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ASPIRE-200

System Description, Installation, and Maintenance Manual

This guide provides procedures for installation, configuration, and operation of the equipment listed below.

Model	Part Number
Low Gain Antenna System	1541-K-1015-01
AMT-3500 Intermediate Gain Antenna System	1541-K-1007-01
AMT-700 High Gain Antenna System	1541-K-1006-01
AMT-3800 High Gain Antenna System	1541-K-1006-02
AMT-1800 Intermediate Gain Antenna System	1541-K-1007-42
AMT-1800 Intermediate Gain Antenna System with CCU-200	1541-K-1007-02
AMT-1800 Intermediate Gain Antenna System with CNX-250	1541-K-1007-32
AMT-3500 Intermediate Gain Antenna System with CNX-200	1541-K-1007-11
AMT-1800 Intermediate Gain Antenna System with CNX-200	1541-K-1007-12

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ECCN: 7E994.

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6 May 2011
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Model	Part Number
AMT-1800 Intermediate Gain Antenna with CNX-900	1541-K-1007-52
AMT-700 High Gain Antenna with CNX-200	1541-K-1006-11
AMT-700 High Gain Antenna with CNX-250	1541-K-1006-31
AMT-700 High Gain Antenna with CNX-900	1541-K-1006-51
AMT-3800 High Gain Antenna with CNX-200	1541-K-1006-12
AMT-3800 High Gain Antenna with CNX-250	1541-K-1006-32
AMT-3800 High Gain Antenna with CNX-900	1541-K-1006-52

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Aspire-200, System Description, Installation, and Maintenance Manual
Document Number: MN-0000042, Revision F
28 Feb 2018

Revision Table		
Revision	**ECR**	**Description**
A	N/A	First release.
B	01120	Format to EMS Aviation standard, add LGA install info, Windows 7 setup for SBB.
C		Apply Aspire-200 branding. Add content for CNX, remote lamp panel, airworthiness, new NAV labels..Update AMT-700 outline drawing to rev D.
D		Changed publication number from 23-15-30 to 23-15-45. Updated outline drawings and Firmware versions.
E		Added AMT-1800 intermediate gain antenna system to title page. Updated data to include AMT-1800 intermediate gain antenna system. Added IPLD Helo Vibe Description. Updated graphics as necessary.
F		Added new models to title page. Added descriptions and figures for new models.

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SERVICE BULLETIN LIST

Service Bulletin Number	Subject	Mod Dot	Implementation	Manual Rev.	Manual Rev. Date
SB-90404733	Aspire 200 HDU Flammability Hardware Upgrade	6		A	4 Nov 2015
D201311000046	Correction of Part Numbers for Antenna Installation Kits in the Aspire-200 System Description, Installation, and Maintenance Manual			0	27 Dec 2013
D201410000026	Aspire-200 High Speed Data Unit (HDU), PN 1541-A-3000-01 - Loss of Navigational Data Disabling SwiftBroadband Channel			0	20 Oct 2014

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ABOUT THIS MANUAL

This manual provides information about the installation, operation, and maintenance of the eNfusion® Aspire-200.

1. Scope

This manual provides detailed information for avionics technicians about the wiring, installation, and setup of every component of the Aspire-200. The installer is responsible for the approval and certification of system components on the aircraft, and for the installation of wiring in the aircraft.

This manual includes information for end users about how to operate the Aspire-200.

2. Part Numbers

This manual applies to the Aspire-200 kits below:

- 1541-K-1015-01—Low Gain Antenna (LGA) with CCU-200
- 1541-K-1007-01—AMT-3500 Intermediate Gain Antenna (IGA)
- 1541-K-1007-42—AMT-1800 IGA
- 1541-K-1007-02—AMT-1800 IGA with CCU-200
- 1541-K-1007-32—AMT-1800 IGA with CNX-250
- 1541-K-1006-01—AMT-700 High Gain Antenna (HGA) with CCU-200
- 1541-K-1006-02—AMT-3800 HGA with CCU-200
- 1541-K-1007-11—AMT-3500 IGA with CNX-200
- 1541-K-1007-12—AMT-1800 IGA with CNX-200
- 1541-K-1007-52—AMT-1800 IGA with CNX-900
- 1541-K-1006-11—AMT-700 HGA with CNX-200
- 1541-K-1006-31—AMT-700 HGA with CNX-250
- 1541-K-1006-51—AMT-700 HGA with CNX-900
- 1541-K-1006-12—AMT-3800 HGA with CNX-200
- 1541-K-1006-32—AMT-3800 HGA with CNX-250
- 1541-K-1006-52—AMT-3800 HGA with CNX-900.

The part numbers of the Line Replaceable Units (LRUs) are:

- 1541-A-3000-01—HDU-200
- 1541-A-2000—IPLD
- 1252-A-4120-01—SCM
- 1541-A-9011—LGA
- 1242-K-7001—AMT-1800 IGA
- 1242-A-2210-01—eNfusion® AMT-3500 IGA AC
- 1242-A-0010-02—eNfusion® AMT-3800 HGA DC
- 1428-A-0010-02—eNfusion® AMT-700 HGA DC
- 1233-A-0200—eNfusion® CCU-200
- 1110-A-0501-20—eNfusion® CNX-200 Series 2 Network Accelerator
- CNX-900 router SCD-90406174 (CNX-900 router comes with Personality Module SCD-90406256)
- 90403134—CNX-250.

The Aspire-200 software is:

- LI-1541-30101.

The Aspire-200 maintenance cable is:

- 1541-F-3150 (included in each shipping kit).

3. Organization

This manual includes the following sections:

- Introduction—information about the Aspire-200, the Inmarsat network and its services
- Equipment Drawings—outline drawings of every piece of equipment available with the Aspire-200, and

pinout tables for all the connectors

- Installation—information and procedures for the installation of the Aspire-200
- System Setup—information and procedures for setting up the system after installation
- Troubleshooting—troubleshooting information and where to find it
- Specifications—environmental specifications for every piece of equipment available with the Aspire-200
- Glossary.

4. Precautions

When working with AMT-1800, AMT-3500, AMT-3800, and AMT-700 antennas, be aware of the following warnings and cautions.

WARNING: THIS EQUIPMENT RADIATES HIGH FREQUENCY RADIATION AND POSES A RADIATION HAZARD. SERVICE TECHNICIANS AND OPERATORS MUST EXERCISE CARE TO KEEP CLEAR OF THE ANTENNA'S BEAM WHILE PERFORMING OPERATIONAL TESTS OR INSTALLATION VERIFICATION PROCEDURES.

FOR INSTALLATION WHERE RF COMPOSITE AVERAGE POWER DOES NOT EXCEED 30W, DO NOT APPROACH WITHIN 12 FEET (3.5 METRES) OF THE ANTENNA DURING ANTENNA OPERATION (TRANSMISSION).

DURING ANTENNA OPERATION (TRANSMISSION), ENSURE MINIMUM EXPOSURE OF ALL PERSONNEL TO ANY REFLECTED, SCATTERED, OR DIRECT BEAMS.

CAUTION: SERVICE TECHNICIANS MUST OBEY STANDARD SAFETY PRECAUTIONS, SUCH AS WEARING SAFETY GLASSES, TO PREVENT PERSONAL INJURY WHILE INSTALLING OR PERFORMING SERVICE ON THIS UNIT.

When working with avionics and satellite communications equipment, be aware of the following warnings and cautions.

CAUTION: TURN OFF POWER BEFORE DISCONNECTING ANY TERMINAL FROM WIRING. DISCONNECTING THE TERMINAL WITHOUT TURNING POWER OFF MAY CAUSE VOLTAGE TRANSIENTS THAT CAN DAMAGE THE TERMINAL.

CAUTION: THIS EQUIPMENT INCLUDES ITEMS THAT ARE ELECTROSTATIC DISCHARGE SENSITIVE (ESDS) DEVICES. ESDS DEVICES ARE SUBJECT TO DAMAGE BY EXCESSIVE LEVELS OF VOLTAGE AND/OR CURRENT. THE LOW-ENERGY SOURCE THAT MOST COMMONLY DESTROYS ESDS DEVICES IS THE HUMAN BODY, WHICH, IN CONJUNCTION WITH NONCONDUCTIVE GARMENTS AND FLOOR COVERINGS, GENERATES AND RETAINS STATIC ELECTRICITY. TO ADEQUATELY PROTECT ESDS DEVICES, THE DEVICE AND EVERYTHING THAT CONTACTS IT MUST BE BROUGHT TO GROUND POTENTIAL BY PROVIDING A CONDUCTIVE SURFACE AND DISCHARGE PATHS. USE STANDARD INDUSTRY PRECAUTIONS TO KEEP RISK OF DAMAGE TO A MINIMUM WHEN TOUCHING, REMOVING, OR SERVICING THE EQUIPMENT.

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INTRODUCTION

1. About the Aspire System

The Aspire-200 connects to the Inmarsat satellite network and provides data and voice services to the aircraft cabin. You can install the Aspire-200 with various antennas, and each variation of the system provides a different level of service. With higher gain antennas, higher rates of transfer are possible, and you can access information faster and use applications that require higher bandwidth.

The five variations of the Aspire-200 are:

- LGA system, with a Sensor Systems Omni Blade antenna
- IGA system, with an eNfusion AMT-1800 LGA
- IGA system, with an eNfusion AMT-3500 IGA
- HGA system, with an eNfusion AMT-700 HGA
- HGA system, with an eNfusion AMT-3800 HGA.

The optional additions to the Aspire-200 are:

- eNfusion® CNX-200 Network Accelerator Series 2—router and accelerator
- eNfusion® CCU-200 (Communication Convergence Unit)—router and PBX
- CNX-250 Cabin Gateway—router
- CNX-900 Cabin Gateway—router.

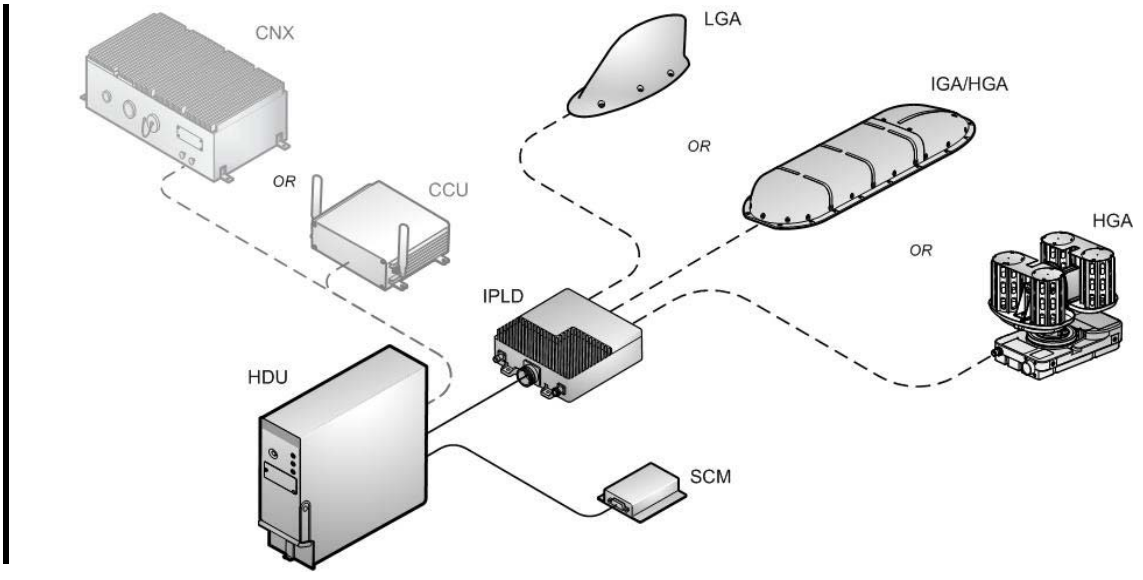

Figure 2-1 Aspire-200 Variants

The eNfusion® Communication Convergence Unit (CCU) extends the capabilities of the Aspire system with additional user connections and features for the aircraft cabin. For more information about the CCU, see “Introduction to the Cabin Network” on page 2-6, “eNfusion® CCU Interfaces” on page 2-7, and the CCU Network Administrator’s Guide, MN-1233-10054.

The eNfusion® CNX-200 Network Accelerator Series 2 product provides advanced routing functions for the aircraft cabin. With an accelerator installed at the ground station, the CNX-200 can improve data transfer rate of the satellite communication system by up to 400 percent. For more information about the CNX-200, see “Introduction to the Cabin Network” on page 2-6, “eNfusion® CNX-200 Interfaces” on page 2-8, and the CNX Series 2 Network Administrator’s guide, MN-1110-50348.

High data rate (HDR) software is available as an upgrade to the Aspire-200 kit. You can install the HDR software to enhance Inmarsat L-band services. For HGA installations, the upgrade results in up to 650 kbps per SBB channel compared to the previous maximum data rate of up to 432 kbps. For IGA installations, the enhanced system can provide up to 450 kbps compared to the previous maximum of 333 kbps. The HDR software uses long burst inter-leaver technology to enable the Aspire-200 system to transmit through helicopter rotors. It also improves system operation in less than ideal conditions (low look angle, operating in an area where there are interferers).

The CNX-250 Cabin Gateway is a single LRU designed to act as the communications hub for all aircraft voice and data services. It includes data routing, Wi-Fi, and 3G/4F cellular. For more information about the CNX-250, see "Introduction to the Cabin Network" on page 2-6, and the CNX-250 Administration Guide, 23-15-19.

The CNX-900 is a revolutionary approach to cabin voice and data communications management. Through the GoDirect advanced user manager, you are provided with access to all passenger usage and can control device connectivity with just a few steps. It supports redundancy, acceleration and compression, and provide access to the Honeywell suite of GoDirect services. For more information about the CNX-900, see "Introduction to the Cabin Network" on page 2-6, and the CNX-900 Installation Manual, 23-15-88.

A. System Description

Table 2-1 provides specifications for the HDU-200, IPLD, and SCM.

Table 2-1 HDU-200, IPLD, and SCM Specifications

Component	Characteristic	Specification
HDU-200	Dimensions	14.88 by 2.43 by 7.81 in. (378 by 62 by 198 mm)
	Mounting Information	2-MCU Tray
	Weight	8.8 pounds (4.0 kg) maximum
	Frequency Band	Tx: 1626.5 to 1660.5 MHz Rx: 1525.0 to 1559.0 MHz
	Power Dissipation	40 W maximum (Typical 30 W)
	Operating Voltage	20.5 VDC to 32.2 VDC
	Cooling	15.5 lb/hr air @ 0.44 +/- 0.025 in. water
	Maintenance	No scheduled maintenance required
	Interfaces	Ethernet: 10BASE-T RS-232: Maintenance Port ISDN S/T
	Software	RTCA/DO-178 Level E
	Complex Electronic Hardware	RTCA/DO-254 Level E
IPLD	Dimensions	7.5 by 7.5 by 2.5 in. (190 by 190 by 64 mm)
	Weight	5.65 pounds (2.56 kg)
	Power Dissipation	40 W maximum (Typical 37W)
	Operating Voltage	20.5 VDC to 32.2 VDC
	Cooling	No forced-air cooling required
	Software	RTCA/DO-178 Level E
	Complex Electronic Hardware	RTCA/DO-254 Level E
SCM	Dimensions	4.69 by 4.0 by 1 in. (119 by 102 by 25 mm)
	Weight	0.5 pounds (0.22 kg)
	Software	RTCA/DO-178 Level E
	Complex Electronic Hardware	RTCA/DO-254 Level E

Table 2-2 provides an overview of specifications for other components of the ASPIRE-200. The documentation for each component provides detailed specifications.

Table 2-2 Specification Overview of ASPIRE-200 Components

Component	Characteristic	Specification
LGA	Dimensions	11 by 4.25 by 4.6 in. (279 by 108 by 117 mm)
	Weight	1.35 pouns (0.61 kg)
AMT-1800	Dimensions	18.3 by 7.6 by 1.98 in. (465 by 193 by 50 mm)
	Weight	Flat variant - 5.5 lbs (2.5 kg) maximum Curved variant - 6.0 lbs (2.7 kg) maximum
	Power	+28 VDC @ 0.75 amps maximum 20 W maximum (Typical 12 W)
	Software	RTCA/DO-178B Level D
AMT-3500	Dimensions	34.5 by 9.5 by 2.7 in. (876 by 241 by 69 mm)
	Weight	11.7 pounds (5.5 kg) maximum
	Power	115 VAC (360-800 Hz) @ 0.3 amps RMS 21 W maximum (Typical 19 W)
	Software	RTCA/DO-178B Level D
AMT-3800	Dimensions	43 by 14.4 by 2.68 in. (1092 by 366 by 68 mm)
	Weight	19.8 lbs (9.0 kg) maximum
	Power	+28 VDC @ 1.25 amps maximum 35 W maximum (Typical 27 W)
	Software	RTCA/DO-178B Level D
AMT-700	Dimensions	10 by 10 by 9.7 in. (254 by 254 by 246 mm)
	Weight	4.3 pounds (1.95 kg) maximum
	Power	+28 VDC @ 1.25 amps maximum 30 W maximum (Typical 15 W)
	Software	RTCA/DO-178B Level D

Table 2-2 Specification Overview of ASPIRE-200 Components

Component	Characteristic	Specification
CCU-200	Dimensions	8.65 by 7.7 by 2.3 in. (220 by 196 by 58 mm)
	Weight	4.0 lb (1.81 kg) maximum
	Clearance	2.0 in.(5.08 cm) on all sides
	Voltage	28 VDC Nominal
	Power Dissipation	6 W Nominal
	Power Consumption	28 VDC / 0.5 A
	Interfaces	Ethernet: 8 x LAN 1-/100 Ethernet: 1 WAN USB: 2 x USB 1.1 RS-232: maintenance port RS-232: full modem interface 802.11 b/g: 1 x WAP (Wireless Access Point) 4-Wire: 2 interfaces FXS: 2 interfaces for POTS FXO: 2 interfaces for POTS ISDN: 4 interfaces
	Software	RTCA/DO-178B Level E
CNX-200	Dimensions	15.34 by 8.64 by 3.21 in. (390 by 219 by 82 mm)
	Weight	10.8 lbs (4.9 kg) maximum
	Clearance	3-inch clearance above the unit and 1-inch clearance for the connector panel.
	Voltage	28 VDC Nominal
	Power Dissipation	50 W maximum
	Installation	See MN-1110-50108, CNX System Description, Installation, and Maintenance Manual
	Interfaces	CLI and Telnet over an available Ethernet Port CLI via the Maintenance Port Connector J3 (not for flight use) Ethernet: 7 LAN Ethernet: 4 WAN ISDN: 4 WAN 802.11 b/g: 1 x WAP (Wireless Access Point) Discrete I/O: 6 input, 5 output (all I/Os software configurable)
	Software	RTCA/DO-178B Level E
CNX-250	Dimensions	12.7 by 3.7 by 8.5 in. (323 by 94 by 216 mm) including mounting feet
	Weight	8.6 pounds (3.9 kg)
	Voltage	28 VDC

Table 2-2 Specification Overview of ASPIRE-200 Components

Component	Characteristic	Specification
	Power	43.4 W maximum
	Mounting	Mounts using ¼ in (10-24 mm) fasteners
	Software	DO-178B Level E
	Clearances	2 in. (51 mm) clearance recommended
CNX-900	Dimensions	2MCU ARINC 600 Form Factor
	Weight	6.4 pounds (2.39 kg)
	Power	45 W Maximum, Nominal 25 W
	Environmental	RTCA DO-160G
	Software	RTCA DO-178B Level E
	Clearances	At least 1 in. (25 mm) to the left At least 2.25 in. (57 mm) to the right At least 1 in. (25 mm) in front At least 3 in. (76 mm) above

B. Introduction to the Cabin Network

The cabin network enables aircraft operators to offer various data and voice services to passengers in the aircraft cabin. The Aspire-200 can distribute the various services to the aircraft cabin and connect the users to ground data and voice networks.

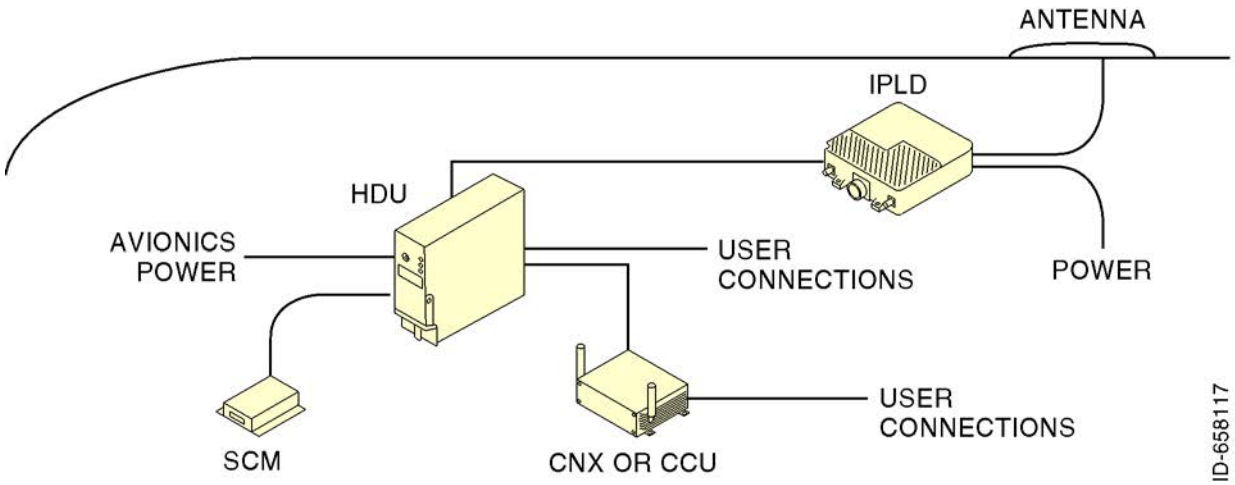

Figure 2-2 Cabin Network

You can create a sophisticated airborne network that includes WiFi access and an airborne LAN with the CCU. The CCU is a multi-function networking device that provides wireless LAN, Ethernet LAN, 2 and 4-wire voice, and ISDN services. The CCU can also create a telephone system for the airborne office, including extensions for each phone on the aircraft and an automated attendant.

The CNX-200 Network Accelerator provides Ethernet and WiFi interfaces for computers, and mobile devices, and can provide secure connections to ground networks. Acceleration can improve the data transfer rate by up to 400 percent. The CNX-200 acceleratormodule operates with an accelerator installed at the ground station—both accelerators are required for acceleration.

The CNX-250 and CNX-900 Cabin Gateway Routers. Add data routing and WiFi connectivity to the cabin network. Bandwidth can be assigned to specific devices or users to ensure a balanced use of network resources.

C. Aspire-200 Features

- Small and light-weight
- Easily upgraded to higher-bandwidth system
- One SwiftBroadband channel for transfer rates up to 432kbps (depending on antenna)
- ISDN voice or data
- One Swift 64 channel available with the AMT-700 and AMT-3800 High Gain Antennas
- Each component is a LRU.

D. Aspire-200 User Interfaces

The Aspire-200 provides various interfaces to users in the cabin and users who set up and maintain the system.

- ISDN 64k—access to ISDN services that you can wire directly to a computer or ISDN phone, or distribute through an ISDN router or terminal adapter. ISDN 64k is only available with Swift 64 and SwiftBroadband when using an HGA. This interface also provides AMBE+2 services with SwiftBroadband and 64 Speech or AMBE with Swift 64.
- PPPoE 10BASE-T—Ethernet access for computers; provides access to Swift 64 ISDN, MPDS (Swift 64 only), or SwiftBroadband services.
- RS-232 (Maintenance)—access to maintenance and setup functions when the aircraft is on the ground.

E. eNfusion® CCU Interfaces

The CCU provides various interfaces to users in the cabin, and 4-wire audio interfaces for users in the cockpit.

- Eight Ethernet LAN 10/100 interfaces
- One WAN Ethernet interface (to the HDU)

- Two USB 1.1 interfaces
- One RS-232 interface for access to maintenance functions
- One RS-232 full modem interface
- One 802.11 b/g WAP (Wireless Access Point)
- Two 4-Wire interfaces (for the cockpit)
- Two FXS interfaces for POTS
- Two FXO interfaces for POTS
- Four ISDN interfaces.

F. eNfusion® CNX-200 Interfaces

The CNX-200 provides various interfaces for users in the cabin:

- Seven Ethernet LAN interfaces
- Four Ethernet WAN interfaces
- One 802.11 b/g WAP (Wireless Access Point)
- Four ISDN interfaces.

G. eNfusion® CNX-250 Interfaces

The CNX-250 provides various interfaces for users in the cabin:

- Eight Gigabyte Ethernet interfaces programmable as LAN (Cabin) or WAN (HDU)
- One 802.11 a/b/g/n WAP (Wireless Access Point)
- Two ISDN interfaces for Voice or Data
- 3G/4G Modem for Ground connectivity over the Cellular Data Network
- Internal Data Storage with built-in Media Server
- Data Acceleration, Mobile-IP (for seamless transition over different bearer systems) and Failover.
- Built-In SIP IP PBX for Wired or Wireless telephony extensions
- One RS-232 interface for access to maintenance functions.

H. CNX-900 Interfaces

The CNX-900 provides various interfaces for users in the cabin:

- Eight Ethernet ports with full auto-sensing capabilities:
  - Three Gigabyte Ethernet LAN ports for connectivity with high-performance systems such as CMS or IFE
  - Two additional Fast Ethernet LAN ports
  - Three Fast Ethernet ports for WAN connectivity

- 802.11 ac Wi-Fi, three Wi-Fi antennas
- 3G/4G/LTE cellular for future connectivity to the public Internet while on the ground
- Two ISDN BRI Interfaces for future telephony trunking support
- 80Gb solid state media storage.

I. Aspire-200 Connections to Aircraft

The Aspire-200 communicates with various systems in your aircraft to control the antenna and distribute resources to its subsystems.

(1) Power

28V aircraft power supplies the HDU, the IPLD, and all the antennas except the Omni Blade antenna and the AMT-3500 IGA (115 VAC).

(2) ARINC 429

The HDU provides three standard connections to the navigation systems on the aircraft. Each connection can accept labels from:

- Inertial
- GPS (GNSS)
- Hybrid
- FMS
- AHRS.

