

Mobile dual solenoid driver

RA 29864/01.07
Replaces: 06.98

1/6

Model MDSD

Component series 2X

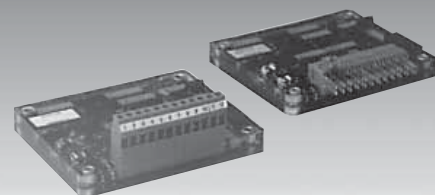


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Features

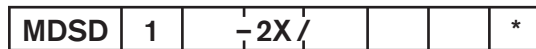
- Wide supply voltage range: 10–28 VDC
- On board, replaceable fuse
- Reverse voltage protection
- Pulse Width Modulated (PWM) outputs
- PWM frequency adjustable from 75–275 Hz
- Max. and min. current separately adjustable for both solenoids
- High current driver, regulated to within 1.0%, continuous operation
- Infinite duration short circuit protection on both outputs
- Reference voltage provided for control via an external potentiometer (>1K Ohm)
- Differential inputs for external voltage sources (+/- 2.5 or +/- 5.0 VDC)
- Neutral position deadband for joysticks
- Ramp time 0.2 to 10.0 sec., separately adjustable for both solenoids (A = up/down; B = up/down)
- All adjustments are made via multi-turn potentiometers
- EMI/RFI resistant
- Rugged, environmental packaging
- Temperature range: -13 to 176 °F (-25 to 80 °C)

Functional description

The MDSD is a high current amplifier that controls proportional valves with one or two force solenoids. Applications include the EL and EP controls on A2, A4, A7, A11 pumps and A6 motors. Also included are pressure and directional valves FT-DRE2K, DRE4K, DBE, DBET, MP, SM, SP, 4WRA, 4WRZ. All 12 Volt solenoids can be controlled over the entire 10 to 28 VDC power

supply range to simplify design. Of course, 24 Volt solenoids can be used in 24 Volt power systems. The rugged, compact design is environmentally protected by a potting compound (Concap: EN-21 Conathane). The MDSD has good insusceptibility to electromagnetic interference (EMI) and has a wide temperature range.

Ordering code



Mobile Dual Solenoid Driver

Electrical deadband

+/- 10% neutral deadband, for joysticks
 No deadband (*for other applications)

= No code
 = 1

Connector

Flat tabs (standard)
 Screw terminals
 Flying leads

= No code
 = K
 = L

Design series

Series 20 to 29

= 20 to 29

Further details to be written in clear text

Adjustment option for MDSD-2X/

0 = All other models
 1, 2, 3, 4 = See preset adjustment table

Ramp time

No code = 0.2 – 10 sec.
 R60 = 1.2 – 60 sec.
 R120 = 2.4 – 120 sec.

Ramp type

No code = A/B solenoid ramp
 W = Up/down ramp

* Minimum pots P5, P6 can be adjusted to eliminate spool overlap on MDSD 1 cards.

Preset Adjustments

	P1, P2	P5, P6	P3, P4	P7
1 =	2 sec.	700 mA	1800 mA	180 Hz
2 =	2 sec.	400 mA	1200 mA	100 Hz
3 =	2 sec.	300 mA	800 mA	180 Hz
4 =	2 sec.	200 mA	600 mA	100 Hz
0 =	don't care			

