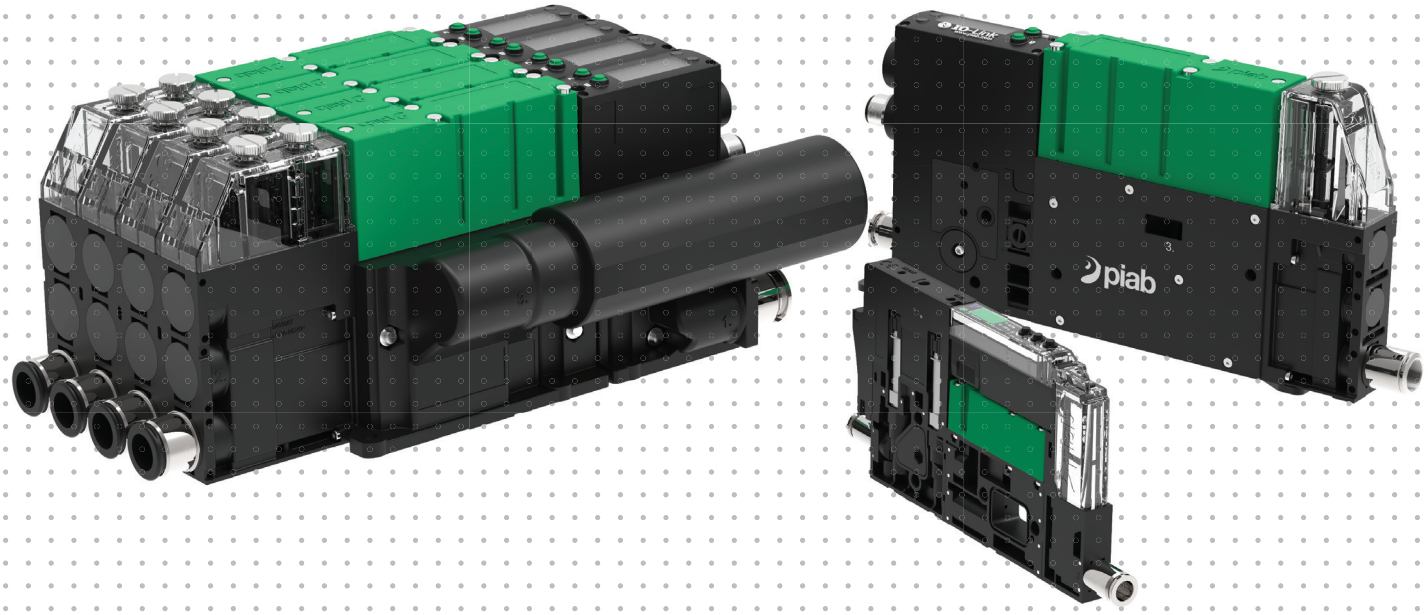
# Innovative vacuum generators with fully integrated controls for smart manufacturing

## piCOMPACT® SMART



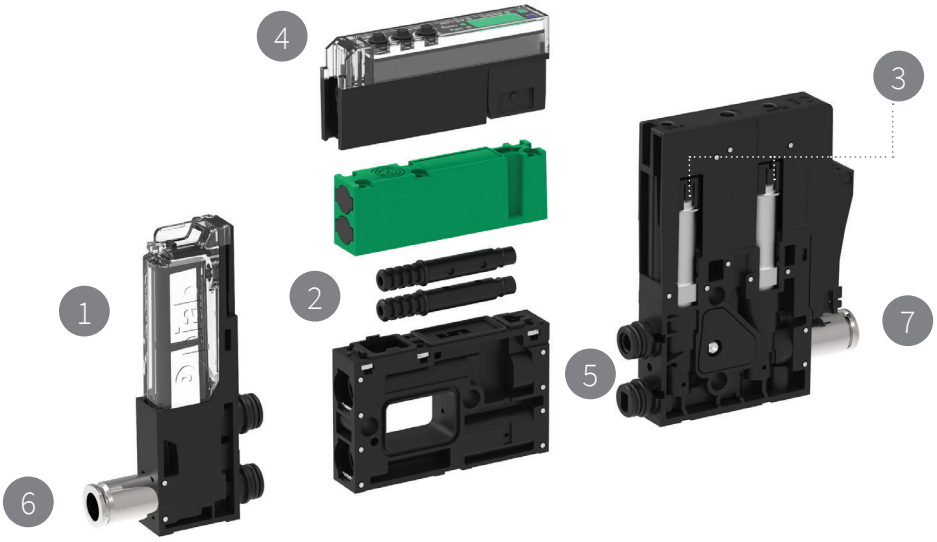

Smart solutions for the automated world™

piab

# Why piCOMPACT® is the best choice for you

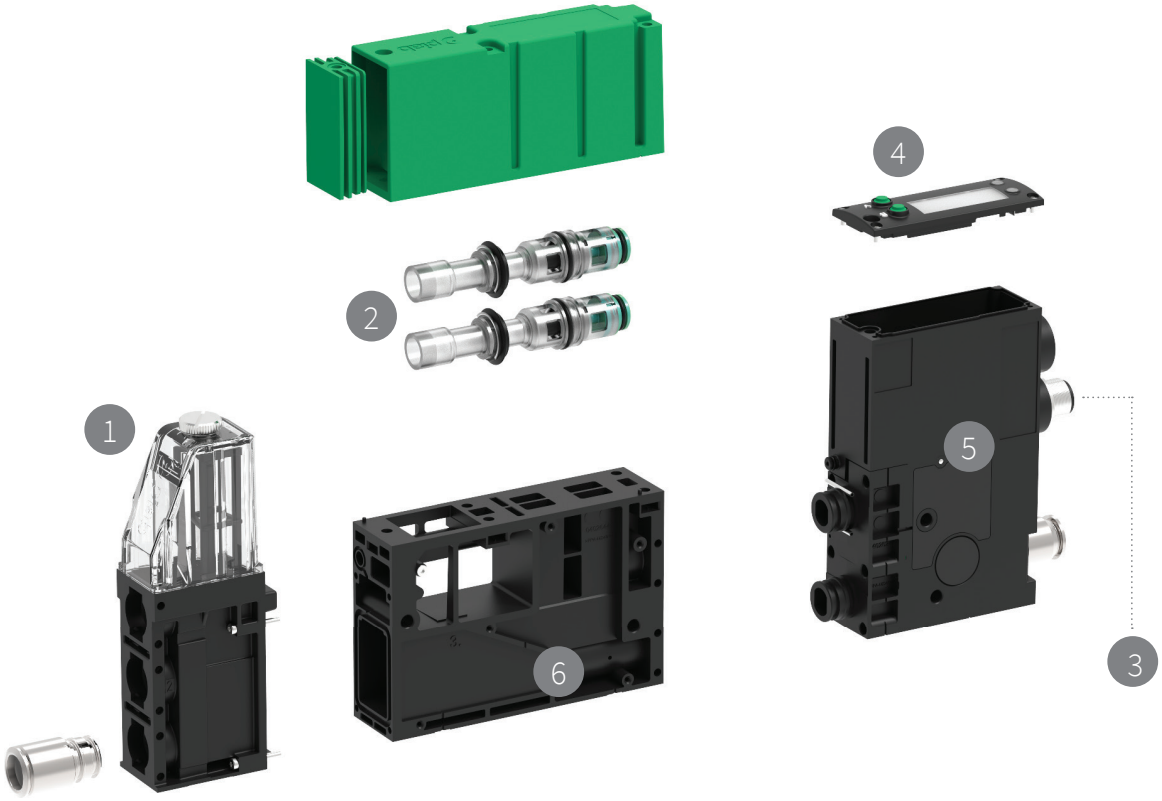
piCOMPACT®'s are vacuum ejectors with integrated control functions for on/off, blow, vacuum sensing and diagnostics.

## piCOMPACT® 10X




1. No pressure drop or reduced speed guaranteed due to an extra large cleanable filter area.
2. 1–2 COAX® MICRO cartridges allow for supply pressure drops or pressure fluctuations without jeopardizing vacuum performance.
3. Short cycle times and high reliability is provided through ultra high speed direct operating valves for vacuum on/off and releasing objects.
4. User friendly vacuum switch.
5. Shorter cycle time with a unique lightweight split unit feature where pumps and valves are separated. (Optional)
6. The only 10 mm wide compact ejector with a large 6 mm vacuum connection for maximum performance.
7. The only 10 mm wide compact ejector with simple M8-6pin connector.

