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**EQUIPMENT INSTALLATION MANUAL**

**for the**

**GFD11 COCKPIT CONTROL UNIT**

**PN's 1001-4000-2X, 1001-4000-3X**

DAC International  
6702 McNeil Drive  
Austin, TX 78729

**RELEASED**

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RECORD OF REVISIONS

REV	DESCRIPTION	DATE	APPROVED
IR	INITIAL RELEASE E191-05	9-17-03	LW
A	Removed reference to compass Cal switch (E279)	4-20-04	LW
A1	Updated per ECO 1153 E1153	01/18/2010	BH



**INTRODUCTION:**

This manual contains installation data and specifications for the DAC International GFD11 Cockpit Control Unit.

**DESCRIPTION:**

The GFD11 Cockpit Control Unit (CCU) allows for cockpit control of the compass functions of Litef LCR92 and LCR-93 Attitude Heading Reference Systems (AHRS). The CCU provides control of the following functions of the Litef AHRS;

- Selection between SLAVED and FREE mode of operation
- AHRS Self Test actuation
- Compass Card slewing in either CW or CCW directions in the DG (FREE) mode of operation

In addition to the above listed controls, the CCU provides a visual indication of slaving error on a meter built into the front of the panel.

**PART NUMBERS:**

The GFD11 Cockpit Control Unit is available under the following part numbers:

1001-4000-21	Black with 28V edge lighting w/MS circular conn.
1001-4000-22	Black with 5V edge lighting w/MS circular conn.
1001-4000-31	Gray with 28V edge lighting w/MS circular conn.
1001-4000-32	Gray with 5V edge lighting w/MS circular conn.
1001-4000-23	Black with NVIS compliant 5V edge lighting w/MS circular conn.
1001-4000-25	Black with NVIS compliant 28v edge lighting w/MS circular conn.

**Table 1**

**REGULATORY COMPLIANCE:**

**TSO Compliance**

The GFD11 meets the requirements set forth in FAA TSO-C5e and TSO-C6d

**Software**

The Model GFD11 contains no software.



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**SUPPLIED EQUIPMENT**

Each CCU is shipped with the following items:

Part Number	Description	Qty
1001-4000-[ ]	Cockpit Control Unit	1
1001-4200-05	Installation Kit, GFD11 CCU PNs 1001-4000-2X and -3X	1

Complete installation kits are available under kit part number 1001-4200-05. Individual pieces are available under the part numbers shown. Contact DAC International sales to place orders.

Part Number	Description	Qty
1001-4200-05	Installation Kit, GFD11 CCU	
M83723-75R1415N	Connector, Receptacle, Round, 15 pin	1
M39029/5-115	Socket, Crimp Style, female	15
M85049/52-1-14N	Backshell, Straight	1
1001-2510-05	Equipment Installation Manual for the GFD11 CCU	1



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**SPECIFICATIONS:**

**Physical:**

The GFD11 fits into standard dzus mounting rails. See the paragraph titled Outline Drawing for further details.

Height.....1.5 inches  
Width.....5.7 inches  
Depth.....2.22 inches behind dzus rails  
Weight.....0.5 lb.

**Faceplate Color:**

The GFD11 is available with either black or gray faceplate color according to Federal Standard FED-STD-578A. Color numbers are:

Gray.....#36118 (FED-STD-578A)  
Black .....#37038 (FED-STD-578A)

**Edge Lighting:**

The GFD11 is available with white 5 volt or 28 volt edge lighting, or 5 volt or 28volt NVIS edge lighting.

Lighted faceplate per MIL-P-7788F, Class 1-W (Black) or 2-W (Gray), type V or  
NVIS faceplate per MIL-P-7788F, Class 1-NVIS, Green A, Type V.