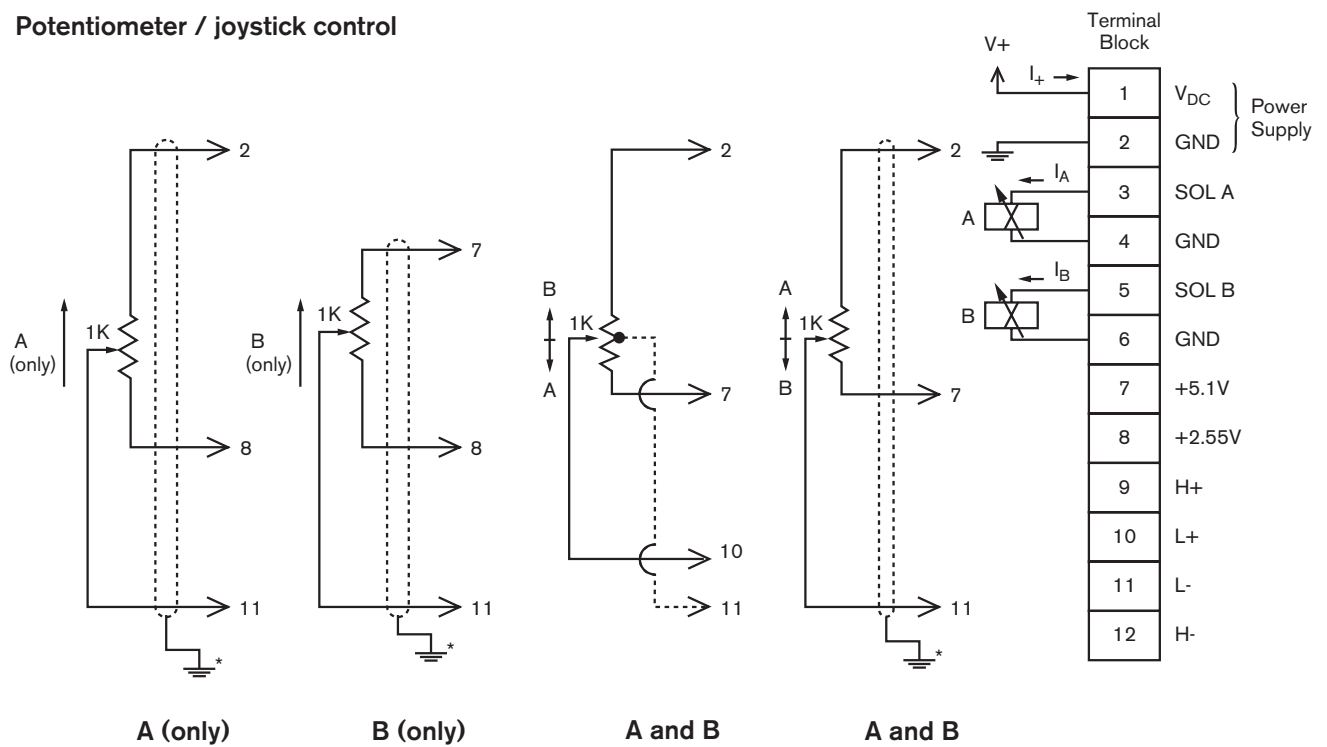
Only applies to MDSD-2X/1, MDSD-2X/2, MDSD-2X/3, and MDSD-2X/4.

Technical data (for operation outside these parameters, please consult us!)

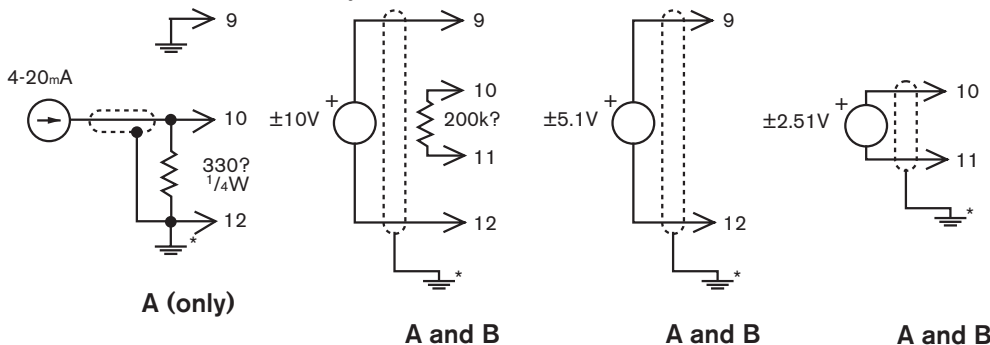
Power supply voltage	VDC	$V_{DC} = 10 \text{ to } 28$	
Power requirement	W	$P = I_{max}^2 \cdot R_{SOL} \cdot 1.2$ (Refer to valve or pump data sheet for max. solenoid current and hot solenoid resistance)	
Power supply current	Amp	$I = \frac{P}{V_{DC}}$	
Ramp time	sec.	0.2 to 10 (standard) 1.2 to 60 (R60) 2.4 to 120 (R120)	
Control potentiometer	KΩ	1 to 10	
Pulse frequency	P7	Hz	75 to 275
Fuse – 5x20 mm fast acting	Amp	4	
Ambient temperature	°F (°C)	-13 to 176 (-25 to 80)	
Weight	lbs	0.36	

