

- Electronic control units developed to control proportional valves PRM2
- Nominal size 04, 06,10 of proportional valves
- Compact units mounted on a strip 35/7.5 to DIN 50 022
- Enclosure type - IP20



EL3E-24A

EL3E-24AB

Functional Description

The external model of the analogue electronics EL3E-12 and EL3E-24 have been developed for controlling the proportional directional valves of the series PRM2 with one solenoid (EL3E-xxA) or two solenoids (EL3E-xxAB). The electronics performs the function of an amplifier and former of the input control signals with the defined transfer characteristic. The main advantages of the external electronics model are the possibility of its mounting, together with the other electronic components, on a strip 35,7x7, 5mm to DIN 50 022 and situating into a determined space, the reduction of the

necessary mounting space thanks to the absence of the box with the integrated electronics and protection of the electronics against undesirable vibrations.

The easy accessibility of the electronics setting elements (trims) enables a more operative changing of the adjustable parameters of the controlled proportional directional valves.

The electric design of the external electronics is identical with the design of the integrated electronics situated directly on the solenoid coil. The arrangement of the setting elements and the electric connection is adapted

Ordering Code

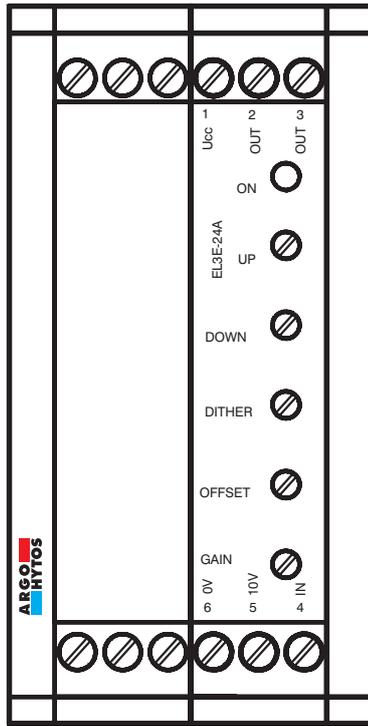
EL3E-	<input type="checkbox"/>	<input type="checkbox"/>	
External analogue electronics			
Rated supply voltage			Type
12V	12		A External electronics for proportional directional valves with one solenoid
24V	24		AB External electronics for proportional directional valves with two solenoid

Technical Parameters

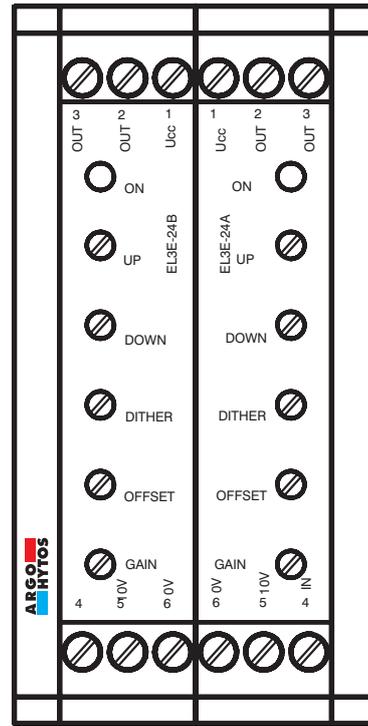
Technical parameters EL3E-12	Specification
Nominal supply voltage	12 V DC
Range of the supply voltage	11,2...14,7 V DC
Maximum output current	2,4 A for $R < 4 \Omega$
Input power	max. 25 W
Stabilized voltage for potentiometer control	5 V DC / 100 mA
Control signal type	0...20 mA 4...20 mA +/- 5 V 0...+5 V $U_{CC}/2 \pm 5 V$
Setting range of ramp functions	0,05...3 s
Dither frequency	60 / 90 Hz
Dither amplitude	0...30 %
Enclosure type	IP 20
Operating ambient temperature	-20 °C...+50 °C
External dimensions	40 x 79 x 85,5 mm
Attachment	On a strip 35,7x7,5 mm to DIN 50 022
Weight	125 g
Technical parameters EL3E- 24	Specification
Nominal supply voltage	24 V DC
Range of the supply voltage	20...30 V DC
Maximum output current	1,5 A for $R < 10 \Omega$
Input power	max. 25 W
Stabilized voltage for potentiometer control	10 V DC / 100 mA
Control signal type	0...20 mA 4...20 mA +/-10 V 0...+10 V 0...+5 V $U_{CC}/2 \pm 10 V$
Setting range of ramp functions	0,05...3 s
Dither frequency	60 / 90 Hz
Dither amplitude	0...30 %
Enclosure type	IP 20
Operating ambient temperature	-20 °C...+50 °C
External dimensions	40 x 79 x 85,5 mm
Attachment	On a strip 35,7x7,5 mm to DIN 50 022
Weight	125 g

