



bürkert
FLUID CONTROL SYSTEMS



bürkert
FLUID CONTROL SYSTEMS

Product Overview Pneumatics & Process Interfaces

Bürkert Fluid Control Systems
Christian-Bürkert-Straße 13-17
74653 Ingelfingen
Germany
Tel. +49 (0) 7940/10-0
Fax +49 (0) 7940/10-91 204
info@burkert.com
www.burkert.com

01 SOLENOID VALVES

02 PROCESS VALVES

03

04 SENSORS

05 MICROFLUIDICS

06 MASS FLOW CONTROLLERS

07 SOLENOID CONTROL VALVES

Content

- 3 _____ Introduction
- 4 _____ Fascination Bürkert
- 7 _____ Process Actuation
- 8 _____ Process Actuation and Valve Islands
- 10 _____ Seat Valves
- 12 _____ Pilot Valves
- 14 _____ Valve Block – Type 8640
- 16 _____ Valve Island – Type 8640
- 18 _____ Process Control Centers AirLINE – Type 8644
- 20 _____ Automation System FreeLINE – Type 8645
- 28 _____ Automation System AirLINE Ex – Type 8650
- 30 _____ Cabinet Know-how
- 34 _____ Certifications
- 36 _____ Fieldbus Expertise
- 38 _____ ELEMENT Interface
- 44 _____ Accessories
- 46 _____ System Solutions
- 50 _____ Contacts at Bürkert

The Process Interface Market Leader

Across thousands of individual solutions and spanning dynamic conditions of global competition our mission is to work towards your success.

We have decades of global experience and we have always been positioned at the forefront of pneumatic and process interface technology.

Our innovative approach to your success is to secure your process efficiency, lower your downtime, increase your safety and boost your competitive advantage.

We intend to collaborate with you where we can share our pneumatic and process interface experience.

All of our combined knowledge is available to you through consultation, engineering support, selection and commissioning.

Everyone in our organisation is interested in listening to you with the aim of presenting you with only the most appropriate solution, fluently in your daily application language.

Welcome to the Fascinating World of Fluid Control Systems

Measurement and control: When it comes to working with fluids and gases, we are at your side – as a manufacturer of sophisticated products, as a problem-solver with an eye for the big picture, and as a partner offering you reliable advice. Since we started in 1946, we have developed into one of the world's leading suppliers of Fluid Control Systems. At the same time we have kept our status as a family-owned business with a foundation of strong basic values to highlight the way we think and act.

EXPERIENCE

There are things which are not inherently yours. You have to gather them bit by bit. You receive them from others. And you constantly have to acquire them anew. That is what makes them so valuable. Experience is one of those things. For instance, because of our many years of experience with Pneumatics, we can provide our extensive services to you – from consulting, development, and 3D CAD simulating to testing and after-sales service. Whether individual product solutions or a pioneering new system for the entire control process: Benefit from our experience.

COURAGE

Those who only work toward optimizing things that already exist will eventually reach the limits – technically, financially, or personally. In order to overcome these limits, courage is needed: the courage to be different and trust one's own ideas; the courage to venture into the unknown, searching for new ways to develop products that have never existed before. We have this courage. By pooling and utilizing our competencies across all sectors, you benefit from our cumulative knowledge of Pneumatics and Process Interfaces.

CLOSENESS

There are things we simply take for granted. Only when they are gone, do we realize how important these things really were. This applies in particular to closeness. Without closeness, it is very difficult to build relationships and a good understanding of one another. As an established medium-sized company, we know that. And that is why we are always there for you. Working with you, we develop the best possible solutions for your projects in the area of Pneumatics. Our global presence in 35 locations enables us to press ahead with technical innovations for our customers around the world.

Bürkert Product Program

We are one of the few suppliers on the market to cover the complete control loop. Our current product range extends from solenoid valves through process and analytical valves to pneumatic actuators and sensors.



Bürkert offers a remarkable range of servo-assisted and direct acting solenoid valves. Read more about them in this brochure.



Bürkert offers unlimited modularity for process control with angle-seat, globe and diaphragm valves in the widest range of configurations.



Here you can find our product range of pneumatic valves, valve units and automation systems as well as information on our control cabinet building.



Here you can find our sensors, transmitters and controllers for measuring and controlling flow, temperature, pressure, level, pH/ORP and conductivity.



The brochure contains an overview of Bürkert miniature valves and micro pumps, which allow for precise and safe handling of small volumes of liquids.



This brochure provides technical background information as well as a detailed product overview for the mass flow controller and meter product range.



This brochure presents our solenoid control valves including their respective features, functions and typical applications.





Process Actuation

Pneumatic technology is known for high reliability, high force and torque generation and cleanliness. This makes it indispensable for efficient solutions for drives and actuators for control and regulation.

Bürkert has tamed the power of pneumatics and brings it to you in its most efficient form resulting in new standards in factory automation and process control.

Factory Automation

Factory automation refers to computer-aided automation of production in all technical and organizational areas of a factory. One special point of emphasis relates to automatic assembly of subassemblies and devices. This primarily requires transport systems, material flow systems, handling systems, robot systems and measuring systems which are connected with computer assistance. In many cases, pneumatically operated actuators are used for this (e. g., cylinders). These systems must smoothly interwork at high speed in the production process.

Process Control and Supervision

Bürkert has perfected practically-oriented pneumatics in an extremely wide variety of industries. Food, chemical and pharmaceutical industries, with their complex installations, require a high level of decentralization and conversion or expansion during operation.

Centralized or distributed control: not a question of faith in automation. Every problem is different and requires the most efficient solution. Our solutions allow you to focus on optimum process reliability, efficiency and economy.

Process Actuation and Valve Islands

The pilot valves required for controlling actuators may be fitted at various locations and in different ways. Our range extends from directly mounted pilot valves on the actuator to centralized valve islands with fieldbus interface in control cabinets (AirLINE and AirLINE Ex) or without control cabinets (FreeLINE).

Pilot valves with NAMUR interfaces are among the valve types suitable for direct mounting, and are particularly useful due to their standardized mounting flange pattern.

When using valve islands, corresponding pneumatic tubing must be installed from the control cabinet to the final control element.



Normally Open and Normally Closed – Seat Valve Anatomy

The ports of a seat valve are connected or disconnected by lowering or lifting a sealing element (e. g. servopiston). These seals are hermetically tight and self-readjusting, they operate without friction (no stick-slip effect) and are rarely subject to any dynamic stress. Seat valves are designed to be very tight over their entire service life and the switching travels are small. The actuating forces are pressure-dependent and relatively high; a pressure differential across the pilot valve is required for switching.

Multi-way seat valves are available with a choice of connection thread for direct installation or flange design for mounting directly on manifolds or actuators. Seat valves of narrow design are – similar to spool valves – well-suited for block assembly. Several valves may be arranged in a space-saving manner on manifolds or valve blocks with fieldbus interface. Mufflers can be connected to reduce venting noise.

The illustrations on the opposite page show a 3/2 way seat valve using the plunger principle. This type of valve has three ports and two valve seats, which open and close alternatively.



Type 6014



3D Animation Type 6014



Pilot for Pneumatically Operated Valves

The term "control unit for pneumatic actuators" refers to a converter function unit which is able to issue corresponding pneumatic signals for controlling an actuator and which is controlled with low-energy, electrical, mechanical or pneumatic signals. These control units have electrically (magnetically), pneumatically or mechanically operated multi-way valves for switching compressed air.

These pneumatic valves can be differentiated as follows, based on the pilot system's operating principle:

- pivoted armature
- plunger-type valves
- rocker valves
- flipper valves

For details about these principles see our Product Overview Solenoid Valves.

The illustrations on the opposite page show the flipper valve anatomy used as a pilot for pneumatic valves such as Type 6524 and 6525.



