

Electronic pulse control unit



Electronic valve control unit
for dust filter systems

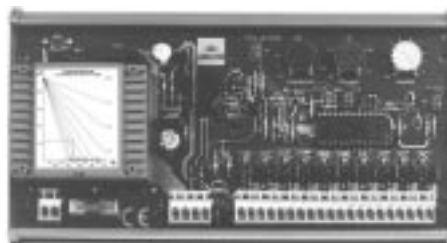


Publication 7502735.06.09.96
Catalogue index
A 17
83 720 series

Description

Electronic unit for pulse control of solenoid actuated valves in dust filter systems.

The ten 24 V outputs of the standard unit can be upgraded to a total of 30 with two expansion units. The control unit can be activated by the switching output of a differential pressure regulator. On the other hand it is possible to limit the filter dust build-up by controlling the interval with a 0 to 20 mA signal from a pressure sensor. A switch is used to select whether the control unit ends its cycle when the stop signal arrives from the differential pressure regulator, or whether the cleaning is to be interrupted immediately.



The unit conforms to the Electromagnetic Compatibility (EMC) Directive 89/336/EEC.

Features

- microprocessor-controlled
- short-circuit-proof solid-state outputs
- valves supplied with power from the electronic unit
- spring terminals
- interval can be selected with potentiometer or using 0 to 20 mA

Technical data

Power supply: (please state when ordering)	Output voltage for valves: at rated load (R=28.5 ohms):			
230 V $\pm 10\%$ 50 to 60 Hz, 115 V $\pm 10\%$ 50 to 60 Hz	23 V to 29 V DC			
24 V DC – 5% to 25% filtered, Residual ripple < 1 V _{pp}	Power supply – 2.5 V DC			
24 V DC – 10% to 15% unfiltered	23 to 34 V DC			
Power consumption of standard and two expansion units and valves (R=28.5 ohms)	44 VA AC models 20 W DC model			
Rated power/output:	maximum of 20 W			
Output protection:	current limited and output switched off when short-circuit current reached			
Pulse duration:	30 to 1000 ms			
Interval:	1 to 240 s			
Load resistance of the analog input:	600 ohms			
Load on the ext. contact for START/STOP:	maximum of 50 V, 10 mA			
Ambient temperature:	–20 to +60 °C			
EMC Emission:	to EN 50081-1:1992			
EMC Immunity:	to EN 50082-1:1992			
Mains fuses:	200 mA slow-blow/230 V AC, 400 mA slow-blow/115 V AC, 1.6 A quick-acting/24 V DC			
Connection of expansion unit to standard unit:	via 10-way ribbon cable			
Name	Type	Protection class	Dimension diagram	Cat. no.
Standard unit	Standard rail mounting	IP 00	01	83 720 00.0000.XXXXX
Standard unit	Protective housing	IP 65	02	83 721 00.0000.XXXXX
Standard unit	Printed circuit board	IP 00	03	83 722 00.0000.XXXXX
Expansion unit	Standard rail mounting	IP 00	01	83 725 00.0000.00000
Expansion unit	Printed circuit board	IP 00	03	83 727 00.0000.00000

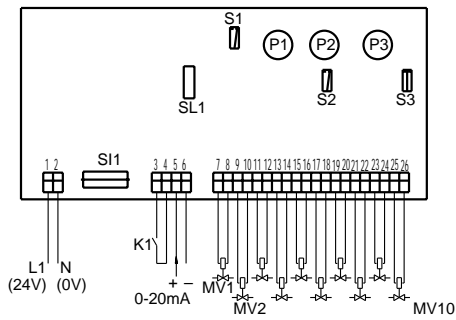
IMI Norgren Buschjost GmbH + Co. KG

PO Box 10 02 52-53
D-32502 Bad Oeynhausen

Tel +49 (0) 57 31 79 10
Fax +49 (0) 57 31 79 11 79

<http://www.buschjost.com>
e-mail:mail@buschjost.de

Wiring



Terminals

- 1 Live (24 V for DC model)
- 2 Neutral (0 V for DC model)
- 3, 4 Terminals for external floating contact, START/STOP input, K1 closed: cleaning performed
- 5, 6 0 to 20 mA analog input for external control of interval
- 7 to 26 Terminals for solenoid valves 1 to 10
- NB** Connecting the power supply for the DC model the wrong round will blow fuse S1

Controls

- P1 Potentiometer for adjusting pulse duration
- P2 Potentiometer for adjusting interval
- P3 Potentiometer for number of outputs (valves) to be controlled
- S3: N 1 to 10
- S3: E1 11 to 20
- S3: E2 21 to 30
- S1 Selector switch for START/STOP function
 - "Immediate": cleaning interrupted immediately K1 opened
 - "Cycle": when K1 opened, cleaning continued until last valve set with P3

