LOU-GED-D3800NRTB-A

9.0 NRTBCAL.1A CALIBRATION INSTRUCTIONS

9.1 SCOPE

THE FOLLOWING DESCRIBES THE SETUP AND CALIBRATION PROCEDURE FOR THE PWB DS3800NRTB.

9.2 SPECIAL TEST EQUIPMENT

1. 100 OHM PRECISION SHUNT. ~~(USE P/N 7-639)~~ USE FLUKE 5500A CALIBRATOR
2. ALL MEASUREMENTS MUST BE MADE WITH METER TYPE ~~HP3456A~~ FLUKE 45
3. PWB WARMUP FIXTURE. - H033913

9.3 POWER SUPPLY REQUIREMENTS

P5	PA3, 45, 77
DCOM	PA1, 43, 79
P15	PA5
N15	PA7
ACOM	PA9

CONNECT ACOM AND DCOM TOGETHER FOR TEST

ON MAUNAL CONSOLE: SWITCHES ~~A1,A2,A3,A4~~ P5 P15 N15 P28 SET TO "UP" POSITION FOR CONNECTING POWER TO PWB.

9.4 INITIAL SETUP

1. CONNECT A 10K RESISTOR FROM PA32 TO P5 IN FIXTURE
2. PUT BERG JUMPER J1 IN POSITION "L".

9.5 DAUGHTER BOARD

NONE

9.6 CALIBRATION PROCEDURE

NOTES:

A. THE NRTB CONTAINS EIGHT DUPLICATE CIRCUITS OR CHANNELS. SIGNAL NAMES AND COMPONENTS OF EACH CHANNEL IS REFERED TO IN THIS TEST WITH ITS BASIC NOMENCLATURE PLUS AN X. THE X REFERS TO 0-7 DEPENDING ON WHICH CHANNEL IS BEING REFERED TO. SEE THE CHART ON THE LAST PAGE OF THIS TEST FOR A COMPLETE DESCRIPTION OF ALL CHANNEL NOMENCLATURES.

B. UNLESS OTHERWISE SPECIFIED ALL OUTPUT MEASUREMENTS MUST BE MADE WITH RESPECT TO TP1 (ACOM).

C. NOTE: PRIOR TO PERFORMING THE CALIBRATION, IT IS RECOMMENDED THAT THE FOLLOWING CONDITIONS BE MET:

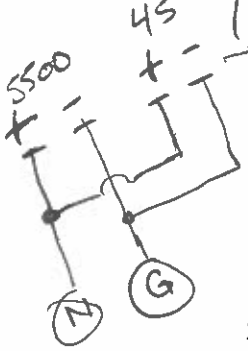
- WARM UP 15 MINUTES PRIOR TO CALIBRATION. (USE PWB WARMUP FIXTURE.)

ALL SWITCHES IN DOWN POSITION

- CALIBRATE IN A STILL AIR ENVIRONMENT. (ROOM AMBIENT WITH NO AIR FLOW FROM AIR CONDITIONERS, ETC IS PERMISSABLE.)
- WARM UP TEST EQUIPMENT 15 MINUTES PRIOR TO CALIBRATION.
- ALL TEST LEADS MUST BE AS SHORT AS POSSIBLE.
- CALIBRATE IN A LOW ELECTRICAL NOISE ENVIRONMENT.
- UNLESS OTHERWISE SPECIFIED, ALL MEASUREMENTS MUST BE MADE WITH RESPECT TO TP1 (ACOM)

1. SET UP AND APPLY POWER PER SECTIONS 9.3 AND 9.4 SET CAL UP FLUKE 5500A

2. ~~ON MANUAL CONSOLE:~~ SET SWITCHES ~~A6,A7,A8 TO "UP"~~ (CLOSED) POSITION. SET ~~SWITCHES PA2,4,10,12,14,~~16,17,18,25,26,34,38, ~~40,46,49,~~51,58,62,64,66,67,68,69,~~71 TO THE "UP"(CLOSED) POSITION.~~ SET TO 0°C



TYPE Pt385
Output RTD
Comp off

ISO POWER SW UP

APPLY POWER TO ALL ISOLATED POWER ~~CONNECTIONS~~ BY TIEING ALL P15IX INPUTS TO P15, ALL N15IX INPUTS TO N15, AND ALL ACOMIX INPUTS TO ACOM. THEN, ONE AT A TIME CONNECT THE 100 OHM SHUNT SPECIFIED IN SECTION 9.2 BETWEEN RTDNX AND RTDGX OF EACH CHANNEL. AFTER ONE MINUTE WARMUP ADJUST RX SO THAT THE VOLTAGE MEASURED ACROSS THE SHUNT IS 100 +/- .05MV. (ADJUST AS CLOSE TO NOMINAL AS POSSIBLE.) BE SURE TO KEEP ALL TEST LEADS AS SHORT AS POSSIBLE.

