

g GE Canada Electronic Products Repair

Test Instructions for

0621L0433 G001

Device Number

77mm OPTICAL DRIVER CARD

Description of Device

Originated By: Rogério Cordeiro
Typed Name

Date: November 5, 2004
mm/dd/yy

Approved By: _____
Signature

Approval Date: _____
mm/dd/yy

TEST INSTRUCTIONS PREVIOUS REVISION SHEET

0621L0433 G001

Device Number

77mm OPTICAL DRIVER CARD

Description of Device

Originated By	Date mm/dd/yy	Description of change
Omar Zawistowski	05/19/87	Created new instruction for Armature Interface 0621L0431 G001.
Scott Andrus	11/25/96	Incorporated 621L0431 instructions and modified to be used for the 0621L0432 card.
Scott Andrus	06/24/97	Incorporated 621L0432 instructions and modified to be used for the 0621L0433 card.
Rogério Cordeiro	November 5, 2004	Added upgrade information

TEST INSTRUCTIONS

g

Location: Book or file

0621L0433 G001
77mm OPTICAL DRIVER CARD
Date: November 5, 2004

Pg.: 3/7

PURPOSE: To test the 77mm OPTICAL DRIVER CARD card.

EQUIPMENT:

Digital Multimeter
Anatek Dual Regulated Power Supply
Bench Power supplies (+/-15VDC)
Tektronix Oscilloscope
51 Pin Universal Test Jig
50 Pin Flat Ribbon Cable to 51 Pin Jig Converter Jig
Variat
Isolation Transformer (ratio not important)
3 Phase 115VAC
1 - 20K-ohm, 1%, 1/2 Watt resistor
3 - 1K-ohm, 1%, 1/2 Watt resistor
1 - 100K-ohm, 1%, 1/2 Watt resistor

PROCEDURES:

- 1) Connect 51 Pin Universal test Jig to bench power supplies, insert 50 Pin Flat Ribbon to 51 Pin Jig Converter Jig in any slot and connect to JA on the card.
- 2) Connect +15VDC to pin 25 & 1 connect -15VDC to pin 37 connect COM to pin 31. Apply DC power and observe 5VDC at C76.
- 3) Connect 115VAC Isolated to 115VA and 115VB on the circuit card. Apply power and NL3 should illuminate.

OPTICAL DRIVERS

- 4) Ground each JAA point and observe that corresponding optical emitter turns on (as per table)

Circuit	JAA	RA	OEA
P1F	JA2	R80	OE1
N1F	JA4	R81	OE2
P2F	JA6	R82	OE3
N2F	JA8	R83	OE4
P3F	JA10	R84	OE5
N3F	JA12	R85	OE6
P1R	JA14	R86	OE7
N1R	JA16	R87	OE8
P2R	JA18	R88	OE9
N2R	JA20	R89	OE10
P3R	JA22	R90	OE11
N3R	JA24	R91	OE12

TEST INSTRUCTIONS

g

Location: Book or file

0621L0433 G001
77mm OPTICAL DRIVER CARD
Date: November 5, 2004

Pg.: 4/7

Conduction State Sensors:

- 5) Using the digital multimeter, measure the comparator thresholds by measuring across C80 and C81 should read +.54 and -.54 respectively +/- 2%. Monitor the outputs as stated with respect to COM, with the following inputs as according to this chart. NOTE: Input and Output Values are +/- 5% and jumpers are removed.

INPUT CP POINTS			INPUT VOLTAGE		OUTPUT VOLTAGE		TEST POINTS
HIGH	MED.	LOW	STATE 1	STATE 2	STATE 1	STATE 2	
49			0	63.6	5.0	-0.61	1,2 AND 3
	50		0	45.9	5.0	-0.61	1,2 AND 3
		51	0	27.6	5.0	-0.61	1,2 AND 3
52			0	63.6	5.0	-0.61	1 AND 4
	53		0	45.9	5.0	-0.61	1 AND 4
		54	0	27.6	5.0	-0.61	1 AND 4
55			0	63.6	5.0	-0.61	2 AND 5
	56		0	45.9	5.0	-0.61	2 AND 5
		57	0	27.6	5.0	-0.61	2 AND 5
58			0	63.6	5.0	-0.61	3 AND 6
	59		0	45.9	5.0	-0.61	3 AND 6
		60	0	27.6	5.0	-0.61	3 AND 6
61			0	63.6	5.0	-0.61	4,5 AND 6
	62		0	45.9	5.0	-0.61	4,5 AND 6
		63	0	27.6	5.0	-0.61	4,5 AND 6

Motor Voltage Feedback:

- 6) Apply +50.00 volts to CP66, with Digital multimeter, read U8 pin 1, should read -.984 VDC +/- 2%. Install the 20 K Ω resistor between SC5 and SC6 and again apply +50.00 volts to CP66, measure JA41 with digital multimeter, and observe +1.968 VDC +/-2%. Measure the same voltage again at TP15, JA42 and JA49. Now apply the +50.00 input to CP69. Observe the same voltages as above but with the opposite polarity except for TP15 and JA42. The voltage at TP15 and JA42 should always be positive because of the absolute value circuit.

