Find out what we can offer to meet your needs, at www.smcusa.com/industries/life-science

SMC is a world leader in innovative design of automation components specifically suited to the Medical Device and Life Science Industry. Our global network of sales and services, covering over 83 countries, is supported by an expansive manufacturing capacity in order to meet our customers’ needs. We offer over 700,000 products that include technologies for pneumatic and robotic automation, microfluidics, thermo control, high purity liquid and gas, among many others. Custom design, total solution and component quality are part of our DNA. Our components... for the life of your device.
How can SMC help you?

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For dimensions and other details, refer to the general catalog for each series at www.smcusa.com

Chemical Inert Isolation Valves
- Zero dead volume
- Low power consumption
- Fully swept fluid chamber

Fixed Shot Solenoid Pump
- Accurate, repeatable liquid dispensing

Electric Robot Hand
- Miniature, lightweight and space saving
- 2, 3 finger gripper controlled force (feedback)

Engineered Manifolds and Assemblies
- Reduced connection leakage
- Save space and assembly labor

Electric Linear Actuators
- Precision motion, high speed and quiet movement in a compact space

Electric Rotary Actuators
- Compact, precision rotary motion

Analyzers
**Solenoid Directional Control Valves**
- Compact, high flow, power-saving pneumatic controls

**Digital Pressure and Flow Sensors**
- Measure condition, program values and alarm points.
- Remote output features

**Air Preparation Equipment**
- Eliminate maintenance and reduce costs with filtration, drying and efficient pressure control.

**Membrane Air Dryers**
- Sub-zero dew point delivers clean, dry air without electrical power.

**Refrigerant and Peltier Style 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

**Static Removing Ionizers**
- Eliminate blockages due to static electricity in component (e.g. cuvette) feeder devices.
Dental Applications

VX and VDW 2 & 3-port Media Solenoid Valves
- Energy saving as a consequence of low power solenoids
- Low switching noise suitable for use in quiet environments

SY 5-port Solenoid Valves
- Simple and quick valve replacement
- Different valve functions in a common manifold
- Flexible port configuration reducing installation costs and assembly time
- Reduced power consumption

WR110 Water Regulator
- Tamperproof, lockable adjustment handle
- Resilient body and seal materials assure long service life

For dimensions and other details, refer to the general catalog for each series at www.smcusa.com
**AC-B Modular F.R.L. Units**
- Improved visibility and options
- Modular design incorporating many functions
- Improved resistance to chemicals and other substances

**PVQ Proportional Solenoid Valves**
- Greater process control
- Extended service life
- Can be used in quiet environments

**WF300 Water Strainer**
- Extends the service life of downstream products
- Simple maintenance due to replaceable mesh
- Resilient body and seal materials

**IDG Membrane Air Dryers**
- High and accurate air drying capacity
- Reduction of air preparation process time
- Onboard filter monitor
- No electrical running costs
- Suitable for use in confined spaces
- Long service life
Sterilizers & Decontamination

VX and VDW 2 & 3-port Media Solenoid Valves
- High flow capacity
- Energy saving as a consequence of low power solenoids
- Low switching noise suitable for use in quiet environments

APTech Series: High Pressure & High Purity Products
- Wide range of gas valves and regulators

LQ High Purity Fluoropolymer Fittings
- Wide range of sizes and forms
- High leakage protection
- Superior chemical and heat resistance
- Easy assembly

VXZ 2-port Solenoid Valves
- Suitable for use in low pressure fluid and low vacuum applications due to zero differential pressure construction
- Ideal for use in quiet environments due to low switching noise

For dimensions and other details, refer to the general catalog for each series at www.smcusa.com
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- Ideal for use in quiet environments due to low switching noise

**Fluoropolymer Tubing**
- High chemical and heat resistance
- Wide range of size variations
- Easy and quick assembly process

**VXB Angle Seat Valves**
- Robust, compact construction
- Range of body materials
- Reliable long life sealing system

**Life Science**
**Sterilizers & Decontamination**
Stationary

UIUSP 5 Port Valve
5 port poppet style valve controls the Fill/Exhaust function of the concentrator in one valve, offering high flow and long life.

UIUSP 3 Port Valve
High flow 3 port poppet style valve controls either the Fill or Exhaust function of the concentrator.

SRA Regulator
SRA regulator can be pre-set and left alone for the life of the device, providing repeatable pressures with low hysteresis.

For dimensions and other details, refer to the general catalog for each series at www.smcusa.com
SX090 3-Port Valve
3 port SX090 valve can be used to control the Fill or Exhaust, with high flow and bi-directional characteristics.

SX90 2-port Valve
2-port SX90 valve can be used to control fill/exhaust, as well as crossover function and oxygen delivery in portable oxygen concentrator applications.

DXT474 Valve
2 port DXT474 valve has exceptional flow characteristics for either the Fill or Exhaust function within the concentrator.