# piCOMPACT®23 SMART




1 Vacuum connector module with optional, easily cleanable, vacuum filter. Up to 3 vacuum ports.

2 Ejector module with 1–2 COAX® SX cartridges.

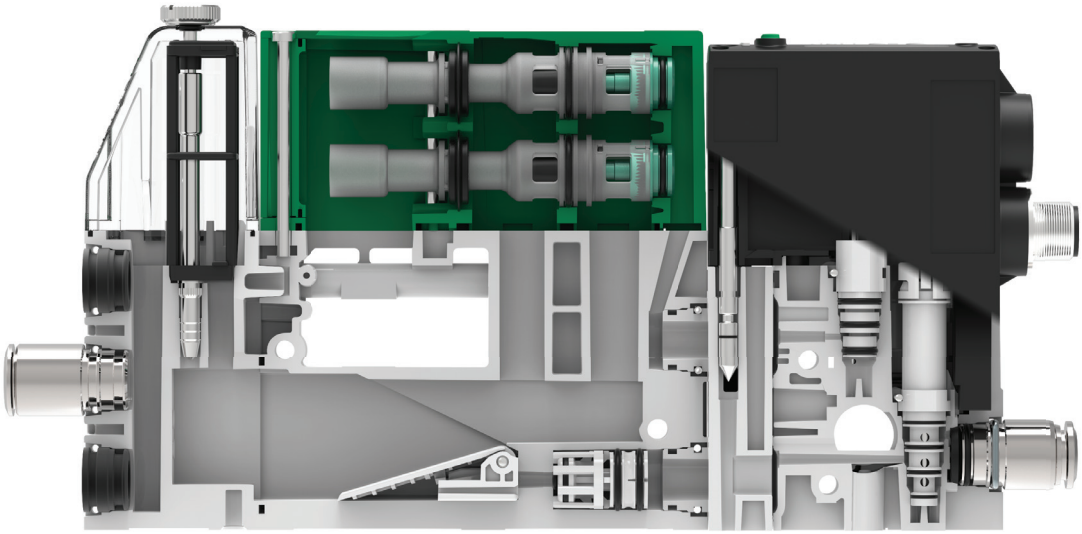
3 Control module with several valve options for supply and release. Integrated blow-flow control valve. Industry standard M12 connector. Standard IO's or IO-Link for communication. Sensor data to cope with Industry 4.0.

4 User interface with OLED display including gyro function and warning keypad for easy setting/parametrization and also optical indicators for valves and vacuum system status.

5 Optional Bi-stable (latching) on/off valve, provides security in case for emergency stop. The valve remains in the last position.

6 Patented amplified blow-off (ABO) provides reduced cycle times in large systems.

# Features and benefits



**High Reliability ensures trouble-free production**

- Dust proof ejector cartridges and flap valves.
- A-PWM (adaptive pulse width modulation) technology for valves with compensation for voltage fluctuation to reduce heat generation and enhance life.
- Valve protection (Automatic Condition Monitoring, ACM, function).
- Integrated and easy to clean filters.
- Power Booster circuit will reliably operate the solenoid valves under temporary “low-supply-voltage” conditions.
- Low voltage Power supply warning reported on the display or via IO-Link.
- The IO-Link version of piCOMPACT®23 SMART provides several sensor and smart data to support predictive maintenance.

**Impressive performance with minimal energy consumption**

- Superior ejector technology gives significant more vacuum flow and faster response time with less air-consumption (30–50%) in comparison with other brands. Suction cups will secure a better grip, giving possibility to handle products faster and safer.
- Extremely fast switching valves further contributes to shorten cycles times.
- Integrated automatic air/energy-saving function (ES) with adjustable hysteresis that will further reduce energy usage (up to 90–95%). Activate and optionally sets itself automatically (Automatic Level Determination, ALD, function).
- Ejector and control section can be ordered as a split to get to position the lightweight ejector close to point of suction even faster response times.

**Ultimate flexibility thanks to endless configuration possibilities**

- Design your own tailor made vacuum generator as piCOMPACT® is built to order.
- Pay only for needed performance and features.
- Re-configure piCOMPACT®23 SMART, both standard and IO-Link, to perfectly fit the application and programming needs. Standard version is re-configurable on an easy-to-use display menu.

**Easy to use, install and set-up with “plug-and-play”**

- Manifold mounts available with common feed and exhaust ports. Reduce cost of installation.
- Up to 3 vacuum ports can be selected per unit. Facilitates routing of hoses.
- User-friendly GUI (Graphical User interface), no risk for setting up incorrectly. Analog and digital outputs available.
- Optional Automatic Timer blow-off (ATBO) – will eliminate need to control blow-off and save on outputs from PLC or I/O block.
- Modular design make service and maintenance easy and low-cost.

**piCOMPACT® 10X**

- Ultra-short valve switching time, <5ms, makes the unit suitable for very high speed applications, >1000 picks per minute is possible.
- Special version for clean room environment.
- Common electrical D-sub connector for manifold mounted units makes installation easier.

piCOMPACT®23 SMART standard display

piCOMPACT®23 SMART IO-Link display

**piCOMPACT®23 SMART**

- Includes the new patented COAX® generation 2 (SX).
- Optional leakage warning signal facilitates preventive service/maintenance.
- Possible to remote control the activation of several functions such as ES, ACM and PDO (Process Data Out).
- Available with a unique possibility to max and set PNP-NPN for input and output signals.
- Self-Adhesion Control (SAC), a useful and patented feature to automatically avoid unwanted vacuum in the cups during positioning.
- Available with IO-Link, a generic data communication standard for sensors and actuators that will communicate with all type of higher level bus systems. For piCOMPACT®23 SMART, more sensor data and other smart diagnostic features have been added to the IO-Link Device Description supporting predictive maintenance and trend for smarter factories in general (read more on page 9).
- IP65 classified.
- Available with separate power domains for sensors and valves (actuators), both for standard and IO-Link units. This version allows sensors and piCOMPACT®23 SMART to stay “active” when entering a robot cell without the risk of activating any actuator/valve and risk for human injuries.
- New “click-in” rail/mounting plates for 1 up to 4 units where each unit easily and separately can be dismounted. Common feed port for compressed air.

# Technical features

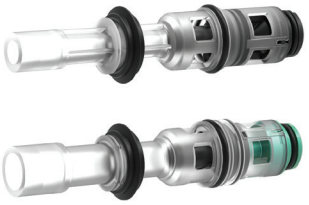
P Patented | PP Patent pending | 10X 23 Available for piCOMPACT® 10X/23 | 10X Not available for piCOMPACT® 10X

## Dust-proof design ensures worry-free operation

### COAX® Generation 2

P 10X 23

State-of-the-art multistage COAX® generation 2 ejector nozzles, SX12 and SX42, are made of a fully dust proof design where flap and check valves are separated. With reduced outer dimension the user of piCOMPACT®23 SMART will enjoy a new further improved COAX® ejector characteristic (SX) that combines high vacuum flow and fast response times with high vacuum levels, down to 27 -inHg.

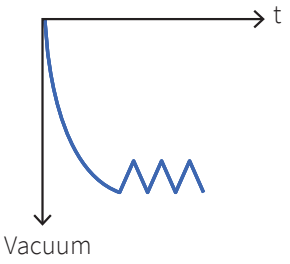


## Uptime and operational savings

### Energy saving (ES)

10X 23

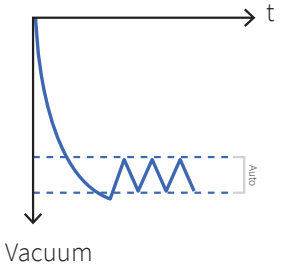
Energy saving (ES), the piCOMPACT® SMART generator will automatically shut off when vacuum is no longer needed in a sealed or semi-sealed system. The shut-off level and hysteresis (how much vacuum level can drop before restart) is fully adjustable. The function can save up to 90–95% of compressed air usage in a cycle. Selectable function.




### Automatic Level Determination (ALD) of ES system

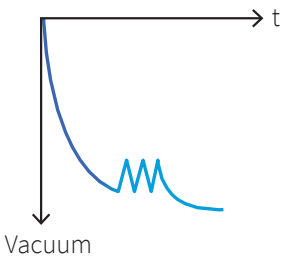
10X 23

Automatic Level Determination (ALD), a feature related to the ES. ALD will automatically set optimized ES shut-off and restart levels in every cycle based on actual conditions. When purchasing a piCOMPACT® SMART with ES, the default mode is ALD to secure that ES is really being used. ALD shall be de-activated manually. Onboard function when selecting ES.