Terminal block connections

Potentiometer / joystick control



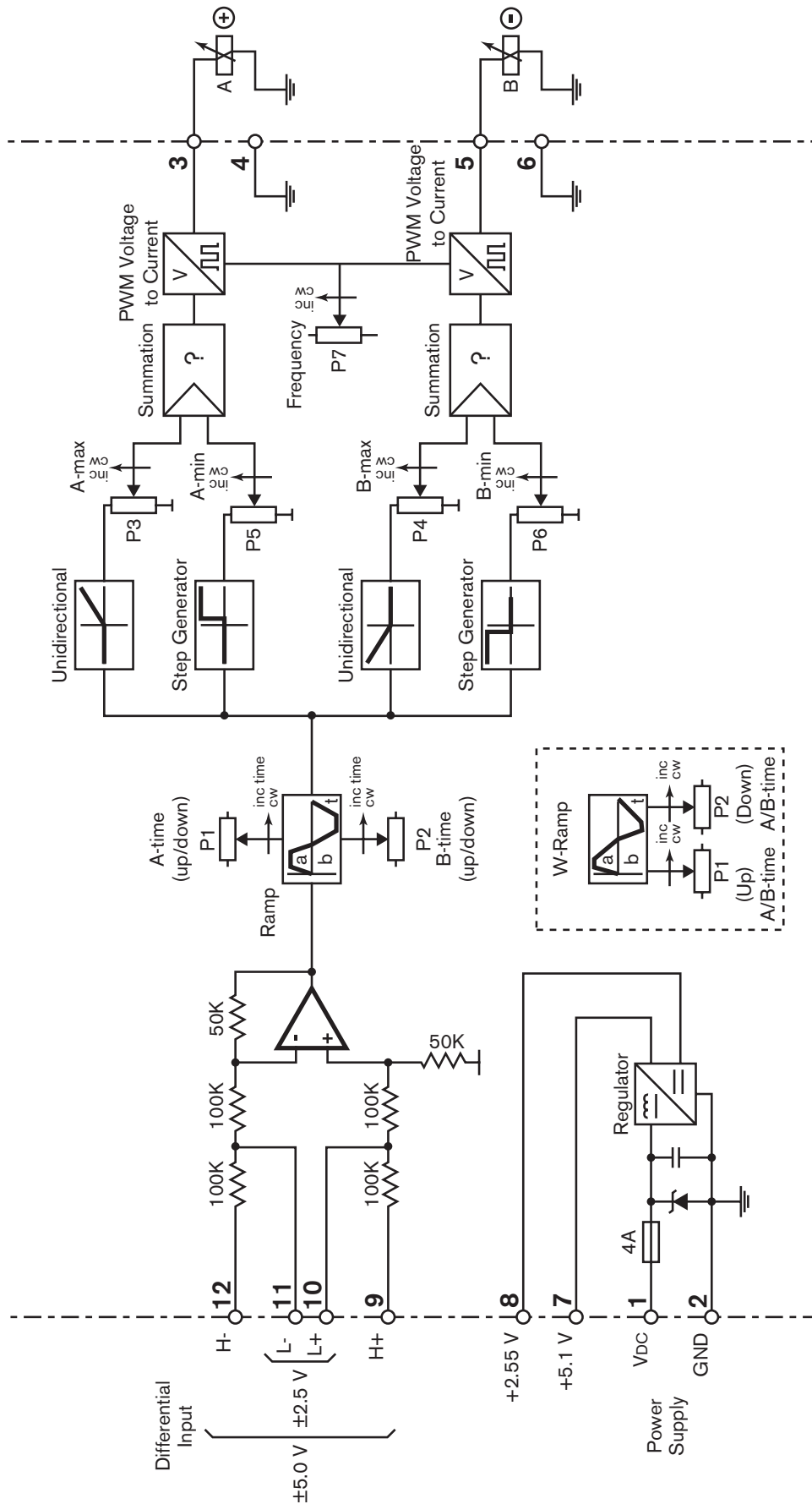
* Ground shield at one end only



External voltage commands:

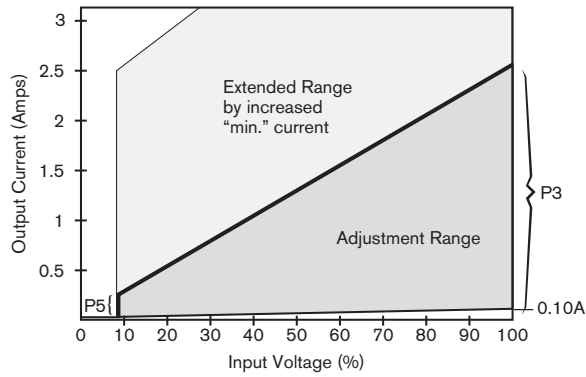
- ±2.5V use terminals 10 and 11, $V_{10} > V_{11}$ for Sol A
- ±5.0V use terminals 9 and 12, $V_9 > V_{12}$ for Sol A
- ±10V use terminals 9 and 12, add 200 KΩ resistor between 10 and 11, $V_9 > V_{12}$ for Sol A

