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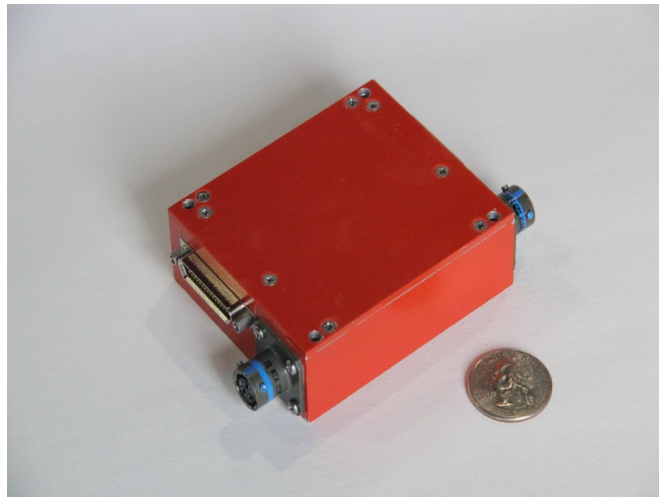
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8 CHANNEL PROGRAMMABLE SIGNAL CONDITIONING UNIT WITH DIFFERENTIAL LINE DRIVE OUTPUT AND VOLTAGE EXCITATION

MODEL PSCU

The 8-channel differential input, differential output Programmable Signal Conditioning Unit is intended to condition transducer signals that require significant signal conditioning flexibility. The unit provides programmable gain, programmable analog anti-aliasing four-pole filtering, and programmable offset that can be set uniquely for each channel. The PSCU analog output is differential with line drive capability (see Figure 1). If the user desires a single ended output, it is available for each channel.

With line drive capability, the unit is ideal for remote transducer amplification and signal conditioning.



Each channel is completely analog signal conditioned, including the filtering.

Four programmable voltage excitation sources are provided. Each of the four voltage excitation sources can provide in excess of 80 milli Amps of current (enough for eight 350 ohm bridge circuits).

The unit is programmed with provided Windows/PC based software via the PC serial port or USB to serial port adapter. The provided software does not require PC installation, simply double click on the program.

The power supply and PC serial port interface are isolated from each other and from the precision analog signal conditioning system, thus providing reduced noise performance.

The PSCU unit can be powered from 5 to 40 volts DC, providing versatility for many applications.

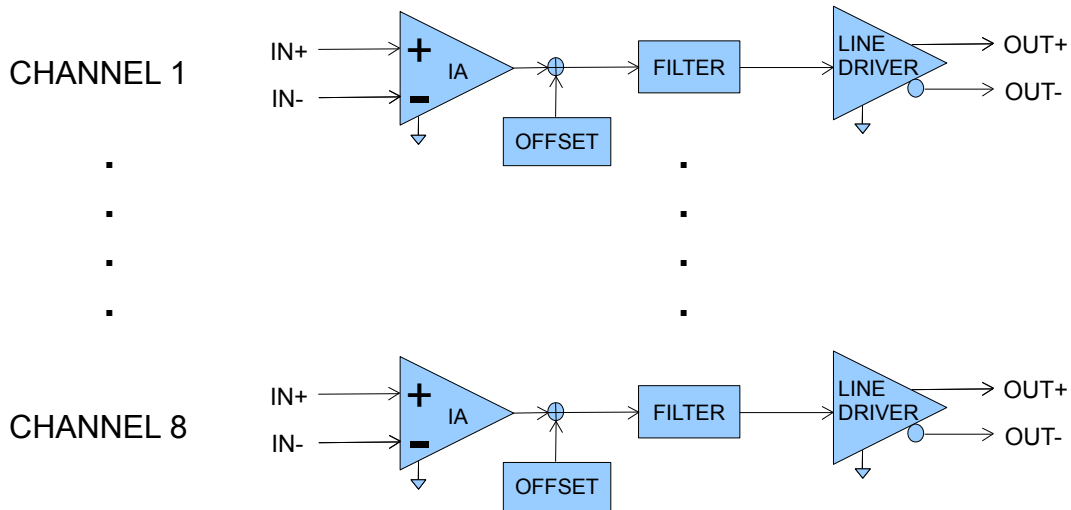


FIGURE 1

Electrical Specifications:

Analog Inputs and Conditioning:

8 Differential Inputs with full signal conditioning.

Gain: High resolution programmable with >32,000 possible gains from 0.5 to 5,000.