Table 2-3 provides the IRS ARINC 429 bus labels and associated data types. Table 2-4, Table 2-5, Table 2-6, and Table 2-7 provide alternative data types. For more information about the labels, refer to Appendix 10 of the ARINC 704-7, Inertial Reference System document and ARINC Specification 429-ALL: Mark 33 Digital Information Transfer System (DITS).

The priority of navigation labels is:

1. Hybrid
2. GPS (GNSS)
3. IRS
4. FMS
5. AHRS

The HDU does not require heading, pitch, and roll labels when operating with an LGA.

Table 2-3 ARINC 429 IRS Navigational Requirements

Label (Octal)	Name	Minimum Interval Rate (ms)	Maximum Interval Rate (ms)
310	Latitude	100	200
311	Longitude	100	200
312	Ground Speed	25	50
313	True Track	25	50
314	True Heading	25	50
324	Pitch Angle	10	20
325	Roll Angle	10	20
361	Altitude	20	40

Table 2-4 GNSS Navigational Data

Label (Octal)	Name	Minimum Interval Rate (ms)	Maximum Interval Rate (ms)
370 or 076	GNSS Height	20	40
110	GNSS Latitude	100	200
111	GNSS Longitude	100	200
112	Ground Speed GNSS, Autonomous	25	50
103	Track Angle True GNSS, Autonomous	25	50

Table 2-5 Hybrid Inertial/GNSS Navigational Data

Label (Octal)	Name	Minimum Interval Rate (ms)	Maximum Interval Rate (ms)
254 or 110	Latitude GNSS, Hybrid, or Autonomous	100	200
255 or 111	Longitude GNSS, Hybrid, or Autonomous	100	200
175 or 112	Ground Speed GNSS, Hybrid, or Autonomous	25	50
137 or 103	Track Angle True GNSS, or Autonomous	25	50

Table 2-5 Hybrid Inertial/GNSS Navigational Data

Label (Octal)	Name	Minimum Interval Rate (ms)	Maximum Interval Rate (ms)
132 or 314	True Heading, Hybrid, or Intertial	25	50
324	Pitch Angle	10	20
325	Roll Angle	10	20
261 or 076	Hybrid Altitude MLS or GNSS Altitude	20	40

Table 2-6 FMS Navigational Data

Label (Octal)	Name	Minimum Interval Rate (ms)	Maximum Interval (ms)
203	Pressure Altitude	31.3	62.5
204	Baro Corrected Altitude #1	31.3	62.5
310	Present Position—Latitude	100	200
311	Present Position—Longitude	100	200
312	Ground Speed	25	50
313	Track Angle—True	25	50
314	True Heading	25	50
324	Pitch angle	10	20
325	Roll Angle	10	20

Table 2-7 AHRS Navigational Data

Label (Octal)	Name	Minimum Interval Rate (ms)	Maximum Interval (ms)
324	Pitch Angle	10	20
325	Roll Angle	10	20

2. About the Inmarsat Network

Inmarsat is an international organization that operates and maintains multiple geostationary satellites and satellite networks. Inmarsat networks provide services for aviation, shipping, and land-mobile terminals. Inmarsat provides information about satellite beam coverage at www.inmarsat.com.

The Aspire-200 can access services from two of Inmarsat's satellite networks. The I-3 satellite network provides Swift 64 services, and the I-4 satellite network provides SwiftBroadband (SBB) services. Throughout 2018, Inmarsat will transition Swift64 services to the I-4 network and then decommission the I-3 network.

3. About Inmarsat Services

A Swift 64 connection provides 64K Speech voice, low cost AMBE voice, ISDN 64K data, and MPDS (Mobile Packet Data Service). Only one service is available at a time. ASPIRE can provide one 64kbps channel when using an HGA. You can use ISDN or MPDS to access the Internet or other ground-based networks, or high-quality voice services to access terrestrial phone networks.

The applications available with a Swift 64 connection include:

- Telephony: in-seat, mobile, VoIP and text messaging
- Email, intranet, internet and instant messaging
- Secure VPN access
- Large file transfer
- In-flight news updates.

An SBB connection provides simultaneous data and voice services. In Standard IP mode, data service is shared among other users on the Inmarsat spot beam. In Streaming IP mode, users receive a guaranteed rate of service—8, 16, 32, 64, 128kbps, or XStream, which can be combined to create higher rate connections.

An SBB connection can serve similar applications as the Swift 64 connection, but with more simultaneous users and optional guaranteed rates of transfer. In SBB mode, you can specify various rates of service to different users and applications, for example, a low-rate service for an email user and a higher rate service for a user transferring large files.

4. SwiftBroadband Service Classes

Inmarsat classifies SBB satellite communication services according to the capability of the system. The three classes of systems are:

- SBB Class 15—can provide data services including background IP up to 200kbps, up to two streaming IPs of 8kbps or 16kbps, a single streaming IP (8kbps to 32kbps) and one Ambe+2 low cost voice.
    - Class 15 systems can only access SBB services when the angle to the satellite is greater than 20 degrees.
    - An Aspire-200 equipped with an Omni antenna can access only Class 15 services.
- SBB Class 7—can provide data services including background IP up to 330kbps, multiple streaming IPs (8kbps to 128kbps), 56k RDI, 64k UDI, 3.1KHz (fax) and one Ambe+2 low cost voice.
    - Class 7 systems can access packet-switched services when the angle to the satellite is greater than 10 degrees.

- Class 7 systems can access circuit-switched services (AMBEvoice) in the full coverage area of the I-4 satellite network.
- An Aspire-200 equipped with an IGA can access only Class 7 services.
- Class 7 ISDN circuit-switched services such as 56k RDI, 64k UDI, and 3.1KHz (fax) are only available when the look angle to the satellite is greater than 45 degrees.

- SBB Class 6—can provide data services including background IP up to 432kbps, multiple streaming IPs (8kbps to 128kbps), 56k RDI, 64k UDI, 3.1KHz (fax), XStream IP (224kbps to 348kbps) and one Ambe+2 low cost voice.
  - Class 6 systems can access SBB services in the full coverage area of the I-4 satellite network.
  - An Aspire-200 equipped with an HGA can access only Class 6 services.

5. Available Inmarsat Services

The various configurations of the Aspire-200 provide different combinations of services.

Table 2-8 System Configurations and Available Services

Available Service	LGA	IGA	HGA
Data calls/Internet use	Up to 200kbps	Up to 330kbps	Up to 432kbps
Voice calls	Yes	Yes	Yes
BlackBerry™ Email	Yes	Yes	Yes
Streaming Video	No	Yes	Yes

NOTE: If you have upgraded your Aspire-200 system with HDR software, data rates increase up to 450 kbps for an IGA installation, and up to 650 kbps for an HGA installation.

6. About Installation and Registration

There are several steps to perform before you can use your Aspire-200.

1. Verify with the appropriate government authority that you can install the antenna on your aircraft.
2. Install wiring in the aircraft according to the wiring information in section “Equipment Drawings” on page 3-1 and “Installation” on page 4-1.
3. You can order installation kits.
4. Install wiring for user connections in the aircraft cabin in easily accessed locations.
5. Install the components of the Aspire-200.

6. Subscribe to a service plan from a SwiftBroadband or Swift 64 Service Provider.
7. If an HDR upgrade has been installed on the Aspire-200 System, ensure the applicable keys have been provisioned to use the HDR system with the Inmarsat network.

EQUIPMENT DRAWINGS

This section includes outline drawings of every component in the Aspire-200.

1. HDU-200

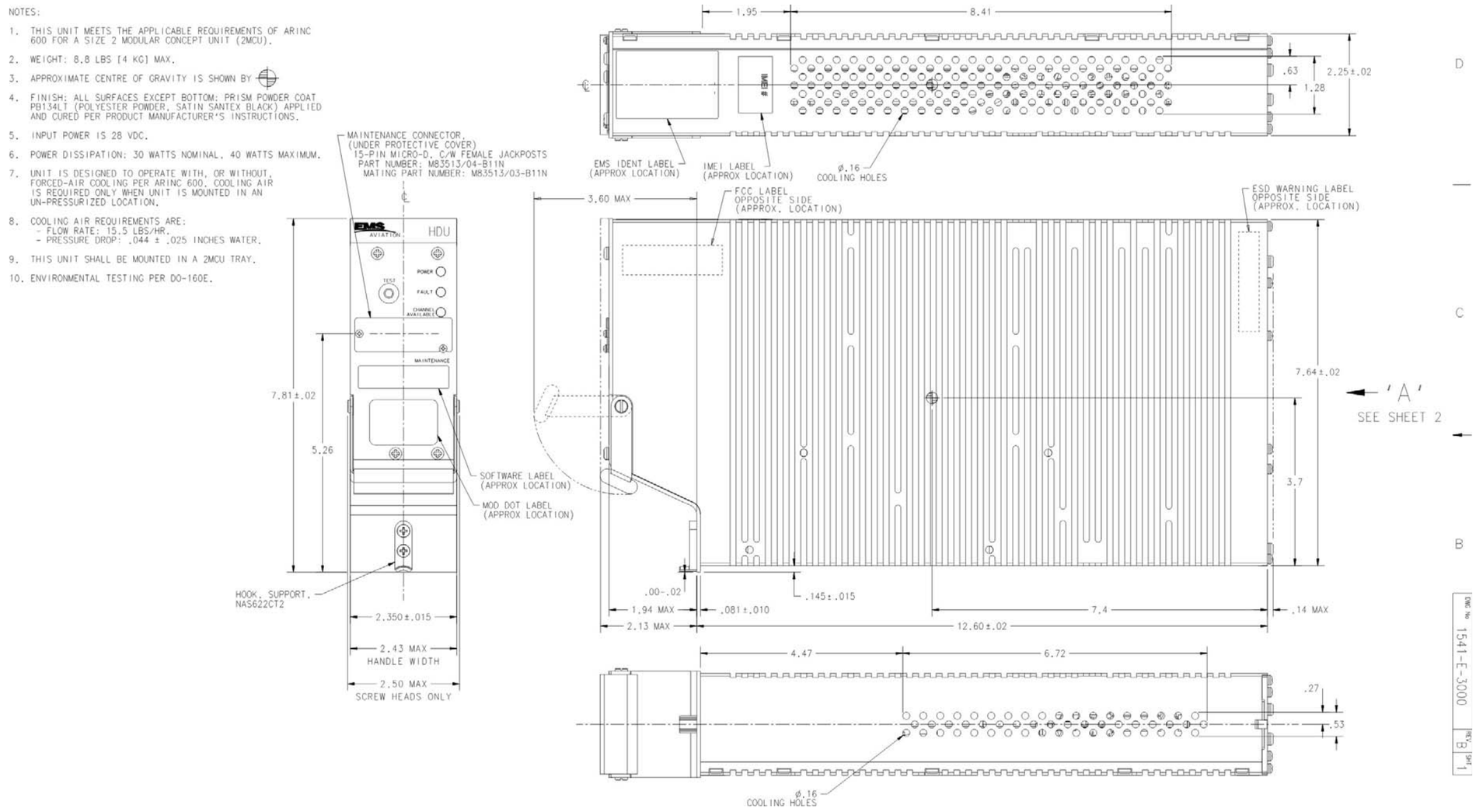

Figure 3-1 HDU Outline Drawing

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2. HDU Rear Connector

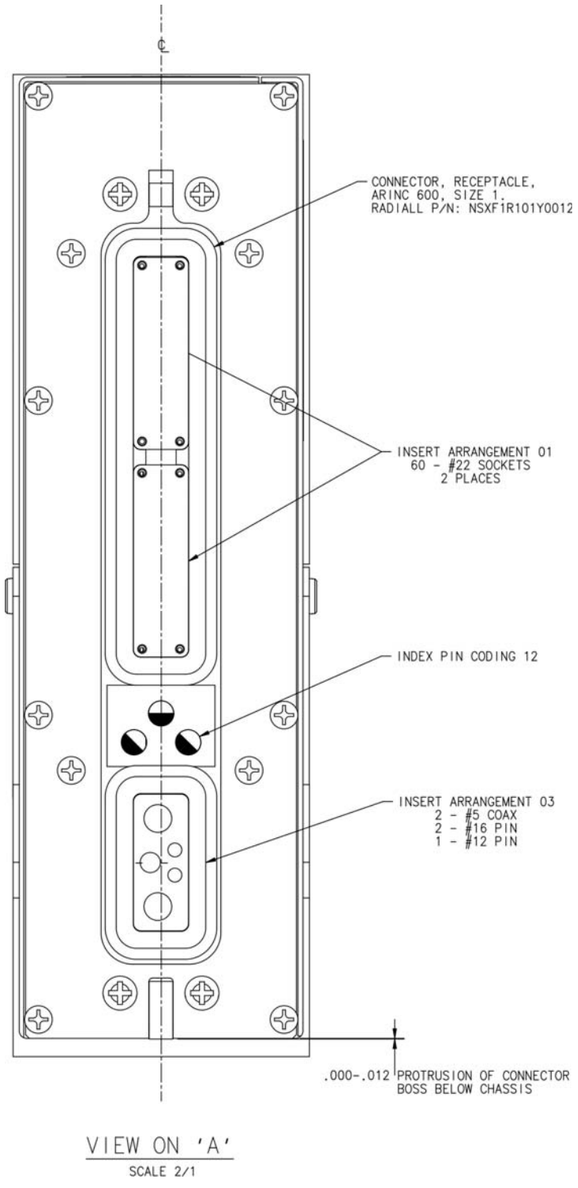

Figure 3-2 HDU Rear Connector

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3. IPLD

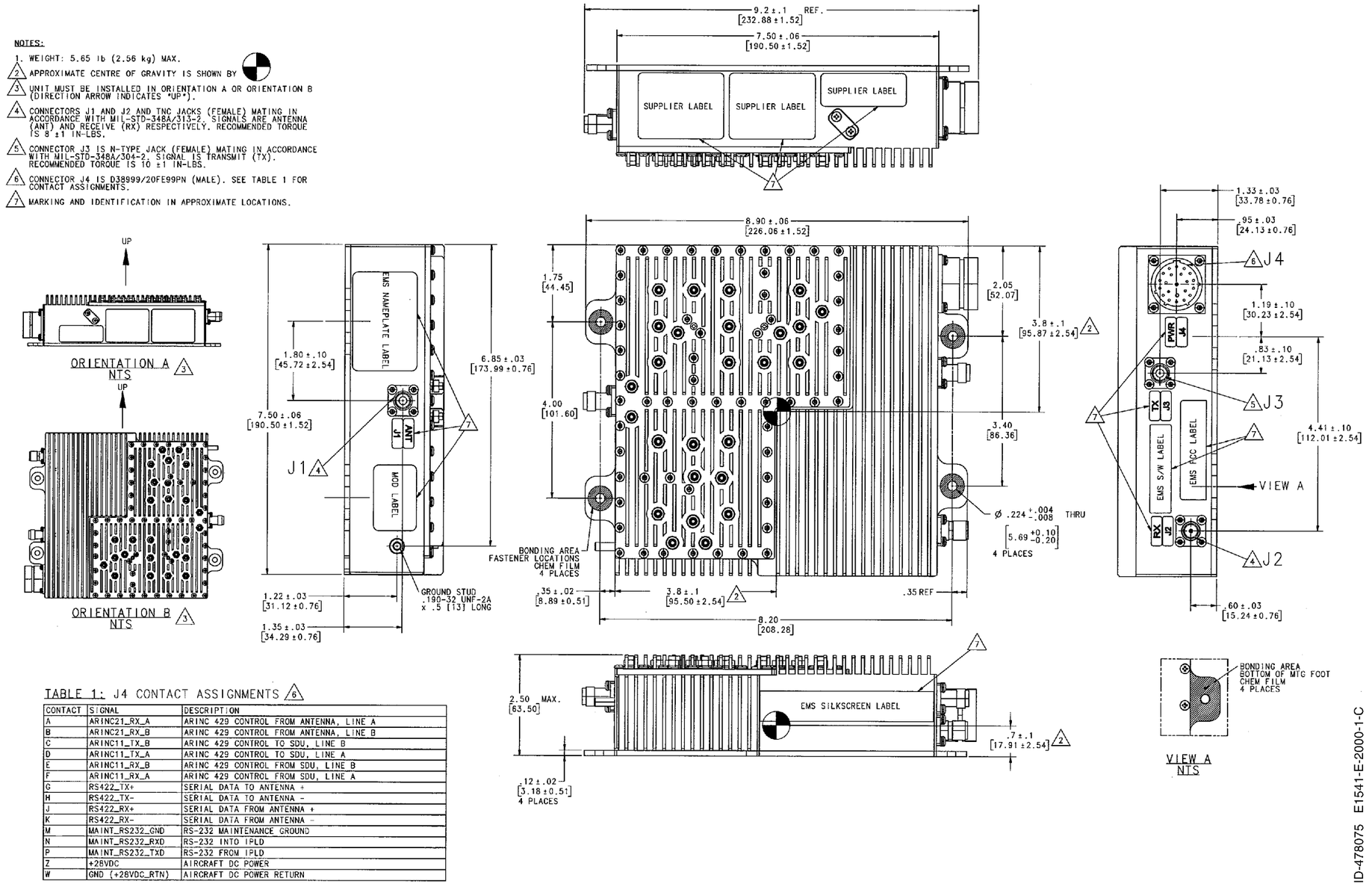

TABLE 1: J4 CONTACT ASSIGNMENTS 6

CONTACT	SIGNAL	DESCRIPTION
A	ARINC21_RX_A	ARINC 429 CONTROL FROM ANTENNA, LINE A
B	ARINC21_RX_B	ARINC 429 CONTROL FROM ANTENNA, LINE B
C	ARINC11_TX_B	ARINC 429 CONTROL TO SDU, LINE B
D	ARINC11_TX_A	ARINC 429 CONTROL TO SDU, LINE A
E	ARINC11_RX_B	ARINC 429 CONTROL FROM SDU, LINE B
F	ARINC11_RX_A	ARINC 429 CONTROL FROM SDU, LINE A
G	RS422_TX+	SERIAL DATA TO ANTENNA +
H	RS422_TX-	SERIAL DATA TO ANTENNA -
J	RS422_RX+	SERIAL DATA FROM ANTENNA +
K	RS422_RX-	SERIAL DATA FROM ANTENNA -
M	MAINT_RS232_GND	RS-232 MAINTENANCE GROUND
N	MAINT_RS232_RXD	RS-232 INTO IPLD
P	MAINT_RS232_TXD	RS-232 FROM IPLD
Z	+28VDC	AIRCRAFT DC POWER
W	GND (+28VDC_RTN)	AIRCRAFT DC POWER RETURN

Figure 3-3 IPLD Outline Drawing

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4. SCM

NOTES:

1. MAXIMUM WEIGHT IS .22 KG (.5 LBS).

2 ⊕ INDICATES APPROXIMATE CENTER OF GRAVITY.