Custom Manifold Solutions
Machined and injection molded manifolds can be custom made for specific applications.
Laboratory Automation

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

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

**KKA S Couplers**
- Highly corrosion resistant
- Robust design and construction
- Wide range of size variations

**PF3W Flow Switches**
- High accuracy and repeatability
- Highly visual multi-color display
- IO-Link compatible
- Integrated product diagnostics
- Remotely accessible and tamper-proof

**HRS Thermo-Chillers**
- Superior temperature stability across a range of ambient conditions
- Reduced envelope dimensions for fitting in restricted machine space
- Easy operation, control and maintenance

**HEC Peltier Thermo-cons**
- Superior temperature stability and control
- Environmentally friendly (refrigerant-free)
- Heaterless

X-Ray & Imaging Cooling Systems
Compression Care & NIBP

V100 3-port Solenoid Valves
- Miniature design (10 mm body width)
- Energy-saving circuit reduces power consumption.
- Lightweight

S070 3-port Solenoid Valves
- Miniature and lightweight design (7 mm body width)
- Energy-saving circuit reduces heat and power consumption.
- Reduced switching noise

SX90 & SX090 High Flow Solenoid Valves
- 2-port and 3-port SX series valves have many of the features of the V100 and S070 valves with the additional benefit of increased flow capacity.

For dimensions and other details, refer to the general catalog for each series at www.smcusa.com
LVM Liquid Isolation Valves
- Increased chemical resistance
- Low power consumption
- Zero dead volume
- Space saving

CQ2 Compact Cylinders
- Compact, lightweight and robust design
- Multiple mounting options

VDW 2-port Media Solenoid Valves
- High flow capacity
- Energy saving as a consequence of low power solenoids
- Low switching noise suitable for use in quiet environments.

PVQ Proportional Solenoid Valves
- Greater process control
- Extended service life
- Can be used in quiet environments

S070 3-port Solenoid Valves
- Miniature and lightweight design (7 mm body width)
- Energy-saving circuit reduces heat and power consumption.
- Reduced switching noise

Medical Training Simulators
EX Serial Transmission System
- Fieldbus systems save on components, installation time, wiring and space.
- Communication in several languages
- Ethernet-based Fieldbus systems and other common industrial communication protocols are available.
- All-to-all connection
- Remote control & diagnostics

CJ5-S/CG5-S Stainless Steel Cylinders
- Highly resistant to corrosion
- Clean design reduces liquid retention after washing.
- Cost efficient due to long service life

SY 5-port Solenoid Valves
- Simple and quick valve replacement
- Different valve functions in a common manifold
- Flexible port configuration reducing installation costs and assembly time
- Reduced power consumption

EX600-W Wireless Systems
- Radically reduced wiring results in reduced installation cost and setting time.
- Enhanced machine and component flexibility
- Safe, reliable and stable communication

HY Hygienic Design Cylinders
- Wash down compatible due to its streamlined design
- Resilient body and seal materials ensure long service life.
- Many mounting options are available.
Digital High Pressure & Flow Sensors
- See abnormal values at a glance.
- Available for wide variety of fluids with stainless diaphragm
- Security, power saving, resolution and stability
- High repeatability

KKA S Couplers
- Highly corrosion resistant
- Robust design and construction
- Wide range of size variations
Composite bonded valve manifold for air, gas and liquids. Materials include acrylic, ultem, PVC, polycarbonate, etc.

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

**Lightweight**
Weight reduced by using a range of high-tech materials and by minimizing overall size and rationalizing components.

**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.

**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.

Current type (tube piping)  Composite manifold

For dimensions and other details, refer to the general catalog for each series at www.smcusa.com
SMC Products

Isolation Valves

Liquid Isolation Valves
LVM Series
- Fluid: air, water, chemicals
- Valve type: NC, NO, universal
- Orifice size: 0.8 to 2 mm
- Long service life: 10 million cycles
- Wetted part material: PEEK, EPDM, FKM, FFKM

Pinch Valves

Solenoid Operated Pinch Valves
LPV Series
- The fluid does not come into contact with the moving parts of the valve, so there is no inflow of contaminants.
- By discarding tube after use, the need for a washing process is eliminated, thus ensuring good hygiene.
- Tubes can be set or replaced easily.

Dispense Pump

Liquid Dispense Pumps
LSP Series
- Solenoid driven diaphragm type
- Discharge volume: 5-200 µL/Shot
- Repeatability: ±1%
- Max. frequency: 2 Hz
- Body ported or base mounted

Solenoid Valves

2/3-port Solenoid Valves
SX90 & SX090 Series
- High flow up to 90 l/min at 2 bar
- Fluid: air, oxygen, inert gas
- Reduced power consumption (0.7 W)
- Valve type: NC, universal
- Low profile
- Long service life: 10 million cycles

Direct Operated 2-port Solenoid Valves
VX2 Series
- Fluid: air, water, steam, medium vacuum, oil
- Reduced power consumption (4.5 W)
- Valve type: NC, NO
- Port size: 1/8” to 1/2”
- One-touch fitting: 6 to 12 mm
- Orifice size: 2 to 10 mm

