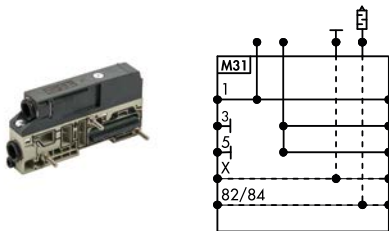


## Intermediate support

Art. No. 153221

Type No. 02282M230Z20



Exemplary illustration

The "Intermediate support – M" modules serve multiple functions within an EB 80 valve island. They support increased flow rates when several valves operate simultaneously and allow the division of the island into zones with different pressures. In systems with many solenoid pilots activated simultaneously, they can provide additional electrical power. They also enable the electrical isolation of specific island sections, for example to turn off part of the island during an emergency.

These modules are freely positionable within the EB-80 island and available in various versions with fittings for different pipe diameters. Relief ports 3 and 5 can either be connected using a silencer or conveyed via a single fitting. A variant with separate ports 3 and 5 is also offered, which is particularly useful for pilot-assisted valves operating at different pressures, ranging from vacuum to 8 bar.

The lower body of the intermediate plate features different air flow configurations, including versions with full-flow or selectively closed ducts, allowing precise control of the air supply.

### Technical data

|                                                            |                                       |
|------------------------------------------------------------|---------------------------------------|
| Module type                                                | M                                     |
| Module description                                         | intermediate support                  |
| Version                                                    | with conveyed relief                  |
| Duct separation                                            | ports 3/5 sectioned                   |
| Additional electric power supply                           | without                               |
| Port 1                                                     | Ø 10 mm                               |
| Port 3+5                                                   | 1x Ø 10 mm                            |
| Medium                                                     | filtered, unlubricated compressed air |
| Required purity class in accordance w. ISO 8573-1          | 4.7.3                                 |
| Op. pressure min. 5/2-, 5/3-way valves with int. pilot air | 3 bar                                 |
| Op. pressure min. 2/2-, 3/2-way valves with int. pilot air | 3,5 bar                               |
| Operating pressure max. with int. pilot air                | 8 bar                                 |
| Operating pressure min. with external pilot air            | -0,99 bar                             |

## Technical data

|                                                 |                                                                 |
|-------------------------------------------------|-----------------------------------------------------------------|
| Operating pressure max. with external pilot air | 10 bar                                                          |
| Pilot pressure min. 5/2- and 5/3-way valves     | 3 bar                                                           |
| Pilot pressure min. 2/2- and 3/2-way valves     | 3-5 bar, dep. on operating pressure (see Metal Work data sheet) |
| Max. pilot pressure                             | 8 bar                                                           |
| Flow rate measurement 1                         | Air supply via port 1, at 6.3 bar $\Delta p$ 1 bar              |
| Flow rate 1                                     | 2800 NI/min                                                     |
| Flow rate measurement 2                         | Air supply via port 3/5, at 6.3 bar $\Delta p$ 1 bar            |
| Flow rate 2                                     | 3200 NI/min                                                     |
| Min. ambient temperature                        | -10 °C                                                          |
| Max. ambient temperature                        | 50 °C                                                           |
| Housing                                         | technopolymer                                                   |
| Sealant                                         | NBR                                                             |
| Protection IP                                   | IP 65                                                           |
| Series                                          | EB 80                                                           |

## Commercial data

|                         |                  |
|-------------------------|------------------|
| eCl@ss 5.1.4            | 27291501         |
| eCl@ss 9.0              | 27291390         |
| UNSPSC_Code_v190501     | 40141603         |
| UNSPSC_CodeDesc_v190501 | Pneumatic valves |

# EB 80 INTERMEDIATE SUPPORT - M

The "Intermediate modules - M" perform a series of functions. They can help increase the flow rate available in an EB 80 island, when various valves are used at the same time. They can be used to divide an island in areas of different pressures.

They can also be used as additional electrical power supply, when there is a high number of solenoid pilots actuated simultaneously; or to electrically separate and cut out a part of the island, in the event of an emergency, for example.

Intermediate modules can be placed in any position in the EB 80 island. Several versions are available, with fittings for pipes of different diameter. Relief ports 3 and 5 can be either connected using a silencer or conveyed via a fitting.

A version with separate ports 3 and 5 is also available. This feature is useful in versions with pilot servo-assistance to power the valves from ports 3 and 5, at different pressures, from vacuum to 8 bar.

The lower body of the intermediate plate comes with different air flow ducts: with full flow ports or one or more closed ports.