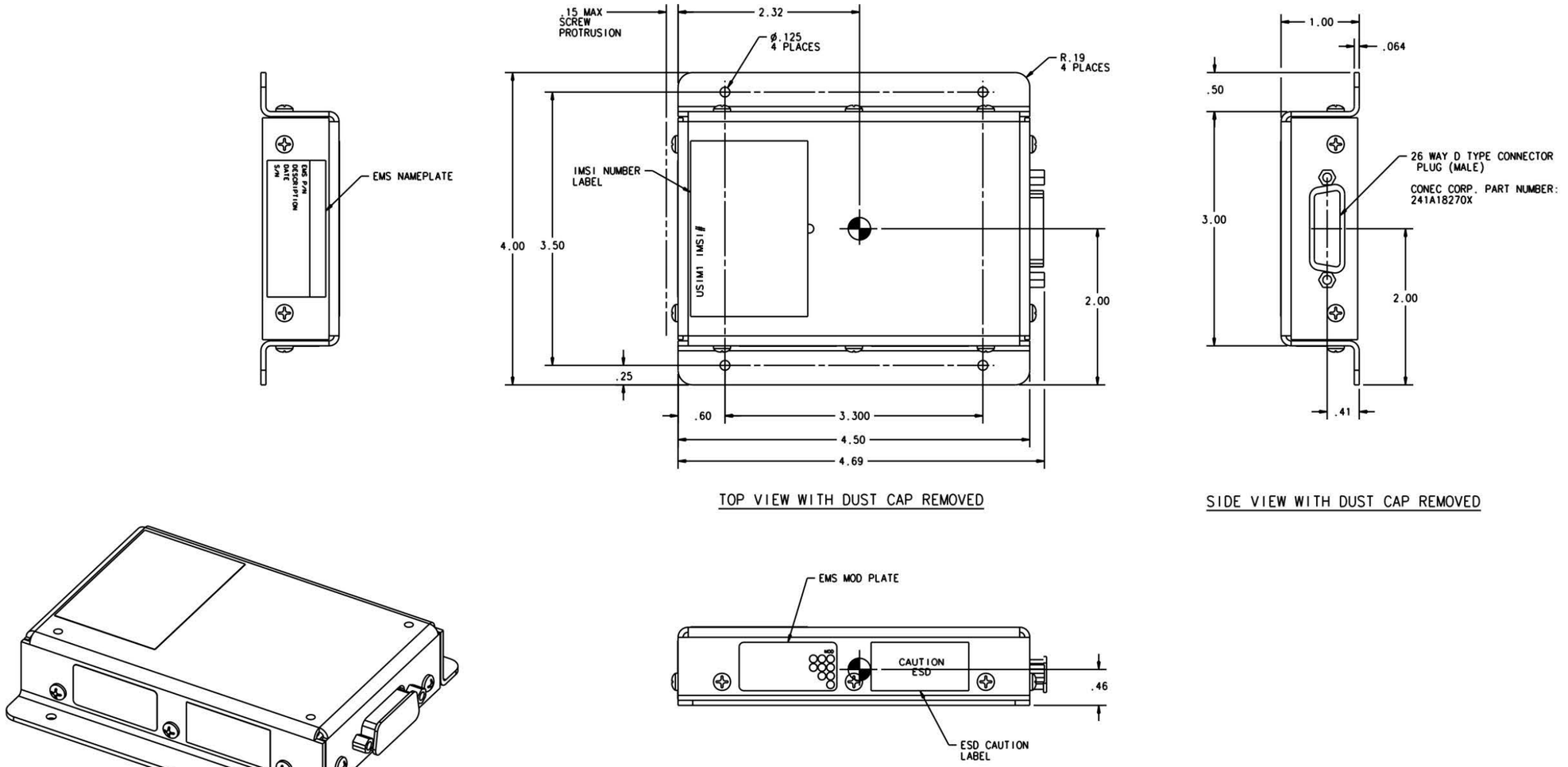

Figure 3-4 SCM Outline Drawing

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5. Omni Blade Antenna

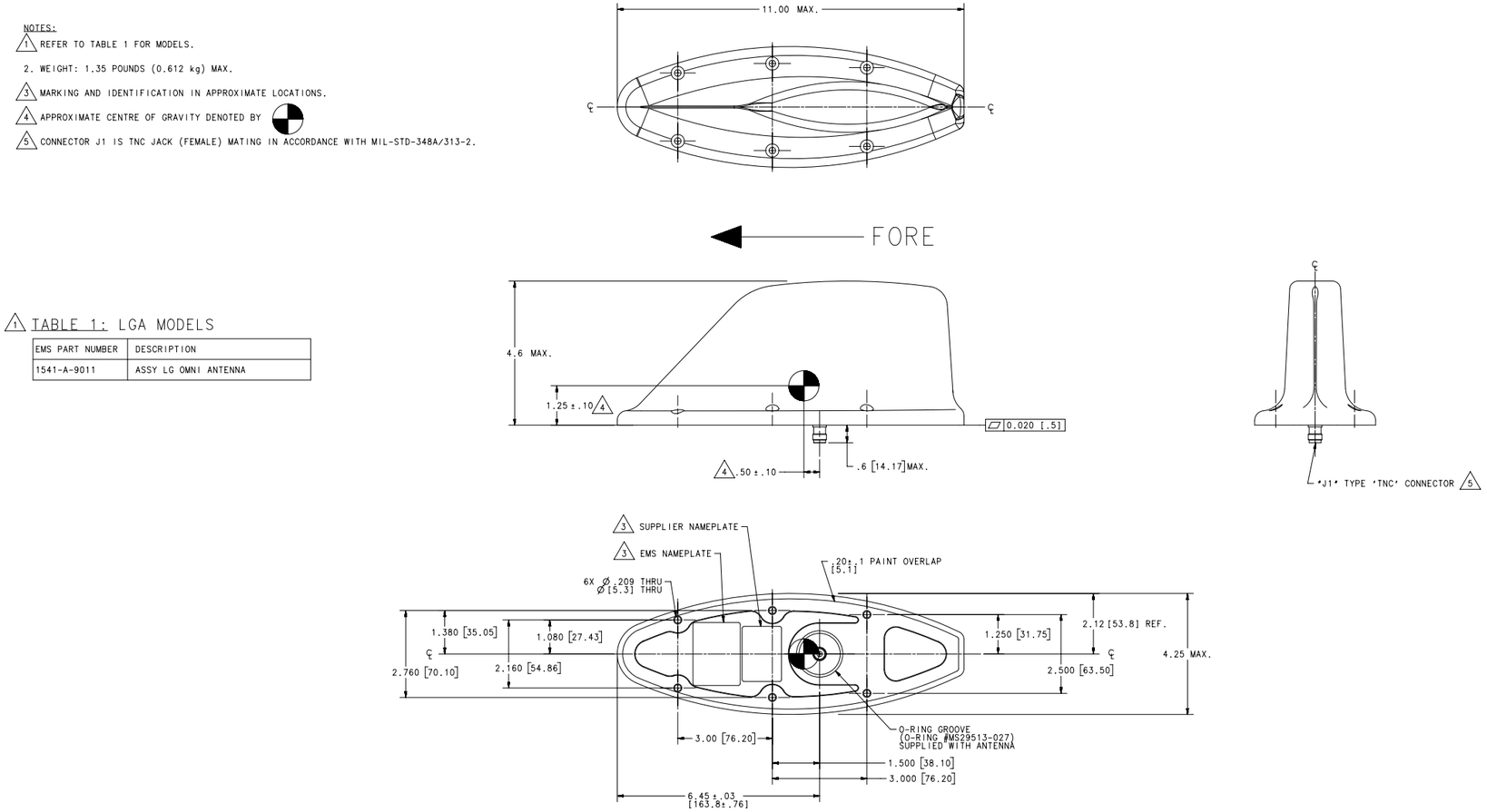

Figure 3-5 Omni Blade Antenna Outline Drawing

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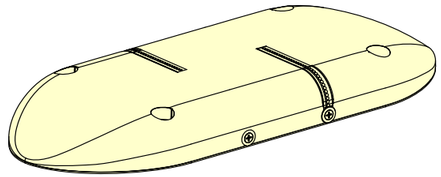
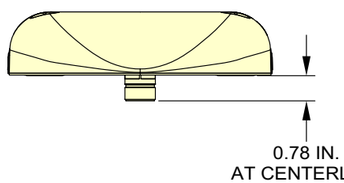
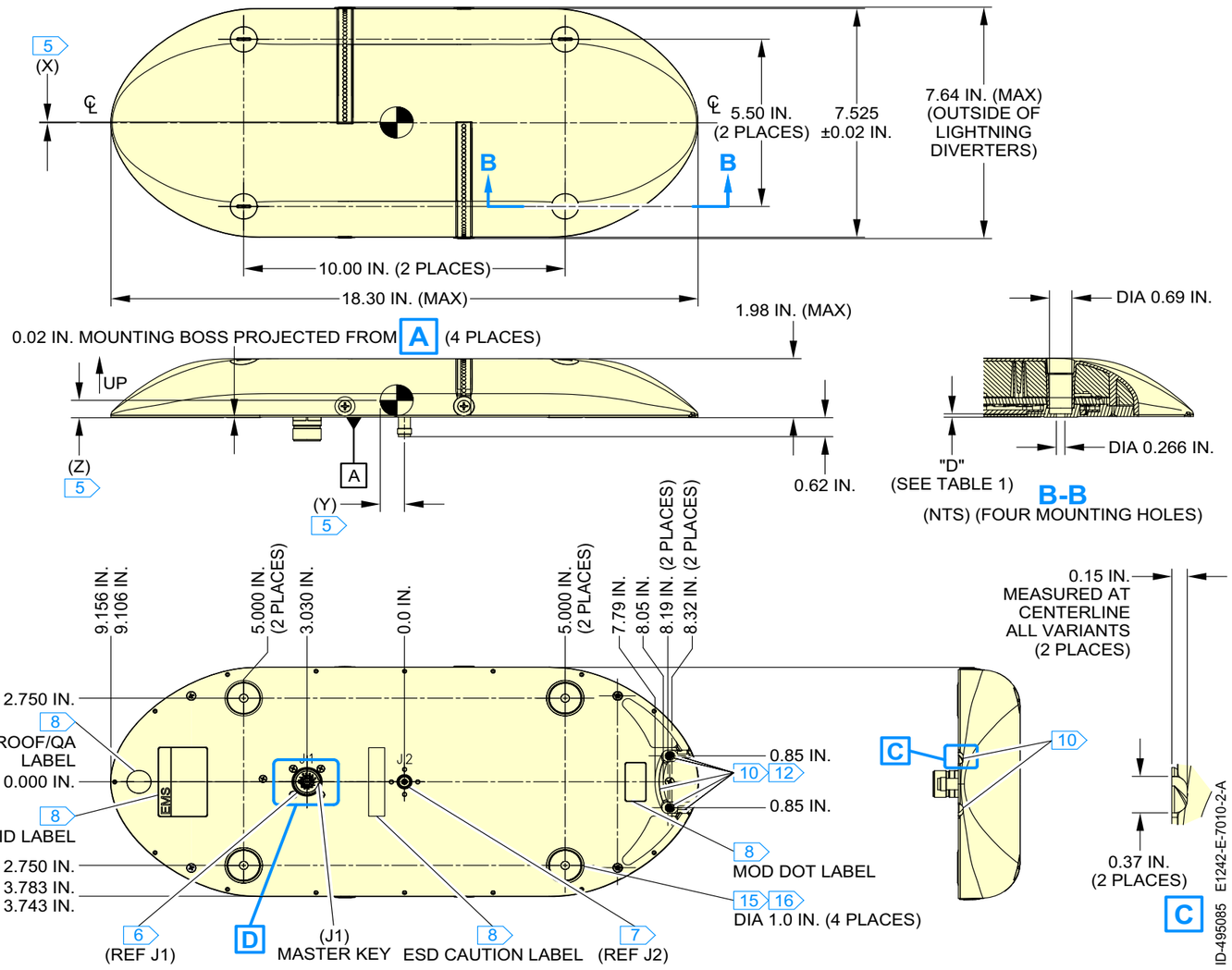
6. AMT-1800 IGA



TRIMETRIC VIEW: TOP (NTS)





TRIMETRIC VIEW: BOTTOM (NTS)

Figure 3-6 AMT-1800 IGA Outline Drawing

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7. AMT-3500 IGA

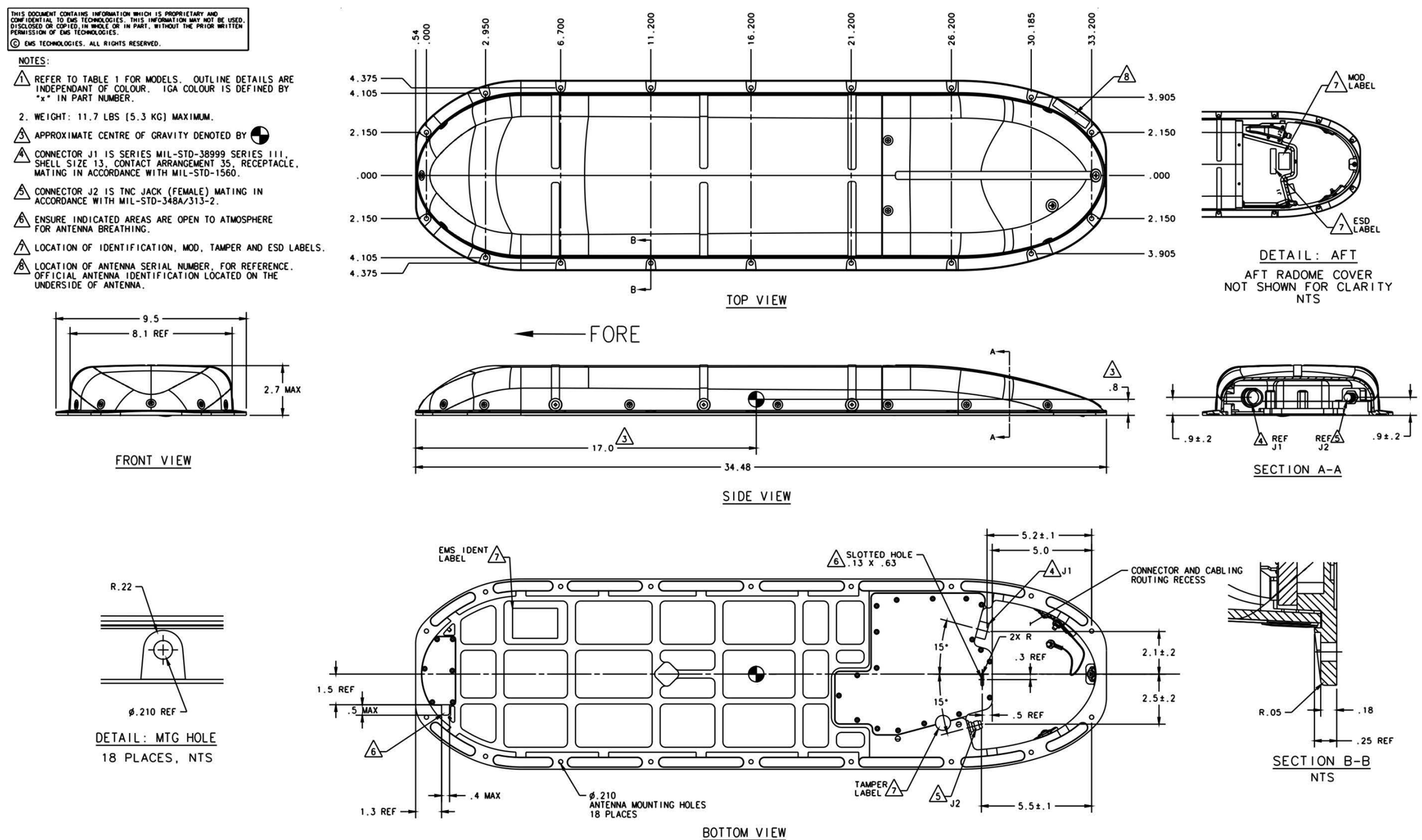

Figure 3-7 AMT-3500 IGA Outline Drawing

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8. AMT-3800 HGA

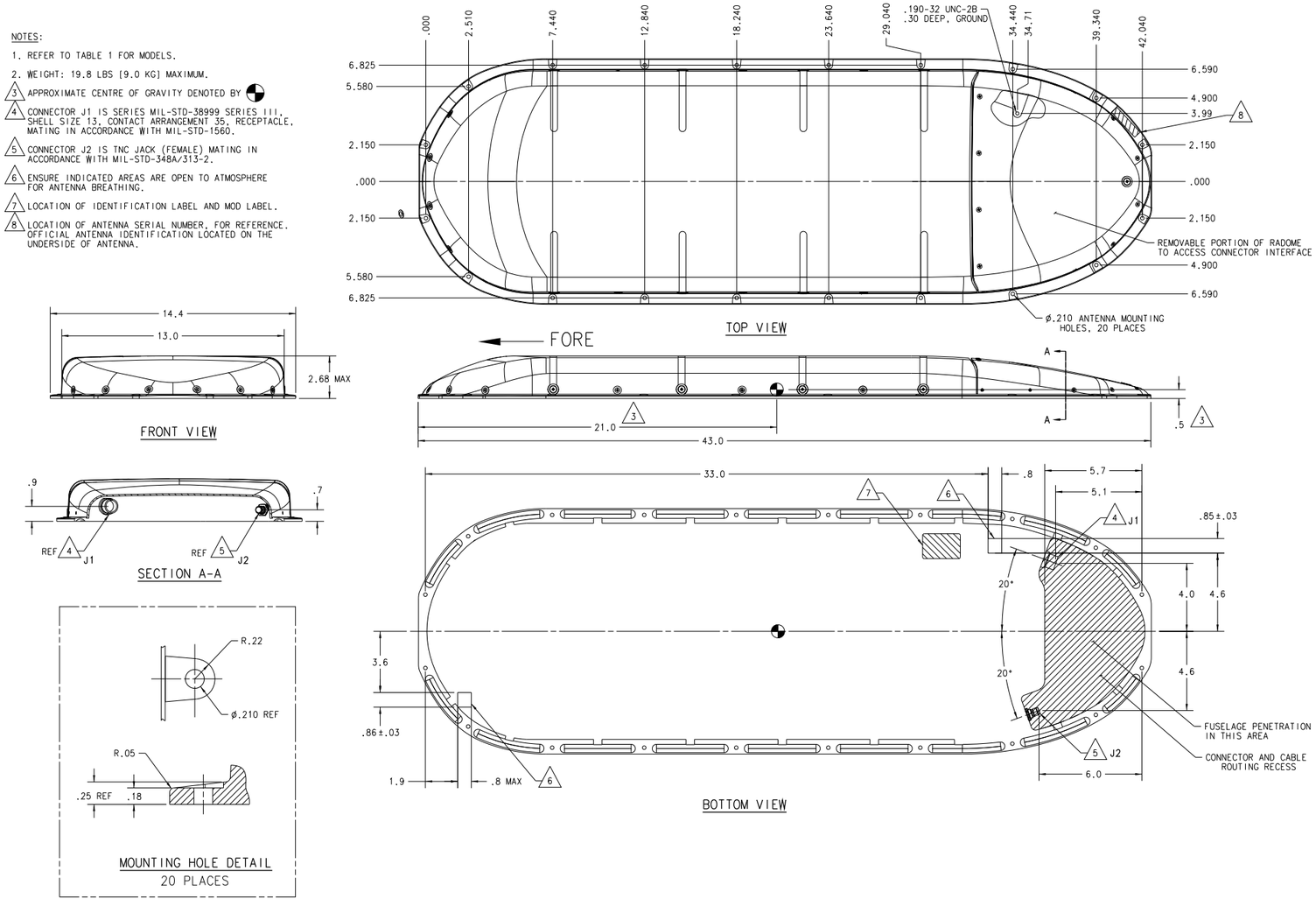

Figure 3-8 AMT-3800 HGA Outline and Installation Drawing

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9. AMT-700 HGA

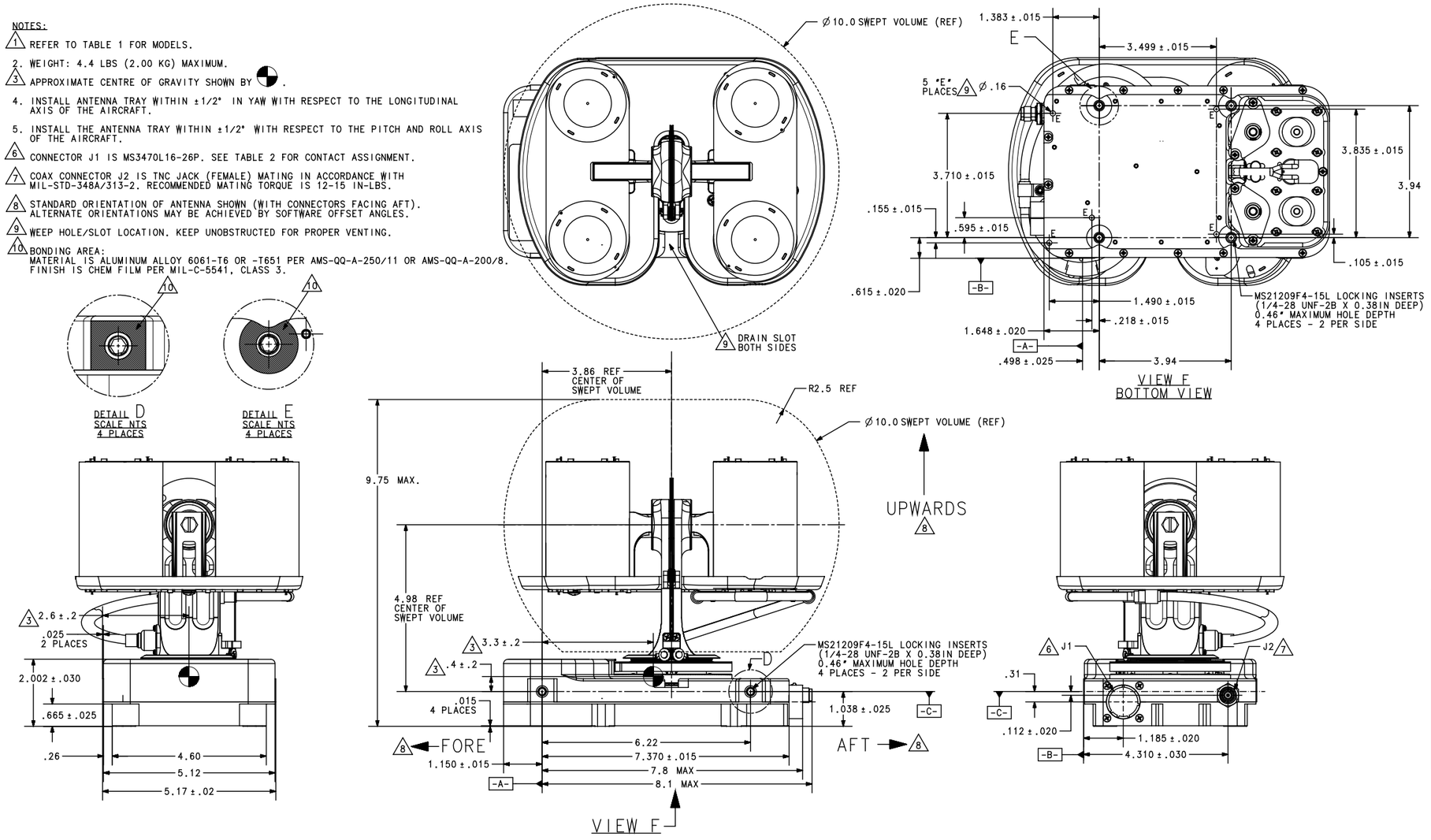

Figure 3-9 AMT-700 HGA Outline Drawing

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10. CCU-200

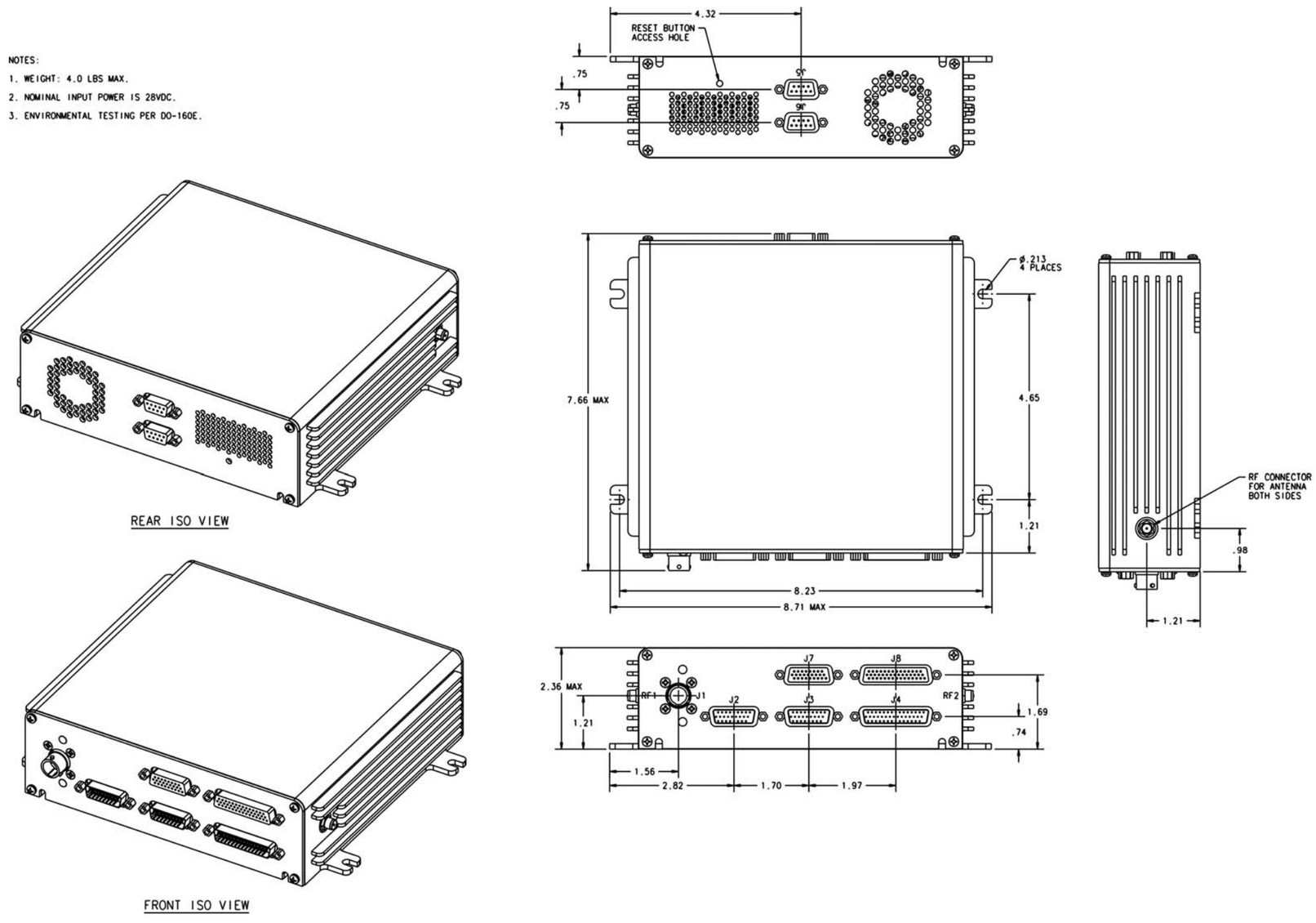

Figure 3-10 CCU-200 Outline and Installation Drawing

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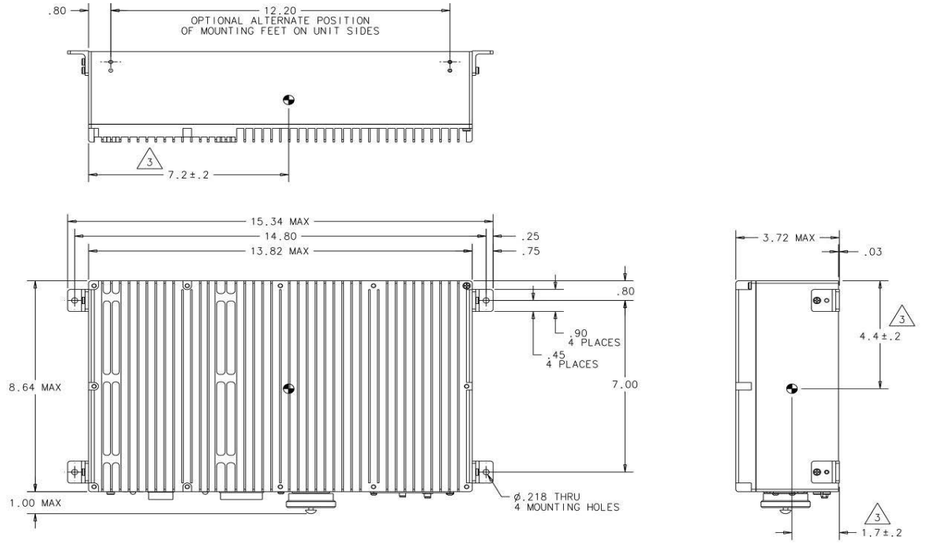
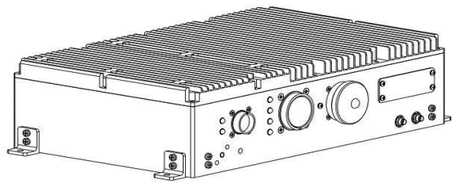
11. CNX-200

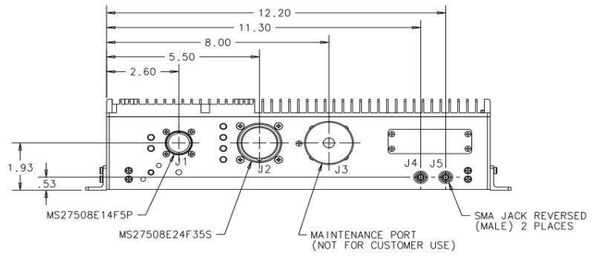
NOTES:

1. USE THIS DRAWING IN CONJUNCTION WITH SYSTEM INTERCONNECTION DIAGRAM 1110-B-0708.
2. UNIT MAXIMUM WEIGHT IS 10.8 LBS.
3. APPROXIMATE CENTRE OF GRAVITY IS INDICATED BY ⊕.





ISOMETRIC VIEW



DWG No 1110-E-0501-20 REV B SHT 1

Figure 3-11 CNX-200 Outline and Installation Drawing

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12. CNX-250

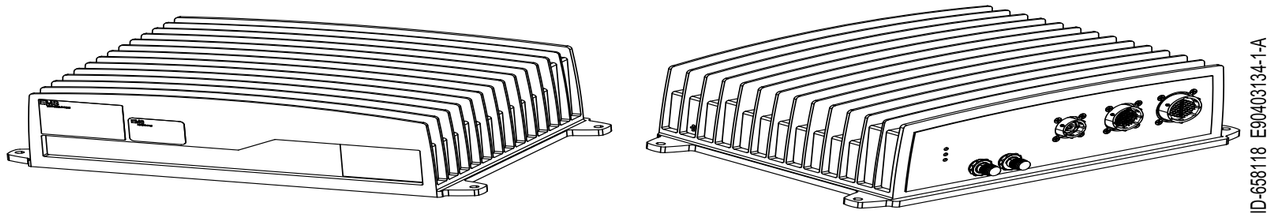

Figure 3-12 CNX-250

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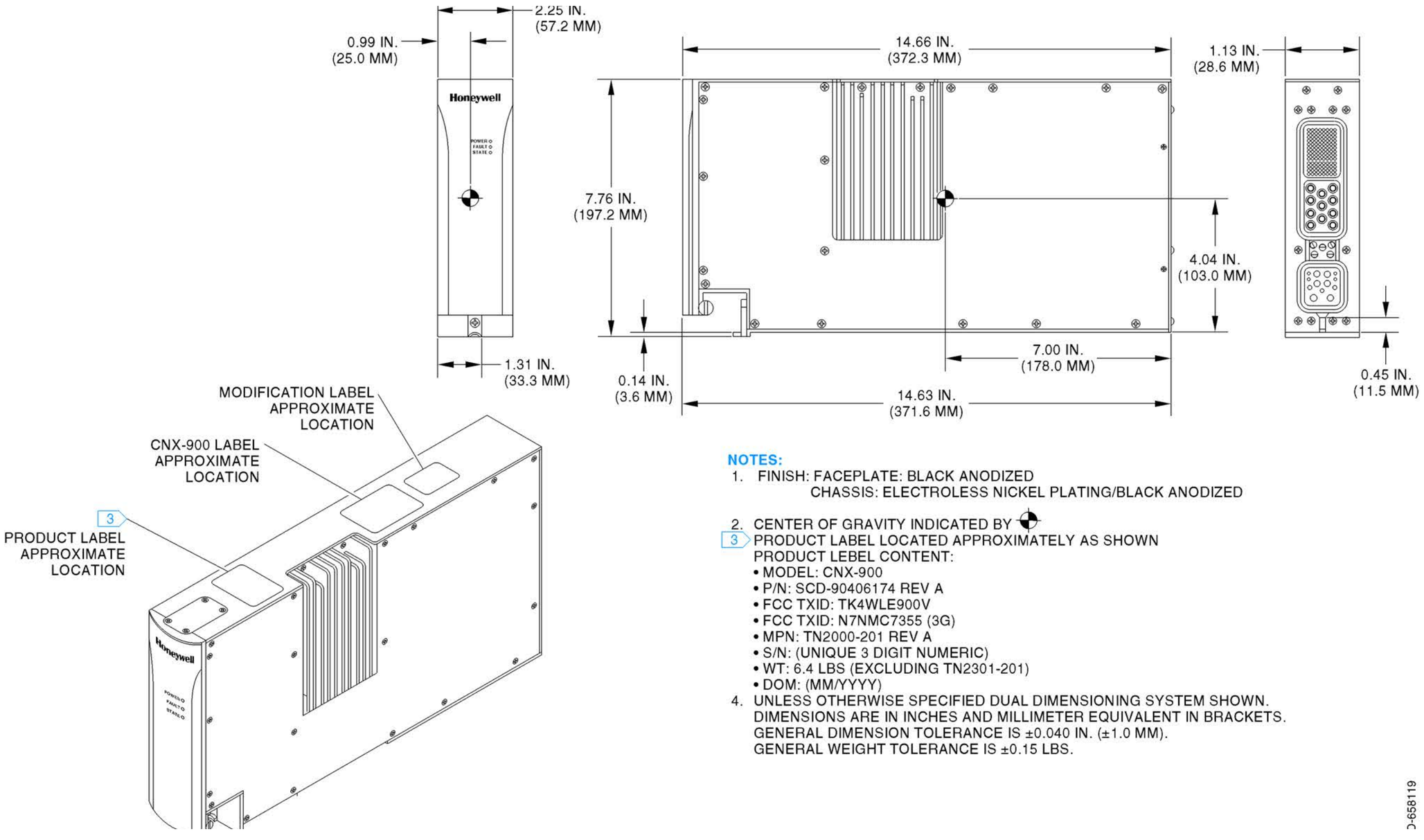
13. CNX-900



NOTES:

1. FINISH: FACEPLATE: BLACK ANODIZED
   CHASSIS: ELECTROLESS NICKEL PLATING/BLACK ANODIZED
2. CENTER OF GRAVITY INDICATED BY ⊕
3. PRODUCT LABEL LOCATED APPROXIMATELY AS SHOWN
   PRODUCT LEBEL CONTENT:
   - MODEL: CNX-900
   - P/N: SCD-90406174 REV A
   - FCC TXID: TK4WLE900V
   - FCC TXID: N7NMC7355 (3G)
   - MPN: TN2000-201 REV A
   - S/N: (UNIQUE 3 DIGIT NUMERIC)
   - WT: 6.4 LBS (EXCLUDING TN2301-201)
   - DOM: (MM/YYYY)
4. UNLESS OTHERWISE SPECIFIED DUAL DIMENSIONING SYSTEM SHOWN. DIMENSIONS ARE IN INCHES AND MILLIMETER EQUIVALENT IN BRACKETS. GENERAL DIMENSION TOLERANCE IS ±0.040 IN. (±1.0 MM). GENERAL WEIGHT TOLERANCE IS ±0.15 LBS.

