

# REMSRA... TYPE ELECTRONIC REGULATORS FOR SINGLE SOLENOID PROPORTIONAL CONTROL VALVES



REMSRA...

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### ORDERING CODE

<b>REM</b>	Miniaturized electronic regulator in Octal type container
<b>S</b>	Single solenoid
<b>RA</b>	Asymmetrical ramp
<b>*</b>	Maximum output current $I_{MAX}$ . (JU variant) <b>X</b> = 0.88 A (0.80 A) <b>Y</b> = 1.76 A (1.20 A) <b>Z</b> = 2.8 A
<b>*</b>	Input reference (V) see note (*) below <b>2</b> = 0 ÷ + 2 V <b>5</b> = 0 ÷ + 5 V <b>0</b> = 0 ÷ + 10 V <b>A</b> = 0 ÷ 20 mA
<b>*</b>	Frequency Dither <b>1</b> = 100 Hz (standard, JU var.) <b>2</b> = 330 Hz (for XP.3)
<b>*</b>	Minimum initial current <b>G</b> = step (normally for XD.*. and XDP.3 valves) <b>C</b> = continuous (normally for XP.3, XQ.3, XQP.*. and CXQ.3 valves)
<b>**</b>	<b>00</b> = No variant
<b>4</b>	Serial No.

The electronic control card type REM.S.RA has been designed to drive the "XD.\*.A, XDP.3.A, XP.3, XQ.3, XQP.\*. and CXQ.3" series single solenoid proportional valves without integral position transducer. The control card is enclosed in an "OCTAL" type housing, a typical relay mounting standard. The output stage operates on the pulse width modulation principle (P.W.M.) and is provided with current feedback in order to obtain a solenoid output current proportional to the reference input signal. Output short circuit and supply polarity inversion protection is provided.

Gain, minimum current and rise and fall ramp time adjustments are possible through the corresponding front panel trimming potentiometers, while the output current to the solenoid can be measured via the Valve Current test points, and the ramp operation can be excluded.

The product incorporates a serial interface for adjustment of parameters.

**Pay attention please: electronic regulators must be used in dampness and water protected places.**

### Manuals and software

The user and installation manual, the manual for variants DJ/JU and the software DG are available on "products" section of [www.brevinifluidpower.com](http://www.brevinifluidpower.com) website (put REMS on internal search engine).

