



## **UL-801**

# **Installation Manual**

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# Introduction

## 1. Makeup and Use of This Manual

### A. Application

This manual provides installation information pertaining to the UL-801.

### B. Organization

This manual provides information about:

- Description of the components of the UL-801
- Environmental qualification forms
- UniLink equipment specifications
- Installation and wiring requirements
- Worksheets and procedures for installing system data including configuring the UL-801 Configuration Module

## 2. Abbreviations and Terminology

This manual contains no abbreviations or terms that have varying interpretations throughout the industry. Refer to Appendix 1 for a list of acronyms, abbreviations, and terms that are used throughout this manual.

The front panel of the Control Display Unit/Multi-function Control Display Unit (CDU/MCDU), part of the FMS, contains an array of push buttons or keys that are used by the crew to operate the system. Instructions in this manual refer to specific keys by name. We bracket the legend on the key in the text. Examples: [ENTER], [A]. Line Select Keys (LSK) are referred to by numerical order (top to bottom) and side. Text appearing on the display may be included. Example: RETURN [5R].

## 3. Contact Information

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# Description and Operation

## 1. Description

The UL-801 Airborne Datalink provides an air-to-ground two-way digital datalink that meets the need for specific air-to-ground communications. UniLink communicates with multiple ground-based Datalink Service Providers (DSP) using a VHF radio and/or SatCom telephony-based system. The UL-801 contains an internal VHF Data Radio (VDR).

**NOTE:** Both DSP and DLSP are used as acronyms for Datalink Service Providers.

The Datalink system consists minimally of an FMS, a CDU/MCDU, the UL-801, a transmission medium, such as a VDR or SatCom, and a configuration module. The UL-801 supports connections with up to three FMSs and one remote CDU, and connections to a VDR; and peripheral devices, such as UASC multifunction displays (MFDs) (including the MFD-640 and Electronic Flight Instrument-890R (EFI-890R) displays) and a printer.

This Installation Manual applies to both FANS-enabled and non-FANS-enabled UniLink systems unless otherwise noted.

UniLink capabilities include:

- Future Air Navigation System (FANS)
- Controller-Pilot Datalink Communications (CPDLC) messaging
- Automatic Dependent Surveillance - Contract (ADS-C)
- CVR/CVFDR Output for datalink recording
- OOOI (Out-Off-On-In) reporting
- Automatic position reporting
- Fight planning route uplinks
- Aircraft triggered events
- Clearances/Requests
  - Pre-departure
  - Oceanic
  - Pushback
  - Expected Taxi
- Textual and graphical color weather maps or depictions in both low and high resolution formats
- Digital Automatic Terminal Information System (D-ATIS, which is sometimes referred to as ATIS)
- Terminal Weather Information for Pilots (TWIP)
- Free Text messaging
- Special Status reports (for example, delays, ETA updates, and diversions).

The communication links used to exchange data are Very High Frequency (VHF), including:

- The legacy Aircraft Communications Addressing and Reporting system (ACARS)
- Next-generation VHF digital link (VDL) Mode 2
- Satellite Communications (SatCom).

The UL-801 is designed to be interfaced with, and controlled through, a variety of Universal Avionics Control Display Units (CDUs) or Multi-function Control Display Units (MCDUs) that are integrated with a Universal Avionics Flight Management System (FMS). The UL-801 can also be controlled via an MCDU with ARINC 702 FMS or 743/743A GNSS.

Uplink text messages are displayed on Universal's CDU/MCDUs. Color graphical weather maps may be displayed on Universal's CDUs, MCDUs, Multi-Function Displays (MFD), and Flat Panel Integrated Display (FPID), as well as UASC's EFI-890Rs.

High resolution graphics ports support up to two high-resolution display devices, such as a capable EFI-890R ND and/or an MFD-640.

UniLink is capable of simultaneously transmitting and or receiving messages on more than one transmission link at a time (VHF and SatCom, which includes SAT and TEL). Messages may be generated on the ground and sent to the aircraft (uplink message) or messages can be generated from the aircraft and sent to the ground (downlink message). Downlink messages are generated by the crew, internally by the UniLink, or any one of the peripheral units may generate a message to be passed on to the UniLink for transmission. When UniLink receives an uplink message, it determines if the message should be processed internally or be sent to a peripheral device specified by a message sub-label. Messages can be predefined as ARINC Aircraft Communications Addressing and Reporting System (ACARS) messages or UniLink supported messages, such as specialized weather requests or graphical weather maps, or text messages routed to a printer.

The communications link connects the UniLink-equipped aircraft directly to a DSP. This provides a general purpose communications link between the aircraft and ground computers utilizing such first party service providers such as ARINC, SITA, and/or AVICOM. It is the user's decision which DSP is selected. The decision may also be based on the second-party DSP to which the user subscribes.

In order to aid in potential incident/accident investigations, UniLink supports the transmission of datalink records to an ARINC Characteristic 757 Cockpit Voice Recorder (CVR) and a Cockpit Voice Flight Data Recorder (CVFDR).

## **A. General**

The UL-801 provides two-way datalink for air-to-ground communications which allows communication with a DSP for a variety of available services. In order for UniLink to be utilized, a DSP subscription is required. Each DSP may not support all UniLink services. Contact your DSP for a list of supported services. A list of available UniLink DSPs can be found in Appendix 3.

UniLink communicates via one or more communication systems: VHF and/or Satellite SatCom systems. It supports an RS-232 serial or ARINC 429 (740, 744/744A) cockpit printer to print various uplink messages, such as a textual weather report. The UniLink also connects to a DTU/SSDTU to allow future software and database updates.

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SatCom weather graphic uplinks via circuit mode data and text weather uplinks via Short Burst Data (SBD) or packet data mode may or may not be available, based on your selected DSP and the SatCom equipment installed. In addition, some functions/features may only be available through specific communications systems as described in the following table.

Communication System <sup>2</sup>	Supported Applications <sup>1</sup>				
	AOC Text, and Text, Weather, and D-ATIS	ACARS Air Traffic Services excluding FANS	Flight Information Services (FIS) <sup>3</sup>	ATC FANS 1/A+	Weather Graphics <sup>4</sup>
VHF (VDL Mode 2 and POA)	Yes	Yes	Yes	Yes	No
SatCom (UASC Aero-I)	Yes	Yes	Yes	No	No
SatCom (UASC Aero-M)	Yes	No	No	No	Yes
Iridium SatCom ARINC 741	Yes	Yes	Yes	Yes <sup>4</sup>	No
Iridium SatCom RS-232	Yes	No	No	No	Yes
Inmarsat SatCom ARINC 741	Yes	Yes	Yes	Yes <sup>4</sup>	No
Inmarsat SatCom RS-232	Yes	No	No	No	Yes

1. Check with the DSP for applicable supported applications.
2. Communication Systems must meet DO-178B Level D to be used for FANS applications.
3. The following Flight Information Services are available thru the internal VHF radio or a capable and approved Packet Mode Data or Short Burst Data SatCom system. Contact your DSP and SatCom manufacturer for more information.
  - Pre-departure clearance
  - Oceanic clearance
  - D-ATIS
  - TWIP
  - Pushback clearance
  - Expected taxi clearance
4. Check with the Iridium or Inmarsat SatCom manufacturer for current FANS approvals.
5. Graphical weather information is available only when the UniLink is interfaced to a circuit mode data SatCom system via the RS-232 connection and supported by the DSP. The older tip and ring circuit mode data interface that was available on all previous UniLink models, UL-60X and UL-70X, has been removed.

## B. Future Air Navigation System (FANS 1/A+)

UniLink system functionality is greatly enhanced by a Future Air Navigation System (FANS) 1/A+ implementation, which is intended to improve safety of flight, enhance efficiency, and increase air traffic capacity by replacing voice transmissions between crews and ATC with datalink messages during flight in oceanic and remote areas that have no or limited radar coverage. Voice transmissions will continue to be used as a reversionary means of communication. UniLink provides a FANS-1/A+ implementation as defined in RTCA/DO-258A and A622. FANS-1/A+ features include AFN, ADS, and CPDLC text data transmissions.

At least one UASC FMS must be installed and operating with SCN 1000.5/1100.5 or later for the UniLink FANS-1/A+ implementation. The FMS must be configured to enable FANS data transmission and must be configured to transmit to UniLink over the UNS HS-429-1 bus.

FANS-1 is the original version of FANS developed by Boeing and FANS-A is the corresponding version developed by Airbus. Both of these versions are interoperable with worldwide ATC facilities and use the Aircraft Communications Addressing and Reporting System (ACARS) network. UniLink's FANS-1/A+ implementation is designated as such because it is functionally equivalent to, and combines many of the best features of both Boeing's FANS-1 and Airbus' FANS-A implementations.

Future Air Navigation System (FANS) is principally comprised of three applications:

- **Air Traffic Services ATS Facilities Notification (AFN)**  
AFN allows the aircraft and an ATS provider on the ground to exchange addresses, as well as information about which FANS applications they support.
- **Automatic Dependent Surveillance-Contract (ADS-C)**  
ADS-C allows multiple ATS providers to command position reports and other situational data at regular intervals or in response to events specified by the ATS provider, such as a change in altitude or lateral deviation. ADS-C requires no crew interaction.
- **Controller-Pilot Datalink Communications (CPDLC)**  
CPDLC provides capabilities to substitute for traditional voice communications for routine communications between a pilot and an air traffic controller. CPDLC messages can be used to request and grant clearances, to inform the ground of the aircraft's position and situation, and to provide instructions to the crew, such as "Climb To Reach FL390 By 2200" or "Proceed Direct To TUNTO".

## **C. Field-Loadable Software and Databases**

The UniLink application software, Customer, ATC, and Geographic databases are loadable in the field or at an authorized Universal Avionics dealer. During the software loading process, automatic and manual version number verification procedures are performed to ensure the compatibility of the software and database. A separate manual, 23-20-08, provides the Field Loading procedures.

### **Detection of Corrupted or Partially Loaded Software**

All loadable software and databases contain a 32-bit Cyclic Redundancy Check (CRC). The data-loading software function calculates a CRC upon receipt of a file and compares it to the CRC included with the loaded data file thus rejecting any files whose contents have changed during the loading process.

### **Determination of the Effects of Loading the Inappropriate Software**

The system has been designed to guard against inappropriate software or database loading based on version numbering. Loadable application software only functions with versions of the hardware and boot software that supports the version type of software loaded. If an incompatibility is detected during power-up checks, the system is placed into a state in which no normal functions can occur. Only appropriate loadable databases and applications will function with compatible versions of the main application software.

### **Hardware/Software Compatibility**

The hardware versions are made available to the application software and are verified for compatibility during power-up checks and during application software loading.

### **Restricted Access to the Field-Loading Function**

The field-loading function is only enabled when the aircraft is on the ground and after a password has been entered successfully.

### **UniLink Databases**

The UniLink databases, consist of multiple database components including the Aeronautical Operational Control (AOC) and Air Traffic Control (ATC) databases (required for FANS operations) components, contains the definitions of nearly all user-interface screens, nearly all uplink and downlink messages, a flight database that defines how data is formatted and stored, and event triggers used for responses to system events. Database integrity is verified by means of a 32-bit CRC at loading and during UniLink initialization.

## **D. Field-Loadable Software Interface**

UniLink provides an interface to load the following databases and application software via the UASC Data Transfer Unit (DTU-100) or UASC Solid State Data Transfer Unit (SSDTU). Access to the software and database loading functions are password protected and the aircraft must be on the ground. The UASC DTU physical interface is 10BaseT Ethernet. The UniLink hardware contains a 10/100BaseT Ethernet port.

- Datalink application software
- VDR application software
- Customer database, which includes the AOC database
- ATC database
- Geographic database

UniLink provides user-interface screens that allow the user to command and monitor the loading progression.

## **E. UniLink Customer, ATC, and Geographic Databases**

The Field Loadable Software database system provides flexibility in response to the changing communications, navigation, and surveillance/air traffic management environment for current and future regulations. The Customer Database (CDB)-driven user interface and message set can be customized by UASC to match airline or business operator's requirements. Each database is described below.

All UniLink systems include three databases: the Customer Database, the Air Traffic Control (ATC) Database, and the Geographic Database, and contains the definitions of the following:

- User interface screens
- Line Select Key functions
- Message definitions for uplink and downlink messages
- A flight database, which defines how data is formatted and stored
- Event triggers used for OOOI event reporting and other responses to system events

The Customer Database (CDB)-driven user interface and message set can be customized to match airline or business operator's operational requirements. Each database is described below.

- Customer Database

Contains screen and message definitions for Aeronautical Operational Communications (AOC) and Air Traffic Services (ATS) applications. Contains user definitions for uplink and downlink messaging, and a flight database that defines how data is formatted and stored, and event triggers used for responses to system events.

A 32-bit CRC is employed to confirm database integrity at loading, initialization, and during flight. The customer database also has a version number that is checked upon loading for compatibility with the application software. If the customer database CRC check fails, UniLink annunciates the error and provides a screen for reloading the customer database.

**NOTE:** The loading of the customer database erases the ATC database from UniLink memory. Following a load of the customer database, the ATC database must be reloaded.

- Air Traffic Control (ATC) Database

Contains screen and message definitions for ATC applications, including the Future Air Navigation Systems (FANS).

The system provides flexibility in response to the changing communications, navigation, and surveillance/air traffic management environment for current and future regulations. This database is used to define the UniLink ATC screens and message sets and is very similar in function and purpose as the customer database.

A 32-bit CRC is employed to confirm database integrity at loading, initialization, and during flight. The ATC database also has a version number that is checked upon loading for compatibility with the application software and the customer database. If the ATC database CRC check fails, UniLink annunciates the error and allows the user to continue to access the functions defined by the customer database.

**NOTE:** Loading the ATC database does not affect the currently loaded customer database or Geographic database.

- Geographic Database

Contains aircraft communications addressing and reporting system (ACARS) ground station locations and corresponding ACARS VHF frequency information.

The geographic database has a 32-bit CRC that is verified upon database loading. It also has a version number that determines its compatibility with the application software. If the geographic database CRC check fails, UniLink annunciates the error and prevents the user from operating UniLink with a corrupted database.

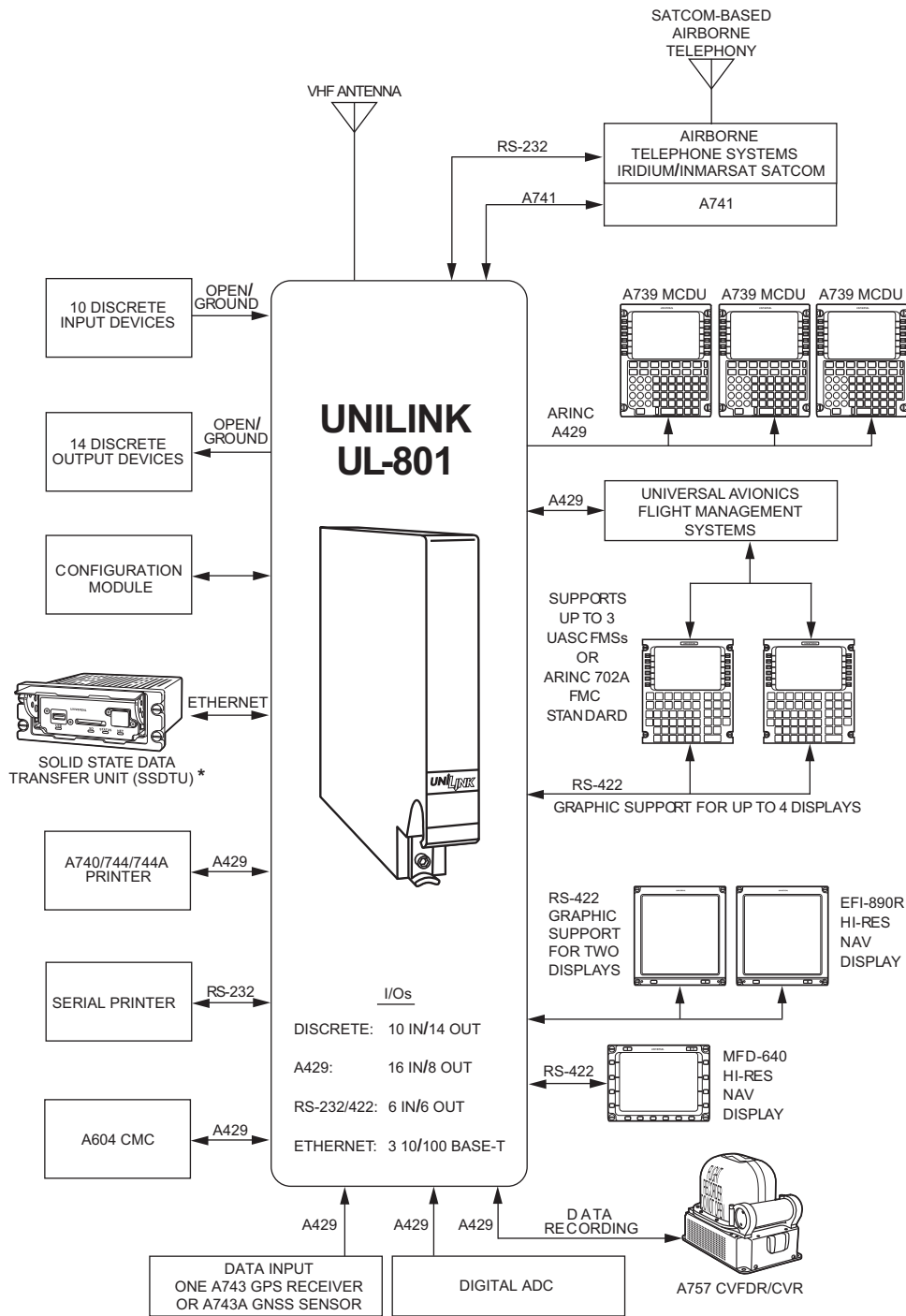
**NOTE:** The Customer, ATC, and Geographic databases can be installed by UASC and can also be field-loaded using a UASC DTU-100 or SSDTU. It is recommended that this connection be installed as updates to these databases may be required from time to time.

## **F. UASC FMS Interface**

The UniLink provides concurrent user interface access for up to three UASC Flight Management Systems. The ARINC 429 interface uses the ARINC 739 protocol for display control and ARINC 619 bit oriented file transfer protocol for file exchange between the devices. Each UASC FMS provides a high-speed ARINC 429 channel as inputs to UniLink. The specific channel will be specified by the configuration module, based on aircraft wiring. Any of the general purpose ARINC 429 output buses can be configured as output bus to the FMS. However, ARINC TX port #1 is hard set to low speed and is required by the number 1 FMS. UniLink provides an RS-422 proprietary graphics display bus interface between the unit and each UASC CDU for low resolution graphics.

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(1) UniLink interface capabilities

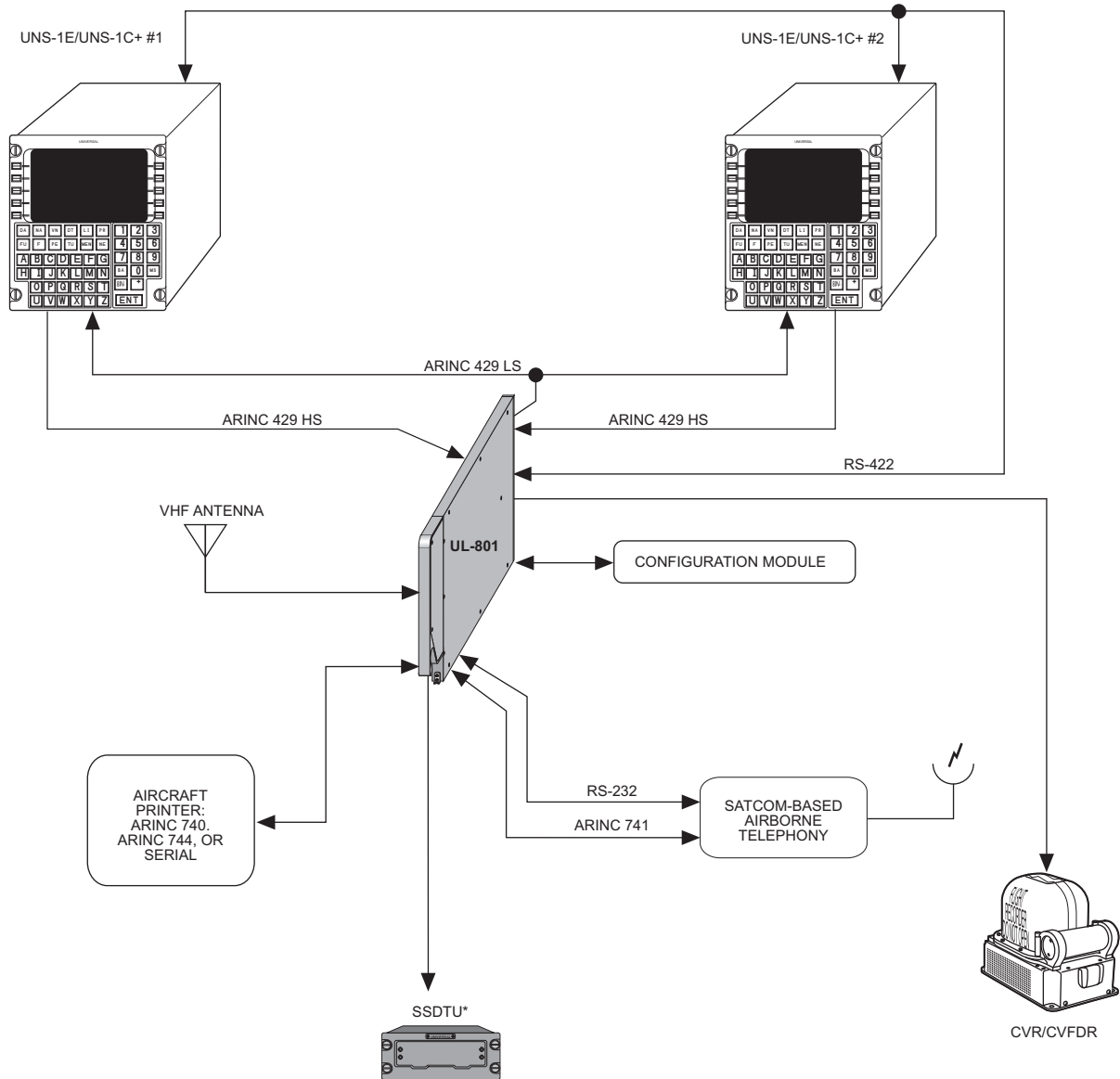


\* DTU-100 MAY ALSO BE USED



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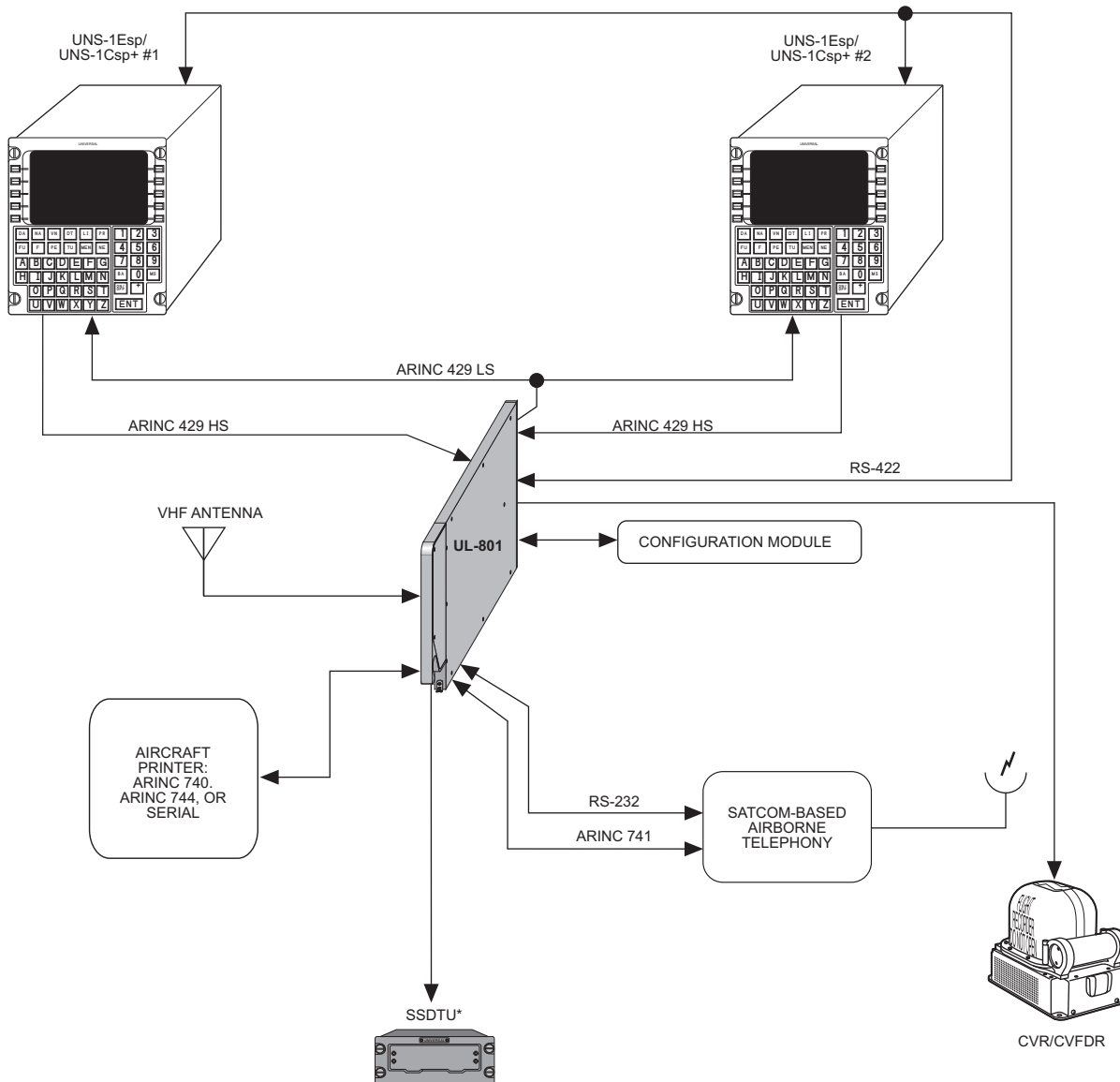
(2) UL-801 to UNS-1E/UNS-1C+ Block Diagram – non FANS-enabled



\* THE DTU-100 MAY BE USED BUT IS NOT RECOMMENDED IN NEW INSTALLATIONS.

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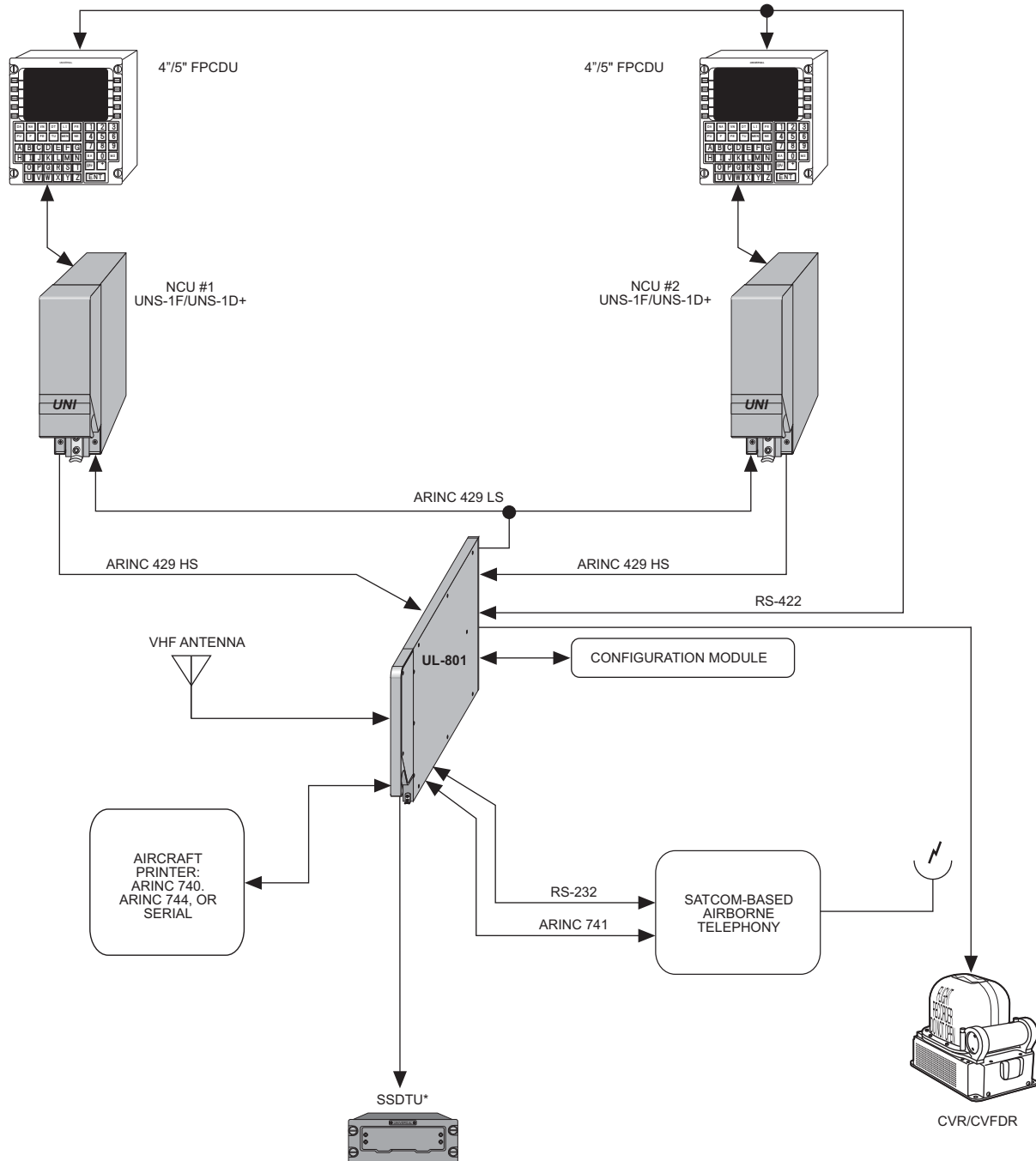
(3) UL-801 to UNS-1Esp/UNS-1Csp+ Block Diagram – non FANS-enabled



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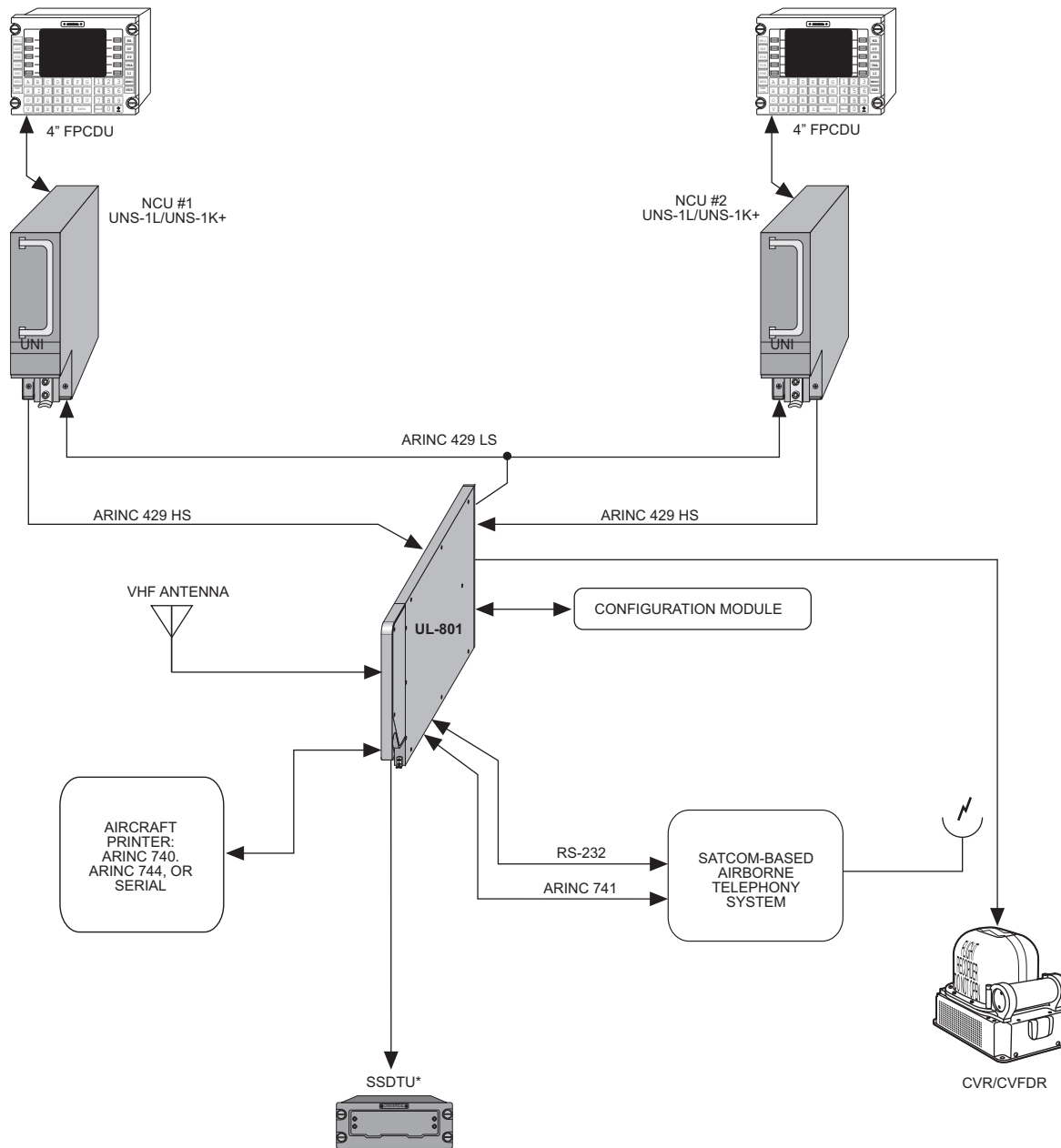
(4) UL-801 to UNS-1F/UNS-1D+ Block Diagram – non FANS-enabled



\* THE DTU-100 MAY BE USED BUT IS NOT RECOMMENDED IN NEW INSTALLATIONS.

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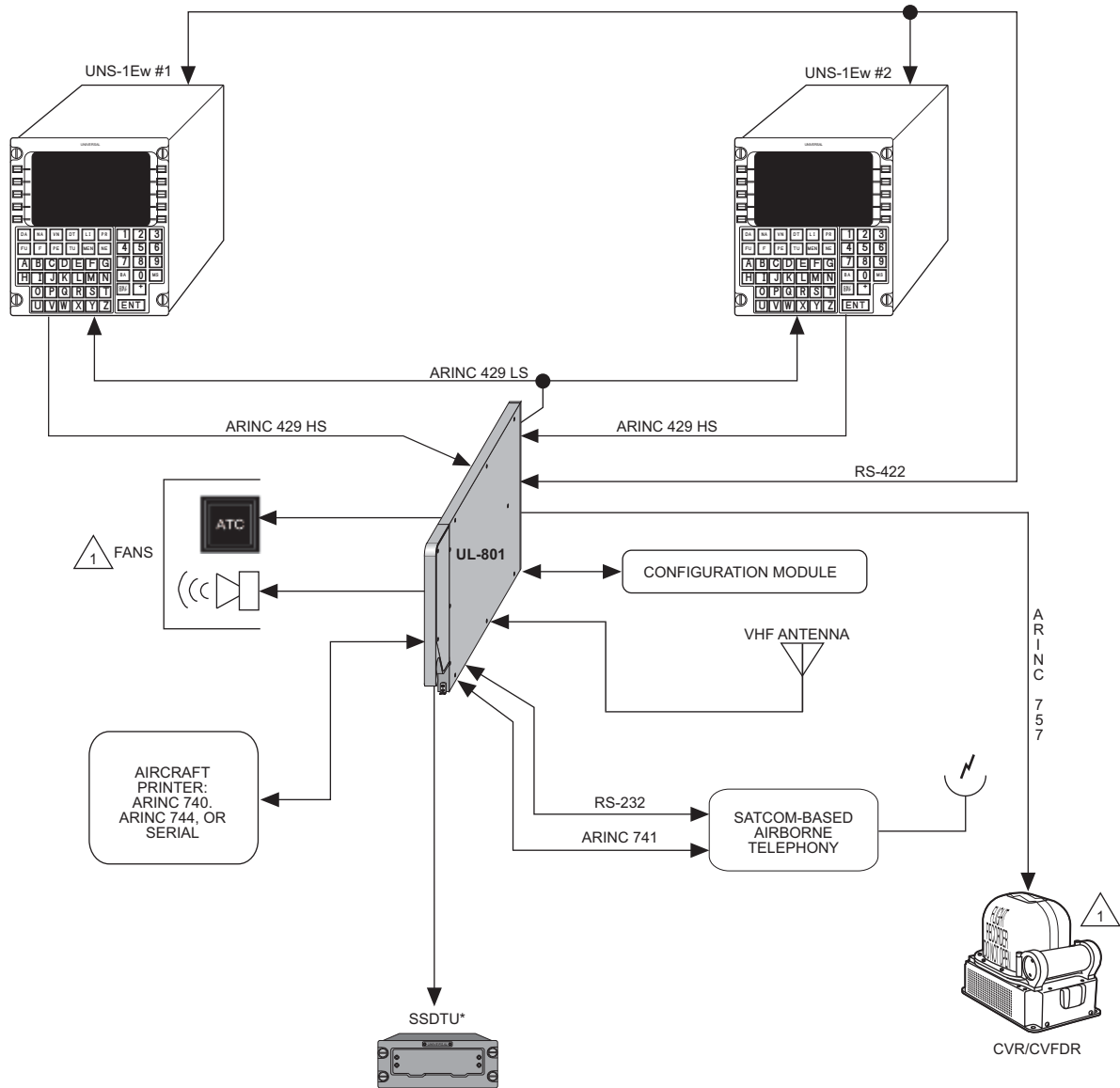
(5) UL-801 to UNS-1L/UNS-1K+ Block Diagram – non FANS-enabled



\* THE DTU-100 MAY BE USED BUT IS NOT RECOMMENDED IN NEW INSTALLATIONS.

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(6) UL-801 to UNS-1Ew Block Diagram - FANS-enabled (FMS SCN 1000.5/1100.5 and later)

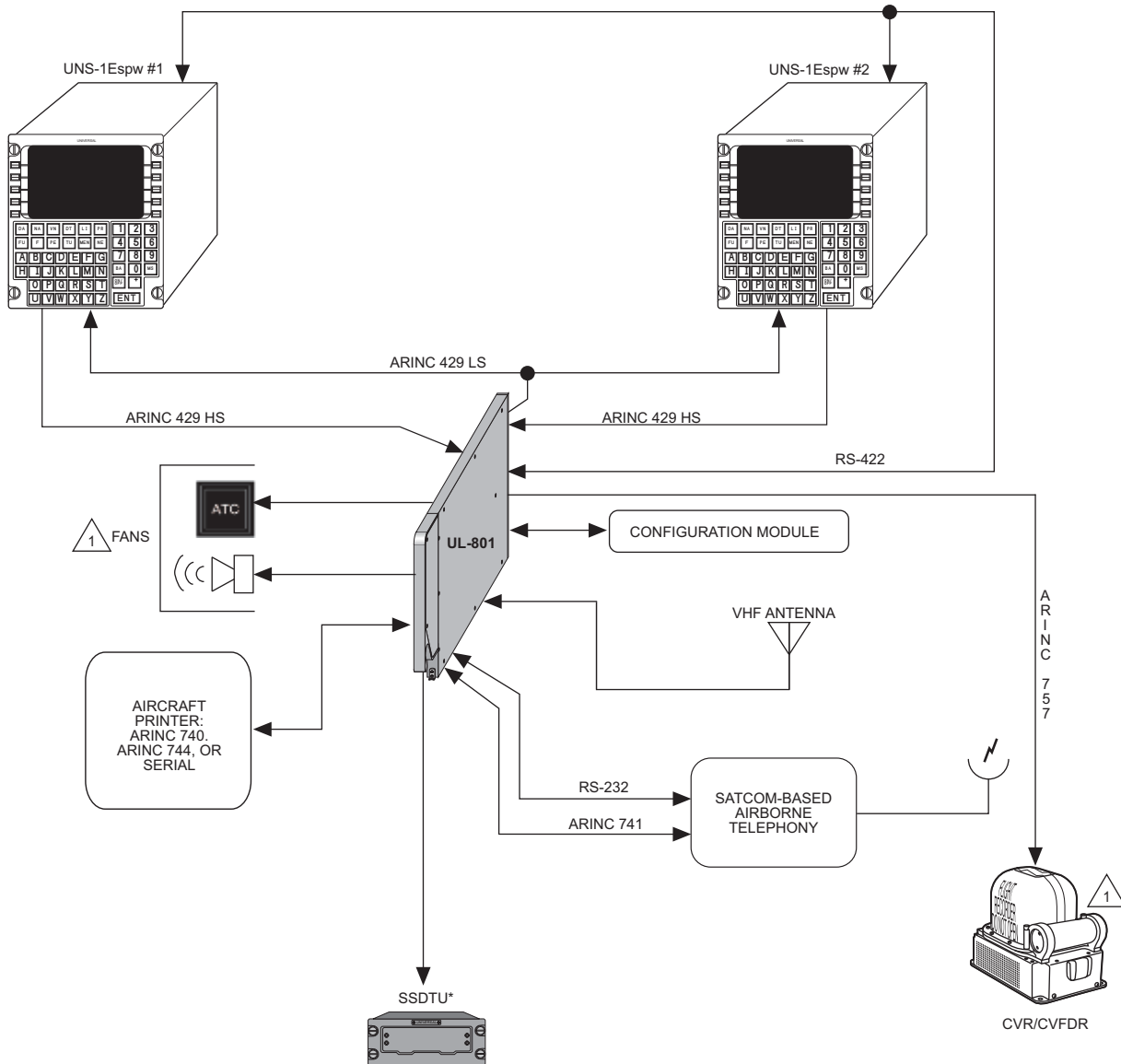


\* THE DTU-100 MAY BE USED BUT IS NOT RECOMMENDED IN NEW INSTALLATIONS.

