## GENERAL B ELECTRIC

68 A 9 4 4 8 9 5

CODE IDENT NO.

CONT ON SHEET 2 TITLE THERMOCOUPLE AMPLIFIER TEST INSTRUCTIONS 68A944895 CONT ON SHEET 2 SH NO. 1 IC3600STKJ1 MARK III FIRST MADE FOR CARE SHOULD BE TAKEN IN MAKING ADJUSTMENT AND READINGS BECAUSE SETTINGS ARE REVISIONS VERY CRITICAL FOR PROPER OPERATION. TEST INSTRUCTIONS A. EQUIPMENT LIST 1. 12 VOLT POWER SUPPLIES - ±12V @ 100MA. 2. 28 VOLT POWER SUPPLY@100MA. 3 /2) DIGITAL VOLTMETER - DC MVOLTS. (KEITHLY DIFFERENTIAL MODEL #660 OR EQUIVALENT) 4. OCILLOSCOPE (HP3455 OR DANA 5900 (6 1/2 DIGIT) 5. WAVETEK - 100HZ AT 5V P-P 6. DC MILLIVOLT SOURCE - 0 TO 50MV ±.01MV. 7. THERMOMETER (F). ACCURATE TO ± .2 F OR BETTER. 8. MILLIAMMETER O-1MA. 9. RTV Resistor 68A7035P681E (6.81K) from OUT (17) to SCOM (33) for loading. 10: જ TEST SET UP P28 N12 23 27 29 1C3600STKJ1 ΜV SOURCE NOTE: POLARITY OF MV SOURCE MAY HAVE TO BE REVERSED TO ACHIEVE (22)(33)(2,50)(5) SOME ZERO OUTPUTS. TO EARTH OR BUILDING 6.81K **GROUND** PCOM **EXCOM** GRD CHASSIS **POWER** ON POWER SUPPLY COM SUPPLIES DL22: 2520 PRINTS TO MADE BY APPROVALS S. B. HILL DRIVE SYSTEMS. DIV OR 68A944895 - 73 SALEM, VA CONT ON SHEET 2 SH NO. 1 LOCATION

FF-803 WF (4-72)

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687	. 9	4 4 8	3 9 5				COUPLE AMI		·		
CONT ON SHEET	3	} ·	sh No.	2	FIRST MADE	E FOR 1036005	STKJI MAF	RK 111	:		
											REVISIO
c.	PRO	CEDU	RE_								***************************************
	1.	ALL WIT	OW CA	RD TO W	ARM UP FOR SHORTED T	AT LEAST OF	NE HOUR IN	"WARM UP"	BOX UNDER POV	√ER	
	2.	UP"	BOX	MUST BE FOR AT	LEAST ONE	FOR ANY REAS HOUR. (CONT	SON, PUT F	REPAIRED CAR	D BACK IN "WA W CARD FROM	\RM	
	з.	INI	TIAL	CHECK	(INSURE J	UMPERS 12	TO 37 D1	SCONNECTE:	D)		
		В.	CHEC CHEC			P121 = +12, N121 = -12, P6 <sub>*</sub> 2 = +6,	6v ± 1v		+ (4) TO (6) TO (3) TO	(2) -	
	4.	ME NO FOI VOI A. B.	TER M 1PERA DRÁF TAGE REA RTD REA + • REC BE	ATURE OF TEACH OF THE CONTROL OF THE	AKE SOLID OF THE CAP NAKE SURE 10-15 MIN CORRESPON OLTS +BP NGE. + .00 OLTS +BP NTEPS A AN	CONTACT WRD STAYS CONTACT WITES BEFORE TO RTD (49) TO BE (50) TO B	ITH THE ONSTANT OMETER RE CALIB TEMPERA C (47).  N (46).  AND R81	RTD BLOCK. DURING CAL EADING IS RATING. A TURE ON CH ADJUST R8 ADJUST R8 INTERACT.	CALIBRATION MAKE SURE IBRATION, STABLE (+ ADJUST POTS IART. B2 PER CHART ADJUSTMENT	THERMO-E THE  2°F) TO READ  FOR	
	-					Ts for aljustment L. Pepad	• /	R86 R80 RTD	R84 R83 R85 O O		1-B411604AN 3/6/79 MAC 2 - 7MAY86 JMT S 8 SEPREJM
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FF-803 WF (5-74)

