

USERMANUAL

Intelligent 2-wire positioners
EPP2000

Stock code:

101510/R

101510/RG

101512/R

101512/RG

101610/R

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1 General

Software revision level at the time, when this document was printed:

Rev. 1.01.00.

Hardware revision level at the time, when this document was printed:

Configuration 8, Version 6

1.1 Safety instructions

For a safe installation of a positioner in hazardous area the following must be observed. The module must only be installed by qualified personnel who are familiar with the national and international laws, directives and standards that apply to this area and all instructions in this manual.

EPP2000 EEx i models:

The installation must observe EC Type examination Certificate LCIE 05 ATEX 6076 X, Document and EC-Declaration of conformity.

The positioner must only be connected to certified intrinsically safe apparatus or according to § 5.4 EN 50020 standard. These combinations must be compatible as regards the electrical parameters.

This EC Type examination certification relates only to the design and construction of this specified equipment or protective system in accordance with the Directive 94/9/EC.

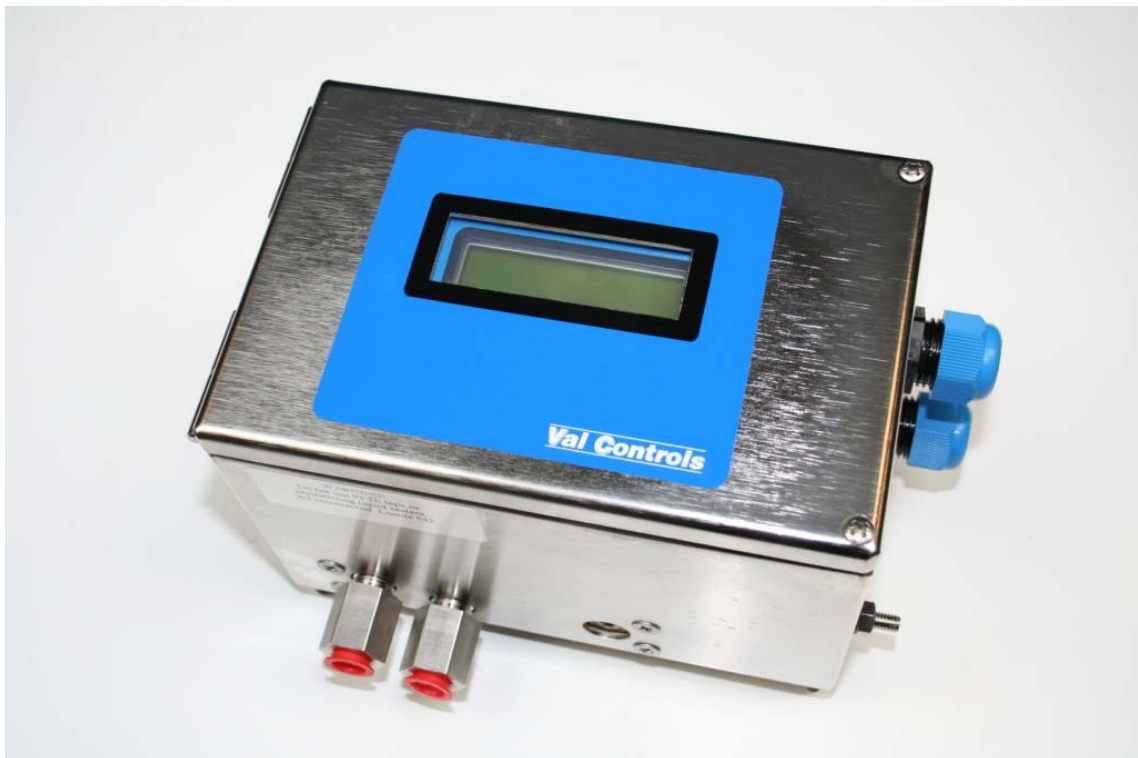
If any information not contained in this manual is needed, please do not hesitate to contact us.

The information in this user manual is subject to change without notice.

2 Application

Val Controls intelligent 2-wire positioners, controls almost all pneumatic, linear, rotary, single-return (SR) and double-acting (DA) actuators on the market.

The enclosure is in AISI 316 stainless steel, which makes the positioner stronger facing extreme outside exposure, and the compact design, with few moving parts, makes it very reliable. The flexible software calibrates automatic, contains intern safety surveillance together with several standard flowcurves. A special flow curve is defined very simple, and the positioners' setpoint and deadband can be adjusted from the user menu.



3 Choice of positioner

This is a little guide, which will help you pick a positioner, which fits exactly your actuator.

To choose the right positioner, you need to have some knowledge about the actuator. Is the positioner for a linear or rotary actuator? Is it a single or a double-acting actuator, and what is the volume of the actuator?

3.1 Positioner for single-return (SR) actuators

For a single-return actuator you have two pressure-blocks to choose from. A standard block or a high capacity, HC, block. The HC pressure-block, delivers 10 times more air than the standard block, as seen below.

Supply pressure SR (Min/Max) : 1,5-8 Bar
Air-flow SR : In Qn = 40L/min, out Qn = 22L/min

Supply pressure SR HC (Min/Max): 3-8 Bar
Air-flow SR HC : In Qn = 485L/min, out Qn = 200L/min

It is very important to pick the right positioner, or the actuator will malfunction. The opening and closing time of the actuator must at least be 3-4 sec. else the pressure-block is too big. It is important to set the supply-pressure correctly, so it fits the actuator and the positioner.

3.2 Positioner for double-acting (DA) actuator

For a double-acting actuator there is only one pressure-block to choose from, so you have to adjust it.

Supply pressure DA (Min/Max) : 4-8 Bar
Air-flow DA : In Qn = 1066L/min, out Qn = 438L/min

It is important to set the supply-pressure correctly, so it fits the actuator and the positioner.

4 Main Specifications

See section:

- Intrinsically Safe - Electrical parameters
- Electrical Technical Specifications EPP2000 IPCU
- Technical Specifications EPP2000
- Main Dimensions EPP2000 SR

for more details.

4.1 Technical specifications

Enclosure	: 1,5mm AISI-316 stainless steel.
Main dimensions: (l _w xh)	: 185x120x120 mm.
Ingress protection	: IP-66, DS/EN 60529.
Mounting according to	: Standard mounting
Weight :	Approximately 3,5 kg
Glands	: 2 piece M20x1,5 (5.5 – 13mm round-cable).
Air-supply SR	: 1,5-8 Bar
Air-supply SR HC	: 3-8 Bar
Air-supply DA	: 4-8 Bar
Air-flow SR	: In Q _n = 40 L/min, out Q _n = 22 L/min
Air-flow SR HC	: In Q _n = 485 L/min, out Q _n = 200 L/min
Air-flow DA	: In Q _n = 1066 L/min, out Q _n = 438 L/min
Air consumption	: Approximately 0, when not operated
Air entry	: 1/4" NPT
Air filtering	: < 30 um, dried and filtered air. Do not use PTFE-tape or liquid crystallising sealant.
Recommended sealant	: LocTite 542
Oil mist lubrication air	: None or only little, max 30 mg/m ³
Recommended oil	: Mineral oil type VG32, ISO-3448
Control Loop	: 2 wire, 4 - 20 mA.
Control Loop U _i max	: 11,5V DC (@20mA)
Control Loop R _i max	: 550 Ohm.
Transmitter loop	: 4 - 20 mA, Loop Powered
Transmitter R _i max	: 250 Ohm
Hysteresis	: 1 %
Linearity	: < 1 %
Sensitivity	: 0,4 %
Min/Max Rotations-angle (Rot. act.)	: 40 - 300°
Min/Max Rotations-angle (Lin. act.)	: 40 - 60°

LCD-display accuracy, control signal : 4 - 20 mA. \pm 0.1 mA.
Flow 0 - 100% : \pm 1 %.



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II 1G EEx ia IIC T4/T5/T6 -20<Ta< 85/60/45

5 Quick guide installation

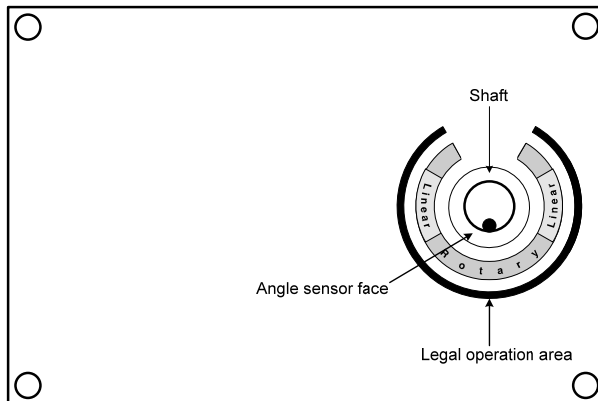
1. Mount the feedback lever/adapter on the positioner, see section 6.1 and 6.2.
2. Mount the bracket on the actuator see section 6.1 and 6.2.
3. Mount the positioner on the bracket see section 6.1 and 6.2.
4. Linear only: Adjust arm on actuator, see section 6.1 and 6.2.
5. Connect and adjust the air supply and connect the actuator, see section 6.3.
 - I = inlet
 - A = Actuator
6. Connect wires, see section 6.4.
 - 1 Control loop +
 - 2 Control loop –
 - 3 Transmitter +
 - 4 Transmitter –
7. Calibrate positioner by pressing CAL, see section 7.4.
 - Choose Fail open or Fail close
 - Choose Direct or Reverse
8. If needed adjust pressure block and calibrate again.

6 Mounting and installation

Instructions on how the positioner is mounted and installed.

6.1 Mounting, rotary actuator

When using the Valve positioner on actuators with rotary action, the allowed angle in which the angle sensor will have to work is between 40-300 degrees.

