

EL3E

Rail mounting acc. to DIN 50022

EL3E-24A



EL3E-24AB

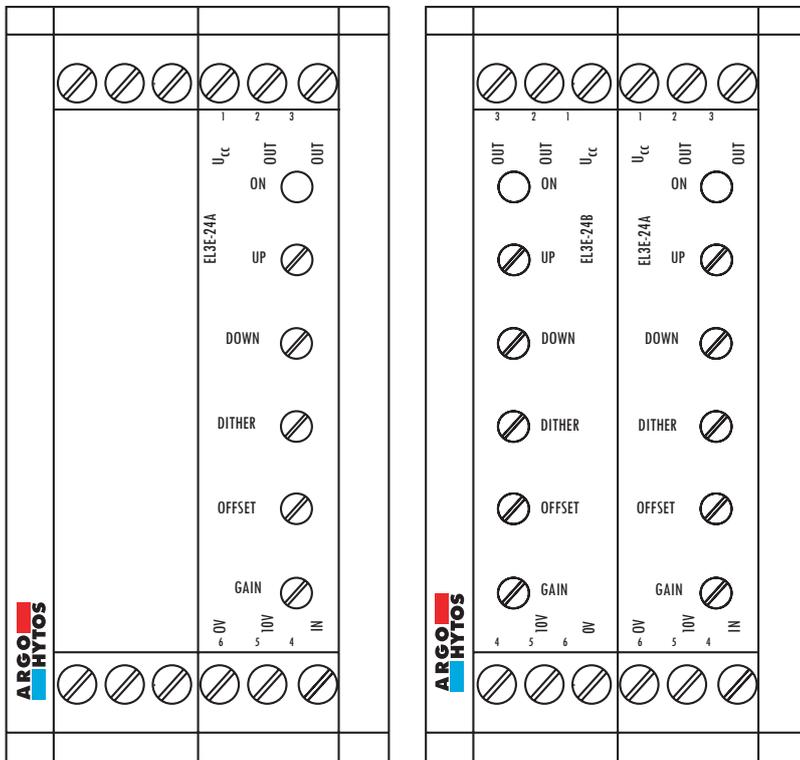
Technical Features

- › Analog electronic control unit for open-loop solenoid PRM2-04(06) and PRM6-10 proportional valves, modular
- › Easy access of the electronics setting elements (trims) enables adjustment of the parameters during operation
- › The electric design of the external electronics is identical with the design of the integrated electronics situated directly on the valve solenoid coil
- › Smaller power input than the digital counterpart
- › Rail mounting 35/7.5 acc to DIN 50022

Functional Description

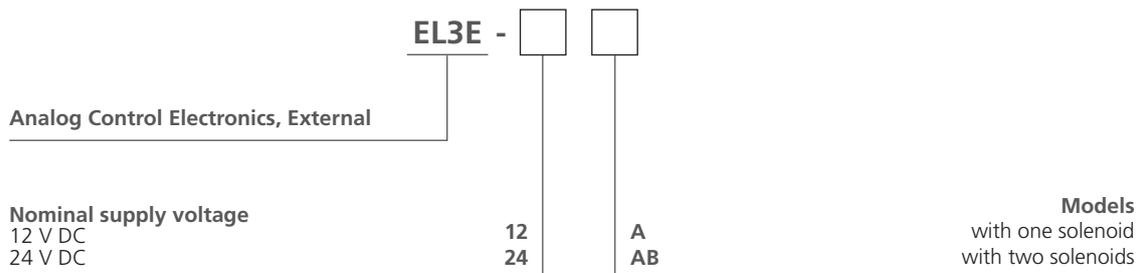
The external models of the analog electronics EL3E-12 and EL3E-24 have been developed to control the proportional directional valves of the series PRM2 with one solenoid (EL3E-xxA) or two solenoids (EL3E-xxAB). The electronics performs the function of an amplifier and shaper of the input control signals with the defined transfer characteristic. The main advantages of the external electronics model are the possibility to mount it together with the other electronic components on a DIN 50022 35x7.5mm strip. Hence, space requirement is deterministic which enhances planing and reduces mounting space. No separate box is required further improving protection against undesired vibrations.