Type 6144 single valve



Type 6144 block solution

created by 3D Sales Technologies GmbH · info@3dst.de · www.3dst.de



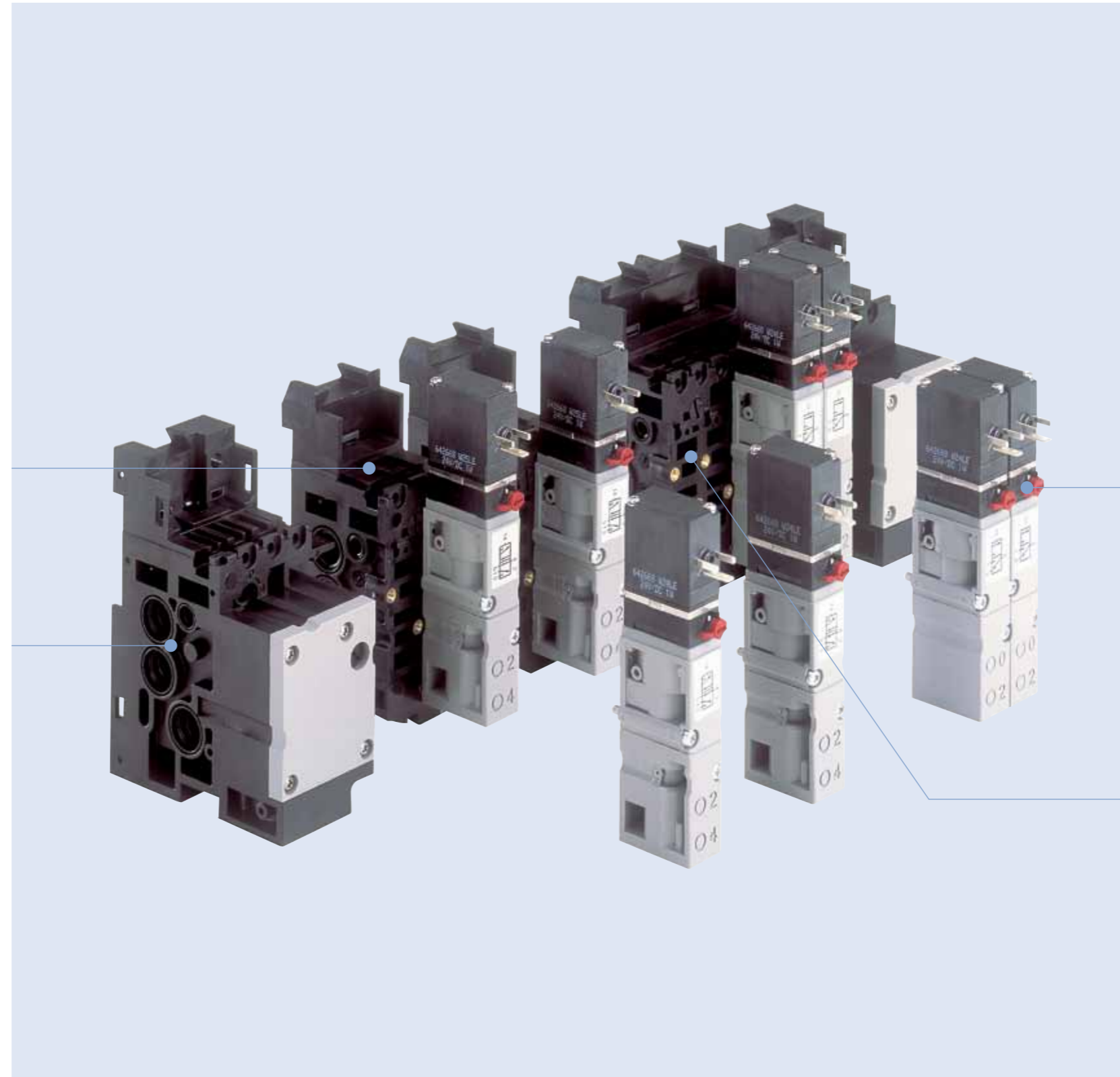
3D Animation Type 6144



Valve Block – Type 8640

The 8640 valve block is designed to solve diverse and complex control problems due to its systematic modular construction. Different valve functions can be combined on one block without a common electrical control.

- Pneumatic basic modules in different sizes
- Pneumatic supply: common supply of valves with compressed air as well as common exhaust air lines

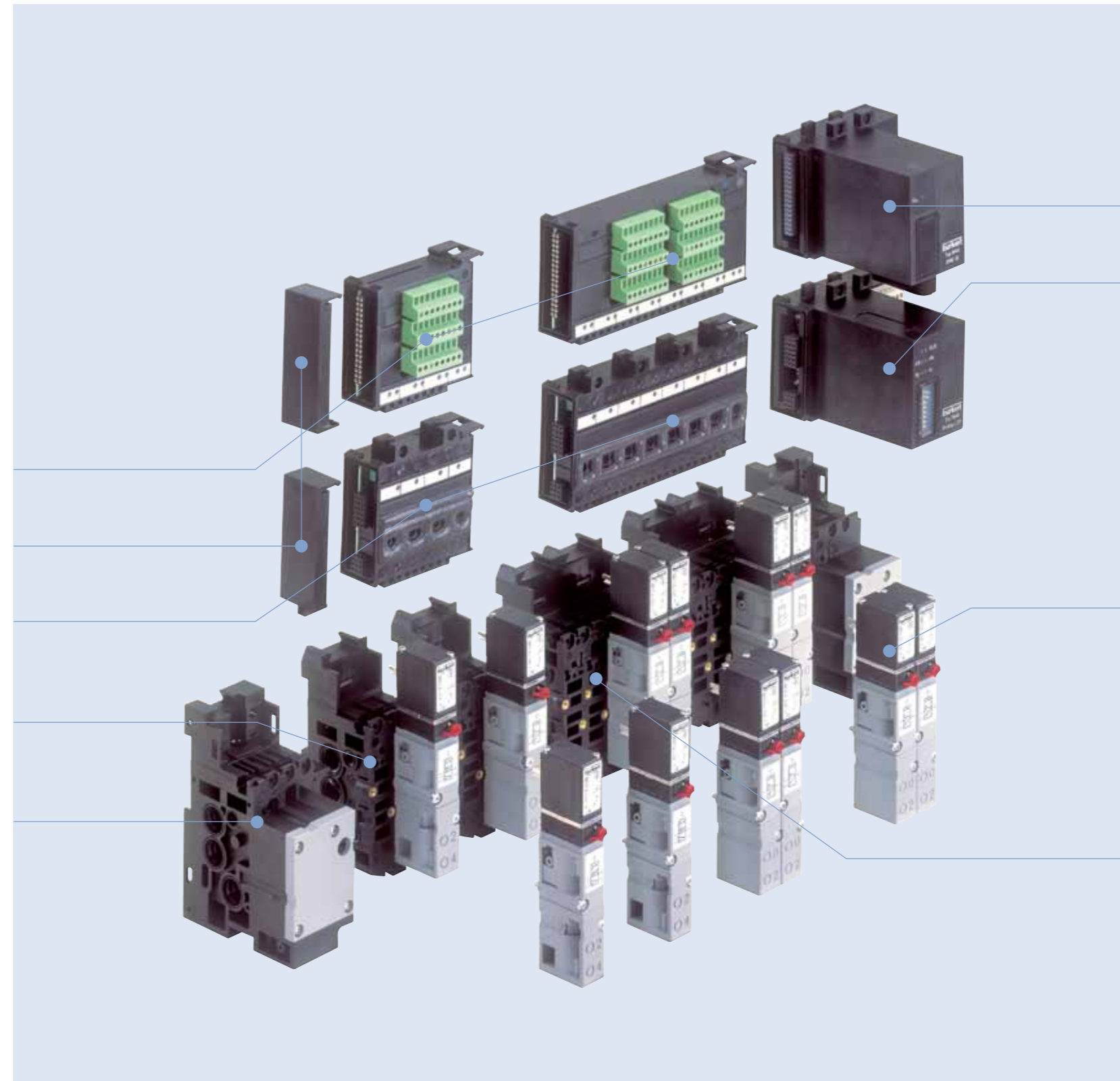


- Possibility to combine different valve functions on a single valve block:
 - 3/2-way valve
 - 5/2-way valve
 - 2x3/2-way valve
 - 5/2-way valve bistable
 - 5/3-way valve
- Pneumatic features:
 - P shut-off: replacement of valves during operation possible
 - Additional protection in your device with check valves

Valve Island – Type 8640

Type 8640 is a modular automation system with a protection class up to IP 54. The valve island uses digital feedback inputs for the control of sensor signals and pneumatic outputs for the control of single and double-acting process valves. By putting together a row of pneumatic modules with different numbers of valves, 2 to 24 valve functionalities may be realized on one valve island. Electrical connectivity is achieved by either fieldbus interfaces, common connection or multipin.

