



YOUR AUTOMATION PARTNER

## SMC – YOUR EXPERT PARTNER IN THE PROCESS INDUSTRY

Your satisfaction is our goal.



#### Virtually all production processes use fluids.

Whether it's compressed air for cleaning filters, or using water in a bakery, or for steam lines in textile dye works, or using coolants in gear manufacturing, or polishing suspensions (slurry) in wafer processing, the list is endless.

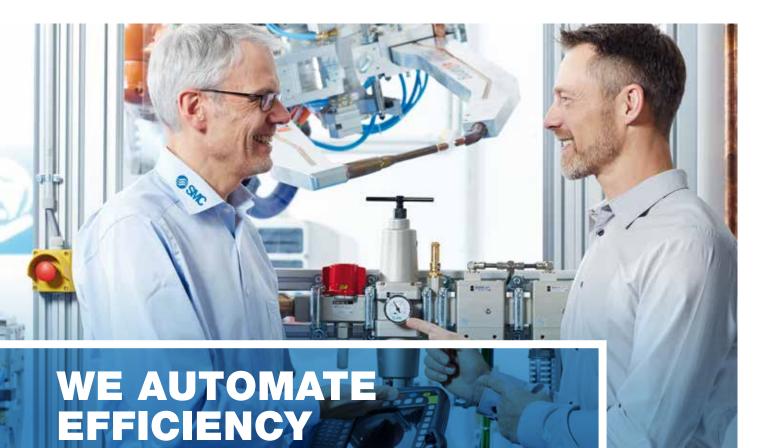
We can make the preparation, monitoring and control of fluids in your process as simple and efficient as possible. From individual components to customised specials, or even complete turn-key solutions we have the answers to help meet all your needs.

With SMC you just need to install and forget – thanks to outstanding reliability and cost effective life time performance. SMC has specialised in factory automation for over 50 years and is the leading provider of pneumatic and electric components to the mechanical engineering sector. Automation is our passion.

We have been providing components to the process industry for many years. From extracting gas in Siberia, brewing beer in Germany or mining bauxite in Australia, SMC has over 8,000 high-qualified sales personnel in 82 countries to help support you throughout the world. Let SMC be your process automation partner – from development through to sales.



SMC is there for you around the world!



reduced **ENERGY USE** optimised **PROCESSES** innovative **TECHNOLOGIES** 

With us, intelligent savings begin as early as construction. Many SMC products are based on ground-breaking and energy-efficient technologies. This means that we give your production the potential to make optimal use of energy.

Join us in shaping the automation solutions of the future!

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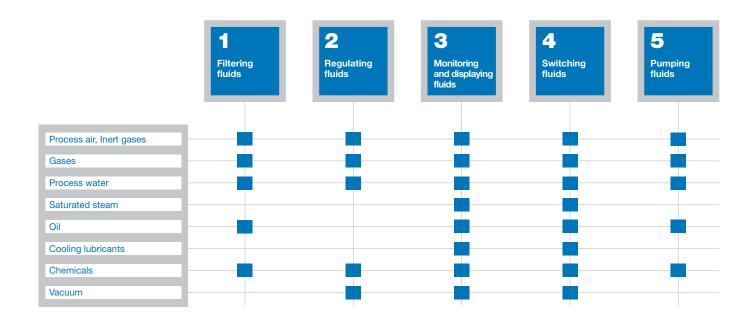


# **FLUID CONTROL**

### Your requirements drive us

More than 1,400 SMC development engineers around the world are constantly reviewing our products to ensure cutting edge performance. Our high quality components make the treatment, monitoring and control of all fluids in your processes safer, more energy efficient, and less labour intensive.











