

# Rockwell Collins ARINCDirect Xplore

## System Description and Installation

### Manual (SDIM)

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**Record of Revisions**

<b>Revision #</b>	<b>Issue Date</b>	<b>Description of Changes</b>
-	08 Dec. 2015	Initial release. Integrate Rockwell Collins comments and recommendations, information and editorial corrections.
	01 Feb. 2016	Cosmetic formatting.
A	30 Mar. 2016	Sec 2.2: Corrected AUX PCB technical specifications Sec 2.4: Updated DO-160G Section 20 Qualification Category (T) Sec 4.1: Removed antenna proximity advisory - was not applicable to Iridium antenna operation Sec 5.1: Updated Xplore unit installation, placement directions. Bolt specs. Corrections, added details and referred to NAS & Mil-Spec. aircraft installation HW standards Sec 6.1 & 6.2: Added details for external wiring harness shielding and grounding requirements Sec 7.3, 7.6, 7.9: Updated suggested wire gauge (AWG) selection to 22 AWG for signaling and 20 AWG for power; updated Standard wire colors for DC Power connector (P2) Section 11.2: Removed references to FARs within "Continued Airworthiness" directive. Plus a couple of minor spelling, grammatical (tense) corrections
B	10 April, 2018	Editorial updates: admin page URL address, identify External Iridium interfaces as future options in system block diagrams. Added Proprietary and Export Control Notices

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## 1.0 Introduction

This manual provides the specifications, principles of operation, and information necessary to install and power on the ARINCDirect Xplore unit.

This document is divided into the following sections:

- System Description
- Installation
- Test and Fault Isolation
- Maintenance and Repair

Only qualified avionics personnel who are knowledgeable in the technical and safety issues related to the installation of aircraft communications equipment should perform the installation procedures provided in this manual.

This manual includes general installation guidelines only; it is not intended to provide specific procedures for every type of installation.

If necessary, the information in this manual will be revised. Before attempting the installation procedures presented in this manual, verify that you have a complete and up-to-date release of this document.

**Note:** *Depending on your ARINCDirect Xplore software version and configuration, the actual (live) system messages you see, such as dialog boxes and screen displays, may differ from the examples in this manual. The ARINCDirect Xplore software version and configuration options can be viewed in the Xplore unit's system GUI status page.*

**1.1 Acronyms, Abbreviations, Terms and Definitions**

SDIM	System Description & Installation Manual
LBT	L-Band Transceiver
SBD	Short Burst Data
MO	Mobile Originated
MT	Mobile Terminated
AWG	American Wire Gauge
Bps	Bits Per Second
CLI	Command Line Interpreter
DC	Direct Current
FAA	Federal Aviation Authority
FHA	Functional Hazard Analysis
FXO	Foreign Exchange Office
FXS	Foreign Exchange Subscriber
GND	Ground
GUI	Graphical User Interface
I/O	Input/ Output
LAN	Local Area Network
LED	Light-Emitting Diode
Mil- Spec	Military Specifications
NAS	National Aerospace Specifications
PBX	Private Branch Exchange
PPP	Point-To-Point Protocol
USB	Universal Serial Bus
SSA	System Safety Analysis
TBD	To Be Defined
VDC	Volts DC
WAN	Wide Area Network

### **1.2    *The Iridium Satellite System Overview***

The Iridium satellite system consists of 66 satellites in orbit around the earth at an altitude of 485 miles (781 Kilometers) and inclination of 86.4°. Orbital velocity of the satellites is approximately 17,000 mph (27,000 km/h). The satellites orbit from pole to pole with an orbit time of roughly 100 minutes. Satellites communicate with neighboring satellites via Ka band inter-satellite links. Each satellite can have four inter-satellite links: two to neighbors fore and aft in the same orbital plane, and two to satellites in neighboring planes to either side.

The over-the-pole orbital design produces "seams" where satellites in counter-rotating planes next to one another are traveling in opposite directions. Cross-seam inter-satellite link hand-offs would have to happen very rapidly and cope with large Doppler shifts; therefore, Iridium supports inter-satellite links only between satellites orbiting in the same direction. The constellation of 66 active satellites has 6 orbital planes spaced 30 degrees apart, with 11 satellites in each plane (not counting spares). This reduced set of 6 planes is sufficient to cover the entire Earth's surface at every moment.

The low orbit means that less powerful equipment is needed for Iridium communications. This translates to smaller size and lower cost. Hence, Iridium systems, such as the Clarus Xplore, are now the most cost effective and portable satellite communication systems on the market.

When the Iridium system was designed, in the 90's, the primary application was for global voice communications for which a data rate of 2.4 Kbps was deemed to be sufficient. However, the internet and today's data rich applications require a much faster link creating a significant challenge for the Iridium system.

ARINCDirect's Xplore was designed uses special packet data communication techniques to provide a low cost, Satellite based communications system that supports passenger's Smartphone or Tablet devices for in flight use.

## 2.0 ARINCDirect Xplore System Description

The ARINCDirect Xplore system is described in detail in the following sub-sections:

- Equipment Overview
- Block Diagram
- Equipment Specifications
- System Interfaces
- User Interfaces
- System Management Connections and Interfaces

### 2.1 *Equipment Overview*

The ARINCDirect Xplore system is an IP Telephony, data communications and applications hosting system for use on board General and Business Aviation aircraft. The Xplore unit has two integrated Iridium 9523 LBTs, which function as Voice and Data Modems providing air to ground communications link over the Iridium Satellite network. It also has an integrated dual band Wi-Fi Access Point (AP) module providing the on-board Wi-Fi wireless LAN for passengers and crew to access all the ARINCDirect Xplore system functions using their own network client devices. Only minor aircraft modifications will be required to install the Iridium and (optional) GPS small blade antenna and RF cables to the Xplore unit. The ARINCDirect Xplore system can also be configured to interface with an existing, installed aeronautical Iridium cabin communication system to provide the ARINCDirect Xplore suite of services.

The ARINCDirect Xplore system is designed to be installed in a climate controlled and pressurized zone of the aircraft and is powered by either 12 VDC or 28 VDC aircraft power source.

### 2.2 *ARINCDirect Xplore System Components*

The ARINCDirect Xplore unit is comprised of two integrated hardware computing platforms:

1. The Telephony Unit is a custom 600MHz Blackfin embedded processor board primarily responsible for providing high efficiency IP telephony functions using its integrated Asterisk IP PBX and access to Iridium voice, Dial-up data and Short Burst Data (SBD) services using its built-in two Iridium 9523 L-Band Transceivers. It has 256MB RAM and 512MB of NAND flash non-volatile memory. GPS receiver and multi-port network switch providing two Ethernet LAN and two Ethernet WAN interfaces. It runs on uClinux OS.

It also has a built in GSM transceiver, dual ARINC 429 receivers and one ARINC 717 receiver, which are non-operational hardware only provisions, in place for possible activation in future product updates.

2. The Auxiliary Unit is a high end PCM-9363 Intel® Atom™ N455 1.66 GHz COTS Single Board Computer, configured to function as Files and Applications server. It has 2GB RAM, support for Compact Flash Type I/II and one SATA II drive. Provides dual USB 3.0 interface and it also hosts the dual band 802.11 ac/a,b,g,n WLAN module: AIRETOS AEX-QCA9880-NX. It runs on Ubuntu Linux OS.



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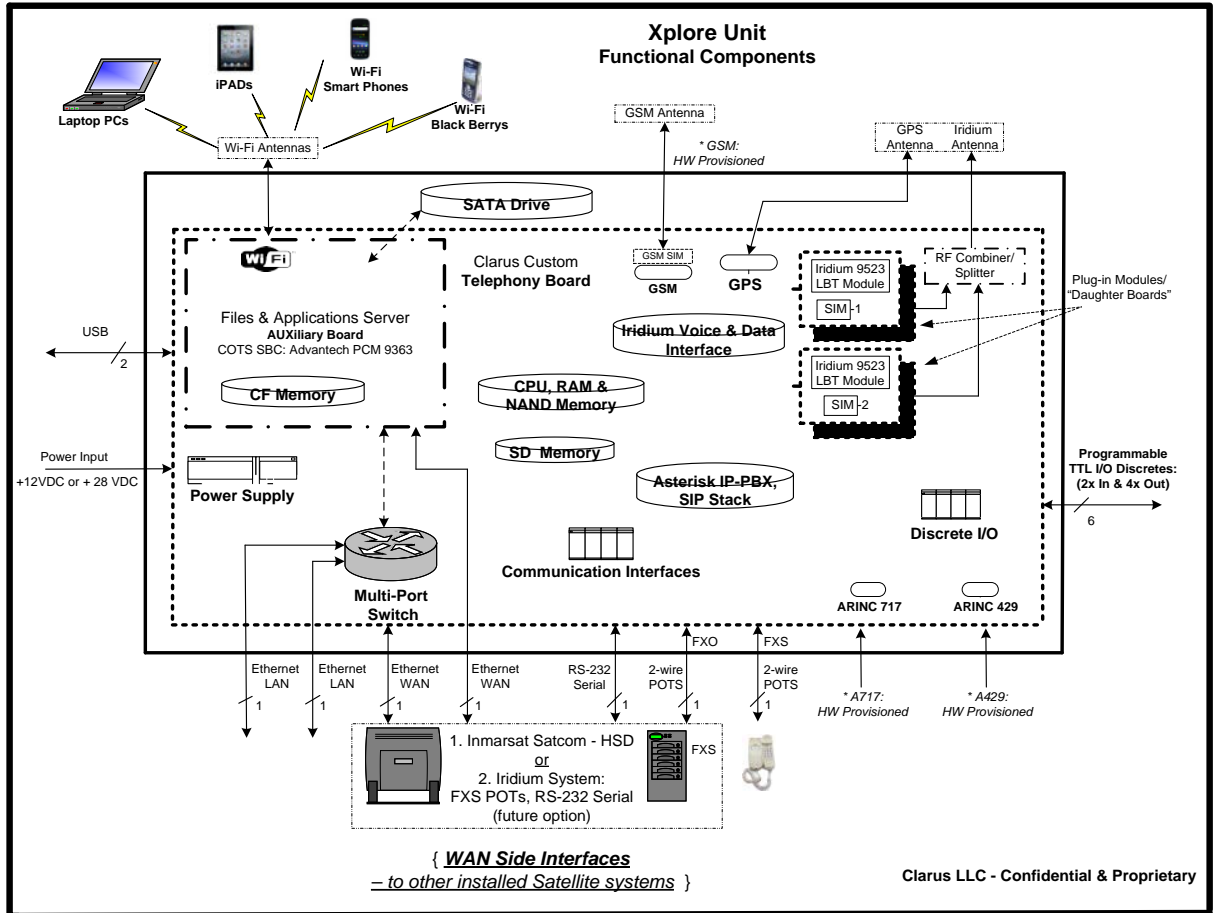


Figure 1. ARINCDirect Xplore Block Diagram

## **2.3 Equipment Specifications**

This section includes the mechanical specifications, and the environmental and software qualifications of the ARINCDirect Xplore system.