- Digital feedback inputs
- Termination modules for electric modules
- Basic electrical modules for valves supply
- Pneumatic basic modules in different sizes
- Pneumatic supply: common supply of valves with compressed air as well as common exhaust air lines



- Expansion modules for digital inputs
- Communication modules:
 - fieldbus technique
 - Profibus DP
 - CANopen
 - DeviceNet
 - Interbus
 - ASI
 - conventional wiring
 - multipin
 - common connection
- Possibility to combine up to 24 valve functions on a single valve block:
 - 3/2-way valve
 - 5/2-way valve
 - 2x3/2-way valve
 - 5/2-way valve bistable
 - 5/3-way valve
- Pneumatic features:
 - P shut-off: replacement of valves during operation possible
 - Additional protection in your device with check valves

Process Control Centers AirLINE

AirLINE type 8644 uses digital and analogue inputs for the control of sensor signals and uses digital and analogue outputs for the control of complete decentralized control systems. Our expertise lies in the supervision and control of complete loops including flow, pressure, temperature and level.

- Our groundbreaking modular systems fit in your world and in your cabinet
- Perfect process pneumatics with multiple communication possibilities

For details on AirLINE with different cooperation partners please see the AirLINE Flyers.

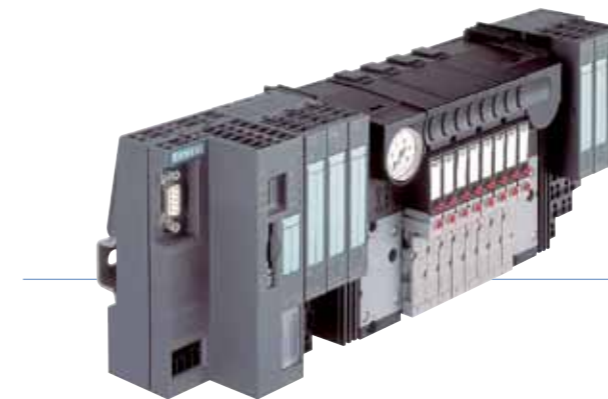


AirLINE Type 8644, Rockwell Point I/O System

Groundbreaking modular system in protection class IP 20 with multiple communication possibilities including ControlNet, DeviceNet, Ethernet and Profibus DP. Fully compatible with Rockwell Point I/O.

AirLINE Type 8644, WAGO I/O System 750

Remote Process Actuation Control System AirLINE, fully compatible with WAGO I/O System 750. It integrates high performance solenoid pilot valves, remote electronic I/O and fieldbus communication into a process actuation and control system that is both compact and extremely flexible. Suitable for hazardous applications in Zone 2.



AirLINE Type 8644, Siemens ET 200S

Modular valve island for pneumatics with fieldbus and digital and analogue I/O modules. This automation system is open for all functionalities including hazardous applications in Zone 2.

AirLINE Type 8644, Phoenix INLINE System

Remote Process Actuation Control System AirLINE, fully compatible with Phoenix INLINE System. It integrates high performance solenoid pilot valves, remote electronic I/O and fieldbus communication into a process actuation and control system that is both compact and extremely flexible.



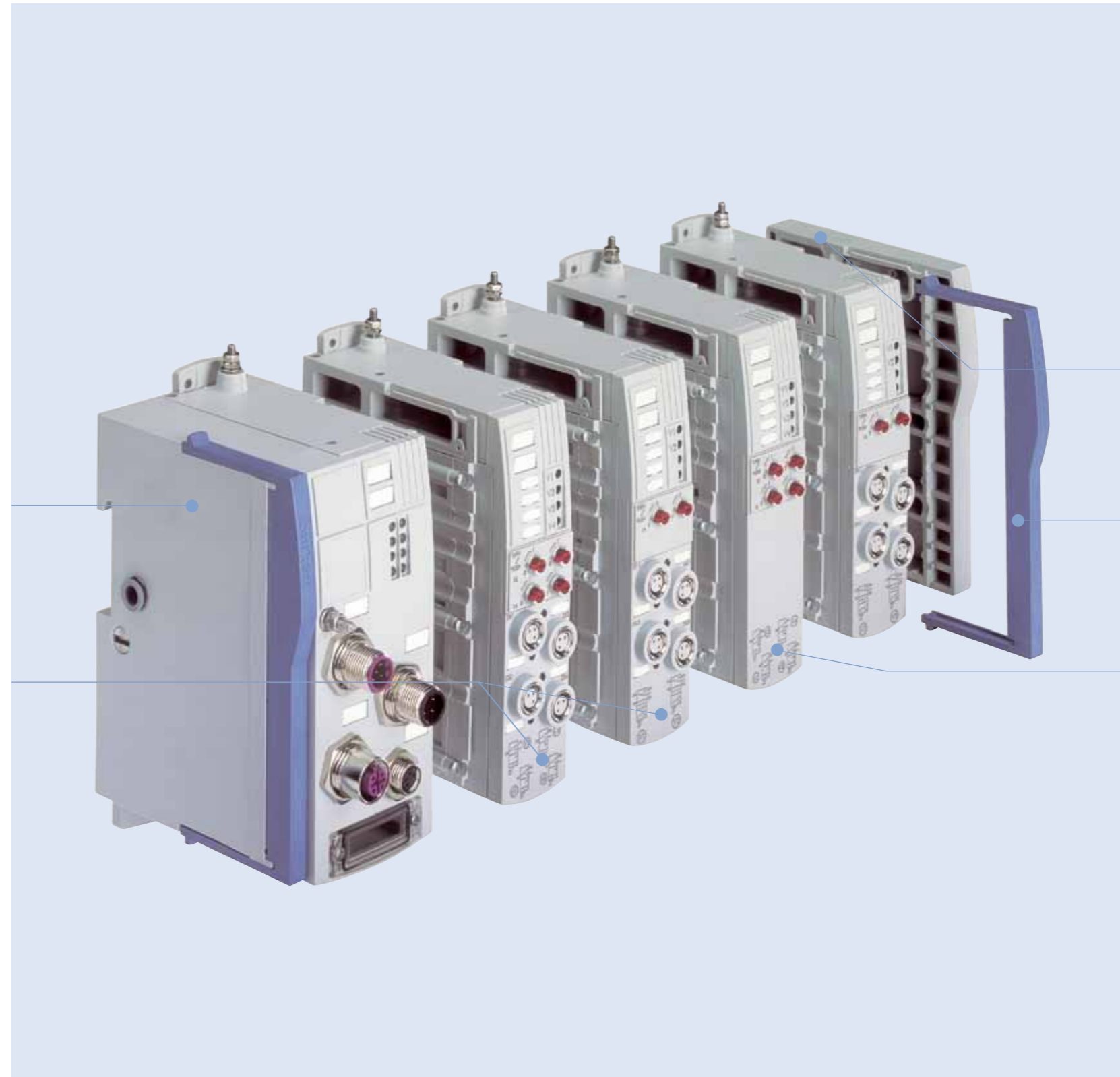
Automation System FreeLINE – Type 8645

The 8645 automation system is suitable for solving a multitude of control tasks thanks to its adapted, modular pneumatic and electrical interfaces. Pneumatic and electrical modules can be arranged in any sequence desired, and pneumatic as well as electrical functions can be realized on one module for the first time.

The efficient coupling of innovative valve technology with highly resistant plastic casing enables high protection classes up to IP 67. FreeLINE offers all the freedoms of distributed systems without the need for control cabinets.

- Communication module: Profibus, DeviceNet, CANopen, Multipin

- Combination module: digital input modules plus several valve functions



- Termination module

- Connection bracket

- Pneumatic module

Selection Criteria for Multi-Way Valves

- Final control element, single or double-acting
- Circuit function of control valve
- Flow rate/nominal diameter
- Tube length
- Pilot pressure
- Switching speed
- Operating voltage
- Installation method and location
- Port connections
- Ambient conditions

Actuators, circuit function

The required circuit function for the pilot valve results from the actuator's mode of operation (single or double-acting). The options are shown in the table on page 24, along with the circuit functions for multi-way valves. Correct dimensioning of the pilot valve, allowing for the supply line, is very important.

Selection of pilot valves (multi-way valves), allowing for the air capacity

The pilot valve has the task of filling or venting – via a supply line – the actuator within a specific time. The shorter the response time of the actuator, the higher the air capacity requirement of the pilot valve. The reset time of single acting actuators can be reduced by using quick exhaust valves, directly mounted on the actuator. In process automation, larger actuators often need to switch slowly and switching times of up to half a minute are accepted. In factory automation it is different and switching times often have to be as fast as possible.