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DRIVE SYSTEMS DIV OR 68.
SALEM, VIRGINIA LOCATION CONT ON SHEET

68 A 9 4 4 8 9 5

SH NO. 2

CODE IDENT NO.

## GENERAL & ELECTRIC

684944895

TITLE CONT ON SHEET 4 3 TEST INSTRUCTIONS 68A944895 THERMOCOUPLE AMPLIFIER IC3600STKJ1 CONT ON SHEET 3 SH NO. FIRST MADE FOR MARK III POT-R81 651. POT-R82 REVISIONS DEG-F EO (49) TO (46) 70 t VRTD (49) TO (47) 65 2.0961E-3 1.02744E-2 NOTE: NUMBERS PRECEEDING (E-3) 65.5 2.10734E-3 1.02857E-2 ARE READ DIRECTLY IN MV. 66 2.11858E-3 0.010297 NUMBERS PREECEEDING (E-2) 66.5 2,12982E-3 1,03082E-2 ARE READ IN MILLIVOLTS BY 67 2.14107E-3 1.03195E-2 MOVING DECIMAL POINT ONE 67.5 2.15231E-3 1.033078-2 PLACE TO THE RIGHT. NUMBERS 68 2,16355E-3 0.010342 WITHOUT EXPONENTS ARE IN 68.5 2.17479E-3 1.03532E-2 VOLTS. 69 2.18603E-3 1,03645E-2 69.5 2.19727E-3 1.03758E-2 70 2.20851E-3 0.010387 70.5 2.21975E-3 1.03983E-2 71 2.23099E-3 1.04095E-2 71,5 2.24224E-3 1.04208E-2 72 2,25349E-3 0.01/0432 72.5 2,26472E-3 1.04433E-2 73 2.275596E-3 1.04546E-2 73.5 2.2872E-3 1.04658E-2 74 2,29844E-3 1.04771E-2 74.5 2.30968E-3 1.04883E-2 75 2.32092E-3 1.04996E-2 75.5 2.33216E-3 1.05108E-2 76 2.3434E-3 1.05221E-2 76.5 2.35464E-3 1.05334E-2 77 2.36588E-3 1.05446E-2 .002248 77.5 2.37712E-3 0 1.0559E-2 78 2,38836E-3 1.05671E-2 78.5 2.3996E-3 1.05784E-2 79 2.41084E-3 1.05896E-2 79.5 2,42208E-3 1.06009E-2 80 2.43332E-3 1.06121E-2 80.5 2.44456E-3 1.06234E-2 81 2.4558F-3 1.06347E-2 81.5 2.46704E-3 1.06459E-2 82 2.47828E-3 1.06572E-2 82.5 2.48952E-3 1.06684E-2 83 2.50076E-3 1.06797E-2 83,5 0.002512 1.06909E-2 84 2.52324E-3 1.07022E-2 84.5 2.53448E-3 1.07134E-2 85 2.54572E-3 DL22 1.07247E-2 85.5 2.55696E-3 2520 0.010736 86 2.5682E-3 1.07472E-2 86.5 2.57944E-3 1.07585E-2 87 2.59068E-3 1.07697E-2 87.5 2.60192E-3 0.010781 88 2.61316E-3 1.07922E-2 88.5 2.6244E-3 1,08035E-2 89 2.63564E-3 1.08147E-2 PRINTS TO MADE BY APPROVALS TURNER DIV OR DRIVE\_SYSTEMS 68 A 9 4 4 8 9 5 SALEM, VA