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 85.5x79x40 mm supporting the grouping on a 35x7.5 mm strip. 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 the in wiring of the terminal strips.

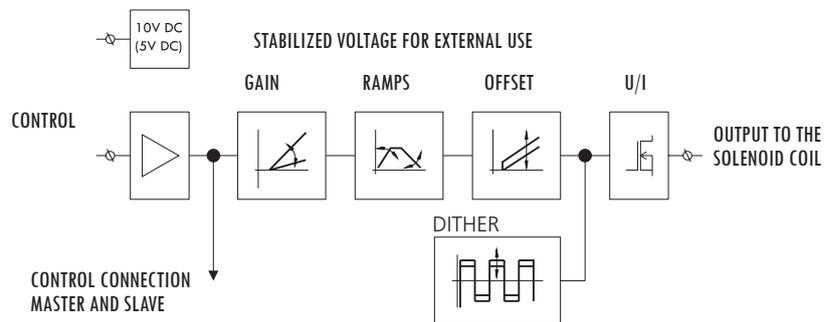
Ordering Code



Technical Data

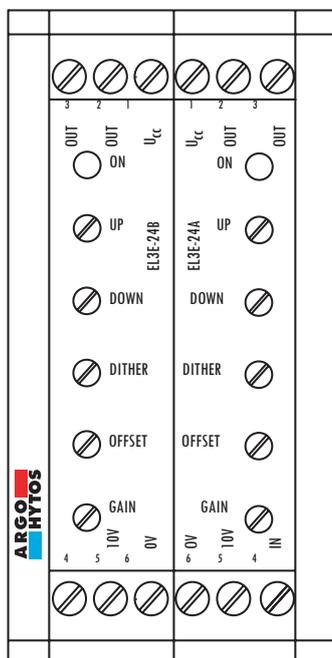
Solenoid data					
Nominal supply voltage	V DC	12		24	
Operating voltage	V DC	11.2 ... 14.7		20 ... 30	
Max. output current	A	2.4 (for R < 4 Ω)		1.5 (for R < 10 Ω)	
Max. input power	W	25			
Stabilized voltage for potentiometer control		5 V DC / 100 mA		10 V DC / 100 mA	
Control signal type		0... 20 mA, 4... 20 mA, ±5 V, 0... +5 V, $U_{CC}/2 \pm 5 V$		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	s	0.05 ... 3			
PWM / Dither frequency	Hz	60 / 90			
Dither amplitude	%	0 ... 30			
Linearity	%	3			
Operating ambient temperature	°C (°F)	-20... +50 (-4... +122)			
Enclosure type of the solenoid to EN 60529		IP20			
Mass	kg (lbs)	0.25 (0.55)			
Max. coil excitation current of proportional directional valves	PRM2-04 PRM2-06 PRM6-10	A	(Coil 16186100) ... 1.7 (Coil 16187500) ... 1.6 (Coil 16195800) ... 1.9	(Coil 16186200) ... 0.8 (Coil 16186800) ... 1.0 (Coil 16196200) ... 1.1	

