SMC

Expertise – Passion – Automation

Be fast, accurate and efficient

SMC solutions for analytical instruments & lab automation

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We pursue complete stakeholder involvement in the value chain of diagnostic and analytical instruments

Or SMC as a group is a stakeholder of the value chain for diagnostic and analytical instruments indirectly supporting the end customer with proposals.

Or our long history of working with different customers and partners with various sizes, ranging from large organisations to startups, SMC is taking part in the market value chain on the latest technologies in IVD instruments and analytical instruments offering the best solution to the end customer.

In collaborative, cooperative relationships with our customers, we understand their engineering instruments needs using our resources and expertise to deliver the right products and solutions.

Through our experience and a dedicated global presence we are contributing to the design, development and manufacture of fluidic components and subassemblies with a complete product portfolio. Our SMC teams can qualify and recommend the specific solutions to create unique customer solutions for requirements by offering standardised components and customised solutions.

This includes our solenoid pump, miniature valve solutions for liquid applications and gas handling, as well as providing a multi-layer integrated manifold solution that minimises dead volume, prevents contamination, generates less heat, consumes less power, and ensures precise control of diagnostics and results.

Our Customer benefit

- One global partner from a single source, standard or customised solutions for plug and play
- A collaborative engineering relationship at the initial project stage
- Interactive solution approach to improve the current solution
- Reduced time to market
- Easy solution to integrate in the instruments
- Extensive know-how in liquid and gas. Fluid handling and automation.

Be fast, accurate and efficient

SMC solutions for analytical instruments & lab automation

Energise your efficiency

In our 24/7 economy and as governments, industries and consumers battle with in the quest for ever increasing supplies of energy, SMC has always been fully committed to assisting customers in reducing their bills and, of course, in making its modest contribution to global sustainability.

Smart Flexibility

This is the main concern of the Industry 4.0, Factory of the Future, Smart Factory or Digitalisation, you name it. It is no longer a question of mass production, but to do so in a personalised, cost-effective, fast and sustainable way.

We understand your daily needs

Our local teams of highly trained experts are on hand to help you achieve your goals

Size & weight optimisation

Nowadays space and weight are at a premium. SMC is on the way to downsizing your machine components, continually re-designing our products so you can achieve more efficient, compact and light machinery.

Your safety in our focus

Creating confidence with confidence. SMC is an innovative, reliable and strong partner for pneumatic and electrical automation technology. We accompany our customers throughout the entire life cycle of their plant and, for all relevant safety issues, we have competent and professional solutions at your disposal.

We understand your process

Analytical instruments

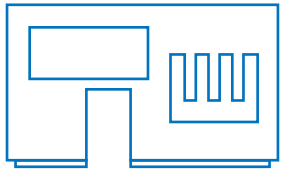
We can help you throughout all steps of your analytical instruments

Delivering precise fluid control and fluidic solutions, automation…

Studied object

Sampling

Sample preparation



Measurement **Analysis**

Result

From in-line instrument to final sample output, you can count on SMC products to integrate, simplify, and streamline your instrument process.

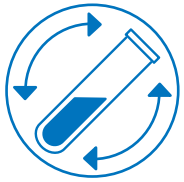
Laboratory automation

We can help you in all areas of sample analysis

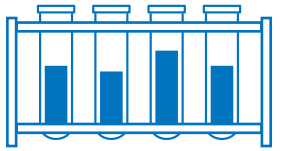
Dispensing and pipetting

Identification

Incubation



Centrifuging



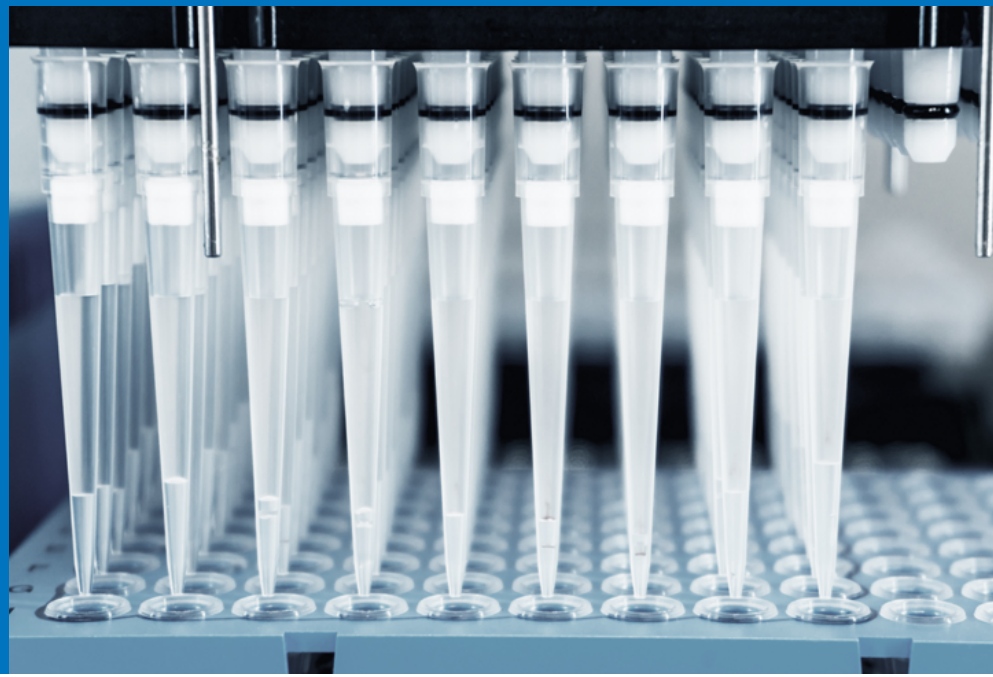
Transport and storage

SMC is able to considerably increase your productivity and safety at every step of the analysis process.
With laboratory automation you get lower overall costs, higher throughput, more efficient testing, a safer environment, reduced experimental errors and increased data accuracy and reliability.