## TECHNICAL DATA

|                                                                                                                                                     |                                                        |                                                                                                |      |      |          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|------------------------------------------------------------------------------------------------|------|------|----------|
| Operating pressure                                                                                                                                  | Vacuum to 10 bar / Vacuum to 1 MPa / Vacuum to 145 psi |                                                                                                |      |      |          |
| Ambient temperature                                                                                                                                 | -10 to + 50 °C / 14 to 122 °F                          |                                                                                                |      |      |          |
| Flow rate at 6.3 bar ΔP 1 bar                                                                                                                       |                                                        |                                                                                                |      |      |          |
| Feeding (port 1)                                                                                                                                    | Nl/min                                                 | Ø 8 (5/16")                                                                                    | Ø 10 | Ø 12 | Ø 1 1/2" |
| Exhaust with fitting (ports 3 and 5)                                                                                                                | Nl/min                                                 | 1800                                                                                           | 2800 | 3500 | 3500     |
| Separate exhausts Ø 8                                                                                                                               | Nl/min                                                 | 2000                                                                                           | 3200 | 4400 | 4400     |
| Flow rate at 6.3 bar free exhaust                                                                                                                   |                                                        |                                                                                                |      |      |          |
| Exhaust with fitting (ports 3 and 5)                                                                                                                | Nl/min                                                 | 1800 x 2                                                                                       | -    | -    | -        |
| Silenced exhaust                                                                                                                                    | Nl/min                                                 | 2700                                                                                           | 3900 | 6100 | 6100     |
| Exhaust with fitting Ø 12 and silencer W0970530086                                                                                                  | Nl/min                                                 | 3600                                                                                           |      |      |          |
| Separate exhausts Ø 8 (N.B.: Pmax 8 bar)                                                                                                            | Nl/min                                                 | 6000                                                                                           |      |      |          |
| Fluid                                                                                                                                               |                                                        | 2700 x 2                                                                                       | -    | -    | -        |
| Additional electrical power supply                                                                                                                  |                                                        | Unlubricated air                                                                               |      |      |          |
| Voltage range                                                                                                                                       | VDC                                                    | M8 4-pin connector *                                                                           |      |      |          |
| Maximum number of solenoid pilots that can be actuated simultaneously from the additional electrical connection:                                    |                                                        | 12 to 31.2                                                                                     |      |      |          |
| at 24VDC                                                                                                                                            |                                                        | With 100% simultaneity: 48 / With 60% simultaneity: 80                                         |      |      |          |
| at 12VDC                                                                                                                                            |                                                        | With 100% simultaneity: 32 / With 60% simultaneity: 64                                         |      |      |          |
| Versions                                                                                                                                            |                                                        | Pipe fittings Ø 8, 10, 12, 1 1/2"; Silenced relief, conveyed relief, ports 3 and 5 separate    |      |      |          |
|                                                                                                                                                     |                                                        | Full-flow ports in the base, 1 closed, 1, 3 and 5 closed, 3 and 5 closed, 1, 3, 5 and X closed |      |      |          |
|                                                                                                                                                     |                                                        | With or without additional electrical power supply                                             |      |      |          |
|                                                                                                                                                     |                                                        | IP65 (with connectors connected or plugged if not used)                                        |      |      |          |
| Degree of protection                                                                                                                                |                                                        |                                                                                                |      |      |          |
| <b>IMPORTANT! Voltage greater than 32VDC will damage the system irreparably.</b>                                                                    |                                                        |                                                                                                |      |      |          |
| * If electric power is not supplied: the red power LED light comes on and the LEDs at the base keep flashing (voltage out of range);                |                                                        |                                                                                                |      |      |          |
| in the version with multi-pin electrical connection, the "OUT" fault signal is triggered; in the version with fieldbus, a software message is sent. |                                                        |                                                                                                |      |      |          |

## COMPONENTS

- 1 LOWER PART BODY: technopolymer
- 2 UPPER PART BODY: technopolymer
- 3 SCREWS for fixing between the bodies: zinc-plated steel (Tightening torque: 1.2 Nm)
- 4 TAG with laser-etched wording: technopolymer
- 5 AIR RELIEF: silencer or pipe fitting
- 6 POWER SUPPLY: pipe fitting
- 7 PILOTING (X): pipe fitting Ø 4
- 8 INDICATOR: indicating whether power supply to pilots is separate or not
- 9 PILOT RELIEF: silencer in HDPE
- 10 PICTOGRAM: indication of compressed air system layout
- 11 TIE RODS: zinc-plated steel
- 12 GASKET: NBR
- 13 THREADED PLATE: zinc-plated steel
- 14 CARTRIDGE FIXING CLIP: stainless steel
- 15 ELECTRONIC BOARD
- 16 M8 CONNECTOR: only for version with additional electrical power supply



## DIMENSIONS - ORDERING CODES

### INTERMEDIATE MODULE - SILENCED RELIEF



WITHOUT additional  
electrical power supply



WITH additional  
electric power supply

\* M8 connector only for versions with additional power supply.  
\*\* Orange tab in the SERVO-ASSISTED (⊙) position



### WIRING DIAGRAM INTERMEDIATE MODULE - M, WITH ADDITIONAL POWER SUPPLY

M8 male connector

2 4 1 = + VDC  
1 3 2 = + VDC  
3 = GND  
4 = GND



| Symbol                                                                                                            | T<br>Pipe fitting | Code<br>Additional electric power supply<br>WITHOUT | Code<br>WITH | Weight<br>[g] |
|-------------------------------------------------------------------------------------------------------------------|-------------------|-----------------------------------------------------|--------------|---------------|
| Full-flow ports<br>             | Ø 8 (5/16")       | 02282M100Z00                                        | 02282M101Z01 | 160           |
|                                                                                                                   | Ø 10              | 02282M200Z00                                        | 02282M201Z01 | 160           |
|                                                                                                                   | Ø 12              | 02282M300Z00                                        | 02282M301Z01 | 150           |
|                                                                                                                   | Ø 1/2"            | 02282M500Z00                                        | 02282M501Z01 | 150           |
| Port 1 closed<br>              | Ø 8 (5/16")       | 02282M110Z00                                        | 02282M111Z01 | 160           |
|                                                                                                                   | Ø 10              | 02282M210Z00                                        | 02282M211Z01 | 160           |
|                                                                                                                   | Ø 12              | 02282M310Z00                                        | 02282M311Z01 | 150           |
|                                                                                                                   | Ø 1/2"            | 02282M510Z00                                        | 02282M511Z01 | 150           |
| Ports 1, 3 and 5 closed<br>    | Ø 8 (5/16")       | 02282M120Z00                                        | 02282M121Z01 | 160           |
|                                                                                                                   | Ø 10              | 02282M220Z00                                        | 02282M221Z01 | 160           |
|                                                                                                                   | Ø 12              | 02282M320Z00                                        | 02282M321Z01 | 150           |
|                                                                                                                   | Ø 1/2"            | 02282M520Z00                                        | 02282M521Z01 | 150           |
| Ports 3 and 5 closed<br>       | Ø 8 (5/16")       | 02282M130Z00                                        | 02282M131Z01 | 160           |
|                                                                                                                   | Ø 10              | 02282M230Z00                                        | 02282M231Z01 | 160           |
|                                                                                                                   | Ø 12              | 02282M330Z00                                        | 02282M331Z01 | 150           |
|                                                                                                                   | Ø 1/2"            | 02282M530Z00                                        | 02282M531Z01 | 150           |
| Ports 1, 3, 5 and X closed<br> | Ø 8 (5/16")       | 02282M140Z00                                        | 02282M141Z01 | 160           |
|                                                                                                                   | Ø 10              | 02282M240Z00                                        | 02282M241Z01 | 160           |
|                                                                                                                   | Ø 12              | 02282M340Z00                                        | 02282M341Z01 | 150           |
|                                                                                                                   | Ø 1/2"            | 02282M540Z00                                        | 02282M541Z01 | 150           |