Design Models

Front panel
of the one-solenoid version



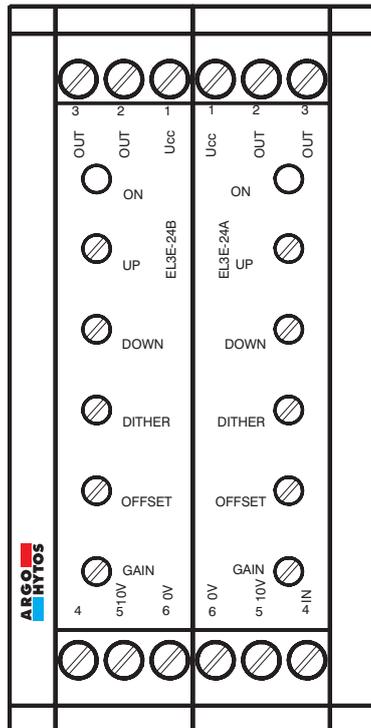
Front panel
of the two-solenoid version



The external electronics EL3E is built into a standard plastic box of dimensions 85,5x79x40mm enabling the grouping on a strip 35,7x7,5 mm and providing the IP 20 electric enclosure. Situated on the front panel are the trims for setting the individual parameters of the electronics and a control LED signaling the presence of the power supply as well as the connection of the electronics output to the solenoid coil of the directional valve controlled.

Two models of the electronics with one or two solenoids are available. The models differ in the inner electric circuitry and in arrangement of the setting elements situated on the front panel as well as in wiring the terminal strips.

Electronics for Controlling the Directional Valves with Two Solenoids



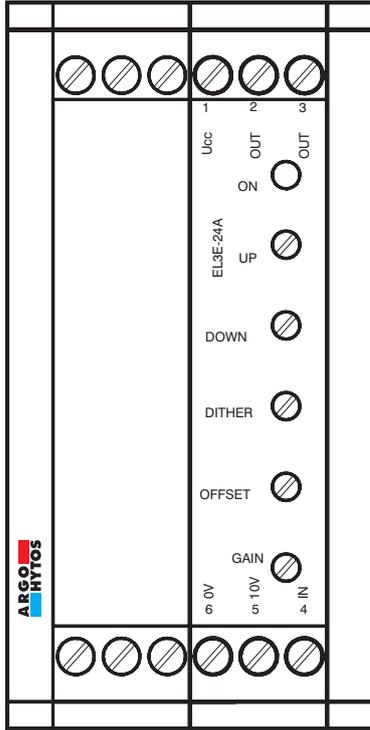
Wiring of connection clamps

Clamp	Description	
	Card MASTER EL3E-XXA	Card SLAVE EL3E-XXB
1	+U _{CC} 24 V (12 V)*	+U _{CC} 24 V (12 V)*
2	Output to the solenoid coil	Output to the solenoid coil
3		
4	Control signal input	-
5	Output of the stabilized voltage +10V/100mA	Output of the stabilized voltage +10V/100mA
	(+5V/100mA)*	(+5V/100mA)*
6	0 V	0 V

*Values in parenthesis are valid for the supply voltage 12 V

The electronics for directional valves with two solenoids consists of two identical electronic cards mutually interconnected. The card designated at its specification end with character A (EL3E-xxA) works as the so-called MASTER; the other card designated with character B (EL3E-xxB) works as the so-called SLAVE. The distinction of the cards is necessary because of the different setting of the changeover switches on both cards serving the configuration of the selected operational parameters, such as the type of the control signal and the dither frequency.

