

Series 86-REG / 86-REV

Technical details

Temperature range	0°C ... +50°C
Medium	Filtered, oil-free and dried compressed air according to ISO 8573-1:2010, Class 7:2:4, instrument air, in each case free of aggressive additives. Alternative the pressure dew point has to be at least 10°C below deepest occurring ambient temperature.
Materials	Body: Al (anodized), brass, stainless steel, zinc coated steel, plastic, Seals: NBR
Protection	IP 65 according to EN 60529



Description

- valve-terminal for pneumatic control systems
- terminal up to 24 stations
- valve sizes 10 mm or 14 mm width
- outlet ports on the side of the terminal or on top of the valve
- mounting via through-holes
- internal or external changeable pilot port
- holding current reduction of up to 70%

Technical data

Number of stations	4, 5, 6, 7, 8, 9, 10, 12, 16, 20, 24
electrical Connection	Multi-pin (Sub-D25), CC-Link, Ethernet, Profinet, EtherCAT, IO-Link, CANopen, Modbus-TCP
Voltage	24 V DC ± 10%
Power consumption	max. 1,2 W solenoid, electronic according version
Flow rate	up to 600 NI/min (depending on valve type*)
Pneumactical ports	1, 3 and 5 G1/4, E1 (external pilot port) and 82/87 (solenoid exhausts) M7
Operating ports	G1/8 (14 mm width), M7 (10 mm width)
Operating pressure	depending on valve type*
Pilot pressure	depending on valve type*

*see page 13

Order code

86-RE*-**-**-**-**-**-**-**

Series

REG	outlet ports on manifold
REV	outlet ports on valve

Pilot pressure, width

10	internal pilot pressure, 10 mm
14	internal pilot pressure, 14 mm
E0	external pilot pressure, 10 mm
E4	external pilot pressure, 14 mm

Stations

4-24	4, 5, 6, 7, 8, 9, 10, 12, 16, 20, 24
------	--------------------------------------

Electrical modules

M1	Multi-pin, 25-pin
B0	Bus module, universal (CC-Link, Ethernet, Profinet, EtherCAT adjustable)
B11	IO-Link
B12	Modbus-TCP

Pneumatic connection

00	G1/8 (M7) at 2 and 4 G1/4 at 1
40	Tube connection Ø 4 at 2 and 4 G1/4 at 1
41	Tube connection Ø 4 at 2 and 4 Tube connection Ø 8 at 1
42	Tube connection Ø 4 at 2 and 4 Tube connection Ø 10 at 1
60	Tube connection Ø 6 at 2 and 4 G1/4 at 1
61	Tube connection Ø 6 at 2 and 4 Tube connection Ø 8 at 1
62	Tube connection Ø 6 at 2 and 4 Tube connection Ø 10 at 1

Silencers*

-	no silencers
BL	sintered bronze silencers, left
PL	plastic silencers, left
VL	silencers made of LDPE, sintered, left
BR	sintered bronze silencers, right
PR	plastic silencers, right
VR	silencers made of LDPE, sintered, right
BB	sintered bronze silencers, left and right
PB	plastic silencers, left and right
VB	silencers made of LDPE, sintered, left and right

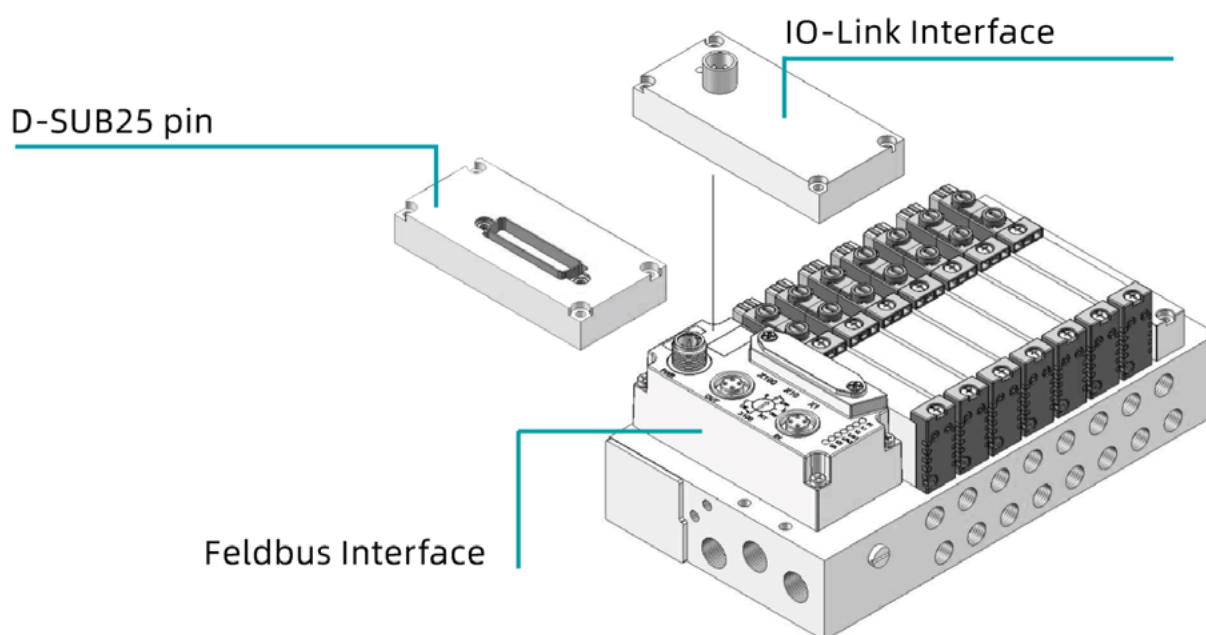
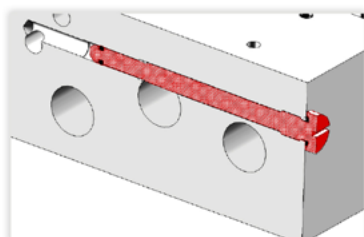
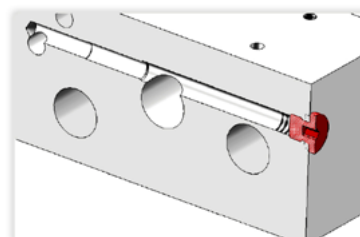
* If more than 6 valves are switched simultaneously, venting is required on both sides.