D-658119

Figure 3-13 CNX-900

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14. CNX-900 Personality Module

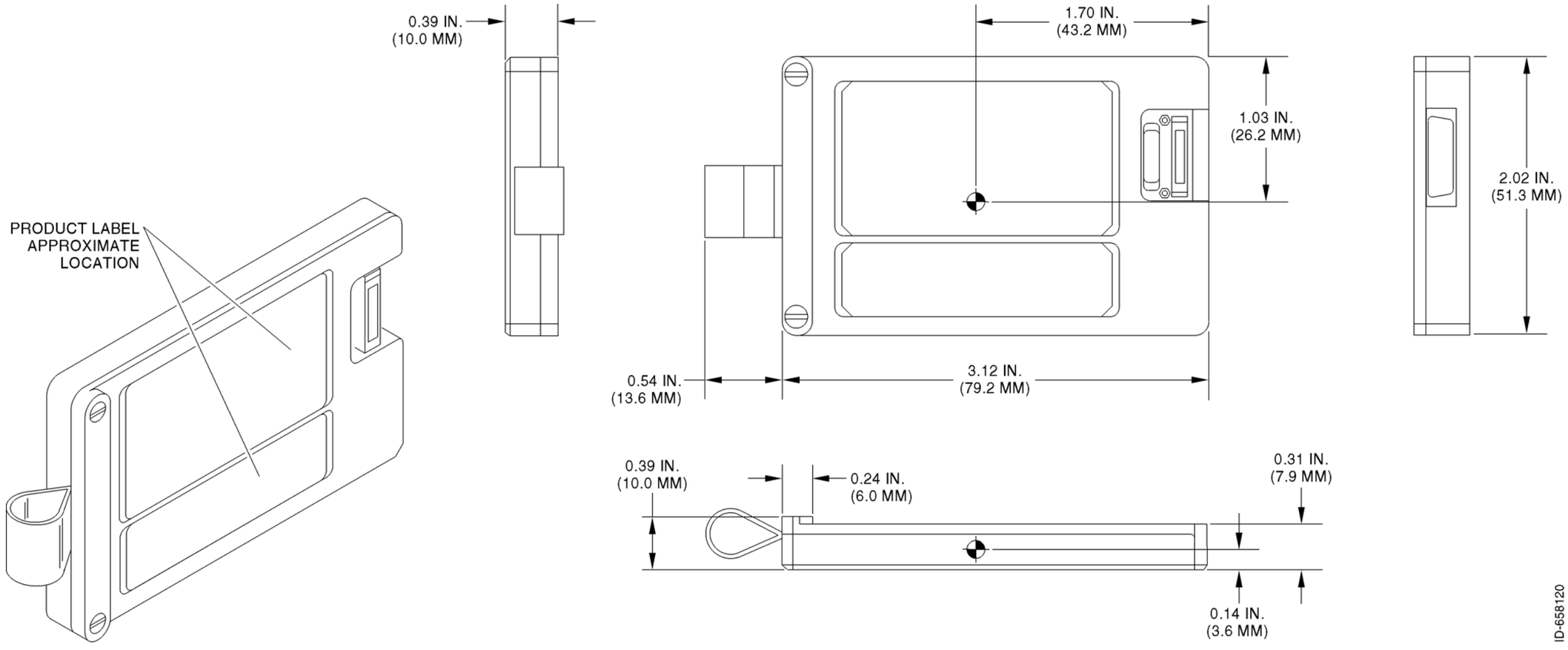

Figure 3-14 CNX-900 Personality Module

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INSTALLATION

1. Installation Overview

The Aspire system includes five LRUs:

- HDU
- IPLD
- SCM
- Antenna—LGA, IGA, or HGA
- Optional router.

The first four LRUs of the core Aspire system provide all the functions and services described in “Aspire-200 Features” on page 2-7 and “Aspire-200 User Interfaces” on page 2-7. The router provides additional features that can create a network or office for users in the aircraft cabin.

Figure 4-1 illustrates the LRUs and provides an overview of the major wiring routes. “Electrical Installation” on page 4-10 provides details for connecting services to each LRU.

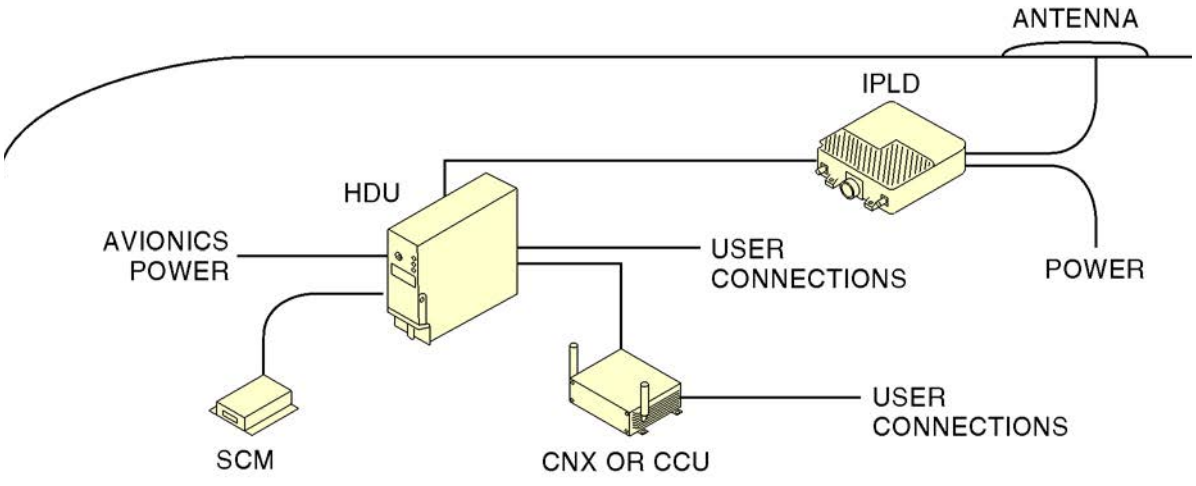


Figure 4-1 Installation Overview

2. Certification and Approvals

To install the AMT-1800 IGA, AMT-3500 IGA, AMT-700 or AMT-3800 HGA, or Blade LGA, you must obtain the approval of the appropriate government air/radio authority, such as the FAA, EASA, or Transport Canada. Contact the authorities when you begin planning your communication system in order to minimize approval and certification issues.

3. Mechanical Installation

This section includes information about installing the equipment in the core Aspire-200. Contact Honeywell about installation kits that include mating connectors and cables.

A. HDU

Install the HDU in a standard 2-MCU rack. The Aspire-200 ships only the equipment in the core system. The customer is responsible for the mounting tray, mating ARINC 600 connector and cables.

Carlisle Interconnect Technologies supplies 2-MCU ARINC 600 shipping kits in various configurations, provided in Table 4-1. You can contact Carlisle at www.carlisleit.com.

Table 4-1 Carlisle Kits

Carlisle Part	Description
120-29256-101	Aspire-200 Install Kit (AMT-700)
120-29256-102	Aspire-200 Install Kit (AMT-1800/3500/3800)
120-29256-103	Aspire-200 Install Kit (LGA)
120-232154-101	Aspire-200 Install Kit (AMT-700) tray with isolators
120-232154-102	Aspire-200 Install Kit (AMT-1800/3500/3800) tray with isolators
120-232154-103	Aspire-200 Install Kit (LGA) tray with isolators
120-29255-101	Female DB26 kit for Aspire-200 SCM
120-21002-102	CCU-200 connector kit
120-21002-104	CCU-200 wire kit
6092-101	2 MCU S/S W/ BOTTOM AC FAN
200-91002-101	2 MCU S/L W/REAR AC FAN
6092-102	2 MCU S/S W/BOTTOM DC FAN
200-92144-101	2 MCU S/L W/REAR DC FAN
6054-101	2 MCU S/S NO FAN
6051-101	2 MCU S/L NO FAN

The HDU rear connector is RADIALL NSXF1R101Y0012. The mating connector is supplied by the customer.

B. IPLD

You can install the IPLD in one of two orientations described in Figure 3-3 on page 3-5.

The IPLD does not require forced cooling. However, to ensure that the IPLD can dissipate heat, install the IPLD in a location that meets as many of the following conditions as possible:

- temperature controlled
- air can circulate around the IPLD
- the IPLD can dissipate heat to that aircraft structure.

Install the IPLD:

- so that the maximum transmit cable loss between the HDU and IPLD is 28dB
- so that the maximum receive cable loss between the HDU and IPLD is 25dB

  NOTE: Honeywell recommends RG142B cable for both transmit and receive connections. The transmit loss in 50 feet of cable is about 10dB.

- so that the maximum cable loss between the IPLD and the antenna is:
  - 0.3dB for an LGA
  - 0.8dB for the IGA or HGA
  - 0.3dB for the AMT-3800 HGA in Swift 64 configuration.

    NOTE: Honeywell recommends Carlisle cable 311701. The transmit loss in five feet of cable is about 0.3dB. There is an additional loss of 0.01dB in each connector.

The IPLD has four connectors.

Table 4-2 IPLD Connectors

IPLD Connector	Connector Type	Recommended Mating Connector (Customer Supplied)
J1	TNC JACK (FEMALE) Mating in Accordance with MIL-STD-348A/313-2	TNC PLUG (MALE) Mating in Accordance with MIL-STD-348A/304-2
J2	TNC JACK (FEMALE) Mating in Accordance with MIL-STD-348A/313-2	TNC PLUG (MALE) Mating in Accordance with MIL-STD-348A/304-2
J3	N-TYPE JACK (FEMALE) Mating in Accordance with MIL-STD-348A/304-2	N-TYPE JACK (MALE) Mating in Accordance with MIL-STD-348A/304-2
J4	D38999/26FE99PN	D38999/26FE99SN

C. SCM

You can install the SCM in any orientation. The outline drawing in “Equipment Drawings on page 3-1 provide mounting information.

There are no clearance requirements for the SCM.

D. CCU-200

You can install the CCU in a pressurized or non-pressurized environment.

Figure 3-9 on page 3-17 illustrates the physical and mechanical specifications of the CCU-200.

(1) Physical Placement

Bolt the CCU to a flat surface within the aircraft cabin in any orientation. Install the mounting flange of the CNX CCU using four 10-32 bolts.

The CCU must have two inches of clearance on all sides.

For installations that require DO-160E Category W waterproofness, you must install the CCU on a horizontal surface with the mounting flange on the bottom.

(2) Environmental Requirements

The CCU meets DO-160E requirements, and does not require additional cooling.

E. CNX-200

CNX Cabin Gateway products must be installed in the pressurized cabin.

Section “CNX-200Series 2 Network Accelerator on page A-10 provides information about the environmental characteristics of the CNX Cabin Gateway.

(1) Cooling Requirements

CNX Cabin Gateway products do not require external, forced-air cooling as long as clearance requirements are maintained and ventilation is provided as required to ensure that the maximum operating temperature does not exceed 131°F (55°C). Honeywell recommends providing ventilation for all CNX-200 products installed in enclosed spaces.

Install CNX-200 products with cooling fins pointing up.

(2) Clearance and Accessibility Requirements

To support maintenance and troubleshooting of the unit, install the unit in a location that provides access to the connector panel.

CNX-200 products must be installed in a location that provides clearances of at least three inches (3") of air space above the unit and one inch (1") of clearance in front of the connector panel.

(3) Mounting Requirements

Mount the unit using four 10-24 bracket fasteners. Install two fasteners on each side panel or on the front and back panel of the unit, depending on the requirements of the installation location. Refer to the outline and installation drawing provided in Figure 3-9 on page 3-17 and Figure 3-10 on page 3-19.

Use sixteen (16) screws (MS81957-28B) and washers (NAS620C6LP) to attach the fasteners to the unit and installation mounting holes.

WARNING: TO PREVENT DAMAGE TO THE UNIT, DO NOT INSERT THE SCREWS MORE THAN 0.26 INCHES INSIDE THE CHASSIS OF THE UNIT.

(4) Installation Notes

1. All wire in accordance with MIL-W-22759/34, or equivalent, unless otherwise specified.
2. All cable in accordance with MIL-C-27500 unless otherwise specified.
3. All coaxial cable in accordance with MIL-C-17 unless otherwise specified. Coaxial cable must be manufacturer certified to meet FAR 25 Appendix F Flammability Requirements.
4. Fabrication and installation of wiring harness in accordance with AC 43.13-1B, Chapter 11.
5. Grounding and bonding in accordance with AC 43.13-1B, Chapter 11, Section 15 (bond J1 Pin B to airframe ground.)
6. Installation of CNX system in accordance with AC 43.13-1B, Chapter 4, Section 4 and AC 43.13-2A, Chapter 2.
7. Refer to the aircraft structural repair manual and the aircraft maintenance manual for instructions and information pertinent to this installation.
8. For all CNX variants, use circuit breaker part number MS3320-5 or MS26574-5 or equivalent.
9. Connect power input to a load-sheddable bus.
10. The CNX system is qualified for installation in a pressurized, temperature controlled location on an aircraft operated at cabin altitudes up to 15,000 feet.
11. After completing a first time installation of the unit, perform the post-installation test procedure described in Post-Installation EMI Test Procedure, CNX Network Module (TS-1110-50150) to ensure non-interference with existing onboard systems.

Note: Installation of the CNX system according to this manual, STC, or other airworthiness authority approved documentation does not authorize the use of portable electronic devices onboard an aircraft. The permitted use of a portable electronic device is the responsibility of operators in conjunction with their regulatory authority.

For guidance, refer to FAA AC 91-21.1 (latest revision), Transport Canada CARs 703.38(3), 704.33(5), and 705.40(4), or the EASA JAA TGL No. 29 - Guidance Concerning the Use of Portable Electronic Devices Onboard Aircraft.

Honeywell Qualification Test Procedure, Aircraft Systems Susceptibility to Transmitting Portable Electronic Devices (TS-1110-50373), or equivalent, may be used to support applications for operational approval with the appropriate regulatory authorities.

F. CNX-250

The CNX-250 must be installed in a pressurized cabin.

Refer to CNX-250 Cabin Gateway Installation Manual, ATA No. 23-15-18.

(1) Cooling Requirements

CNX Cabin Gateway products do not require external, forced-air cooling as long as clearance requirements are maintained and ventilation is provided as required to ensure that the maximum operating temperature does not exceed 131°F (55°C). Honeywell recommends providing ventilation for all CNX-200 products installed in enclosed spaces.

Install CNX-250 products with cooling fins pointing up.

(2) Clearance and Accessibility Requirements

To support maintenance and troubleshooting of the unit, install the unit in a location that provides access to the connector panel.

CNX-250 products must be installed in a location that provides clearances of at least two inches (2") on all sides.

(3) Mounting Requirements

Attach the CNX-250 to a mounting surface using the mounting holes on the baseplate.

(4) Installation Notes

Install the CNX-250 with cooling fins pointing up. To attach the CNX-250 on its base (any configuration), use the four mounting holes in the baseplate flanges. These mounting holes are designed for use with #10 hardware (3/16 or 0.190 inch (4.76 mm)).

G. CNX-900

The CNX-900 must be installed in the pressure and temperature controlled section of the aircraft.

Refer to CNX-900 Next Generation Cabin Gateway Installation Manual, ATA No. 23-15-88.

(1) Selecting a Location for the CNX-900 Router with Personality Module

The WLAN antenna should be located in an area of the aircraft cabin to provide satisfactory coverage of the entire aircraft. In general, a mid-cabin location is ideal. For antenna separation use at least 20 cm (7.8 inches). The WLAN antenna may be located behind the cabin interior, but must not be located behind metallic panels or surfaces.

(2) Cooling Requirements

CNX-900 does not require external, forced-air cooling when installed in the pressurized cabin. However, it is very important that enough clearance exist so that convective air can flow around the CNX-900 unit. Forced air-cooling is required for operation outside of the pressure and temperature controlled areas.

(3) Clearance and Accessibility Requirements

If mounting on a shelf with other avionic equipment the recommended minimum thermal clearances are:

- At least 1 inch (25.4 mm) to the left from the adjacent LRU
- At least 2.25 inches (57.2 mm) to the right (CNX-900 Heat Sink side).

  NOTE: It is very important that any adjacent LRU installed on the right-hand side of the CNX-900 system doesn't generate excessive heat that could radiate into the CNX-900 LRU. Usually the recommended 2.25 inch (57.2 mm) clearance is enough but if the LRU to the right generates more than 131°F (55°C) during normal operation, additional separation between CNX-900 and the LRU to the right might be necessary.

- At least 1 inch (25.4 mm) of air space on the front (to the avionics bay door)
- At least 3 inches (76.2 mm) to the top of the avionics bay closet.

(4) Installation Notes

- The minimum wire size for power lines is 16 AWG. It is the installer's responsibility to ensure that an appropriate sized circuit breaker is used to protect the power wire gauge selected.
- Ethernet cabling must be used for all Ethernet cables. It is recommended that 24 AWG wiring be used for Ethernet cables terminating to the ARINC 600 connector of the CNX-900 ALRU.
- Read all notes on drawings and interconnects and the planning paragraph before installing any units or cabling.
- For enhanced reliability and prolonged life, it is recommended that the equipment be installed in accordance with the environmental limitations.

H. Blade Antenna

(1) Selecting a Location for the Blade Antenna

For clear satellite communication, install the Blade Antenna on the top of the fuselage, as close to the centreline and as far aft as possible (away from any GPS antennas). Make sure that the Blade Antenna has a clear view of the sky in any direction from 5° to 90° in elevation and 360° in azimuth.

NOTE: The Blade Antenna can access the Inmarsat network only above 20° inelevation, even though the Blade Antenna can operate at 5° of elevation.

To prevent interference with GPS systems, the GPS antenna should adhere to C144 TSO and physical placement should be in accordance with section 2.3.3.13 of ARINC 741:

- Separation resulting in greater than 40dB of isolation should be provided between the Blade Antenna and the GPS Antenna at 1572.0 to 1616.0 MHz (GPS band) and 1626.5 to 1660.5 MHz (SATCOM band). The Blade Antenna provides 50dB of filtering. If another antenna is installed, check the documentation for GPS isolation.

(2) Installing the Blade Antenna

To install the antenna assembly:

1. Carefully position and secure the antenna assembly on the fuselage, taking care not to damage exposed cabling.
2. Connect all cables to the antenna assembly.

Install the Blade LGA so that the maximum RF cable loss is 0.3 dB.

NOTE: The cable loss limit of 0.3 dB is a generic value that covers all aircraft types and equipment configurations. Depending on specific installation environments, the cable loss may be increased without compromising system performance or invalidating system certification. If required, contact Honeywell for more information.

For information about installing the Blade LGA, refer to Figure 3-5 on page 3-9. You can contact Sensor Systems at:

Sensor Systems
8929 Fullbright Avenue
Chatsworth, CA 91311 USA
Phone: (818) 341-5366

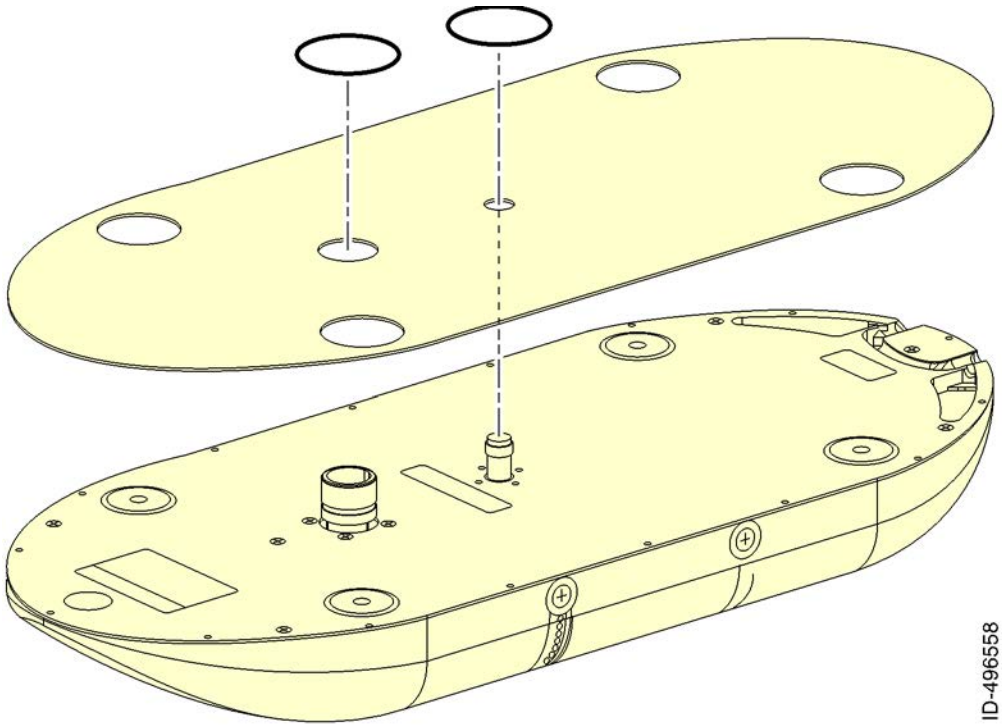
I. AMT-1800 IGA

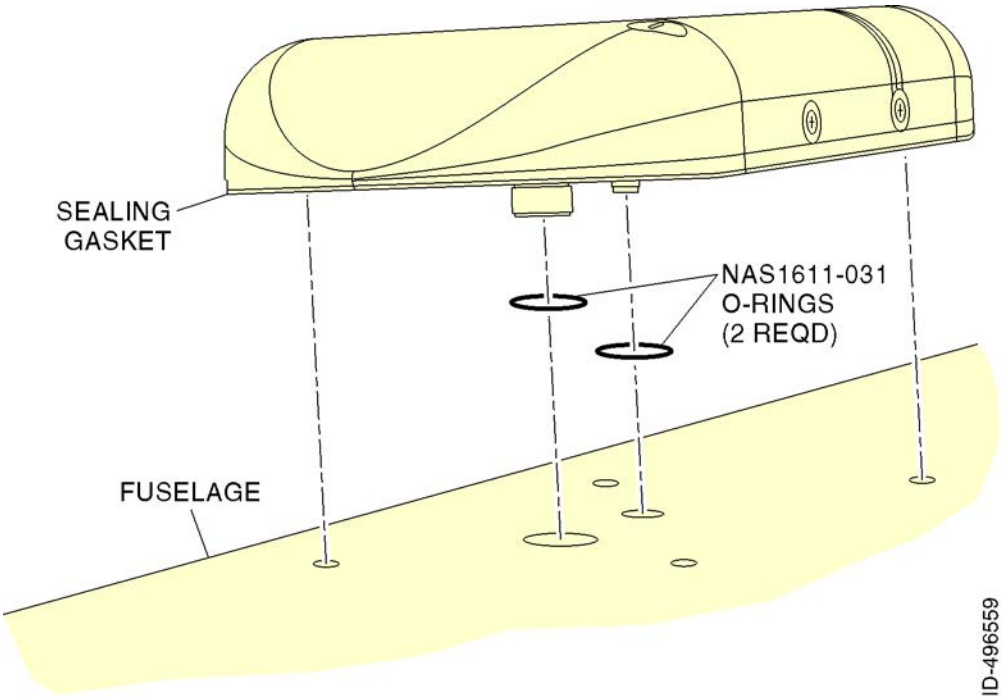
The AMT-1800 IGA is provisioned by variant selection to provide conformal mating with a select list of airframe crown radii. Installations on airframes other than those identified in the product variant list will require a custom antenna interface mounting adapter which adapts the curved fuselage to the flat base of the AMT-1800 IGA.