1 VISUAL, AURAL ALERTING, AND DATALINK RECORDING ARE REQUIRED FOR FANS.

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(7) UL-801 to UNS-1Espw Block Diagram - FANS-enabled (FMS SCN 1000.5/1100.5 and later)

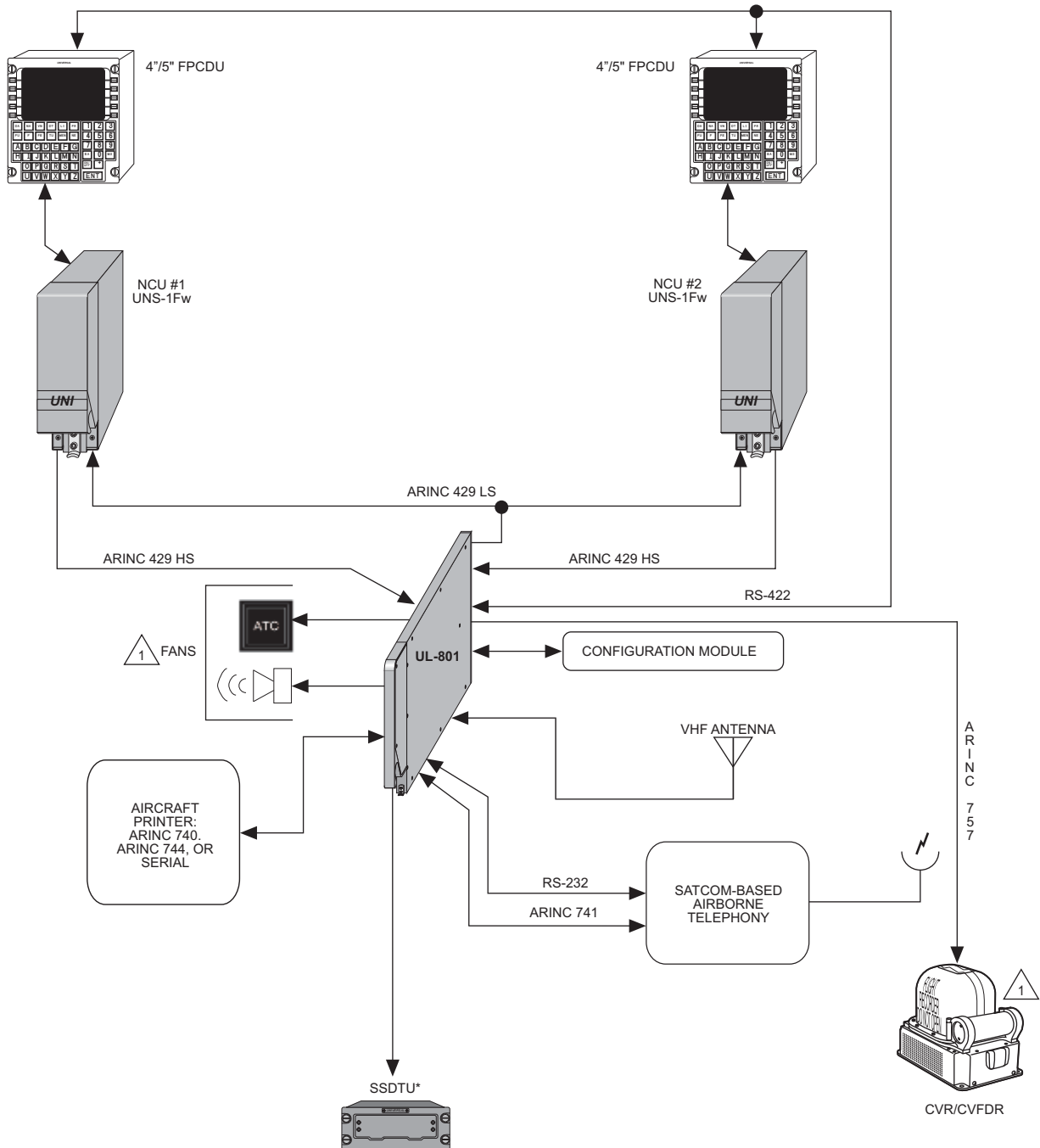


\* THE DTU-100 MAY BE USED BUT IS NOT RECOMMENDED IN NEW INSTALLATIONS.

1 VISUAL, AURAL ALERTING, AND DATALINK RECORDING ARE REQUIRED FOR FANS.

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(8) UL-801 to UNS-1Fw Block Diagram - FANS-enabled (FMS SCN 1000.5/1100.5 and later)

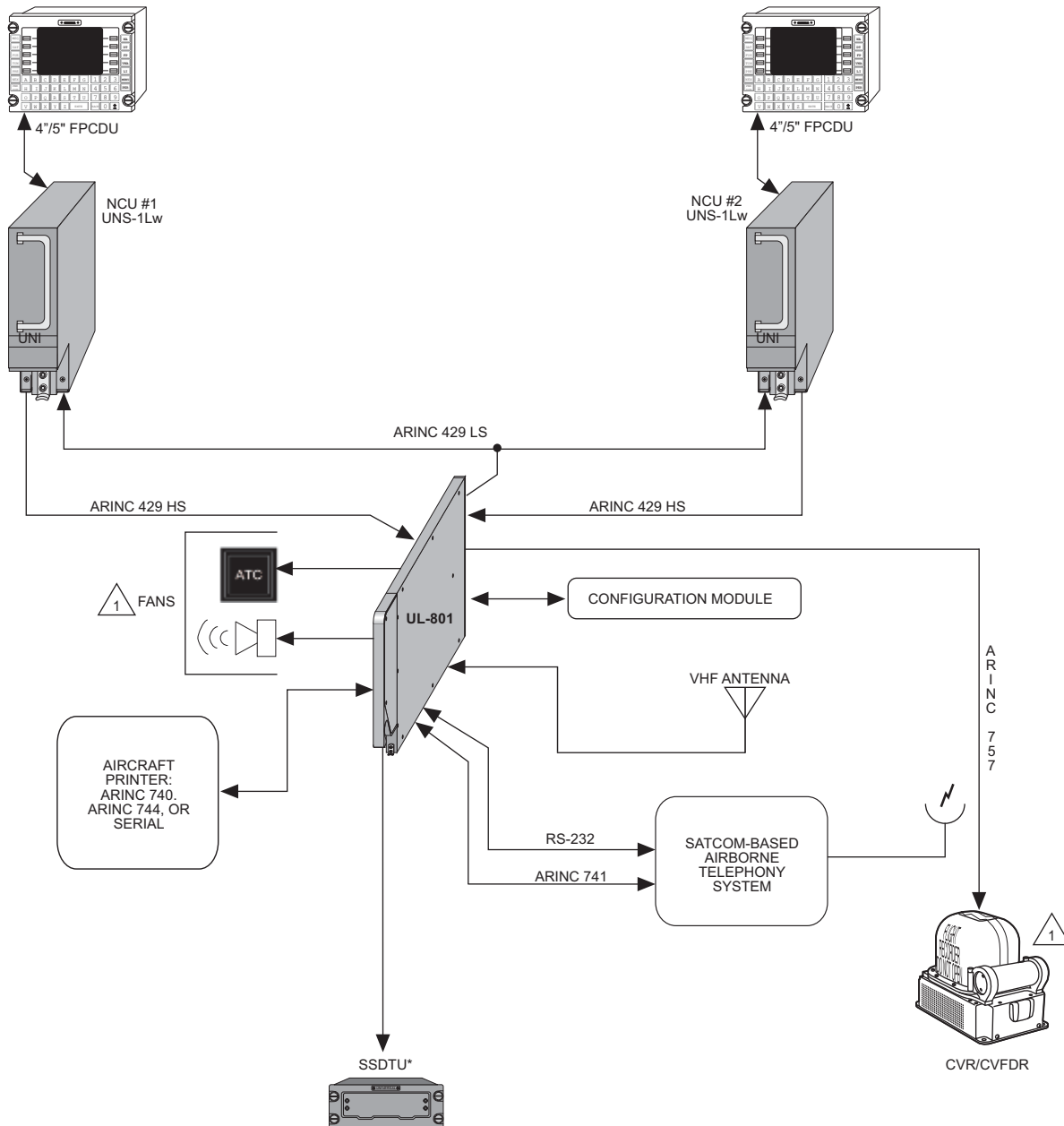


\* THE DTU-100 MAY BE USED BUT IS NOT RECOMMENDED IN NEW INSTALLATIONS.

1 VISUAL, AURAL ALERTING, AND DATALINK RECORDING ARE REQUIRED FOR FANS.

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(9) UL-801 to UNS-1Lw Block Diagram - FANS-enabled (FMS SCN 1000.5/1100.5 and later)



\* THE DTU-100 MAY BE USED BUT IS NOT RECOMMENDED IN NEW INSTALLATIONS.

1 VISUAL, AURAL ALERTING, AND DATALINK RECORDING ARE REQUIRED FOR FANS.



## G. Configuration Module

The configuration module, an electrically erasable, programmable read-only memory (EEPROM) device, is mounted on the rear of the mounting tray and connected via a dedicated interface to the UniLink. The configuration module stores information specific to the installation.

The user can view and retrieve the aircraft configuration through specially designed pages that can be accessed through the keypad on the CDU or MCDU. The UniLink retrieves the configuration data during each power up cycle. Modifications to the configuration are possible only on the ground and are restricted through software interlocks.

## H. ARINC 429 Channels

UniLink provides sixteen ARINC 429 receivers and eight ARINC 429 transmitters.

### (1) ARINC 429 Receivers

The sixteen ARINC 429 receivers can be independently configured for supported ARINC devices. The receiver bus speed (high or low) is determined by the ARINC device selected during configuration.

### (2) ARINC 429 Transmitters

ARINC 429 transmitter, Port #1, is set to low speed by default. The remaining seven ARINC 429 transmitters can be independently configured for bus speed (high or low). Multiple ARINC devices of the same bus speed can be connected in parallel by each transmitter configuration selection. Do not exceed 15 receive devices on one ARINC transmitter port.

Device	UniLink TX Speed (NOTE 1)	UniLink RX Speed
UASC FMS/CDU 1	LOW	HIGH
UASC FMS/CDU 2	LOW	HIGH
UASC FMS/CDU 3	LOW	HIGH
739 MCDU 1	LOW	LOW
739 MCDU 2	LOW	LOW
739 MCDU 3	LOW	LOW
702 FMS 1	LOW or HIGH	NOTE 2
702 FMS 2	LOW or HIGH	NOTE 2
702 FMS 3	LOW or HIGH	NOTE 2
740/744/744A Printer	LOW	LOW
741 SDU	LOW	LOW
Voice Tune Bus      NOTE 6	LOW	Not Applicable
Vibro-Meter CMC	LOW	HIGH
604 CMC	LOW	LOW
750 VDR      NOTE 6	HIGH	HIGH
DHC8 IOP 1	Not Applicable	LOW
DHC8 IOP 2	Not Applicable	LOW

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Device	UniLink TX Speed (NOTE 1)	UniLink RX Speed
Test Device (NOTE 3)	LOW or HIGH	HIGH
ARINC 743A GNSS Receiver	Not Applicable	HIGH or LOW (NOTE 4)
DADC1	Not Applicable	HIGH or LOW (NOTE 5)
DADC2	Not Applicable	HIGH or LOW (NOTE 5)
Generic 429 Device (1 – 4)	LOW or HIGH	NOTE 2
757 CVR HIGH	HIGH	Not Applicable
<p><b>NOTE 1:</b> Device TX speed supported by UniLink.</p> <p><b>NOTE 2:</b> The customer database specifies the data speed of this configurable device.</p> <p><b>NOTE 3:</b> The test device is not used in aircraft installations.</p> <p><b>NOTE 4:</b> References to an ARINC 743A GNSS receiver also include ARINC 743 Global Positioning System (GPS) receivers. UniLink automatically detects the transmission speed (high/low) of the GNSS or GPS and configures the interface accordingly.</p> <p><b>NOTE 5:</b> UniLink automatically detects the transmission speed (high/low) of the Digital ADC and configures the interface accordingly.</p> <p><b>NOTE 6:</b> Does not apply to UL-801.</p>		

## I. RS-232/422 Serial Ports

UniLink provides six general purpose RS-232/422 transmitters and six general purpose RS-232/422 receivers. These ports are available to perform as six full duplex channels. The ports are capable of operating up to a 19.2 kilobaud rate. The serial port type selection (RS-232 or RS-422) is determined by the type of serial device selected during configuration.

UniLink RS-422 serial ports support the interface between the UniLink and various combinations of CDU/MCDU display processors (DPs), flat-panel multifunction displays (MFDs), and EFI-890R displays to accomplish display of uplinked graphic images.

UniLink can be connected to up to three CDUs and one remote CDU/MCDU via ARINC 739 protocol over an ARINC 429 physical layer providing UniLink with control of the CDU/MCDU text display. The user selects graphics to acquire and display from text menus rendered by UniLink on the CDU/MCDU via this interface.

EFI-890R and high-resolution MFD (SCN 1011.4.8) displays are connected to UniLink via an RS-422. UniLink supports two high-resolution connections.

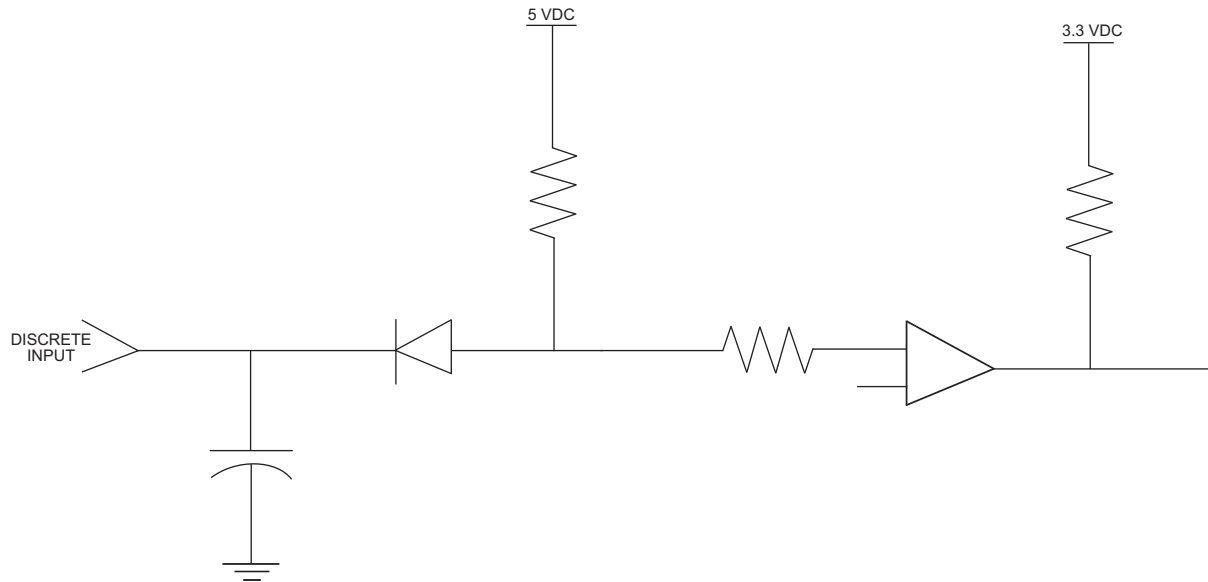
If the device assigned to a serial port is a low-resolution display, UniLink sets up that port as an RS-422 port at a baud rate specified by configuration item CDU/MFD Baud Rate, options 9801 BPS or 19.2 KBS.

Other devices supported by UniLink RS-232/422 serial ports include a serial printer and SatCom telephony functions

## J. Discrete Inputs/Outputs

UniLink provides 10 general purpose discrete input connections and 14 general purpose discrete output connections.

### Discrete Inputs



**NOTE:** THE TRANSITION VOLTAGE VALUE IS  $\approx 3.8$  VDC.  
THE ABOVE CIRCUIT IS INTERNAL TO UNLINK.

#### Basic UniLink Discrete Input

### Configurable Discrete Inputs

The discrete input signal types and active states (in other words, whether the signal state is active when the input is open or connected to a ground) are configurable.

The following discrete input types are selectable from the UniLink Discrete Input Configuration menu:

#### Park Brake Set

Park Brake Set Options		
Active State	Active	Inactive
Ground	Park Brake Set	Park Brake Released
Open	Park Brake Set	Park Brake Released

#### Strut Comp

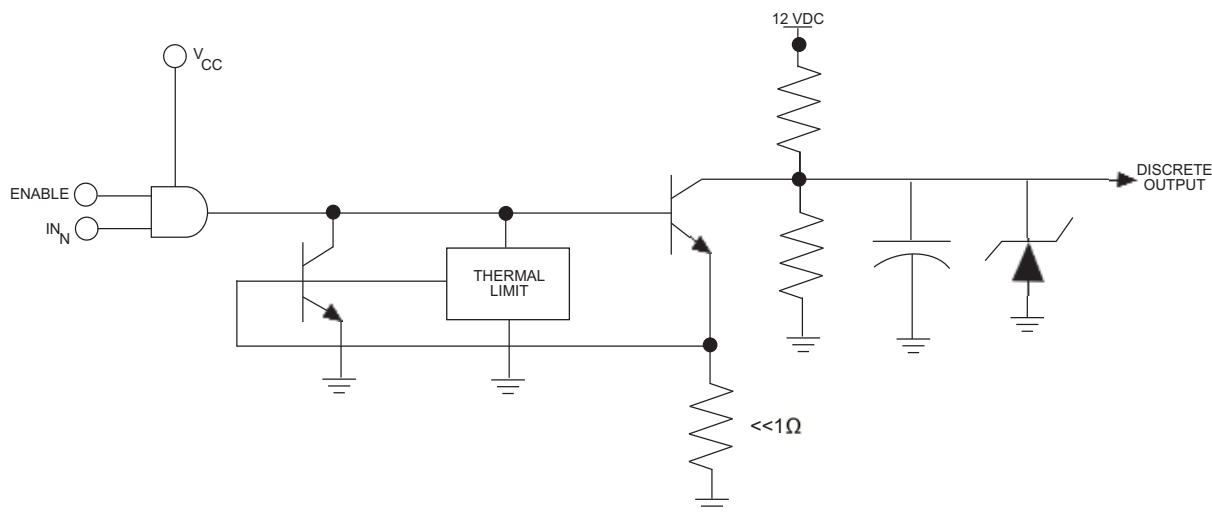
Strut Comp Options		
Active State	Active	Inactive
Ground	Strut Compressed	Strut Not Compressed
Open	Strut Compressed	Strut Not Compressed

## Door n Closed

Door n Closed Options		
Active State	Active	Inactive
Ground	Door n is closed	Door n is open
Open	Door n is closed	Door n is open
<b>NOTE:</b> If more than one door discrete input is wired and configured, the inputs are logically AND'ed together by UniLink to determine approximately when "all doors are closed".		

## Discrete Outputs

UniLink provides 14 discrete outputs. Each discrete output is capable of current sinking up to 500mA, to drive relays, lights, and trigger a variety of aural warning generators.



**NOTE:** THE ABOVE CIRCUIT IS INTERNAL TO UNILINK.

### Basic UniLink Discrete Output

## Configurable Discrete Outputs

The discrete output signal types and active states (in other words, whether the signal state is active when the input is open or ground) are configurable.

### FANS Visual (when FANS is enabled)

FANS Visual		
Active State	Active	Inactive
Ground (Recommended Configuration)	FANS ATC annunciator on	FANS ATC annunciator off
Open	FANS ATC annunciator off	FANS ATC annunciator on
<b>NOTE:</b> 1. The ATC Annunciator power is connected to the aircraft 28 VDC. 2. This annunciator is used to alert the crew of an incoming FANS ATC message.		

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**FANS Aural (when FANS is enabled)**

FANS Aural		
Active State	Active	Inactive
Ground (Recommended Configuration)	FANS alerter on	FANS ATC annunciator off
Open	FANS alerter off	FANS ATC annunciator on
<b>NOTE:</b> The aural alerting devices must be connected to the aircraft 28 VDC power.		

**CPDLC Connect**

CPDLC Connect		
Active State	Active	Inactive
Ground	CPDLC connection active	No CPDLC connection
Open	No CPDLC connection	CPDLC connection active
<b>NOTE:</b> Use of this discrete is optional.		

**New Message**

New Message n		
Active State	Active	Inactive
Ground	New/unread message/graphic received	No new/unread messages
Open	No new/unread messages	New/unread message/graphic received
<b>NOTE:</b> This discrete is intended to drive a visual annunciator. Not associated with FANS advisories.		

**Chime**

Chime n		
Active State	Active	Inactive
Ground	New/unread message/graphic received	No new/unread messages
Open	No new/unread messages	New/unread message/graphic received
<b>NOTE:</b> This discrete is intended to drive an aural annunciator.		

**Media NOCOMM**

VHF NOCOMM/SAT NOCOMM/TEL NOCOMM		
Active State	Active	Inactive
Ground	Media link failed	Media link established/idle
Open	Media link established/idle	Media link failed
<b>NOTE:</b> These discretes are intended to drive visual annunciators.		

## **K. Ethernet**

The UASC DTU-100/SSDTU physical interface is 10BaseT Ethernet. The UniLink hardware contains a 10/100BaseT Ethernet port. All UniLink interfaces to the UASC DTU-100 can be directly applied to the UASC SSDTU without any modifications to the UniLink.

## **L. Transmission Media Management**

UniLink is capable of managing multiple links (VHF, TEL, and SAT) so that simultaneous transmission and receipt of messages is possible on several different links. UniLink provides individual management of the VDR radio and satellite communications equipment.

### **VHF Digital Link (VDL) Mode 2 Capability**

The internal VDR is capable of supporting both the D8PSK modulation of the VDL Mode 2 channel and the current ACARS MSK modulation of the POA ACARS channel (which is used when the aircraft is outside of the VDL Mode 2 coverage area) or directed by the DSP.

POA, in conjunction with VDL Mode 2, supports the Future Air Navigation System (FANS) applications that include ATS Facilities Notification (AFN), Controller-Pilot Datalink Communications (CPDLC), and Automatic Dependent Surveillance-Contract (ADS-C).

The aircraft's 24-bit International Civil Aviation Organization (ICAO) address is required for VDL Mode 2 communications. This address is obtained from the selected DSP and is entered during the configuration process and is stored in the configuration module.

## M. VHF Management

The UniLink contains an internal VHF radio for its data communication. UniLink will only attempt to transmit if the radio has successfully tuned to the selected frequency. VHF Management requires that UniLink perform the following tasks in order to manage the VHF air-ground link:

- Acquire a frequency - UniLink acquires a frequency by the Automatic selection method or a frequency is provided by Autotune or manual crew selection/entry or recall from previously established frequency from Non Volatile Memory at power up.
- Establish a frequency - UniLink establishes the acquired frequency by transmitting a downlink block and receiving a necessary Positive Acknowledgment response.
- Maintain the frequency - UniLink maintains the established frequency until signal loss on the frequency or until subsequent new frequency selection or entry.

The UniLink VHF Communication Status is displayed on the COMM STATUS page and is explained by the table below.

VHF Media Status	Reason
COMM/IDLE	Communications have been established with the ground and datalink messages can be transmitted over VHF. No data is currently being transmitted.
COMM/SENDING	A message is currently in the process of being transmitted over VHF and UniLink is waiting for acknowledgement from the ground.
NOCOMM/NO FREQ	UniLink has not selected a frequency for tuning due to invalid FMS lat/long or no radio type
NOCOMM/SCANNING	UniLink is automatically selecting a frequency for tuning in current region with enabled DSP.
NOCOMM/CONNECTING	UniLink has sent communication to the ground and is awaiting a reply.
NOCOMM/NO DSP	All DSPs have been manually selected OFF.
NOCOMM/VOICE	The VDR is in VOICE mode. <b>NOTE:</b> Does not apply to UL-801 with internal VDR.
NOCOMM/VDR INOP	VDR inoperative.
NOCOMM/VDR FAULT	VDR is reporting a fault.
NOCOMM/VDR UNAVAIL	UniLink has not set the VDR's protocol state.
NOCOMM/MONITORING	UniLink has not detected a viable VDL Mode 2 ground station.
NOCOMM/SUSPEND	VHF communications have been suspended by the crew.

## **N. SatCom-based Airborne Telephony (TEL)**

A dedicated standard telephone modem is designed into UniLink. This modem is used to transfer data between a supported ground station and the aircraft subsystems. For example, the airborne telephone modem is initially used for uploading messages, text weather, and graphical weather data from a DSP via a dial-up connection. UniLink manages only one RS-232 port for this use.

SatCom-based Airborne Telephony is supported by Iridium and Inmarsat systems that include an integral air phone modem which UniLink accesses via an RS-232 interface. The airborne telephony modem uploads messages, text weather, and graphical weather from a DSP.

It is important to note that the UniLink does not support the MagnaStar Digital Airborne Telephone System and the UASC Aero-I. There is no UniLink tip and ring interface as was the case with previous UL-60X/70X products. However, the legacy use of the word TEL, which is used to abbreviate telephony, remains unchanged and continues to indicate the use of a configured RS-232 UniLink port in support of such systems.

If TEL is configured to be used in the priority rotation, the request is then routed to an available SatCom system via a configured RS-232 port.

The available options for RS-232-capable air phone configurations are UASC T-T Aero-M or Iridium. The Iridium selection supports a variety of RS-232 available Iridium SatCom products.

The UniLink Telephony Communications Status is displayed on the COMM STATUS page and is explained in the following table.



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Up to four low-resolution display devices can be connected to a single low-resolution bus and one high-resolution device each can be connected to two high-resolution graphic ports.

TEL Media Status	Reason
COMM/MDM TIMEOUT	UniLink has dialed the phone but a timeout occurred prior to a connection being established. <b>NOTE:</b> Sequential, excessive timeouts will result in the NOCOMM/AUTO DELAY message displaying.
COMM/DIALING	UniLink has provided the phone with the dial string command and is waiting for the phone to answer.
COMM/CONNECTING	The ground has answered the phone and UniLink is communicating with the DSP.
COMM/IDLE	The phone is hung up and no attempt is currently being made to use it and SatCom (TEL) is not suspended or waiting to retry.
COMM/CONNECTED	The phone line is connected and messages can or are currently being transferred.
COMM/PLEASE WAIT	TEL SUSPEND has been manually activated. UniLink is in the process of shutting down the connection.
NOCOMM/SUSPENDED	SatCom (TEL) has been suspended, either by the crew or automatically due to excessive failed attempts.
NOCOMM/AUTO DELAY	UniLink is waiting for the configurable AUTO-DELAY timer to expire before trying again
NOCOMM/CONFIG FAIL	While CONNECTING with the ground server, a message is received saying the configuration sent by UniLink is invalid. The SatCom (TEL) system is permanently shut down. Cycling UniLink power is required to exit this state.
NOCOMM/INIT FAIL	The SatCom (TEL) system is not available for operation. One or both of the following configuration items are invalid: Aircraft Registration Number, or Phone Access Number.
NOCOMM/DIALING	UniLink exited out of the 5-minute delay and is in the process of making another connection attempt.
NOCOMM/PLEASE WAIT	TEL SUSPEND has been manually activated while a connection is in progress. UniLink is in the process of shutting down the connection.
NOCOMM/MDM TIMEOUT	UniLink exited out of the 5-minute delay and while in the process of making another connection attempt the UniLink modem has timed out.

## O. SatCom-based ARINC 741 (SAT)

UniLink interfaces with an ARINC 741-capable SatCom system, such as the Universal/Thrane & Thrane Aero-I SDU and others, via a low speed ARINC 429 interface. Packet Mode ACARS data (Data 2) is sent to the SDU for forwarding to the ACARS gateway on the ground through the Ground Earth Station (GES) and vice versa.

**NOTE:** The UASC Aero-I SatCom system is not approved for FANS messaging.

The UniLink SAT Communication Status is displayed on the COMM STATUS page and is explained in the following table.

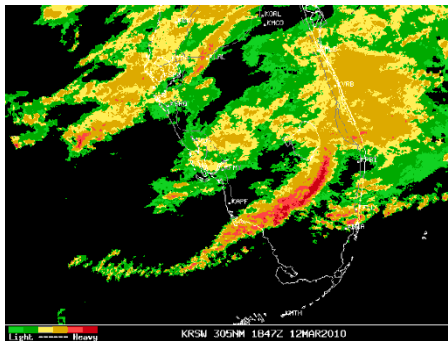
SatCom Media Status	Reason
COMM/IDLE	SatCom (SAT) communication has been established and datalink messages can be transmitted over SatCom. No data is currently being transmitted.
COMM/SENDING	A message is currently in the process of being transmitted. UniLink is waiting for acknowledgement from the ground.
NOCOMM/SDU UNAVAIL <b>NOTE:</b> SDU is the Satellite Data Unit.	The SatCom's system SDU is reporting that it is unavailable.
NOCOMM/SDU INOP	UniLink does not detect the SDU.
NOCOMM/AUTO DELAY	UniLink is waiting before trying to establish a SatCom (SAT) link again.
NOCOMM/TIMEOUT	Retries have been exhausted, and Auto Return to Comm configuration setting is disabled. A manual Link Test must be performed, or an uplink received for the medium to return to COMM.
NOCOMM/CONNECTING	A SatCom (SAT) link is in the process of being established.
NOCOMM/SUSPENDED	SatCom (SAT) link has been suspended by the crew.
COMM/IDLE	SatCom (SAT) communication has been established and datalink messages can be transmitted over SatCom. No data is currently being transmitted.
COMM/SENDING	A message is currently in the process of being transmitted. UniLink is waiting for acknowledgement from the ground.
NOCOMM/SDU UNAVAIL <b>NOTE:</b> SDU is the Satellite Data Unit.	The SatCom's system SDU is reporting that it is unavailable.
NOCOMM/SDU INOP	UniLink does not detect the SDU.
NOCOMM/AUTO DELAY	UniLink is waiting before trying to establish a SatCom (SAT) link again.
NOCOMM/TIMEOUT	Retries have been exhausted, and Auto Return to Comm configuration setting is disabled. A manual Link Test must be performed, or an uplink received for the medium to return to COMM.
NOCOMM/CONNECTING	A SatCom (SAT) link is in the process of being established.
NOCOMM/SUSPENDED	SatCom (SAT) link has been suspended by the crew.

## **Graphical Weather Depiction**

UniLink provides configurable graphic ports which can be configured to interface with a total of six graphics buses.

Graphical weather information is available only when the UniLink is interfaced to a SatCom system via the RS-232 connection and supported by the DSP. The tip and ring data interface, available on previous UniLink models, is no longer required and therefore has been removed.

The graphics capability has been improved by the addition of two high resolution output ports. Graphics may be displayed in high resolution (Hi-Res) for units that are capable of displaying high resolution graphics, such as the EFI-890R in the Navigation Display (ND) position or an MFD-640 with SCN 1011.4.8 or later installed.



Example Graphic

These two high resolution RS-422 ports may be configured to support two dedicated EFI-890R displays (all EFI-890Rs are capable of high resolution display while all CDU/MCDUs display in low resolution). In the event that both a low resolution and a high resolution graphic is requested, the UniLink automatically requests and uplinks two formatted images reflecting the same data during the same call:

- One formatted to support the display of images on the low resolution output
- One formatted to support high resolution images that will result in a larger, higher quality image

## **Graphics Display Configuration Options**

The Graphics Display Configuration Options include low resolution graphics transmission to CDUs, remote CDUs, MCDUs, MFDs; and high resolution graphics to high resolution EFI-890R displays or an MFD-640 with SCN 1011.4.8 or later installed.

## **P. ACARS Message Processing**

UniLink provides services in the Aircraft Communications Addressing and Reporting System (ACARS). There are two types of ACARS data communications, ground-to-air via uplink messages and air-to-ground via downlink messages, both of which are supported by SatCom or VHF. Messages sent from one aircraft to another can only be accomplished through the use of user-defined messages via the ground network. Direct communication from aircraft to aircraft is not available. Uplink messages are generated by Airline Ground Host Centers or an equivalent service provider, ATC facilities or a Datalink Service Provider (DSP) such as ARINC or SITA. Uplink messages not generated by a DSP are passed to a

DSP which then sends the uplink messages to a designated UniLink system or aircraft. The message is then processed by UniLink or, when the message is meant for a peripheral unit, is passed on to the appropriate peripheral unit.

(1) ACARS Uplink Message Receiving

When UniLink receives an uplink message from the ground system, it performs a Block Check Sequence (BCS) error check. If the BCS message is valid, UniLink accepts the message and generates a positive acknowledgment for transmission to the ground. If the uplink message contains an error, UniLink generates a negative technical acknowledgment. Upon receipt of the negative technical acknowledgment, the ground system should retransmit the uplink message.

(2) ACARS Uplink Message Log

UniLink maintains an uplink message log capable of storing at least 40 AOC uplink messages. UniLink stores only those uplink messages that are defined in the database as requiring storage in the log. UniLink allows users to delete or print specific messages from the message log. When the message log is full and a new message requiring storage is received, UniLink will delete the oldest read message in the log. When the log is full of messages that have not been read and a new message requiring storage is received, UniLink will delete the oldest message.

(3) ACARS Downlink Message Origination

There are several actions that can generate a downlink. The crew may do so via the CDU/MCDU and route the message to the UniLink for transmission, or UniLink may automatically generate a downlink as a response to an event having occurred, such as weight off wheels or an automatic position report.

(4) ACARS Downlink Message Queue

Once a downlink message is encoded, it is queued until the message can be transmitted to the ground. UniLink is capable of maintaining at least 70 messages in the transmission queue. UniLink allows users to delete or print specific messages from the message log.

(5) ACARS Downlink Message Transmission

When a valid communication link exists, UniLink transmits the message having the highest priority. If more than one message shares the highest priority then UniLink selects the oldest from that group of messages. Upon receipt of the downlinked message, the DSP performs a BCS error check and, if the BCS is valid, it routes it to the proper destination. The ground system also generates a positive technical acknowledgment for the message and transmits it to the aircraft. Upon receipt of a positive technical acknowledgment, UniLink considers the message successfully transmitted.

## **Q. Advisory Alerts, Device Status, and Error Messages**

UniLink generates advisory alerts annunciating normal and non-normal conditions that require crew action. Selecting the advisory alert displays the UniLink page on which the corresponding information is displayed or from which a required action may be performed.

Examples of advisories are: NEW MSG, VHF VOICE, NOCOMM, and NEW WX MAP.

UniLink provides real-time status information for other LRUs UniLink interfaces with via the DEVICE STATUS page. When configured, devices such as FMSs, internal VHF radio, 741 SatCom-based system, printer, etc. show as OK or INOP. INOP is displayed when communication between both devices has failed. If a particular device is not configured, UniLink displays NO CONFIG as the device status.

Additionally, the state of various input sensors including all analog discretes is displayed via the SENSOR STATUS page. These displays are useful for initial system installation and trouble-shooting in the field

UniLink generates error messages to alert the crew of non-normal conditions. Generally, a NEW ERROR MSG advisory appears, which when selected will display the error message title and additional details if applicable. A log of error messages appears on the ERROR LOG page.

Examples of error messages are:

- CONFIGURATION WARNING
- POWER –ON BIT FAILURE
- VHF CHANNEL CONGESTION

Additionally, UniLink generates pop-up windows for normal and non-normal alert information that may require more timely crew awareness. Examples of pop-up window messages are:

- QUEUE FULL
- PRINT JOB COMPLETE

## **R. Cockpit Voice Recorder (CVR)**

Replacing voice communications between crews and air traffic control (ATC) with datalink messages is intended to improve safety, enhance efficiency, and increase air traffic capacity. This is one of the main features in the UniLink.

The UL-801 provides a configurable ARINC transmit port to support the recording of datalink messages on a compatible ARINC 757Cockpit Voice Recorder (CVR/CVFDR).

The CVR/CVFDR records all messages that are sent to it by the UniLink. Messages are provided to the CVR/CVFDR on an ARINC 429 data bus. This port may be configured for high or low speed based on the recorder's speed requirement.

When an ARINC transmit port is connected to a UASC CVR/CVFDR, the ARINC transmit port must be configured as follows:

- PORT SPEED: HIGH
- PORT DEVICES: CVR

UniLink supports transmission of datalink message recordings to any ARINC Characteristic 757 CVR/CVFDR.

The following information is sent to the CVR/CVFDR as part of the recording process:

- Uplinks to the aircraft
- Downlinks from the aircraft
- The time the message is displayed to the crew
- The crew's response to the message
- UniLink status data
- Any peripheral data that is addressed to the CVR

Records sent to the CVR may contain the following information:

- The message priority (if any)
- The display status of the message
- Time stamps of the message
- Other information required to identify the message.

The following examples describe ways that UniLink processes such data.

**Example 1: Uplink to the Crew (Weather Graphic Received)**

In the event that an uplink intended for display to the crew is received (Weather Graphic), UniLink transmits a record to the CVR/CVFDR. When UniLink receives the graphic uplink, UniLink displays the graphic.

**Example 2: Downlink from the Crew (Crew-Commanded Downlink)**

In the event that the crew generates or commands a downlink (a command to send a downlink is initiated by the crew from CDU/MCDU), UniLink transmits a record to the CVR/CVFD or UniLink queues a downlink. UniLink transmits another record once the message successfully sends or if a message fails to send.

## **S. Printers**

UniLink supports an interface to an ARINC 740/744/744A or a RS-232 serial printer. UniLink only supports one printer in a configuration. If both ARINC and RS-232 serial printers are configured, UniLink only uses the ARINC 740/744/744A printer.

UniLink supports printing of text data only. The maximum file size supported by UniLink is 16 KB, including any header and footer. If a print file is larger than 16 KB, UniLink discards the print file and sends a message to the Status log.

**NOTE:** The file size limit was derived to provide a design guideline for reserving memory for print jobs. The maximum file size from an ACARS uplink is about 3 KB and the maximum Williamsburg file size supported by UniLink is 6,320 bytes.

## **T. Transmission Media Interfaces - Configuration Option**

SatCom is supported with a configurable interface to an A741 SDU for text-based messages.

Telephony is supported with a configurable RS-232 interface to a UASC T-T Aero-M or Iridium systems for both text-based messages and graphical weather maps. MagnaStar and UASC Aero-I tip/ring telephony interfaces are not supported.

VHF communications are supported with a configurable ARINC interface to an external A750 VDR for text-based messages.

## **U. Text Message Processing**

UniLink supports Aeronautical Operational Communications (AOC) flexible messaging and FANS message handling. UniLink also supports both uplink and downlink messages from peripheral systems.

UniLink supports Air Traffic Services ATS and AOC text messages, downlink graphical weather requests, and uplink graphical weather images stored and displayed in one or more message logs. Uplink and downlink message integrity checks are performed by means of a 32-bit CRC calculation.

Message alerting functions include configurable output discretes for visual and aural alerting and digital outputs to various LRUs. Message alert inhibiting is configurable and is provided during critical flight phases (takeoff and landing) and is based on flight parameters including ground speed, altitude, and FMS approach mode.

## **V. Media Advisory Reporting Option**

If enabled, UniLink sends the Media Advisory message to update the DSP regarding the status and availability of datalink media, such as VHF, TEL, or SAT. It is useful for the DSP to know the available datalink media when preparing a message for transmission to UniLink. Upon request by the host processor, the DSP may forward this information to other DSPs. Crew interaction is not required.

## **W. Automatic Position Reporting Option**

The Automatic Position Reporting Option includes configurable on-ground and in-air automatic position reporting selections. UniLink provides the ability to temporarily disable/enable the automatic position reporting function and modify the reporting interval via the UniLink POS REPORT page.

The Automatic Position Reporting messages may be customized by the user and may conform to the format in ARINC Characteristic 702A. The user will be able to delay transmission of Automatic Position Report messages for a configured amount of time after the OFF event to reduce missed transmissions due to signal blockage during take off.