Valves*

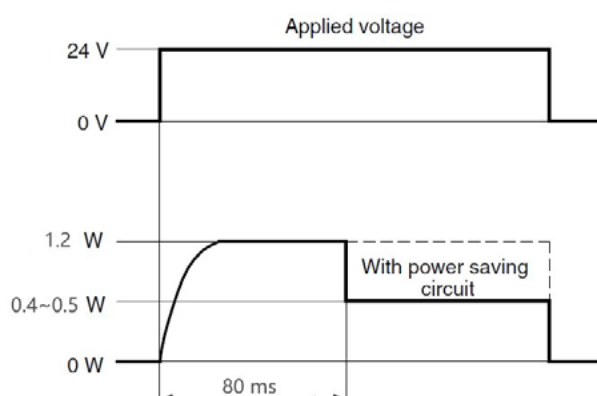
M	5/2-way, single solenoid
J	5/2-way, double solenoid
K	2 x 3/2-way, NC
N	2 x 3/2-way, NO
H	2 x 3/2-way, NC/NO
G	5/3-way, center position closed
E	5/3-way, center position exhausted
B	5/3-way, center position pressurized
L	blind plate
F	blind plate with 3 ports G1/8 for additional air supply
D	pressure dividing plug **

* The valves are fitted in the order specified in the order code.

**Pressure separation is mounted downstream of the valve.

Modular platform

Changing from internal to external pilot pressure

External pilot pressure

Internal pilot pressure

The terminal is set for operation with internal control air when the screw plug 86-VSS-I is fitted.
If this is replaced by the screw plug 86-VSS-E, the terminal is set for operation with external control air.
It is still possible to switch between the two operating modes at a later date.

Holding current reduction


After actuating a solenoid coil, the required holding current is reduced after approx. 80 ms so that it only consumes 0.4 to 0.5 W of power. This saves up to 70% energy.