Where can we help you?

These are some of the processes where SMC can support you:

- Dosing
- Dispensing
- Mixing
- Wasting
- Controlling
- Connecting
- Analysing
- Incubating
- Process automation
- Lab automation
- Flow
- Pressure
- Filtration
- Temperature control
- Identification.



Benefits that SMC products offer you

Among other things, by using SMC products you increase your productivity, ensure flawless accuracy and improve your repeatability. Robotics, fluid handling, dispensing and sample management play a key role in achieving these benefits. Ensuring speed, repeatability and accuracy is fundamental to both analyser and lab automation.

For example, an increase in speed could compromise repeatability. The combination of speed and pressure can affect sample accuracy, as speed increases the risk of bubble generation or turbulence affecting repeatability.

SMC's solutions will help you to minimise this type of risks. In addition, we also have the ability to offer customised automation solutions tailored precisely to your needs.

Increase your productivity

Guarantee impeccable accuracy

Improve your repeatability

SMC solutions for analytical instruments

Chemical inert isolation valves
Low dead volume.
Low power consumption.

Fittings
Highly corrosive environments, aggressive chemicals and extreme temperatures.

Fixed shot solenoid pump
Accurate, repeatable liquid dispensing.

Engineered manifolds and assemblies
Reduced connection leakage, save space and assembly labour.

Electric robot hand
Miniature, lightweight and space saving.

Solenoid directional control valves
Compact, high flow, power-saving pneumatic pick and place controls.

Air preparation equipment
Eliminate maintenance and reduce costs with filtration, drying and efficient pressure control.

Electric linear actuators
Precision motion, high-speed and quiet movement in a compact space.

Serial transmission system
Fieldbus systems save on components, installation time, wiring and space.

Custom manifolds and engineered subassemblies
· Bonded = Acrylic resin, PVC, PEI, PSU
· Machined = PEEK, Aluminium, Stainless Steel, etc.

Step motor controller
Applicable Fieldbus protocol: EtherCAT, PROFINET, EtherNet/IPTM, DeviceNetTM, CC-Link and IO-Link compatible.

Coupler for air and water
A slim body design and large effective area.

Membrane air dryer
Sub-zero dew point delivers clean, dry air without electrical power.

Electric rotary actuators
Compact, precision rotary motion.

Static removing ionizers
Eliminate blockages due to static electricity in component (e.g. cuvette) feeder devices.

Refrigerant and peltier type chillers
Efficient cooling for assays and increased reagent life. Precision control and sub zero temperatures.

Fluoropolymer fittings
Highly compatible with acids, bases and ultra pure water.

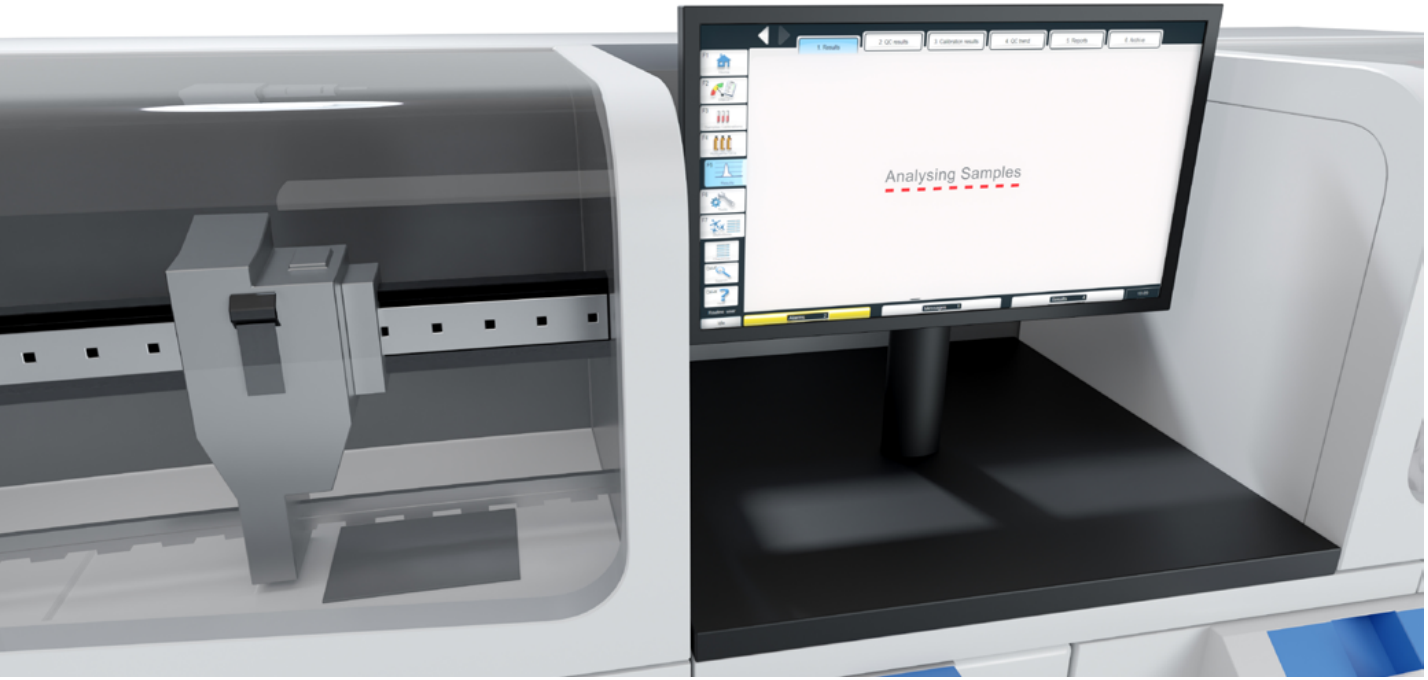
Digital pressure and flow sensor
Measure condition, programme values and alarm points. Remote output features.