## **X. OOOI Reporting/History Option**

The OOOI Reporting/History Option includes Out, Off, On, In (OOOI) downlink messaging and history maintenance stored in UniLink's non-volatile memory. Configurable input parameters (door, brake, strut, ground speed) can be received from multiple sources based on the specific installation. It's recommended that OOOI be enabled if ARINC is selected as a DSP.

## **Y. Flight Leg Transition**

The Flight Leg Transition feature is provided to reduce the crew workload (such as initializing the Origin of the next flight leg to the Destination of the flight leg that was just completed). It is also used as a means of automatically logging data from a flight leg that was just completed if that data may be needed for future reference, such as OOOI times and fuel.

## **Z. Meteorological Data Reporting Option**

The Meteorological Data Reporting Option includes processing of uplink configuration settings and automatic downlink messaging. Meteorological data items include atmospheric temperature, pressure, and wind speeds collected at various durations throughout the flight. Crew interaction is not needed.

## **AA. ARINC 741 using Iridium or Inmarsat**

UniLink provides a standard interface to ARINC 741-capable SatCom-based airborne telephony systems. The UniLink meets DO-178B level C software requirements necessary for all FANS messaging. The bearer systems such as Inmarsat and Iridium SatCom Systems must meet DO-178B level D requirements. Check with the selected SatCom manufacturer for further details regarding this important issue.

## **2. Operation**

The UniLink is operated by controls provided by the FMS CDU/MCDU. Refer to the UniLink Operator's Manual, 23-20-06.01, for UniLink Operating Procedures.

If FANS is enabled, the report number for the UniLink FANS Operations Manual is 23-20-06.02. This manual must be obtained separately.

The Operator's Manual introduces the CDU/MCDU, explains the CDU/MCDU operating philosophy, and provides a detailed explanation of the keyboard keys, Line Select Keys (LSK), and their associated functions.



# FAA Approval

## 1. General

Installation approval of the UniLink system is being accomplished under a variety of STCs and Forms 337. For a new installation to be eligible for approval, it will be necessary to apply to the FAA for an STC or to utilize an existing STC or Form 337.

This manual contains information directing the follow-on TC or STC applicant to include specific maintenance instructions in the Aircraft Maintenance Manual or ICA when the Field Loadable Software process is expected to be used as called out in FAA Order 8110.49 Section 5-4.

ACARS/graphics datalink functionality is NOT approved under TSO-C160.

Universal Avionics Systems Corporation received U.S. Federal Communication Commission “Grant of Equipment Authorization” on TBD, in accordance with FCC Rule Part 87, with the following transmitter specifications:

Mode	Output Power (Minimum)	Frequency Tolerance	Channel Spacing	Frequency Range	Emission Designator
A	16 Watts	±30 PPM	25 kHz	118.000 to 136.975 MHz	13K0A2D
2	15 Watts	±5 PPM	25 kHz	118.000 to 136.975 MHz	14K0G1D

### A. Applicable TSOs

- TSO-C160

Refer to the TSO Deviations section.

### B. TSO Deviations

- TSO-C160 Section 3.f Environmental Qualification

The FAA granted a deviation to use the environmental conditions specified in RTCA/DO-160F in lieu of DO-160E.

- TSO-C160 Section 4.a.(1) and 4.a.(2) Marking

The FAA granted deviations to allow the parts to be marked using the model designation system as referenced in 14 CFR § 21.619(b) Amdt. 21-92 in accordance with 14 CFR § 21.616(d) Amdt. 21-92 and § 45.15b, Amdt. 45-26.

- Section 4.a.(1) Marking: Authorization to mark the LRUs with the Model Designation in order to capture both the hardware part number and software control number (SCN).
- Section 4.a.(2) Marking: Authorization to not mark the LRUs with the date of manufacture. Each part will be marked with a unique serial number.

## C. Equipment Classes

### Equipment Classes

- UL-801, SCN 30:
  - F  
VDL Mode 2 receiver used in a 25-kHz channel separation environment
  - 7  
VDL Mode 2 transmitter used in a 25-kHz channel separation environment, intended to operate with a range of 200 nautical miles

### Equipment Architecture Classes

- UL-801, SCN 30:
  - W (CMU)
  - Y (VDR)

## D. Reference Documents

- (1) TSO-C160 (11-Jan-2008): *VDL Mode 2 Communications Equipment*
- (2) DO-281A (08-Nov-2005): *Minimum Operational Performance Standards for Aircraft VDL Mode 2 Physical, Link, and Network Layer (MPS for TSO-C160)*
- (3) AC 20-140A (07-Apr-2010): *Guidelines for Design Approval of Aircraft Data Communications Systems*
- (4) AC 20-160 (21-Feb-2008): *Onboard Recording of Controller Pilot Data Link Communication in Crash Survivable Memory*
- (5) DO-186B (08-Nov-2005): *Minimum Operational Performance Standards for Airborne Radio Communications Equipment Operating Within the Radio Frequency Range 117.975 – 137.000 MHz*
- (6) DO-258A (07-Apr-2005): *Interoperability Requirements for ATS Applications Using ARINC 622 Data Communications (FANS 1/A Interoperability Standard)*
- (7) RTCA/DO-160F (06-Dec-2007): *Environmental Conditions and Test Procedures for Airborne Equipment*
- (8) RTCA/DO-178B (01-Dec-1992): *Software Considerations in Airborne Systems and Equipment Certification*
- (9) RTCA/DO-254 (19-Apr-2000): *Design Assurance Guidance for Airborne Electronic Hardware*
- (10) RTCA/DO-306/ED-122 (11-Oct-2007): *Safety and Performance Standards for Air Traffic Data Link Services in Oceanic and Remote Airspace (Oceanic SPR Standard)*
- (11) ARINC 618-6 (Jun-2006): *Air/Ground Character-Oriented Protocol Specification*
- (12) ARINC 623-3 (Apr-2005): *Character-Oriented Air Traffic Service (ATS) Applications*
- (13) ARINC 631-5 (Dec-2008): *VHF Digital Link (VDL) Mode 2 Implementation Provisions*
- (14) ARINC 741P2-10 (09-Feb-2009): *Aviation Satellite Communication System Part 2 System Design and Equipment Functional Description (Section 4.7 ACARS MU/CMU - SATCOM Interface)*

- (15) ED-85A (Dec-2003): *Data Link Application System Document (DLASD) for the "Departure Clearance" Data-Link Service*
- (16) ED-89A (Dec-2003): *Data-Link Application System Document (DLASD) for the "ATIS" Data-Link Service*
- (17) ED-106A (Mar-2005): *Data-Link Application System Document (DLASD) for the "Oceanic Clearance" Data-Link Service*
- (18) GOLD (14-Jun-2010): *Global Operational Data Link Document (GOLD)*
- (19) AC 120-70A (29-Dec-2005): *Operational Authorization Process for use of Data Link Communication System*
- (20) ICAO Doc 9613 (01-Jan-2008): *Performance-based Navigation (PBN) Manual*
- (21) RTCA/DO-290/ED-120; Change 1 and Change 2 (29-Apr-2004): *Safety and Performance Requirements Standard for Air Traffic Data Link Services in Continental Airspace (Continental SPR Standard)*
- (22) ED-154 (Jul-2008): *Future Air Navigation System 1/A - Aeronautical Telecommunication Network Interoperability Standard*

## **E. Other References**

### **TSO Functions**

- (1) VDL Mode 2 - Ref: TSO-C160, DO-281A, ARINC 631  
Supports the requirements contained in TSO-C160 and MPS DO-281A. The UL-801 is equipment class F (VDL Mode 2 receiver used in a 25-kHz channel separation environment) and 7 (VDL Mode 2 transmitter used in a 25-kHz channel separation environment, intended to operate with a range of 200 nautical miles) and architecture class W (CMU) and Y (VDR). The UL-800 is architecture class W (VDR).

### **TSO Supporting Functions**

- (1) Data Loading of Software and Databases - Ref: ARINC 758, SRD  
Application-level functionality may be field-modified by the transfer from portable media (disk or flash memory) of the UniLink and VDR software programs as well as databases that define the cockpit presentation, air/ground message types and formats, as well as the geographic location of VHF ground stations.
- (2) Config Module Interface - Ref: ARINC 758, SRD  
An aircraft "personality module" is integrated with the UniLink to hold configuration data unique to the aircraft installation. This includes the physical connections as well as customer-specific operational preferences.
- (3) BIT/Maintenance and Status Reporting - Ref: ARINC 758  
Built-in-test and continuous health monitoring functions detect health of both internal components (memory, I/O devices, S/W validity, etc.) as well as external systems. Maintenance and Status reporting provides periodic output of the status of other connected aircraft peripherals. Errors are presented to the cockpit and logged internally for service and troubleshooting.

- (4) VDL Mode A - Ref: ARINC 618, DO-186B  
VDL Mode A refers to the analog communication protocols exercised by the VHF data radio (VDR) and supported by the UniLink to exchange ACARS messages with any appropriately equipped ground system. This mode is equivalent to the plain old ACARS (POA) function of historical CMUs.
- (5) SatCom Communication Interface - Ref: ARINC 618, ARINC 619  
Satellite-based communication is available to the UniLink through a digital interface to an external satellite data unit (SDU). The SatCom interface provides an alternative media to VHF for the transmission of ACARS messages supporting FANS 1/A+, ACARS ATS, and AOC applications. Customer preferences usually prioritize the use of SatCom communications lower than VHF communications resulting in this function generally being used in Remote or Oceanic regions.
- (6) ACARS - Ref: ARINC 618  
The Aircraft Communications Addressing and Reporting System (ACARS) is a data link protocol and message structure which allows communication of character-oriented data between aircraft systems and ground communication service provider systems.
- (7) AOA - ACARS over AVLK Ref: ARINC 618  
The AOA function transports ACARS messages using ACARS routing over VDL Mode 2 Aviation VHF Link Control (AVLC) - the data link layer. AOA provides a more efficient, digital exchange of air/ground ACARS messages than VDL Mode A.
- (8) ACARS Air Traffic Services (for example, D-ATIS, PDC, OC) (TSO indirect) - Ref: ARINC 622, ARINC 623  
The ACARS ATS function is the exchange of text-based Air Traffic Services information between the flight crew and ATS ground host processing systems. These services include: Automatic Terminal Information Services (ATIS), Oceanic Clearances (OC), Pre-Departure Clearances (PDC), Terminal Weather Information for Pilots (TWIP), Pushback Clearances, and Expected Taxi Clearances.
- (9) Airline Operations Control (AOC – for example, text weather, weight, and balance) - Ref: ARINC 620  
The AOC function is the exchange of text-based information between the flight crew/aircraft systems and the operator's AOC processing systems (for example, dispatch, maintenance, or meteorological services) throughout all phases of flight (pre-flight, enroute, and post flight). Data included in the messages can be drawn from other aircraft systems (such as I/O concentrator buses or FMS units) or can be entered by the flight crew via a control and display unit.
- (10) Datalink Message Recording - Ref: ARINC 758, ARINC 619  
Intending to improve safety, enhance efficiency, and increase air traffic capacity, the trend of replacing voice communications between flight crews and air traffic control (ATC) with datalink messages is becoming more prevalent. In order to aid in potential incident/accident investigations, UniLink supports transmission of datalink messaging records to an ARINC Characteristic 757 cockpit voice recorder (CVR). Records presented to the CVR include messages exchanged between the UniLink and

CSPs and between the UniLink and peripheral devices, datalink-based crew actions, and other datalink events.

### **Non-TSO Functions**

- (1) Telephony Communication Interface - Ref: SRD

The telephony communication interface provides an alternate media for the limited transfer of operator's AOC messages and weather graphics between the aircraft and the ground. The telephony interface uses industry standard protocols for access to an airborne telephone modem that is part of an on-board satellite communication system. Telephony messaging is supported through separate air-air/air-ground channels from other SATCOM ACARS ATS and FANS 1/A+ message functions.

- (2) FANS 1/A+ Ops Credit for FANS - Ref: DO-258A, GOLD, ARINC 622

UniLink system functionality is greatly enhanced by offering a FANS-1/A + implementation, which is intended to improve safety of flight, enhance efficiency, and increase capacity by replacing routine voice transmissions between flight crews and ATC with datalink messages during flight in oceanic and remote areas that have no or limited radar coverage. FANS operational credit can be applied for following UniLink installation airworthiness approval for aircraft that are properly equipped.

- (3) Weather Graphics - Ref: SRD

Graphical weather images can be requested by the crew and transferred by UniLink from the ground via the Telephony Communication Interface and presented on compatible display units (UASC only) in the cockpit. This facility is supported by ground AOC facilities complying with UASC-proprietary protocols and message formats. The images presented are intended for non-essential use.

## **2. Software Criticality**

### **SCN 10.X Main UniLink Bootloader Software**

Main UniLink Bootloader software version SCN 10.X is categorized as DO-178B Level D (Minor). Level D software is defined by DO-178B as *“software whose anomalous behavior, as shown by the system safety assessment process, would cause or contribute to a failure of system function resulting in a minor failure condition for the aircraft”*.

#### **VDR Bootloader SCN 10.X**

The VDR boot software is partitioned from the VDR application and will be developed to Level D. The VDR boot software is stored in a flash memory device separate from that of the application software. Once the application software is invoked, the boot software is deactivated.

#### **VDR Transmit Monitor SCN 10.X**

The VDR transmit monitor software is partitioned from the VDR boot and application software and will be developed to Level C. The VDR transmit monitor software is stored and executes on a separate microcontroller residing on a different physical circuit card from that that hosts the VDR boot and application functions.

### **SCN 30.X Application Software**

Application software version SCN 30.X is categorized as DO-178B Level C (Major). Level C software is defined by DO-178B as “*software whose anomalous behavior, as shown by the system safety assessment process, would cause or contribute to a failure of system function resulting in a major failure condition for the aircraft*”.

### **SCN 10.X VHF Data Radio Application Software**

VHF Data Radio Application software version SCN 10.X is categorized as DO-178C Level C (Major). Level C software is defined by DO-178B as “*software whose anomalous behavior, as shown by the system safety assessment process, would cause or contribute to a failure of system function resulting in a major failure condition for the aircraft*”.

## **3. Instructions for Continuous Airworthiness, FAR 23.1529, 25.1529, 27.1529 and 29.1529**

Our statement in compliance with FAR 23.1529, 25.1529, 27.1529 and 29.1529 follows:

Maintenance Requirements and Instructions for Continuous Airworthiness

SYSTEM: Universal Avionics Systems Corporation UniLink System

Modification of an aircraft by this Supplemental Type Certificate or Form 337 obligates the aircraft operator to include the maintenance information provided by this document in the operator's Aircraft Maintenance Manual and the operator's Aircraft Scheduled Maintenance Program.

- (1) Maintenance Manual information for the UniLink (system description, removal, installation, testing, etc.) is contained in Universal Avionics Systems Corporation's (UASC) Installation Manual 23-20-06.
- (2) Line Replaceable Unit (LRU) part numbers and other necessary part numbers contained in the installation data package should be placed in the aircraft operator's appropriate aircraft Illustrated Parts Catalog (IPC). Refer to Equipment Specifications, F. Electronic Part Marking, of this manual for additional parts marking information.
- (3) Wiring diagram information contained in the aircraft installation's data package should be placed into the aircraft operator's appropriate aircraft Wiring Diagram Manuals.
- (4) Installation specific electrical drawings, mechanical drawings and miscellaneous documents are listed on the data package Master Drawing List.
- (5) The LRU's location and access requirements are as defined by the installer.
- (6) Revision to this document will be accomplished via Service Bulletins and/or Installation Manual revision.
- (7) The system performs full self-test BITE at each power on and any failures are annunciated to the crew.

## **A. Airworthiness Limitations**

### **Scheduled Maintenance Program**

Scheduled Maintenance Program tasks to be added to the aircraft operator's appropriate aircraft maintenance program are as follows:

- |     |                                                                                                                            |               |
|-----|----------------------------------------------------------------------------------------------------------------------------|---------------|
| (1) | Recommended Periodic Scheduled Servicing Tasks:                                                                            | None Required |
| (2) | Recommended Periodic Scheduled Preventative Maintenance Tests/Checks to determine System Condition and/or Latent Failures: | None Required |
| (3) | Recommended Periodic Inspections:                                                                                          | None Required |
| (4) | Recommended Periodic Structural Inspections:                                                                               | None Required |
| (5) | Recommended Replacement Interval:                                                                                          | None Required |

### **Unscheduled Maintenance Program**

Unscheduled maintenance may include upgrade of the program software contained in the UniLink, upgrade of the Field Loadable software, or other modifications. If the UniLink is removed and the software changed, the configuration settings should be checked and amended as necessary in accordance with the instructions contained in applicable manuals.

## **B. Compliance**

Universal Avionics has published two compliance reports for the UL-80X systems. These reports describe installation requirements that must be considered as part of the installation airworthiness approval. Contact Universal Avionics Product Support to receive the latest revisions of these reports.

RPRT-2012-1005, *AC 20-140A Compliance Report for the UL-80X UniLink LRU with Software SCN 30.X*

RPRT-2012-1007, *UniLink UL-80X With Software SCN 30.X Compliance Summary Report*

## 4. Environmental Qualification Forms

The environmental categories under which the UniLink is approved (Reference RTCA DO-160F) are listed on the following Environmental Qualification Forms.

### ENVIRONMENTAL QUALIFICATION FORM

NOMENCLATURE	<u>UniLink UL-801</u>
PART NO.	<u>10801-XX</u>
TSO NUMBER	<u>TSO-C160</u>
MANUFACTURER	Universal Avionics Systems Corporation 3260 East Universal Way Tucson, AZ 85756-5097

Conditions	DO-160F Section #	Category	Description of Conducted Tests
Temperature and Altitude	4	A2 E1	Inside or outside pressure vessel -55°C to +70°C Maximum altitude—70,000 feet For the E1 levels that, per RTCA/DO-160F, are declared by the manufacturer, the corresponding levels for A2 are used.
In-Flight Loss of Cooling	4.5.4	X	There is no fan on this product.
Temperature Variation	5	B	Equipment in non-temperature controlled area of airplane. 5 degrees/minute
Humidity	6	A	Standard humidity
Operational Shocks and Crash Safety	7	B, E	Equipment in fixed-wing and helicopters tested for operational shock and safety.
Vibration	8	S	Test category S—Standard
Explosion Atmosphere	9	H	Equipment H—including hermetically sealed, contains hot spot surfaces and non-spark producing.  Environment 2—atmosphere where flammable mixture exist only because of spillage or leakage.
Waterproofness	10	W	Equipment subjected to falling water in course of normal airplane operations.
Fluids Susceptibility	11	X	Not tested—Fluid contamination not commonly encountered.
Sand and Dust	12	X	Not tested—Not subject to blowing sand and dust.
Fungus Resistance	13	X	Not tested—Equipment not exposed to severe fungus contamination.



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Conditions	DO-160F Section #	Category	Description of Conducted Tests
Salt Fog	14	X	Not tested—Equipment not subjected to salt atmosphere.
Magnetic Effect	15	Z	Actual class will be measured. (The distance required to cause a compass needle deflection of one degree is measured and must be less than 0.3 meter to be considered compliant with Category Z.)
Power Input	16	Z	DC generator systems with or without a battery. Not designated to transmit under emergency electrical system conditions.
Voltage Spike	17	A	Equipment installed where high degree of protection against voltage spikes is required.
Audio Frequency Conducted Susceptibility	18	Z	—
Induced Signal Susceptibility	19	ZC	Equipment intended for operation where interference free operation is required on an aircraft whose primary power is constant frequency or DC.
Radio Frequency Susceptibility (Radiated and Conducted)	20	R	HIRF conditions are part of normal environment.
Emission of Radio Frequency Energy	21	M	—
Lightning Induced Transient Susceptibility	22	A3 G33 J33	Pin test performed to level A3; shielded cable bundle test performed to level J33; unshielded cable bundle test performed to level G33. <b>NOTE:</b> The pin test was performed to level A3 except for the Ethernet signal pins which were tested to Level A2.
Lightning Direct Effects	23	X	—
Icing	24	X	—
Electrostatic Discharge	25	A	—
Flammability	26	X	—

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**ENVIRONMENTAL QUALIFICATION FORM**

NOMENCLATURE

Configuration Module

PART NO.

108009

TSO NUMBER

TSO-C160

MANUFACTURER

Universal Avionics Systems Corporation  
3260 East Universal Way  
Tucson, AZ 85756-5097

Conditions	DO-160F Section #	Category	Description of Conducted Tests
Temperature and Altitude	4	A2 E1	Inside or outside pressure vessel -55°C to +70°C Maximum altitude—70,000 feet For the E1 levels that, per RTCA/DO-160F, are declared by the manufacturer, the corresponding levels for A2 are used.
In-Flight Loss of Cooling	4.5.4	X	There is no fan on this product.
Temperature Variation	5	B	Equipment in non-temperature controlled area of airplane. 5 degrees/minute
Humidity	6	A	Standard humidity
Operational Shocks and Crash Safety	7	B, E	Equipment in fixed-wing and helicopters tested for operational shock and safety.
Vibration	8	S	Test category S—Standard
Explosion Atmosphere	9	H	Equipment H—including hermetically sealed, contains hot spot surfaces and non-spark producing.  Environment 2—atmosphere where flammable mixture exist only because of spillage or leakage.
Waterproofness	10	W	Equipment subjected to falling water in course of normal airplane operations.
Fluids Susceptibility	11	X	Not tested—Fluid contamination not commonly encountered.
Sand and Dust	12	X	Not tested—Not subject to blowing sand and dust.
Fungus Resistance	13	X	Not tested—Equipment not exposed to severe fungus contamination.
Salt Fog	14	X	Not tested—Equipment not subjected to salt atmosphere.

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Conditions	DO-160F Section #	Category	Description of Conducted Tests
Magnetic Effect	15	Z	Actual class will be measured. (The distance required to cause a compass needle deflection of one degree is measured and must be less than 0.3 meter to be considered compliant with Category Z.)
Power Input	16	Z	DC generator systems with or without a battery. Not designated to transmit under emergency electrical system conditions.
Voltage Spike	17	A	Equipment installed where high degree of protection against voltage spikes is required.
Audio Frequency Conducted Susceptibility	18	Z	—
Induced Signal Susceptibility	19	ZC	Equipment intended for operation where interference free operation is required on an aircraft whose primary power is constant frequency or DC.
Radio Frequency Susceptibility (Radiated and Conducted)	20	R	HIRF conditions are part of normal environment.
Emission of Radio Frequency Energy	21	M	—
Lightning Induced Transient Susceptibility	22	A3 G33 J33	Pin test performed to level A3; shielded cable bundle test performed to level J33; unshielded cable bundle test performed to level G33.
Lightning Direct Effects	23	X	—
Icing	24	X	—
Electrostatic Discharge	25	A	—
Flammability	26	X	—

## 5. Sample Airplane Flight Manual Supplement

Prepare an Airplane Flight Manual Supplement using the following sample as a guide.

**NOTE:** Comments in angle brackets, < >, and italics are explanatory only and should not appear in the final supplement.

<Name of Applicant> AFM Supplement for <Aircraft Model>

<Address>

Supplement No.

***{SAMPLE}***

**FAA APPROVED  
AIRPLANE FLIGHT MANUAL SUPPLEMENT  
FOR**

**AIRCRAFT MAKE:** \_\_\_\_\_

**AIRCRAFT MODEL:** \_\_\_\_\_

**AIRCRAFT REG:** \_\_\_\_\_

**AIRCRAFT S/N:** \_\_\_\_\_

This supplement must be attached to the FAA Approved Airplane Flight Manual when the airplane is modified by the installation of a Universal Avionics Systems Corporation (UASC) UniLink System, in accordance with STC \_\_\_\_\_, (or Form 337).

The information contained herein supplements or supersedes the basic manual only in those areas listed herein. For limitations, procedures, and performance information not contained in this supplement, consult the appropriate basic Airplane Flight Manual.

FAA Approved:

<Name>

<Title>

FEDERAL AVIATION ADMINISTRATION

<Name of Aircraft Certification Office>

<Address>

FAA Approved Date:

Page 1 of y

## REVISION HISTORY

Sheet	Rev	Description	Approved
1-.....	N/C	Original Document	Date: _____  _____ (Name) (Title) FEDERAL AVIATION ADMINISTRATION (Name of Aircraft Certification Office) (Address)

## TABLE OF CONTENTS

Section	Title	Page
1	General	4
2	Limitations	5
3	Emergency and Abnormal Procedures	8
4	Normal Procedures	9
5	Performance Data	12

## **Section 1 - General**

### **A. Installation Description**

<The following is a sample of how the introduction could read. Fully describe all interfaces with the UniLink.>

The Universal Avionics Systems Corporation UniLink installation is interfaced with up to three UASC Flight Management Systems.

The UniLink contains software 30.X.

## **Section 2 - Limitations**

### **A. Operator's Manual**

The UniLink Operator's Manual, report number 23-20-06.01, must be available to the flight crew when UniLink is to be used during flight. <If FANS is enabled, this report number is 23-20-06.02.>.

### **B. Limitations**

When a UniLink CDU/MCDU message display screen is labeled "Unverified" or "AOC", the Aircraft Communications and Reporting System (ACARS) is unable to ensure that message content was not corrupted during transmission. Unverified messages must be restricted to those that do not create an unsafe condition if:

- (1) The message is not received.
- (2) The message is delivered to the wrong recipient.
- (3) The message content may be frequently corrupted.

**NOTE:** Unverified message contents should be treated as advisory only.

## **Section 3 - Emergency and Abnormal Procedures**

No change to FAA Approved Airplane Flight Manual.

## **Section 4 - Normal Procedures**

Normal operating procedures are outlined in the UniLink Operator's Manual, report number 23-20-06.01. <If FANS is enabled, this report number is 23-20-06.02.>.

## **Section 5 – Performance Data**

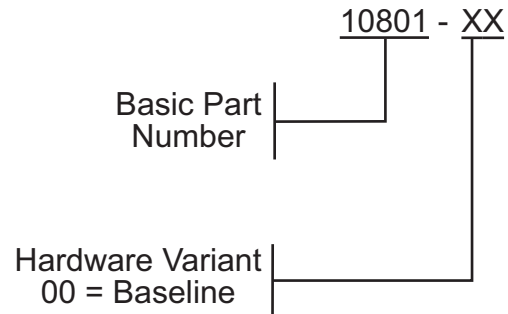
No change to FAA Approved Airplane Flight Manual.



## Equipment Specifications

### 1. UniLink Equipment Specifications

#### A. UniLink Part Number Matrix



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## B. UniLink Installation Kit

(1) Installation Kit P/N K12030-1

Quantity	Part Number	Description
1	13636-93601-2 or 93601-2	Rack, ARINC 600, 1 MCU (Barry Controls)
6	MS24693C4	Screw, Recessed, Cres, 100° CSK, 4-40 x 3/8"
1	1219	Rack Connector
2	MS51957-20	Screw, 4-40 x 7/8", Cres (for configuration module)
2	MS21083C04	Nut, 4-40, Cres, Self Lock (for configuration module)
<b>NOTE:</b> Equivalent substitutes may be used for the listed items in the installation kits.		

## C. Power Specifications

The UniLink will continue to operate with a 19.0V power input.

Component		Current/Power (Amps @ VDC)/Watts						Inrush Current (Amps @ VDC)		
Model	Part No.	22.0V Min		27.5V Nominal		32.0V Max		22.0V Min	27.5V Nominal	32.0V Max
		STBY	TX	STBY	TX	STBY	TX			
UL-801	10801-XX	1A; 22.0W	3.5A typical @ 77W  7A maximum @ 154W	0.9A; 24.8W	3.5A typical @ 96W  7A maximum @ 192W	0.7A; 22.4W	3.5A typical @ 112W  7A maximum @ 224W	2.5A @ <100ms	2.5A @ <100ms	2.5A @ <100ms

**NOTE:**

- The UL-801 is designed to operate using a 5A circuit breaker.
- The UL-801 VDR Transmit Message Duty Cycle is < 750ms.

## D. Equipment Weights

Component	Weight
UL-801 UniLink	Approximately 4.5 Lbs.
Equipment Rack	11.5 Oz.
Connector	5.6 Oz.
Configuration Module	0.5 Oz.

## E. VHF Antenna Specifications

Antenna Specifications	
Coax Cable Attenuation	< 3 dB
Impedance	50 Ohms
Frequency Range	118.000 – 136.975
Power Rating	15W - 35W

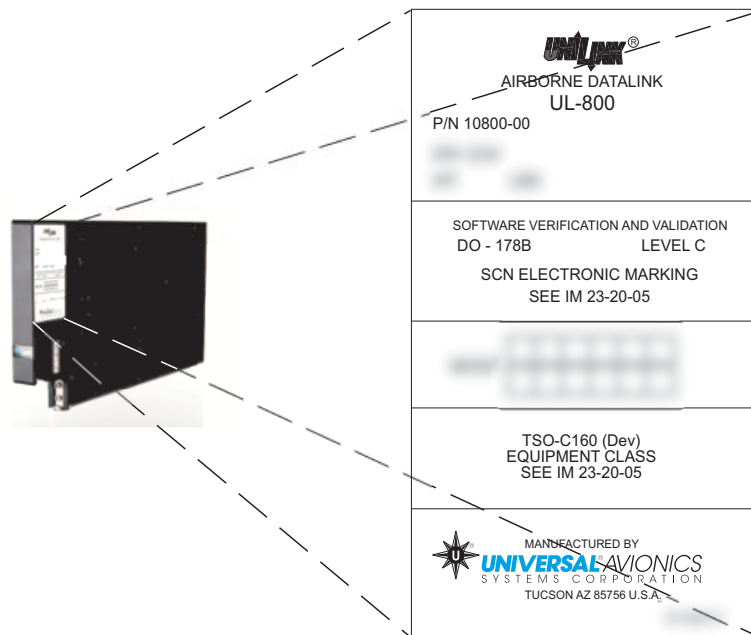
## F. Electronic Part Marking

UniLink supports Electronic Part Marking and is in compliance with FAA Order Number 8110.49 which allows verification of the installed part number and software versions by accessing pages on the connected display device such as a CDU or MCDU. The UniLink nameplate, as shown below, makes reference to the Installation Manual (IM) where such information can be found.

Per FAA Order number 8110.49, there should be a process in place to ensure that maintenance personnel record loaded Field Loadable Software (FLS) part number in the necessary maintenance logs.

When new software is loaded into the unit, it is the maintenance personnel's responsibility to ensure that the software part number has been logged and verified before the unit/aircraft is returned to service.

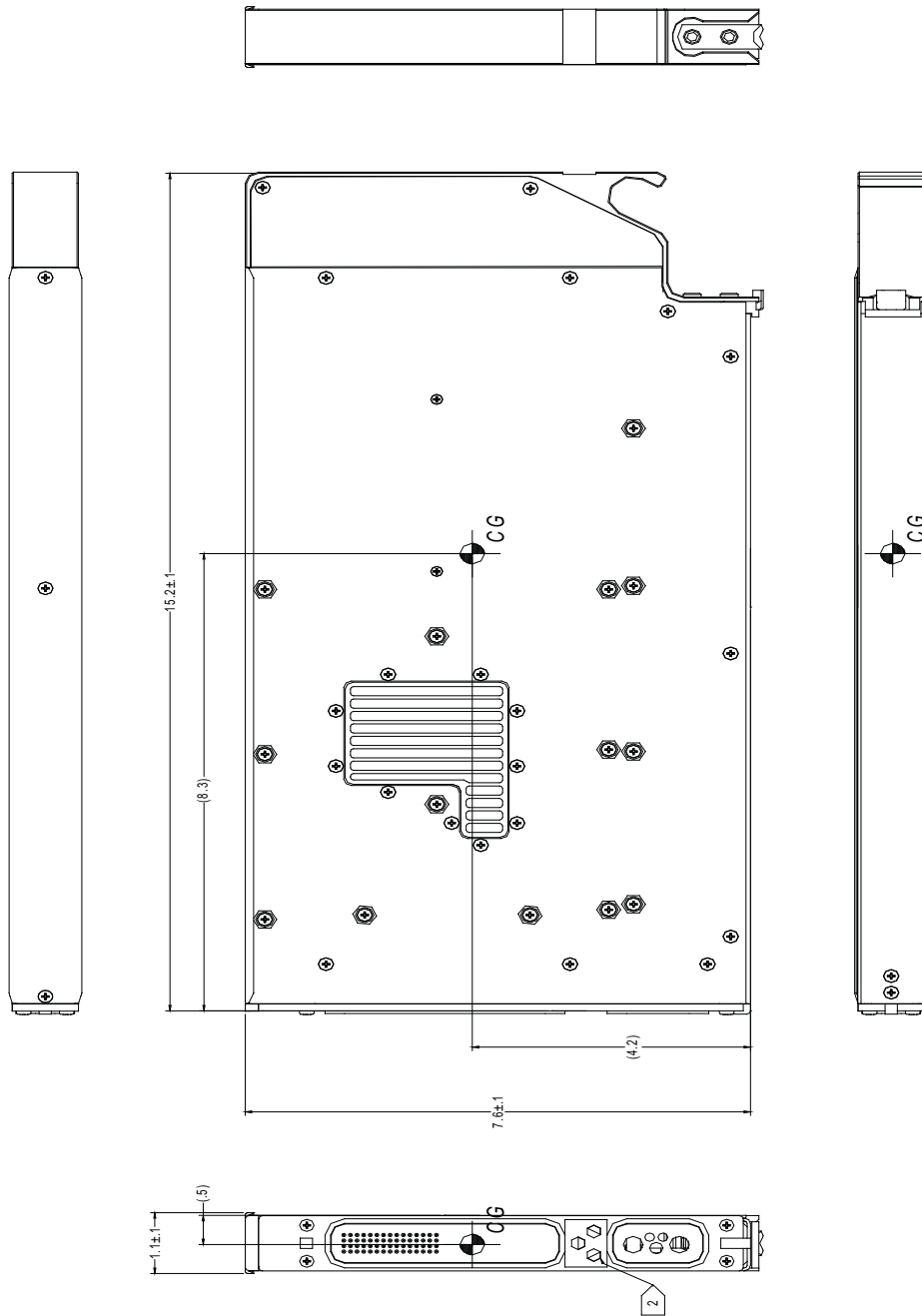
Changes to software part number, version, and/or operational characteristics should be reflected in the Operator's Manual, Aircraft Flight Manual, Aircraft Flight Manual Supplement, and/or any other appropriate document.



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## G. Equipment Drawings

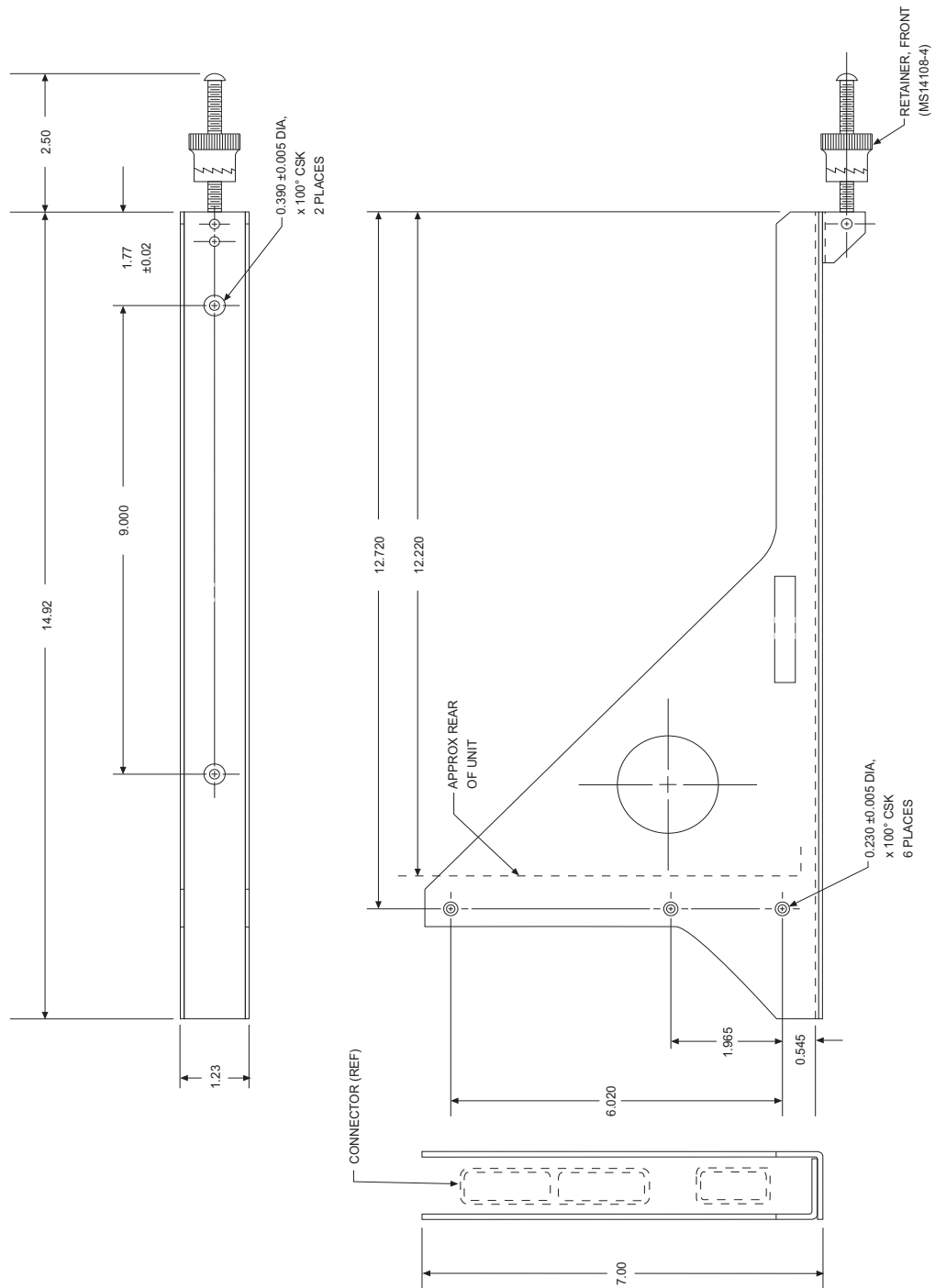
### (1) UL-801 (P/N 10801-XX) Outline Drawing



1. WEIGHT 10801: 4.54 LBS  $\pm$  5%
2. POSITION ARINC 600 CONNECTOR POLARIZATION KEYS TO CODE #08.

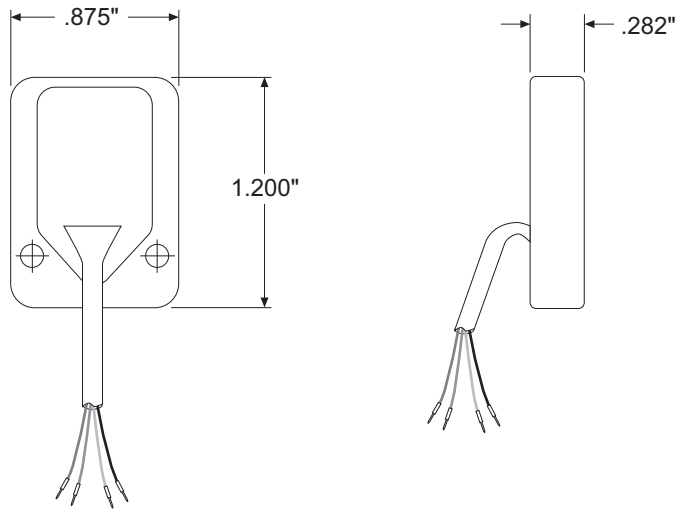
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(2) Rack Drawing (P/N 13636-93601-2)

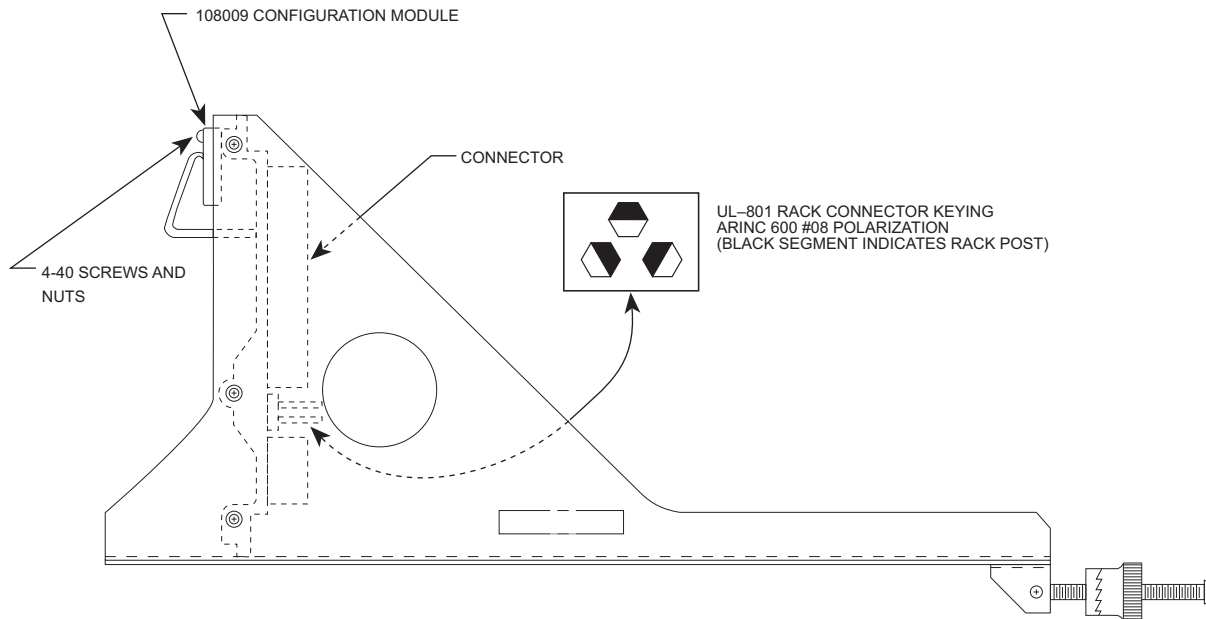


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(3) Configuration Module (P/N 108009)



(4) Configuration Module Installation Detail



**NOTE:** The darkened portion of the rack connector above indicates the extended part of the key; the light portion indicates the key hole.

