GENERAL & ELECTRIC

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TITLE

TEST INSTRUCTIONS

2 7 8 A 3 2 1 2

GROUND DETECTOR AND ALARM III

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REVISIONS

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1.0 SCOPE

This document establishes performance requirements and recommended tests for the 278A3136 Ground Detector and Alarm III Printed Wiring Board. This instruction will check analog transfer functions.

2.0 TEST EQUIPMENT

Oscilloscope

Pulse Generator

Resistor 40K Ohm \pm 10%, $\frac{1}{4}$ Watt (minimum)

Resistor 10K Ohm + 10%, 4 Watt (minimum)

3.0 POWER SUPPLY REQUIREMENTS AND PIN CONNECTIONS

NOMINAL VOLTAGE	RANGE	PERCENT REGULATION	MAXIMUM VOLTAGE	CONNECTIONS
*P24	<u>+</u> 10%	4	28	Pins 7 and 8
*N24	-	_	· _	Pins 9 and 10
COM	-	-	-	Pins 3 and 4
10VDC	0-10V	1	15	Signal voltage to be connected as required during test

^{*}Isolated 24VDC Supply

4.0 SETUP AND INITIAL LOADING

Open SW1 (NEG ALO) and SW2 (POS ALO). SW1 and SW2 are open with the toggle on the switch pressed to the downward position.

Connect load resistors and jumpers as required under Section 6.4 of this instruction.

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5.0	STGN	IAL LEVELS	•			
		required during test.				
	110 -					
6.0	TEST	PROCEDURE				
	6.1		ry Inspection			
			nt shall be inspected prior to applic	cation of		
			verify that it is assembled according			
		assembly o				
		,	-			
	6.2	Digital Te	ests			
		Not Appli				
	6.3	Hybrid In	terface Tests			
		Not Appli	cable			
	6.4	Analog Te Set jumpe	ests er 'J1' in the RT. side position.			
		1. Apply	24VDC + 0.1 VDC to pins 7,8 (+) and	pins 9,10 (-).		
			that jumpers J1 and J2 (218A4628P1)			
		•	s and release the GND Reset pushbutt			
			ate of the printed wiring board. Th			
		lights	(LED1 and LED2) should be energized	•		
		Verify	that TP4 is switching from 23 VDC ±	1.0VDC to 1VDC	ł	
		<u>+</u> 1VDC	. This should occur from 1-3 times	per second.		
		4. Connec	t a 40K oh m <u>+</u> 10% resistor from P24	to common. Verify		
		that P	OS GND LED flashes on and off from 1	-3 times per		
		second	. Remove the 40K ohm resistor and v	erify that the LED	*	
		contin	ues to flash. Push the GND RESET pu	shbutton(PB1) and		
		reset	the circuit.		DL1	
		5. Close	POS ALO switch (SW2) and re-connect	the 40K ohm, resistor	3EL	
		from P	24 to COM. Verify that the POS GND	LED flashes on and		
		off.	Verify that pin 21 is at 23V \pm 1VDC.	Open POS ALO		
		switch	and disconnect the 40K ohm resistor	· Push the GND		

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reset pushbutton to reset the circuit.

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TITLE TEST INSTRUCTIONS

GROUND DETECTOR AND ALARM III

FIRST MADE FOR 278A3136

6.0 TEST PROCEDURE (Cont'd)

Analog Tests (Cont'd)

