EPP4 Series

ELECTROPNEUMATIC PRESSURE REGULATORS





aerospace climate control electromechanical filtration fluid & gas handling hydraulics pneumatics process control sealing & shielding

Basic	1/4 $1/2$
Comfort	$\frac{1}{4}$ $\frac{1}{2}$
Comfort	¹ / ₂ "HP 1"2"
Comfort ATEX	¹ / ₂ " 1" 2"





ELECTROPNEUMATIC PRESSURE REGULATORS

Lucifer[®] EPP4 Programmable Pressure Regulator

EPP4 is an electro pneumatic pressure regulator with integrated electronic system.

A pulsed width modulated solenoid valve controls the output pressure proportionally to an analog input signal.

Very high accuracy is guaranteed thanks to a high precision closed loop signal provided by a built in pressure sensor.



Market

Robotics Paper industry Machine tools Mobile Buildings Textile Instrumentation Semi conductor







Parker Hannifin Corporation Fluid Control Division Europe General Catalogue FCDE/0110/UK/V2.0

Description of Applications

Welding Speed and brake control Sanding Cutting Humidification Tension regulation Painting Presses Polishing Adaptative suspension control



Value Propositions for the Lucifer® EPP4 Range of Proportional Pressure Regulators

- All parameters fully adjustable through the PC software Calys
- Easy to use software
- Long life expectancy
- Compact and light
- Limited inventory
- Low power
- Flexible remote display positioning
- Proven expertise of Parker, a pioneer in pressure regulation technology





calys Software for EPP Comfort

Calys is a unique software in house developed to configurate all the parameters of the EPP4 Comfort range. Calys is an option of the EPP4. To use CALYS, you need to order cable reference 496449 wich permits the communication between the EPP4 and a PC.

Calys offers many capabilities:

- It enables distributors to reduce inventory by keeping a generic EPP4 in stock and adjust it to the needs of each customer application. They can switch for example from 0-10 V to 4-20 mA, or from 0-7 bar pressure range to 0-5 bar.
- Engineers designing a pneumatic system are able to monitor precisely all the important values (electrical or pneumatical) directly on their laptop.
- After sales technicians are able to receive via email all the parameters measured by the EPP4 installed on a machine wherever its location allowing remote ma intenance operation.
- PID regulation parameters can be adjusted with Calys to match required regulator response (like slow or reactive).





To download free Calys software click on www.parker.com/FCDE/Support



ELECTROPNEUMATIC PRESSURE REGULATORS









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INTRODUCTION

Description Operation

The EPP4 Series is a family of electrically remotecontrolled pneumatic pressure regulators with closed loop integrated electronic control.

It allows regulating the outlet pressure proportionally to an electrical control signal.

The EPP4 regulator comprises a traditional servo-operated pneumatic pressure regulator, where the pilot chamber is fed y one or the other of two pulse width modulated 2-way solenoid valves.

The pressure sensor measures the outlet pressure of the regulator and provides a feedback signal to the controller.

Any difference between the control signal and the feedback signal is converted to a digital signal to energise the coil of one or the other 2-way valves to correct the position of the regulator.

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 to the main inlet P of the

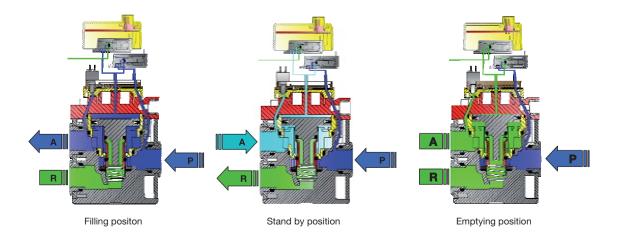
regulator; when energised this valve will fill the servo-chamber for increasing the pressure at the outlet A of the regulator.

When the other **"exhaust valve"** is energised (reduction of pressure at the outlet A of the regulator), the pressure of the servo-chamber will be exhausted through a discharge orifice located between the cover and the body and directly fed to the atmosphere without silencer.

The exhaust of the main regulated pressure will be made through the quick exhaust R.

The use of a conventional silencer is recommended. Both solenoid valves assure the Filling or Emptying of the servo-chamber in order to increase or decrease the pressure at the outlet of the regulator.

In rest position of the valves all ports are blocked.



