

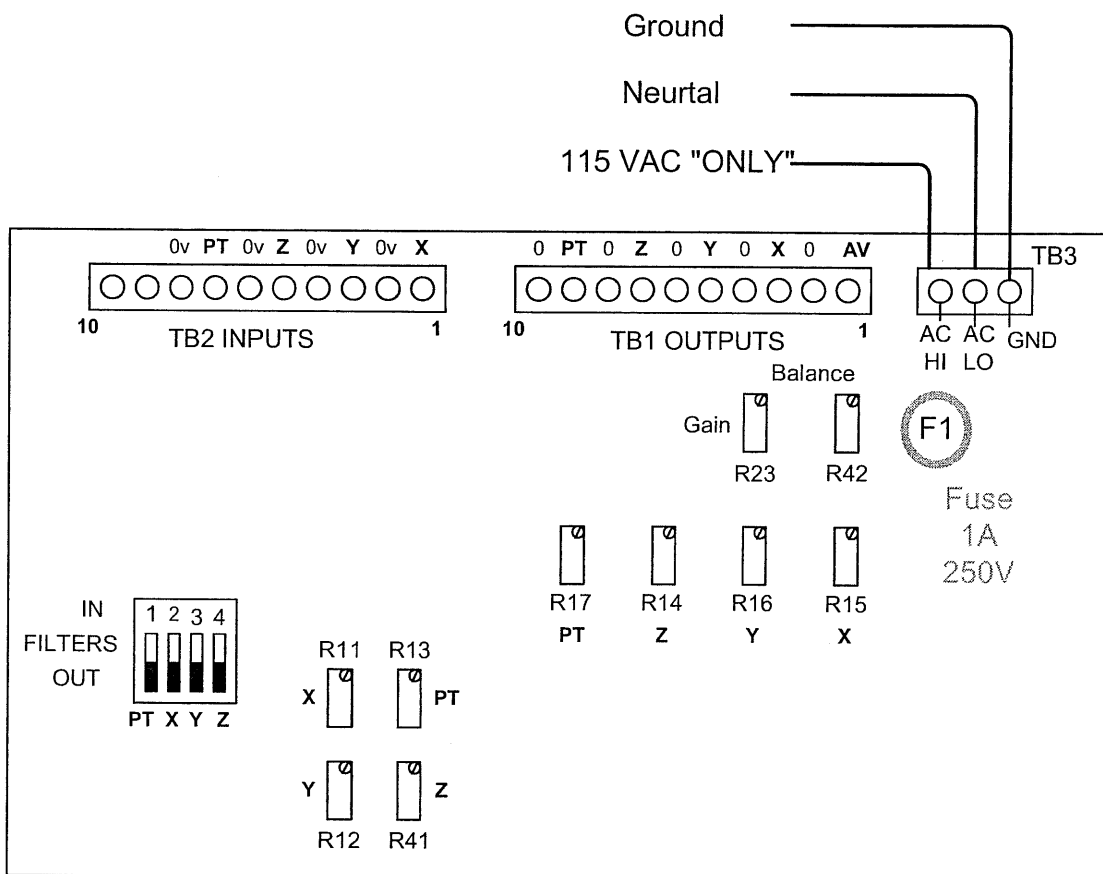
GRMS Calibration Procedure

The JC Systems 704 GRMS converter is functionally checked out and calibrated prior to leaving the factory.

The most common problem found is incorrect AC input voltage connected to the instrument.

Please check the AC hook up to TB3. It must be 115 vac and connected as shown below.

Check fuse F1. It is in line with the 115 vac provided to the power supply transformer.



A2350
4 Channel GRMS Converter PCB

A2350 4 Channel GRMS Converter Calibration Procedure

EQUIPMENT REQUIRED:

True RMS DVM,
Sine wave Generator,
4 - 2K ohm, 1% resistors (Dummy Loads),
1 -1K ohm, 1% resistor,
Accelerometer Simulator (Build simulator as shown on page 4).

HOOK UP:

Connect 117VAC to Line inputs: TB3 - 1 (Hot), - 2 (Neutral) & - 3 (GND).
Apply power to the unit.

MEASURE THE DC SUPPLY VOLTAGES:

Connect the negative meter lead to TB1 pin 2, 4, 6, 8 or 10 (0 VDC).

