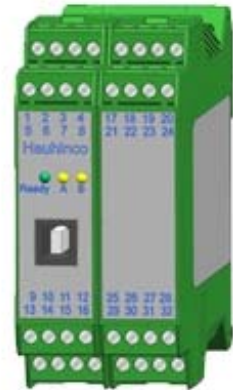


Digital Controller RE 4 for Hauhinco Proportional Valves

Characteristics

- Electronic amplifier with integrated PID-Controller for solenoid-operated hydraulic valves
- Operating mode Pressure and Position control
- Suitable for all Hauhinco Valves
- Exchangeability of RE1, RE2 and RE3 is given
- Control and Diagnosis over software
- Automatic calibration between controller and hydraulic valve
- Communication between PC/Laptop and Controller by USB-port



Controller RE 4

Functional description

The Controller has been specifically designed for Hauhinco Control Valves and forms a closed loop circuit with hydraulic valve.

The demand values for the pressure at the working connection or the position of the setting piston are transmitted by the user by scaled voltage (0-10V) and electricity (4-20 mA) to the controller. Through the controller the demand value and the current value are compared and the valve is being calibrated until the offset is minimized. The control parameters can be altered in many areas within the control software. Further functions as for example a ramp function are also implemented.

Depending on the used valve type (3/2 or 2/2 way valve) one or two valves can be controlled per one controller. The master/slave configuration of the controller allows an expansion to up to four 3/2 way valves or eight 2/2 way valves that are controlled by the master controller.

The previous control cards RE1, RE2 und RE3 can be replaced with the RE4.

Technical information

- Mechanical mounting on a standardized top hat rail according to DIN 50 022
- Digital PID-Controller
- Controller sampling rate 1 ms
- Control deviation monitoring
- Up to 8 demand values can be stored on the Controller and selected digitally
- Demand value correction for the analog signal
- Automatic actual value correction for the analog signal
- Broken wire detection for analog power inputs
- Broken wire detection for power outputs
- Short circuit detection for power outputs
- Adaption to Hauhinco valve construction sizes
- Visualization of the control variables in test mode
- Automatic adaption of the overlap compensation for all Hauhinco Valve construction sizes
- Analog output of internal control parameters
- To optimize the control procedures, manual correction of single parameters are possible
- Controller is configurable as Master/Slave, parallel valve groups can controlled
- The initial valve position can be defined, for example „NC“ or „NO“
- The operating and diagnostic software is designed for WIN32 compatible operating systems (e.g. Windows® Vista, Windows® 7, 8, 10 etc.)

Technical data

Supply voltage (U_b) Power requirement max. External protection	[VDC] [W] [A]	12... 30 (incl. ripple) 60 (depending on solenoid) 3 medium time lag
Digital inputs Low level High level Input resistance	[V] [V] [kOhm]	4 OFF : < 2 ON : > 10 25
Digital outputs Low level High level Maximum output current	[V] [V] [mA]	2 OFF: < 2 ON : max. U_b 50
Analogue inputs Signal Signal resolution	[V] [mA] [%]	3 0... 10; min. 25 kOhm 4... 20; 240 Ohm 0,003 incl. oversampling
Analogue outputs Signal Signal resolution	[V] [mA] [%]	2 0... 10 10 (max. load) 0,006
PWM outputs Nominal current Frequency Dither frequency Dither amplitude	[mA] [Hz] [Hz] [%]	2 500... 2600; broken wire monitored and short circuit proof 61... 2604; adjustable in steps 60... 400 0...30
Sample time PID controller Current controller	[ms] [ms]	1 0,125
Ramp function Up Down	[ms] [ms]	0...60000 0...60000
Standby current for pre-magnetisation	[%]	0...60 (max. current)
Serial interface		USB in RS 232C Emulation (9600... 57600 Baud, 1 Stop bit, no parity, Echo Mode)
Housing		Snap-on module to EN 50022 PA 6.6 polyamide Flammability class V0 (UL94)
Protection class Temperature range Storage temperature Humidity	[°C] [°C] [%]	IP20 -20... 60 -20... 70 < 95 (non-condensing)
Weight	[kg]	0,250
Connections		USB Type B 8 x 4 pole terminal blocks PE: via the DIN mounting rail
EMC		EN 61000-6-2: 8/2005 EN 61000-6-4: 6/2007 + A1:2011

Modification measures

An adaption is necessary when older Controllers are being replaced. Please see the following overview for the necessary adaptations:

Comparison of the connection assignment			
Version RE 1.19 RE 2.01		MR1 / Controller RE 4.01	RE 4.01
		Connections at the controller	
2	z b d	24 V + Supply Voltage Controller 24 V + Supply Voltage Controller 24 V + Supply Voltage Controller	3 3 3
4	z b d	GND Demand Value Demand value 0-10 V Demand Value 4-20 mA	11 13 13
6	z b d	GND Actual Value 1 Actual Value 1, 0-10 V Actual Value 1, 4-20 mA	11 14 14
8	z b d		
10	z b d	Digital Input No. 9 / constant demand value 2	6
12	z b d	Digital Input No. 8 / valve lock Digital Input No. 7 / constant demand value 1 Digital Input No. 6 / constant demand value 0 (RE2.01 analog/digital demand value)	8 5 -
14	z b d	Digital Input No. 5 / constant demand value 3 Digital Output No. 4 / I-Amount Reset Digital Output No. 3 / 2 ramp pairs	7 - -
16	z b d	Digital Input No. 2 / Delete ramp Digital Output No. 1 / Actual Value Comparator Digital Output No. 2 / Failure	- - 1
18	z b d	Proportional solenoid Y1 GND Analog 0 Output Analog 1 Output	19 16 -
20	z b d	+ 12 Volt + 12 Volt + 12 Volt	- - -
22	z b d	GND Analog Output GND GND	12 - -
24	z b d	-12 Volt -12 Volt -12 Volt	- - -
26	z b d	+ 10 Volt Reference S/W Solenoid Y3 GND S/W Solenoid Y3 +	- - -
28	z b d	+ 24 Volt Supply Solenoid Valves S/W Solenoid Y4 GND (not applicable by RE2.01) Proportional Solenoid Y2 GND	22 - 20
30	z b d	Proportional Solenoid Y2 + Proportional Solenoid Y1 + S/W Solenoid Y4 + (not applicable by RE2.01)	18 17 -
32	z b d	GND GND GND	4/24 4/24 4/24
	-	Output deviation	2
	-	Input from Slave-Signal to Master 0-10 Volt	10
	-	Input from Slave-Signal to Master 0 Volt	9
	-	Master Output Slave-Signal for Slave 0-10 Volt	15
	-	Master Output Slave-Signal for Slave 0 Volt	11