

Operating instructions

Proportional air regulator

Series: 82-EPV-1 / 82-EPV-2 / 82-EPV-3



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General Remarks

These operating instructions are exclusively intended for trained experts of control and automation technology having experience with the assembly, installation, startup, maintenance and conversion of pneumatic components. In the interest of your own safety, please note that the valves are only intended for the control of pneumatic actuators. Therefore use them:

- as intended,
- in the original condition,
- without unauthorized changes and in technically flawless condition.

The limits specified by AIRTEC for pressures, temperatures, electrical data, etc. must be complied with. The national standards, safety regulations and accident prevention regulations must be observed.

Read the operating instructions prior to commissioning. All liability and warranty claims become void in case of improper interventions or disregard of the information in these assembly instructions and the parameters specified therein.

Risk due to noise - The use of silencers is recommended. Risk from detached hose connections – secure hoses.



Safety Instructions for Assembly and Commissioning

The products may only be commissioned when the regulations of the machinery guideline MRL 2006/42/EG have been met for the entire machine. The devices can be installed in any preferred position.



Pneumatic Connection

Connecting lines and threaded joints must be properly routed and mounted. They must be checked regularly for leaks and repaired, if applicable. All components must be assembled without distortion. Depressurize the connecting lines to be opened for repairs. The pneumatic connections are printed or engraved on the valves. In order for the valve to function correctly, the input and output connections are to be made only on these properly identified connections. In some individual valve models, the printed identification may vary from the standard diagram shown. All connections must be protected from moisture when installed outdoors.



Electrical Connection

In regard to the installation, the relevant electro technical stipulations and accident prevention regulations of the destination country must be observed. For Germany, these are the VDE regulations and the accident prevention regulations of the occupational association.

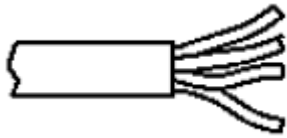
The electrical commissioning may be performed only without pressure and voltage to prevent possibly hazardous movements. Wiring errors are to be avoided as they may cause fire, faulty operation or malfunctions. The power cables and signal lines are to be protected against excitation from high-voltage cables and irradiation interferences. Disconnect the electrical supply when working on the electrical system. Protect against foreign objects falling into or otherwise coming into contact with exposed electrical components. Such foreign electrical conductors e.g. trimmed wire or swarf, may result in electrical faults or fire, faulty operations or malfunctions. Observe correct polarity and electrical connection.



Maintenance, Inspection and Cleaning

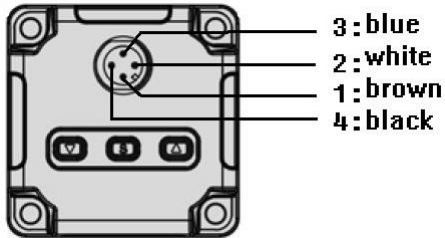
Prior to carrying out installation and maintenance work, switch off the compressed air supply and the power supply to the products. Manually check the products after 2 million switching cycles or no later than every 6 months. Check for the following: Leaks, firm seat of the screws and threaded joints. Replace defective components with original AIRTEC spare parts.

Options of connection

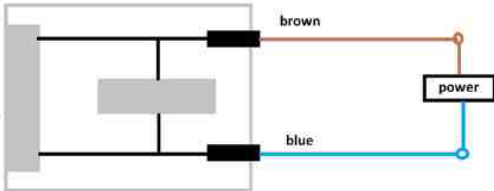


	1: brown	VCC (supply voltage 12 ... 24 V DC)
	2: white	input signal
	3: blue	VSS (ground)
	4: black	output signal

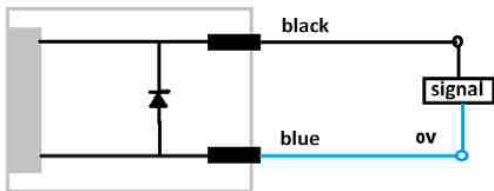
Note: The color code is only valid for the optional cable.



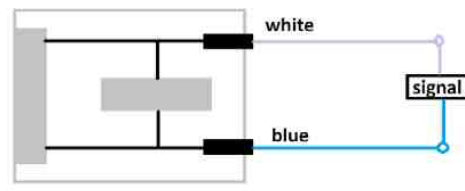
Supply voltage



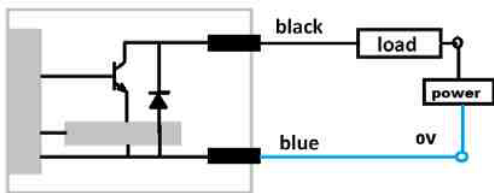
Analog output



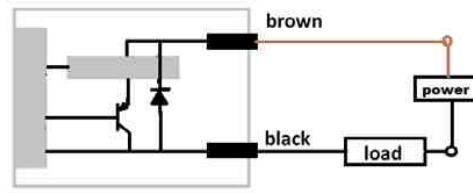
Analog input



NPN output

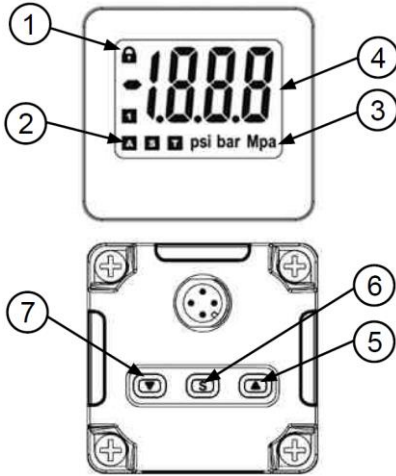


PNP output



Note: PNP is the preferred standard in europe.
 The most control systems need a 24 V input signal.

