Series AP
directly operated proportional valves

2/2-way proportional valves, NC
Sizes: 16 - 22 mm

- Available in two sizes: 16 and 22 mm
- PWM or current operation
- Open loop flow control
- Also suitable for use with vacuum
- Size 16mm also available with body in PVDF

Series AP directly operated 2/2-way proportional solenoid valves, NC, with nominal diameters range from 0.8 to 2.4 mm, can be used where an open loop flow control is required, with gas mixtures, to control free flows or blows, or emptying chambers using vacuum.

Series AP proportional valves have been manufactured to optimize and reduce friction and stick-slip effects.
The output flow is proportional to the control signal.
As they can work also in vacuum, a minimum working pressure is not required.

GENERAL DATA

Function	2/2 NC			
Operation	proportional directly operated			
Ports	M5 - G1/8			
Nominal diameter (ø)	see table			
Nominal flow (Qn - Kv)	see table			
Maximum operating pressure	see table			
Hysteresis	16 mm size < 7%	22 mm size < 5%		
Repeatibility	16 mm size < 5%	22 mm size < 3%		
Operating temperature	0 ÷ 60°C			
Medium	filtered compressed air, unlubricated, according to ISO 8573-1 class 3.4.3, inert gas			
Installation	in any position			
Materials	body = brass / PVDF (for size 16mm only) seals = NBR			
	GP7	GPH	U711	U712
Nominal resistance	193 ohm	48 ohm	85 ohm	22 ohm
Rated current	125 mA	250 mA	271 mA	0.542 mA

While choosing the valve characteristics and in order to reach the highest performances, it is important to know that there must be a pressure difference of 90% at least between the inlet and the outlet. For example: inlet P 10 bar - outlet P max 1 bar up to free flow.

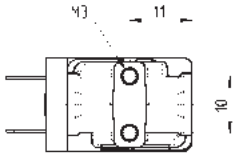
CODING EXAMPLE

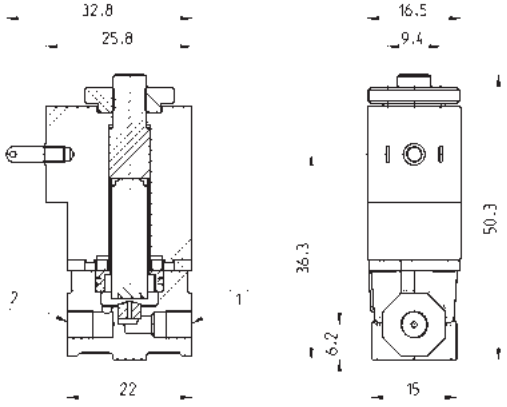
AP	-	7	2	1	1	-	L	R	2	-	G	7	11

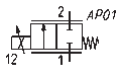
AP	SERIES
7	BODY: 6 = Size 16 mm 7 = Size 22 mm
2	NUMBER OF WAYS: 2 = 2-way
1	VALVE FUNCTION: 1 = NC
1	PORTS: 0 = M5 (for size 16 mm only) 1 = G1/8 (for size 22 mm only) L = barbed fittings (for body in PVDF only, size 16 mm)
L	NOMINAL DIAMETER: D = ø 0.8 mm (for size 16 mm only) F = ø 1 mm H = ø 1.2 mm L = ø 1.6 mm N = ø 2 mm (for size 22 mm only) Q = ø 2.4 mm (for size 22 mm only)
R	SEALS MATERIAL: R = NBR
2	BODY MATERIAL: 2 = brass 3 = PVDF (for size 16 mm only)
G	ENCAPSULATING MATERIAL: G = PA (for size 16 mm only) U = PET (for size 22 mm only)
7	SOLENOID DIMENSIONS: P = 16x26 DIN EN 175301-803-C (for size 16 mm only) 7 = 22x22 DIN 43650 B (for size 22 mm only)
11	SOLENOID VOLTAGE: H = 12 V DC 3 W (for size 16 mm only) 7 = 24 V DC 3 W (for size 16 mm only) 11 = 24 V DC 6.5 W (for size 22 mm only) 12 = 12 V DC 6.5 W (for size 22 mm only)

Series AP proportional valves - size 16mm

For the use with vacuum connect the line to connection 2.





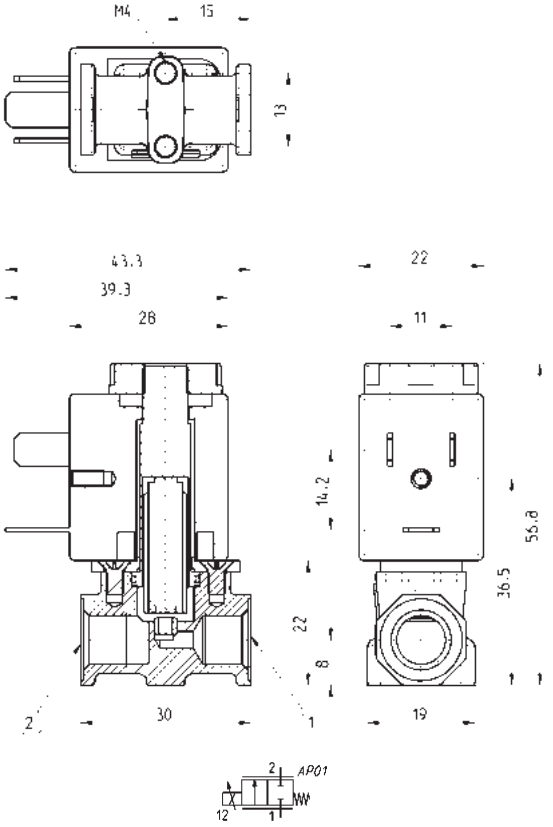


Mod.	Port 1	Port 2	Function	Orifice ø (mm)	Kv (l/min)	P Max (bar)
AP-6210-DR2-GP*	M5	M5	2/2 NC	0.8	0.4	10
AP-6210-FR2-GP*	M5	M5	2/2 NC	1	0.5	8
AP-6210-HR2-GP*	M5	M5	2/2 NC	1.2	0.65	6
AP-6210-LR2-GP*	M5	M5	2/2 NC	1.6	1.2	4

* choose the desired voltage

Series AP proportional valves - size 22mm

For the use with vacuum connect the line to connection 2.



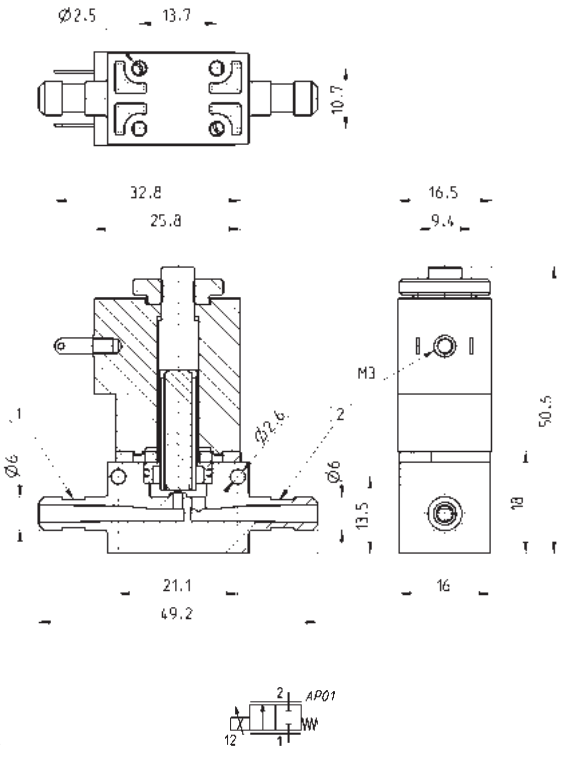
Mod.	Port 1	Port 2	Function	Orifice ø (mm)	Kv (l/min)	P Max (bar)
AP-7211-FR2-U7*	G1/8	G1/8	2/2 NC	1	0.5	10
AP-7211-HR2-U7*	G1/8	G1/8	2/2 NC	1.2	0.65	8
AP-7211-LR2-U7*	G1/8	G1/8	2/2 NC	1.6	1.0	6
AP-7211-NR2-U7*	G1/8	G1/8	2/2 NC	2	1.6	5
AP-7211-QR2-U7*	G1/8	G1/8	2/2 NC	2.4	2.0	4

* choose the desired voltage

Series AP proportional valves, size 16mm - body in PVDF

New

For the use with vacuum connect the line to connection 2.

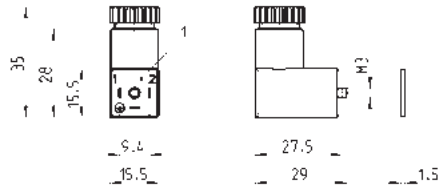


Mod.	Port 1	Port 2	Function	Orifice ø (mm)	Kv (l/min)	P Max (bar)
AP-621L-DR3-GP*	Ø6 **	Ø6 **	2/2 NC	0.8	0.4	10
AP-621L-FR3-GP*	Ø6 **	Ø6 **	2/2 NC	1	0.5	8
AP-621L-HR3-GP*	Ø6 **	Ø6 **	2/2 NC	1.2	0.65	6
AP-621L-LR3-GP*	Ø6 **	Ø6 **	2/2 NC	1.6	1.2	4

* choose the desired voltage
** pneumatic connection with tube and clamps

Connector Mod. 125-800 DIN 43650 pitch 9.4 mm

For size 16 mm only

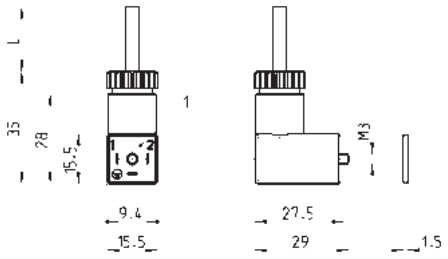


Mod.	description	colour	working voltage	cable holding	tightening torque
125-800	connector, without electronics	black	-	PG7	0.3 Nm

1 = 90° adjustable connector

Connector Mod. 125-550- DIN 43650 pitch 9.4 mm with cable

For size 16 mm only

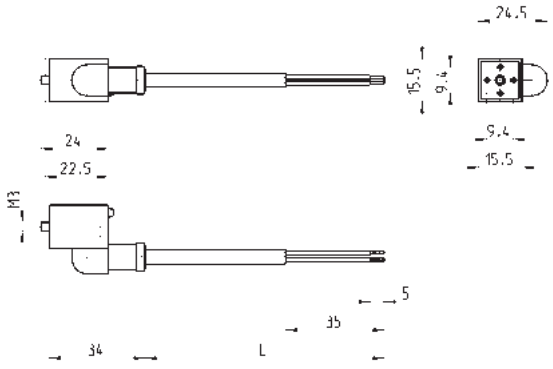


Mod.	description	colour	working voltage	cable length [L]	cable holding	tightening torque
125-550-1	moulded cable, without electronics	black	-	1000 mm	-	0.3 Nm

1 = 90° adjustable connector

In-line connectors with cable Mod. 125-553

For size 16 mm only

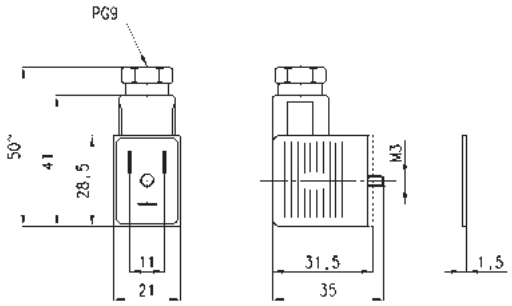


Mod.	description	colour	working voltage	cable length [L]	cable holding	tightening torque
125-553-2	in-line moulded cable, without electronics	black	-	2000 mm	-	0.3 Nm
125-553-5	in-line moulded cable, without electronics	black	-	5000 mm	-	0.3 Nm

Connectors Mod. 122-800 DIN 43650

For size 22 mm only

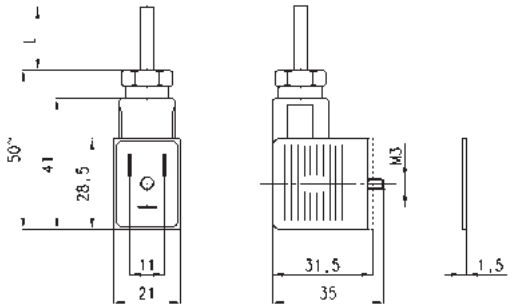
Mod. 122-800EX:
for ATEX certified solenoids mod. U7*EX, with anti-screwing off screw mod. TORX.



Mod.	description	colour	working voltage	cable holding	tightening torque
122-800	connector, without electronics	black	-	PG9	0.5 Nm
122-800EX	connector, without electronics	black	-	PG9	0.5 Nm

Connectors Mod. 122-550 DIN 43650 with cable

For size 22 mm only



Mod.	description	colour	working voltage	cable length [L]	cable holding	tightening torque
122-550-1	moulded cable, without electronics	black	-	1000 mm	-	0.5 Nm
122-550-5	moulded cable, without electronics	black	-	5000 mm	-	0.5 Nm

Series CP directly operated proportional solenoid valves

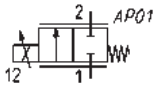
New

2/2-way NC
Nominal diameters: 1mm - 1.5mm - 2mm

- High flow
- Great precision
- Low hysteresis

Series CP valves have been designed to optimize dimensions and reduce friction and stick-slip effects. The output flow is proportional to the control signal.
As they can work also in vacuum, a minimum working pressure is not required.
Their cartridge design makes them particularly compact, thus they can be mounted directly near the workstation.

Series CP directly operated proportional solenoid valves can be used where an open loop flow control is required, with gas mixtures or to control flows.



GENERAL DATA

TECHNICAL FEATURES	
Function	2/2 NC
Operation	proportional directly operated
Pneumatic connections	cartridge
Nominal diameters	1 - 1.5 - 2 mm
Free flow capacity	70 - 80 - 90 l/min
Operating pressure	8 – 5 – 3 bar
Max overpressure	16 bar
Linearity	3% FS
Hysteresis	10% FS
Repeatibility	5% FS
Operating temperature	+10°C / +50°C
Media	filtered compressed air, unlubricated, according to ISO 8573-1 class 3.4.3, inert gas
Response time	see the following page
Installation	in any position
MATERIALS IN CONTACT WITH THE MEDIUM	
Body	brass, stainless steel, PPS
Seals	FKM
ELECTRICAL FEATURES	
Operation	PWM > 1000 Hz or current control
Operation voltage	6 - 11 - 24 V DC
Max power consumption	3.2 W
Nominal resistance	11.8 - 37.6 - 184.7 Ohm
Rated current	0.103 - 0.238 - 0.410 A
Duty cycle	100%
Electrical connection	cable 300mm AWG24
Protection class	IP00 / IP40
Average lifecycles	50000000
Versions available on demand	- base with 1/8 - 1/4 ports - seals in EPDM (in progress)

CODING EXAMPLE

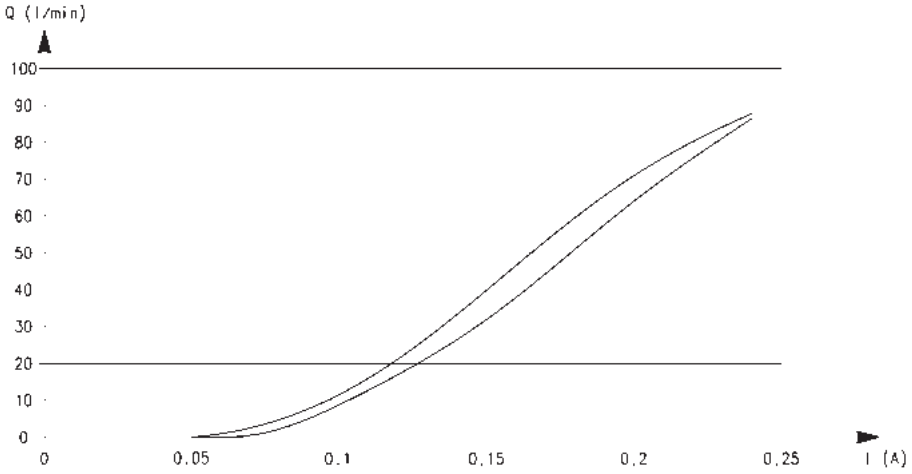
CP	-	C	6	2	1	-	G	W	2	-	0	P	5

CP	SERIES
C	PORTS: C = cartridge
6	BODY SIZE: 6 = 16mm
2	NUMBER OF PORTS: 2 = 2-way
1	FUNCTION: 1 = NC
G	ORIFICE DIAMETRES: F = ø 1mm G = ø 1.5mm N = ø 2mm
W	GASKETS MATERIAL: W = FKM
2	BODY MATERIAL: 2 = BRASS
0	OVERMOULDING MATERIAL OF COIL: 0 = cartridge
P	DIMENSIONS OF THE COIL: P = ø 16
5	VOLTAGE: 1 = 6V DC 3.2W 3 = 24V DC 3.2W 5 = 11V DC 3.2W

TYPICAL HYSTERESIS DIAGRAM and RESPONSE TIMES

DIAGRAM LEGEND:

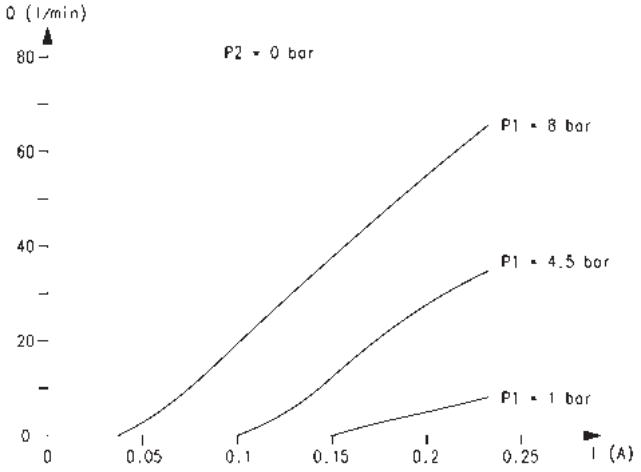
Q = flow (l/min)
I = current (A)



SIZE 16mm - RESPONSE TIMES calculated according to the maximum flow at each operating pressure. [Electromechanical response time: 10 ms]

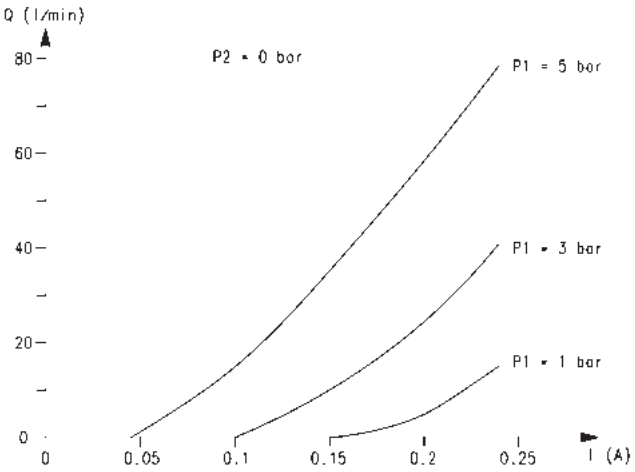
ø	Pin [bar]	Load response time [ms]			Exhaust response time [ms]		
		0% - 10%	0% - 90%	10% - 90%	100% - 90%	100% - 10%	90% - 10%
1 mm	8	12	42	30	9	33	24
1.5 mm	5	12	39	27	9	33	24
2 mm	3	11	39	28	9	33	26

FLOW DIAGRAMS



Nominal diameter 1mm

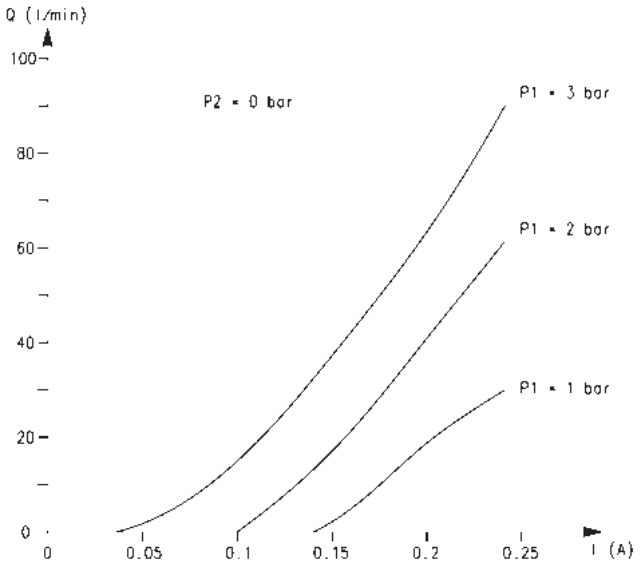
Q = flow (l/min)
I = current (A)
P1 = pressure in load (bar)
P2 = 0 [free flow pressure] (bar)



Nominal diameter 1.5mm

Q = flow (l/min)
I = current (A)
P1 = pressure in load (bar)
P2 = 0 [free flow pressure] (bar)

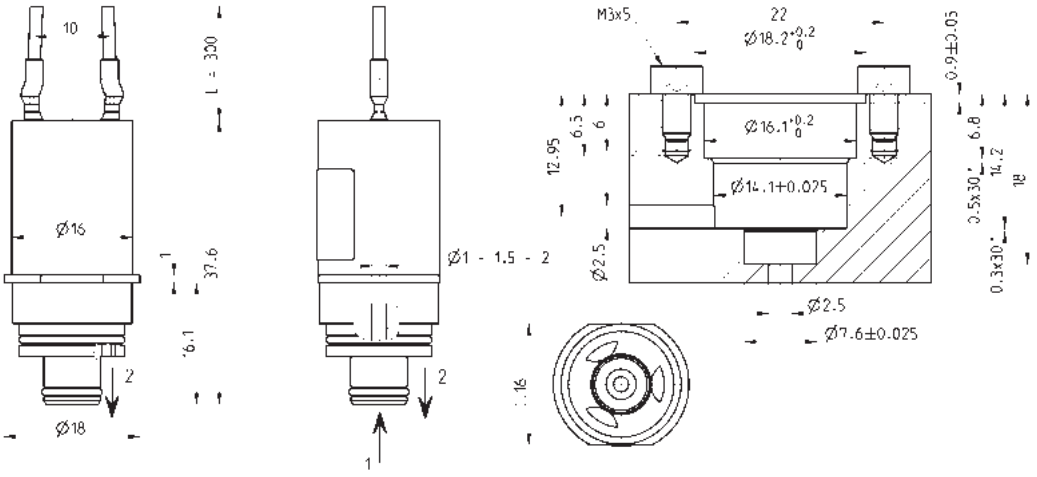
FLOW DIAGRAMS



Nominal diameter 2mm

Q = flow (l/min)
I = current (A)
P1 = pressure in load (bar)
P2 = 0 [free flow pressure] (bar)

Solenoid valves, size 16mm - dimensions



Mod.	Orifices Ø (mm)	Max operating pressure (bar)	Flow at the max pressure (l/min)	Flow at the max pressure Kv (l/min)	Operation voltage (V DC)	Max current (A)
CP-C621-FW2-0P1	1	8	70	0.55	6	0.410
CP-C621-GW2-0P1	1.5	5	80	0.88	6	0.410
CP-C621-NW2-0P1	2	3	90	1.42	6	0.410
CP-C621-FW2-0P3	1	8	70	0.55	24	0.103
CP-C621-GW2-0P3	1.5	5	80	0.88	24	0.103
CP-C621-NW2-0P3	2	3	90	1.42	24	0.103
CP-C621-FW2-0P5	1	8	70	0.55	11	0.238
CP-C621-GW2-0P5	1.5	5	80	0.88	11	0.238
CP-C621-NW2-0P5	2	3	90	1.42	11	0.238

Series 130 electronic control device for proportional valves

New

PWM control device, with current control system for directly operated proportional valves

- Closed loop current control (max current that can be provided = 1A)
- Management of up and down ramp
- Command signal 0-10V and 4-20mA
- Regulation of min and max current (Span and Offset)

Series 130 electronic control device allows to pilot any proportional valve with a maximun current of 1 A.
It turns a standard inlet signal (0-10V or 4-20 mA) into a PWM signal to obtain at the solenoid outlet a current which is proportional to the inlet signal.