FF-803 WF (1-72)

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CONT ON SHEET LOCATION

CODE IDENT

GENERAL (36) ELECTRIC 68A944895 TITLE CONT ON SHEET 5 👡 зн но. THERMOCOUPLE AMPLIFIER 68A944895 TEST INSTRUCTIONS FIRST MADE FOR 1C3600STKJ1 MARK III CONT ON SHEET SH NO. REVISIONS 89,5 2.64688E-3 0.010826 90 2.65812E-3 1.08373E-2 AC NULL ADJUSTMENT - IC3 A. JUMPER POS (37) TO NEG (12) TAB P TUESCHE B. CONNECT 100HZ ± 10HZ, 1VPP ± .3VPP SINE WAVE BETWEEN POS (37) AND SCOM (33) C. CONNECT OSCILLOSCOPE TO OUT (17) WITH GND TO SCOM (33) Bothon D. ADJUST R83 FOR AN AC NULL (IGNORE HIGH FREQUENCY NOISE) -E. REMOVE SINE WAVE INPUT, OSCILLOSCOPE, AND REMOVE JUMPER POS. (37) TO NEG(12). 2.31 A. ADJUST MV SOURCEATO OBTAIN 0.00 VOLTS ± 5MV BETWEEN POS (37) AND FXCOM (50) 4.74 1.27 1.05 B. READ DC VOLTS COR(43) TO FXCOM(50) OF 9.74V + .5V. W) C. ADJUST MV SOURCE TO OBTAIN 1.461 VOLTS ± 5MV FROM POS (37) TO FXCOM (50) 5.80 6.07 D. READ DC VOLTS COR(43) TO FXCOM(50) OF 5.45V  $\pm$  .4V E. ADJUST MV SOURCE TO OBTAIN 3.410 VOLTS ± 5MV FROM POS (37) TO FXCOM (50) 15,09 F. READ DC VOLTS COR (43) TO FXCOM (50) OF 0.00V ± .3V/14.32 15.31 7. DC OFFSET ADJUSTMENT - 1C2B, 1C3 A. JUMPER COR (43) TO FXCOM (2) 1.10 B. ADJUST MV SOURCE TO OBTAIN 0.00V ± .1MV BETWEEN POS (37) AND FXCOM (50) 1,3/ /.07 C. READ DC VOLTS OUT (17) TO SCOM (33), ADJUST R84 FOR O OV  $\pm$  .1MV (READ STEPS B AND C SIMULTANEOUSLY WHILE MAKING THIS ADJUSTMENT - WAIT 15 SEC. BEFORE MAKING READING) ADJUST FOR THE SAME READING ON (37) TO (50). THEN, ত্ D. REMOVE JUMPER COR (43) TO FXCOM (2) READJUST MV SOURCE AND R84 SO THAT REMOVE MV SOURCE (44) TO (38) BOTH DVM'S TRACK THRU ZERO+- WITH TO STANDBY. A-1-4 uV CHANGE ON THE INPUT: .8. DC OFFSET'ADJUSTMENT - ICI 2123 780810 A. JUMPER BP (49) TO FXCOM (50) B. WAIT 15 SEC. BEFORE MAKING READING .000F C. ADJUST OFFSET POT R85 FOR 0.00 VOLTS ± .1MV BETWEEN POS (37) AND FXCOM (50) D. REMOVE JUMPER BP (49) TO FXCOM (50) CGL 9. GAIN ADJUSTMENT - IC2B @1000°F A. RECONNECT MY SOURCE (44) TO (38) BU945WJ 21.43 B. ADJUST MV SOURCE TO OBTAIN 23.61MV ± .005MV BETWEEN BP (49) AND FXCOM (2,50) 214 \$ C. ADJUST R80 FOR 5.00V ± 1MV BETWEEN OUT (17) AND SCOM (33) CHECK THE FOLLOWING POINTS ιC DEGREES OF  $\Xi$ ADJUST MV SOURCE TO READ READ DC VOLTS OUT BP (49) TO FXCOM (50) (17) TO SCOM (33) 4QA3 100 +- 10uV 2.932MV  $.50 \pm .01$ .001932 300 1RA2 7.457MV  $1.50 \pm .01$ MV 9.43 11.98MV 500  $2.50 \pm .01$ 4EF1 NAME 700 16.53MV  $3.50 \pm .01$ 900 8 0 21 .25MV 1338 4.50 ± .005 1100 25,97₩ 5.50 ± .005 2520 1300 ୬ ନଃଞ୍ଚ 30.69₩V 6.50 ± .01 CAREFULLY REDO PREVIOUS STEPS IF STEP 10 FAILS TO PASS. PRINTS TO

