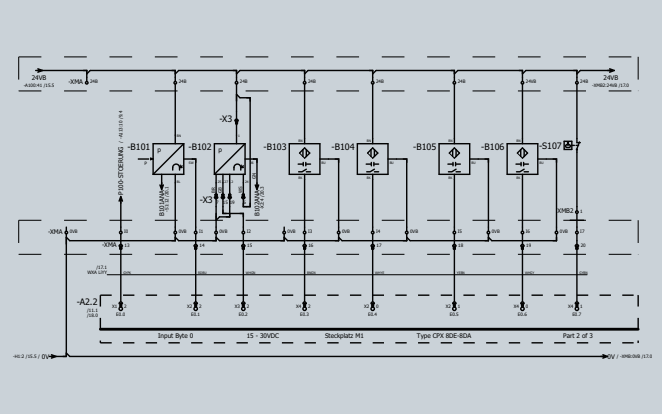
Select the design

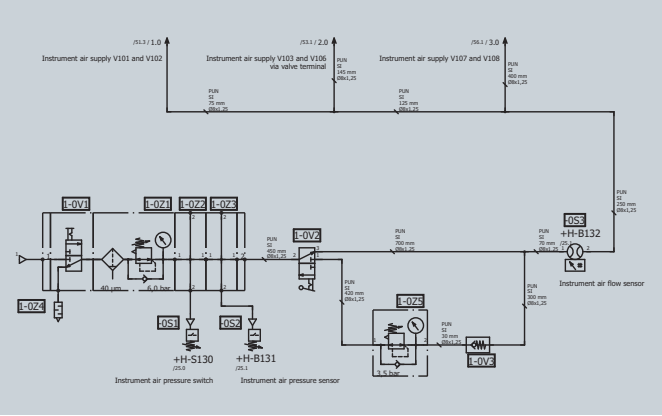
- Paper
- Electronically on CD ROM
- Single or multiple copies
- In German or English

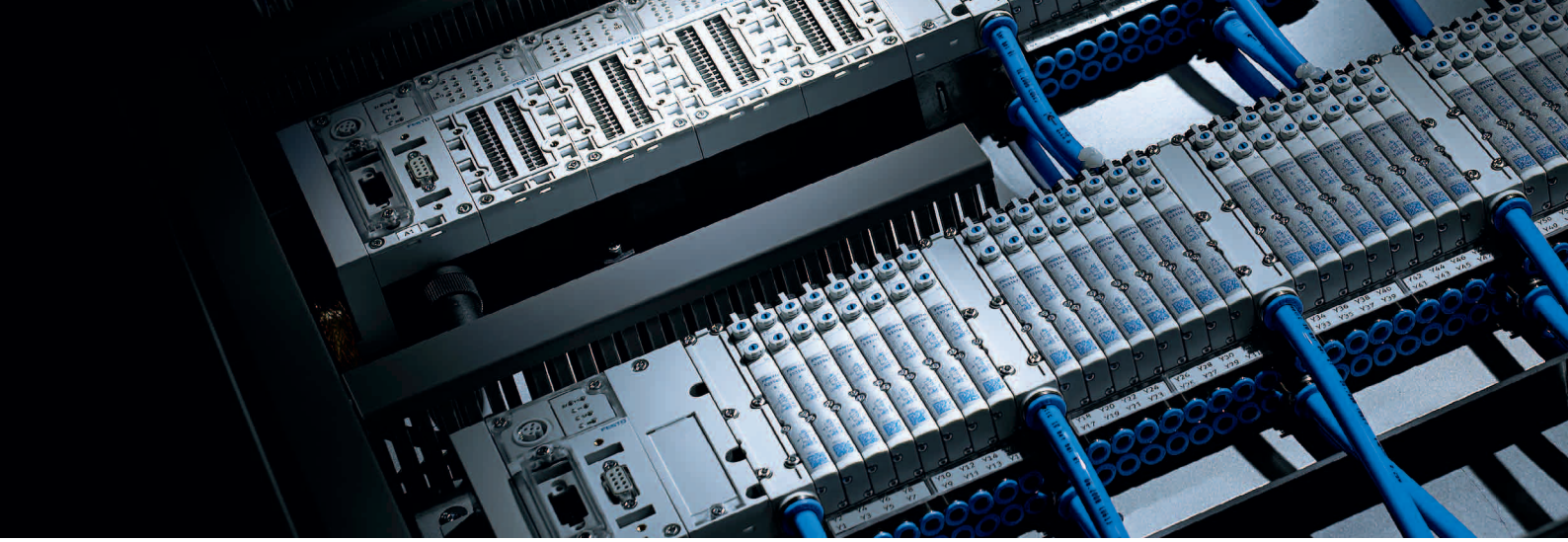
10 years of security

As a preventive measure, we also archive the data – for 10 whole years!