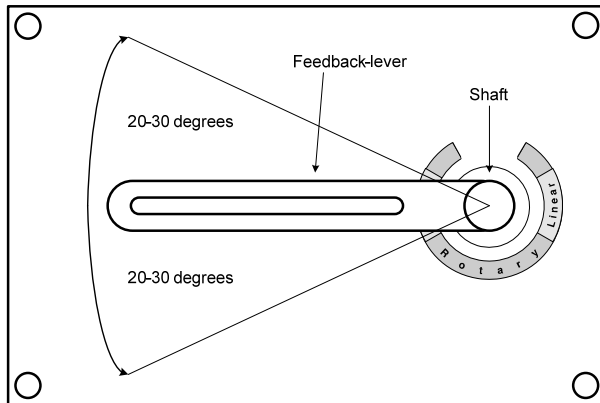


The angle-sensor face is during operation only allowed to move inside the legal operation area. If the angle-sensor face is moving inside the illegal operation area the positioner will give an error message during the calibration-routine.

Notice: All adapters delivered by Val Controls A/S are marked to tell the position of the angle-sensor face.

6.2 Mounting, linear actuator

When using the Valve positioner on linear actuators the following instruction must be followed. The operation of the feedback-lever must be in accordance with the details shown on the following figure.

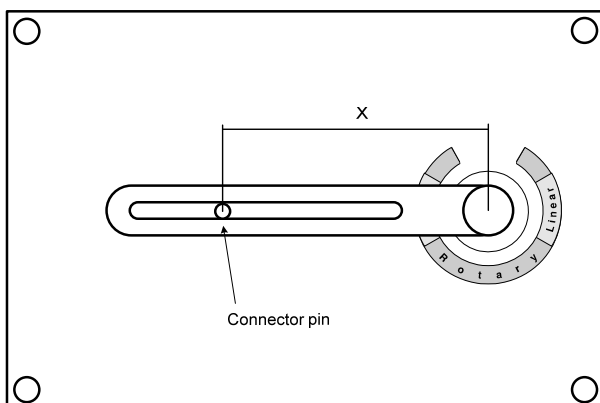


The allowed operation-angle is between 40-60 degrees. The centre of the operation-angle must be as shown on the sketch (horizontal). The rotation angle is showed on a label mounted on the bottom.

Installations guide

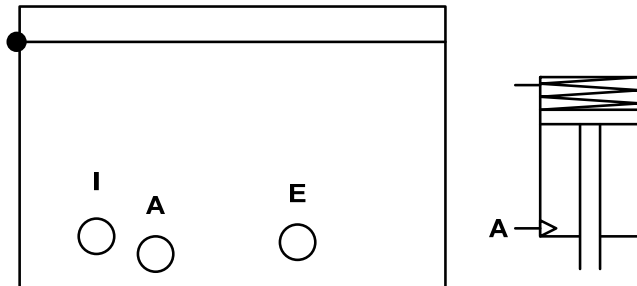
Step by step installations guide.

1. Measure the travel distance of the actuator.
2. The travel length is called X.
3. Then you set the actuator so it has travelled $\frac{1}{2}X$, 50%.
4. Then you set the connector pin to be X from the shaft, and the feedback-lever to be horizontal, see the picture below.
5. Now the Feedback-lever should travel approximately 60°.



6.3 Pneumatic connections

EPP2000 SR for Spring-Return actuators.



EPP2000 SR-HC for Spring-Return actuators.

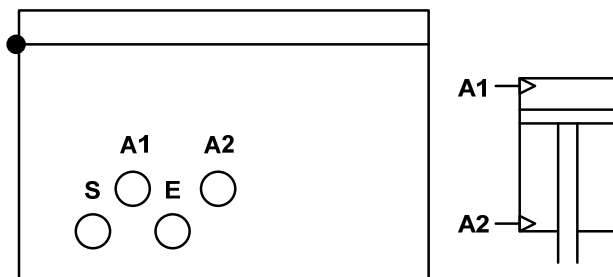


Pneumatic connections for the EPP2000 SR and EPP2000 SR-HC:

- Supply air : I
- Actuator : A
- Exhaust : E

In powerless condition the Valve positioner will exhaust the actuator (A).

EPP2000 DA for double-acting actuators.



Pneumatic connections for the EPP2000 DA:

- Supply air : I
- Actuator chamber 1 : A1

- Actuator chamber 2 : A2
- Exhaust with throttle screw : E

4mA closed position - Pressure on A1 & A2 exhausted

20mA open position - Pressure on A2 & A1 exhausted

In powerless condition the Valve positioner will keep the valve-position (stay-put). .

Important : The air-filtering must be < 30 um. Do not use PTFE-tape or crystallising liquid sealant on the fittings! We recommend LockTite 542

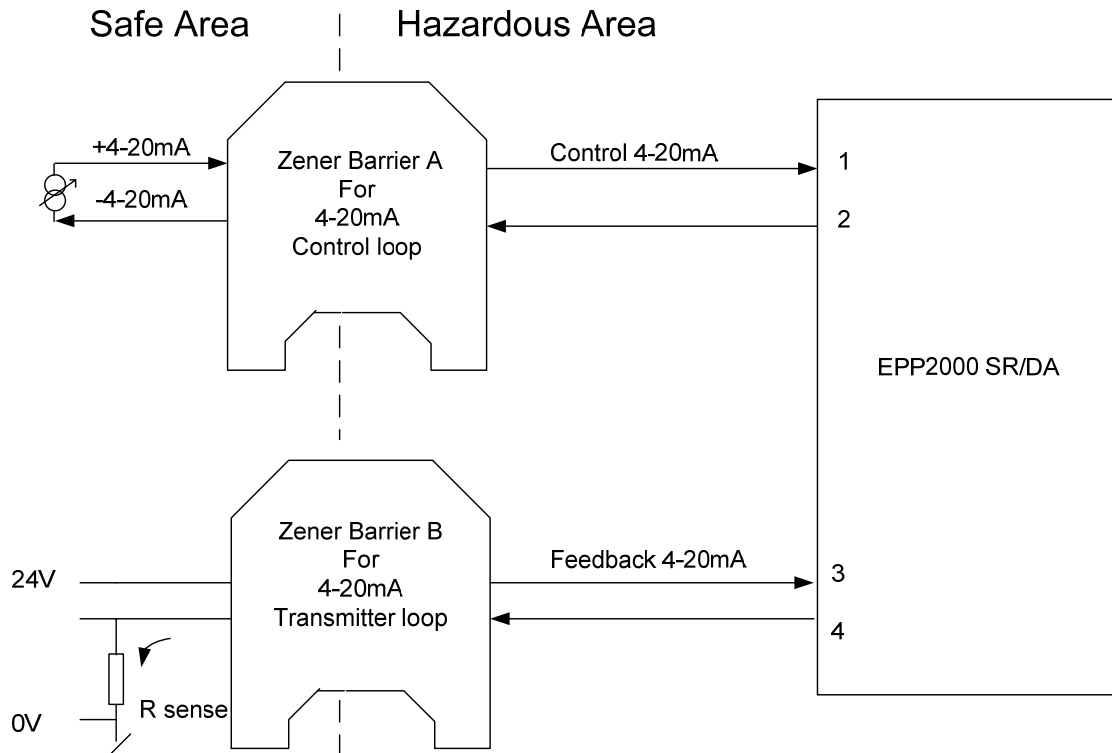
Oil mist lubrication : None or only little, max. 30 mg/m³.

Recommended oil : Mineral oil, type VG32 to ISO-3448.

Max. supply pressure : 8 bar.

6.4 Electrical connections

The following block diagram shows how the EPP2000 controller- and transmitter-loop is connected.



Terminals:

- 1: Controller Loop (+)
- 2: Controller Loop (-)
- 3: Transmitter Loop (+)
- 4: Transmitter Loop (-)

Recommended barriers for Controller loop:

- MTL : 3045/5045 Isolated Driver (Or equal)
- P+F : KFD2-CD-EXI. 32

Recommended barriers for Transmitter loop:

- MTL : 3041/5041 Isolated Transmitter Driver (Or equal)
- P+F : KFD2-CR-EXI. 30200

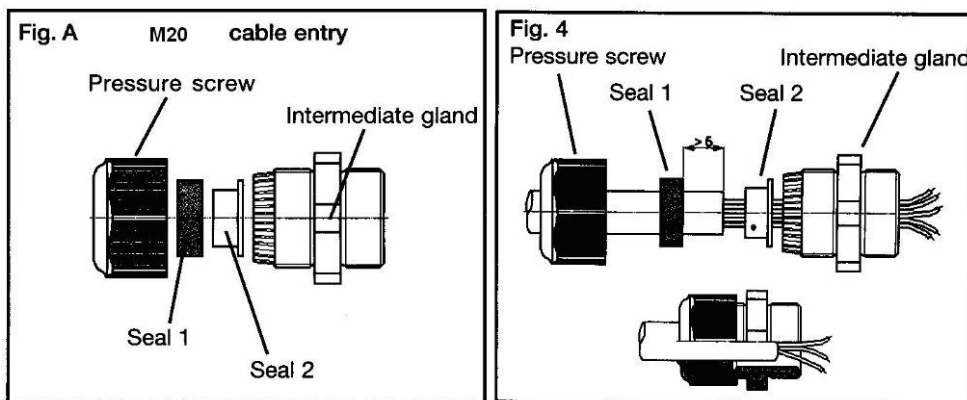
6.5 Glands

The cable must be clean or it can impact on the degree of IP protection. The glands are suited for cable with diameter between 5,5mm and 13mm. The seal inserts shall be chosen to suit the respective cable diameter:

Cable diameter 5,5mm to 8mm use Seal 1+2.

Cable diameter 8mm to 13mm use Seal 2.

Not used glands are closed with suited plugs, or it can impact on the degree of IP protection.



6.6 Adjusting the pressure-block

It is possible on the pressure-block, to adjust the amount of air going through the pressure-block.

SR-model

To adjust the SR-model, remove the mainboard inside the positioner, and under the mainboard lays the pressure-block. On the pressure-block there are two screws, the one to the left adjusts the air-flow in to the actuator, I. The one to the right adjusts the outlet from the actuator, E.

SR HC-model

To adjust the SR HC-model, use the two screws, which is placed by I and E. The one to the left adjusts the air-flow in to the actuator, I. The one to the right adjusts the outlet from the actuator, E.

DA-model

On the DA-model the outlet-filter can be adjusted. Here you can't control the amount of air coming in to the pressure-block, only the outlet, E.

7 Software and Configuration General

This chapter describes how to configure the Val Controls EPP2000 positioner. It is important that these pages are read very carefully to achieve an optimal function of the positioner. The positioner is configured by using the keyboard. The menu structure below shows where to find all the available menu functions. Configuration of flow curve as well as dead band is described in the following pages.