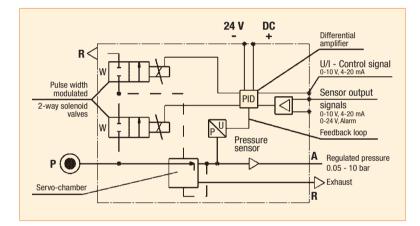


Block Diagram

The controller 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 so that the pilot piston moves to correct the pressure. The same feedback signal from the sensor is used for the output feedback in voltage and current.

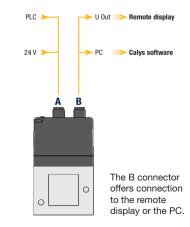
The digital signal (alarm) is activated when the conditions (out of pressure or time tolerance) are met.



EPP4 possible executions : Basic and Comfort

EPP4 Basic and Comfort ranges share the same reliable mechanical parts. Proportional regulation is also identical for the two different executions, giving the same characteristics for hysteresis or precision for instance.

Comfort range regulators have a second M12 connector, that can be used to connect a remote display showing the current regulated pressure, or a PC to easily set the regulation's parameters. These are the key feature options for a comfortable use.





LUCIFER[®] EPP4 BASIC 1/4" & 1/2"

TECHNICAL DATA

	Basic 1/4"	Basic 1/2"				
Fluids:	Lubricated or non lubricated air and neutr	al gases Recommended fi Itration: 50 µm				
Temperature range:	Ambient: 0° Fluid: 0°C					
Inlet pressure range: The inlet pressure must always be at least 1 bar above the regulated pressure.	1 to 12 bar	1 to 12 bar				
Outlet pressure range:	0.05 to	10 bar				
Hysteresis:	± 50 mbar (fa	actory set up)				
Air consumption at constant control signal:	C)				
Supply voltage:	24 V DC ± 15%	(Max. ripple 1 V)				
Power consumption:	Max. 2.8 W with 24 V DC and constant changes of the control signal < 1.5 W without change of control signal					
Control signal:	Analog 0 - 10 V Analog 4 - 20 mA					
Max. flow: Indicative response time: With a volume of 330 cm ³ at the outlet of the regulator	70 m³/h	150 m³/h				
Filling 2 to 4 bar: Filling 2 to 8 bar: Emptying 4 to 2 bar: Emptying 8 to 2 bar:	50 msec 100 msec 70 msec 130 msec	60 msec 120 msec 90 msec 190 msec				
Safety position:	In case of control signal failure or if it is les automatically to 0 bar (atmospheric pre- the regulated pressure	ssure). In case of voltage supply failure,				
Electrical connection:	M12 - 4 pin; 4	4 x 0.34 mm²				
Life expectancy:	> 50 Million changes	of control signal steps				
Mounting position:	Indifferent (recommended positio	n: upright; electronic part on top)				
Resistance to vibrations:	30 g in all	directions				
Degree of protection:	IP	65				
Assembly:	Silicone free					
Electromagnetic compatibility: In accordance with:	EN 61000-6-1: 2001 EN 61000-6-2: 2001 EN 61000-6-3: 2001 EN 61000-6-4: 2001					
Installation and setting instructions:	See our "Notice 408038, 408014" and	d appendix supplied with the product.				

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 $\label{eq:Note:Parker reserves the right to change specifications without notification.$

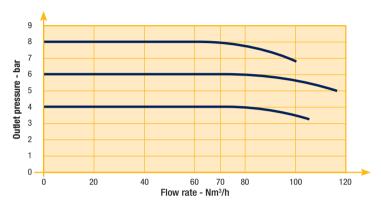




LUCIFER® EPP4 BASIC 1/4" & 1/2"

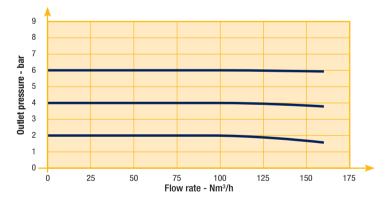
FLOW CURVES

Flow Curve Basic 1/4"





Flow Curve Basic 1/2"





LUCIFER[®] EPP4 BASIC 1/4" & 1/2"

