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 predicted 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.

A2350 4 Channel GRMS Converter Calibration Procedure

EQUIPMENT REQUIRED:

True RMS DVM (Digital Volt Meter), Sinewave Generator**,** 4 ea. 2K ohm, 1% resistors (Dummy Loads), 1 ea. 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.

Measure the - 15.0 VDC by connecting the positive meter lead to pin 4 of either U12 or U13.
Measure the + 15.0 VDC by connecting the positive meter lead to 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 exactly the same as that measured with the 2K resistor +/- 0.00mA.

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 25000 HZ

0.0 VDC OUTPUT ADJUSTMENT:

Connect 2K ohm, 1% resistors to: "X" (TB2 pins 1 & 2), "Y" (TB2 pins 3 & 4), "Z" (TB2 pins 5 & 6) and "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 R 14 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 R42 (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 0.3333 Vdc.
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).
Check TB1-1 for 0.3333 Vdc.
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).
Check TB1-1 for .3333 Vdc.
Remove simulator from "Y" input (TB2 5&6) and install the 2K ohm, 1% resistor.

FILTER ADJUSTMENTS:

Remove the 2K ohm, 1% resistor and connect the generator to the “X” input (TB2 - 1 & 2).
Set Generator output to 2500Hz at 1.0 V 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 Vdc.
Remove the generator and connect the 2K ohm, 1% resistor to the “X” input (TB2 - 1 & 2).

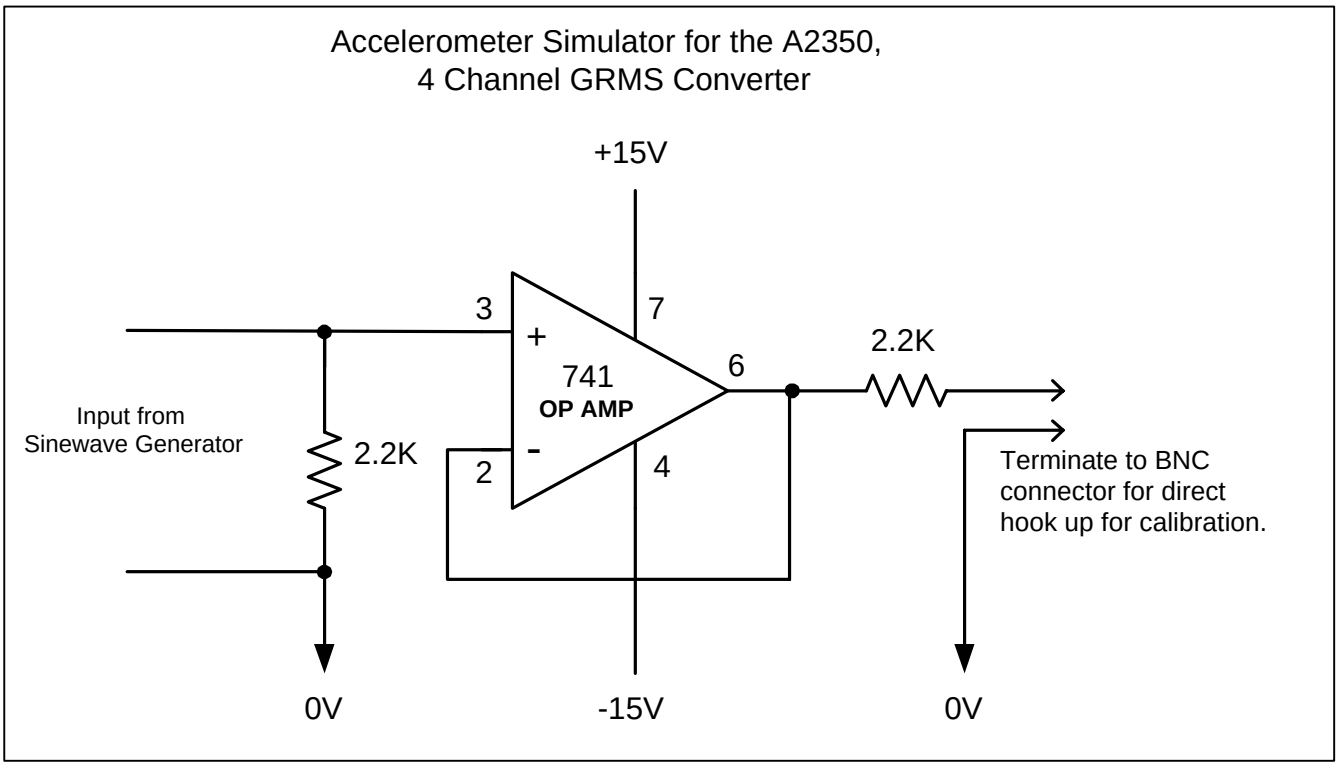
Remove the 2K ohm, 1% resistor and connect the generator to the “Y” input (TB2 - 3 & 4).
Set Generator output to 2500Hz at 1.0 V rms (must be true rms).
Connect the positive meter lead to the “Y” output TB1 - 5.
Set S1, bit 3 to the “IN” (ON) position.
Adjust pot R46 for a meter reading of 0.707 Vdc.
Remove the generator and connect the 2K ohm, 1% resistor to the “Y” input (TB2 - 3 & 4).