## **FILTERING FLUIDS**

Products	Fluids
Industrial filters for coolant and process water > Low-maintenance filters with rinsing function: FN1/FN4 series	Process water
From pure water to hydraulic fluid > Stainless steel microfilters for fluids: FGH series	Process water Chemicals
Quick-change filters to switch filter elements without any tools > Stainless steel filters for water, cleaning fluids and lyes: FQ1 series	Process water Chemicals
Universal industrial filters > Boiler filters for fluids and gases: FG# series	Process air, Inert gases Gases Process water

Hydraulic filters		Oil
> From low pressure to 210 bar gauge pressure: FH# series		
Filtering clear air or nitrogen in the clean room <ul> <li>With changeable filter element:</li> <li>SFA/SFB/SFD10# series</li> </ul> <li>Disposable filter:</li> <li>SFB3/SFC/SFD100 series</li>	SFD series	Process air, Inert gases Gases
High-quality air treatment including odour filtration > Main line filter: AFF/AM# series > Filter controller for pneumatics: AW series	AM series	Process air, Inert gases
Filtering and precise control of instruments Filter controllers for instrumentation: IW series		Process air, Inert gases
<ul> <li>Tailored solutions for harsh environments</li> <li>Stainless steel filter controllers for temperatures from -40 to +80 °C: AW-X2622 series</li> <li>Stainless steel filters for temperatures from -40 to +80 °C: AF-X2622 series</li> <li>Copper and fluoride-free filter controllers: 20-AW series</li> </ul>	W-X2622 series	Process air, Inert gases



## **REGULATING FLUIDS**

Products		Fluids
Air pressure regulator > Stainless steel pressure controllers for temperatures from -40 to +80 °C: AR-X2622 series > Stainless steel clean room controller: SRH series > Stainless steel precision pressure controller for clean rooms: SRP series	SRH series	Process air, Inert gases Gases Process water
Electro-pneumatic regulator <ul> <li>Electropneumatic pressure regulator valves E/P converter: ITV series</li> <li>Electropneumatic pressure regulator valves E/P converter, explosion-proof:</li> <li>ITV2000-X430 series</li> <li>High pressure version: ITVX series</li> </ul>	ITV series	Process air, Inert gases Gases
<ul> <li>Pressure regulator for fluids</li> <li>&gt; Water regulator: WR110 series</li> <li>&gt; Stainless steel manual pressure regulator for water and pure water: SRH/INA-48 series</li> <li>&gt; Pneumatically-controlled pressure regulators for chemicals and high-purity fluids: SRF series</li> </ul>	WR110 series	Process water Chemicals
Control cleanest gases manually (UHP–Ultra High Purity) > Single-stage pressure regulator with up to 310 bar inlet pressure: AP/AZ1#00/9#00 series > Two-stage pressure regulator with up to 310 bar inlet pressure: AP#700 series > Compact pressure regulator with up to 10 bar inlet pressure: AP500/SL5200 series > Single-step springless pressure regulator with up to 241 bar inlet pressure: SL5#00 series	AP series	Gases Vacuum
Control pure gases and high pressures in industrial applications manually > Single-stage pressure regulator with up to 310 bar inlet pressure: AK1#00/9200 series > Two-stage pressure regulator with up to 310 bar inlet pressure: AP1700 series > Pressure regulator with up to 690 bar inlet pressure: KT10/KT12 series	AK series	Process air, Inert gases Gases Vacuum
<ul> <li>For UHP applications with up to 241 bar inlet pressure: AP/AZ1#PA, AP9#PA series</li> <li>For industrial applications with up to 241 bar inlet pressure: AK1#PA series</li> <li>For maximum pressures up to 690 bar inlet pressure: KT1#2 series</li> </ul>	AK series	Process air, Inert gases Gases



## **MONITORING AND DISPLAYING FLUIDS**

Products		Fluids
<ul> <li>Pressure sensor with 2-colour indicator:</li> <li>Electronic, precise, switching or analogue output</li> <li>Vacuum or overpressure up to 10 bar: ISE/ZSE30A series</li> <li>Precision pressure sensor up to 10 bar: ISE/ZSE20 series</li> <li>Vacuum or overpressure up to 10 bar, Protection class IP65: ISE/ZSE40A series</li> <li>Vacuum or overpressure up to 20 bar, restive membrane, Protection class IP65: ISE/ZSE80 series</li> </ul>	ISE40A series with M8	Process air, Inert gases Process water Oil Chemicals Vacuum
Pressure sensor with display: Compact, electronic, precise, switching or analogue output > Narrow form factor, vacuum up to 10 bar overpressure: ISE/ZSE10 series		Process air, Inert gases Gases
Pressure sensor with display: Robust, electronic, precise switching output > Metal casing, watertight (IP67), up to 10 bar overpressure: ISE70 series > Metal casing, watertight (IP67), up to 150 bar overpressure: ISE75H series	ISE75H series	Process air, Inert gases Gases Process water Oil Chemicals
Monitoring pressure: Compact and plug-in, switching output > Miniature pressure switch, vacuum up to 10 bar overpressure: PS1#00 series		Process air, Inert gases Gases Vacuum