REFERENCES

Codes	Pipe		ire Range bar)	Control Signal (see options)	Drawing Number
P4BG2001A001	G 1/4"	0	4 bar	4 - 20 mA	1
P4BG2001A002	G 1/4"	0	10 bar	0 - 10 V	1
P4BG2001A003	G 1/4"	0	10 bar	4 - 20 mA	1
P4BG2001A004	G 1/4"	0	6 bar	0 - 10 V	1
P4BG2001A005	G 1/4"	0	6 bar	4 - 20 mA	1
P4BG2001A006	G 1/4"	0	5 bar	0 - 10 V	1
P4BG2001A007	G 1/4"	0	5 bar	4 - 20 mA	1
P4BG2001A008	G 1/4"	0	7 bar	0 - 10 V	1
P4BG2001A009	G 1/4"	0	7 bar	4 - 20 mA	1
P4BG2003A002 *	G 1/4"	0	10 bar	0 - 10 V	1
P4BG2003A003 *	G 1/4"	0	10 bar	4 - 20 mA	1
P4BG4001A002	G 1/2"	0	10 bar	0 - 10 V	2
P4BG4001A003	G 1/2"	0	10 bar	4 - 20 mA	2
P4BG4001A004	G 1/2"	0	6 bar	0 - 10 V	2
P4BG4001A005	G 1/2"	0	6 bar	4 - 20 mA	2
P4BG4001A006	G 1/2"	0	5 bar	0 - 10 V	2
P4BG4001A007	G 1/2"	0	5 bar	4 - 20 mA	2
P4BG4001A008	G 1/2"	0	7 bar	0 - 10 V	2
P4BG4001A009	G 1/2"	0	7 bar	4 - 20 mA	2
P4BG4004A010 ***	G 1/2"	0	4 bar	0 - 10 V	2
P4BG4051A002 **	G 1/2"	0	10 bar	4 - 20 mA	2
P4BN2001A002	NPT 1/4''	0	10 bar	0 - 10 V	2
P4BN2001A003	NPT 1/4''	0	10 bar	4 - 20 mA	2
P4BN4001A002	NPT 1/2''	0	10 bar	0 - 10 V	2
P4BN4001A003	NPT 1/2''	0	10 bar	4 - 20 mA	2

* Integrated pilot exhaust

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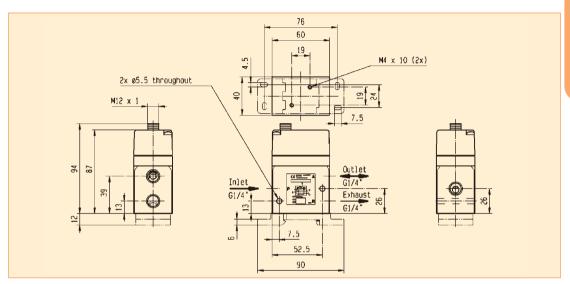
*** External pressure supply





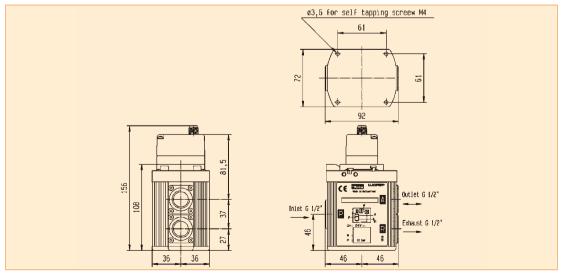
LUCIFER® EPP4 BASIC 1/4" & 1/2"

DIMENSIONS DRAWINGS EPP4 BASIC 1/4"



Drawing 1

DIMENSIONS DRAWINGS EPP4 BASIC 1/2"



Drawing 2



LUCIFER[®] EPP4 COMFORT 1/4" & 1/2"

TECHNICAL DATA

Basic	1/4 $1/2$
Comfort	$\frac{1}{4}$ " $\frac{1}{2}$ "
Comfort	¹ / ₂ ["] HP 1 ["] 2 ["]
Comfort ATEX	¹ / ₂ " 1" 2"