Solenoid operated pinch valves
High flow, low power, zero dead volume liquid control.

How can we help you?

Precise, fast and silent movements

The speed of movement has a direct impact on analysis cycle times. By improving the speed and precision of the movements, the volume of analyses increases while maintaining their quality.



Electric actuators

⊕ Slider type

LEF□ Series

- Ball screw drive: Step motor (servo/24 VDC), servo motor (24 VDC), AC servo motor or motorless
- Belt drive: Step motor (servo/24 VDC), servo motor (24 VDC), AC servo motor, motorless or guide rod.

⊕ Rod type

LEY/LEYD Series

- Step motor (servo/24 VDC), servo motor (24 VDC): Motor top/parallel type or In-line motor type
- AC servo motor: Motor top/parallel type or In-line motor type.

⊕ Electric rotary table

LER Series

- Rotation angle: 360°, 320° (310°), 180°, 90° ( ) The value indicated in brackets shows the value for the LER10
- Low profile: height 42 mm (LER10)
- Space saving: built-in step motor.

⊕ Electric grippers 2/3-finger type

LEH□ Series

- Easy setting: data can be set with only two items: position and force
- Equipped with a drop prevention function (all series come equipped with a self-lock mechanism)
- The self-lock mechanism reduces power consumption.

⊕ Guide rod type

LEYG/LEYGD Series

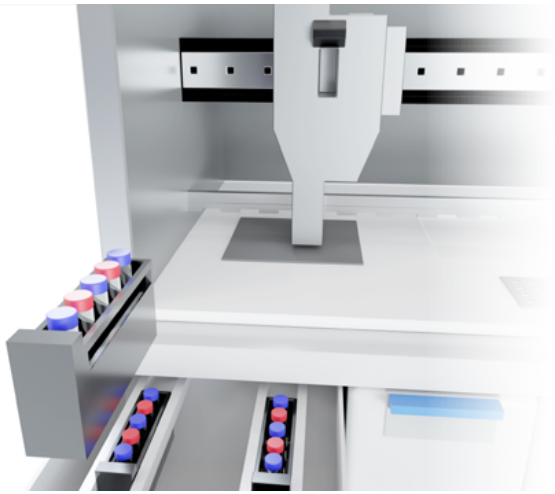
- Step motor (servo/24 VDC), servo motor (24 VDC): Motor top mounting type or in-line motor type
- AC servo motor: Motor top mounting type or in-line motor type.

Static removal in the transport and movement of pipes

Blood drops/reagents can become static-charged as can rack tubes. Static elimination aids the correct functioning of the analyser

Fan type ionizer
IZF Series

- Compact and lightweight
- Flow rate adjustment function
- Electrostatic removal in the atmosphere around a workpiece.



Bar type ionizer
IZT Series

- Separate controller bar type ionizer
- Potential amplitude: as low as 25 V or less.
- Rapid neutralisation of static electricity: as fast as 0.1 s.

Nozzle type ionizer
IZN Series

- Slim design
- Built-in power supply substrate
- Energy saving and large flow nozzles.

Fast and accurate aliquot and reagent pipetting

Rapid and accurate pipetting of aliquots and reagents is essential for an analyser to be efficient and effective.

2/3-port solenoid valve
LVM Series

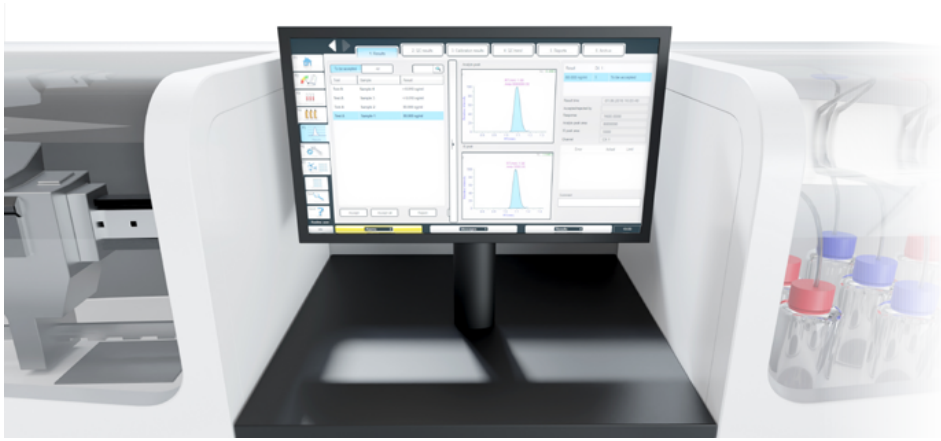
- Applicable fluid: Chemical liquids
- Flow rates up to 0.9 l/min (water) and 57 l/min (air)
- Isolated structure.

