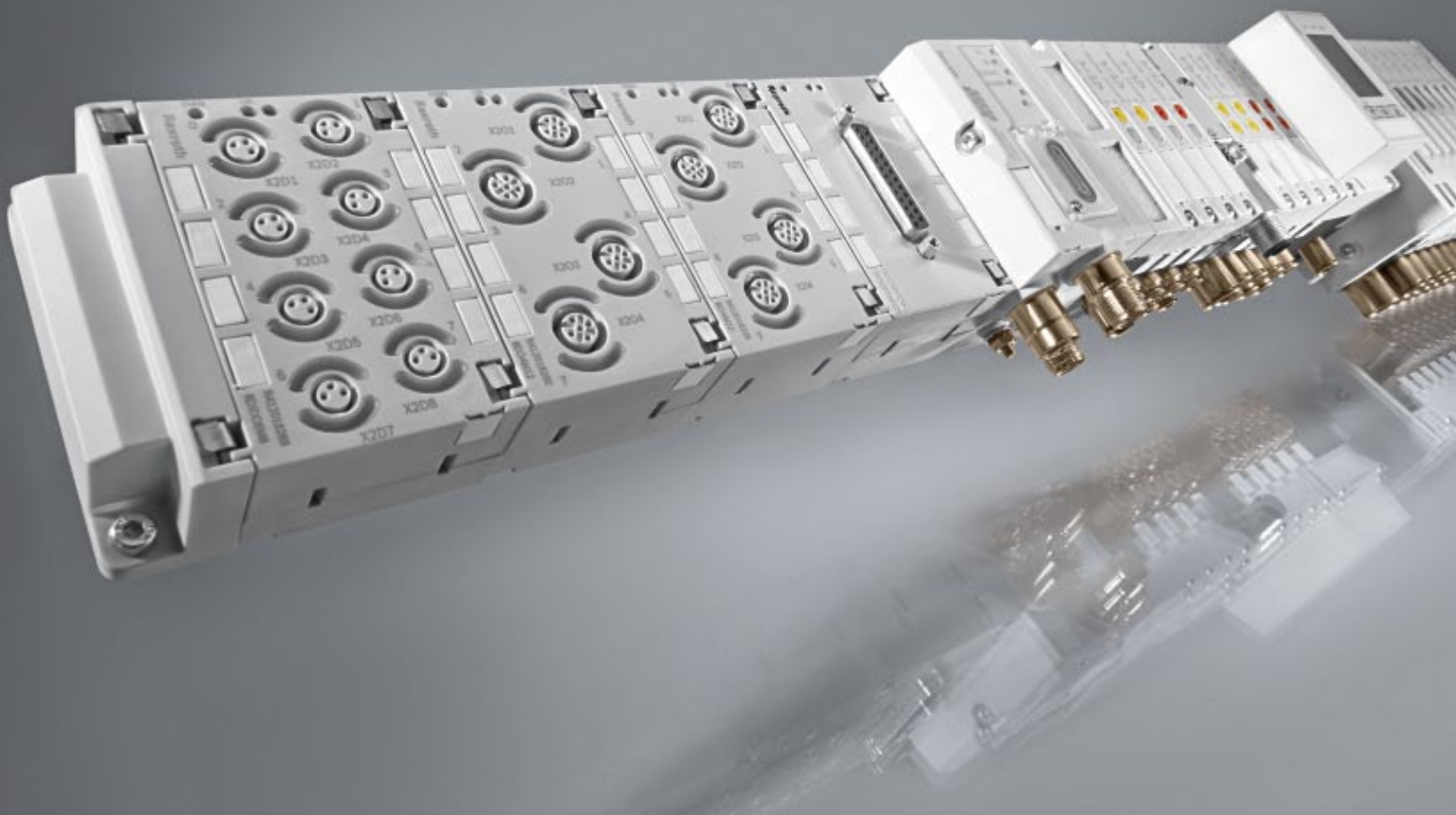


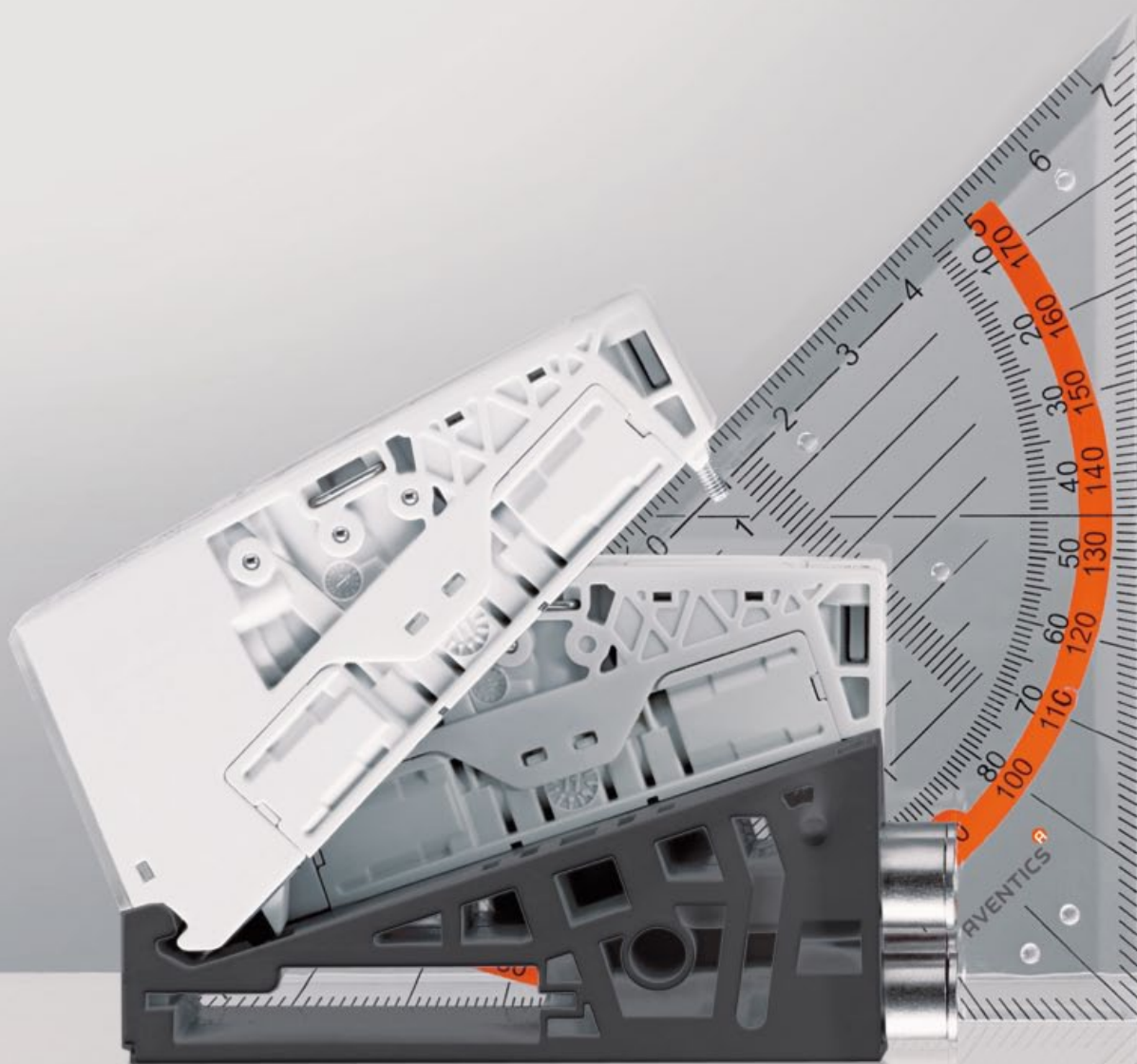
**AVENTICS**

**AV SYSTEM**

MORE MODULAR, COMPACT,  
AND SIMPLE

**Rexroth**  
Pneumatics





# Welcome to the family!

While developing the Advanced Valve series (AV), we focused on exploring the limits of valve technology and looked at everything in an entirely new way. The result of our research has been groundbreaking – so much so that the series will be developed into an entire system family in the future.