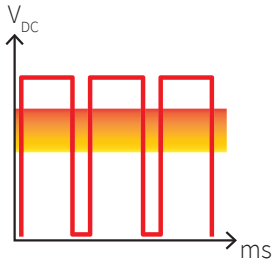
## Automatic Condition Monitoring (ACM)

Automatic Condition Monitoring (ACM), also a feature related to ES. ACM will turn off the ES function in case of significant leakage in the system to protect the valves from going on/off rapidly and to prolong valve lifetime. A leakage warning output signal is available when ACM is triggered. The Leakage warning is a great aid for preventive maintenance and increased uptime. Onboard function when selecting ES.




## Adaptive Pulse Width Modulation (A-PWM)

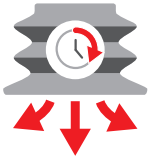
Adaptive Pulse Width Modulation (A-PWM) reduces the power to the valves when they are in holding position and allows for full power when switching the valves to achieve as quick a response as possible. The adaptive part allows for fluctuating voltage without impacting functionality. A-PWM will significantly reduce power consumption, generate a lower temperature, increase robustness of the installation and extend life time of unit. Onboard function.




# User friendly, cost savings, increased throughput

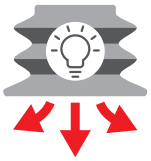
## Automatic Timer Blow-off (ATBO)

Automatic Timer Blow-off (ATBO) means that the compressed air release function will start automatically after the vacuum valve is turned off. The blow-off duration is set with a timer (0–3 sec) integrated on the piCOMPACT® SMART. ATBO will save on I/Os needed to control piCOMPACT® SMART, can be of great importance if several units are connected to one controller. It makes programming easer and can be used to fine-tune blow-off duration to cut cycles time by a person without software skills. Selectable function.



## Intelligent Blow-off (IBO)

Intelligent Blow-off (IBO) is an alternative to save compressed air for part release, in many vacuum applications the big air consumer. The blow-off duration is optimized and blow-air will automatically stop when all vacuum is removed from the system. IBO is a self-learning function and only needs a few cycles to optimize blow-off duration for different system volumes. In the initial cycles, an extra blow-off puff can be presented to fully remove vacuum.

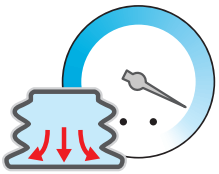


P Patented  PP Patent pending  10X 23 Available for piCOMPACT® 10X/23  10X Not available for piCOMPACT® 10X

## Self Adhesion Control (SAC)

PP 10X 23

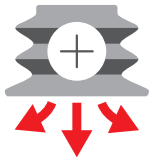
Self Adhesion Control (SAC) automatically removes “unwanted” vacuum with short blow puffs if the piCOMPACT® SMART vacuum control valve has not been activated. Unwanted vacuum is typically created by an ergonomic vacuum handling device/manipulator where a vacuum check/non-return valve is included. For example, ejectors with ES feature have a check/non-return valve inside. When suction cups are applied against a sealed object, the weight of the handling device compresses the cups and create a small bonding force. The force can be enough to move the object in an uncontrolled manner and even cause personal injuries if glass or metal sheets with sharp edges are handled. SAC will eliminate this problem completely. Selectable function.



## Amplified Blow-off (ABO)

PP 10X 23

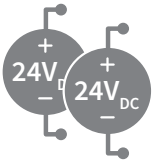
An internal valve will automatically close the flow-path to the ejector cartridge(s) during blow-off. 100% of the compressed air during blow-off goes to the cup(s) and gives a very strong and efficient part release. A recommended function for large sealed systems. Amplified blow-off (ABO) will cut cycle times. The dust-proof design of the internal valve is patented and tested for over 50 million cycles. Selectable function.



## Separate Power Domains (SPD)

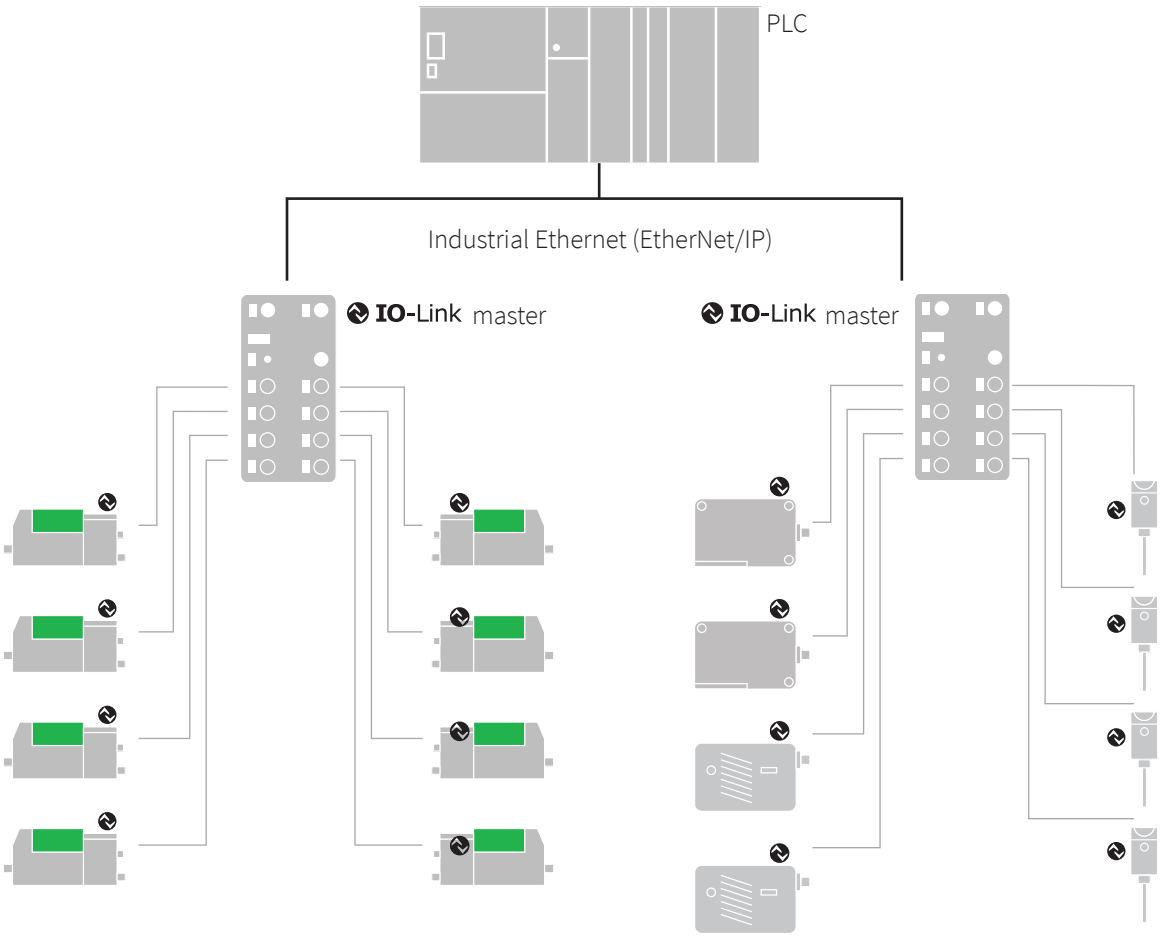
10X 23

piCOMPACT®23 SMART with “separate power domains” enables fully independent power supplies for actuators (the valves) and onboard sensors. The sensor power is also used as main power for the unit including the OLED display. The separation is done by optocouplers. In case of short circuit, power supply for actuators and sensors needs to be separated in robot cells and machines with high degree of safety, for instance to protect humans during an E-stop situation when power needs to be available to sensors and displays for easy troubleshooting/maintenance.



# Generic communication link – new era of smart factories

The piCOMPACT®23 SMART is available with IO-Link, which fits any type of fieldbus. IO-Link is the first worldwide standard (IEC 61131-9) for IO technology used for sensor and actuator communication. The powerful point-to-point communication is based on 3-wire connection. Offering fieldbus-independence, IO-Link is really a further development of the existing, tried-and tested connection technology for sensors and actuators.