FF-803 WF (5-74) PRINTED IN U.S.A TURNER

MADE BY

ISSUED

SALEM, VIRGINIA

DRIVE SYSTEMS

APPROVALS

68A944895 LOCATION

DIV OR

SH NO.

CODE IDENT NO

68A944895 CONT ON SHEET FL., SH NO. 5 TITLE THERMOCOUPLE AMPLIFIER 68A944895 TEST INSTRUCTIONS FIRST MADE FOR 1C3600STKJ1 MARK 111 CONT ON SHEET FL. SH NO. 5 REVISIONS 11. WITH OUT (17) TO SCOM (33) AT 6.5V CONNECT MILLIAMMETER FROM M(13) TO SCOM (33) ADJUST R86 FOR 1MA READING 12. FINAL CHECK A. CONNECT 1MV SOURCE TO PINS (44) POS, (38) NEG B. PLACE THERMOMETER IN RTD. RECORD TEMPERATURE AND LOOK UP CORRECTION FACTOR IN TABLE 1: DEG F 0 1 2 DEG F 10 THERMOELECTRIC VOLTAGE IN ABSOLUTE MILLIVOLTS 0,397 0,419 0,441 0,464 0,486 0,508 0,530 0,553 0,575 0,597 0,619 50 0.619 0.642 0.664 0.086 0.709 0.731 0.753 0.776 0.798 0.821 0.843 60 60 0.843 0.865 0.888, 0.910 0.933, 0.955, 0.978 1.000 1.023 1.045, 1.068 70 70 1.068 1.090 1.113 1.135 1.158 1.181 1.203 1.226 1.248 1.271 1.294 80 80 1.294 1.316 1.339 1.362 1.384 1.407 1.430 1.452 1.475 1.498 1.520 TABLE | 1.4677 C. ADJUST MV SOURCE AS FOLLOWS: DEGREES (OF) ADJ MV SOURCE OUTPUT SHALL READ TO READ (44 to 38) (17) TO SCOM (33) 1,4798 300 6.092MV MINUS 1.5V ± 50MV (CORRECTION FACTOR) 22.251MV MINUS 1000  $5V \pm 20MV$ (CORRECTION FACTOR) EXAMPLE: AT 76.2°F 6.092 MV (FROM TABLE AT 76°) -.978 MV 5.114 MV 5.059 ADJUST SOURCE FOR 5.114 MV TO OBTAIN 1.5V +- 0.05 AND: 22.251V - .978V 21.318 21.273V: ADJUST THE SOURCE FOR 21.27MV FOR 5.00V+-.02 OUTPUT. 4 13. MARK 1/4 X 1 IN. TIGER LABEL WITH TEMPERATURE UPPER AND LOWER READINGS OBTAINED. ATTACH TO THERMOCOUPLE MODULE. DL22 2520 14. APPLY RTV TO ALL TRIMPOTS EXCEPT R86. PRINTS TO MADE BY APPROVALS DRIVE SYSTEMS

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SALEM, VIRGINIA

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CONT ON SHEET FL.