Design of the mounting adapter should not permit water/condensate to become To simplify installation of the AMT-1800 IGA on common aircraft, Installation Kits are available from Honeywell. These kits include, most significantly, an AIM Adapter that meets the requirements described in this section. Contact Honeywell for information on availability of the AIM adapter for a given airframe.entrapped. Ensure sufficient drainage to avoid damage and corrosion.

(1) Antenna to Aircraft Fuselage

The AMT-1800 IGA will be installed using the custom gasket provided with the system, and quantity two NAS1611-031 O-rings (not provided), to seal the faying interface between the underside of the antenna and mounting surface to provide a pressure seal and to avoid water entrapment and corrosion. Clean the faying surfaces of the AMT-1800 IGA and the fuselage using approved avionics solvents.(such as IPA) prior to installation of the gasket.





Center the O-ring seals on the J1 and J2 connector holes (approximately). Ensure that there is no overlap between the O-rings and the fuselage penetration holes.

NOTE: Do not re-use gasket or O-rings.

Additionally, the perimeter of the AMT-1800 IGA should be sealed to the mounting surface (aircraft fuselage or Antenna Interface Mount, if applicable) to avoid water entrapment and corrosion. The installer must follow proper avionics procedures, use approved avionics sealants and corrosion inhibitors. When sealing the antenna perimeter to the fuselage, avoid quantity 2 vent holes at aft.

NOTE: Contact Honeywell to order replacement sealing kits.

(2) Antenna to Aircraft Attach Fastener Locations

After installation and function ground test of the AMT-1800 IGA to the aircraft, the antenna to aircraft mounting locations (4 places) must be sealed using the custom sealing plugs provided with the system.

Each sealing plug consists of a foam plug and a cap; these may be delivered pre-assembled. The sealing plugs have a keying feature to ensure proper alignment in AMT-1800 IGA.

Apply approved avionics sealants (such as silicone RTV) to the faying surface of the AMT-1800 IGA and the sealing plug surface prior to installation of the sealing plug into the respective mounting location. Wipe away excess sealant.

NOTE: Contact Honeywell to order replacement sealing kits.

(3) Selecting a Location for the AMT-1800 IGA

For clear satellite communication, install the AMT-1800 IGA on the top of the fuselage.

Select a location for the AMT-1800 IGA assembly that minimizes shadowing from any part of the aircraft structure. The aircraft tail (on fixed wing platforms) may cause a small amount of blockage. You can minimize this blockage by installing the AMT-1800 IGA forward on the fuselage so that it has a clear view in any direction from 5° to 90° in elevation and 360° in azimuth.

(4) Aligning the AMT-1800 IGA

Orientation of the AMT-1800 IGA is defined with respect to the principal axes of the antenna. The principal axes are illustrated in Figure 3-7 on page 3-13. The connector access cover on the radome is towards the aft of the aircraft. In this orientation, the principal axes of the AMT-1800 IGA should be aligned with those of the aircraft to within ± 0.25°. This is the default position for the AMT-1800 IGA.

You can install the AMT-1800 IGA in a position that is slightly offset from the default position. The HDU can be configured to compensate for installation offsets, the procedure for configuring the HDU is provided in the System Setup Section 1F. This is the preferred method for applying any antenna installation offsets. Optionally, software in the AMT-1800 can accommodate an

offset to
correct beam steering. During the initial installation, set the pitch, roll, and rotation offset angles to within ± 0.25° in the AMT-1800 IGA EEPROM—MN-1242-70010 provides information about setting up the AMT-1800 IGA. Refer to the AMT-1800 IGA SDIM for more information on setting these values through the Antenna interface.

(5) Installing the Antenna Interface Adapter

The installer must follow proper avionics procedures both when sealing the mounting adapter to the fuselage and when sealing the AMT-1800 IGA to the mounting adapter to avoid trapping water and corrosion. Use approved avionics sealants and corrosion inhibitors.

The AMT-1800 IGA has two weeping/venting locations on the underside of the unit. These venting locations are sealed, and no special precautions are required to seal the antenna. The base of the antenna (except the grounding areas) is painted.

J. AMT-3500 IGA

(1) Designing an Antenna Interface Adapter

Most installations require the fabrication of an antenna interface adapter to adapt the flat base of the AMT-3500 IGA to the curved surface of the fuselage.

The AMT-3500 IGA has two weeping/venting locations on the underside of the unit that must not be blocked. The mounting adapter must provide features to allow the AMT-3500 IGA to properly vent (for pressure equalization) and weep condensate. Refer to Figure 3-6 on page 3-11 for the location of these features.

The mounting adapter should not permit water/condensate to become entrapped. Ensure sufficient drainage to avoid damage and corrosion.

Honeywell can provide installation kits for common airframes—contact Honeywell for more information.

(2) Selecting a Location for the AMT-3500 IGA

For clear satellite communication, install the AMT-3500 IGA on the top of the fuselage.

Select a location for the AMT-3500 IGA assembly that minimizes shadowing from any part of the aircraft structure. The aircraft tail (on fixed wing platforms) may cause a small amount of blockage. You can minimize this blockage by installing the AMT-3500 IGA forward on the fuselage so that it has a clear view in any direction from 5° to 90° in elevation and 360° in azimuth.

(3) Aligning the AMT-3500 IGA

Orientation of the AMT-3500 IGA is defined with respect to the principal axes of the antenna. The principal axes are illustrated in Figure 3-6 on page 3-11. The connector access cover on the radome is towards the aft of the aircraft. In

this orientation, the principal axes of the AMT-3500 IGA should be aligned with those of the aircraft to within ± 0.25°. This is the default position for the AMT-3500 IGA.

You can install the AMT-3500 IGA in a position that is slightly offset from the default position. The HDU can be configured to compensate for installation offsets, the procedure for configuring the HDU is provided in the System Setup Section 1F, this is the preferred method for applying any antenna installation offsets. Optionally, software in the AMT-3500 can accommodate an offset to correct beam steering. During the initial installation, set the pitch, roll, and rotation offset angles to within ± 0.25° in the AMT-3500 IGA EEPROM—MN-1242-20010 provides information about setting up the AMT-3500 IGA.

(4) Installing the Antenna Interface Adapter

The installer must follow proper avionics procedures both when sealing the mounting adapter to the fuselage and when sealing the AMT-3500 IGA to the mounting adapter to avoid trapping water and corrosion. Use approved avionics sealants and corrosion inhibitors.

The AMT-3500 IGA has two weeping/venting locations on the underside of the unit. These venting locations are sealed, and no special precautions are required to seal the antenna. The base of the antenna (except the grounding areas) is painted.

(5) Installing the AMT-3500 IGA

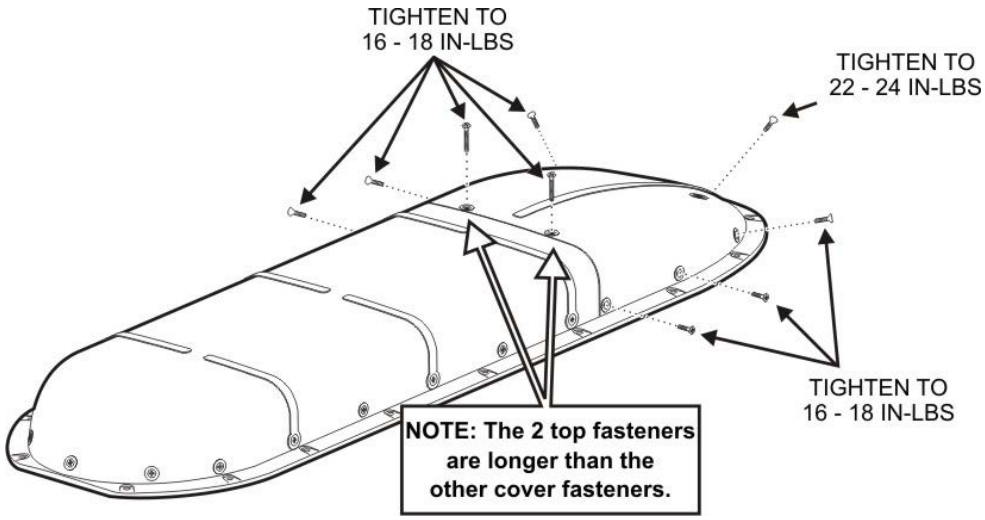
Honeywell recommends using #10 stainless steel (CRES) fasteners with minimum UTS of 80 KSI for mounting hardware. Torque for #10 screws is typically 20-22 in-lbs.

To install the antenna assembly:

1. Remove the aft cover fasteners from the antenna assembly.
2. Carefully position and secure the antenna assembly on the mount, taking care not to damage exposed cabling.
3. Connect the test harness (incorporating RS-422 maintenance lines) to the IGA-J1.
4. Perform a software alignment using the AMT-3500 IGA MPU (optional if installed in default orientation). Remove the test harness when the test is complete.
5. Connect all cables to the antenna assembly.
6. Install the aft cover with #6 screws, 1242-K-0105-56 (SCREW PFH.138-32 X 9/16L CRES), and 16–18 in-lbs of torque as shown below.

   NOTE: The screws shown below are longer than the standard mounting screws.

   NOTE: Do not torque the aftmost bolt over the recommended 20–21 in-lbs.



7. Seal the interfaces.

   NOTE: The aft cover interfaces do not require sealing.

8. Test the satellite communication equipment as specified by the manufacturer.
   Honeywell recommends towing the aircraft in a figure eight pattern or 360 degrees while monitoring the signal strength.

K. AMT-3800 HGA

(1) Designing an Antenna Interface Adapter

Most installations require the fabrication of an antenna interface adapter to adapt the flat base of the AMT-3800 HGA to the curved surface of the fuselage.

The AMT-3800 HGA has two weeping/venting locations on the underside of the unit that must not be blocked. The mounting adapter must provide features to allow the AMT-3800 HGA to properly vent (for pressure equalization) and weep condensate. Refer to Figure 3-7 on page 3-13 for the location of these features.

The mounting adapter should not permit water/condensate to become entrapped. Ensure sufficient drainage to avoid damage and corrosion.

Honeywell can provide installation kits for common airframes—contact Honeywell for more information.

(2) Selecting a Location for the AMT-3800 HGA

For clear satellite communication, install the AMT-3800 HGA on the top of the fuselage.

Select a location for the AMT-3800 HGA assembly that minimizes shadowing from any part of the aircraft structure. The aircraft tail (on fixed wing platforms) may cause a small amount of blockage. You can minimize this blockage by installing the AMT-3800 HGA forward on the fuselage so that it has a clear view in any direction from 5° to 90° in elevation and 360° in azimuth.

(3) Aligning the AMT-3800 HGA

Orientation of the AMT-3800 HGA is defined with respect to the principal axes on the antenna. The principal axes are illustrated in Figure 3-7 on page 3-13. The connector access cover on the radome is towards the aft of the aircraft. In this orientation, the principal axes of the AMT-3800 HGA should be aligned with those of the aircraft to within ± 0.25°. This is the default position for the AMT-3800 HGA.

You can install the AMT-3900 HGA in a position that is slightly offset from the default position. The HDU can be configured to compensate for installation offsets, the procedure for configuring the HDU is provided in the System Setup Section 1F. This is the preferred method for applying any antenna installation offsets. Optionally, software in the AMS-3800 can accommodate an offset to correct beam steering. During the initial installation, set the pitch, roll and rotation offset angles to within ± 0.25°. The AMT-3800 EEPROM—MN-1242-10010 provides information about setting up the AMT-3800 HGA.

(4) Installing the Antenna Interface Adapter

The installer must follow proper avionics procedures both when sealing the mounting adapter to the fuselage and when sealing the AMT-3800 HGA to the mounting adapter to avoid trapping water and corrosion. Use approved avionics sealants and corrosion inhibitors.

The AMT-3800 HGA has two weeping/venting locations on the underside of the unit. These venting locations are sealed, and no special precautions are required to seal the antenna. The base of the antenna (except the grounding areas) is painted.

(5) Installing the AMT-3800 HGA

Honeywell recommends using #10 stainless steel (CRES) fasteners with a minimum ultimate tensile strength of 120,000 PSI for mounting hardware. Torque requirements for mounting hardware should be calculated by the installer for each unique installation.

To install the antenna assembly:

1. Remove the aft cover fasteners from the antenna assembly.
2. Carefully position and secure the antenna assembly on the mount, taking care not to damage exposed cabling.
3. Connect the test harness (incorporating RS-422 maintenance lines) to the HGA-J1.
4. Perform a software alignment using the AMT-3800 HGA MPU (optional if installed in default orientation). Remove the test harness when the test is complete.
5. Connect all cables to the antenna assembly.
6. Install the aft cover with #6 screws, 1242-K-0105-56 (SCREW PFH.138-32 X 9/16L CRES), and 14–16 in-lbs of torque.

7. Seal the interfaces.

   NOTE: The aft cover interfaces do not require sealing.

8. Test the satellite communication equipment as specified by the manufacturer.
   Honeywell recommends towing the aircraft in a figure eight pattern while monitoring the signal strength.

L. AMT-700 HGA

(1) Physical Placement

Position the AMT-700 HGA Assembly so that it can be pointed in any direction from 5° to 90° in elevation, and 360° in azimuth, and not be subject to shadowing from any part of the aircraft structure. Make sure that the area around the Antenna Assembly is free of any objects, which might interfere with the antenna's moving mechanical parts and coaxial cable.

(2) Aligning the AMT-700 HGA

Orientation of the AMT-700 HGA is defined with respect to the principal axes of the antenna. The principal axes are illustrated in Figure 3-8 on page 3-15. The connector access cover on the radome is towards the aft of the aircraft. In this orientation, the principal axes of the AMT-700 HGA should be aligned with those of the aircraft to within ± 0.25°. This is the default position for the AMT-700 HGA.

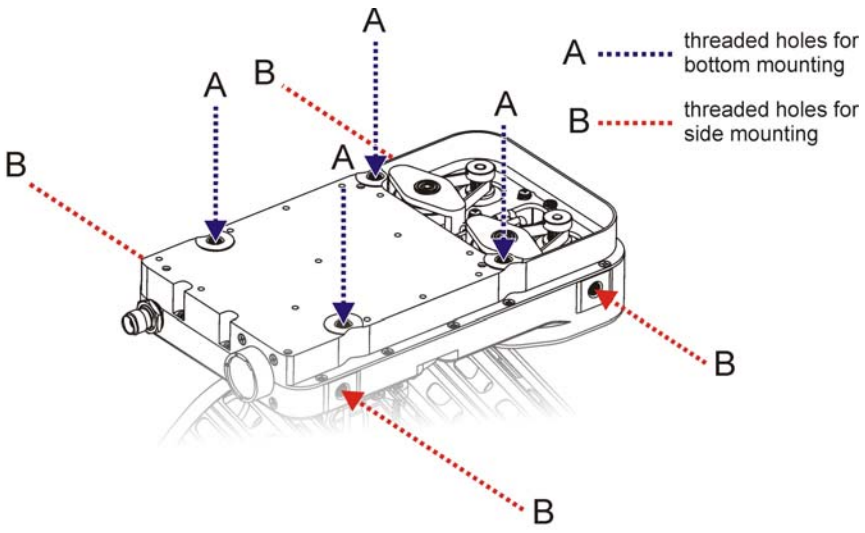
You can install the AMT-700 HGA in a position that is slightly offset from the default position. The HDU can be configured to compensate for installation offsets, the procedure for configuring the HDU is provided in the System Setup Section 1F. This is the preferred method for applying any antenna installation offsets. Optionally, software in the AMT-700 can accommodate an offset to correct beam steering. During the initial installation, set the pitch, roll, and rotation offset angles to within ± 0.25° in the AMT-700 HGA EEPROM—MN-1428-10010 provides information about setting up the AMT-700 HGA.

(3) Installing the AMT-700 HGA

To install the AMT-700 HGA:

1. Select the location for mounting the Antenna Assembly.
2. Secure the Antenna Assembly.
   The AMT-700 HGA attaches to either four (4) side mounts OR four (4) bottom mounts (both not required) on the aircraft/interface mount in four (4) locations.

   NOTE: Do not make power connections at this time.



3. Measure the +28 VDC input voltage to the HGA at A1-P1 V and Y to A1-P1 P and S.
4. Measure the +28 VDC input voltage to the DLNA at A2-P4 G to A2-P4 K.
5. Switch OFF the breaker to the antenna subsystem components.
6. Connect the +28 VDC supply cable to A1-J1 and A2-J4.

Perform manufacturer-specific satellite communication avionics tests. Honeywell recommends towing the aircraft in a figure eight pattern or 360° circle while monitoring signal strength received by the Aspire-200 to verify the antenna operation.

4. Electrical Installation

For details about electrical installation, refer to the Aspire System Interconnect Drawings in Figure 4-3 to Figure 4-6, starting on page 4-13.

A. Remote Lamp Driver Circuit Requirements

Figure 4-2 provides the circuit requirements for Remote Status Lamp drivers. Each lamp driver circuit provides an open-drain Field-Effect Transistor (FET) interface that has a maximum continuous drain-to-source voltage of 35 VDC and drain-to-source current of 0.5 A DC. These circuits are designed to sink current to ground only. Any external lamps connected to these driver circuits require the appropriate external voltage and series impedance to be connected.

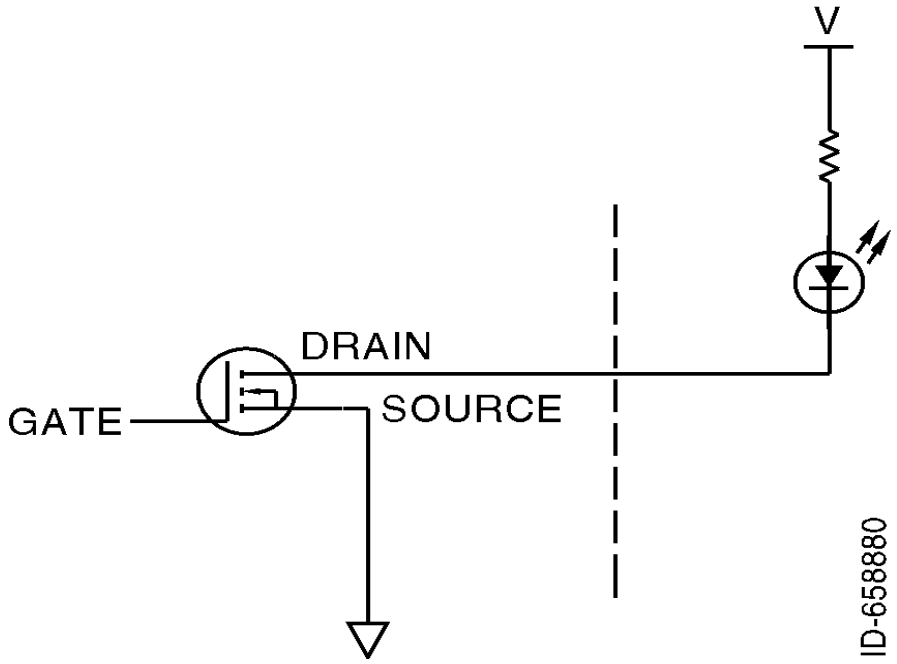


Figure 4-2 Remote Lamp Panel Circuit

Remote lamps are available on connector pins:

- MP-10A—Power
- MP-10B—Channel available.

5. Cabling Requirements

In single point cabling, the cable shield is terminated at one end only via a connector or suitable crimp terminal.

Table 4-3 Cable Shielding and Termination Specifications

Cable	Conductor Type	Single Point	Multiple Point	Minimum Conductor Coverage by Shield
Power Lines	Single conductor, stranded	N/A	N/A	N/A
Serial Data (RS-232)	Twisted pair, stranded		Yes	85%
Ethernet Data	Twisted pair, stranded		Yes	85%
ISDN Data			Yes	85%

Table 4-3 Cable Shielding and Termination Specifications

Cable	Conductor Type	Single Point	Multiple Point	Minimum Conductor Coverage by Shield
RF TX and RX	Coaxial		Yes	95%

When installing the Aspire-200, follow the cabling requirements listed below:

- The maximum recommended length for USB data connections is 16 feet.
- The maximum recommended length for USB power connections is 30 feet.
- Ethernet LAN/WAN and ISDN cables must meet flammability and TIA/EIA568-A CAT 5E requirements.
- USB cables must meet flammability requirements.
- Twisted shielded pairs must meet ARINC 741 wiring requirements or equivalent.
- Wire size recommendations for the HDU:
    - For +28 VDC HOT (BP2), +28 VDC RTN GND (BP3), and Chassis GND (BP8), use 16 AWG
    - Unless otherwise specified, for signaling, use 22 AWG.
- Wire size recommendations for the CCU:
    - For +28VDC (J1-A), +28 VDC RTN (J1-B), and Chassis GND (J1-C), use 20 AWG
    - Unless otherwise specified, for discrete signaling, use 22 AWG.
    - Unless otherwise specified, for twisted shielded pairs, use 22 AWG conductors.
- Wire size recommendations for the IPLD:
    - For +28 VDC (J4-Z), +28 VDC RTN GND (J4-W), use 16 AWG
    - Unless otherwise specified, for signaling, use 22 AWG.

NOTES:

1. IPLD TO IGA OR HGA ANTENNA MAX CABLE LOSS: 0.8 dB.
   IPLD TO LGA ANTENNA MAX CABLE LOSS: 0.3 dB.
   *FOR AMT-3800 HGA SW64 CONFIGURATION, IPLD TO ANTENNA MAX CABLE LOSS: 0.3 dB.
2. TRANSMIT CABLE LOSS: 8-28 dB FROM HDU BP1 TO IPLD J3.
3. RECEIVE CABLE LOSS: 6-25 dB FROM IPLD J2 TO HDU BP5.
4. THE AIRCRAFT 24-BIT FWD AIRFRAME ADDRESS SHALL BE WIRED AS FOLLOWS:
   PINS MARKED "0" SHALL BE CONNECTED TO FWD ADDRESS COMMON PIN TP9D.
   PINS MARKED "1" SHALL BE LEFT OPEN.
   FWD ID ONLY APPLICABLE FOR SWIFT-64 SERVICE.
5. WIRE SIZE RECOMMENDATIONS FOR HDU:
   - +28VDC(BP2), +28VDC RTN GND (BP3), AND CHASSIS GND (BP8) SHALL BE 16 AWG.
   - UNLESS OTHERWISE SPECIFIED ALL SIGNAL WIRES SHALL BE 22 AWG.
6. WIRE SIZE RECOMMENDATIONS FOR CCU-200:
   - +28VDC HOT (J1-A), +28VDC COLD (J1-B) AND CHASSIS GND (J1-C) SHALL BE 20AWG.
   - UNLESS OTHERWISE SPECIFIED ALL DISCRETE SIGNAL WIRES SHALL BE 22AWG.
   - UNLESS OTHERWISE SPECIFIED ALL SHIELDED TWISTED PAIRS SHALL HAVE 22AWG CONDUCTORS. M27500-22TG2T14 IS ACCEPTABLE.
7. WIRE SIZE RECOMMENDATIONS FOR IPLD:
   - +28 VDC (J4-Z), +28VDC RTN GND (J4-W) SHALL BE 16 AWG.
   - UNLESS OTHERWISE SPECIFIED ALL SIGNAL WIRES SHALL BE 22 AWG.
8. SEE TABLE 1 FOR HDU CONFIGURATION STRAPPING DETAILS.
9. SEE TABLE 2 FOR HDU I/O CONFIG DETAILS.
10. SEE TABLE 3 FOR HDU FRONT PANEL CONNECTOR DESCRIPTION DETAILS.
    CONNECTOR TYPE IS M83513/04-B11N.
11. ETHERNET LAN/WAN AND ISDN CABLES MUST MEET FLAMMABILITY AND TIA/EIA568-A CAT 5E REQUIREMENTS. CABLES 922404, 922408 AND 422404 AS SUPPLIED BY ELECTRONIC CABLE SPECIALISTS ARE ACCEPTABLE.
12. USB CABLES MUST MEET FLAMMABILITY REQUIREMENTS. ELECTRONICS CABLE SPECIALISTS 912204 IS ACCEPTABLE. THE MAXIMUM RECOMMENDED LENGTH FOR USB DATA CONNECTIONS IS 16 FEET. THE MAXIMUM RECOMMENDED LENGTH FOR USB "POWER ONLY" CONNECTIONS IS 30 FEET.
13. TWISTED SHIELDED PAIRS AS PER ARINC 741 WIRING REQUIREMENTS OR EQUIVALENT.
14. CONNECTOR TYPES REQUIRED FOR MATING TO CCU-200:
    - 3 PIN CIRCULAR RECEPTACLE MS27484E8F98S (OR EQUIVALENT) TO MATE WITH J1.
    - 26 PIN HD FEMALE DSUB TO MATE WITH J2 AND J3.
    - 44 PIN HD FEMALE DSUB TO MATE WITH J4.
    - 9 PIN MALE DSUB TO MATE WITH J5 AND J6.
    - RSMA PLUG TO MATE WITH RF-1 AND RF-2.
    - 26 PIN HD MALE DSUB TO MATE WITH J7.
    - 44 PIN HD MALE DSUB TO MATE WITH J8.
15. ALL TX+ AND TX- SIGNALS ARE OUTPUT SIGNALS.
16. ALL RX+ AND RX- SIGNALS ARE INPUT SIGNALS.
17. THESE DISCRETE INPUTS ARE SOFTWARE DEFINABLE. INTERNALLY PULLED TO 12V WITH A 2K RESISTOR. CONNECT TO GND TO DRIVE LOW.
18. CONNECT J4-8 TO J4-42 TO ENABLE WIFI RF.
19. THIS IS AN OPEN COLLECTOR OUTPUT. A "HIGH" INDICATES A POWER SUPPLY FAULT. A "LOW" INDICATES POWER SUPPLY IS OK. MAX COLLECTOR VOLTAGE IS 38V AND CAN DRIVE .5A.
20. THIS IS AN OPEN COLLECTOR OUTPUT. A "LOW" INDICATES FAULT ON CCU. MAX COLLECTOR VOLTAGE IS 38V AND CAN DRIVE .5 A.
21. GND FOR AT LEAST 1 SECOND TO SHUTDOWN POWER SUPPLY. FOR NORMAL POWER SUPPLY OPERATION LEAVE OPEN.
22. MAX SUGGESTED CABLE RUN SHOULD NOT EXCEED 50 FEET.
23. NOTE: MULTIPLE ANTENNA INTERCONNECT OPTIONS SHOWN. CONNECT SINGLE ANTENNA ONLY AND STRAP AS PER TABLE 1.
24. AMT-3500 IGA IS AVAILABLE AS AC VERSION. AMT-3800 HGA IS AVAILABLE AS EITHER AC OR DC VERSION - ONLY WIRE FOR ONE VERSION.
25. ISDN AND ETHERNET INTERFACES WIRED TO RJ45 PLUG CONNECTORS. FOR INTERFACE TO CCU-200 SEE OPTIONAL CCU SHEET REFERENCES.
26. DO NOT WIRE.