A control system of the provided current allows to compensate variations due to heating of the solenoid or to the variation of the supply voltage.It is possible to adjust the maximum current and the minimum current provided to the solenoid. The outlet signal can have a ramp progress that is adjustable between 0 and 5 s. The device has a firmware dedicated to the proportional valve to pilot in order to guarantee the best performance.

GENERAL DATA

Material of container	Polycarbonate
Electrical connections	screw
Environmental temperature	0 ÷ 50°C
Mounting	in any position
Power supply	6 V ÷ 24 V DC (± 10%)
Consumption	0.4 W (without valve)
Analogical input	0 ÷ 10 V 4 ÷ 20 mA
Input impedence	>30 Kohm with inlet under voltage <200 ohm with inlet under current
Output PWM	120 Hz ÷ 11.7 KHz (fixed, according to the valve chosen)
Maximum current (valve)	1 A
Protection	Polarity inversion, short circuit of the outlet
External diameter of cable jacket	5 ÷ 7.5 mm with seal only 4 ÷ 6 mm with reducer and seal
Conductor section	26 ÷ 16 AWG / 0,13 ÷ 1,5 mm2
Maximum length supply/signal cable	10 m
Maximum length valve cable	5 m
IP protection class according to EN 60529	IP 54
Ramp function	Adjustable time from 0 to 5 s
Regulation min. current (Offset)	0% ÷ 40% F.S.
Regulation maximum current	50% ÷ 100% F.S.

CODING EXAMPLE

130	-	2	2	2

130	SERIES
2	VOLTAGE: 2 = 24 V DC (max power 24 W) 3 = 12 V DC (max power 12 W) 4 = 6 V DC (max power 6 W) 5 = 11 V DC (max power 11 W)
2	POWER: 1 = 3 W 2 = 6.5 W 3 = 3.2 W 4 = 4.3 W 5 = 10 W
2	PWM FREQUENCY: 2 = 500 Hz 3 = 1 KHz

NOTE: it is possible to realize configurations with voltage, power and PWM frequency values that are not yet foreseen in the coding example.
For further information we suggest you to contact our technical department.

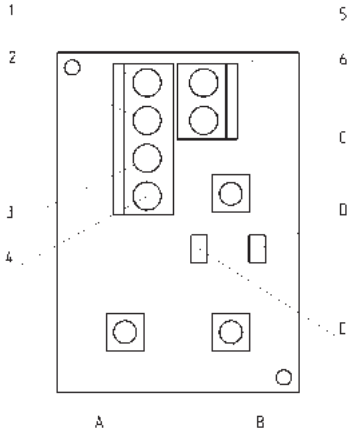
ELECTRICAL CONNECTIONS AND SETTINGS

DRAWING LEGEND:

1 = 6 ÷ 24 V DC (supply)
2 = 0 V (Ground) common also for the reference signal
3 = analogical reference signal 0 ÷ 10V DC
4 = analogical reference signal 4 ÷ 20 mA
A = regulation of min. current (OFFSET)
B = regulation of max. current (SPAN)
C = regulation of the PWM outlet up and down ramp
D = red LED
E = yellow LED

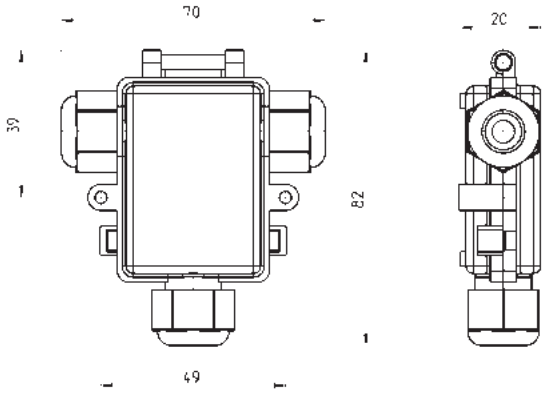
Note 1: the GND of the reference signal and the GND of supply have to be linked together.

Note 2: For the valve connection use a connector without protection - diodes, varistors, etc... - as these might alter the regulation of the device.



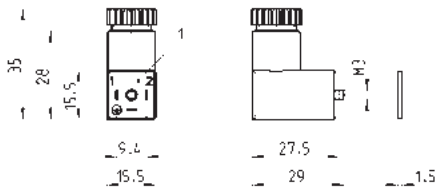
Series 130 electronic control

NOTE: it is possible to realize configurations with voltage, power and PWM frequency values that are not shown in the table below. For further information we suggest you to contact our technical department.



Mod.	Matching valve family	Valve voltage (Output)	Adjusted power	Adjusted frequency
130-222	Series AP - size 22 mm	24 V DC	6.5 W	500 Hz
130-322	Series AP - size 22 mm	12 V DC	6.5 W	500 Hz
130-252	Series AP - size 22 mm	24 V DC	10 W	500 Hz
130-352	Series AP - size 22 mm	12 V DC	10 W	500 Hz
130-213	Series AP - size 16 mm	24 V DC	3 W	1000 Hz
130-313	Series AP - size 16 mm	12 V DC	3 W	1000 Hz
130-433	Series CP - size 16 mm	6 V DC	3.2 W	1000 Hz
130-533	Series CP - size 16 mm	11 V DC	3.2 W	1000 Hz
130-233	Series CP - size 16 mm	24 V DC	3.2 W	1000 Hz
130-442	Series CP - size 20 mm	6 V DC	4.3 W	500 Hz
130-342	Series CP - size 20 mm	12 V DC	4.3 W	500 Hz
130-242	Series CP - size 20 mm	24 V DC	4.3 W	500 Hz

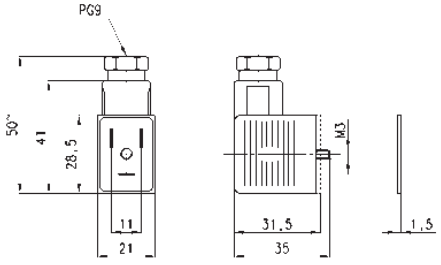
Connector Mod. 125-800 DIN 43650 pin spacing 9,4mm



Mod.
125-800

1 = 90° adjustable connector

Connector Mod. 122-800 DIN 43650 (PG)



Mod.	Torque (Nm)
122-800	0.5

Analogic proportional servo valves Flow control - Series LRWA

Running out of stock

3/3-way directly operated servo valves for the flow control

Theser servo valves are equipped with a patented rotating spool system with closed loop control circuit.
Their compact design makes them particularly suitable for several applications.

The LRWA0 cartridge has to be supplied with a controller that contains the electronic board and a connection cable. The valve controllers are adjusted to the corresponding cartridges. A correct function needs a cartridge and a controller with identical serial numbers. In the LRWA2 (cabinet mounting on DIN-rail) and LRWA4 (sub-base mounting, with G1/4 threaded ports) versions, the electronic board is integrated into the valve's body ready to connect.

- Rotating spool with a metal to metal seal
- Compact design
- High flow rate
- Electronic control to ensure high precision in the flow control
- 3-way-function with 4 - 6 mm nominal diameters
- LRWA0 version: cartridge system, optimal mounting options for different applications
- LRWA2 version: for cabinet mounting on DIN-rail in any position
- LRWA4 version: realized on a proper sub-base with G1/4 threaded ports for mounting in any position

GENERAL DATA

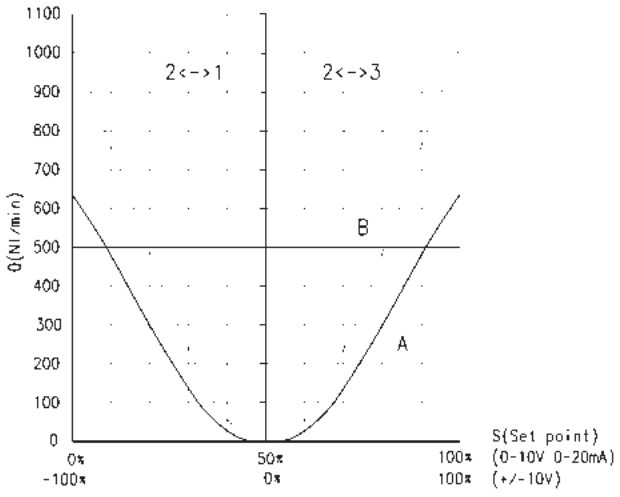
Power supply	24V DC +/- 10%, stabilized, max. 0,8 A
Control signal	+/- 10V 100 kohm; 0-10V 100 kohm; 0-20 mA 500 ohm; +/-5 V DC 100 ohm (LRWA4 only)
Hysteresis	1% FS
Linearity	1% FS
Switching time	from 0 to 100%: approx. 5 ms; +/- 100%: approx. 7 ms
Working temperature	from 0 to 50°C
Relative humidity of air	max. 90%
Weight of the cartridge	0.140 kg without cable; (LRWA0); 0.700 kg (LRWA2); 1 kg (LRWA4)
Maximum flow rate at 6 bar ΔP 1 bar	350 Nl/min (LRWA4-34); 450 Nl/min (LRWA0-34, LRWA2-34); 550 Nl/min (LRWA4-36); 690 Nl/min (LRWA0-36, LRWA2-36)
Medium	filtered compressed air, unlubricated, according to ISO 8573-1 class 3.4.3, inert gas
Supply pressure	-0,9 to 10 bar
Leakage	< 1% of maximum flow rate
Electrical connection	SUB-D connector 25 poles with pre-wired cable of 0.5-1-2 m (LRWA0); male connector M12 5 poles (LRWA2); male connector M16 7 poles (LRWA4)

CODING EXAMPLE

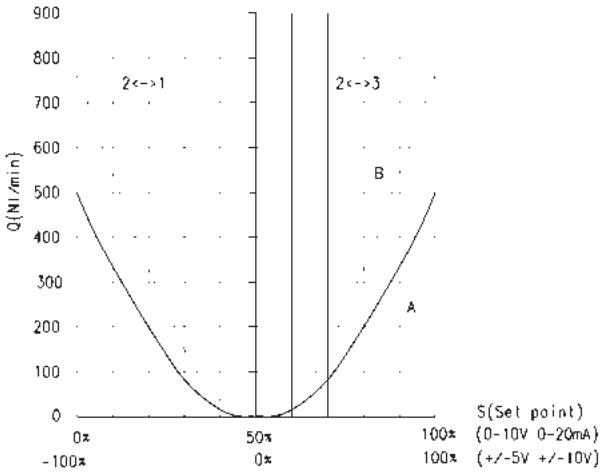
L	R	W	A	0	-	3	4	-	1	-	A	-	05

L	SERIES: L = proportional servo valves
R	TECHNOLOGY: R = rotating spool
W	VERSION: W = flow control
A	ELECTRONICS: A = analogic
0	MODEL: 0 = cartridge with fixation slot 2 = compact DIN-RAIL 4 = with sub-base
3	FUNCTION: 3 = 3-way
4	NOMINAL DIAMETER: 4 = 4 mm 6 = 6 mm
1	INPUT COMMAND SIGNAL (Setpoint): 1 = +/- 10 V 2 = 0-10 V 3 = 0-20 mA 4 = +/- 5 V
A	FEEDBACK SIGNAL: A = internal encoder
05	CABLE: 00 = no cable (LRWA2 and LRWA4) 05 = 0.5 m (LRWA0 only) 10 = 1 m (LRWA0 only) 20 = 2 m (LRWA0 only)

FLOW DIAGRAMS (Nl/min) vs INPUT SIGNAL (%)



A: LRWA0-34 - LRWA2-34
B: LRWA0-36 - LRWA2-36



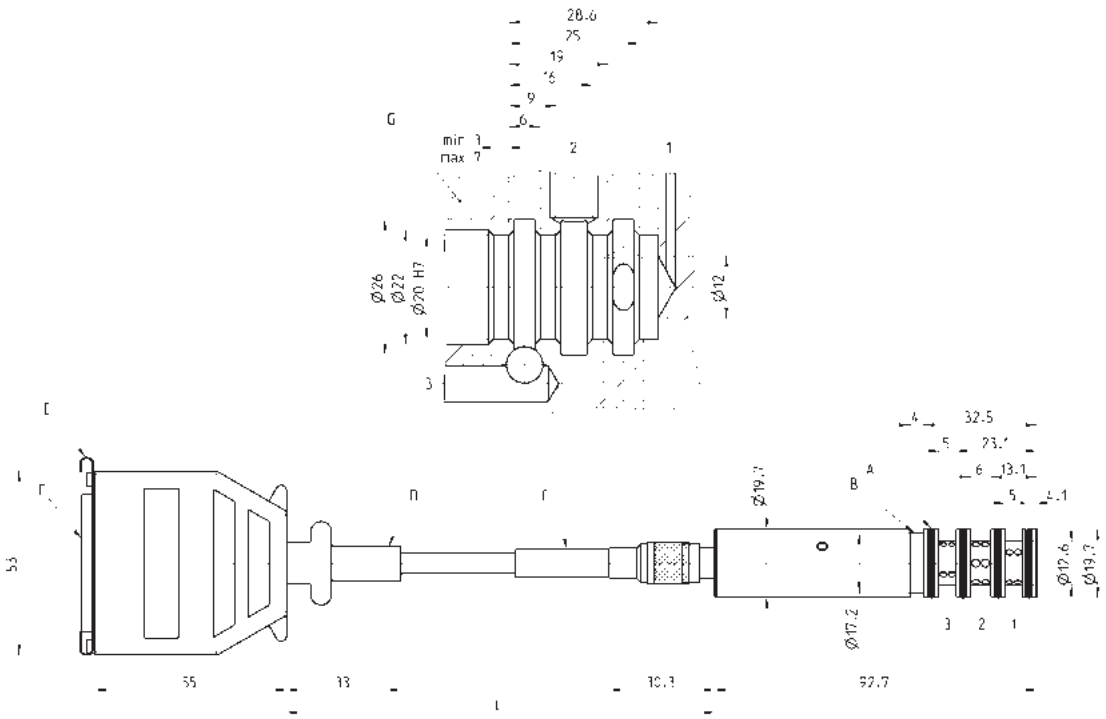
A: LRWA4-34
B: LRWA4-36

LRWA0 SERVO VALVES - PNEUMATIC INSTALLATION

The servo valve works as follows: if the command signal or setpoint is lower than 50%, the valve establishes a link between connection 1 and connection 2; then the air passes between the inlet and the outlet. If the setpoint value is higher than 50%, the port 2 is connected with the exhaust 3. For a better understanding, please see the flow diagram on page 2.15.11.2.

THE LENGTH OF THE LEADS SHOULD BE AS SHORT AS POSSIBLE, BETWEEN VALVE-OUTLET AND LOAD NORMALLY NOT MORE THAN 2 mts.

Drawing legend:
1 = Supply
2 = Port
3 = Exhaust
A = O-ring 17x1,5
B = fixation slot
C = bending radius >50
D = bending radius >25
F = sub-d-25 pins (male)
G = cartridge fitting block
L = cable length

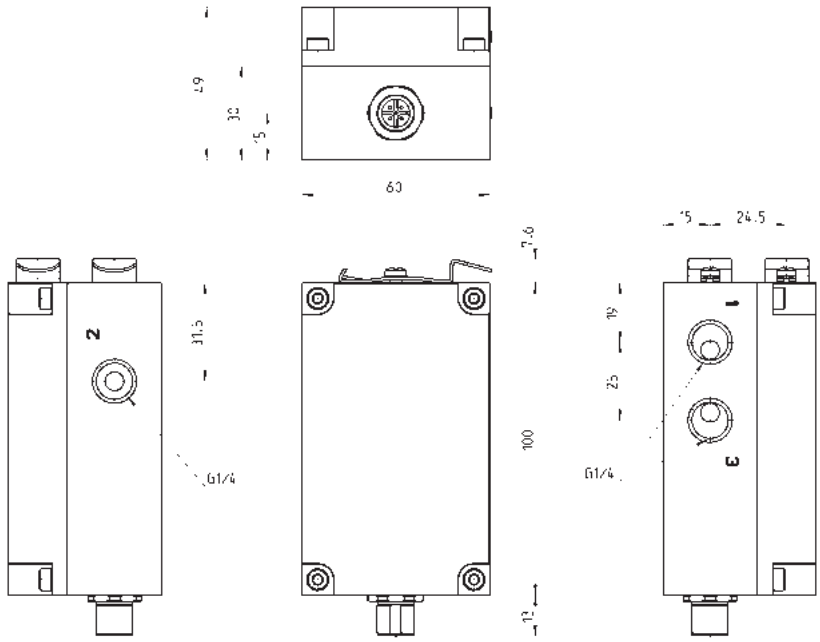


ELECTRICAL CONNECTIONS		
PIN	FUNCTION	NOTES
7	power supply +24 VDC	
13	GND power supply	
14	GND Input command signal	
15	Input command signal	
6,8	Internal reference potential	never connect to other GNDs!
1	Testpoint motor voltage	+/- 10 V vs. pin 6
24	Testpoint slide position	+/- 1 V vs. pin 6

LRWA2 SERVO VALVES - PNEUMATIC INSTALLATION

The servo valve works as follows: if the command signal or setpoint is lower than 50%, the valve establishes a link between connection 1 and connection 2; then the air passes between the inlet and the outlet. If the setpoint value is higher than 50%, the port 2 is connected with the exhaust 3. For a better understanding, please see the flow diagram on page 2.15.11.2.

THE LENGTH OF THE LEADS SHOULD BE AS SHORT AS POSSIBLE, BETWEEN VALVE-OUTLET AND LOAD NORMALLY NOT MORE THAN 2 mts.