Offset: High resolution programmable with >16,000 offsets from -4.5V to +4.5V.

Anti Aliasing Filters: High resolution programmable 4 pole Butterworth with >16,000 cutoff frequencies from 3 Hz to 20 kHz (factory option from 5 to 50 kHz).

Allowable input signal levels on either input from -10V to +10V.

Maximum Input \pm 40 volts will not damage any analog input.

Input Impedance: 10.0 Gig ohm (Power On)

System Gain Accuracy: \pm 0.2% maximum over the operating temperature range.

Slew Rate: Minimum 2 volt per micro second at gain of 1000

Electrical Specifications Continued:

Line Driver Outputs:

Differential Output, Line Driver: Each plus and minus output can drive 5000pF//1 K ohm at 5 volts peak to peak at 20 kHz. Differential output can drive 5000pF//75 ohm at 2 volts rms at 20 kHz.
Each plus and minus output has 25 milli amp drive capability.

Single Ended Output: Use plus output with provided return (analog ground pin provided for each output).

Excitation:

Programmable excitation: 0 volts to 10.05 volts, with >16,000 settings, 4 independent channels, in excess of 80 milli amps per channel, short circuit protected.

Accuracy: +/- 0.003 volts, -40 degree C to +85 degree C.

Power:

The unit can be powered from 5 volts DC to 40 volts DC, dissipating about 5 watts, isolated.