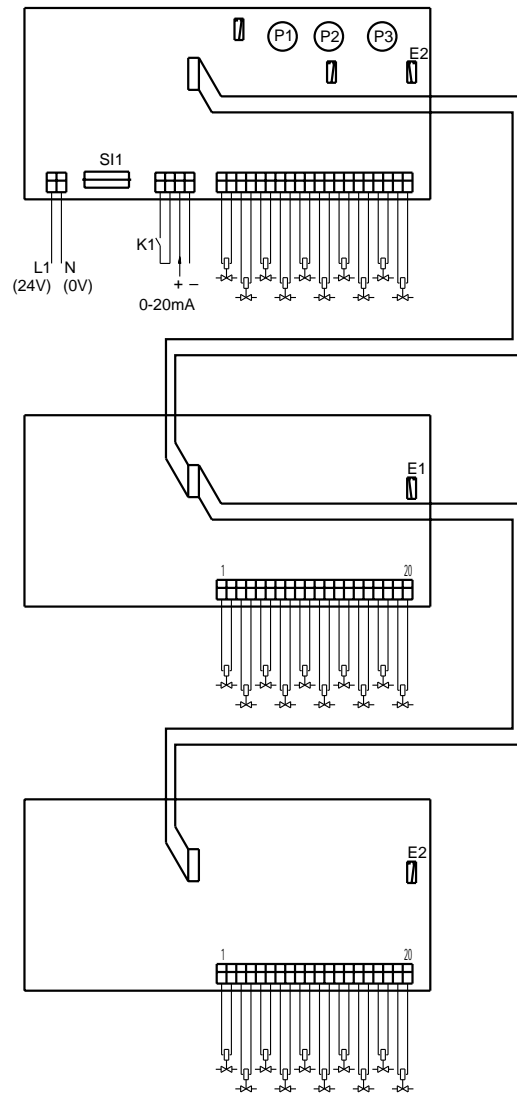
If S1 is in the middle position when the operating voltage is switched on, the control system shortens the interval to about 50 to 1050 ms. This mode may only be activated briefly for test purposes. Normal operation can be resumed moving the switch to one of its other positions, and then switching the operating voltage off briefly.

- S2 Selector switch for adjusting interval
 - "int.": with potentiometer P2
 - "ext." with 0 to 20 mA signal
- S3 Selector switch for operation with expansion units
 - "N" (not connected):**
 - Operation **without** any expansion units
 - Operation of the standard unit with **one** expansion unit:
 - Standard unit on "E1" setting
 - Expansion unit on "E1" setting
 - Operation of the standard unit with **two** expansion units:
 - Standard unit on "E2" setting
 - Expansion unit 1 on "E1" setting for outputs 11 to 20
 - Expansion unit 2 on "E2" setting for outputs 21 to 30

Description of operation

When the power is switched on, outputs 1 to 10 are activated (K1 closed) cyclically according to the pulse duration and interval set. The number of outputs to be controlled can be preset with potentiometer P3. The interval can also be controlled via the 0 to 20 mA input. The potentiometer setting affects the inter-

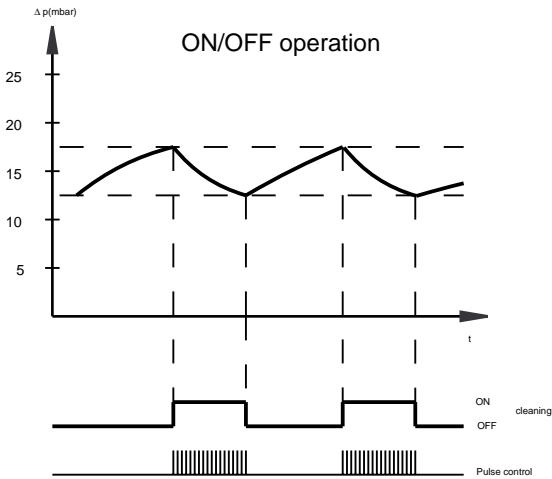
Operation with expansion units



- S11 Mains fuse, 5x20mm
Danger!
Disconnect unit from the power before changing the fuse!
- SL1 10-way male connector; the connecting ribbon cable with crimped female connector is pushed onto this
- NB** Standard unit and expansion unit must be mounted right next to each other. An 0.5 metre long ribbon cable fitted with 3 female connectors is supplied with each expansion unit.

val in this case (see Fig: „Adjusting operating points“). The operating sequence can be interrupted with the aid of the external contact K1 and continued later. 2 modes of operation are therefore possible.