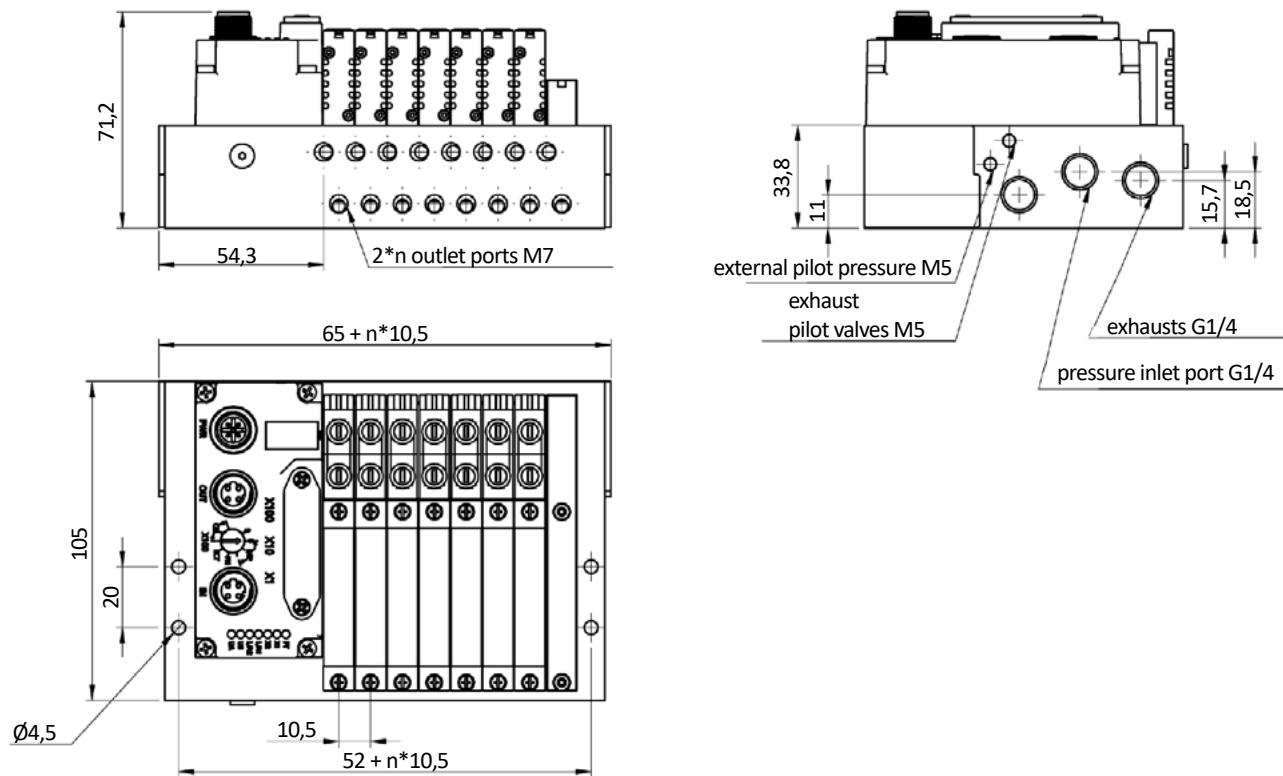
Series 86-REG / 86-REV



Manifold 86-RE-10S, width 10 mm, outlet ports lateral

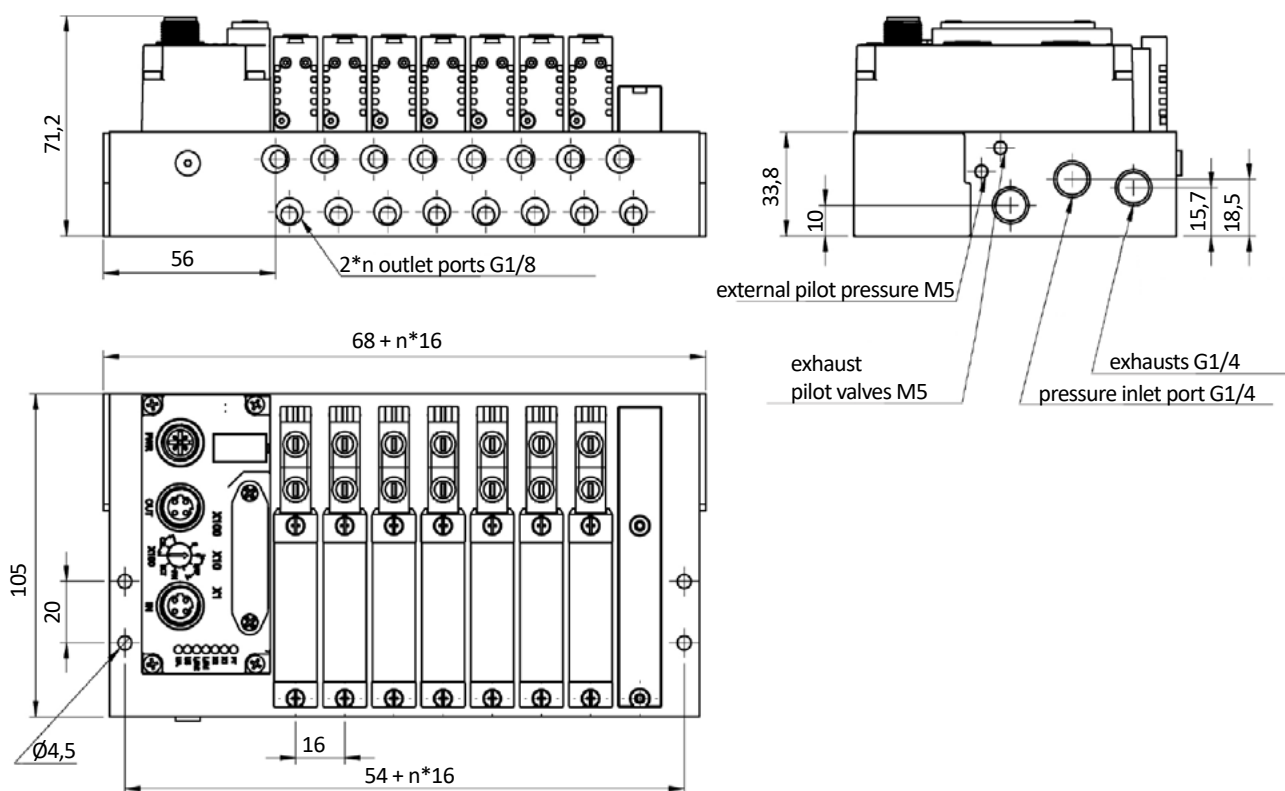
Model-no.:	Stations (n)
86-RE-10S-04	4
86-RE-10S-05	5
86-RE-10S-06	6
86-RE-10S-07	7
86-RE-10S-08	8
86-RE-10S-09	9
86-RE-10S-10	10
86-RE-10S-12	12
86-RE-10S-16	16
86-RE-10S-20	20
86-RE-10S-24	24

