E510-Series

Plug-in Proportional Valve Amplifier



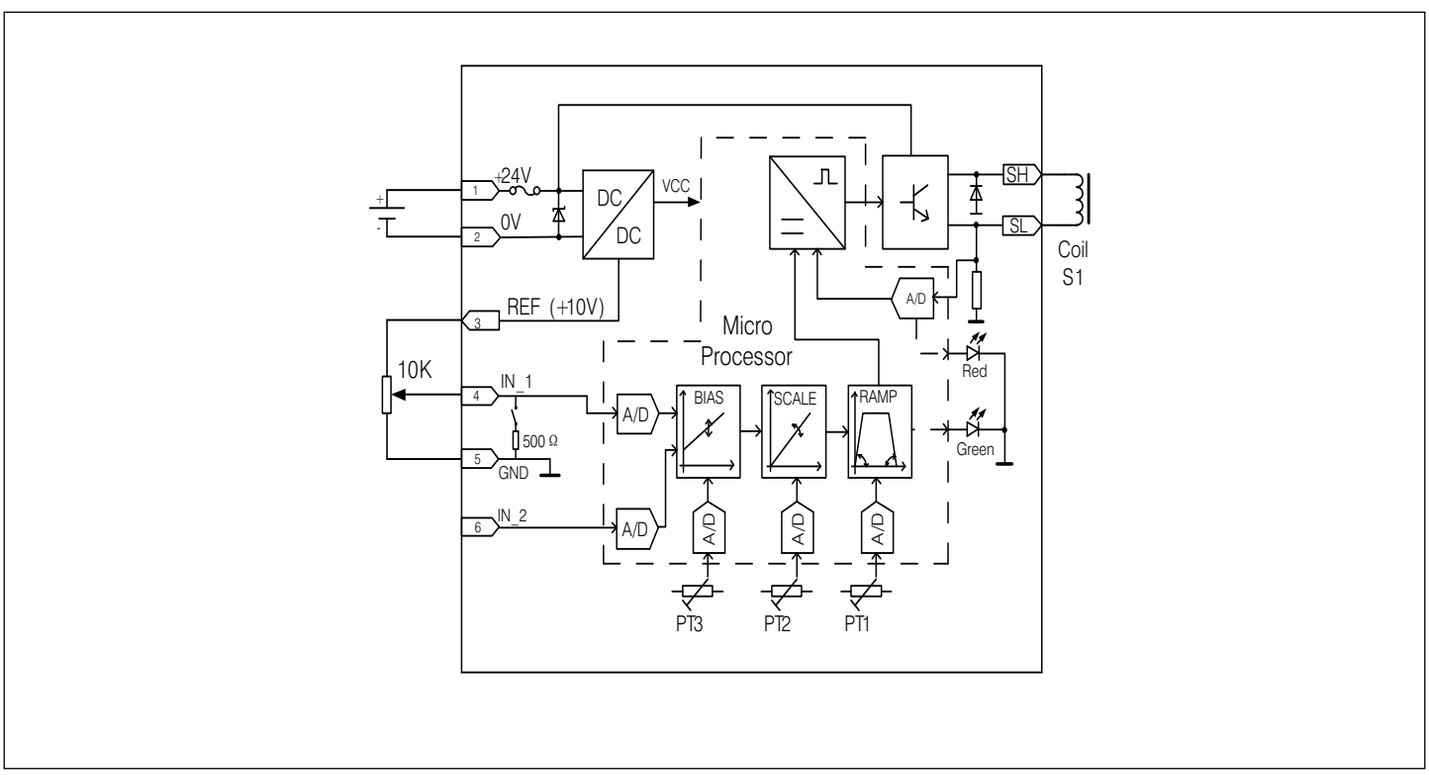
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Introduction

- STM microprocessor Chip, Embedded Digital Amplifier and Software , PWM negative current feedback;
- Shell is the standard DIN plug with convenient shape, less heat generated and IP65 protection;
- The maximum output current is 3.3A with current limiting protection;
- Two LED indicators of input signal and output current status;
- Preset PWM Frequency parameters, the built-in potentiometers can change bias, ramp and scale parameters;
- The inputs are 0 ~ 10V, 0 ~ 20mA, 4 ~ 20mA or on-off input;
- Provide many options such as enable control, logic control, power limitation and so on ;
- +10 V reference voltage output, which can be used as setting signal of external potentiometer ;
- Digital LED diagnostic indicating function for displaying signal and current value, which is convenient for equipment debugging and fault state judgment.;
- Industrial standard 24VDC or 12VDC power supply with transient Suppression Device and built-in ceramic fuse to prevent accidental failure;
- CE certification, in line with EMC specifications, is suitable for automatic control application field under various adverse working conditions;

- Symbol:



Ordering code

E510 - A1 S - U0 B2 / L

Proportional Amplifier	= E
Plug-in type	= 5
Edition code	= 10
Open loop single coil	= A1
Standard mode	= S
Threshold mode	= H
0~10V Input	= U0
0-~20mA Input	= I0
4-~20mA Input	= I4
2 on-off Inputs	= D2
Rated output current 0.8A	= A
Rated output current 2.7A	= B
Rated output current 3.3A	= C
125 Hz	= 1
200 Hz	= 2
320 Hz	= 3
With 1.5M cable	= L
With 5pins M12 plug	= M
With enabling signal	= Q
Power limit control	= W

Functions & Principle

- E510 series plug proportional amplifier is suitable for all kinds of proportional valves without spool transducer. It can be directly installed on proportional electromagnetic coil. The socket meets the DIN 43650 standard. Plug protection is IP65. Installation standard meets DIN 40050, internal with 6 Pin terminal. The input control signal of the amplifier has 0-10V, 0-20mA, 4-20mA or on-off input. The maximum output current has a variety of specifications; such as 0.8A, 2.7A, 3.3A (12V power supply).