### **2.3.1 Xplore Unit Mechanical and Electrical Specifications**

The table below lists the mechanical specifications for the ARINCDirect Xplore unit.

<b>Table 1. Mechanical Characteristics and Specifications</b>	
<b>Characteristics</b>	<b>Specifications</b>
Height	80 mm (3.15")
Width	156 mm (6.15")
Length	249 mm (9.83")
Weight	< 2.0 Kg. (4lbs. 6oz.)
Mounting Information	Flange Mount
Clearance	Minimum 2.5 cm (1 inch) on all sides; cooling holes on the two sides must be kept clear for proper operation. Adequate clearance to access mounting brackets, ~ 15 cm / 6 inches on the sides.
Maintenance Requirements	No Maintenance required
<b>Electrical Specifications</b>	
Voltage	12 or 28 VDC
(Nominal) Power Consumption	24W: ~ 2.0 Amps@12 VDC / ~ 0.86 Amps@28 VDC
(Max) Power Consumption	36W: ~ 3.0 Amps@12 VDC / ~ 1.30 Amps@28 VDC
Power Interrupt Tolerance	Maximum: ~1 ms.
Heating and Cooling Requirements	Internal Fan

### **2.3.2 Telephony Board Specifications**

**Electrical:**

- ◆ Processor : Blackfin processor (600MHz)
- ◆ OS : uClinux
- ◆ RAM Memory : 256MB
- ◆ NAND : 512MB

**Multi-port Switch:** 10/100 Base-T managed switch

**GPS Receiver:** SiRF Nav

**GSM Radio:** [HW provisioned for future use]

**ARINC 429:** [HW provisioned for future use]

**ARINC 717:** [HW provisioned for future use]

### 2.3.3 Auxiliary Board Specifications

**Electrical:**

- ◆ Processor : Intel Atom N455 Single Core 1.66GHx
- ◆ OS : Ubuntu Linux
- ◆ RAM Memory: DDR3 : 2GB
- ◆ CompactFlash, CF Type II : 32GB
- ◆ SATA II Drive : 240GB

**Wi-Fi AP:**

- ◆ 802.11 ac/b/g/n

### 2.4 Environmental and Airworthiness Qualifications

The table below lists the RTCA/DO-160G Environmental and Airworthiness Category qualifications for the ARINCDirect Xplore unit.

<b>Table 2. DO160G Environmental Characteristics</b>		
<b>Section</b>	<b>Environmental Condition</b>	<b>Category</b>
4	Temperature / Altitude / Overpressure	A2
5	Temperature Variation	B
6	Humidity	A
7	Operational Shocks and Crash Safety	B
8	Random Vibration (operational)	S & Curve C
9	Explosive Atmosphere	E
15	Magnetic Effect	Z
16	Power Input	B
17	Voltage Spike	B
18	Audio Frequency Susceptibility	B
19	Induced Signal Susceptibility	AC
20	Radio Frequency Susceptibility	T
21	Emission of RF Energy	M
26	Fire and Flammability	C

### 2.5 Software Qualifications

Per the FHA and SSA of ARINCDirect Xplore system, its' applications and functions have been deemed to be Level E (no safety or operational impact). The Xplore middle-ware software is qualified per RTCA/DO-178C DAL D requirements so to support Level D software in future product enhancement cycles.

## 3.0 ARINCDirect Xplore System Interfaces

### 3.1 User (LAN) side Interfaces

The ARINCDirect Xplore provides following LAN side interfaces that enable users to access its full range of voice and data services.

#### A. Ethernet LAN

Two Ethernet LAN interfaces are provided via the 41-pin circular connector, J2 (LAN). These enable client devices on the LAN to connect to the Xplore unit via wired Ethernet. Typically these will be brought out to RJ-45 Jacks mounted in locations convenient for passenger access. [Optional]

#### B. FXS

The ARINCDirect Xplore system can support voice services via 2-wire POTS FXS interface provided via the 41-pin circular connector, J2 (LAN). When applicable, this input may be connected to the FXO port of a “subscriber equipment” such as a 2-wire POTS analog phone using a RJ-11 Jack. [Optional]

**Note:** The ARINCDirect Xplore system provides the customers access to voice services using ARINCDirect’s proprietary softphone application, the “ADConnect” or using a standard 2-wire POTS analog handset attached to its FXS interface.

The following Dial Rules apply when using this ARINCDirect Xplore system:

- **To access any international telephone number:** Dial using prefix “9 “ followed by the international 3-digit country code, local area code and the phone number, e.g. for a USA phone number: 9 001 800 555 1234
- **To access another handset, a local extension:** Dial using prefix “ \* “ followed by the handset extension, e.g. \* 6001
- **To access the 2-wire POTS analog handset (if installed) on the FXS interface:** Dial \* 603 (pre-assigned extension)

#### C. USB

The ARINCDirect Xplore customers, operators can download System Log files or upload “content” data to the Xplore unit’s integrated SAMBA fileserver, to and from the customer’s network client devices via either of the two USB ports located on front of the Xplore unit.

#### D. System Reset

The ARINCDirect Xplore unit provides access to a recessed system Reset button through the rear panel. This Reset button initiates a load of the pre-stored, “Factory backup” software to the Telephony unit.

### 3.2 Network (WAN) side Interfaces

This section describes the WAN side network interfaces of the ARINCDirect Xplore system.

#### A. Iridium

One Iridium satellite network interface is provided via a TNC-M connector (IRD). The ARINCDirect Xplore uses this single port for both of its internal Iridium 9523 LBT Modems. This port is connected to an Iridium approved, FAA TSOed Iridium antenna mounted outside on the top side of the aircraft fuselage using a low loss RF co-axial cable.

### B. GPS

One GPS satellite network interface is provided via a SMA-RP M connector (GPS). This port is connected to a FAA TSOed GPS antenna mounted outside on the top side of the aircraft fuselage using a low loss RF co-axial cable.

**Note:** The customer may also choose to use a single, combined, FAA TSOed Iridium-GPS antenna instead of two separated antennas.

### C. Ethernet WAN [selectable optional]

Two Ethernet WAN interfaces are provided via the 41-pin circular connector, J3 (WAN). To operate via these interfaces, at least one of these interfaces must be connected to the LAN Ethernet ports of an installed Inmarsat Satcom system and the "Inmarsat" Satellite Link option must be selected on the Xplore system's Admin page to enable this interface.

### D. RS-232 Data [selectable optional]

One RS-232 Serial interface is provided via the 41-pin circular connector, J2 (LAN). To operate via this interface, it must be connected to the Data port of an existing installed Iridium system and "External Iridium" Satellite Link option must be selected on the Xplore system's Admin page to enable this interface.

The ARINCDirect Xplore RS-232 connection settings are:

- Bits per second: 19200
- Data bits: 8
- Parity: None
- Stop bits: 1
- Flow control: None

### E. FXO [optional]

The ARINCDirect Xplore system can support voice services via 2-wire POTS FXO interface provided via the 41-pin circular connector, J2 (LAN). To communicate via this output, it must be connected to the FXS input of existing (other) installed Iridium or Inmarsat Satcom system. [Optional]

#### **Notes:**

1. When this FXO interface is active, the user's will need to use prefix "8 " in the dial string to have the Xplore unit route the call via this FXO interface.
2. Moreover, there may be additional Dial Rule requirement to route the call via the other existing Satcom system, in order to access the intended international phone number. For example, to connect to a USA phone number, the user will need to dial: **8** (plus other Satcom system's Dial Rule prefix) 001 800 555 1234.

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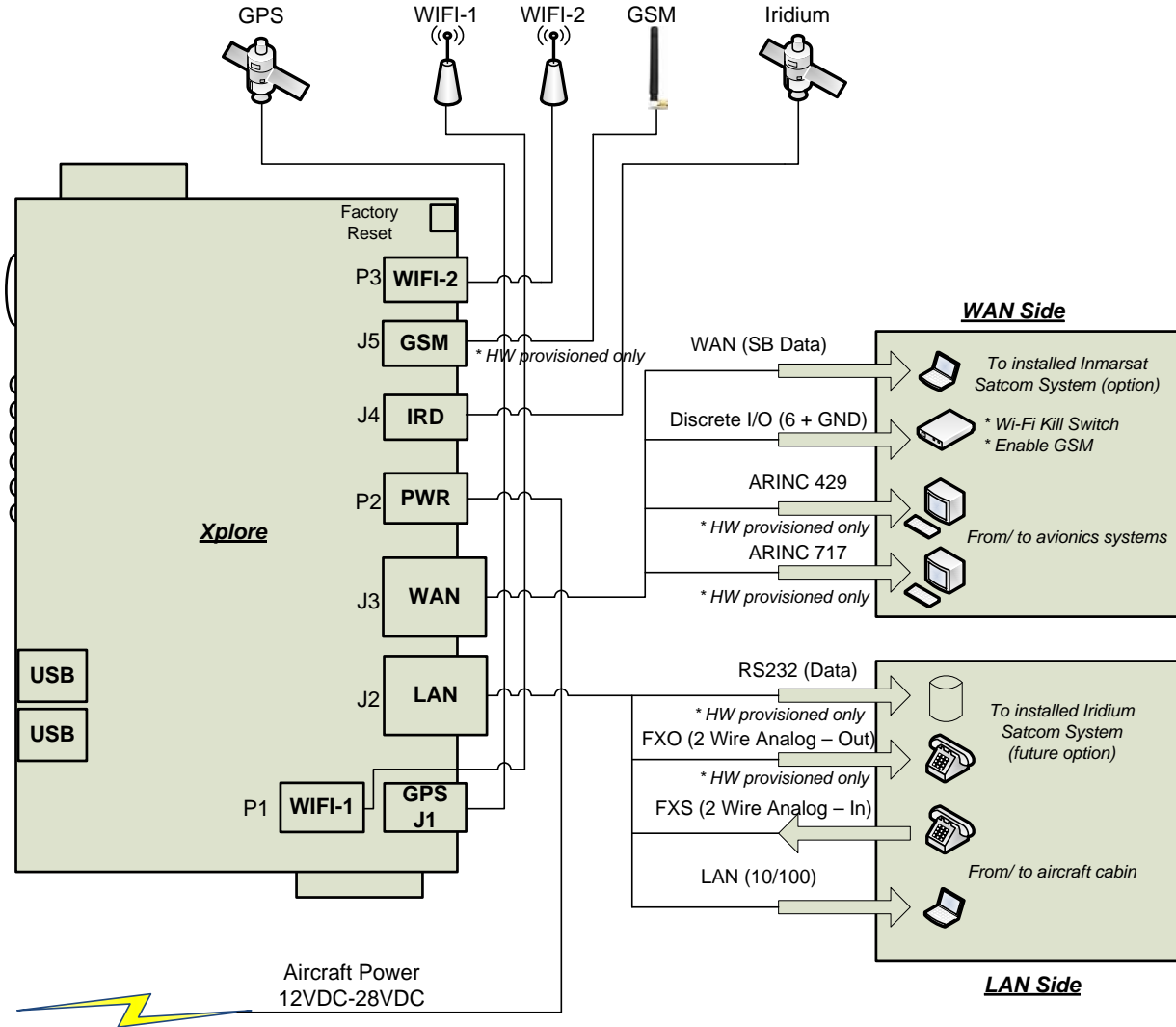


Figure 2. ARINCDirect Xplore System Interfaces

## 4.0 Pre-Installation Preparations

This section presents guidelines and steps leading to a successful installation of the ARINCDirect Xplore system on an aircraft:

- Advisories
- Pre-Installation Inspection
- Mechanical Installation
- Electrical Installation
- Installation and Engineering Diagrams

### 4.1 *Safety Advisories*

Before performing any installation procedures, please read the following safety advisories.