<ul> <li>Pressure sensor without display</li> <li>More compact, analogue pressure sensor, vacuum or overpressure up to 100 bar: PSE5# series</li> <li>Differential pressure sensor, 0 to 20 mbar: PSE550 series</li> <li>Splash-roof (IP65) pressure sensor Vacuum to 10 bar: PSE560 series</li> <li>Splash-roof (IP65) pressure sensor with M12 plug, Vacuum to 10 bar: PSE570 series</li> </ul>	PSE570 series	Process air, Inert gases Process water Oil Chemicals Vacuum
<ul> <li>Read out and display sensor values</li> <li>&gt; Display for up to four external sensors, switching output: PSE200 series</li> <li>&gt; Display for one external sensor, switching and analogue output: PSE300 series</li> </ul>	PSE200 series	
Monitoring pressure > Mechanical pressure switch for pressurised air: IS3000 series > Compact mechanical pressure switch for pressurised air: IS10 series > Robust mechanical pressure switch for gases and fluids: ISG series	ISG series	Process air, Inert gases Process water Saturated steam Oil Chemicals Vacuum
Displaying pressure > Manometer with limit value display: G36/46 series > Differential pressure manometer: GD40 series		Process air, Inert gases
Measuring the flow of air and gas > Minimal flow rates up to 3 l/min, external display: PFMV series > Flow range up to 100 l/min, internal display: PFM7 series > Flow range up to 100 l/min, external display: PFM5 series > Flow range up to 2,000 l/min, internal display: PFM5 series > Flow range up to 2,000 l/min, two-line display: PFMC series > Flow range up to 12,000 l/min, internal display: PFA7 series > Flow range up to 12,000 l/min, internal display: PF2A5 series > Flow range up to 500 l/min, external display: PF2A5 series	FFMC series	Process air, Inert gases Gases

#### Monitoring the flow of ultra-pure gases (UHP – Ultra High Purity)

> Flow switch for up to 6,000 slpm (pressures up to 267 bar): AP74 series

#### Measuring the flow rate of water

- Flow range up to 250 l/min, for water, internal display: PF3W7 series
- > Flow range up to 250 l/min, for water, external display: PF3W5 series

### Measuring the flow rate of purified water and low-viscosity chemicals

- > Flow range up to 250 l/min, PVC/PPS/FKM, internal display: PF3W7##-U series
- > Flow range up to 250 l/min, PVC/PPS/FKM, external display: PF3W5##-U series
- Flow range up to 40 l/min, PFA, external display: PF2D5 series

### Measuring the flow rate of conductive (even contaminated) fluids

- > Flow range up to 200 l/min, brass/PPS/FKM, internal display: LFE#A/B/C/D series
- > Flow range up to 200 I/min, brass/PPS/FKM, external display: LFE#J/K series
- Flow range up to 200 l/min, SUS304/PPS/EPDM e.g. for sodium hydroxide 50%: LFE-X19 series