Block Diagram



Settings and Range

Two-solenoid version



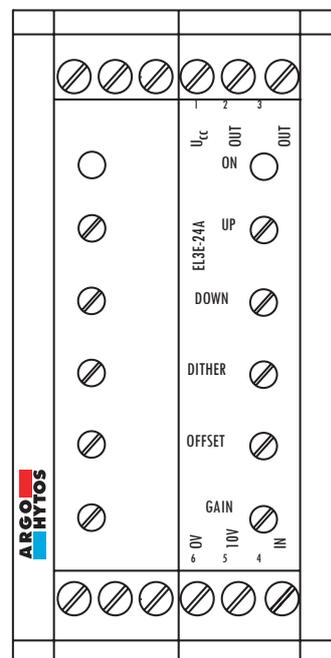
Wiring of connection clamps

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

One-solenoid version



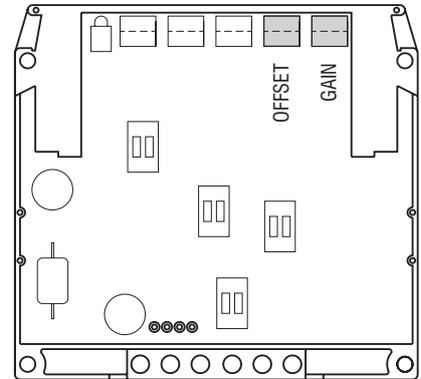
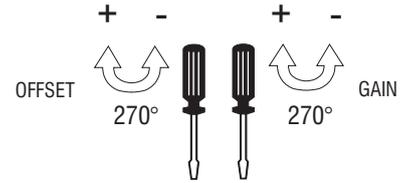
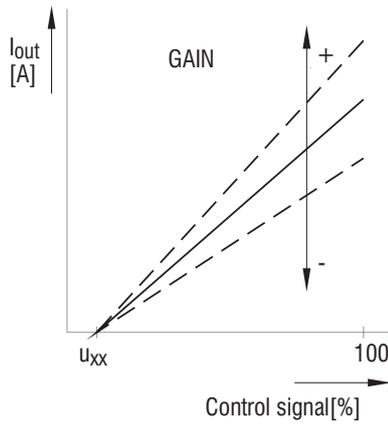
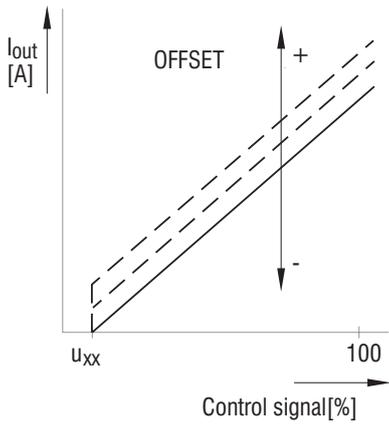
Wiring of connection clamps

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

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

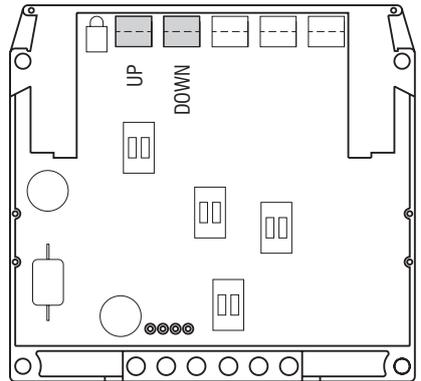
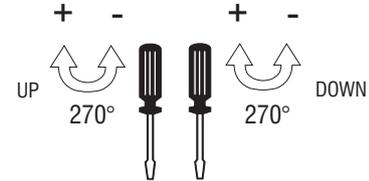
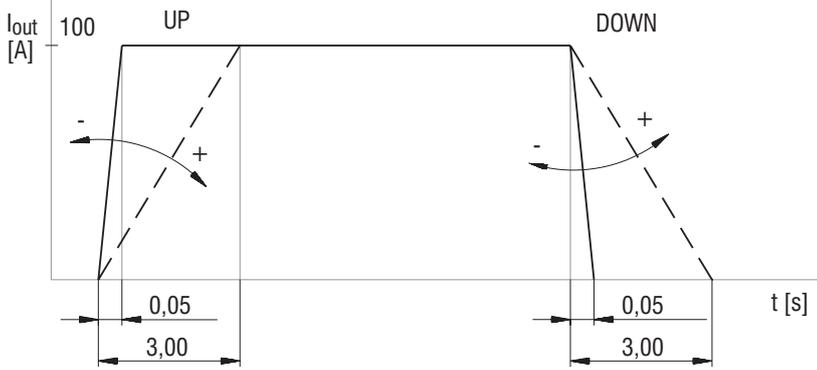
The electronics for controlling the proportional directional valves with one solenoid is built into a box with dimensions corresponding to the previous configuration, but only a part of the electronic is fitted with components. The electric wiring of the clamps is identical with the arrangement of the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