- E510 series plug-in proportional amplifier is equipped with a STM microprocessor, which receives two analog signals from external input and three built-in potentiometer analog signals form set parameters. After the calculation by the microprocessor, a PWM pulse signals are synthesized. The PWM signal is output signal, which is used to drive the power switching element to adjust the current of proportional electromagnetic coil. It has the negative feedback algorithm of coil current, which makes output current has excellent linear constant current regulation characteristics.

Specifications

DC power supply range	12V～15V(12VPower Supply), 20V～28V(24VPower Supply)
Maximum power supply current	3.3A(Fuse)
Maximum power consumption	50W
Maximum output current	/A=0.8A,/B=2.7A,/C=3.3A
Input signal range (IN_1)	Voltage signal :0～10V; Currentsignal :0～20 mA /4～20mA;
Signal input impedance (IN_1)	Voltage signal Ri =100 KΩ Current signal Ri = 500Ω
Input signal range (IN_2)	Voltage signal 0～10 V,Ri = 100 KΩ
Enableor on-offinput	OFF:0～5 VDC,ON:9～24 VDC
GND	GND connect with 0V inside
Reference output	+10V / 5mA
Ramp signal	Symmetrical ramp, 0～20s adjustable
Connection form	6PinTerminal,1.5Mcable,M12Plug
Operating temperature range	20°C～60°C
Storage temperature range	-25°C～85°C
Protection level	IP 65
Socket standard	DIN 43650
Amplifier weight	150 g(without cable)
Shape size	See figure

• Shape size (mm)

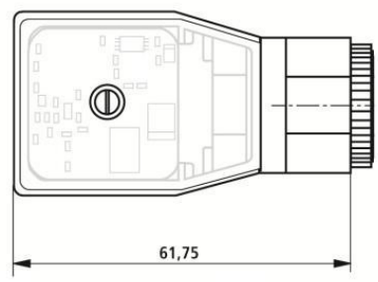


Fig.2 Amplifier Topographic View

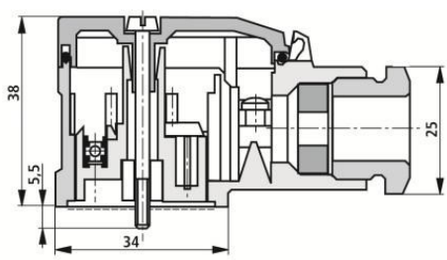


Fig.3 Amplifier Profile

• Wiring indication

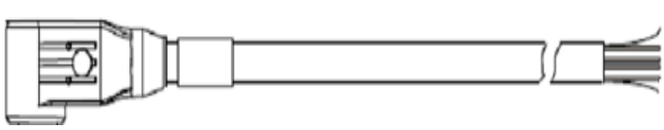


Fig.4 Cable wiring diagram

6PinTerminals Definition:
Pin 1: +24V
Pin 2: 0V
Pin 3: REF (+10V)
Pin 4: IN_1
Pin 5: GND
Pin 6: IN_2

Diagnosis Indicator LED

- E510 series plug-in proportional amplifier has two LED indicators with diagnosis logic function. The red LED indicates th state of driving current and the green LED indicates the state of input signal.

LED status	MEANING	Failure condition
Red Off	No drive current	No power supply, no signal input or scale parameter is 0
Red Light	With drive current, brightness according to the current	Drive current is normal
Red Blink	Drive current abnormal	The resistance of proportional coil is too large or the current signal exceeds the limit value
Green Off	No input signal	Polarity reversal or disconnection of input signal
Green Light	With input signal, brightness according to the input	Input signal is normal
Green Blink	Input signal abnormal	Input signal out of range or switching input set state

- Adjustment of main parameters of amplifier

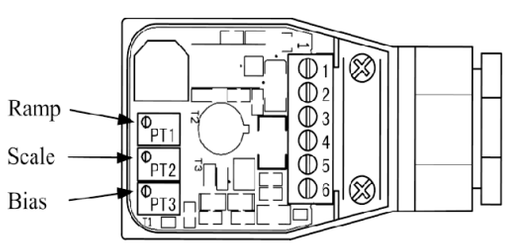


Fig. 5 Simple sketch of internal structure

Ramp (Pt1):
The ramp function converts in input step signal into a slow rising output signal (electromagnet driving current). The rise/fall time of the current can be adjusted by ramp potentiometer. The longest time for the input signal to rise from 0V can be 20 seconds. Default setting is 0s.
The amplifier uses the ramp adjusted potentiometer to adjust the rise/fall time. The ramp potentiometer is rotates clockwise to prolong the rise and fall time of the ramp.

Scale(PT2):
The relationship between driving current and input signal can be adjusted by scale potentiometer. The scale function can set the maximum current input to the coil, which corresponds th the maximum scale when the input signal is the largest. The scale potentiometer is rotated clockwise to increase scale.

Bias(PT3):
The bias adjustment makes the hydraulic 0 point of the valve correspond to the electrical 0 point. The bias potentiometer is rotated clockwise to increase bias. The default Bias is zero.

Notes:
- The Polarity of the power supply can not be reversed, otherwise the amplifier circuit will be damaged.
- REF output cannot be connected to any power supply
- Do not insert or pull the amplifier out of the coil socket during power-on
- Amplifiers can only be connected when the power supply is disconnected.
- Please adjust the amplifier parameters correctly and do not make the matched proportional valve to work in the limit state for a long time
- Pull out the fixed bolt to open the amplifier cover



The specified data is for product description purposes only and may not be deemed to be guaranteed unless expressly confirmed in the contract.