All known principles of design, materials, and the assembly of industrial valves were called into question during the development of the AV series. Comprehensive flow analyses, a modern polymer-based construction, and our many years of experience with application requirements were the basis for our AV series – and the result is a class of its own. Its unique design, significantly reduced weight, and extremely compact size, as well as an increased function density make sure that you stay a step ahead in production.

The AV system is a complete automation solution that continuously adapts to your requirements and also maximizes the potential of your existing machines.

## Advantages that run in the family

New challenges are presented in production every day. Major economic factors include the time required for design, installation, and commissioning, as well as effective operation. The flexibility of the AV system pays off. An optimum interaction of the valves with the AES fieldbus connection and the wide variety of components is a crucial benefit. In fact, the AV family gives a perfect overall impression.

AVENTICS' exclusive Engineering Tools, which you can use to configure, order, and document projects, provide you with extra support. The tools also significantly simplify expansion, retro-fitting, and maintenance at a later stage – online from any workstation across the world.

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# Unbelievably advanced – already today

Many patents have been granted in conjunction with the AV system, which is a sign of just how unique the “AV principle” is. AV products offer high performance with an improved flow in the system and many connection options, and easily adapt to the requirements of any machine.



*“We are at the cutting edge of technology with this family, and more groundbreaking innovations are already being tested. The good thing about this modular principle: new components can be applied immediately after certification.”*

Theo Paulus, Head of Pneumatics Development  
and Product Management, AVENTICS, Laatzten, Germany







Just one of the AV system's many talents is its adaptability within a consistent design. Even the push-in fittings can be modified and exchanged. The connection elements do not affect the dimensions. High-performance polymers reduce the weight of the system by over half when compared with similar systems. Combined with their small size, the valves can be mounted directly on the actuator, for example in handling systems, reducing tubing lengths and saving on compressed air.

The consistent modular design offers additional functions at your fingertips and is impressively systematic. This convenient solution package simplifies project planning. As a result, the family concept pays off directly: you can meet even the most demanding of requirements with ease, giving you a crucial competitive edge.

#### Features of the AV system at a glance

- Optimized compressed air balance thanks to a small, lightweight construction
- Universal system for a variety of applications
- High flexibility thanks to easy application retrofitting
- Simplified design process with Engineering Tools

*"Innovative automation systems are an important component of our innovative machine technology. AVENTICS is just the right partner for us."*

Frank Gniechwitz, Director of GM  
Getränketechnik & Maschinenbau GmbH, Gera, Germany



# AV03 and AV05

## Diagonal design: increasing success

Each component a small masterpiece: the diagonal spool, a flexible base plate, galvanic isolation in the power concept. Advanced valves convince with their distinct modularity and are perfect for every situation.

Just one of the AV system's many features: adaptability as the main principle, beginning with the base. Base plate valves enable fast, easy assembly; up to 64 valves can be added to the board in single increments. Each valve slice is fastened with only one captive screw. For installations at heights of four meters, for example, this is of vital importance, as no screws

can be lost. Changes in valve function can be carried out very quickly. The galvanic isolation permits separate power supply for logic voltage and actuator voltage. In addition, configurable voltage and compressed air circuits allow intelligent shut-off of sections.



▲ The modular design is maintained, even in larger systems.

## Convincing figures

AV03/AV05 compared with existing products

Up to **45 %**  
**less space**

thanks to its diagonal design  
with higher functional integration

Up to **40 %**  
**lighter**

thanks to low-weight,  
high-performance polymers

Up to **20 %**  
**less compressed air consumption**

thanks to shorter distances  
from the actuator to the valve

There are many choices for pressure supply and exhaust too: air collected via integrated silencers or dual-pressure applications on request. You can prevent interfering influences and adjust settings for clean room or food zone applications; a total of seven different systems are available.

It is also possible to change the connection angles of the working lines and custom-configure the manual override: activated either by pressing or pressing and turning. This simplifies commissioning and enables short function tests. In special cases, the AV is also available without a manual override.

- The diagonal spool reduces the volume of the Advanced Valves, improving the performance of the supply and exhaust channels.