Warnings, Cautions, and Notes in this manual provide the reader with the following information:

- A **WARNING** describes an operation, procedure, or condition that, if not obeyed, could cause injury or death.
- A **CAUTION** describes an operation, procedure, or condition that, if not obeyed, could cause damage to the equipment.
- A **NOTE** provides supplementary information or explanatory text that makes it easier to understand and perform procedures.

All personnel who install, operate, and maintain the ARINCDirect Xplore system and associated test equipment must know and obey the safety precautions listed below. The procedures provided in this manual assume that the person performing installation or maintenance tasks is familiar with and obeys standard aviation shop and safety practices.

The general safety advisories include the following:

**WARNING:** SERVICE PERSONNEL MUST OBEY STANDARD SAFETY PRECAUTIONS, SUCH AS WEARING SAFETY GLASSES, TO PREVENT PERSONAL INJURY WHILE INSTALLING OR PERFORMING SERVICE ON THIS EQUIPMENT.

**CAUTION:** Turn off power before disconnecting or connecting the ARINCDirect Xplore unit to any power wiring, otherwise the unit may be damaged by resulting voltage transients.



**CAUTION:** ARINCDirect Xplore unit includes electronic components that are Electro Static Discharge Sensitive (ESDS). ESDS devices are subject to damage by excessive levels of voltage and/ or current. To adequately protect ESDS devices they must be brought to Ground potential by providing a conductive

surface and adequate discharge paths. Use of standard industry precautions is highly recommended to avoid risk of damage to the system when touching, removing or servicing the equipment.

**CAUTION:** Do not activate any voice or data application on the ARINCDirect Xplore system, which may initiate an Iridium satellite communication link - without first ensuring that the unit is either: connected to an Iridium antenna, or a 50 ohm “dummy load, RF terminator” is attached to the IRD connector interface of the Xplore unit. Doing so otherwise may cause damage to one or both Iridium LBTs in the ARINCDirect Xplore unit.

**CAUTION:** The ARINCDirect Xplore contains a Wi-Fi radio transceiver that conforms to IEEE 802.11n standards. Do not use this unit where such equipment may create interference with other equipment.

### ***4.2 Xplore Equipment Inspection Checklist***

Before installing an ARINCDirect Xplore unit, inspect all parts to make sure that there is no visible damage to the equipment.

- Unpack the ARINCDirect Xplore unit from the shipping container(s). It is recommended not to discard the special, secure shipping containers as they may re-used in case the Xplore equipment has to be returned to the supplier for repair or updates.
- Verify that the part number displayed on the shipping box and on the ARINCDirect Xplore system component matches the model and part number ordered. If any components are missing from the shipment, contact the supplier or ARINCDirect Product Support immediately and report the problem.
- Visually inspect all equipment components to ensure that there is visible damage to the equipment. If any damage has occurred as a result of packaging or shipping, contact the shipping carrier immediately and also report the problem to ARINCDirect.
- Check the ARINCDirect Xplore unit connectors for deformation or damage. If damage is noted, do not apply power to the Xplore. Contact the supplier or ARINCDirect Product Support immediately to report the problem.



## 5.0 Xplore System Installation

This section contains the information required for the physical placement and installation of the ARINCDirect Xplore system. The outline drawings in Section 10.0 of this document illustrate the physical and mechanical specifications of the ARINCDirect Xplore unit.

### 5.1 *Physical Placement*

This section provides information and procedures for installing the ARINCDirect Xplore unit.

- A. The ARINCDirect Xplore unit must be located in a space which will provide at least the minimum clearance necessary to access and secure the mounting bolts onto the right-angled brackets attached to either side of the unit for flange mounting, using standard hand tools, such as a mechanical torque wrench.
- B. The ARINCDirect Xplore unit must be mounted, i.e. secured to the aircraft frame using right angled mounting brackets on either side of the unit. One set of the right-angled mounting brackets, along with the M8-1.25x10mm bolts required to attach the bracket to the unit, will be provided with the Xplore unit.

This will enable the unit to be mounted “normal side up”, i.e. with the ARINC logo on the top of the unit visible, in any orientation. That is, on the bottom (“floor”) of the space, or on the side walls, or even on the ceiling (with the unit essentially up-side-down).

- C. The recommended size of the mounting bolts for the flanges attaching the unit to the airframe is M6. The installer may select the specific bolt appropriate for the selected mounting surface. The selected bolt hardware and mounting scheme must adhere to applicable National Aerospace Specifications (NAS) or Military Specifications (Mil-Spec) standards. The mounting bolts must be tightened per the standardized torque specification for the specific bolt used in the installation.
- D. The ARINCDirect Xplore unit is cooled by its internal fan and does not require any externally applied forced air cooling, as long as it is not located in any sealed, “air-tight” compartment or enclosed housing.

### 5.2 *Climate Controlled Environment requirements*

The ARINCDirect Xplore system has been airworthiness qualified and has been tested to meet DO-160G Environmental Conditions and Test Procedures applicable for equipment installed and operated in a pressurized and climate-controlled zone on an aircraft, and thus it must be installed in a location that meets these conditions.

### 5.3 *Chassis Grounding*

It is highly recommended that the Xplore be electrically bonded to the airframe. The mating surfaces must be free from contaminants such as paints or other non-conductive elements. Where surface preparations are inadequate to ensure a proper bond, the use of a short, tin-coated, copper bonding strap of at least 6.35 mm (0.25 in.) in width is recommended be used at the Xplore unit mounting brackets.

In case the Xplore unit is installed on a non-metallic (non-conductive) surface, the installation must ensure that the Chassis Ground/ Return (on Pin 2) wire of the Power Cable is securely attached to a clean, metallic (conducting) airframe surface at the nearest possible location to the installed Xplore unit. The measured resistance between the ground surface and the Chassis Ground/ Return wire must not exceed 2.50 milliohm (0.0025 Ohm).

## **6.0 Electrical Wiring and Cable Installation**

This section provides electrical wiring and cable installation details for the ARINCDirect Xplore system.

### **6.1 General Cabling Considerations**

Communications network cabling may be installed under floors, in ceilings, and around dividers and other obstacles. However, when installing network cabling, care must be taken to avoid interference and problems caused by cable losses by adhering to industry standard best practices for network wiring, for example, considering the following:

- Install cables away from power outlets, uninterruptible power supplies, and sources of strong electromagnetic interference.
- Do not coil up the cables. Coiled cables may cause interference.
- When the Ethernet cabling is used, each cable should not exceed 325 feet in length (PC to Switch connection).
- Use Shielded Twisted-Pair wiring for all balanced connections, i.e. Ethernet and RS-232 Serial communications.
- All wires and cable jackets used to interface to the Xplore system must be compliant with the NAS or Mil-Spec. flammability and environmental standards applicable for on aircraft applications.

### **6.2 Systems Interface Wiring Specifications**

The ARINCDirect Xplore unit provides connectivity to communication ports on the LAN, to maintenance ports and to other avionics and Satcom systems interfaces via its two (2) Amphenol MIL –DTL-38999 Series I, Size 21 shell, 41-Pin circular connectors at the back of the unit. The unit receives Power via its Size 6 shell, 3-Pin Hirose Push Pull circular connector. Table 4 shows the types of connectors and the size and number of pins in each connector.

<b>Table 3. Xplore Connectors</b>		
<b>Location</b>	<b>Connector Type</b>	<b>Pins/ Wire</b>
(P2) Rear	Amphenol MIL –DTL-38999 Series I, Size 21, 41-Pin Circular	22 AWG
(P3) Rear	Amphenol MIL –DTL-38999 Series I, Size 21, 41-Pin Circular	22 AWG
(P4) Rear	Hirose Push Pull – HR30 Series, Size 6, 3-Pin Circular	20 AWG

Note:

1. If either of the two (LAN or WAN) circular connectors, on the Xplore unit, are to be wired for on aircraft installation, then the external circular mating connectors must be fitted with the applicable “Straight RFI/EMI Shield-Sock Shrink Boot Back shell and String relief Adapter kits” and all the individual interface wiring bundles must also be shielded end-to-end and have their outer shells connected to the Chassis Grounds at both ends.

## 6.3 Power Requirements

The Xplore uses onboard aircraft 12 VDC or 28 VDC power source, via the power input connector labeled 'PWR' on the back panel of the Xplore. ARINCDirect recommends using 20 AWG rated for a maximum of 2.3 amps for power interconnection.

## 6.4 Iridium and GPS Antenna and Cable Installation

For optimum performance, the Iridium antenna must be installed on the upper surface of the aircraft fuselage, with an unrestricted view of the sky down to eight degrees above the horizon. Transmission from the antenna may be affected by and can affect the operation of other systems and it is the installer's responsibility to evaluate the location for any possible RF interference. The Iridium frequency is near the allocated GPS and Inmarsat band. The antenna should be at least 35 inches (or 1 meter) from any L-band antennas, particularly another, separate stand-alone GPS antenna. The customer may choose from any of the Iridium certified and FAA TSOed, **Iridium/ GPS antennas** to use with the ARINCDirect Xplore system.

Strict maximum attenuation requirements for the coax cable and connectors that link the Iridium/ GPS antenna to the ARINCDirect Xplore Unit must be observed.

The following **cables and terminations** are recommended for ARINCDirect Xplore unit's **RF interfaces**:

- GPS:
  - LMR-240 or comparable low loss coaxial cable, ARINCDirect Xplore unit end terminating connector SMA (M).
  - The GPS signal loss budget, including the antenna cable and all connectors from the antenna to the ARINCDirect Xplore unit must be < 10.0dB @1576MHz.
- IRD (Iridium):
  - LMR-240 or comparable low loss coaxial cable, ARINCDirect Xplore end terminating connector TNC /M
  - The Iridium signal loss budget, including the antenna cable and all connectors from the antenna to the ARINCDirect Xplore unit must be < 3.0dB @1621MHz.

Possible **dual mode Iridium-GPS antenna** selections may include:

- **Sensor Systems:** S67-1575-165 dual element Iridium - GPS antenna
- **Antcom:** 5GIR1516RR-A2P-XTT-1, L1 GPS and Iridium Antenna

## 6.5 Wi-Fi Antenna and Cable Installation

The following antennas have been demonstrated as being compatible with ARINCDirect Xplore and will be provided with the ARINCDirect Xplore units:

- **Wi-Fi (x2):**
  - Model Name:** Wireless 5DBI Dual Band Rubber Antennae to RP-SMA
  - Part Number:** WAND5DBI-SMA (OxfordTec) or equivalent

### Notes:

- The customer may also choose alternative Wi-Fi Antennae as long as they pass the Installation Verification Checklist presented in this document.