Functional diagram MDSD

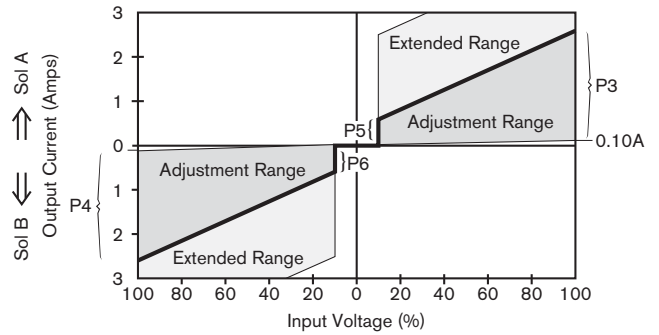


Output curves

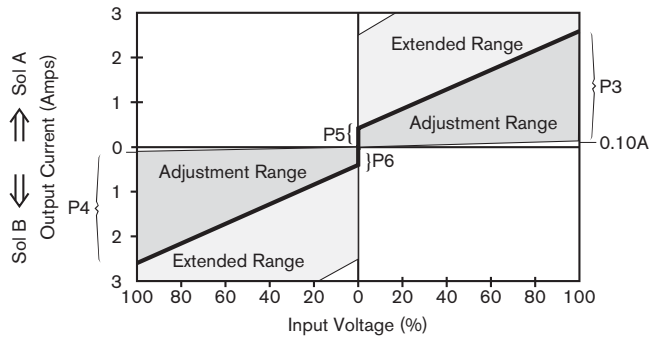
MDSD Solenoid A



MDSD Dual Solenoid



MDSD - 1 Dual Solenoid

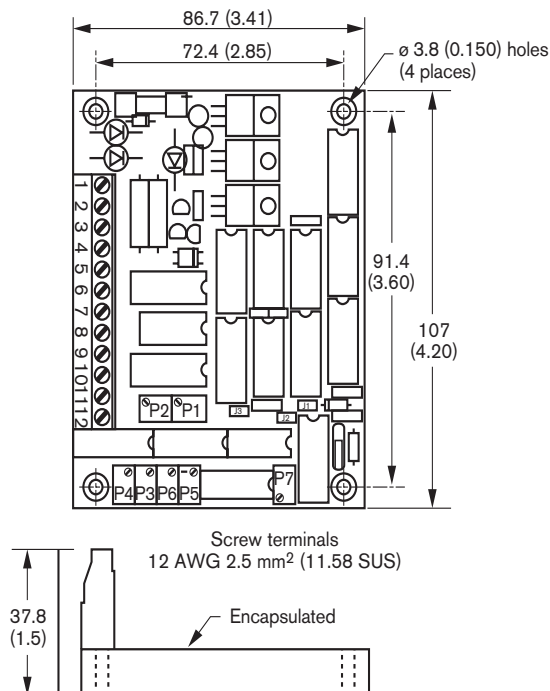


Potentiometer Adjustments

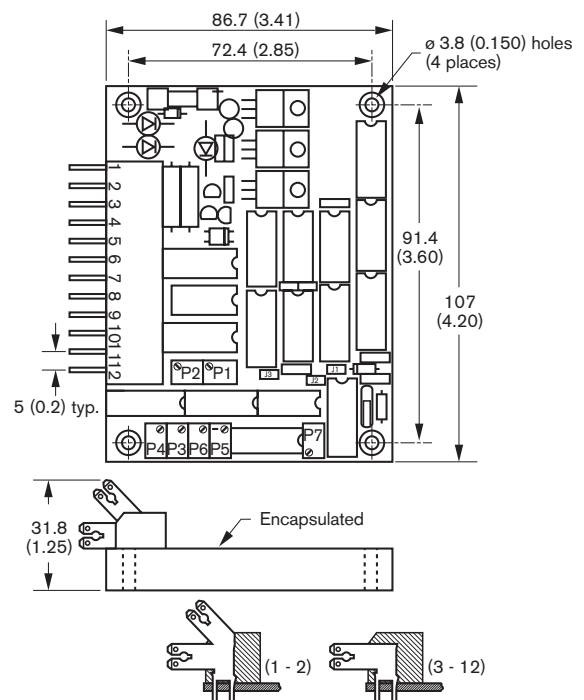
P1	Ramp time (std.)	Sol A	
P2	Ramp time (std.)	Sol B	0.2 10 sec.
P3	Max. current	Sol A	
P4	Max. current	Sol B	0 2.5 A
P5	Min. current	Sol A	
P6	Min. current	Sol B	0.1 2.5 A
P7	PWM frequency		75 275 Hz