## Tightly bundled expertise in an ultra-compact form

Vital for decision-making: actual economy and efficiency, and true comparative values. Advanced valves also manage to demonstrate their technical edge and mastery here.



▲ The advantages don't stop with the system's compact size: the arrangement of connections also allows for low installation heights and ensures a clear structure.



Advanced Valves represent the true definition of power density with an appearance that matches their inner values. And the details are even more interesting: determining the compactness of a valve based on measurements alone just doesn't do it. The real indicator: the ratio of flow to installation volume.

Pneumatic valves in particular should be used directly at the point of action in handling systems, so their dimensions are crucial for the overall design and dynamics. Smaller masses mean smaller main drives, resulting in lower initial investments and improved energy footprints – areas where Advanced Valves excel.



▲ Advanced Valves: record-breaking switching times and an excellent size/performance ratio.

	AV03	AV05
Max. nominal flow (output)	300 l/min	700 l/min
Min. switching time	8 ms	13 ms
Slice volume (size)	53,3 cm <sup>3</sup>	75,2 cm <sup>3</sup>
Size/performance ratio	178 mm <sup>3</sup> /l	107 mm <sup>3</sup> /l



◀ Visible in the clear model: the honeycomb structure of the inner membrane of the Advanced Valves provides the state-of-the-art polymer enclosure with even more stability.

# AES

## Your interface to the higher-level controller

**AVENTICS' Advanced Electronic System (AES) ensures smooth serial communication between the controller and the AV components and offers quick assembly times, a wide spectrum of variants, as well as increased modularity.**

AES is the logical continuation of the AV family concept. Smaller, lighter, and more compact on the one hand, but also fit to interpret many serial protocols, and thus suitable for use in any conceivable environment. As a fieldbus connection, it ensures perfect communication between actuators and the machine peripherals. In combination with compact AV systems, AES components can be placed very close to pneumatic drives. By contrast, a wide range of communication options are available: each AES fieldbus coupler can control up to ten I/O modules and 64 valves with up to 128 solenoids. This is an impressive figure considering the size of the system.

### Everyday flexibility – verifiable daily

Your requirements for the product or machine have changed? You require an additional sensor in production? Everyday work often requires quick solutions. The modular structure of the

AES has proven to be very flexible. Retrofitting new inputs and outputs is easier than ever. And fieldbus connections are realized without tools, by means of spring clamps – with optimized cable routing, of course.

#### AES-Highlights

<b>Number of valve coils</b>	128
<b>Max. possible I/O modules</b>	10
<b>Protection class</b>	Max. IP65
<b>I/O functionality</b>	Analog/digital
<b>Connection options</b>	M8, M12, D-SUB, spring clamp

## Convincing figures

### AES compared with existing products

Up to **60 % smaller**  
thanks to fewer parts and an optimized design principle

Up to **70 % lighter**  
thanks to high-tech polymers and easy assembly



▲ The AES also features a modular design. The result: a convincing, compact system.