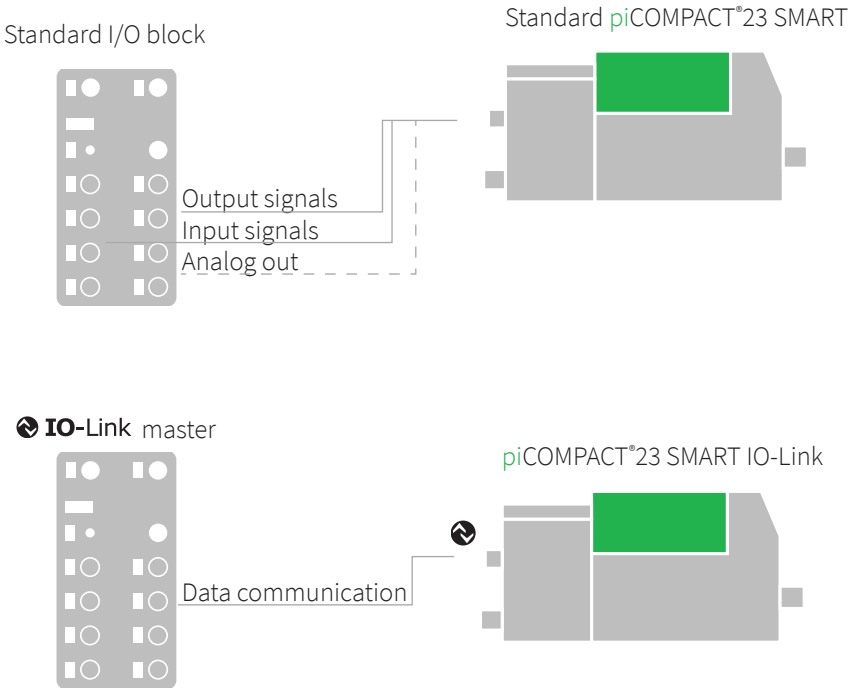



8× piCOMPACT®23 SMART IO-Link

8× IO-Link Sensors

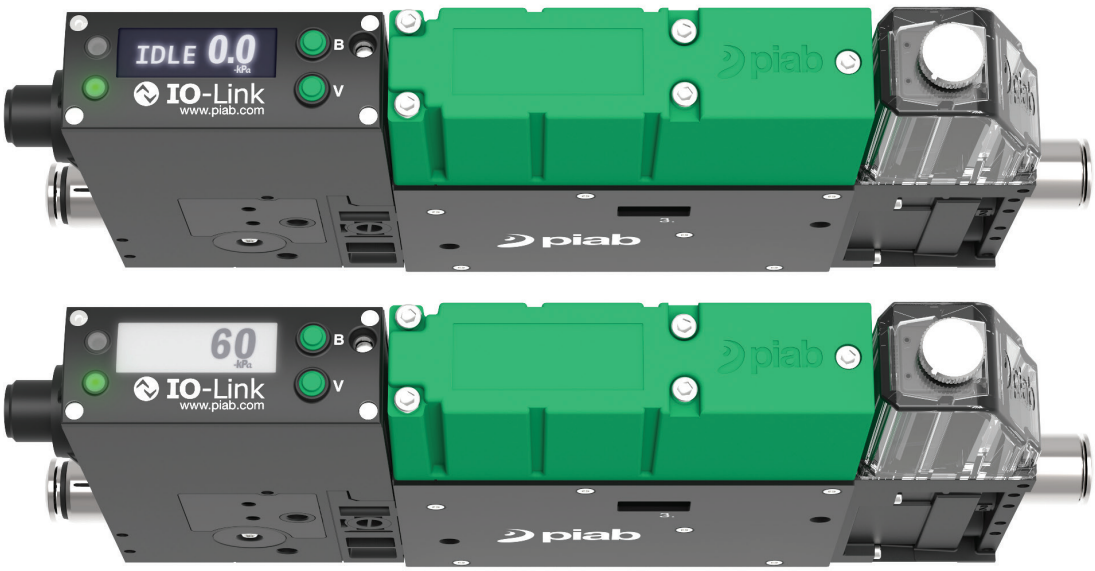
**Why piCOMPACT®23 SMART with IO-Link**

- Simpler communication – IO-Link is a powerful and secure, yet easy to understand protocol. IO-Link provides significantly more information, configurability and control than $24V_{DC}$ or analog communication.
- International, open and independent standard with great industry support.
- IO-Link works with any fieldbus as it acts as a gateway. The IO-Link Master provides a universal solution for protocols such as EtherNet/IP, PROFINET, PROFIBUS and DeviceNet. You can easily integrate the IO-Link Master into an industrial network with existing and new installations.
- Improved operating efficiency with simple parametrization. IO-Link's ability to identify devices and provide access to the devices' parameters gives you much more freedom and flexibility to set-up the piCOMPACT®23 SMART according to specific needs. The automated parameter setting ensures no parameter data loss when device is being replaced.
- Simple to install – No need for multiple of IO's when separating/handling input, output and analog signals. The IO-Link master will handle all these signals, significantly reducing the amount of cabling.
- Smart diagnostics functions and a lot of sensor data supports **predictive maintenance** which improves productivity with less unplanned down time. piCOMPACT®23 SMART IO-Link fully supports the idea of having a smart factory. For example, it provides data and diagnostics such as on-board



system temperature & voltage, max accelerations, cycle time changes, vacuum pressure, leakage warning and much more. The IODD for piCOMPACT®23 SMART IO-Link also include programming safety and calibration features.

- Easy set-up – Piab's IO Device Description software tool (IODD) for piCOMPACT®23 SMART is intuitive and easy to understand.
- Standard electrical connection, M12, compatible with low cost standard cables.
- Only the piCOMPACT®23 SMART IO-Link version has a Patented feature where a trigger "signal" (output data) is received when Blow-off is Completed (BOC) for units with integrated automatic blow-off functions such as the Automatic Timer Blow-off or Intelligent Blow-off. The trigger will make it very easy to always program for fastest possible cycle time.
- The piCOMPACT®23 SMART IO-Link Vacuum switch has a bright and easy to read OLED display. The display inverts background and text colors when vacuum part present signal (S1) is reached, thereby also functioning as a visual vacuum OK indicator. It also comes with manual override valve buttons which require power on.



www.sar.biz

# SAR – A robot integrator saves 50% of air costs!

SAR integrates robots with compressed air driven vacuum pumps (single stage ejector). They contacted Piab to find solutions in areas which could be improved by our products. With Piab's products, the current set-up would reduce air usage and avoid pressure drops in the tubing. The customer said that they now have better margins to their production goal and can run the robot as fast as they need.

**Solution**

We proposed the piCOMPACT® 10X with an M8 connection. The customer installed 24 units instead of the 16 he had from the competitor. As the piCOMPACT® footprint is so small they actually used the same area. The piCOMPACT® has the world's most efficient cartridge inside – the COAX® Cartridge. This meant that the air tubing installed in the robot worked perfectly and could supply the need of all 24 units in a satisfactory way. The piCOMPACT® only needs 50 psi of air pressure to operate nominally.

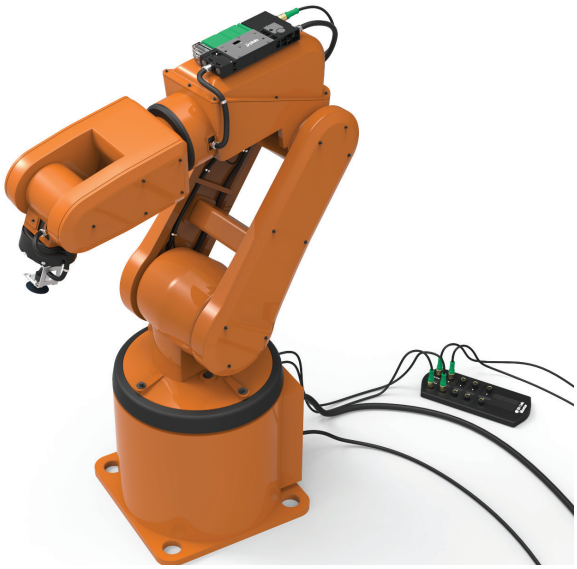
There was also one more thing, as the sensors in the piCOMPACT® 10X were so much faster than the competitor, it meant that the signal back to the robot was so much faster than the competitor's and that also sped up the cycle for increased production.