PF2D5 series

Process water, Chemicals

Gases

Process water

Process water

Chemicals

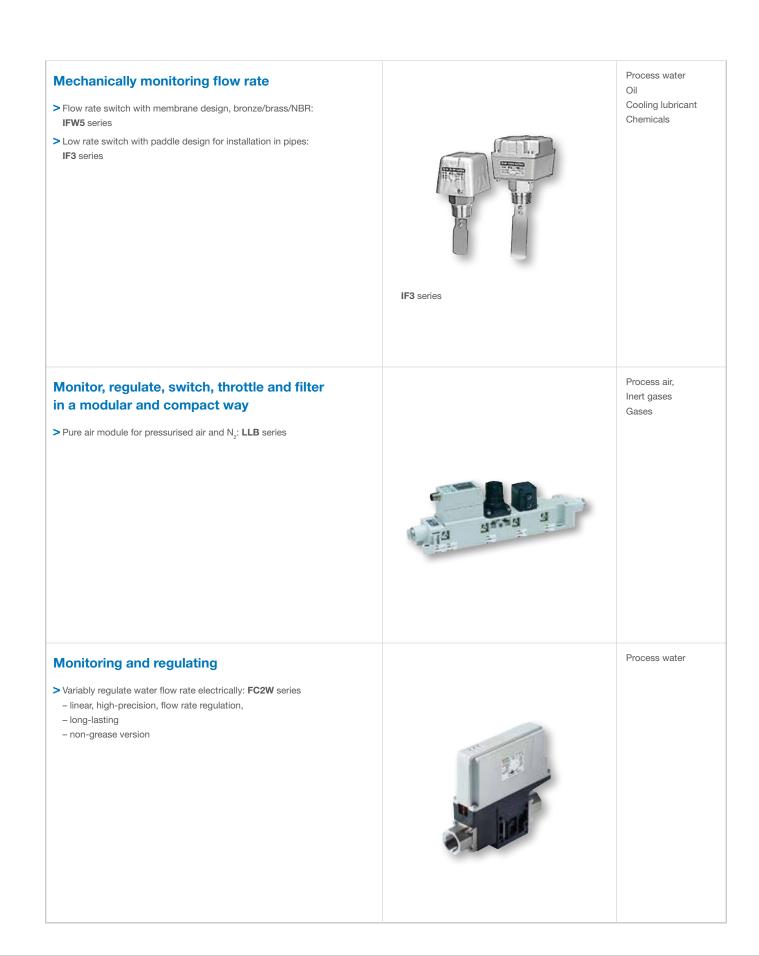


#### Read out and display sensor values

- > Display for one PF3W5, switching and analogue output: PF3W3 series
- > Display for up to four PF2D5s, switching output: PF2D2 series
- > Display for one PF2D5, switching output: PF2D3 series
- > Display for one LFE#J/K, switching and analogue output: LFE0 series



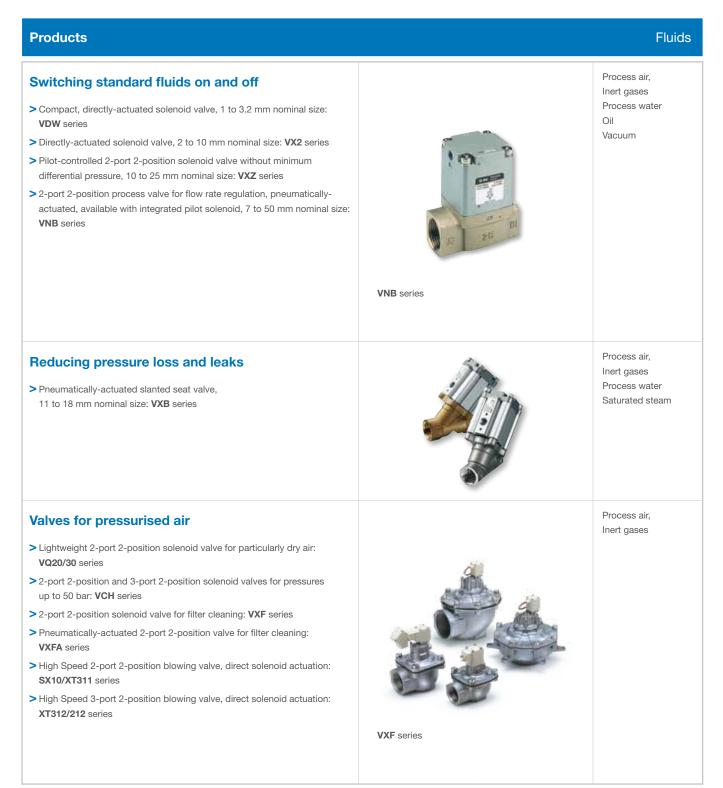
PF3W3 series



### SNC. FLUID CONTROL IN THE PROCESS INDUSTRY



# **SWITCHING FLUIDS**



#### Valves for saturated steam

- > Directly-actuated 2-port 2-position solenoid valve VX2#5 series
- > Force pilot actuated 2-port 2-position solenoid valve: VXS series
- > Pneumatically-actuated straight valve: VXS series
- > Pneumatically-actuated slanted seat valve: VXB series