**CANopen**

**DeviceNet**

**PROFI  
BUS**

**EtherCAT**  
Technology Group

**EtherNet/IP**

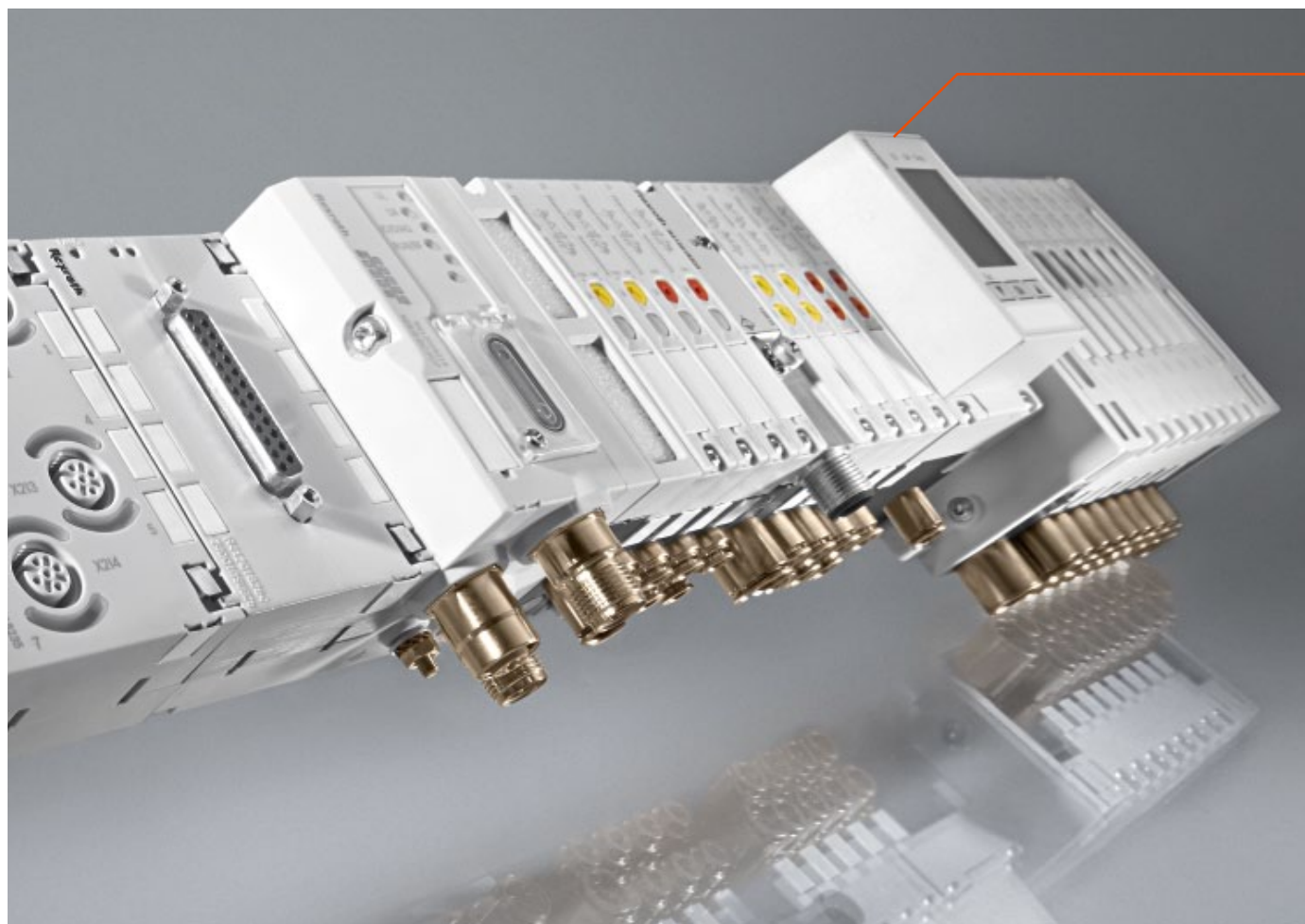
**PROFI  
NET**

**ETHERNET  
POWERLINK**

# AV-EP

## Better control: EP for Advanced Valves

AVENTICS stands for leading electropneumatic pressure regulation (EP) technology, but we're taking it a step further. Our AV family now includes the integration, compact size, and wide range of variants of our AV03/AV05-EP.



▲ Regulation, control, monitoring: one system does it all.





▲ Adjustment, diagnosis, or monitoring: the system display offers many functions.

Seamless: the consistent use of high-tech polymers for high functional integration and power density are the primary characteristics of this family of products. The control function boosts the flexibility of your production, as the AV-EP is amazingly multifaceted. The desired operating pressure level can also be parameterized using a membrane keyboard and display, to adjust the working pressure precisely to the respective application. The individual performance can thus be tailored to the specific application. No matter whether digital or analog control: The AV-EP conforms to your wishes for your respective application. Furthermore, you can choose whether the working pressure is available directly on the controller by means of a fitting, or multiple switching valves adjacent to the controller are supplied with a common working pressure level.

#### Highly varied: typical for AV

In addition, the offered AV-EPs are available in many variants: matching the AV03/AV05 system, fully integrated, or as a stand-alone solution. Further options include a selectable display or actuation via multipole or fieldbus.

Of course, AV-EPs also have all the advantages of AV directional valves: push-in fittings for quick working line exchange, easily visible status LED, and a low weight that enables use on moving axes and thus short connection paths to actuators.