Display	
Nr.	Description
1	„Lock“ symbol sign
2	output signal sign
3	pressure units
4	main display
5	push button „UP“
6	push button „,SET“
7	push button „,DOWN“



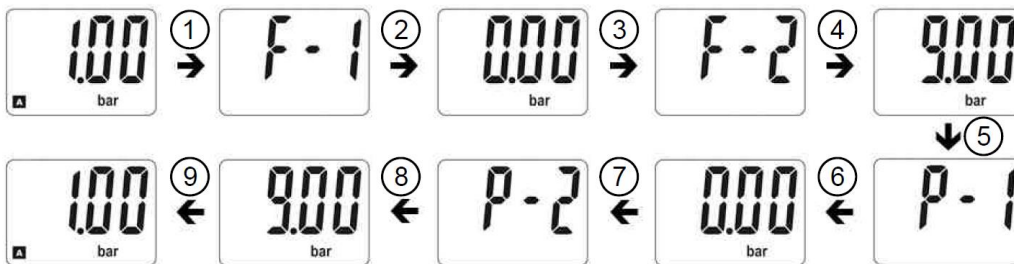
Adjustment / Programming

to unlock device



to unlock: Press the push button „DOWN“ until the the padlock symbol disappeared.

Setting of pressure range for analog input signal ($p_{\min} = F-1$, $p_{\max} = F-2$)



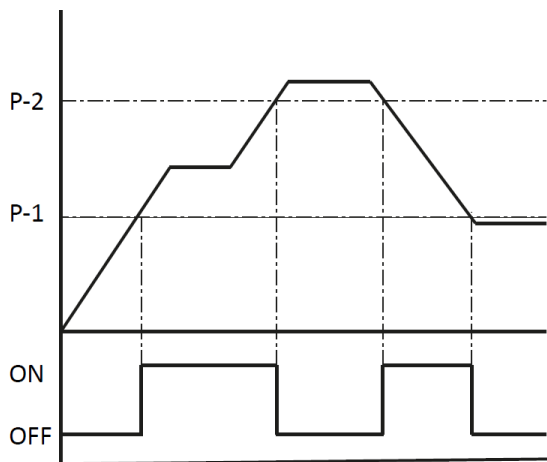
1. Unlock device and press „S“ button, F-1 appears on the display.
2. Set p_{\min} by using „UP“ and „DOWN“ button.
3. Press „S“ button to save data, F-2 appears on the display.
4. Set p_{\max} by using „UP“ and „DOWN“ button.
5. Press „S“ button to save data, P-1 appears on the display (only for devices with switch output).
6. Set p_1 by using „UP“ and „DOWN“ button.
7. Press „S“ button to save data, P-2 appears on the display.
8. Set p_2 by using „UP“ and „DOWN“ button.
9. Press „S“ button to save data.

Notes

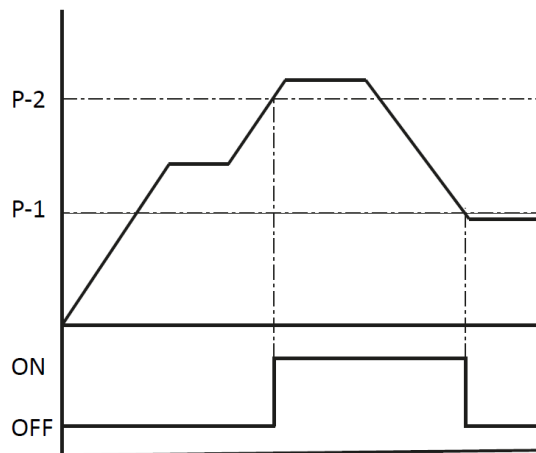
- F-1 is adjustable in a range from 0% to 90% of the rated value
- F-2 is adjustable in a range from 10% to 100% of the rated value
- $(F-2) - (F-1) \geq 10\% \text{ FS}$
- $P-1 < P-2$ Window comparator mode
- $P-1 \geq P-2$ Hysteresis mode
- $P-1 = P-2 = 0$ Out of range mode

