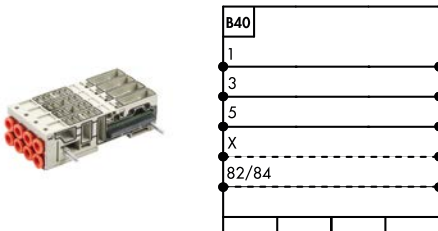


base for valves

Art. No. 151682

Type No. 02282B4041111



Exemplary illustration

The EB 80 "bases for valves – B" are available with either 3 or 4 positions. One version features an electrical connection for a single control of each position, designed exclusively for 5/2 monostable solenoid valves, making it physically impossible to install other valve types.

Another version includes two electrical connections per position and supports all valve types.

The integrated electronics manage signals from both the multi-pole connector and the fieldbus, allowing the same base to be used regardless of the island's control system.

The air delivery ducts (ports 2 and 4) use cartridge-style push-in fittings. These cartridges can be easily replaced by removing the clip located beneath the base, for example when changing the pipe diameter.

In the 4-position base, ports 1, 3, 5, and X are designed as full-flow ports. The 3-position base can be configured with either full-flow or differently sectioned ports, enabling the creation of islands with zones operating at different pressures.

Technical data

Module type	B
Module description	base for valves
Version	4 positions
Duct separation	full-flow ports
Number of controls	4
Port 2+4	without cartridges
Medium	filtered, unlubricated compressed air
Required purity class in accordance w. ISO 8573-1	4.7.3
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 BASES FOR VALVES - B



The EB 80 "Bases for valves - B" can be provided with 3 or 4 positions. A version is available with an electrical connection for a single control of each position, suitable for 5/2 monostable solenoid valves (physically impossible to install other valves). Another version comes with two electrical connections for each position and is suitable for all types of valves. The electronics in the base controls the signal coming from both the multi-pole connector and the fieldbus, so the base is the same, regardless of the control system of the island.

The air delivery ducts (ports 2 and 4) are made up of cartridge-type push-in fittings. The cartridge can be replaced, for example when the pipe diameter needs to be changed, by pulling out the clip placed under the base.

The air flow ducts (ports 1, 3, 5, X) of the 4-position base are the full flow type. For the 3-position base, either full-flow or one or more sectioned ports can be mounted. With this solution, islands with zones with differentiated pressure can be created.

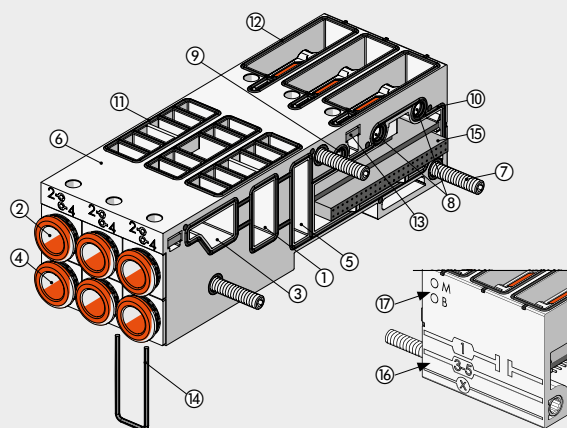


TECHNICAL DATA

Ambient temperature	°C	-10 to + 50
	°F	14 to 122
Fluid		Unlubricated air
Versions		3-position base for controlling 3 solenoid pilots; 3 positions for 6 solenoid pilots; 4 positions for 4 solenoid pilots; 4 positions for 8 solenoid pilots.
		Pipe fittings Ø 4 (5/32"), 6, 8 (5/16"), 1/4" Ducts
		1, 3, 5 and X full flow
		3-position base with 1 sectioned duct; 1, 3 a 5 sectioned; 3 and 5 sectioned (after the first position)
Degree of protection		IP65