## Convincing figures

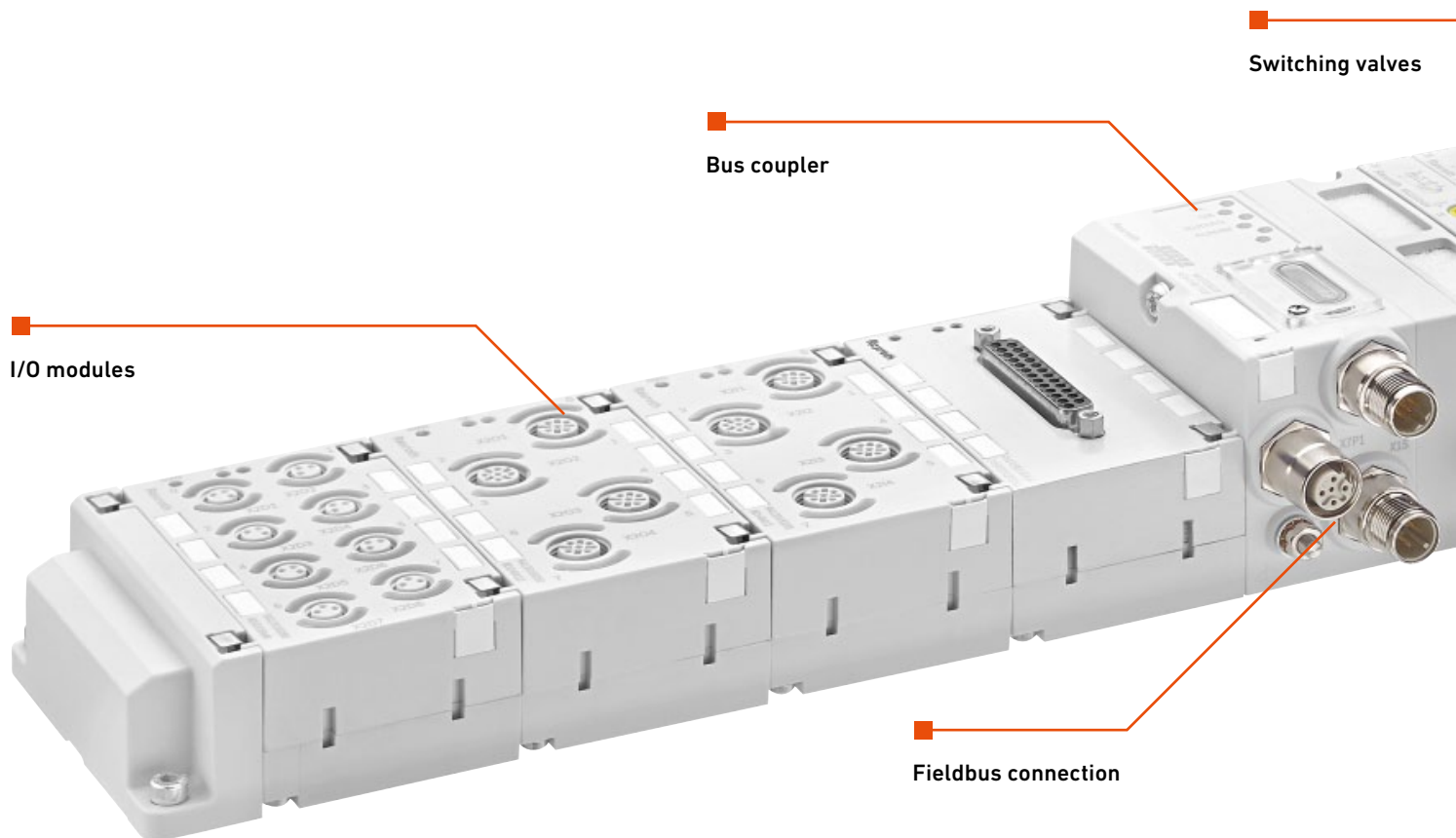
AV-EP compared with existing products

Up to **70 %**  
**lighter**  
thanks to a consistent use of polymers

Up to **80 %**  
**lower power consumption**  
thanks to pilot technology

## "Easy" times three

The AV family makes it even easier to use, configure, and expand existing or new systems and ensures a coherent system design with uniform stages of expansion.