VALVES

EB 80 - INTERMEDIATE SUPPORT - M

## INTERMEDIATE MODULE - CONVEYED RELIEF

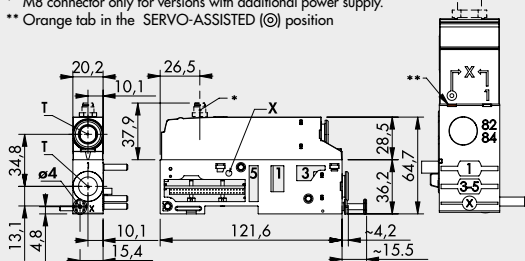


WITHOUT additional electrical power supply



WITH additional electric power supply

- \* M8 connector only for versions with additional power supply.
- \*\* Orange tab in the SERVO-ASSISTED (©) position



## WIRING DIAGRAM NTERMEDIATE MODULE - M, WITH ADDITIONAL POWER SUPPLY

M8 male connector

1 = + VDC  
2 = + VDC  
3 = GND  
4 = GND



| Symbol                     | T                                | Code         | Weight |
|----------------------------|----------------------------------|--------------|--------|
| Pipe fitting               | Additional electric power supply |              | [g]    |
|                            | WITHOUT                          | WITH         |        |
| Full-flow ports            | Ø 8 (5/16") 02282M100Z10         | 02282M101Z11 | 160    |
|                            | Ø 10 02282M200Z20                | 02282M201Z21 | 160    |
|                            | Ø 12 02282M300Z30                | 02282M301Z31 | 150    |
|                            | Ø 1/2" 02282M500Z50              | 02282M501Z51 | 150    |
| Port 1 closed              | Ø 8 (5/16") 02282M110Z10         | 02282M111Z11 | 160    |
|                            | Ø 10 02282M210Z20                | 02282M211Z21 | 160    |
|                            | Ø 12 02282M310Z30                | 02282M311Z31 | 150    |
|                            | Ø 1/2" 02282M510Z50              | 02282M511Z51 | 150    |
| Ports 1, 3 and 5 closed    | Ø 8 (5/16") 02282M120Z10         | 02282M121Z11 | 160    |
|                            | Ø 10 02282M220Z20                | 02282M221Z21 | 160    |
|                            | Ø 12 02282M320Z30                | 02282M321Z31 | 150    |
|                            | Ø 1/2" 02282M520Z50              | 02282M521Z51 | 150    |
| Ports 3 and 5 closed       | Ø 8 (5/16") 02282M130Z10         | 02282M131Z11 | 160    |
|                            | Ø 10 02282M230Z20                | 02282M231Z21 | 160    |
|                            | Ø 12 02282M330Z30                | 02282M331Z31 | 150    |
|                            | Ø 1/2" 02282M530Z50              | 02282M531Z51 | 150    |
| Ports 1, 3, 5 and X closed | Ø 8 (5/16") 02282M140Z10         | 02282M141Z11 | 160    |
|                            | Ø 10 02282M240Z20                | 02282M241Z21 | 160    |
|                            | Ø 12 02282M340Z30                | 02282M341Z31 | 150    |
|                            | Ø 1/2" 02282M540Z50              | 02282M541Z51 | 150    |

### INTERMEDIATE MODULE - SEPARATE RELIEF



WITHOUT additional electrical power supply



WITH additional electrical power supply

- \* M8 connector only for versions with additional power supply.
- \*\* Orange tab in the SERVO-ASSISTED (Ⓢ) position



### WIRING DIAGRAM INTERMEDIATE MODULE - M, WITH ADDITIONAL POWER SUPPLY

M8 male connector

- 2 4 1 = + VDC
- 1 3 2 = + VDC
- 3 = GND
- 4 = GND



N.B.: Maximum pressure in the ports 3 and 5: 8 bar

| Symbol          | T           | Pipe fitting | Code                                     |              | Weight [g] |
|-----------------|-------------|--------------|------------------------------------------|--------------|------------|
|                 |             |              | Additional electric power supply WITHOUT | WITH         |            |
| Full-flow ports | Ø 8 (5/16") |              | 02282M100Z_0                             | 02282M101Z_1 | 190        |
|                 | Ø 10        |              | 02282M200Z_0                             | 02282M201Z_1 | 190        |
|                 | Ø 12        |              | 02282M300Z_0                             | 02282M301Z_1 | 180        |
|                 | Ø 1/2"      |              | 02282M500Z_0                             | 02282M501Z_1 | 180        |



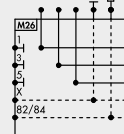
Port 1 closed

|             |              |              |     |
|-------------|--------------|--------------|-----|
| Ø 8 (5/16") | 02282M110Z_0 | 02282M111Z_1 | 190 |
| Ø 10        | 02282M210Z_0 | 02282M211Z_1 | 190 |
| Ø 12        | 02282M310Z_0 | 02282M311Z_1 | 180 |
| Ø 1/2"      | 02282M510Z_0 | 02282M511Z_1 | 180 |



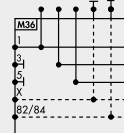
Ports 1, 3 and 5 closed

|             |              |              |     |
|-------------|--------------|--------------|-----|
| Ø 8 (5/16") | 02282M120Z_0 | 02282M121Z_1 | 190 |
| Ø 10        | 02282M220Z_0 | 02282M221Z_1 | 190 |
| Ø 12        | 02282M320Z_0 | 02282M321Z_1 | 180 |
| Ø 1/2"      | 02282M520Z_0 | 02282M521Z_1 | 180 |



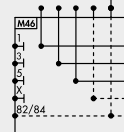
Ports 3 and 5 closed

|             |              |              |     |
|-------------|--------------|--------------|-----|
| Ø 8 (5/16") | 02282M130Z_0 | 02282M131Z_1 | 190 |
| Ø 10        | 02282M230Z_0 | 02282M231Z_1 | 190 |
| Ø 12        | 02282M330Z_0 | 02282M331Z_1 | 180 |
| Ø 1/2"      | 02282M530Z_0 | 02282M531Z_1 | 180 |



Ports 1, 3, 5 and X closed

|             |              |              |     |
|-------------|--------------|--------------|-----|
| Ø 8 (5/16") | 02282M140Z_0 | 02282M141Z_1 | 190 |
| Ø 10        | 02282M240Z_0 | 02282M241Z_1 | 190 |
| Ø 12        | 02282M340Z_0 | 02282M341Z_1 | 180 |
| Ø 1/2"      | 02282M540Z_0 | 02282M541Z_1 | 180 |