Offset, gain - parameters adjustment

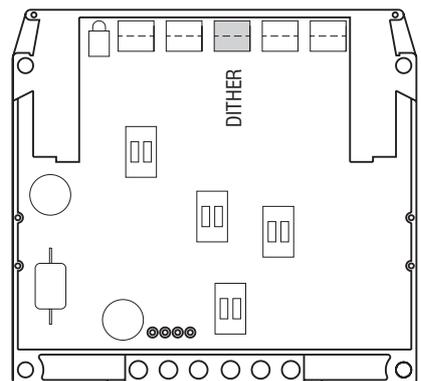
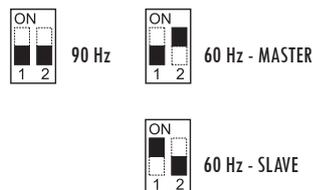
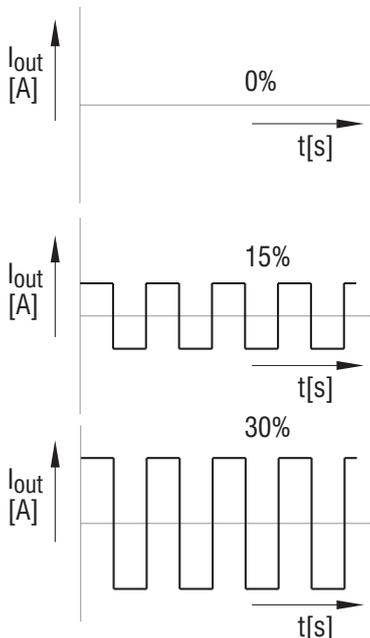


Nominal supply voltage of electronics [V]	Dead band u_{xx} [%]
12	1... 3
24	0.5... 2

Ramp Adjustment (up, down)



Dither Adjustment



Configuration of Changeover Switches on the Electronics Card

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	$U_{CC}/2 \pm 10 V (\pm 5 V)^*$	$\pm 10 V (\pm 5 V)^*$
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