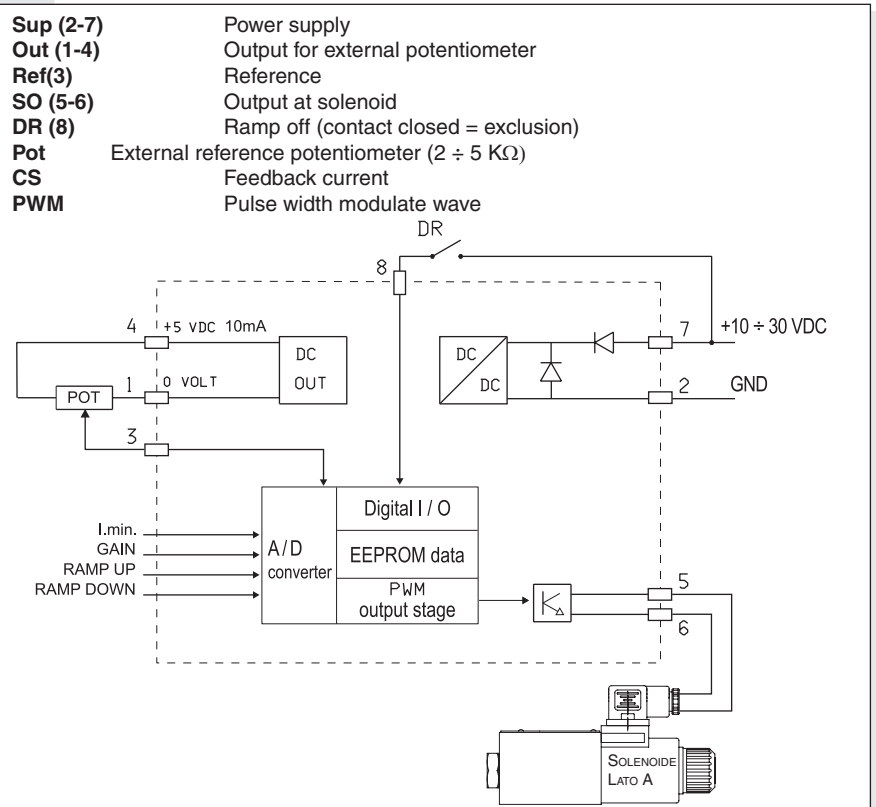
#### ADJUSTMENT PANEL

<b>Supply</b>	10VDC ÷ 30VDC (green led)
<b>Overload</b>	Protection against overload (red led)
<b>Ramp off</b>	Ramp off (red led)
<b>Output</b>	Output (current at solenoid, yellow led)
<b>I. min.</b>	Minimum current adjustment
<b>Gain</b>	Gain adjustment
<b>Ramp up</b>	Rump up adjustment time
<b>Ramp down</b>	Rump down adjustment time
<b>Valve Current</b>	Current test point at solenoid (1V = 1A)

If any field is missing from the ordering code the standard setting is as follows:

- Input ref. = 0 ÷ 5V
- Dither 100Hz
- $I_{min}$  = continuous
- $I_{max}$  = 0.8A

### ELECTRICAL CIRCUIT AND CONNECTIONS



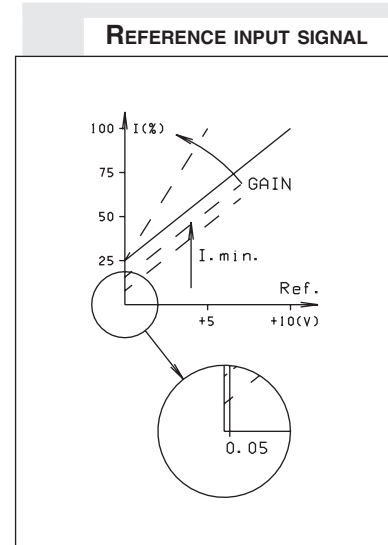
(\*If the input reference is a current signal (mA) the regulator has to be pre-setted in the factory.

**CE** registered mark for industrial environment with reference to the electromagnetic compatibility. European norms:  
 - EN61000-6-2 general safety norm - industrial environment  
 - EN61000-6-4 emission general norm - residential environment  
 • Product in accordance with RoHS 2011/65/UE Europe Directive.

## ELECTRONIC REGULATORS FOR SINGLE SOLENOID PROPORTIONAL CONTROL VALVES

Power supply	10 ÷ 30 VDC
Maximum supply voltage	36 V
Power absorption	40 W
Current output setting by dip switches	I <sub>max</sub> = 2.8A I <sub>max</sub> = 1.76A I <sub>max</sub> = 0.88A
External potentiometer supply output short circuit protected	+5V 10mA
Reference input signal setting by dip switches	0 ÷ +2V 0 ÷ +5V 0 ÷ +10V 0 ÷ 20mA
Polarization current adjustment	I <sub>min</sub> = 0 ÷ 50% I <sub>max</sub>
Current gain adjustment	50% ÷ 100% I <sub>max</sub>
Ramp time adjustment	0 ÷ 20 sec
Ambient operating temperature	-20 ÷ +70°C
Current test point	1 Volt = 1 Ampere
Weight	0.101 Kg

(\*) For the current signal (mA) the regulator has to be pre-setted in the factory.



### REMSRA... INSTRUCTIONS FOR USE

#### CALIBRATION PROCEDURE

Connect the card in the proper way following the previous page diagram but without powering it or in the way following the next page "Typical connections". Turn completely anticlockwise (20 turns about) the trimming potentiometers of Minimum Current ( $I_{min}$ ) and Ramp Time (Ramp-up and Ramp-down), and position the reference potentiometer on zero. Before powering the card, ensure that any unforeseen hydraulic system movement cannot cause material damage or injury to people. Power now the card; the green LED should light up.