\_ = To complete the code enter: 6: øD = 8 mm; 7: øD = 6 mm; 8: øD = 4 mm

VALVES

EB 80 - INTERMEDIATE SUPPORT - M

## KEY TO CODES

| 02282<br>FAMILY | M<br>SUBSYSTEM | 3<br>PORT FITTING 1                                                                                           | 0<br>PORTS<br>IN THE BASE                                                                                                            | 0<br>ADDITIONAL<br>ELECTRICAL POWER<br>SUPPLY | Z<br>UPPER<br>PART                | 3<br>PORTS 3 AND 5<br>FITTING                                                                                                                                                                                                                                                                                                  | 0<br>ELECTRICAL<br>CONNECTOR |
|-----------------|----------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| 02282 EB 80     | M Intermediate | 1 Pipe fitting<br>Ø 8 (5/16")<br>2 Pipe fitting<br>Ø 10<br>3 Pipe fitting<br>Ø 12<br>5 Pipe fitting<br>Ø 1/2" | 0 Full-flow ports<br>1 Port 1 closed<br>2 Ports 1, 3<br>and 5 closed<br>3 Ports 3 and 5<br>closed<br>4 Ports 1, 3, 5<br>and X closed | ■ 0 Without<br>● 1 With                       | Z The<br>upper part<br>is present | 0 Silencer<br>▲ 1 Pipe fitting Ø 8 (5/16")<br>▲ 2 Pipe fitting Ø 10<br>▲ 3 Pipe fitting Ø 12<br>▲ 5 Pipe fitting Ø 1/2"<br>6 2 pipes fitting Ø 8 (5/16")<br>(one for port 3, one for port 5)<br>7 2 pipes fitting Ø 6<br>(one for port 3, one for port 5)<br>8 2 pipes fitting Ø 4 (5/32")<br>(one for port 3, one for port 5) | ■ 0 Without<br>● 1 With      |

▲ For ports 3/5, use the same Ø pipe as port 1.

■ Same number for both positions.

● Same number for both positions.

## ACCESSORIES

## M8 CONNECTOR FOR POWER SUPPLY



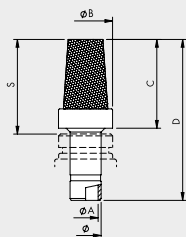
| Code         | Description                                                            |
|--------------|------------------------------------------------------------------------|
| 0240009060   | M8 4-pin female connector for power supply, cable L = 3 m              |
| 0240009037   | M8 4-pin female connector for power supply, cable L = 5 m              |
| 0240009058   | M8 4-pin female connector for power supply, cable L = 10 m             |
| 0240009059   | M8 4-pin female connector for power supply, cable L = 15 m             |
| 0240009P60 * | M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 3 m  |
| 0240009P37 * | M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 5 m  |
| 0240009P58 * | M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 10 m |
| 0240009P59 * | M8 4-pin female connector for power supply, H-FLEX CL6, cable L = 15 m |

## M8 90° CONNECTOR FOR POWER SUPPLY



| Code       | Description                                    |
|------------|------------------------------------------------|
| 0240009103 | M8 4-pin connector - female, 90° angle L = 5 m |

## SILENCER FOR FITTING



| Ø  | Ø A | Ø B  | C  | D    | S    |
|----|-----|------|----|------|------|
| 8  | 6.5 | 14   | 23 | 42   | 24.5 |
| 12 | 10  | 18.8 | 29 | 51.5 | 31.5 |

| Code        | Description                | Flow rate at 6.3 bar [Nl/min] | Weight [g] |
|-------------|----------------------------|-------------------------------|------------|
| W0970530084 | Silencer for fitting, Ø 8  | 2400                          | 15         |
| W0970530086 | Silencer for fitting, Ø 12 | 6000                          | 24         |

## SPARE PARTS

## CARTRIDGE



| Code       | Description                                  | Ø         |
|------------|----------------------------------------------|-----------|
| 02282R2110 | EB 80 silencer cartridge kit                 | silencer  |
| 02282R2113 | EB 80 Ø 8 power supply round cartridge kit   | 8 (5/16") |
| 02282R2114 | EB 80 Ø 10 power supply round cartridge kit  | 10        |
| 02282R2115 | EB 80 Ø 12 power supply round cartridge kit  | 12        |
| 02282R2118 | EB 80 Ø 1/2 power supply round cartridge kit | 1/2"      |

Comes in 10-pc. packs

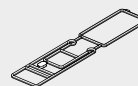
## BASE INTERFACE GASKET



| Code       | Description                     |
|------------|---------------------------------|
| 02282R1000 | EB 80 base interface gasket kit |

Comes in 10-pc. packs

## LOWER /UPPER BODY GASKET



| Code       | Description                       |
|------------|-----------------------------------|
| 02282R1001 | EB 80 lower/upper body gasket kit |

Comes in 10-pc. packs

# EB 80 ELECTRO-PNEUMATIC SYSTEM

EB 80 is defined as an electro-pneumatic system as it would be simplistic to use the term "solenoid valve island". In effect, a single assembly can combine solenoid valves of all types, multi-position bases, pneumatic and electric supplies arranged as desired in a system, digital or analogue input or output signal control modules and much more besides.

The EB 80 system is protected by numerous patents and utility models, which enhance the most innovative design solutions.

The possible combinations are endless, but the most amazing thing is that they can be obtained using a small number of basic components.

In order to achieve this objective, a single size of small yet high-performance valves to cover the vast majority of applications was conceived.

A single electronic control unit is provided when supplying 12VDC or 24VDC valves with multi-pole cables or with a field bus for each protocol.

All EB 80 versions come with an efficient diagnostic system.

The EB 80 catalogue consists of a first overall introductory chapter followed by a chapter for each subsystem.

NSF H1-certified grease is used to lubricate the valve spool and seals.