3. ON MANUAL CONSOLE: SET SWITCHES A6,A7,A8 TO "DOWN"(OFF) POSITION.

SW DOWN

REMOVE ALL ISOLATED POWER ~~CONNECTIONS MADE IN STEP 2 AND THEN~~ JUMPER RTDNX, RTDLX, AND RTDGX INPUTS TOGETHER FOR ALL CHANNELS. SET ALL CH SW'S UP

4. ~~REMOVE SHUNT~~. REMOVE ALL CONNECTIONS - SET CHANNEL SEL SW'S UP WITH PA72, PA76, AND PA78 FLOATING, JUMPER RTDN7, RTDL7, AND RTDG7 INPUT NODE TO TP1. THEN MAKE THE FOLLOWING ADJUSTMENTS IN THE SEQUENCE INDICATED. ALLOW ONE MINUTE FOR DRIFT FOR EACH ADJUSTMENT AND READJUST IF NECESSARY. ADJUST ALL POTS FOR AS CLOSE TO NOMINAL AS POSSIBLE.

A. ADJUST R9 FOR 0 +/- .1 MILLIVOLTS AT TP2.
B. ADJUST R10 FOR 0 +/- .1 MILLIVOLTS AT TP3.
C. ADJUST R11 FOR 0 +/- .1 MILLIVOLTS AT TP4.
D. REPEAT A THROUGH C UNTIL ALL THREE TP'S ARE WITHIN TOLERANCE WITHOUT MAKING FURTHER ADJUSTMENTS. (SHOULD TAKE ABOUT 3 REPITITIONS.)
E. JUMPER TP3 AND TP4 TO TP1 AND ADJUST R12 FOR 0 +/- .1 MILLIVOLTS AT TP5. (JUMPER BETWEEN TP3 AND TP4 MUST BE VERY SHORT.)
F. REMOVE JUMPERS ON TP3 AND TP4; JUMPER TP5 TO TP1, THEN ADJUST R13 FOR 0 +/- .1 MILLIVOLTS AT TP6.
G. REMOVE JUMPERS FROM RTD NODE (RTDNX7) TO TP1 AND FROM TP5 TO TP1 AND AGAIN ADJUST R13 FOR 0 +/- .1 MILLIVOLTS.

100000nV

5. WITH RTD INPUTS STILL TIED TOGETHER FOR ALL CHANNELS, MEASURE AND RECORD EXACT OUTPUT AT TP6. THEN REMOVE JUMPERS BETWEEN ~~RTDNX AND RTDGX~~ INPUTS BUT LEAVE JUMPERS BETWEEN ~~RTDGX~~ AND ~~RTDLX~~ INPUTS.

L + N J

Remove for the rest of test.

G — L

Keep

6. USING AN ISOLATED PRECISION VOLTAGE SOURCE, APPLY AS CLOSE TO +199.640 MILLIVOLTS AS POSSIBLE BETWEEN RTDG7 (+) AND RTDN7 (-). USING A DVM THAT DISPLAYS DOWN TO THE UNITS PLACE IN MICROVOLTS, MEASURE AND RECORD INPUT FROM VOLTAGE SOURCE. THEN ADJUST R16 SO THAT THE VOLTAGE AT TP6 IS EQUAL TO THE FOLLOWING: 199.640

199.640 mV 10 V ±

TP6 = [(INPUT X 50.0902) + (STEP 5 MEASUREMENT)] +/- 3 MILLIVOLTS

(SHOULD BE VERY CLOSE TO 10.000 VOLTS +/- 3 MILLIVOLTS.)

SEAL ALL POTS

199.640Ω 265, 348 °C
509, 627 °F

END OF CALIBRATION

CHANNEL	RTDGX	RTDLX	RTDNX	RX	P15IX	N15IX	ACOMIX	ELEM
0	JA19	JA21	JA20	R1	PA67	PA68	PA69	4AA
1	JA23	JA22	JA24	R2	PA66	PA64	PA71	4BA
2	JA18	JA16	JA17	R3	PA62	PA51	PA58	4CA
3	JA14	JA13	JA15	R4	PA49	PA40	PA46	4DA
4	JA12	JA10	JA11	R5	PA38	PA25	PA34	4EA
5	JA7	JA9	JA8	R6	PA26	PA17	PA18	4FA
6	JA5	JA6	JA4	R7	PA14	PA4	PA10	4GA
7	JA2	JA3	JA1	R8	PA12	PA2	PA16	4HA

VER	INIT	DESCRIPTION OF CHANGE	DATE COMPLETE
0	VANDY	FIRST MADE FOR NRTB1A1A	03/04/84
1	VANDY	REMOVED UNNECESSARY STEPS. GENERAL CLEANUP.	11/29/84
2	VANDY	IMPROVED CALIBRATION AND REMOVED STEPS NOT RELATED TO CALIBRATION.	12/02/85
3	VANDY	ADDED REFERENCES TO PWB WARMUP FIXTURE.	10/22/86
4	JERRY	ADDED MARKS TO ORIGINAL TEST	24FEB88
5	JERRY	UPDATED MARKS	03MAY88
6	VANDY	CHANGED MISC TOLERANCES TO +/- .1MV AND ADDED STEP 4D.	15JUN90