#### MINIMUM CURRENT OR POLARIZATION CURRENT ADJUSTMENT

Turn slowly the minimum current trimming potentiometer clockwise ( $I_{min}$ ) until an actuator movement can be visually detected. Turn slowly anticlockwise the potentiometer: the minimum current setting will be adjusted correctly when the actuator movement stops. For the REM model with minimum initial threshold current, set the reference signal to a Vref. of 150 mV.

#### MAXIMUM CURRENT GAIN ADJUSTMENT

Turn first the ramp time trimming potentiometers clockwise by at least 10 turns, if the system could be damaged by a too fast solenoid operation (evaluate the application carefully). The maximum actuator speed can now be adjusted. Turn the reference signal to its maximum setting and rotate slowly the GAIN trimming potentiometer (GAIN) until the maximum required speed is obtained. The speed can now be varied by moving the potentiometer.

#### RAMP TIME ADJUSTMENT (RAMP-UP E RAMP-DOWN)

The ramp time is the time taken to pass from the minimum to the maximum current value, and vice versa. It's adjustable from a minimum of 0s up to a maximum of 20s (to reach the maximum current value setted). Turning clockwise the trimming potentiometer, the ramp time increases.

#### NOTES:

- The ramp fall time affects the actuator stop position. Moving the reference to zero Volt, the actuator goes on moving till the setted ramp time is elapsed. Therefore it's necessary to adjust it properly.
- When the overload red LED lights up, it will be necessary to switch off the power to the card, switching it on again after having eliminated the cause of overload.

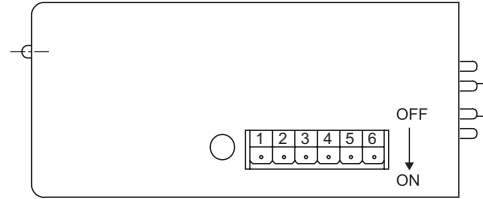
## REMSRA... DIP SWITCHES TABLE

For our proportional valves are recommended the following settings:

G	XD3A	DITHER =100Hz	$I_{max.} = 2.35A$ with 9V coil
G	XDP3A	DITHER =100Hz	$I_{max.} = 2.35A$ with 9V coil
C	XQ3	DITHER =100Hz	$I_{max.} = 2.35A$ with 9V coil
C	XQP3	DITHER =100Hz	$I_{max.} = 2.35A$ with 9V coil
C	CXQ3	DITHER =100Hz	$I_{max.} = 2.35A$ with 9V coil
G	XD2A	DITHER =100Hz	$I_{max.} = 1.4A$ with 12V coil
G	XD3A	DITHER =100Hz	$I_{max.} = 1.76A$ with 12V coil
G	XDP5A	DITHER =100Hz	$I_{max.} = 2.5A$ with 12V coil
G	XDP3A	DITHER =100Hz	$I_{max.} = 1.76A$ with 12V coil
C	XQ3	DITHER =100Hz	$I_{max.} = 1.76A$ with 12V coil
C	XQP3	DITHER =100Hz	$I_{max.} = 1.76A$ with 12V coil
C	XQP5	DITHER =100Hz	$I_{max.} = 2.5A$ with 12V coil
C	XP3	DITHER =330Hz	$I_{max.} = 1.25A$ with 12V coil
C	CXQ3	DITHER =100Hz	$I_{max.} = 1.76A$ with 12V coil
G	XD2A	DITHER =100Hz	$I_{max.} = 0.7A$ with 24V coil
G	XD3A	DITHER =100Hz	$I_{max.} = 0.88A$ with 24V coil
G	XDP5A	DITHER =100Hz	$I_{max.} = 1.25A$ with 24V coil
G	XDP3A	DITHER =100Hz	$I_{max.} = 0.88A$ with 24V coil
C	XQ3	DITHER =100Hz	$I_{max.} = 0.88A$ with 24V coil
C	XQP3	DITHER =100Hz	$I_{max.} = 0.88A$ with 24V coil
C	XQP5	DITHER =100Hz	$I_{max.} = 1.25A$ with 24V coil
C	XP3	DITHER =330Hz	$I_{max.} = 0.68A$ with 24V coil
C	CXQ3	DITHER =100Hz	$I_{max.} = 0.88A$ with 24V coil