Electronic for Controlling the Proportional Valves with One Solenoid



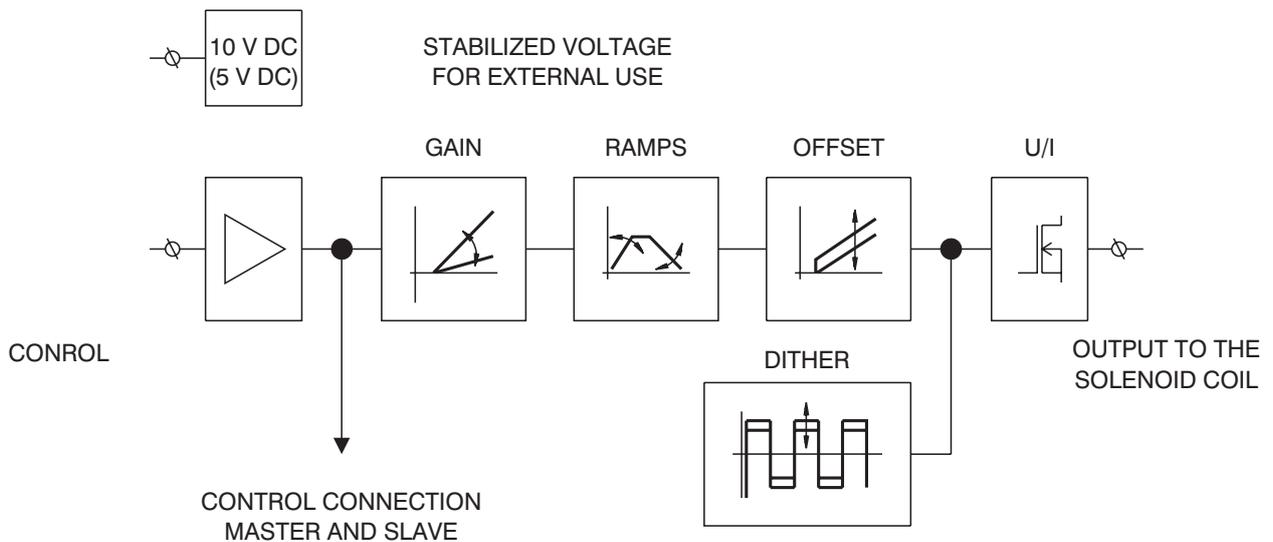
Wiring of connection clamps

Clamp	Description
	Card MASTER EL3E-XXA
1	+U _{CC} 24 V (12 V)*
2	Output to the solenoid coil
3	
4	Control signal input
5	Output of the stabilized voltage +10V/100mA (+5V/100mA)*
6	0 V

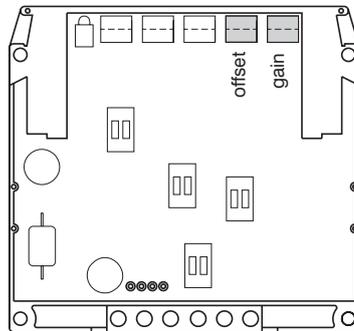
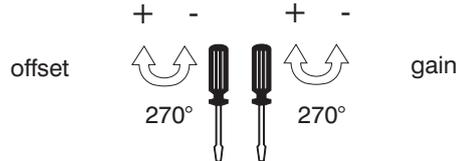
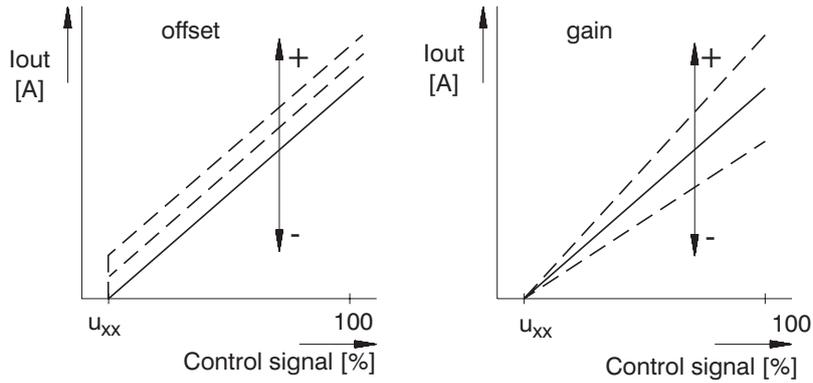
*Values in parenthesis are valid for the supply voltage 12 V

The electronics for controlling the proportional directional valves with one solenoid is built into a box with dimensions corresponding with the previous configuration, but only a part of the electronic is fitted with components. The electric wiring of the clamps is identical with the arrangement of the MASTER card in the previous two-magnet configuration.

Block Diagram

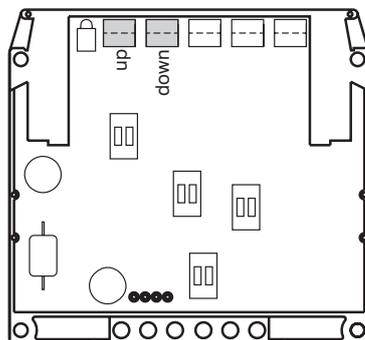
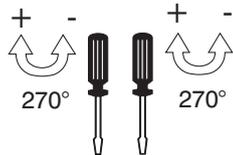
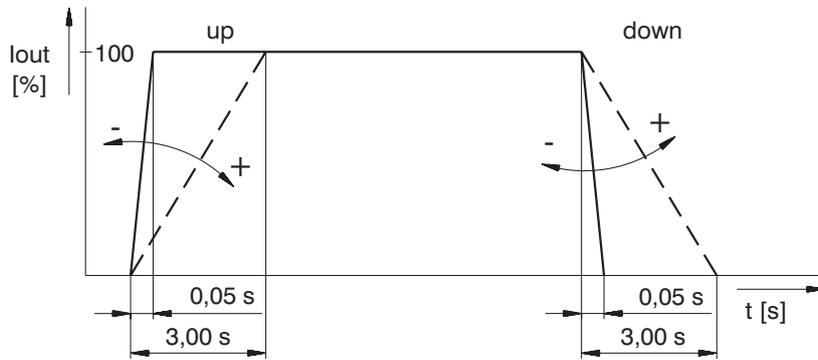


Adjustment of Offset, Gain Parameters



Nominal supply voltage of electronics [V]	Area insensible to control signal u_{xx} [%]
12	1 ... 3
24	0.5 ... 2

Ramp Adjustment (up,down)



Dither Adjustment

0 %

15 %

30 %

90 Hz

60 Hz - MASTER

60 Hz - SLAVE

Frequency - dither switch

Limit Coil Exciting Current of Proportional Directional Valves ARGO-HYTOS

Valve nominal size	Nominal supply voltage			
	12 V		24 V	
	Coil type	I_{lim} [A]*	Coil type	I_{lim} [A]*
NG04	16186100	1,7	16186200	0,8
NG06	16187500	1,6	16186800	1,0
NG10	16195800	1,9	16196200	1,1

*for load factor 100 %. Values must not exceed 5 %.