### Pneumatically-actuated valves for cooling lubricants

- > 2-port 2-position valve: SGCA series
- > 2-port 2-position valve with integrated pilot valve: SGC series
- > 2-port 2-position and 3-port 2-position directional control valves for pressures up to 70 bar: **SGHA** series
- > 2-port 2-position and 3-port 2-position directional control valves for pressure sup to 70 bar with integrated pilot valve: SGC series



Cooling lubricants

LVA series

#### 2 and 3 port valves for chemicals and ultrapure fluids

- > Compact solenoid valves, isolated fluids: LVM series
- > Pneumatically-actuated membrane valve, threaded version: LVA series
- Pneumatically-actuated PFA membrane valve with fittings for ultra pure fluids: LVC series
- > Pneumatically-actuated PFA membrane valve with fittings for ultra pure fluids, compact: LVD series
- > Non-metallic membrane valve: LVQ series
- > Hand-actuated membrane valve: LVH series
- > Pneumatically-actuated PVC-C membrane valve with PVC pipe fittings: LVP series
- Pneumatically-actuated PVC drain valve with PVC pipe fittings: LVW series

#### Switching high purity gases (UHP-Ultra High Purity)

- > Single-stage pressure regulator with up to 310 bar inlet pressure: AP/AZ1#00/9#00 series
- > Two-stage pressure regulator with up to 310 bar inlet pressure: AP#700 series
- > Compact pressure regulator with up to 10 bar inlet pressure: AP500/SL5200 series
- Single-step springless pressure regulator with up to 241 bar inlet pressure: SL5#00 series

#### Switching industrial gases

- > Pneumatic and manual 1/4" membrane valve up to 207 bar: AK3000 series
- > Pneumatic and manual 3/8" membrane valve up to 207 bar: AK4000 series

### High vacuum valve (10<sup>-6</sup> Pa<sub>abs</sub>) with aluminium body

- > Pneumatically-actuated angle valve with bellows: XLA/XLC series
- > Pneumatically actuated angle valve: XLF/XLG series
- > Pneumatically-actuated angle valve with bellows, 2-step: XMD series
- > Manually-actuated angle valve, with bellows: XLH series
- > Stainless steel solenoid-actuated angle valve with bellows: XLS series

## High vacuum valve (10<sup>-6</sup> Pa<sub>abs</sub>) with stainless steel body

- Solenoid-actuated straight way valve with VCR<sup>®</sup> and Swagelok<sup>®</sup> fittings: XSA series
- > Pneumatically-actuated angle valve with bellows: XMA/XMC series
- > Pneumatically-actuated angle valve with bellows, 2-step: XMD series
- > Manually-actuated angle valve, with bellows: XMH series
- > Pneumatically-actuated straight way valve with bellows: XYA/XYC series
- > Pneumatically-actuated straight way valve with bellows, 2-step:**XYD** series
- > Manually-actuated straight way valve with bellows: XYH series



#### 2 and 3 port valves for special applications

- > Directly-actuated 2-port 2 position solenoid valve: VX3 series
- > 2-port 2-position solenoid valve, energy saving version: VXE series
- Directly-actuated 2-port 2-position solenoid valve with integrated sieve: VXK series
- > Waster hammer reducing, pilot-controlled, 2-port 2-position directional control solenoid valve: VXR series
- Directly-actuated 2-port 2-position solenoid for high pressures: VX2##XH series
- Pilot-controlled 2-port 2-position solenoid for high pressures: VXH series
- > Compact proportional valve: **PVQ** series