**Electrical:**

Input Voltage ..... 28 VDC supplied by AHRS.  
Lamp Voltage ..... -22, -32, and -23      5V dc or ac aircraft lighting voltage  
..... -21, -25, and -31      28V dc or ac aircraft lighting voltage  
Lamp Current..... -22, -32, and -23      0.2A max  
..... -21, -25, and -31      1.1A max

**Slaving Meter:**

Impedance.....1000  $\pm$ 10 ohms  
Full scale current.....200  $\pm$ 2 $\mu$ A



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OPERATION:

Slaved / DG Switch

This is a two-position switch, locked in both positions. It supplies nominal 28Vdc (input voltage supplied by AHRS) to the DG pin (J1-6).

Active.....Series resistance less than 2 ohms. Provides nominal 28Vdc input voltage on active contact.

Inactive.....Series resistance greater than 1 Meg ohm

Set Hdg Switch

This is a three position switch, spring loaded to center-off. It supplies nominal 28Vdc (input voltage supplied by AHRS) to the Slew-right pin (J1-8) or the Slew-left pin (J1-7). Both pins are open when the switch is in the center (OFF) position.

Active.....Series resistance less than 4 ohms. Provides nominal 28Vdc input voltage on active contact.

Inactive.....Series resistance greater than 1 Meg ohm

Self Test Switch

This normally open push button switch activates the AHRS self test mode. The AHRS Self Test operates ONLY when the aircraft is On Ground. Refer to the applicable Litef operating manual for the expected results of the test mode.

On.....Series resistance less than 2 ohms

Off.....Series resistance greater than 1 Meg ohm



**ENVIRONMENTAL:**

The GFD11 meets the environmental test categories detailed below in accordance with RTCA/DO-160B, Environmental Conditions and Test Procedures for Airborne Equipment.

NOMENCLATURE: Model GFD11 Cockpit Control Unit  
 PART NO: 1001-4000-[ ] TSO NUMBER: TSO-C5e, TSO-C6d  
 MANUFACTURER: DAC International  
 ADDRESS: 6702 McNeil Drive, Austin, TX 78729

Conditions	Section	Description of Conducted Test
Temperature and Altitude	4.0	Equipment tested to Category A3
Low temperature	4.5.1	
High Short Time Operating Temp	4.5.2	
High Temperature	4.5.3	
Altitude	4.6.1	
Decompression	4.6.2	
Over pressure	4.6.3	
Temperature Variation	5.0	Equipment tested to Category B
Humidity	6.0	Equipment tested to Category A
Shock	7.0	
Operational	7.2	6g
Crash Safety	7.3	15g shock, 12g sustained
Vibration	8.0	Equipment tested to Categories K and S
Explosion	9.0	Equipment identified as Category X. No test required.
Waterproofness	10.0	Equipment identified as Category X. No test required.
Fluids Susceptibility	11.0	Equipment identified as Category X. No test required.
Sand and Dust	12.0	Equipment identified as Category X. No test required.
Fungus	13.0	Equipment identified as Category X. No test required.
Salt Spray	14.0	Equipment identified as Category X. No test required.
Magnetic Effect	15.0	Equipment is Class A, 1 foot
Power Input	16.0	Equipment identified as Category X. No test required.
Voltage Spike	17.0	Equipment identified as Category X. No test required.
Audio Frequency Susceptibility	18.0	Equipment identified as Category X. No test required.
Induced Signal Susceptibility	19.0	Equipment identified as Category X. No test required.
Radio Freq. Susceptibility	20.0	Equipment identified as Category X. No test required.
Radio Frequency Emissions	21.0	Equipment identified as Category X. No test required.
Lightning Induced Transient	22.0	Equipment identified as Category X. No test required.