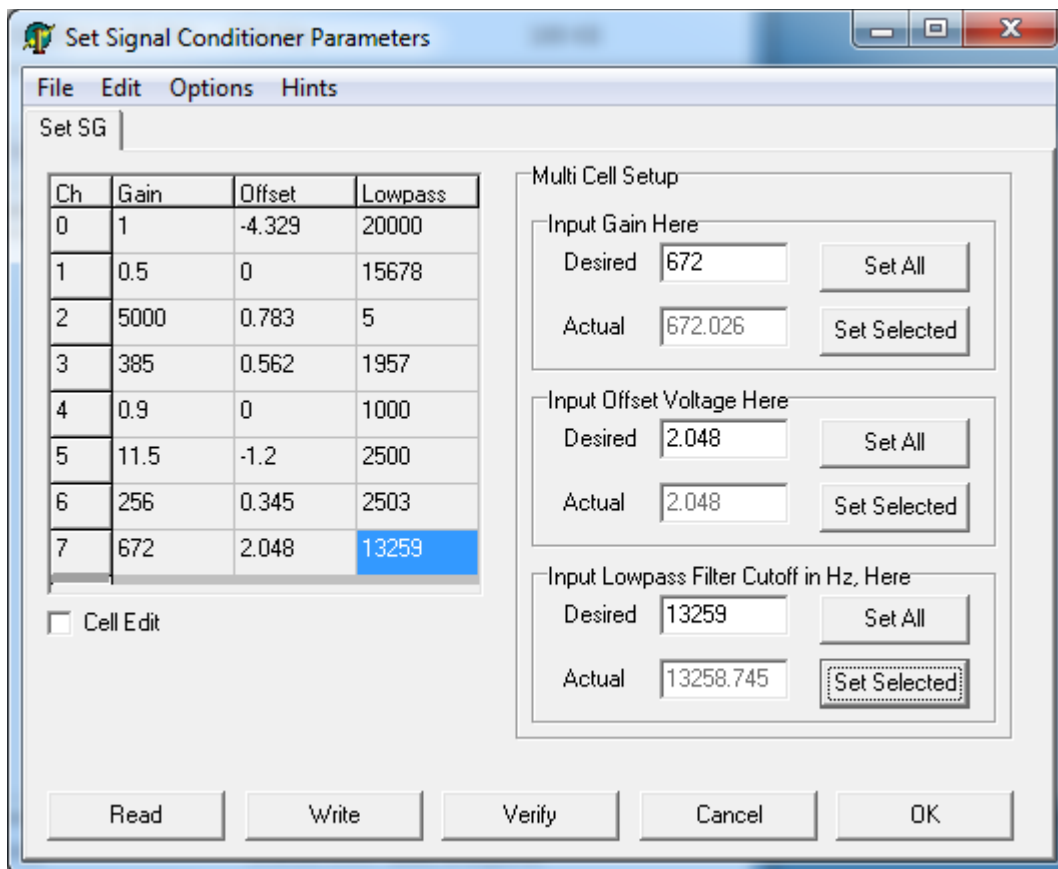
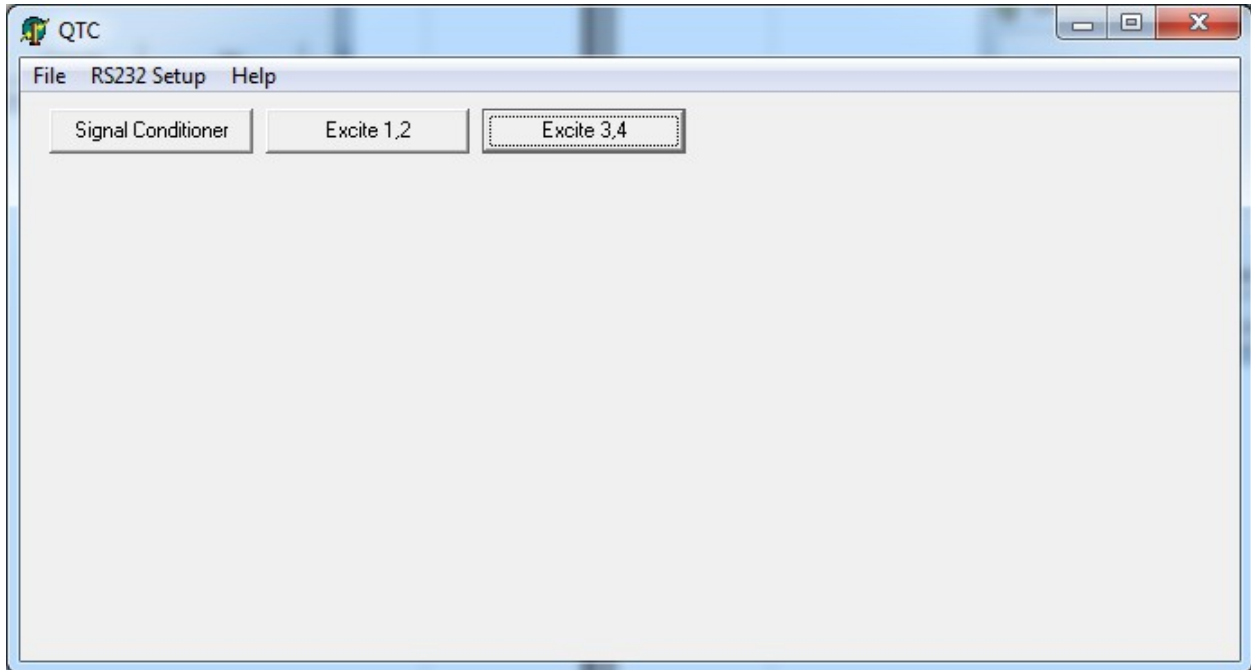
Environmental:

Operating Temperature:	-40°C to +85°C
Storage Temperature:	-55°C to +125°C
Humidity:	Relative humidity of 85% for two hours at 65°C.
Altitude:	Unlimited
Vibration:	20g's RMS from 5 to 2000Hz in each major axis.
Acceleration:	Constant acceleration of 100g's in each axis.
Shock:	100g's for 10m second in each major axis.