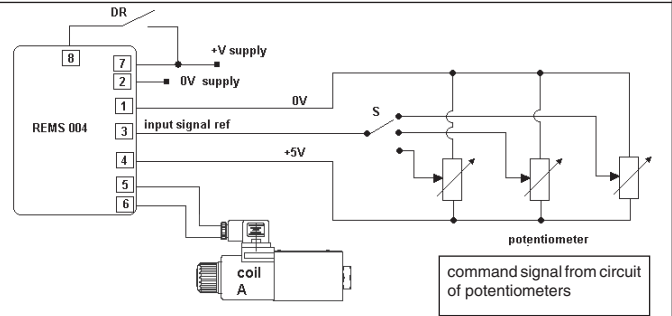
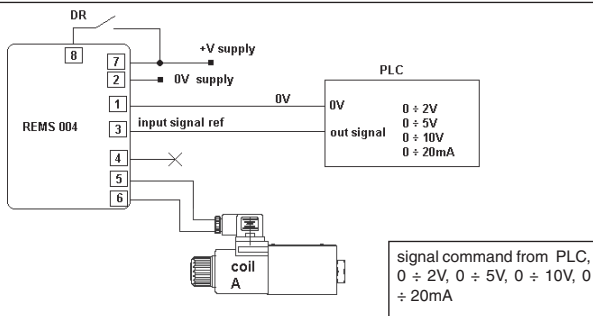
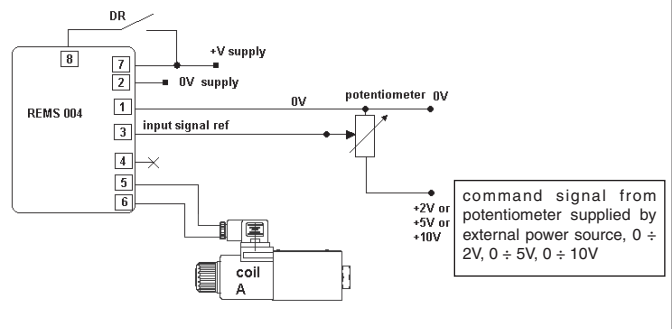
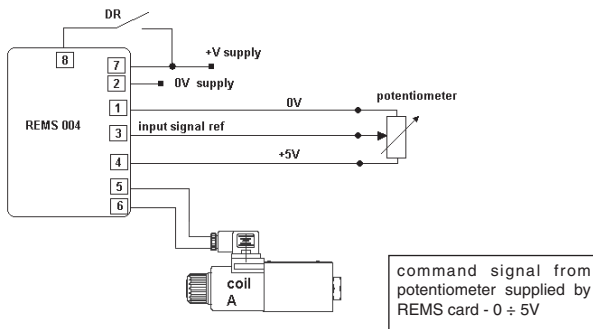
Six miniature switches are mounted internally on one of the REM sides. The REM configuration to suit any particular application can be implemented by setting these switches.

PWM frequency (100 to 330 Hz), minimum (continuous or step) current, reference voltage range and maximum current ( $I_{max}$ ) can thus be adjusted.



Function	DITHER		I min		Input ref.				I.max.		
	100 Hz	330 Hz	C	G	0÷10 V	0÷5 V	0÷2 V	0÷20 mA	2.8 A	1.76 A	0.88 A
1	OFF	ON									
2			OFF	ON							
3					OFF	ON	OFF	ON			
4					OFF	OFF	ON	OFF			
5									OFF	ON	OFF
6									OFF	OFF	ON

## TYPICAL CONNECTIONS



POT = 1000 ÷ 5000 Ω

- The connection between REM and the solenoid must be direct
- The common one of return to proportional solenoid must not be shared between other valve connections or electrical equipment worker.