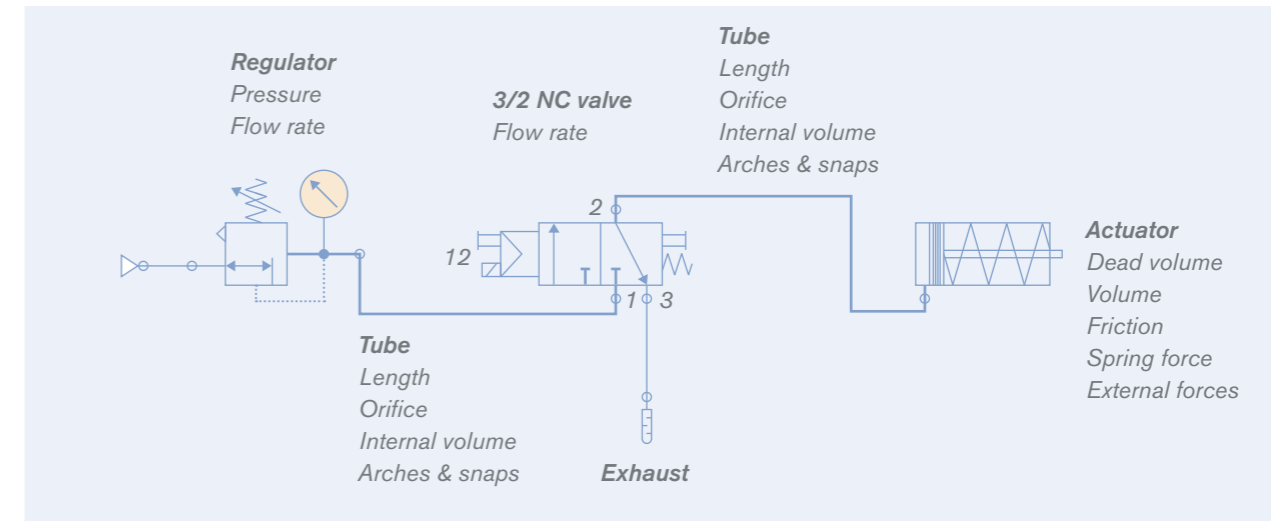
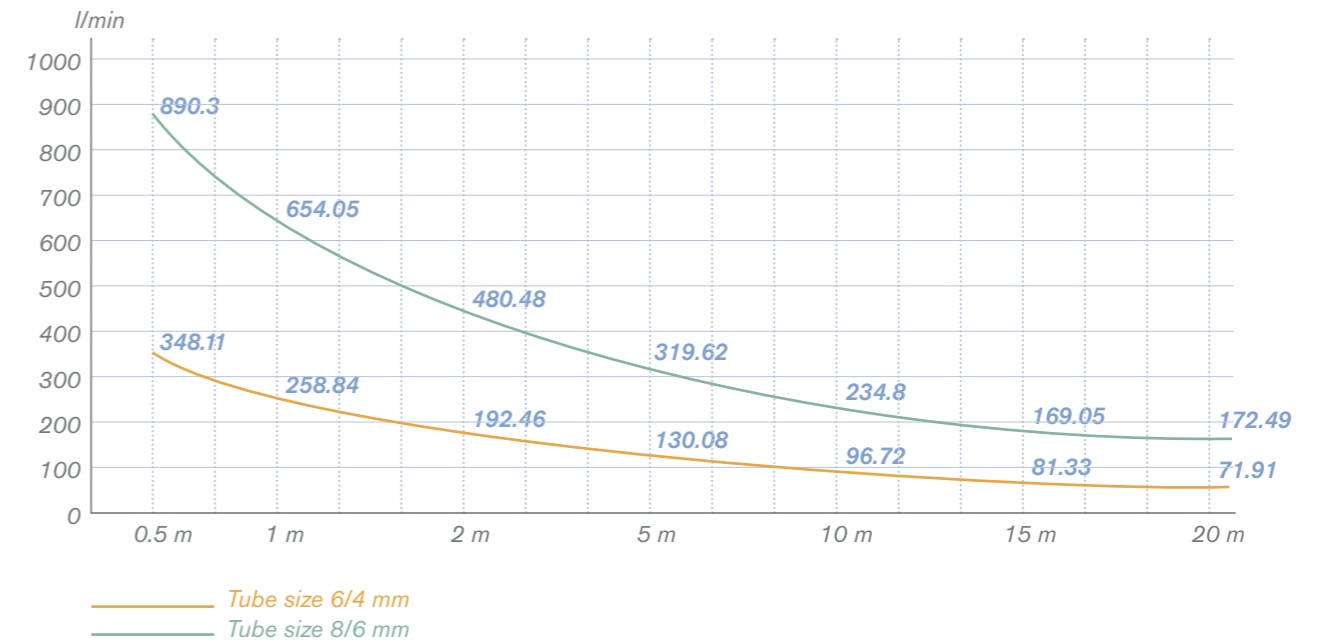
A tube represents an additional flow resistance and a disadvantageous volume. Thus, shortening the tube length reduces the volume to be filled and allows the usage of “smaller” control valves. Experience indicates that the flow rates can drop up to 50 % after approx. 3 – 4 m tube length and can also drop by an additional 20 – 30 % after a further 10 m (see diagram on the right page). Consequently, the losses must also be taken into account when selecting the valves and when dimensioning the tubes.

In addition, it must be ensured that lines are routed as straight as possible, with no kinks, pinching points or elbows, since they can impair the flow conditions, i. e. increase the flow losses in the tube. The diagram also clearly shows that higher flow rates are achieved by increasing the tube's inside diameter from 6/4 mm to 8/6 mm.

The diagram shows the effect of the tube lengths (6/4; 8/6 mm) on the air flow rate. Similar characteristics also result for tube sizes 10/8 and 12/10 mm. The measurements were conducted with multi-way valves at +20 °C and at an input pressure of 6 bar. The configurators for the valve blocks and valve islands include a calculation tool for calculating flow rates.

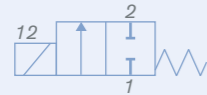
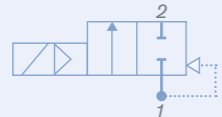
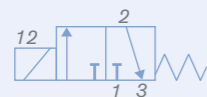
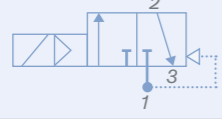
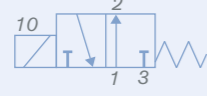
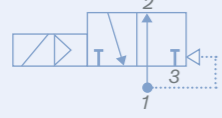
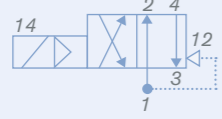
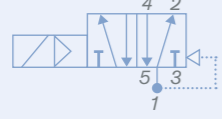
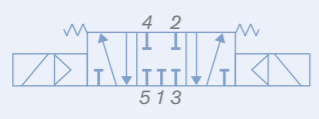
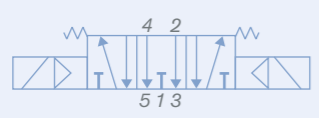
However, it is difficult to give a statement about the real switching times of an actuator, connected in the end of a tube. Further criteria influencing the switching time are the force of the spring package inside the actuator, friction forces and possibly the media pressure.

Q_{Nn} value (tube size 6/4 mm, 8/6 mm)







Different Multi-Way Valves

Circuit functions (WW) and possible applications of multi-way solenoid valves

WW	Circuit Symbol	Circuit Function	Possible Applications
A		2/2-way solenoid valve, direct-acting; normally closed; switching without pressure differential	Opening, closing of compressed air lines
A		2/2-way solenoid valve, servo-assisted; normally closed; pressure differential required across valve	Opening, closing of compressed air lines
C		3/2-way solenoid valve, direct-acting; service port 2 normally vented via outlet 3; switching without pressure differential	Pilot valve for single-acting final control elements (low air capacity)
C		3/2-way solenoid valve, servo-assisted; service port 2 normally vented via outlet 3	Pilot valve for single-acting final control elements (high air capacity)
D		3/2-way solenoid valve, direct-acting; service port 2 normally pressurized; switching without pressure differential	Pilot valve for single-acting final control elements (no air capacity)
D		3/2-way solenoid valve, servo-assisted; service port 2 normally pressurized; pressure differential required across valve	Pilot valve for single-acting final control elements (high air capacity)
G		4/2-way solenoid valve, servo-assisted; service port 2 normally pressurized and service port 4 normally vented via outlet 3	Pilot valve for double-acting final control elements; 2 and 4 are always vented via 3
H		5/2-way solenoid valve, servo-assisted; service port 2 normally pressurized and service port 4 normally vented via outlet 5	Pilot valve for double-acting final control elements; venting 2 via 3 and 4 via 5
L		5/3-way solenoid valve, servo-assisted; Position 1: pressure on 2; 4 vented; Position 2 (center): everything shut off; Position 3: pressure on 4; 2 vented	Pilot valve for double-acting final control elements; lifting, holding and lowering
N		5/3-way solenoid valve, servo-assisted; Position 1: pressure on 2; 4 vented; Position 2 (center): 2 and 4 vented; Position 3: pressure on 4; 2 vented	Pilot valve for double-acting final control elements; 2 and 4 vented in center position



Symbols for the actuating elements on the valve:

-  Solenoid actuator
-  Pilot valve
-  Mechanical spring
-  Pneumatic return

Process Actuation and Valve Islands for Hazardous Areas

Bürkert provides cutting edge solutions for your hazardous location process control. An otherwise unattainable synergy of hardworking valve elements, process actuation, sensors and networked communication provide a true single source of remarkably attractive hazardous location systems. We aim to provide real peace of mind, process safety and joy of use.