	Comfort 1/4"	Comfort 1/2"				
Fluids:	Lubricated or non lubricated air and neutra	al gases - Recommended fi Itration: 50 µm				
Temperature range:		2C to +50 °C to +50 °C				
Inlet pressure range: The inlet pressure must always be at least 1 bar above the regulated pressure.	1 to 12 bar	1 to 12 bar				
Outlet pressure range:		s 10 bar				
Hysteresis:	± 50 mbar (fa					
Air consumption at constant control signal:						
Supply voltage:		(Max. ripple 1 V)				
Power consumption:	Max. 2.8 W with 24 V DC and constant changes of the control signal < 1.5 W without change of control signal					
Control signal:	Analog Analog 4	0 - 10 V - 20 mA				
Outlet sensor signal:	Analog 0 - 10 V Standard for 0 - 10 bar; Adjustable Analog 4 - 20 mA Standard for 0 - 10 bar; Adjustable	Digital 0/24 V for alarm features: Adjustable pressure error (+/-) Adjustable delay ON Adjustable delay OFF Adjustable logic (+/-)				
Max. flow:	70 m³/h	150 m³/h				
Indicative response time:	With a volume of 330 cm ³ a	at the outlet of the regulator				
Filling 2 to 4 bar : Filling 2 to 8 bar: Emptying 4 to 2 bar: Emptying 8 to 2 bar:	50 msec 100 msec 70 msec 130 msec	60 msec 120 msec 90 msec 190 msec				
Safety position:	the regulated pressure dra (atmospheri	re or if it is less than 50 mV, ops automatically to 0 bar ic pressure). gulated pressure will be kept constant.				
Electrical connection:	M12 - 8 pin; male connector M12 - 5 pin; male con	r power supply/control signal nector communication				
Life expectancy:		of control signal steps				
Mounting position:	Indifferent (recommended positio					
Resistance to vibrations:		directions				
Degree of protection: Assembly:		65 ne free				
Electromagnetic compatibility: In accordance with:	EN 61000-6-1: 2001 EN 61000-6-2: 2001 EN 61000-6-3: 2001 + A11 2004 edition (01/07/07) EN 61000-6-4: 2001					
Installation and setting instructions:	See our "Notice 408128, 408134" an					

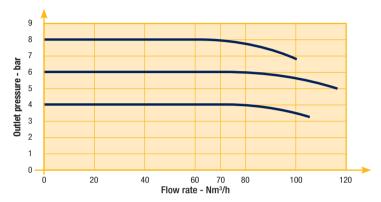
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LUCIFER® EPP4 COMFORT 1/4" & 1/2"

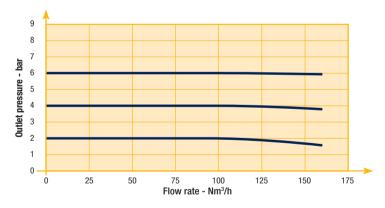
Flow Curves

Flow Curve 1/4"





Flow Curve 1/2"





LUCIFER[®] EPP4 COMFORT1/4" & 1/2"

REFERENCES

Codes	Pipe		re Range bar)	Control Signal (see options)	Display	Drawing Number
P4CG2001C001	G 1/4	0	10	0-10 V	-	3
P4CG2001C002	G 1/4	0	10	4-20 mA	-	3
P4CG2001C005	G 1/4	0	7	0-10 V	-	3
P4CG2001C006	G 1/4	0	7	4-20 mA	-	3
P4CG2002C001	G 1/4	0	10	0-10 V	included	3
P4CG2002C002	G 1/4	0	10	4-20 mA	included	3
P4CG2003C001 *	G 1/4	0	10	0-10 V	-	3
P4CG2003C002 *	G 1/4	0	10	4-20 mA	-	3
P4CG2002C007	G 1/4	0	7	0-10 V	-	3
P4CG2002C008	G 1/4	0	7	4-20 mA	-	3
P4CN2001C001	1/4 NPT	0	10	0-10 V	-	3
P4CN2001C002	1/4 NPT	0	10	4-20 mA	-	3
P4CN2002C001	1/4 NPT	0	10	0-10 V	included	3
P4CN2002C002	1/4 NPT	0	10	4-20 mA	included	3
P4CG4001C001	G 1/2	0	10	0-10 V	-	4
P4CG4001C002	G 1/2	0	10	4-20 mA	-	4
P4CG4001C005	G 1/2	0	7	0-10 V	-	4
P4CG4001C006	G 1/2	0	7	4-20 mA	-	4
P4CG4002C001	G 1/2	0	10	0-10 V	included	4
P4CG4002C002	G 1/2	0	10	4-20 mA	included	4
P4CG4002C005	G 1/2	0	7	0-10 V	-	4
P4CG4002C006	G 1/2	0	7	4-20 mA	-	4
P4CG4051C001 **	G 1/2	0	10	0-10 V	-	4
P4CG4051C002 **	G 1/2	0	10	4-20 mA	-	4
P4CN4001C001	1/2 NPT	0	10	0-10 V	-	4
P4CN4001C002	1/2 NPT	0	10	4-20 mA	-	4
P4CN4002C001	1/2 NPT	0	10	0-10 V	included	4
P4CN4002C002	1/2 NPT	0	10	4-20 mA	included	4