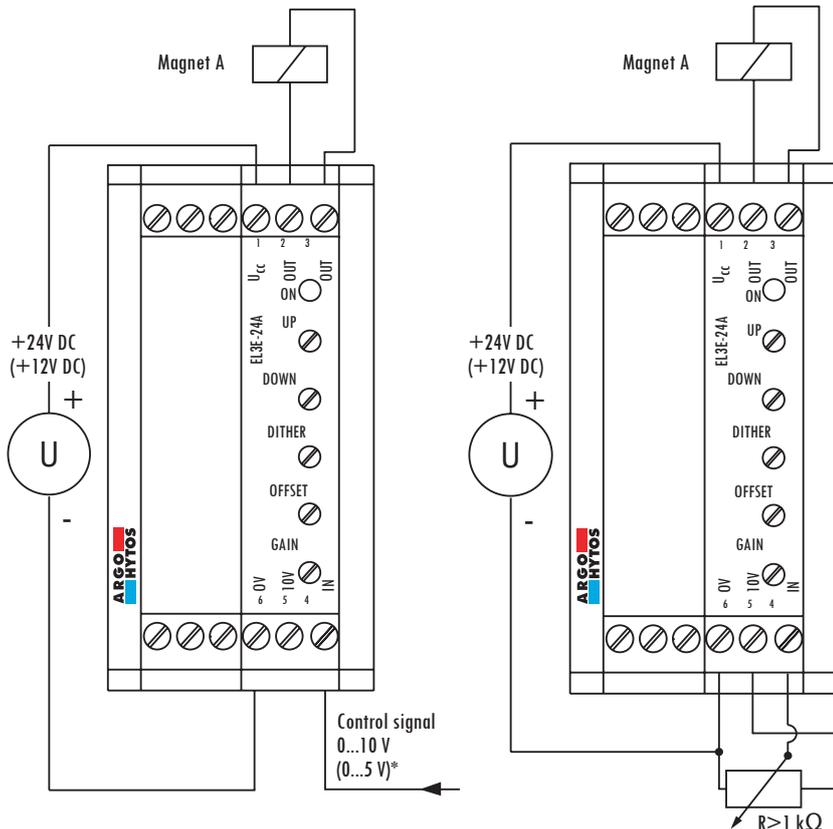


Installation note:

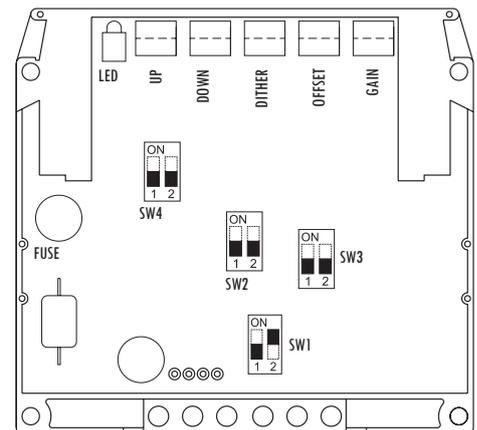
The null potential of the control signal must be the same as the null potential of the supply voltage.

Proportional directional valve with one solenoid

control signal 0... 10 V (0... 5 V)* or controlling by an external potentiometer $R > 1k\Omega$



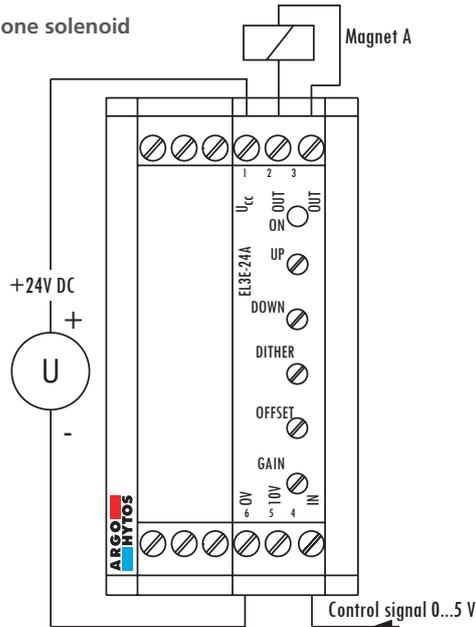
MASTER card for solenoid A



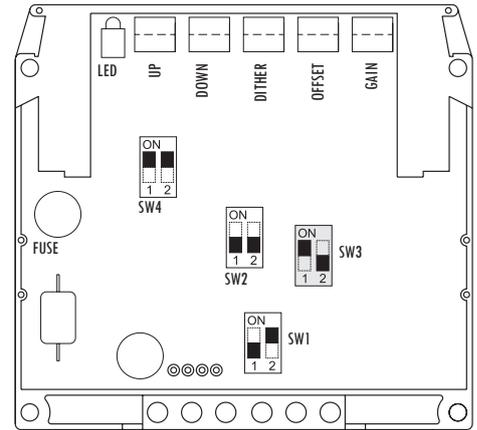
SW1 - control signal choice
 SW2 - control signal choice
 SW3 - control signal choice
 SW4 - dither frequency