TABLE 1. CONFIGURATION STRAPPING (8)

SYSTEM CONFIGURATION	PIN STATUS			
	TP4A	TP4B	TP4C	TP4D
NOT VALID	OPEN	OPEN	OPEN	OPEN
OMNI DIRECTIONAL ANTENNA (LGA, SBB CLASS 15)	OPEN	OPEN	OPEN	STRAPPED
AMT-XXXX (FUTURE ANTENNA)	OPEN	OPEN	STRAPPED	OPEN
AMT-3500 ANTENNA (IGA, SBB CLASS 7)	OPEN	OPEN	STRAPPED	STRAPPED
(1) AMT-3800 ANTENNA (HGA, SBB CLASS 6, SW64*)	OPEN	STRAPPED	OPEN	OPEN
AMT-700 ANTENNA (HGA, SBB CLASS 6, SW64)	OPEN	STRAPPED	OPEN	STRAPPED

NOTE:-PINS THAT ARE STRAPPED SHOULD BE CONNECTED TO FWD ADDRESS COMMON (TP9D).
-ALL OTHER STRAP CONFIGURATIONS ARE RESERVED.

TABLE 2: HDU I/O DATA STRAPPING (9)

MP11A	MP11B	MP11C	MP11D	I/O CONFIG
1	1	1	1	RESERVED
1	1	0	1	RESERVED
1	0	1	1	RESERVED
1	0	0	1	RESERVED
0	1	1	1	SMALL SATCOM OPERATION
0	1	0	1	NOT ASSIGNED
0	0	1	1	NOT ASSIGNED
0	0	0	1	RESERVED

0=FWD ID COMMON (TP9D), 1=NO CONNECTION

TABLE 3: HDU FRONT PANEL CONNECTOR DESCRIPTIONS (10)

FUNCTION	PIN	ASPIRE HDU IN/OUT	SIGNAL TYPE
NO CONNECT	J2-1		RESERVED
NO CONNECT	J2-2		RESERVED
SPARE	J2-3		
NO CONNECT	J2-4		RESERVED
NO CONNECT	J2-5		RESERVED
SPARE	J2-6		
NO CONNECT	J2-7		RESERVED
MAINT PORT TD	J2-8	OUT	RS232
MAINT PORT GND	J2-9	GND	RS232
MAINT PORT RD	J2-10	IN	RS232
NO CONNECT	J2-11		RESERVED
ATE RESERVED	J2-12		ATE
ATE RESERVED	J2-13	GND	ATE
ATE RESERVED	J2-14		ATE
ATE RESERVED	J2-15		ATE

ID-659147 E1541-B-1000-1-D

Figure 4-3 ASPIRE-200 Interconnect Drawing, 1541-B-1000 Rev D00

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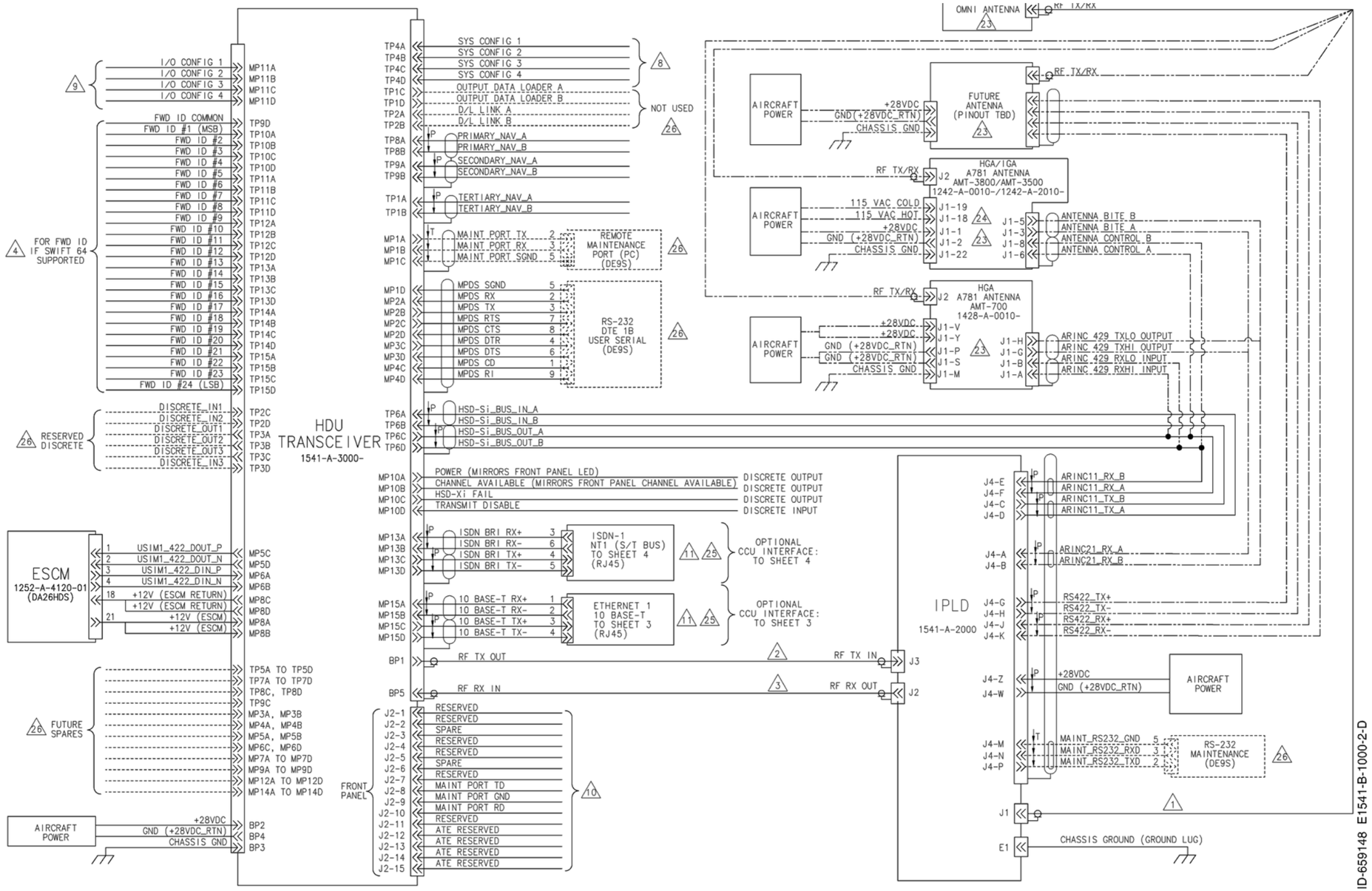

Figure 4-4 ASPIRE-200 Interconnect Drawing, 1541-B-1000 Rev D00

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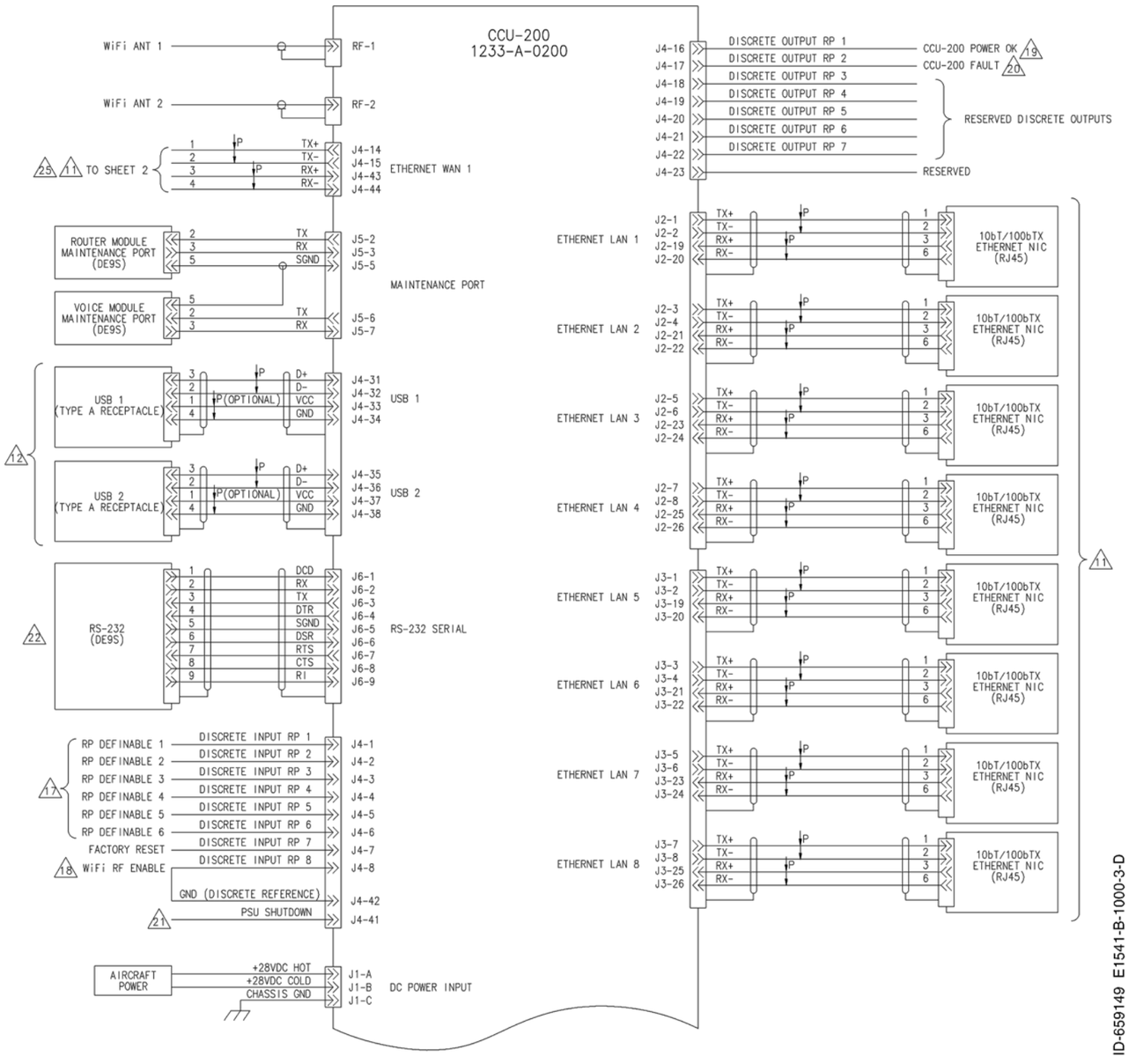

Figure 4-5 ASPIRE-200 Interconnect Drawing, 1541-B-1000 Rev D00

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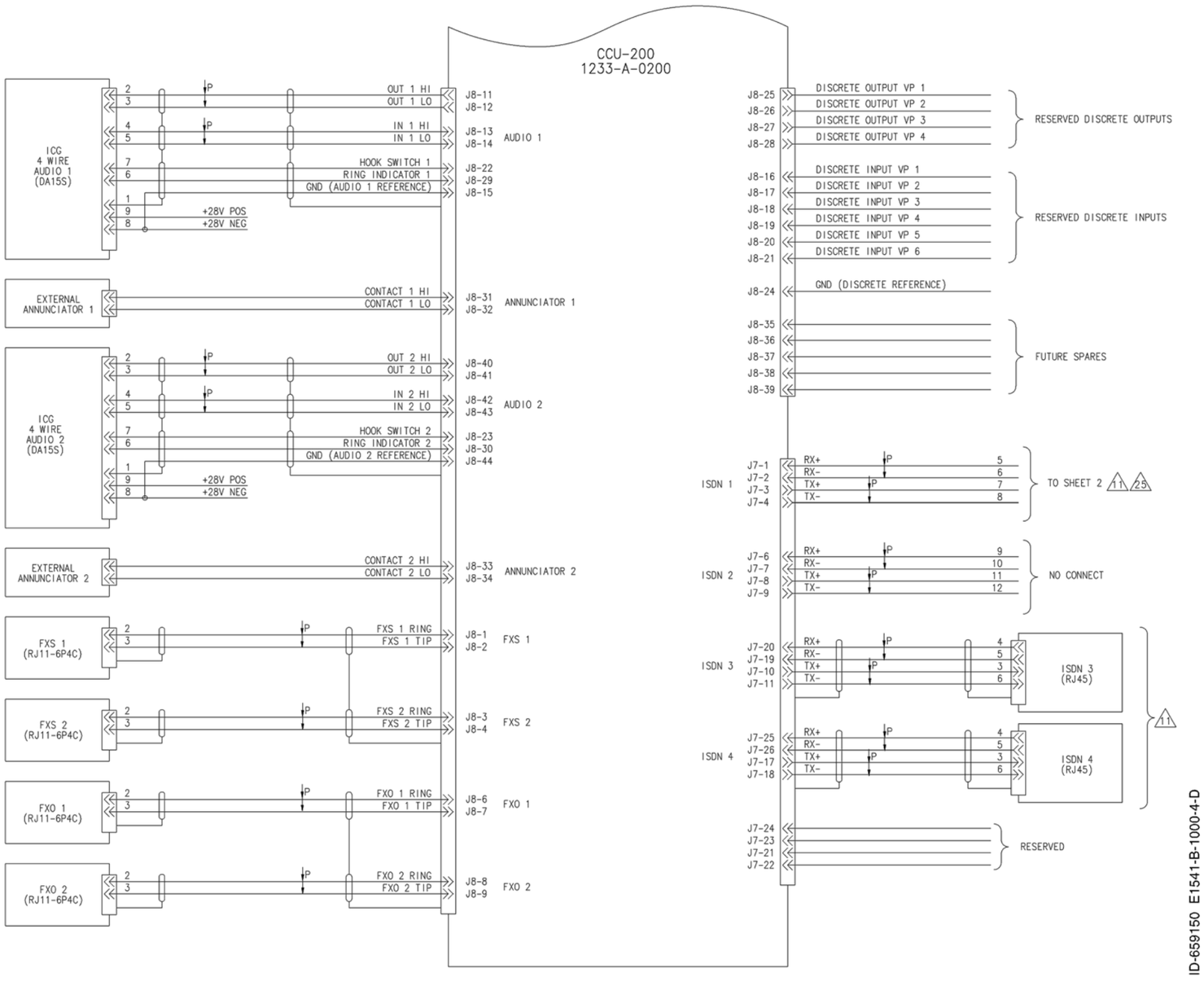

Figure 4-6 ASPIRE-200 Interconnect Drawing, 1541-B-1000 Rev D00

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SYSTEM SETUP

1. Setting up Operational Parameters

After the Aspire-200 is installed in the aircraft, you must configure fundamental parameters in order to operate the system:

- Cable losses
- LES IDs
- The APN
- Navigational input to the system.

A. Connecting to the Aspire-200 Maintenance Port

You can connect to the Aspire-200 through the maintenance port.

To connect to the maintenance port:

1. Connect your computer to the front-panel maintenance port with the maintenance cable, PN 1541-F-3150, provided in the shipping kit.
2. Start a HyperTerminal session on an active COM port with the following parameters:

Parameter	Value
Bits per second	19200
Data bits	8
Parity	None
Stop bits	1
Flow control	None

3. Type the password **maint**.

   The password does not appear on screen.

   Menu 1 appears when you connect.

B. Configuring Cable Loss

The signal loss in cables between the IPLD and the antenna affect the power required to access Inmarsat services. After you install the system, measure the cable loss and configure the IPLD-to-antenna cable loss parameter.

To configure cable loss parameters:

1. Connect to the HDU maintenance port—see “Connecting to the Aspire-200 Maintenance Port” on page 1.
2. In the maintenance menus, press CTRL + N to navigate to **menu 3**.
3. In **menu 3**, to access miscellaneous EEPROM parameters, press **m**.

   The list of miscellaneous EEPROM parameters appears.

```
MISCELLANEOUS PARAMETERS
 1  IPLD-TO-ANTENNA TOTAL LOSS          10  NUMBER OF CHANNEL CARDS
 2  FORWARD ID                          11  FRONT PANEL LEDS ENABLED
 3  GPS PROTECTION ALGORITHMS           13  MIN SECS BETWEEN CHAN CARD RESETS
 5  CHANNEL-CARD-TO-HPA LOSS            14  MAINTENANCE PORT INVERSE VIDEO
 6  MAX IPLD GAIN                       15  MAINTENANCE PORT DEGREES SYMBOL
 7  MIN ANTENNA GAIN                    16  IPLD CABLE CAL
 8  MAX EIRP                            17  SIGNATURE FOR REMOTE ORT
 9  MAX CHANNEL_CARD POWER              19  AUTO-ACTIVATE WINTERM

WHICH PARAMETER #   <CTRL> N for next page  ?
```

4. To configure the IPLD-to-antenna total loss, press the number next to the **IPLD-to-Antenna Total Loss** parameter, and then press ENTER.

   The IPLD-to-antenna prompt appears. The default value is 0.8 dB. 0.8 dB is also the maximum allowable value. You should change this value to the measured cable loss.

```
IPLD-TO-ANTENNA TOTAL LOSS 0.8 dB = ?
```

5. Type the new IPLD-to-antenna value, and then press ENTER.
6. Restart the HDU.

   You can restart the HDU using menu 2, option Z.

C. Configuring LES (Land Earth Station) IDs

If you are using an HGA and subscribe to Swift 64 services, your service provider sends you LES IDs when you open an account. LES IDs enable the Aspire system to connect to the Land Earth Stations operated by the service provider.

In the Aspire system, LES IDs are part of the Ocean Region Parameter.

You can configure LES IDs for each Ocean Region or configure one LES ID for all Ocean Regions.

To configure LES ID for each Ocean Region:

1. Connect to the HDU maintenance port—see “Connecting to the Aspire-200 Maintenance Port” on page 1.
2. In the maintenance menus, press CTRL + N to navigate to **menu 3**.

3. In **menu 3**, to access Ocean Region Parameters, press **p**.

   The Ocean Region Parameter prompt appears.

```
                          SAT LONG   LES ID   TNID   SERVICES
REGION 0  AORW              54.0W      0       0     SW64/AERO
REGION 1  AORE              15.5W      0       0     SW64/AERO
REGION 2  POR              178.0E      0       0     SW64/AERO
REGION 3  IOR               64.0E      0       0     SW64/AERO
REGION 4  MTSAT            142.5E                    AERO
REGION 5  APAC             143.5E                    AERO/SBB
REGION 6  EMEA              25.0E                    AERO/SBB
REGION 7  AMERICAS          97.5W                    AERO/SBB

WHICH OCEAN REGION (0-7) ? 0
```

4. To edit the parameters for an ocean region, type the number of the region (0 to 7).

   The OR name prompt appears.

```
ENTER NAME [AORW] ?
```

5. Enter a new name for the Ocean Region and press ENTER, or to accept the existing name, press ENTER.

   The SAT Longitude prompt appears.

```
SAT LONGITUDE: [54.00W]  ?
```

6. Enter a new longitude and press ENTER, or to accept the existing value, press ENTER.

   The LES ID prompt appears.

```
LES ID [0] ?
```

7. Type the LES ID from your service provider, and then press ENTER.

   The Terrestrial Network ID prompt appears.

```
TERRESTRIAL NETWORK ID (TNID) [0] ?
```

8. To accept the existing value, press ENTER.

   The Satellite Services prompt appears.

```
SATELLITE SERVICES (A=AERO S=SWIFT64 B=SBB) (ie, AB) ?
```

9. To accept the existing value, press ENTER.
10. Restart the HDU.

    You can restart the HDU using menu 2, option Z.

To configure an LES ID for all Ocean Regions:

1. Connect to the HDU maintenance port—see “Connecting to the Aspire-200 Maintenance Port” on page 1.
2. In the maintenance menus, press CTRL + N to navigate to **menu 3**.
3. In **menu 3**, to access Ocean Region Parameters, press **i**.

   The LES OD prompt appears.

```
This command sets the LES id's in all the ocean regions to the same
provider LES id ?
```

4. Type the LES ID and press ENTER.

D. Configuring the APN

The APN enables the Aspire system to access your SBB service provider’s network. Contact your service provider to obtain your APN.

To configure the APN:

1. Connect to the HDU maintenance port—see “Connecting to the Aspire-200 Maintenance Port” on page 1.
2. In the maintenance menus, press CTRL + N to navigate to **menu 3**.
3. In **menu 3**, to access miscellaneous EEPROM parameters, press **m**.

   The list of miscellaneous EEPROM parameters appears.

```
MISCELLANEOUS PARAMETERS
88  CHANNEL CARD CONFIGURATION          99  VSWR ERROR THRESHOLD
89  DATA I/O ETHERNET DUPLEX MODE       100  NAV1 TYPE
90  DATA I/O APN                        101  NAV2 TYPE
91  MIN SAT LOOK ANGLE                  104  MAXIMUM IGA POWER
92  PREEMPTABLE CALLS                   105  MAX ORDER FOR INTERMOD CHECK
93  BGAN/SWIFT64 HYSTERESIS TIMEOUT     106  ENABLE PAP
94  ANTENNA MOUNTING ANGLE (ROLL)       107  PAP USER NAME
95  ANTENNA MOUNTING ANGLE (PITCH)      108  PAP PASSWORD
96  ANTENNA MOUNTING ANGLE (ROTATION)   109  LNA TO SDU RX THRESHOLD
97  RT-CHANNEL RESERVED POWER

WHICH PARAMETER #   <CTRL> N for next page  ?
```

4. To navigate the list of parameters, press CTRL + N.
5. To configure the APN, press the number next to the **Data I/O APN** parameter, and then press ENTER.

   The Data I/O APN prompt appears.

```
DATA I/O APN ?[ ] = ?
```

6. Type the new APN, and then press ENTER.
7. Restart the HDU.

   You can restart the HDU using menu 2, option Z.

E. Configuring NAV

The Aspire-200 uses information from the aircraft's navigation system to steer the antenna. To operate the system, you must configure the type of navigational information available to the HDU and the transmission speed of NAV buses..

To configure the NAV:

1. Connect to the HDU maintenance port—see "Connecting to the Aspire-200 Maintenance Port" on page 1.
2. In the maintenance menus, to navigate to **menu 3**, press CTRL + N.
3. In **menu 3**, to access miscellaneous EEPROM parameters, press **m**.

   The list of miscellaneous EEPROM parameters appears.

```
MISCELLANEOUS PARAMETERS
88  CHANNEL CARD CONFIGURATION          99  VSWR ERROR THRESHOLD
89  DATA I/O ETHERNET DUPLEX MODE       100  NAV1 TYPE
90  DATA I/O APN                        101  NAV2 TYPE
91  MIN SAT LOOK ANGLE                  104  MAXIMUM IGA POWER
92  PREEMPTABLE CALLS                   105  MAX ORDER FOR INTERMOD CHECK
93  BGAN/SWIFT64 HYSTERESIS TIMEOUT     106  ENABLE PAP
94  ANTENNA MOUNTING ANGLE (ROLL)       107  PAP USER NAME
95  ANTENNA MOUNTING ANGLE (PITCH)      108  PAP PASSWORD
96  ANTENNA MOUNTING ANGLE (ROTATION)   109  LNA TO SDU RX THRESHOLD
97  RT-CHANNEL RESERVED POWER

WHICH PARAMETER #   <CTRL> N for next page  ?
```

4. To navigate the list of parameters, press CTRL + N.
5. To configure the NAV1 type, press the number next to the **NAV1 Type** parameter, and then press ENTER.

   The NAV1 Type prompt appears.

```
NAV1 TYPE INERTIAL  0=INERTIAL  1=GNSS  2=HYBRID  7=AHRS  8=FMS  = ?
```

6. Type the number next to the available NAV type.
7. To configure the NAV2 type, press the number next to the **NAV2 Type** parameter, and then press ENTER.

   The NAV2 Type prompt appears.

```
NAV2 TYPE   NOT INSTALLED  0="NOT INSTALLED" 1=INERTIAL   3=GNSS
4=HYBRID  7=AHRS  8=FMS  = ?
```

8. Type the number next to the available NAV2 type.
9. To configure the NAV3 type, press the number next to the **NAV3 Type** parameter, and then press ENTER.

   The NAV3 Type prompt appears.

```
NAV3 TYPE   NOT INSTALLED  0="NOT INSTALLED" 1=INERTIAL   3=GNSS
4=HYBRID  7=AHRS  8=FMS  = ?
```

10. Type the number next to the available NAV3 type.
11. If you have finished configuring the HDU, restart the HDU.

To configure the NAV transmission speed:

1. In the maintenance menus, to navigate to **menu 3**, press CTRL + N.
2. In **menu 3**, to access miscellaneous EEPROM parameters, press **m**.

   The list of miscellaneous EEPROM parameters appears.
3. To navigate the list of parameters, press CTRL + N.
4. Type the number next to **Primary Nav Receive Speed**, and then press ENTER.
5. To set the interface to high speed, press **1**, and to set the interface to low-speed, press **0**.
6. Type the number next to **Secondary Nav Receive Speed**, and then press ENTER.
7. To set the interface to high speed, press **1**, and to set the interface to low-speed, press **0**.
8. Type the number next to **Tertiary Nav Receive Speed**, and then press ENTER.
9. To set the interface to high speed, press **1**, and to set the interface to low-speed, press **0**.
10. Restart the HDU.

    You can restart the HDU using menu 2, option Z.