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- The customer may also opt to use remote stand-alone Wi-Fi antennas using extension cable to connect to the Xplore unit. The following is a possible selection of the interface cable.
  - LMR-240 or comparable low loss coaxial cable, with ARINCDirect Xplore unit end terminating connectors - RP SMA (M)

## 7.0 Xplore Unit External Mating Connector Information

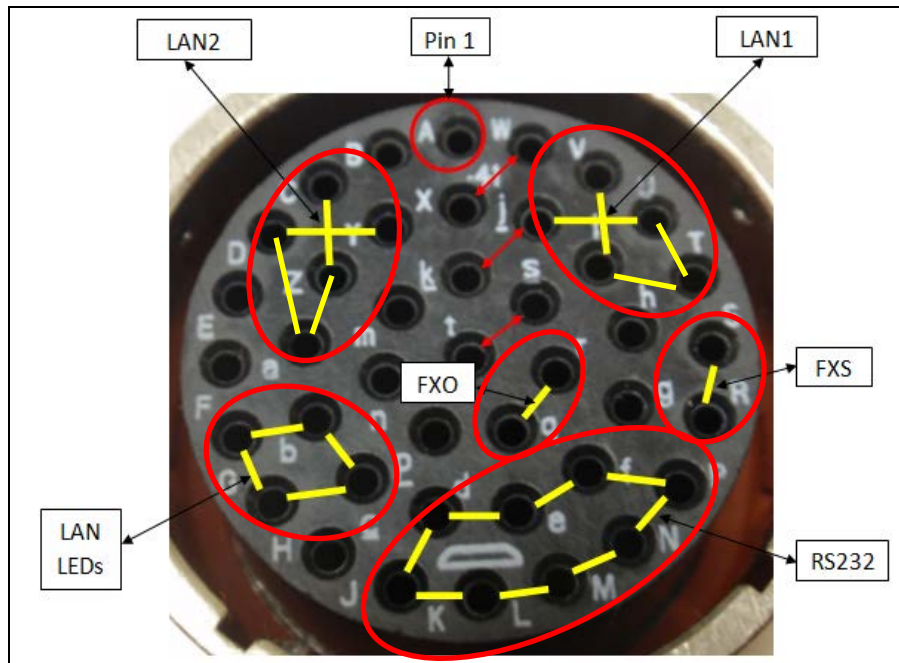
There are two (2) Amphenol MIL –DTL-38999 Series I 41-pin circular connectors, (J2 - LAN & J3 - WAN) at the rear of the Xplore. The mating circular connectors for these interfaces are as follows:

- J2 (LAN): **MS27467T21F41P**
- J3 (WAN): **MS27467T21F41PA**

Need to use applicable “**Straight RFI/EMI Shield-Sock Shrink Boot Back Shell**” adapter kits with the above external circular mating connectors. Example: Glenair **AS85049/49** or its replacement.

There is one Hirose Circular Push Pull 3-pin connector (P2 - PWR) on the rear panel of the Xplore. The mating circular connector for this interface is: P2 (PWR): LF07-WBR-3S

### 7.1 J2 (LAN) Connector Pins Signals Description



**Table 4. J2 (LAN) 41 - Pin Connection Details**

I/O	Interface	Signal Name
A	N/C	N/C
B	N/C	N/C
C	LAN2	TX+
D	LAN2	RX-
E	N/C	N/C
F	N/C	N/C
G	LAN1 LED	Link
H	LAN1 LED	+3.3VIOsw

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<b>Table 4. J2 (LAN) 41 - Pin Connection Details</b>		
<b>I/O</b>	<b>Interface</b>	<b>Signal Name</b>
J	RS-232	DTR
K	RS-232	RTS
L	RS-232	TXD
M	RS-232	RXD
N	RS-232	CD
P	RS-232	DSR
R	FXS	RING
S	FXS	TIP
T	LAN1	GND(A)
U	LAN1	RX+
V	LAN1	TX+
W	N/C	N/C
X	N/C	N/C
Y	LAN2	RX+
Z	LAN2	TX-
a	LAN2	GND(A)
b	LAN2 LED	+3.3VIOsw
c	LAN2 LED	Link
d	RS-232	GND
e	RS-232	CTS
f	RS-232	RI
g	N/C	N/C
h	N/C	N/C
i	LAN1	TX-
j	LAN1	RX-
k	N/C	N/C
m	N/C	N/C
n	N/C	N/C
p	N/C	N/C
q	FXO	RING
r	FXO	TIP
s	N/C	N/C
t	N/C	N/C

7.2 J2 (LAN) Connector - External Interfaces

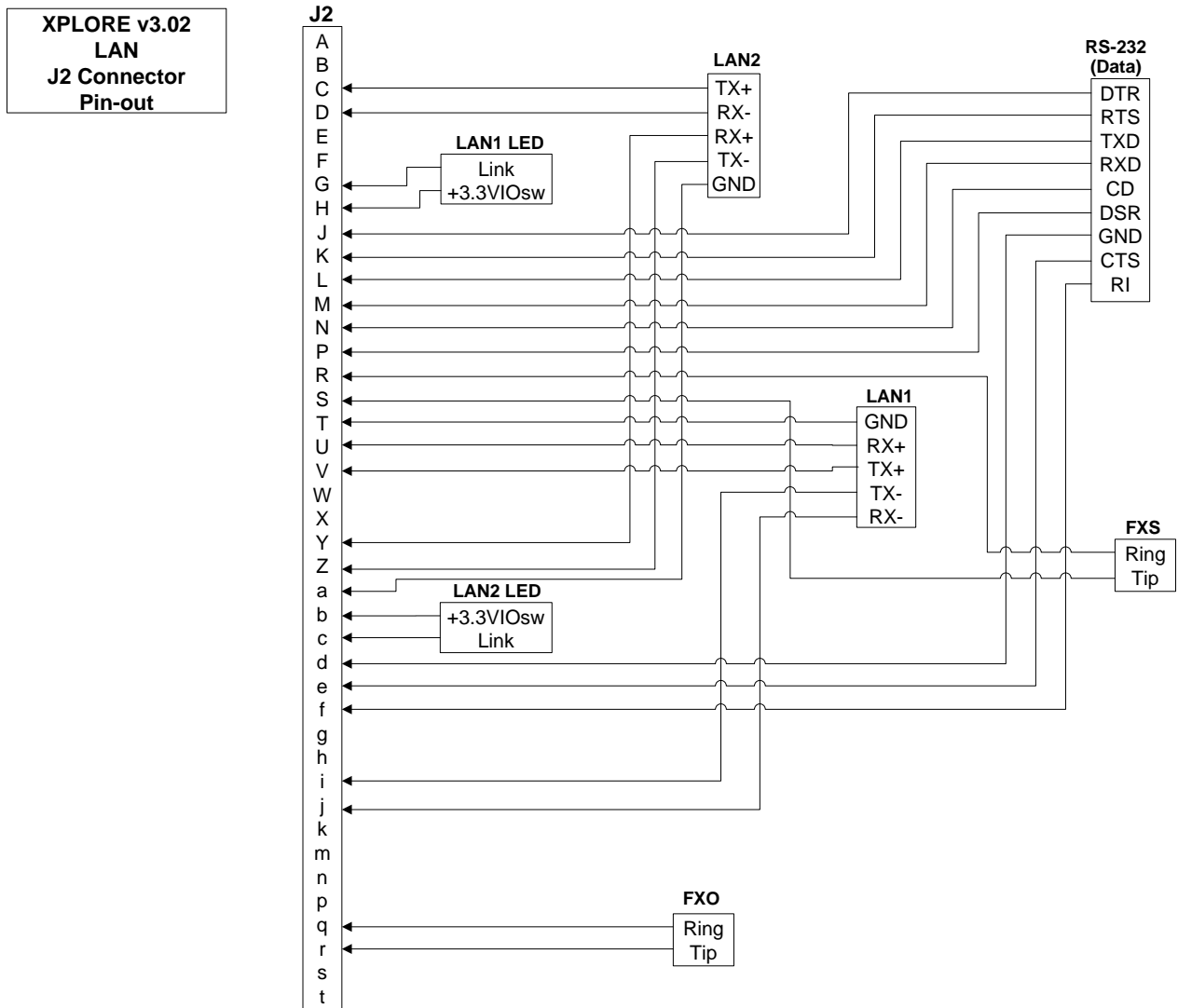
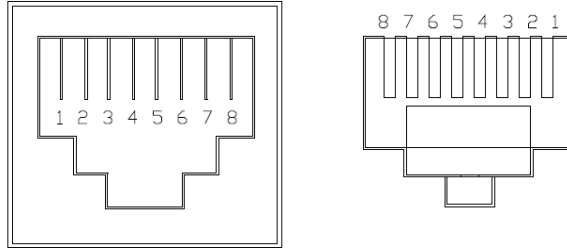


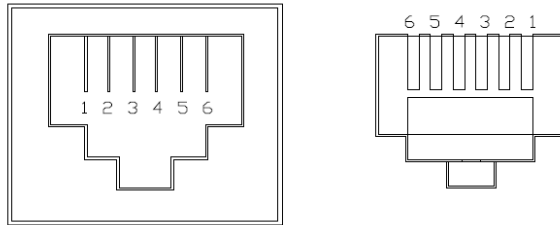
Figure 3. J2 (LAN), 41 - Pin Circular Connector Wire Diagram

**Notes:**

1. **TP#** - Stands for Twisted Pair and references the wire pairs that are to be twisted together. For example, the matching TP1's are twisted together.
2. **N/C** stands for **No Connect**.
3. **C/S** stands for **Capped & Stowed**
4. When wiring the LEDS, Cathode =LAN1/2 (Link) & Anode = LAN1/2 +3.3VIOsw.
5. **RJ-45** connectors are used by Ethernet adaptors. The RJ-45 connector socket and plug with pin numbering is shown below. The installation of RJ-45 connectors for Ethernet devices in appropriate places in the aircraft is recommended.



6. RJ-11 connectors are used by 2-wire phone devices. The RJ-11 connector Jack and Plug with pin numbering is shown below. One RJ-11 Jack should be located at some location in the cabin for installation and easy access to the 2-wire POTS analogue phone.