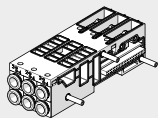
COMPONENTS

- ① PORT 1 DUCT
- ② PORT 2 CARTRIDGE: push-in fitting
- ③ PORT 3 DUCT
- ④ PORT 4 CARTRIDGE: push-in fitting
- ⑤ PORT 5 DUCT
- ⑥ BODY: technopolymer
- ⑦ TIE ROD: nickel-plated brass + stainless steel grub screw
- ⑧ 82/84 DUCT: pilot air relief
- ⑨ X DUCT: pilot control
- ⑩ GASKET BETWEEN BASES: NBR
- ⑪ GASKET FOR THE VALVE: NBR
- ⑫ GASKET FOR IP65:NBR
- ⑬ THREADED PLATE for securing the valves: zinc-plated steel
- ⑭ CLIP for securing the cartridge: stainless steel
- ⑮ ELECTRONICS
- ⑯ PICTOGRAM: indication of compressed air system layout
- ⑰ INDICATION of the type of electronic board:
M = to 3 or 4 controls - B = to 6 or 8 controls



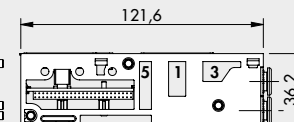
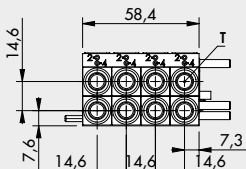
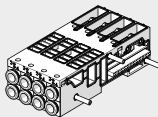
DIMENSIONS - ORDERING CODES

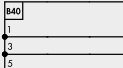
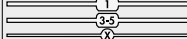
3-POSITION BASE FOR VALVES



Symbol	T - Pipe fitting		Code		Weight [g]
	3 CONTROLS		6 CONTROLS		
Full-flow ports					
	without cartridges	02282B3031110	02282B3061110	170	
	Ø 4 (5/32")	02282B3034440	02282B3064440	230	
	Ø 6	02282B3036660	02282B3066660	220	
	Ø 8 (5/16")	02282B3038880	02282B3068880	210	
	Ø 1/4"	02282B3032220	02282B3062220	220	
Port 1 sectioned after the first position					
	without cartridges	02282B3131110	02282B3161110	170	
	Ø 4 (5/32")	02282B3134440	02282B3164440	230	
	Ø 6	02282B3136660	02282B3166660	220	
	Ø 8 (5/16")	02282B3138880	02282B3168880	210	
	Ø 1/4"	02282B3132220	02282B3162220	220	
Ports 1, 3 and 5 sectioned after the first position					
	without cartridges	02282B3231110	02282B3261110	170	
	Ø 4 (5/32")	02282B3234440	02282B3264440	230	
	Ø 6	02282B3236660	02282B3266660	220	
	Ø 8 (5/16")	02282B3238880	02282B3268880	210	
	Ø 1/4"	02282B3232220	02282B3262220	220	
Ports 3 and 5 sectioned after the first position					
	without cartridges	02282B3331110	02282B3361110	170	
	Ø 4 (5/32")	02282B3334440	02282B3364440	230	
	Ø 6	02282B3336660	02282B3366660	220	
	Ø 8 (5/16")	02282B3338880	02282B3368880	210	
	Ø 1/4"	02282B3332220	02282B3362220	220	

4-POSITION BASE FOR VALVES



Symbol	T - Pipe fitting	Code		Weight [g]
		4 CONTROLS	8 CONTROLS	
Full-flow ports				
	without cartridges	02282B4041111	02282B4081111	230
	Ø 4 (5/32")	02282B4044444	02282B4084444	310
	Ø 6	02282B4046666	02282B4086666	300
	Ø 8 (5/16")	02282B4048888	02282B4088888	270
	Ø 1/4"	02282B4042222	02282B4082222	290
				