Liquid dispenser pump
LSP Series

- Solenoid driven diaphragm type
- Discharge volume: 5-200 µL/shot
- Repeatability: ±1 %.

Composite manifold

- Materials: PMMA, PEI (Ultem), PVC, PC
- Space saving
- Reduced piping and connections
- Reduced wiring.



Temperature control of samples and/or reagents

Temperature control of the reagent can be a problem. The typical shelf life of an unrefrigerated reagent may be only two days. However, if the reagent is kept refrigerated, its shelf life can be extended up to 35 days. Thermal control in the reagent chambers helps to preserve reagent shelf life.

Peltier-type chiller
HEF Series
- Cooling capacity: 220 W
- Temperature stability: ±0.1 °C
- Set temperature range: 10 to 60 °C.

Peltier rack-mounted type
HECR Series
- Cooling capacity: 0.8 to 1.2 kW
- Temperature stability: ±0.01 °C to ±0.03 °C
- Set temperature range: 10 to 60 °C.

Rack-mounted type
HRR Series
- Cooling capacity: 0.95 to 5 kW (50 Hz)
- Temperature stability: ±0.1°C
- Set temperature range: 5 to 35 °C; 15 to 35 °C (HRR010).

Line cleaning

Line cleanliness is essential to avoid contamination of the samples. Correct cleaning guarantees the quality of the analysis.

2-port solenoid valve
JSX Series
- Applicable fluid: air, water, oil
- Flow rate up to 2200 l/min (water)
- Orifice diameter: 1.6 to 50 mm

2-port solenoid valve
VX Series
- Applicable fluid: air, water, steam, medium, vacuum, oil
- Reduced power consumption (4.5 W)
- Orifice size: 2 to 10 mm.

Pinch valve
LPV Series
- Highly resistant to contamination and reduces valve failures
- Easy tubing replacement
- Applicable tubing: Silicone, PharMed®BPT, Tygon®.

SMC solutions for laboratory automation

Helping to ensure you achieve maximum speed, accuracy, performance and efficiency. SMC provides specialised products for robotics, liquid handling, dispensing and sample management.

Cylinders
Large range of variations.

Electric robot hand
Miniature, lightweight and space saving.

Electric linear actuators
Precision motion, high-speed and quiet movement in a compact space.

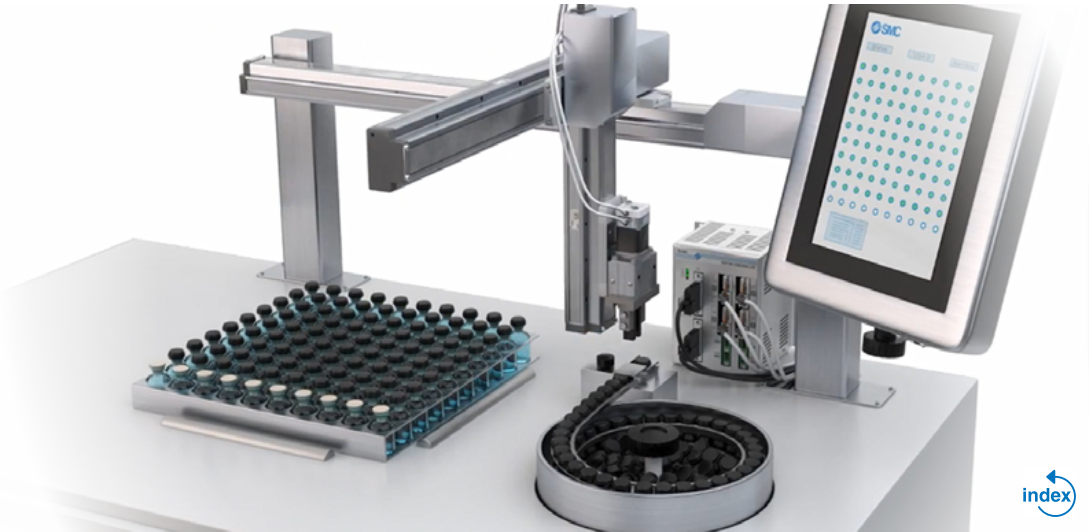
Electric rotary actuators
Compact, precision rotary motion.

Step motor controller
Applicable Fieldbus protocol: EtherCAT, PROFINET, EtherNet/IPTM, DeviceNetTM, CC-Link and IO-Link compatible.

Solenoid directional control valves
Compact, high flow, power-saving pneumatic pick and place controls.

Serial transmission system
Fieldbus systems save on components, installation time, wiring and space.

Coupler for air and water
A slim body design and large effective area.



Static removing ionizers
Eliminate blockages due to static electricity in component (e.g. cuvette) feeder devices.

Digital pressure and flow sensor
Measure condition, programme values and alarm points. Remote output features.

Air preparation equipment
Eliminate maintenance and reduce costs with filtration, drying and efficient pressure control.

Membrane air dryer
Sub-zero dew point delivers clean, dry air without electrical power.

Refrigerant and peltier type chillers
Efficient cooling for assays and increased reagent life. Precision control and sub zero temperatures.

Solenoid operated pinch valves
High flow, low power, zero dead volume liquid control.