**Figure 4. RJ-11 Jack and Plug**

7. The following are the color codes for all abbreviations:

Color Guide Description	
B/W	Blue/White
Bl	Blue
OW	Orange/White
O	Orange
GW	Green/White
G	Green
BrW	Brown/White



### 7.3 J2 (LAN) Connector - External Cable Harness Definition

**Table 5. J2 (LAN) Detailed External Cable Harness Wiring Definition**

Cir. Conn.	Description	Wire Gauge	Wire Pairs	Wire Color	A/C Panel Mount Connector Signal	A/C Panel Mount Connector Pin #	To
A	N/C	-	-	-	-	-	-
B	N/C	-	-	-	-	-	-
C	LAN2 TX+	22 AWG	TP3	GW	LAN-2 TX+	RJ-45 Jack Pin 3	LAN Client RX+
D	LAN2 RX-	22 AWG	TP4	O	LAN-2 RX-	RJ-45 Jack Pin 2	LAN Client TX-
E	N/C	-	-	-	-	-	-
F	N/C	-	-	-	-	-	-
G	LAN1 Link LED	22 AWG	-	O	LAN-1 Link	(See Note 5)	Cathode (-) LED
H	LAN1 +3.3VIOsw	22 AWG	-	BrW	LAN-1 3.3VIOsw	(See Note 5)	Anode (+) LED
J	RS-232 DTR	22 AWG	-	BIW	RS-232 DTR	DB-9 Pin 4	RS-232 Client DSR
K	RS-232 RTS	22 AWG	-	BI	RS-232 RTS	DB-9 Pin 7	RS-232 Client CTS
L	RS-232 TXD	22 AWG	-	OW	RS-232 TXD	DB-9 Pin 3	RS-232 Client RXD
M	RS-232 RXD	22 AWG	-	O	RS-232 RXD	DB-9 Pin 2	RS-232 Client TXD
N	RS-232 CD	22 AWG	-	GW	RS-232 DCD	DB-9 Pin 1	RS-232 Client DTR
P	RS-232 DSR	22 AWG	-	G	RS-232 DSR	DB-9 Pin 6	RS-232 Client DTR
R	FXS RING	22 AWG	TP6	GW	Ring	RJ-11 Jack Pin3	Analog Phone
S	FXS TIP	22 AWG	TP6	G	Tip	RJ-11 Jack Pin 4	Analog Phone
T	LAN1 GND	22 AWG	-	BI	LAN 1 GND	RJ-45 Jack -	LAN Client GND
U	LAN1 RX+	22 AWG	TP1	OW	LAN 1 RX+	RJ-45 Jack	LAN Client TX+
V	LAN1 TX+	22 AWG	TP2	GW	LAN 1 TX+	RJ-45 Jack Pin 3	LAN Client RX+
W	N/C	-	-	-	-	-	-
X	N/C	-	-	-	-	-	-
Y	LAN2 RX+	22 AWG	TP4	OW	LAN 2 RX+	RJ-45 Jack Pin 1	LAN Client TX+
Z	LAN2 TX-	22 AWG	TP3	G	LAN 2 TX-	RJ-45 Jack Pin 6	LAN Client RX-
a	LAN2 GND	22 AWG	-	BI	LAN 2 GND	-	LAN Client GND
b	LAN2 +3.3VIOsw	22 AWG	-	BrW	LAN 2 3.3VIOsw	(See Note 5)	Anode (-) LED
c	LAN2 Link LED	22 AWG	-	G	LAN 2 Link LED	(See Note 5)	Cathode (-) LED
d	RS-232 GND	22 AWG	-	BI	RS-232 GND	DB-9 Pin 5	RS-232 Client GND
e	RS-232 CTS	22 AWG	-	Br	RS-232 CTS	DB-9 Pin 8	RS-232 Client RTS
f	RS-232 RI	22 AWG	-	BrW	RS-232 RI	DB-9 Pin 9	-
g	N/C	-	-	-	-	-	-
h	N/C	-	-	-	-	-	-

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**Table 5. J2 (LAN) Detailed External Cable Harness Wiring Definition**

Cir. Conn.	Description	Wire Gauge	Wire Pairs	Wire Color	A/C Panel Mount Connector Signal	A/C Panel Mount Connector Pin #	To
i	LAN1 TX-	22 AWG	TP2	G	LAN 1 TX-	RJ-45 Jack Pin 6	LAN Client RX-
j	LAN1 RX-	22 AWG	TP1	O	LAN 1 RX-	RJ-45 Jack Pin 2	LAN Client TX-
k	N/C	-	-	-	-	-	-
m	N/C	-	-	-	-	-	-
n	N/C	-	-	-	-	-	-
p	N/C	-	-	-	-	-	-
q	FXO RING	22 AWG	TP5	O	RING	RJ-11 Plug Pin 3	Iridium Analog Input
r	FXO TIP	22 AWG	TP5	OW	Tip	RJ-11 Plug Pin 4	Iridium Analog Input
s	N/C	-	-	-	-	-	-
t	N/C	-	-	-	-	-	-

7.4 J3 (WAN) Connector Pins Signals Description

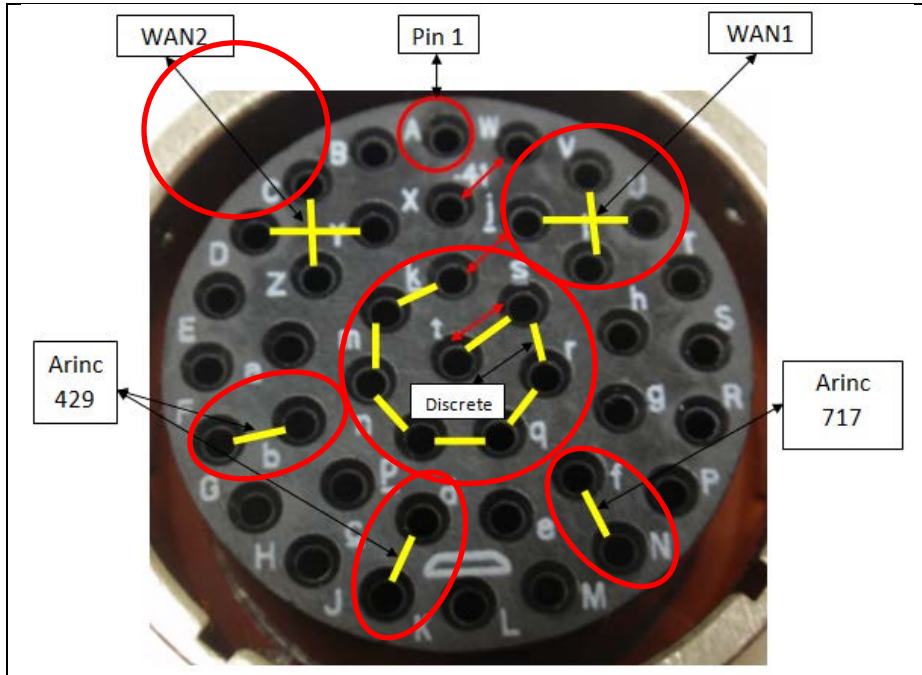


Table 6. J3 (WAN) 41 - Pin Connection Details

Pin	Interface Name	Signal Name
A	N/C	N/C
B	N/C	N/C
C	WAN2	TD+
D	WAN2	RD-
E	N/C	N/C
F	N/C	N/C
G	ARINC 429	RIN1B-40
H	N/C	N/C
J	N/C	N/C
K	ARINC 429	RIN2B-40
L	N/C	N/C
M	N/C	N/C
N	ARINC 717	RINB-40
P	N/C	N/C
R	N/C	N/C
S	N/C	N/C
T	N/C	N/C

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<b>Table 6. J3 (WAN) 41 - Pin Connection Details</b>		
<b>Pin</b>	<b>Interface Name</b>	<b>Signal Name</b>
U	WAN1	RX+
V	WAN1	TX+
W	N/C	N/C
X	N/C	N/C
Y	WAN2	RD+
Z	WAN2	TD-
a	N/C	N/C
b	ARINC 429	RIN1A-40
c	N/C	N/C
d	ARINC 429	RIN2A-40
e	N/C	N/C
f	ARINC 717	RINA-40
g	N/C	N/C
h	N/C	N/C
i	WAN1	TX-
j	WAN1	RX-
k	Discrete I/O	CON D-INO
m	Discrete I/O	CON D-IN1
n	Discrete I/O	CON D-OUT0
p	Discrete I/O	CON D-OUT1
q	Discrete I/O	CON D-OUT2
r	Discrete I/O	CON D-OUT3
s	Discrete I/O	CON D-GND
t	Discrete I/O	CON D-3V3

7.5 J3 (WAN) Connector - External Interfaces

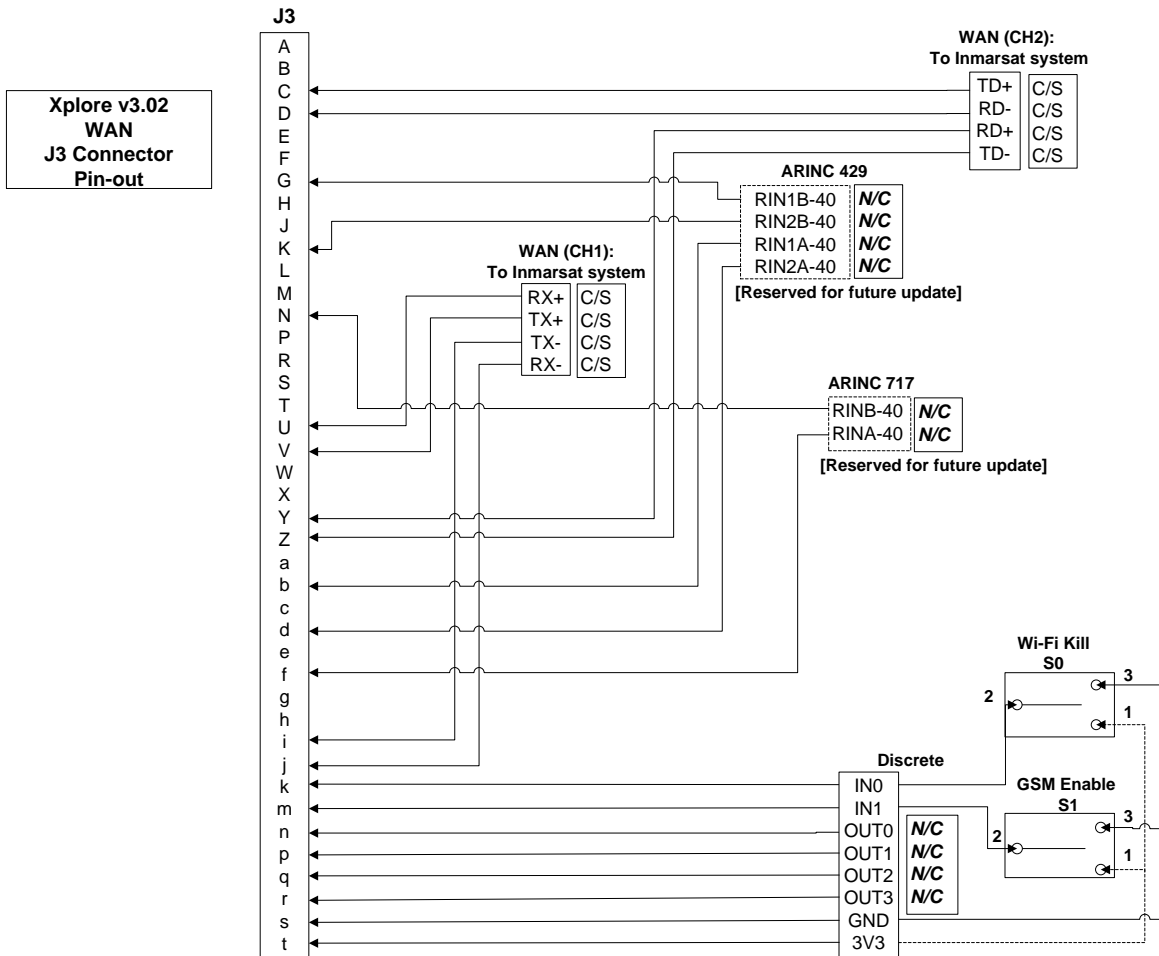


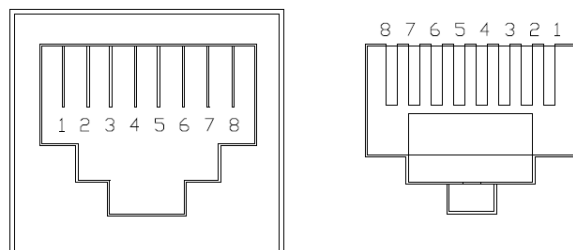
Figure 5. J3 (WAN) Connector External Interfaces

Notes:

1. **N/C: No Connect** (i.e. Not wired - interface reserved for future product updates)
2. **C/S: Capped & Stowed** (i.e. interface is optional - may be used if the Xplore unit will be interfacing with other Satcom system installed onboard aircraft)
3. For the Wi-Fi Kill switch (S0) and the GSM Enable switch (S1), (pin s) is the common (shared) D-GND.
4. For the Wi-Fi Kill switch (S0) and the GSM Enable switch (S1), (pin t) is the common (shared) D-3V3.