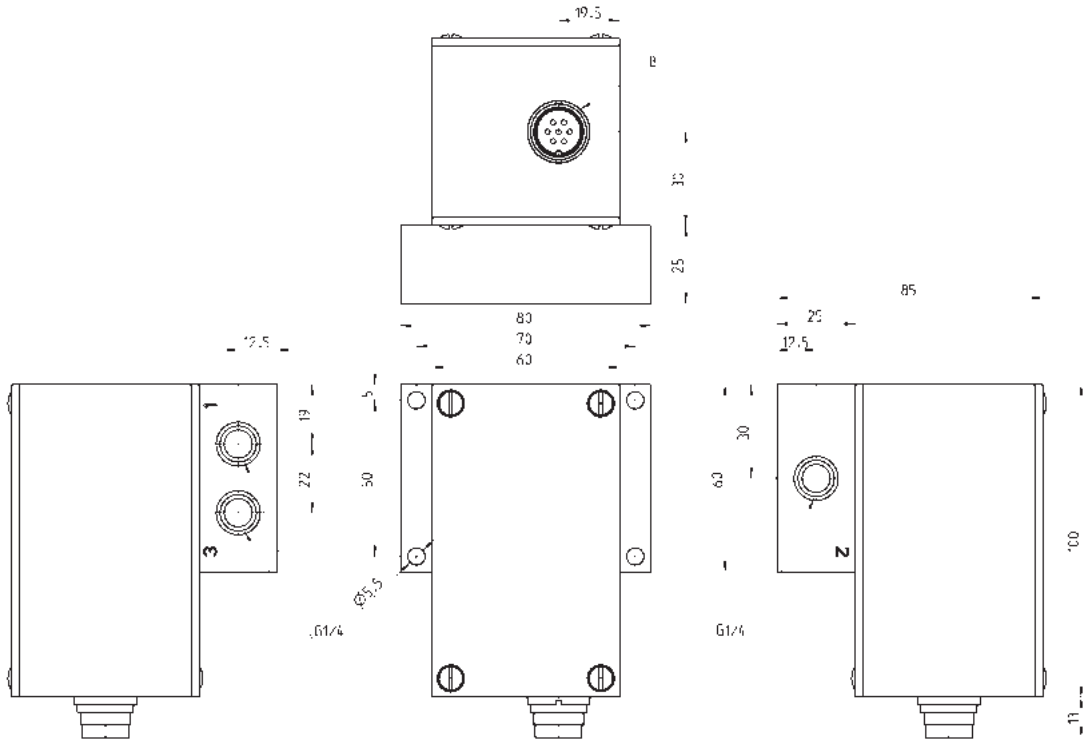


ELECTRICAL CONNECTIONS (male connector M12 5 poles)		
PIN	FUNCTION	NOTES
1	power supply +24 VDC	
4	GND power supply	
3	Input command signal (Setpoint)	
2	GND Input command signal	Pin 4 and 2 should be connected.
5	NC	

LRWA4 SERVO VALVES - PNEUMATIC INSTALLATION

The servo valve works as follows: if the command signal or setpoint is lower than 50% the valve establishes a link between connection 1 and connection 2; then the air passes between the inlet and the outlet. If the setpoint value is higher than 50%, the port 2 is connected with the exhaust 3. For a better understanding, please see the flow diagram on page 2.15.11.2.

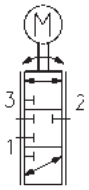
THE LENGTH OF THE LEADS SHOULD BE AS SHORT AS POSSIBLE, BETWEEN VALVE-OUTLET AND LOAD NORMALLY NOT MORE THAN 2 mts.



ELECTRICAL CONNECTIONS (male connector M16 7 poles)		
PIN	FUNCTION	NOTES
1	power supply +24 VDC	
2	GND power supply	
3	Input command signal (Setpoint)	
4	GND Input command signal	Pin 4 and 2 should be connected.
5	NC	
6	NC	
7	NC	

SERIES LRWA - TECHNICAL FEATURES

For the suitable accessories see the catalogue section 2/15.35



Mod.	Model	Nominal diameter Ø (mm)	Command signal	Cable length (m)
LRWA0-34-1-A-05	cartridge with fixation slot	4	+/- 10 V	0.5
LRWA0-34-1-A-10	cartridge with fixation slot	4	+/- 10 V	1
LRWA0-34-1-A-20	cartridge with fixation slot	4	+/- 10 V	2
LRWA0-34-2-A-05	cartridge with fixation slot	4	0-10 V	0.5
LRWA0-34-2-A-10	cartridge with fixation slot	4	0-10 V	1
LRWA0-34-2-A-20	cartridge with fixation slot	4	0-10 V	2
LRWA0-34-3-A-05	cartridge with fixation slot	4	0-20 mA	0.5
LRWA0-34-3-A-10	cartridge with fixation slot	4	0-20 mA	1
LRWA0-34-3-A-20	cartridge with fixation slot	4	0-20 mA	2
LRWA0-36-1-A-05	cartridge with fixation slot	6	+/- 10 V	0.5
LRWA0-36-1-A-10	cartridge with fixation slot	6	+/- 10 V	1
LRWA0-36-1-A-20	cartridge with fixation slot	6	+/- 10 V	2
LRWA0-36-2-A-05	cartridge with fixation slot	6	0-10 V	0.5
LRWA0-36-2-A-10	cartridge with fixation slot	6	0-10 V	1
LRWA0-36-2-A-20	cartridge with fixation slot	6	0-10 V	2
LRWA0-36-3-A-05	cartridge with fixation slot	6	0-20 mA	0.5
LRWA0-36-3-A-10	cartridge with fixation slot	6	0-20 mA	1
LRWA0-36-3-A-20	cartridge with fixation slot	6	0-20 mA	2
LRWA2-34-1-A-00	compact DIN-RAIL	4	+/- 10 V	no cable
LRWA2-34-2-A-00	compact DIN-RAIL	4	0-10 V	no cable
LRWA2-34-3-A-00	compact DIN-RAIL	4	0-20 mA	no cable
LRWA2-36-1-A-00	compact DIN-RAIL	6	+/- 10 V	no cable
LRWA2-36-2-A-00	compact DIN-RAIL	6	0-10 V	no cable
LRWA2-36-3-A-00	compact DIN-RAIL	6	0-20 mA	no cable
LRWA4-34-1-A-00	with sub-base	4	+/- 10 V	no cable
LRWA4-34-2-A-00	with sub-base	4	0-10 V	no cable
LRWA4-34-3-A-00	with sub-base	4	0-20 mA	no cable
LRWA4-34-4-A-00	with sub-base	4	+/- 5 V	no cable
LRWA4-36-1-A-00	with sub-base	6	+/- 10 V	no cable
LRWA4-36-2-A-00	with sub-base	6	0-10 V	no cable
LRWA4-36-3-A-00	with sub-base	6	0-20 mA	no cable
LRWA4-36-4-A-00	with sub-base	6	+/- 5 V	no cable

Analogic proportional servo valves Pressure control - Series LRPA4

Running out of stock

3/3-way servo valves for the pressure control (Ø 4-6 mm)

- Closed loop control circuit
- Rotating spool with a metal to metal seal
- Feedback with internal/ external pressure sensor
- Integrated PID control

LRPA4 proportional servo valves are valves for the high precision pressure control with integrated closed loop circuit. This is a 3/3-way valve, based on a patented rotating spool system with electronic control of the position, a pressure sensor and an electronic PID-control board.

The electronic board is directly integrated in the valve body. The LRPA valve, which is available in the version using an external pressure transducer, is suitable for applications with large distances between valve and volume to be adjusted. Besides this, the valve can also be used with other sensors detecting different physical values such as force, speed, torque, etc. to obtain a feedback signal.

GENERAL DATA

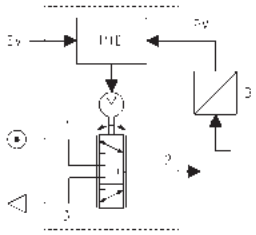
Power supply	24 V DC +/- 10%, Ripple max. 0.5 V, max. 0.8 A		
Input specified value	0-10 V DC 100 kohm; 0-20 mA 500 ohm; 4-20 mA 500 ohm		
Output "in-position" signal	"LIMIT ERROR": open-collector to GND, max. 20 mA, no protection against the overload		
Output "feedback" signal	0-10 V DC, max 10 mA		
Repeatability	< 0.03 % FS		
Accuracy	< 0.1% FS related to sensor output signal		
External sensor power supply	24 V DC, max. 100 mA		
"Feedback" signal	0- 10 V 100 kohm; 0-20 mA 500 ohm; 4-20 mA 625 ohm		
Flow rate at 6 bar ΔP 1 bar	300 Nl/min (LRPA4-34) 450 Nl/min (LRPA4-36)		
Temperature range	0 ÷ 50°C		
Relative humidity of air	max. 90%		
Weight	approx. 1 Kg		
Medium	filtered compressed air, unlubricated, according to ISO 8573-1 class 3.4.3, inert gas		
Linearity	<+/- 0.01 %		
Switching time (working pressure of 6 bar)	2.5 ÷ 3 bar	2.5 ÷ 2 bar	2.5 ÷ 5 bar
without load - LRPA4-34	8	13	18
without load - LRPA4-36	7	9	12
with load of 1000 cm³ - LRPA434	50	100	240
with load of 1000 cm³ - LRPA436	35	65	145
Electrical connection	male connector M16 7 poles (version with internal sensor) female connector M16 4 poles (to connect the external transducer)		

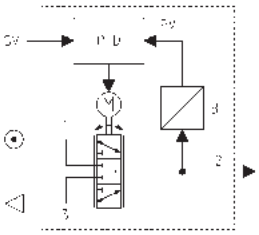
CODING EXAMPLE

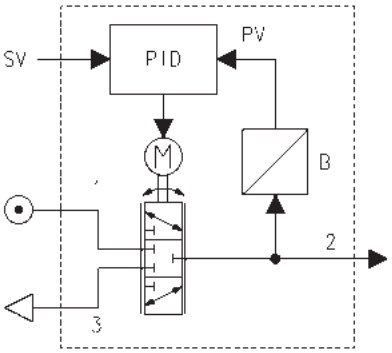
L	R	P	A	4	-	3	4	-	2	-	2	-	00

L	SERIES: L = Proportional servo valves
R	TECHNOLOGY: R = rotating spool
P	VERSION: P = pressure control
A	ELECTRONICS: A = analogic
4	MODEL: 4 = with sub-base
3	FUNCTION: 3 = 3/3-way
4	NOMINAL DIAMETER: 4 = 4 mm 6 = 6 mm
2	INPUT COMMAND SIGNAL (Setpoint): 2 = 0-10 V 3 = 0-20 mA 5 = 4-20 mA
2	FEEDBACK SIGNAL: 2 = 0-10 V external transducer 3 = 0-20 mA external transducer 5 = 4-20 mA external transducer B = 1 bar integrated pressure sensor C = 2.5 bar integrated pressure sensor D = 10 bar integrated pressure sensor
00	CABLE: 00 = no cable

PNEUMATICAL INSTALLATION



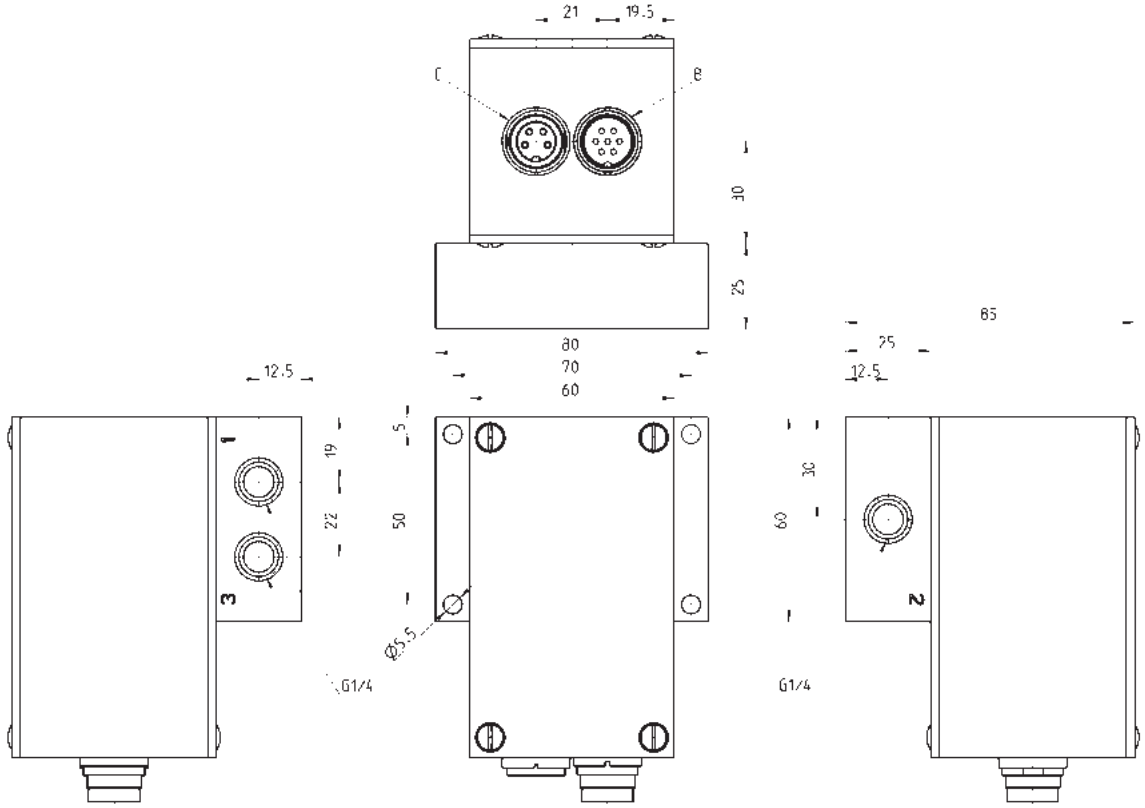




SV = setpoint value
PV = process value
B = external or internal sensor
PID = proportional control, integrative, derivative

LRPA4-xx-x-2/3/5-00 SERVO VALVES - PNEUMATICAL INSTALLATION

Accessories are available in the section 2.15.35



B = male connector M16 7 poles for supply
C = female connector M16 4 poles for external transducer

Female connector M16 4 poles for external transducer		
PIN	FUNCTION	NOTES
1	Electrical supply to the external transducer	24 V DC
2	GND	Internal connection to GND power supply
3	Input from the external transducer	0-10 V o 0-20 mA o 4-20 mA
4	NC	

B - Supply connector (7 poles male)		
PIN	FUNCTION	NOTES
1	Power supply +24 VDC	
2	Power supply GND	
3	Input command signal (Setpoint Value)	0-10 VDC or 0-20 mA or 4-20mA. The output pressure always follows this signal that has to has to be as stable as possible. For example: if the sensor has a range of 10 bar and the Setpoint has a Ripple error of 10 mV, this will generate a ripple of 10 mbar on the output.
4	GND input command signal	Pin 4 and 2 must be connected.
5	Output "ERROR"	see technical data
6	Output "LIMIT"	see technical data
7	Output signal of the internal sensor	0-10 VDC. The accuracy-fault of that signal is 2% F.S. and there is an offset of approx. 150 mV.

Analogic proportional servo valves Positioning control - Series LRXA4

Running out of stock

3/3-way servo valves which control the positioning of pneumatic cylinders

- Rotary slide principal, metal to metal seal
- Precise and quick electronic control
- Closed loop system for master valve, slave valve and external sensor
- Connection for the external position transducer signal
- Connection for the slave valve to control the two cylinder chambers
- 3-way valve function with nominal diameters 4 mm - 6 mm

LRXA4 servo valves are proportional valves with a high-precision integrated control for the positioning of pneumatic cylinders. The valves include a patented 3-way system based on the rotating spool principle with electronic control of the spool position.

The servo pneumatic closed loop system allows, through the feedback of the external positioning sensor, the control of position, speed and acceleration.
The electronic board is directly integrated in the valve body.
Through the use of a proper connector, the Master valve mod. LRXA4 is connected to a second LRWA4 valve that will work as a slave-valve.

GENERAL DATA

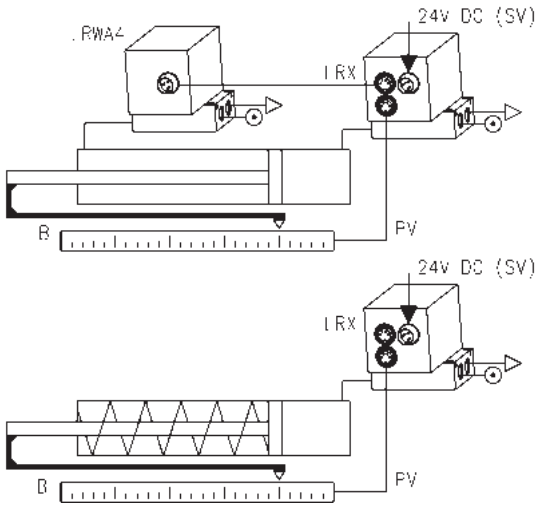
Power supply	24 V DC +/- 10%, Ripple max. 0.5 V, max. 0.8 A; with slave valve max. 1.6 A
Command signal (Setpoint)	0-10 V DC 100 kohm; 0-20 mA 500 ohm; 4-20 mA 500 ohm
Signal of the position transducer	24 V DC, Max. 70 mA, short circuit protected
Repeatability	< 0.1% with optimally adjusted control feedbacks
Absolute accuracy and linearity	determinated by feedback system (position sensor)
Output power supply	5 V DC, max. 10 mA, for feedback system
Maximum flow rate at 6 bar ΔP 1 bar	350 Nl/min (LRXA4-34) 550 Nl/min (LRXA4-36)
Temperature range	0 ÷ 50°C
Relative humidity of air	max. 90%
Weight	1 Kg
Medium	filtered compressed air, unlubricated, according to ISO 8573-1 class 3.4.3, inert gas
Supply pressure	0 ÷ 10 bar

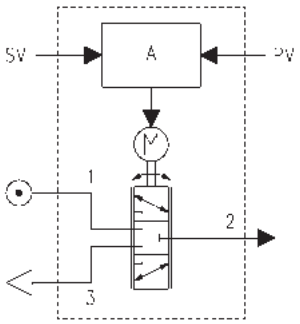
CODING EXAMPLE

L	R	X	A	4	-	3	4	-	2	-	4	-	00

L	SERIES: L = proportional servo valves
R	TECHNOLOGY: R = rotating spool
X	VERSION: X = position control
A	ELECTRONICS: A = analogic
4	MODEL: 4 = with sub-base
3	VALVE FUNCTION: 3 = 3/3-way
4	NOMINAL DIAMETER: 4 = 4 mm 6 = 6 mm
2	COMMAND SIGNAL (Setpoint): 2 = 0-10 V 3 = 0-20 mA 5 = 4-20 mA
4	FEEDBACK SIGNAL: 4 = 0-5 V
00	CABLE: 00 = no cable

PNEUMATICAL INSTALLATION





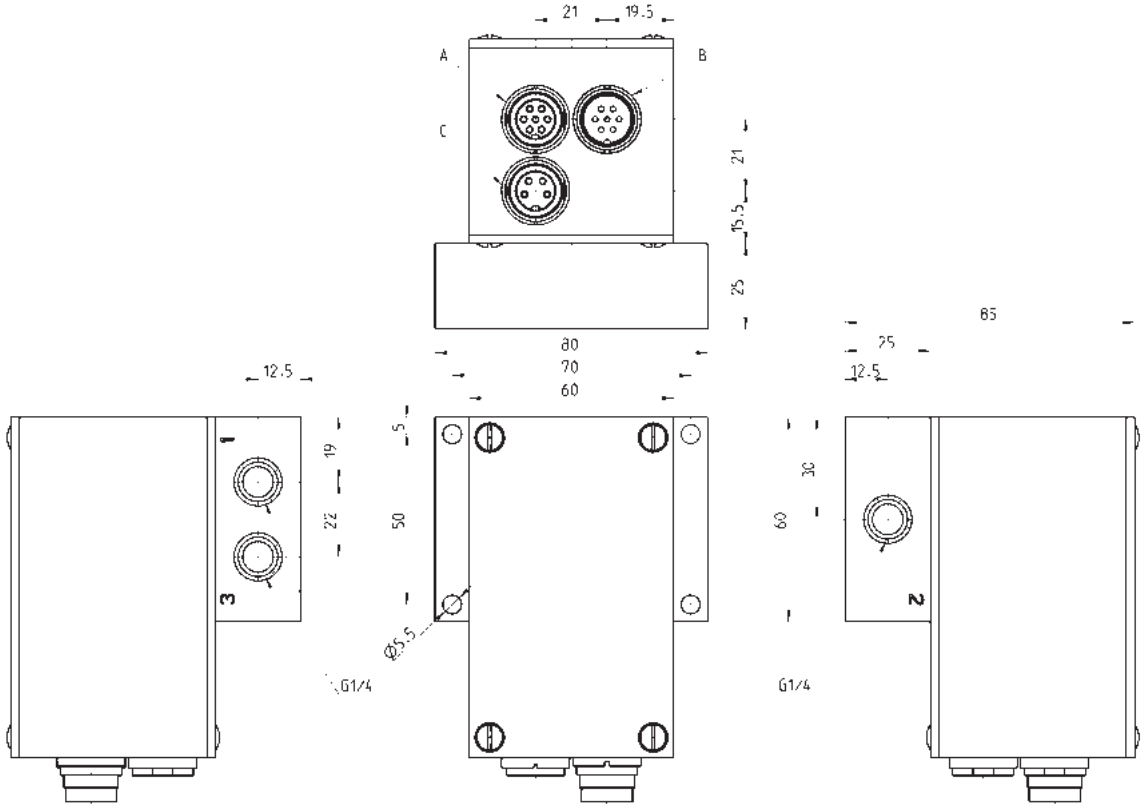
PIC. 1 (above): positioning of a cylinder with master valve LRX and slave valve LRWA4-3X-4-A-00.

PIC. 2: positioning of a cylinder with valve LRX only.

SV = setpoint value; PV = process value;
A = closed loop system for master, slave valve and external sensor.