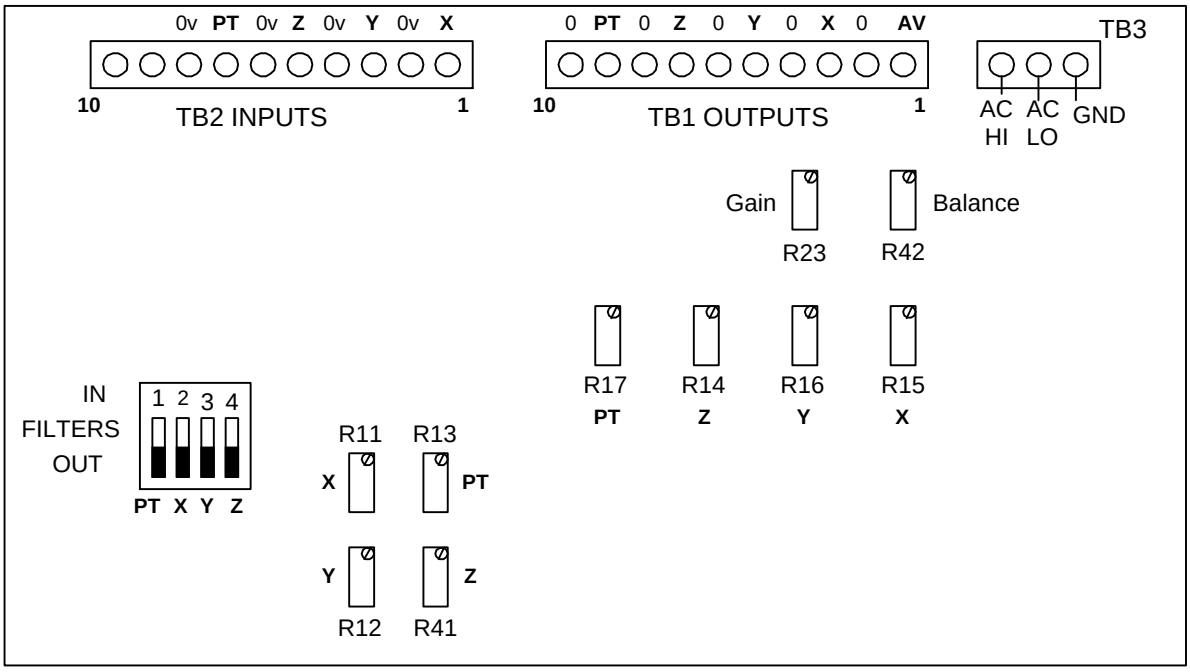
Remove the 2K ohm, 1% resistor and connect the generator to the “Z” input (TB2 - 5 & 6).
Set Generator output to 2500Hz at 1.0 V rms (must be true rms).
Connect the positive meter lead to the “Z” output TB1 - 7.
Set S1, bit 2 to the “IN” (ON) position.
Adjust pot R47 for a meter reading of 0.707 Vdc.
Remove the generator and connect the 2K ohm, 1% resistor to the “Z” input (TB2 - 5 & 6).

Remove the 2K ohm, 1% resistor and connect the generator to the “PT” input (TB2 - 7 & 8).
Set Generator output to 2500Hz at 1.0 V 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.
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.