KEY TO CODES

02282 FAMILY	B SUBSYSTEM	3 NUMBER OF POSITIONS	0 PORTS IN THE BASE	6 NUMBER OF SOLENOID PILOT CONTROLS	8 1 st position (from left)	8 FITTINGS 2 nd position	8 3 rd position	0 FITTINGS 4 th position
02282 EB 80	B Base for valve	3 3 positions 4 4 positions	0 Full-flow ports ▲ 1 Port 1 sectioned ▲ 2 Ports 1, 3 and 5 sectioned ▲ 3 Ports 3 and 5 sectioned	▲ 3 3 controls ■ 4 4 controls ▲ 6 6 controls ■ 8 8 controls	1 Without cartridges 2 Pipe fitting Ø 1/4" 4 Pipe fitting Ø 4 (5/32") 6 Pipe fitting Ø 6 8 Pipe fitting Ø 8 (5/16")			▲ 0 (for 3-position base) ■ 1 Without cartridges ■ 2 Pipe fitting Ø 1/4" ■ 4 Pipe fitting Ø 4 (5/32") ■ 6 Pipe fitting Ø 6 ■ 8 Pipe fitting Ø 8 (5/16")

▲ For 3-position base only.

■ For 4-position base only.

ACCESSORIES
SILENCER FOR FITTING, Ø 8


Code	Description	Flow rate at 6.3 bar [Nl/min]	Weight [g]
W0970530084	Silencer for fitting, Ø 8	2400	15

ADDITIONAL FIXING BRACKET TO OMEGA BAR


Code	Description	Weight [g]
02282R4001	Additional fixing bar accessory to EB 80 omega bar	5

Individually packed

N.B.: to be used to improve the fixing to Omega bars of islands with more than 40 valves. The bracket must be positioned every 20-25 valves.

SPARE PARTS
CARTRIDGE

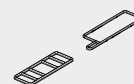

Code	Description	Ø
02282R2001	EB 80 Ø 4 base square cartridge kit	4 (5/32")
02282R2002	EB 80 Ø 6 base square cartridge kit	6
02282R2003	EB 80 Ø 8 base square cartridge kit	8 (5/16")
02282R2006	EB 80 Ø 1/4 base square cartridge kit	1/4"

Comes in 10-pc. packs

BASE INTERFACE GASKET


Code	Description
02282R1000	EB 80 base interface gasket kit

Comes in 10-pc. packs

BASE-VALVE GASKET


Code	Description
02282R1002	EB 80 base-valve gasket kit

Comes in 10-pc. packs

VALVES

EB 80 - BASES FOR VALVES - B

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

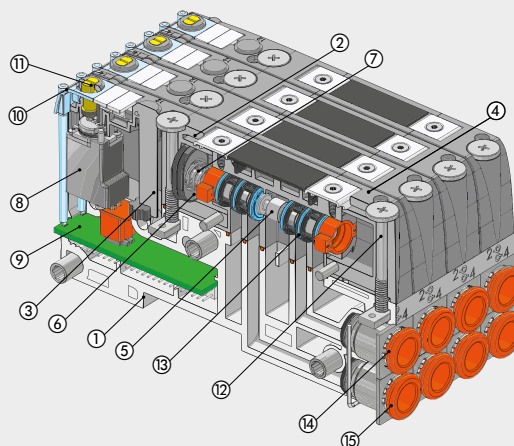


VALVES

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.


ONE SIZE FITS ALL

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


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



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.



Accessories

	Art. No.	Type No.
EB 80 square cartridge with push-in fitting Ø 4 mm for valve base plate, PU 10 pcs.	153913	02282R2001
EB 80 square cartridge with push-in fitting Ø 6 mm for valve base plate, PU 10 pcs.	153914	02282R2002
EB 80 square cartridge with push-in fitting Ø 8 mm for valve base plate, PU 10 pcs.	153915	02282R2003
Additional fixing bracket for OMEGA bar, for valve island EB 80	153576	02282R4001
Splash area kit for valve island EB 80, for 3-8 positions, aluminium	153690	02282R7080
Splash area kit for valve island EB 80, for 3-8 positions, stainless steel	153691	02282R7081
Splash area kit for valve island EB 80, for 8-12 positions, aluminium	153692	02282R7120
Splash area kit for valve island EB 80, for 8-12 positions, stainless steel	153693	02282R7121

Spareparts

	Art. No.	Type No.
EB 80 base interface gasket, PU 10 pcs.	153860	02282R1000
EB 80 gasket for sealing between valve and base plate, PU 10 pcs.	153909	02282R1002