**Result**

The customer could use the robot to its full potential and still save 50% on air. Also, as the M8 connection was used, the installation time was extremely fast as it only needed one wire instead of two (competitor) wires per pump. One additional benefit was that the working conditions improved with the decreased noise level with piCOMPACT® 10X.

# Applications

Examples on where and why to use the piCOMPACT® 10X or piCOMPACT®23 SMART.



## Electronics/semi-conductor

10X

piCOMPACT® 10X has the performance, features and a 10mm design which makes it perfectly suitable for pick and place, sorting and test/inspection of components for printed circuit boards (PCB).

The ultra-high speed valves and COAX® technology can help improve performance of Surface Mount Devices (SMD) using SMT (surface mount technology). Cycle times well below 50ms is reachable in a SMD with piCOMPACT® 10X. The fast switching valves are equipped with Adaptive Pulse Width Modulation (A-PWM) technology to reduce heat generation and extend life, >100 million cycles guaranteed.


A-PWM


ABO

## Robotics

10X 23

The piCOMPACT® SMART family is tailor made for robot based vacuum handling applications. It comes with the performance, low-weight, installation flexibility, product reliability and special features that the robot industry has been asking for to improve productivity and profitability.


ES


ALD


ACM


A-PWM


ATBO


IBO


ABO


SAC

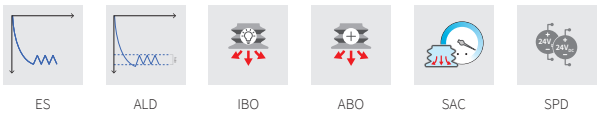

PVH


SPD


IO-Link

## Automotive

Unbeaten performance, high reliability and new special features on piCOMPACT®23 SMART will exceed the tough requirements of the automotive industry. The amplified blow-off (ABO) gives an efficient and super-strong, yet air-saving blow-off even in vacuum systems for very large car parts. The bi-stable (latching) on/off valve in combination with a check valve secures safety and air-savings in case of an emergency-stop. Integrated diagnostics, such as leakage warnings, and automatic functions to minimize energy consumption as well as high level communication (IO-Link) are available options appreciated by automotive customers. piCOMPACT®23 SMART is also available with separate power domains for sensors and valves (actuators). This version allows sensors and piCOMPACT® SMART to stay “active” when entering a robot cell without the risk of activating any actuator/valve and risk for human injuries.



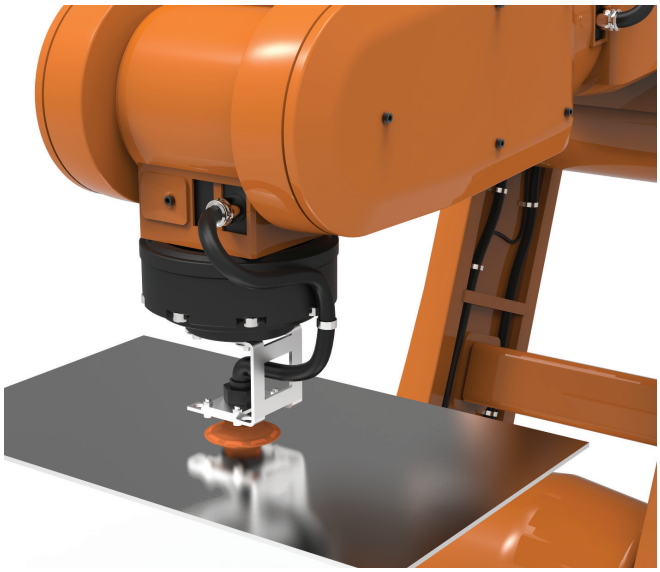
ES ALD IBO ABO SAC SPD

IO-Link

## Wood Industry

The piCOMPACT®23 SMART is the first all-in-one ejector with an integrated and easy-to-clean vacuum + compressed air filter. The new COAX® generation 2 ejectors have been developed to withstand the dirtiest environment without risk for clogging and reduced performance. Users of piCOMPACT®23 SMART in the wood industry will experience a reliable and high performing unit which will reduce downtime and cost for service.

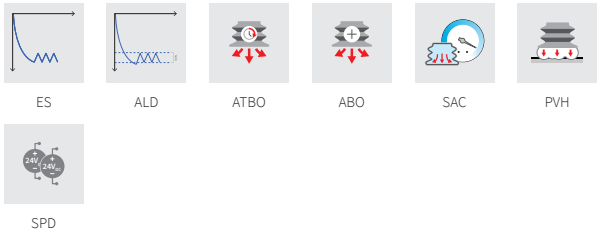
ACM ATBO ABO

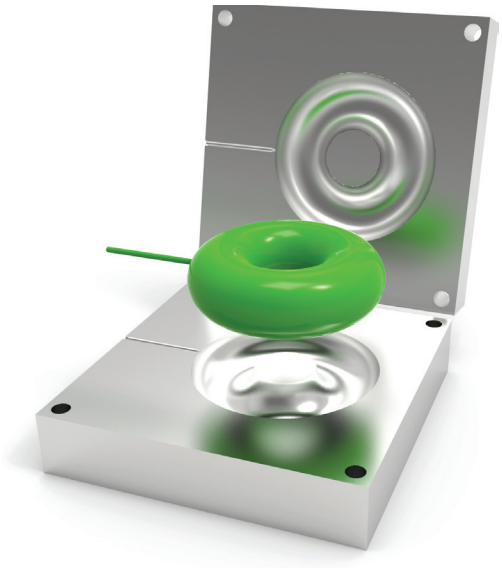


## Metal sheet and glass

10X 23

Loading and unloading of glass or metal sheets are typical applications where air/energy savings are justified. piCOMPACT® 10X and 23 are loaded with air saving functions, both when generating vacuum but also during blow-off, which will be automatically activated and even automatically initiated if customer forget to set-up.

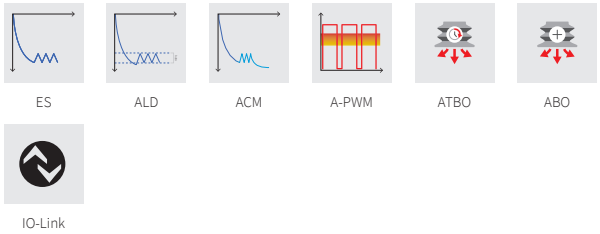


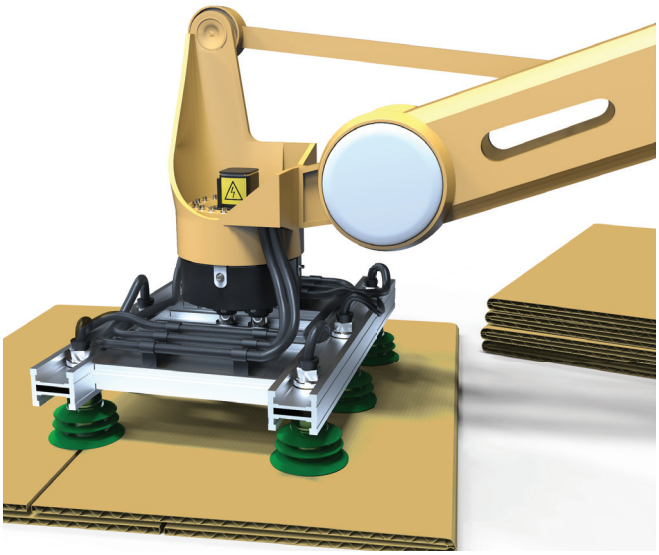



## Plastic injection moulding

10X 23

piCOMPACT® 10X and piCOMPACT®23 SMART are both suitable for injection molding automation, removal and trimming of very small to large parts, such as automobile bumpers. The lightweight, flexible and configurable piCOMPACT® SMART makes it easy to manifold mount several units and even split the ejector section from the control section. That will create attractive solutions for a high degree of flexibility, i.e. handle different plastic parts with same gripper tool, and be able to mount in tight spaces. The special function Automatic Timer Blow-Off (ATBO) will help save on outputs from PLC or I/O block which can be an issue if several units are used on same robot for gripper flexibility.