- Connect a 40K ohm \pm 10% resistor from N24 to Com. Verify that NEG GND LED flashes on and off 1-3times per second. Remove the 40K ohm reistor and verify that the LED continues to flash. Push the GND reset pushbutton (PBl) and reset the circuit.
- Close NEG ALO SW and re-connect the 40K ohm $\pm~10\%$ resistor from N24 to COM. Verify that NEG GND LED Flashes on and off. Verify that pin 21 is at 23 \pm 1VDC. Open NEG ALO switch (SW1) and disconnect the 40K ohm resistor. Push the GND reset pushbutton (PBI) and reset the circuit.
- 8. Connect a variable DC power supply from pin 17 (+) to N24 (-). Set the power supply to OVDC. Jumper pins 19 and 20 to P24. Connect a 10K ohm \pm 10% resistor from pin 18 to P24. Verify that TP7 is 1V+ 1VDC. Verify that TP8 is 2V + 1VDC. (TP7 & TP8 may have low level pulses). Raise the power supply voltage to $10.0V \pm 0.1VDC$. Verify that TP7 is $23V \pm 1VDC$. Verify that TP8 oscillates 1-3 times per second from $1V \pm 1VDC$ to $23V \pm 1VDC$. Remove the 10Kohm resistor, jumpers and variable power supply.
- 9. Connect a variable DC power supply from pin 11 (+) to N24. Set the power supply to 0 volts. Jumper pins 15 and 16 to P24. Connect a 10K ohm \pm 10% resistor from pin 13 to P24. Verify that TP9 is $1V \pm 1VDC$. Verify that TP10 is 2V + 1VDC. (TP9 & TP10 may have low level pulses). Raise the power supply voltage to $10V \pm 0.1 \text{VDC}$. Verify that TP9 is 23V \pm 1VDC. Verify that TP10 oscillates 1-3 times per second from 1V \pm 1VDC to 23V \pm 1VDC. Remove the 10K ohm resistor, jumpers and variable power supply.

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SENERAL (S) ELECTRIC 2 7 8 A 3 2 1 2 REV NO. TITLE CONT ON SHEET 6 SH NO. TEST INSTRUCTIONS 2 7 8 A 3 2 1 2 GROUND DETECTOR AND ALARM III CONT ON SHEET SH NO. FIRST MADE FOR 278A3136 **REVISIONS** 6.0 TEST PROCEDURE (Cont'd) 6.4 Analog Tests (Cont'd) Connect a variable DC power supply from pin 21 (+) to N24. Set the power supply to OVDC. Jumper pins 23 and 24 to P24. Connect a 10K ohm \pm 10% resistor from pin 22 to P24. Verify that TP5 is 1V \pm 1VDC. Verify that TP6 is $2V \pm 1VDC$. Raise the power supply voltage to 10V \pm 0.1VDC. Verify that TP5 is 23V \pm 1VDC. Verify that TP6 oscillates 1-3 times per second from lV \pm 1VDC to 23V \pm 1VDC. Remove the 10K ohm resistor, jumpers and variable power supply. Jumper pin 26 thru a 10K ohm \pm 10% resistor to P24. Push the MCA RESET pushbutton (PB2) on the faceplate and verify that the MCA LED is on. Verify that pin 26 is 16.5 + 1VDC. Inject a 20V \pm 1VDC pulse from pin 25 (+) to N24. This pulse should last 10 milliseconds + 1 millisecond. Verify that pin 26 goes to $1V \pm 1VDC$ for 200-300milliseconds. Verify that pin 27 is oscillating 1-3 times per second between 1V \pm 1VDC and 23V \pm 1VDC. (Pin 27 should remain in this state until reset by PB2.) 20V + 1VDCPin 25 10 Milliseconds -16.5V + 1VDC3EL1 Pin 26 DL13 1V <u>+</u> 1V 0V _200-300 Milliseconds

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CONT ON SHEET 6

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TITLE Test Instructions

GROUND DETECTOR AND ALARM III

FIRST MADE FOR 278A3136

REVISIONS

TEST PROCEDURE (Cont'd) 6.0

- Analog Tests (Cont'd)
 - Push the MCA Reset pushbutton to reset the MCA LED.
 - Remove all jumpers and external resistors temporarily 14. interrupt the 24 power. Reapply the 24 volt power and verify that the MCA LED is flashing on and off 1-3 times per second. Jumper pin 28 to pin 7 and note that the MCH LED stops flashing and remains on.
 - 15. Remove all jumpers and power.

END OF TEST

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