**CONNECTOR PIN OUT:**

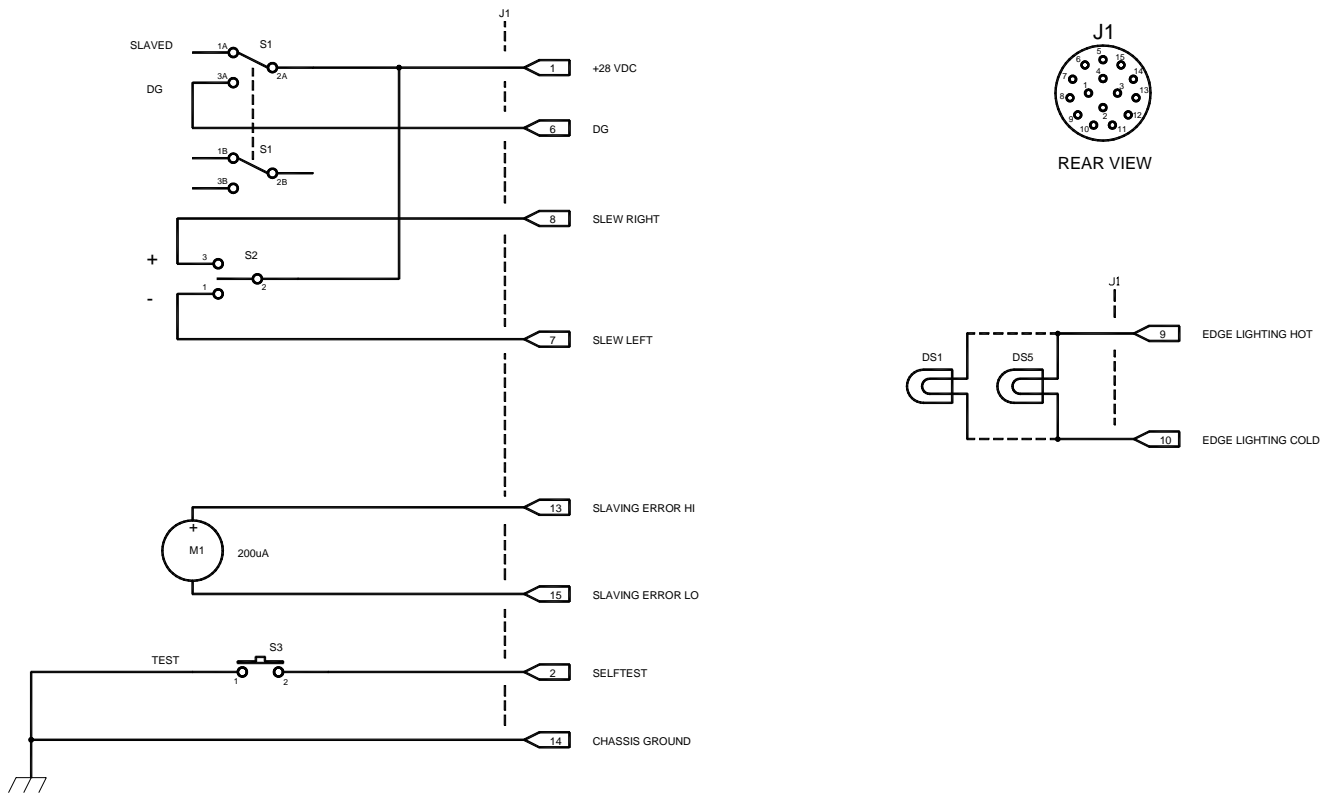
The GFD11 has a 15-pin male connector per MIL-C-83723, part number M83723-72R1415N. The mating connector, P1, is an M83723-75R1415N.