Setup and Configuration is done by using the 4 button keyboard at the front of the EPP2000 positioner.



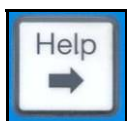
Arrow Up & Calibrate button



Arrow Left & Menu button



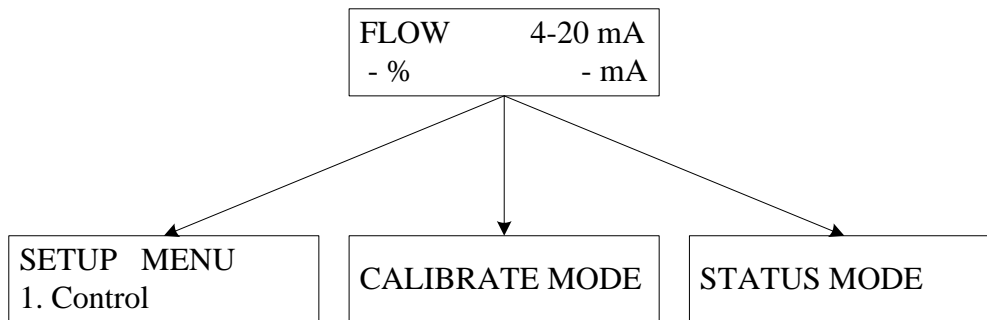
Arrow Down & Enter button




Arrow Right & Help button


7.1 How to select Menus


When the Valve positioner is mounted, pressure-air supply connected and power switched on, the Valve positioner will go to the regulation mode and begin to regulate dependent on the control-signal available.



To get from the Flow menu to the other menus:


Press  once to get into the Setup Menu.

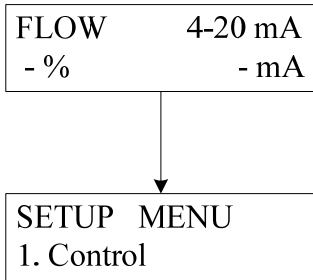
Press  once to get into the Calibrate Mode.

Press  once to get into the Status Mode.

7.2 Setup menu

At the following pages there is a menu overview and description how to configure and calibrate the EPP2000 positioner.

To get from the Flow menu to the Setup Menu press  once.

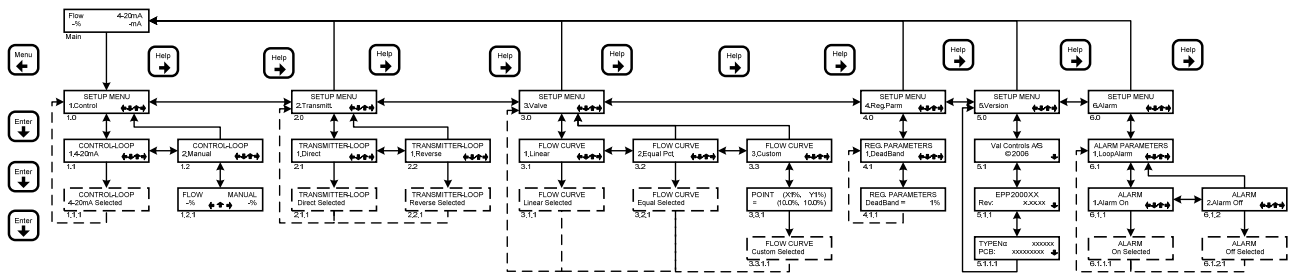


Display explanation:




Shows which preference that have been selected

Use the following diagram to navigate in the Setup Menu, or see Menu structure.



7.3 Setup menu Description



At any time you can leave the Setup Menu by pressing the  button. This will cause a "saving changes" operation.

1.0 Control

Menu to select Control Loop input or Manual control

When "manual operation" is picked from the Setup Menu the positioner will ignore the electrical control-signal and the user can set the valve-position at a certain flow directly from the keyboard.

2.0 Transmitter

Menu to select the Transmitter Loop to be Direct or Reverse.

- Direct : 4mA open and 20mA close
- Reverse : 20mA open and 4mA close

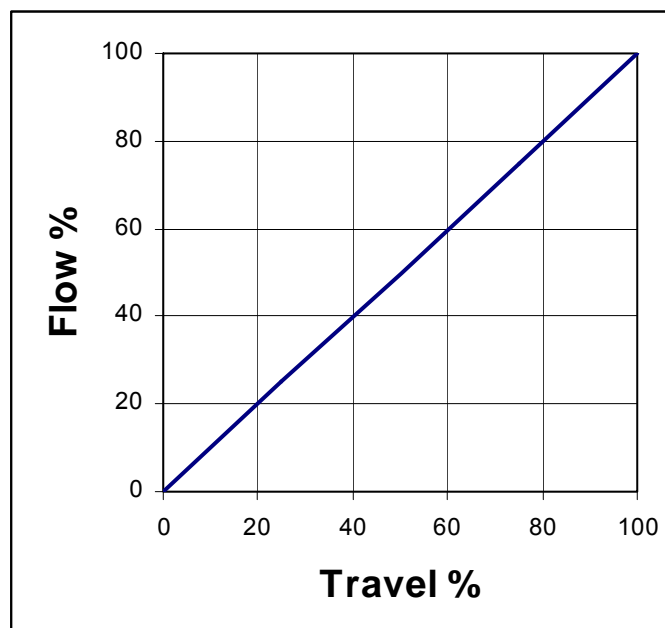
3.0 Valve

Menu to select Flow Curves.

The valve-characteristic expresses the flow-percent through a valve at different opening-angles. To obtain an accurate regulation of the flow-media it is important to choose a valve-characteristic that is identical with the one for the valve used.

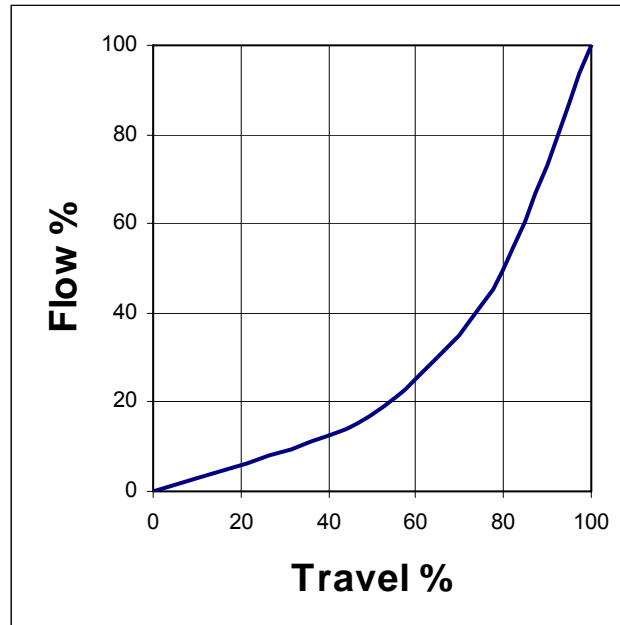
3.1 Linear valve-characteristic.

The flow through the valve is proportional with the travel of the valve. The linear valve-characteristic can be chosen from the users menu.



3.2 Equal Percentage

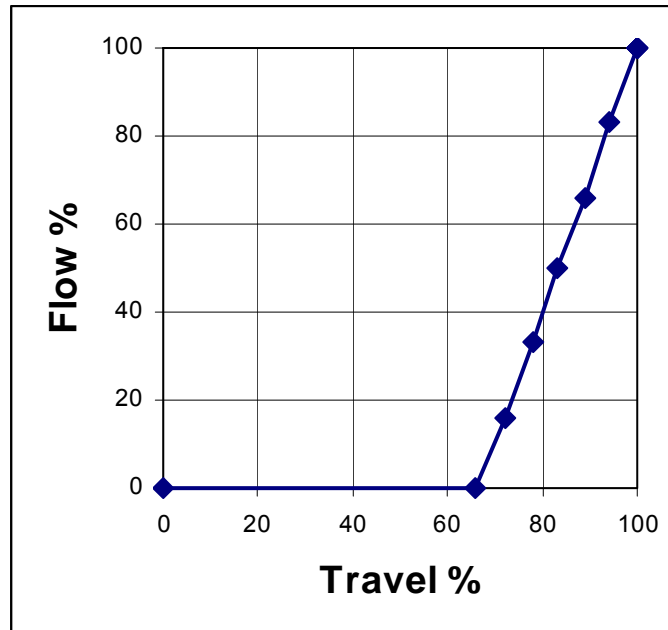
The flow through the valve rises in the last part of the curve. The equal percentage valve-characteristic can be chosen from the users menu.



3.3 Custom curve

The Intelligent Valve positioner offers the user to define his own valve-characteristic from the key-board. This option makes it possible to use a wide range of valves and still be able to obtain an accurate regulation. The Intelligent Valve positioner needs 10 referencepoints to linearize an arbitrary valve-characteristic.

Point	Travel %	Flow %
0	0	0
1	66	0
2	72	16
3	78	33
4	83	50
5	89	66
6	94	83
7	100	100
8	100	100
9	100	100
10	100	100



When the points describing the flowcurve are keyed in, the valve-positioner will linearise the flowcurve.

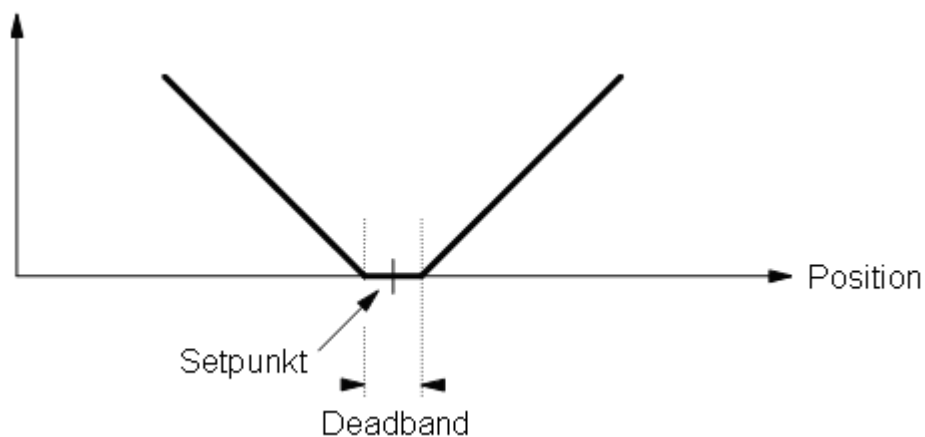
4.0 Reg. Parm.