Tubes to the cylinder < 2 m with an inner Ø of 4 or 6 mm to avoid possible pressure drops. The cylinder has to be dimensioned to provide at least 30% more force than needed.

SERVO VALVES LRXA4 - PNEUMATICAL INSTALLATION



A = female connector M16 7 poles for slave valve
B = male connector M16 7 poles for master valve supply
C = female connector M16 4 poles for the feedback system (position sensor)

FEMALE CONNECTOR M16 4 POLES FOR THE FEEDBACK SYSTEM (POSITION SENSOR)

PIN	FUNCTION	NOTES
1	GND	Potentiometer GND. Never connect this pin to other GNDs. Because of technical reasons the voltage at this pin is about half of the power supply voltage.
2	Input of the feedback signal	Potentiometer output. If there isn`t used a potentiometer as feedback system, the output signal of the feedback system has to be 0-5 VDC. The signal must have a floating GND (see remark to pin 1).
3	Output supply	For potentiometer, +5 VDC vs. pin 1
4	Shielding	The cable to the feedback system has to be shielded. At the feedback system's end of the cable the shielding must be connected to the metallic housing of the feedback system, at the valve's end pin 4 is connected internally to the valve housing.

CONNECTORS M16 7 POLES

PIN	FEMALE CONNECTOR M16 7 FOR SLAVE VALVE	MALE CONNECTOR M16 7 POLES FOR MASTER VALVE SUPPLY	NOTES
1	Power supply +24 VDC	Power supply +24 VDC	
2	Power supply GND	Power supply GND	
3	Input signal(for slave valve, +/- 5V vs. pin 4)	Input signal (Setpoint)	The total range of this signal corresponds to the total electric range of the feedback system. The cylinder is positioned always and immediately to the position according to this signal. Therefore this signal has to have a high signal quality: if, for example, the feedback system has a length of 300 mm, a ripple of 10 mVpp on the command signal will generate a positioning ripple of +/-0.3 mm !!
4	GND input signal (for slave valve, don't connect to other GND!)	GND Input signal	Pin 4 and 2 should be connected. If that is not possible, the voltage between both GND's may not increase +/- 5 V.
5	NC	GND output feedback signal	For slave-valve, 0-5V vs. pin 4
6	NC	Output In-position	24 VDC vs. pin 2
7	NC	Output feedback signal	0-10 VDC vs. pin2. The accuracy-fault of that signal is about 2% and there is an offset of approx. 150 mV. Don't use it for precise documentations

Digital proportional servo valves
Flow control - Series LRWD2
Pressure control - Series LRPD2

New

3/3-way directly operated servo valves for the flow (LRWD2) and pressure control (LRPD2)

- Digital version which is completely configurable through USB
- Rotating spool system with a metal to metal seal
- Compact design
- High flow rate
- Electronic control to ensure high precision in the flow control
- 3-way-function with 4 - 6 mm nominal diameters
- Compact version for cabinet mounting on DIN-rail

Series LRWD2 and LRPD2 digital proportional servo valves are direct driven 3/3-way valves with a patented rotating spool system with closed loop control circuit. The electronic board is integrated into the valve's body ready to connect.

Series LR*D2 digital proportional servo valve has been designed to be as compact as possible in order to save space and to be mounted on a DIN-rail. Thanks to this new digital version, the valve can be configurated through a USB connection according to different requirements.

GENERAL DATA

Power supply	24 VDC +/- 10%, max absorption 1.5 A
Command signal	+/- 10 V 0-10 V 0-20 mA
Hysteresis	1% FS LRWD2 - 0,2% FS LRPD2
Linearity	1% FS LRWD2 - 0.3% FS LRPD2
Switching time	see the following pages
Working temperature	from 0 to 50° C
Relative humidity of air	max. 90%
Direction of assembly	any
Maximum flow rate at 6 bar ΔP 1 bar	450 Nl/min LRWD2 - 700 Nl/min LRPD2 690 Nl/min LRWD2 - 950 Nl/min LRPD2
Medium	filtered compressed air, unlubricated, according to ISO 8573-1 class 3.4.3, inert gas
Supply pressure	-0,9 to 10 bar
Leakage	< 1% of maximum flow rate
Electrical connection	male connector M12 8 poles

SERIES LRWD2 - CODING EXAMPLE

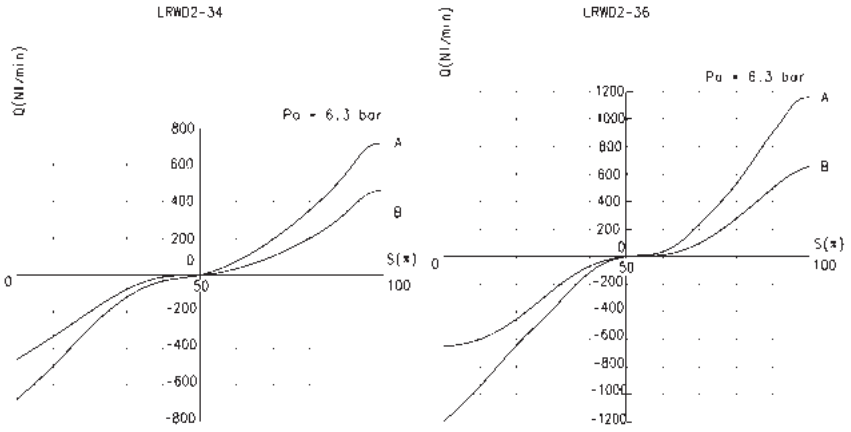
L	R	W	D	2	-	3	4	-	1	-	A	-	00

L	SERIES: L = proportional servo valves
R	TECHNOLOGY: R = rotating spool
W	VERSION: W = flow control
D	ELECTRONICS: D = digital
2	MODEL: 2 = compact DIN-RAIL
3	FUNCTION: 3 = 3/3-way
4	NOMINAL DIAMETER: 4 = 4 mm 6 = 6 mm
1	INPUT COMMAND SIGNAL (Setpoint): 1 = +/- 10 V 2 = 0-10 V 4 = 4-20 mA
A	FEEDBACK SIGNAL: A = internal encoder
00	CABLE: 00 = no cable

FLOW DIAGRAMS

LEGEND:

A = free flow
B = ΔP1
Q = flow
S = set point
Pa = inlet pressure



RESPONSE TIMES ACCORDING TO THE COMMAND SIGNAL

COMMAND SIGNAL	-5% ÷ +5%	+5% ÷ -5%	-25% ÷ +25%	+25% ÷ -25%	-90% ÷ +90%	+90% ÷ -90%
Time [ms] LRWD2-34	4	5	6	9	10	10
Time [ms] LRWD2-36	5	5	6	6	10	10

* closed valve with SET POINT = 0
loaded valve with SET POINT = +
exhaust valve with SET POINT = -

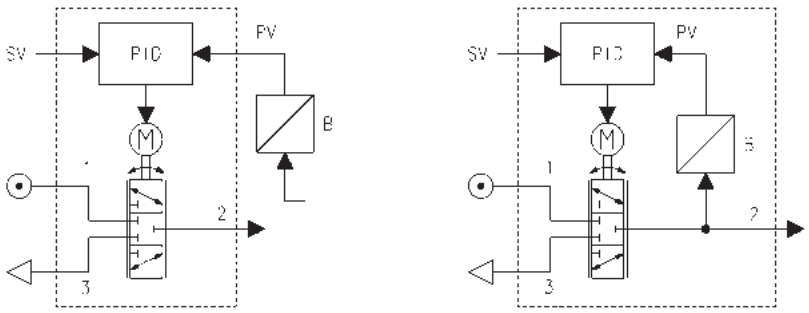
SERIES LRPD2 - CODING EXAMPLE

L	R	P	D	2	-	3	4	-	2	-	D	-	00

L	SERIES: L = proportional servo valves
R	TECHNOLOGY: R = rotating spool
P	VERSION: P = pressure
D	ELECTRONICS: D = digital
2	MODEL: 2 = compact DIN-RAIL
3	FUNCTION: 3 = 3/3-way
4	NOMINAL DIAMETER: 4 = 4 mm 6 = 6 mm
1	INPUT COMMAND SIGNAL (Setpoint): 1 = +/- 10 V 2 = 0-10 V 5 = 4-20 mA
D	Sensor SIGNAL or External signal: 2 = 0..10 V 4 = 0 - 5 V 5 = 4..20 mA B = 1 bar INTERNAL D = 10 bar INTERNAL E = 250 mbar INTERNAL F = +1/-1 bar INTERNAL
00	CABLE: 00 = no cable

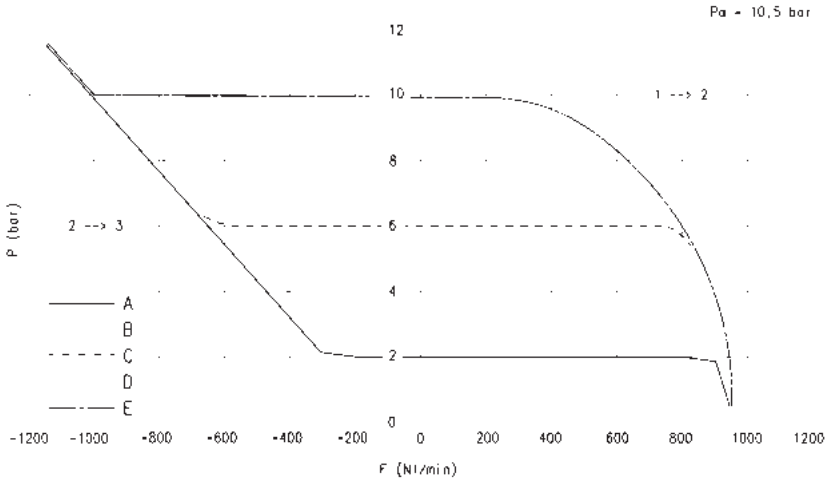
SERIES LRPD2 - PNEUMATIC SCHEME FOR THE INSTALLATION

SV = setpoint value
PV = process value
B = sensor
PID = proportional control, integrative, derivative



LRPD2-34 - STEP RESPONSE

LEGEND:
P = pressure
F = flow
Pa = inlet pressure

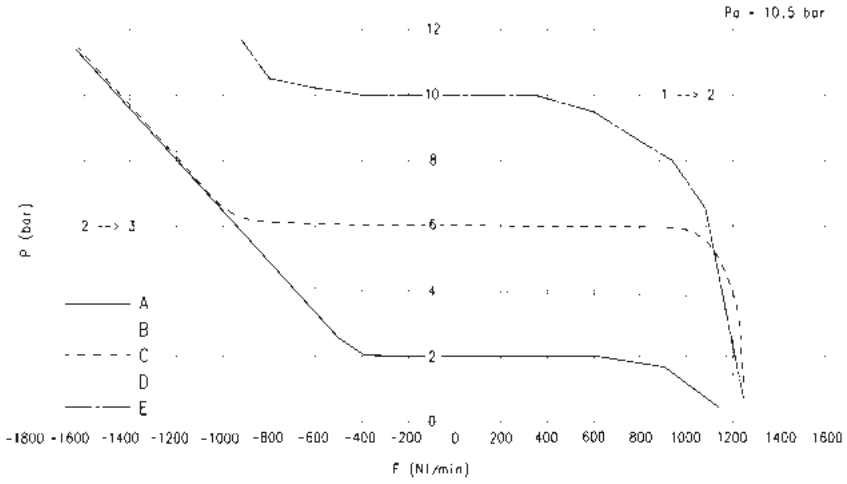


RESPONSE TIMES WITH COMMAND SIGNAL BETWEEN 0% AND 100%

	Without volume	Volume 0,5 l	Volume 2 l
Filling [ms]	24	313	1841
Exhaust [ms]	35	663	3640

LRPD2-36 - STEP RESPONSE

LEGEND:
P = pressure
F = flow
Pa = inlet pressure



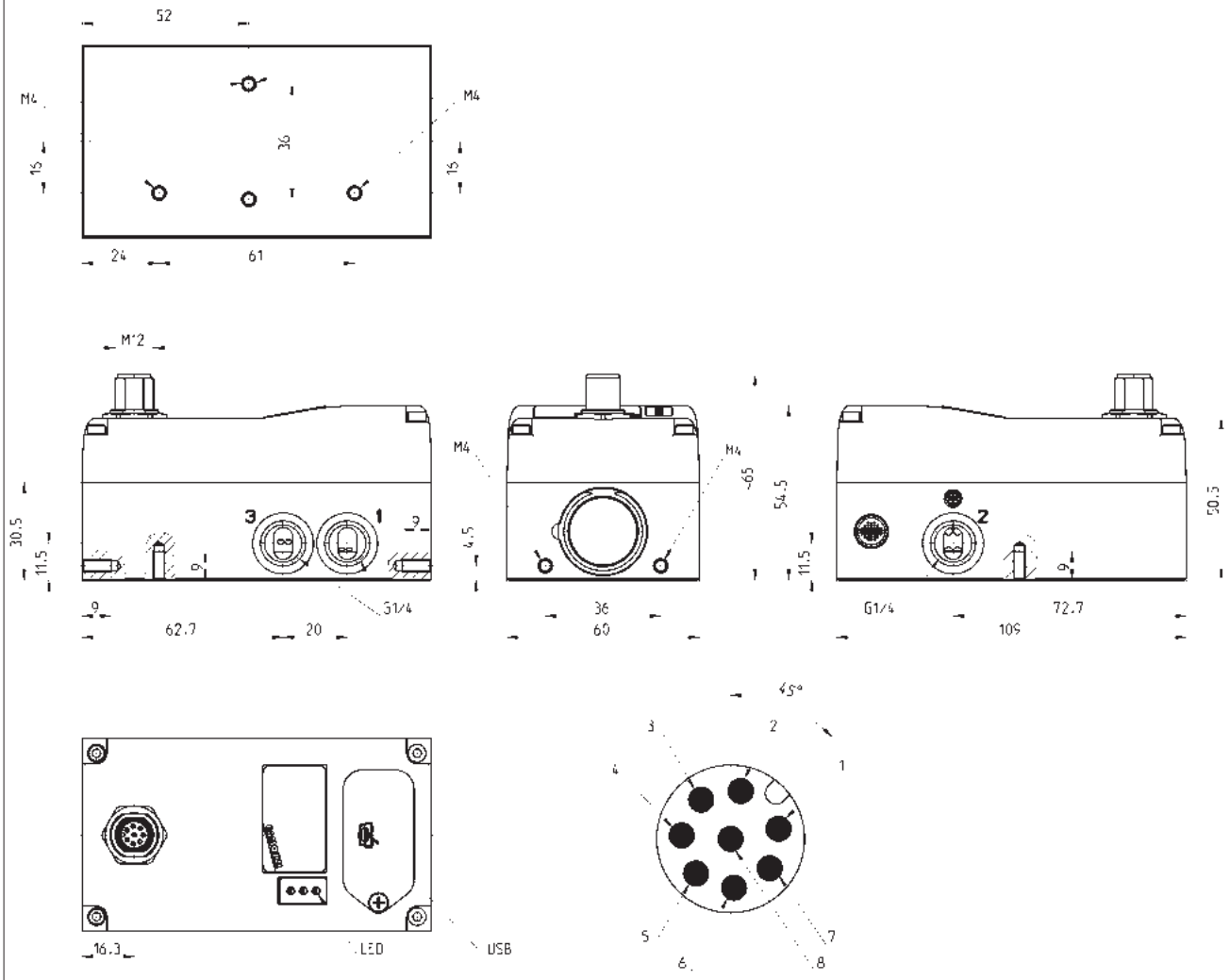
RESPONSE TIMES WITH COMMAND SIGNAL BETWEEN 0% AND 100%

	Without volume	Volume 0,5 l	Volume 2 l
Filling [ms]	20	263	1560
Exhaust [ms]	32	357	1905

SERIES LRWD2 and LRPD2 - PNEUMATIC INSTALLATION

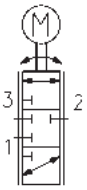
The servo valve works as follows: if the command signal or setpoint is lower than 50%, the valve establishes a link between connection 1 and connection 2; then the air passes between the inlet and the outlet. If the setpoint value is higher than 50%, the port 2 is connected with the exhaust 3. For a better understanding, please see the flow diagram on the previous page.

THE LENGTH OF THE LEADS SHOULD BE AS SHORT AS POSSIBLE, BETWEEN VALVE-OUTLET AND LOAD NORMALLY NOT MORE THAN 2 mts.



PIN	SIGNAL	DESCRIPTION
1	+5V	+5V power supply for external potentiometer transducer (ref. GND). If used, is necessary to connect RIF- with GND.
2	24 V DC	24V DC power supply (logic and motor): connect to the positive pole of the 24V DC power supply (ref. GND)
3	RIF-	GND reference or NEGATIVE pole of the command signal (0-10V / 4-20mA / ±10V)
4	RIF+	POSITIVE reference of the command signal (0-10V / 4-20mA / ±10V)
5	EXT	Not used
6	FBK	Feedback signal 0-10V / 4-20mA (ref. GND)
7	GND	Common (reference pin 1 and 2): connect to the negative pole of the 24V DC power supply (compulsory)
8	ERR	Error signal (output) 0-24V (ref. GND)

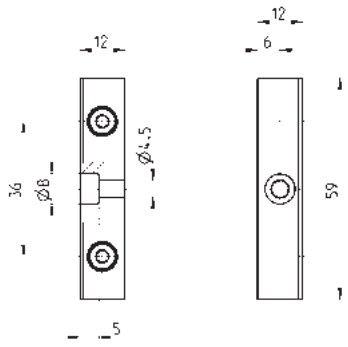
SERIES LRWD2 AND LRPD2 - TECHNICAL FEATURES



Mod.	Control	Nominal diameter (ø)	Command/Input signal	Sensor/External signal
LRWD2-34-1-A-00	flow	4 mm	+/- 10 V	-
LRWD2-34-2-A-00	flow	4 mm	0-10 V	-
LRWD2-34-5-A-00	flow	4 mm	4..20 mA	-
LRWD2-36-1-A-00	flow	6 mm	+/- 10 V	-
LRWD2-36-2-A-00	flow	6 mm	0-10 V	-
LRWD2-36-5-A-00	flow	6 mm	4..20 mA	-
LRPD2-34-1-2-00	pressure	4 mm	+/- 10 V	0..10 V
LRPD2-34-2-2-00	pressure	4 mm	0-10 V	0..10 V
LRPD2-34-5-2-00	pressure	4 mm	4..20 mA	0..10 V
LRPD2-34-1-4-00	pressure	4 mm	+/- 10 V	0 - 5 V
LRPD2-34-2-4-00	pressure	4 mm	0-10 V	0 - 5 V
LRPD2-34-5-4-00	pressure	4 mm	4..20 mA	0 - 5 V
LRPD2-34-1-5-00	pressure	4 mm	+/- 10 V	4..20 mA
LRPD2-34-2-5-00	pressure	4 mm	0-10 V	4..20 mA
LRPD2-34-5-5-00	pressure	4 mm	4..20 mA	4..20 mA
LRPD2-34-1-B-00	pressure	4 mm	+/- 10 V	1 bar internal
LRPD2-34-2-B-00	pressure	4 mm	0-10 V	1 bar internal
LRPD2-34-5-B-00	pressure	4 mm	4..20 mA	1 bar internal
LRPD2-34-1-D-00	pressure	4 mm	+/- 10 V	10 bar internal
LRPD2-34-2-D-00	pressure	4 mm	0-10 V	10 bar internal
LRPD2-34-5-D-00	pressure	4 mm	4..20 mA	10 bar internal
LRPD2-34-1-E-00	pressure	4 mm	+/- 10 V	250 mbar internal
LRPD2-34-2-E-00	pressure	4 mm	0-10 V	250 mbar internal
LRPD2-34-5-E-00	pressione	4 mm	4..20 mA	250 mbar internal
LRPD2-34-1-F-00	pressure	4 mm	+/- 10 V	+1/-1 bar internal
LRPD2-34-2-F-00	pressure	4 mm	0-10 V	+1/-1 bar internal
LRPD2-34-5-F-00	pressure	4 mm	4..20 mA	+1/-1 bar internal
LRPD2-36-1-2-00	pressure	6 mm	+/- 10 V	0..10 V
LRPD2-36-2-2-00	pressure	6 mm	0-10 V	0..10 V
LRPD2-36-5-2-00	pressure	6 mm	4..20 mA	0..10 V
LRPD2-36-1-4-00	pressure	6 mm	+/- 10 V	0 - 5 V
LRPD2-36-2-4-00	pressure	6 mm	0-10 V	0 - 5 V
LRPD2-36-5-4-00	pressure	6 mm	4..20 mA	0 - 5 V
LRPD2-36-1-5-00	pressure	6 mm	+/- 10 V	4..20 mA
LRPD2-36-2-5-00	pressure	6 mm	0-10 V	4..20 mA
LRPD2-36-5-5-00	pressure	6 mm	4..20 mA	4..20 mA
LRPD2-36-1-B-00	pressure	6 mm	+/- 10 V	1 bar internal
LRPD2-36-2-B-00	pressure	6 mm	0-10 V	1 bar internal
LRPD2-36-5-B-00	pressure	6 mm	4..20 mA	1 bar internal
LRPD2-36-1-D-00	pressure	6 mm	+/- 10 V	10 bar internal
LRPD2-36-2-D-00	pressure	6 mm	0-10 V	10 bar internal
LRPD2-36-5-D-00	pressure	6 mm	4..20 mA	10 bar internal
LRPD2-36-1-E-00	pressure	6 mm	+/- 10 V	250 mbar internal
LRPD2-36-2-E-00	pressure	6 mm	0-10 V	250 mbar internal
LRPD2-36-5-E-00	pressure	6 mm	4..20 mA	250 mbar internal
LRPD2-36-1-F-00	pressure	6 mm	+/- 10 V	+1/-1 bar internal
LRPD2-36-2-F-00	pressure	6 mm	0-10 V	+1/-1 bar internal
LRPD2-36-5-F-00	pressure	6 mm	4..20 mA	+1/-1 bar internal