* Integrated pilot exhaust

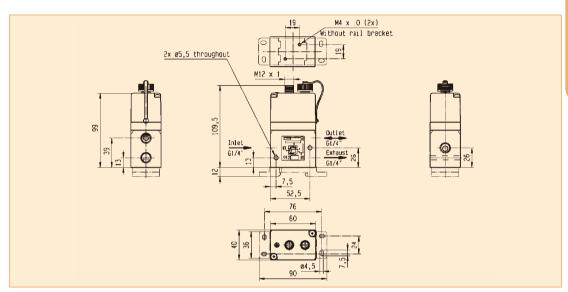
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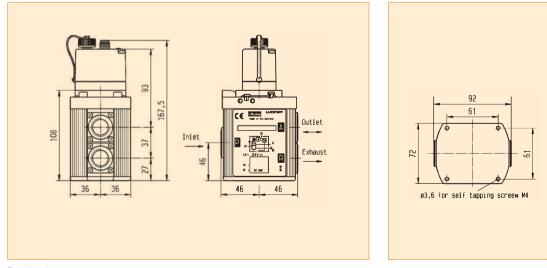
LUCIFER® EPP4 COMFORT 1/4" & 1/2"

DIMENSIONS DRAWINGS EPP4 COMFORT RANGE 1/4"



Drawing 3

DIMENSIONS DRAWINGS EPP4 COMFORT RANGE 1/2"

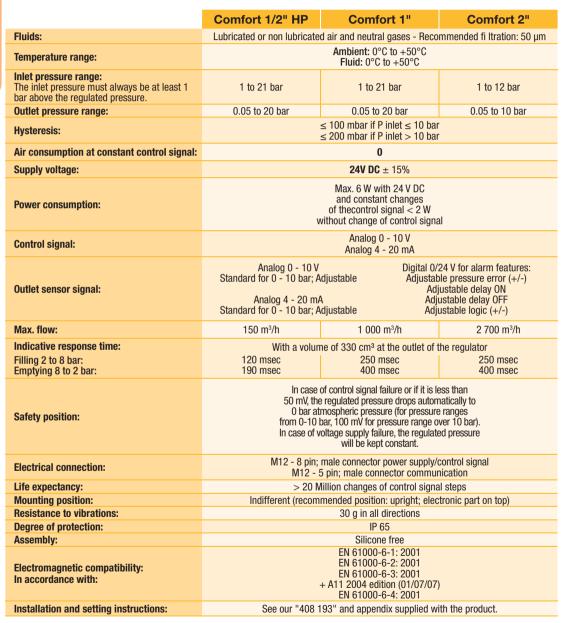


Drawing 4



LUCIFER® EPP4 COMFORT 1/2"HP, 1" & 2"

TECHNICAL DATA



Note: Parker reserves the right to change specifications without notification.

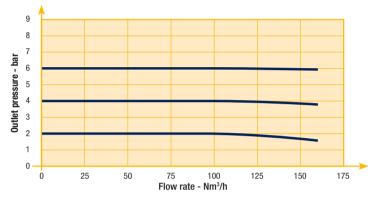




LUCIFER® EPP4 COMFORT 1/2"HP, 1" & 2"

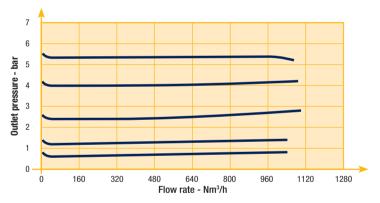
FLOW CURVES



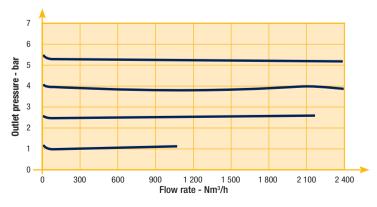




Flow Curve 1"



Flow Curve 2"



LUCIFER[®] EPP4 COMFORT 1/2"HP

REFERENCES

Codes	Pipe	Max inlet pressure (bar)	Pressure range (bar)		Control signal (see options)	Dimensional Drawing
P4CG4101D001	G1/2	15	0	12	0-10 V	5
P4CG4201D005	G1/2	21	0	16	0-10 V	6
P4CG4201D003	G1/2	21	0	20	0-10 V	6
P4CG4201D004	G1/2	21	0	20	4-20 mA	6

Other specific settings or specialties are available, please contact us.