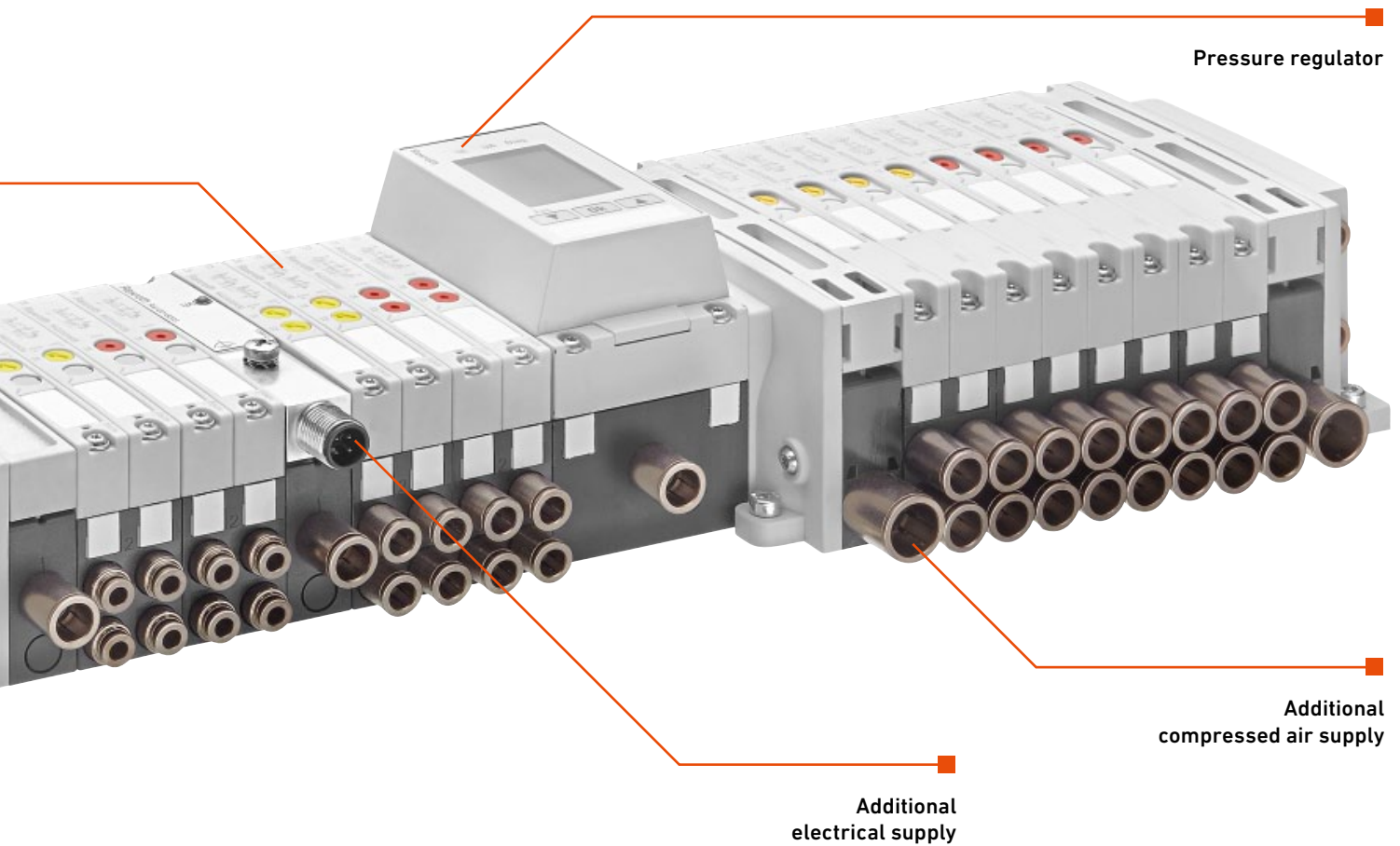


### EASY-2-USE

- Small, compact dimensions – suitable for use on cross ties or dynamic tooling
- All standard fieldbus protocols are available
- Can be used with valve technology or as stand-alone solution
- Short assembly and testing times
- I/O modules with ring LED for each plug