## TECHNICAL DATA

|                                                                    |                                                  |                                                            |
|--------------------------------------------------------------------|--------------------------------------------------|------------------------------------------------------------|
| Supply voltage range                                               | VDC                                              | 12 -10% 24 +30%                                            |
| Minimum operating voltage                                          | VDC                                              | 10.8 *                                                     |
| Maximum operating voltage                                          | VDC                                              | 31.2                                                       |
| Maximum admissible voltage                                         | VDC                                              | 32 ***                                                     |
| Power for each controlled pilot                                    | W                                                | 3 for 15 ms, then holding 0.3                              |
| Drive (for multi-pole)                                             |                                                  | PNP or NPN                                                 |
| Solenoid rating                                                    |                                                  | 100% ED                                                    |
| Solenoid valve supply power                                        |                                                  | See chapter "Electrical connection - E"                    |
| Signal module supply power                                         |                                                  | See chapter "Signal module - S"                            |
| Protection                                                         |                                                  | Overload and short-circuit protected solenoid pilot Output |
| Diagnostics                                                        |                                                  | See chapter "Electrical connection - E"                    |
| Maximum number of solenoid pilots                                  |                                                  | 21 or 38 multi-pole connection; field bus 128              |
| Ambient temperature                                                | °C                                               | -10 to +50 (at 8 bar)                                      |
|                                                                    | °F                                               | 14 to 122 (at 8 bar)                                       |
| Operating pressure                                                 |                                                  | 5/2 and 5/3                                                |
| Non-assisted valves                                                | bar                                              | 3 to 8                                                     |
|                                                                    | MPa                                              | 0.3 to 0.8                                                 |
|                                                                    | psi                                              | 43 to 116                                                  |
| Assisted valves                                                    | bar                                              | Vacuum to 10                                               |
|                                                                    | MPa                                              | Vacuum to 1                                                |
|                                                                    | psi                                              | Vacuum to 145                                              |
| Servo pressure                                                     | bar                                              | 3 to 8                                                     |
|                                                                    | MPa                                              | 0.3 to 0.8                                                 |
|                                                                    | psi                                              | 43 to 116                                                  |
| Valve flow rate, at 6.3 bar ΔP 1 bar                               |                                                  | Ø 4 (5/32") Ø 6 Ø 8 (5/16") Ø 1 1/4" Ø 10 ** Ø 3/8" **     |
|                                                                    | valve 2/2 NI/min                                 | 350 430 500 430 - -                                        |
|                                                                    | valve 3/2 NI/min                                 | 350 600 700 600 1250 1250                                  |
|                                                                    | valve 5/2 NI/min                                 | 350 650 800 650 1250 - 1400 1250 - 1400                    |
|                                                                    | valve 5/3 NI/min                                 | 350 460 500 460 1000 - 1250 1000 - 1250                    |
|                                                                    | valve V3V (R) NI/min                             | - - - - 1000 1000                                          |
| Actuation response time (TRA) / reset response time (TRR) at 6 bar |                                                  |                                                            |
|                                                                    | TRA/TRR valve 2/2 and 3/2                        | ms 14 / 28                                                 |
|                                                                    | TRA/TRR valves 5/2 monostable and shut-off valve | ms 12 / 45                                                 |
|                                                                    | TRA/TRR valve 5/2 bistable                       | ms 12 / 14                                                 |
|                                                                    | TRA/TRR valve 5/3                                | ms 15 / 45                                                 |
|                                                                    | TRA/TRR valve 3/2 high flow                      | ms 13 / 36                                                 |
| Fluid                                                              |                                                  | Unlubricated air                                           |
| Air quality required                                               |                                                  | ISO 8573-1 class 4-7-3                                     |
| Degree of protection                                               |                                                  | IP65 (with connectors connected or plugged if not used)    |
| Category ATEX                                                      |                                                  | Ex II 3G Ex ec IIC T5 Gc X -10°C<Ta<50°C                   |
|                                                                    |                                                  | Ex II 3D Ex tc IIIC T100°C Dc X                            |
| Certifications                                                     |                                                  | CE - ENEC - cULus - Ex                                     |

\* Minimum voltage 10.8VDC required at solenoid pilots. Check the minimum voltage at the power supply output using the calculations shown on page B2.28

\*\* Using high-flow valves or connected valves - see pages B2.58

\*\*\* IMPORTANT! Voltage greater than 32VDC will damage the system irreparably.

N.B.: Refer to the chapter of each EB 80 sub-assembly for specific technical data.

### CERTIFICATIONS

The **CE** certification for the part concerning only CSA (Canadian market) is bound to the following conditions of use:

- environment temperature: max 45°C
- ED max 70%

If non-adjoining valves are used, ED max can reach 100% (environment temperature max 45°C)

### COMPONENTS

EB 80 systems are identified by a set of sub-assemblies:

- S** Electrical Modules - **S**
- E** Electrical connection
- P** Pneumatic supply
- B** Bases for solenoid valves; the valves are fixed on the bases
- M** InterMediate Modules
- C** Closed end-plate

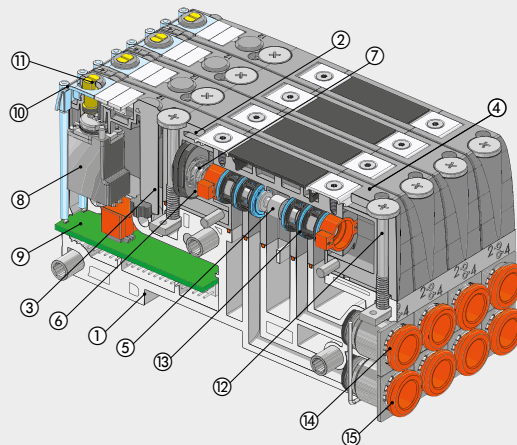


**VALVES**

EB 80 ELECTRO-PNEUMATIC SYSTEM

### COMPONENTS – SOLENOID VALVE AND BASE

- ① BASE: technopolymer
- ② VALVE BODY: technopolymer
- ③ CONTROL: technopolymer
- ④ BASE: technopolymer
- ⑤ SPOOL: chemically nickel-plated aluminium
- ⑥ CONTROL PISTON: Stainless steel and NBR
- ⑦ SPRING: Oteva® steel and Dacromet treatment
- ⑧ SOLENOID VALVE
- ⑨ ELECTRONIC BOARD
- ⑩ LED light display: technopolymer
- ⑪ MANUAL CONTROL: nickel-plated brass
- ⑫ SCREW SECURING VALVE TO THE BASE: zinc-plated steel
- ⑬ SPOOL GASKET: NBR
- ⑭ Push-in fitting CARTRIDGE for port 2
- ⑮ Push-in fitting CARTRIDGE for port 4