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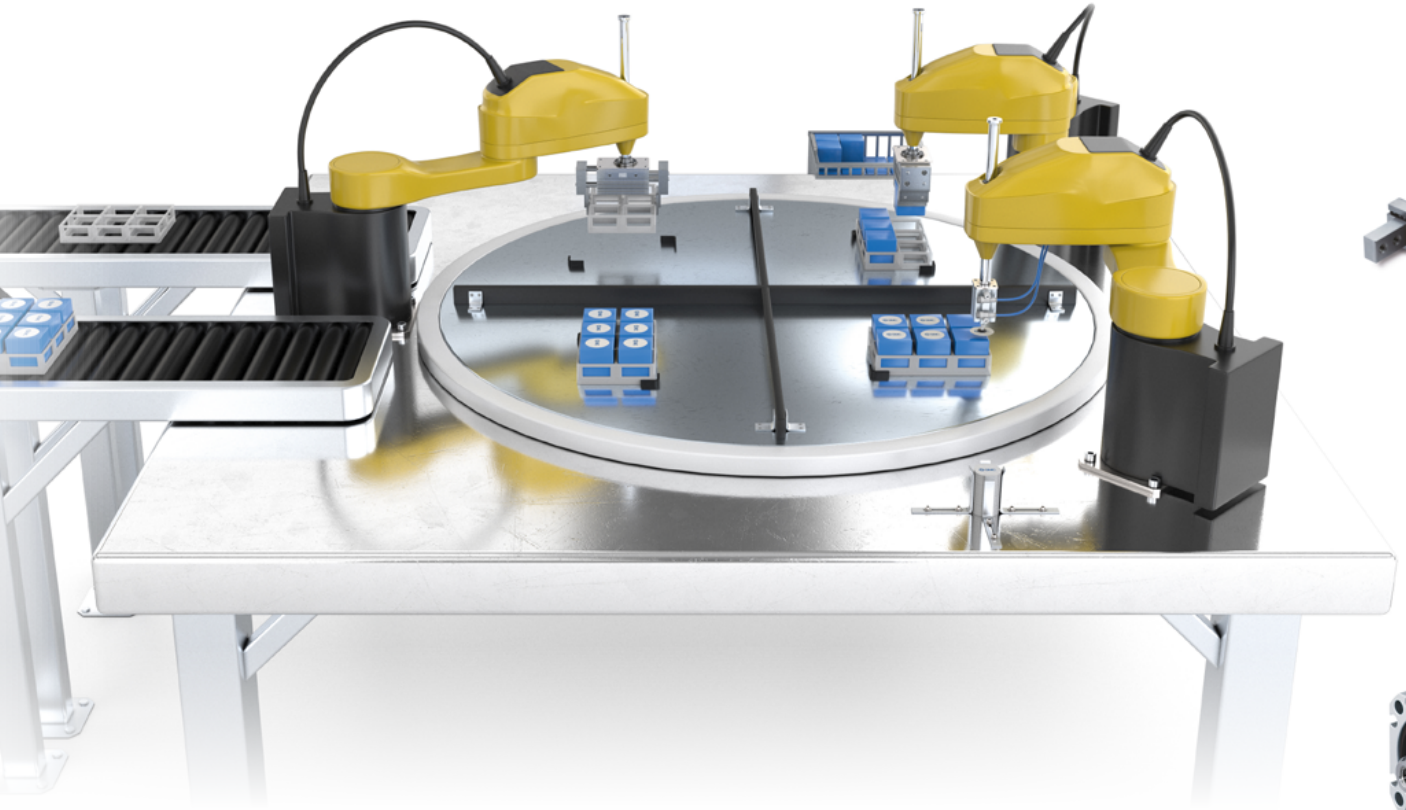
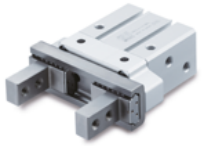
How can we help you?

Fast robot movements

Our pneumatic solutions are specially designed under a weight and dimension optimisation concept. This allows your robotic arm to move faster by reducing inertia loads, being more productive thanks to improved cycle times.





Parallel style air gripper
JMHZ2 Series

- Minimise the moments of inertia in your robot – Overall length shortened up to 21 % and weight reduced up to 43 %
- Enhance your performance – Higher opening/closing stroke and longer gripping point is possible in cylinder one bore smaller
- Achieve precise handling – Precision repeatability as low as ±0.01 mm.