VX3 series

Process air, Inert gases Gases Process water Saturated steam Oil

Vacuum





## **PUMPING FLUIDS**

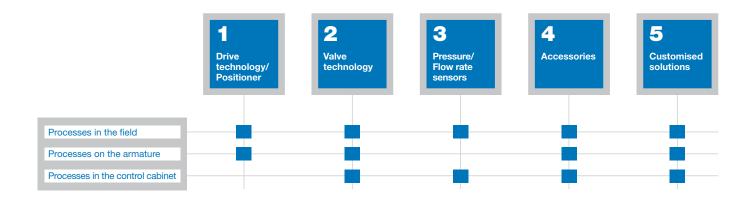
Pumping fluids with pneumatic		Process water
double membrane pumps		Oil Chemicals
<ul> <li>Standard version, output up to 20 or 45 l/min:</li> <li>PA3000/5000 series</li> </ul>		
Pulsation absorbing version, throughout up to 10 l/min: PAX1000 series		
<ul> <li>PFA clean room version, throughput up to 13 l/min:</li> <li>PAP3000 series</li> </ul>		
PFA clean room version, throughput up to 20 or 45 l/min: PAF3000/5000 series		
	PAF3000/5000 series	
Pumping or dosing fluids with pneumatic membrane pumps		Process water Oil
Standard version, throughput up to 1 l/min:	1-	Chemicals
<ul><li>PB1013A series</li><li>Version with integrated solenoid valve, throughout up to 2 l/min:</li></ul>	P-P -	
PB1011A series		
Throughout up to 1 I/min, assembled under clean room conditions, contact surface with medium: PFA (casing), PTFE (membrane): PB1313A series		
Ejectors to extract gases or fluids		Process air, Inert gases
Stainless steel Venturi scrubbers: ZH#-X267 series	-	Gases
Volume booster to extract or discharge: ZH#-X185 series	i, i	Process water Oil Chemicals
	ZH#-X185 series	

# **PROCESS AUTOMATION**

### Your process is our challenge

Reliability and cost awareness are the motto of SMC engineers. Thanks to instrumentation components and many other products from SMC you can equip your production facilities or those of your clients so as to ensure process security and low maintenance requirements. Whether in the control cabinet, direction on the armature or out in the field.









## **DRIVE TECHNOLOGY/POSITIONER**

Products		Processes
Pneumatic drives for the process industry – more than standard		In the field On the armature
> Standard ISO 15552 cylinder with many custom versions: <b>C96/CP96</b> series		
<ul> <li>&gt; ISO cylinder, explosion-proof version: 55-C95/CP95/C96 series</li> <li>&gt; Cylinder up to 300 mm in diameter, explosion-proof version:</li> </ul>		
55-CS1 series		
> Stainless steel pneumatic cylinder: CG5 series		
> Air-servo system for simple electro-pneumatic positioning: XT777 series	and	
> Custom cylinder with large diameter over 300 mm: Upon request		
Cylinder with positioning units: Upon request	Cylinder with positioning unit	
Hydraulic actuators		In the field On the
Hydraulic cylinder up to 160 mm in diameter and 35 bar operating pressure: CHA series		armature
<ul> <li>Hydraulic cylinder up to 100 mm in diameter and 70 bar operating pressure:</li> <li>CH2F series</li> </ul>		
Hydraulic cylinder up to 100 mm in diameter and 140 bar operating pressure: CH2G/CH2H series	CHS series	
Adjustment controller: Positioning drives with pneumatic signals		On the armature
<ul> <li>Pneumatic-pneumatic, lever or wave return: IP5000/IP5100 series</li> </ul>		
<ul> <li>Pneumatic-pneumatic, lever or wave return, explosion-proof:</li> <li>55-IP5000/55-IP5100 series</li> </ul>		
> Pneumatic-pneumatic, for installation on cylinders. IP200 series	IP5000/ 5100 series	
Positioner: Positioning actuators by		On the armature
electronic signals		amature
> Electro-pneumatic, lever or wave return: IP8000/IP8100 series		
> Electro-pneumatic, lever or wave return, explosion-proof: IP8000-X14/IP8100-X14 series	Caret Partner	
Smart positioner, HART protocol, lever or wave return: IP8001/IP8101 series		
<ul> <li>Smart Positioner, HART protocol, lever or wave return, explosion-proof:</li> <li>52-IP8001/52-IP8101 series</li> </ul>	IP8001 series	