In the explosion proof world where certification, compactness, smart communication, and security are everyday concerns, our wide product range provides process efficiency and higher yields by offering you unlimited process modularity.

Details can be found in our competence brochure Hazardous Locations.

Direct-acting



6013
EEx m II T4



6014
EEx m II T4
EEx ia IIC T5, T6

Pivoted



0780
EEx ed IIC T5

Servo-assisted



5281
EEx m II T4



5282
EEx ed IIC T5

NAMUR



6519 6519
EEx ia IIC T5, T6
EEx m II T5

Pneumatic Systems



6518 6519
EEx ia IIC T5, T6
EEx m II T5



6524/6525

AirLINE Automation System



8650
for hazardous areas
(Zone 1/21)

Automation System AirLINE Ex – Type 8650

AirLINE Ex Type 8650 is a modular electrical and pneumatic automation system that controls complex processes in hazardous areas (Zone 1/21). The protection class "intrinsically safe" (Ex-i) of electronic modules and valves allows the change of modules during operation. Combined with the modules from our cooperation partner Siemens, Bürkert offers electrical, analogue and digital I/O functions for use in Zone 0.

- Interface Module
- Supply slice left
- Power supply module



- Electronic modules
- Valve slice
- Valves

Cabinet Know-how



We have intimate knowledge of the main panel components. We combine pneumatics, communication and networking into simple turnkey solutions.



We strive to understand the exact needs and requirements of our customers. We deliver according to precise project management time scales.



We understand what is required for process cabinets in demanding environments.



We deliver and commission complete solutions for process environments, including hazardous locations.



Selection of Environment

	Installation in Cabinets	Installation without Additional Enclosures
Non Ex		
Hazardous Locations		

Approvals Behind our Success

Individual directives and national standards have resulted in clear standards that have been implemented in national or international law by the legislature. These recognized regulations ensure that equipment items from different countries are compatible and that manufacturers adhere to a set of regulations regarding design and production.

These regulations relate to the following aspects:

- Protection against risks and dangers
- Interfaces between technical systems
- Testing and inspections of products
- Clear description of the content and the characteristics of products

Legal supervisory authorities require that system operators use only equipment which meets the necessary safety requirements pursuant to these regulations.

Bürkert has the largest number of valves which have been granted the corresponding global approvals.

European approvals

The European approvals and CE mark must be considered in conjunction with one another. As products with CE marking comply with the specified safety regulations, these marked products must be accepted in all EU and EFTA states. A distinction is made between the regulated and unregulated area. The CE mark on Bürkert devices refers to

- Electromagnetic compatibility in the areas
- Low Voltage Directive with the following limits:
 - 75 – 1500 V for DC voltages
 - 50 – 1000 V for AC voltages
- Pressure Equipment Directive

In regulated areas, the requirement stipulates that an independent body must conduct an CE type examination:

- Pressure Equipment Directive
- Gas Appliances Directive
- ATEX Directive

In unregulated areas, it is the manufacturer's direct responsibility to attach the CE mark. In this case, a Declaration of Conformity may be required of the manufacturer, specifying the standards applied. Depending on the particular application, the following directives may apply to Bürkert:

- Low Voltage Directives
- Electromagnetic Compatibility Directive
- Vehicle Directives
- Medical Device Directives

German approvals

VDE approval applies to water valves for domestic use where the most important requirements are electrical safety requirements, stipulated function behavior, water hammer, tightness and mechanical strength of the fluidic components.

The KTW Recommendation is relevant to plastics in components used in drinking water and is also required for the use of solenoid valves with VDE approval in the drinking water sector. The hygiene requirement apply to non-metallic materials (e. g., elastomer seal materials) which come into contact with the medium and is taken as a basis for this recommendation in accordance with the specification of the competent Federal Agency.

Safety shut-off valve to EN 264 "Safety Shut-Off Devices for Combustion Plants using Liquid Fuels" is specified as the test regulation for this. A test laboratory (e. g., TÜV) draws up a report on the requirements which include functional behavior, continuous loading capability, electrical safety, tightness and mechanical strength of the fluidic components.

North American approvals

The American Occupational Safety and Health Administration (OSHA) drew up the OSHA Regulation. In Standard 29 CFR, the requirement for electrical installations or equipment stipulates that only installations or equipment which have been tested for the specified safety requirements by an NRTL (National Registered Test Laboratory) may be installed. The NRTLs specified include the following:

- Underwriters' Laboratories (UL) for UL-listed, UL-recognized, UL-classified
- Factory Mutual (FM)
- Canadian Standards Association (CSA)

The complete CSA approval, from the measurements to be carried out up to preparation of the documents can be conducted by Bürkert.

Hazardous Locations

Valves for ATEX Directives (formerly Explosion-Protection (EX) Directives) covers equipment, components and protection systems for use in hazardous areas. It also applies to safety facilities outside of hazardous areas if they are required for safe operation of equipment in the hazardous area with respect to the risk of explosion.



Intelligent Technology in the Field

The status quo:

Application-specific standardization of systems

As a key technology in the automation sector, fieldbus technology now offers a range of standardized bus systems that have been specialized and optimized for specific industries or specific applications.

Opening up this intelligent technology with optimum efficiency for the customer is a welcome and sought-after challenge for our team of consultants who, owing to their pioneering experience, process the crucial knowledge for developing future-oriented solutions. And what would highly qualified engineers find more motivating than an unsolved problem? The fact that Bürkert has the "tickets" for the future-oriented fieldbus technology worldwide makes the choice simple for our customers, but "difficult" for our experts who wish to be challenged by new tasks.

Catching the right bus

The "evolution" of network technology has essentially developed from the principle of centralization through to distributed intelligence. Of course, this also necessitates components that comply with all aspects of the new "command structure". Maximum availability and minimum possible downtimes are but two key aspects of more efficient, i. e. advanced, operation of a system or installation which is based on future-proof fieldbus technology. It is certainly worth considering opting for a technology leader who has been involved right from the very start and who can therefore provide the appropriate solution to an individual problem as an integrated system. With Bürkert, you are riding the bus to the future.

Bürkerts networking technology

In addition to the automation systems and valve islands, you can see on the right hand page, Bürkert offers a variety of different communication interfaces like Profibus DP, Profibus PA, DeviceNet, CANopen, Ethernet, Interbus, Foundation Fieldbus or the HART protocol.

Various user associations track the ongoing development of individual bus systems. Visiting the following websites will fill you in on the latest:

- AS-International Association
www.as-international.net
- CANopen
www.can-cia.de
- DeviceNet
www.odva.org
- Ethernet
www.iaona-eu.com
www.ida-group.org
www.odva.org
www.profibus.com
- FOUNDATION Fieldbus
www.fieldbus.org
- HART Communication Foundation
www.hartcomm.org
- INTERBUS Club
www.interbusclub.com
- PROFIBUS International (OI)
www.profibus.com



ELEMENT TopControl Type 8693

with Profibus DP and DeviceNet



RaySENS Type 8136

with HART protocol



LiquidFLOW Controller Type 8719

with Profibus DP or DeviceNet



Power I/O Box Type 8643

with Foundation Fieldbus or Profibus PA



Modular Analysis Transmitter Type 8285

in combination with Types 8201 and 8221



Ethernet

Central or Decentral ... You Choose.