Table of the Switch Configuration for the Control Signal Choices

		PRM2-062				PRM2-063	
		0 ... 5 V	0 ... 10 V (0 ... 5 V)*	0 ... 20 mA	4 ... 20 mA	$U_{cc}/2$ ± 10 V (± 5 V)*	± 10 V (± 5 V)*
MASTER M	SW1						
	SW2						
	SW3						
	SW4	90 Hz		60 Hz			
SLAVE S	SW1						
	SW2						
	SW3						
	SW4	90 Hz		60 Hz			

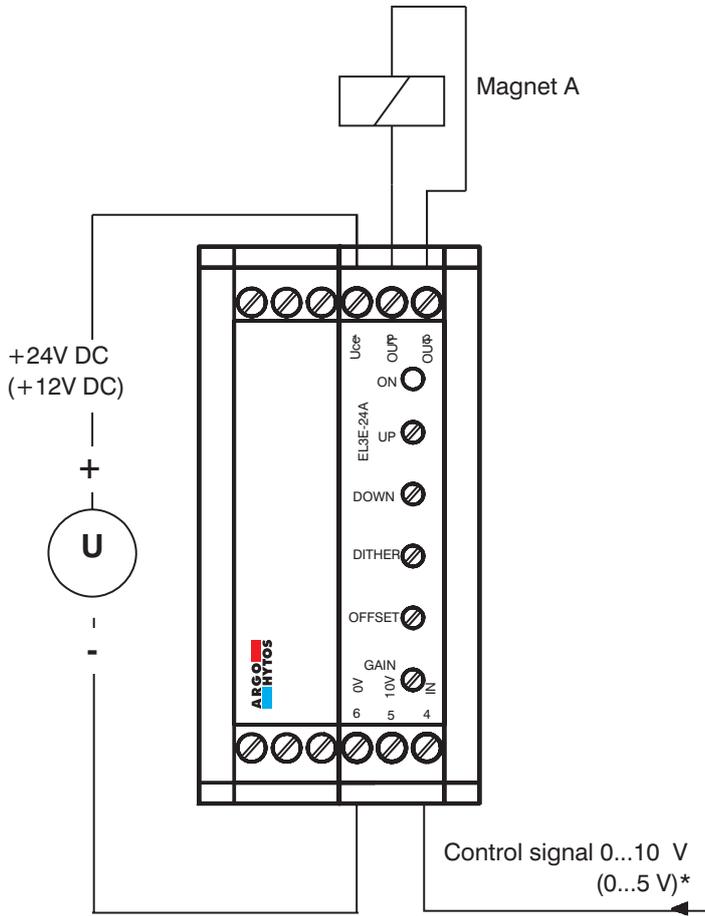
Designation of the basic manufacture setting.

*Values in parenthesis are valid for the supply voltage 12 V

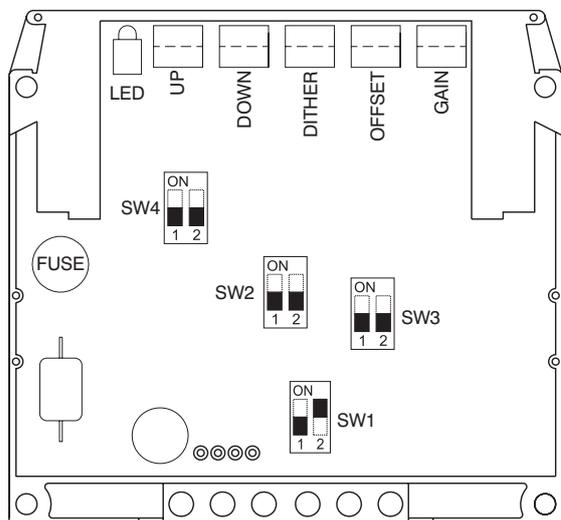
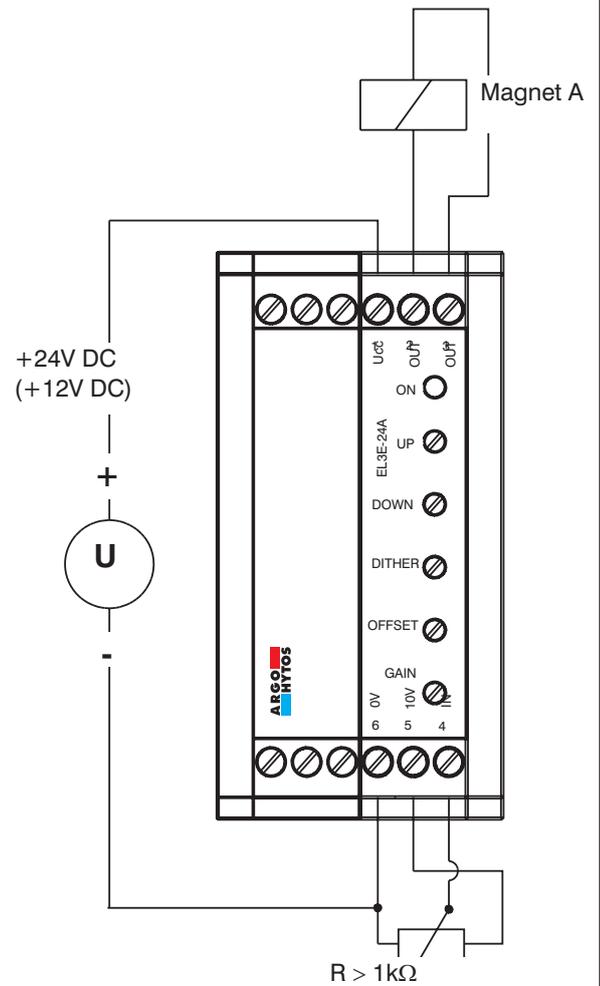
Configuration of Changeover Switches on the Electronics Card According to the Proportional Valve Model and the Control Signal Type Used