Menu to select regulating parameters e.g. dead band.

The Dead band can be manual altered from the users menu. The standard adjustment is $\pm 1\%$ but this value can be changed from ± 1 to $\pm 10\%$.

Note: The dead band is on the position of the valve, -not the flow!

If the Dead band is set to f.ex. $\pm 5\%$ the Valve positioner will regulate in on a setpoint with an accuracy of $\pm 5\%$ and stay there until the position feedback is bigger than 5% .



5.0 Version

Menu to display software version and setup parameters
This menu is useful to check after any changes in setup.

6.0 Alarm

Menu to select Alarm on/off and alarm features

2 mA. Transmitter alarm. Valve-positioners with 4-20 mA. feedback signal will when an error occurs supplement the error-message, written in the LCD-display, with a 2 mA. error-signal.

It is possible to switch off the 2 mA. error-signal in this menu.

7.4 Calibrate menu

See 7.1 how to select Menus. At first-time calibration you have to define the preferences for the actuator in the following steps.

When calibrating, the transmitter will be at 2mA.

Step 1

Select fail operation of the actuator:

- Fail Close
- Fail Open

Step 2

Select Acting of the controller:

- Direct Acting
- Reverse Acting.

Step 3

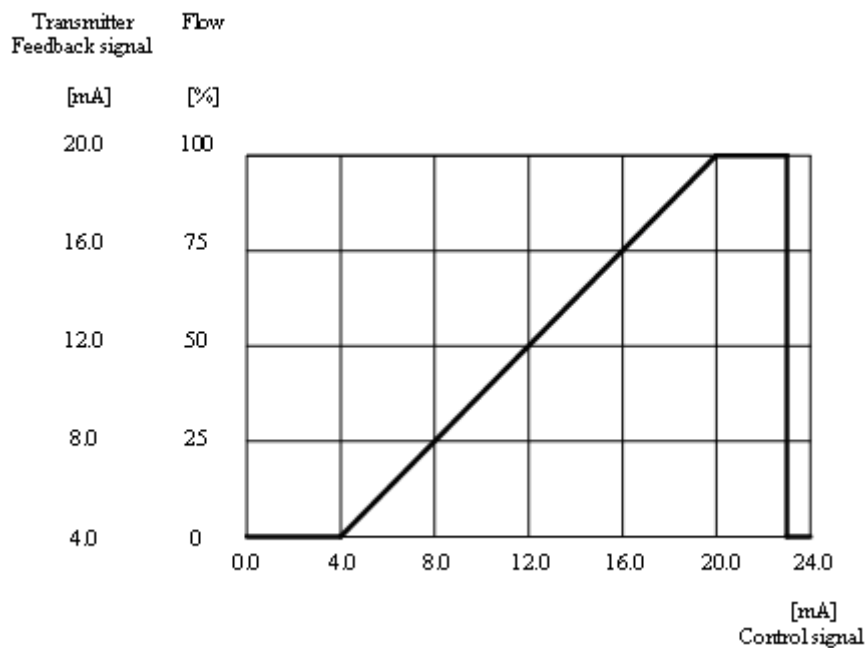
Automatic Calibrating

The following settings show the regulation function dependent on the choices made:

Setting 1

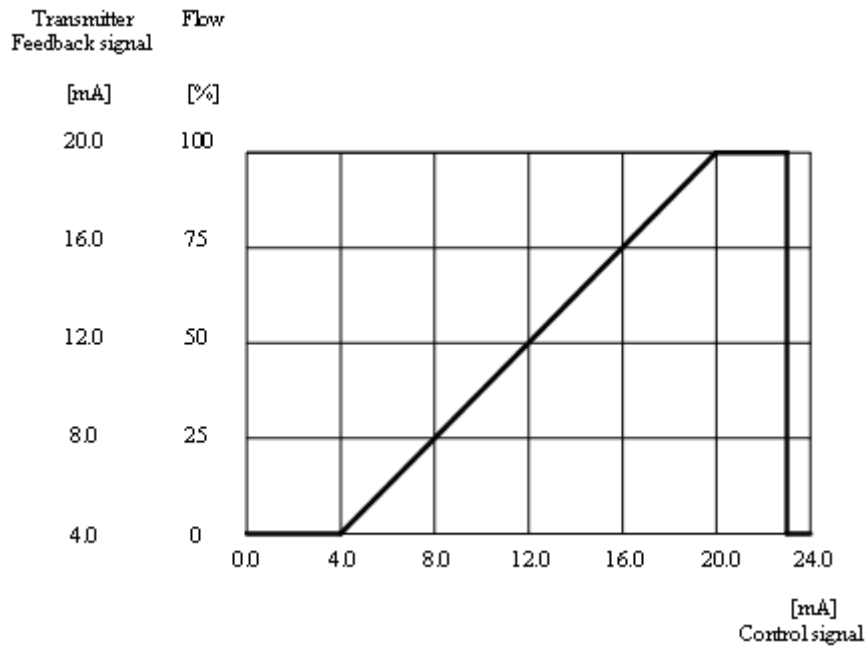
Valve : Fail close

Controller : Direct Acting



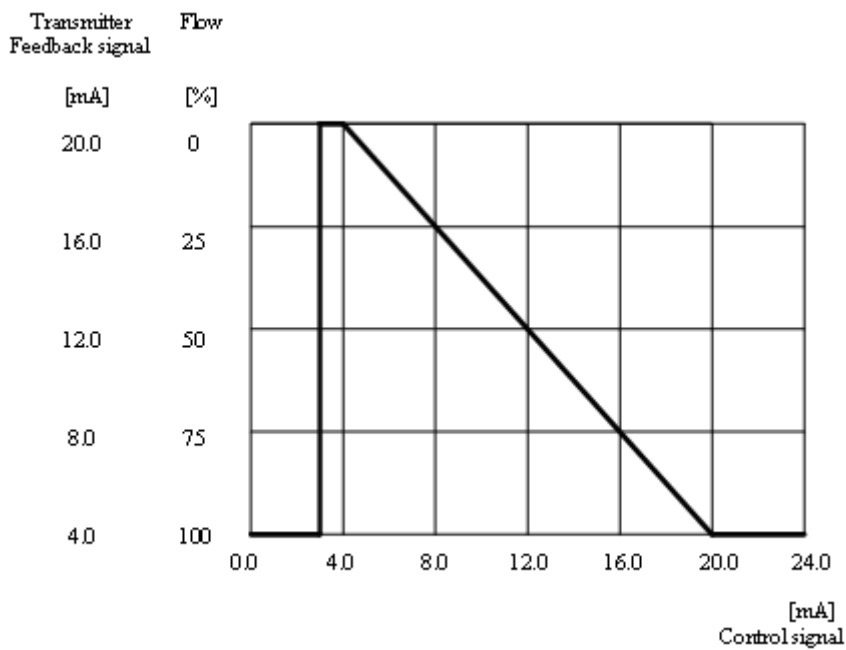
Setting 2

Valve : Fail open
Controller : Direct Acting



Setting 3

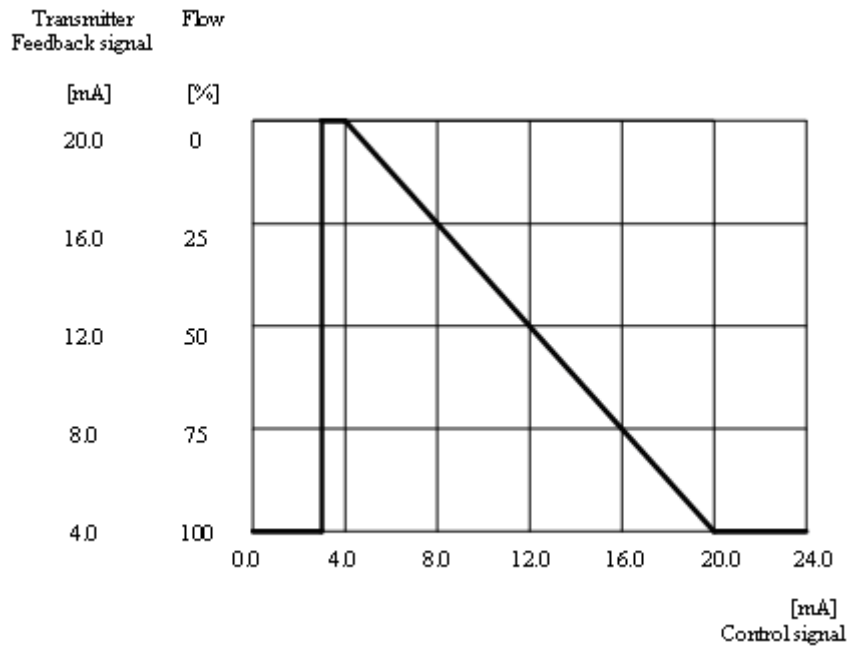
Valve : Fail close
Controller : Reverse acting



Setting 4

Valve : Fail open

Controller : Reverse acting



7.5 Status menu

If the user want to get a general view over the chosen configuration parameters, it is possible by pushing the “Help” key while the positioner is in regulation mode. The regulation of the valve will not be influenced and each “window” in the status overview will be displayed for a couple of seconds.