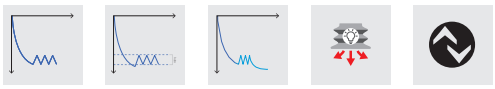




## Packaging

10X 23

Robots are widely used for palletizing cardboard boxes, top-loading of cases and bag handling. piCOMPACT® units have the vacuum performance/flow to handle leaking and semi-leaking materials better than any other ejector on the market. That will improve the number of picked parts per minute and productivity. With features such as valve protection (Automatic Condition Monitoring, ACM), air/energy-saving functions can still be used for common packaging (non-sealed) materials. The dust/dirt proof piCOMPACT® design, which includes a vacuum filter and new dust proof COAX® cartridges fits into the packaging environment and contributes to less down time and easy maintenance. Manifold mounting option facilitates installation of several units for zoning purposes, common within palletizing.

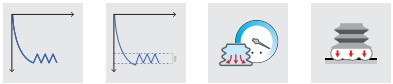


ES ALD ACM IBO IO-Link

## Ergonomic Manipulators

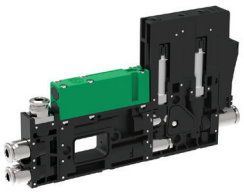
10X 23

For ergonomic manipulators, where personal security and ease of use are crucial parameters, piCOMPACT®23 SMART offers you a new patented function SAC (Self Adhesive Control), an air-tight vacuum check valve and a special design “pre-vacuum hovering” (PVH) blow-off function. SAC eliminates unwanted vacuum in cups during positioning and eliminates risk for injuries. The pre-vacuum hovering blow facilitates positioning of the cup and speeds up handling time.



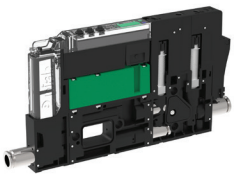
ES ALD SAC PVH

# piCOMPACT® examples

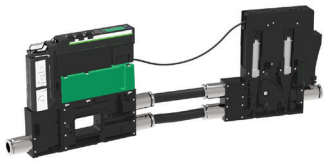
piCOMPACT® 10X Single unit without filter

Height 2.79 in Length 4.95 in
Width 0.39 in Weight 3.39 oz



piCOMPACT® 10X Single unit

Height 2.82 in Length 5.15 in
Width 0.39 in Weight 3.49 oz



piCOMPACT® 10X Split units

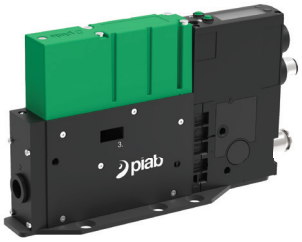
Height 2.79 in Length 6.46 in
Width 0.39 in Weight 4.62 oz

piCOMPACT® 10X four stacked units

Height 2.82 in Length 5.77 in
Width 2.87 in Weight 1.14 lb

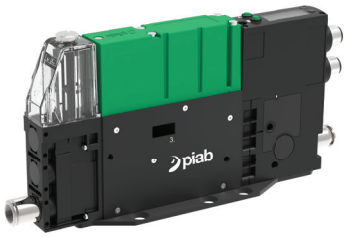
piCOMPACT® 10X eight stacked units

Height 2.82 in Length 5.77 in
Width 4.44 in Weight 2.04 lb



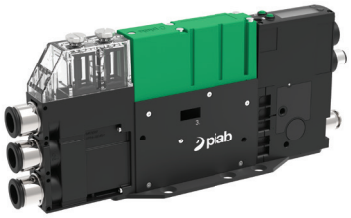
piCOMPACT®23 SMART Single unit without filter

Height 4.09 in Length 6.98 in
Width 3.04 in Weight 15.63 oz



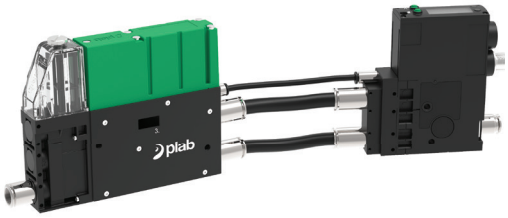
piCOMPACT®23 SMART with opto coupling

Height 4.09 in Length 8.4 in
Width 0.98 in Weight 14.5 oz



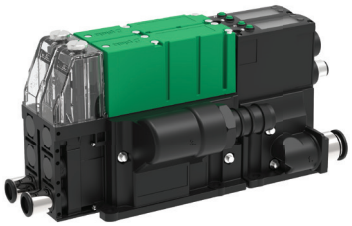
piCOMPACT®23 SMART Single unit with large filter

Height 4.09 in Length 9.5 in
Width 0.98 in Weight 1.12 lb



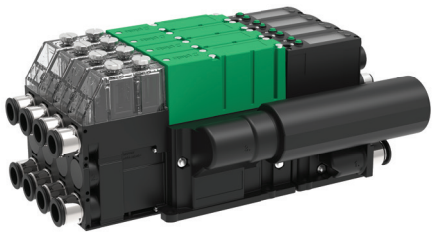
piCOMPACT®23 SMART Split units

Height 4.13 in Length 10.3 in
Width 1.41 in Weight 1.2 lb



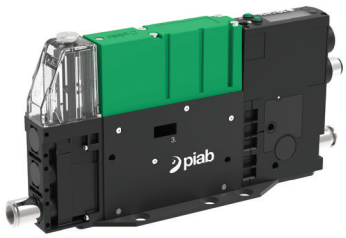
piCOMPACT®23 SMART two stacked units with central exhaust

Height 4.13 in Length 8.68 in
Width 3.95 in Weight 2 lb



piCOMPACT®23 SMART four stacked units with central silencers

Height 4.09 in Length 9.96 in
Width 7.2 in Weight 4.61 lb



piCOMPACT®23 SMART Single unit with small filter

Height 4.13 in Length 8.34 in
Width 0.98 in Weight 14.71 oz

# Technical data

## piCOMPACT® 10X

### Pneumatic technical information

| Description | Unit | COAX® | | | |
|---|---|---|---|---|---|
| | | Bi03-2 ×1 | Bi03-2 ×2 | Xi2.5-2 ×1 | Xi2.5-2 ×2 |
| Optimum feed pressure, pump | psi | 31.2 | 34.5 | 74.5 | 76.9 |
| Optimum feed pressure, nozzle | psi | 29.0 | 29.0 | 72.5 | 72.5 |
| Max. vacuum at optimum pressure | -inHg | 24.2 | 24.2 | 26.9 | 26.9 |
| Air consumption at optimum pressure | scfm | 0.297 | 0.593 | 0.275 | 0.551 |
| Max. vacuum flow at optimum pressure | scfm | 0.445 | 0.720 | 0.487 | 0.784 |
| Flow, blow off at 87 psi | scfm | 2.14 | | | |
| | | Si02-2 ×1 | Si02-2 ×2 | Ti05-2 ×1 | Ti05-2 ×2 |
| Optimum feed pressure, pump | psi | 87.6 | 89.9 | 62.4 | 72.5 |
| Optimum feed pressure, nozzle | psi | 87.0 | 87.0 | 58.0 | 58.0 |
| Max. vacuum at optimum pressure | -inHg | 22.1 | 22.1 | 24.8 | 24.8 |
| Air consumption at optimum pressure | scfm | 0.233 | 0.466 | 0.487 | 0.974 |
| Max. vacuum flow at optimum pressure | scfm | 0.233 | 0.890 | 0.657 | 1.12 |
| Flow, blow off at 87 psi | scfm | 2.14 | | | |

### General electric characteristics

| Description | |
|---|---|
| Supply voltage | 24 ±10% V |
| Current consumption | 100/63 mA (Valve pull/hold at $24V_{sys}$) |

### Valve module

| Description | |
|---|---|
| Function on/off | Normally closed (NC/NC 2) or normally open (NO) |
| Function blow-off | Normaly closed (NC) |
| Air consumption blow-off/release | 0–2.14 scfm at 87 psi |
| Manual override | Yes, non-locking push style |

### Other data

| Description | |
|---|---|
| Temperature range | 14–122°F |
| Materials | PA, NBR, SS, POM, TPE, PVC |

# Technical data

## piCOMPACT®23 SMART

### Pneumatic technical information

| Description | Unit | COAX® | | | |
|---|---|---|---|---|---|
| | | SX12 ×1 | SX12 ×2 | SX42 ×1 | SX42 ×2 |
| Optimum feed pressure, pump | psi | 73.2 | 74.7 | 68.2 | 78.3 |
| Optimum feed pressure, nozzle | psi | 72.5 | 72.5 | 62.4 | 62.4 |
| Max. vacuum at optimum pressure | -inHg | 25 | 25 | 26.6 | 26.6 |
| Air consumption at optimum pressure | scfm | 1.52 | 3.05 | 4.68 | 9.36 |
| Max. vacuum flow at optimum pressure | scfm | 2.58 | 5.16 | 7.33 | 14.7 |
| Flow, blow off at 87 psi | scfm | 0–11.7 | | | |