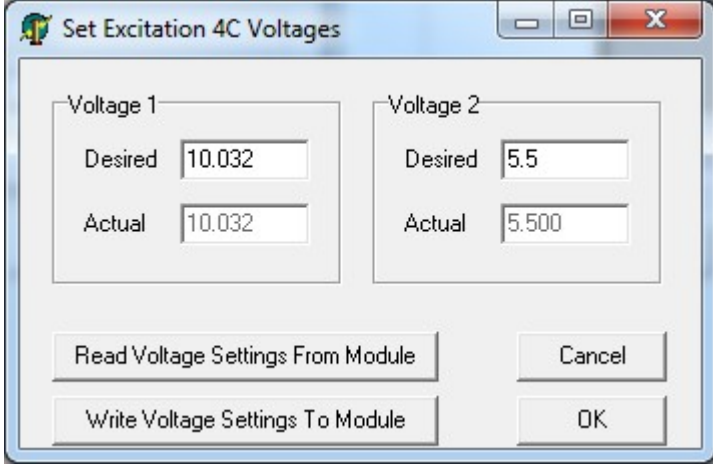
Mechanical:

Size:		
	inches	mm
Length	3.00	76.2
Width	2.570	65.278
Height	1.050	26.67
Weight:	8 OZ	

Windows Programming Examples:

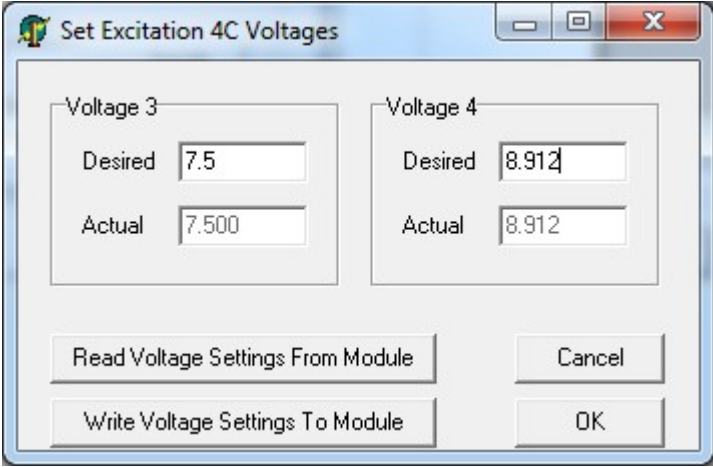


Windows Programming Examples Continued:



The screenshot shows a Windows dialog box titled "Set Excitation 4C Voltages". It contains two columns of settings. The first column, labeled "Voltage 1", has a "Desired" field with the value "10.032" and an "Actual" field with the value "10.032". The second column, labeled "Voltage 2", has a "Desired" field with the value "5.5" and an "Actual" field with the value "5.500". At the bottom, there are four buttons: "Read Voltage Settings From Module", "Write Voltage Settings To Module", "Cancel", and "OK".

Parameter	Desired	Actual
Voltage 1	10.032	10.032
Voltage 2	5.5	5.500



The screenshot shows the same "Set Excitation 4C Voltages" dialog box, but now displaying settings for "Voltage 3" and "Voltage 4". The "Voltage 3" column has a "Desired" field with the value "7.5" and an "Actual" field with the value "7.500". The "Voltage 4" column has a "Desired" field with the value "8.912" and an "Actual" field with the value "8.912". The buttons at the bottom are the same: "Read Voltage Settings From Module", "Write Voltage Settings To Module", "Cancel", and "OK".

Parameter	Desired	Actual
Voltage 3	7.5	7.500
Voltage 4	8.912	8.912

PSCU PINOUT:

NOTE: The following grounds are all isolated from each other:
AGND, B+_RTN, PROG_RTN.

NOTE: EXC_RTN is connected to AGND at the single point PSCU internal power supply return. This avoids excitation return current shifting AGND due to ground loop issues.

P1

Input, Transducer Side: MLDM2L-51S

36	IN1+	40	IN2+
19	IN1-	23	IN2-
1	AGND	5	AGND
20	EXC1	24	EXC2
2	EXC_RTN	6	EXC_RTN
37	SHIELD_A	41	SHIELD_A
47	IN3+	51	IN4+
31	IN3-	35	IN4-
14	AGND	18	AGND
30	EXC3	34	EXC4
13	EXC_RTN	17	EXC_RTN
46	SHIELD_A	50	SHIELD_A
38	IN5+	42	IN6+
21	IN5-	25	IN6-
3	AGND	7	AGND
22	EXC1	26	EXC2
4	EXC_RTN	8	EXC_RTN
39	SHIELD_A	43	SHIELD_A
45	IN7+	49	IN8+
29	IN7-	33	IN8-
12	AGND	16	AGND
28	EXC3	32	EXC4
11	EXC_RTN	15	EXC_RTN
44	SHIELD_A	48	SHIELD_A
9	CHASSIS		
10	CHASSIS		
27	SHIELD_A		