The null potential of the control signal must be the same as the null potential of the supply voltage

Proportional directional valve with one solenoid, control signal 0...10V (0...5V)* or controlling by an external potentiometer $R > 1k\Omega$

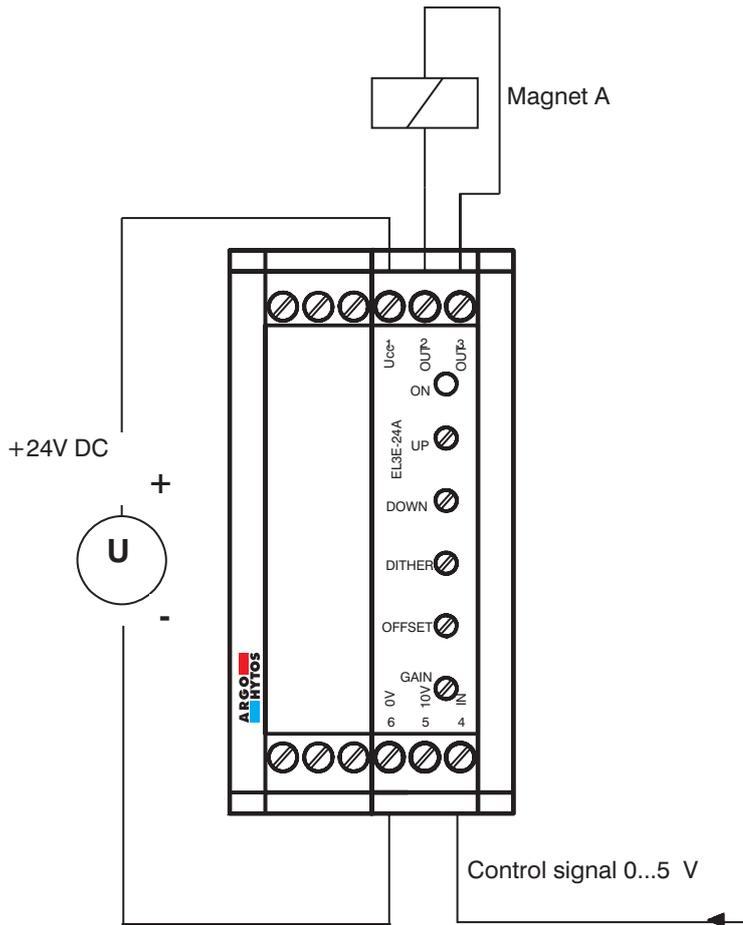


MASTER card for solenoid A



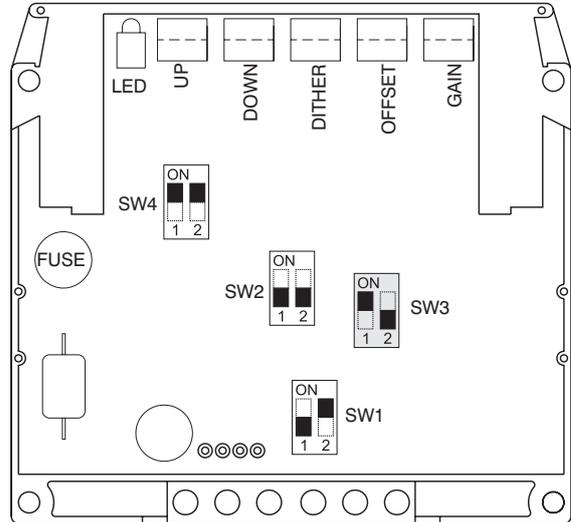
- SW1 - Control signal choice
- SW2 - Control signal choice
- SW3 - Control signal choice
- SW4 - Dither frequency

Proportional directional valve with one solenoid, control signal 0..5V (external)