# **VALVE TECHNOLOGY**







# **PRESSURE/FLOW RATE SENSORS**

## Suitable components for your application

Products		Processes
<ul> <li>Pressure switch</li> <li>Mechanical pressure switch, explosion-proof: 56-IS10 series</li> <li>Electronic pressure switch, explosion-proof: 56-ISE70 series</li> <li>Mechanical pressure switch for pressurised air: IS3000 series</li> </ul>		In the field
<ul> <li>Flow switch</li> <li>&gt; Flow rate switch with membrane design, bronze/brass/ NBR: IFW5 series</li> <li>&gt; Low rate switch with paddle design for installation in pipes: IF3 series</li> </ul>	IFW5 series	In the field
<ul> <li>Flow switch with external display</li> <li>Flow range up to 100 l/min: PFM5 series</li> <li>Flow range up to 500 l/min: PF2A5 series</li> </ul>	FFM5 series	In the control cabinet



## ACCESSORIES

Products		Processes
<ul> <li>Process air treatment</li> <li>&gt; Filter controllers for instrumentation: IW series</li> <li>&gt; Stainless steel filter controllers for temperatures from -40 to +80 °C: AW-X2622 series</li> <li>&gt; Filter regulator for pneumatics: AW-B series</li> <li>&gt; Membrane drier: IDG series</li> </ul>	IDG series	In the field On the armature In the control cabinet
<ul> <li>Tubes</li> <li>Tubes: TU series</li> <li>PTFE fluoropolymer tube: TD/TID series</li> <li>Double-walled soft fluoropolymer tube (inner layer) and polyamide (external layer): TQ series</li> </ul>	TD/TID series	In the field On the armature In the control cabinet
<ul> <li>Push-in/insert fittings</li> <li>&gt; 316 stainless steel push-in fittings: KQG2 series</li> <li>&gt; 316 stainless steel insert fittings: KFG2 series</li> </ul>	KFG2 series	In the field On the armature In the control cabinet
<ul> <li>Boosting control signals</li> <li>&gt; Booster valve: IL100 series</li> <li>&gt; Booster valve, special version for -30 to +80 °C: IL100 series</li> <li>&gt; Booster valve, special stainless steel version: IL100 series</li> <li>&gt; Booster valve, special version for large drives/available in stainless steel: XT240 series</li> </ul>	IL100 series	On the armature
Monitoring and blocking control signals > Lock-up valve, single action: IL201 series > Lock-up valve, double action: IL211 series > Lock-up valve, double action: IL220 series > Lock-up valve, special version for -40 to +60 °C: IL2## series > Lock-up valve, special stainless steel version: IL2## series	IL201/211 series	On the armature



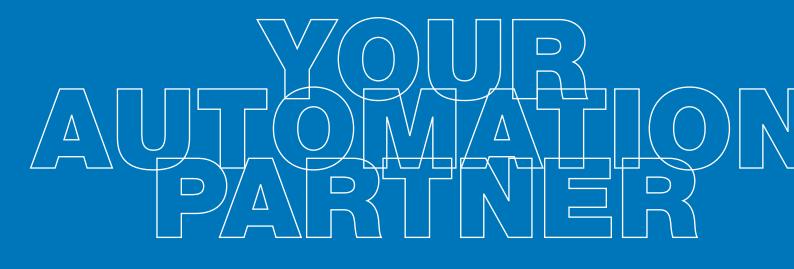
## **CUSTOMISED SOLUTIONS**

### Suitable components for your application

Products	Processes
Specials	In the field
> Standard components tailored to your application	
Our development and sales engineers work closely with you to plan, produce, test and deliver components optimised for your processes.	
Packages	On the armature
> Components bundles for your assembly process	
Our logistical experts plan, commission and deliver multiple components you require as a bundle, where and when you need them.	
Assemblies	In the field On the armature
> Components, ready to install in your system	
Whether complex components, mounting plates or complete control cabinets;	
our assembly specialists work with you to develop a plug & play solution.	



Example: Component



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