### General electric characteristics

| Description | |
|---|---|
| Supply voltage | 24 ±10% V |
| Current consumption | 100/63 mA (Valve pull/hold at $24V_{sys}$) |

### Technical data, IO-Link

| Description | Unit | |
|---|---|---|
| Min. cycle time | ms | 2.5 |
| Transfer type | Baud rate | 230k (COM3) |
| IO-Link revision | | 1.1 |

### Valve module

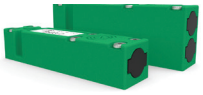
| Description | |
|---|---|
| Function on/off | Normally closed (NC*) or normally open (NO) |
| Function blow-off | Normally closed (NC) |
| Air consumption blow-off/release | 0–11.7 scfm at 87 psi |
| Manual override | Yes, non-locking push style |

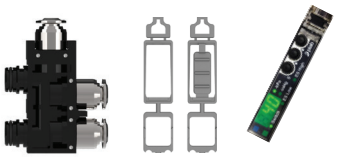
* NC failsafe version is available (power off - NO). In running mode the valve behaves like a NC valve but if power is cut the valve goes into NO-mode leaving compressed air for continuous vacuum.

### Other data

| Description | |
|---|---|
| Temperature range | 14–122 °F |
| Materials | PA, NBR, SS, POM, TPE, PVC, Brass, Al |

# piCOMPACT® 10X – customer code





| piCOMPACT® | |
|---|---|
| Code | |
| PC | |

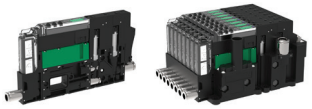
| Ejector performance | |
|---|---|
| Code | Vacuum characteristics |
| L | Low feed pressure |
| S | High vacuum flow |
| X | Extra vacuum level |
| T | Extra high vacuum flow |

| Ejector performance | |
|---|---|
| Code | Nozzle model |
| MC | MICRO (0.50–0.67 scfm) |
| **Code** | **Nozzle rows** |
| 1 | Single |
| 2 | Double |

| Working enviroment | |
|---|---|
| Code | Chemical resistance |
| S | Standard |

| Functionality | |
|---|---|
| Code | Control functions |
| A | Electrical ES, vac and blow off |
| B | Electrical ES, vac and automatic blow off |
| C | Vac and blow off |
| D | Vac and automatic blow off (ATBO) |
| E | Vacuum on/off (vac) |
| **Code** | **Non-return valve** |
| B | Without non-return valve |
| A | With non-return valve |
| **Code** | **Vacuum sensing** |
| A | Display, analog and digital output |
| X | No vacuum sensing |

| Vacuum connect module | |
|---|---|
| Code | Vacuum filter |
| S | Vacuum filter 50 µm |
| X | No vacuum filter |
| **Code** | **Vacuum port(s)/channel** |
| 1 | 1 vacuum port |
| 2 | 2 vacuum ports |
| 3 | 3 vacuum ports |
| **Code** | **Vacuum connection(s)** |
| 4 | Ø4 (5/32") push-in connector(s) |
| 6 | Ø6 push-in connector(s) |
| 14 | Ø1/4" push-in connector(s) |



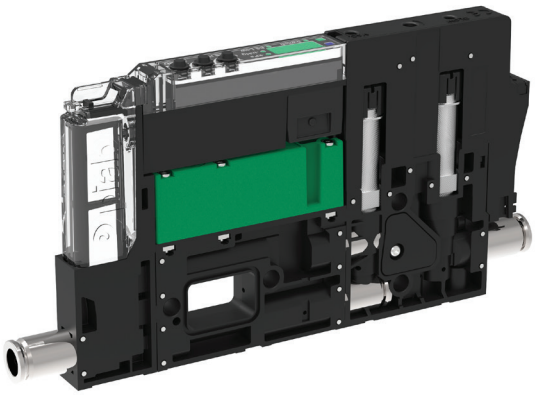
| Single unit or manifold mount | |
|---|---|
| **Code** | **Number of channels** |
| 1 | 1 channel |
| 2 | 2 channels |
| 3 | 3 channels |
| 4 | 4 channels |
| 5 | 5 channels |
| 6 | 6 channels |
| 7 | 7 channels |
| 8 | 8 channels |
| **Code** | **Split control from vacuum** |
| X | No split |
| A | Split Ø4 |
| B | Split Ø6 |
| C | Split Ø1/4” |

| Air supply | |
|---|---|
| **Code** | **Air connections** |
| 4 | Ø4 (5/32”) push-in connector |
| 6 | Ø6 push-in connector |
| 14 | Ø1/4” push-in connector |
| 8 | Ø8 (5/16”) push-in connector |
| 26 | 2 x Ø6 push-in connectors |
| 214 | 2 x Ø1/4” push-in connectors |
| 28 | 2 x Ø8 (5/16”) push-in connectors |

| Mounting | |
|---|---|
| **Code** | **Options** |
| EC | Ejectors stacked with central exhaust |
| EN | Ejectors stacked with central silencer |
| EI | Ejector(s) for individual mounts |

| Electrical properties | |
|---|---|
| **Code** | **Valve configuration** |
| CC | NC vacuum + NC blow off |
| OC | NO vacuum + NC blow off |
| RC | NC 2/2 vacuum + NC 2/2 blow off |
| C | NC vacuum |
| O | NO vacuum |
| R | NC 2/2 vacuum |
| **Code** | **Electrical input/output** |
| P | PNP |
| N | NPN |
| **Code** | **Electrical interface** |
| 6 | 6p connector(s) |
| A | M8 6p connector(s) |
| 26 | HD D-sub 26p connector |
| 44 | HD D-sub 44p connector |

PC . S . MC2 . S . AAA . S16 . 1X . 6 . EI . CCP6



# piCOMPACT®23 SMART – customer code

| piCOMPACT® |
|---|
| Code |
| PC |

| Functionality | |
|---|---|
| Code | Vacuum characteristics |
| F | High vacuum performance |

| Functionality | |
|---|---|
| Code | Nozzle model |
| 12 | SX12 (2.59–5.18 scfm) |
| 42 | SX42 (7.33–14.6 scfm) |
| **Code** | **Nozzle rows** |
| 1 | Single |
| 2 | Double |

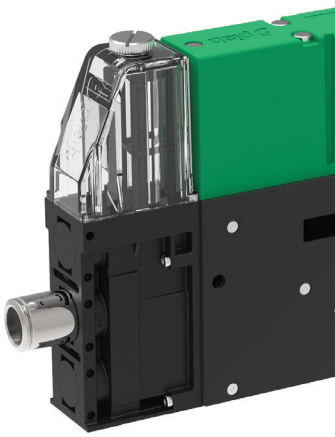
| Working enviroment | |
|---|---|
| Code | Chemical resistance |
| S | Standard |

| Functionality | |
|---|---|
| Code | Communication interface |
| | Standard input/output |
| H | IO-Link pre-configured |
| K | Standard input/output and IO-Link ready |

| Vacuum connect module | |
|---|---|
| Code | Vacuum filter |
| S | Vacuum filter 50 µm |
| F | 2× Vacuum filter 50 µm |
| X | No vacuum filter |
| Z | No vacuum filter including sensing port |
| **Code** | **Vacuum ports(s) / channel** |
| 1 | 1 vacuum port |
| 2 | 2 vacuum ports |
| 3 | 3 vacuum ports |
| **Code** | **Vacuum connection(s)** |
| 8 | Ø8(5/16) push-in connector(s) |
| P1 | Ø10 push-in connector(s) |
| P2 | Ø3/8" push-in connector(s) |
| P3 | Ø12 push-in connector(s) |
| P4 | Ø1/2" push-in connector(s) |
| H1 | 12mm / 1/2" I.D. barb connector |

| Single unit or manifold mount | |
|---|---|
| Code | Number of channels |
| 1 | 1 channel |
| 2 | 2 channels |
| 3 | 3 channels |
| 4 | 4 channels |
| **Code** | **Split control from vacuum** |
| X | No split |
| B | Split Ø6 |
| C | Split Ø1/4" |
| D | Split Ø8 |
| E | Split Ø10 |
| F | Split Ø3/8" |

| Air supply | |
|---|---|
| Code | Air connections |
| 6 | Ø6 push-in connector |
| 14 | Ø1/4" push-in connector |
| 8 | Ø8(5/16") push-in connector |
| P1 | Ø10 push-in connector |
| P2 | Ø3/8" push-in connector |
| P3 | Ø12 push-in connector(s) |
| P4 | Ø1/2" push-in connector(s) |
| 2P1 | 2× Ø10 push-in connector(s) |
| 2P2 | 2× Ø3/8" push-in connector(s) |
| 2P3 | 2× Ø12 push-in connector(s) |
| 2P4 | 2× Ø1/2" push-in connector(s) |
| QC | Pre-configured for Quick connect plate |