NOTE:

Leave the negative meter lead connected during the remainder of the procedure.

Verify the negative 15.0 VDC power supply at pin 4 of either U12 or U13.

Verify the positive 15.0 VDC by connecting at pin 7 of either U12 or U13.

MEASURE THE ACCELEROMETER SOURCE CURRENTS:

Place a 2K ohm resistor in series with the positive meter lead.

Place the resistor/meter in series with the "X" accelerometer input.

Measure & record the constant current.

The current at each input must be 5.2mA, +/- 0.3mA. (4.9mA - 5.5mA)

This can be done by using the free lead of the resistor as a probe and inserting it into the center (+) conductor of the associated inputs BNC connector.

Replace the 2K ohm resistor with the 1K ohm resistor.

Measure each of the accelerometer inputs again.

The reading must be close to the 2K value (2k current reading +/- 0.05mA)

0.0 VDC OUTPUT ADJUSTMENT:

Connect a 2K ohm, 1% resistor to all 4 inputs:

"X" (TB2 pins 1 & 2)

"Y" (TB2 pins 3 & 4)

"Z" (TB2 pins 5 & 6)

"PT" (TB2 pins 7 & 8)

Connect positive meter lead to: TB1 pin 3 ("X"), adjust pot R15 for 0.0 VDC output.

TB1 pin 5 ("Y"), adjust pot R16 for 0.0 VDC output.

TB1 pin 7 ("Z"), adjust pot R14 for 0.0 VDC output.

TB1 pin 9 ("PT"), adjust pot R17 for 0.0 VDC output.

Repeat until all outputs read 0.0 VDC.

Connect positive meter lead to TB1 pin 1 ("Average"), adjust pot R44 (20K pot) for 0.0 VDC output.

1.0 VDC OUTPUT ADJUSTMENT:

Set bits 1, 2, 3 & 4 of dip switch S1 (Filter) to the "Out" (OFF) position.

"X" : Remove 2K ohm, 1% resistor from "X" input (TB2-1 & 2) and connect the generator.
Set Generator output to 250HZ Sine wave at 1.0 V rms (must be true rms).
Connect positive meter lead to TP4 and verify 1.0 V rms.
Connect positive meter lead to "X" output, TB1 pin 3.
Adjust pot R11 for 1.0 VDC.

Remove generator from "X" input (TB2-1 & 2) and reinstall 2K ohm, 1% resistor.
"Y" : Remove 2K ohm, 1% resistor from "Y" input (TB2-3 & 4) and connect generator.
Set Generator output to 250HZ Sine wave at 1.0 V rms (must be true rms).
Connect positive meter lead to TP3 and verify 1.0 V rms.
Connect positive meter lead to "Y" output, TB1 pin 5.
Adjust pot R12 for 1.0 VDC.
Remove generator from "Y" input (TB2-3 & 4) and reinstall 2K ohm, 1% resistor.

"Z" : Remove 2K ohm, 1% resistor from "Z" input (TB2-5 & 6) and connect generator.
Set Generator output to 250HZ Sine wave at 1.0 V rms (must be true rms).
Connect positive meter lead to TP2 and verify 1.0 V rms.
Connect positive meter lead positive meter lead to "Z" output, TB1 pin 7.
Adjust pot R41 for 1.0 VDC.
Remove generator from "Z" input (TB2-5 & 6) and reinstall 2K ohm, 1% resistor.

"PT": Remove 2K ohm, 1% resistor from "PT" input (TB2-7 & 8) and connect generator.
Set Generator output to 250HZ Sine wave at 1.0 V rms (must be true rms).
Connect positive meter lead to TP1 and verify 1.0 V rms.
Connect positive meter lead to "PT" output, TB1 pin 9.
Adjust pot R13 for 1.0 VDC.
Remove generator from "PT" input (TB2-7 & 8) and reinstall 2K ohm, 1% resistor.

AVERAGE OUTPUT ADJUSTMENT:

Remove the 2K ohm, 1% resistor and connect the Simulator to the "X" input (TB2- 1&2)
Connect positive meter lead to TB1-3 and verify 1.0 Vdc.
Connect positive meter lead to TB1- 1. Average (X, Y, Z output).
Adjust pot R23 for 0.333 Vdc +/- 0.002.
Remove simulator from "X" input (TB2 1&2) and install the 2K ohm, 1% resistor.