Compact Direct Operated 2-port Solenoid Valves
VDW Series
- Fluid: air, water, medium vacuum
- Reduced power consumption (2.5 W)
- Valve type: NC
- Port size: M5 to 1/8”
- One-touch fitting: 3.2 to 6 mm
- Orifice size: 1 to 3.2 mm

Zero Differential Pressure Type Pilot Operated 2-port Solenoid Valves
VXZ Series
- Fluid: air, water, heated water, oil, high temperature oil
- Valve type: NC, NO
- Port size: 1/4” to 1”
- One-touch fitting: 10 to 12 mm
- Orifice size: 10 to 25 mm
**5-port Solenoid Valves**
- **SY Series**
  - Fluid: air
  - 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)
  - Enclosure: IP67

**3-port Solenoid Valves**
- **V100 Series**
  - Fluid: air
  - Flow rate: up to 24 l/min
  - Low power consumption: 0.1 W
  - Operating pressure range: 0 MPa to 0.7 MPa
  - Valve width: 10 mm

**3-port Solenoid Valves**
- **S070 Series**
  - Fluid: air
  - Flow rate: up to 15 l/min
  - Valve width: 7 mm
  - Weight: 5 g (single unit valve)
  - Operation noise: 38 dB(A) or less

**Angle Seat Valves**
- **VXB Series**
  - Fluid: air, water, steam
  - Low pressure loss due to angle seat structure
  - Valve type: NC
  - Port size: 3/8” to 3/4”
  - Orifice size: 11 to 18 mm
  - Long service life: 3 million cycles (steam) 5 million cycles (air)

**Water Filters**
- **WF300 Series**
  - Removal of foreign matter in water line
  - Mesh: 25, 50, 70, 100 microns
  - Port size: Rc 1/4, 3/8, 1/2
  - Replaceable stainless steel mesh
  - Body material: bronze casting

**Proportional Solenoid Valves**
- **PVQ Series**
  - Fluid: air, inert gas
  - Flow rate: up to 100 l/min
  - Service life: lasts 25 million cycles
  - Repeatability: 3% or less
  - Can be used for vacuum applications

For dimensions and other details, refer to the general catalog for each series at www.smcusa.com
Electric Actuators

Slider Type

Ball Screw Drive
LEFS Series

Step motor (servo/24 VDC), servo motor (24 VDC)
- Max. work load: 65 kg
- Positioning repeatability: ±0.015 mm (high precision type)
- Clean specification: complies with ISO Class 4 (ISO 14644-1) (11-LEFS)

AC servo motor
- High output motor (100/200/400 W)
- Improved high speed transfer ability
- High acceleration/deceleration (20.000 mm/s²)
- Pulse input type
- Internal absolute encoder
- Positioning repeatability: ±0.01 mm (high precision type)
- Clean specification: complies with ISO Class 4 (ISO 14644-1) (11-LEFS)

Belt Drive
LEFB Series

Step motor (servo/24 VDC), servo motor (24 VDC)
- Max. stroke: 2000 mm
- Max. speed: 2000 mm/s
- Positioning repeatability: ±0.0 mm

AC servo motor
- Max. speed: 2000 mm/s
- Max. stroke: 3000 mm
- Max. acceleration/deceleration 20000 mm/s²
- Pulse input type
- With internal absolute encoder
- Positioning repeatability: ±0.06 mm
- Compatible drivers: LECSS-T, LECY
- Motorless specification is available.

Support Guide
LEFG Series

- Designed to support workpieces with significant overhang
- Easy installation with the same outer dimensions as the LEF series body - contributes to the reduction of design and assembly labor.
- The standardly equipped sealing band prevents the scattering of grease and the entry of foreign matter from outside.
High Rigidity Slider Type, Ball Screw Drive
LEJS Series
- Low profile/Low center of gravity: height reduced by approx. 36% (reduced by 32 mm)
- Max. work load: 85 kg
- Positioning repeatability: ±0.02 mm
- Max. acceleration/deceleration: 20000 mm/s²
- Clean specification: complies with ISO Class 4 (Class 10) (11-LEJS)
- Compatible drivers: LECSS-T, LECY
- Motorless specification is available.

High Rigidity Slider Type, Belt Drive
LEJB Series
- Max. stroke: 3000 mm
- Max. speed: 3000 mm/s
- Max. acceleration/deceleration: 20000 mm/s²
- Compatible drivers: LECSS-T, LECY
- Motorless specification is available.