Dimensions



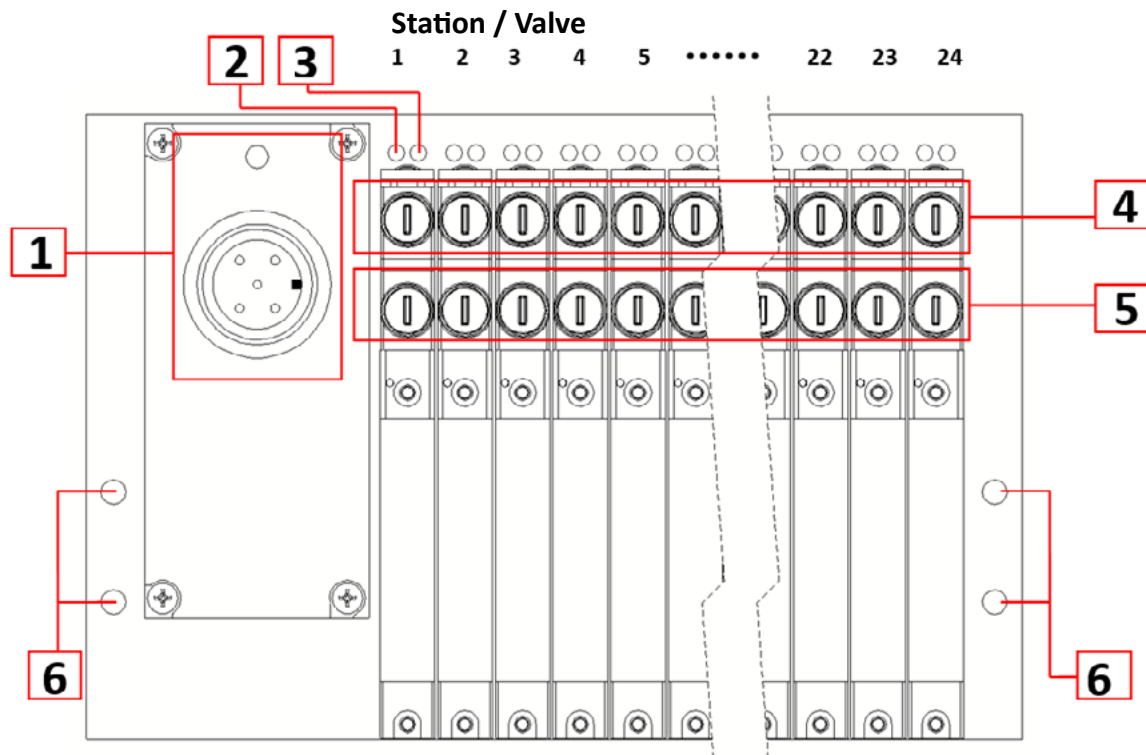
Manifold 86-RE-14S, width 14 mm, outlet ports lateral

Model-no.:	Stations (n)
86-RE-14S-04	4
86-RE-14S-05	5
86-RE-14S-06	6
86-RE-14S-07	7
86-RE-14S-08	8
86-RE-14S-09	9
86-RE-14S-10	10
86-RE-14S-12	12
86-RE-14S-16	16
86-RE-14S-20	20
86-RE-14S-24	24

Dimensions


Series 86-REG / 86-REV

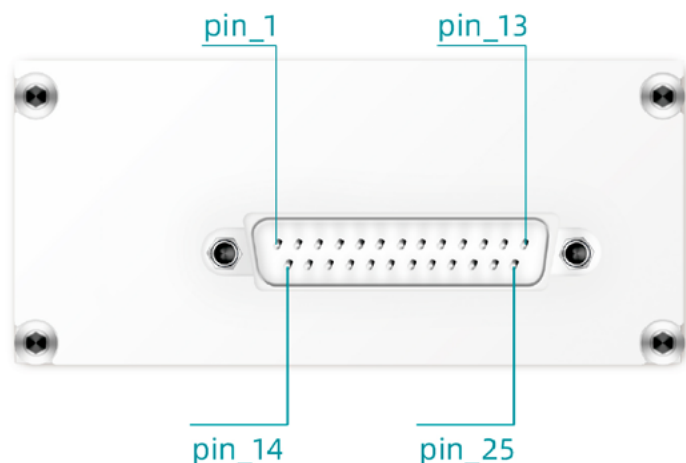
Structure



Pos.	Description	Pos.	Description
1	electrical connection (IO-Link in this case)	4	manual override 12
2	LED indicator 14	5	manual override 14
3	LED indicator 12	6	mounting holes

Multi-pin module 86-RE-M25, Sub-D 25-pin

The 25-pin multi plug has to be ordered separately.



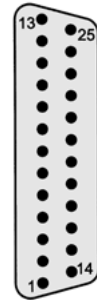
Pin assignment on the multi-pin connection module

Pin	Stations			
	4-12	16	20	24
1	valve 1 / solenoid 14	valve 1 / solenoid 14	valve 1 / solenoid 14	valve 1 / solenoid 14
2	valve 1 / solenoid 12	valve 1 / solenoid 12	valve 1 / solenoid 12	valve 24 / solenoid 14
3	valve 2 / solenoid 14	valve 2 / solenoid 14	valve 2 / solenoid 14	valve 2 / solenoid 14
4	valve 2 / solenoid 12	valve 2 / solenoid 12	valve 2 / solenoid 12	valve 23 / solenoid 14
5	valve 3 / solenoid 14	valve 3 / solenoid 14	valve 3 / solenoid 14	valve 3 / solenoid 14
6	valve 3 / solenoid 12	valve 3 / solenoid 12	valve 3 / solenoid 12	valve 22 / solenoid 14
7	valve 4 / solenoid 14	valve 4 / solenoid 14	valve 4 / solenoid 14	valve 4 / solenoid 14
8	valve 4 / solenoid 12	valve 4 / solenoid 12	valve 4 / solenoid 12	valve 21 / solenoid 14
9	valve 5 / solenoid 14	valve 5 / solenoid 14	valve 5 / solenoid 14	valve 5 / solenoid 14
10	valve 5 / solenoid 12	valve 5 / solenoid 12	valve 20 / solenoid 14	valve 20 / solenoid 14
11	valve 6 / solenoid 14	valve 6 / solenoid 14	valve 6 / solenoid 14	valve 6 / solenoid 14
12	valve 6 / solenoid 12	valve 6 / solenoid 12	valve 19 / solenoid 14	valve 19 / solenoid 14
13	valve 7 / solenoid 14	valve 7 / solenoid 14	valve 7 / solenoid 14	valve 7 / solenoid 14
14	valve 7 / solenoid 12	valve 7 / solenoid 12	valve 18 / solenoid 14	valve 18 / solenoid 14
15	valve 8 / solenoid 12	valve 8 / solenoid 14	valve 6 / solenoid 14	valve 6 / solenoid 14
16	valve 8 / solenoid 14	valve 8 / solenoid 12	valve 17 / solenoid 14	valve 17 / solenoid 14
17	valve 9 / solenoid 12	valve 9 / solenoid 14	valve 9 / solenoid 14	valve 9 / solenoid 14
18	valve 9 / solenoid 14	valve 16 / solenoid 14	valve 16 / solenoid 14	valve 16 / solenoid 14
19	valve 10 / solenoid 12	valve 10 / solenoid 14	valve 10 / solenoid 14	valve 10 / solenoid 14
20	valve 10 / solenoid 14	valve 15 / solenoid 14	valve 15 / solenoid 14	valve 15 / solenoid 14
21	valve 11 / solenoid 12	valve 11 / solenoid 14	valve 11 / solenoid 14	valve 11 / solenoid 14
22	valve 11 / solenoid 14	valve 14 / solenoid 14	valve 14 / solenoid 14	valve 14 / solenoid 14
23	valve 12 / solenoid 12	valve 12 / solenoid 14	valve 12 / solenoid 14	valve 12 / solenoid 14
24	valve 12 / solenoid 14	valve 13 / solenoid 14	valve 13 / solenoid 14	valve 13 / solenoid 14
25	GND (common ground)	GND (common ground)	GND (common ground)	GND (common ground)