Configuration of Changeover Switches on the Electronics Card

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

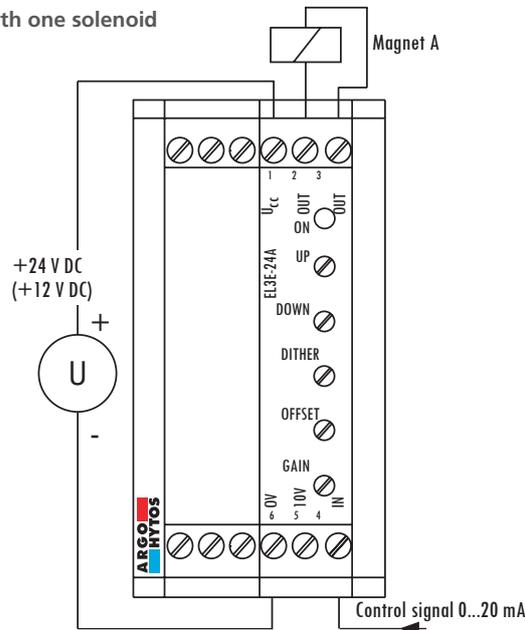


MASTER card for solenoid A

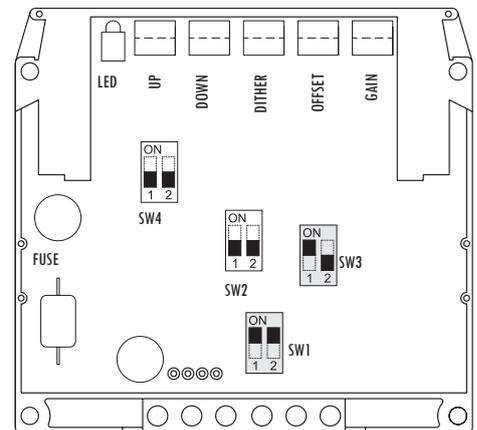


SW1 - control signal choice
SW2 - control signal choice
SW3 - control signal choice
SW4 - dither frequency

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

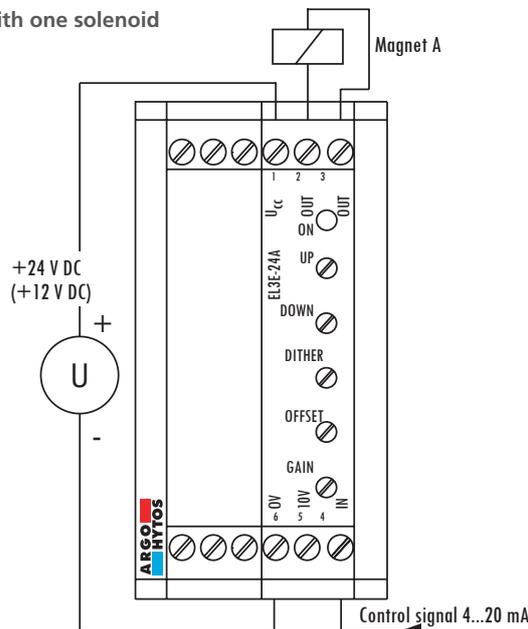


MASTER card for solenoid A

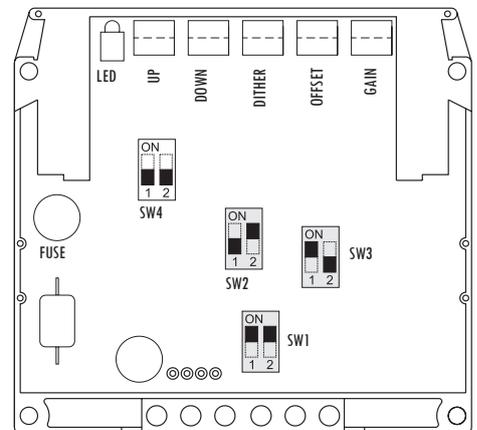


SW1 - control signal choice
SW2 - control signal choice
SW3 - control signal choice
SW4 - dither frequency

