

LUCIFER®

***EPP3 Series
EP-Transducer***

with integrated electronic control

*Catalogue 8678/GB
March 1999*



INTRODUCTION

The product

A range of electropneumatic EP-transducers G1/8 and G1/4 which, by means of an integrated electronic control system and built-in pulse width modulated solenoid valves, controls the output pressure proportionally to an analog electrical control signal. High precision is achieved by means of an internal feedback loop through an integrated pressure sensor.

Applications

- Large flow valve pilot control
- Pressure remote control
- Mass braking
- Air motors speed regulation
- Contact forces control
- Tool clamping

Industries

- Robotics: welding, painting lines etc.
- Paper and printing: tension regulation
- Food and Chemistry: processing
- Instrumentation: mixing
- Packaging: metering

Benefits

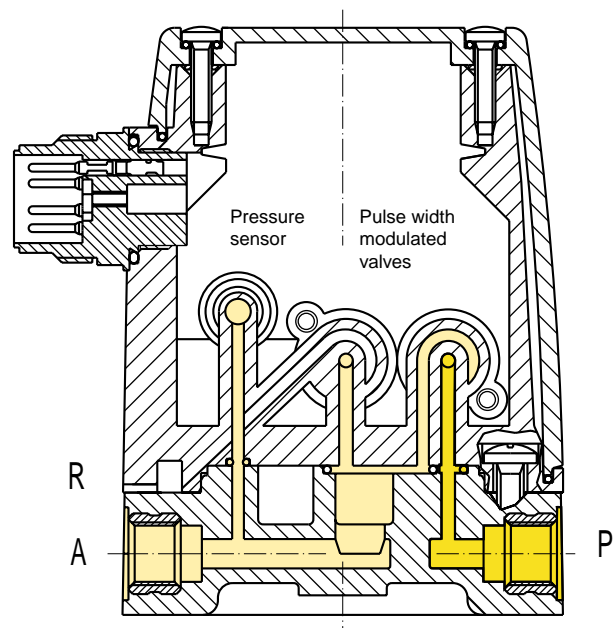
- Simplification of control systems by reducing the number of components
- More flexibility of the controls
- Increase in productivity
- Increase in safety
- Reduce maintenance
- Reduce rejects

DESCRIPTION OF OPERATION

The EP-transducer allows regulation of the outlet pressure proportionally to an electrical control signal. It comprises an integrated closed loop electronic control and two pulse width modulated 2-way solenoid valves. The pressure sensor measures the outlet pressure and provides a feedback signal to the differential amplifier. Any difference between the control signal and the feedback signal is converted to a digital signal to energize the coil of one or the other 2-way valves. This is then followed by an immediate, soft correction of the outlet pressure without overshoot.

The control signal can be a voltage (0 - 10 V) or a current (4 - 20 mA). The inlet of the "filling valve" is connected directly with the inlet P of the transducer. When energized, this valve will increase the pressure at the outlet A. When the "exhaust valve" is energized, the pressure at the outlet A will decrease. The pressure will be exhausted through a discharge orifice located between the cover and the body and directly fed to the atmosphere without silencer.

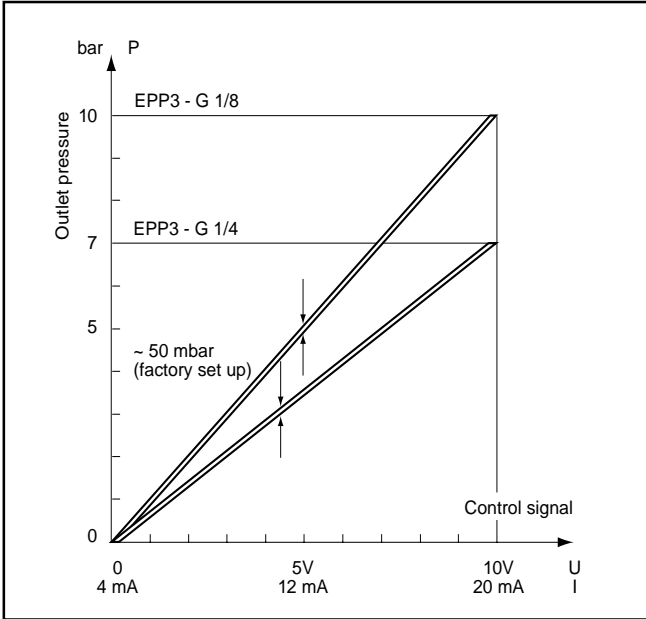
Both solenoid valves assure the filling or emptying of the servo-chamber of a main flow control valve in order to increase or decrease the outlet pressure. In the rest position of the pilot valves, all ports are blocked.