### EASY-2-CONFIGURE

- Can be configured completely online
- User guidance with default specifications and plausibility check
- Time-saving creation of technical documents
- Simple assembly of components
- One part number, no conversion necessary, available immediately online
- Easy identification



#### EASY-2-EXTEND

- Simple, subsequent addition of switching valves, pressure regulators, and I/O modules
- Tool-free connection of I/O modules
- Valve assembly with one screw

# Engineering Tools

## Excellent service comes with the family





The products of the AV system form a strong basis, but our additional service offering is the icing on the cake. With our Engineering Tools, we provide you with the complete product offering, tools, and expertise for all your pneumatics questions, all online.

From configuration programs to product information, up to the energy savings calculator, our wide range of practical, time-saving Engineering Tools is already in use by many satisfied customers.

#### Your homepage for non-stop service

Research tools, design and configuration aids, the circuit diagram software and the eShop are available online at [www.engineering-tools.com](http://www.engineering-tools.com). The site also offers technical

support and extensive documentation. Our tools not only calculate basic component configurations, but also provide you with alternative solutions and energy-efficient accessories. Each AV system has its own specific QR code which leads directly to the system documentation. This allows you to accelerate your business processes and save all of your steps online so that you can access them again even after the project is finished.



#### Online catalog

The fastest point of entry is via our online catalog. Here you can start your search directly by entering a part number or keyword.



#### Calculation programs

Here you can specify the dimensions or load-bearing capacity of your components with a wide variety of calculation options. We also provide an air consumption calculator as a special feature.



#### CAD

Your desired object can be issued here directly as a CAD file in various formats, as a PDF file, or for further configuration in your software.



#### Circuit diagram software

With the D&C Scheme Editor, you can quickly and easily create circuit diagrams that are based on your component layout and linked to your catalog selection.



#### Configurators

The configurator can be reached by clicking the selected product. After selecting your product, you can begin to adapt it to your own specifications.



#### eShop

The eShop is our online shop that answers your price requests and monitors the whole order process up to delivery.

# QR codes

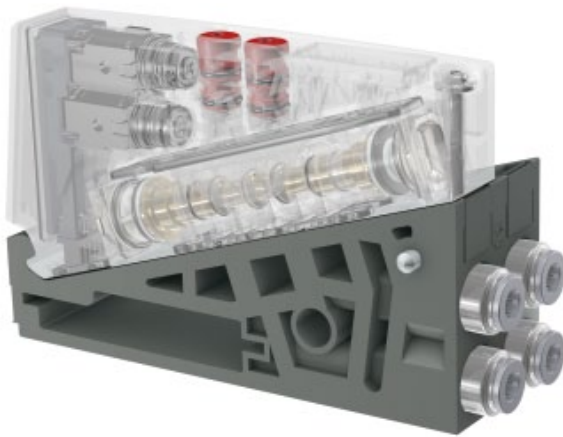
## Easier, faster, and more direct

One picture of the QR code on your product using your cell phone or tablet is all it takes, and you are immediately forwarded to your configuration via a wireless connection – from any workstation across the world. For uncomplicated subsequent orders, expansions, or quick connection to our Service department.



# Your advantages: Small solution, major impact

The AV family is not only more modular, smaller, and simpler – it is also constantly being updated. You will find all the latest information and news at [www.aventics.com](http://www.aventics.com) or [www.advanced-valve.com](http://www.advanced-valve.com).



## Advantages

- ✓ Productive and energy-efficient
- ✓ Future-proof technology
- ✓ Shorter assembly times
- ✓ Custom design thanks to Engineering Tools

The code displayed on the right leads you directly to [www.advanced-valve.com](http://www.advanced-valve.com)



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The data specified only serve to describe the product. No statements concerning a certain condition or suitability for a certain application can be derived from our information. The information given does not release the user from the obligation of own judgment and verification. It must be remembered that our products are subject to a natural process of wear and aging.