Note the two Discrete Inputs to the Xplore unit (Wi-Fi Kill: pin k and GSM Enable: pin m) will both have internal "pull up" circuits for the "Normal" state. The use of a SPDT switch to connect to the Xplore unit's 3VDC for the "Normal" state is recommended, but not required. The customer may select to use a SPST switch to have the Discrete Input be (externally) Normally OPEN and connect to the common GND to change state of the function.

5. The RJ-45 connector jack and plug pin numbering are shown below. The RJ-45 Jacks may be mounted in the cabin area at location(s) that would enable the customers to conveniently connect their network devices to the Xplore unit using standard CAT-5 Ethernet cables.
6. **TP#:** Twisted Pair and references the wire pairs that are to be twisted together. For example, the matching TP1's are twisted together.



**Figure 6. RJ-45 Jack and Plug**

7. The following are the color codes for all abbreviations:

Color Code	
B/W	Blue/White
Bl	Blue
OW	Orange/White
O	Orange
GW	Green/White
G	Green
BrW	Brown/White
Br	Brown

### 7.6 J3 (WAN) Connector - External Cable Harness Definition

**Table 7. J3 (WAN) Detailed External Wiring Harness Definition**

Cir. Conn. WAN (P3)	Description	Wire Gauge	Wire Pairs	Wire color	A/C Panel Mount Connector Signal	A/C Panel Mount Connector/ Pin #	To
A	N/C	-	-	-	-	-	-
B	N/C	-	-	-	-	-	-
C	WAN2 TD+	22 AWG	TP10	GW	WAN2 RD	TBD	Inmarsat system
D	WAN2 RD-	22 AWG	TP9	O	WAN2 TD	TBD	Inmarsat system
E	N/C	-	-	-	-	-	-
F	N/C	-	-	-	-	-	-
G	ARINC 429 RIN1B-40	22 AWG	TP11	G	ARINC 429 RIN1B-40	N/C	Reserved for future use.
H	N/C	-	-	-	-	-	-
J	N/C	-	-	-	-	-	-
K	ARINC 429 RIN2B-40	22 AWG	TP12	O	ARINC 429 RIN2B-40	N/C	Reserved for future use.
L	N/C	-	-	-	-	-	-
M	N/C	-	-	-	-	-	-
N	ARINC 717 RINB-40	22 AWG	TP14	G	ARINC 717 RINB-40	N/C	Reserved for future use.
P	N/C	-	-	-	-	-	-
R	N/C	-	-	-	-	-	-

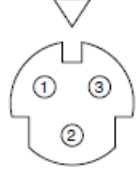
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**Table 7. J3 (WAN) Detailed External Wiring Harness Definition**

Cir. Conn. WAN (P3)	Description	Wire Gauge	Wire Pairs	Wire color	A/C Panel Mount Connector Signal	A/C Panel Mount Connector/ Pin #	To
S	N/C	-	-	-	-	-	-
T	N/C	-	-	-	-	-	-
U	WAN1 RX+	22 AWG	TP7	OW	WAN1 RX	TBD	Inmarsat WAN1TX+
V	WAN1 TX+	22 AWG	TP8	GW	WAN1 TX	TBD	Inmarsat WAN1 RX+
W	N/C	-	-	-	-	-	-
X	N/C	-	-	-	-	-	-
Y	WAN2 RD+	22 AWG	TP9	OW	WAN2 RD	TBD	Inmarsat WAN2 TD+
Z	WAN2 TD-	22 AWG	TP10	G	WAN2 TD	TBD	Inmarsat WAN2 RD-
a	N/C	-	-	-	-	-	-
b	ARINC 429 RIN1A-40	22 AWG	TP11	GW	ARINC 429 RIN1A-40	N/C	Reserved for future use.
c	N/C	-	-	-	-	-	-
d	ARINC 429 RIN2A-40	22 AWG	TP12	OW	N/A	N/A	Reserved for future use.
e	N/C	-	-	-	-	-	-
f	ARINC 717 RINA-40	22 AWG	TP14	GW	ARINC 717 RINA-40	N/C	Reserved for future use.
g	N/C	-	-	-	-	-	-
h	N/C	-	-	-	-	-	-
i	WAN1 TX-	22 AWG	TP8	G	WAN1 TX	TBD	Inmarsat WAN2 RX-
j	WAN1 RX-	22 AWG	TP7	O	WAN1 RX	TBD	Inmarsat WAN1 TX-
k	D-IN0	22 AWG	-	OW	SPDT Switch	2	Wi-Fi Kill Switch
m	D-IN1	22 AWG	-	O	SPDT Switch	2	GSM Enable Switch
n	D-OUT0	22 AWG	-	GW	N/C	N/C	Reserved Indicator 1
p	D-OUT1	22 AWG	-	G	N/C	N/C	Reserved Indicator 2
q	D-OUT2	22 AWG	-	B/W	N/C	N/C	Reserved Indicator 3
r	D-OUT3	22 AWG	-	Br	N/C	N/C	Reserved Indicator 4
s	D-GND	22 AWG	-	Bl	SPDT Switch	3, 3 (See Note 5)	Switch1 & 2
t	D-3V3	22 AWG	-	BrW	SPDT Switch	1, 1 (See Note 6)	Switch1 & 2

### 7.7 P2: Power Connector Pins Signals Description

Table 8. P2: 3 - Pin Power Connector Details

I/O	Signal Name
	
1	12 or 28 VDC. (Live) (+)
2	Common (Return) (-)
3	Earth Ground (Chassis)

### 7.8 P2 Power Connector - External Interfaces

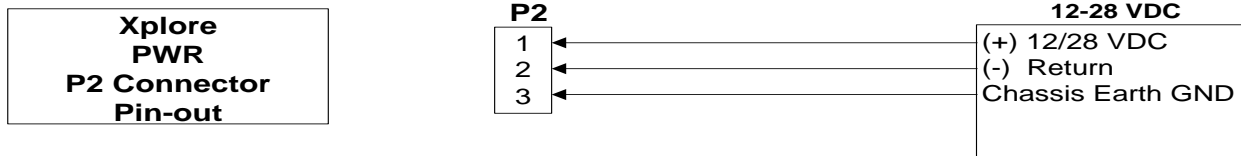


Figure 7. P2 (PWR) Circular Connector Wire Diagram

### 7.9 P2 Power Connector - External Cable Harness Definition

**Note:** The following are the color codes for all abbreviations:

**Color Guide Description**

- W White
- R Red
- Blk Black

Table 9. P2 (PWR) Detailed External Wiring Harness Description				
Cir. Conn.	Description	Wire Gauge	Wire Color	To
1	(+) 12 VDC/28 VDC	20 AWG	R	(+) 12 VDC/28 VDC
2	(-) Return	20 AWG	Blk	(-) Return
3	Chassis Earth Ground	20 AWG	W	Earth Ground