Remove the 2K ohm, 1% resistor and connect the Simulator to the "Y" input (TB2- 3&4)
Connect positive meter lead to TB1-5 and verify 1.0 Vdc.
Connect positive meter lead to TB1- 1. Average (X, Y, Z output).
Verify TB1-1 for 0.333 Vdc +/- 0.002.
Remove simulator from "Y" input (TB2 3&4) and install the 2K ohm, 1% resistor.

Remove the 2K ohm, 1% resistor and connect the Simulator to the "Z" input (TB2- 5&6)
Connect positive meter lead to TB1-7 and verify 1.0 Vdc.
Connect positive meter lead to TB1- 1. Average (X, Y, Z output).
Verify TB1-1 for .333 Vdc +/- 0.002.
Remove simulator from "Z" input (TB2 5&6) and install the 2K ohm, 1% resistor.

FILTER ADJUSTMENTS:

FILTERING:

Single stage Low Pass cutoff filter. (See figure on page 6 for filter dip switch settings).

Filter In: 3DB down (.707) @ 2500 Hz

Filter Out: 3DB down (.707) @ approximately 25 kHz

Remove the 2K ohm, 1% resistor from the "X" input and connect the generator.(TB2 - 1 & 2).

Set Generator output to 2500Hz at 1.0 VAC rms (must be true rms).

Connect the positive meter lead to the "X" output TB1 - 3.

Set S1, bit 4 to the "IN" (ON) position.

Adjust pot R45 for a meter reading of 0.707 V DC +/- 0.001V.

Remove the generator and reconnect the 2K ohm, 1% resistor to the "X" input (TB2 - 1 & 2).

Remove the 2K ohm, 1% resistor from the "Y" input and connect the generator. (TB2 - 3 & 4).

Set Generator output to 2500Hz at 1.0 VAC rms (must be true rms).

Connect the positive meter lead to the "Y" output TB1 - 5.

Set S1, bit 3 to the "IN" (ON) position.

Adjust pot R46 for a meter reading of 0.707 V DC +/- 0.001 V

Remove the generator and reconnect the 2K ohm, 1% resistor to the "Y" input (TB2 - 3 & 4).

Remove the 2K ohm, 1% resistor from the "Z" input and connect the generator. (TB2 - 5 & 6).

Set Generator output to 2500Hz at 1.0 VAC rms (must be true rms).

Connect the positive meter lead to the "Z" output TB1 - 7.

Set S1, bit 2 to the "IN" (ON) position.

Adjust pot R47 for a meter reading of 0.707 Vdc +/- 0.001 V

Remove the generator and reconnect the 2K ohm, 1% resistor to the "Z" input (TB2 - 5 & 6).

Remove the 2K ohm, 1% resistor from the "PT" input and connect the generator. (TB2 - 7 & 8).

Set Generator output to 2500Hz at 1.0 VAC rms (must be true rms).

Connect the positive meter lead to the "PT" output TB1 - 7.

Set S1, bit 1 to the "IN" (ON) position.