TECHNICAL DATA

Fluid:	lubricated or non lubricated air and neutral gases (recommended filtration: 25-50 μ)	
Temperature range:	ambient 0 to 50° C. fluid 0 to 50° C.	
Inlet pressure range:	G 1/8 - 1 to 10 bar G 1/4 - 1 to 7 bar	
Outlet pressure range:	G 1/8 - 0.2 to 10 bar G 1/4 - 0.2 to 7 bar	
Hysteresis:	≈ 50 mbar (Factory set up)	
Linearity:	1% f.s.o.	
Air consumption at constant control signal:	0	
Supply voltage:	24 V DC \pm 15 % (Max. ripple 1 V.)	
Power consumption:	G 1/8 - max. 6 W) with 24 V DC and constant changes G 1/4 - max. 7 W) of the control signal < 1 W without change of control signal	
Control signal:	analog 0-10 V	Impedance: 10 k Ω
	analog 4-20 mA	Impedance: 0.5 k Ω
Outlet sensor signal:	for types with output signal module. Proportional pressure output signal supplied by the pressure sensor. A) 0-10V, voltage signal (recommended load resistance min. 10 k Ω) B) 4-20 mA, current signal (recommended load resistance 0.5 k Ω max.) Voltage- and current signal can be received simultaneously. Both are protected against short-circuits. C) "Alarm" output signal 0/24 V (I max. = 40 mA) with adjustable triggering level. (Difference between control signal and sensor pressure signal) - factory set up: diff. signal = \pm 0.8 V to \pm 1 V - possible set up: diff. signal = \pm 0.1 V to \pm 5 V To neutralize the alarm output signal during the control signal changes, the use of a synchronized time lag relay is required.	
Indicative reponse time:	with a volume of 30 cm ³ at the outlet of the EP-transducer. filling : 2 to 4 bar emptying: 4 to 2 bar step response: G 1/8: ≈ 100 ms - 120 ms G 1/4: ≈ 70 ms - 100 ms	
Conductance C (dm³/s.bar):	G 1/8 - 0.1 G 1/4 - 0.2	
Outlet pressure/Flow rate:	G 1/8 - pressure drop 0.5 bar at 1.0 Nm ³ /h (P1 = 7 bar, Pout = 6 bar) G 1/4 - pressure drop 0.5 bar at 2.1 Nm ³ /h (P1 = 7 bar, Pout = 6 bar)	
Safety position:	in case of control failure or if it is less than 1% of its full scale value, the regulated pressure drops automatically to 0 bar (atmospheric pressure). In case of voltage supply failure, the regulated pressure will be kept constant.	
Electrical connection:	4 screw terminals under the protection cover with Pg 13.5 cable gland or through DIN 43651 connector (6 P + E).	
Life expectancy:	> 50 Mio changes of control signal steps.	
Mounting position:	indifferent (recommended position: upright; electronic part on top).	
Resistance to vibrations:	30 g in all directions.	
External sensors:	all pressure sensors with following characteristics are compatible with the EP-transducer: Sensitivity: 0.5 V/bar up to 10 V/bar Zero offset: -3 V to +3 V	
Degree of protection:	IP 65.	
Electromagnetic compatibility:	in accordance with IEC 801-4 part 4 standards.	
Installation and setting instructions:	see publication MI-9202 and appendix supplied with the product.	

HYSTERESIS DIAGRAM

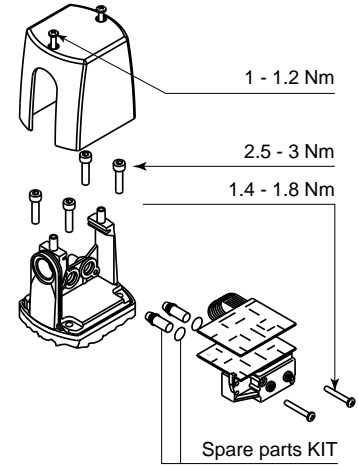


SPARE PARTS KIT

Plungers and seals

order No 481203-193
for EPP3-G 1/8

order No 481203-215
for EPP3-G 1/4

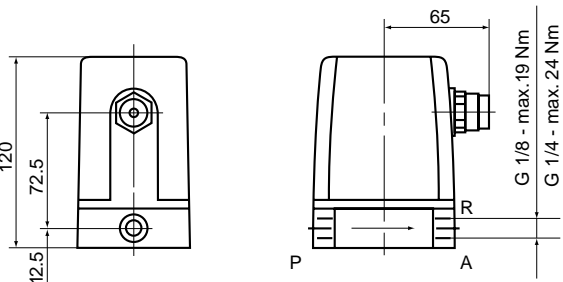
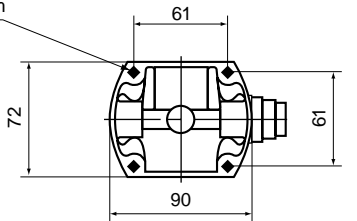