## H. Signal Specifications

### (1) Digital Inputs

#### (a) FMS ARINC 429 Broadcast Data

Label	Description	Format	UNS HS429-1 TX Rate (ms)	ARINC 429 HS TX Rate (ms)	Notes
102	Selected Altitude	BNR	200	N/A	Crew selected via CP.
116	Cross-track Distance	BNR	100	100	Cross-track distance is relative to SXTK
147	Magnetic Variation	BNR	1000	500	TX rate ARINC 429 HS bus = 100 ms.
150	UTC	BNR	1000	1000	N/A
203	Pressure Altitude	BNR	100	1000	N/A
204	Baro-Corrected Altitude	BNR	100	500	ADC dependent. Baro-corrected altitude is output if available.
205	Mach	BNR	500	N/A	N/A
206	Indicated Air Speed	BNR	500 (NOTE 2)	N/A	N/A
210	True Air Speed	BNR	100	500	N/A
212	Altitude Rate	BNR	100	N/A	N/A
213	Static Air Temperature	BNR	500	1000	N/A
231	Actual Navigation Performance	BCD	500	500	N/A
233	Selected Cross-track	BCD	500	N/A	Crew selected offset from the flight plan.
251	Along Track Distance to WPT	BNR	1000	500	N/A
252	Estimated Time to Waypoint	BNR	500	500	N/A
260	Date	BCD	1000	500	N/A
270	Status	DSC	100	500	N/A
272	Active Leg Attributes	DSC	100	N/A	Contains flight phase data.
310	Present Latitude	BNR	100	100	N/A
311	Present Longitude	BNR	100	100	N/A
312	Ground Speed	BNR	100	500	N/A
313	True Track Angle	BNR	1000	500	N/A
314	True Heading	BNR	100	100	N/A
315	Wind Speed	BNR	1000	500	N/A
316	True Wind Angle	BNR	1000	500	N/A
320	Magnetic Heading	BNR	100 (NOTE 1)	100 (NOTE 2)	N/A

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Label	Description	Format	UNS HS429-1 TX Rate (ms)	ARINC 429 HS TX Rate (ms)	Notes
325	Roll Angle	BNR	100 (NOTE 1)	100 (NOTE 2)	N/A
370	WGS-84/GNSS Height	BNR	1000	N/A	
371	Equipment ID	DSC	1000	1000	N/A
<b>NOTE:</b> 1. When in DEMO mode, the label is not transmitted. 2. Label is output during DEMO mode when IRS ATT OUTPUTS is set active. When IRS ATT OUTPUTS is set inactive, these labels are inhibited during DEMO mode.					

(b) 702A FMS ARINC 429 Broadcast Data

Label	Description	Format	Transmission Rate (ms)
203	Pressure Altitude	BNR	1000
210	True Air Speed	BNR	500
213	Static Air Temperature	BNR	1000
314	True Heading	BNR	100
315	Wind Speed	BNR	500
316	True Wind Angle	BNR	500

(c) ARINC 741 SDU Broadcast Data

Label	Description	Format	Transmission Rate (ms)
270	Status	DSC	1000

(d) ARINC 740/744A Printer Broadcast Data

Label	Description	Format	Transmission Rate (ms)
350	Printer Status	DSC	1000

(e) DHC8-S400 IOP Bus #1 and IOP Bus #2 Broadcast Data ARINC 429

Label	Description	Format	Source
107	Selected Flap Position	BNR	FCU
164	Radio Altimeter 1	BNR	RA 1
164	Radio Altimeter 2	BNR	RA 2
176	Left Engine Fuel Temperature	BNR	FMU 1 (IOP 1)
176	Right Engine Fuel Temperature	BNR	FMU 2 (IOP 2)
204	Baro Alt 1 (cor)	BNR	ADU 1
204	Baro Alt 2 (cor)	BNR	ADU 2
205	Mach Number 1	BNR	ADU 1
205	Mach Number 2	BNR	ADU 2
206	Calib Airspeed 1	BNR	ADU 1
206	Calib Airspeed 2	BNR	ADU 2



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Label	Description	Format	Source
210	True Airspeed 1 (TAS)	BNR	ADU 1
210	True Airspeed 2 (TAS)	BNR	ADU 2
211	Total Air Temp 1	BNR	ADU 1
211	Total Air Temp 2	BNR	ADU 2
212	Altitude Rate 1	BNR	ADU 1
212	Altitude Rate 2	BNR	ADU 2
213	Static Air Temp 1 (SAT)	BNR	ADU 1
213	Static Air Temp 2 (SAT)	BNR	ADU 2
244	Left Fuel Flow	BNR	Left Fuel Flow Meter
244	Right Fuel Flow	BNR	Right Fuel Flow Meter
245	Left Gas Gen Speed (NL)	BNR	FADEC 1 (A/B)
245	Right Gas Gen Speed (NL)	BNR	FADEC 2 (A/B)
246	Left Gas Gen Speed (NH)	BNR	FADEC 1 (A/B)
246	Right Gas Gen Speed (NH)	BNR	FADEC 2 (A/B)
247	Total Fuel Qty Lbs	BNR	FQC
256	Left Tank Fuel Qty Lbs	BNR	FQC
256	Right Tank Fuel Qty Lbs	BNR	FQC
270	IOP 1 Discrete Word 1	BNR	IOP 1
270	IOP 2 Discrete Word 2	BNR	IOP 2
316	Left Engine Oil Temp	BNR	FADEC 1 (A/B)
316	Right Engine Oil Temp	BNR	FADEC 2 (A/B)
317	Left Eng Oil Pressure	BNR	Left Eng Oil Pres Meter (IOP 1)
317	Right Eng Oil Pressure	BNR	Right Eng Oil Pres Meter (IOP 2)
325	Roll Altitude 1	BNR	AHRS 1
325	Roll Altitude 2	BNR	AHRS 2
336	Left Engine Torque	BNR	FADEC 1 (A/B)
336	Right Engine Torque	BNR	FADEC 2 (A/B)
345	Left ITT	BNR	FADEC 1 (A/B)
345	Right ITT	BNR	FADEC 2 (A/B)
346	Left Propeller	BNR	FADEC 1 (A/B)
346	Right Propeller	BNR	FADEC 2 (A/B)

(f) ARINC 739A MCDU Broadcast Data

Label	Description	Format	Transmission Rate (ms)
172	System Identification Word	DSC	1000
270	MCDU Status Word #1	DSC	1000
377	MCDU Identifier Word	DSC	1000

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(g) ARINC 743 GNSS Broadcast Data

Label	Description	Format	Transmission Rate (ms)
076	GNSS Altitude	BNR	1000
103	GNSS Track Angle	BNR	1000
110	GNSS Latitude	BNR	1000
111	GNSS Longitude	BNR	1000
112	GNSS Ground Speed	BNR	1000
150	UTC Time	BNR	1000
165	Vertical Velocity	BNR	1000
260	Date	BCD	1000
273	GNSS Sensor Status	DSC	1000

(h) 604 CMC ARINC 429 Broadcast data

Label	Description	Format	Transmission Rate (ms)
270	Status	DSC	1000

(2) Digital Outputs

(a) Standard UniLink Broadcast Data ARINC 429

Label	Description	Format	Transmission Rate (ms)
172	System Identification Word	DSC	1000
214	ICAO Aircraft Address Word #1	DSC	1000
216	ICAO Aircraft Address Word #2	DSC	1000
270	Status Word #1	DSC	1000
276	Status Word #2	DSC	1000
350	Maintenance Word #1	DSC	1000
351	Maintenance Word #2	DSC	1000

## I. HS-429-1 Bus – UniLink

**NOTE:** Although there are HS-429-1 labels available for GLS, TAWS, and Vision-1, only the labels for UniLink are shown in the following table.

Label	Definition	Format	TX Rate	Update Rate
150	Greenwich Mean Time	BNR	1000 ms	
204	Barometric Altitude (429 GAMA)	BNR	100 ms	
213	Static Air Temperature	BNR	100 ms 500 ms	100 ms 500 ms
234	Poll Word (ENQ) from MDF		As required	
234	Clear to Send Word (CTS) from MDF			
234	Synchronization Word (SYN) from MDF			
234	Button-Push Word (BPW) from MDF			
234	ACK Word from User System from MDF			
234	NAK Word from User System from MDF			
235	Full Data Word		1000 ms and as required	
235	Partial Data Word			
235	Protocol Word			
235	Solo Word			
235	Start of Transmission			
235	End of Transmission			
252	Time to Go (429 GAMA)	BNR	500 ms	1 per sec.
260	Date	BCD	1000 ms	
261	GPS Discrete Word 1 (429 GAMA)	DSC	1000 ms	
310	Present Position Latitude	BNR	100 ms	
311	Present Position Longitude	BNR	100 ms	
312	Ground Speed	BNR	100 ms	100 ms
315	Wind Speed	BNR	1000 ms	
316	True Wind Speed	BNR	1000 ms	
340	Present Position Fine Latitude	BNR	100 ms	100 ms
341	Present Position Fine Longitude	BNR	100 ms	100 ms

## J. Configurable LRUs

Item	Configurable LRU	Qty Supported by UL-80X (I/O Type)
<b>Input Data Equipment</b>		
1	A743 GPS/A743A GNSS	1 (A429)
2	DHC8 IOP	2 (A429)
3	Digital ADC	2 (A429)
4	UASC FMS/CDU	3 (A429)
5	A702 FMS	3 (A429)
6	604 CMC	1 (A429)
7	VM CMC	1 (A429)
8	Generic Device	1 (A429)
<b>Display Equipment</b>		
9	UASC A739A MCDU	3 (A429)
10	Standard A739A MCDU	3 (A429)
11	EFI-890R	2 (RS-422)
12	MFD-640	1 (RS-422)
13	CDU	3 (RS-422)
14	Remote CDU/MCDU (UASC)	2 (RS-422)
<b>Transmission Media</b>		
15	Internal VHF Radio (VDR) (UL-801 only)	1 (A429)
16	A750 VDR (UL-800 only)	1 (NA)
17	A741 SDU	1 (A429)
18	Telephony	1 (RS-232)

**NOTE 1:** The ADC interface is used as a supplement to FANS required air data that was not supplied by the FMS such as Mach Number and IAS. The ADC interface can still be used to supplement this FMS data in the case the data from the FMS may be invalid or NCD.

**NOTE 2:** A maximum of six total display devices can be configured at a time, one high-resolution device on each of two high-res ports and up to four low-resolution devices on the low-res port. An RCDU has a separate display processor from the master CDU/MCDU that it is connected to.

**NOTE 3:** The diagnostic RS-232 port is a dedicated connection and is not a configurable item of the general purpose RS-232/422 serial channels.

**NOTE 4:** The AirCell ground-based cellular network has been decommissioned by AirCell. "Iridium/AirCell" equipment will continue to be supported; the "AirCell" only equipment support has been removed.

**NOTE 5:** UL-80X does not support tip/ring telephony devices (Magnastar, UASC T –T Aero-I, AirCell only). Serial telephony devices are supported (Iridium, UASC T –T Aero-M).

# Installation and Wiring

## 1. Installation Considerations for UniLink Mounting

### A. UniLink Mounting

The UniLink may be installed inside or outside of the pressure vessel. The UniLink must not be mounted next to excessive heat producing equipment or in such a way as to impede normal convection cooling and it must not be mounted with its rear connector up. The UniLink may be mounted in any rotational direction in an upright position. The UniLink rack must be grounded to the airframe by use of proper bonding methods. This provides a positive grounding of the rack to which data shields may be connected.

## 2. Wiring Diagrams

The following wiring diagrams show connections between the UL-801 and other avionics equipment used in typical installations. Refer to the appropriate FMS technical manual for additional required wiring.

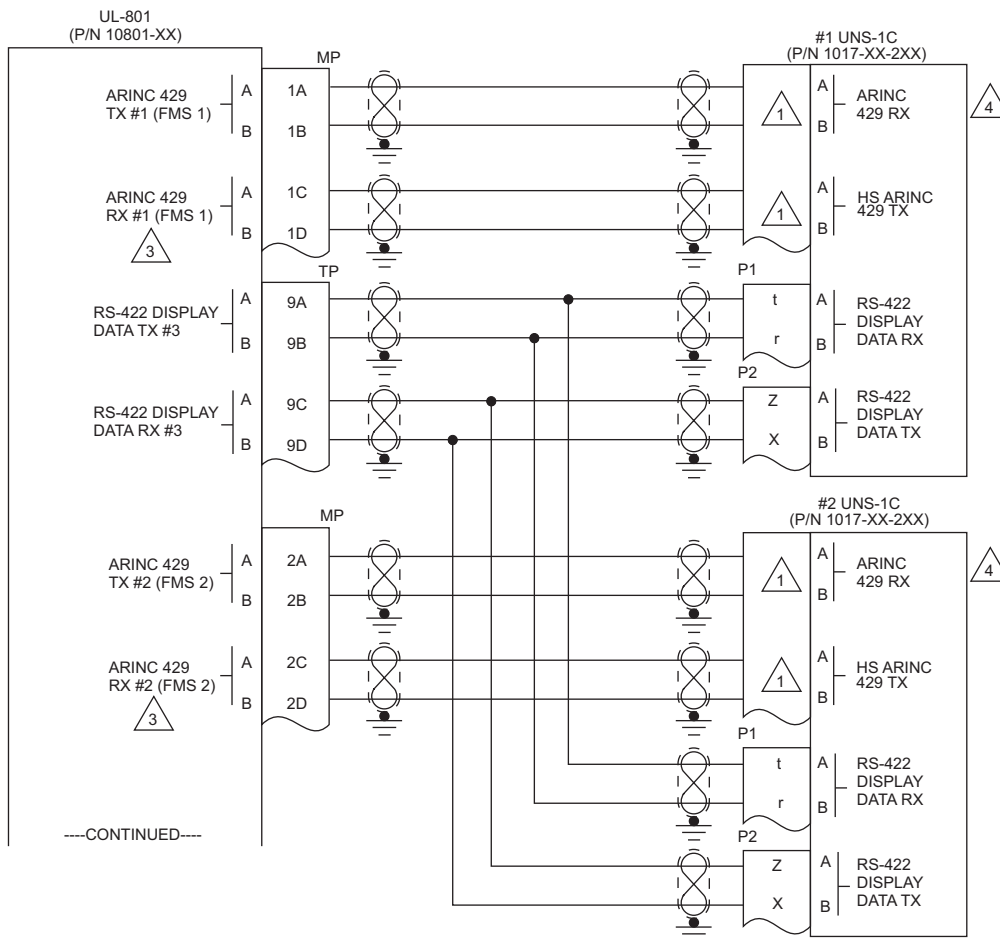
These diagrams include our suggested choices for configurable discretes and communications ports but the choice is left up to the discretion of the installer. Mark the configuration worksheets to show your actual installation. Configuration worksheets are found in the System Data Installation section of this manual.

**NOTE:** The FMS must have SCN 1000.5/1100.5 or later in order to utilize FANS.

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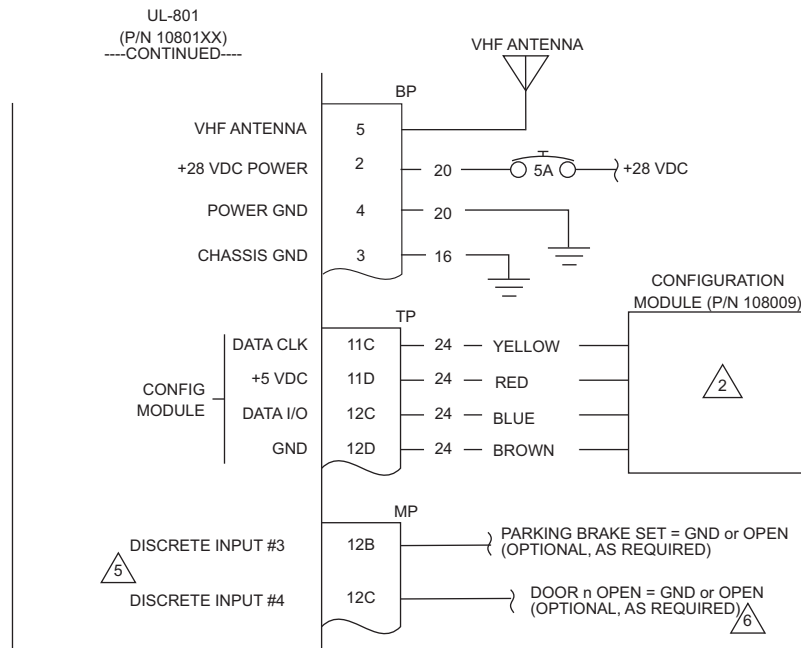
**A. UL-801 without FANS to UNS-1C**

(1) Sheet 1 of 2



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(2) Sheet 2 of 2



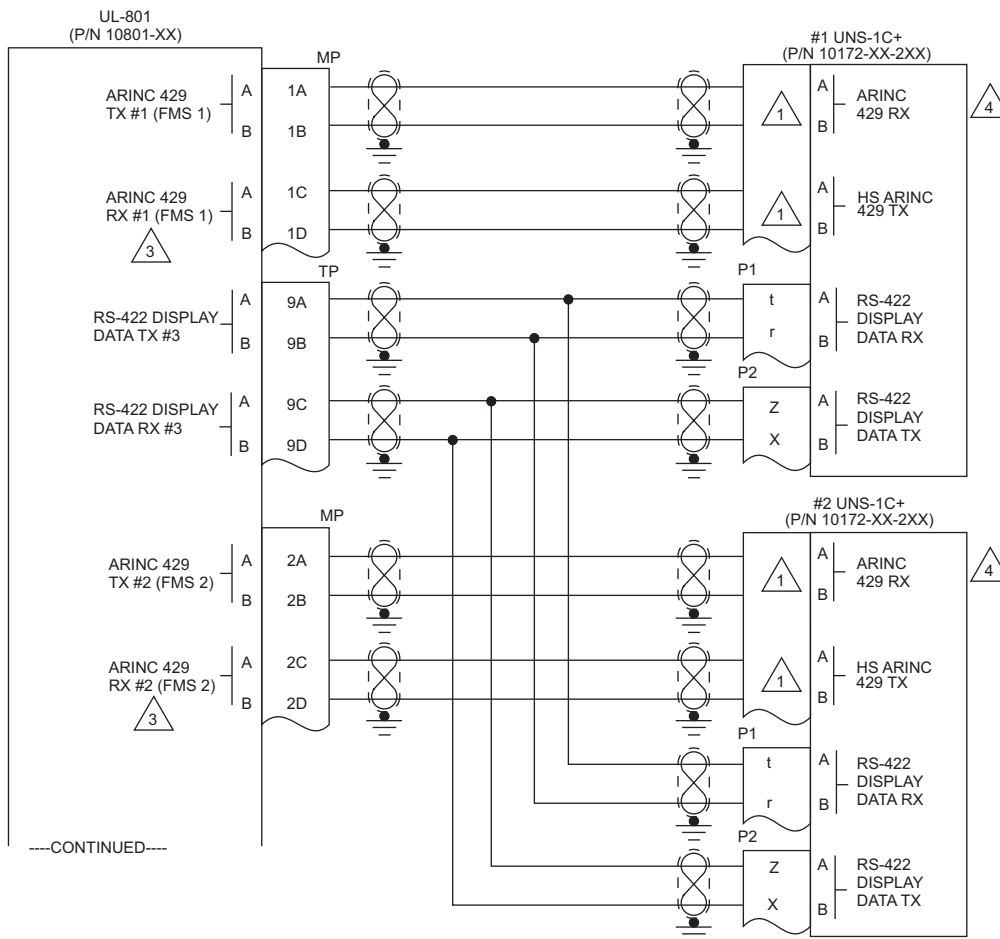
NOTE: ALL WIRING IS TO BE 22 AWG UNLESS OTHERWISE INDICATED.

- 1 REFER TO APPLICABLE TECHNICAL MANUAL FOR PORT CONFIGURATIONS AND PIN ASSIGNMENTS.
- 2 CONFIGURATION MODULE IS MOUNTED ON THE REAR OF THE UL-801 RACK.
- 3 IF FMS #1 IS NOT INTERFACED TO THE UL-801, THEN CONNECT FMS #2 TO MP1C AND MP1D INSTEAD OF THE WIRING (MP2C & MP2D) SHOWN ABOVE.
- 4 UNS-1C, P/N 1017-XX-2XX, SUPPORTS BOTH UNILINK TEXT AND WEATHER GRAPHICS (RS-422 DISPLAY DATA). UNS-1C, P/N 1017-XX-1XX, SUPPORTS UNILINK TEXT DISPLAYS ONLY.
- 5 DISCRETE INPUT ACTIVE STATE IS CONFIGURABLE TO EITHER OPEN OR GROUND.
- 6 IT IS RECOMMENDED THAT DOOR 1 INPUT DISCRETE BE USED IF ONLY ONE DOOR DISCRETE IS TO BE CONFIGURED.

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**B. UL-801 without FANS to UNS-1C+**

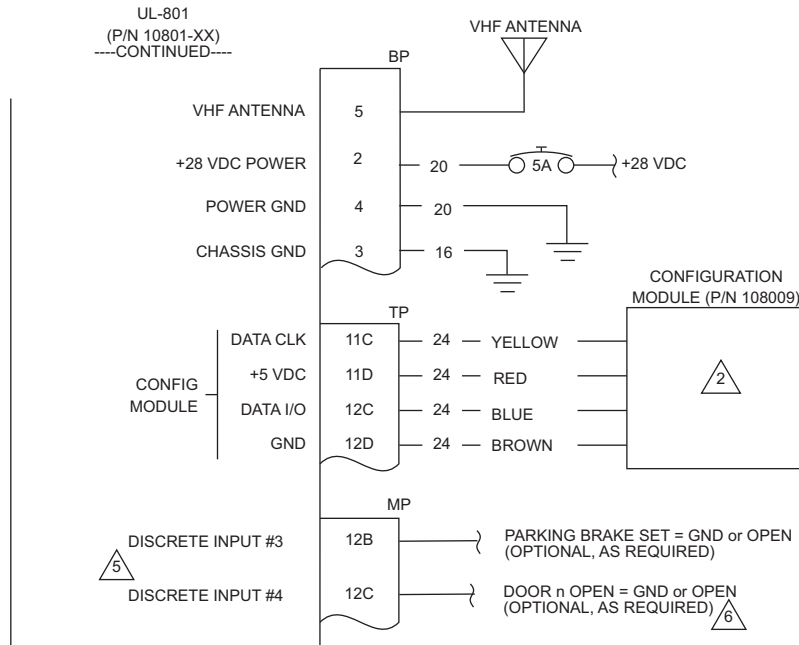
(1) Sheet 1 of 2





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(2) Sheet 2 of 2



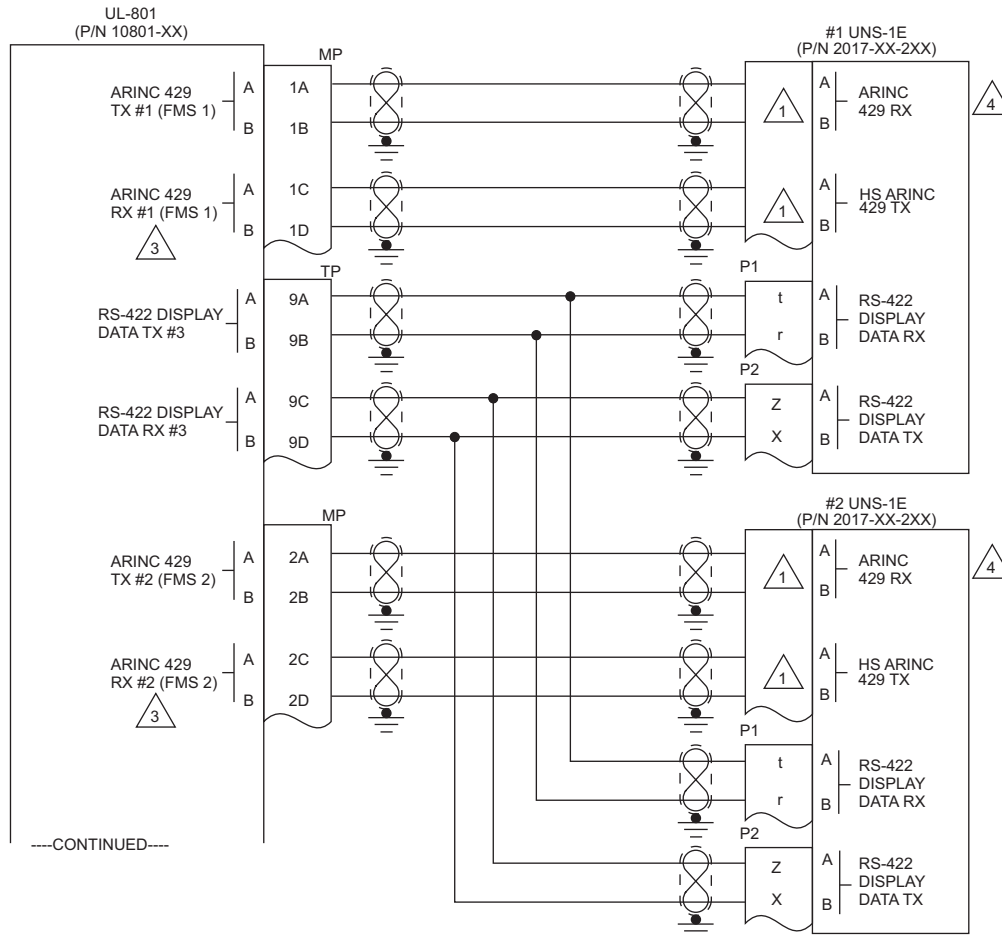
NOTE: ALL WIRING IS TO BE 22 AWG UNLESS OTHERWISE INDICATED.

- 1 REFER TO APPLICABLE TECHNICAL MANUAL FOR PORT CONFIGURATIONS AND PIN ASSIGNMENTS.
- 2 CONFIGURATION MODULE IS MOUNTED ON THE REAR OF THE UL-801 RACK.
- 3 IF FMS #1 IS NOT INTERFACED TO THE UL-801, THEN CONNECT FMS #2 TO MP1C AND MP1D INSTEAD OF THE WIRING (MP2C & MP2D) SHOWN ABOVE.
- 4 UNS-1C+, P/N 10172-XX-2XX, SUPPORTS BOTH UNILINK TEXT AND WEATHER GRAPHICS (RS-422 DISPLAY DATA). UNS-1C+, P/N 10172-XX-1XX, SUPPORTS UNILINK TEXT DISPLAYS ONLY.
- 5 DISCRETE INPUT ACTIVE STATE IS CONFIGURABLE TO EITHER OPEN OR GROUND.
- 6 IT IS RECOMMENDED THAT DOOR 1 INPUT DISCRETE BE USED IF ONLY ONE DOOR DISCRETE IS TO BE CONFIGURED.

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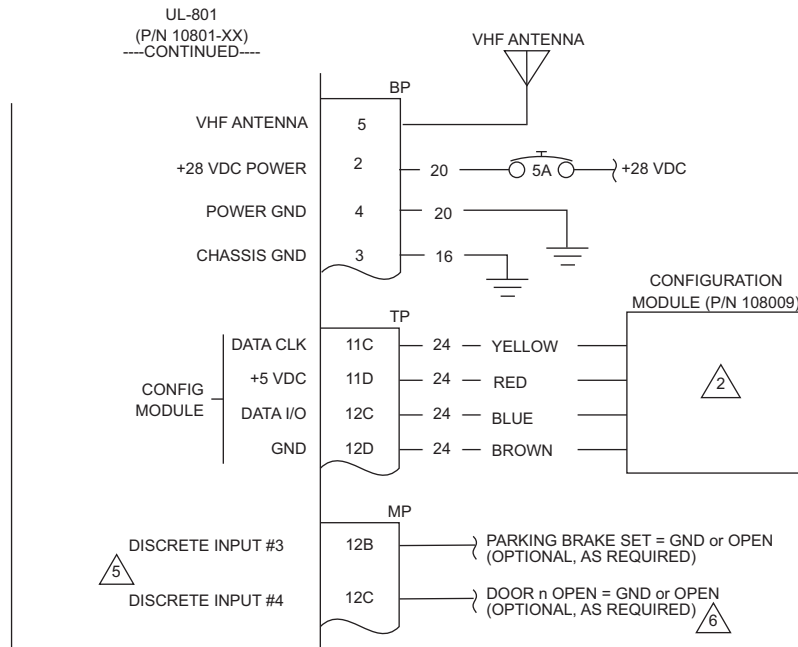
**C. UL-801 without FANS to UNS-1E**

(1) Sheet 1 of 2



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(2) Sheet 2 of 2

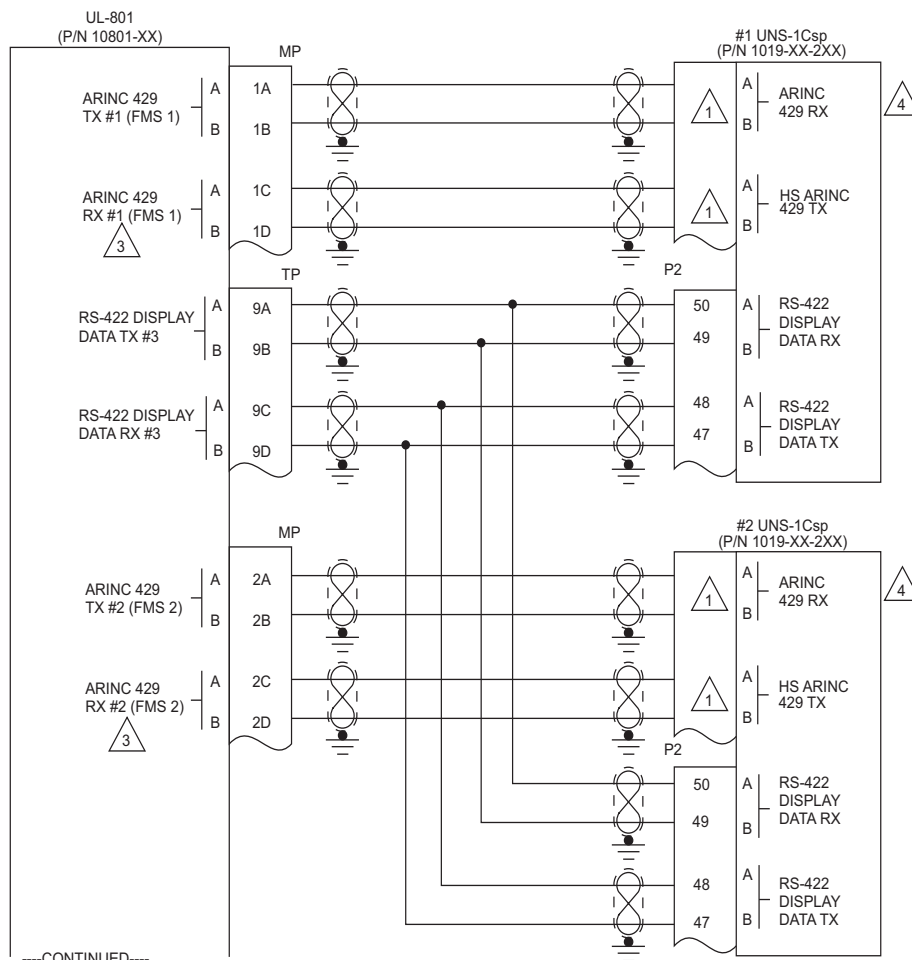


- 1 REFER TO APPLICABLE TECHNICAL MANUAL FOR PORT CONFIGURATIONS AND PIN ASSIGNMENTS.
- 2 CONFIGURATION MODULE IS MOUNTED ON THE REAR OF THE UL-801 RACK.
- 3 IF FMS #1 IS NOT INTERFACED TO THE UL-801, THEN CONNECT FMS #2 TO MP1C AND MP1D INSTEAD OF THE WIRING (MP2C & MP2D) SHOWN ABOVE.
- 4 UNS-1E, P/N 2017-XX-2XX, SUPPORTS BOTH UNILINK TEXT AND WEATHER GRAPHICS (RS-422 DISPLAY DATA). UNS-1E, P/N 2017-XX-1XX, SUPPORTS UNILINK TEXT DISPLAYS ONLY.
- 5 DISCRETE INPUT ACTIVE STATE IS CONFIGURABLE TO EITHER OPEN OR GROUND.
- 6 IT IS RECOMMENDED THAT DOOR 1 OPEN DISCRETE BE USED IF ONLY ONE DOOR DISCRETE IS TO BE CONFIGURED.

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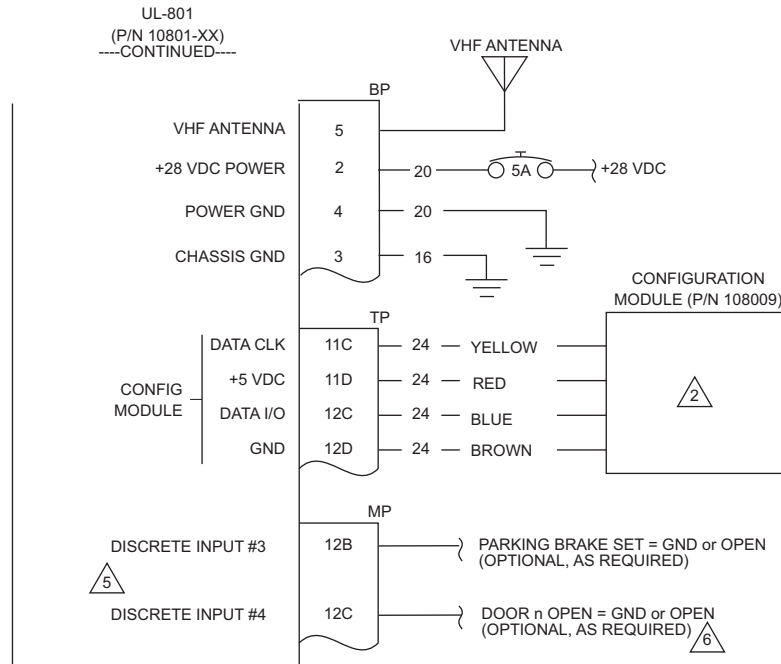
**D. UL-801 without FANS to UNS-1Csp**

(1) Sheet 1 of 2



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(2) Sheet 2 of 2



NOTE: ALL WIRING IS TO BE 22 AWG UNLESS OTHERWISE INDICATED.



REFER TO APPLICABLE TECHNICAL MANUAL FOR PORT CONFIGURATIONS AND PIN ASSIGNMENTS.



CONFIGURATION MODULE IS MOUNTED ON THE REAR OF THE UL-801 RACK.



IF FMS #1 IS NOT INTERFACED TO THE UL-801, THEN CONNECT FMS #2 TO MP1C AND MP1D INSTEAD OF THE WIRING (MP2C & MP2D) SHOWN ABOVE.



UNS-1Csp, P/N 1019-XX-2XX, SUPPORTS BOTH UNILINK TEXT AND WEATHER GRAPHICS (RS-422 DISPLAY DATA). UNS-1Csp, P/N 1019-XX-1XX, SUPPORTS UNILINK TEXT DISPLAYS ONLY.



DISCRETE INPUT ACTIVE STATE IS CONFIGURABLE TO EITHER OPEN OR GROUND.

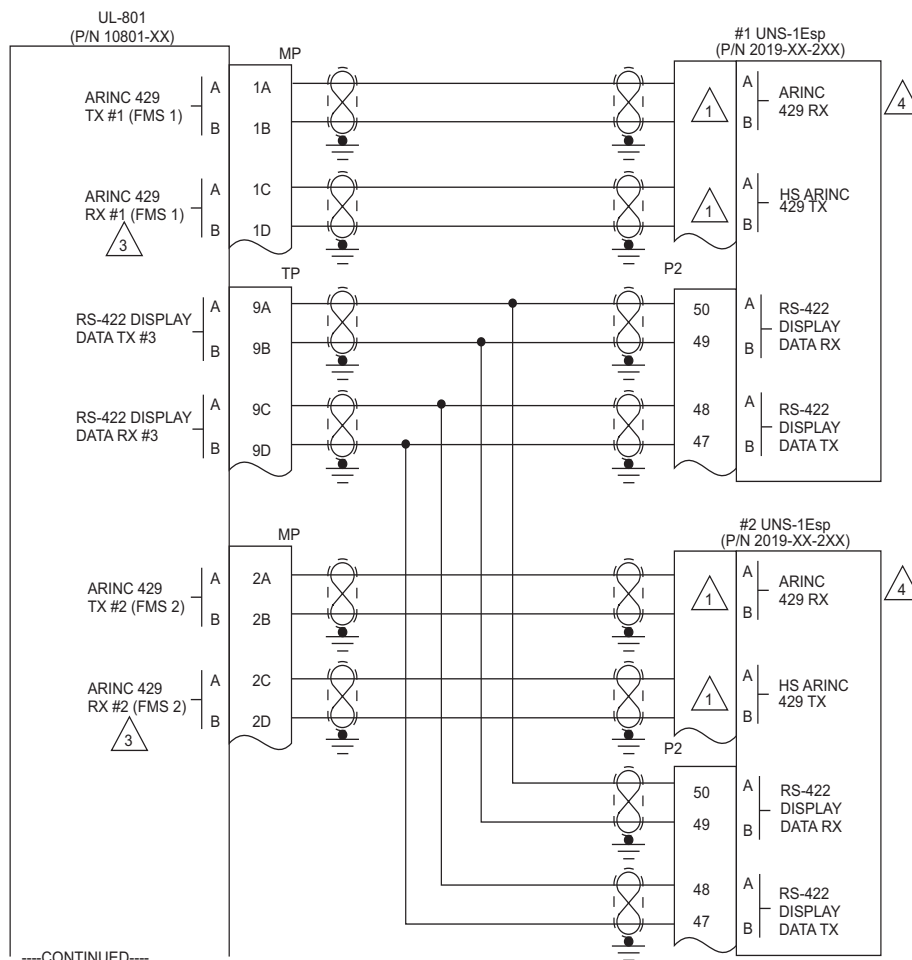


IT IS RECOMMENDED THAT DOOR 1 OPEN DISCRETE BE USED IF ONLY ONE DOOR DISCRETE IS TO BE CONFIGURED.