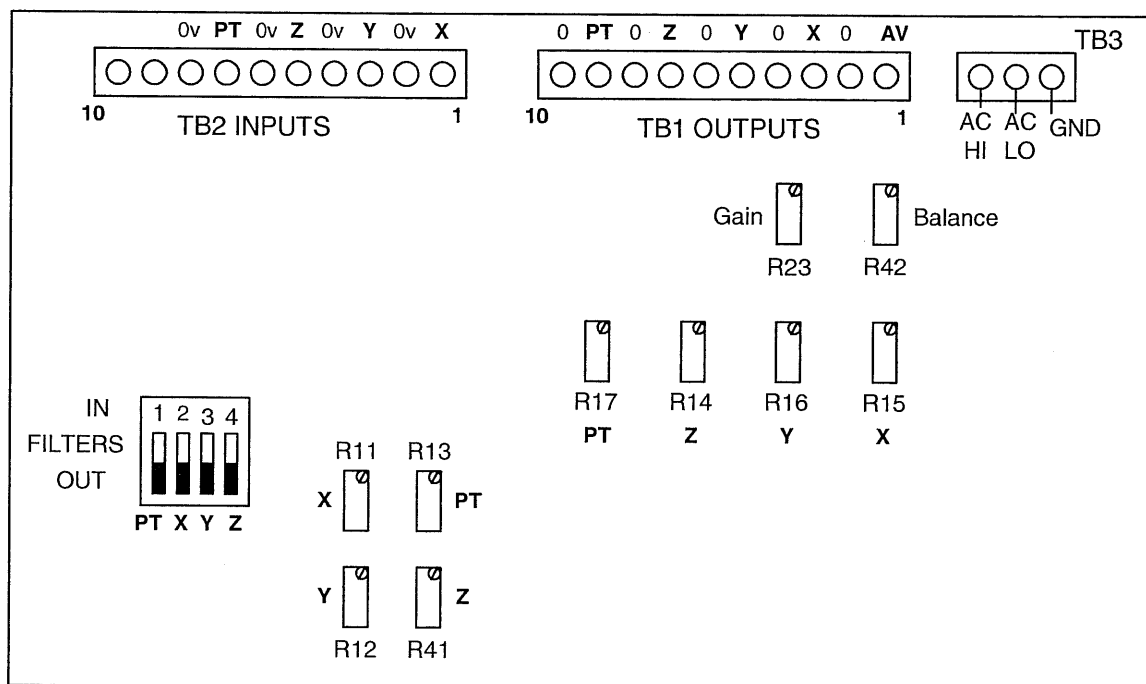
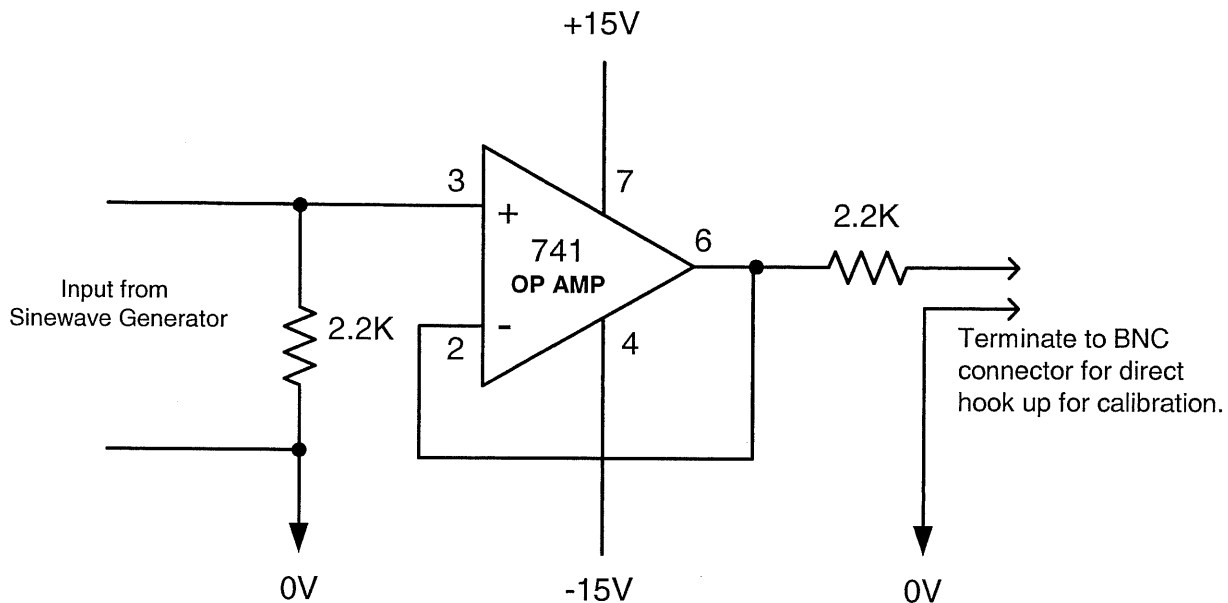
Adjust pot R48 for a meter reading of 0.707 VDC +/- 0.001V..

Remove the generator and connect the 2K ohm, 1% resistor to the "PT" input (TB2 - 7 & 8).

Set switch S1 bits 1 - 4 to the "OUT" (OFF) position.