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



MASTER card for solenoid A

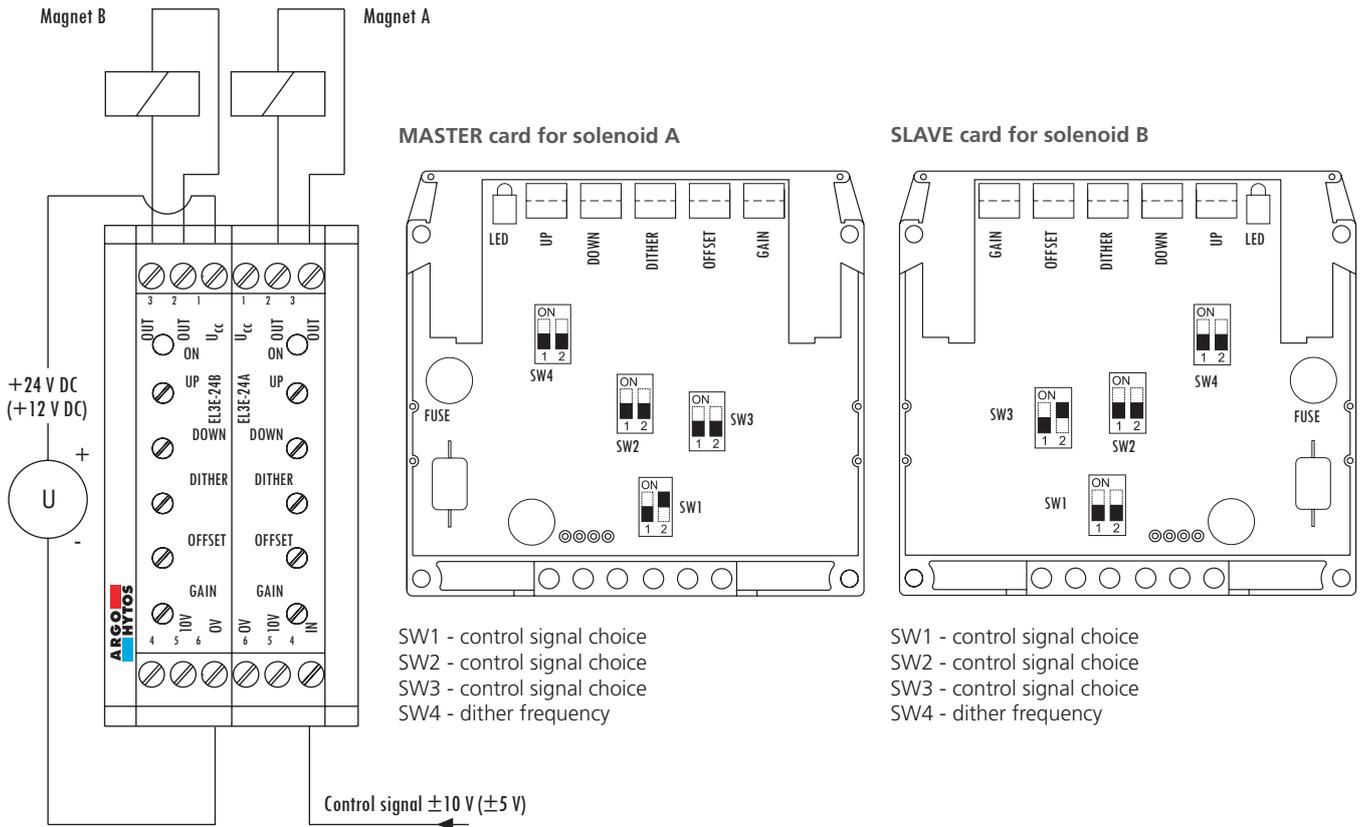


SW1 - control signal choice
SW2 - control signal choice
SW3 - control signal choice
SW4 - dither frequency