* The valve positions marked in red can only be fitted with single solenoid 5/2-way valves.

Pin assignment on the multi-pin connection cable

Pin	Function	Colour code	Pin	Function	Colour code
1	valve 1 / solenoid 1 (top)	white	14	valve 7 / solenoid 14 (bottom)	brown/ green
2	valve 1 / solenoid 2 (bottom)	brown	15	valve 8 / solenoid 15 (top)	white/ yellow
3	valve 2 / solenoid 3 (top)	green	16	valve 8 / solenoid 16 (bottom)	yellow/ brown
4	valve 2 / solenoid 4 (bottom)	yellow	17	valve 9 / solenoid 17 (top)	white/ grey
5	valve 3 / solenoid 5 (top)	grey	18	valve 9 / solenoid 18 (bottom)	grey/ brown
6	valve 3 / solenoid 6 (bottom)	pink	19	valve 10 / solenoid 19 (top)	white/ pink
7	valve 4 / solenoid 7 (top)	blue	20	valve 10 / solenoid 20 (bottom)	pink/ brown
8	valve 4 / solenoid 8 (bottom)	red	21	valve 11 / solenoid 21 (top)	white/ blue
9	valve 5 / solenoid 9 (top)	schwarz	22	valve 11 / solenoid 22 (bottom)	brown/ blue
10	valve 5 / solenoid 10 (bottom)	violet	23	valve 12 / solenoid 23 (top)	white/ red
11	valve 6 / solenoid 11 (top)	grey/ pink	24	valve 12 / solenoid 24 (bottom)	brown/ red
12	valve 6 / solenoid 12 (bottom)	red/ blue	25	GND (gemeinsame Masse)	white/ schwarz
13	valve 7 / solenoid 13 (top)	white/ green			



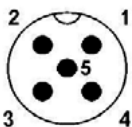
IO-Link-Modul 86-RE-B11-24



IO-Link connector	socket M12, 5-pin, A-code
IO-Link version	V1.1 (V1.0 compatible)
Baud rate	COM2 (38,4 kBit)
Voltage	COM3 (230,4 kBit) at 2 and 4 byte
Power consumption	24 V DC \pm 10%, 2 galvanically isolated power circuits for IO-Link electronic (US) or solenoids (UA)
Min. cycle time (device)	open-circuit: ca. 170 mA full load: max. 2,4 A, depending on number of active valves
Min. cycle time (device)	4ms



Pin assignment



IO-Link connection			
Pin	Designation	Description	
2	UA	supply valve stations 1-24 (solenoids 1-48) ¹⁾	
3	GND_S	ground to U _S	
4	C/Q	IO-Link data communication(seriell)	
5	GND_A	ground to U _A	

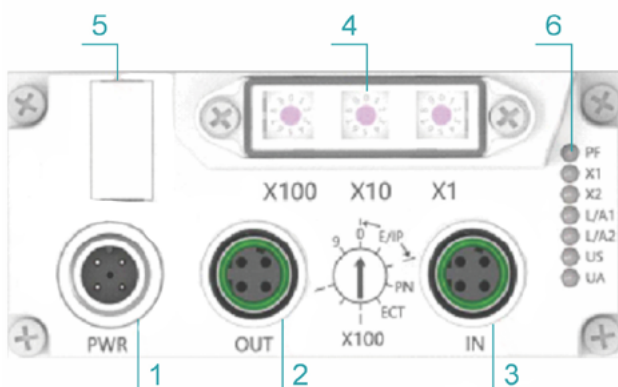
¹⁾ This pin must be connected to 24 V for the solenoids to function, but can be deactivated if necessary to suppress unwanted switching. Reference ground is GND_A.