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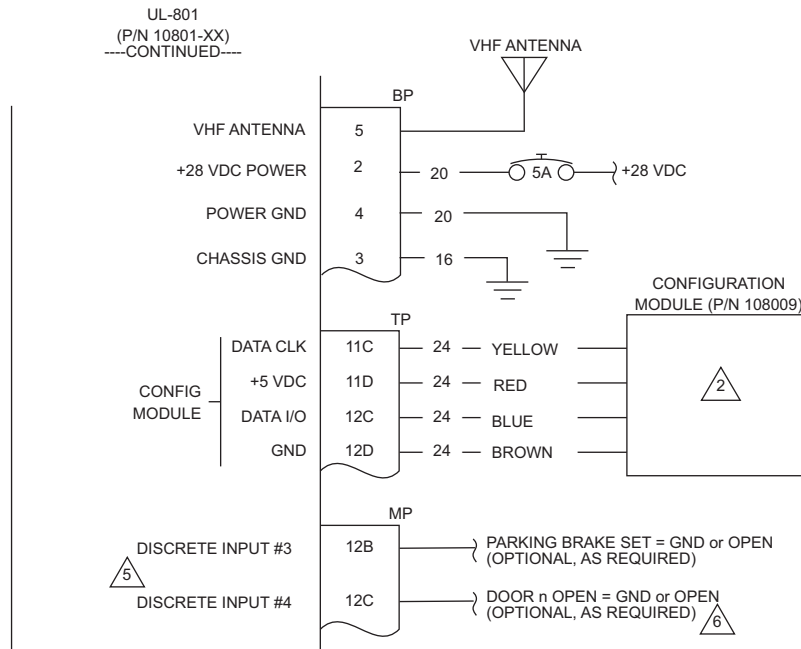
## E. UL-801 without FANS to UNS-1Esp

(1) Sheet 1 of 2



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(2) Sheet 2 of 2



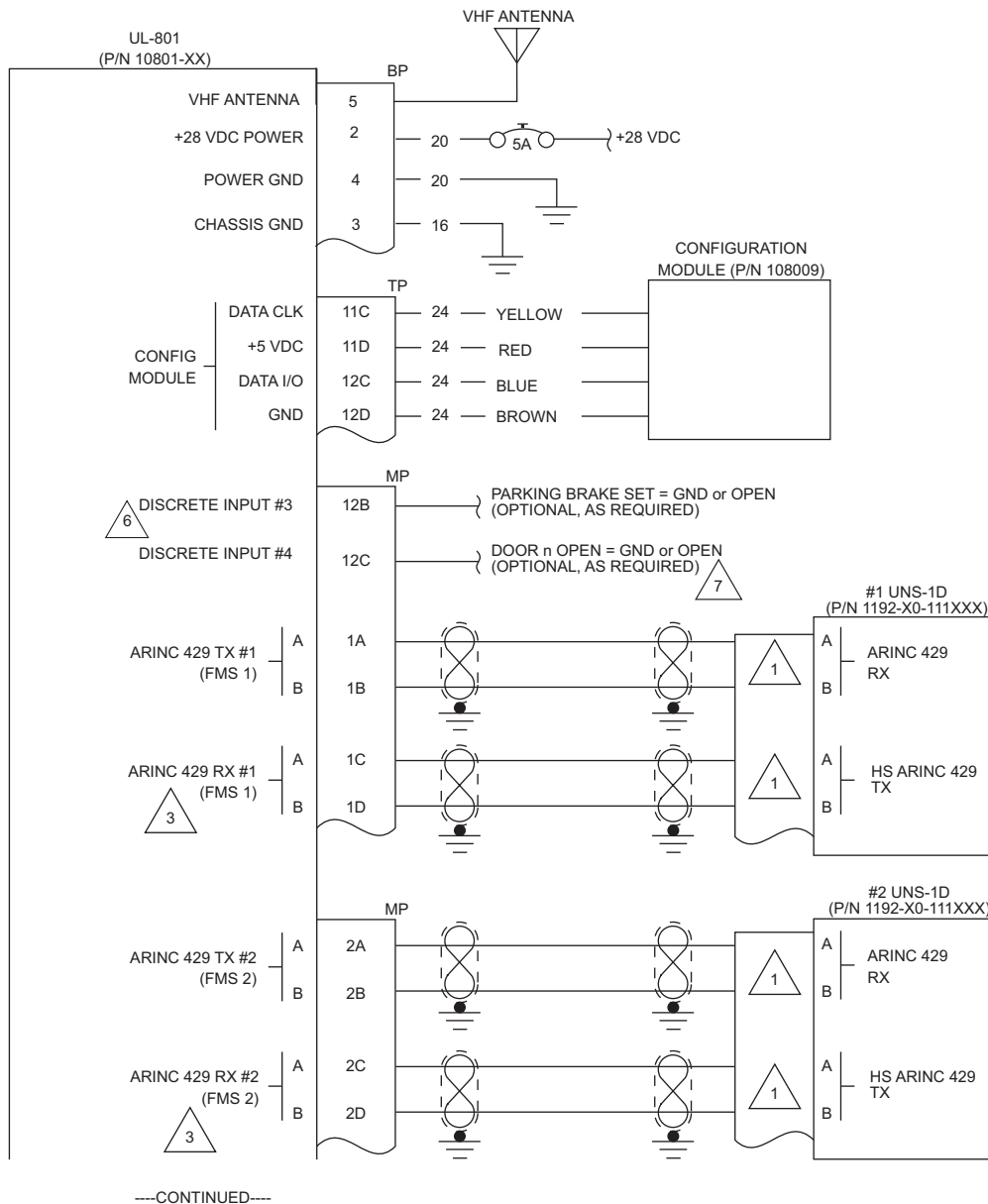
NOTE: ALL WIRING IS TO BE 22 AWG UNLESS OTHERWISE INDICATED.

- 1 REFER TO APPLICABLE TECHNICAL MANUAL FOR PORT CONFIGURATIONS AND PIN ASSIGNMENTS.
- 2 CONFIGURATION MODULE IS MOUNTED ON THE REAR OF THE UL-801 RACK.
- 3 IF FMS #1 IS NOT INTERFACED TO THE UL-801, THEN CONNECT FMS #2 TO MP1C AND MP1D INSTEAD OF THE WIRING (MP2C & MP2D) SHOWN ABOVE.
- 4 UNS-1Esp, P/N 2019-XX-2XX, SUPPORTS BOTH UNILINK TEXT AND WEATHER GRAPHICS (RS-422 DISPLAY DATA). UNS-1Esp, P/N 2019-XX-1XX, SUPPORTS UNILINK TEXT DISPLAYS ONLY.
- 5 DISCRETE INPUT ACTIVE STATE IS CONFIGURABLE TO EITHER OPEN OR GROUND.
- 6 IT IS RECOMMENDED THAT DOOR 1 OPEN DISCRETE BE USED IF ONLY ONE DOOR DISCRETE IS TO BE CONFIGURED.

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**F. UL-801 without FANS to UNS-1D**

(1) Sheet 1 of 2

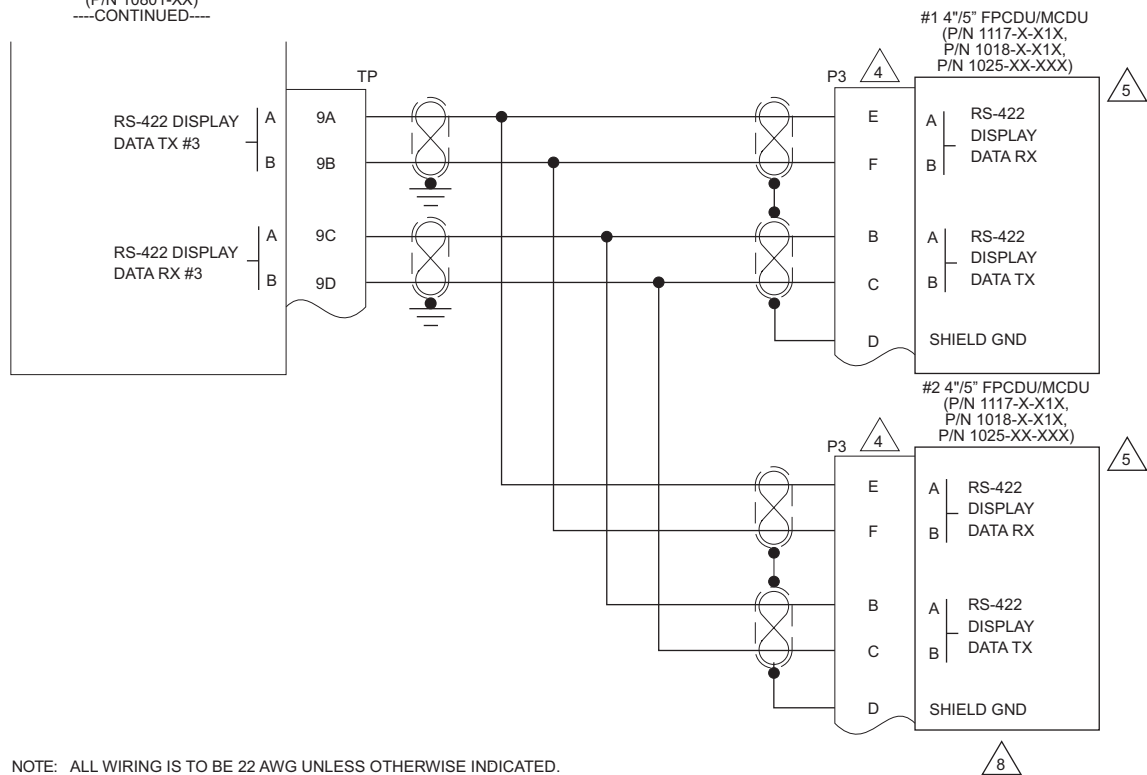




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(2) Sheet 2 of 2 - 4/5" FPCDU/MCDU

UL-801  
(P/N 10801-XX)  
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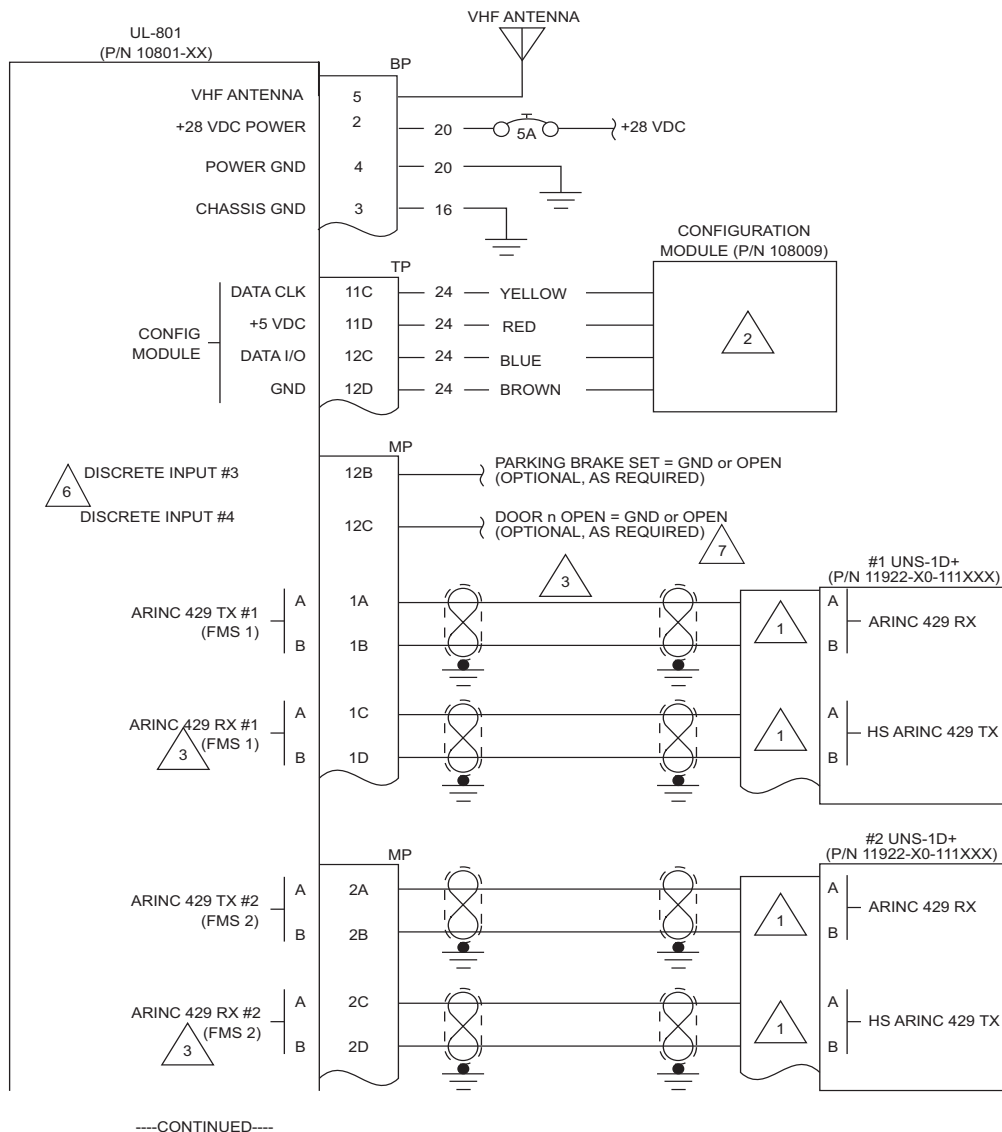


- 1 REFER TO APPLICABLE TECHNICAL MANUAL FOR PORT CONFIGURATIONS AND PIN ASSIGNMENTS.
- 2 CONFIGURATION MODULE IS MOUNTED ON THE REAR OF THE UL-801 RACK.
- 3 IF FMS #1 IS NOT INTERFACED TO THE UL-801, THEN CONNECT FMS #2 TO MP1C AND MP1D INSTEAD OF THE WIRING (MP2C & MP2D) SHOWN ABOVE.
- 4 THE P3 CONNECTOR IS AMPHENOL P/N MS27473T12F8SC AND IS INCLUDED IN THE APPROPRIATE UNS-1D INSTALLATION KIT.
- 5 THE 5" FPCDU, P/N 1018-2-X10, SUPPORTS BOTH UNILINK TEXT AND WEATHER GRAPHICS (RS-422 DISPLAY DATA). OTHER 5" FPCDUs, P/N 1018-X-X00, SUPPORT UNILINK TEXT ONLY DISPLAYS.
- 6 DISCRETE INPUT ACTIVE STATE IS CONFIGURABLE TO EITHER OPEN OR GROUND.
- 7 IT IS RECOMMENDED THAT DOOR 1 OPEN DISCRETE BE USED IF ONLY ONE DOOR DISCRETE IS TO BE CONFIGURED.
- 8 BOTH 4" AND 5" FPCDUs ARE WIRED IN THE SAME MANNER.

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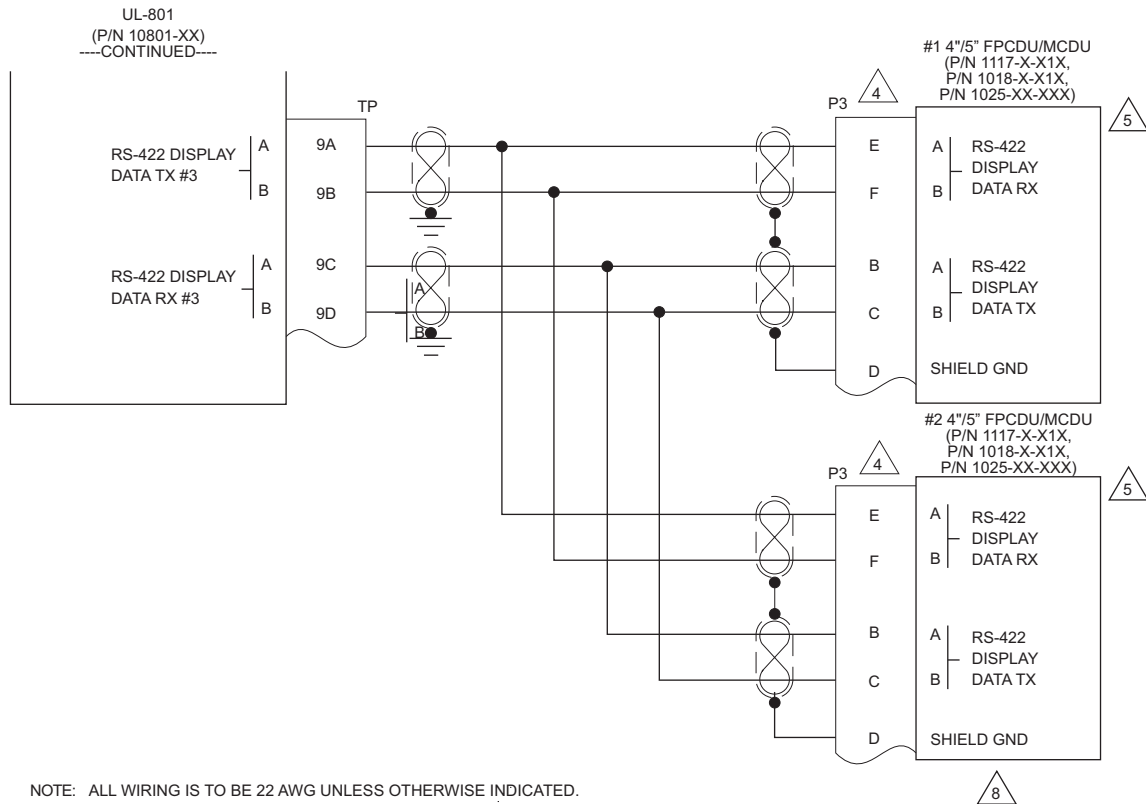
**G. UL-801 without FANS to UNS-1D+**

(1) Sheet 1 of 2



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(2) Sheet 2 of 2 - 4/5" FPCDU/MCDU

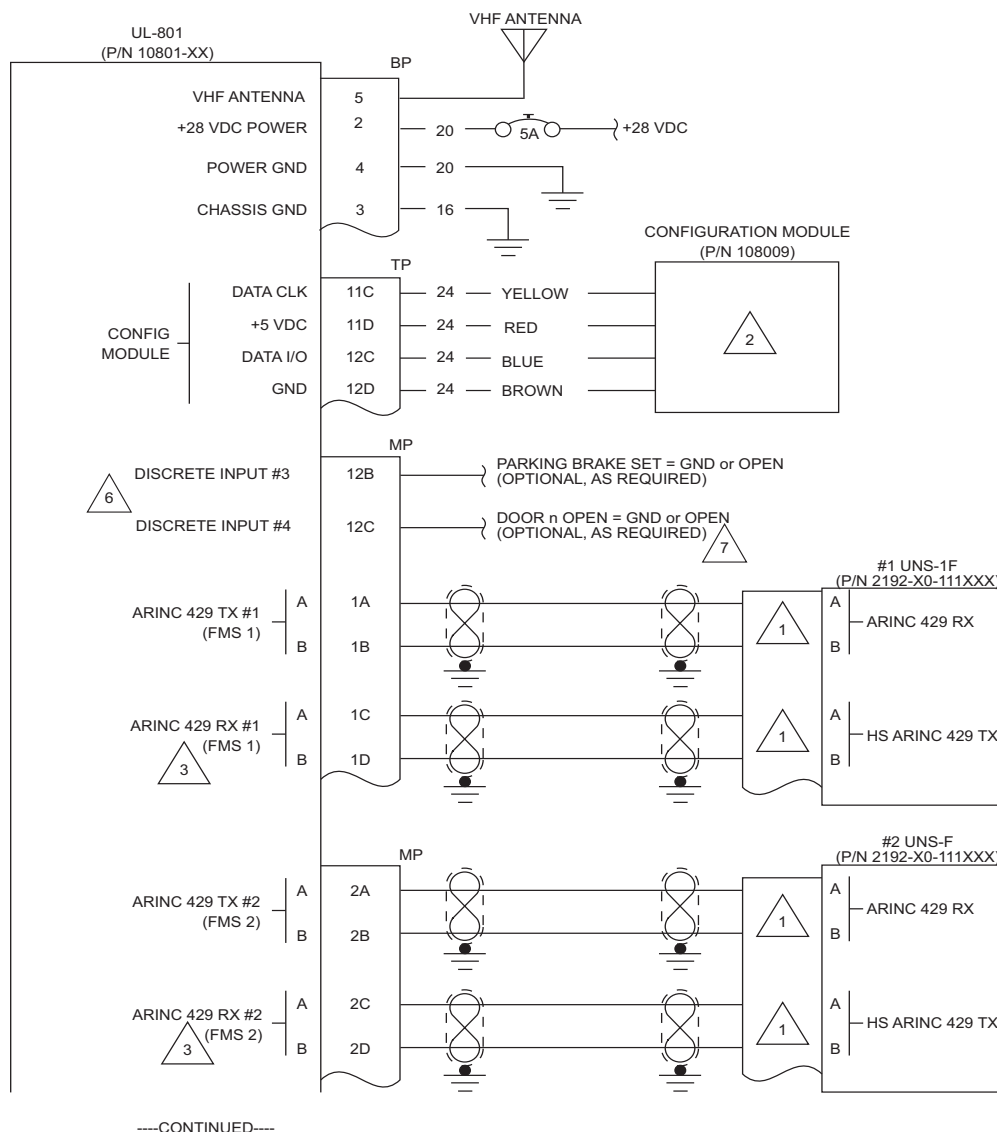


- 1 REFER TO APPLICABLE TECHNICAL MANUAL FOR PORT CONFIGURATIONS AND PIN ASSIGNMENTS.
- 2 CONFIGURATION MODULE IS MOUNTED ON THE REAR OF THE UL-801 RACK.
- 3 IF FMS #1 IS NOT INTERFACED TO THE UL-801, THEN CONNECT FMS #2 TO MP1C AND MP1D INSTEAD OF THE WIRING (MP2C & MP2D) SHOWN ABOVE.
- 4 THE P3 CONNECTOR IS AMPHENOL P/N MS27473T12F8SC AND IS INCLUDED IN THE APPROPRIATE UNS-1D+ INSTALLATION KIT.
- 5 THE 5" FPCDU, P/N 1018-2-X10, SUPPORTS BOTH UNILINK TEXT AND WEATHER GRAPHICS (RS-422 DISPLAY DATA). OTHER 5" FPCDUs, P/N 1018-X-X00, SUPPORT UNILINK TEXT ONLY DISPLAYS.
- 6 DISCRETE INPUT ACTIVE STATE IS CONFIGURABLE TO EITHER OPEN OR GROUND.
- 7 IT IS RECOMMENDED THAT DOOR 1 OPEN DISCRETE BE USED IF ONLY ONE DOOR DISCRETE IS TO BE CONFIGURED.
- 8 BOTH 4" AND 5" FPCDUs ARE WIRED IN THE SAME MANNER.

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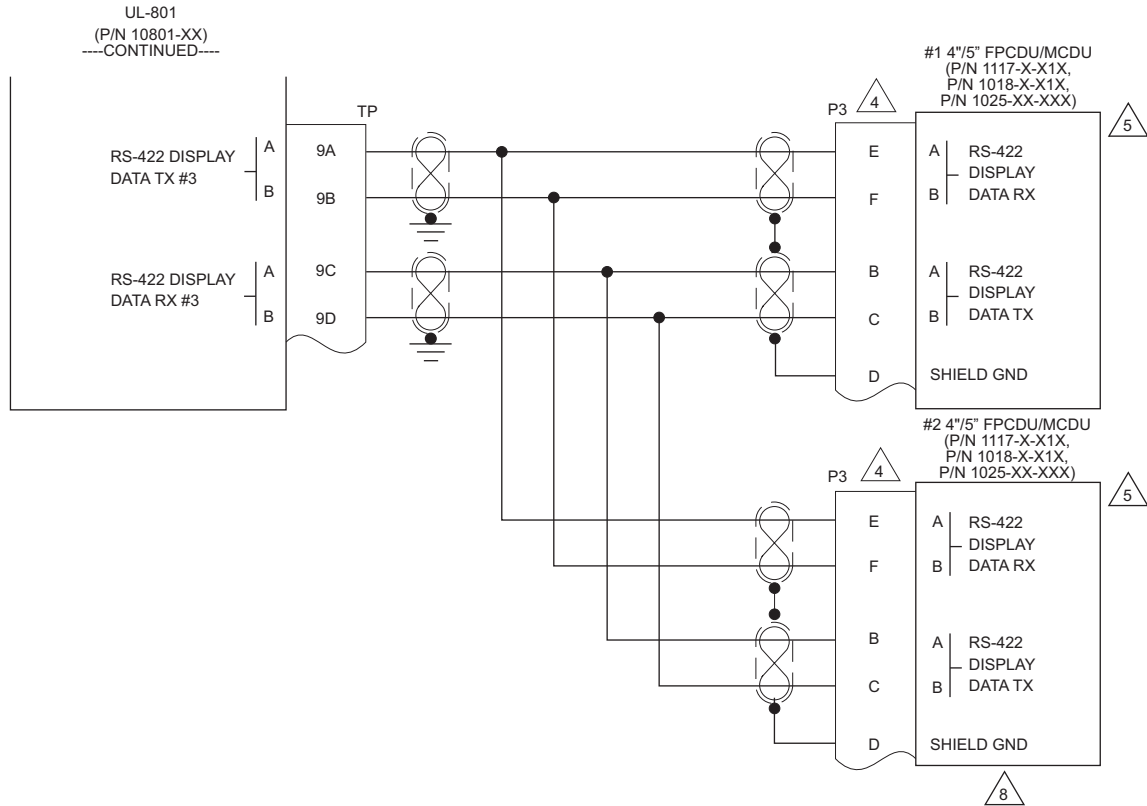
## H. UL-801 without FANS to UNS-1F

(1) Sheet 1 of 2



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(2) Sheet 2 of 2 - 4/5" FPCDU/MCDU

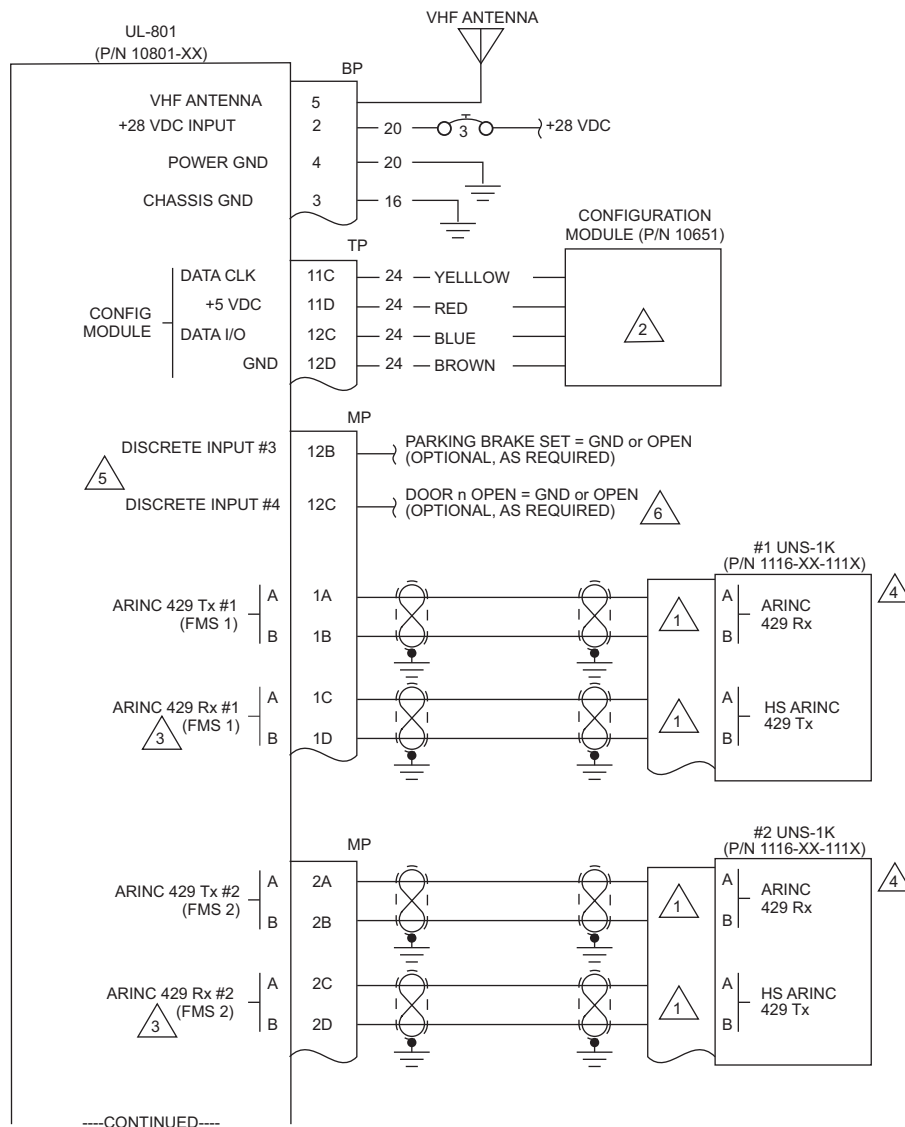


- 1 REFER TO APPLICABLE TECHNICAL MANUAL FOR PORT CONFIGURATIONS AND PIN ASSIGNMENTS.
- 2 CONFIGURATION MODULE IS MOUNTED ON THE REAR OF THE UL-801 RACK.
- 3 IF FMS #1 IS NOT INTERFACED TO THE UL-801, THEN CONNECT FMS #2 TO MP1C AND MP1D INSTEAD OF THE WIRING (MP2C & MP2D) SHOWN ABOVE.
- 4 THE P3 CONNECTOR IS AMPHENOL P/N MS27473T12F8SC AND IS INCLUDED IN THE APPROPRIATE UNS-1D+ INSTALLATION KIT.
- 5 THE 5" FPCDU, P/N 1018-2-X10, SUPPORTS BOTH UNILINK TEXT AND WEATHER GRAPHICS (RS-422 DISPLAY DATA). OTHER 5" FPCDUs, P/N 1018-X-X00, SUPPORT UNILINK TEXT ONLY DISPLAYS.
- 6 DISCRETE INPUT ACTIVE STATE IS CONFIGURABLE TO EITHER OPEN OR GROUND.
- 7 IT IS RECOMMENDED THAT DOOR 1 OPEN DISCRETE BE USED IF ONLY ONE DOOR DISCRETE IS TO BE CONFIGURED.
- 8 BOTH 4" AND 5" FPCDUs ARE WIRED IN THE SAME MANNER.

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## I. UL-801 without FANS to UNS-1K

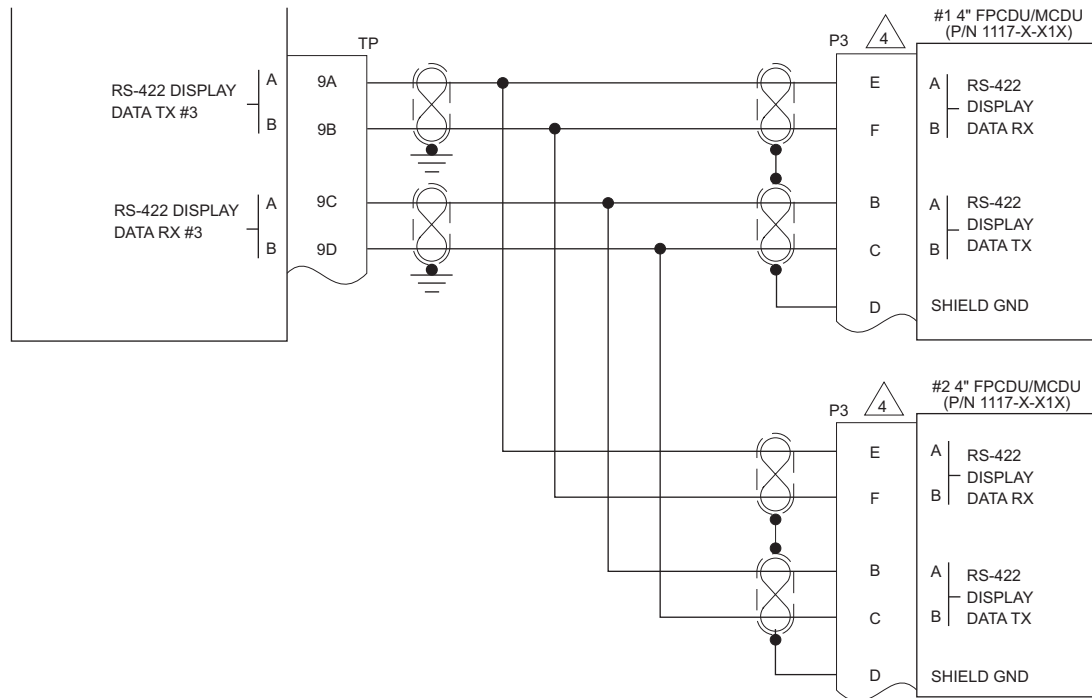
(1) Sheet 1 of 2



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(2) Sheet 2 of 2

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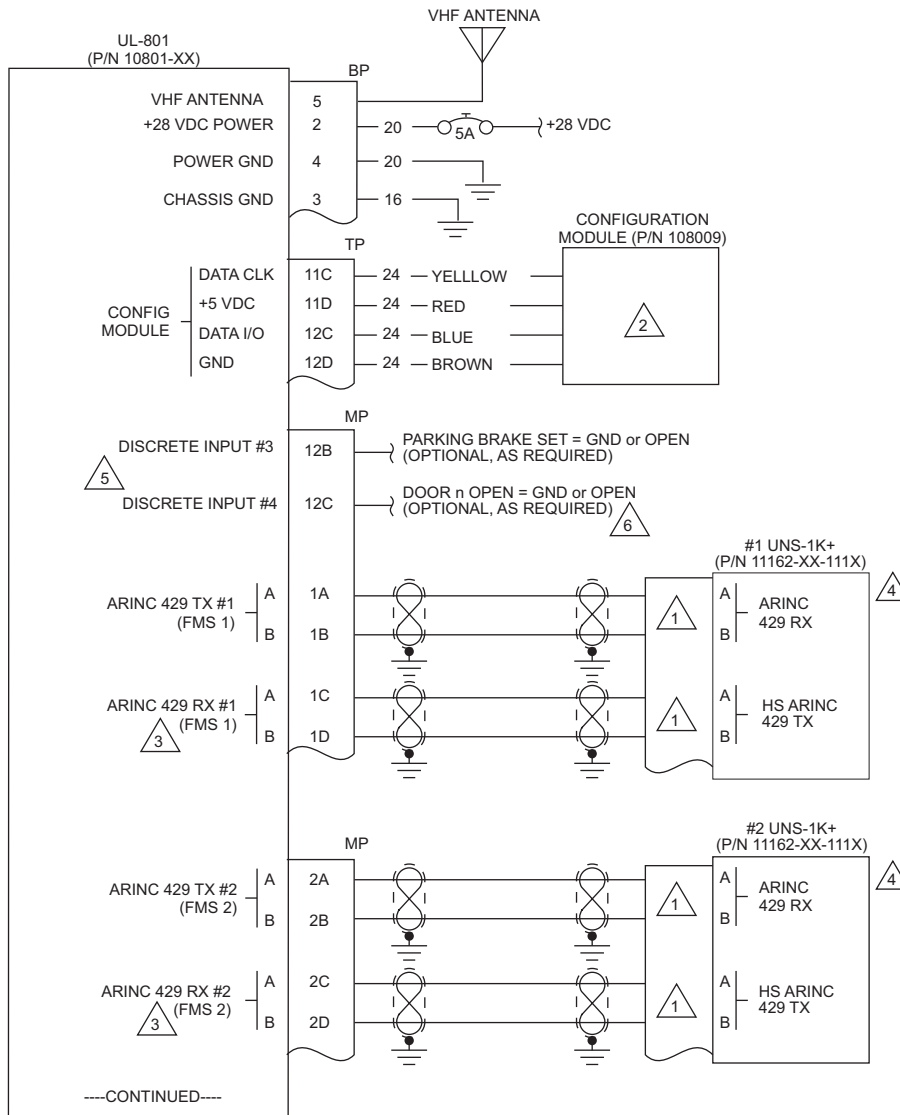
NOTE: ALL WIRING IS TO BE 22 AWG UNLESS OTHERWISE INDICATED.

- 1 REFER TO APPLICABLE TECHNICAL MANUAL FOR PORT CONFIGURATIONS AND PIN ASSIGNMENTS.
- 2 CONFIGURATION MODULE IS MOUNTED ON THE REAR OF THE UL-801 RACK.
- 3 IF FMS #1 IS NOT INTERFACED TO THE UL-801, THEN CONNECT FMS #2 TO MP1C AND MP1D INSTEAD OF THE WIRING (MP2C & MP2D) SHOWN ABOVE.
- 4 THE P3 CONNECTOR IS AMPHENOL P/N MS27473T12F8SC AND IS INCLUDED IN THE APPROPRIATE UNS-1K INSTALLATION KIT.
- 5 DISCRETE INPUT ACTIVE STATE IS CONFIGURABLE TO EITHER OPEN OR GROUND.
- 6 IT IS RECOMMENDED THAT DOOR 1 OPEN DISCRETE BE USED IF ONLY ONE DOOR DISCRETE IS TO BE CONFIGURED.

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## J. UL-801 without FANS to UNS-1K+

(1) Sheet 1 of 2



NOTE: ALL WIRING IS TO BE 22 AWG UNLESS OTHERWISE INDICATED.

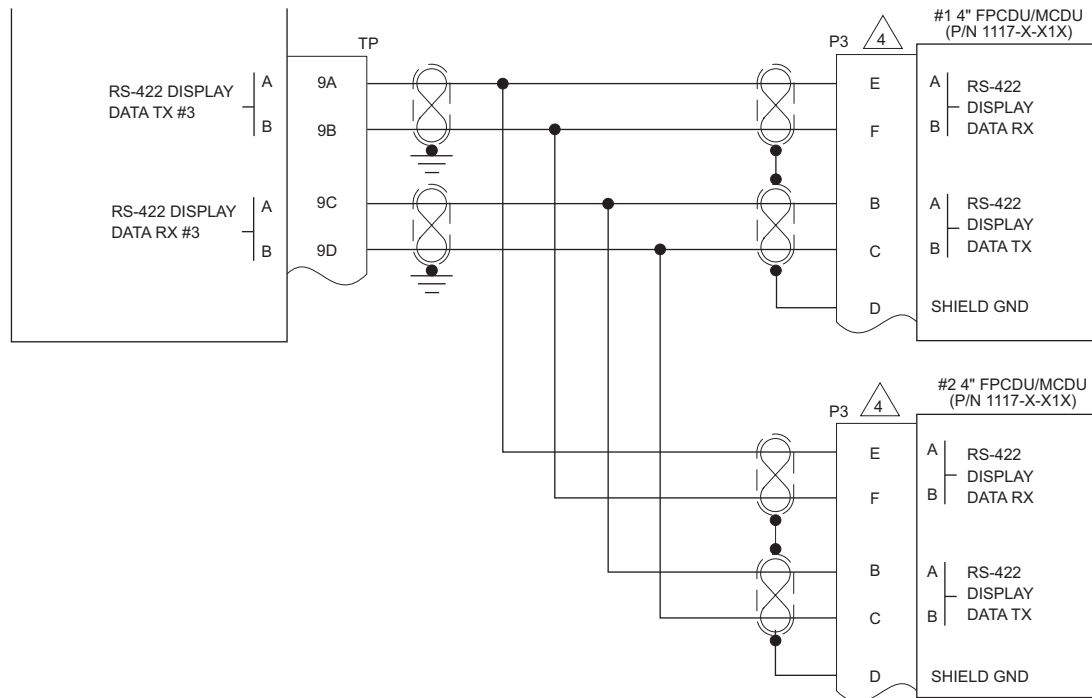
- 1 REFER TO APPLICABLE TECHNICAL MANUAL FOR PORT CONFIGURATIONS AND PIN ASSIGNMENTS.
- 2 CONFIGURATION MODULE IS MOUNTED ON THE REAR OF THE UL-801 RACK.
- 3 IF FMS #1 IS NOT INTERFACED TO THE UL-801, THEN CONNECT FMS #2 TO MP1C AND MP1D INSTEAD OF THE WIRING (MP2C & MP2D) SHOWN ABOVE.
- 4 UNS-1K+ SUPPORTS UNILINK TEXT ONLY (NO GRAPHICS).
- 5 DISCRETE INPUT ACTIVE STATE IS CONFIGURABLE TO EITHER OPEN OR GROUND.
- 6 IT IS RECOMMENDED THAT DOOR 1 OPEN DISCRETE BE USED IF ONLY ONE DOOR DISCRETE IS TO BE CONFIGURED.