## THE EB 80 WORLD

## ELECTRICAL CONNECTION - E

| E025                                                                              | E044                                                                              | E0EN                                                                              | E0EC                                                                              | E0PN                                                                              | E0CN                                                                              | E0PB                                                                              | E0PL                                                                              | E0IO                                                                               | E0LK                                                                                | E0CC                                                                                | E0AD                                                                                |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |  |  |  |  |  |  |  |
| 25 PIN                                                                            | 44 PIN                                                                            | EtherNet/IP                                                                       | EtherCAT                                                                          | Profinet IO                                                                       | CANopen                                                                           | Profibus-DP                                                                       | Ethernet POWERLINK                                                                | IO-Link 32 IN/32 OUT                                                               | IO-Link 64 OUT                                                                      | CC-Link IE Field Basic                                                              | Additional                                                                          |
| page B2.30                                                                        | page B2.30                                                                        | page B2.43                                                                        | page B2.43                                                                        | page B2.43                                                                        | page B2.43                                                                        | page B2.43                                                                        | page B2.43                                                                        | page B2.43                                                                         | page B2.43                                                                          | page B2.43                                                                          | page B2.48                                                                          |

## SIGNAL MODULE - S

| S01                                                                                 | S02                                                                                 | S03                                                                                 | S04                                                                                 | S05                                                                                 | S06                                                                                 | S07                                                                                 | S08                                                                                 | S21                                                                                  |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|  |  |  |  |  |  |  |  |  |
| 8 M8 digital inputs                                                                 | 8 M8 digital outputs                                                                | 6 M8 digital outputs + electrical supply                                            | 4 M8 analogue inputs                                                                | 4 M8 analogue outputs                                                               | 16 digital terminal block inputs                                                    | 16 digital terminal block outputs                                                   | 4 M8 analogue inputs for temperature measurement                                    | 16 M8 configurable digital inputs/outputs                                            |
| page B2.18                                                                          | page B2.18                                                                          | page B2.19                                                                          | page B2.19                                                                          | page B2.20                                                                          | page B2.20                                                                          | page B2.21                                                                          | page B2.21                                                                          | page B2.22                                                                           |

## WIRELESS MODULE - S

| S20                                                                                 |
|-------------------------------------------------------------------------------------|
|  |
| Wireless connection module                                                          |
| page B2.16                                                                          |

Part included in the  
ELECTRICAL CONNECTION - E  
with Fieldbus

## COMPRESSED-AIR SUPPLY - P

| P__Z00                                                                              | P__Z__                                                                              | P__Z_0                                                                              | P91Z90                                                                              |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |
| Silenced relief                                                                     | Conveyed relief                                                                     | Separate reliefs                                                                    | Module for electric version only                                                    |
| page B2.51                                                                          | page B2.51                                                                          | page B2.51                                                                          | page B2.52                                                                          |

## PROPORTIONAL PRESSURE REGULATOR - A

| A40_Z_0                                                                               | A41_Z_0                                                                               |
|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |
| Base port 1 pass-through local outlet                                                 | Base port 1 sectioned in-series regulation                                            |
| page B2.65                                                                            | page B2.65                                                                            |

| VALVES                                                                            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Z_ ▲                                                                              | I_ ▲                                                                              | W_ ▲                                                                              | L_ ▲                                                                              | V_                                                                                | K_ ▲                                                                              | O_ ▲                                                                              | G_                                                                                | J_                                                                                | R_ +                                                                                | N0                                                                                  | Y8                                                                                  |
|  |  |  |  |  |  |  |  |  |  |  |  |
| 2 valves 2/2 NC                                                                   | 2 valves 3/2 NC (valid as 5/3 OC)                                                 | 2 valves 3/2 NO (valid as 5/3 PC)                                                 | 3/2 NC + 3/2 NO                                                                   | monostable 5/2                                                                    | bistable 5/2                                                                      | 5/3 CC                                                                            | 3/2 NC high flow                                                                  | 3/2 NO high flow                                                                  | Shut-off valve                                                                      | Dummy valve                                                                         | Bypass                                                                              |
| page B2.57                                                                        | page B2.57                                                                        | page B2.57                                                                        | page B2.57                                                                        | page B2.57                                                                        | page B2.57                                                                        | page B2.57                                                                        | page B2.58                                                                        | page B2.58                                                                        | page B2.59                                                                          | page B2.60                                                                          | page B2.60                                                                          |

▲ Can only be used with 6 or 8 control bases.  
 + Requires inlet port X slave synchronisation.



| CLOSED END-PLATE - C                                                                 |                                                                                       |                                                                                       |
|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| C1                                                                                   | C2                                                                                    | C3                                                                                    |
|  |  |  |
| For islands with multi-pole connector                                                | For islands with fieldbus                                                             | For electrical connection of islands with fieldbus to additional islands              |
| page B2.74                                                                           | page B2.74                                                                            | page B2.74                                                                            |

**BASES FOR VALVES - B**

| B3_ _ _ 0                                                                           | B4_ _ _ _                                                                           |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |
| 3-position base for valves                                                          | 4-position base for valves                                                          |
| page B2.54                                                                          | page B2.54                                                                          |

**Y-FITTING**

| R2                                                                                  |
|-------------------------------------------------------------------------------------|
|  |
| Y-fitting                                                                           |
| page B2.61                                                                          |

**MULTI-FUNCTION MODULE**

|                                                                                     |
|-------------------------------------------------------------------------------------|
|  |
| Fittings with pneumatic functions                                                   |
| page B2.92                                                                          |

**INTERMEDIATE SUPPORT - M**

| M_ _ _ Z0                                                                            | M_ _ _ Z_                                                                             | M_ _ _ Z_                                                                             |
|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |
| Silenced relief                                                                      | Conveyed relief                                                                       | Separate relief                                                                       |
| page B2.69                                                                           | page B2.70                                                                            | page B2.71                                                                            |

## FIXING OPTIONS

- 1 - **Fixing on a DIN bar:** tighten the grub screws into modules E (electrical connection) and C (closed end-plate).  
For islands with more than 40 valves or 5 modules, also use the additional plate code 02282R4001.
  - 2 - **Fixing on a flat surface:** use the pair of brackets code 02282R4000 and the M5x20 screws supplied.  
You can choose where to position the brackets in relation to the island:
    - 2A - **Protruding brackets:** can be used to install the island + brackets unit from above. First secure the brackets to the modules E and C using the grub screws, then secure everything with M5x20 screws.
    - 2B - **Concealed brackets:** the overall dimensions of the island are reduced. First secure the brackets to the flat top with M5x20 screws, then place the island onto the brackets and lock the two grub screws provided in the modules E and C.
  - 3 - **Fixing through a wall:** use the brackets code 02282R4000. The brackets come with M6 threaded holes and can be fixed with M6 screws (not included in the supply) passing through the wall. The brackets can be fixed either protruded or concealed.
- N.B.:** Planar surfaces are required to ensure correct fixing. Avoid twisting or bending the valve units.