Low Profile Slider Type
LEM Series
- Low-profile, low center of gravity
- Table height: 28 mm (in the case of LEMC/H/HT, size 25)
- Can be combined with various guides
- High maintainability
- Motor mounting position: select from above or below, right or left
- Solid state auto switches can be mounted for limit confirmation and intermediate signal confirmation
- Selectable controllability (controller)
- Complete control like an air cylinder (allows for a 12 point intermediate stop)
- Easy position setting by value input

Guide Rod Slider, Belt Drive
LEL Series
- Low profile/Flat: height 48 mm
- Profile reduced by the side mounting of the motor
- No interference with the motor, even with large workpieces
- Auto switch mountable (made to order)
- Max. stroke: 1000 mm
- Transfer speed: 1000 mm/s
- Positioning repeatability: ±0.1 mm
Rod Type

Step Motor (servo/24 VDC), Servo Motor (24 VDC)
LEY/LEYD Series

Motor top/parallel type
- Long stroke: max. 500 mm
- Direct mounting: 3 directions
- Bracket mounting: 3 types
- Auto switch can be mounted.
- Speed control/Positioning: max. 64 points
- Either positioning or pushing control can be selected.
- It is possible to hold the actuator with the rod pushing on a workpiece, etc.
- Positioning repeatability: ±0.02 mm or less
- Dust-tight/Water-jet-proof (IP65)

In-line motor type
- Long stroke: max. 500 mm
- Direct mounting: 3 directions, bracket mounting: 3 types
- Auto switch can be mounted.
- Speed control/Positioning: max. 64 points
- Either positioning or pushing control can be selected
- It is possible to hold the actuator with the rod pushing on a workpiece, etc.
- Positioning repeatability: ±0.02 mm or less

AC Servo Motor
LEY/LEYD Series

Motor top/parallel type
- High output motor (100/200/400 W)
- Improved high speed transfer ability
- High acceleration compatible (5000 mm/s²)
- Pulse input type
- With internal absolute encoder
- Positioning repeatability: ±0.02 mm or less
- Dust-tight/Water-jet-proof (IP65 equivalent)
- Compatible drivers: LECSS-T, LECY
- Motorless specification is available.

In-line motor type
- High output motor (100/200/400 W)
- Improved high speed transfer ability
- High acceleration/deceleration compatible (5000 mm/s²)
- Pulse input type
- With internal absolute encoder
- Positioning repeatability: ±0.02 mm or less
- Compatible drivers: LECSS-T, LECY
- Motorless specification is available.
Guide Rod Type

Step Motor (servo/24 VDC), Servo Motor (24 VDC)
LEYG/LEYGD Series

Motor top mounting type
- Compact integration of guide rods
- Achieves lateral load resistance and high non-rotating accuracy
- Lateral end load: five times more (compared with a rod type, size 25, 100 stroke)
- Compatible with sliding bearings and ball bushing bearings
- Compatible with moment load and stopper (sliding bearings)
- Speed control/Positioning: max. 64 points
- Either positioning or pushing control can be selected
- It is possible to hold the actuator with the rod pushing on a workpiece, etc.
- Positioning repeatability: ±0.02 mm or less

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- Either positioning or pushing control can be selected
- It is possible to hold the actuator with the rod pushing on a workpiece, etc.
- Positioning repeatability: ±0.02 mm or less

AC Servo Motor
LEYG/LEYGD Series

Motor top mounting type
- High output motor (100/200 W)
- Improved high speed transfer ability
- High acceleration/deceleration compatible (5000 mm/s²)
- Pulse input type
- With internal absolute encoder
- Compatible drivers: LECSS-T, LECY
- Motorless specification is available.

In-line motor type
- High output motor (100/200 W)
- Improved high speed transfer ability
- High acceleration/deceleration compatible (5000 mm/s²)
- Pulse input type
- With internal absolute encoder
- Compatible drivers: LECSS-T, LECY
- Motorless specification is available.
Slide Table

**Electric Slide Table/Compact Type**

LES Series

- Compact: Workpiece mounting surface height reduced by up to 12% compared with the LESH.
- Vertical work load: increased by up to 50%.
- Lightweight: reduced by up to 29%.
- Max. pushing force: 180 N.
- Positioning repeatability: ±0.05 mm.
- Cycle time can be reduced.
- Max. acceleration/deceleration: 5000 mm/s².
- Max. speed: 400 mm/s.

**Electric Slide Table/High Rigidity Type**

LESH Series

- Easy setting: Data can be set with only 2 items, position and speed.
- The controller is already set with the data of the actuator (the actuator and controller are provided as a set).
- Integrated guide rail and table.
- Uses a recirculating linear guide for high rigidity and high precision.
- Reduced cycle time.
- Max. acceleration/deceleration: 5000 mm/s², max. speed: 400 mm/s.
- Max. pushing force: 180 N.
- Positioning repeatability: ±0.05 mm.

Miniature

**Miniature Rod Type**

LEPY Series

- Compact and lightweight.
  - W 20.5 mm x H 30 mm x L 125.6 mm, weight 240 g.
- Max. pushing force: 50 N.
- Positioning repeatability: ±0.05 mm.
- It is possible to set the position, speed, and force. (64 points).
- Max. speed (horizontal): 350 mm/s.

**Miniature Slide Table Type**

LEPS Series

- Compact and lightweight.
  - W 21 mm x H 41 mm x L 138.6 mm, weight 290 g.
- Max. pushing force: 50 N.
- Positioning repeatability: ±0.05 mm.
- It is possible to set the position, speed, and force. (64 points).
- Max. speed (horizontal): 350 mm/s.
Rotary Table

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
- Shock less/high speed actuation
  - Max. speed: 42°/sec (7.33 rad/sec)
  - Max. acceleration/deceleration: 3000 °/sec² (52.36 rad/sec²)
- It is possible to set the speed, acceleration/deceleration, and position. Max. 64 points
- Energy saving: automatic 40 % power reduction after the table has stopped
- Easy setting: data can be set with only two items: position and speed.
  The controller is already set with the data of the actuator. (The actuator and controller are provided as a set.)