Bridge Voltage Feedback:

- 7) Apply +50.00 volts to CP51. Observe -.984 VDC on U12 pin7 with digital multimeter. Install the 20 K-ohm resistor between SC1 and SC2 and again apply the +50.00 volts to CP51 as before. Observe +1.968 VDC +/- 2% at the following points: SC2, TP14, JA40 and CP92. Now move the +50.00 VDC to CP63 and observe the same as above but with opposite polarity.

TEST INSTRUCTIONS

g

Location: Book or file

0621L0433 G001
77mm OPTICAL DRIVER CARD
Date: November 5, 2004

Pg.: 5/7

Line Voltage Feedback:

- 8) Attach 3 phase 115 VAC to circuit card as follows: Line 1 to CP54, Line 2 to CP57 and Line 3 to CP60. Apply power and observe TP8 and TP9 with oscilloscope and observe the following waveform in figure 1.

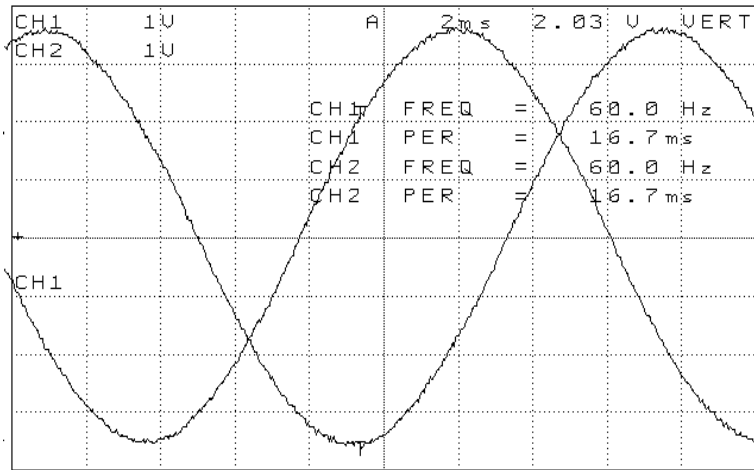


Figure 1.

TP9 may be slightly higher, both have the same amplitude of approximately 6.8 Vp-p to 6.9 Vp-p. Also observe the same waveforms on JA45 and JA46.

Conduction State Sensors Part II:

- 9) With 3 phase still connected apply power and observe TP1 with channel 1 and TP2 with channel 2 of oscilloscope and observe the waveforms in FIGURE 2. The waveform present on TP1 will also be on TP4 and the waveform on TP2 will also be on TP5. Now move Channel 2 from TP2 and place on TP3, observe the waveforms of FIGURE 3. The waveform present on TP3 will also be present on TP6.

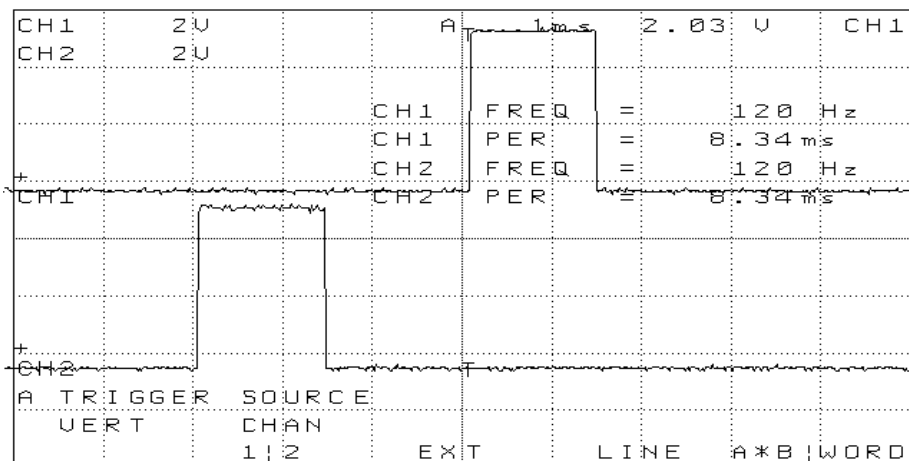


Figure 2.