F. Entering the Antenna Alignment Parameters: ROLL, PITCH, ROTATION

1. Ensure the terminal emulation program is connected to the Aspire-200 maintenance console (see section A).
2. Navigate to menu **3** select option **m**. At this point the MISCELLANEOUS PARAMETERS submenu will be displayed.
3. Enter **<CTRL>N** to navigate to the next page. It will be displayed as follows:

```
MISCELLANEOUS PARAMETERS
88  CHANNEL CARD CONFIGURATION          99  VSWR ERROR THRESHOLD
89  DATA I/O ETHERNET DUPLEX MODE       100  NAV1 TYPE
90  DATA I/O APN                        101  NAV2 TYPE
91  MIN SAT LOOK ANGLE                  104  MAXIMUM IGA POWER
92  PREEMPTABLE CALLS                   105  MAX ORDER FOR INTERMOD CHECK
93  BGAN/SWIFT64 HYSTERESIS TIMEOUT     106  ENABLE PAP
94  ANTENNA MOUNTING ANGLE (ROLL)       107  PAP USER NAME
95  ANTENNA MOUNTING ANGLE (PITCH)      108  PAP PASSWORD
96  ANTENNA MOUNTING ANGLE (ROTATION)   109  LNA TO SDU RX THRESHOLD
97  RT-CHANNEL RESERVED POWER

WHICH PARAMETER #   <CTRL> N for next page  ?
```

4. Selecting options **94**, **95** or **96** then entering **?** will display the following information. This is important to establish if the roll, pitch or rotation angle is negative:

   If the antenna mounting angles are non-zero, steering commands from the HSD are compensated accordingly. The mounting angles currently stored in this equipment specify that the antenna is mounted with the base plate horizontal, and that the 'nose' of the antenna points towards the nose of the aircraft.

   The antenna mounting must be specified relative to the three axes of the aircraft. ROTATION measures the angle between front of the antenna, and the front of the aircraft. If the front of the antenna points towards the left wing, ROTATION is positive. If the front of the antenna points towards the right wing, ROTATION is negative.

   PITCH measures the angle between the 'long' axis of the antenna, and the horizontal. If the front of the antenna points up, PITCH is positive. If the front of the antenna points down, PITCH is negative.

   ROLL measures the angle between the 'short' axis of the antenna, and the horizontal. If the right side of the antenna is higher than the left side (looking towards the front of the antenna), ROLL is positive. This would normally occur if the antenna were mounted on the left side of the aircraft.

   If more than one mounting angle is non-zero, the angles are presumed to be applied in the following order: ROTATION is first, PITCH is second, and ROLL is third.

5. To enter the ROLL parameter Navigate to menu **3** select option **m** then select option **94**. Enter the ROLL parameter value noting the correct sign, either + or -. The following text will be displayed after selecting option **94**. It will display the current ROLL parameter value and provide the option to enter a new ROLL parameter value. Values displayed below are examples only. Once a parameter is entered and accepted the system will display EEPROM UPDATED.

```
WHICH PARAMETER #   <CTRL> N for next page  ?94
ANTENNA MOUNTING ANGLE (ROLL) 0.0 DEG
[ROLL IS POSITIVE IF RIGHT SIDE IS UP LOOKING
FRONT-WARDS]
ROLL = ?-1.2
EEPROM UPDATED
```

6. To enter the PITCH parameter Navigate to menu **3** select option **m** then select option **95**. Enter the PITCH parameter value noting the correct sign, either + or -. The following text will be displayed after selecting option **95**. It will display the current PITCH parameter value and provide the option to enter a new PITCH parameter value. Values displayed below are examples only. Once a parameter is entered and accepted the system will display EEPROM UPDATED.

```
WHICH PARAMETER #   <CTRL> N for next page  ?95
ANTENNA MOUNTING ANGLE (PITCH) 0.0 DEG
[PITCH IS POSITIVE IF NOSE OF ANTENNA IS UP]
PITCH = ? 2.4
EEPROM UPDATED
```

7. To enter the ROTATION parameter Navigate to menu **3** select option **m** then select option **96**. Enter the ROTATION parameter value noting the correct sign, either + or -. The following text will be displayed after selecting option **96**. It will display the current ROTATION parameter value and provide the option to enter a new ROTATION parameter value. Values displayed below are examples only. Once a parameter is entered and accepted the system will display EEPROM UPDATED.

```
WHICH PARAMETER #   <CTRL> N for next page  ?96
ANTENNA MOUNTING ANGLE (ROTATION) 0.0 DEG
[ROTATION IS POSITIVE CCW LOOKING DOWN ON
ANTENNA]
ROTATION = ?-1.1
EEPROM UPDATED
```

8. To confirm the parameter values entered navigate to any of the menu selections in steps 5, 6, or 7. Select the menu option to display the current parameter value then hit **<ESC>** to terminate the menu option if you don't want to enter a new parameter value. If the displayed parameter's value is incorrect a new parameter value may be entered.

2. Configuring Dialers

Dialers enable your computer to connect to the Internet or other networks. You can configure a dialer for each type of Inmarsat service available on your system.

A. Configuring a SwiftBroadband Dialer (Windows XP)

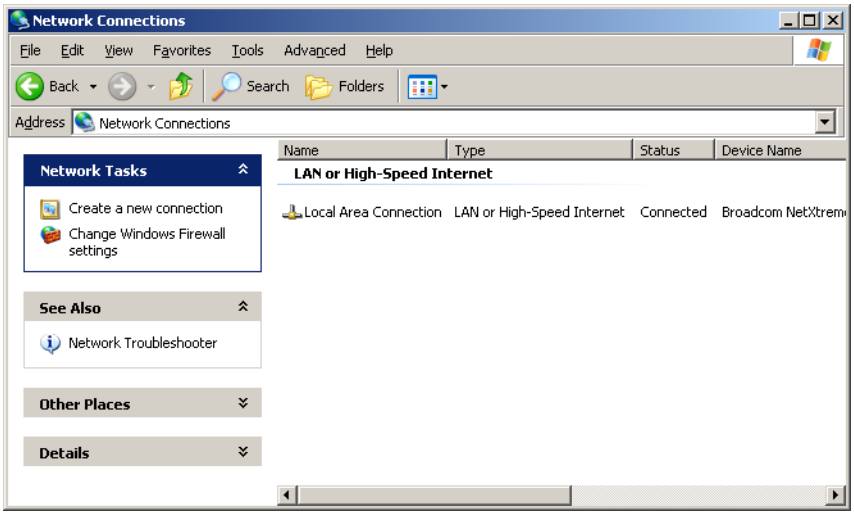
To configure a dialer to access SBB services on an Ethernet connection:

1. Click the **Start** button, point to **Settings**, and then click **Control Panel**.

   The Control Panel window appears.

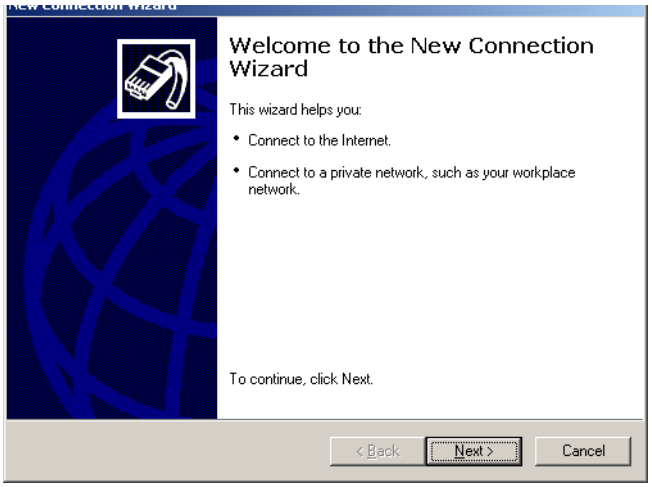
2. Double-click **Network Connections**.

   The Network Connections window appears.



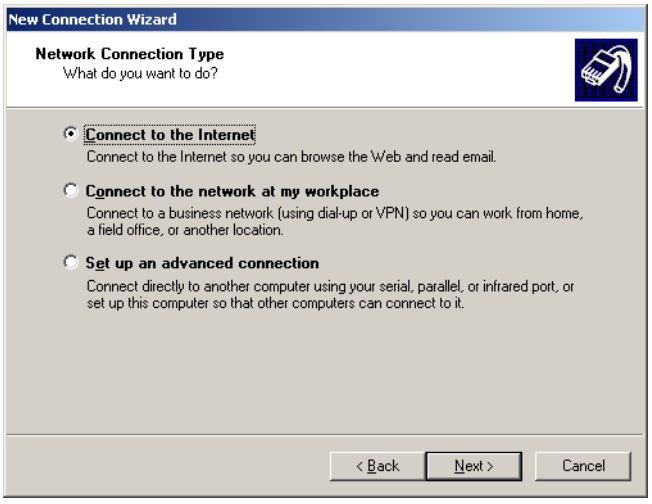
3. Click **Create a new connection**.

   The New Connection Wizard appears.



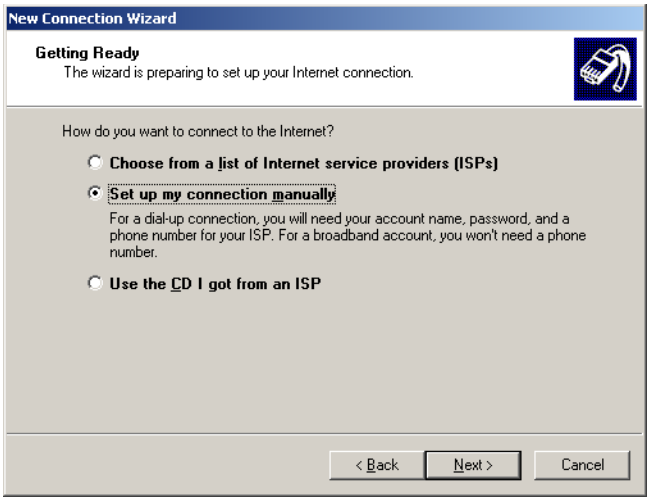
4. Click **Next**.

   The Network Connection Type page appears.



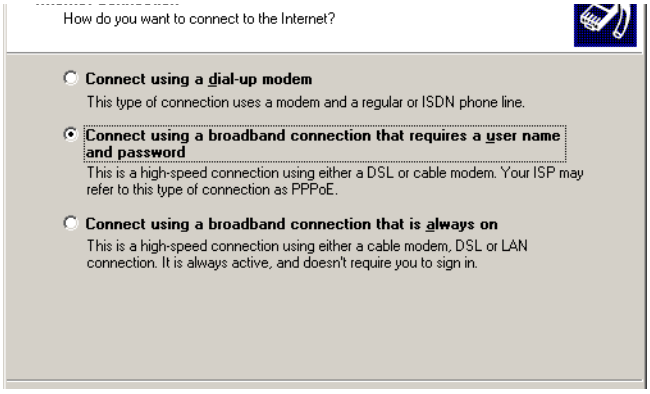
5. Click **Connect to the Internet**, and then click **Next**.

   The Getting Ready page appears.



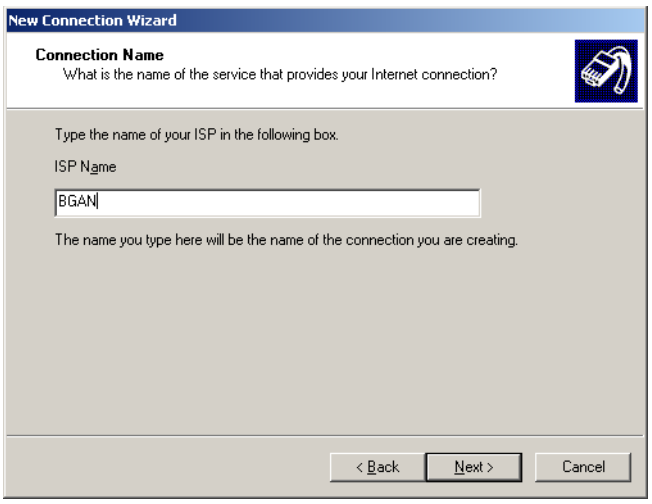
6. Click **Set up my connection manually**, and then click **Next**.

   The Internet Connection page appears.



7. Click **Connect using a broadband connection that requires a user name and password**, and then click **Next**.

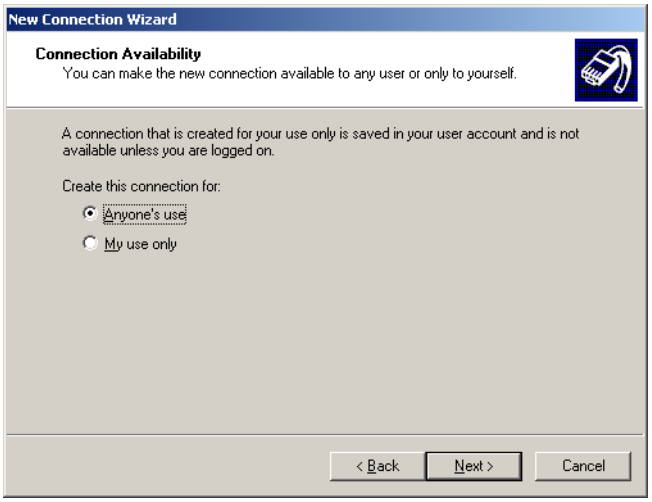
   The Connection Name page appears.



8. In the **ISP Name** field, type **SBB**, and then click **Next**.

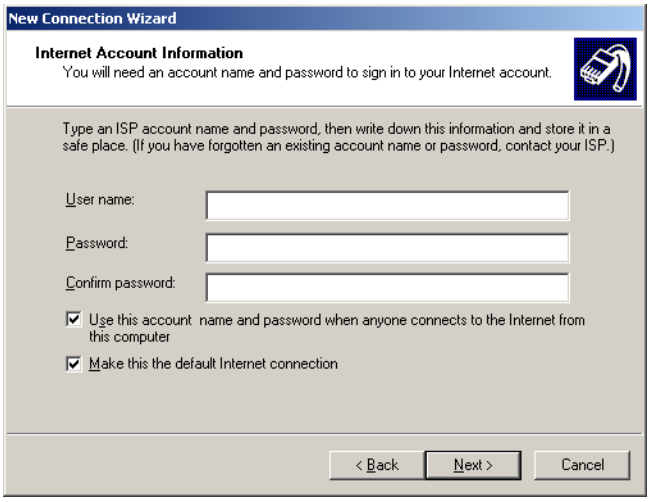
   The name you enter is the name that appears in the list of connections available on your computer.

   The Connection Availability page appears.



9. Click **Anyone's use** or **My use only**, and then click **Next**.

   The Internet Account Information page appears.



10. If required by your service provider, type a **User name** and **Password** in the appropriate fields.
11. In the **Confirm password** text box, retype the password.
12. Click **Next**.

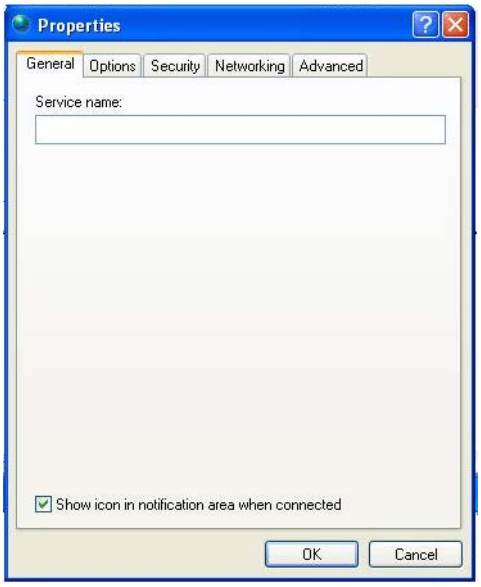
    The Completing the New Connection Wizard page appears.

13. To complete the connection setup, click **Finish**.

    The Connect dialog box appears.

14. Click **Properties**.

    The Properties dialog box appears.



15. In the **Service Name** text box, type the service name **BGAN:BACKGROUND@USER=username@PASS=password@APN=my.apn.com**.

    Replace the text “username”, “password”, and “my.apn.com” with your own username, password, and APN IP address.

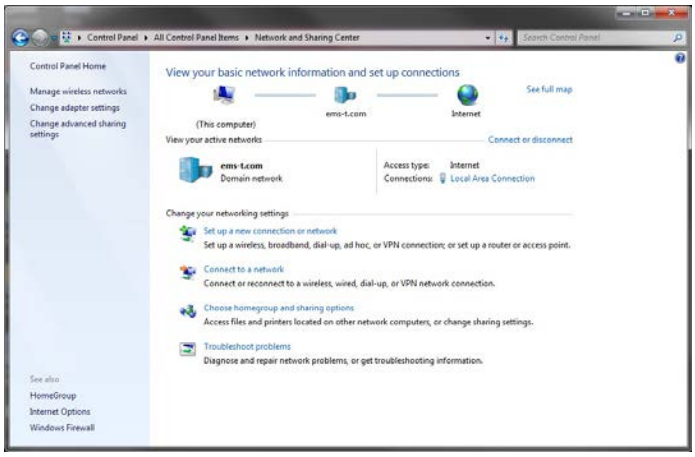
    NOTE: Each parameter of the service name is independent and if you do not type it in the service name, the system uses the value from it’s configuration.

B. Configuring a SwiftBroadband Dialer (Windows 7)

To configure a dialer to access SBB services on an Ethernet connection:

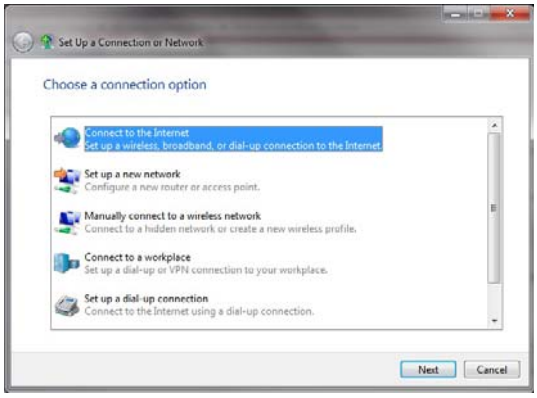
1. Click the **Start** button, click **Control Panel**, click **Network and Internet**, and then click **Network and Sharing Center**.

   The Network Connections window appears.



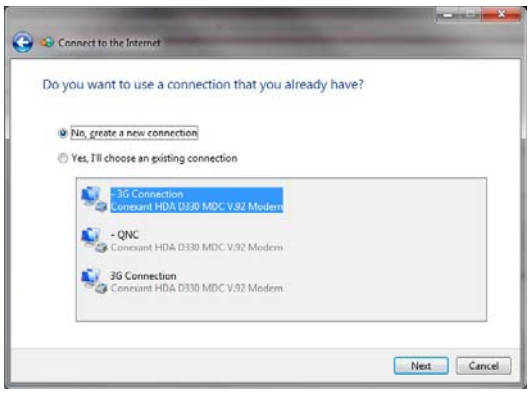
2. Click **Set up a new connection or network**.

   The Set up a Connection or Network window appears.



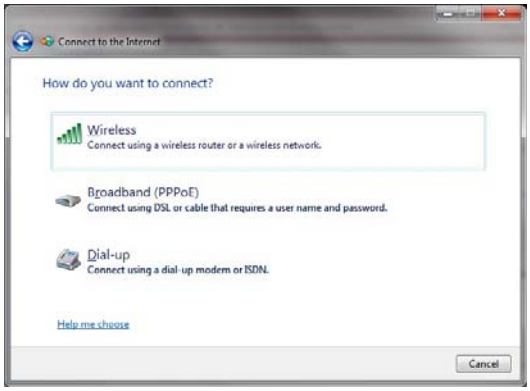
3. Click **Connect to the Internet**, and then click **Next**.

   The Connect to the Internet dialog box appears.



4. Click **No, create a new connection**, and then click **Next**.

   A list of connection types appears.



5. Click **Broadband (PPPOE)**.

   A list of connection parameters appears.

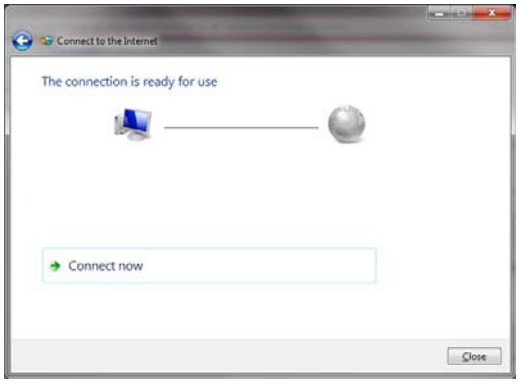
6. In the **User name** and **Password** fields, type the username and password assigned by your service provider.

7. In the **Connection name** field, type a descriptive name for this connection.

   The name you enter is the name that appears in the list of connections available on your computer.

8. Click **Connect**.

   The Connection to the Internet page appears. The connection is ready for use.



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TROUBLESHOOTING

This chapter provides information and procedures to help users diagnose and repair common problems.

NOTE: If you have a computer connected to the internet, Honeywell product support engineers can help troubleshoot your terminal using a remote desktop application.

1. Basic Equipment Checks

When the Aspire-200 is not functioning as it should, you should verify the following:

- Proper registration with Inmarsat and your service provider
- FWD ID strapping (only for HGA installations)—see Checking the FWD ID
- Valid APN.

A. Checking the FWD ID

The Aspire-200 MPU (Maintenance Port Utility) displays the strapped FWD ID on the boot-up splash screen and in a menu option.

The MPU splash screen displays FWD ID only for systems with an HGA. For systems with and IGA or LGA, the MPU splash screen displays the FWD ID as 000000.

To view the strapped FWD ID on the splash screen:

1. Connect to the HDU maintenance port—see “Connecting to the Aspire-200 Maintenance Port” on page 1.
2. In the maintenance menus, press CTRL + N to navigate to **menu 2**.
3. To restart the HDU, press **z**.

   The HDU restarts and the boot-up splash screen appears.

   NOTE: The software versions shown in the splash screen illustration below are examples. The values may differ on the actual splash screen.

```
FIRMWARE VERSIONS:
   KERNEL:           V2.2 -- Tue Dec 07 17:56:11 2010
   APPLICATION:      V28.1 -- Fri Oct 03 13:41:54 2014
   CHANNEL CARD:     6.8.7.0 -- 1.4.0.0 --  -- 4.2.3.0
   DATA IO CARD:     Version 1.84.0.0 built on Apr 27 2011
09:38:54


CHANNEL CARD STATISTICS
CARD #1  BGAN 15X  (SERIAL 58080):
      1742.5 hrs powered  1138.8 hrs in call since 23:06:13 May
4, 2011


BGAN INTERFACE          IMEI       SVN        IMSI
CARD #1            35813304000012  04    901112115100717

CHECKING FLASHPROM CONFIGURATION ($420000)  .......


HARDWARE:
            PART NUMBER        REVISION
     EMS:   1541-A-3000-01     A00


SOFTWARE:
            PART NUMBER        REVISION
     EMS:   LI-1541-30101      D00
   BUILD:   201410031600

     CRC:   E35B9602
```

Menu 4 of the MPU displays the FWD ID only when the system is operating in Swift 64 mode. If the system is operating in SBB, the MPU displays the IMSI number.

To view the strapped FWD ID from the MPU menu:

1. Connect to the HDU maintenance port—see “Connecting to the Aspire-200 Maintenance Port” on page 1.
2. In the maintenance menus, press CTRL + N to navigate to **menu 4**.
3. To view Channel Card Forward IDs, press **q**.

   Channel card #1 information appears.

```
INMARSAT TYPE APPROVAL: ------
CHAN #1: ABCDEF  (AERO WITH MPDS)
```

B. Checking the APN

The Aspire-200 MPU can display EEPROM parameters, including the APN.

To view the strapped APN:

1. Connect to the HDU maintenance port—see “Connecting to the Aspire-200 Maintenance Port” on page 1..
2. In the maintenance menus, press CTRL + N to navigate to **menu 3**.
3. To view Miscellaneous EEPROM parameters, press **m**.

   The list of parameters appears.

```
DATA I/O APN ?[bgan.inmarsat.com = ?
```

2. Checking System Reports

The Aspire-200 MPU provides diagnostic reports that display information about various system functions.

A. Viewing System Reports

To view a report:

1. Connect to the HDU maintenance port—see “Connecting to the Aspire-200 Maintenance Port” on page 1..
2. To view a list of available reports, press **=**.

   The list of available reports appears.

```
Enter 1 thru 153 to toggle report on/off
X  turn off all reports    <CTRL> N  show next page    S   save to EEPROM
ESC  return to PREVIOUS MENU

 1 OFF OFF messages to card #1          18 OFF port antenna arinc input
 2 OFF OFF hex output to card #1        19 OFF port antenna maintenance word
 3 OFF OFF responses from card #1       20 OFF port antenna status word
 4 OFF OFF hex input from card #1       21 OFF call codes
 5 OFF OFF card #1 misc info            22 OFF spot beam selection
 6 OFF low-level ort transfer to IPLD   23 OFF standard output
 7 OFF IPLD cable cal                   24 OFF doppler, antenna az/el
 8 OFF low-level call log tx to IPLD    27 OFF IPLD/channel card backoffs
 9 OFF channel card call status         28 OFF miscellaneous digital inputs
10 OFF channel card THA codes           29 OFF channel card A_AM msgs
11 OFF channel card errors              30 OFF multi-control arinc bus
12 OFF IRS input                        31 OFF ocean region info
```

3. To navigate through the list of reports, press CTRL + N.
4. To access a report, type the number next to the report name, and then press ENTER.

B. System Status Reports

The vt100 scenario report provides information about various aspects of the channel card operation.

To view the report, in the list of available reports, press the number next to **vt100 scenario report**.

Figure 6-1 provides an example of the output of the report.

```
45D25'12.8"N  74D51'8.8"W  PT 0.2D  RL 0.0D  HD 79.8D  TK 0.2D  40 knots  150 ft
CHAN   C/N0   SIG dB  TEMP   BEAM    STAT     BT  OC     TX     dBW      WATT
 1     ****   *****   ????   ?       booting  58  NO     0.000  0.0       0
19:26:15 DOP=-50  LOOK ANGLE=33.1
45D25'12.8"N  74D51'8.8"W  PT 0.2D  RL 0.0D  HD 79.8D  TK 0.2D  40 knots  150 ft
CHAN   C/N0   SIG dB  TEMP   BEAM    STAT     BT  OC     TX     dBW      WATT
 1     ****   *****   ????   ?       booting  58  NO     0.000  0.0       0
19:26:16 DOP=-50  LOOK ANGLE=33.1
```

Figure 6-1 VT100 Scenario Report

Table 6-1 provides descriptions of the items in the report.