Cylinders
JCQ/JMGP/JCM/JMB Series

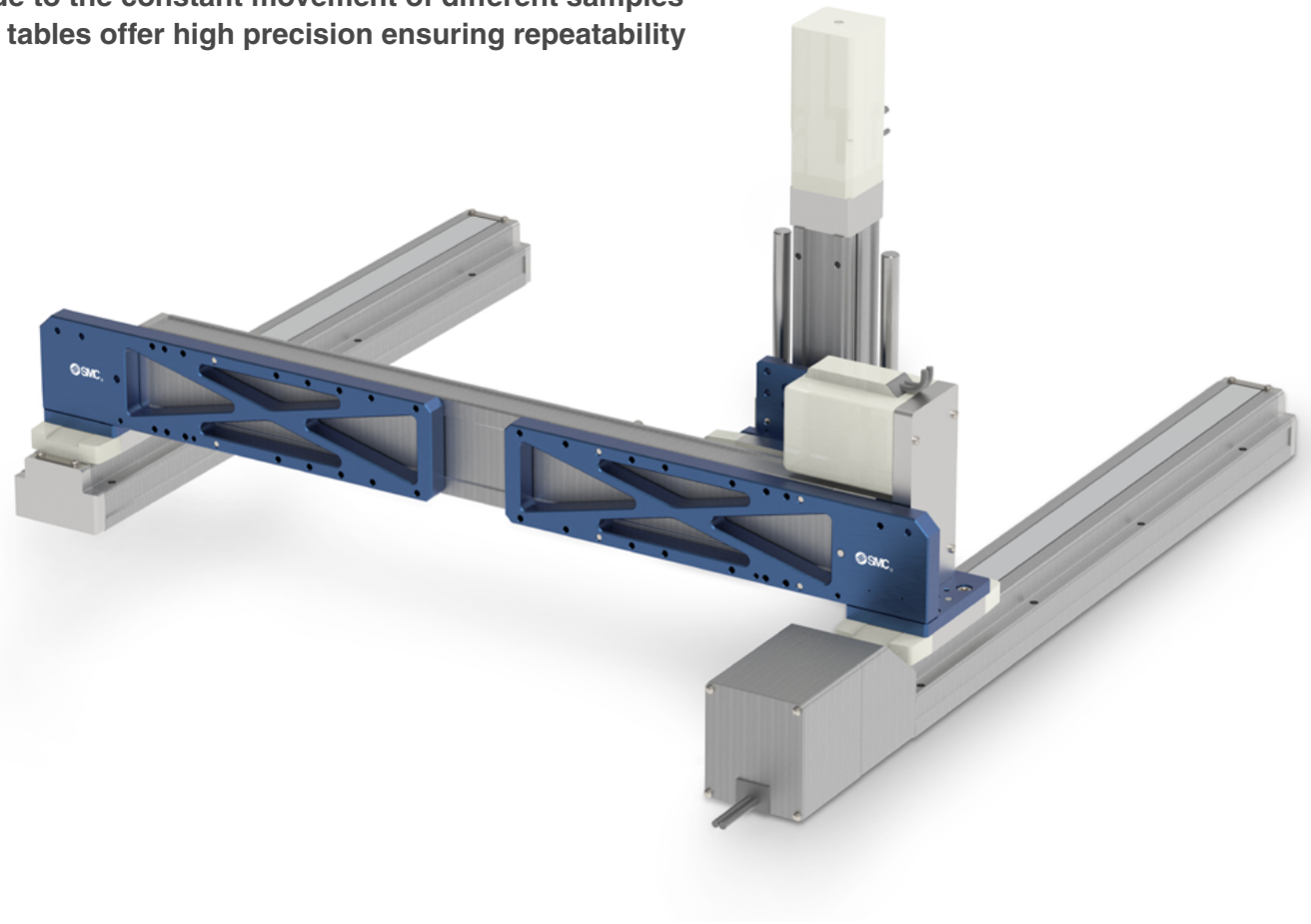
- Suitable for robot manipulation – Up to 69 % lighter with overall length shortened. Improved cycle times
- Better utilisation – Compact, guide, tie-rod and round types Tie-rod type allows intermediate bore sizes for an even greater optimisation.

5-port solenoid valve
JSY Series

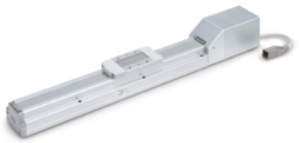
- The smallest width 5-port solenoid valve (6.4 mm) on the market
- Better flow characteristics and faster response time compared with other valve series with a similar valve width.

Accurate positioning

Sample positioning is essential in laboratory automation due to the constant movement of different samples from one side to the other, our electric actuators and rotary tables offer high precision ensuring repeatability of these movements.



Electric actuators



⊕ Slider type

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⊕ Electric rotary table

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· Rotation angle: 360°, 320° (310°), 180°, 90° ( ) The value indicated in brackets shows the value for the LER10
· Low profile: height 42 mm (LER10)
· Space saving: built-in step motor.

Temperature control of samples

Maintaining a constant sample temperature is a key step in many analytical processes. With SMC chillers, maintaining a constant temperature is very easy thanks to the precision of our chillers.

Peltier-type chiller
HEF Series

· Cooling capacity: 220 W
· Temperature stability: ±0.1 °C
· Set temperature range: 10 to 60 °C.

Peltier rack-mounted type
HECR Series

· Cooling capacity: 0.8 to 1.2 kW
· Temperature stability: ±0.01 °C to ±0.03 °C
· Set temperature range: 10 to 60 °C.

Rack-mounted type
HRR Series

· Cooling capacity: 0.95 to 5 kW (50 Hz)
· Temperature stability: ±0.1°C
· Set temperature range: 5 to 35 °C; 15 to 35 °C (HRR010).

Peltier-type chiller
HEC Series

· Cooling capacity: 140 W to 1200 W
· Temperature stability: ±0.01 °C to ±0.03 °C
· Set temperature range: 10 to 60 °C.

Liquid tank for thermoelectric bath
HEB Series

· Cooling capacity: 140 W
· Temperature stability: ±0.01 °C
· Set temperature range: -15 to 60 °C.

Solutions for air

For analytical instruments & lab automation

For those machines where movements can be pneumatic and require clean, dry air, SMC has a wide range of products that can offer you the solution that fits your needs.

Membrane air dryer
IDG Series

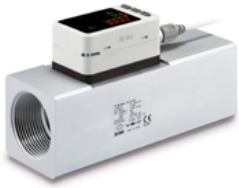
- Possible to easily supply dry air using the hollow fibre membrane
- Non-fluorocarbon
- Power supply not required.

Modular F.R.L. units
AC-D Series

- Port sizes 1/8, 1/4, 3/8, 1/2, 3/4 and 1
- Modular, compact and lightweight
- Integrated and other selectable pressure gauges.