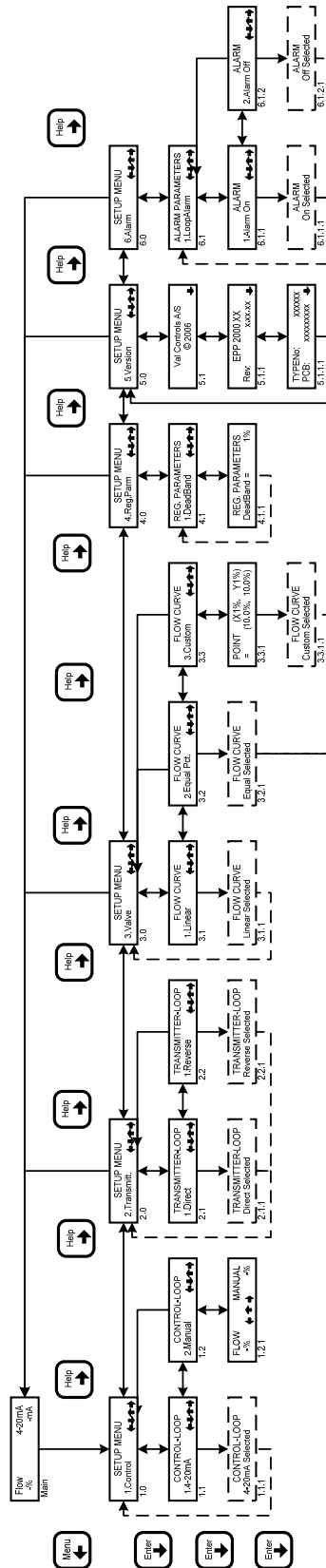
8 Error messages

The valve-positioners will write an error-message in the LCD-display when an error occurs during operation, setup or calibration. The positioner will despite of the error-message continue to regulate according to the controlsignal given. If the positioner succeeds in reaching the setpoint the error-message will after a while be cancelled.

NO.	ERROR	TROUBLE-SHOOTING
02	Turn pot 180 deg	This error message will be showed in the LCD-display if the angle sensor during the calibration-routine has been moving outside the legal area. Turn the angle-sensor 180 degrees and re-calibrate the Valve positioner. Please notice the chapter regarding installation.
06	No Potentiometer	This error message will be showed in the LCD-display in calibration mode if the EPP2000 positioner can not measure that there are a potentiometer connected to the terminal 7 to 10.
10	Memory Defect	Internal error, contact distributor.
11	Actuator too big	This error message will occur if the actuator volume is too big related to the pulse-size of the Valve positioner. In this case it is not possible to regulate the valve within the existing tolerances. Increase the airflow in and out of the actuator and re-calibrate the system.
12	Actuator too small	This error message will occur if the actuator volume is too small related to the pulse-size of the Valve positioner. In this case it is not possible to regulate the valve within the existing tolerances. Reduce the airflow in and out of the actuator and re-calibrate the system.
14	Air Leakage	This error occurs if under "Pneumatic check" a position change. It can be caused by a defect piezo-valve or a leakage between the positioner and the actuator.
17	Angle Sensor	This error occurs if the angle sensor at operation is moving out of the operating-area that the Valve positioner has detected and stored during the calibration routine. It can be caused by a loose or worn mechanical connection.
18	Valve Blocked	This error occurs whenever the Valve positioner fails to position the valve according to the electrical control-signal (setpoint). This error can be caused by; failing pressure air, valve blocked, defect actuator, loose mechanical connection between Valve positioner and actuator or leakiness in the pneumatic connections.
27	Memory defect	Internal error, contact distributor.
30	Service Needed	If EPP2000 has enabled service interval, this Message will occur if the maximum operation days have been reached, or the maximum allowed solenoid operations have been reached.

41	Check Potentiometer	Check connections to potentiometer ground. Connection is missing.
42	Check Potentiometer	Check connections to potentiometer Vcc. Connection is missing.
43	Potentiometer > 100K	The positioner has measured the potentiometer value to be too big.
44	Potentiometer < 4,7K	The positioner has measured the potentiometer value to be too small.
50	Not Calibrated!	Calibrate the positioner
101	Position Signal	No connection to the positioner's sensor. Check connections. Contact distributor.
102	No Version Def.	No software version selected. Contact distributor.
110	No menu def.	Contact distributor.
201	Can't Close	If positioner can't close when calibrating. - Check position sensor
202	Can't Open	If positioner can't open when calibrating. - Check position sensor or check Air supply
203	Can't reach 100%	If positioner can't reach 100% - Check position sensor or check Air supply
204	Can't reach 90%	If positioner can't reach 90% - Check pneumatic for air leak.
205	Can't reach 10%	If positioner can't reach 10% - Check pneumatic for air leak.
206	Can't reach 0%	If positioner can't reach 10% - Check position sensor or check Air supply
207	Can't Open	If positioner can't open - Check position sensor or check Air supply
210	Factory Reset	Contact distributor.
220	Remove JTAG Fuse	Contact distributor.

9 Menu structure



10 Intrinsically Safe - Electrical parameters

Input and output parameters:

Terminal 1(+) and 2(-)	2-wire Control Loop	$U_i \leq 30 \text{ V}$, $I_i \leq 119 \text{ mA}$, $P_i \leq 830 \text{ mW}$, $L_i = 0 \text{ mH}$, $C_i = 6 \text{ nF}$
Terminal 3(+) and 4(-)	2-wire TransmitterLoop	$U_i \leq 30 \text{ V}$, $I_i \leq 119 \text{ mA}$, $P_i \leq 830 \text{ mW}$, $L_i = 0 \text{ mH}$, $C_i = 0 \text{ nF}$.

11 Electrical Technical Specifications EPP2000 IPCU

Explosion Protection				
Flammable Gas		Yes General: ⊕ II 1G EEx ia IIC T4/T5/T6 Zone 0 Group II Category 1G ia Installation	IEC: DS/EN 60079-0 None DS/IEC 60079-11 DS/EN 60079-14	CENELEC EN: DS/EN 60079-0 DS/EN 50284 DS/EN 50020 DS/EN 60079-14
Mines		No		
Flammable Dust		No		
Power				
2 - wire Loop Powered		Yes		
Control Loop 2-wire				
Control Loop Range		4-20mA		
Control Loop Rin max.		550 ohm		
Control Loop Rin typ.		530 ohm		
Control Loop Ui max.		11,5V (@ 20mA)		
Transmitter Loop 2-wire				
Loop Powered		Yes	Uloop = 5 to 25,2 VDC	
Optical Galvanic isolated		Yes		
Transmitter Loop Range		4-20 mA		
Transmitter Loop Rin max		250 ohm		
Transmitter Loop Rin typ		205 ohm		
Output				
Digitale outputs		No		
Piezovalves / Low effekt		Yes	Uout nom = +/-24VDC Uout max = 25,3VDC Pout nom = 5 mW Iout max = 7 mA	
Inputs				
Digital inputs		No		
Ohmsk position sensor.		4 Kohm - 100Kohm	When using a potentiometer more than 80Kohm workingrange is 300 deg. Cable length max 150cm	
MMI				
KeyBoard		Yes		
Toutch Buttons		Yes, 4 pcs		
Display		Yes, 2x16 char		
Display Back light		No		

Light Emitting Diodes		Yes 3 pcs.		
Infrared Reciever		No		
Enviromental Conditions				
Temperatur Operating (Tamb)		-20 to 60 deg celcius		
Temperatur Operating (Tamb) Reduced displayfunctions		-20 to 70 deg celcius		
Temperatur Storage (Tamb)		-40 to 80 deg celcius		
Vibrations specifikation		Yes		60068-2-6 ISO 13628-6 chp 11
Temperaturtest, Cold		Yes		60068-2-1 ISO 13628-6 chp 11
Temperaturtest, Hot		Yes		60068-2-2 ISO 13628-6 chp 11
Shock test		Yes		60068-2-27 ISO 13628-6 chp 11
EMC test		Yes		EN61000-6-2 EN61000-6-3 EN 61326
Electrical Connections				
Screw terminals capacity		0,5 - 1,5 mm2		
Performance				
Conversion		10 bit max	Full scale div by 1024	
Accuracy (full scale)		+/- 0,1%		
Linearitet IPCU		Max <0,2%	Typ <0,1%	
Linearitet with potentiometer		Max <+/-1,2%	Typ <+/-1%	
Repeatability IPCU		Max <0,2%	Typ <0,1%	
Measure speed		2mSec		
Software facilities				
Calibrating		Automatic / Intelligent		
Adjustment of direct / revers		Yes		
Temperature compensation		Yes		
Deadband		+/-1% to +/-10%		

12 Technical Specifications EPP2000 General

		Pneumatic Models:	
Enclosure			
Enclosure		AISI-316 1,5mm SS	
Ingress Protection		IP66	DS/EN 60529
Main dimensions			
Kabinet dimensioner LxWxH		185x120x120	
Veight		App. 3,5 Kg	
Actuator types			
Actuator types, Rotary		SR, DA	
Actuator typer, Linear		SR, DA	
Mounting			
For rotary actuator		Standard Mounting	
For linear actuator		Standard Mounting	
Electrical Entry			
Electrical Entry		2 x M20x1,5	
Electrical Connections			
Screw terminals capacity		0,5 - 2,5 mm ²	
Sensing Devices			
Limmit switche - Proximity		No	
Gauges		No	