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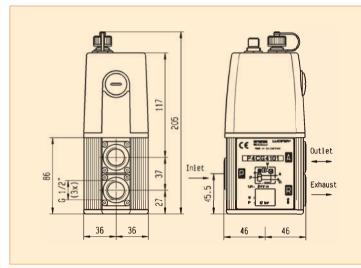
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e3.6 for self tapping screew M4

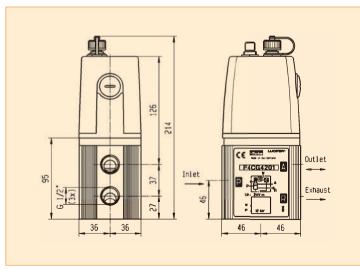
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LUCIFER® EPP4 COMFORT 1/2"HP

DIMENSIONS DRAWINGS



Drawing 5



Drawing 6



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#3.6 for self tapping screew M4

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LUCIFER[®] EPP4 COMFORT 1" & 2"

REFERENCES

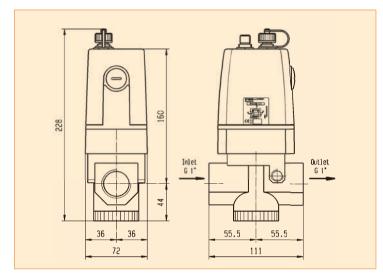
Codes	Pipe	Max inlet pressure (bar)		ire range bar)	Control signal (see options)	Dimensional Drawing
P4CG6101C009	G1	12	0	3.5	4-20 mA	7
P4CG6101C011	G1	12	0	5.0	0-10 V	7
P4CG6101C010	G1	12	0	6.0	4-20 mA	7
P4CG6101C001	G1	12	0	10	0-10 V	7
P4CG6101C002	G1	12	0	10	4-20 mA	7
P4CG6201D001	G1	21	0	12	0-10 V	7
P4CG6201D003	G1	21	0	20	0-10 V	7
P4CG9101C012	G2	12	0	4.0	4-20 mA	8
P4CG9101C010	G2	12	0	6.0	4-20 mA	8
P4CG9101C001	G2	12	0	10	0-10 V	8
P4CG9101C002	G2	12	0	10	4-20 mA	8

Other specific settings or specialties are available, please contact us.



LUCIFER® EPP4 COMFORT 1" & 2"

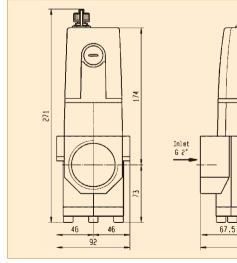
DIMENSIONS DRAWINGS EPP4 COMFORT RANGE 1"

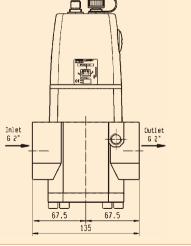




Drawing 7

DIMENSIONS DRAWINGS EPP4 COMFORT RANGE 2"