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4 Channel GRMS Converter PCB

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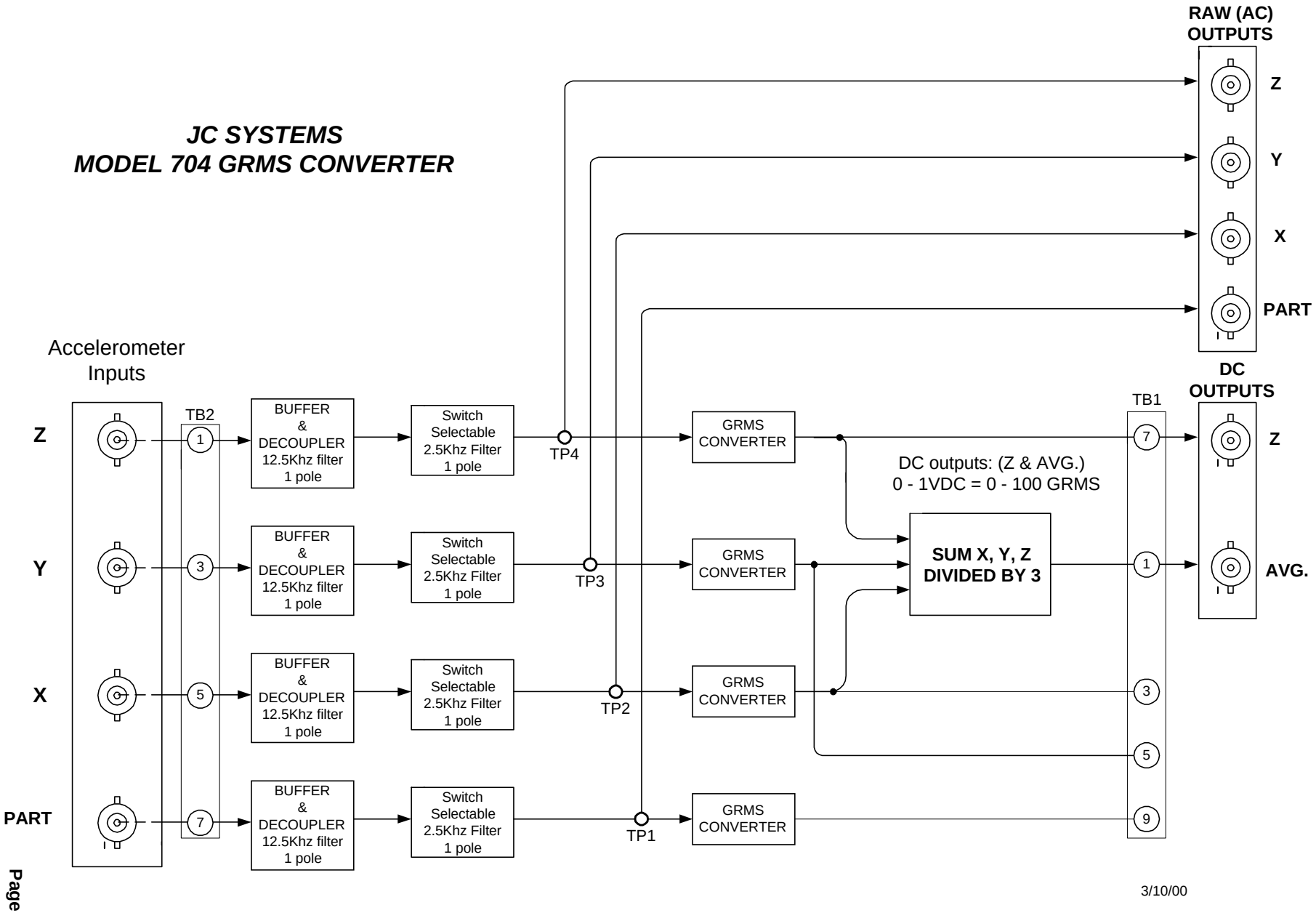
JC SYSTEMS
MODEL 704 GRMS CONVERTER
RAW (AC) OUTPUTS
Z
Y
X
PART
Accelerometer Inputs
DC OUTPUTS
TB1
TB2
Z
Y
X
PART
1
3
5
7
BUFFER & DECOUPLER 12.5Khz filter 1 pole