Filter dust build-up



1. ON/OFF operation using the switching output of a differential pressure regulator

Connection:

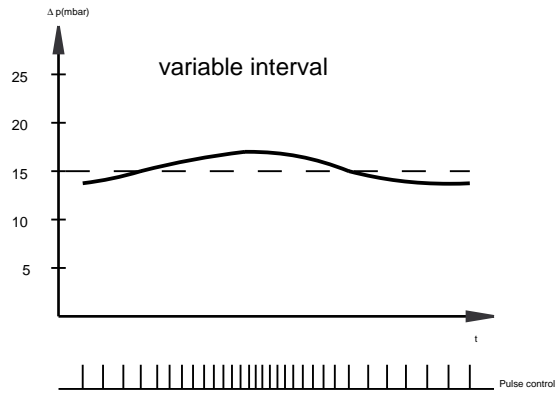
Connect terminals 3 and 4 to regulator output (eg terminals 4 and 5 of differential pressure regulator 82793xx)

Setting:

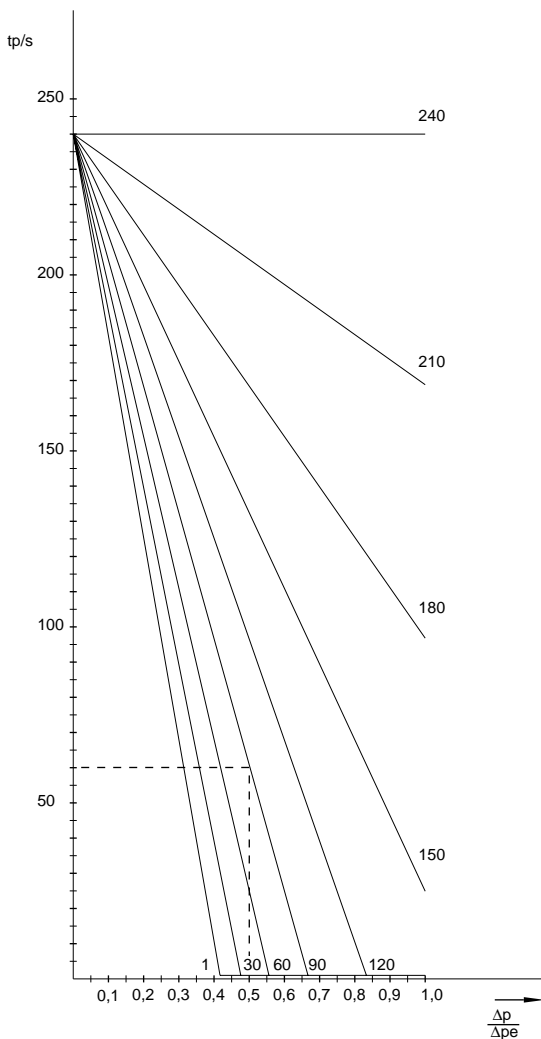
Selector switch S2 on „int.“

If the differential pressure, which represents a measure of the amount of dust that has built up in the filter, has reached an

Filter dust build-up



upper limit that can be adjusted on the regulator, a relay contact in the regulator is closed and the pulse control started. This results in the filter being cleaned so that the differential pressure drops. The pulse control is switched off when a lower limit is reached. Switch S1 can be used to select whether, after switching on, this cleaning is continued until the last valve is reached, or is stopped immediately.



2. Changing the interval as a function of the filter dust build-up

Connection:

Connect terminals 5 and 6 to pressure signal (0 to 20 mA) (eg terminals 12 and 13 of differential pressure regulator 82 793 50.0000.230 50). Short circuit terminals 3 and 4 (cleaning ON).

Setting:

Selector switch S2 on „ext.“

Typical application:

The differential pressure in the filter is to be about 15 mbar. This can be achieved with an interval of 60 s. A Buschjost differential pressure regulator with a range transmission value p_e of 30 mbar and 0 to 20 mA analog output (20 mA corresponds to 30 mbar) is used. With

$$\begin{aligned} p/p_e &= 15 \text{ mbar} / 30 \text{ mbar} = \\ &0.5 \text{ on the x-axis, the pulse control characteristic} \\ &\text{shown on the left gives 60 s on the y-axis.} \end{aligned}$$

This point (0.5/60) lies on a straight line labelled „90 s“. Potentiometer P 2 is therefore to be set to 90 s. The operating point of the regulation will now move along the straight line. If the dust build-up and hence the differential pressure were to rise, eg to 20 mbar ($p/p_e = 0.66$ on diagram), the interval would shorten to a minimum of 1 s. Conversely, the interval would lengthen to 120 s if the pressure difference dropped to 10 mbar.