## 8.0 Xplore Unit Mechanical Illustrations

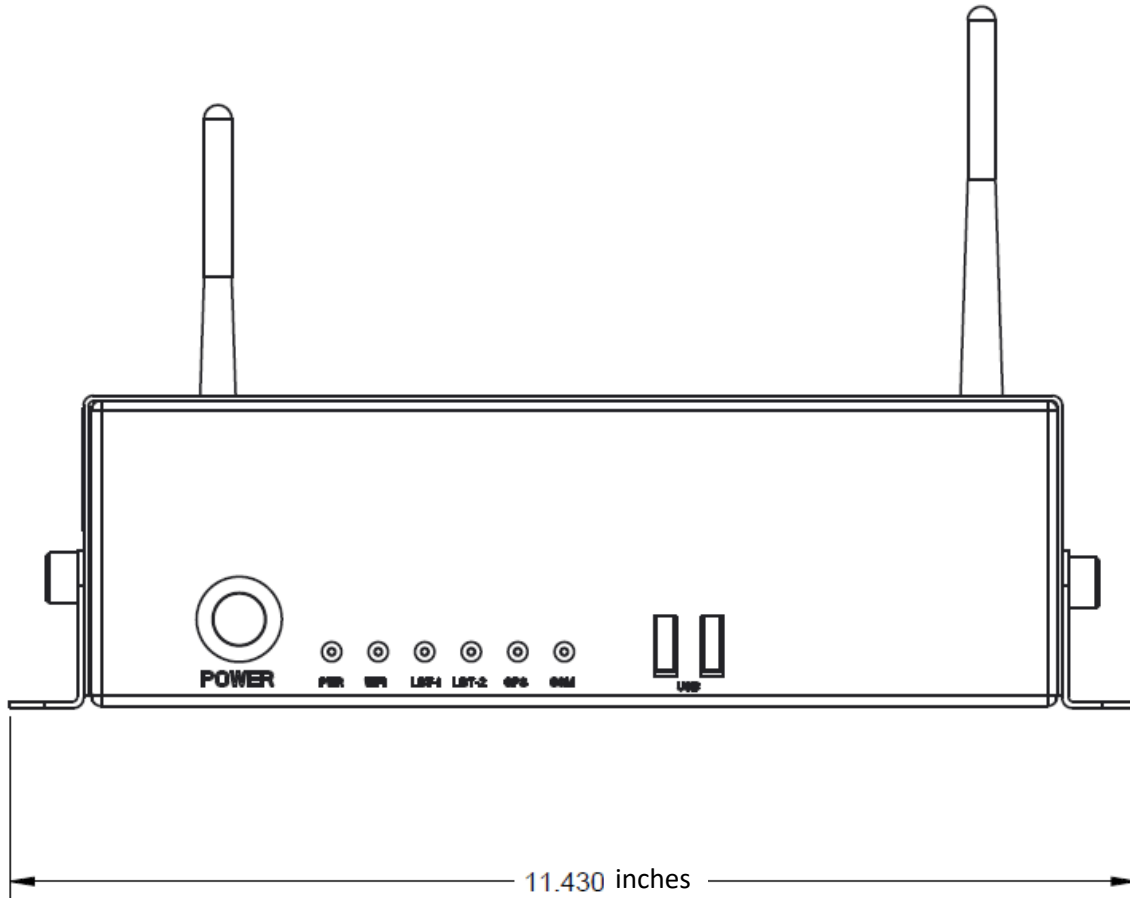
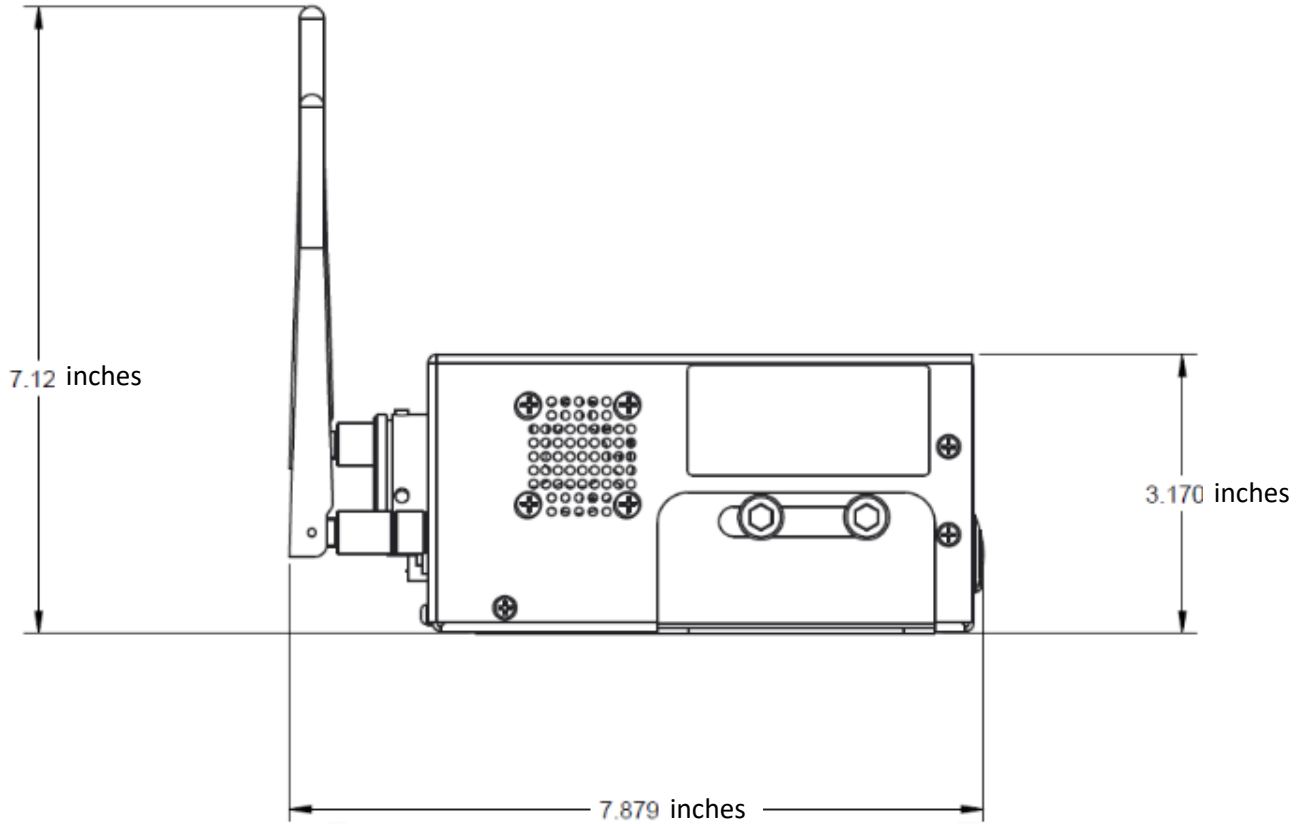


Figure 8. Xplore Unit Front View and Dimension



**Figure 9. Xplore Unit Side View and Dimension**

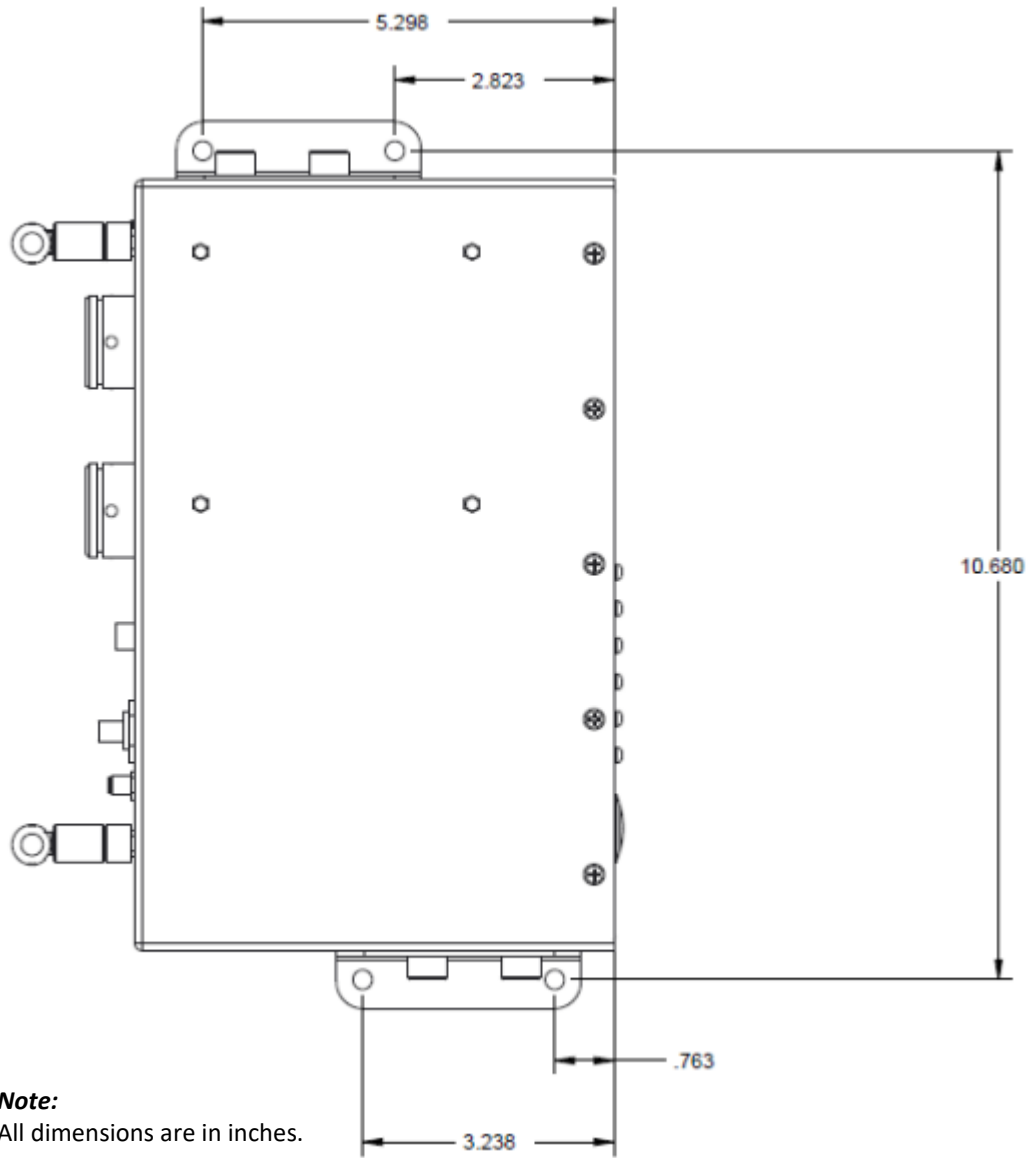


Figure 10. Xplore Unit Top View and Dimension

## 9.0 Test and Fault Isolation

This section provides the information required to determine the operational readiness of the Xplore and aid service personnel in diagnosing system faults, including the following sections:

- Operational and Diagnostic Testing
- Debug and Fault Isolation

### 9.1 *Operational and Diagnostic Testing*

This section includes the following sections:

- LEDs
- Operational Testing
- Connecting to the Maintenance Port Utility
- Software Load Procedures

#### 9.1.1 Xplore System Status Front Panel LEDs

The Xplore provides (5) LEDs on the front panel. The LEDs indicate the system status, as shown in the table below.

<b>Table 10. Front Panel LED Indicators</b>			
<b>LED Name</b>	<b>LED Color</b>	<b>Flashing</b>	<b>Solid</b>
Power	Green/Red	Booting up	N/A
Power	Green	N/A	Boot complete
Wi-Fi	Red	N/A	Wi-Fi Failed
Wi-Fi	Green	Wi-Fi in Use	Wi-Fi Ready
LBT-1	Red	N/A	LBT(1) Failed
LBT-1	Green	Voice or Data (PPP) or SBD service in Progress	LBT(1) Ready
LBT-2	Red	N/A	LBT(2) Failed
LBT-2	Green	Data call in Progress	LBT(2) Ready
GPS	Red	N/A	GPS Failed
GPS	Green	Acquiring Valid GPS	GPS Ready
GSM	Off	N/A	GSM Not Enabled
GSM	Green	Acquiring Valid GSM	GSM Ready

## 10.0 Installation Verification Checklist

Refer to the “Xplore – Users Guide” for more detail on these verification steps.