**Connector J1 Pinout**

<b>Pin</b>	<b>Signal</b>	<b>Function</b>
1	+28 Vdc	Primary power supplied by AHRS
2	Self Test	Ground when active, open otherwise
3	Slaved	+28Vdc when active, open otherwise
4	NC	No connection
5	+28Vdc	Slew power supplied by AHRS
6	DG	+28Vdc when active, open otherwise
7	Slew Left	+28Vdc when active, open otherwise
8	Slew Right	+28Vdc when active, open otherwise
9	Edge Lighting hot	28V or 5V dc or ac edge lighting power
10	Edge Lighting cold	Edge lighting return
11	NC	No connection
12	NC	No connection
13	Slaving Error Hi	Positive side of 200uA slaving meter. A positive current with respect to pin 15 causes the meter to deflect right. A negative current with respect to pin 15 causes the meter to deflect left
14	Ground	Aircraft common
15	Slaving Error Lo	Negative side of 200uA slaving meter

**Table 2**

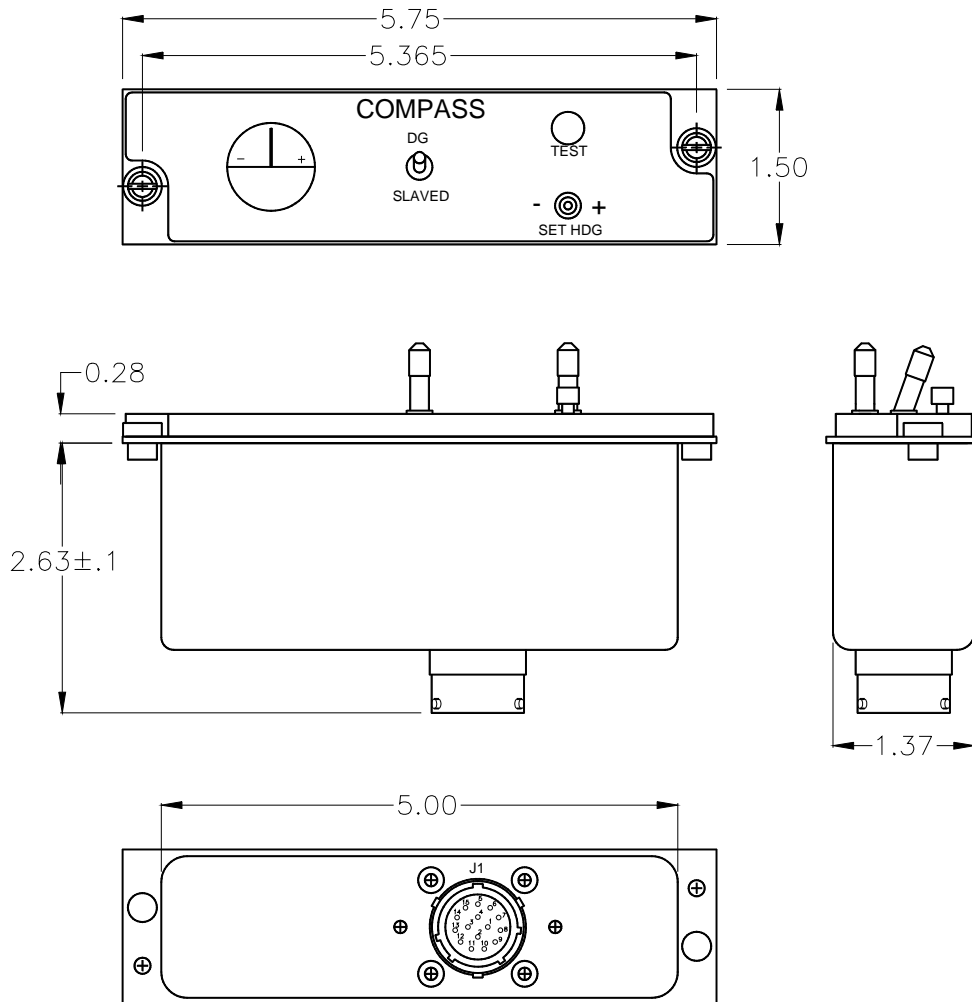
TYPICAL INTERCONNECT



**NOTE:**

This diagram is for reference only. Refer to the applicable manufacturer's installation data for complete wiring information.

OUTLINE DRAWING



Note: ±.02 unless otherwise noted.