Centralized Automation

Types 8640, 8644, 8650 in cabinets



IP 65/IP 67

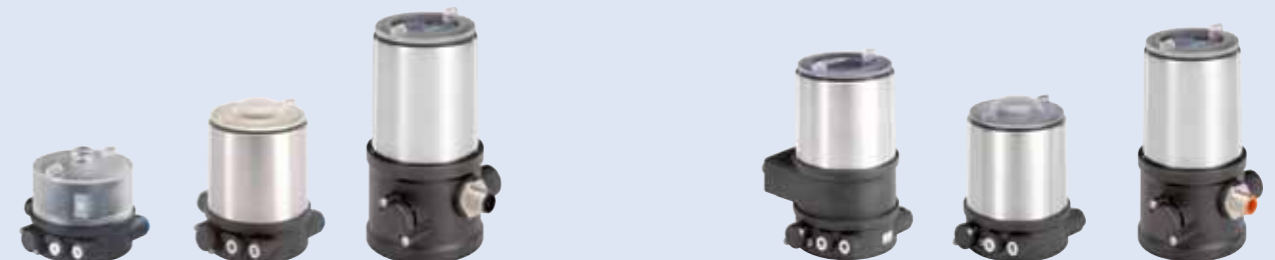
Type 8645 in the wild outside the cabinet



Decentralized Automation

Types 8690, 8691, 8695 On/Off

Types 8692, 8693, 8694, 8696 Continuous



On/Off Advantages

Mechanical

- Extremely compact integrated actuation without external air lines
- Contactless, wear-free displacement transmitter
- Simple, one button, reliable drive adaptation by automatic TEACH calibration between parts
- ATEX Zone 2/22
- On-board air filter
- Protection against cleaning materials, external seals and integrated control air channels
- Integrated pilot valve with manual override
- Adaptation also to classic 2000 and 2031 series valves

Communication

- Binary outputs
- AS-Interface or DeviceNET
- SuperBRIGHT visual feedback

SetUp

- Designed for simple setup in tough, agile process environments

Look and Feel

- Exceptional

Direct Mounted On/Off Control for Process Valves



Air Advantages

Compressed air operating medium

- The compressed air operating medium is available in unlimited quantities.
- Many plants have their own compressed air systems/compressed air networks.
- The pressure range normally lies between 5 and 8 bar.
- Compressed air is easy to transport and easily stored.
- Compressed air that is not required can be vented into the atmosphere.
- No return line for the energy-carrying medium to the compressor.
- No environmental pollution if unlubricated compressed air is used.
- No risk of fire or explosion.

The ELEMENT range of ControlTOPs, positioners and controllers offer four technological breakthroughs which effect the efficiency and lifetime of all the actuators it is coupled with. Innovative thinking and acting has produced advantages which should easily find their way into solid engineering specifications as they will be appreciated in the field as they will save headaches, time and investment.

As well as the inherent good looks of the system these four points are tough to overlook.

Control Flush Over Pressure Protection

Inside the control head is always a positive pressure controlled by a small integrated check valve. As the pilot valve exhausts clean instrument air refreshes the environment in the head.

Integrated Pneumatic Actuation

Bürkert's 6144 process ready pneumatic flipper valves control On/Off and positioner functions perfectly. Bürkert specialized in making processes work. Solenoid isolation techniques formed over many years mean our "process actuation" offers more than what is expected in simple "pneumatics".

Integrated Air Inlet Filter

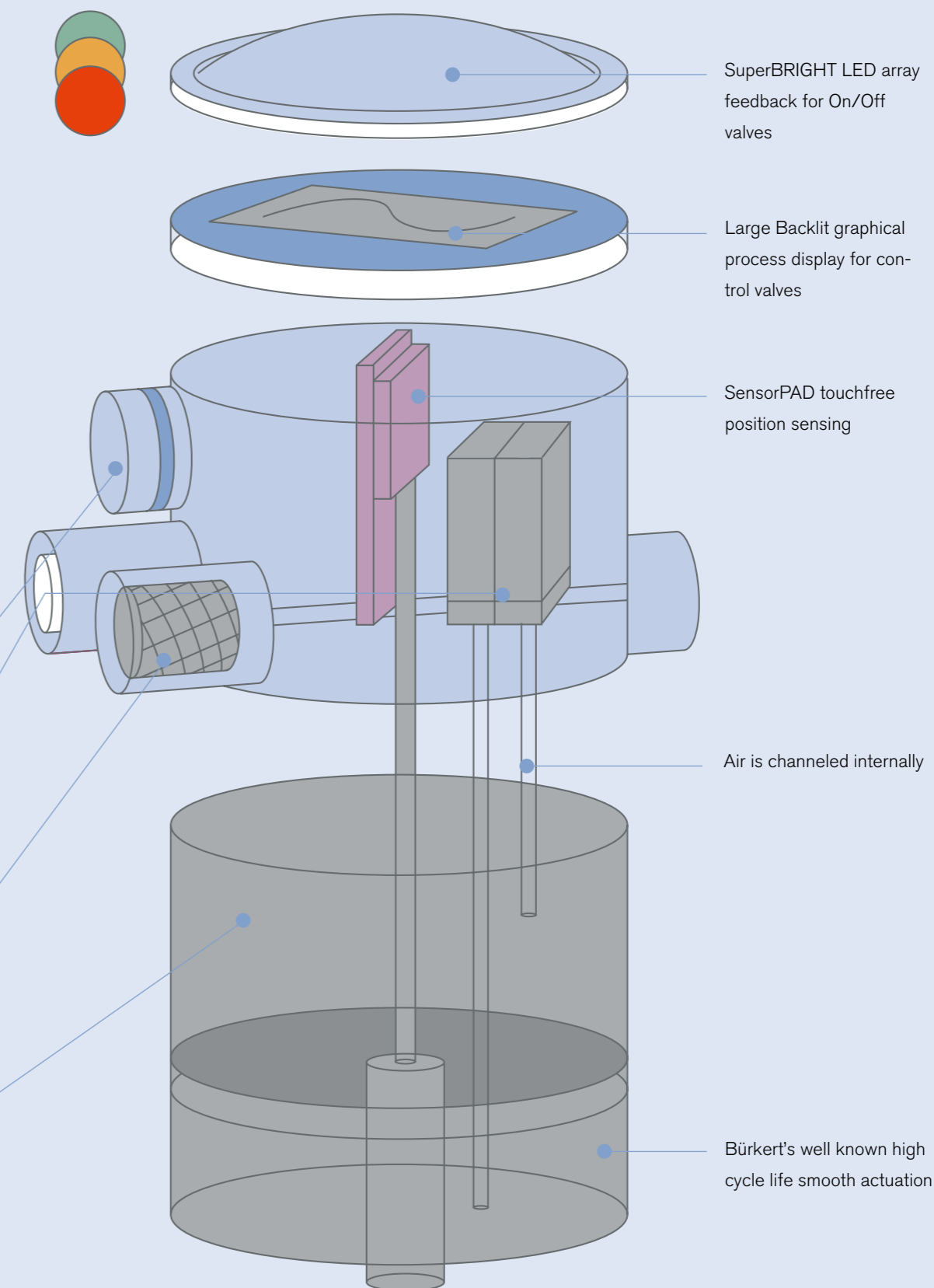
A removable mesh filter saves the valve from both installation dirt and any chance of dirty air during normal operation.

FreshAIR

Unlike any other actuator system, each time the actuator strokes the spring chamber is replenished by clean instrument air.

This means

- no corrosion of the actuator springs
- no dirt inside the actuator
- no humidity transmitted into the control head through the spindle
- no biological contamination inside the actuator



Accessories

The most important criteria for selecting the right accessories for your pneumatic system are pressures, flow rates, materials for environmental resistance, port connection sizes, mounting options and tube lengths.

In particular, the following accessories should be used for configuring a complete pneumatic system:

- plastic tubes (Type 1013 AF)
- mufflers (Type 1013 AJ)
- screwed fittings (Type 1013 AA)
- plug-in fittings (Type 1013 AB)
- compression fittings (Type 1013 AT)

Besides these pneumatic accessories, Bürkert offers a wide range of components such as flow valves and shut-off valves, which are interconnected with pilot valves and process valves, to form your pneumatic and process interface installation (see section "Selection Criteria for Multi-Way Valves" – page 22-23).



Added Value Systems

Bürkert has a unique perspective in the process control and instrumentation industry as we are the only single brand which combines a complete range of valves, instruments, pneumatic actuation, networking and controllers from a single source.

With our dedicated world-class engineers and our superlative manufacturing facilities we can deliver systems which meet your exact requirements.

Your reliable Bürkert sales consultant and our system engineers work in concert to ask the right questions and provide the right hardware. Transparent operations, up to date situation, review procedure, engineering change notices, portals through SAP and secure intranet are normal in our projects.