Festo Didactic – competitive edge through knowledge

We make you fit for work: with our new products for the process industry
Make your company and your employees fit for a dynamic future with basic and further training! Innovative, new training systems and practical seminars for process automation as well as topical focus events all make your company more competitive. You will benefit immediately from innovative, high-quality training products and services.

Process automation: Measuring – open-loop control – closed-loop control of industrial processes
Learning at the highest level and about the latest topics: trainers and consultants convey their specialised knowledge and practical know-how about the most modern process valves and components from Festo and other leading manufacturers. Whether process valve technology, industrial measurement technology, instrumentation or control circuits, the new seminars provide professionals with answers to their daily challenges.

The new learning system provides a complete learning environment for conveying basic information to all junior employees. Working with industrial components in a controlled environment is ideal for a fast transfer to practical industrial application!

Course list

VALVE PA 1
Valves in process automation – basics

VALVE PA 2
Valves in process automation – advanced

EX PA 1
Explosive safety – basics

EX PA 2
Explosive safety – advanced

SIL PA 1
Safety integrity level (SIL) to IEC 61508 – basics

SIL PA 2
Safety integrity level (SIL) to IEC 61508 – advanced

ISA PA 1
Symbols in PA, ISA-based (P&ID, PFD, BFD) – introduction

ISA PA 2
Symbols in PA, ISA-based (P&ID, PFD, BFD) – advanced

CONTROL PA 1
Optimising closed-loop control circuits

CONTROL PA 2
Closed-loop control circuits in practice

INST PA 1
Basics and functions of industrial measurement technology and instrumentation

INST PA 2
How industrial measurement technology and instrumentation function

PA-COMPACT
Modern process automation – executive summary

More information:
www.festo-tac.de

Customer _____

Project name _____

Contact person _____

Festo project number _____

FESTO

Check list
Control cabinet
Basis of offer

1. Control cabinet

☐ Stainless steel (1.4301) ☐ Steel (RAL 7035) ☐ Polymer Inspection window: ☐ Without ☐ With

Comments _____

2. Power supply unit

☐ Yes ☐ No ☐ Primary fuse ☐ Secondary fuse

Comments _____

3. Service unit

☐ Yes ☐ No ☐ D series ☐ MS series

Position ☐ Cabinet side left ☐ Cabinet side right ☐ In control cabinet

Design ☐ Standard (HE-LFR-PEV) ☐ Water/wastewater (H-KD-HE-LFR-PEV)

☐ No standard, configuration as follows: _____

Comments _____

4. Valve terminal

Pneumatic	☐ MPA	☐ VTSA	☐ CPV	
Electrics	☐ Multi-pin plug	☐ Profibus	☐ Profinet	
Activated actuators	☐ Diaphragm actuators	☐ Quarter-turn actuators	☐ Linear actuators	
Valve function	☐ 5/2 single solenoid	☐ 5/2 double solenoid	☐ 3/2	☐ 5/3
Number	_____	_____	_____	_____

Digital inputs	Number _____	Digital outputs	Number _____
Analogue inputs	Number _____	Analogue outputs	Number _____
Connection type	☐ Cage Clamp	☐ M8 plugs	☐ M12 plugs

Comments _____

5. Pneumatic interfaces

Compressed air supply _____ Position of connections _____

Working lines (2/4) ☐ Individual bulkhead fittings ☐ Pneumatic multiple connector plate