Fixing foot

Supplied with:
2x feet
4x screws

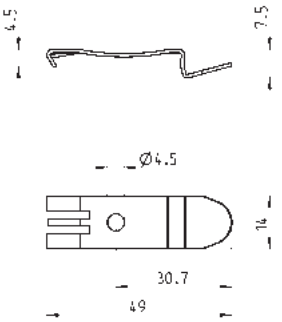


Mod.
LRADB

Mounting brackets for DIN-rail

DIN EN 50022 (7,5mm x 35mm - width 1)

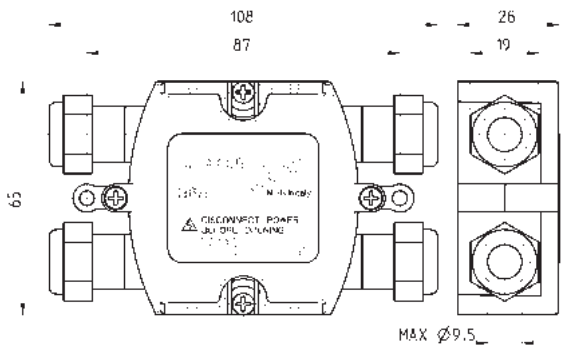
Supplied with:
2x mounting brackets
2x screws M4x6 UNI 5931
2x nuts



Mod.
PCF-EN531

Electrical tee box Mod. CS-AA08EC

Connection valve-PLC-external transducer



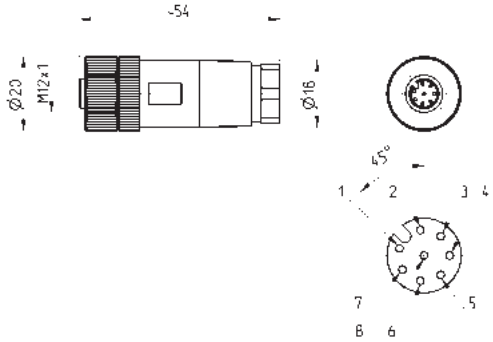
CS-AA08EC

2

CONTROL

Straight female connector M12 8 poles

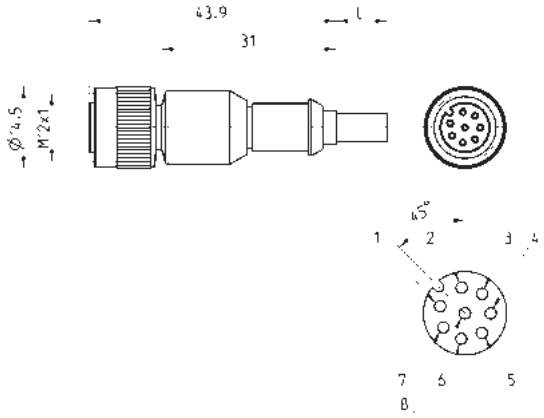
For electric supply and commands



CS-LF08HC

Cable with straight female connector M12 8 poles

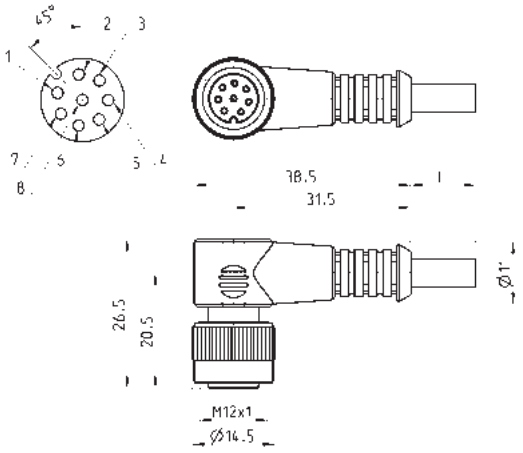
For electrical supply and commands



Mod.	Cable length (m)
CS-LF08HB-C200	2
CS-LF08HB-C500	5

Cable with angular (90°) female connector M12 8 poles

For electric supply and commands



Mod.	Cable length (m)
CS-LR08HB-C200	2
CS-LR08HB-C500	5

ACCESSORIES FOR SERVO VALVES SERIES LR

Fitting block Mod. LRA0C-3

Connector Mod. CS-PM07CB

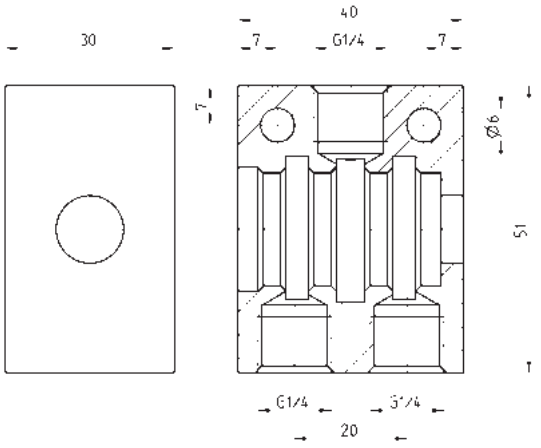
Connector Mod. CS-PM04CB

Connector Mod. CS-PF07CB

Cable Mod. CS-LR05HB-D200/D500

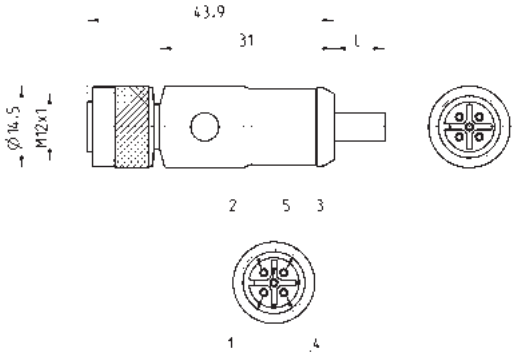
Cable Mod. CS-LF05HB-D200/D500

Fitting block Mod. LRA0C-3 for valves Series LRWA0



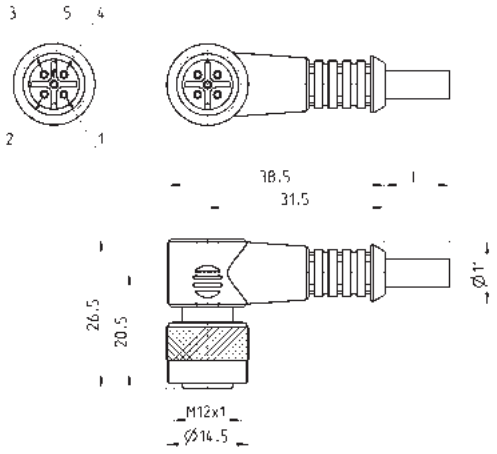
Mod.
LRA0C-3

Cable Mod. CS-LF05HB-D200/D500



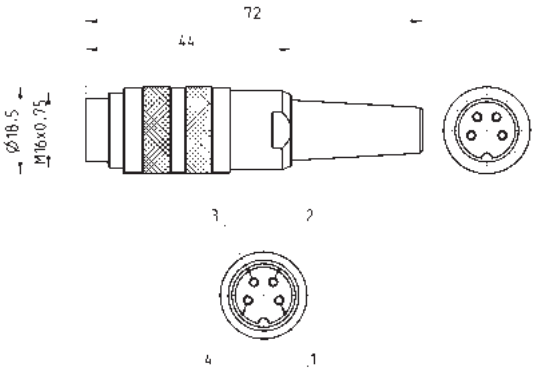
Mod.	Cable length (m)
CS-LF05HB-D200	2
CS-LF05HB-D500	5

Cable Mod. CS-LR05HB-D200/D500



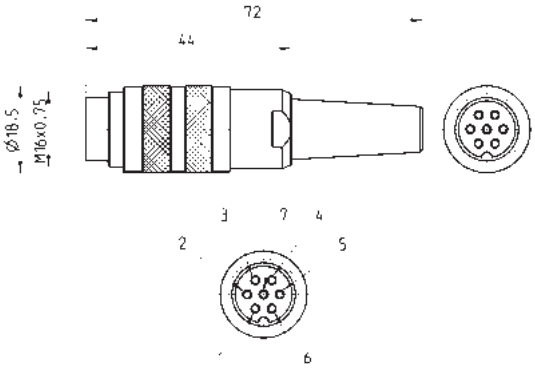
Mod.	Cable length (m)
CS-LR05HB-D200	2
CS-LR05HB-D500	5

Male connector M16 4 pin Mod. CS-PM04CB



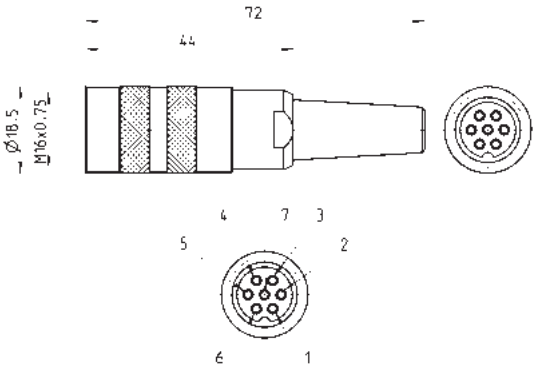
Mod.
CS-PM04CB

Male connector M16 7 pin Mod. CS-PM07CB



Mod.
CS-PM07CB

Female connector M16 7 pin Mod. CS-PF07CB



Mod.
CS-PF07CB

Series K8P
electronic proportional micro regulator

Proportional regulator for the pressure control

- High precision
- Reduced response times
- Minimum consumption
- Self-regulation function
- Flexibility of use
- Compact design

The K8P regulator adjusts the outlet pressure through the operation of two K8 monostable valves according to the inlet signal and to the retroactivity of the internal pressure sensor. A self-adjusting function has been integrated into the regulator control algorithm to guarantee the highest levels of performance apart from the volume connected.

Series K8P electronic proportional micro regulators have evolved from our Series K8 mini-solenoid valves. Series K8P regulators guarantee excellent pressure regulation, fast response times, self-regulation and low energy consumption.
Series K8P is a high performance proportional pressure regulator which is suitable for use in all applications where high precision, quick response times and low consumption are required.

GENERAL DATA

Fluids	filtered compressed air, unlubricated, according to ISO 8573-1 class 3.4.3, inert gas
Range of regulated pressure	0.5 ÷ 10 bar 0.15 ÷ 3 bar
Max inlet pressure	11 bar (0.5 ÷ 10 bar) 4 bar (0.15 ÷ 3 bar)
Operating pressure	0 ÷ +50°C
Analogical input	0-10 V DC 4-20 mA Ripple ≤ 0,2%
Analogical output	0.5 - 9.5 V [Feedback]
Analog input impedance	20.000 Ω for versions 0-10 V 250 Ω for versions 4-20 mA
Maximum flow	Inlet P 10 bar - regulated P 6 bar 12 l/min Inlet P 4 bar - regulated P 3 bar 6 l/min
Supply / Use	24 V - ~1 W
Function	3/2 NC
Linearity	≤ ± 1% FS
Hysteresis	±0,5% FS
Repeatability	±0.5% FS
Minimal set point change	50 mV => 50 mB (10 bar) - 100mV => 30 mB (3 bar)
Electrical connection	M8 4 Pin (Male)
In compliance with the European Directive 2004/108/EC	

CODING EXAMPLE

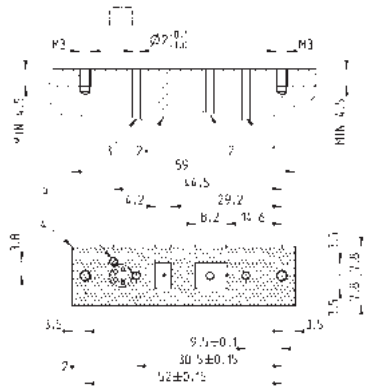
K8P	-	0	-	D	5	2	2	-	0

K8P	SERIES
0	BODY DESIGN: 0 = Stand alone S = Standard Sub-base L = Light Sub-base T = Light Sub-base for the pressure remote reading
D	WORKING PRESSURE: D = 0 -10 bar E = 0 - 3 bar
5	VALVE FUNCTIONS: 5 = 2-way NC
2	COMMAND: 2 = 0-10 V DC 3 = 4-20 mA
2	OUTPUT SIGNAL: 2 = 0-10 V
0	CABLE LENGTH: 0 = without cable 2F = straight cable, 2 m 2R = right angle cable (90 degrees), 2 m 5F = straight cable, 5 m 5R = right angle cable (90 degrees), 5 m

APPLICATIONS

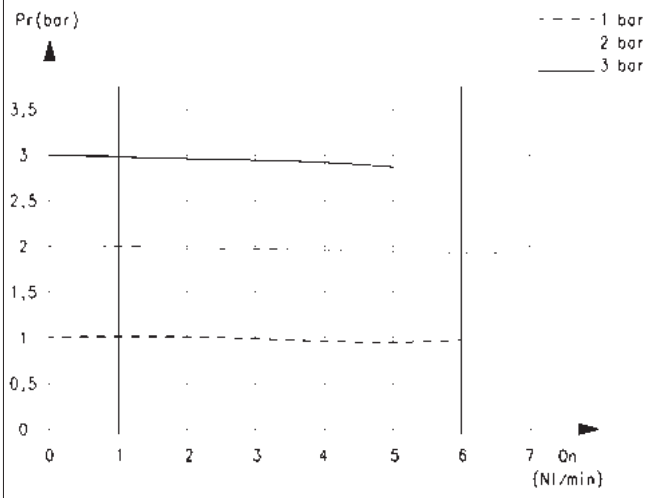
The K8P proportional regulator can be used as a pilot valve to control the opening of high flow valves or to check the high flow pressure regulators proportionally (version with sub-base for the pressure remote reading).
It enables proportional control of power in lifting systems and can be used with inert gas to maintain a constant pressure in pneumatic cylinders or expansion valve chambers.
It has also been designed to maintain a constant pressure during the pulling power applied to the wires in winding machines, to modulate pressure during the smoothing process in woodworking machines or to adjust the opening of diaphragm valves.

Interface for single use without sub-base



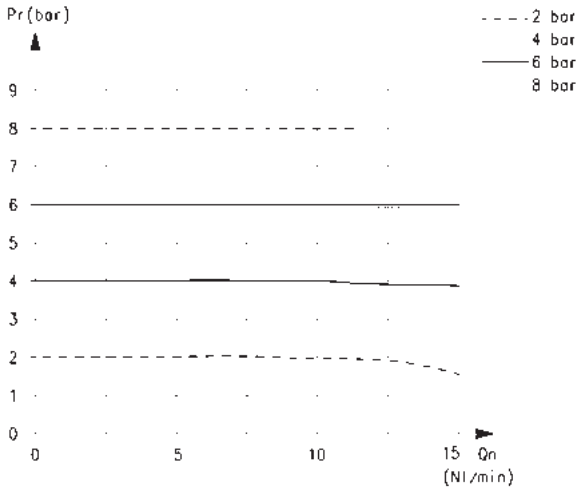
DRAWING LEGEND	
	Notes
1 = Supply	Pneumatic connection
2 = Outlet	Pneumatic connection
2* = area for possible positioning of outlet port 2	Do not exceed the indicated outline
3 = Exhaust	Pneumatic connection
4 = OUTLET DIMENSION	
5 = VENT PORT FOR IP65	Optional when a OR seal is mounted

FLOW DIAGRAMS



Pr = Outlet pressure (bar)*
Qn = Flow (Nl/min)*

* = Inlet pressure 4 bar



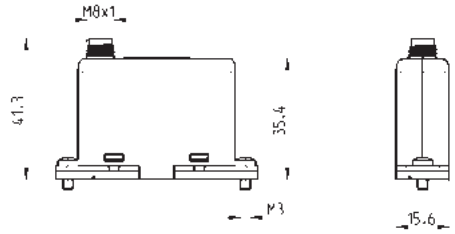
Pr = Outlet pressure (bar)*
Qn = Flow (Nl/min)*

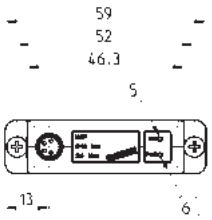
* = Inlet pressure 10 bar

Series K8P electronic proportional micro regulator - dimensions

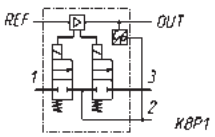
MALE CONNECTOR M8 4 POLES
Pin 1: +24 V DC (Power supply)
Pin 2: Command analogical signal 0-10 V DC
or 4-20 mA
Pin 3: 0 V (Ground) common also for the
command signal
Pin 4: Output analogical signal
(according to the regulated pressure)

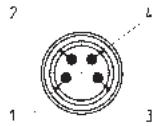
5 red LED
6 green LED





NOTE TO THE TABLE
* according to the type of
command desired, insert:
2 (0-10 V DC) or
3 (4-20 mA)



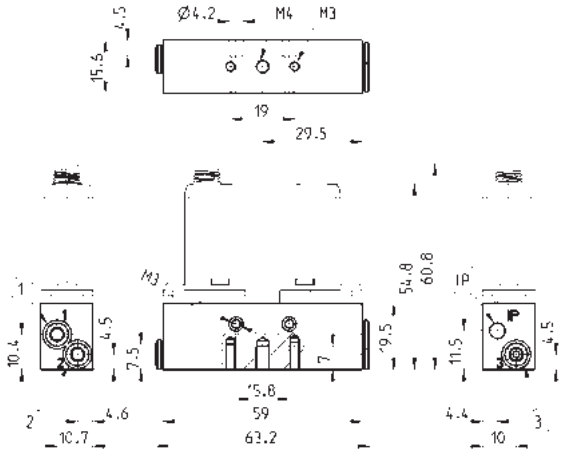


Mod.
K8P-0-D5*2-0
K8P-0-E5*2-0
K8P-L-E5*2-0
K8P-L-D5*2-0
K8P-S-D5*2-0
K8P-S-E5*2-0
K8P-T-D5*2-0
K8P-T-E5*2-0

Standard Sub-base

Note: the use of a silencer on the exhaust is recommended. *

* Mod. 2939 4



Mod.
K8P-AS

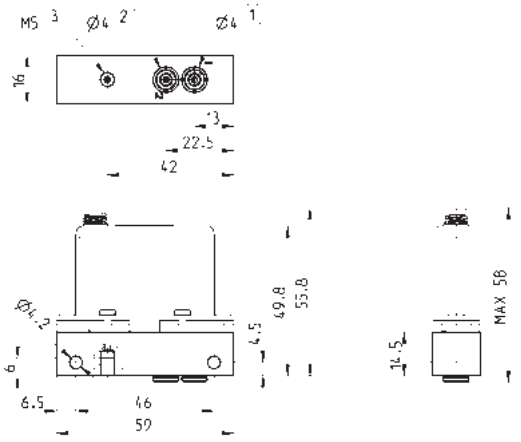
1 = Power supply
2 = Outlet
3 = Exhaust

IP = IP65 connection

Light Sub-base

Note: the use of a silencer on the exhaust is recommended. *

* Mod. 2931 M5, 2938 M5, 2901 M5



Mod.
K8P-AL

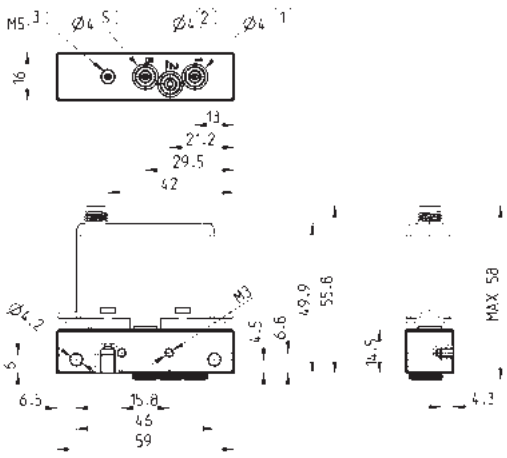
1 = Power supply
2 = Outlet
3 = Exhaust

Light Sub-base for the pressure remote reading

Note: the use of a silencer on the exhaust is recommended. *

* Mod. 2931 M5, 2938 M5, 2901 M5

In the version Light sub-base for the pressure remote reading it is also possible to use the fixing bracket B2-E531 (see page 5/2.05.15).