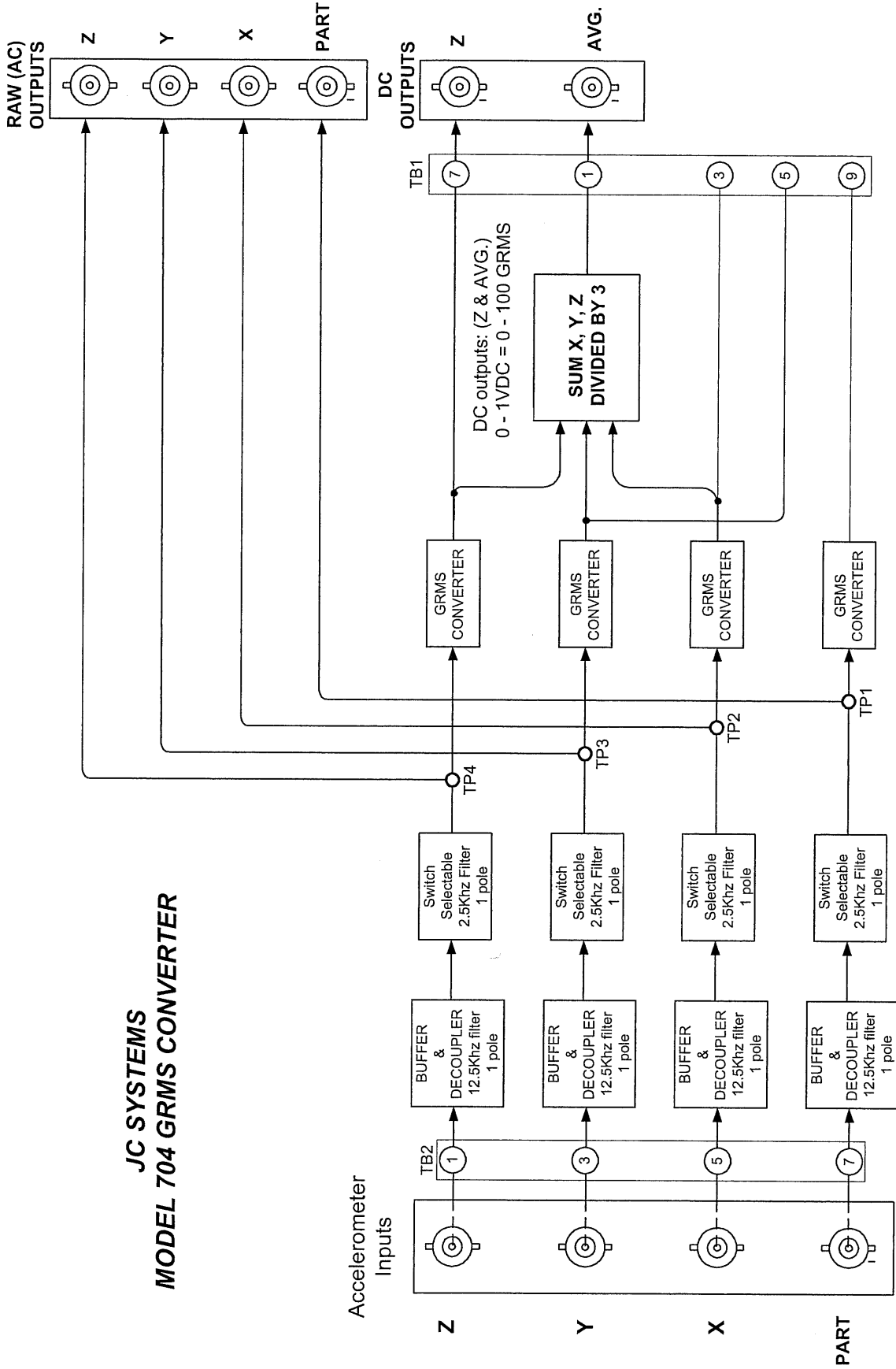
Calibration complete.