TEST INSTRUCTIONS

g

Location: Book or file

0621L0433 G001
77mm OPTICAL DRIVER CARD
Date: November 5, 2004

Pg.: 6/7

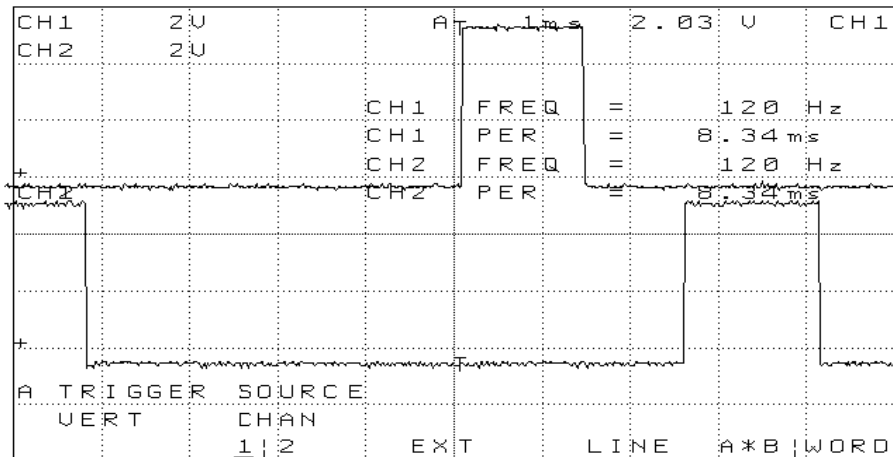


Figure 3.

Phase Locked Loop Input Filter:

- 10) With 3 phase still connected apply power and observe TP12 with channel 1, TP13 with channel 2 and observe the waveforms in FIGURE 4. The square wave on TP13 should be from -0.6 VDC and +5.0 VDC, this waveform will also be present on JA38.

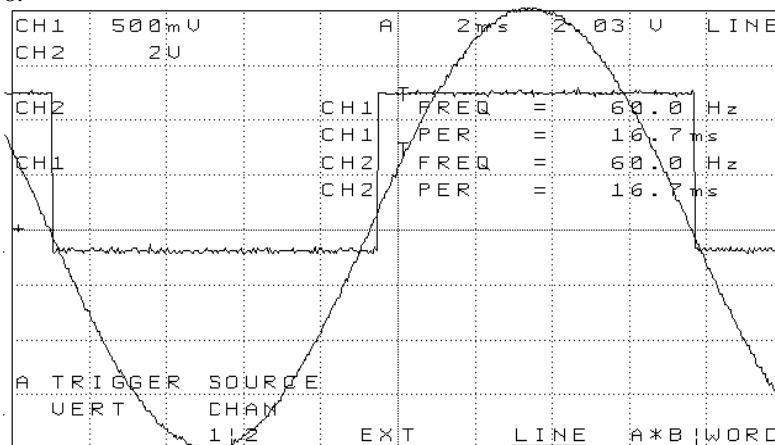


Figure 4.

Spare Meter Driver:

- 11) Check for continuity between CP89 and SC11; CP90 and SC12; and CP91 and COM.

TEST INSTRUCTIONS

g

Location: Book or file

0621L0433 G001
77mm OPTICAL DRIVER CARD
Date: November 5, 2004

Pg.: 7/7

Temperature Sensors:

- 12) Using the 1 K-ohm resistors connect one resistor between CP70 and com; CP72 and com; CP74 and com. Observe TP7 with digital multimeter, should read +1.9 VDC +/- 5%. Attach CP70, with resistor still connected to +5 VDC and TP7 should go to +5VDC as well. Repeat this for CP72 and then CP74 with the same results. Note that if any of the resistors are removed, the voltage is 13.5v with no i/p applied.

Motor Current Feedback:

- 13) With CP76 jumpered to CP77 (COM), observe that CP88, TP11, JA47 and JA48 are at 0VDC with digital multimeter. Remove jumper and apply 10Vp-p to CP76 with respect to COM with variac and isolation transformer. Observe JA47 and CP88 with oscilloscope, should see the input waveform on these points. Observe JA48 and TP11 with oscilloscope, should see a 5V peak, fully rectified waveform. Replace factory jumper CP76 - CP77 after test.

Bridge Current Feedback:

- 14) Connect variac to isolation transformer and set so that the secondary of the isolation transformer is 16 VAC p-p. Connect the secondary leads to CP82 & CP83. Install a 100k Ω resistor between SC7 and SC8. Apply power and observe that there is a 1VAC peak, fully rectified waveform on the right side of R235. Also note that there is a 5 VAC peak rectified waveform at TP16, JA43, CP93 & SC9. Note that the signal on CP93 inverts when JA50 is tied to ground. Repeat the above for the secondary leads connected to CP84 & CP85 and then again for CP86 & CP87. Check for continuity between CP80 & SC10 and CP81 & COM.

Upgrade information

Rev0 to Rev1

- 1) Change D13 to D15 to 0177A1811 P001
- 2) Change C66 from 0.001 μ F to 0.01 μ F 0177A1283 P009
- 3) Add C118 0.1 μ F 0177A1283 P016.
- 4) Add C119 0.001 μ F 0177A1283 P001
- 5) Add SC11 and SC12 0177A1125 P007 and 0177A1125 P008.

Rev1 to Rev2

- 1) Cut trace on U15-pin13 and U15-pin14.
- 2) Cut trace on U15-pin7 and C76 and C82.
- 3) Jumper U15-pin5 to U15-pin7.
- 4) Jumper U15-pin14 to R170 at junction of R168, and R169.

Rev2 to Rev3

- 1) Remove C118

Rev3 to Rev4

- 1) Raise 0177A1811 P001 or insulate from copper traces.
- 2)

END.