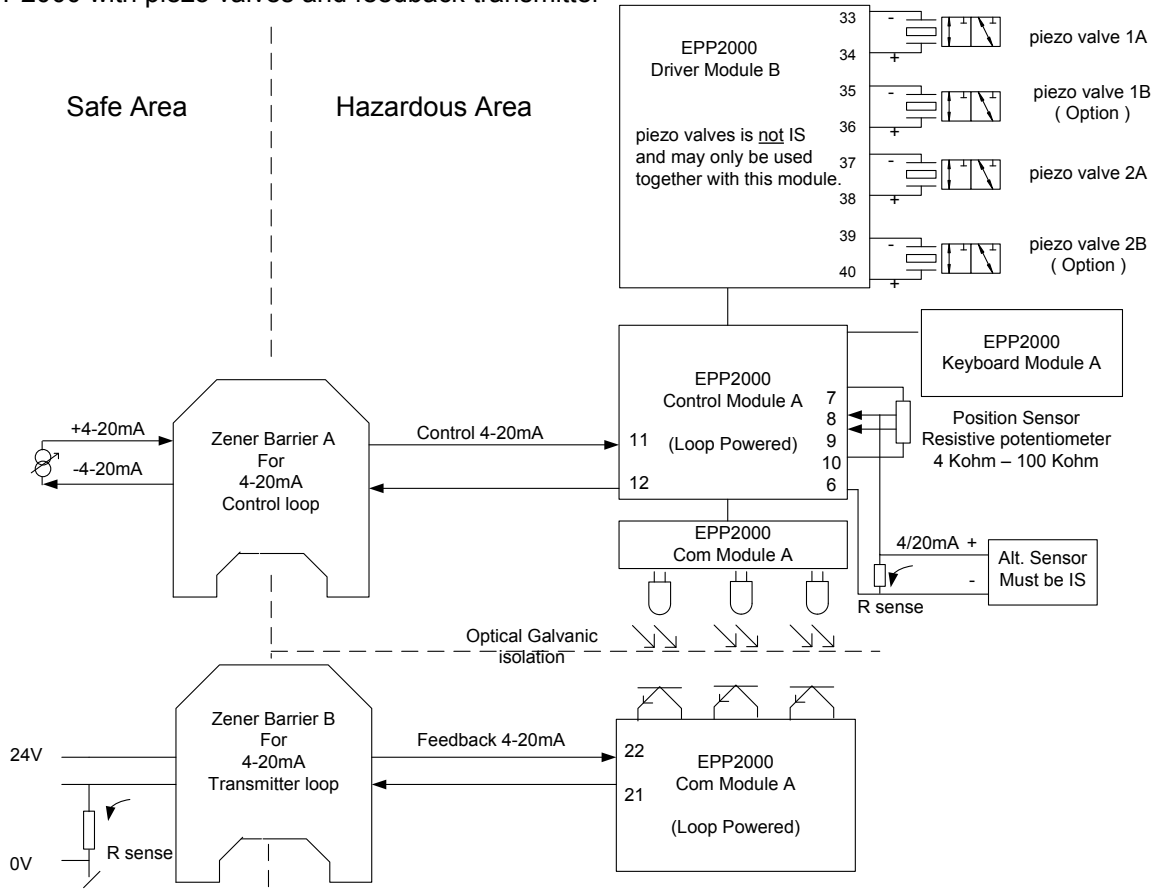
13 Technical Specifications Pressure block

		Pneumatic
Valve types		SR, DA
Air consumption		≈ 0
Air filtering		Dried or filtered air < 30
Oil mist lubrication		None, or only little. Max 30mg/m ³
SR		
Supply		1,5-8 bar
Flow in		40 l/min
Flow out		22 l/min
Connections		2 x 1/4" NPT
SR-HC		
Supply		3-8 bar
Flow in		485 l/min
Flow out		200 l/min
Connections		2 x 1/4" NPT
DA		
Supply		4-8 bar
Flow in		1066 l/min
Flow out		438 l/min
Connections		3 x 1/4" NPT

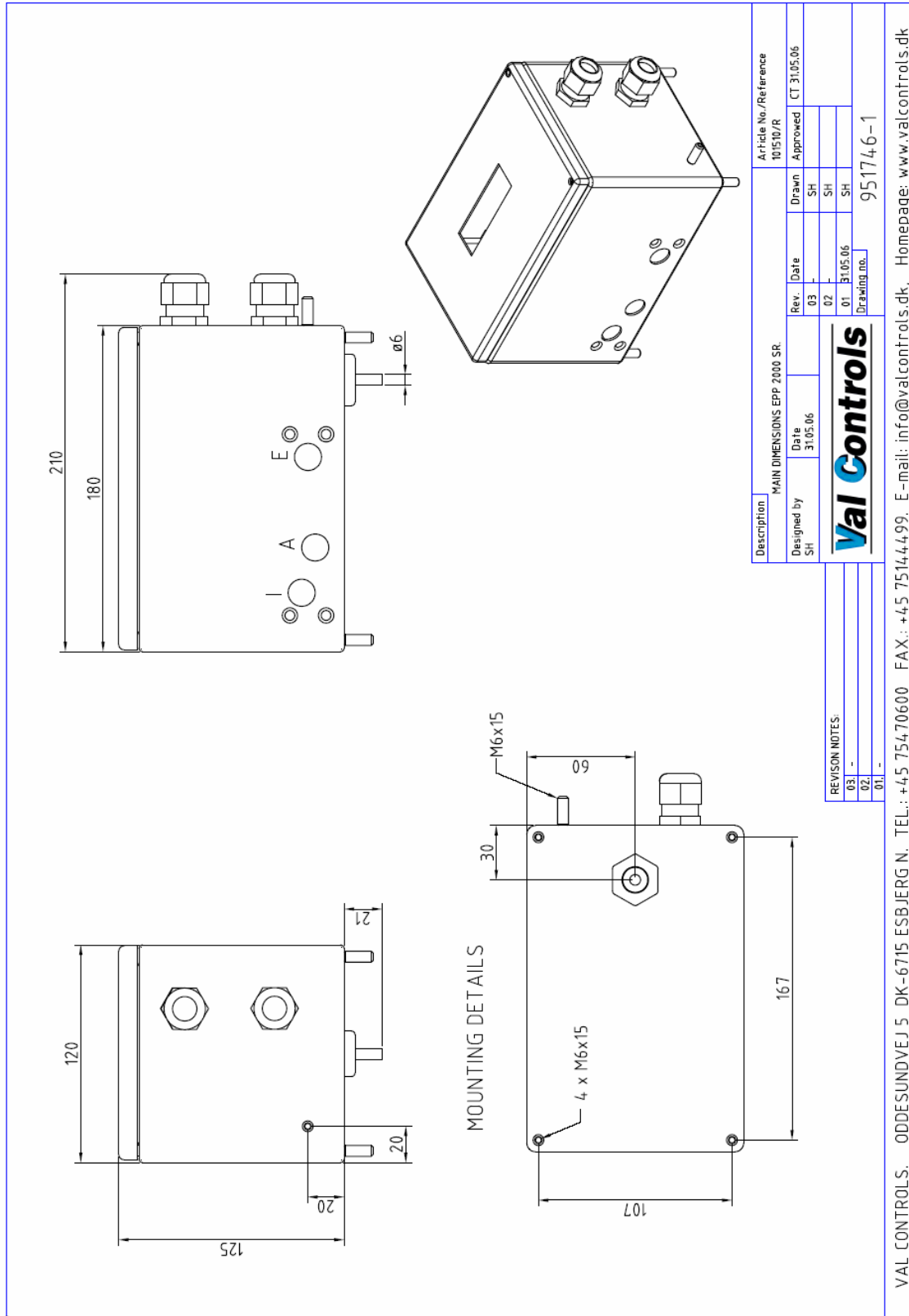
14 Basic circuit diagram

The following block diagram shows the EPP2000 positioner and interface components.

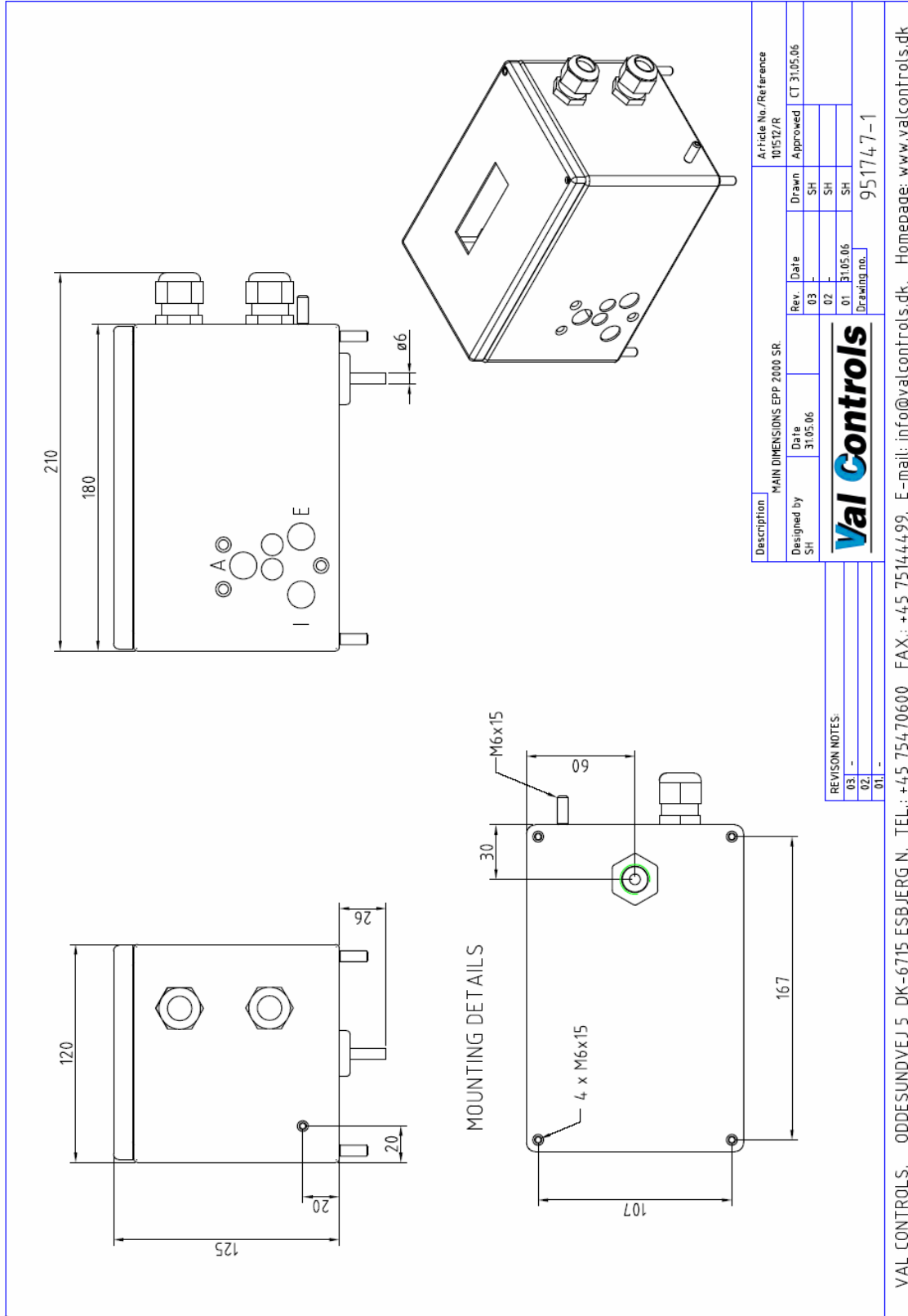
EPP2000 with piezo valves and feedback transmitter