For a world class system experience, insist on Bürkert people to be part of your next project.



01 Connect

As a globally flexible, lean, focused and innovative company we are the partner of choice for fluid control systems in more than 35 countries. Whether you are in Stuttgart, Singapore, Chicago or Sydney, everywhere in the world, we are close to you and therefore know at first-hand about your specific tasks and problems.

Following our principle of "one face to the customer", you have a competent, reliable consultant by your side at all times, who listens to your needs and presents a solution in your daily application language ... crossing conventional boundaries and creating synergies between industries in pursuit of your ideal solution.

Systemhaus crews in Charlotte (USA), Suzhou (China), Dresden, Ingelfingen and Dortmund are continuously in innovation mode. They creatively engineer cost effective solutions to meet difficult process challenges for our customers.



02 Conceive & Innovate

Your project team starts working for you: from your reliable sales consultant, qualified industry specialists to dedicated system engineers – Bürkert puts the necessary experts together.

For the entire duration of the project they work together, combining their experience and clarifying all the requirements in close cooperation with you to come up with a feasible draft of your solution within the shortest timeframe.

CAD-created animations or simulations, combined with extended manufacturing, materials, tool design, construction and assembly knowledge enable us to provide a rough but firm production concept for your system at an early stage.



03 Plan & Specify

In Phase 3 the project is planned in detail. A specification sheet and refined solution concept are developed. This defines exactly what you expect from the system and what it must provide to ensure that all components meet your requirements.

At the end of this phase you are presented with a detailed product definition, a production specification and precise commercial conditions and agreements.

Structured project management based on open communication, effective coordination and thorough documentation ensures fast and reliable results.



04 Do & Check

Good communication, coordination and documentation at all project phases make sure that we are on the right track, developing the right solution, to allow us to quickly move on to prototyping.

Thanks to the latest technology, we are able to build a prototype made of metal or plastic or a functional model to test flow for example within 24 hours.

We provide you with samples; we perform tests and, of course, obtain all the necessary local and global approvals to make sure the system can go to production.

From here we work in concert with one of our production facilities in Ingelfingen, Gerabronn, Criesbach, Öhringen or Triembach according to their individual core manufacturing competencies.



05 Complete

Our work does not end with the perfect delivery of components and systems. We offer a comprehensive program to our global clients interlinking services ranging from maintenance and service contracts, operator training and integrated logistics.

Our customer service is available around the clock, offering support through internet, telephone or our qualified, experienced people at your site.

We aim to provide only the utmost in customer experience. Something you will tell your friends about.

Most Important Ingredient ... People

Perfect delivery of components and systems is one dimension in providing comprehensive solutions for our global clients. We offer a comprehensive program of interlinking services which include:

Personal Consultation and Individual Configurations

We share our knowledge both by embedding our expertise in the product and by really listening to your requirements with your success in mind. We are only content when your specific problem was solved.

Everything from one Partner

We have tens of thousands of process engineering products in our program. We know exactly how to program them, install them and combine them according to your wishes.

Customer Service around the Clock

We offer support through internet, telephone or people on the ground at your site. We are available around the clock.

Start-up

We are always available for installation and commissioning and local staff and operator training.

Global Operations

We are close by in 35 countries in a network which guarantees the full achievement of our enterprise to each customer on each continent.



Bürkert – Close to You

Germany

Sales Center

Ingelfingen
Bürkert GmbH & Co. KG
Christian-Bürkert-Straße 13-17
DE-74653 Ingelfingen
Tel: +49 (0)7940/10-91 111
Fax: +49 (0)7940/10-91 448
E-mail: info@buerkert.de

Sales Offices

Berlin
Bürkert GmbH & Co. KG
Paradiesstraße 206 b
DE-12526 Berlin
Tel: +49 (0)30/679717-0
Fax: +49 (0)30/679717-66

Hannover

Bürkert GmbH & Co. KG
Rendsburger Straße 18
DE-30659 Hannover
Tel: +49 (0)511/90276-0
Fax: +49 (0)511/90276-66

Dortmund

Bürkert GmbH & Co. KG
Holzener Straße 70
DE-58708 Menden
Tel: +49 (0)2373/9681-0
Fax: +49 (0)2373/9681-50

Frankfurt

Bürkert GmbH & Co. KG
Am Flugplatz 27
DE-63329 Egelsbach
Tel: +49 (0)6103/9414-0
Fax: +49 (0)6103/9414-66

Stuttgart

Bürkert GmbH & Co. KG
Ulmer Straße 4
DE-70771 Leinfelden-Echterdingen
Tel: +49 (0)711/45110-0
Fax: +49 (0)711/45110-66

München

Bürkert GmbH & Co. KG
Eisenheimerstraße 47
DE-80687 München
Tel: +49 (0)89/829228-0
Fax: +49 (0)89/829228-50

North and South America

Argentina

Bürkert-Contromatic Argentina S.A.
Uruguay 2602, Centro Uruguay Norte,
P.B. Oficina 1, (B1643EKP) Beccar,
Pcia. de Buenos Aires, ARGENTINA
Tel: +54 (0)11-5648-6350
Fax: +54 (0)11-5648-6355
E-mail: contacto.argentina@buerkert.com

Brazil

Bürkert-Contromatic Brasil Ltda.
Rua Américo Brasiliense, 2069
Chacara Santo Antônio
04715-005 São Paulo - SP BRAZIL
Tel: +55 (0)11-2186 1155
Fax: +55 (0)11-2186 1165
E-mail: pedidos.brasil@buerkert.com

Canada

Bürkert Contromatic Inc.
5002 South Service Road
Burlington, Ontario L7L 5Y7, CANADA
Tel: +1 905-632 30 33
Fax: +1 905-632 38 33
E-mail: sales.ca@buerkert.com

USA

BURKERT CONTROMATIC CORP.
2915 Whitehall Park Drive, Suite 100
Charlotte, NC 28273, USA
Tel: +1 704-504 44 40
Fax: +1 949-223 31 98
E-mail: marketing-usa@buerkert.com

Europe

Austria

Bürkert-Contromatic G.m.b.H.
Diefenbachgasse 1-3
AT-1150 Wien
Tel: +43 (0)1-894 13 33
Fax: +43 (0)1-894 13 00
E-mail: info@buerkert.at

Belgium

Bürkert Contromatic NV
Wijnegem Zone 1 "De Hoek"
Bijkhoevelaan 3
BE-2110 Wijnegem
Tel: +32 (0)3-325 89 00
Fax: +32 (0)3-325 61 61
E-mail: BC-B@buerkert.com

Czech Rep.

Bürkert-Contromatic G.m.b.H. organizacni slozka
Krenova 35
CZ-602 00 Brno
Tel: +420 543-25 25 05
Fax: +420 543-25 25 06
E-mail: obchod@buerkert.cz

Denmark

Bürkert-Contromatic A/S
Hørkær 24
DK-2730 Herlev
Tel: +45 44-50 75 00
Fax: +45 44-50 75 75
E-mail: info.dk@buerkert.com

Estonia

Bürkert Oy Eesti
Laki 11 E
EE-12915 Tallinn
Tel: +372 6440 698
Fax: +372 6313 759
E-mail: info@buerkert.ee

Europe, continued

Finland

Bürkert Oy
Atomitie 5
FI-00370 Helsinki
Tel: +358 (0)207 412 550
Fax: +358 (0)207 412 555
E-mail: sales.fi@buerkert.com

France

BURKERT CONTROMATIC SAS
Rue du Giessen
FR-67220 Triembach au Val
Tel: +33 (0)388-58 91 11
Fax: +33 (0)388-57 20 08
E-mail: burkert.france@buerkert.com

Italy

Bürkert Contromatic Italiana S.p.A.
Centro Direzionale „Colombiolo“
Via Roma, 74
IT-20060 Cassina De' Pecchi (Mi)
Tel: +39 02-959 07 1
Fax: +39 02-959 07 251
E-mail: info@buerkert.it

Netherlands

Bürkert Contromatic BV
Computerweg 9
NL-3542 DP Utrecht
Tel: +31 (0)346-58 10 10
Fax: +31 (0)346-56 37 17
E-mail: info@buerkert.nl

Norway

Bürkert-Contromatic A/S
Hvamstuppen 17
NO-2013 Skjetten
Tel: +47 63-84 44 10
Fax: +47 63-84 44 55
E-mail: info@buerkert.no