Card Motor

Card Motor
LAT3 Series
- The transportation, pushing, and length measurement systems have been miniaturized through the use of a linear motor.
- Thickness 9 mm, weight 130 g (at a stroke of 10 mm)
- Max. pushing force: 6 N
- Positioning repeatability: ±5 μm
- Pushing measurement accuracy: ±10 μm
- Max. operating frequency: 500 cpm
· Easy setting: Data can be set with only two items: position and force. The controller is already set with the data of the actuator (actuator and controller are provided as a set.)
· Equipped with a drop prevention function (All series come equipped with a self-lock mechanism.)
· The self-lock mechanism reduces power consumption.
· Equipped with a gripping check function
· It is possible to set the position, speed, and force. (64 points)

2-Finger Type (Z type)
LEHZ Series

2-Finger Type/With Dust Cover (ZJ type)
LEHZJ Series

2-Finger Type (F type)
LEHF Series

3-Finger Type (S type)
LEHS Series
SMC Products

Serial Transmission

Fieldbus Systems

- Fieldbus system
  - Serial interface uses Fieldbus for communicating, instead of point-to-point connections, thus allowing savings in:
    - Material costs – cables, connectors, gutters
    - Connection and set-up times
    - Generation of electrical diagrams
    - Labeling and documentation
    - Electrical panels, cleaner and more compact – it is even possible to remove cabinets.
  - Compatible with EtherNet/IP™-based and other common industrial protocols
  - Short/open circuit detection
    - Easy to identify short circuits or open circuits
  - High environmental resistance
    - Up to IP67 enclosure protection
  - Highlighted EX serial interface solutions:

  1. **Fieldbus System (Output Device for Driving 5-port Solenoid Valves)**
     - EX260 Series
     - Centralized and compact solution for solenoid valves, with up to 32 outputs

  2. **Fieldbus System (For input/output)**
     - EX600 Series
     - Centralized and great capacity solution for both solenoid valves and I/O, with up to 512 inputs & 512 outputs

  3. **Fieldbus System (Gateway Decentralized Type)**
     - EX500 Series
     - Decentralized solution for both solenoid valves and I/O, with up to 128 inputs & 128 outputs

Wireless System

- EX600-W Series
  - Two SI units: wireless base SI module, remote SI module
    - Wireless base unit
      - One unit to control the entire wireless network
      - EtherNet/IP™ and PROFINET compatible
      - Max. 1280 inputs/1280 outputs
      - Maximum number of remotes that can be connected to one base without need for communication cables:
        - 127 for EtherNet/IP™
        - 31 for PROFINET
    - Remote module
      - Management of analogue, digital and pneumatic product
    - Wireless system
      - Electrical noise resistant
      - Radio wave propagation in the 2.4 GHz ISM high frequency band
      - Frequency hopping – every 5 ms
      - Data encryption
    - Decentralized system, point-to-multipoint communication
      - Only one IP address for managing the complete wireless system
      - Wireless communication range: 10 meters

For dimensions and other details, refer to the general catalog for each series at www.smcusa.com
Ionizers

Bar Type Ionizer
IZS Series
- Effective and efficient in the rapid elimination of static
- Built-in, high accuracy and feedback sensors
- Energy saving and high speed de-ionizing cartridges
- Low maintenance electrode cartridges
- Electrostatic removal from flat surfaces and remote surfaces
- Suitable for applications in all industries

Nozzle Type Ionizer
IZN Series
- Slim design
- Built-in power supply substrate
- Energy saving and large flow nozzles
- Removal from a small work piece or total electrostatic removal in confined spaces. Suitable for dust removal
- Suitable for applications in all industries

Regulators

Electro-Pneumatic Regulator
ITV1000/2000/3000 Series
- Controls air pressure in proportion to an electric signal
- Available in MPa, kgf/cm², bar, PSI, and kPa units
- Pressure range of 0.005 to 0.9 MPa
- Available port sizes M5 and 3/8
- Mounting bracket option

Compact Electro-Pneumatic Regulator
ITV0000 Series
- Built-in one-touch fitting
- Pressure range of 0.001 to 0.9 MPa
- Error indication LED
- High stability
- High response time

Fan Type Ionizer
IZF Series
- Compact and lightweight
- Flow rate adjustment function
- Electrostatic removal in the atmosphere around a work piece
- Operates without the need of a compressed air supply
- Suitable for applications in all industries

Water Regulator
WR110 Series
- Pressure adjustment of water line
- Set pressure range: 0.08 to 0.39 MPa / 0.05 to 0.69 MPa
- Locking system. Resistant body material: brass
- Optional pressure gauge
- Port size: Rc1/8, 1/4, NPT 1/8, 1/4