NOTE: SHIELD_A is connected internally to all other SHIELD_A pins and is floating.
To make SHIELD_A be CHASSIS, connect Pin 27 to Pin 9 or Pin 10.
To make SHIELD_A be AGND, connect Pin 27 to any AGND pin.
SHIELD_A can be left not connected at the PSCU and connected to a source at the transducer.

J1

Output Signal Side: MLDM2L-37P

22	OUT1+	26	OUT2+
4	OUT1-	8	OUT2-
23	AGND	27	AGND
5	SHIELD_B	9	SHIELD_B
30	OUT3+	34	OUT4+
12	OUT3-	16	OUT4-
31	AGND	35	AGND
13	SHIELD_B	17	SHIELD_B
24	OUT5+	28	OUT6+
6	OUT5-	10	OUT6-
25	AGND	29	AGND
7	SHIELD_B	11	SHIELD_B
32	OUT7+	36	OUT8+
14	OUT7-	18	OUT8-
33	AGND	37	AGND
15	SHIELD_B	19	SHIELD_B
2	AGND		
21	AGND		
1	CHASSIS		
3	SHIELD_B		
20	SHIELD_B		

NOTE: SHIELD_B is connected internally to all other SHIELD_B pins and is floating.
To make SHIELD_B be CHASSIS, connect Pin 20 to Pin 1.
To make SHIELD_B be AGND, connect Pin 20 to pin 21.
SHIELD_B can be left not connected at the PSCU and connected to a source at the destination receiver.