DIMENSIONS - TORQUES

EPP 3PC...

with DIN circular plug-in connection 6 P + E
(connector included)

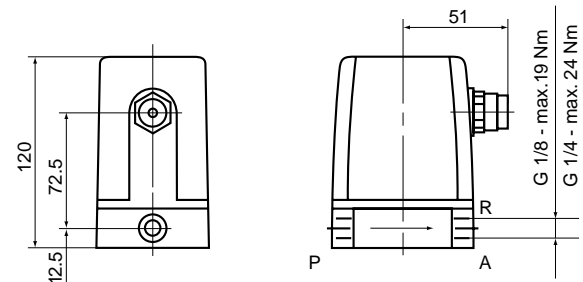
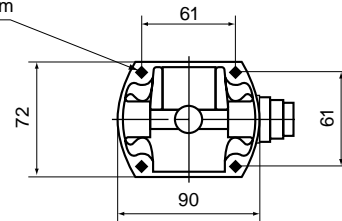
M4 x 20 - max. 1.5 Nm



EPP 3PC...

with Pg 13.5 cable gland connection.

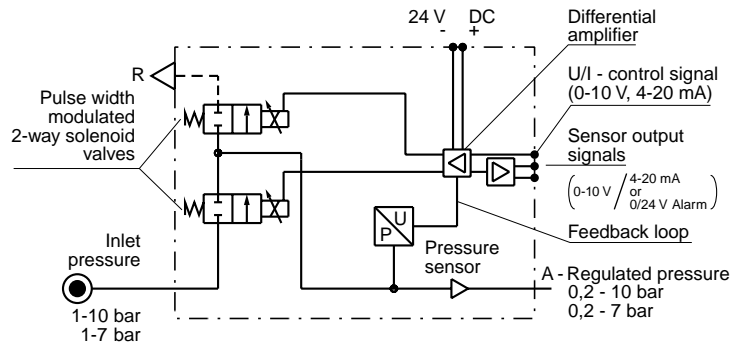
M4 x 20 - max. 1.5 Nm



BLOCK DIAGRAMS

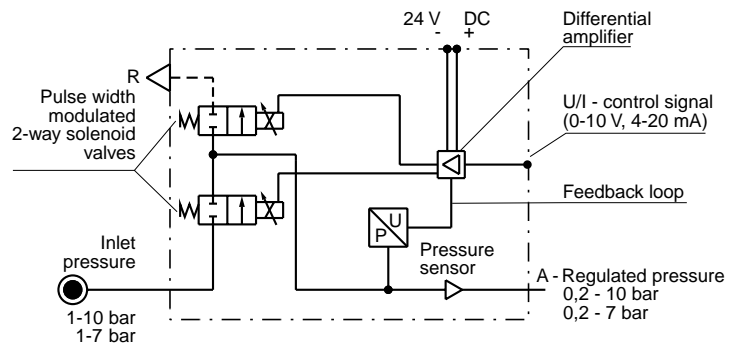
1. EP-Transducer with integrated pressure sensor, and output signal module.

Through a differential amplifier, the electronic control unit receives both the control signal (set pressure) and the feedback signal from the sensor (outlet pressure). Any difference between the two amplifier inputs results in a corresponding output which drives the appropriate 2-way pulse width modulated solenoid valve. The closing and opening of these pilots corrects the outlet pressure. An integrated output signal module allows the utilization of voltage- and current output signals (0-10 V, 4-20 mA) proportionally to the outlet pressure, or a voltage output signal and an alarm output signal 0/24 V DC.



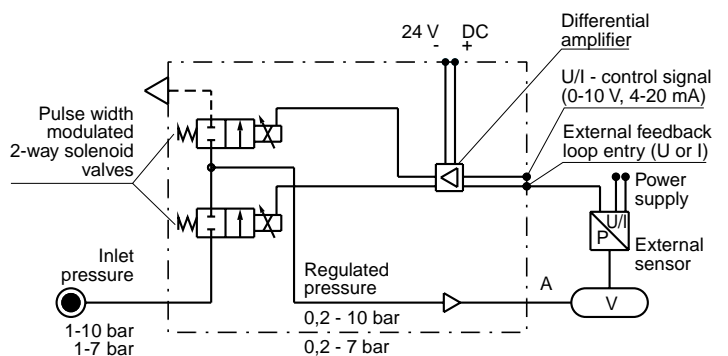
2. EP-Transducer with integrated pressure sensor, without output signal module.

Similar principle of operation as explained under pt. 1, but without output signal module.