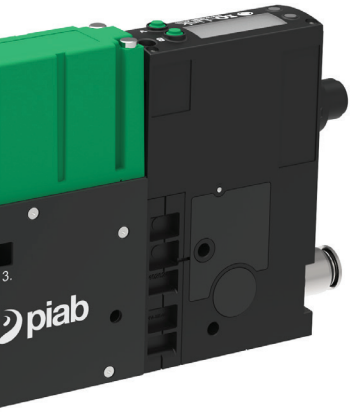

| Functionality | |
|---|---|
| **Code** | **Control functions** |
| A | Electrical ES, vac and blow-off |
| B | Electrical ES, vac and automatic timer based blow-off (ATBO) |
| F | Electrical ES, vac, intelligent blow-off (IBO) |
| C | Vac and blow-off |
| D | Vac, automatic timer based blow-off (ATBO) |
| G | Vac and intelligent blow off (IBO) |
| E | Vacuum on/off (vac) |
| | IO-Link pre-configured |

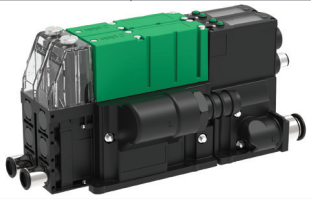
| **Code** | **IO-Link Energy saving type** |
|---|---|
| 1 | ES pre-set on 22.1 -inHg |
| 2 | ES Automatic level determination (ALD) |
| 3 | ES pre-set on 22.1 -inHg with ALD backup |
| 0 | No ES |
| **Code** | **IO-Link Blow-off type** |
| 1 | Automatic timer based blow-off (ATBO) |
| 2 | Intelligent blow off (IBO) |
| 0 | External control |
| **Code** | **IO-Link Additional functions** |
| 1 | Self adhesion control (SAC) |
| 0 | No IO-Link additional functions |

| **Code** | **Additional vacuum functions** |
|---|---|
| | No extra vacuum control |
| Z | Self adhesion control (SAC) |

| **Code** | **Internal check valves** |
|---|---|
| B | Without non-return valve |
| A | With non-return valve |
| C | Amplified blow-off, without vacuum non-return valve (ABO) |
| D | Amplified blow-off, with vacuum non-return valve (ABO) |
| **Code** | **Vacuum sensing** |
| A | Display, analog and digital output [-kPa] |
| B | Display, 2× digital outputs [-kPa] |
| C | Display, leakage warning and digital output [-kPa] |
| D | IO-Link display [-kPa] |
| E | Display, analog and digital output [-inHg] |
| F | Display, 2× digital outputs [-inHg] |
| G | Display, leakage warning and digital output [-inHg] |
| H | IO-Link display [-inHg] |
| X | No vacuum sensing |

PC . F . 122 . S . H111AD . S1P1 . 1X . 8 . EJ . CCCC

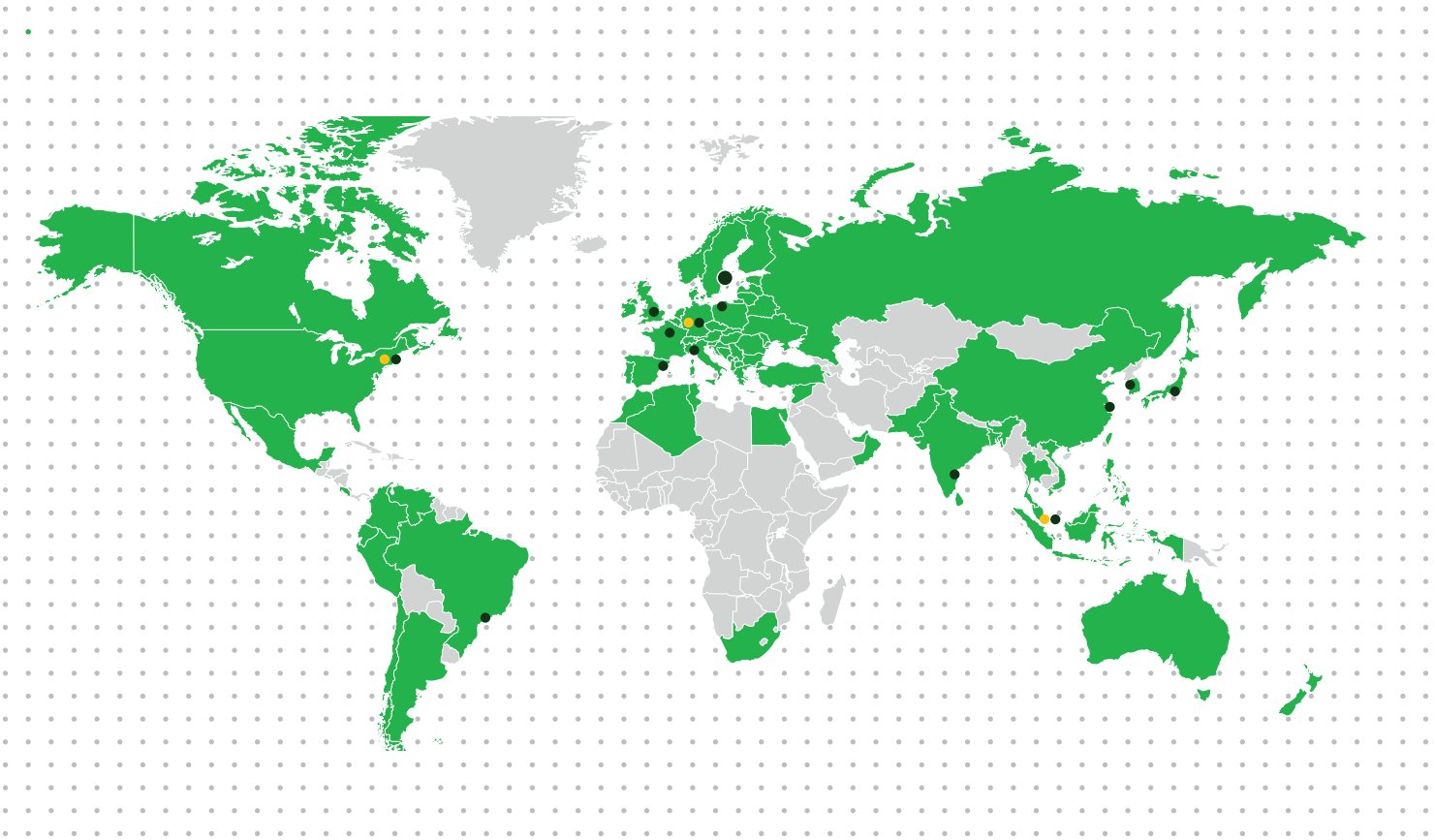


| Mounting | |
|---|---|
| **Code** | **Ejector options** |
| EC | Ejectors stacked with central exhaust |
| EN | Ejectors stacked with central silencer |
| EJ | Ejector(s) for individual mounts, integrated silencer |
| EK | Ejector(s) for individual mounts, top mounted silencer |
| EL | Ejector(s) for individual mounts, central exhaust |
| EM | Ejector(s) for individual mounts, central silencer |


| Electrical properties | |
|---|---|
| **Code** | **Valve configuration** |
| CC | NC vacuum + NC blow off |
| OC | NO vacuum + NC blow off |
| C | NC vacuum |
| O | NO vacuum |
| AC | Bi-stable vacuum valve + NC blow off |
| **Code** | **Electrical input/output** |
| A | PNP/PNP or NPN/NPN |
| B | Mixed mode |
| C | IO-Link |
| **Code** | **Electrical interface** |
| B | M12 8p connector(s) |
| C | M12 5p connector(s) |
| E | M12 5p connector(s), separate power domains |
| F | 2 × M12 4p connectors, separate power domains |

Art. No. 0207298, Rev.02 Piab AB, 2018-11



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