## LUBRICATION



The EB 80 electro-pneumatic system is designed to run millions of cycles without the need for any lubrication. This is possible thanks to the optimisation of its components and the use of a special grease with excellent properties and NSF H1 certified. To avoid removing the grease, it is highly recommended not to lubricate the valve input and output ports and check the quality (to ISO 8573-1 class 4-7-3) of the compressed air used, which is often contaminated by particularly aggressive oils that are released by compressors and are not always compatible with the elastomers used in the valves.

## SOME CHARACTERISTICS OF EB 80 SYSTEMS

### HORIZONTAL MODULARITY

- Easy replacement or addition of any sub-assembly.  
The locking tie rods are included in each sub-assembly.



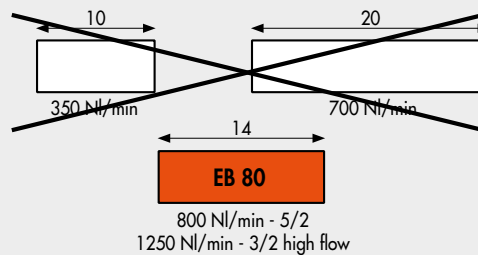
**VERTICAL MODULARITY**

- Easy replacement – no need to disassemble the pack – of the valves on the Bases – B and also of the top part (cover) of subsystems S, E, P, M using a single Phillips-head screwdriver.

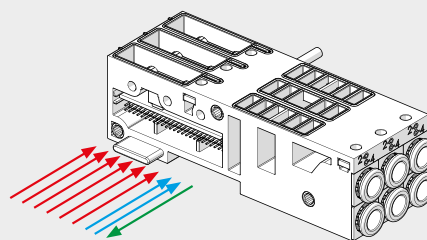
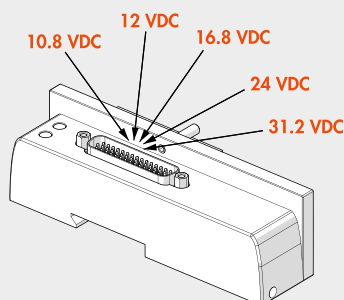
**N.B.:** All protocols can be mounted on the base for field buses and all input or output modules can be mounted on the same base for signals.


**VALVES**
**ONE SIZE FITS ALL**

- Reduced dimensions
- High flow rate
- One warehouse and spares


**EB 80 ELECTRO-PNEUMATIC SYSTEM**
**THE SAME BASE FITS BOTH MULTI-POLE CONNECTIONS AND FIELD BUSES**

- Controls from multi-pole connection
- Controls from field buses
- Diagnostics


**THE SAME ISLAND CAN BE SUPPLIED 10.8 - 31.2 VDC**


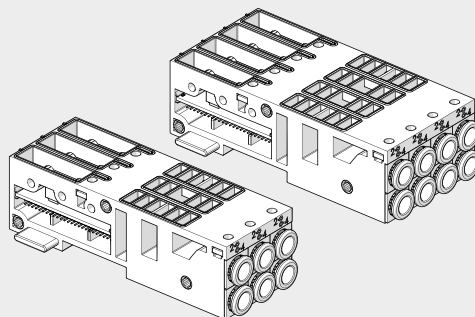
### ONLY 0.3 W FOR EACH SOLENOID VALVE

- Speed-up solenoid valve control:
  - high power for a few milliseconds ensures high performance and rapid and safe switching;
  - reduced holding power resulting in reduced temperatures and energy saving.



### 3- OR 4-POSITION BASES FOR VALVES

- Island layout options:
  - 3 1 base with 3 positions
  - 4 1 base with 4 positions
  - (5 2 bases with 3 positions and 1 dummy valve)
  - 6 2 bases with 3 positions
  - 7 1 base with 3 and 1 with 4 positions
  - 8 2 bases with 4 positions
  - ...
- Compared to single-base solutions, this configuration is advantageous because:
  - just a few bases are required for multiple positions;
  - the base is sturdy and rigid;
  - there is plenty of space to accommodate smart electronics



### INTERCHANGEABLE CARTRIDGE FITTINGS

- For pipes  $\varnothing$  4 (5/32"), 6, 8 (5/16"), 1/4"



## DIMENSIONS

### DIMENSION OF VERSIONS WITH MULTI-POLE CONNECTION



### DIMENSION OF VERSIONS WITH FIELD BUS OR ADDITIONAL CONNECTION



VALVES

EB 80 ELECTRO-PNEUMATIC SYSTEM

## DESCRIPTION

A complete system has a compound **description** of all its subsystems listed in sequence from left to right, as shown below. The abbreviation of each subsystem is obtained by taking the code and omitting the first digits 02282. For example: the digital 8-input signal module is identified with code 02282S01; only write S01 in the description.

The abbreviation of each base for valves consists of:

| Abbreviation of the Base                                                           | Manual valve control           | Type of valves                                                          |
|------------------------------------------------------------------------------------|--------------------------------|-------------------------------------------------------------------------|
| Obtained from the code, after removing 02282                                       | 0 = monostable<br>1 = bistable | Valves<br>Dummy valve<br>Bypass                                         |
| <b>Example</b><br>4-position base, 8 solenoid pilots, Ø 6 pipe; code 02282B4086666 | Monostable                     | 2 monostable 5/2 valves - V<br>1 double 3/2 NO - W<br>1 dummy valve - F |
| <b>Abbreviation</b><br>B4086666                                                    | 0                              | VVWF                                                                    |

The description is therefore a sequence of this type:

| EB 80          | - S _                             | - E _ _               | - P _ _ _ _           | - B _ _ _ _ _ _ _                                                 | - M _ _ _ _ _                | - C _            |
|----------------|-----------------------------------|-----------------------|-----------------------|-------------------------------------------------------------------|------------------------------|------------------|
| EB 80 system   | Electrical Module<br>(if present) | Electrical connection | Compressed air supply | Base for valves<br>(as many as there are)<br>with normal or dummy | Intermediate<br>(if present) | Closed end-plate |
| For the codes: | see page B2.22                    | see page B2.28        | see page B2.52        | see page B2.55 and B2.60                                          | see page B2.72               | see page B2.75   |