Mod.
K8P-AT

1 = Power supply
2 = Outlet
3 = Exhaust

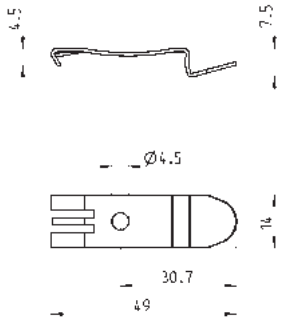
S = remote-mounted sensor

Mounting bracket for DIN rail

DIN EN 50022 (7,5mm x 35mm - width 1)

Supplied with:
1x plate
1x screw M4x6 UNI 5931

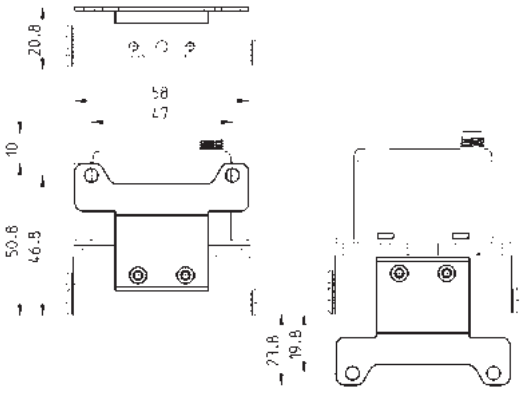
Note: this accessory cannot be used with the Light sub-base version.



Mod.
PCF-K8P

Bracket for horizontal mounting, for standard sub-base

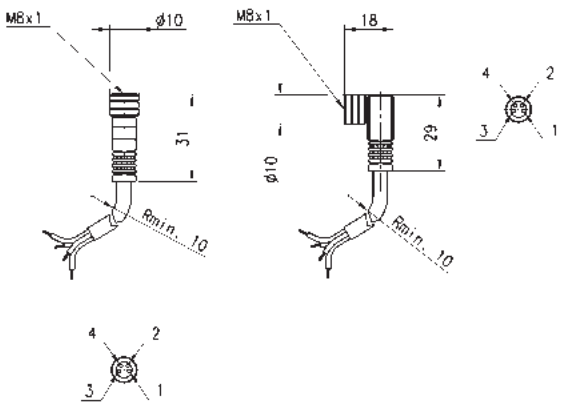
Supplied with:
1x mounting bracket
2x screws M3x8 UNI 5931



Mod.
K8P-B1

Circular M8 4-pole connectors, Female

With PU sheathing, non shielded cable.
Protection class: IP65



Mod.	Type of connector	Cable length (m)
CS-DF04EG-E200	straight	2
CS-DF04EG-E500	straight	5
CS-DR04EG-E200	right angle (90 degrees)	2
CS-DR04EG-E500	right angle (90 degrees)	5

Series MX-PRO
electronic proportional regulator

New

Ports: G1/2
Manifold ports: G1/2
Modular - Available with built-in pressure gauges or ports for gauges

- High precision
- Low electric consumption
- High exhaust flow
- Modular with Series MX2
- Available also in the MANIFOLD and external servo pilot supply versions

Series MX-PRO electronic proportional pressure regulator is the result of combining advanced technology of Series K8P electronic proportional micro regulator, with reliability and high performance of Series MX2 modular regulators.
This new regulator ensures high precision in pressure regulation, high flow rate and low consumption. Moreover, it can take the most of Series MX ease of assembly to provide particularly compact Manifolds.

GENERAL DATA

Construction	modular, compact, diaphragm type
Materials	see tables on the following pages
Ports	G1/2
Mounting	vertical in-line, wall-mounting (by means of clamps)
Working temperature	0°C ÷ 50°C
Max inlet pressure **Regulated pressure**	11 bar (10 bar), 4 bar (3 bar) 0.5 ÷ 10 bar, 0.15 ÷ 3 bar
Overpressure exhaust	with relieving (standard) without relieving
Nominal flow	see flow diagrams (following pages)
Air specifications	Filtered compressed air, non lubricated, class 3.4.3 according to ISO 8573.1 standard. If lubrication is necessary, please use only oils with maximum viscosity of 32 Cst and the version with external servo-pilot supply. The servo-pilot supply air quality class must be 3.4.3 according to ISO 8573.1 standard.
Pressure gauge	version with built-in pressure gauge (standard) version with G1/8 port
Analogical input	0-10 V DC Ripple ≤ 0.2% 4–20 mA
Analogical output	0.5-9.5 V DC [Feedback]
Supply / Consumption	19-28 V DC - ~1 W
Linearity	≤ ± 1% FS
Hysteresis	±0.5% FS
Repeatability	±0.5% FS
Sensibility	0.3% FS
Protection class	IP51
Electrical connection	M8 4 Pin (Male)

CODING EXAMPLE

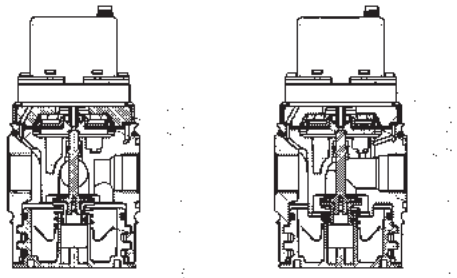
MX	2	-	1/2	-	R	CV	2	0	4	-	LH

MX	SERIES
2	SIZE: 2 = G1/2
1/2	PORTS: 1/2 = G1/2
R	TYPE OF REGULATOR: R = pressure regulator M = Manifold pressure regulator (G1/2 only)
CV	COMMAND: CV = electrical command 0-10 V DC CA = electrical command 4-20 mA EV = electrical command 0-10 V DC with external servo pilot supply EA = electrical command 4-20 mA with external servo pilot supply
2	OPERATING PRESSURE (1 bar = 14,5 psi): 1 = 0.15 ÷ 3 bar 2 = 0.5 ÷ 10 bar (standard)
0	DESIGN TYPE: 0 = relieving (standard) 1 = without relieving
4	PRESSURE GAUGE: 0 = without pressure gauge (with threaded port for gauges) 2 = with built-in pressure gauge 0-6 and working pressure 0.15 ÷ 3 bar 4 = with built-in pressure gauge 0-12 and working pressure 0.5 ÷ 10 bar (standard)
LH	FLOW DIRECTION: = from left to right (standard) LH = from right to left

For the assembly of a single component with fixing flanges or wall-mounting, see the section “FRL Series MX Assembled” (pag. 3/1.50.01)

Series MX-PRO electronic proportional regulators - materials

R = pressure regulator
M = Manifold pressure regulator



R M

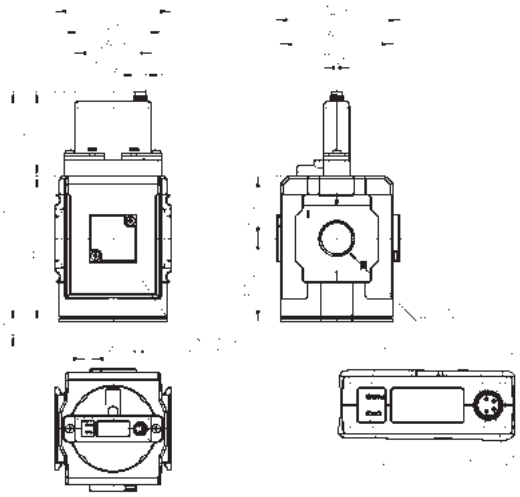
PARTS	MATERIALS
1 = Body	Aluminium
2 = Covering	Polyacetal
3 = Valve holder plug	Polyacetal
4 = Upper base	Polyamide
5 = Lower spring	Zinc-plated steel
6 = Diaphragm	NBR
Seals	NBR

Series MX-PRO electronic proportional regulators

Male connector M8 4 poles
Pin 1: +24 V DC (Power supply)
Pin 2: Command analogical signal
0-10 V DC or 4-20 mA
Pin 3: 0 V (Ground) common also
for the command signal
Pin 4: Output analogical signal
(according to the
regulated pressure)
5 red LED
6 green LED

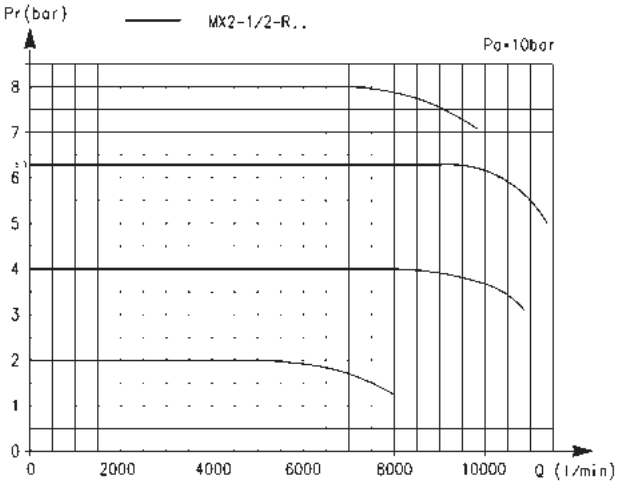
Accessories: see MX accessories (3/1.49)
Assembled FRL: see Series MX (3/1.50)
Connection cables: see Series K8P (2/15.37)

DRAWING NOTE
** = in the versions with external servo pilot supply only (MX2-1/2-REV... and MX2-1/2-REA...)



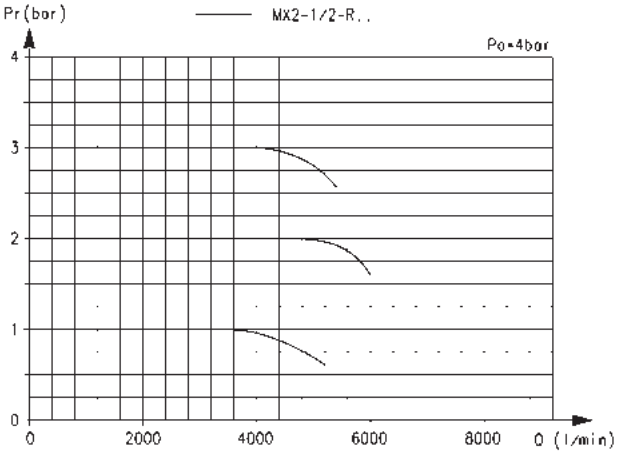
Mod.	Ports	Electrical command	Operating pressure (1 bar = 14,5 psi)	Relieving	Pressure gauge
MX2-1/2-RCV102	G1/2	0-10 V DC	0.15 ÷ 3 bar	yes	with built-in pressure gauge 0-6
MX2-1/2-RCV112	G1/2	0-10 V DC	0.15 ÷ 3 bar	no	with built-in pressure gauge 0-6
MX2-1/2-RCV204	G1/2	0-10 V DC	0.5 ÷ 10 bar	yes	with built-in pressure gauge 0-12
MX2-1/2-RCV214	G1/2	0-10 V DC	0.5 ÷ 10 bar	no	with built-in pressure gauge 0-12
MX2-1/2-RCA102	G1/2	4-20 mA	0.15 ÷ 3 bar	yes	with built-in pressure gauge 0-6
MX2-1/2-RCA112	G1/2	4-20 mA	0.15 ÷ 3 bar	no	with built-in pressure gauge 0-6
MX2-1/2-RCA204	G1/2	4-20 mA	0.5 ÷ 10 bar	yes	with built-in pressure gauge 0-12
MX2-1/2-RCA214	G1/2	4-20 mA	0.5 ÷ 10 bar	no	with built-in pressure gauge 0-12
MX2-1/2-RCV100	G1/2	0-10 V DC	0.15 ÷ 3 bar	yes	without pressure gauge
MX2-1/2-RCV110	G1/2	0-10 V DC	0.15 ÷ 3 bar	no	without pressure gauge
MX2-1/2-RCV200	G1/2	0-10 V DC	0.5 ÷ 10 bar	yes	without pressure gauge
MX2-1/2-RCV210	G1/2	0-10 V DC	0.5 ÷ 10 bar	no	without pressure gauge
MX2-1/2-RCA100	G1/2	4-20 mA	0.15 ÷ 3 bar	yes	without pressure gauge
MX2-1/2-RCA110	G1/2	4-20 mA	0.15 ÷ 3 bar	no	without pressure gauge
MX2-1/2-RCA200	G1/2	4-20 mA	0.5 ÷ 10 bar	yes	without pressure gauge
MX2-1/2-RCA210	G1/2	4-20 mA	0.5 ÷ 10 bar	no	without pressure gauge
MX2-1/2-REV100	G1/2	0-10 V DC	0.15 ÷ 3 bar	yes	without pressure gauge
MX2-1/2-REV102	G1/2	0-10 V DC	0.15 ÷ 3 bar	yes	with built-in pressure gauge 0-6
MX2-1/2-REV110	G1/2	0-10 V DC	0.15 ÷ 3 bar	no	without pressure gauge
MX2-1/2-REV112	G1/2	0-10 V DC	0.15 ÷ 3 bar	no	with built-in pressure gauge 0-6
MX2-1/2-REV200	G1/2	0-10 V DC	0.5 ÷ 10 bar	yes	without pressure gauge
MX2-1/2-REV204	G1/2	0-10 V DC	0.5 ÷ 10 bar	yes	with built-in pressure gauge 0-12
MX2-1/2-REV210	G1/2	0-10 V DC	0.5 ÷ 10 bar	no	without pressure gauge
MX2-1/2-REV214	G1/2	0-10 V DC	0.5 ÷ 10 bar	no	with built-in pressure gauge 0-12
MX2-1/2-REA100	G1/2	4-20 mA	0.15 ÷ 3 bar	yes	without pressure gauge
MX2-1/2-REA102	G1/2	4-20 mA	0.15 ÷ 3 bar	yes	with built-in pressure gauge 0-6
MX2-1/2-REA110	G1/2	4-20 mA	0.15 ÷ 3 bar	no	without pressure gauge
MX2-1/2-REA112	G1/2	4-20 mA	0.15 ÷ 3 bar	no	with built-in pressure gauge 0-6
MX2-1/2-REA200	G1/2	4-20 mA	0.5 ÷ 10 bar	yes	without pressure gauge
MX2-1/2-REA204	G1/2	4-20 mA	0.5 ÷ 10 bar	yes	with built-in pressure gauge 0-12
MX2-1/2-REA210	G1/2	4-20 mA	0.5 ÷ 10 bar	no	without pressure gauge
MX2-1/2-REA214	G1/2	4-20 mA	0.5 ÷ 10 bar	no	with built-in pressure gauge 0-12

FLOW DIAGRAMS - STANDARD VERSION



Pr = Regulated pressure
Q = Flow

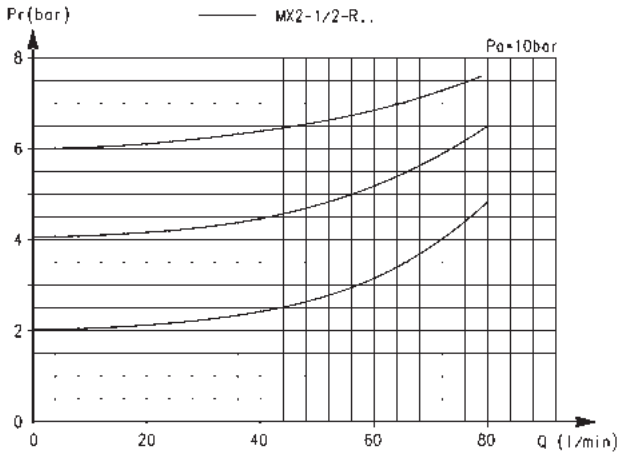
Pa = Inlet pressure



Pr = Regulated pressure
Q = Flow

Pa = Inlet pressure

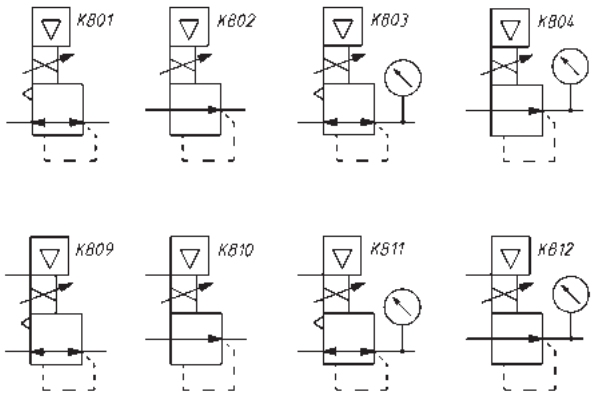
FLOW DIAGRAM AND PNEUMATIC SYMBOLS - STANDARD VERSION



Exhaust flow diagram

Pr = Regulated pressure
Q = Flow

Pa = Inlet pressure



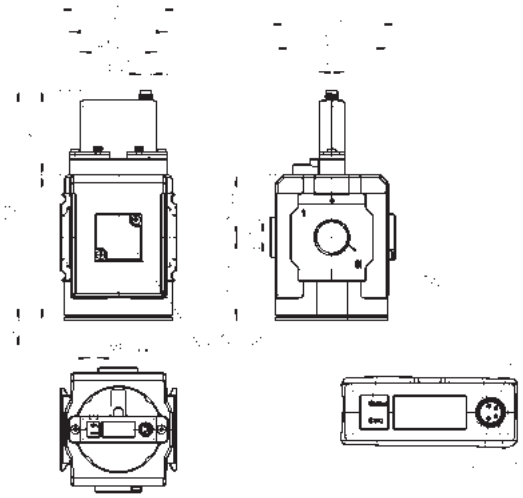
K801 = relieving, electrical command
K802 = NO relieving, electrical command
K803 = relieving, electrical command, built-in pressure gauge
K804 = NO relieving, electrical command, built-in pressure gauge
K809 = relieving, electrical command, ext. servo pilot supply
K810 = NO reliev., electrical command, ext. servo pilot supply
K811 = reliev., el. com., built-in pr. gauge, ext. servo pilot supply
K812 = NO reliev., el. com., built-in pr. gauge, ext. servo pilot sup.

Series MX-PRO Manifold regulators - dimensions

Male connector M8 4 poles
Pin 1: +24 V DC (Power supply)
Pin 2: Command analogical signal
0-10 V DC or 4-20 mA
Pin 3: 0 V (Ground) common also
for the command signal
Pin 4: Output analogical signal
(according to the
regulated pressure)
5 red LED
6 green LED

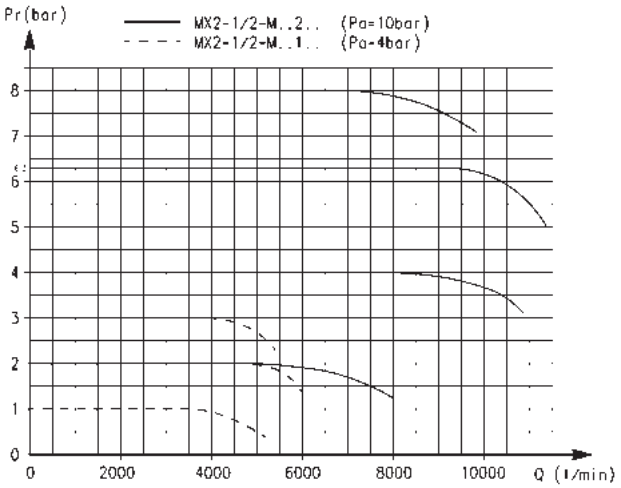
Accessories: see MX accessories (3/1.49)
Assembled FRL: see Series MX (3/1.50)
Connection cables: see Series K8P (2/15.37)

DRAWING NOTE
** = in the versions with external servo pilot supply only (MX2-1/2-REV... and MX2-1/2-REA...)