Accelerometer Simulator for the A2350, 4 Channel GRMS Converter



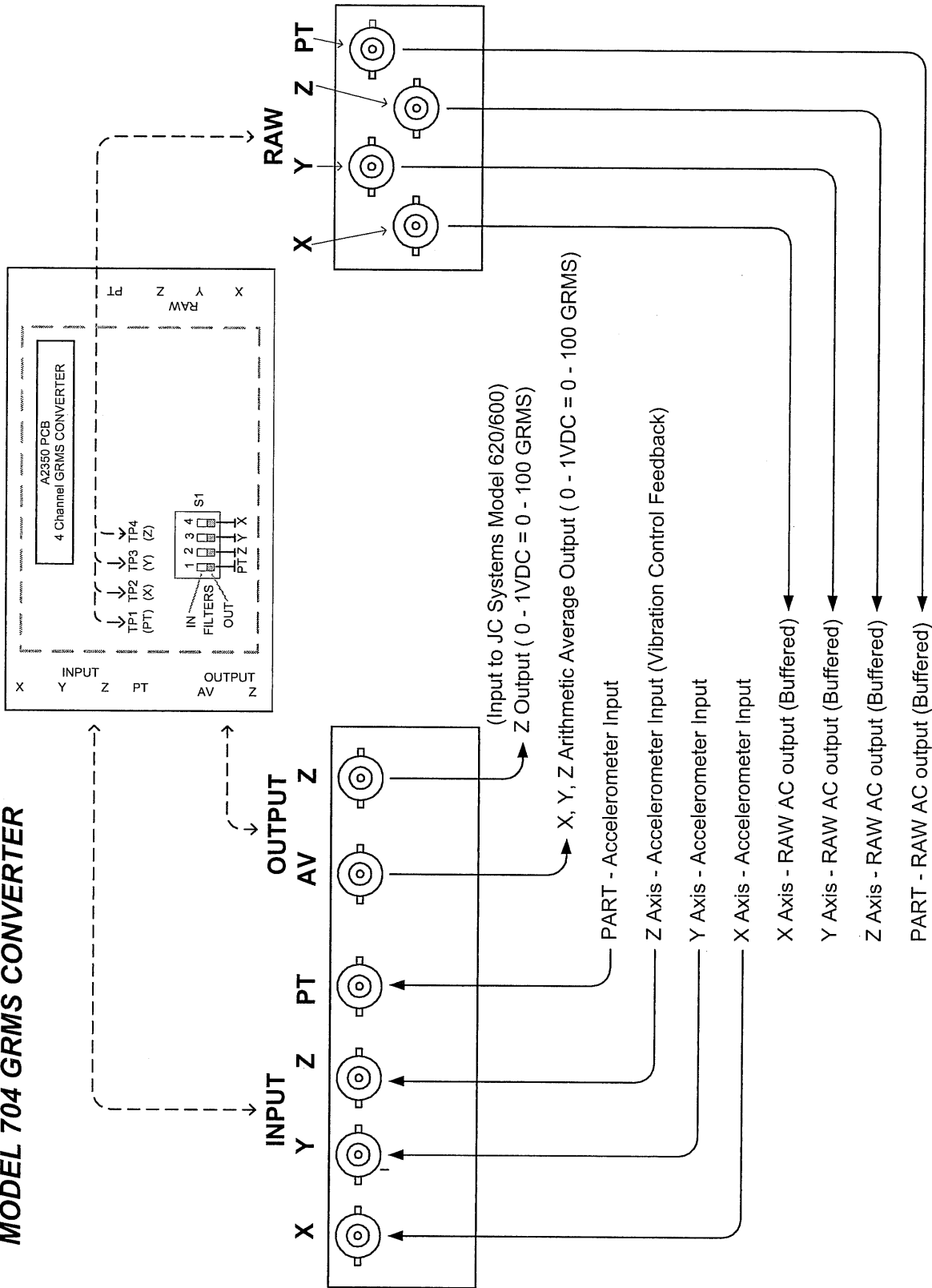
A2350
4 Channel GRMS Converter PCB

JC SYSTEMS MODEL 704 GRMS CONVERTER



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JC SYSTEMS MODEL 704 GRMS CONVERTER



MODEL 620\600 CHANNEL 1 INPUT CALIBRATION FOR JCS A704 GRMS CONVERTER 0 - 1VDC

EQUIPMENT REQUIRED: 0.0 - 1VDC VOLTAGE SOURCE TO PROVIDE INPUT TO CH1.

NOTE: The TB1 input connections are CH1 (2 "+", 3 "-") Model 620/600 and CH1 (1 "+", 4 "-") for the Model 620A/600A..

The Model 620/600 may have an external M355 input board located on the back of the unit connected to TB1 pins 2 & 3 (CH1 input). If so, the voltage input is connected to the M355 board.