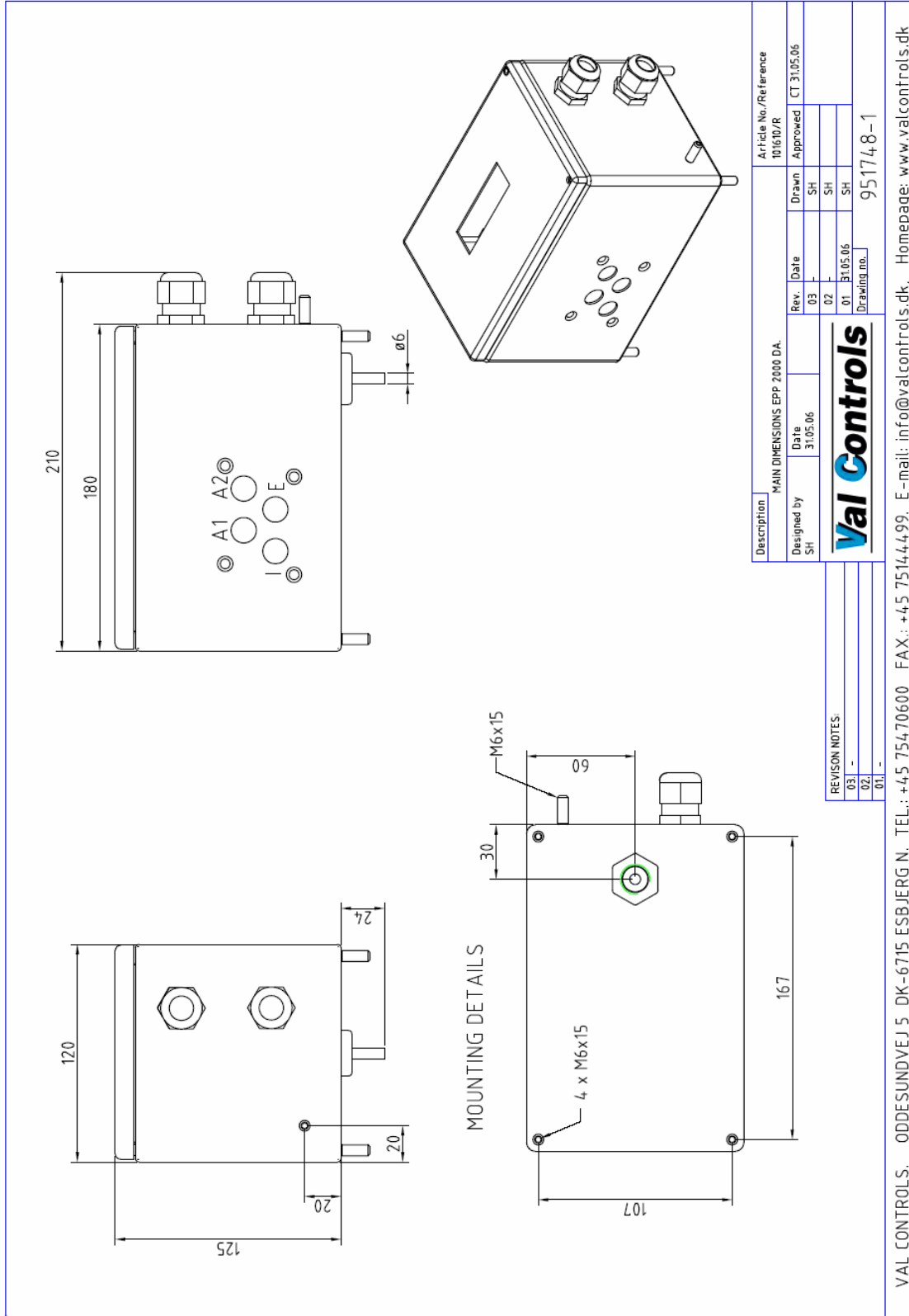
15 Main Dimensions EPP2000 SR






16 Main Dimensions EPP2000 SR-HC



17 Main Dimensions EPP2000 DA



18 EC Type Examination Certificate

	 LCIE				
<p>1 ATTESTATION D'EXAMEN CE DE TYPE</p> <p>2 Appareils et systèmes de protection destinés à être utilisés en atmosphères explosibles Directive 94/9/CE</p> <p>3 Numéro de l'attestation CE de type LCIE 05 ATEX 6076 X</p> <p>4 Appareil ou système de protection : Unité de contrôle intelligente de positionnement Type : EPP2000</p> <p>5 Demandeur : VAL CONTROLS</p> <p>6 Adresse : Oddesundvej 5 DK 6715 ESBJERG N DANEMARK</p> <p>7 Cet appareil ou système de protection et ses variantes éventuelles acceptées est décrit dans l'annexe de la présente attestation et dans les documents descriptifs cités en annexe.</p> <p>8 Le LCIE, organisme notifié sous la référence 0081 conformément à l'article 9 de la directive 94/9/CE du Parlement européen et du Conseil du 23 mars 1994, certifie que cet appareil ou système de protection est conforme aux exigences essentielles en ce qui concerne la sécurité et la santé pour la conception et la construction d'appareils et de systèmes de protection destinés à être utilisés en atmosphères explosibles, données dans l'annexe II de la directive. Les vérifications et épreuves figurent dans notre rapport confidentiel N° 60035000/534359.</p> <p>9 Le respect des exigences essentielles en ce qui concerne la sécurité et la santé est assuré par la conformité aux documents suivants : -EN 50014 (1997) + amendements 1 et 2 -EN 50020 (2002)</p> <p>10 Le signe X lorsqu'il est placé à la suite du numéro de l'attestation, indique que ce matériel ou système de protection est soumis aux conditions spéciales pour une utilisation sûre, mentionnées dans l'annexe de la présente attestation.</p> <p>11 Cette attestation d'examen CE de type concerne uniquement la conception et la construction de l'appareil ou du système de protection spécifié, conformément à la directive 94/9/CE. Des exigences supplémentaires de cette directive sont applicables pour la fabrication et la fourniture de l'appareil ou du système de protection.</p> <p>12 Le marquage de l'appareil ou du système de protection devra comporter, entre autres indications utiles, les mentions suivantes :</p> <p style="text-align: center;"> EEx ia [ia] IIC T6 ou T5 ou T4</p> <p>Fontenay-aux-Roses, le 27 février 2006</p>	<p>1 EC TYPE EXAMINATION CERTIFICATE</p> <p>2 Equipment or protective system intended for use in potentially explosive atmospheres Directive 94/9/EC</p> <p>3 EC type Examination Certificate number LCIE 05 ATEX 6076 X</p> <p>4 Equipment or protective system : Intelligent Position Control Unit Type : EPP2000</p> <p>5 Applicant : VAL CONTROLS</p> <p>6 Address : Oddesundvej 5 DK 6715 ESBJERG N DENMARK</p> <p>7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.</p> <p>8 LCIE, notified body number 0081 in accordance with article 9 of the Directive 94/9/EC of the European Parliament and Council of 23 March 1994, certifies that this equipment or protective system has been found to comply with the essential Health and Safety Requirements relating to the design and construction of equipment and protective system intended for use in potentially explosive atmospheres, given in Annex II of the Directive. The examination and test results are recorded in confidential report No 60035000/534359.</p> <p>9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with : -EN 50014 (1997) + amendments 1 and 2, -EN 50020 (2002)</p> <p>10 If the sign X is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.</p> <p>11 This EC Type examination certificate relates only to the design and construction of this specified equipment or protective system in accordance with the Directive 94/9/EC. Further requirements of the Directive apply to the manufacture and supply of this equipment or protective system.</p> <p>12 The marking of the equipment or protective system shall include the following :</p> <p style="text-align: center;"> EEx ia [ia] IIC T6 or T5 or T4</p> <p style="text-align: center;">Le Directeur de l'organisme certificateur Manager of the certification body</p> <p style="text-align: center;"> Jean CERVELLO Timbré sec / Dry seal</p>				
<p>Seul le texte en français peut engager la responsabilité du LCIE. Ce document ne peut être reproduit que dans son intégralité, sans aucune modification The LCIE's liability applies only on the French text. This document may be reproduced in full and without any change</p>					
<p>Page 1/3 A</p>					
<table border="0"> <tr> <td style="vertical-align: top;"> <p>LCIE Laboratoire Central des Industries Electriques Une société de Bureau Veritas</p> </td> <td style="vertical-align: top;"> <p>33, av du General Leclerc BP 8 92266 Fontenay-aux-Roses cedex France</p> </td> <td style="vertical-align: top;"> <p>Tel : +33 1 40 95 60 60 Fax : +33 1 40 95 86 56 contact@lcie.fr www.lcie.fr</p> </td> <td style="vertical-align: top;"> <p>Société Anonyme au capital de 15 745 984 € RCS Nanterre B 408 363 174</p> </td> </tr> </table>		<p>LCIE Laboratoire Central des Industries Electriques Une société de Bureau Veritas</p>	<p>33, av du General Leclerc BP 8 92266 Fontenay-aux-Roses cedex France</p>	<p>Tel : +33 1 40 95 60 60 Fax : +33 1 40 95 86 56 contact@lcie.fr www.lcie.fr</p>	<p>Société Anonyme au capital de 15 745 984 € RCS Nanterre B 408 363 174</p>
<p>LCIE Laboratoire Central des Industries Electriques Une société de Bureau Veritas</p>	<p>33, av du General Leclerc BP 8 92266 Fontenay-aux-Roses cedex France</p>	<p>Tel : +33 1 40 95 60 60 Fax : +33 1 40 95 86 56 contact@lcie.fr www.lcie.fr</p>	<p>Société Anonyme au capital de 15 745 984 € RCS Nanterre B 408 363 174</p>		



L C I E

(A1) ANNEXE

(A1) SCHEDULE

(A2) ATTESTATION D'EXAMEN CE DE TYPE

(A2) EC TYPE EXAMINATION CERTIFICATE

LCIE 05 ATEX 6076 X

LCIE 05 ATEX 6076 X

(A3) Description de l'équipement ou du système de protection :

(A3) Description of Equipment or Protective System:

Unité de contrôle intelligente de positionnement
Type : EPP2000

Intelligent Position Control Unit
Type : EPP2000

L'unité de contrôle intelligente de positionnement (IPCU) est conçue pour fournir des signaux de commande pour un actionneur, en réponse à un signal d'une unité de commande situé en zone non dangereuse, et en option, pour fournir un signal de positionnement en retour pour cette même unité de commande.