Output functions

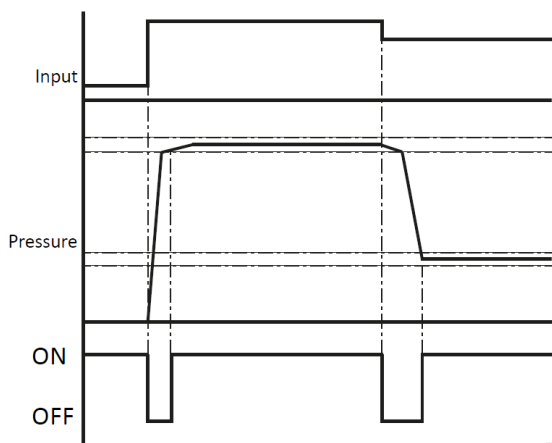
Window comparator mode



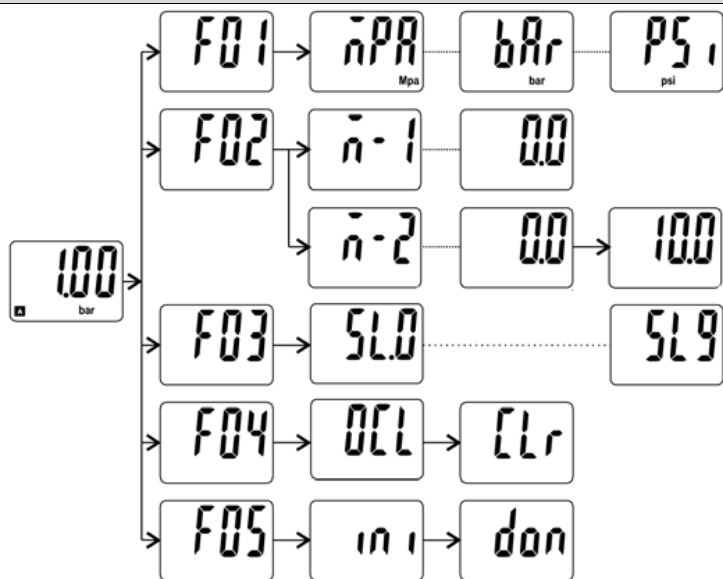
Hysteresis mode



Out of range mode



Function setting



to unlock: Press the push button „DOWN“ until the the padlock symbol disappeared.
to enter the main menu: Hold the button “S” more than 2 seconds.
to switch the menu: Use the “DOWN” and “UP” buttons.
to enter the submenu: Use button “S” again.
Save settings with hold the button “S” for more than 2 seconds.

F01	Units	Selection pressure units.
F02	Response characteristic input signal	n-1: Set the start control point for the input signal e.g.: n-1 = 1.0 if use a regulator device with control range 0.00 to 9.00 bar. 1.0 V correspond to 0.00 bar n-2: Set the start and end control point for the input signal e.g.: n-1 = 1.0 and n-2 = 7.0 if use a regulator device with control range 0.00 to 9.00 bar. 1.0 V correspond to 0.00 bar AND 7.0 V correspond to 9.00 bar
F03	Control mode	This value can be used to change / adjust the response of the controller. Can shorten the oscillating time or a reduce the "resonance" of the pressure.
F04	Zero point	Used to reset / initialize the zero point. If the ambient pressure (atmosphere) is changed it can be needed to reset them.
F05	Initialization	Resets the device to its factory state.

Error indication function

No.	Display	Content of error	Countermeasure
1	E-1	Input signal exceeds the rated value range.	Reset input signal to within the rated range.
2	E-2	Solenoid valve failure	Contact customer service for maintenance.
3	E-3	Out of range error of Zero Clear	Error operate, recheck, please operator Zero Clear within the range of 5% FS.
4	E-4	Compressed air line failure	Please check if first pressure is supplied and if EXH side and pilot exhaust are blocked.

Technical data

Model-no.	82-EPV-1-1	82-EPV-1-3	82-EPV-1-5
	82-EPV-2-1	82-EPV-2-3	82-EPV-2-5
	82-EPV-3-1	82-EPV-3-3	82-EPV-3-5
Input range (bar)	1...2	1...10	1...10
Output range (bar)	0,05...1	0,05...5	0,05...9
Input signal	0...10 V or 4...20 mA		
Input impedance	Ca. 6,5 k Ω (0...10 V) \leq 250 Ω (4...20 mA)		
Output signal (analog)	1...5 V or 4...20 mA		
Output signal (switch)	NPN or PNP (max. 30 V, 80 mA)		
Repeatability	\pm 0,5% full span		
Linearity	\pm 1% full span		
Hysteresis	0,5% full span		
Temperature characteristic	2% full span / K		
Display precision	\pm 2% full span		
Electrically connection	M12-plug, 4-pin		
Nominal voltage	24V DC \pm 10%		
Power consumption	max. 3 W		
Protection	IP65 according to EN 60529		
Weight (kg)	82-EPV-1	0,25	
	82-EPV-2	0,37	
	82-EPV-3	0,66	

Reference data of response time

Model-no.	Input signal 50% - 100%		
	82-EPV-1	82-EPV-2	82-EPV-3
without load	0,2 - 0,3 s	0,2 - 0,3 s	0,3 - 0,4 s
with load 1 liter	0,3 - 0,5 s	0,3 - 0,5 s	0,4 - 0,5 s