☐ Cable connector with multiple seal insert

Position of connections _____

Exhaust air ☐ Ducted ☐ Silencer

Position of connections _____

Comments _____

6. Electrical interfaces

Cable connectors Position of terminals _____

Comments _____

7. Other

☐ Cabinet heating ☐ Fan ☐ Rain protection ☐ Protective cover

☐ ATEX

Number of items _____ Comments _____

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Customer _____

Project name _____

Contact person _____

Festo project number _____

FESTO

Check list
Basic ATEX data
Basis of offer

Explosion protection
Directive RL 94/9/EC

Check 1: Zone/equipment category/ignition protection class

Gas zone (G)	Dust zone (D)	Zone description	Equipment category	
1 ☐		- To be expected occasionally - High level of safety - Malfunction	2 G ☐	Gas, mist, vapour
	21 ☐		2 D ☐	Dust
2 ☐		- Brief, rare, not expected - Normal level of safety - Normal operation	3 G ☐	Gas, mist, vapour
	22 ☐		3 D ☐	Dust
Type of explosion protection:		i (intrinsically safe)	☐	

Check 2: Explosion groups, temperature classes, temperatures

Specification for gas atmosphere

Temperature class (Maximum permissible surface temperature)	T 1 450 °C	T 2 300 °C	T 3 200 °C	T 4 135 °C	T 5 100 °C	T 6 85 °C
	☐	☐	☐	☐	☐	☐

Explosion group	II A	II B	II C	II	Device group II contains explosions groups IIA, IIB, IIC
Customer specifications	☐	☐	☐		
*Specification for system solution	☐	☐	☐	☐	

Specification for dust atmosphere

Maximum permissible surface temperature	Tmax = _____ °C	
Conductivity of dust	Conductive	Not conductive
	☐	☐

Specification for gas and dust atmosphere

Ambient temperature range	_____ °C ≤ Ta ≤ + _____ °C

Check 3: System type

As module ☐ On mounting plate ☐ In control cabinet ☐

General comments/notes

Customer specifications: _____

_____

_____

Resulting Festo ATEX classification _____

* Parts to be completed by Festo. This indicates the explosion group for which the system solution is approved.

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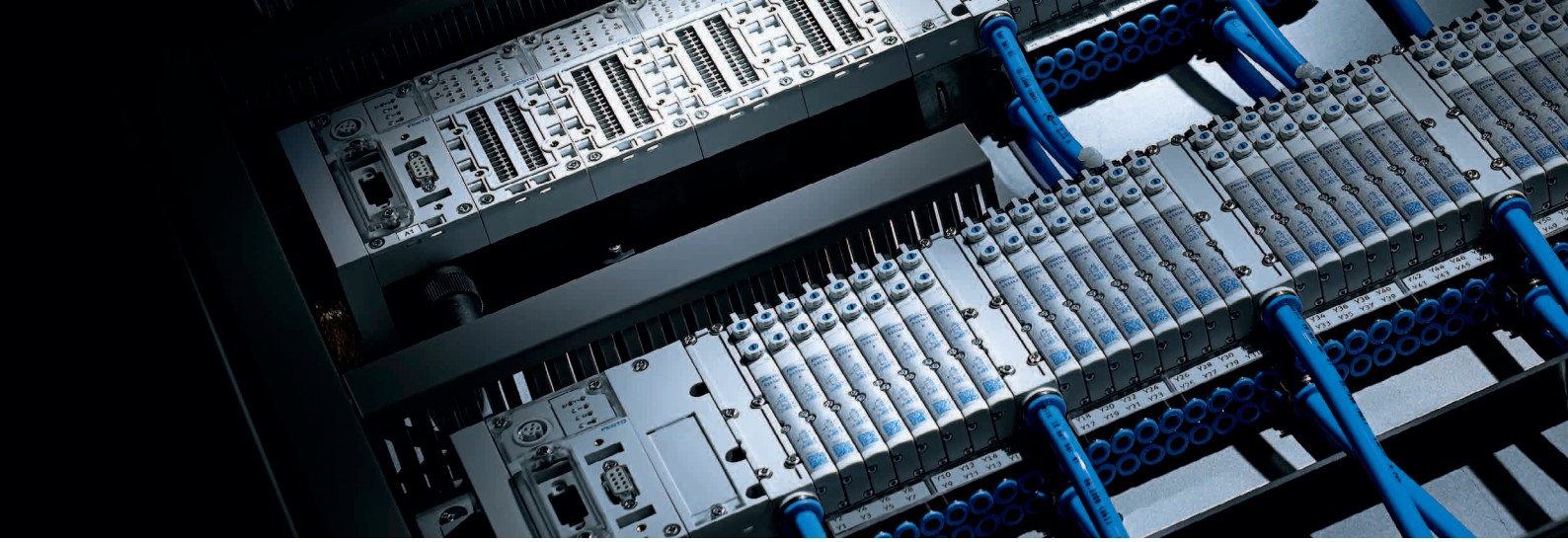

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Everything from a single source
From individual components to pneumatic systems consisting of actuators, sensors, valves, connection technology and compressed air preparation, Festo offers products, special and complete solutions for all sectors of process engineering.