3. EP-Transducer without pressure sensor and without output signal module.

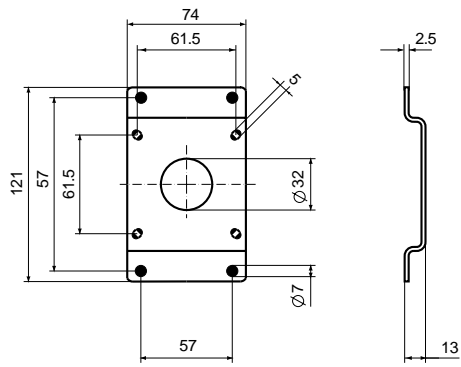
Similar principle of operation as explained under pt. 1, but without output signal module and without integrated sensor. A vast range of sensors can be used as proximity-, level-, pressure sensors etc. providing the regulation system responds proportionally to the pressure. Example: opening of a large valve through a pneumatically driven actuator. If the angle of rotation of the gate is proportional to the pressure, the EP-transducer can be controlled by a proximity sensor.



ACCESSORIES

Mounting bracket

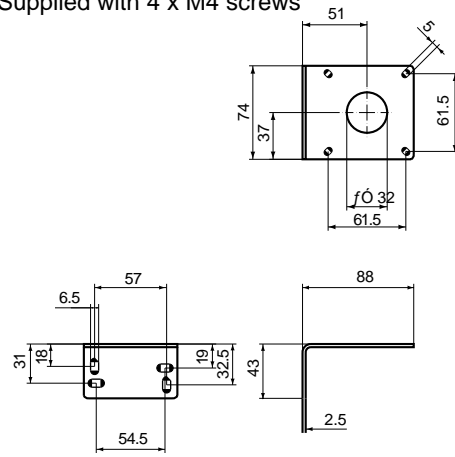
Supplied with 4 x M4 screws



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Mounting bracket

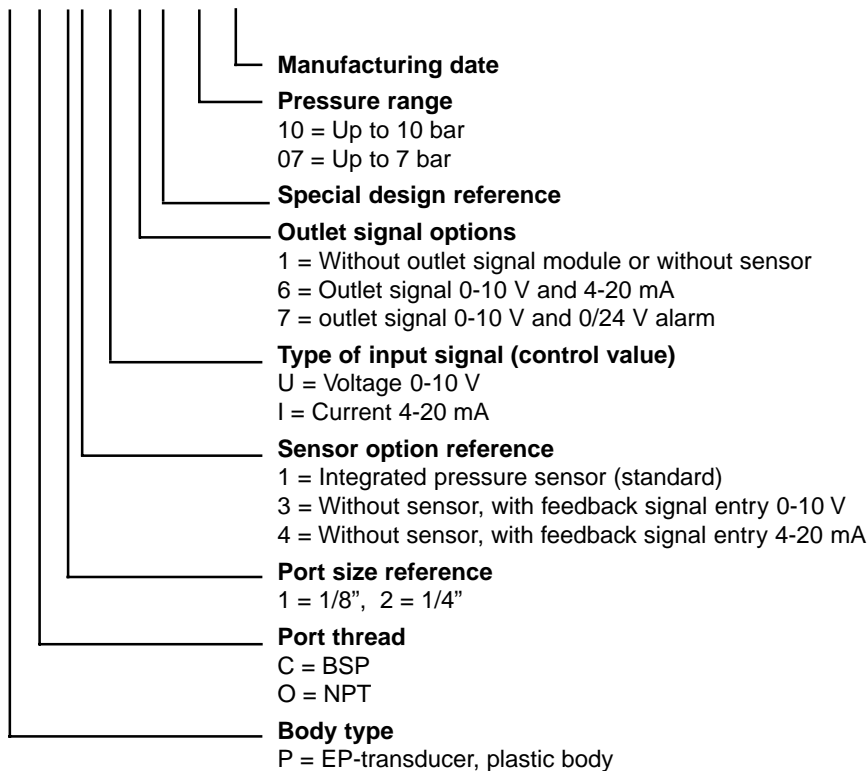
Supplied with 4 x M4 screws



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DESIGNATION CODE

EPP3 P C 21 U 100 10 ...



SUMMARY OF TYPES

	Connection G	With integrated pressure sensor	Entry options for external sensor signal		Outlet signal options			Electrical connection	
			feedback signal 0 - 10 V	feedback signal 4 - 20 mA	without	0 - 10 V 4 - 20 mA	0 - 10 V 0/24 V alarm	DIN 43651 connector	cable gland Pg. 13.5
EPP3PC11U/I10010	1/8	•			•				•
11U/I60010	1/8	•				•		•	
21U/I70010	1/8	•					•	•	
EPP3PC13U/I13010	1/8		•		•			•	
14U/I13010	1/8			•	•			•	
EPP3PC21U/I10007	1/4	•			•			•	•
21U/I60007	1/4	•				•		•	
21U/I70007	1/4	•					•	•	
EPP3PC23U/I13007	1/4		•		•			•	
24U/I13007	1/4			•	•			•	



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