The EPP2000 Intelligent Position Control Unit (IPCU) is designed to provide control signals for an actuator, in response to a signal from a control unit in a non hazardous area, and to provide an optional actual position, back to the control unit.

L'EPP2000 possède 9 configurations possibles :

The EPP2000 unit could be configured into 9 possible variations :

Configuration 1	EPP2000 avec vannes de sécurité intrinsèque / EPP2000 with IS valves
Configuration 2	EPP2000 avec vannes de sécurité intrinsèque et transmetteur de signal de retour / EPP2000 with IS valves and feedback transmitter
Configuration 3	EPP2000 avec vannes pilotées de sécurité intrinsèque et transmetteur de signal de retour / EPP2000 with IS solenoid valves and feedback transmitter
Configuration 4	EPP2000 avec vannes de sécurité intrinsèque et transmetteur HART de signal de retour / EPP2000 with IS valves and HART feedback transmitter
Configuration 5	EPP2000 avec vannes pilotées de sécurité intrinsèque et transmetteur HART de signal de retour / EPP2000 with IS solenoid valves and HART feedback transmitter
Configuration 6	EPP2000 avec vannes pilotées de sécurité intrinsèque / EPP2000 with IS solenoid valves
Configuration 7	EPP2000 avec piezo vannes / EPP2000 with piezo valves
Configuration 8	EPP2000 avec piezo vannes et transmetteur de signal de retour / EPP2000 with piezo valves and feedback transmitter
Configuration 9	EPP2000 avec piezo vannes et transmetteur HART de signal de retour / EPP2000 with piezo valves and HART feedback transmitter

Le marquage est le suivant :

The marking is as following :

VAL CONTROLS Adresse :
Type : EPP2000
N° de fabrication : ... Année de construction : ...
Ex II 1 G EEx ia [ia] IIC T6 ou T5 ou T4
T6 pour Tamb : de -20°C à +45°C
T5 pour Tamb : de -20°C à +60°C
T4 pour Tamb : de -20°C à +85°C
LCIE 05 ATEX 6076 X

VAL CONTROLS Address :
Type : EPP2000
Serial number : ... Year of construction : ...
Ex II 1 G EEx ia [ia] IIC T6 or T5 or T4
T6 for Tamb : from -20°C to +45°C
T5 for Tamb : from -20°C to +60°C
T4 for Tamb : from -20°C to +85°C
LCIE 05 ATEX 6076 X

Le marquage CE est accompagné du numéro d'identification de l'organisme notifié responsable de la surveillance du système approuvé de qualité (0081 pour le LCIE).

The CE marking shall be accompanied by the identification number of the notified body responsible for surveillance of the approved quality system (0081 for LCIE).

Le matériel devra également comporter le marquage normalement prévu par les normes de construction du matériel électrique concerné.

The equipment must also carry the usual marking required by the manufacturing standards applying to such equipments.



LCIE

(A1) ANNEXE

(A1) SCHEDULE

(A2) ATTESTATION D'EXAMEN CE DE TYPE

(A2) EC TYPE EXAMINATION CERTIFICATE

LCIE 05 ATEX 6076 X (suite)

LCIE 05 ATEX 6076 X (continued)

Paramètres spécifiques du ou des modes de protection concerné(s) :

Specific parameters of the mode of protection concerned :

	Paramètres d'entrée et de sortie de SI pour le groupe IIC/ Input and Output IS parameters for IIC gas group
Bornes 6 à 10 (alimentation de la boucle passive) / Terminals 6 to 10 (supply to passive feedback)	$U_o \leq 5,4 \text{ V}$, $I_o \leq 6 \text{ mA}$, $P_o \leq 9 \text{ mW}$, $L_o \leq 10 \text{ mH}$, $C_o \leq 65 \text{ }\mu\text{F}$.
Bornes 11-12 (boucle de commande 2 fils) / Terminals 11-12 (2-wire Control Loop)	$U_i \leq 30 \text{ V}$, $I_i \leq 119 \text{ mA}$, $P_i \leq 830 \text{ mW}$, $L_i = 0$, $C_i \leq 6 \text{ nF}$.
Bornes 13-14, 17-18 (sortie pour vannes de SI) / Terminals 13-14, 17-18 (driver to IS valves)	$U_o \leq 28,4 \text{ V}$, $I_o \leq 6,4 \text{ mA}$, $P_o \leq 45 \text{ mW}$, $L_o \leq 700 \text{ mH}$, $C_o \leq 79 \text{ nF}$.
Bornes 21-22 (boucle de transmission 2 fils) / Terminals 21-22 (2-wire Transmitter Loop)	$U_i \leq 30 \text{ V}$, $I_i \leq 119 \text{ mA}$, $P_i \leq 830 \text{ mW}$, $L_i = 0$, $C_i \leq 53 \text{ nF}$.
Bornes 23-24, 27-28 (entrée d'alimentation pour vannes pilotées) / Terminals 23-24, 27-28 (supply input to solenoid)	$U_i \leq 25 \text{ V}$, $I_i \leq 185 \text{ mA}$, $P_i \leq 1,15 \text{ W}$, $L_i = 0$, $C_i = 0$.
Bornes 25-26, 29-30 (sortie d'alimentation pour vannes pilotées) / Terminals 25-26, 29-30 (solenoid output)	$U_o \leq 25 \text{ V}$, $I_o \leq 185 \text{ mA}$, $P_o \leq 1,15 \text{ W}$, $L_o \leq 1,6 \text{ mH}$, $C_o \leq 110 \text{ nF}$.
Bornes 31-32 (boucle de transmission HART 2 fils) / Terminals 31-32 (2-wire Transmitter Loop HART)	$U_i \leq 30 \text{ V}$, $I_i \leq 119 \text{ mA}$, $P_i \leq 830 \text{ mW}$, $L_i = 0$, $C_i \leq 10 \text{ nF}$
Bornes 33-34, 35-36, 37-38 et 39-40 (sortie pour piezo vanne) / Terminals 33-34, 35-36, 37-38 and 39-40 (output to piezo valve)	$U_o \leq \pm 25,3 \text{ V}$, $I_o \leq 6 \text{ mA}$, $P_o \leq 38 \text{ mW}$, $L_o \leq 700 \text{ mH}$, $C_o \leq 106 \text{ nF}$.

(A4) Documents descriptifs :

(A4) Descriptive documents :

Dossier technique N°VCTD702000.00.02.02 Rév. 02 du 02/02/2006.

Technical file N°VCTD702000.00.02.02 Rev 02 dated 02/02/2006.

Ce document comprend 17 rubriques (77 pages).

This file includes 17 items (77 pages).

(A5) Conditions spéciales pour une utilisation sûre :

(A5) Special conditions for safe use:

Classement en température

Operating ambient temperature :

T6 pour Tamb : de -20°C à +45°C

T6 for Tamb : from -20°C to +45°C

T5 pour Tamb : de -20°C à +60°C

T5 for Tamb : from -20°C to +60°C

T4 pour Tamb : de -20°C à +85°C

T4 for Tamb : from -20°C to +85°C

L'équipement est un matériel de sécurité intrinsèque : il peut être placé en atmosphères explosibles.

The equipment is intrinsically safe and can be used in potentially explosive atmospheres.

Le circuit d'alimentation et les circuits de sortie ne peuvent être reliés qu'à des matériels associés de sécurité intrinsèque d'un type certifié ayant des paramètres électriques d'alimentation compatibles avec les valeurs mentionnées au paragraphe (A3)

The supply and output circuits shall only be connected to intrinsically safe associated apparatus certified type and with electrical parameters compatible with the mentioned values of the clause (A3)

La piezo vanne utilisée ne peut être que la suivante : HOERBIGER type Piezo chip-valve P9 (100nF). La valeur capacitive du câble de liaison ne doit pas excéder 6 nF.

The piezo valve used can be only the following : HOERBIGER type Piezo chip-valve P9 (100 nF). The capacitive value of the connecting cable shall not be exceed 6 nF.

La programmation de l'EPP2000 doit s'effectuer hors zone dangereuse (bornes 1-2-3-4-5).

The EPP2000 factory programming shall be done in a non hazardous area (terminals 1-2-3-4-5).

(A6) Exigences essentielles en ce qui concerne la sécurité et la santé :

(A6) Essential Health and Safety Requirements:

Conformité aux normes européennes EN 50014 (1997 + amendements 1 et 2) et EN 50020 (2002).

Conformity to the European standards EN 50014 (1997 + amendments 1 and 2) and EN 50020 (2002).

Vérifications et épreuves individuelles : Néant

Individual examinations and tests : None.

19 EC Declaration of Conformity

Val Controls

VCQD20006.02.02

EC-DECLARATION OF CONFORMITY In accordance with EC Directive 94/9/EC (ATEX)


As manufacturer

ValControl A/S
Oddsundvej 5
DK-6715 Esbjerg N
Denmark

hereby declares that the following products:

Products:	Intelligent Position Control Unit
Type:	EPP 2000
EX certificate:	LCIE 05 ATEX 6076 X

Product Group and Category:

 II 1 G EEx ia IIC T6,T5,T4

is in conformity with the following directives:

EMC directive 89/336/EEC and later amendments

From serial no.: 2005-0121 ff
EN 61 000-6-2
EN 61 000-6-3
EN 61 326

The ATEX directive 94/9/EC and later amendments

From serial no.: 2005-0121 ff
EN 60079-0:2004
EN 50020:2002
EN 50284:1999

Manufacturer's own warning:

Subject to use for the purpose for which it was designed and/or installed in accordance with relevant standards and with the manufacturer's recommendations.

Notified body for ATEX: LCIE 0081



Esbjerg, 31 may 2005

Peter Toft
Managing Director

20 Product pictures