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(2) Sheet 2 of 2

UL-801  
(P/N 10801-XX)  
-----CONTINUED-----

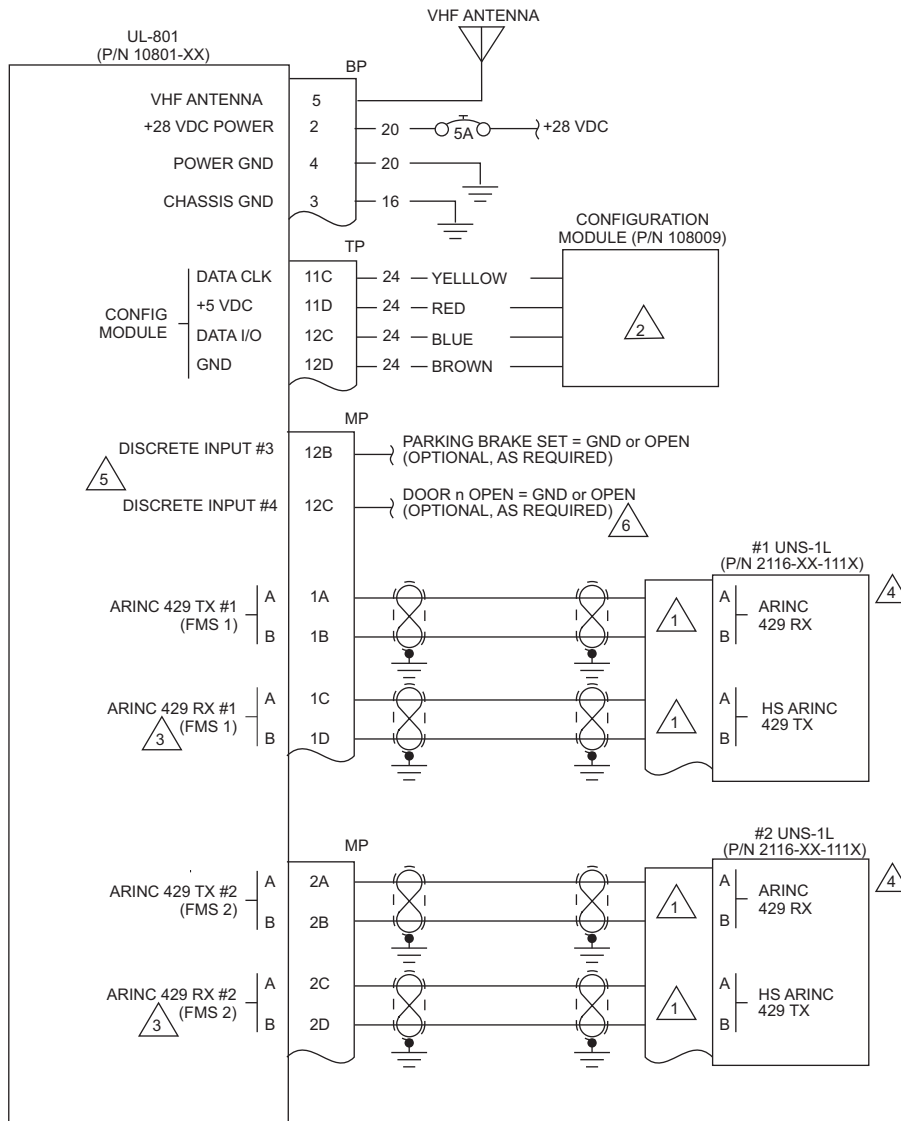


NOTE: ALL WIRING IS TO BE 22 AWG UNLESS OTHERWISE INDICATED.

- 1 REFER TO APPLICABLE TECHNICAL MANUAL FOR PORT CONFIGURATIONS AND PIN ASSIGNMENTS.
- 2 CONFIGURATION MODULE IS MOUNTED ON THE REAR OF THE UL-801 RACK.
- 3 IF FMS #1 IS NOT INTERFACED TO THE UL-801, THEN CONNECT FMS #2 TO MP1C AND MP1D INSTEAD OF THE WIRING (MP2C & MP2D) SHOWN ABOVE.
- 4 THE P3 CONNECTOR IS AMPHENOL P/N MS27473T12F8SC AND IS INCLUDED IN THE APPROPRIATE UNS-1K INSTALLATION KIT.
- 5 DISCRETE INPUT ACTIVE STATE IS CONFIGURABLE TO EITHER OPEN OR GROUND.
- 6 IT IS RECOMMENDED THAT DOOR 1 OPEN DISCRETE BE USED IF ONLY ONE DOOR DISCRETE IS TO BE CONFIGURED.

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## K. UL-801 without FANS to UNS-1L



NOTE: ALL WIRING IS TO BE 22 AWG UNLESS OTHERWISE INDICATED.

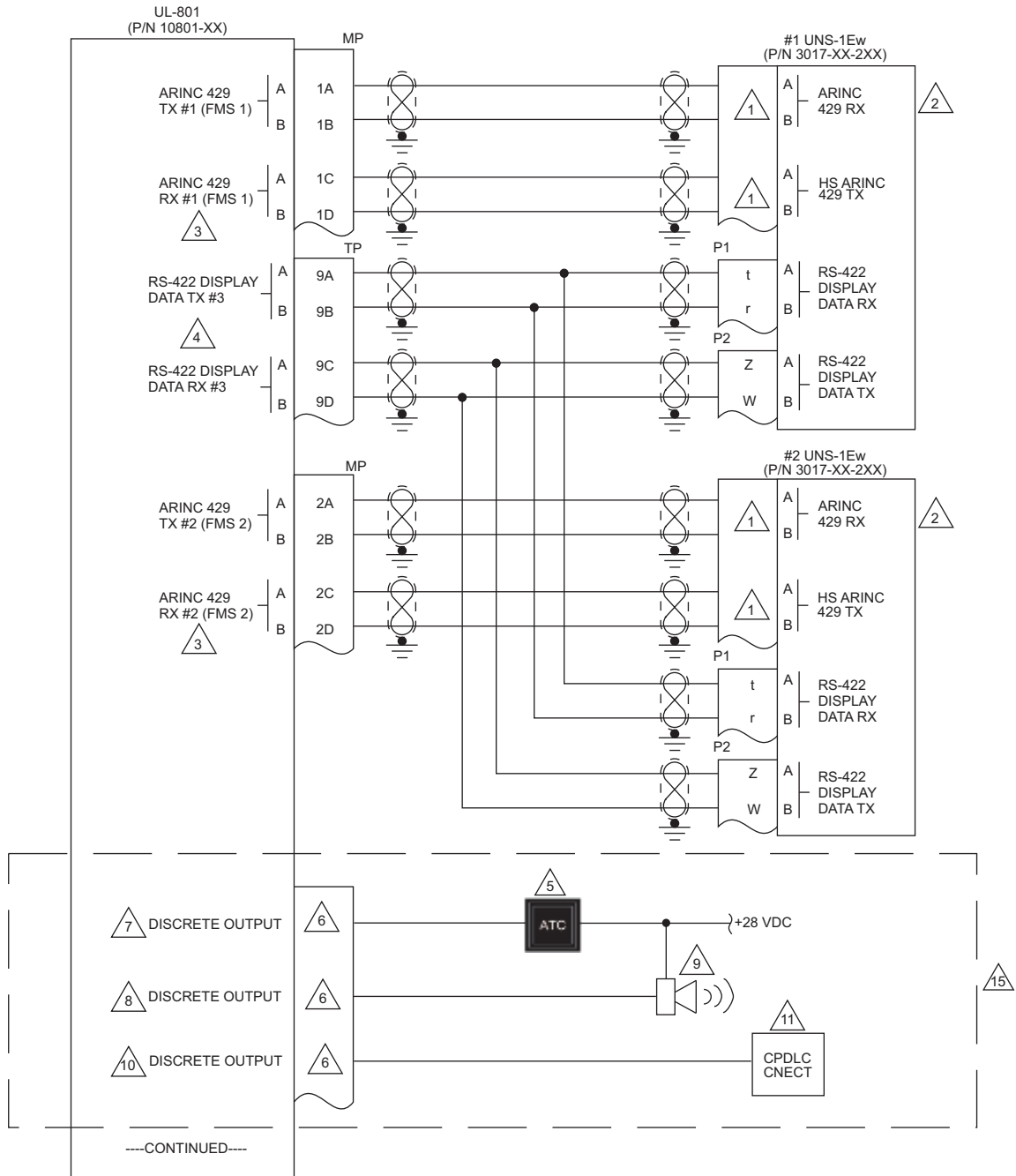
- 1 REFER TO APPLICABLE TECHNICAL MANUAL FOR PORT CONFIGURATIONS AND PIN ASSIGNMENTS.
- 2 CONFIGURATION MODULE IS MOUNTED ON THE REAR OF THE UL-801 RACK.
- 3 IF FMS #1 IS NOT INTERFACED TO THE UL-801, THEN CONNECT FMS #2 TO MP1C AND MP1D INSTEAD OF THE WIRING (MP2C & MP2D) SHOWN ABOVE.
- 4 UNS-1L SUPPORTS UNILINK TEXT ONLY (NO GRAPHICS).
- 5 DISCRETE INPUT ACTIVE STATE IS CONFIGURABLE TO EITHER OPEN OR GROUND.
- 6 IT IS RECOMMENDED THAT DOOR 1 OPEN DISCRETE BE USED IF ONLY ONE DOOR DISCRETE IS TO BE CONFIGURED.

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## L. UL-801 to UNS-1Ew

(1) Sheet 1 of 2

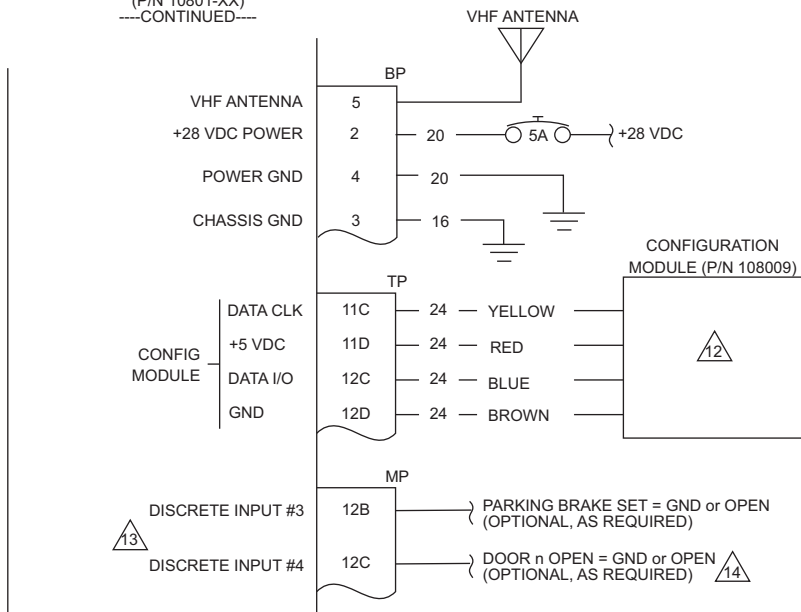
**NOTE:** The FMS must be SCN 1005.5/1100.5 or later to support FANS.



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(2) Sheet 2 of 2

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**NOTES: ALL WIRING IS TO BE 22 AWG UNLESS OTHERWISE INDICATED.**

**THE FMS MUST BE SCN 1000.5/1100.5 OR LATER TO SUPPORT FANS.**

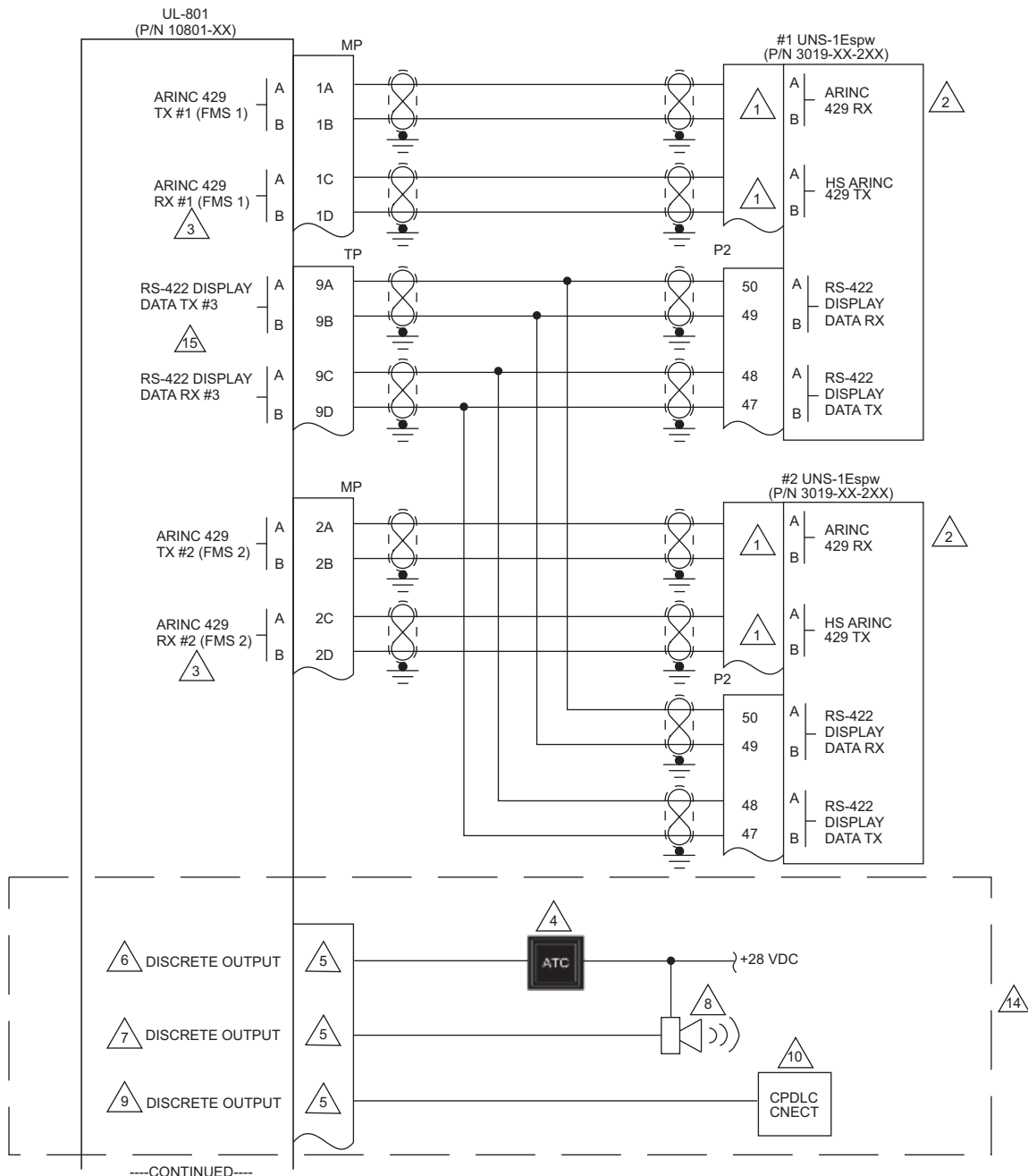
- 1 REFER TO APPLICABLE TECHNICAL MANUAL FOR PORT CONFIGURATIONS AND PIN ASSIGNMENTS.
- 2 UNS-1Ew SUPPORTS BOTH UNILINK TEXT AND WEATHER GRAPHICS USING RS-422 DISPLAY DATA.
- 3 IF FMS #1 IS NOT INTERFACED TO THE UL-801, THEN CONNECT FMS #2 TO MP1C AND MP1D IN LIEU OF MP2C AND MP2D SHOWN ABOVE.
- 4 CONFIGURE: SERIAL LOW RESOLUTION DISPLAY.
- 5 WHITE ATC LETTERING RECOMMENDED. USE ANNUNCIATOR P/N EATON 582-10 A0 B0 C3 F4 L5 N1 (D) P12,12 ATC OR EQUIVALENT.
- 6 ANY AVAILABLE DISCRETE OUTPUT PIN MAY BE USED.
- 7 CONFIGURE DISCRETE OUTPUT FOR FANS VISUAL.
- 8 CONFIGURE DISCRETE OUTPUT FOR FANS AURAL.
- 9 CONNECT TO AN AURAL ALERTING DEVICE OR AN AURAL WARNING GENERATOR. USE SONALERT P/N SCE028LD2TT1B OR EQUIVALENT.
- 10 OPTIONAL: CONFIGURE DISCRETE OUTPUT FOR CPDLC CNECT (CONNECT).
- 11 OPTIONAL: CPDLC CNECT ANNUNCIATOR. LABEL AS REQUIRED.
- 12 CONFIGURATION MODULE IS MOUNTED ON THE REAR OF THE UL-801 RACK.
- 13 DISCRETE INPUT ACTIVE STATE IS CONFIGURABLE TO EITHER OPEN OR GROUND.
- 14 IT IS RECOMMENDED THAT DOOR 1 OPEN DISCRETE BE USED IF ONLY ONE DOOR DISCRETE IS TO BE CONFIGURED.
- 15 WIRING WITHIN THE DASHED LINES APPLIES ONLY WITH FANS ENABLED.

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## M. UL-801 to UNS-1Espw

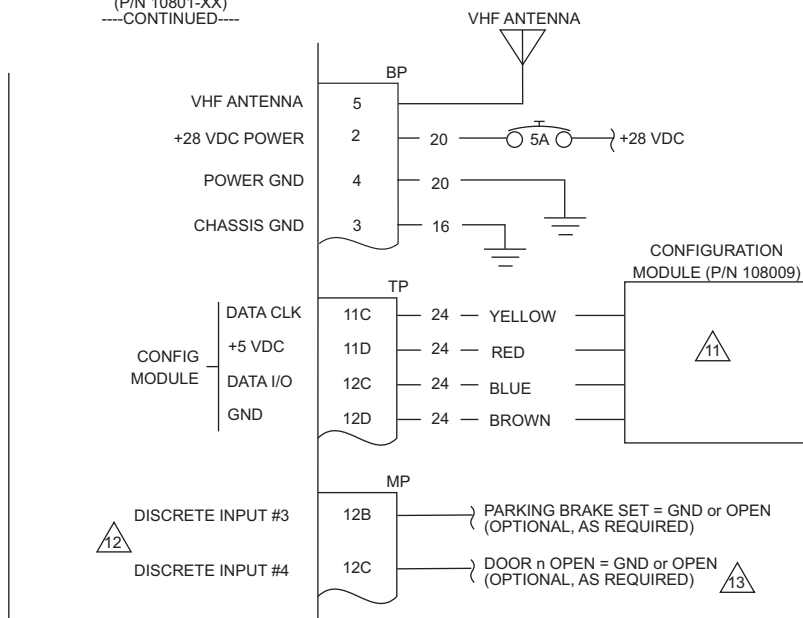
(1) Sheet 1 of 2

**NOTE:** The FMS must be SCN 1000.5/1100.5 or later to support FANS.



(2) Sheet 2 of 2

UL-801  
(P/N 10801-XX)  
-----CONTINUED-----



**NOTES: ALL WIRING IS TO BE 22 AWG UNLESS OTHERWISE INDICATED.**

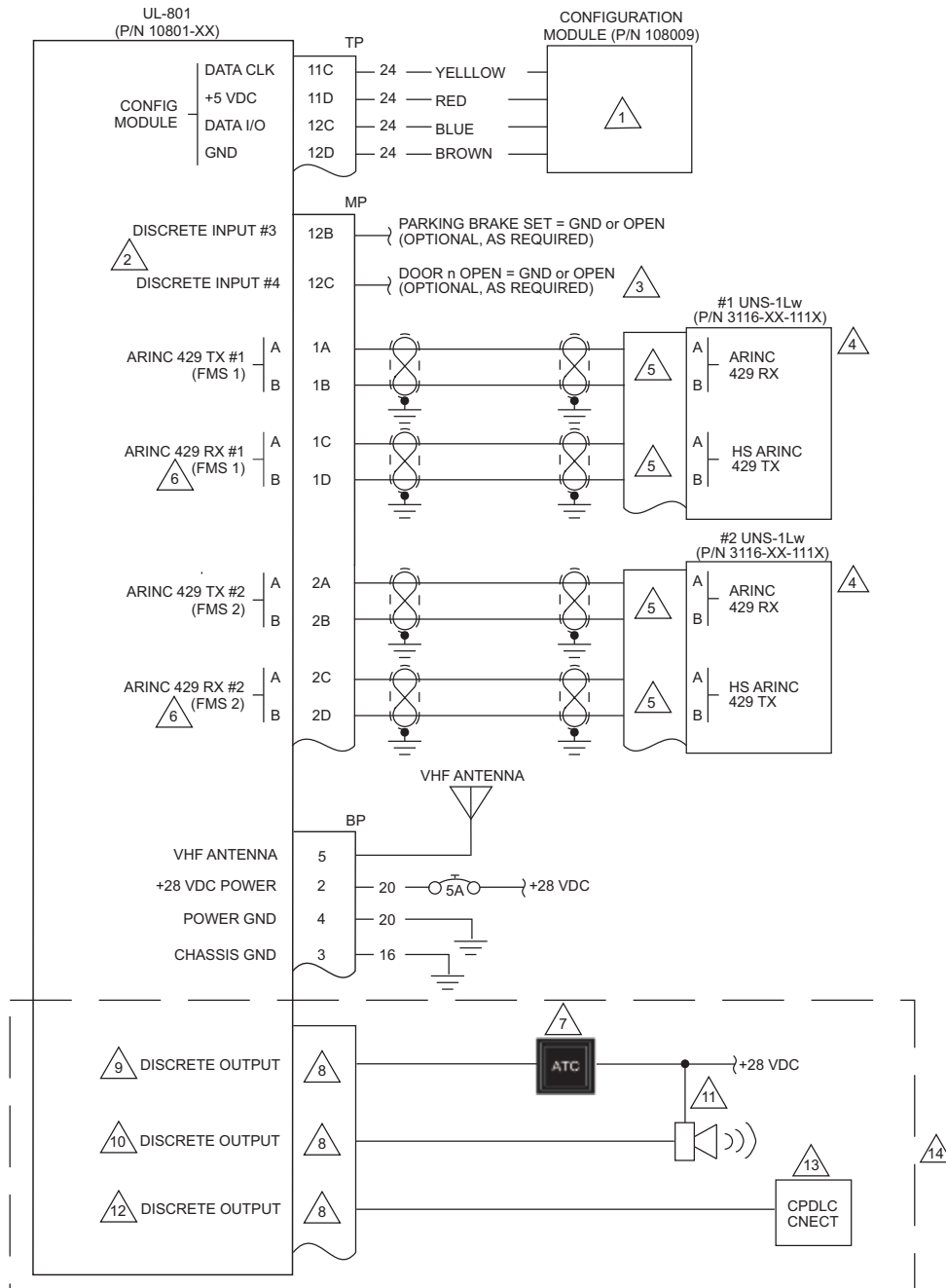
**THE FMS MUST BE SCN 1000.5/1100.5 OR LATER TO SUPPORT FANS.**

- 1 REFER TO APPLICABLE TECHNICAL MANUAL FOR PORT CONFIGURATIONS AND PIN ASSIGNMENTS.
- 2 UNS-1Espw SUPPORTS BOTH UNILINK TEXT AND WEATHER GRAPHICS USING RS-422 DISPLAY DATA.
- 3 IF FMS #1 IS NOT INTERFACED TO THE UL-801, THEN CONNECT FMS #2 TO MP1C AND MP1D INSTEAD OF THE WIRING (MP2C & MP2D) SHOWN ABOVE.
- 4 WHITE ATC LETTERING RECOMMENDED. USE ANNUNCIATOR P/N EATON 582-10 A0 B0 C3 F4 L5 N1 (D) P12,12 ATC OR EQUIVALENT.
- 5 ANY AVAILABLE DISCRETE OUTPUT PIN MAY BE USED.
- 6 CONFIGURE DISCRETE OUTPUT FOR FANS VISUAL.
- 7 CONFIGURE DISCRETE OUTPUT FOR FANS AURAL.
- 8 CONNECT TO AN AURAL ALERTING DEVICE OR AN AURAL WARNING GENERATOR. USE SONALERT P/N SCE028LD2TT1B OR EQUIVALENT.
- 9 OPTIONAL: CONFIGURE DISCRETE OUTPUT FOR CPDLC CNECT (CONNECT).
- 10 OPTIONAL: CPDLC CNECT ANNUNCIATOR. LABEL AS REQUIRED.
- 11 CONFIGURATION MODULE IS MOUNTED ON THE REAR OF THE UL-801 RACK.
- 12 DISCRETE INPUT ACTIVE STATE IS CONFIGURABLE TO EITHER OPEN OR GROUND.
- 13 IT IS RECOMMENDED THAT DOOR 1 OPEN DISCRETE BE USED IF ONLY ONE DOOR DISCRETE IS TO BE CONFIGURED.
- 14 WIRING WITHIN THE DASHED LINES APPLIES ONLY WITH FANS ENABLED.

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## N. UL-801 to UNS-1Lw

**NOTE:** The FMS must be SCN 1000.5/1100.5 or later to support FANS.



NOTES: ALL WIRING IS TO BE 22 AWG UNLESS OTHERWISE INDICATED.

THE FMS MUST BE SCN 1000.5/1100.5 OR LATER TO SUPPORT FANS.













1 CONFIGURATION MODULE IS MOUNTED ON THE REAR OF THE UL-801 RACK.

2 DISCRETE INPUT ACTIVE STATE IS CONFIGURABLE TO EITHER OPEN OR GROUND.

NOTES ARE CONTINUED ON THE NEXT PAGE.

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**NOTES continued**

-  IT IS RECOMMENDED THAT DOOR 1 OPEN DISCRETE BE USED IF ONLY ONE DOOR DISCRETE IS TO BE CONFIGURED.
-  UNS-1Lw SUPPORTS BOTH UNILINK TEXT AND WEATHER GRAPHICS USING RS-422 DISPLAY DATA.
-  REFER TO APPLICABLE TECHNICAL MANUAL FOR PORT CONFIGURATIONS AND PIN ASSIGNMENTS.
-  IF FMS #1 IS NOT INTERFACED TO THE UL-801, THEN CONNECT FMS #2 TO MP1C AND MP1D IN LIEU OF MP2C AND MP2D SHOWN ABOVE.
-  WHITE ATC LETTERING RECOMMENDED. USE ANNUNCIATOR P/N EATON 582-10 A0 B0 C3 F4 L5 N1 (D) P12,12 ATC OR EQUIVALENT.
-  ANY AVAILABLE DISCRETE OUTPUT PIN MAY BE USED.
-  CONFIGURE DISCRETE OUTPUT FOR FANS VISUAL.
-  CONFIGURE DISCRETE OUTPUT FOR FANS AURAL.
-  CONNECT TO AN AURAL ALERTING DEVICE OR AN AURAL WARNING GENERATOR. USE SONALERT P/N SCE028LD2TT1B OR EQUIVALENT.
-  OPTIONAL: CONFIGURE DISCRETE OUTPUT FOR CPDLC CNECT (CONNECT).
-  OPTIONAL: CPDLC CNECT ANNUNCIATOR. LABEL AS REQUIRED.
-  WIRING WITHIN THE DASHED LINES APPLIES ONLY WITH FANS ENABLED.

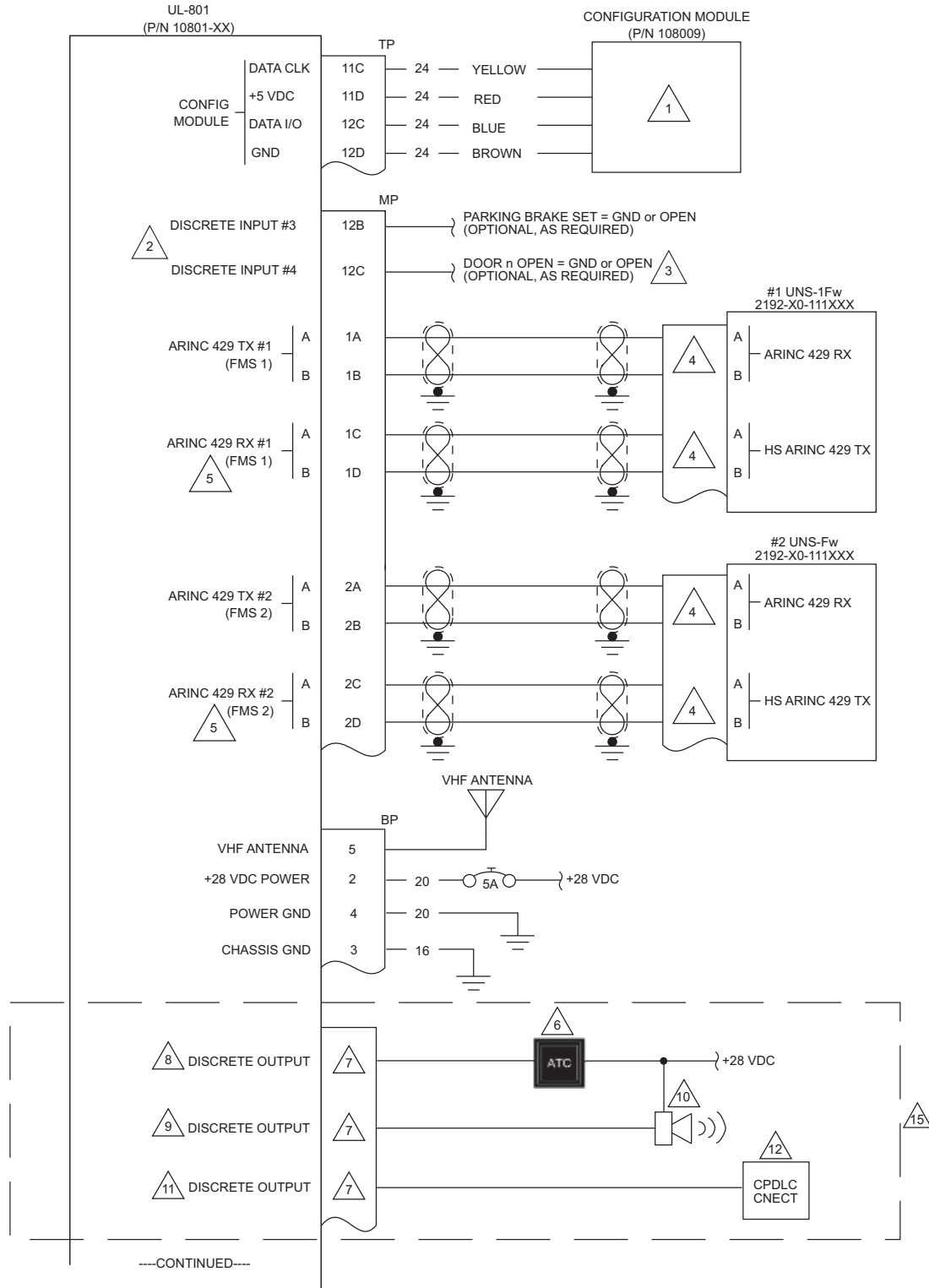


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**O. UL-801 with FANS to UNS-1Fw**

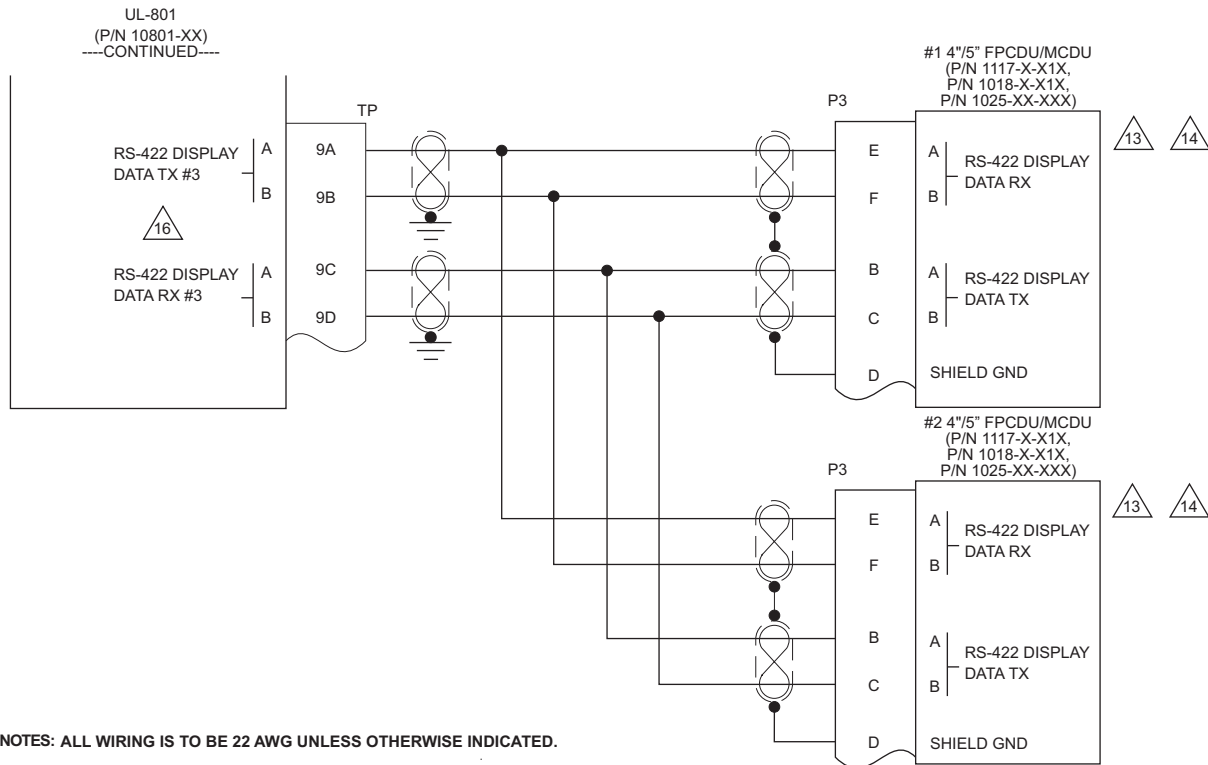
(1) Sheet 1 of 2

**NOTE:** The FMS must be SCN 1000.5/1100.5 or later to support FANS.



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(2) Sheet 2 of 2 - 4/5" FPCDU/MCDU



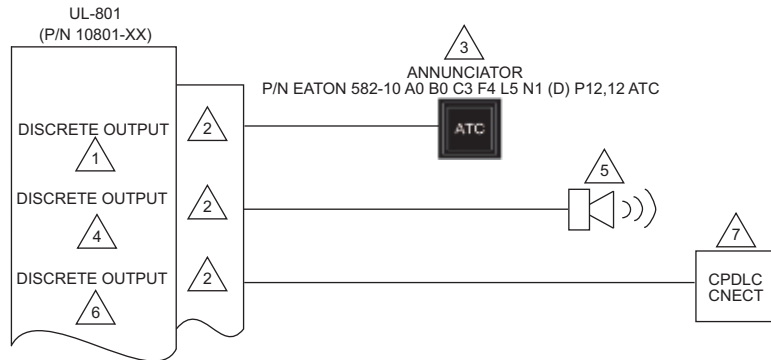
**NOTES: ALL WIRING IS TO BE 22 AWG UNLESS OTHERWISE INDICATED.**

**THE FMS MUST BE SCN 1000.5/1100.5 OR LATER TO SUPPORT FANS.**

- 1 CONFIGURATION MODULE IS MOUNTED ON THE REAR OF THE UL-801 RACK.
- 2 DISCRETE INPUT ACTIVE STATE IS CONFIGURABLE TO EITHER OPEN OR GROUND.
- 3 IT IS RECOMMENDED THAT DOOR 1 OPEN DISCRETE BE USED IF ONLY ONE DOOR DISCRETE IS TO BE CONFIGURED.
- 4 REFER TO APPLICABLE TECHNICAL MANUAL FOR PORT CONFIGURATIONS AND PIN ASSIGNMENTS.
- 5 IF FMS #1 IS NOT INTERFACED TO THE UL-801, THEN CONNECT FMS #2 TO MP1C AND MP1D IN LIEU OF MP2C AND MP2D SHOWN ABOVE.
- 6 WHITE ATC LETTERING RECOMMENDED. USE ANNUNCIATOR P/N EATON 582-10 A0 B0 C3 F4 L5 N1 (D) P12,12 ATC OR EQUIVALENT.
- 7 ANY AVAILABLE DISCRETE OUTPUT PIN MAY BE USED.
- 8 CONFIGURE DISCRETE OUTPUT FOR FANS VISUAL.
- 9 CONFIGURE DISCRETE OUTPUT FOR FANS AURAL.
- 10 CONNECT TO AN AURAL ALERTING DEVICE OR AN AURAL WARNING GENERATOR. USE SONALERT P/N SCE028LD2TT1B OR EQUIVALENT.
- 11 OPTIONAL: CONFIGURE DISCRETE OUTPUT FOR CPDLC CNECT (CONNECT).
- 12 OPTIONAL: CPDLC CNECT ANNUNCIATOR. LABEL AS REQUIRED.
- 13 BOTH THE 4" AND 5" FPCDUs, P/Ns 1117-2-X1X AND 1018-2-X1X, SUPPORT BOTH UNILINK TEXT AND WEATHER GRAPHICS (RS-422 DISPLAY DATA). OTHER 4" AND 5" FPCDUs, P/Ns 1117-X-X00 AND 1018-X-X00, SUPPORT UNILINK TEXT ONLY.
- 14 BOTH 4" AND 5" FPCDUs ARE WIRED IN THE SAME MANNER.
- 15 WIRING WITHIN THE DASHED LINES APPLIES ONLY WITH FANS ENABLED.
- 16 CONFIGURE AS A LO-RES DISPLAY.

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**P. UL-801 FANS Discretes (WAAS FMS SCN 1000.5/1100.5 or later)**

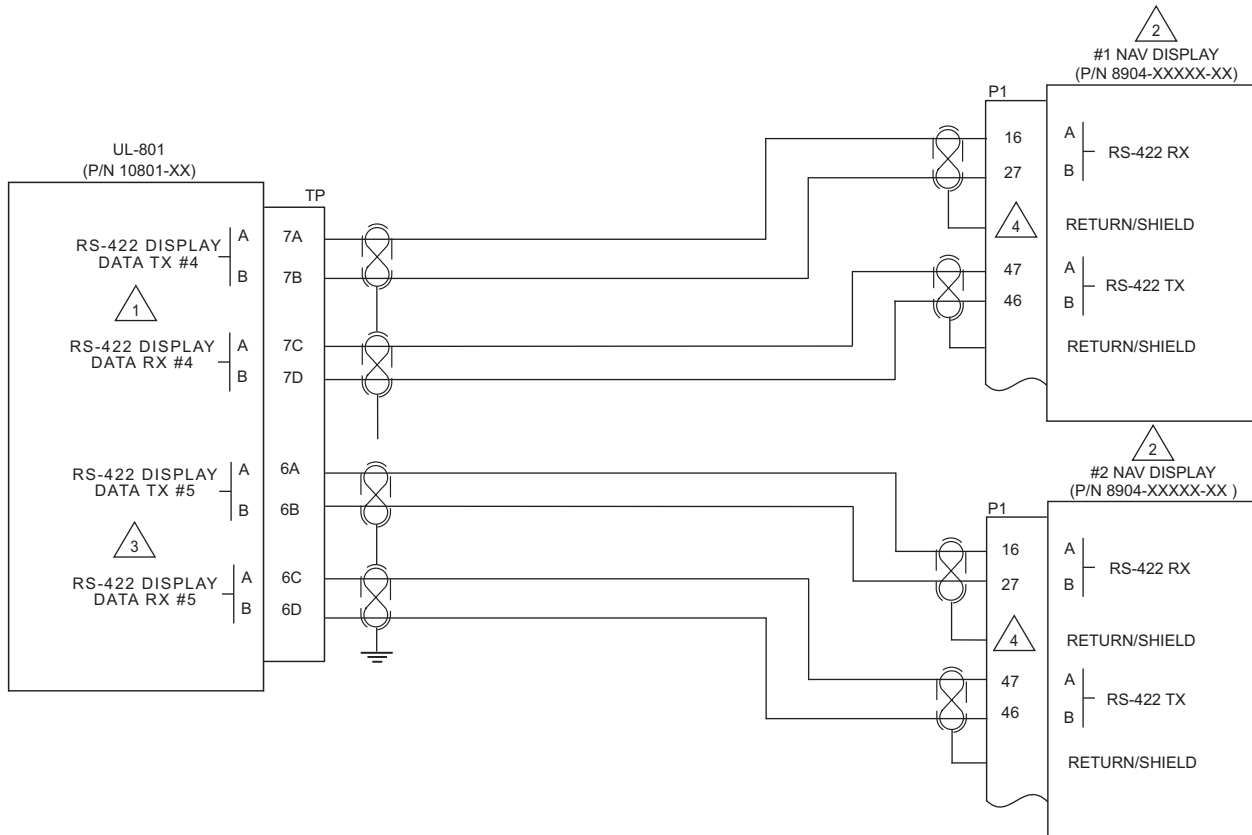


**NOTE: ALL WIRING IS TO BE 22 AWG UNLESS OTHERWISE INDICATED.**

- 1 CONFIGURE DISCRETE OUTPUT FOR FANS VISUAL.
- 2 ANY AVAILABLE DISCRETE OUTPUT PIN MAY BE
- 3 WHITE ATC LETTERING RECOMMENDED.
- 4 CONFIGURE DISCRETE OUTPUT FOR FANS
- 5 CONNECT TO AN AURAL ALERTING DEVICE OR AN AURAL WARNING GENERATOR.
- 6 OPTIONAL: CONFIGURE DISCRETE OUTPUT FOR CPDLC CNECT (CONNECT).
- 7 OPTIONAL: CPDLC CNECT ANNUNCIATOR. LABEL AS REQUIRED.

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## Q. UL-801 to EFI-890R – High Resolution



- 1 SELECT ANY AVAILABLE RS-422 PORT AND CONFIGURE THE PORT FOR HI-RES DISPLAY 1. PORT #4 IS USED HERE AS AN EXAMPLE.
- 2 EFI-890Rs ARE HIGH RESOLUTION DEVICES, ONE DEVICE MAXIMUM PER PORT. THEREFORE, THE UNILINK MUST BE CONFIGURED AS DEFINED BELOW. A MAXIMUM OF TWO HIGH-RESOLUTION DISPLAYS CAN BE INSTALLED AND CONFIGURED.
- 3 SELECT ANY AVAILABLE RS-422 PORT AND CONFIGURE THE PORT FOR HI-RES DISPLAY 2. PORT #5 IS USED HERE AS AN EXAMPLE.
- 4 USE ANY AVAILABLE RS-422 PORT. PORTS DEPICTED ARE FOR EXAMPLE.