Bus module 86-RE-B0 (CC-Link, Ethernet, Profinet, EtherCAT adjustable)

EtherCAT
EtherNet/IP

PROFINET

CC-Link IE Field Basic

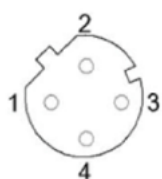


No	Designation	Description
1	Power connection	M12 plug, 4-pin, A-coded
2	Bus connection (OUT)	M12 socket, 4-pin, D-coded
3	Bus connection (IN)	M12 socket, 4-pin, D-coded
4	Selector switch	protocol selection, IP address, coil selection
5	Type plate	device description
6	LED indicators	status indicators

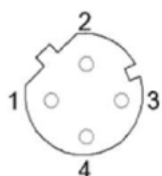
Pin assignment



Power connection		
Pin	Designation	Description
1	UA	supply valve stations 1-24 (solenoids 1-48)
2	GND_A	ground to U _A
3	US	Bus electronics supply
4	GND_S	ground to U _S



Bus connection (OUT)		
Pin	Designation	Description
1	Tx+	Transmit Data +
2	Rx+	Receive Data +
3	Tx-	Transmit Data -
4	Rx-	Receive Data -

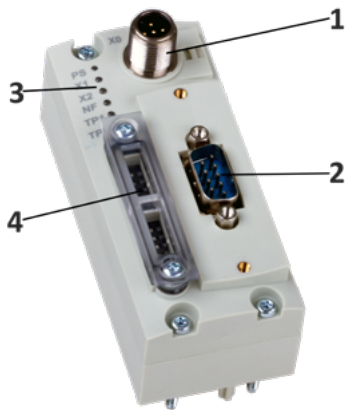


Bus connection (IN)		
Pin	Designation	Description
1	Tx+	Transmit Data +
2	Rx+	Receive Data +
3	Tx-	Transmit Data -
4	Rx-	Receive Data -

Bus module 86-RE-B6 (CANopen)

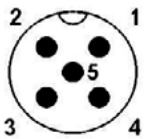


The bus module is connected to the terminal via an I-Port interface.
For this purpose, an IO-Link module 86-RE-B11-24 must be placed between the bus module and the electrical connection of the terminal.



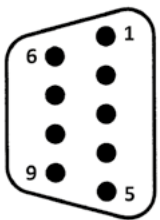
No	Designation	Description
1	Power connection	M12-plug, 5-pin, B-coded
2	CANopen connection	Sub-D-plug, 9-pin
3	LED indicators	status indicators (operating status/diagnosis)
4	Selector switch	DIL switches

Pin assignment



Power connection

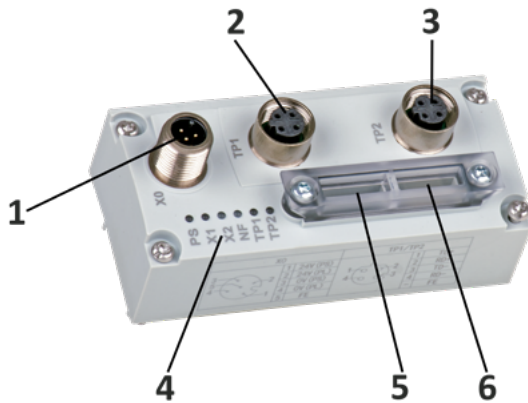
Pin	Designation	Description
1	24V (EL/SEN)	power supply electronics, sensors/inputs
2	24V (VAL/OUT)	power supply valves/outputs
3	0V (EL/SEN)	ground Electronics, sensors/inputs
4	0V (VAL/OUT)	ground valves/outputs
5	FE	functional ground



TP1-connection

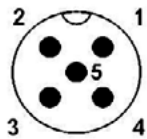
Pin	Designation	Description
1	n.c.	not connected
2	CAN_L	receive/transmit data Low
3	CAN_GND	0V CAN interface (connected to pin 6)
4	n.c.	not connected
5	CAN_Shld	optional shield connection
6	GND	0V CAN interface, optional (connected to pin 3)
7	CAN_H	receive/transmit data High
8	n.c.	not connected
9	CAN_V+	24 V DC supply CAN interface
housing		cable shielding, connection to FE

Modbus-TCP module 86-RE-B12



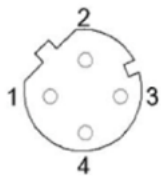
No	Designation	Description
1	Power connection	M12 plug, 5-pin, A-coded
2	TP1 connection	M12 socket, 4-pin, D-coded
3	TP2 connection	M12 socket, 4-pin, D-coded
4	LED indicators	status indicators
5	Selector switch	
6	LED indicator	System status display

Pin assignment



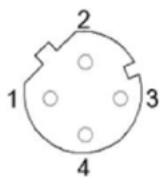
Power connection

Pin	Designation	Description
1	24V (PS)	supply PS
2	24V (PL)	supply PL
3	0V (PS)	ground PS
4	0V (PL)	ground PL
5	FE	functional ground



TP1 connection

Pin	Designation	Description
1	Tx+	Transmit Data +
2	Rx+	Receive Data +
3	Tx-	Transmit Data -
4	Rx-	Receive Data -

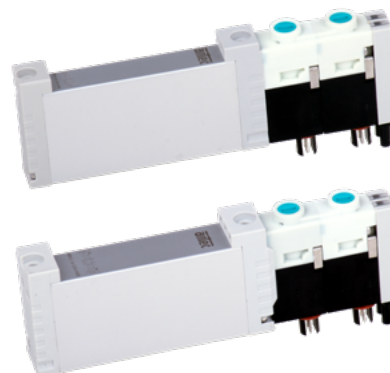


TP2 connection

Pin	Designation	Description
1	Tx+	Transmit Data +
2	Rx+	Receive Data +
3	Tx-	Transmit Data -
4	Rx-	Receive Data -

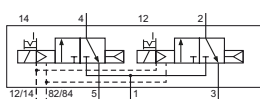
Technical details

Outlets	according to the pneumatical connections of the terminal
Temperature range	0°C ... +50°C
Medium	Filtered, oil-free and dried compressed air according to ISO 8573-1:2010, Class 7:2:4, instrument air, free of aggressive additives. Alternatively the pressure dew point must be at least 10°C below lowest occurring ambient temperature.
Materials	Body: Al (anodized), plastic, seals: NBR, inner parts: Al, steel, brass and plastic
Nominal voltage	24 V DC, $\pm 10\%$
Power consumption	1.2 W
Protection	IP 65 according to EN 60529

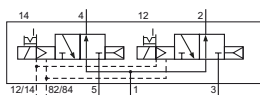


Electrically operated spool valve. The manual override is detent. The manual override is located on top of the solenoid.