ID	Xplore Installation Verification Checklist	Pass	Fail
<b>1</b>	<b><i>Before applying power to the Xplore Unit.</i></b>		
1.1	Unpack the unit and verify that the unit was not physically damaged during shipping. Verify all applicable components were shipped with the unit (i.e. two Wi-Fi antennas and mounting brackets).		
1.2	Attach the supplied Wi-Fi Antennas and power source to unit.		
1.3	Attach Iridium and GPS antennas to their respective TNC connectors on the Xplore unit. Ensure the connections are secure.		
1.4	If applicable, attach the respective associated external cables harnesses for J2 (LAN) & J3 (WAN). <b>Note:</b> The installation (wiring) of the external interfaces is an optional selection by the customer. The customer may choose to have both, or only one or neither the two Arinc circular connectors on the Xplore unit.		
<b>2</b>	<b><i>Applying Power to the Xplore</i></b>		
2.1	Apply Power. Verify that the Green/Red Power LED is lit. Wait approx. 3 minutes for the system to fully boot.		
<b>3</b>	<b><i>Attach network client device to Xplore Wi-Fi AP</i></b>		
3.1	Connect a Wi-Fi client (e.g. iPad) to the Xplore unit’s wireless Access Point (AP). Verify that the Wi-Fi client lists the expected ESSIDs (i.e. “xxx-Pax” and “xxx-Crew”) broadcast by the Xplore unit AP. Use provided applicable WPA keys and verify that the client device can register to either of the two Xplore ESSIDs. Verify that the Wi-Fi LED is lit solid Green when the client is registered on either of the Xplore ESSIDs.		
<b>4</b>	<b><i>Verify Access to the Xplore Web Auxiliary GUI – Status Information</i></b>		
4.1	Once connected to the unit, access the Xplore Aux GUI by typing <b><i>auxadmin.sap212.com</i></b> in your browser. <ul style="list-style-type: none"> <li>a. Tap on the <b>View Status</b> option on the menu ribbon to check status (green checkmarks) for:                             <ul style="list-style-type: none"> <li>– <i>Aux Ready</i></li> <li>– <i>Telephony Ready</i></li> <li>– <i>Wi-Fi</i></li> </ul> </li> <li>b. View status of <b>Number of Connected Devices</b> (and their IP and MAC addresses)</li> <li>c. Confirm the above appears the same on the <b>Aux GUI View Status</b> page as it does on the front panel LEDs of the Xplore unit.</li> </ul>		

## Rockwell Collins ARINCDirect Xplore SDIM

ID	Xplore Installation Verification Checklist	Pass	Fail
4.2	<p>Tap <b>View GPS &amp; Iridium LBT Data</b> to check status parameters for the <i>GPS</i> and <i>Iridium Transceivers #1</i> and <i>2</i>.</p> <p>Verify that the Xplore system displays valid GPS coordinates for the location of the system and also valid Iridium Transceiver IMES numbers.</p>		
<b>5</b>	<b>Verify successful transmission of SBD (MO &amp; MT) messages over the Iridium network</b>		
5.1	<p>Select the <b>SBD (MO &amp; MT) Message Test</b> option on the menu ribbon.</p> <ol style="list-style-type: none"> <li>a. "LBT-2" LED comes on a solid green and blinks green as a message is sent and returned.</li> <li>b. The LBT-2 LED should go back to solid green when the SBD message is complete.</li> <li>c. Confirm the above appears the same on the Aux GUI View Status page as it does on the front panel LEDs of the Xplore unit.</li> </ol>		
<b>6</b>	<b>Verify Voice call service over Iridium using ADConnect Soft Phone App.</b>		
6.1	<ol style="list-style-type: none"> <li>a. While still connected to the Xplore WAP, connect to the ARINCDirect softphone app and make an outbound call with a client smart device via the Xplore system's internal PBX.</li> <li>b. On the front of the unit,               <ul style="list-style-type: none"> <li>– During the call, confirm the "LBT-1" LED blinks green.</li> <li>– When the call is complete, confirm the "LBT-1" LED does back to solid green.</li> </ul> </li> <li>c. Verify the above appears the same on the Aux GUI View Status page as it does on the front panel LEDs of the Xplore unit.</li> </ol>		

Aircraft Tail No.: \_\_\_\_\_ XPLORE unit S/n \_\_\_\_\_ TESTED BY: \_\_\_\_\_

### 10.1 Xplore Access Debug and Fault Isolation

This section describes the following sections:

- Equipment Required
- Troubleshooting Options
- System Logs

#### 10.1.1 Equipment Required

The following equipment is required to access and troubleshoot the Xplore system:

- A computer or Laptop PC with Wi-Fi LAN interface and Ethernet ports.

#### 10.1.2 Wi-Fi LAN Interface Troubleshooting Options

##### A. Accessing Xplore unit via Wi-Fi interface

Verify the Xplore units' Wi-Fi interface connectivity:

1. Verify that the Wi-Fi antennas are attached securely to the Xplore unit.
2. Verify that the client device is within the acceptable range of the Xplore AP (no more than 30 to 35 feet max. depending on the signal obstructions).
3. Verify that client device Wi-Fi is supported by the Xplore AP and has the latest updates (IOS, PC and Android).
4. Enter the applicable WPA key for the selected Xplore unit's ESSID.
5. Verify that the client device connecting to the Xplore unit's ESSID and is receiving an IP address (10.10.0.X).
6. Verify that the Wi-Fi LED is displaying the correct color sequence (Solid Green means Wi-Fi is available or Blinking Green means Wi-Fi is in use).
7. If the LED color sequence is incorrect, reboot the unit and wait the 3 minutes for the system to completely boot and repeat the above steps above.
8. Open a browser on the Laptop PC and type in the URL address:  
auxadmin.sap212.com or teladmin.sap212.com to access the Xplore system's status and admin Web GUIs.

**Note:** The default IP address of the Xplore Home page is **auxadmin.sap212.com**.

### **B. In case of Wi-Fi Interface Issues**

If an "Unable to join the Network" error is displayed this could be because it was taking too long for the client device to acquire an IP address from the Xplore unit's AP. Client devices can vary widely in their ability to connect to a Wi-Fi network, some may take quite a bit longer to acquire a DHCP address than others. In such a case, it is recommended to first verify that the Wi-Fi antennas on the Xplore unit are securely attached to the unit and the Xplore system status indicators show valid Wi-Fi function. Once the Xplore unit set up is confirmed, then second, go to the "network settings" on the client device, "forget" the network and try re-acquiring and re-registering with the Xplore unit's Wi-Fi AP.

The issue may also be the result of low Wi-Fi signal coverage at the physical location of the client device. This could be caused by a number of different external conditions, such as: distance from the Xplore unit's Wi-Fi antennas, interference due to physical barriers or other RF transmitting devices (e.g. "rogue" Wi-Fi Apps, active microwave ovens, other Wi-Fi appliances or devices) in the close proximity of the client device. In such conditions it is best if the source of the interference can be identified and removed; otherwise try to access the Xplore unit from a different physical location.

### **C. Accessing Xplore AUX Web GUI or TEL Web GUI via LAN Port**

(Useful when the Xplore system is not accessible via the Wi-Fi interface).

1. Power on and reboot the Xplore unit.
2. Connect an RJ45 straight through cable from a windows enabled Laptop PC. Connecting one end to the laptop and the other to the LAN port provided by LAN interface circular connector at the rear of the Xplore unit.
3. Turn off the Wi-Fi interface on the Laptop PC.
4. Allow up to a minute, for Xplore unit to assign an IP address of 10.10.0.x to the Laptop PC.

5. Once an IP is acquired, open a browser on the Laptop PC and type in the URL address **auxadmin.sap212.com** or **teladmin.sap212.com** to access the Xplore system's status and admin Web GUIs.

### D. USB Interface Access to the Xplore unit's Samba server

Confirm Ability to Access and Navigate the Samba Server Share

1. Insert the USB Thumb Drive in the USB port on the Xplore unit.
2. Connect a client device hosting MS Windows to the Xplore WAP and in Windows Explorer and go to [\\10.10.0.1](http://10.10.0.1).
3. Enter login credentials for Samba Server.
4. Select folder USB1 and confirm ability to view, cut, delete or rename files and that files can then be copied or moved to the **MyFiles** folder (Xplore Samba Server storage) and vice versa.

If the Xplore unit stops functioning when the USB connection is in use, reboot the Xplore unit.

## 10.2 Accessing Xplore System Logs

ARINCDirect technical support personnel can diagnose the Xplore system using the System Logs.

To capture Xplore AUX, RMI or ACARS logs from the AUX Web GUI:

1. Connect a Laptop PC to an Xplore Wireless AP.
2. Connect to the Xplore Home Page (**auxadmin.sap212.com**) and navigate to the System Log Tab.
3. Enter your administrator username and password.
4. Choose the parameters and type of log needed.
5. Choose the Type of Log Output (CSV or XML) Format.
6. View, open, edit copy and paste log file as needed.

To capture live and current Xplore Syslog file from the Samba Server:

1. Connect a computer to an Xplore Wireless AP.
2. Log into the Samba Server of the Xplore via a windows machine using Windows Explorer (**10.10.0.1**) and enter your administrator username and password.
3. Navigate to the syslog file(s) (**MyFiles**→**Syslog**).
4. View, open, copy and/or paste the log file(s) as needed. The syslog file(s) will need to be opened in WordPad to view.



## 11.0 Maintenance and Repair

This section provides maintenance and repair information for the Xplore, including the following sections:

- Maintenance
- Repair
- Instructions for Continued Airworthiness

### 11.1 Description of Maintenance and Repair Process

- The Xplore system is an on condition device and does not require routine maintenance. Since it is not a field serviced device, no special tools or supplies are required by the customer to repair the Xplore unit.
- Call ARINCDirect at the contact information below, should the Xplore system show signs of degraded performance or malfunction.
- An Xplore unit that requires repair must be uninstalled and shipped to Clarus LLC or designated certified facility for replacement. Stop power to the unit, disconnect cables, secure cables and wiring, collar applicable switches and circuit breakers, and placard them as “inoperative.”
- Contact Clarus at the contact information for further detail on procedure for handling an Xplore unit that needs repair.
- ARINCDirect needs to be notified of disruption to service at the contact information below.

<b><i>Report any problems with an Xplore Unit to ARINCDirect before uninstalling</i></b>
<b>ARINCDirect</b> 2551 Riva Road Annapolis, MD 21404 U.S.A. Phone: +1 410-266-2990 Email: <a href="mailto:ADTech@ARINC.com">ADTech@ARINC.com</a>
<b><i>Contact Clarus for details on returning an Xplore unit and obtaining a replacement</i></b>
<b>Clarus-LLC</b> 21640 N. 19th Avenue Ste. # C-9 Phoenix, AZ 85027 Phone: +1 602-402-3629 Phone: +1 480-442-5426 Email: <a href="mailto:info@clarus-llc.com">info@clarus-llc.com</a>

### 11.2 *Instructions for Continued Airworthiness*

- This section presents the special instructions and maintenance requirements for continued airworthiness of the Xplore.
- This manual contains maintenance information for the Xplore (including system description, system operation, removal, installation, debug and fault isolation, and maintenance and repair).
- The Xplore is considered an on-condition unit. No additional or routine maintenance is required.
- If an Xplore is inoperative, remove the unit, 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 unit in the logbook.
- The Xplore is not field-repairable. All units must be returned to the ARINCDirect or authorized repair centers for repair. Instructions for the removal of the unit for repair are provided in the Maintenance and Repair section of this manual.
- Repaired units must be re-installed on the aircraft in accordance with the instructions provided in this manual. The operation of all repaired units must be verified using the operational verification tests and procedures provided in this manual before being approved for return to service. All special tools required to test the unit for approval for return to service are listed and described in the Operational and Diagnostic Testing section of this manual. Approval for return to service must be entered in the logbook.
- 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*

## 12.0 Installation Information Sheet

Use this sheet to keep track of installation information and when contacting product support.

### Xplore Unit Information

Model Number	
Serial Number	
Hardware Part Number	
TB Software Release	
AB Software Release	
Manufacturer	
LBT-(1) IMEI Number	
Sim (1) Number	
LBT-(2) IMEI Number	
Sim (2) Number	

### Aircraft Information

Owner	
Tail Number	
Serial Number	
Model / Type	

### Installation Information

Installation facility	
Name of Installer	
Checked By	
Date of Installation	