### Example:

EB 80-S01-E0EN-P3XZ00-B4086666VWKN-M300Z30-B30388800VVN-C2

| EB 80        | - S01                                            | - E0EN                               | - P3XZ00                                                                          | - B4086666VWKN                                                                                                                                                                                     | - M300Z30                                                                                           | - B30388800VVN                                                                                                                                                       | - C2                                                   |
|--------------|--------------------------------------------------|--------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| EB 80 system | Signal module<br>complete<br>8 M8 digital inputs | Electrical connection<br>EtherNet/IP | Compressed air supply<br>- fitting Ø 12<br>- pilot servo Ø 4<br>- silenced relief | Base for valves<br>- 4 positions<br>- 8 controls<br>- fittings for pipe Ø 6<br>- manual monostable control<br>- 5/2 monostable valve<br>- 2 3/2 NO valves<br>- bistable 5/2 valve<br>- dummy valve | Intermediate<br>- fittings for pipe Ø 12<br>- through ports<br>- without supplementary power supply | Base<br>- 3 positions<br>- 3 controls<br>- fittings for pipe Ø 8<br>- manual monostable control<br>- 5/2 monostable valve<br>- 5/2 monostable valve<br>- dummy valve | Closed end-plate<br>for valve Island<br>with field bus |

Endless number of EB 80 systems can be obtained and their description is variable in length, which can be very extended. The actual ordering CODE of an EB 80 system is created by Metal Work S.p.a. with a limited number of characters. The ordering code is not explicative. The description only is univocal, complete and explicative.

## ACCESSORIES

### FIXING BRACKET



| Code       | Description               | Weight [g] |
|------------|---------------------------|------------|
| 02282R4000 | EB 80 base fixing bracket | 47         |

Note: 2 pieces per pack complete with 4 M5x20 screws

### NOTES

Please refer to the subsystem chapter for other accessories (e.g. connectors) and spare parts.

## EB 80 INDUSTRY 4.0

The new advanced EB 80 diagnostic functions, known as EB 80 I4.0, provide a powerful analysis tool for traditional maintenance operations, ensuring the safe, reliable and lasting operation of production units.

They are available for all electrical connections with fieldbuses and bases marked I4.0, with advanced diagnostics integrated in accordance with Industry 4.0 philosophy.

These functions use the original EB 80 diagnostics, integrating them with the ability of the station itself to control IOs.

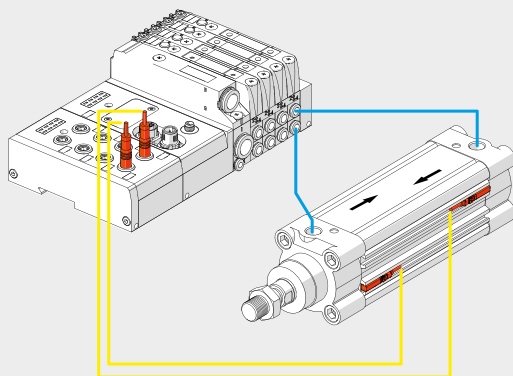
They re-organise and optimise maintenance management by developing predictive maintenance in order to:

- predict faults;
- intervene early to avoid system downtime;
- have all information on equipment operation available in real time;
- monitor component end-of-lifetime;
- optimise warehouse spare parts management.

This makes it possible to turn the data collected into concrete actions using standard EB 80 stations without needing additional modules.

### Description of EB 80 I4.0 functions:

- System data:
  - EB 80 system startup counter;
  - supply alert counter.
- Valve data: Each valve base for each solenoid valve permanently stores the following information:
  - cycle counter;
  - counter for total solenoid valve excitation time;
  - activation of a flag to signal average lifetime exceeded;
  - short circuit alert counter;
  - open circuit alert counter.
- Electropneumatic system control functions (data updated with each cycle):
  - measurement of the delay between activating the solenoid valve "A" and actuator movement commencing via the signal of sensor "B", with delays that exceed the limit flagged;
  - measurement of actuator movement time using two linked sensors "B" and "C", with exceeded time limits flagged;
  - measurement of the delay between deactivating the solenoid valve "A" (or activating a second valve) and actuator return commencing via the signal of sensor "B", with exceeded time limits flagged;
  - measurement of actuator return time using two linked sensors "B" and "C", with exceeded time limits flagged;
  - counter for actuator range of motion.



### PLC-BASED DATA COLLECTION

Electrical connection modules can be used to complement the EB 80 with the main field buses available in the market. In this way, the control system (generally a PLC) can handle in real time the behaviour of the solenoid valve island, including signal modules.

With the introduction of the I4.0 version, the field bus connection modules also send to the network the historical and diagnostic data relating to the behaviour of the island (such as the number of cycles for each solenoid pilot, total activation time and alarms) and the controlled pneumatic circuit (such as the delay times in sensor switching and actuator activation times).

This data is also sent to the control system and can be handled differently depending on the situation: in some cases, it can be used in real time, like in the case of fault alarms; in other cases, it can be sent to a storage local unit or one remotely controlled on a cloud server, and is analysed in a subsequent stage; in other cases, the alarms can be sent to a teleservice station that can monitor the state of the system remotely.



### EB 80 WIRELESS DATA COLLECTION

Integrated into the EB 80, this module provides connection to Wi-Fi networks and Bluetooth® devices to display diagnostic and operating data. The APP specifically developed by Metal Work, called EB80Up, can connect Android and IOS devices for easy viewing of diagnostic and operating data plus the setting of network parameters.



## Spareparts

|                                                                                                                       | Art. No. | Type No.   |
|-----------------------------------------------------------------------------------------------------------------------|----------|------------|
| EB 80 square cartridge with push-in fitting Ø 10 mm for compressed air supply and intermediate support, PU 10 pcs.    | 153918   | 02282R2114 |
| EB 80 base interface gasket, PU 10 pcs.                                                                               | 153860   | 02282R1000 |
| EB 80 gasket for compressed air supply and intermediate support, for sealing between upper and lower part, PU 10 pcs. | 153908   | 02282R1001 |