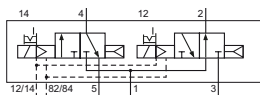
2 x 3/2-way valves



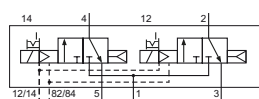
MRG-10-310/2-HNR-442
MRV-10-310/2-HNR-442
2 x 3/2-way, single solenoid, air spring return, NC



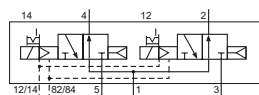
MRG-10-312/2-HNR-442
MRV-10-312/2-HNR-442
2 x 3/2-way, single solenoid, air spring return, NO



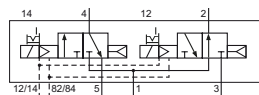
MRG-10-314/2-HNR-442
MRV-10-314/2-HNR-442
2 x 3/2-way, single solenoid, air spring return, 1 x NC, 1 x NO



MRG-14-310/2-HNR-442
MRV-14-310/2-HNR-442
2 x 3/2-way, single solenoid, air spring return, NC

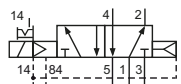


MRG-14-312/2-HNR-442
MRV-14-312/2-HNR-442
2 x 3/2-way, single solenoid, air spring return, NO

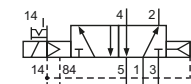


MRG-14-314/2-HNR-442
MRV-14-314/2-HNR-442
2 x 3/2-way, single solenoid, air spring return, 1 x NC, 1 x NO

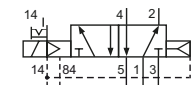
5/2-way valves



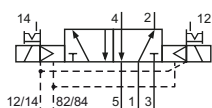
MRG-10-510-HNR-442
MRV-10-510-HNR-442
5/2-way, single solenoid, air spring return



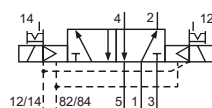
MRG-14-510-HNR-442
MRV-14-510-HNR-442
5/2-way, single solenoid, air spring return



MRG-14-510-HNR-T32
MRV-14-510-HNR-T32
5/2-way, single solenoid, air spring return

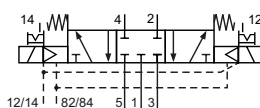


MRG-10-520-HNR-442
MRV-10-520-HNR-442
5/2-way, double solenoid

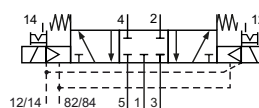


MRG-14-520-HNR-442
MRV-14-520-HNR-442
5/2-way, double solenoid

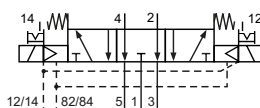
5/3-way valves



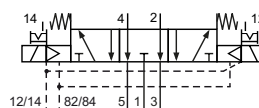
MRG-10-530-HNR-442
MRV-10-530-HNR-442
5/3-way, center position closed



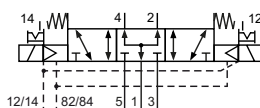
MRG-14-530-HNR-442
MRV-14-530-HNR-442
5/3-way, center position closed



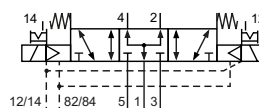
MRG-10-533-HNR-442
MRV-10-533-HNR-442
5/3-way, center position exhausted



MRG-14-533-HNR-442
MRV-14-533-HNR-442
5/3-way, center position exhausted



MRG-10-534-HNR-442
MRV-10-534-HNR-442
5/3-way, center position pressurized



MRG-14-534-HNR-442
MRV-14-534-HNR-442
5/3-way, center position pressurized

Series 86-REG / 86-REV

Technical data

Model-no.:	MR*-14-310/2-HNx-xxx	MR*-14-312/2-HNx-xxx	MR*-14-314/2-HNx-xxx
Internal pilot pressure			
Operating pressure (bar)	2,5 ... 8	2,5 ... 8	2,5 ... 8
External pilot pressure			
Operating pressure (bar)	2 ... 8	2 ... 8	2 ... 8
Pilot pressure (bar)	2,5 ... 8	2,5 ... 8	2,5 ... 8
Flow rate (NI/min)	600	580	580

Model-no.:	MR*-14-510-HNx-xxx	MR*-14-520-HNx-xxx	MR*-14-530-HNx-xxx	MR*-14-533-HNx-xxx
Internal pilot pressure				
Operating pressure (bar)	2 ... 8	2 ... 8	3 ... 8	3 ... 8
External pilot pressure				
Operating pressure (bar)	0 ... 8	0 ... 8	0 ... 8	0 ... 8
Pilot pressure (bar)	2 ... 8	2 ... 8	3 ... 8	3 ... 8
Flow rate (NI/min)	600	600	580	580

Model-no.:	MR*-10-310/2-HNx-xxx	MR*-10-312/2-HNx-xxx	MR*-10-314/2-HNx-xxx
Internal pilot pressure			
Operating pressure (bar)	2,5 ... 8	2,5 ... 8	2,5 ... 8
External pilot pressure			
Operating pressure (bar)	2 ... 8	2 ... 8	2 ... 8
Pilot pressure (bar)	2,5 ... 8	2,5 ... 8	2,5 ... 8
Flow rate (NI/min)	400	400	400