Unit dimensions: dimensions in mm (inches)

MDSD...K; Screw Terminals

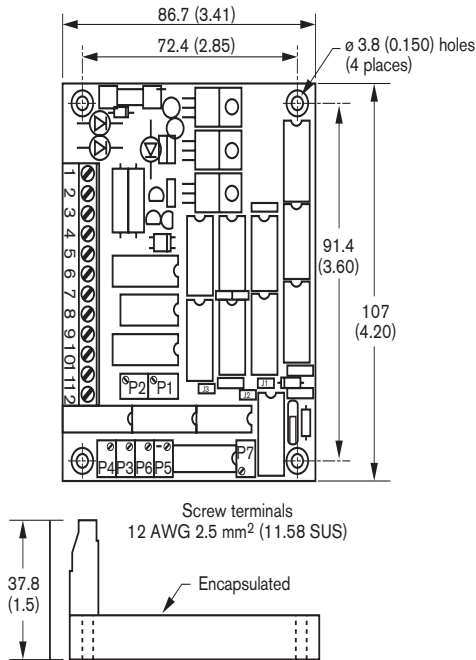


MDSD...; Flat Tabs

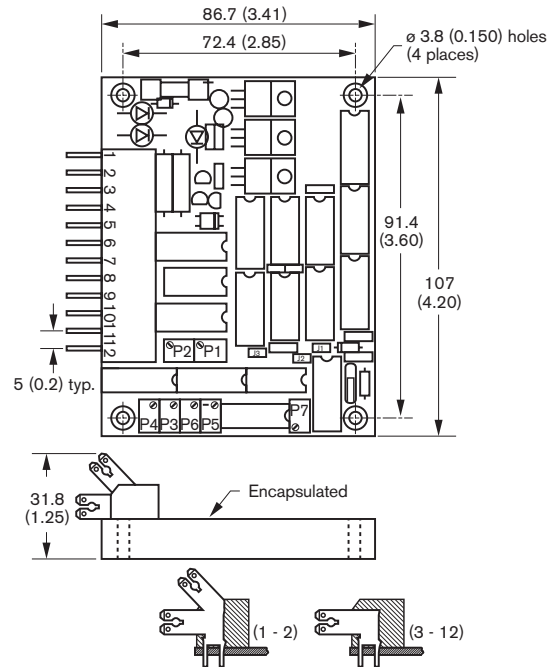


Unit dimensions: dimensions in mm (inches)

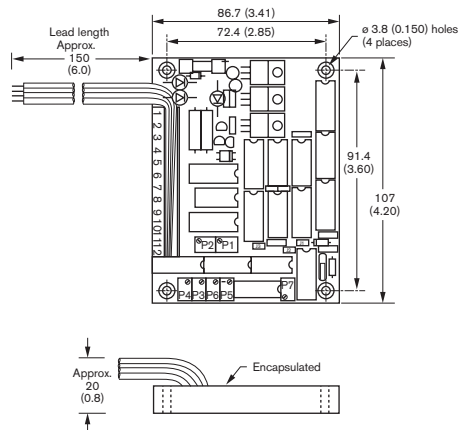
MDS...K; Screw Terminals



MDS...; Flat Tabs



MDS...L; Flying Leads



Drawing not to scale

Board	Wire Color
1	Red
2	Black
3	Blue
4	White/Blue
5	Brown
6	White/Brown
7	Yellow
8	Orange
9	Violet
10	Gray
11	White/Gray
12	White/Violet

Leads are 18 AWG stranded UL style 1429 or equivalent, Irradiated PVC

Typical terminal types
 Tab per DIN 46249
 Mates with 0.25 in. and 0.11 in. female tab connectors

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