Configuration of Changeover Switches on the Electronics Card

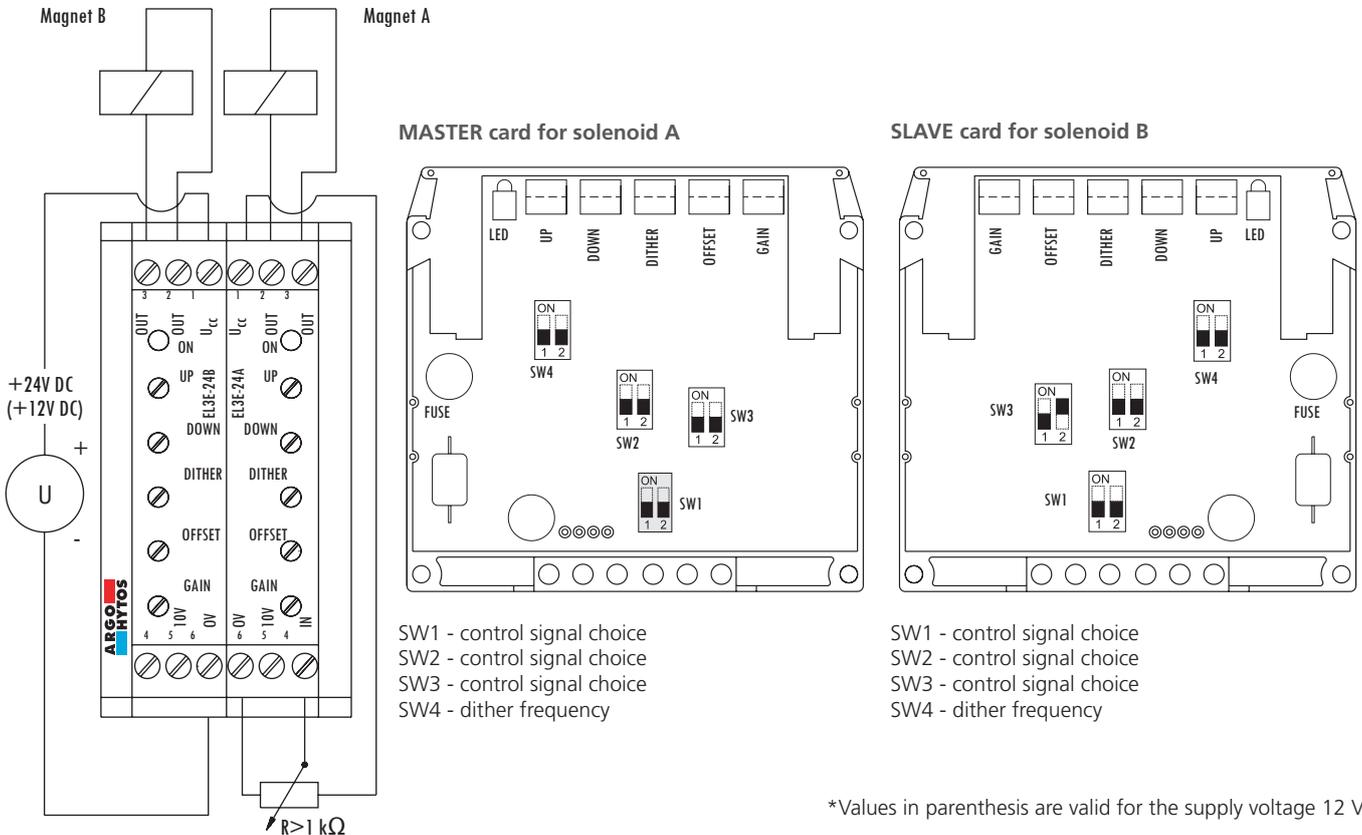
Proportional directional valve with two solenoids

control signal $\pm 10\text{ V}$ ($\pm 5\text{ V}$)*



Proportional directional valve with two solenoids, control signal $U_{cc}/2 \pm 10\text{ V}$ ($U_{cc}/2 \pm 5\text{ V}$)*

with an external potentiometer $R > 1\text{ kW}$



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