J_PWR

**Power Connector, Output Side: MS3470W8-33P ,
Mate: MS2476W8-33S**

A	B+
B	B+_RTN
C	CHASSIS

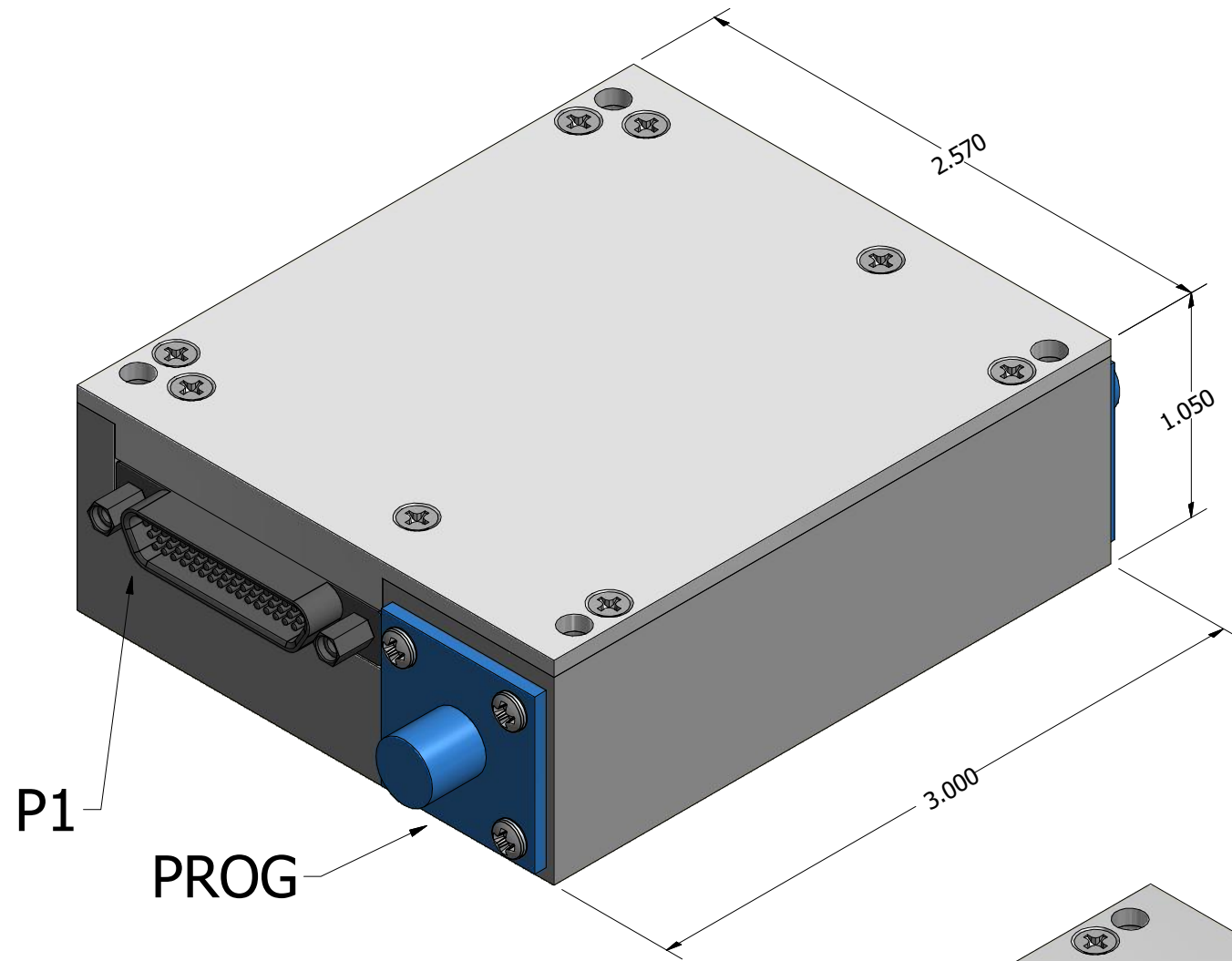
J_PROG

**Programming connector, Transducer Side: MS3470W8-33S,
Mate: MS2476W8-33P**

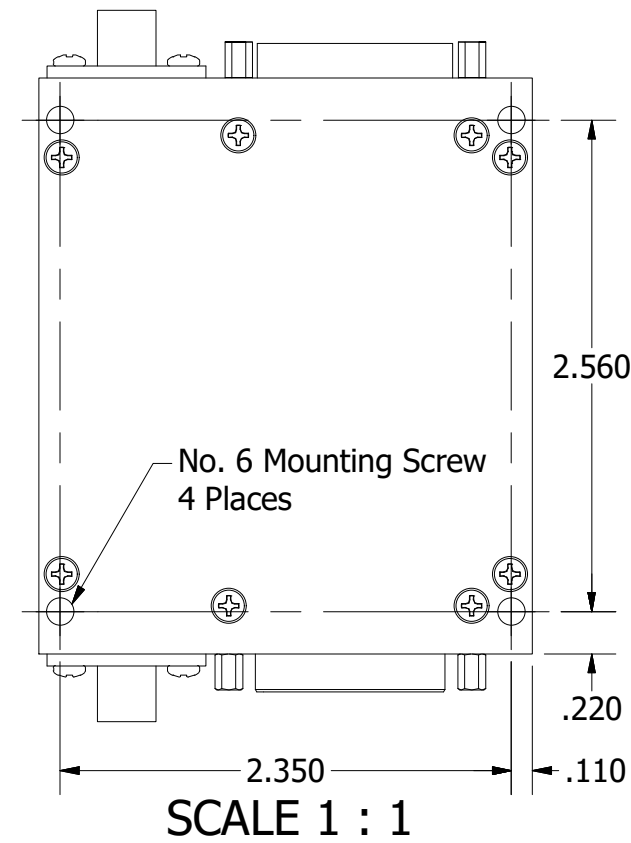
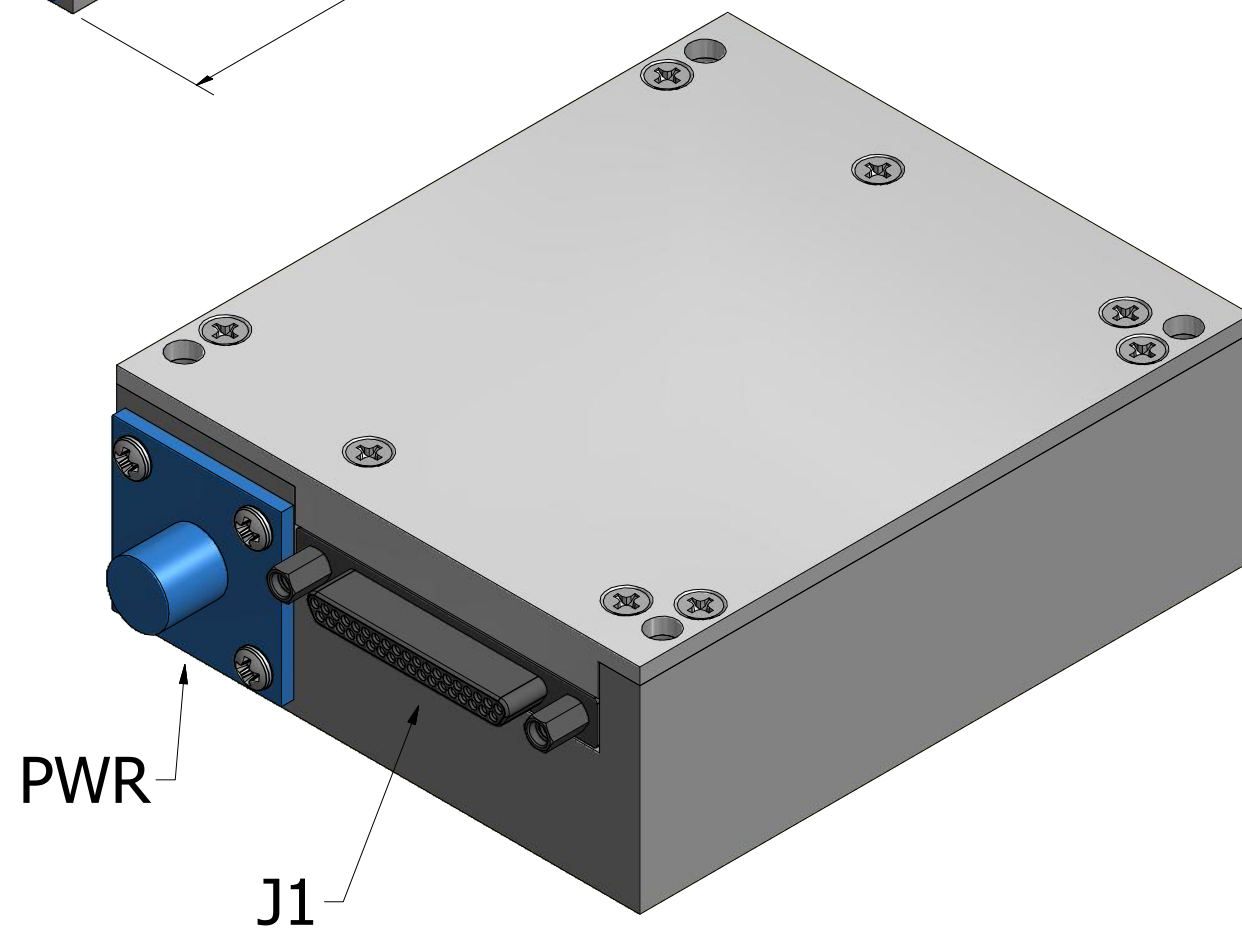
A	TX_RS232
B	PROG_RTN
C	RX_RS232

RS232 PROGRAMMING CONNECTOR (PROG) PINS		CONNECT TO 9 PIN COM PORT PIN	CONNECT TO 25 PIN COM PORT PIN
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C	RS232 RECEIVE DATA FROM PC TO PSCU	3	2
A	RS232 TRANSMIT DATA FROM PSCU TO PC	2	3
B	COM PORT GROUND	5	7

PSCU Mechanical Outline



SCALE 1.5:1



Connectors:

P1 - Input, Transducer Side:
MLDM2L-51S

J1 - Output Signal Side:
MLDM2L-37P

PWR - Power Connector, Output Side:
MS3470W8-33P
Mate: MS2476W8-33S

PROG - Programming Connector, Transducer Side:
MS3470W8-33S
Mate: MS2476W8-33P