### UNILINK CONFIGURATION

I/O CONFIG:  
SELECT SERIAL  
PORT 4 SELECT HI-RES DISPLAY 1  
PORT 5 SELECT HI-RES DISPLAY 2

### GRAPHICS CONFIGURATION

CDU/MFD BAUD RATE SELECT 19.2 KBS  
CDU1 GRAPHICS DISPLAY ON SELECT CDU, HR1  
CDU2 GRAPHICS DISPLAY ON SELECT CDU, HR2

#### EXAMPLE 1

CDU1 GRAPHICS DISP ON  
CDU, RCDU, HR1  
  
CDU2 GRAPHICS DISP ON  
CDU, HR2  
  
CDU3 GRAPHICS DISP ON  
CDU

#### EXAMPLE 2

CDU1 GRAPHICS DISP ON  
CDU, FPCDU, HR1  
  
CDU2 GRAPHICS DISP ON  
CDU, HR2  
  
CDU3 GRAPHICS DISP ON

ANY ADDITIONAL SELECTIONS WILL RESULT IN AN ERROR MESSAGE.

### EFI-890R ND #1 CONFIGURATION MAIN MENU

RS-422 RX CHANNEL MENU  
J1-16, J1-27(A,B) RX FUNCTION: UNILINK 700 PRIMARY 38.4  
J1-16, J1-27(A,B) RX NUMBER: SYSTEM 1

RS-422 TX CHANNEL MENU  
J1-47, J1-46(A,B) TX FUNCTION: UNILINK 700 38.4

UNILINK NODE ID: 35

### EFI-890R ND #2 CONFIGURATION MAIN MENU

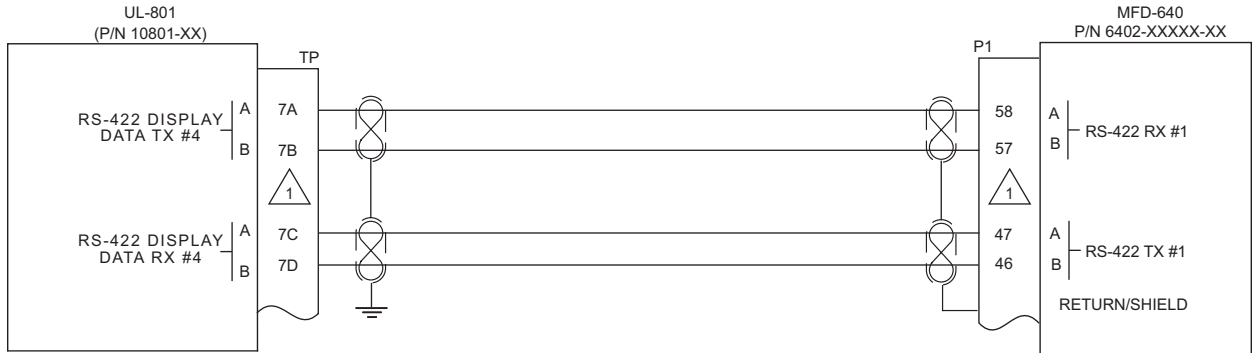
RS-422 RX CHANNEL MENU  
J1-16, J1-27(A,B) RX FUNCTION: UNILINK 700 PRIMARY 38.4  
J1-16, J1-27(A,B) RX NUMBER: SYSTEM 1

RS-422 TX CHANNEL MENU  
J1-47, J1-46(A,B) TX FUNCTION: UNILINK 700 38.4

UNILINK NODE ID: 45

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## R. UL-801 to MFD-640 – High Resolution (MFD SCN 1011.4.8 or later)



**NOTE: UNILINK HIGH RESOLUTION CONFIGURATION SETTINGS REQUIRE MFD-640-SCN 1011.4.8 OR LATER.**

**1** USE ANY AVAILABLE RS-422 PORT. PORTS DEPICTED ARE EXAMPLES. A MAXIMUM OF TWO HIGH-RESOLUTION DISPLAYS MAY BE USED.

THE UNILINK HIGH RESOLUTION MFD MUST BE CONFIGURED AS DEFINED BELOW.

### UNILINK CONFIGURATION

I/O CONFIG:  
SELECT SERIAL  
PORT 4      SELECT HI-RES DISPLAY 1

### GRAPHICS CONFIGURATION

CDU/MFD BAUD RATE      SELECT 19.2 KBPS  
CDU1 GRAPHICS DISPLAY ON      SEE THE EXAMPLES BELOW  
CDU2 GRAPHICS DISPLAY ON      SEE THE EXAMPLES BELOW  
CDU3 GRAPHICS DISPLAY ON      SEE THE EXAMPLES BELOW

**EXAMPLE 1**  
CDU1 GRAPHICS DISP ON  
**CDU, RCDU, HR1**  
  
CDU2 GRAPHICS DISP ON  
**CDU, HR2**  
  
CDU3 GRAPHICS DISP ON  
**CDU**

**EXAMPLE 2**  
CDU1 GRAPHICS DISP ON  
**CDU, FPCDU, HR1**  
  
CDU2 GRAPHICS DISP ON  
**CDU, HR2**  
  
CDU3 GRAPHICS DISP ON

ANY ADDITIONAL SELECTIONS WILL RESULT IN AN ERROR MESSAGE.

### MFD-640 CONFIGURATION

CONFIGURATION MAIN MENU

UNILINK NODE ID: 35

BAUD RATE: 38.4K

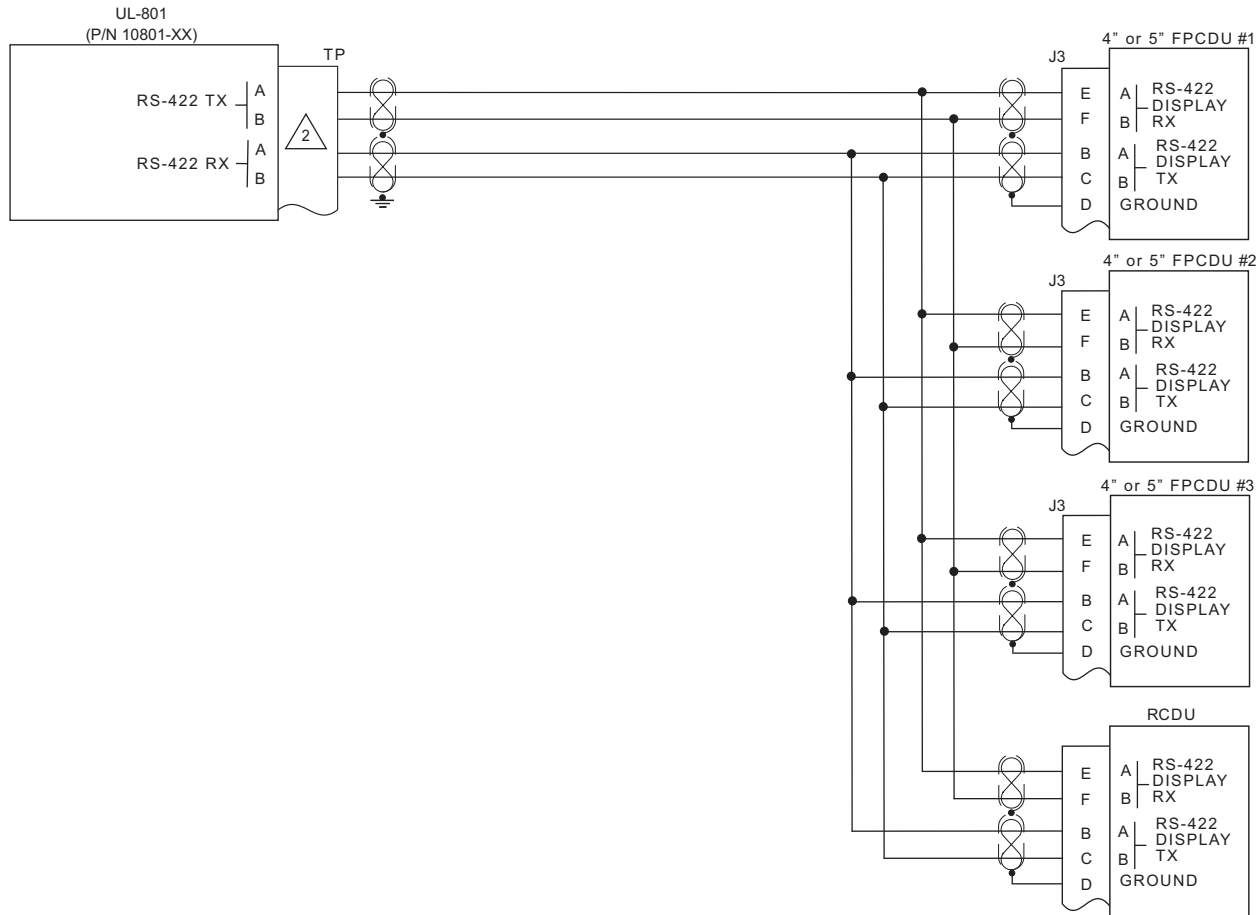
RS-422 MENU  
J1-58, J1-57 RX FUNC: UNILINK PRIMARY  
RX NUMBER: SYSTEM 1

RS-422 TX CHANNEL MENU  
J1-47, J1-46 TX FUNC: UNILINK

J1-58, 47, J1-57, 46 SPEED: 38400

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## S. UL-801 to Remote CDU (RCDU) – Low Resolution



**CAUTION:** IT IS THE INSTALLER'S RESPONSIBILITY TO VERIFY PIN NUMBERS ON EQUIPMENT MANUFACTURED BY OTHER THAN UNIVERSAL AVIONICS SYSTEMS CORPORATION.

**NOTES:**

1. A MAXIMUM OF FOUR DISPLAY DEVICES MAY BE CONNECTED AND CONFIGURED. THE FPCDUs SHOWN ARE EXAMPLES ONLY. FMS CDUs OR ANY OTHER DISPLAY DEVICE IN ANY COMBINATION CAN ALSO BE USED.



SELECT ANY AVAILABLE RS-422 PORT (PORT 4 RECOMMENDED) AND CONFIGURE FOR LOW RESOLUTION:

**UNILINK CONFIGURATION**

I/O CONFIG:

SELECT AND CONFIGURE PORT AS LO-RES DISPLAY

**GRAPHICS CONFIGURATION**

CDU/MFD BAUD RATE	SELECT 19.2 KBPS
CDU1 GRAPHICS DISPLAY ON	SEE CONFIGURATION NOTE 1
CDU2 GRAPHICS DISPLAY ON	SEE CONFIGURATION NOTE 2
CDU3 GRAPHICS DISPLAY ON	SEE CONFIGURATION NOTE 3

**CONFIGURATION NOTES**

1. CONFIGURE RCDU HERE TO SHARE DATA WITH #1 CDU.
2. CONFIGURE RCDU HERE TO SHARE DATA WITH #2 CDU.
3. CONFIGURE RCDU HERE TO SHARE DATA WITH #3 CDU.

**EXAMPLE 1**

CDU1 GRAPHICS DISP ON  
CDU, RCDU

CDU2 GRAPHICS DISP ON  
CDU

CDU3 GRAPHICS DISP ON  
CDU

**EXAMPLE 2**

CDU1 GRAPHICS DISP ON  
CDU, FPCDU

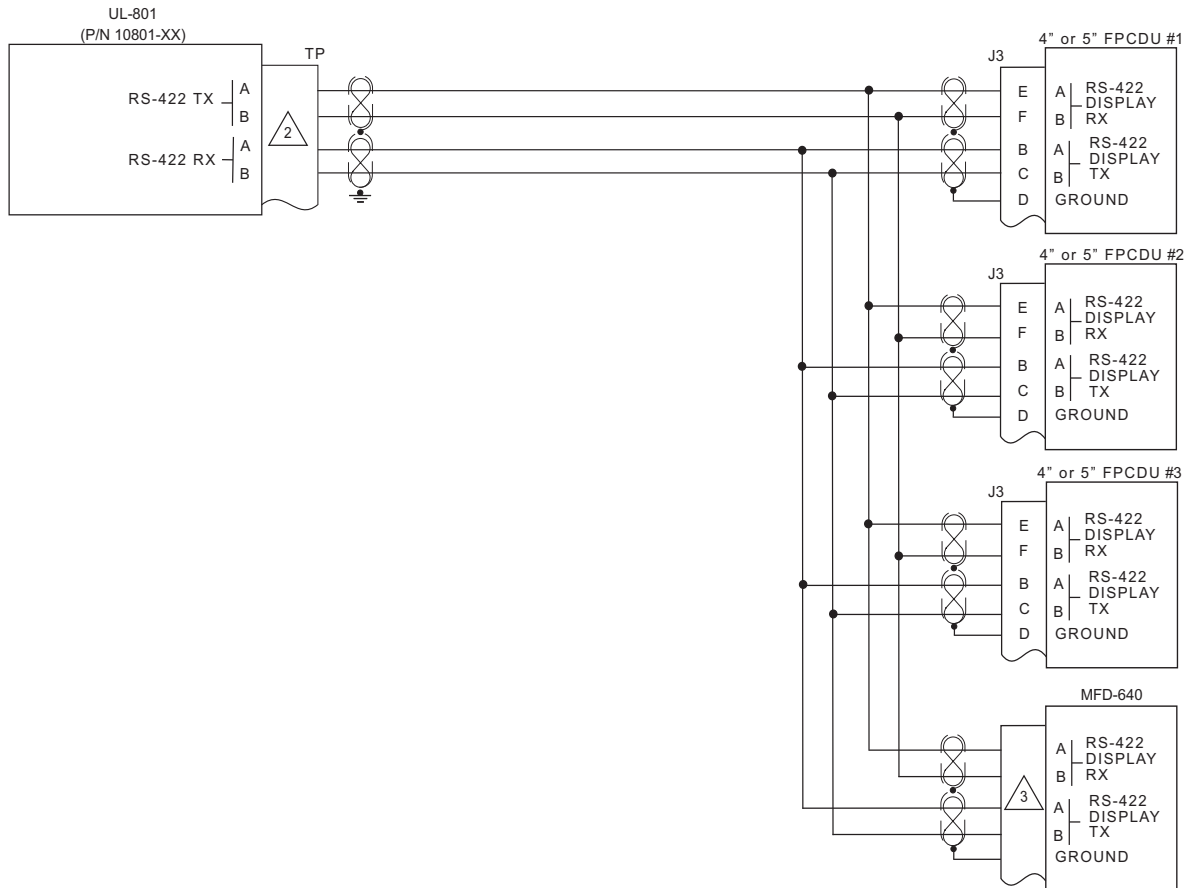
CDU2 GRAPHICS DISP ON  
CDU, MFD-LR

CDU3 GRAPHICS DISP ON

ANY ADDITIONAL SELECTIONS WOULD EXCEED THE TOTAL OF FOUR DEVICES AND CREATE AN ERROR MESSAGE.

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## T. UL-801 to MFD-640 - Low Resolution (MFD-640 SCN 1011.4.7 or earlier)



**CAUTION:** IT IS THE INSTALLER'S RESPONSIBILITY TO VERIFY PIN NUMBERS ON EQUIPMENT MANUFACTURED BY OTHER THAN UNIVERSAL AVIONICS SYSTEMS CORPORATION.

**NOTES:**

1. A MAXIMUM OF FOUR DISPLAY DEVICES MAY BE CONNECTED AND CONFIGURED. THE FPCDU'S SHOWN ARE EXAMPLES ONLY. FMS CDUs OR ANY OTHER DISPLAY DEVICE IN ANY COMBINATION CAN ALSO BE USED.

**2** SELECT ANY AVAILABLE RS-422 PORT (PORT 4 RECOMMENDED) AND CONFIGURE FOR LOW RESOLUTION:

**3** REFER TO THE MFD-640 INSTALLATION MANUAL FOR PORT SELECTIONS.

**UNILINK CONFIGURATION**

I/O CONFIG:  
SELECT SERIAL AND CONFIGURE PORT AS LO-RES DISPLAY

**GRAPHICS CONFIGURATION**

CDU/MFD BAUD RATE	SELECT 19.2 KBPS
CDU1 GRAPHICS DISPLAY ON	SEE CONFIGURATION NOTE 1
CDU2 GRAPHICS DISPLAY ON	SEE CONFIGURATION NOTE 2
CDU3 GRAPHICS DISPLAY ON	SEE CONFIGURATION NOTE 3

**CONFIGURATION NOTES**

1. CONFIGURE MFD-LR HERE TO SHARE DATA WITH #1 CDU.
2. CONFIGURE MFD-LR HERE TO SHARE DATA WITH #2 CDU.
3. CONFIGURE MFD-LR HERE TO SHARE DATA WITH #3 CDU.

**EXAMPLE 1**

CDU1 GRAPHICS DISP ON  
CDU, MFD-LR

CDU2 GRAPHICS DISP ON  
CDU

CDU3 GRAPHICS DISP ON  
CDU

**EXAMPLE 2**

CDU1 GRAPHICS DISP ON  
CDU, FPCDU

CDU2 GRAPHICS DISP ON  
CDU, MFD-LR

CDU3 GRAPHICS DISP ON

ANY ADDITIONAL SELECTIONS WOULD EXCEED THE TOTAL OF FOUR DEVICES AND CREATE AN ERROR MESSAGE.

**MFD-640 CONFIGURATION**

CONFIGURATION MAIN MENU

UNILINK NODE ID: 40

**RS-422 MENU**

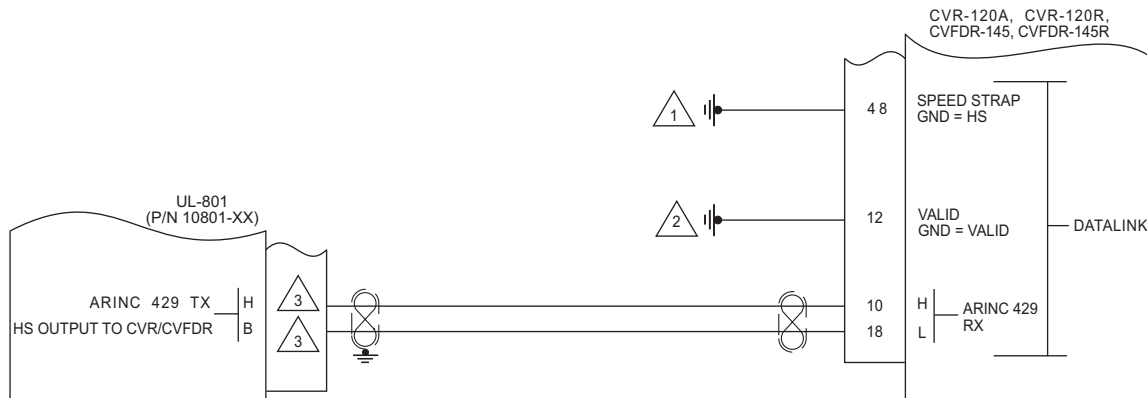
J1-58, J1-57 RX FUNC: UNILINK PRIMARY  
RX NUMBER: SYSTEM 1

**RS-422 TX CHANNEL MENU**

J1-47, J1-46 TX FUNC: UNILINK  
J1-58, 47, J1-57,46 SPEED: 19200

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## U. UL-801 to CVR/CVFDR



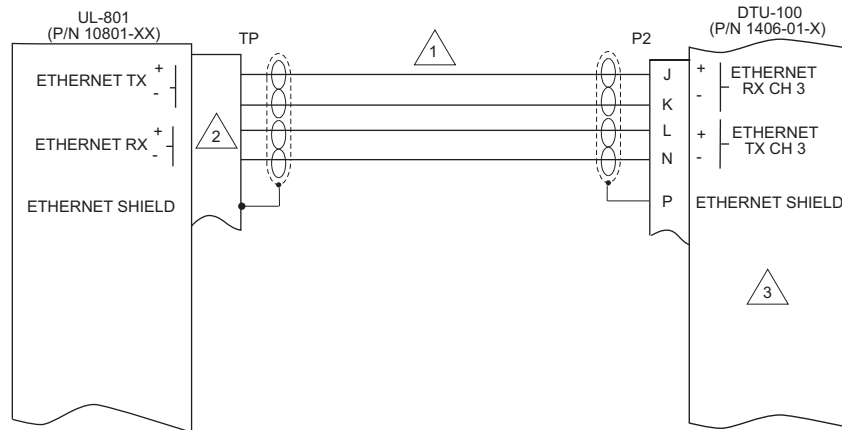
**CAUTION:** IT IS THE INSTALLER'S RESPONSIBILITY TO VERIFY PIN NUMBERS ON EQUIPMENT MANUFACTURED BY OTHER THAN UNIVERSAL AVIONICS SYSTEMS CORPORATION.

- 1 PIN 48 (DATA LINK SPEED STRAP) SETS THE ARINC 429 RX PORT TO HIGH OR LOW SPEED. UNILINK TRANSMITS 429 HIGH SPEED AND THEREFORE MUST BE GROUNDED AS SHOWN.
- 2 PIN 12 (VALID) DATA LINK VALID MUST BE GROUNDED AS SHOWN TO ENABLE DATA LINK RECORDING. IF THIS PIN IS GROUNDED WITH NO COMMUNICATION FROM A DATA LINK, A CVR FAIL (AMBER LED) WILL BE PRESENT ON THE COCKPIT CONTROL UNIT (CCU).
- 3 CONNECT TO ANY AVAILABLE ARINC TX PORT, CONFIGURE FOR HIGH SPEED, AND SET THE PORT TO "CVR". RECEIVE PORTS ARE NOT REQUIRED AT THIS TIME.



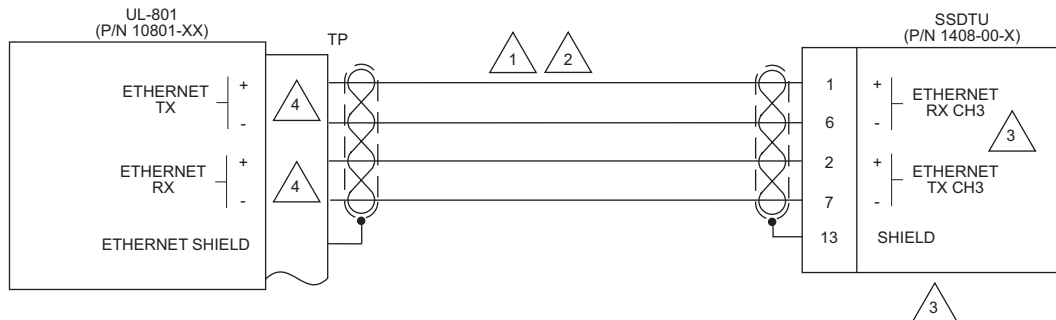
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## V. UL-801 to DTU-100



- 1 ETHERNET CABLE PER ARINC 646 (10 BASE-T FOR AVIONICS USE), P/N ECS 392404 OR EQUIVALENT.
- 2 THREE ETHERNET PORTS ARE AVAILABLE. REFER TO THE PIN ASSIGNMENT CHART IN THIS MANUAL.
- 3 THERE ARE ADDITIONAL ETHERNET PORTS AVAILABLE. REFER TO THE PIN ASSIGNMENT CHART OF THIS MANUAL.

## W. UL-801 to SSDTU

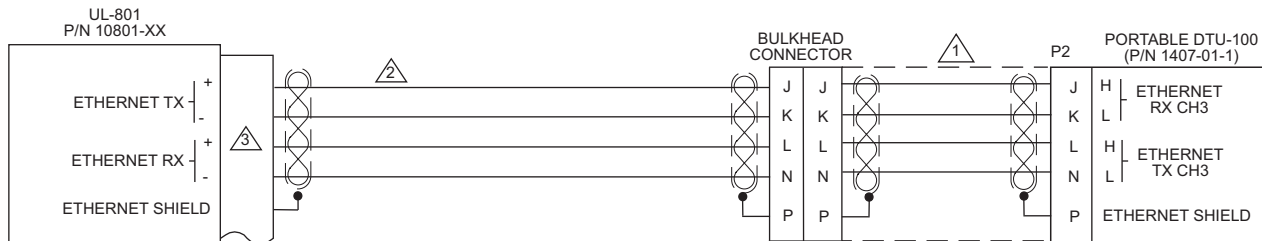


**NOTES:**

- 1 USE ETHERNET CABLE ECS P/N 392404 OR THERMAX/CDT 956-426 OR EQUIVALENT.
- 2 THE EXPOSED UNSHIELDED ETHERNET WIRE BETWEEN THE SHIELD AND THE CIRCULAR CONNECTOR SHOULD BE LESS THAN 0.5 INCHES LONG.
- 3 THERE ARE ADDITIONAL ETHERNET PORTS AVAILABLE. REFER TO THE PIN ASSIGNMENT CHART OF THE MANUAL.
- 4 THREE ETHERNET PORTS ARE AVAILABLE. WIRING AND CONFIGURATION ARE UP TO THE DISCRETION OF THE INSTALLER.

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## X. UL-801 to Portable DTU-100

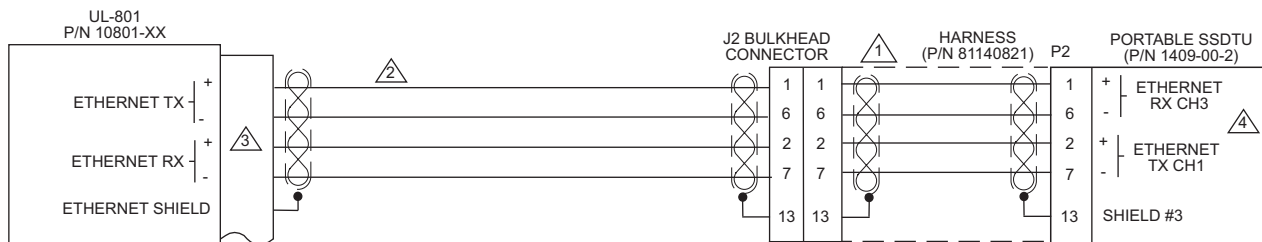


**CAUTION:** IT IS THE INSTALLER'S RESPONSIBILITY TO VERIFY PIN NUMBERS ON EQUIPMENT MANUFACTURED BY OTHER THAN UNIVERSAL AVIONICS SYSTEMS CORPORATION.

- △1 THE DASHED LINES BETWEEN THE PORTABLE DTU AND P1 AND P2 CONNECTORS REPRESENTS A WIRING HARNESS THAT IS PART OF THE PORTABLE DTU.
- △2 ETHERNET CABLE PER ARINC 626 (10 BASE-T AVIONICS USE) P/N ECS 392404 OR EQUIVALENT.
- △3 THERE ARE ADDITIONAL ETHERNET PORTS AVAILABLE. REFER TO THE PIN ASSIGNMENT CHART OF THIS MANUAL.

## Y. UL-801 to Portable SSDTU

**NOTE:** It is strongly recommended that customer's using a DTU-100 upgrade to the SSDTU.



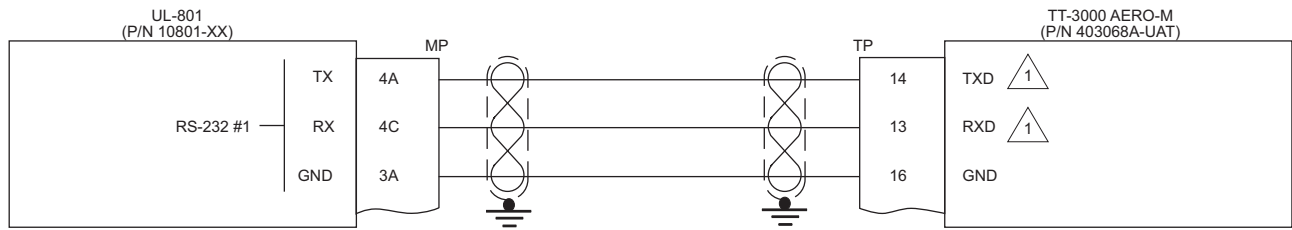
**CAUTION:** IT IS THE INSTALLER'S RESPONSIBILITY TO VERIFY PIN NUMBERS ON EQUIPMENT MANUFACTURED BY OTHER THAN UNIVERSAL AVIONICS SYSTEMS CORPORATION.

- △1 THE DASHED LINES BETWEEN THE PORTABLE DTU AND P1 AND P2 CONNECTORS REPRESENTS A WIRING HARNESS THAT IS PART OF THE PORTABLE SSDTU.
- △2 USE ETHERNET CABLE ECS P/N 392404 OR THERMAX/CDT P/N 956-426 OR EQUIVALENT.
- △3 THE EXPOSED UNSHIELDED ETHERNET WIRE BETWEEN THE SHIELD AND THE CIRCULAR CONNECTOR SHOULD BE LESS THAN 0.5 INCHES LONG.
- △4 THERE ARE ADDITIONAL ETHERNET PORTS AVAILABLE. REFER TO THE PIN ASSIGNMENT CHART OF THIS MANUAL.

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## Z. UL-801 Airborne-based Telephony SatCom Systems

### (1) UL-801 to Aero-M – without FANS



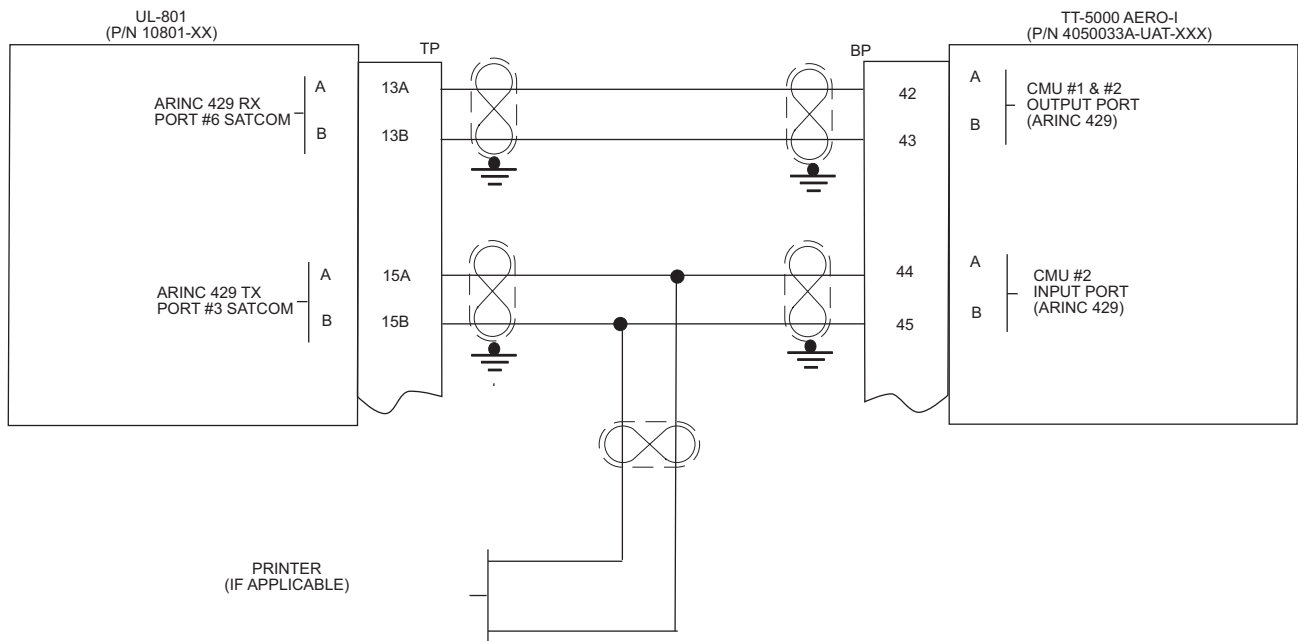
**CAUTION:** IT IS THE INSTALLER'S RESPONSIBILITY TO VERIFY PIN NUMBERS ON EQUIPMENT MANUFACTURED BY OTHER THAN UNIVERSAL AVIONICS SYSTEMS CORPORATION.

NOTES:



SIGNAL NAMES ARE IDENTIFIED BY THE MANUFACTURER AND ARE NOT USED TO IMPLY SIGNAL DIRECTION.

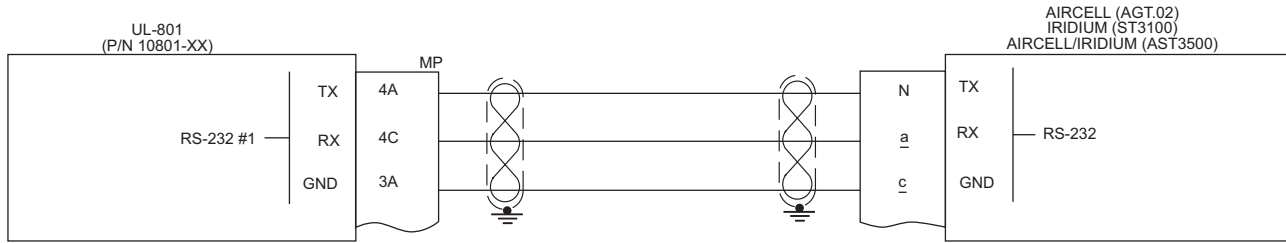
### (2) UL-801 to ARINC 741 Satellite Communication (SatCom) Packet Data – without FANS



**CAUTION:** IT IS THE INSTALLER'S RESPONSIBILITY TO VERIFY PIN NUMBERS ON EQUIPMENT MANUFACTURED BY OTHER THAN UNIVERSAL AVIONICS SYSTEMS CORPORATION.

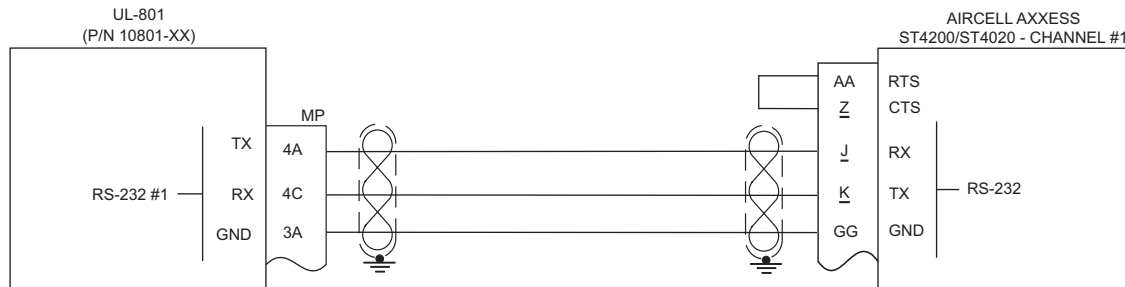
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(3) UL-801 to AirCell and Iridium Systems



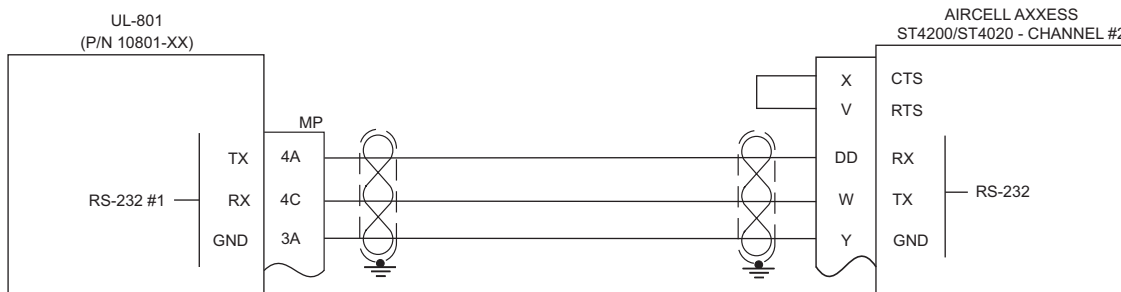
**CAUTION:** IT IS THE INSTALLER'S RESPONSIBILITY TO VERIFY PIN NUMBERS ON EQUIPMENT MANUFACTURED BY OTHER THAN UNIVERSAL AVIONICS SYSTEMS CORPORATION.

(4) UL-801 Connection to AirCell Axxess ST4200/ST4020 – Channel #1



**CAUTION:** IT IS THE INSTALLER'S RESPONSIBILITY TO VERIFY PIN NUMBERS ON EQUIPMENT MANUFACTURED BY OTHER THAN UNIVERSAL AVIONICS SYSTEMS CORPORATION.

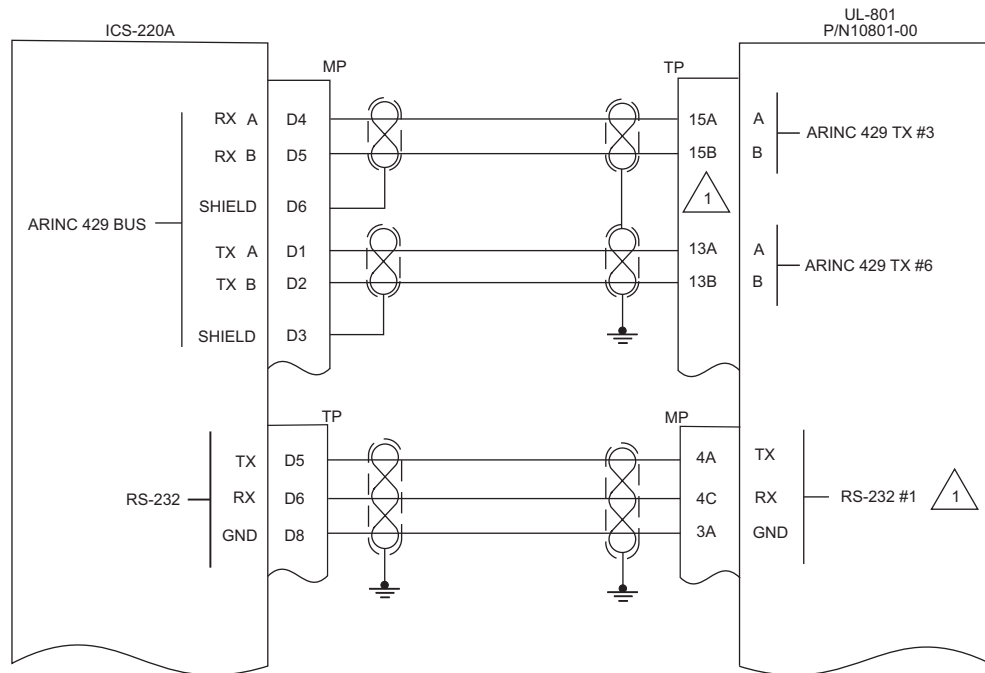
(5) UL-801 Connection to AirCell Axxess ST4200/ST4020 – Channel #2



**CAUTION:** IT IS THE INSTALLER'S RESPONSIBILITY TO VERIFY PIN NUMBERS ON EQUIPMENT MANUFACTURED BY OTHER THAN UNIVERSAL AVIONICS SYSTEMS CORPORATION.

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(6) **UL-801 Connections to International Communications Group (ICG)  
ICS-220A**

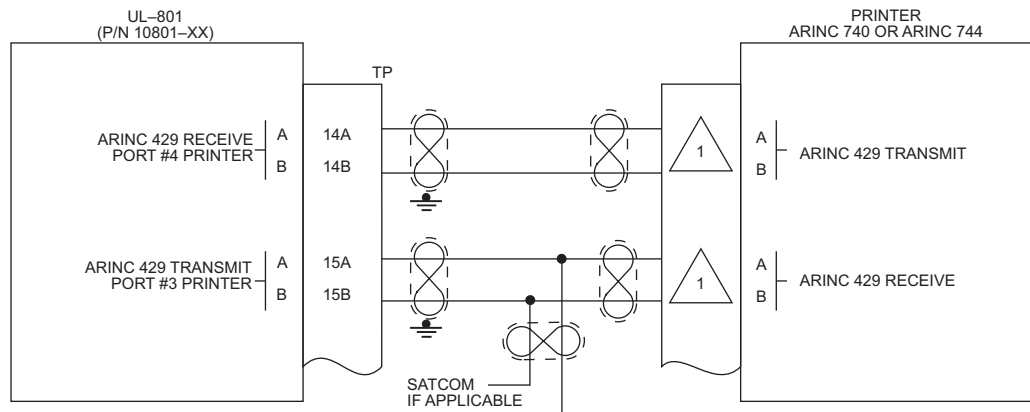


**CAUTION:** IT IS THE INSTALLER'S RESPONSIBILITY TO VERIFY PIN NUMBERS ON EQUIPMENT MANUFACTURED BY OTHER THAN UNIVERSAL AVIONICS SYSTEMS CORPORATION.



THESE PIN NUMBERS ARE RECOMMENDED. HOWEVER, THE WIRING AND CONFIGURATION ARE UP TO THE DISCRETION OF THE INSTALLER.