Drawing 8





LUCIFER® EPP4 COMFORT 1/2", 1" & 2" ATEX

TECHNICAL DATA



	Comfort 1/2" ATEX	Comfort 1" ATEX	Comfort 2" ATEX				
Fluids:	Lubricated or non lubricated air and neutral gases - Recommended fi Itration: 50 μm						
Temperature range:	Ambient: 0°C to +50°C Fluid: 0°C to +50°C						
Inlet pressure range: The inlet pressure must always be at least 1 bar above the regulated pressure.	Inlet pressure range: 1 to 12 bar						
Outlet pressure range:	Out	let pressure range: 0.05 to 10	bar				
Hysteresis:		≤ 100 mbar					
Air consumption at constant control signal:		0					
ATEX certification:		Ex II 3 G/D Ex nA IIC T4 Gc Ex tc IIIB T130°C Dc					
Supply voltage:		24V DC ± 15 %					
Power consumption:		Max. 6 W with 24 V DC tant changes of thecontrol sign vithout change of control sign					
Control signal:		Analog 0 - 10 V Analog 4 - 20 mA					
Outlet sensor signal:	Analog 0 - 10 V Standard for 0 - 10 bar; Adjustable Analog 4 - 20 mA Standard for 0 - 10 bar; Adjustable clay OFF Standard for 0 - 10 bar; Adjustable clay OFF Standard for 0 - 10 bar; Adjustable clay OFF						
Max. flow:	150 m³/h	1 000 m³/h	2 700 m³/h				
Indicative response time:	With a volun	ne of 330 cm³ at the outlet of	the regulator				
Filling 2 to 8 bar:	120 msec	250 msec	250 msec				
Emptying 8 to 2 bar:	190 msec	400 msce	400 msec				
Safety position:	automatically to from 0-10 l	llure or if it is less than 50 mV, the 0 bar atmospheric pressure (for par, 100 mV for pressure range o ply failure, the regulated pressure	pressure ranges ver 10 bar).				
Electrical connection:		male connector power supply/ 5 pin; male connector commu					
Life expectancy:	> 20 N	lillion changes of control signa	ll steps				
Mounting position:	Indifferent (recom	mended position: upright; elec	tronic part on top)				
Resistance to vibrations:		30 g in all directions					
Degree of protection:		IP 54					
Assembly:		Silicone free					
Electromagnetic compatibility: In accordance with:		EN 61000-6-1: 2001 EN 61000-6-2: 2001 EN 61000-6-3: 2001 + A11 2004 edition (01/07/07 EN 61000-6-4: 2001)				
Installation and setting instructions:	See our "408 2	283" and appendix supplied w	ith the product.				

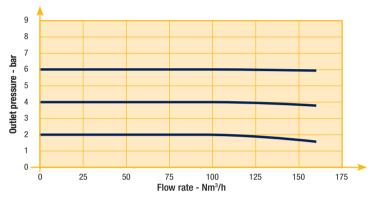
Note: Parker reserves the right to change specifications without notification.



LUCIFER® EPP4 COMFORT 1/2", 1" & 2" ATEX

FLOW CURVES

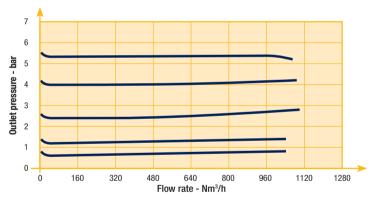
Flow Curve 1/2"



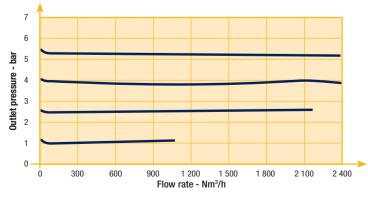


 $\langle E_X \rangle$

Flow Curve 1"



Flow Curve 2"



LUCIFER® EPP4 COMFORT 1/2" ATEX

REFERENCES

Pipe	Max inlet pressure (bar)	Pressure range (bar)		Control signal (see options)	Dimensional Drawing
G1/2	12	0	10	0-10 V	9
G1/2	12	0	10	4-20 mA	9
G1/2	12	0	10	0-10 V	9
G1/2	12	0	10	4-20 mA	9
	G1/2 G1/2 G1/2	Fipe (bar) G1/2 12 G1/2 12 G1/2 12	ripe (bar) (b G1/2 12 0 G1/2 12 0 G1/2 12 0	ripe (bar) (bar) G1/2 12 0 10 G1/2 12 0 10 G1/2 12 0 10	ripe (bar) (bar) (see options) G1/2 12 0 10 0-10 V G1/2 12 0 10 4-20 mA G1/2 12 0 10 0-10 V

** O2

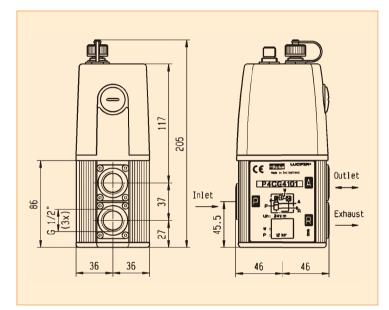
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DIMENSIONS DRAWINGS