3-screen display digital pressure switch
ISE70/71 Series

- Angled display.
- Rotating display.
- IO-Link Compatible.



Digital flow switch for large flow
PF3A7□H Series

- Flow range: max. 12000 l/min
- Flow ratio 100:1
- Through bore construction.

5-Port solenoid valve
SY Series

- Flow rate: up to 1535 l/min
- Low power consumption: 0.1 W
- Operating pressure range: -100 kPa to 0.7 MPa (high-pressure type: 1 MPa).

Fluoropolymer tubing
TH Series

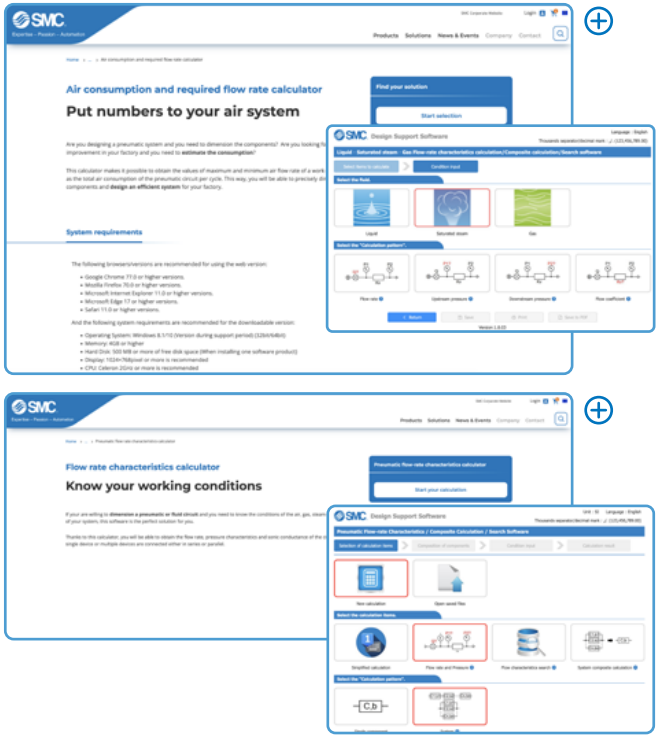
- Operating temperature up to 260 °C
- Wide range of sizes.

How can we help you with our tools?

Manual calculations are a thing of the past. Calculate, among other things, air consumption, pressure drop and moment of inertia

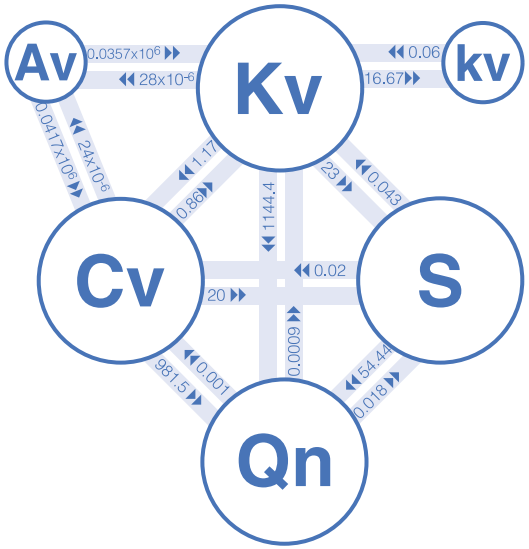
1 Flow calculator

Helping to choose the right valve



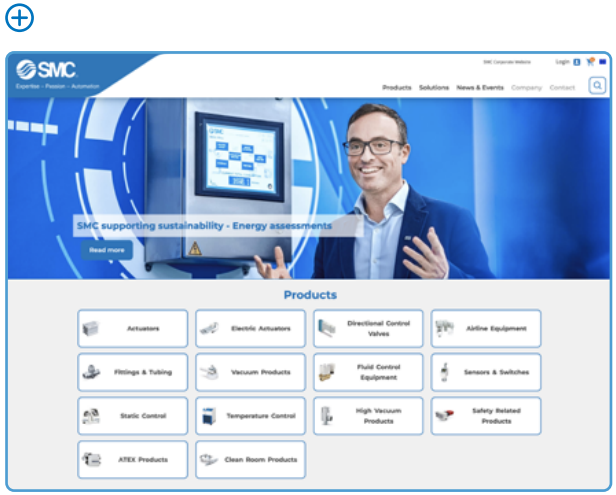
2 Conversion calculator

Measurements conversion



3 Select the products

SMC webpage



Co-development: your partner for your own solutions

Composite bonded valve manifold for air, gas and liquids. Materials include acrylic, ultem, PVC and polycarbonate etc.

Space saving

With the reduction in piping volume, the manifold can be designed for confined spaces.

Reduced piping and connections

Integrated circuit reduces leakage and internal channel volume.

Reduced wiring

Wiring time reduced by integrating printed circuit boards to the manifold assembly.

Lightweight

Weight reduced by using a range of high-tech materials and by minimisin overall size and rationalising components.

Transparent flow passages

Easy visual detection of fluid or contamination.