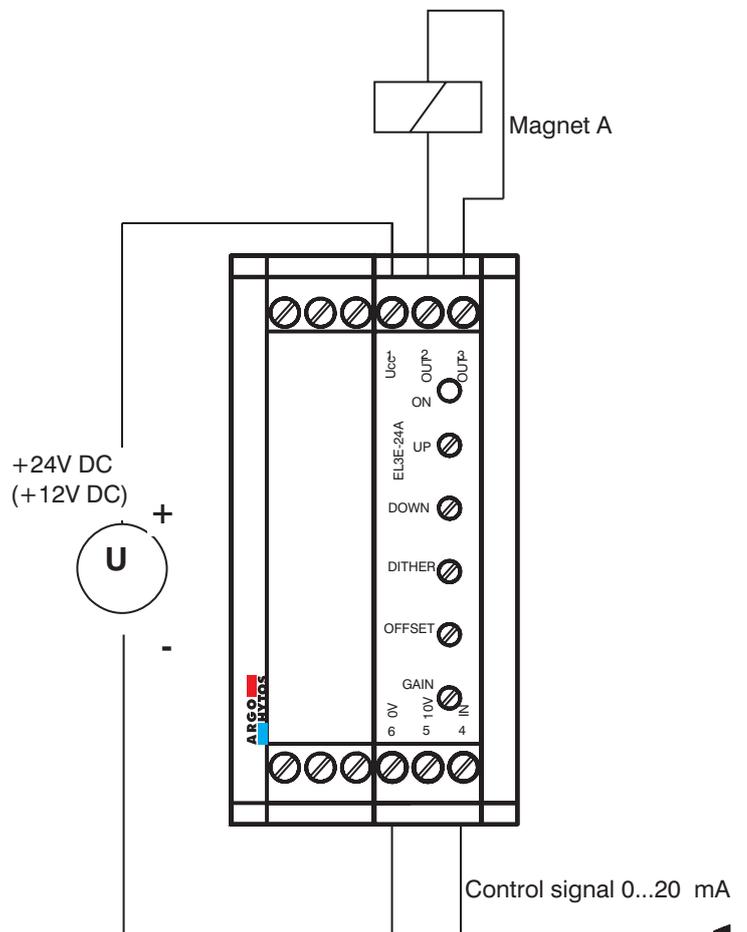


MASTER card for solenoid A

- SW1 - Control signal choice
- SW2 - Control signal choice
- SW3 - Control signal choice
- SW4 - Dither frequency

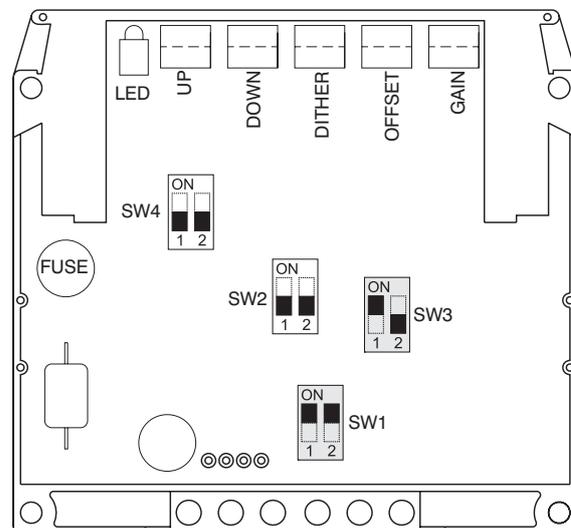


Proportional directional valve with one solenoid, control signal 0...20mA

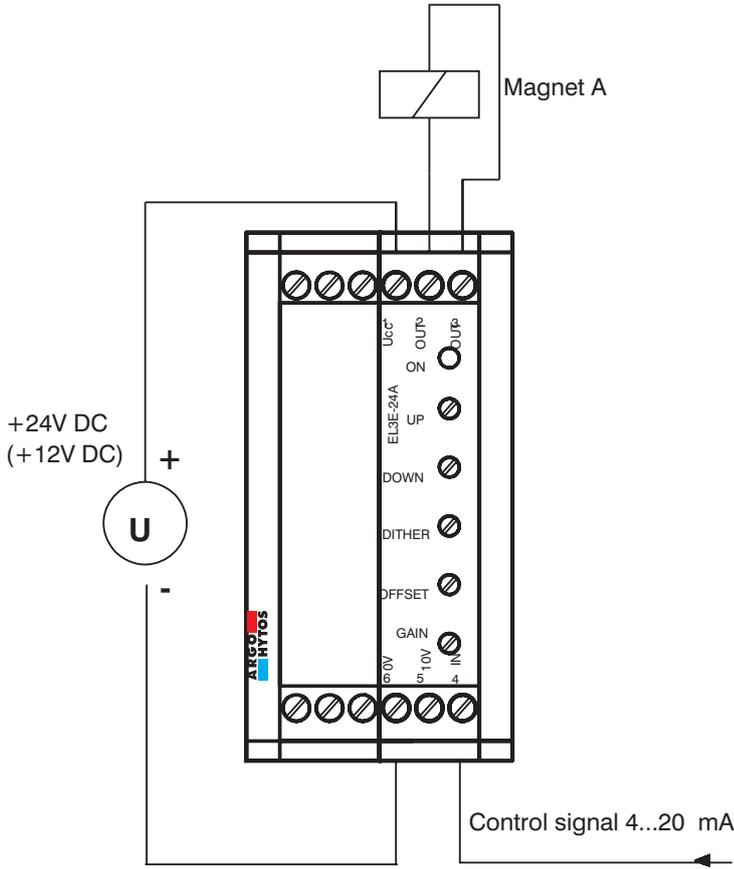


MASTER card for solenoid A

- SW1 - Control signal choice
- SW2 - Control signal choice
- SW3 - Control signal choice
- SW4 - Dither frequency