Mod.	Ports	Electrical command	Operating pressure (1 bar = 14,5 psi)	Relieving	Pressure gauge
MX2-1/2-MCV102	G1/2	0-10 V DC	0.15 ÷ 3 bar	yes	with built-in pressure gauge 0-6
MX2-1/2-MCV112	G1/2	0-10 V DC	0.15 ÷ 3 bar	no	with built-in pressure gauge 0-6
MX2-1/2-MCV204	G1/2	0-10 V DC	0.5 ÷ 10 bar	yes	with built-in pressure gauge 0-12
MX2-1/2-MCV214	G1/2	0-10 V DC	0.5 ÷ 10 bar	no	with built-in pressure gauge 0-12
MX2-1/2-MCA102	G1/2	4-20 mA	0.15 ÷ 3 bar	yes	with built-in pressure gauge 0-6
MX2-1/2-MCA112	G1/2	4-20 mA	0.15 ÷ 3 bar	no	with built-in pressure gauge 0-6
MX2-1/2-MCA204	G1/2	4-20 mA	0.5 ÷ 10 bar	yes	with built-in pressure gauge 0-12
MX2-1/2-MCA214	G1/2	4-20 mA	0.5 ÷ 10 bar	no	with built-in pressure gauge 0-12
MX2-1/2-MCV100	G1/2	0-10 V DC	0.15 ÷ 3 bar	yes	without pressure gauge
MX2-1/2-MCV110	G1/2	0-10 V DC	0.15 ÷ 3 bar	no	without pressure gauge
MX2-1/2-MCV200	G1/2	0-10 V DC	0.5 ÷ 10 bar	yes	without pressure gauge
MX2-1/2-MCV210	G1/2	0-10 V DC	0.5 ÷ 10 bar	no	without pressure gauge
MX2-1/2-MCA100	G1/2	4-20 mA	0.15 ÷ 3 bar	yes	without pressure gauge
MX2-1/2-MCA110	G1/2	4-20 mA	0.15 ÷ 3 bar	no	without pressure gauge
MX2-1/2-MCA200	G1/2	4-20 mA	0.5 ÷ 10 bar	yes	without pressure gauge
MX2-1/2-MCA210	G1/2	4-20 mA	0.5 ÷ 10 bar	no	without pressure gauge
MX2-1/2-MEV100	G1/2	0-10 V DC	0.15 ÷ 3 bar	yes	without pressure gauge
MX2-1/2-MEV102	G1/2	0-10 V DC	0.15 ÷ 3 bar	yes	with built-in pressure gauge 0-6
MX2-1/2-MEV110	G1/2	0-10 V DC	0.15 ÷ 3 bar	no	without pressure gauge
MX2-1/2-MEV112	G1/2	0-10 V DC	0.15 ÷ 3 bar	no	with built-in pressure gauge 0-6
MX2-1/2-MEV200	G1/2	0-10 V DC	0.5 ÷ 10 bar	yes	without pressure gauge
MX2-1/2-MEV204	G1/2	0-10 V DC	0.5 ÷ 10 bar	yes	with built-in pressure gauge 0-12
MX2-1/2-MEV210	G1/2	0-10 V DC	0.5 ÷ 10 bar	no	without pressure gauge
MX2-1/2-MEV214	G1/2	0-10 V DC	0.5 ÷ 10 bar	no	with built-in pressure gauge 0-12
MX2-1/2-MEA100	G1/2	4-20 mA	0.15 ÷ 3 bar	yes	without pressure gauge
MX2-1/2-MEA102	G1/2	4-20 mA	0.15 ÷ 3 bar	yes	with built-in pressure gauge 0-6
MX2-1/2-MEA110	G1/2	4-20 mA	0.15 ÷ 3 bar	no	without pressure gauge
MX2-1/2-MEA112	G1/2	4-20 mA	0.15 ÷ 3 bar	no	with built-in pressure gauge 0-6
MX2-1/2-MEA200	G1/2	4-20 mA	0.5 ÷ 10 bar	yes	without pressure gauge
MX2-1/2-MEA204	G1/2	4-20 mA	0.5 ÷ 10 bar	yes	with built-in pressure gauge 0-12
MX2-1/2-MEA210	G1/2	4-20 mA	0.5 ÷ 10 bar	no	without pressure gauge
MX2-1/2-MEA214	G1/2	4-20 mA	0.5 ÷ 10 bar	no	with built-in pressure gauge 0-12

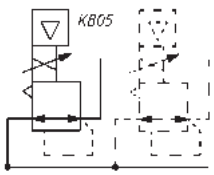
FLOW DIAGRAMS - MANIFOLD VERSION

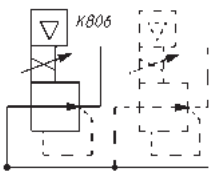


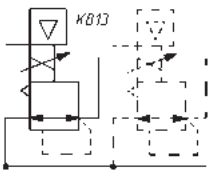
Pr = Regulated pressure
Q = Flow

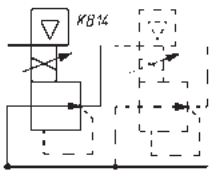
Pa = Inlet pressure

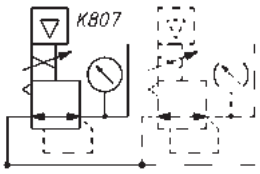
PNEUMATIC SYMBOLS - MANIFOLD VERSION

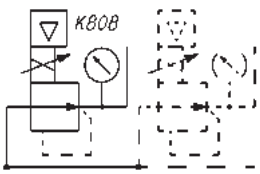


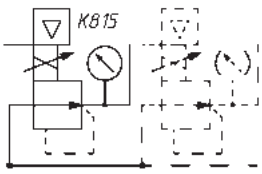


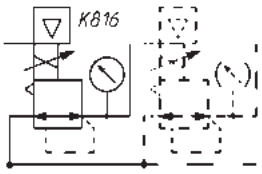












K805 = MANIFOLD reg., relieving, electrical command
K806 = MANIFOLD reg., NO relieving, electrical command
K807 = MANIFOLD reg., relieving, electrical command and built-in pressure gauge
K808 = MANIFOLD reg., NO relieving, electrical command and built-in pressure gauge

K813 = MANIFOLD reg., relieving, electrical command, and external servo pilot supply
K814 = MANIFOLD reg., NO relieving, electrical command, and external servo pilot supply
K815 = MANIFOLD reg., relieving, electrical command, built-in pressure gauge and external servo pilot supply
K816 = MANIFOLD reg., NO relieving, electrical command, built-in pressure gauge and external servo pilot supply

Series ER100
digital electro-pneumatic regulators

Port G1/4

- Compact design
- Digital display
- Analog and digital input
- Programmable
- Zero/span adjustment function
- Error display function, pressure display
- Preset memory function 8-set points (3 bits).

GENERAL DATA ER104-5xxx

Model	ER104-5 0/1/2 X Analog type	ER104-5 P X Parallel type
Fluid	filtered compressed air, unlubricated, according to ISO 8573-1 class 3.4.3, inert gas	filtered compressed air, unlubricated, according to ISO 8573-1 class 3.4.3, inert gas
Max. working pressure	7 bar	7 bar
Min. working pressure	Control pressure + max. control pressure x 0,2	Control pressure + max. control pressure x 0,2
Pressure control range	0,3 ÷ 5 bar	0,3 ÷ 5 bar
Class protection	IP40	IP40
Power supply voltage	24 V DC +/- 10% (stabilized power supply with a ripple rate of 1% or less)	24 V DC +/- 10% (stabilized power supply with a ripple rate of 1% or less)
Consumption current	0.15 A (or less rush current 0.6 A or less when power is turned on)	0.15 A (or less rush current 0.6 A or less when power is turned on)
Input signal **(Input impendance)**	0 ÷ 10 V DC (6,7 kΩ) 0 ÷ 5 V DC (10 kΩ) 4 ÷ 20 mA DC (250 Ω)	10 bit
Preset input	8 points	N/A
Output signal **Note 1**	Analog output 1-5 VDC (load to be connected impedance 500 kW or more) Switch output NPN or PNP, open collector output, 30 V or less, 50 mA or less, voltage drop 2.4 or less, compatible for use with PLC or Relay	Analog output 1-5 VDC (load to be connected impedance 500 kW or more) Switch output NPN or PNP, open collector output, 30 V or less, 50 mA or less, voltage drop 2.4 or less, compatible for use for PLC or Relay
Error Output signal	NPN or PNP open collector output, 30 V or less, 50 mA or less, voltage drop 2,4 V or less, compatible for use with PLC or Relay	NPN or PNP open collector output, 30 V or less, 50 mA or less, voltage drop 2,4 V or less, compatible for use with PLC or Relay
Direct memory setting	0,05 ÷ 5 bar minimum input width 0,01 bar	0,05 ÷ 5 bar minimum input width 0,01 bar
Hysteresis **Note 2**	0.5% F.S. or less	0.5% F.S. or less
Linearity **Note 2**	±0.3% F.S. or less	±0.3% F.S. or less
Resolution **Note 2**	0.2% F.S. or less	0.2% F.S. or less
Repeatability **Note 2**	0.3% F.S. or less	0.3% F.S. or less
Temperature characteristics: **Zero point fluctation**	0.15% F.S./°C or less	0.15% F.S./°C or less
Temperature characteristics: **Span point fluctation**	0.07% F.S./°C or less	0.07% F.S./°C or less
Max. flow rate (ANR) **Note 3**	400 l/min (see diagram)	400 l/min (see diagram)
Step response time **No load** **Note 4**	0.2 sec. or less	0.2 sec. or less
Step response time **1000 cm³ load** **Note 4**	0.8 sec. or less	0.8 sec. or less
Mechanical vibration proof	98 m/s² or less	98 m/s² or less
Ambient temperature	5°C ÷ 50 °C	5°C ÷ 50 °C
Fluid temperature	5°C ÷ 50 °C	5°C ÷ 50 °C
Connection port size	G1/4	G1/4
Mounting direction	Free	Free
Weight	250g	250g
Note 1:	Select either analog or switch output.	
Note 2:	This characteristic is guaranteed within a regulation range between 10 and 90% of the full scale, with a power voltage of 24V±10%, a supply pressure of 1 bar higher compared with the set pressure (ex. regulation of 3 bar, supply pressure of 3+1 = 4 bar) and a volume connected to the outlet without any loss. In applications with great air consumption, such as the blowing, the indicated tolerance may change.	
Note 3:	The above apply when working pressure and control pressure are maximum	
Note 4:	The above apply when working pressure is maximum and the step is as follows: 50% F.S. -> 100%F.S. 50% F.S. -> 60% F.S. 50% F.S. -> 40% F.S.	

GENERAL DATA ER104-9xxx

Model	ER104-9 0/1/2 X Analog type	ER104-9P X Parellel type
Fluid	Filtered air according to ISO 132	Filtered air according to ISO 132
Max. working pressure	10 bar	10 bar
Min. working pressure	Control pressure + Max. control pressure + 1 bar	Control pressure + Max. control pressure + 1 bar
Pressure control range	0,5 ÷ 9 bar	0,5 ÷ 9 bar
Class protection	IP40	IP40
Power supply voltage	DC24V ± 10% (stabilized power supply with a ripple rate of 1% or less)	DC24V ± 10% (stabilized power supply with a ripple rate of 1% or less)
Consumption current	0.15 A or less rush current 0.6 A or less when power is turned on	0.15 A or less rush current 0.6 A or less when power is turned on
Input signal **(Input impedance)**	0 a 10 VDC (6.7kΩ) 0 a 5 VDC (10kΩ) 4 a 20 mADC (250 Ω)	10 bit
Preset input	8 points	N/A
Output signal **Note 1**	Analog output 1-5 VDC (load to be connected impedance 500 KW or more) Switch output NPN or PNP, open collector output, 30 V or less, 50 mA or less voltage drop 2.4.V or less, compatible for usage in PLC and Relay.	Analog output 1-5 VDC (load to be connected impedance 500 KW or more) Switch output NPN or PNP, open collector output, 30 V or less, 50 mA or less, voltage drop 2.4.V or less, compatible for usage in PLC and Relay.
Error output signal	NPN or PNP, open collector output, 30 V or less, 50 mA or less, voltage drop 2.4 or less, compatible for usage in PLC and Relay	NPN or PNP, open collector output, 30 V or less, 50 mA or less, voltage drop 2.4 or less, compatible for usage in PLC and Relay
Direct memory setting	0,05 ÷ 9 bar minimum input width 0,01 bar setting resolution 0,02 bar	0,05 ÷ 9 bar minimum input width 0,01 bar setting resolution 0,02 bar
Hysteresis **Note 2**	0.5% F.S. or less	0.5% F.S. or less
Linearity **Note 2**	±0.3% F.S. or less	±0.3% F.S. or less
Resolution **Note 2**	0.2% F.S. or less	0.2% F.S. or less
Repeatability **Note 2**	0.3% F.S. or less	0.3% F.S. or less
Temperature characteristics: **Zero point fluctuation**	0.15% F.S./°C or less	0.15% F.S./°C or less
Temperature characteristics: **Span point fluctuation**	0.07% F.S./°C or less	0.07% F.S./°C or less
Max. flow rate **Note 3**	400 l/min (see diagram)	400 l/min (see diagram)
Step response time **No load** **Note 4**	0.82 sec. or less	0.2 sec. or less
Step response time **1000 cm³ load** **Note 4**	0.8 sec. or less	0.8 sec. or less
Mechanical vibration proof	98 m/s² or less	98 m/s² or less
Ambient temperature	5°C ÷ 50 °C	5°C ÷ 50 °C
Fluid temperature	5°C ÷ 50 °C	5°C ÷ 50 °C
Connecting port size	G1/4	G1/4
Mounting direction	Free	Free
Weight	250g	250g
Note 1	Select either analog or switch output.	
Note 2	This characteristic is guaranteed within a regulation range between 10 and 90% of the full scale, with a power voltage of 24V±10%, a supply pressure of 1 bar higher compared with the set pressure (ex. regulation of 3 bar, supply pressure of 3+1 = 4 bar) and a volume connected to the outlet without any loss. In applications with great air consumption, such as the blowing, the indicated tolerance may change.	
Note 3	The above apply when working pressure and control pressure are maximum.	
Note 4	The above apply when working pressure and control pressure is maximum and the step is as follows: 50% F.S. -> 100%F.S. 50% F.S. -> 60% F.S. 50% F.S. -> 40% F.S.	

STANDARD CODES

Models

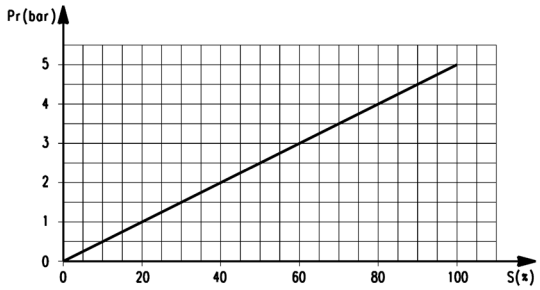
ER104-50AP	ER104-52AP	ER104-5PSP	ER104-90SP	ER104-92SP
ER104-50SP	ER104-52SP	ER 104-90AP	ER104-92AP	ER104-9PSP

CODING EXAMPLE

ER	1	04	-	5	0	AN

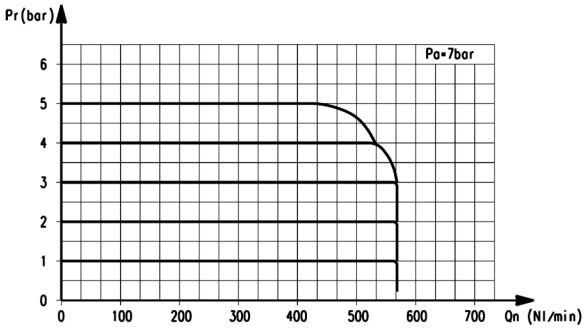
ER	SERIES
1	SIZE: 1 = size 1
04	PORT: 04 = G1/4
5	WORKING PRESSURE: 5 = 0 ÷ 5 bar 9 = 0.5 ÷ 9 bar
0	INPUT: 0 = 0 - 10 V DC 1 = 0 - 5 V DC 2 = 4 - 20 mA P = Parallel 10 bit
AN	OUTPUT: AN = 1 - 5 V analog, error (NPN) AP = 1 - 5 V analog, error (PNP) SN = switch (NPN), error (NPN) SP = switch (PNP), error (PNP)

DIAGRAMS



ER104-5xxx
Input/Output characteristics

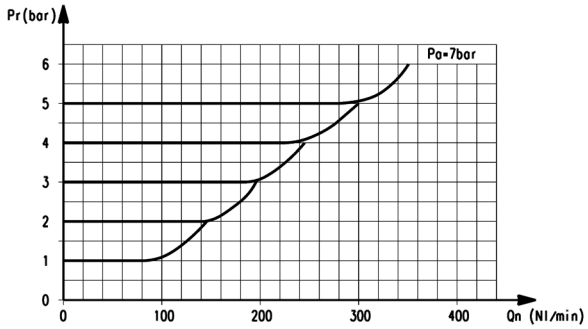
Pr = outlet pressure (bar)
S = input signal (%)



ER104-5xxx
Flow characteristics

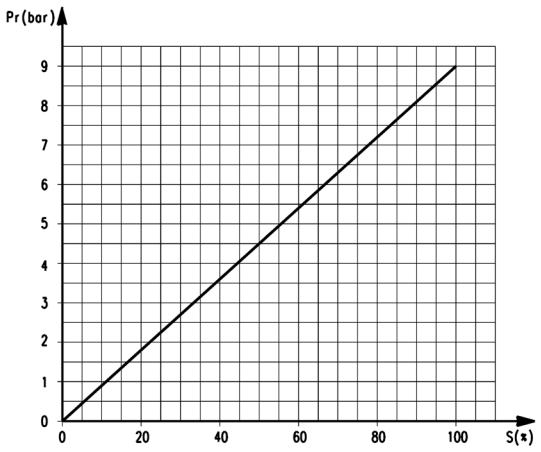
Pr = outlet pressure (bar)
Qn = flow (l/min)
Pa = operating pressure (bar)

DIAGRAMS



ER104-5xxx
Exhaust characteristics

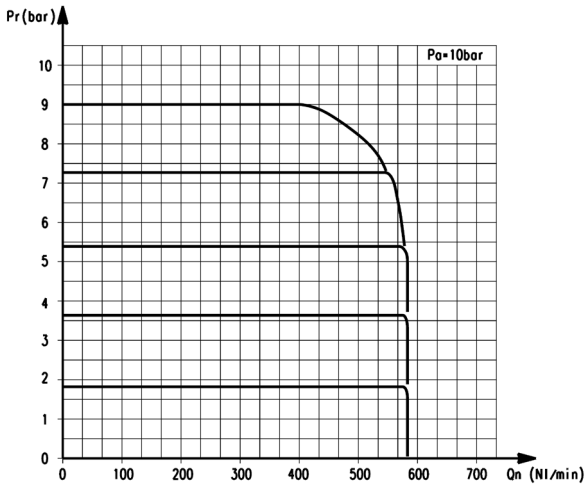
Pr = outlet pressure (bar)
Qn = flow (l/min)
Pa = operating pressure (bar)



ER104-9xxx
Input/Output characteristics

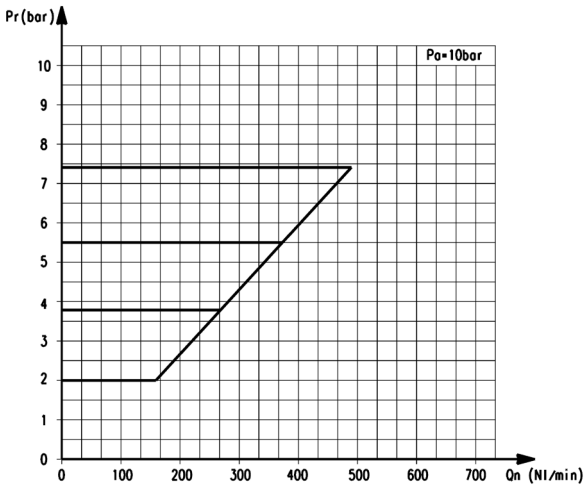
Pr = outlet pressure (bar)
S = input signal (%)

DIAGRAMS



ER104-9xxx
Flow characteristics

Pr = outlet pressure (bar)
Qn = flow (l/min)
Pa = operating pressure (bar)

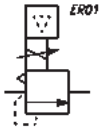


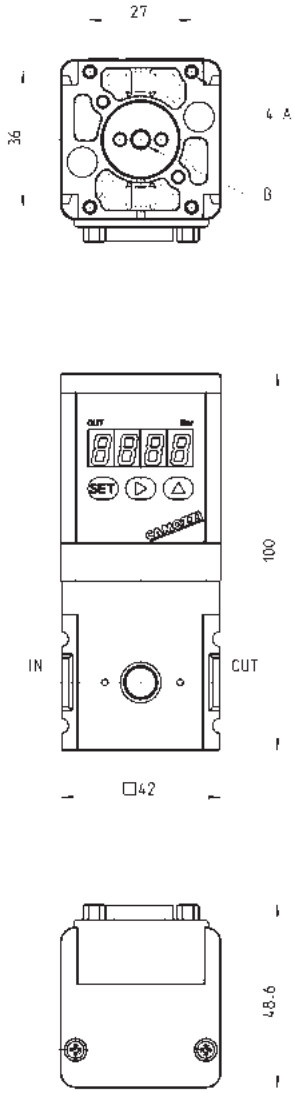
ER104-9xxx
Exhaust characteristics

Pr = outlet pressure (bar)
Qn = flow (l/min)
Pa = operating pressure (bar)

Proportional regulator Series ER100

See connectors on page 2/15.51.09



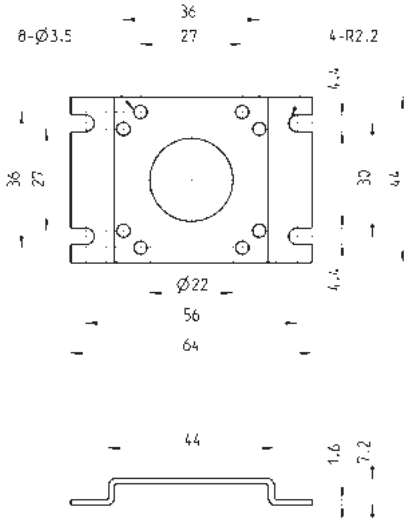


DIMENSIONS

Mod.	A	B	C	D	E	F
ER104	M3 depth 6	Ø5.3 EXH port	D sub-connector 15 pins/plugs	G1/4	4-40 UNC	Ø4.2 Port R (pilot air exhaust port)

Bracket ER1-B1

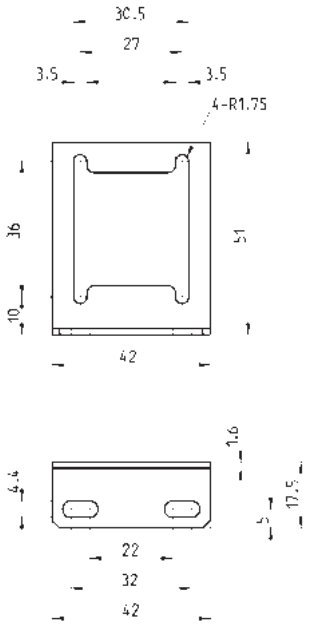
Floor installation type



DIMENSIONS
Mod.
ER1-B1

Bracket ER1-B2

Wall installation type



DIMENSIONS
Mod.
ER1-B2

Series ER200
digital electro-pneumatic regulators

Ports G1/4 and G3/8

- Compact design
- Digital display
- Analog and digital input
- Programmable
- Zero/span adjustment function
- Error display function, pressure display
- Preset memory function 8-set points (3 bits).