Poland

Bürkert-Contromatic GmbH Oddzial w Polsce
Bernardynska street 14 a
PL-02-904 Warszawa
Tel: +48 (0)22-840 60 10
Fax: +48 (0)22-840 60 11
E-mail: buerkert@buerkert.pl

Portugal

Tel: +351 212 898 275
Fax: +351 212 898 276
E-mail: portugal@buerkert.com

Spain

Bürkert Contromatic S.A.
Avda. Barcelona, 40
ES-08970 Sant Joan Despí, Barcelona
Tel: +34 93-477 79 80
Fax: +34 93-477 79 81
E-mail: spain@buerkert.com

Sweden

Bürkert-Contromatic AB
Kattsundsgatan 27
SE-211 26 Malmö
Tel: +46 (0)40-664 51 00
Fax: +46 (0)40-664 51 01
E-mail: info.se@buerkert.com

Switzerland

Bürkert-Contromatic AG Schweiz
Bösch 71
CH-6331 Hünenberg ZG
Tel: +41 (0)41-785 66 66
Fax: +41 (0)41-785 66 33
E-mail: info.ch@buerkert.com

Europe, continued

Turkey

Bürkert Contromatic Akiskan Kontrol
Sistemleri Ticaret A.S.
1203/8 Sok. No:2-E
TR-Yenisehir, Izmir
Tel: +90 (0)232-459 53 95
Fax: +90 (0)232-459 76 94
E-mail: burkert@superonline.com

United Kingdom

Bürkert Contromatic Limited
Brimmscombe Port Business Park
Brimmscombe, Stroud
Glos, GL5 2QQ / UNITED KINGDOM
Tel: +44 (0)1453-731 353
Fax: +44 (0)1453-731 343
E-mail: sales.uk@buerkert.com

Africa

South Africa

Bürkert Contromatic (Proprietary) Limited
233 Albert Amon Road
Millennium Business Park
Meadowdale,
Germiston
(Postal: P.O. Box 26260, East Rand 1462)
SOUTH AFRICA
Tel: +27 (0)11-574 60 00
Fax: +27 (0)11-454 14 77
E-mail: sales.za@buerkert.com

Asia Pacific

Australia

BURKERT CONTROMATIC AUSTRALIA PTY.
LIMITED
15 Columbia Way, Norwest Business Park
Baulkham Hills, NSW 2153, AUSTRALIA
Tel: +61 2 8853 6353
Fax: +61 2 8853 6363
E-mail: sales.au@buerkert.com

Victoria

BURKERT CONTROMATIC AUSTRALIA
PTY. LIMITED
Unit 11/26-30 Howleys Road
Notting Hill Victoria 3168
Tel: 1300 888 868
Fax: 1300 888 076

Queensland

BURKERT CONTROMATIC AUSTRALIA
PTY. LIMITED
Unit 4/43 Sandgate Road
Albion Queensland 4010
Tel: 1300 888 868
Fax: 1300 888 076

Western Australia

BURKERT CONTROMATIC AUSTRALIA
PTY. LIMITED
Unit 8, 1st Floor, 85 Reid Promenade
Joondalup WA 6027
Tel: 1300 888 868
Fax: 1300 888 076

South Australia

BURKERT CONTROMATIC AUSTRALIA
PTY. LIMITED
Innovation House, First Avenue
Mawson Lakes SA 5095
Tel: 1300 888 868
Fax: 1300 888 076

Asia Pacific, continued

China

Bürkert Contromatic (Suzhou), Co., Ltd.
(System House) Unit A5, Suhong Square
No. 81 Suhong West Road
SIP Suzhou P.R. China, 215021
Tel: +86 512 6265 8498
Fax: +86 512 6265 9337

Bürkert Contromatic (Shanghai), Co., Ltd.
(logistic and warehouse for BC China)
Floor 2, block 6, 166 Mingdong Road
Pudong New District
Shanghai 201209, P.R. CHINA
Tel: +86 21-5863 9990
Fax: +86 21-5863 9968
E-mail: info.chn@buerkert.com

Beijing

Bürkert Contromatic (Shanghai), Co., Ltd.
Room A 1708, Luowa Building, No.203
Er Ou Lizezhongyuan, Wangjing,
Chaoyang District
Beijing P.R. China, 100102
Tel: +86 10 6439 9783, 6439 9793
Fax: +86 10 6439 9612

Chengdu

Bürkert Contromatic (Shanghai), Co., Ltd.
B zone, 2nd floor,
DongFangGuangYi office building
Long'an city industrial zone, 2nd section,
East 3rd ring Rd.
Chengdu, China 610051
Tel: +86 28 8425 1434, 8425 1435
Fax: +86 28 8425 1560

Guangzhou

Bürkert Contromatic (Shanghai), Co., Ltd.
Room 1502, Tower 4, Dong Jun Plaza
828 - 836 Dong Feng Road East
Guangzhou P.R. China, 510080
Tel: +86 20 8769 8379, 8767 8703
Fax: +86 20 8767 1131

Shanghai

Bürkert Contromatic (Shanghai), Co., Ltd.
Room 501/502 Xin Gai Nian Mansion
No.39 Wu Zhong Road
Shanghai P.R. China, 200233
Tel: +86 21 6486 51 10
Fax: +86 21 6487 48 15

Suzhou

Bürkert Contromatic (Shanghai), Co., Ltd.
Unit 11-12, 5th Floor, Block A
No.5 Xinghan Street
SIP Suzhou P.R. China, 215021
Tel: +86-512-6265 9881
Fax: +86-512-6265 9882

Hong Kong

Bürkert Contromatic (China/HK) Limited
Unit K, 9/Floor, Kwai Shun Industrial Centre
No. 51-63 Container Port Road
Kwai Chung, N.T., HONG KONG
Tel: +852 2480 1202
Fax: +852 2418 1945
E-mail: info.hkg@buerkert.com

India

Bürkert Contromatic PVT Ltd
Apex Towers, 1st Floor, No. 54 II Main Rd
RA Puram
Chennai 600 028, INDIA
Tel: +91 (0)44-4230 3456
Fax: +91 (0)44-4230 3232
E-mail: sales.in@buerkert.com

Japan

Bürkert Ltd.
Imasu moto asakusa-building
4-9-14 Moto Asakusa, Taito-ku
Tokyo 111-0041, JAPAN
Tel: +81 (0)3-5827-0066
Fax: +81 (0)3-5827-0067
E-mail: info.jp@buerkert.com

Osaka

Bürkert Ltd.
2-8-8-1103 Higashi Nakajima,
Higashi-Yodogawa-ku
Osaka 533-0033, JAPAN
Tel: +81 (0)6-6320-0880
Fax: +81 (0)6-6320-0881

Korea

Bürkert Contromatic Korea Co., Ltd.
C-401, Micro Office Bldg. 554-2
Gasan-Dong, Keumcheon-Gu
Seoul 153-803, KOREA
Tel: +82 (0)2-3462 5592
Fax: +82 (0)2-3462 5594
E-mail: info.kor@buerkert.com

Malaysia

BURKERT CONTROMATIC SINGAPORE PTE LTD
2F-1, Tingkat Kenari 6
Sungai Ara
11960 Penang, MALAYSIA
Tel: +60 (0)4-643 5008
Fax: +60 (0)4-643 7010
E-mail: info.sin@buerkert.com

New Zealand

BURKERT CONTROMATIC NEW ZEALAND
LIMITED
44 Rennie Drive
Airport Oaks, Auckland 2022
NEW ZEALAND
Tel: +64 (0)9-256 77 37
Fax: +64 (0)9-256 77 47
E-mail: sales.nz@buerkert.com

Philippines

BURKERT CONTROMATIC PHILIPPINES, INC.
8467 West Service Road, Km. 14, Sunvalley
South Superhighway, Parañaque City, 1700
Metro Manila, PHILIPPINES
Tel: +63 (0)2-7766071 / 7764384
Fax: +63 (0)2-7764382
E-mail: info.rp@buerkert.com

Singapore

BURKERT CONTROMATIC SINGAPORE PTE LTD
51 Ubi Avenue 1, #03-14
Paya Ubi Industrial Park
Singapore 408933, SINGAPORE
Tel: +65 6844 2233
Fax: +65 6844 3532
E-mail: info.sin@buerkert.com

Taiwan

Bürkert Contromatic Taiwan Ltd.
9 F, No. 32, Chenggong Road, Sec. 1,
Nangang District
Taipei
TAIWAN 115, R.O.C.
Tel: +886 (0)2-2653 7868
Fax: +886 (0)2-2653 7968
E-mail: info.rc@buerkert.com