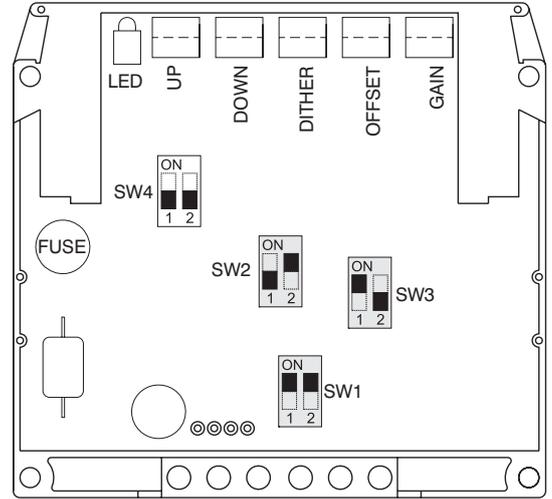


Proportional directional valve with one solenoid, control signal 4...20mA

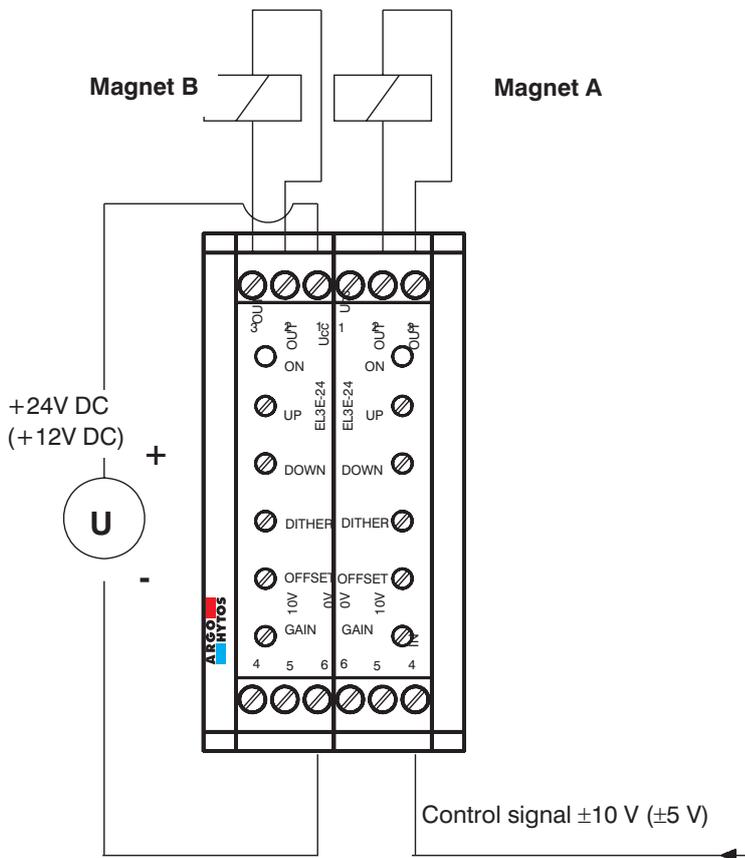


MASTER card for solenoid A

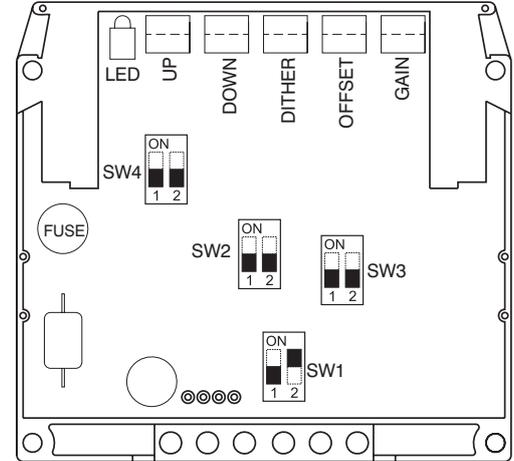
- SW1 - Control signal choice
- SW2 - Control signal choice
- SW3 - Control signal choice
- SW4 - Dither frequency