	Model 620/600	Model 620A/600A
TB1 Pin	1 - CH1 Iso Gnd	1 - CH1 lin In +
	2 - + CH1	2 - CH1 Iso Gnd
	3 - - CH1	3 - CH1 +
	4 - - CH2	4 - CH1 -
	5 - + CH2	5 - CH2 -
	6 - CH2 Iso Gnd	6 - CH2+
		7 - CH2 Iso Gnd
		8 - CH2 Lin In

Connect the voltage source output to TB1 pin 2 (+), and pin 3 (-) or the M355 bd.(620/600), or TB1 pin 1 (+) and pin 4 (-) (620A/600A).

CONFIGURE UNIT FOR CALIBRATION:

From the MAIN MENU

Push <4> (Config Tune\Calib)
Push <2> (Config Contrls\tune)
Push <1> (Config CH1)

If the **CH1 UNITS** are not set for **LINEAR**:

Push <SEL> for **LINEAR** (Else)
Push <DOWN ARROW>

If **INPUT** is not set for **LINEAR MV**:

Push <SEL> for **LINEAR MV** (Else)
Push <DOWN ARROW>

If **SPAN - SETPOINT** is not set for Max **105**, Min **-5**

Input 105 for Max value from keypad (then)
Push <RIGHT ARROW>
Input -5 for Min value from keypad

Note: The controller span has no effect on the controller calibration.

ENTER CHANNEL 1 CALIBRATION:

NOTE: ONLY PUSH <ENTER> WHEN INSTRUCTED.

Push <PAGE UP>
Push <PAGE UP>
Push <3> (Calibrate Inputs)
Push <PAGE DOWN> (Cold Junction)
Push <PAGE DOWN> (CH1_LO ACTUAL)

Set the output of the voltage source to **0.0 VDC**.

At the **CH1 LO_ACTUAL: CALIBRATOR SETTING.** prompt,
Push "0.0" on the keypad.
Push <ENTER>
Wait 10 seconds.
Push <PAGE DOWN>

Set the voltage source output to **1.0 VDC**.

At the **CH1 HI_ACTUAL: CALIBRATOR SETTING.** prompt,
Push **100.0** on the keypad.
Push <ENTER>
Wait 10 seconds.

Push <RESET> (To HOME -STOP Screen)

Calibration is complete.

Vary the CH1 input value from 0 to 1vdc and make sure the process reading tracks the input linearly from 0 to 100 % for 0 to 1VCD input. This is a linear relationship.

NOTE: Whenever a new *Input Type* is selected from the *Controller Configuration*, the controller outputs will be disabled.
If the *Current Loop* outputs are selected for *Setpoint or Process Retransmit* they will latch on the last output value they were at when the new Input Type was selected.
To reactivate the outputs, it is necessary for the controller to receive a new setpoint either from the Manual Mode or by running a program.

Addendum to 704-GRMS System Calibration

This additional procedure insures that the display on the 600A/620A is accurate at low levels of vibration testing.

Background:

The calibration of the Model 704_GRMS consists of setting 0 Grms and 100 Grms vibration levels.

The output is calibrated for 0 Grms input and should produce 0.0 vdc output corresponding to 0 Grms.

The output gain of the GRMS Model-704 is adjusted to produce 1.0 vdc for the equivalent of 100 Grms at the input to the GRMS Model-7004. (All predicated on a 10 mv/Grms accelerometer).

At times the 00 adjustment of the GRMS unit will not allow a true value of 0.0 vdc to be obtained. Instead, the 0 adjustment may result in small offsets, such as 8 millivolts (equivalent to 0.8 Grms) or less.

When this occurs, the controller (channel 1 of the 600A/66620) calibration will compensate for the error at low g values.

What to do!

Connect the output of the 704-GRMS unit to the Ch 1 controller input.

Power On the units with the accelerometer disconnected.

Insure that the GRMS output has stabilized (in this example 0.8 Grms).

Go t the calibrate screen of the controller for channel 1 by pushing the following -

<Page Down>

<4> (CONFIG-TUNE-CALIB)

<3> (CALIBRATE INPUTS)

<Page Down>

<Page Down>

enter the value of 0.0 for the calibration setting of the "CH1_LO_ACTUAL" screen and push <Enter>

You should see 0.0L in the right corner of the upper display.

Push <Reset>, <Reset> to leave the calibrate screen and return to the main screen.

This calibrates the system as a whole and provides correct display for the various levels of Grms.