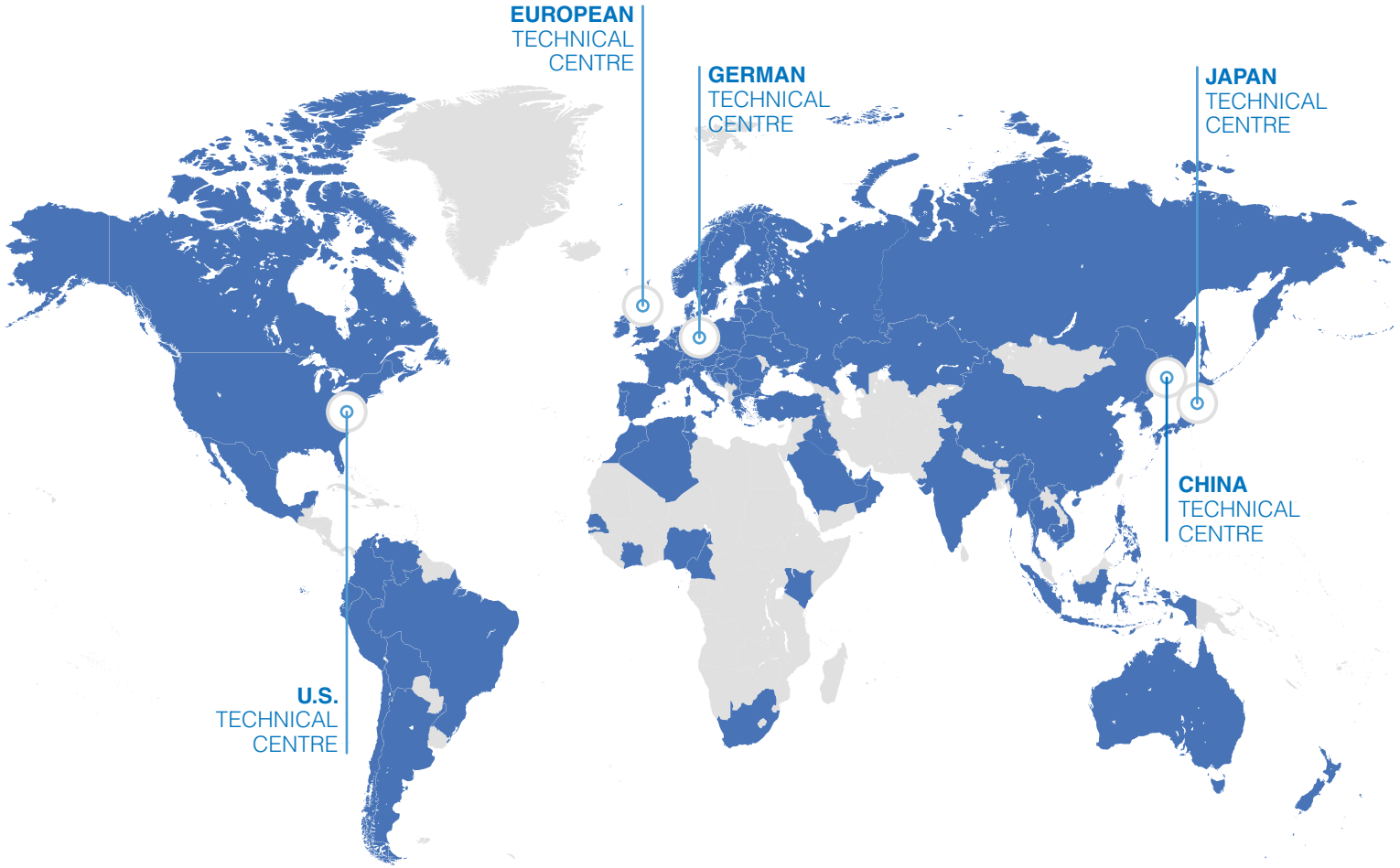
Flow passage style with high flexibility

Multi-layer flow passages allow for connections that cannot be created by machining or injection molding.

Technical development locations

Looking for a customised solution?

Our 5 technical centres are at your disposal and 1,700 R&D Sales Engineers who will be pleased to devise, develop and design a tailor-made solution with you for your application.



We develop specific solutions by understanding our clients' needs

Our dedicated teams can provide you with ad-hoc solutions and R&D activities to help tackle your challenges

SMC Business Continuity Plan

Discover more on
SMC Business Continuity Plan

Sustainable growth also means ensuring uninterrupted operations

We are committed to ensuring that SMC is prepared for any emergency and that our business activities will not stop in the event of such circumstances. SMC aims to fulfil our product supply responsibilities and maintain our customers' trust by contributing to both sustainable growth and the expansion of technological innovations.

SMC, as a comprehensive manufacturer of automatic control equipment that supports automation, is able to promptly provide products that meet our customers' needs anywhere in the world.

Finance BCP

Safe & Solid financial base

In the event of an emergency, SMC can provide a safe and solid financial base (with cash, deposits, and equity capital) that will sufficiently cover the working capital and funds needed to rebuild buildings and the equipment required for business continuity. This is done to provide peace of mind to our customers and workers alike.

Information security BCP

Vital data kept safe

Strengthen information security for protection against computer viruses and cyberattacks, plus the installation of data centres to establish a disaster recovery system. Your information is safe with us.

Sales BCP

Consistent sales support

8,700 sales engineers worldwide ready to recommend the best solution for you.
83 global locations to make sure that wherever you are, we are there too.

Production BCP

Ensure customer order fulfilment

Reliable delivery for you thanks to our 8 global logistic centres and 34 production sites. Moreover, flexibility to rapidly respond to any sudden change in the manufacturing environment.

Aiming to gain your trust
Sustainability through reliability

Engineering BCP

Consistent technical support

1,700 engineers at our 5 technical centres around the globe.

Expertise – Passion – Automation

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