Oxygen Regulator
SRA Series
- Fluid: air, oxygen
- Set pressure range: 0.01 to 0.1 MPa
- Port size: Rc1/8, Ø 8 O.D. tubing
- Flow rate range 0.2 to 6 l/min
- Oil-free
Thermo-Chiller
HRS Series
- Cooling capacity (50Hz): 1100 W, 1700 W, 2100 W, 2600 W, 4700 W, 4900 W
- Lightweight: 43 kg/73 kg
- Temperature stability: ±0.1°C
- Temperature range setting: 5 to 40°C
- International standard: CE, UL

Thermo-Chiller (basic type)
HRSE Series
- Large energy saving by triple control
- Power consumption: 33% energy saving
- Cooling capacity: 1000 W, 1400 W, 1900 W
- Temperature stability: ±2.0°C
- Set temperature range: 10 to 30°C
- Maintenance free: magnet pump

Thermo-Chiller (rack mount type)
HRR Series
- Mountable in a 19-inch rack
- Cooling capacity: 1000 W, 1600 W, 2000 W, 2500 W
- Bypass valve and flow sensor are built in (standard)
- International standards: CE, UL

Thermo-con
HECR Series
- Mountable in a 19-inch rack
- Cooling capacity: 200 W, 400 W, 510 W, 800 W, 1000 W, 1200 W
- Temperature stability: ±0.01 to 0.03°C
- Set temperature range: 10 to 60°C
- Learning control function
- Low vibration, low noise

Thermo-con
HEC Series
- Temperature stability: ±0.01 to 0.03°C
- Set temperature range: 10 to 60°C
- Cooling capacity (50Hz): 600 W, 1200 W
- Type of circulating fluid: water, fluorinated chemicals
- International standards: CE, UL
Thermo-Chiller
HRS Series
- Cooling capacity (50hz): 1100 W, 1700 W, 2100 W, 2600 W, 4700 W, 4900 W
- Lightweight: 43 kg/73 kg
- Temperature stability: ±0.1°C
- Temperature range setting: 5 to 40°C
- International standards: CE, UL

Thermo-Chiller (basic type)
HRSE Series
- Large energy saving by triple control
- Power consumption: 33% energy saving
- Cooling capacity: 1000 W, 1400 W, 1900 W
- Temperature stability: ±2.0°C
- Set temperature range: 10 to 30°C
- Maintenance free: magnet pump

Thermo-Chiller (rack mount type)
HRR Series
- Mountable in a 19-inch rack
- Temperature stability: ±0.1°C
- Set temperature range: 10 to 35°C
- Cooling capacity (50hz): 1000 W, 1600 W, 2000 W, 2500 W
- Bypass valve and flow sensor are built in (standard)
- International standards: CE, UL

Thermo-con (rack mount type)
HECR Series
- Mountable in a 19-inch rack
- Cooling capacity: 200 W, 400 W, 510 W, 800 W, 1000 W, 1200 W
- Temperature stability: ±0.01 to 0.03°C
- Set temperature range: 10 to 60°C
- Learning control function
- Low vibration, low noise

Membrane Air Dryers
IDG Series
- Possible to easily supply dry air using the hollow fiber membrane
- Non-fluorocarbon
- Power supply not required
- Compatible with low dew point (-60°C)
- No vibration or heat discharge
- Dew point indicator

IDG Series
- Possible to easily supply dry air using the hollow fiber membrane
- Non-fluorocarbon
- Power supply not required
- Compatible with low dew point (-60°C)
- No vibration or heat discharge
- Dew point indicator

Modular F.R.L. Units
AC-B Series
- Filter + Regulator + Lubricator
- Body size: 20, 25, 30, 40, 50, 55, 60
- Port Size: 1/8, 1/4, 3/8, 1/2, 3/4, 1
- Max. operating pressure: 1.0 MPa
- Attachments

Fluoropolymer Fittings
LQ Series
- High purity fluoropolymer fitting
- Threaded and tubing connection
- Maximum operating pressure (at 20°C): 1 MPa
- Operating temperature: 0 to 200°C
- Variety of size combinations available

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

Soft Fluoropolymer Tubing
TD/TID Series

FEP Tubing (Fluoropolymer)
TH/TIH Series

Fluoropolymer Tubing
TL/TIL Series

S Couplers
KKA Series
- S coupler with plug and socket
- Body material: stainless steel 304
- Seal material: fluoropolymer (special FKM)
- Threads, sizes: R, Rc, from 1/8 to 1 1/2
- Operating temperature: -5 to 150°C
For dimensions and other details, refer to the general catalog for each series at www.smcusa.com

**Sensors**

**Pressure Switches**

**High-Precision Digital Pressure Switch**
ISE20 Series
- Setting is possible while checking the measured value
- Visualization of setting items
- Delay time: Fastest 1.5 ms or less
- Current consumption: 35 mA or less
- IO-Link compatible
- Copy function/auto-shift function

**High-Precision Digital Pressure Switch**
ISE7/ISE7G Series
- Setting is possible while checking the measured value
- Angled display
- Rotatable display (336°)
- IO-Link compatible

**Digital Flow Switch for Water**
PF3W Series
- 3-color/2-screen display
- Integrated temperature sensor
- Grease free, RoHS compliant
- Fluid temperature: 0 to 90°C (PVC piping type 0 to 70 °C)
- PVC piping type: applicable to deionized water, chemical liquids, etc.