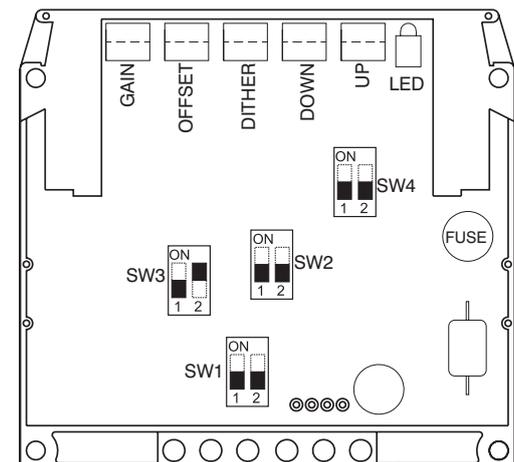
Proportional directional valve with two solenoids, control signal ±10V (±5V)*



MASTER card for solenoid A

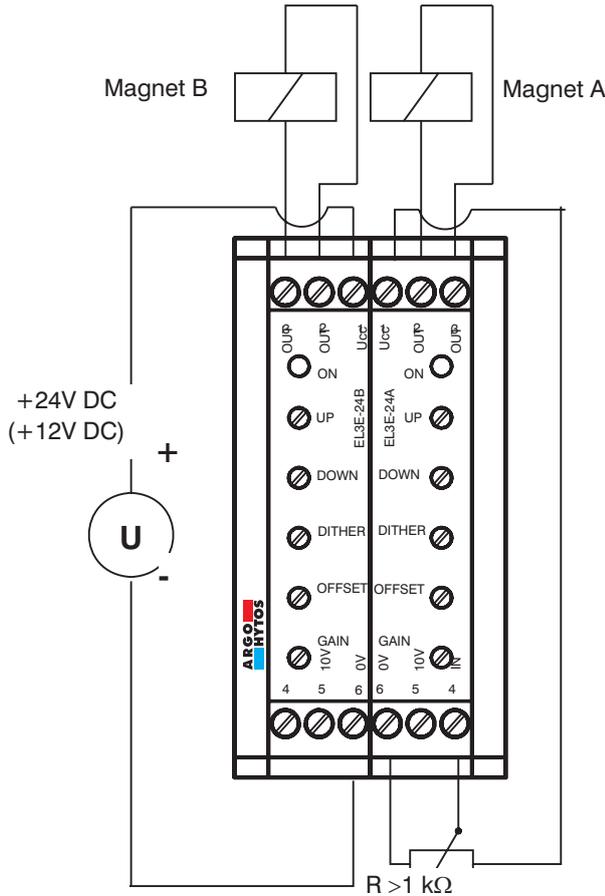


SLAVE card for solenoid B

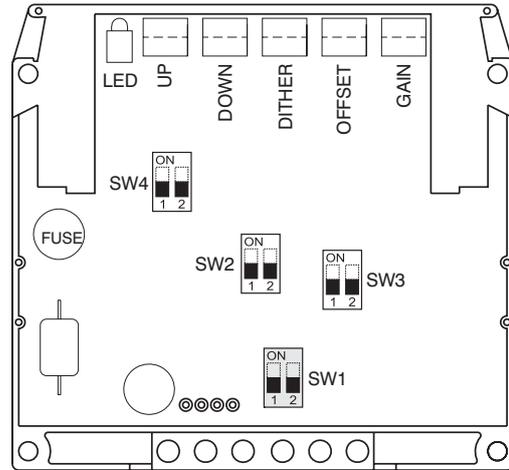


- SW1 - Control signal choice
- SW2 - Control signal choice
- SW3 - Control signal choice
- SW4 - Dither frequency

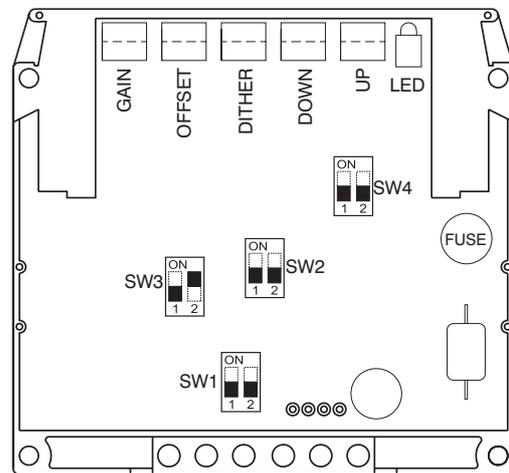
Proportional directional valve with two solenoids, control signal $U_{cc}/2 \pm 10V$ ($U_{cc}/2 \pm 5V$)* with an external potentiometer $R > 1k\Omega$



MASTER card for solenoid A



SLAVE card for solenoid B



- SW1 - Control signal choice
- SW2 - Control signal choice
- SW3 - Control signal choice
- SW4 - Dither frequency

*Values in parenthesis are valid for the supply voltage 12 V

Caution!

- The packing foil is recyclable.
- The technical information regarding the product presented in this catalogue is for descriptive purposes only. It should not be construed in any case as a guaranteed representation of the product properties in the sense of the law.

ARGO-HYTOS s.r.o. CZ - 543 15 Vrchlaví
 Tel.: +420-499-403111, Fax: +420-499-403421
 E-mail: sales.cz@argo-hytos.com
 www.argo-hytos.com