GENERAL DATA ER2XX-5XXX

Model	ER204-5 0/1/2 X ER238-5 0/1/2 X Analog type	ER204-5P X ER238-5P X Parallel type
Fluid	filtered compressed air, unlubricated, according to ISO 8573-1 class 3.4.3, inert gas	filtered compressed air, unlubricated, according to ISO 8573-1 class 3.4.3, inert gas
Max. working pressure	7 bar	7 bar
Min. working pressure	Control pressure + max. control pressure + 1 bar	Control pressure + max. control pressure + 1 bar
Pressure control range	0,3 ÷ 5 bar	0,3 ÷ 5 bar
Class protection	IP40	IP40
Power supply voltage	DC24V ± 10% (stabilized power supply with a ripple rate of 1% or less)	DC24V ± 10% (stabilized power supply with a ripple rate of 1% or less)
Consumption current	0.15 A (rush current 0.6 A or less)	0.15 A (rush current 0.6 A or less)
Input signal(Input Impedance)	0 to 10 VDC (6.7k Ω) 0 to 5 VDC (10k Ω) 4 to 20 mADC (250 Ω)	10 bit
Preset input	8 points	N/A
Output signal **Note 1**	Analog output 1-5 VDC (load to be connected impedance 500 kΩ or more) Switch output NPN or PNP, open collector output, 30 V, 50 mA, voltage drop 2.4 V, compatible for usage in PLC and Relay.	Analog output 1-5 VDC (load to be connected impedance 500 kΩ or more) Switch output NPN or PNP, open collector output, 30 V, 50 mA, voltage drop 2.4 V, compatible for usage in PLC and Relay.
Error output signal	NPN or PNP, open collector, 30 V, 50 mA, voltage drop 2.4 V, compatible for usage in PLC and Relay.	NPN or PNP, open collector, 30 V, 50 mA, voltage drop 2.4 V, compatible for usage in PLC and Relay.
Direct memory setting	0,05 ÷ 5 bar minimum input width 0,01 bar	0,05 ÷ 5 bar minimum input width 0,01 bar
Hysteresis **Note 2**	0.5% F.S. or less	0.5% F.S. or less
Linearity **Note 2**	±0.3% F.S. or less	±0.3% F.S. or less
Resolution **Note 2**	0.2% F.S. or less	0.2% F.S. or less
Repeatability **Note 2**	0.3% F.S. or less	0.3% F.S. or less
Temperature characteristics: **zero point fluctuation**	0.15% F.S./°C or less	0.15% F.S./°C or less
Temperature characteristics: **span point fluctuation**	0.07% F.S./°C or less	0.07% F.S./°C or less
Max. flow rate(ANR) **Note 3**	1500 l/min	1500 l/min
Step response time: **no load**	0.2 sec. or less	0.2 sec. or less
Step response time: **With load 1000 cm³**	0.8 sec. or less	0.8 sec. or less
Mechanical vibration proof	98 m/s² or less	98 m/s² or less
Ambient temperature	5°C ÷ 50 °C	5°C ÷ 50 °C
Fluid temperature	5°C ÷ 50 °C	5°C ÷ 50 °C
Connecting port size **IN/OUT**	G1/4 - G3/8	G1/4 - G3/8
Connecting port size **EXHAUST**	G3/8	G3/8
Mounting	Free	Free
Weight	450g	450g
Note 1:	Select either analog or switch output.	
Note 2:	This characteristic is guaranteed within a regulation range between 10 and 90% of the full scale, with a power voltage of 24V±10%, a supply pressure of 1 bar higher compared with the set pressure (ex. regulation of 3 bar, supply pressure of 3+1 = 4 bar) and a volume connected to the outlet without any loss. In applications with great air consumption, such as the blowing, the indicated tolerance may change.	
Note 3:	The above apply when working pressure and control pressure are maximum.	
Nota 4:	The above apply when working pressure is maximum and the step is as follows: 50% F.S. -> 100% F.S. 50% F.S. -> 60% F.S. 50% F.S. -> 40% F.S.	

GENERAL DATA ER2XX-9XXX

Model	ER204-9 0/1/2 X ER238-9 0/1/2 X Analog type	ER238-9P X ER238-9P X Parallel type
Fluid	Cleaned air	Cleaned air
Max. working pressure	10 bar	10 bar
Min. working pressure	Control pressure + max. control pressure + 1 bar	Control pressure + max. control pressure + 1 bar
Pressure control range	0,5 - 9 bar	0,5 - 9 bar
Class protection	IP40	IP40
Power supply voltage	DC24V ± 10% (stabilized power supply with a ripple rate of 1% or less)	DC24V ± 10% (stabilized power supply with a ripple rate of 1% or less)
Consumption current	0.15 A (rush corrent 0.6 A or less)	0.15 A (rush corrent 0.6 A or less)
Input signal **(Input impedance)**	0 to 10 VDC (6.7kΩ) 0 to 5 VDC (10kΩ) 4 to 20 mADC (250Ω)	10 bit
Preset input	8 points	N/A
Output signal	Analog output 1-5 VDC (load to be connected impedance 500 kΩ) Switch output NPN or PNP, open collector, 30 V, 50 mA, voltage drop 2.4 V, compatible for usage in PLC and Relay	Analog output 1-5 VDC (load to be connected impedance 500 kΩ) Switch output NPN or PNP, open collector, 30 V, 50 mA, voltage drop 2.4 V, compatible for usage in PLC and Relay
Error output signal	NPN or PNP, open collector, 30 V, 50 mA, voltage drop 2.4 V, compatible for usage in PLC and Relay	NPN or PNP, open collector, 30 V, 50 mA, voltage drop 2.4 V, compatible for usage in PLC and Relay
Direct memory setting	0,05 - 9 bar - min. input 0,01 bar max. error 0,02 bar	0,05 - 9 bar - min. input 0,01 bar max. error 0,02 bar
Hysteresis **Note 2**	0.5% F.S. or less	0.5% F.S. or less
Linearity **Note 2**	±0.3% F.S. or less	±0.3% F.S. or less
Resolution **Note 2**	0.2% F.S. or less	0.2% F.S. or less
Repeatability **Note 2**	0.3% F.S. or less	0.3% F.S. or less
Temperature characteristics: **Zero point fluctuation**	0.15% F.S./°C or less	0.15% F.S./°C or less
Temperature characteristics: **Span point fluctuation**	0.07% F.S./°C or less	0.07% F.S./°C or less
Max. flow rate(ANR) **Note 3**	1500 l/min	1500 l/min
Step response time **No load**	0.2 sec. or less	0.2 sec. or less
Step response time **Load 1000 cm³**	0.8 sec. or less	0.8 sec. or less
Mechanical vibration proof	98 m/s²	98 m/s²
Ambient temperature	5 to 50 °C	5 to 50 °C
Fluid temperature	5 to 50 °C	5 to 50 °C
Connecting port size **IN/OUT**	G1/4 - G3/8	G1/4 - G3/8
Connecting port size **EXHAUST**	G3/8	G3/8
Mounting	Free	Free
Weight	450g	450g
Note 1:	Select either analog or switch output	
Note 2:	This characteristic is guaranteed within a regulation range between 10 and 90% of the full scale, with a power voltage of 24V±10%, a supply pressure of 1 bar higher compared with the set pressure (ex. regulation of 3 bar, supply pressure of 3+1 = 4 bar) and a volume connected to the outlet without any loss. In applications with great air consumption, such as the blowing, the indicated tolerance may change.	
Note 3:	The above apply when working pressure and control pressure are maximum.	
Note 4:	The above apply when working pressure is maximum and the step is as follows: 50% F.S. -> 100% F.S. 50% F.S. -> 60% F.S. 50% F.S. -> 40% F.S.	

STANDARD CODES

Models

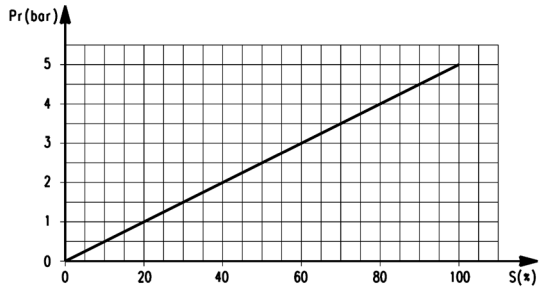
ER238-50AP	ER238-52AP	ER238-5PSP	ER238-90SP	ER238-92SP
ER238-50SP	ER238-52SP	ER238-90AP	ER238-92AP	ER238-9PSP

CODING EXAMPLE

ER	2	04	-	5	0	AN

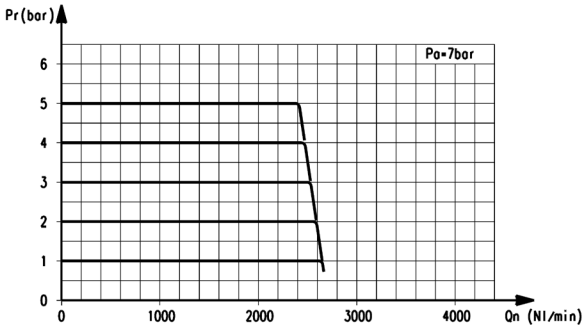
ER	SERIES
2	SIZE: 2 = size 2
04	PORT: 04 = G1/4 38 = G3/8
5	WORKING PRESSURE: 5 = 0 ÷ 5 bar 9 = 0.5 ÷ 9 bar
0	INPUT: 0 = 0 - 10 V DC 1 = 0 - 5 V DC 2 = 4 - 20 mA P = Parallel 10 bit
AN	OUTPUT: AN = 1 - 5 V analog error (NPN) AP = 1 - 5 V analog, error (PNP) SN = switch(NPN), error(NPN) SP = switch (PNP), error (PNP)

DIAGRAMS



ER2xx-5xxx
Input/Output characteristics

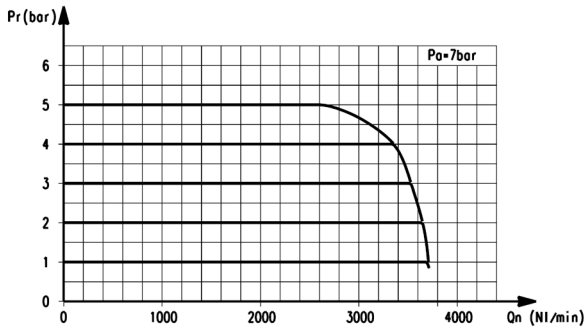
Pr = outlet pressure (bar)
S = input signal (%)



ER204-5xxx
Flow characteristics

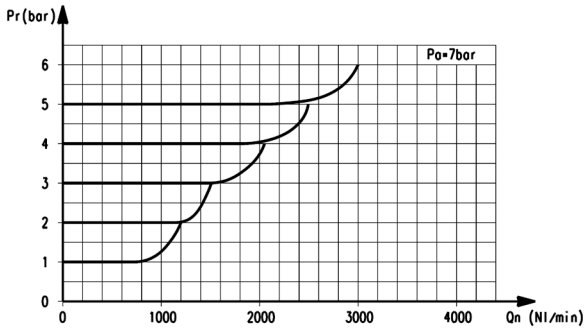
Pr = outlet pressure (bar)
Qn = flow (l/min)
Pa = working pressure (bar)

DIAGRAMS



ER238-5xxx
Flow characteristics

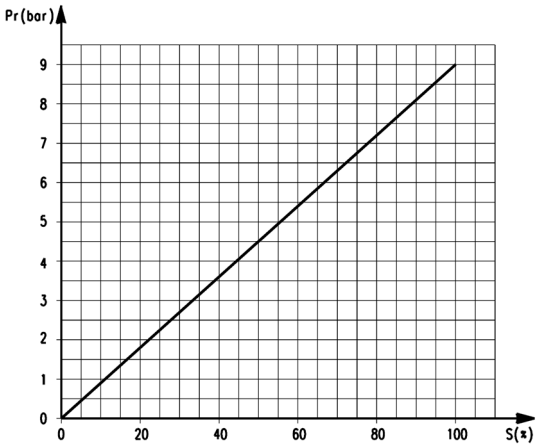
Pr = outlet pressure (bar)
Qn = flow (l/min)
Pa = working pressure (bar)



ER2xx-5xxx
Exhaust characteristics

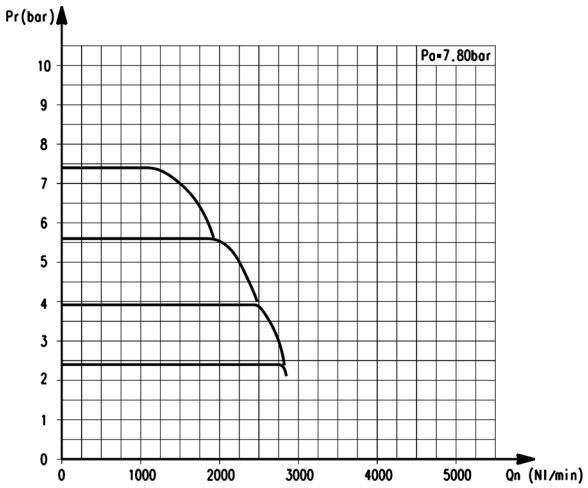
Pr = outlet pressure (bar)
Qn = flow (l/min)
Pa = working pressure (bar)

DIAGRAMS



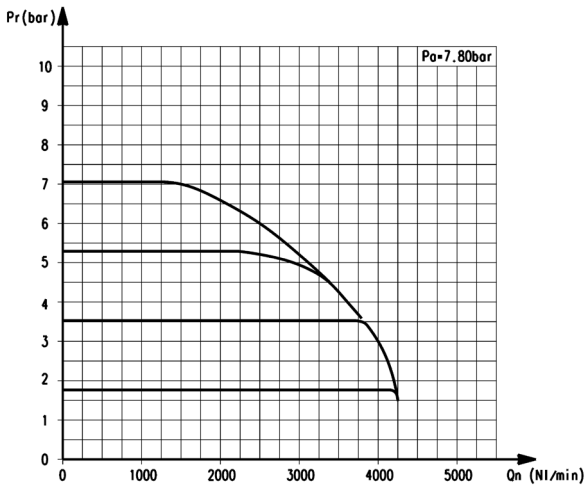
ER2xx-9xxx
Input/Output characteristics

Pr = output pressure (bar)
S = inlet signal (%)
Pa = working pressure (bar)



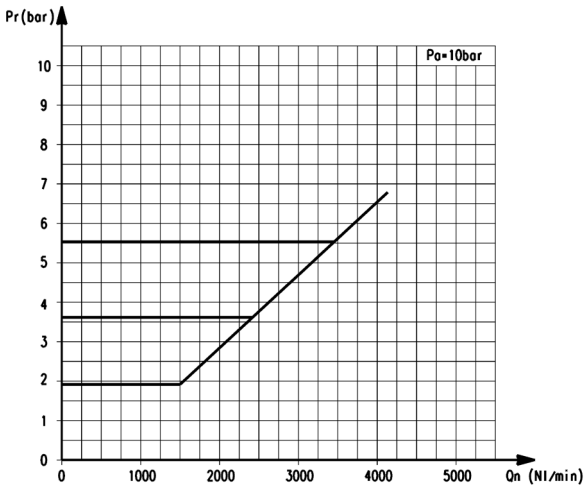
ER204-9xxx
Flow characteristics
Pr = output pressure (bar)
Qn = flow (l/min)
Pa = working pressure (bar)

DIAGRAMS



ER238-9xxx
Flow characteristics

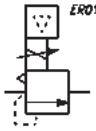
Pr = output pressure (bar)
Qn = flow (l/min)
Pa = working pressure (bar)

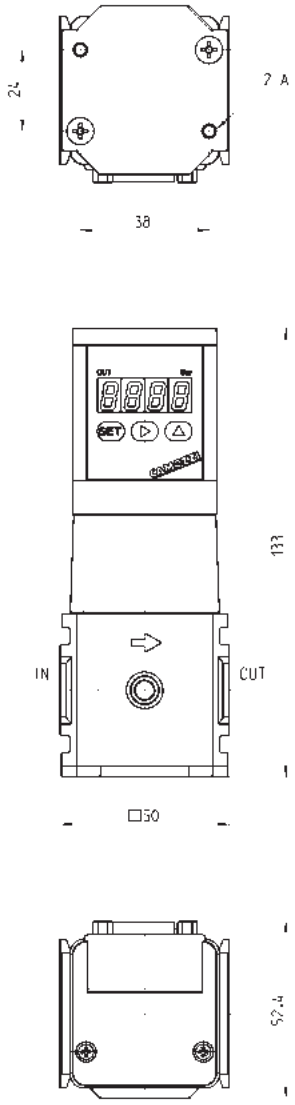


ER2xx-9xxx
Exhaust characteristics

Pr = output pressure (bar)
Qn = flow (l/min)
Pa = working pressure (bar)

Proportional regulators Series ER200





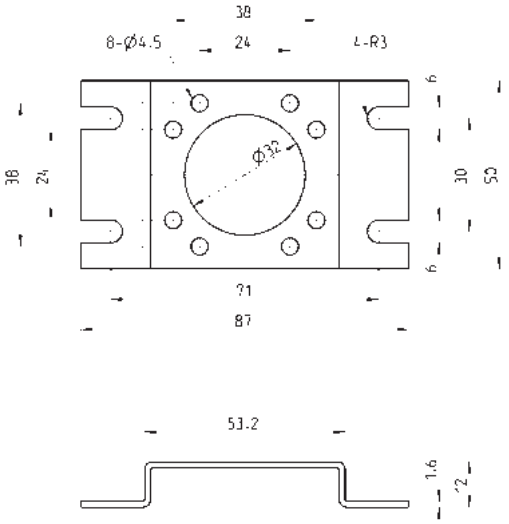
DIMENSIONS

Mod.	A	B	C	D	E	F
ER204	M4 depth 12	D sub-connector 15 pins/plugs	G1/4	4-40 UNC	Ø4.2 Port R (pilot air exhaust port)	G3/8 EXH port
ER238	M4 depth 12	D sub-connector 15 pins/plugs	G3/8	4-40 UNC	Ø4.2 Port R (pilot air exhaust port)	G3/8 EXH port

2
CONTROL

Bracket ER2-B1

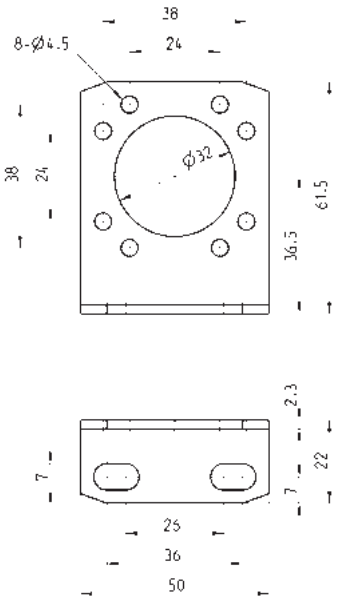
Floor installation type mounting



Mod.
ER2-B1

Bracket ER2-B2

Wall installation type mounting



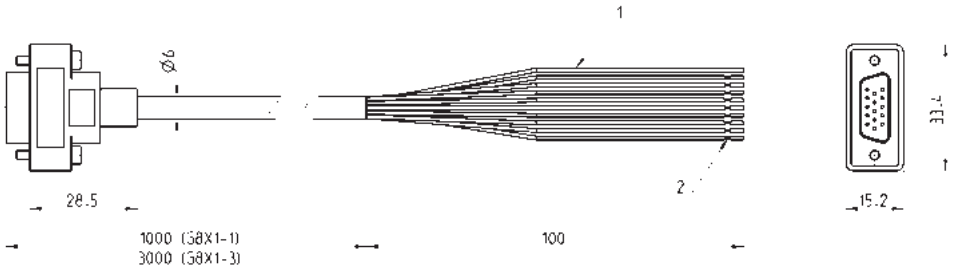
Mod.
ER2-B2

Cable and connector for regulator with analog Input

To check the correspondence between pin and cables' colour, please refer to the instruction sheet included in the packaging or to the user manual.

1 = shield wire*
2 = 9-AWG26

* Connect the shield wire to the power's minus (0 V) side.



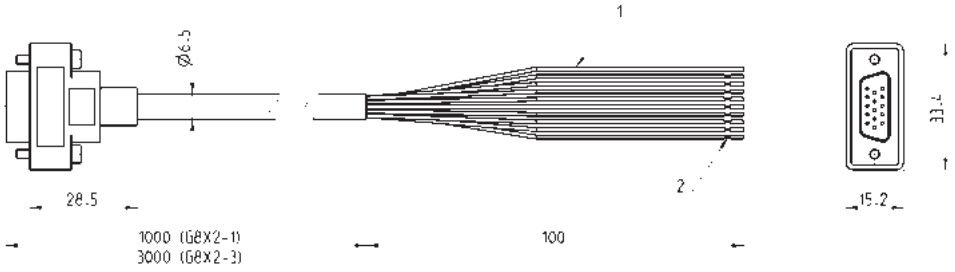
Mod.
G8X1-1
G8X1-3

Cable and connector for regulator with parallel Input

To check the correspondence between pin and cables' colour, please refer to the instruction sheet included in the packaging or to the user manual.

1 = shield wire*
2 = 9-AWG26

* Connect the shield wire to the power's minus (0 V) side.



Mod.
G8X2-1
G8X2-3