Drawing 9



LUCIFER® EPP4 COMFORT 1" & 2" ATEX

REFERENCES

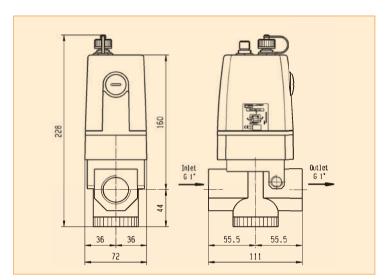
Codes	Pipe	Max inlet pressure (bar)	Pressure range (bar)		Control signal (see options)	Dimensional Drawing
P4CG6161C001	G1	12	0	10	0-10 V	11
P4CG6161C002	G1	12	0	10	4-20 mA	11
P4CG9161C001	G2	12	0	10	0-10 V	12
P4CG9161C002	G2	12	0	10	4-20 mA	12

Other specific settings or specialties are available, please contact us.





DIMENSIONS DRAWINGS EPP4 COMFORT RANGE 1"

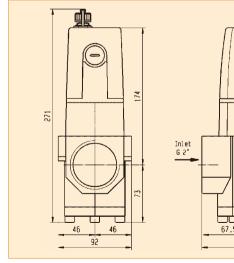


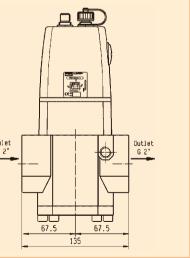


(c

Drawing 11

DIMENSIONS DRAWINGS EPP4 COMFORT RANGE 2"





Drawing 12



LUCIFER[®] EPP4 ACCESSORIES

MOUNTING BRACKETS FOR EPP4 1/4" BASIC / COMFORT







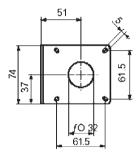
This mounting bracket is delivered as a standard with all EPP4 1/4".

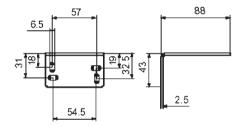


2.5

LUCIFER® EPP4 ACCESSORIES

MOUNTING BRACKETS FOR EPP4 1/2" BASIC / COMFORT







Order reference 491367

74 61.5



Order reference 491366



LUCIFER[®] EPP4 ACCESSORIES

POWER SUPPLY/CONTROL SIGNAL CABLE FOR BASIC AND COMFORT VERSIONS.

Cable for Basic EPP4

• 2 m cable with moulded straight M12-4 pole

Order Ref. P8L-MC04A2A-M12

Cable for Comfort EPP4

• 2 m cable with moulded straight M12-8 pole

Order Reference 496796







LUCIFER® EPP4 COMFORT ACCESSORIES

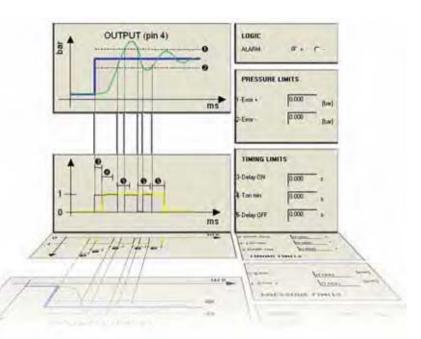
calys software

Calys is a unique software in house developed to configurate all the parameters of the EPP4 Comfort range. Calys is an option of the EPP4. A specific cable is needed for the communication between the EPP4 and a PC.

Calys offers many capabilities:

- Live monitoring (control signal, regulated pressure, supply voltage,...)
- Recording of the main parameters (control signal, regulated pressure, supply voltage,...) in an Excel file
- Free calibration for the inputs and outputs
- Adjustable alarm (positivenegative, pressure limits, delays)
- Configuration files easy to duplicate
- Complete and interactive help file
- Data in 4 different pressure units
- Menus in 4 languages (English, German, French and Italian)





Specific communication cable PC-EPP4 with RS232 and USB connection

Order Reference 496449

This option is for safe area only.

To download free Calys software click on www.parker.com/FCDE/Support



LUCIFER[®] EPP4 COMFORT ACCESSORIES

REMOTE DISPLAY

This option includes the Remote Display and 1.5 meter connecting cable. Connected to the pressure regulator, it offers flexible monitoring. This option only works with EPP4 0-10 bar.

Compact and highly readable remote LED display:

- Bar and PSI scales
- Security lock
- 1.5 m cable
- Mounting brackets

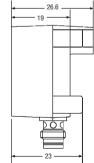
Order the Remote Display under reference 496490

This option is for safe area only.



PANEL MOUNTING KIT





Order the Panel Mounting Kit under reference 496601