**Digital Flow Switch for Large Flow**
PF3A7H Series
- Flow range: max. 12000 l/min
- Flow ratio 100:1
- Through bore construction
- Pressure loss: 75% reduction (20 kPa to 5 kPa)
- Improved drainage and resistance to foreign matter
- Applicable fluids: air, N₂

**Flow Switches**

**Electromagnetic Type Digital Flow Switch**
LFE Series
- Applicable fluids: water, water-soluble coolant
- Compact, lightweight:
  - 56 mm x 40 mm x 90 mm (H x W x D)
  - Weight: 340 g (LFE3)
- Reverse flow can be detected
- Operating Fluid temperature: 0 to 85°C
- Pressure loss: 0.02 MPa or less

**Digital Flow Switch**
PFMC Series
- 3-color/2-screen display
- Flow ratio 100:1
- Bypass structure
- Applicable fluids: dry air, N₂

**Digital High Pressure Sensors**
ISE80(H) Series
- 2-color display
- Stainless diaphragm NBR gasket
- IP65 enclosure, RoHS compliant
- Suitable for various fluids
- Current consumption: 45 mA or less
Cylinders

Corrosion Resistant Cylinders
CJ5/CJS Series
- Double acting, single rod cylinders
- All stainless steel external parts
- Special scraper prevents water from entering cylinder

Hygienic Design Cylinders
HY Series
- A water resistant cylinder configured for easy cleaning
- Service life - five times longer than water resistant cylinders
- External seal material: choice of NBR or FKM

Compact Cylinders
CQ2 Series
- Double acting, single rod, compact cylinder
- Can mount small auto switches on four surfaces
- No protrusion of auto switch

APTech Products

Diaphragm Valves
AP Series
- Suitable for UHP gas supply line
- Body material: 316L SS secondary remelt
- Air operated type/Manually operated type
- High pressure type: max. 3000 psig (20.7 MPa)

Regulators
AK Series
- Single or two stage regulator for general applications
- High inlet pressure type: max. 3500 psig (24.1 MPa)
- Body material: stainless steel and brass available
- Corrosion resistant Ni-Cr-Mo Alloy (2.4602) internals available

Regulators
KT Series
- Single stage regulator
- Inlet pressure: max. 10000 psig (69 MPa)
- Body material: stainless steel or brass
- Self-relieving or non-relieving available
## Europe

<table>
<thead>
<tr>
<th>Country</th>
<th>Address</th>
<th>Phone</th>
<th>Fax</th>
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<tbody>
<tr>
<td>Germany</td>
<td>SMC Deutschland GmbH</td>
<td>06130/402-0 Fax: 06130/402-139</td>
<td></td>
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<tr>
<td>Switzerland</td>
<td>SMC Schweiz AG</td>
<td>052/396 31 31 Fax: 052/396 31 91</td>
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</tr>
<tr>
<td>France</td>
<td>1, Boulevard de Strasbourg, Parc Gustave Eiffel</td>
<td>01-6476 1000 Fax: 01-6476 1010</td>
<td></td>
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<tr>
<td>Italy</td>
<td>SMC Italia S.p.A.</td>
<td>945184100 Fax: 945-184 510</td>
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<tr>
<td>Belgium</td>
<td>Ternessele 232, 2160 Wommelgem, Belgium</td>
<td>+32-3-355-1464 Fax: +32-3-355-1466</td>
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<tr>
<td>Denmark</td>
<td>SMC Danmark A/S</td>
<td>70252900 Fax: 70252901</td>
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<tr>
<td>Netherlands</td>
<td>Ruyterkade 120, NL-1011 AB Amsterdam, The Netherlands</td>
<td>020-5318888 Fax: 020-5318880</td>
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<tr>
<td>Croatia</td>
<td>Grikstrasse 8, AT-2100 Korneuburg, Austria</td>
<td>0226 62 280 Fax: 0226 62 285</td>
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<tr>
<td>Czech Republic</td>
<td>SMC Industrial Automation CZ s.r.o.</td>
<td>5 412-1803</td>
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<tr>
<td>Hungary</td>
<td>Hungary SMC Hungaripar Automatizalasi Kft.</td>
<td>+36 23 513 000 Fax: +36 23 513 001</td>
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<tr>
<td>Poland</td>
<td>SMC Industrial Automation Sp. z.o.o.</td>
<td>+48-22 344 40-00 Fax: +48-22 344 40-05</td>
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<tr>
<td>Slovakia</td>
<td>SMC Priemyselnai Automatizacia Spol s.r.o.</td>
<td>41-32-1321-1 Fax: 41-32-1321-0</td>
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<tr>
<td>Slovenia</td>
<td>Slovenia Industrijska Avtomatika d.o.o.</td>
<td>7388 5412 Fax: 7388 5435</td>
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<tr>
<td>Bulgaria</td>
<td>SMC Industrial Automation Bulgaria EOOD</td>
<td>7388 5412 Fax: 7388 5435</td>
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<td>Croatia</td>
<td>SMC Industrijska Avtomatika d.o.o.</td>
<td>2 9744492 Fax: 2 9744519</td>
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<tr>
<td>Bosnia-Herzegovina</td>
<td>Distributor - A.M. Pneumatik d.o.o.</td>
<td>45601677 Fax: 45601677</td>
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<tr>
<td>Serbia</td>
<td>Toplice Milana 14A, RS-11050 Beograd, Serbia</td>
<td>+381-113221758 Fax: +381-113227571</td>
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<tr>
<td>Ukraine</td>
<td>Distributor - PNEUMOTEC Corp.</td>
<td>44-606177 Fax: 44-606177</td>
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<td>Albania</td>
<td>SMC Industrijska Avtomatika d.o.o.</td>
<td>386 7388 5412 Fax: 386 7388 5435</td>
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## Africa