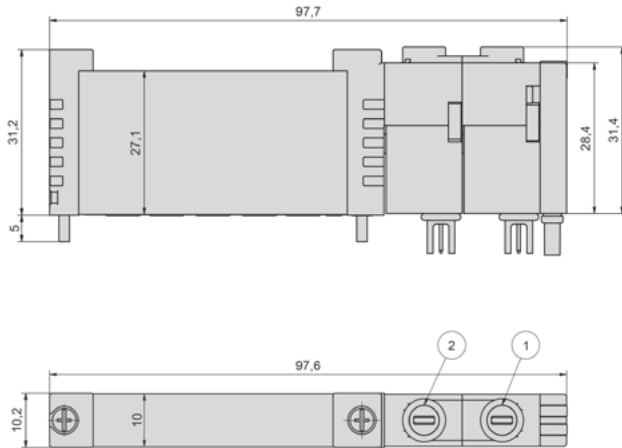
Model-no.:	MR*-10-510-HNx-xxx	MR*-10-520-HNx-xxx	MR*-10-530-HNx-xxx	MR*-10-533-HNx-xxx
Internal pilot pressure				
Operating pressure (bar)	2 ... 8	2 ... 8	3 ... 8	3 ... 8
External pilot pressure				
Operating pressure (bar)	0 ... 8	0 ... 8	0 ... 8	0 ... 8
Pilot pressure (bar)	2 ... 8	2 ... 8	3 ... 8	3 ... 8
Flow rate (NI/min)	400	400	400	400

Series 86-REG / 86-REV

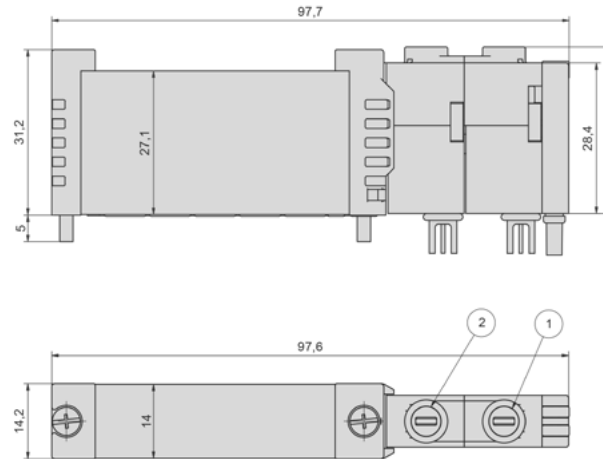


Dimensions

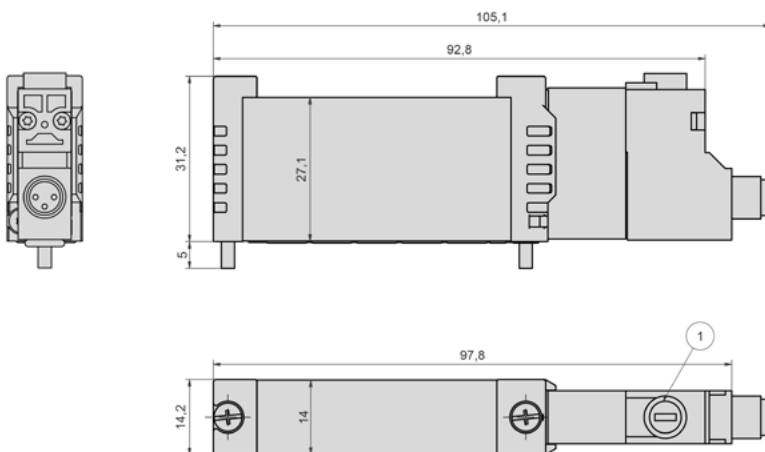
MR-10-xxx-HNx



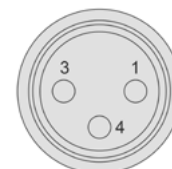
MR-14-xxx-HNx



MRG-14-510-HNR-T32 (with M8 connection for individual wiring)



Pin assignment



- 1 = not used
- 3 = + or -
- 4 = + or -

Accessories

Model-no.: 	86-RE-10-VP Blind plate for valve and coil station 86-RE-10	Model-no.: 	86-ST-246-M1-yy-xxx 25-pin multi plug, 45° yy = 25 25-pin xxx = 105 5 m cable
Model-no.: 	86-RE-14-VP Blind plate for valve and coil station 86-RE-14	Model-no.: 	28-ST-46-M1-yy-xxx 25-pin multi plug, straight yy = 25 25-pin xxx = 105 5 m cable xxx = 110 10 m cable
Model-no.: 	86-RE-10-AP-01 Blind plate for valve and coil station with 3 ports G1/8 for additional air supply (inlet and exhaust)	Model-no.: 	28-ST-146-M1-yy-xxx 25-pin multi plug, 90° yy = 25 25-pin xxx = 105 5 m cable xxx = 110 10 m cable
Model-no.: 	86-RE-14-AP-01 Blind plate for valve and coil station with 3 ports G1/8 for additional air supply (inlet and exhaust)	Model-no.: 	86-RE-DT-01 Pressure dividing plug suitable in channel 1,3 and 5
Model-no.: 	86-VSS-E Screw plug for setting external control air	Model-no.: 	86-RE-B-01 Mounting set for DIN rail mounting
Model-no.: 	86-VSS-I Screw plug for setting internal control air		