Switch Selectable 2.5Khz Filter 1 pole
TP4
TP3
TP2
TP1
GRMS CONVERTER
DC outputs: (Z & AVG.)
0 - 1VDC = 0 - 100 GRMS
SUM X, Y, Z DIVIDED BY 3
AVG.
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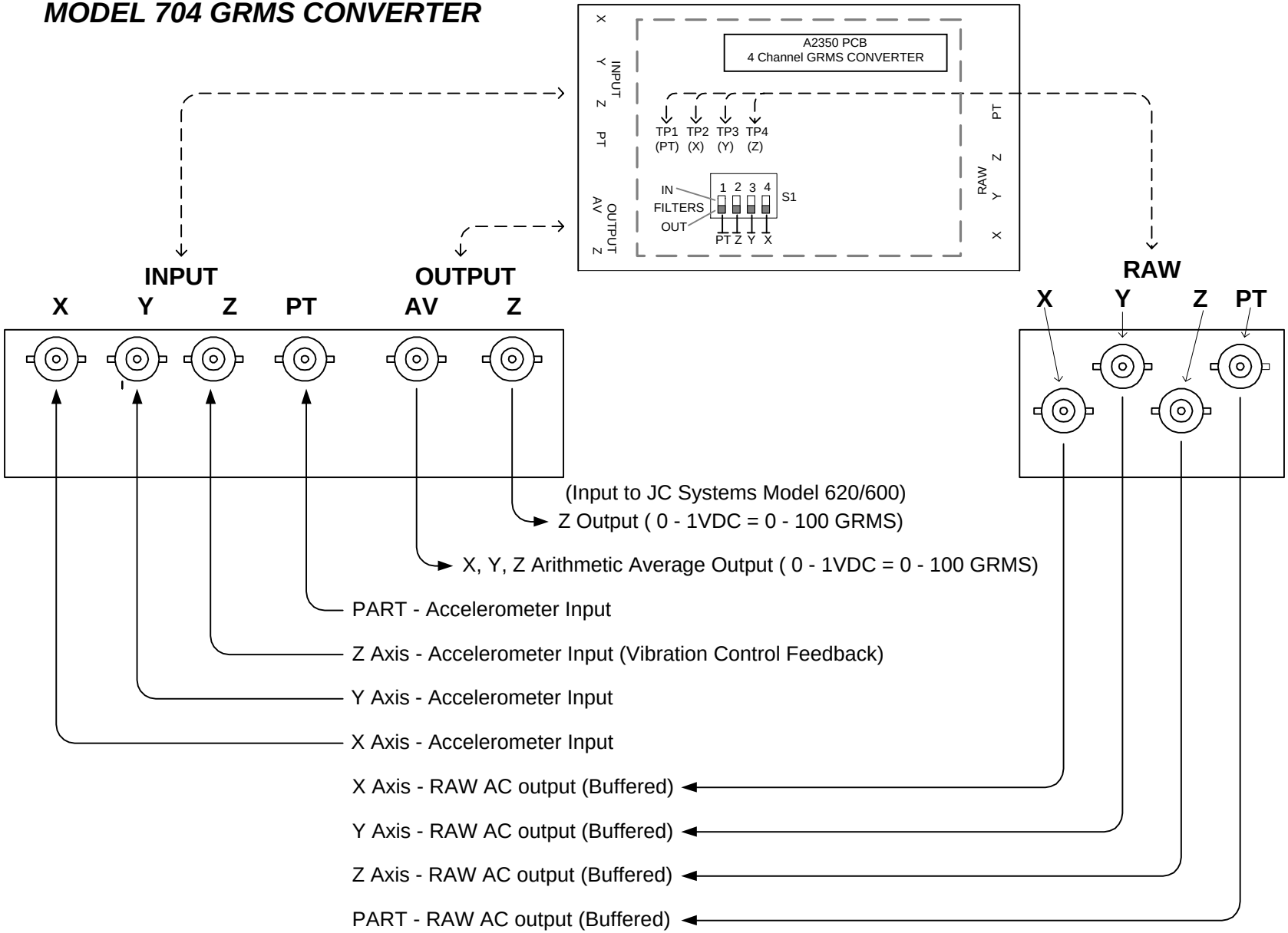
JC SYSTEMS
MODEL 704 GRMS CONVERTER



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