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<td>Casablanca</td>
<td>SMC France</td>
<td>+33 (0)1-72641252</td>
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<tr>
<td>Tunisia</td>
<td>9 rue de Plastic Zl Sidi Rezig BP 176 2033 Meqrine Tunisia</td>
<td>71 428-272 Fax: 71 427-758</td>
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<tr>
<td>Algeria</td>
<td>Electric Center</td>
<td>+33 2 43 77 47 28 Fax: +33 2 43 77 01 34</td>
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<tr>
<td>Egypt</td>
<td>Saadani Trading &amp; Industrial Services</td>
<td>213205111 Fax: 213201489</td>
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<tr>
<td>Nigeria</td>
<td>Faraday Engineering Company Ltd.</td>
<td>214-289-0490 Fax: 214-289-0437</td>
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<td>South Africa</td>
<td>SMC Corporation ZA (Pty) Ltd.</td>
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<tr>
<td>Tunisia</td>
<td>Afrique Industries</td>
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<tr>
<td>Egypt</td>
<td>Electric Center</td>
<td>+225-21-244-604 Fax: +225-21-351-674</td>
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## SMC's Global Service Network

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<th>Region</th>
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<tr>
<td>Africa</td>
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</tbody>
</table>
Asia/Oceania

Japan SMC Corporation
Akihabara UDX 15F, 4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, Japan
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China <Guangzhou> SMC Automation (Guangzhou) Limited
2, Dongmeng Road 3, Science Park Guangzhou Hi-Tech Industrial Development Zone, Guangzhou, P.R. China
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25F, Clifford Centre, 778-781 Chung Sha Wan Road, Kowloon, Hong Kong, China
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Taiwan SMC Pneumatics (Taiwan) Co., Ltd.
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Kvutzat Geva 1891500, Israel
Phone: (09) 573-7007 Fax: (09) 573-7002

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EJIP Industrial Park Plot 6J-1 Cikarang Selatan - Bekasi 17550 Indonesia
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Pakistan <Distributor> Jubilee Corporation
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Sri Lanka <Distributor> Electro-Serv (Pvt.) Ltd.
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P.O. Box 261035, Jebel Ali, Dubai, United Arab Emirates
Phone: 4 801 5900 Fax: 4 801 5988

Kuwait <Distributor> Esco Trading Est.
Al Ranq Building, Tunis St. P.O. Box 44400 Hawally, Kuwait-ZIP: 32058 Phone: 22643710/22634777 Fax: 22634709

Saudi Arabia <Distributor> Alsagaf Trading Co.
P.O. Box 3385 Jeddah 21471 Saudi Arabia Phone: 2-673 1857, 2-676 1574 Fax: 2-670 8173

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239, Sh. Salman Highway, P.O. Box 747, Bahrain, A. Gulf Phone: 17252606 Fax: 17254638

Bangladesh <Distributor> Chemie International
B-20/28 Babor Road (Gr.Floor) Mohammadpur, Dhaka - 1207 Bangladesh Phone: 9132538/0171-546683 Fax: 9131512

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P.O. Box 37956, Doha, Qatar Phone: 4430035 Fax: 4430025

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Bolivia SMC Pneumáticas Bolivia S.r.l.
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Venezuela SMC Neumatica Venezuela S.A.
Ave. Michelleza Zona Industrial Edifcio Canaima Local 4 Valencia-Edo Carabobo, Venezuela Phone: 241-8345617 Fax: 241-8348258

Peru SMC CORPORATION PERU S.A.C.
Calle Andres Reyes 191, San Isidro, Lima, LIMA27, Peru Phone: 1-4401289 Fax: 1-4401280

Ecuador <Distributor> ASSISTECH CIA. LTDA.
Calle de Los Eucaliptos E3-42 y De los Cipreses Quito-Ecuador Phone: 6003690/6003691 6003692/2807963 Fax: 2804750