The benefits to you
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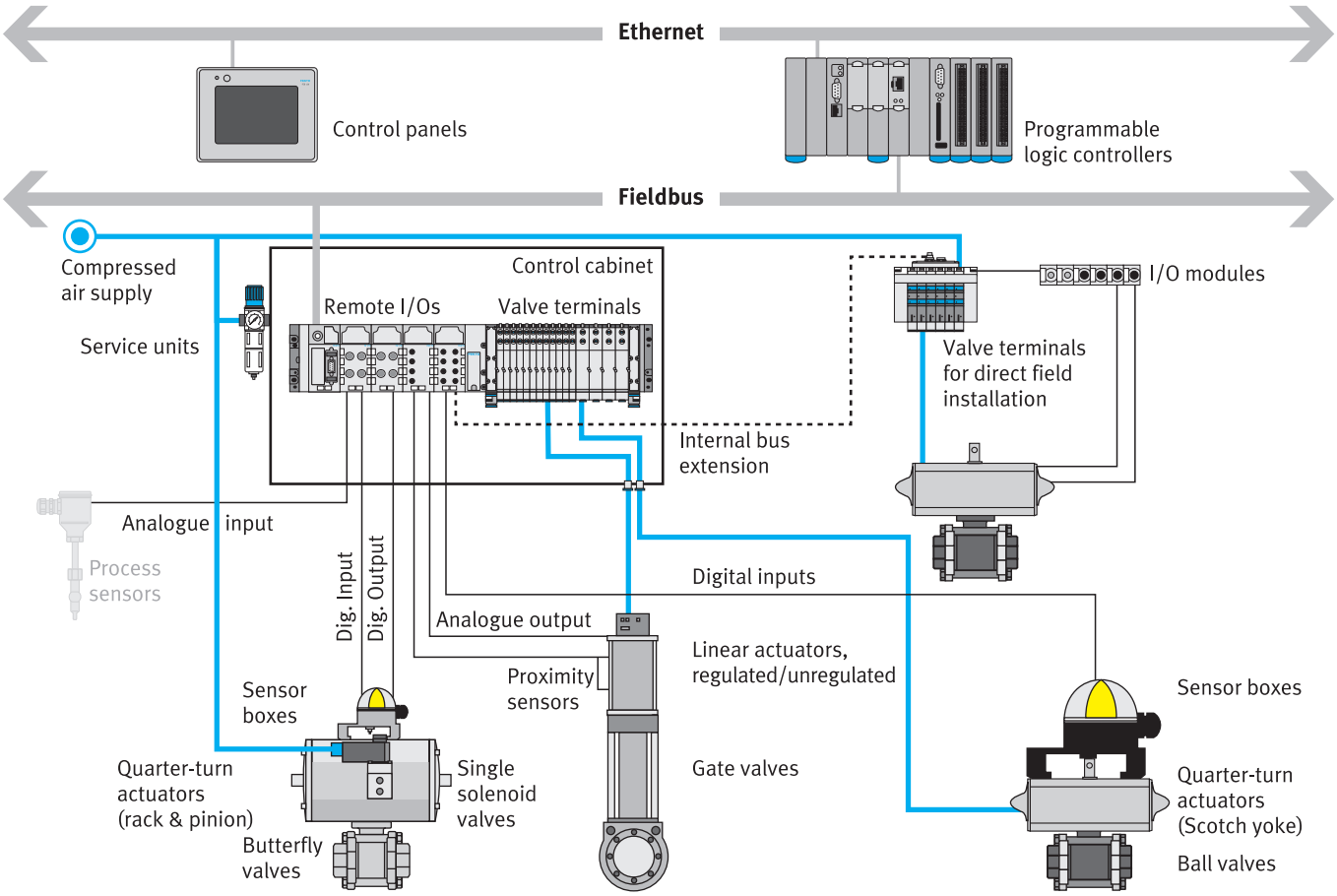

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