Table 6-1 VT100 Scenario Report Content

Output Example	Description
45D25'12.8"N 74D51'8.8"W	IRS latitude and longitude position as interpreted by the HDU
PT 0.2D	Aircraft pitch angle, where nose UP is positive
RL 0.0D	Aircraft roll angle, where cw is positive
HD 79.8D	Aircraft true heading; where the nose of the aircraft is pointingin reference to True North
TK 0.2D	Aircraft true track; direction the aircraft is traveling—not necessarily the direction it is heading
40 knots	Aircraft velocity—may display **** when the aircraft is on the ground, depending on the navigation source.
150 ft	Altitude
19:26:15	Time based on the system real time clock
DOP=-50	Doppler frequency offset

Table 6-1 VT100 Scenario Report Content (Continued)

Output Example	Description
LOOK ANGLE=33.1	Antenna elevation angle to the satellite, with respect to the horizontal axis of the aircraft
CHAN	The channel card number
C/N0	RF input Carrier-to-Noise (C/No) level; typically 50.0 to 55.0 for Swift 64, 55.0 to 60.0 for SBB
SIG dB	RF input signal level—Typically -30 dB in Swift 64 and -50 dB in SBB
TEMP	HDU internal temperature
BEAM	Satellite beam on which the card is registered
STAT	System call status
BT	Boot state
OC	Registration Status
TX	Transmit frequency
dBW	EIRP dBw
WATT	EIRP output

C. System Config Strapping Report

The ascii digital inputs report provides information about the configuration straps on the HDU.

To view the report, in the list of available reports, press the number next to **system config strapping**.

Figure 6-2 provides an example of the ascii digital inputs report.

```
19308.354: NO SELFTEST   NO TEMPERATURE FAULT   NO CC OVERTEMP   CC ENABLED
DATALOADER NOT CONNECTED   PSU OK   OCXO READY   POWER GOOD
SYS-CONFIG='10 -- AMT-700 (HGA,SBB class 6, S64)'

19309.354: NO SELFTEST   NO TEMPERATURE FAULT   NO CC OVERTEMP   CC ENABLED
DATALOADER NOT CONNECTED   PSU OK   OCXO READY   POWER GOOD
SYS-CONFIG='10 -- AMT-700 (HGA,SBB class 6, S64)'

19310.355: NO SELFTEST   NO TEMPERATURE FAULT   NO CC OVERTEMP   CC ENABLED
DATALOADER NOT CONNECTED   PSU OK   OCXO READY   POWER GOOD
SYS-CONFIG='10 -- AMT-700 (HGA,SBB class 6, S64)'

19311.355: NO SELFTEST   NO TEMPERATURE FAULT   NO CC OVERTEMP   CC ENABLED
DATALOADER NOT CONNECTED   PSU OK   OCXO READY   POWER GOOD
SYS-CONFIG='10 -- AMT-700 (HGA,SBB class 6, S64)'
```

Figure 6-2 System Config Strapping Report

D. Antenna Reports

Three reports provide information about the status and operation of the Aspire-200 antenna.

- port antenna arinc input
- port antenna maintenance word
- port antenna status word

To view the report, in the list of available reports, press the number next to the report name.

Figure 6-3 provides an example of the port antenna ARINC input report.

```
port ant: status $108039 SDI=PRT/TOP gain=14.0 HGA SSM: FAILURE  maint $1
SDI=PRT/TOP
SSM: FAILURE
port ant: status $108039 SDI=PRT/TOP gain=14.0 HGA SSM: FAILURE  maint $1
SDI=PRT/TOP
SSM: FAILURE
port ant: status $108039 SDI=PRT/TOP gain=14.0 HGA SSM: FAILURE  maint $1
SDI=PRT/TOP
SSM: FAILURE
port ant: status $108039 SDI=PRT/TOP gain=14.0 HGA SSM: FAILURE  maint $600001
SDI=PRT/TOP
port ant: status $108039 SDI=PRT/TOP gain=14.0 HGA SSM: FAILURE  maint $1
SDI=PRT/TOP
SSM: FAILURE
port ant: status $108039 SDI=PRT/TOP gain=14.0 HGA SSM: FAILURE  maint $600001
SDI=PRT/TOP
port ant: status $108039 SDI=PRT/TOP gain=14.0 HGA SSM: FAILURE  maint $1
SDI=PRT/TOP
SSM: FAILURE
```

Figure 6-3 Port Antenna ARINC Input Report

Figure 6-4 provides an example of the port antenna maintenance word report.

```
port maintenance $600001  SDI: PRT/TOP  SSM: NORMAL
port maintenance $600001  SDI: PRT/TOP  SSM: NORMAL
port maintenance $600001  SDI: PRT/TOP  SSM: NORMAL
```

Figure 6-4 Port Antenna Maintenance Word Report

Figure 6-5 provides an example of the port antenna status word report.

```
port status $708039  SDI: PRT/TOP  SSM: NORMAL  gain=14.0
OMNIDIRECTIONAL MODE  open loop tracking  port/top active   HGA   LNA=on
port status $708039  SDI: PRT/TOP  SSM: NORMAL  gain=14.0
OMNIDIRECTIONAL MODE  open loop tracking  port/top active   HGA   LNA=on
port status $708039  SDI: PRT/TOP  SSM: NORMAL  gain=14.0
OMNIDIRECTIONAL MODE  open loop tracking  port/top active   HGA   LNA=on
port status $708039  SDI: PRT/TOP  SSM: NORMAL  gain=14.0
OMNIDIRECTIONAL MODE  open loop tracking  port/top active   HGA   LNA=on
```

Figure 6-5 Port Antenna Status Word

E. Channel Card THA Codes Report

THA codes are SwiftBroadband network messages.

Figure 6-6 provides an example of the report output.

```
CHAN #1 254.233 T_HA code $c200 BGAN SPOTBEAM SELECTED
CHAN #1 254.305 T_HA code $9085 TAL OUT OF LOCK
CHAN #1 254.379 T_HA code $9084 TAL IN LOCK
CHAN #1 254.785 T_HA code $9085 TAL OUT OF LOCK
CHAN #1 254.939 T_HA code $9084 TAL IN LOCK
CHAN #1 257.937 T_HA code $90a1 TAL BONDING DETACHED
CHAN #1 264.742 T_HA code $341a BGAN MM INT NO FORWARD BEARER
CHAN #1 272.394 T_HA code $8100 TAL BOOTING
CHAN #1 272.401 T_HA code $8110 TAL BOOTED
CHAN #1 272.408 T_HA code $8040 TAL INERT
CHAN #1 273.408 T_HA code $9090 TAL SMARTCARD ACTIVATED
CHAN #1 279.012 T_HA code $8800 TAL CABLE CAL BEGIN
```

Figure 6-6 Channel Card THA Codes Report

3. Equipment Logs

If you cannot connect a call, the system logs may provide information about the problem.

You can copy the text of the logs and send it to your technical support team.

To view event logs:

1. Connect your computer to the maintenance port of the HDU terminal—see “Connecting to the Aspire-200 Maintenance Port on page 1.
2. To navigate to **menu 3**, press CTRL + N.
3. To view logs, press **s**.
4. To view all log entries, press **0**.

   The log entries appear.

```
hit '0' for complete log   '1' for 'special' events   '-' for specific entry

HDU EMS SERIAL NUMBER S/N ???
EVENT LOG: 1027 entries -- powerup #44 (15 hours)
most recent entry at address 337a10

HIT 'S' FOR MORE -- '.' LISTS ALL REMAINING ENTRIES

DIAGNOSTIC (ENTRIES #1026 - #1027):  address 337a10: 160 seconds after powerup
  powerup #44  15 hours operation  Nov 29 18:02:47 2014
  CHAN 1 REQUESTED 0.0 dBW -- 654.5 MSEC AFTER REQUEST FOR ZERO dBW

DIAGNOSTIC (ENTRIES #1024 - #1025):  address 337988: 159 seconds after powerup
  powerup #44  15 hours operation  Nov 29 18:02:46 2014
  CHAN 1 REQUESTED ZERO EIRP DURING BGAN SESSION

HIT 'S' FOR MORE -- '.' LISTS ALL REMAINING ENTRIES

EVENT (ENTRY #1023):  address 337900: 123 seconds after powerup
  powerup #44  15 hours operation  Nov 29 18:02:10 2014
  CHANNEL #1 WAS RESET   -- SELF-REPORTED T_HA ERROR

EVENT (ENTRY #1022):  address 3378bc: 123 seconds after powerup
  powerup #44  15 hours operation  Nov 29 18:02:10 2014
  CHANNEL #1 FATAL ERROR 341a
         BGAN MM INT NO FORWARD BEARER
  recent call code 400107 at time 116 secs
         CTSP BGAN
  recent call code 400108 at time 106 secs
         CTSP BGAN LOWER
  recent call code 400107 at time 92 secs
         CTSP BGAN

DIAGNOSTIC (ENTRIES #1020 - #1021):  address 337878: 110 seconds after powerup
  powerup #44  15 hours operation  Nov 29 18:01:56 2014
  CHAN 1 REQUESTED ZERO EIRP DURING BGAN SESSION
```

To view call logs:

1. Connect your computer to the maintenance port of the HDU terminal—see “Connecting to the Aspire-200 Maintenance Port on page 1.
2. To navigate to **menu 3**, press CTRL + N.
3. To view logs, press **f**.
4. To view all log entries, press **0**.

To view THA logs:

1. Connect your computer to the maintenance port of the HDU terminal—see “Connecting to the Aspire-200 Maintenance Port on page 1.
2. To navigate to **menu 3**, press CTRL + N.
3. To view logs, press **y**.

4. To view all log entries, press **0**.

4. Instructions for Continued Airworthiness

This section presents the instructions for continued airworthiness, as per FAR 25.1529, of the equipment in the Aspire-200 system.

Installation of the Aspire-200 system on an aircraft by supplemental type certificate (STC) or Form 337 obligates the aircraft operator to include the maintenance information supplied by this manual in the operator's Aircraft Maintenance manual and the operator's Aircraft Scheduled Maintenance Program.

The following paragraphs describe all maintenance requirements and instructions for continued airworthiness of the Aspire-200 system.

- For airworthiness information about antenna of the Aspire-200 system, refer to the antenna’s installation manual.
- Add the LRU part numbers and other necessary part numbers contained in this manual to the aircraft operator's appropriate, aircraft illustrated parts catalog (IPC).
- Add all wiring diagram information contained in this manual to the aircraft operator's appropriate aircraft Wiring Diagram Manuals.
- The HDU, SCM, router(s), antenna(s) and IPLD are considered on-condition units. No additional or routine maintenance is required.
- If an Aspire-200 LRU is inoperative, remove the LRU, secure cables and wiring, collar applicable switches and circuit breakers, and placard them as inoperative. Before flight, revise the equipment list and weight and balance data as applicable and record the removal of the terminal in the log book [refer to section 91.213 of the FAR or the aircraft's minimum equipment list (MEL)].
- Aspire-200 LRUs are not field-repairable. All LRUs must be returned to the Honeywell factory or authorized repair centers for repair.
- Repaired LRUs must be re-installed on the aircraft in accordance with the instructions provided in this manual.
- Approval for return to service must be entered in the logbook as required by section 43.9 of the FAR.
- For the HDU and IPLD, the following scheduled maintenance tasks must be added to the aircraft operator's appropriate aircraft maintenance program:
    - Recommended periodic scheduled servicing tasks: None required.
    - Recommended periodic inspections: None required.
    - Recommended periodic scheduled preventative maintenance tests (tests to determine system condition and/or latent failures): None required.

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APPENDIX A: SPECIFICATIONS

1. HDU Inmarsat Terminal

Section	Condition	DO-160E Category
4.0	Temperature and Altitude	
4.5.1	Ground Survival Low Temperature Test and Short-Time Low Operating Temperature Test	A4/C4
4.5.2	Operating Low Temperature	A4/C4
4.5.3	Ground Survival High Temperature and Short-Time High Operating Temperature	A4/C4
4.5.4	Operating High Temperature	A4/C4
4.6.1	Altitude	A4/C4
4.6.2	Decompression	A4/C4
7.0	Operational Shocks and Crash Safety	B
8.0	Vibration	SB
10	Waterproofness	X—not required
11	Fluid Susceptibility	X—not required
12	Sand and Dust	X—not required
14	Salt Spray	X—not required
15	Magnetic Effect	Z
16	Power Input	A
17	Voltage Spike	A
21	Emissions of RF Energy	M
23	Lightning Direct Effects	X—not required
24	Icing	X—not required
26	Fire, Flammability	X—not required

2. Integrated Power and Low-noise Amplifier and Diplexer (IPLD)

Section	Condition	DO-160E Category
4	Temperature and Altitude—70 000ft	E1
4	Overpressure—200kPa	E1—Extended
4	Decompression—8000ft	E1—Extended
5.0	Temperature Variation—10°C/minute	A
6.0	Humidity	B
7.0	Operational Shocks and Crash Safety	E
8.0	Vibration	S (curves L, M, Y, C, E), R (curves C1 and E1), and U (curve G)
9.0	Explosion Proofness	E
10	Waterproofness	S
11	Fluid Susceptibility—tested with Ethylene, Glycol. Isopropyl Alcohol, and one Fire Extinguishing agent	F
12	Sand and Dust	S
13	Fungus Resistance	F
14	Salt Spray	S
15	Magnetic Effect	Z
16	Power Input	A
17	Voltage Spike	A—Modified (600v, 10µs)
18	Audio Frequency Conducted Susceptibility—Power Inputs	R—Modified
19	Induced Signal Susceptibility	ZC
20	Radio Frequency Susceptibility	RR
21	Emissions of RF Energy	H
22	Lightning Induced Transient Susceptibility	A3J33
23	Lightning Direct Effects	X—not required
24	Icing	A
25	Electrostatic Discharge	A—Modified
26	Fire, Flammability	C

3. External Satcom Configuration Module

Section	Condition	DO-160 Category
4.0	Temperature and Altitude	F2
5.0	Temperature Variation	B
6.0	Humidity	A
7.0	Operational Shocks and Crash Safety	B
8.0	Vibration	S—curves B, L, M, Y; R—curves B, B1
9.0	Explosion Proofness	E
10	Waterproofness	X—not required
11	Fluid Susceptibility	X—not required
12	Sand and Dust	X—not required
13	Fungus Resistance	X—not required
14	Salt Spray	X—not required
15	Magnetic Effect	Z
16	Power Input	A(WF)H
17	Voltage Spike	A
18	Audio Frequency Conducted Susceptibility—Power Inputs	K(WF)
19	Induced Signal Susceptibility	CW
20	Radio Frequency Susceptibility	R
21	Emissions of RF Energy	M
22	Lightning Induced Transient Susceptibility	A3J33
23	Lightning Direct Effects	X—not required
24	Icing	X—not required
25	Electrostatic Discharge	A
26	Fire, Flammability	X—not required

4. Blade Antenna

Section	Condition	DO-160 Category
4.0	Temperature and Altitude	E1
5.0	Temperature Variation	A2
6.0	Humidity	A
7.0	Operational Shocks and Crash Safety	C, B
8.0	Vibration	S, U
9.0	Explosion Proofness	X—not required
10	Waterproofness	S
11	Fluid Susceptibility	F
12	Sand and Dust	D
13	Fungus Resistance	F
14	Salt Spray	S
15	Magnetic Effect	X—not required
16	Power Input	X—not required
17	Voltage Spike	X—not required
18	Audio Frequency Conducted Susceptibility—Power Inputs	X—not required
19	Induced Signal Susceptibility	X—not required
20	Radio Frequency Susceptibility	W
21	Emissions of RF Energy	X—not required
22	Lightning Induced Transient Susceptibility	X—not required
23	Lightning Direct Effects	1
24	Icing	B
25	Electrostatic Discharge	A, C
26	Fire, Flammability	A

5. AMT-3500 Intermediate Gain Antenna

Section	Condition	DO-160E Category
4.0	Temperature and Altitude	A2, E1
5.0	Temperature Variation	A
6.0	Humidity	B
7.0	Operational Shocks and Crash Safety	E
8.0	Vibration	S, R, U
9.0	Explosion Proofness	E
10	Waterproofness	S
11	Fluid Susceptibility	F
12	Sand and Dust	S
13	Fungus Resistance	F
14	Salt Spray	S
15	Magnetic Effect	Z
16	Power Input	A(WF)
17	Voltage Spike	A
18	Audio Frequency Conducted Susceptibility—Power Inputs	K(WF)
19	Induced Signal Susceptibility	ZW
20	Radio Frequency Susceptibility	RR
21	Emissions of RF Energy	H
22	Lightning Induced Transient Susceptibility	A3J33
23	Lightning Direct Effects	2A
24	Icing	C
25	Electrostatic Discharge	A
26	Fire, Flammability	X—not required

6. AMT-1800 High Gain Antenna

Section	Condition	DO-160E Category
4.0	Temperature and Altitude	E1
4.5.1	Ground Survival Low and Short Time Operating Low	E1 modified
4.5.2	Operating Low Temperature	E1 modified
4.5.3	Ground Survival High Temperature	E1
4.5.3	Short Term Operation High Temperature	E1 modified
4.5.4	Operating High	E1
4.5.5	In Flight Loss of Cooling	X
4.6.1	Altitude Test	E1
4.6.2	Decompression Test	X
4.6.3	Over Pressure Test	X
5.0	Temperature Variation	A modified
6.0	Humidity	B
7.0	Operational Shocks and Crash Safety	B,E
8.0	Vibration	S, R, U
9.0	Explosion Proofness	E
10	Waterproofness	S
11	Fluid Susceptibility	F
12	Sand and Dust	S
13	Fungus Resistance	F
14	Salt Spray	S
15	Magnetic Effect	Z
16	Power Input	A[A(WF)X]
17	Voltage Spike	A
18	Audio Frequency Conducted Susceptibility—Power Inputs	R[R(WF)X]
19	Induced Signal Susceptibility	[(ZC)(ZW)]
20	Radio Frequency Susceptibility	R
21	Emissions of RF Energy	H

Section	Condition	DO-160E Category
22	Lightning Induced Transient Susceptibility	A3J33
23	Lightning Direct Effects	2A
24	Icing	A
25	Electrostatic Discharge	A
26	Fire, Flammability	X—not required

7. AMT-3800 High Gain Antenna

Section	Condition	DO-160E Category
4.0	Temperature and Altitude	E1
5.0	Temperature Variation	A
6.0	Humidity	B
7.0	Operational Shocks and Crash Safety	B/E
8.0	Vibration	S, R
9.0	Explosion Proofness	E
10	Waterproofness	W/Y
11	Fluid Susceptibility	F
12	Sand and Dust	S
13	Fungus Resistance	F
14	Salt Spray	S
15	Magnetic Effect	Z
16	Power Input	Z
17	Voltage Spike	A
18	Audio Frequency Conducted Susceptibility—Power Inputs	Z
19	Induced Signal Susceptibility	CC
20	Radio Frequency Susceptibility	YY
21	Emissions of RF Energy	H
22	Lightning Induced Transient Susceptibility	A3C3J33
23	Lightning Direct Effects	X—not required
24	Icing	X—not required
25	Electrostatic Discharge	A
26	Fire, Flammability	X—not required

8. AMT-700 High Gain Antenna

Section	Condition	DO-160E Category
4.0	Temperature and Altitude	E1
5.0	Temperature Variation	A
6.0	Humidity	B
7.0	Operational Shocks and Crash Safety	B/E
8.0	Vibration	S, R
9.0	Explosion Proofness	E
10	Waterproofness	W/Y
11	Fluid Susceptibility	F
12	Sand and Dust	S
13	Fungus Resistance	F
14	Salt Spray	S
15	Magnetic Effect	Z
16	Power Input	Z
17	Voltage Spike	A
18	Audio Frequency Conducted Susceptibility—Power Inputs	Z
19	Induced Signal Susceptibility	CC
20	Radio Frequency Susceptibility	YY
21	Emissions of RF Energy	H
22	Lightning Induced Transient Susceptibility	A3C3J33
23	Lightning Direct Effects	X—not required
24	Icing	X—not required
25	Electrostatic Discharge	A
26	Fire, Flammability	X—not required

9. CNX-200Series 2 Network Accelerator

DO-160E Section	Environmental Condition	Description of Test
4.0	Temperature and Altitude	A4
5.0	Temperature Variation	B
6.0	Humidity	A
7.0	Operational Shocks and Crash Safety	B
8.0	Vibration	S
9.0	Explosion Proofness	E
10.0	Waterproofness	X—not required
11.0	Fluid Susceptibility	X—not required
12.0	Sand and Dust	X—not required
13.0	Fungus Resistance	F
14.0	Salt Spray	X—not required
15.0	Magnetic Effect	Z
16.0	Power Input	A
17.0	Voltage Spike	A
18.0	Audio Frequency Conducted Susceptibility	R
19.0	Induced Signal Susceptibility	ZC
20.0	Radio Frequency Susceptibility	RR
21.0	Emission of RF Energy	B
22.0	Lightning Induced Transient Susceptibility	X—not required
23.0	Lightning Direct	X—not required
24.0	Icing	X—not required
25.0	Electrostatic Discharge (ESD)	A
26.0	Fire, Flammability	C

10. CCU-200

Section	Environmental Condition	DO-160E Category
4	Temperature and Altitude	A2
4	In Flight Loss of Cooling	A2V
5	Temperature Variation	B
6	Humidity	B
7	Operational Shocks and ash Safety	B
8	Vibration (operational)	S B2
9	Explosive Atmosphere	E
10	Waterproofness	W
11	Fluids Susceptibility	F
12	Sand and Dust	X—not required
13	Fungus Resistance	X—not required
14	Salt Fog	X—not required
15	Magnetic Effect	X—not required
16	Power Input	A
16	Normal Surge Voltage	Z
16	Abnormal Surge Voltage	Z
17	Voltage Spike	A
18	Audio Frequency Conducted Susceptibility–Power Input	Z
19	Induced Signal Susceptibility	AC
20	Radio Frequency Susceptibility	A
21	Emission of Radio Frequency Energy	M
22	Lightning Induced Transient Susceptibility	X—not required
23	Lightning Direct Effects	X—not required
24	Icing	X—not required
25	Electrostatic Discharge (ESD)	A
26	Fire, Flammability	X—not required

11. CNX-250

Section	Environmental Condition	DO-160G Category
4	Temperature and Altitude	Cat A1 (max. aircraft altitude 15,000 ft)
5	Temperature Variation	Cat C
6	Humidity	Cat A
7	Operational Shocks and Crash Safety	Cat B (standard operational shock and crash safety) Fixed-wing transport aircraft Random orientation
8	Vibration	Cat S (fixed-wing and standard vibration) Curve B, Zone 2
9	Explosive Atmosphere	N/A
10	Waterproofness	Cat Y
11	Fluids Susceptibility	N/A
12	Sand and Dust	N/A
13	Fungus Resistance	N/A
14	Salt Fog	N/A
15	Magnetic Effect	Cat Z (produces magnet deflection less than 0.3 m)
16	Power Input	Cat Z for DC powered equipment (100 ms momentary power interruption)
17	Voltage Spike	Cat B

Section	Environmental Condition	DO-160G Category
18	Audio Frequency Conducted Susceptibility–Power Input	Cat Z for DC powered equipment
19	Induced Signal Susceptibility	Cat AC (DC powered equipment)
20	Radio Frequency Susceptibility (Radiated and Conducted)	RR - conducted and radiated (bench testing is allowed to meet the HRF associated with the normal environment)
21	Emission of RF Energy	Cat M
22	Lightning Induced Transient Susceptibility	N/A
23	Lightning Direct Effects	N/A
24	Icing	N/A
25	Electrostatic Discharge	Cat A
26	Fire, Flammability	Cat C

12. CNX-900

The Avionics LRU and PM of the CNX-900 Communication Family are environmentally qualified to RTCA DO-160G. Qualification rest report TN2000-TR-0001 is available to support aircraft certification activities.

Section	Environmental Condition	Section
4	Temperature and Altitude	A2
5	Temperature Variation	B
6	Humidity	B
7	Operational Shocks and ash Safety	B
8	Vibration	Cat S - curve B, Cat R - curve B1
9	Explosive Atmosphere	E1
10	Waterproofness	Y
11	Fluids Susceptibility	F
12	Sand and Dust	X
13	Fungus Resistance	X
14	Salt Fog	X
15	Magnetic Effect	Z
16	Power Input	A
16	Normal Surge Voltage	Z
16	Abnormal Surge Voltage	I
17	Voltage Spike	A
18	Audio Freq. Susceptibility–Power Input	Z
19	Induced Signal Susceptibility	ZC
20	Radio Frequency Susceptibility	RR
21	Emission of Radio Frequency Energy	M
22	Lightning Induced Transient Susceptibility	X
23	Lightning Direct Effects	X
24	Icing	X
25	Electrostatic Discharge (ESD)	A
26	Fire, Flammability	X

APPENDIX B: GLOSSARY

1. Abbreviations

AHRS	Attitude and Heading Reference System
AIM	Aircraft Interface Mount
AMT	Aeronautical Mobile Terminal
APN	Access Point Name
ARINC	Aeronautical Radio Incorporated
CCU	Communication Convergence Unit
cw	Clockwise
FMS	Flight Management System
GNSS	Global Navigation Satellite System
HDR	High data rate
HDU	High speed Data Unit
HGA	High Gain Antenna
IGA	Intermediate Gain Antenna
IPLD	Integrated Power and Low-noise amplifier and Diplexer
IRS	Inertial Reference System
ISDN	Integrated Services Digital Network
LED	Light Emitting Diode
LGA	Low Gain Antenna
LRU	Line Replaceable Unit
MPDS	Mobile Packet Data Service
MPU	Maintenance Port Utility
POTS	Plain Old Telephone System
SBB	SwiftBroadband
SCM	Satcom Configuration Module
USD	Universal Serial Bus
VAC	Volts, alternating current
VDC	Volts, direct current
VoIP	Voice over IP
VPN	Virtual Private Network
XStream	A high bandwidth (up to 384 kbps) service available with SBB

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