**AA. UL-801 to ARINC 740/744/744A Printer**



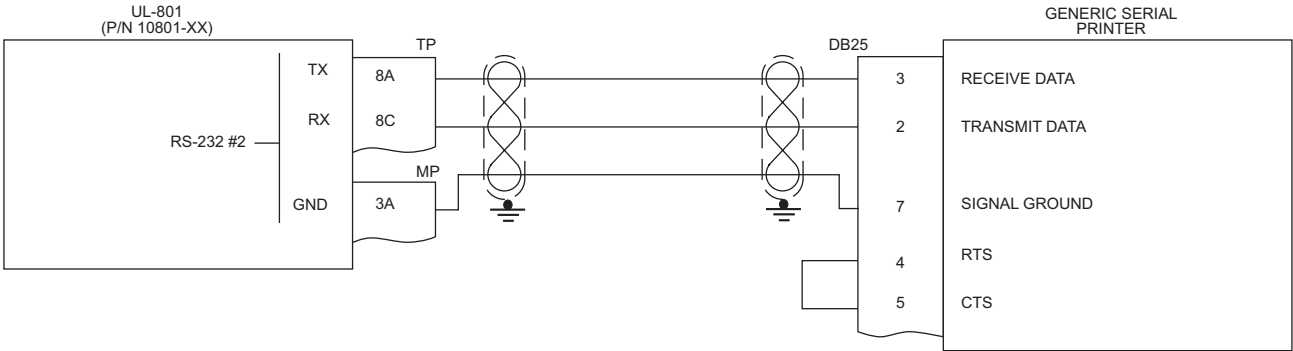
**CAUTION:** IT IS THE INSTALLER'S RESPONSIBILITY TO VERIFY PIN NUMBERS ON EQUIPMENT MANUFACTURED BY OTHER THAN UNIVERSAL AVIONICS SYSTEMS CORPORATION.

ALL WIRES AWG 22 UNLESS OTHERWISE NOTED.



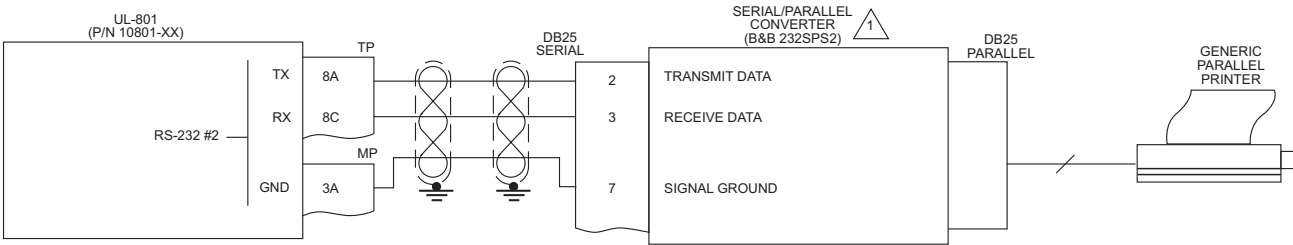
SEE THE PRINTER MANUFACTURER FOR PIN IDENTIFICATIONS.

**BB. UL-801 to PC Printer**



**CAUTION:** IT IS THE INSTALLER'S RESPONSIBILITY TO VERIFY PIN NUMBERS ON EQUIPMENT MANUFACTURED BY OTHER THAN UNIVERSAL AVIONICS SYSTEMS CORPORATION.

**CC. UL-801 to Generic Parallel Printer**



**1** SET THE DIP SWITCH ON THE 232SPS2 AS FOLLOWS (DEFAULT SETTING):

1	2	3	4	5	6	7	8
ON	ON	OFF	OFF	OFF	OFF	OFF/ON	OFF
9600 baud	9600 baud	9600 baud	XON/XOFF	8 Data Bits	No Parity	Don't Care	Serial/Parity

**CAUTION:** IT IS THE INSTALLER'S RESPONSIBILITY TO VERIFY PIN NUMBERS ON EQUIPMENT MANUFACTURED BY OTHER THAN UNIVERSAL AVIONICS SYSTEMS CORPORATION.

### 3. UL-801 Connector Pin Identification

#### A. Top Plug

**NOTE:** Connector pin differences between the UL-701 and UL-801 top plug are shown in the shaded areas below. These differences are being presented for use when upgrading from UL-701 to UL-801.

Pin	UL-801 Function	UL-701 Function
1A	10/100BT Ethernet (+) TX #1	Same
1B	10/100BT Ethernet (-) TX #1	Same
1C	10/100BT Ethernet RX (+) #1	Same
1D	10/100BT Ethernet RX (-) #1	Same
2A	ARINC 429 RX (A) #14	Same
2B	ARINC 429 RX (B) #14	Same
2C	ARINC 429 RX (A) #13	Same
2D	ARINC 429 RX (B) #13	Same
3A	10/100BT Ethernet TX (+) #2 Essential	RS-422/RS-232 (A) TX #8
3B	10/100BT Ethernet TX (-) #2 Essential	RS-422 TX (B) #8
3C	10/100BT Ethernet RX (+) #2 Essential	RS-422/RS-232 (A) RX #8
3D	10/100BT Ethernet RX (-) #2 Essential	RS-422 RX (B) #8
4A	10/100BT Ethernet TX (+) #3 Essential	RS-422/RS-232 (A) TX #7
4B	10/100BT Ethernet TX (-) #3 Essential	RS-422 TX (B) #7
4C	10/100BT Ethernet RX (+) #3 Essential	RS-422/RS-232 (A) RX#7
4D	10/100BT Ethernet RX #3 (-) Essential	RS-422 RX (B) #7
5A	RS-422 (A)/RS-232 TX #6	Same
5B	RS-422 (B) TX #6	Same
5C	RS-422 (A)/RS-232 RX #6	Same
5D	RS-422 (B) RX #6	Same
6A	RS-422 (A)/RS-232 TX #5	Same
6B	RS-422 (B) TX #5	Same
6C	RS-422 (A) /RS-232 RX #5	Same
6D	RS-422 (B) RX #5	Same
7A	RS-422 (A)/RS-232 TX #4	Same
7B	RS-422 (B) TX #4	Same
7C	RS-422 (A)/RS-232 RX #4	Same
7D	RS-422 (B) RX #4	Same
8A	RS-422 (A)/RS-232 TX #2	Same
8B	RS-422 (B) TX #2	Same
8C	RS-422 (A)/RS-232 RX #2	Same
8D	RS-422 (B) RX #2	Same
9A	RS-422 (A)/RS-232 TX #3	Same
9B	RS-422 (B) TX #3	Same

## Top Plug - continued

Pin	UL-801 Function	UL-701 Function
9C	RS-422 (A)/RS-232 RX #3	Same
9D	RS-422 (B) RX #3	Same
10A	RS-232 TX	Same
10B	RS-232 RX	Same
10C	RS-232 GND	Same
10D	Discrete Out #1	Same
11A	ARINC 429 (A) TX #4	Same
11B	ARINC 429 (B) TX #4	Same
11C	Config Mod Clock	Same
11D	Config Mod Power	Same
12A	ARINC 429 (A) RX #8	Same
12B	ARINC 429 (B) RX #8	Same
12C	Config Mod Data (I/O)	Same
12D	Config Mod GND	Same
13A	ARINC 429 (A) RX #6	Same
13B	ARINC 429 (B) RX #6	Same
13C	ARINC 429 (A) RX #7	Same
13D	ARINC 429 (B ) RX #7	Same
14A	ARINC 429 (A) RX #4	Same
14B	ARINC 429 (B) RX #4	Same
14C	ARINC 429 (A) RX #5	Same
14D	ARINC 429 (B) RX #5	Same
15A	ARINC 429 (A) TX #3	Same
15B	ARINC 429 (B) TX #3	Same
15C	ARINC 429 (A) RX #3	Same
15D	ARINC 429 (B) RX #3	Same



## B. Middle Plug

**NOTE:** Connector pin differences between the UL-701 and UL-801 middle plug are shown in the shaded areas below. These differences are being presented for use when upgrading from UL-701 to UL-801.

Pin	UL-801 Function	UL-701 Function
1A	ARINC 429 (A) TX #1	Same
1B	ARINC 429 (B) TX #1	Same
1C	ARINC 429 (A) RX #1	Same
1D	ARINC 429 (B) RX #1	Same
2A	ARINC 429 (A) TX #2	Same
2B	ARINC 429 (B) TX #2	Same
2C	ARINC 429 (A) RX #2	Same
2D	ARINC 429 (B) RX #2	Same
3A	RS-232 GND	Same
3B	ARINC 429 (A) RX #12	Same
3C	ARINC 429 (B) RX #12	Same
3D	ARINC 429 (A) RX #11	Same
4A	RS-422 (A)/RS-232 TX #1	Same
4B	RS-422 (B) TX #1	Same
4C	RS-422 (A)/RS-232 RX #1	Same
4D	RS-422 (B) RX #1	Same
5A	Discrete Out #14	Same
5B	ARINC 429 (A) TX #5	Discrete Out #15
5C	ARINC 429 (B) TX #5	Discrete Out #16
5D	ARINC 429 (B) RX #11	Same
6A	Discrete Out #10	Same
6B	Discrete Out #11	Same
6C	Discrete Out #12	Same
6D	Discrete Out #13	Same
7A	Discrete Out #6	Same
7B	Discrete Out #7	Same
7C	Discrete Out #8	Same
7D	Discrete Out #9	Same
8A	Discrete Out #2	Same
8B	Discrete Out #3	Same
8C	Discrete Out #4	Same
8D	Discrete Out #5	Same
9A	ARINC 429 (A) TX #6	Discrete In #13
9B	ARINC 429 (B) TX #6	Discrete In #14
9C	ARINC 429 (A) TX #7	Discrete In #15

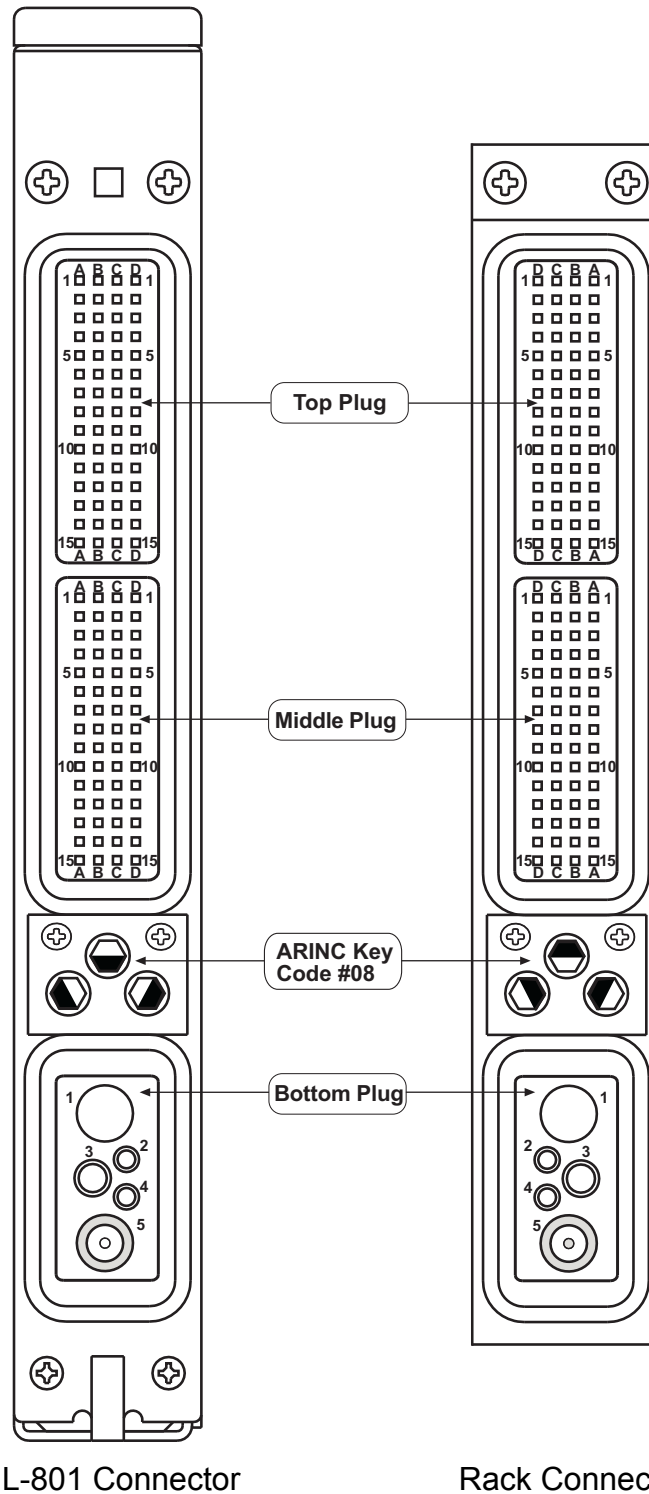
## Middle Plug - continued

Pin	UL-801 Function	UL-701 Function
9D	ARINC 429 (B) TX #7	Discrete In #16
10A	Discrete In #9	Same
10B	Discrete In #10	Same
10C	ARINC 429 (A) RX #15	Discrete In #11
10D	ARINC 429 (B) RX #15	Discrete In #12
11A	Discrete In #5	Same
11B	Discrete In #6	Same
11C	Discrete In #7	Same
11D	Discrete In #8	Same
12A	Discrete In #2	Same
12B	Discrete In #3	Same
12C	Discrete In #4	Same
12D	ARINC 429 (A) RX #10	Same
13A	ARINC 429 (A) RX #16	Telephone Ring (Modem I/F)
13B	ARINC 429 (A) RX #9	Same
13C	ARINC 429 (B) RX #9	Same
13D	ARINC 429 (B) RX #10	Same
14A	ARINC 429 (B) RX #16	Telephone Tip (Modem I/F)
14B	Spare	PTT Radio
14C	Chassis GND	Gnd Rtn VHF-ACARS (VHF Radio)
14D	Discrete In #1	Same
15A	ARINC 429 (A) TX #8	VHF Modem TX (+)
15B	ARINC 429 (B) TX #8	VHF Modem TX (-)
15C	Spare	VHF Modem RX (+)
15D	Spare	VHF Modem RX (-)

## C. Bottom Plug

Pin	UL-801 Function	UL-701 Function
1	Spare	Same
2	+28 VDC	Same
3	Chassis GND	Same
4	Power GND	Same
5	VHF Antenna	Same

## 4. UL-801 Connectors



UL-801 Connector

Rack Connector

**NOTE:** The darkened portion of the keying above indicates the extended part of the key; the light portion indicates the key hole.



## System Data Installation

### 1. International Civil Aviation Organization (ICAO) Aircraft Type Designators

When installing system data during the configuration process, the ICAO aircraft type designator is used. The following tables contain examples of commonly used ICAO designators for various aircraft. Use ICAO Document 8643, found under “Publications” at <http://www.icao.int/>, to ascertain the correct designator for your aircraft.

Manufacturer/Model	ICAO Designator
<b>AIRBUS</b>	
A-300	A300
A-310	A310
<b>ATR</b>	
ATR-42/72	ATR
<b>BAC</b>	
111 One-eleven	BA111
<b>BEECH</b>	
90, A90 to E90 King Air	BE9L
200, 1300 Super King Air	BE20
300 Super King Air	BE30
B300 Super King Air 350	B350
400 Beechjet	MU30
1900 (C-12J)	B190
<b>BELL</b>	
212, 412	B12
214ST	BSTP
222, 230, 430	B222
<b>BOEING</b>	
707	B708
727 (C-22)	B727
737-100/200 (CT-43)	B73A
737-300/400/500	B73B
747-100/200/300 (E-4, VC-25)	B74A
747SP	B74S
757	B757
C135	C135
<b>BRITISH AEROSPACE</b>	
BAC 111 One-eleven	BA11
BAe-125-700/801 (C-29)	H25B
BAe-125-1000	H25C
BAe-146, RJ	BA46
BAe-4100 Jetstream 41	JSTB

Manufacturer/Model	ICAO Designator
<b>CANADAI</b>	
CL-600/601/604 Challenger	CL60
RJ Regional Jet	CARJ
<b>CESSNA</b>	
F406 Caravan 2	F406
441 Conquest, Conquest 2	C441
500, 501 Citation, Citation 1/1SP	C500
525 Citation Jet	C525
526 Citation Jet	C526
550, S550, 551, 552 Citation 2/S2/2SP/Bravo	C550
560 Citation 5	C560
650 Citation 3/6/7	C650
<b>DASSAULT</b>	
Falcon 10, Mystere 10	FA10
Falcon 20, Mystere 20	FA20
Falcon 50, Mystere 20	FA50
Falcon 900, Mystere 900	F900
Falcon 2000	F2TH
<b>DEHAVILLAND CANADA</b>	
DHC-6 Twin Otter	DHC6
DHC-7 Dash 7	DHC7
DHC-8 Dash 8	DHC8
<b>DOUGLAS</b>	
DC-8	DC8
DC-9	DC9
<b>EMBRAER</b>	
EMB-110/111 Bandeirante	E110
EMB-120 Brasilia	E120
EMB-145	E145
EMB-140	E140
<b>EUROCOPTER</b>	
AS-365/565 Dauphin	AS65
BK-117	BK17
<b>FOKKER</b>	
50	F50
<b>GRUMMAN</b>	
G-159 Gulfstream 1	G159
G-1159 Gulfstream 2	GULF
Albatross	U16
<b>GULFSTREAM AEROSPACE</b>	
Gulfstream 3/4/5	GULF

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Manufacturer/Model	ICAO Designator
<b>HAWKER</b>	
HS-124-400/600	H25A
HS-125-700	H25B
<b>IAI</b>	
1123 Westwind	WW23
1124 Westwind	WW24
1125 Astra	ASTR
Galaxy	GLAX
<b>ILYUSHIN</b>	
IL96	IL96
<b>LEARJET</b>	
31	LJ31
35	LJ35
45	LJ45
55	LJ55
60	LJ60
<b>LOCKHEED</b>	
C-130	C130
L-1011 Tristar	L101
<b>McDONNELL DOUGLAS</b>	
DC-8	DC8
DC-9	DC9
DC-10	DC10
MD-81/82/83/87/88	MD80
MD-90	MD90
<b>MITSUBISHI</b>	
MU-300 Diamond	MU30
<b>PIPER</b>	
PA-42 Cheyenne 3/400	PA42
<b>RAYTHEON</b>	
90 King Air	BE9L
200 Super King Air (C-12)	BE20
300 Super King Air	BE30
B300 Super King Air 350	B350
400 Beechjet	MU30
1900	B190
Hawker 801	H25B
Hawker 1000	H25C
<b>REIMS</b>	
F406 Caravan 2	F406
<b>SIKORSKY</b>	
S-70	H60
S-76	S76

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Manufacturer/Model	ICAO Designator
<b>TUPOLEV</b>	
Tu-154	T154
<b>WESTLAND</b>	
Puma	PUMA



## 2. Configuration Worksheets

Universal Avionics Systems Corporation recommends that the following worksheets be completed in order to assist with configuring the UniLink Configuration Module. One set of worksheets should be filled out and a copy given to the customer. Fill in the blanks and check the appropriate boxes based on the wiring of the aircraft and its set of avionics components. Further, these worksheets may be submitted along with other approval paperwork. A copy of these worksheets should be filed along with the aircraft paper work for future reference.

- NOTE:**
- A customer database is installed in each UniLink.
  - You are hereby authorized to reproduce these worksheets as well as the configuration module programming procedures if desired.
  - It is recommended that the current UniLink configuration be recorded prior to updating to a new UniLink software version. UniLink may not maintain previous configuration settings with a software upgrade.

The default value for each option in the worksheets is underlined. Pressing the RETURN LSK returns you to the menu from which you started.

UniLink input consists of one of the three following character types. Where necessary, each field on the worksheets designates which type to use.

Types of character input allowed	
Alpha Shown as "A" on the worksheets.	Alpha characters are the 26 characters of the alphabet.
Numeric Shown as "N" on the worksheets.	Numeric characters consist of the numbers 0 to 9.
Alphanumeric Shown as "AN" on the worksheets.	Alphanumeric characters are a combination of letters (including both upper and lower case) and numbers. Alphanumeric input can also contain punctuation marks, and mathematical and other conventional symbols (such as @, &, and *).

## A. Customer/Aircraft Information

Customer Name: \_\_\_\_\_

Customer Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Aircraft Manufacturer: \_\_\_\_\_

Aircraft Model No.: \_\_\_\_\_

Aircraft Serial No.: \_\_\_\_\_

Configuration Date: \_\_\_\_\_

Technician: \_\_\_\_\_

## B. System Configuration Menu (Sys Config 1/4)

**NOTE:** Configuration options may be used only once. Any option that has been selected is removed from the option list.

### 1. I/O Config

#### a) DISCRETE (DISC) IN

- Active state of BRAKE SET indicates the parking brake is locked.
- Active state of DOOR CLOSED indicates the configured door is closed.
- Active state of STRUT COMP (Strut Compressed) indicates the aircraft is on-ground (weight on wheels).
- The TEST option is provided for development and engineering purposes only.

#### DISC IN 1/4

<b>DISC IN 1</b> <b>Middle Plug 14D</b>	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> BRAKE SET	<input type="checkbox"/> STRUT COMP	<input type="checkbox"/> TEST
	<input type="checkbox"/> DOOR 1 CLOSED	<input type="checkbox"/> DOOR 2 CLOSED	<input type="checkbox"/> DOOR 3 CLOSED	<input type="checkbox"/> DOOR 4 CLOSED
	<b>ACTIVE STATE</b>	<input type="checkbox"/> <u>GROUND</u>	<input type="checkbox"/> OPEN	
<b>DISC IN 2</b> <b>Middle Plug 12A</b>	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> BRAKE SET	<input type="checkbox"/> STRUT COMP	<input type="checkbox"/> TEST
	<input type="checkbox"/> DOOR 1 CLOSED	<input type="checkbox"/> DOOR 2 CLOSED	<input type="checkbox"/> DOOR 3 CLOSED	<input type="checkbox"/> DOOR 4 CLOSED
	<b>ACTIVE STATE</b>	<input type="checkbox"/> <u>GROUND</u>	<input type="checkbox"/> OPEN	
<b>DISC IN 3</b> <b>Middle Plug 12B</b>	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> BRAKE SET	<input type="checkbox"/> STRUT COMP	<input type="checkbox"/> TEST
	<input type="checkbox"/> DOOR 1 CLOSED	<input type="checkbox"/> DOOR 2 CLOSED	<input type="checkbox"/> DOOR 3 CLOSED	<input type="checkbox"/> DOOR 4 CLOSED
	<b>ACTIVE STATE</b>	<input type="checkbox"/> <u>GROUND</u>	<input type="checkbox"/> OPEN	

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Press NEXT. <b>DISC IN 2/4</b> displays.				
<b>DISC IN 4</b> Middle Plug 12C	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> BRAKE SET	<input type="checkbox"/> STRUT COMP	<input type="checkbox"/> TEST
	<input type="checkbox"/> DOOR 1 CLOSED	<input type="checkbox"/> DOOR 2 CLOSED	<input type="checkbox"/> DOOR 3 CLOSED	<input type="checkbox"/> DOOR 4 CLOSED
	<b>ACTIVE STATE</b>	<input type="checkbox"/> <u>GROUND</u>	<input type="checkbox"/> OPEN	
Press NEXT. <b>DISC IN 3/4</b> displays.				
<b>DISC IN 5</b> Middle Plug 11A	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> BRAKE SET	<input type="checkbox"/> STRUT COMP	<input type="checkbox"/> TEST
	<input type="checkbox"/> DOOR 1 CLOSED	<input type="checkbox"/> DOOR 2 CLOSED	<input type="checkbox"/> DOOR 3 CLOSED	<input type="checkbox"/> DOOR 4 CLOSED
	<b>ACTIVE STATE</b>	<input type="checkbox"/> <u>GROUND</u>	<input type="checkbox"/> OPEN	
<b>DISC IN 6</b> Middle Plug 11B	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> BRAKE SET	<input type="checkbox"/> STRUT COMP	<input type="checkbox"/> TEST
	<input type="checkbox"/> DOOR 1 CLOSED	<input type="checkbox"/> DOOR 2 CLOSED	<input type="checkbox"/> DOOR 3 CLOSED	<input type="checkbox"/> DOOR 4 CLOSED
	<b>ACTIVE STATE</b>	<input type="checkbox"/> <u>GROUND</u>	<input type="checkbox"/> OPEN	
Press NEXT. <b>DISC IN 4/4</b> displays.				
<b>DISC IN 7</b> Middle Plug 11C	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> BRAKE SET	<input type="checkbox"/> STRUT COMP	<input type="checkbox"/> TEST
	<input type="checkbox"/> DOOR 1 CLOSED	<input type="checkbox"/> DOOR 2 CLOSED	<input type="checkbox"/> DOOR 3 CLOSED	<input type="checkbox"/> DOOR 4 CLOSED
	<b>ACTIVE STATE</b>	<input type="checkbox"/> <u>GROUND</u>	<input type="checkbox"/> OPEN	
<b>DISC IN 8</b> Middle Plug 11D	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> BRAKE SET	<input type="checkbox"/> STRUT COMP	<input type="checkbox"/> TEST
	<input type="checkbox"/> DOOR 1 CLOSED	<input type="checkbox"/> DOOR 2 CLOSED	<input type="checkbox"/> DOOR 3 CLOSED	<input type="checkbox"/> DOOR 4 CLOSED
	<b>ACTIVE STATE</b>	<input type="checkbox"/> <u>GROUND</u>	<input type="checkbox"/> OPEN	
<b>DISC IN 9</b> Middle Plug 10A	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> BRAKE SET	<input type="checkbox"/> STRUT COMP	<input type="checkbox"/> TEST
	<input type="checkbox"/> DOOR 1 CLOSED	<input type="checkbox"/> DOOR 2 CLOSED	<input type="checkbox"/> DOOR 3 CLOSED	<input type="checkbox"/> DOOR 4 CLOSED
	<b>ACTIVE STATE</b>	<input type="checkbox"/> <u>GROUND</u>	<input type="checkbox"/> OPEN	
<b>DISC IN 10</b> Middle Plug 10B	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> BRAKE SET	<input type="checkbox"/> STRUT COMP	<input type="checkbox"/> TEST
	<input type="checkbox"/> DOOR 1 CLOSED	<input type="checkbox"/> DOOR 2 CLOSED	<input type="checkbox"/> DOOR 3 CLOSED	<input type="checkbox"/> DOOR 4 CLOSED
	<b>ACTIVE STATE</b>	<input type="checkbox"/> <u>GROUND</u>	<input type="checkbox"/> OPEN	

b) DISCRETE (DISC) OUT

- FANS VISUAL
  - Output – Active Open or Active Ground configurable.
  - Use any available discrete output pin and configure accordingly.
  - The FANS VISUAL output discrete activates the ATC annunciator and alerts the crew that an ATC advisory is active and the UniLink pages should be accessed to view further information.
- FANS AURAL
  - Output – Active Open or Active Ground configurable. Duration is configurable.
  - Use any available discrete output pin and configure accordingly.
  - The FANS AURAL output discrete activates the aural warning device and alerts the crew that an aural message has been received.
- CPDLC CNECT (Connect)
  - Output – Active Open or Active Ground configurable.
  - Use any available discrete output pin and configure accordingly.
  - The CPDLC CNECT output discrete activates an optional CPDLC CNECT annunciator while the UniLink is connected to the Current Data Authority (CDA).
  - If the CDA connection is disrupted or lost, the optional CPDLC CNECT annunciator deactivates.
- The New Message (NEW MSG) discretes are provided to drive visual indications of new/unread uplinks. Active state indicates a new/unread uplink exists.
- The CHIME discretes are provided to drive aural indications of new/unread uplinks. Active state indicates a new/unread uplink exists.
- VHF/SAT/TEL NOCOMM discretes are provided to drive visual indications media link states. Active state indicates a particular medium is in NOCOMM (link not established).

DISC OUT 1/5				
<b>DISC OUT 1</b> <b>Top Plug 10D</b>	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> VOX ANNUN	<input type="checkbox"/> NEW MSG 1	<input type="checkbox"/> NEW MSG 2
	<input type="checkbox"/> VHF NOCOMM	<input type="checkbox"/> SAT NOCOMM	<input type="checkbox"/> TEL NOCOMM	<input type="checkbox"/> VDR VOX SEL
	<input type="checkbox"/> CHIME 1	<input type="checkbox"/> CHIME 2	<input type="checkbox"/> FANS VISUAL	<input type="checkbox"/> FANS AURAL
	<input type="checkbox"/> CPDLC CNECT			
	<b>ACTIVE STATE</b>	<input type="checkbox"/> <u>GROUND</u>	<input type="checkbox"/> OPEN	
<b>DISC OUT 2</b> <b>Middle Plug 8A</b>	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> VOX ANNUN	<input type="checkbox"/> NEW MSG 1	<input type="checkbox"/> NEW MSG 2
	<input type="checkbox"/> VHF NOCOMM	<input type="checkbox"/> SAT NOCOMM	<input type="checkbox"/> TEL NOCOMM	<input type="checkbox"/> VDR VOX SEL
	<input type="checkbox"/> CHIME 1	<input type="checkbox"/> CHIME 2	<input type="checkbox"/> FANS VISUAL	<input type="checkbox"/> FANS AURAL
	<input type="checkbox"/> CPDLC CNECT			
	<b>ACTIVE STATE</b>	<input type="checkbox"/> <u>GROUND</u>	<input type="checkbox"/> OPEN	

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DISC OUT 1/5 (Continued)				
<b>DISC OUT 3 Middle Plug 8B</b>	<input type="checkbox"/> <u>NOT USED</u> <input type="checkbox"/> VHF NOCOMM <input type="checkbox"/> CHIME 1 <input type="checkbox"/> CPDLC CNECT <b>ACTIVE STATE</b>	<input type="checkbox"/> VOX ANNUN <input type="checkbox"/> SAT NOCOMM <input type="checkbox"/> CHIME 2 <input type="checkbox"/> <u>GROUND</u>	<input type="checkbox"/> NEW MSG 1 <input type="checkbox"/> TEL NOCOMM <input type="checkbox"/> FANS VISUAL <input type="checkbox"/> OPEN	<input type="checkbox"/> NEW MSG 2 <input type="checkbox"/> VDR VOX SEL <input type="checkbox"/> FANS AURAL
Press NEXT. <b>DISC OUT 2/5</b> displays.				
<b>DISC OUT 4 Middle Plug 8C</b>	<input type="checkbox"/> <u>NOT USED</u> <input type="checkbox"/> VHF NOCOMM <input type="checkbox"/> CHIME 1 <input type="checkbox"/> CPDLC CNECT <b>ACTIVE STATE</b>	<input type="checkbox"/> VOX ANNUN <input type="checkbox"/> SAT NOCOMM <input type="checkbox"/> CHIME 2 <input type="checkbox"/> <u>GROUND</u>	<input type="checkbox"/> NEW MSG 1 <input type="checkbox"/> TEL NOCOMM <input type="checkbox"/> FANS VISUAL <input type="checkbox"/> OPEN	<input type="checkbox"/> NEW MSG 2 <input type="checkbox"/> VDR VOX SEL <input type="checkbox"/> FANS AURAL
<b>DISC OUT 5 Middle Plug 8D</b>	<input type="checkbox"/> <u>NOT USED</u> <input type="checkbox"/> VHF NOCOMM <input type="checkbox"/> CHIME 1 <input type="checkbox"/> CPDLC CNECT <b>ACTIVE STATE</b>	<input type="checkbox"/> VOX ANNUN <input type="checkbox"/> SAT NOCOMM <input type="checkbox"/> CHIME 2 <input type="checkbox"/> <u>GROUND</u>	<input type="checkbox"/> NEW MSG 1 <input type="checkbox"/> TEL NOCOMM <input type="checkbox"/> FANS VISUAL <input type="checkbox"/> OPEN	<input type="checkbox"/> NEW MSG 2 <input type="checkbox"/> VDR VOX SEL <input type="checkbox"/> FANS AURAL
<b>DISC OUT 6 Middle Plug 7A</b>	<input type="checkbox"/> <u>NOT USED</u> <input type="checkbox"/> VHF NOCOMM <input type="checkbox"/> CHIME 1 <input type="checkbox"/> CPDLC CNECT <b>ACTIVE STATE</b>	<input type="checkbox"/> VOX ANNUN <input type="checkbox"/> SAT NOCOMM <input type="checkbox"/> CHIME 2 <input type="checkbox"/> <u>GROUND</u>	<input type="checkbox"/> NEW MSG 1 <input type="checkbox"/> TEL NOCOMM <input type="checkbox"/> FANS VISUAL <input type="checkbox"/> OPEN	<input type="checkbox"/> NEW MSG 2 <input type="checkbox"/> VDR VOX SEL <input type="checkbox"/> FANS AURAL
Press NEXT. <b>DISC OUT 3/5</b> displays.				
<b>DISC OUT 7 Middle Plug 7B</b>	<input type="checkbox"/> <u>NOT USED</u> <input type="checkbox"/> VHF NOCOMM <input type="checkbox"/> CHIME 1 <input type="checkbox"/> CPDLC CNECT <b>ACTIVE STATE</b>	<input type="checkbox"/> VOX ANNUN <input type="checkbox"/> SAT NOCOMM <input type="checkbox"/> CHIME 2 <input type="checkbox"/> <u>GROUND</u>	<input type="checkbox"/> NEW MSG 1 <input type="checkbox"/> TEL NOCOMM <input type="checkbox"/> FANS VISUAL <input type="checkbox"/> OPEN	<input type="checkbox"/> NEW MSG 2 <input type="checkbox"/> VDR VOX SEL <input type="checkbox"/> FANS AURAL
<b>DISC OUT 8 Middle Plug 7C</b>	<input type="checkbox"/> <u>NOT USED</u> <input type="checkbox"/> VHF NOCOMM <input type="checkbox"/> CHIME 1 <input type="checkbox"/> CPDLC CNECT <input type="checkbox"/> NOT USED <b>ACTIVE STATE</b>	<input type="checkbox"/> VOX ANNUN <input type="checkbox"/> SAT NOCOMM <input type="checkbox"/> CHIME 2 <input type="checkbox"/> <u>GROUND</u>	<input type="checkbox"/> NEW MSG 1 <input type="checkbox"/> TEL NOCOMM <input type="checkbox"/> FANS VISUAL <input type="checkbox"/> OPEN	<input type="checkbox"/> NEW MSG 2 <input type="checkbox"/> VDR VOX SEL <input type="checkbox"/> FANS AURAL
<b>DISC OUT 9 Middle Plug 7D</b>	<input type="checkbox"/> <u>NOT USED</u> <input type="checkbox"/> VHF NOCOMM <input type="checkbox"/> CHIME 1 <input type="checkbox"/> CPDLC CNECT <b>ACTIVE STATE</b>	<input type="checkbox"/> VOX ANNUN <input type="checkbox"/> SAT NOCOMM <input type="checkbox"/> CHIME 2 <input type="checkbox"/> <u>GROUND</u>	<input type="checkbox"/> NEW MSG 1 <input type="checkbox"/> TEL NOCOMM <input type="checkbox"/> FANS VISUAL <input type="checkbox"/> OPEN	<input type="checkbox"/> NEW MSG 2 <input type="checkbox"/> VDR VOX SEL <input type="checkbox"/> FANS AURAL

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Press NEXT. **DISC OUT 4/5** displays.

<b>DISC OUT 10</b> <b>Middle Plug 6A</b>	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> VOX ANNUN	<input type="checkbox"/> NEW MSG 1	<input type="checkbox"/> NEW MSG 2
	<input type="checkbox"/> VHF NOCOMM	<input type="checkbox"/> SAT NOCOMM	<input type="checkbox"/> TEL NOCOMM	<input type="checkbox"/> VDR VOX SEL
	<input type="checkbox"/> CHIME 1	<input type="checkbox"/> CHIME 2	<input type="checkbox"/> FANS VISUAL	<input type="checkbox"/> FANS AURAL
	<input type="checkbox"/> CPDLC CNECT			
	<b>ACTIVE STATE</b>	<input type="checkbox"/> <u>GROUND</u>	<input type="checkbox"/> OPEN	
<b>DISC OUT 11</b> <b>Middle Plug 6B</b>	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> VOX ANNUN	<input type="checkbox"/> NEW MSG 1	<input type="checkbox"/> NEW MSG 2
	<input type="checkbox"/> VHF NOCOMM	<input type="checkbox"/> SAT NOCOMM	<input type="checkbox"/> TEL NOCOMM	<input type="checkbox"/> VDR VOX SEL
	<input type="checkbox"/> CHIME 1	<input type="checkbox"/> CHIME 2	<input type="checkbox"/> FANS VISUAL	<input type="checkbox"/> FANS AURAL
	<input type="checkbox"/> CPDLC CNECT			
	<b>ACTIVE STATE</b>	<input type="checkbox"/> <u>GROUND</u>	<input type="checkbox"/> OPEN	
<b>DISC OUT 12</b> <b>Middle Plug 6C</b>	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> VOX ANNUN	<input type="checkbox"/> NEW MSG 1	<input type="checkbox"/> NEW MSG 2
	<input type="checkbox"/> VHF NOCOMM	<input type="checkbox"/> SAT NOCOMM	<input type="checkbox"/> TEL NOCOMM	<input type="checkbox"/> VDR VOX SEL
	<input type="checkbox"/> CHIME 1	<input type="checkbox"/> CHIME 2	<input type="checkbox"/> FANS VISUAL	<input type="checkbox"/> FANS AURAL
	<input type="checkbox"/> CPDLC CNECT			
	<b>ACTIVE STATE</b>	<input type="checkbox"/> <u>GROUND</u>	<input type="checkbox"/> OPEN	
<b>DISC OUT 13</b> <b>Middle Plug 6D</b>	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> VOX ANNUN	<input type="checkbox"/> NEW MSG 1	<input type="checkbox"/> NEW MSG 2
	<input type="checkbox"/> VHF NOCOMM	<input type="checkbox"/> SAT NOCOMM	<input type="checkbox"/> TEL NOCOMM	<input type="checkbox"/> VDR VOX SEL
	<input type="checkbox"/> CHIME 1	<input type="checkbox"/> CHIME 2	<input type="checkbox"/> FANS VISUAL	<input type="checkbox"/> FANS AURAL
	<input type="checkbox"/> CPDLC CNECT			
	<b>ACTIVE STATE</b>	<input type="checkbox"/> <u>GROUND</u>	<input type="checkbox"/> OPEN	
<b>DISC OUT 14</b> <b>Middle Plug 5A</b>	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> VOX ANNUN	<input type="checkbox"/> NEW MSG 1	<input type="checkbox"/> NEW MSG 2
	<input type="checkbox"/> VHF NOCOMM	<input type="checkbox"/> SAT NOCOMM	<input type="checkbox"/> TEL NOCOMM	<input type="checkbox"/> VDR VOX SEL
	<input type="checkbox"/> CHIME 1	<input type="checkbox"/> CHIME 2	<input type="checkbox"/> FANS VISUAL	<input type="checkbox"/> FANS AURAL
	<input type="checkbox"/> CPDLC CNECT			
	<b>ACTIVE STATE</b>	<input type="checkbox"/> <u>GROUND</u>	<input type="checkbox"/> OPEN	

c) **ARINC RECEIVE**

- Only one device/interface may configured on each ARINC receive port at a time.
- UniLink configures the receive port speed based on the device selected.
  - The receive port speed for the following devices are configured for low speed: MCDU, Printer, A741 SDU, A604 CMC, IOP.
  - The receive port speed for the following devices are configured based on the device definition contained within the CDB: A702 FMS, Generic 429 Device.
  - UniLink automatically detects the transmission speed (high/low) of the following devices and configures the receive port speed accordingly: A743A GNSS (including A743 GPS), DADC (Digital ADC).
- UniLink processes data labels received from A702 FMS and Generic 429 Device based on the device definition contained within the CDB.
- Devices configured on a receive port must also be configured on a transmit port except for the following receive-only devices: IOP, A743A GNSS (including A743 GPS), DADC.
- The TEST option is provided for development and engineering purposes only.

ARINC RX 1/3				
PORT 1				
(A) Middle Plug 1C		<input type="checkbox"/> <u>FMS/CDU1</u>	<input type="checkbox"/> FMS/CDU2	<input type="checkbox"/> FMS/CDU3
(B) Middle Plug 1D				
Only FMS/CDU1 is may be chosen for this port.		<input type="checkbox"/> MCDU1	<input type="checkbox"/> MCDU2	<input type="checkbox"/> MCDU3
PORT 2	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> FMS/CDU1	<input type="checkbox"/> FMS/CDU2	<input type="checkbox"/> FMS/CDU3
(A) Middle Plug 2C	<input type="checkbox"/> 740 PRINT	<input type="checkbox"/> 741 SDU	<input type="checkbox"/> VM CMC	<input type="checkbox"/> 604 CMC
(B) Middle Plug 2D	<input type="checkbox"/> DHC8 IOP1	<input type="checkbox"/> DHC8 IOP2	<input type="checkbox"/> MCDU2	<input type="checkbox"/> MCDU3
	<input type="checkbox"/> 702 FMS1	<input type="checkbox"/> 702 FMS2	<input type="checkbox"/> 702 FMS3	<input type="checkbox"/> 743A GNSS
	<input type="checkbox"/> 750 VDR	<input type="checkbox"/> TEST	<input type="checkbox"/> ADC1	<input type="checkbox"/> ADC2
	<input type="checkbox"/> GENERIC1	<input type="checkbox"/> GENERIC2	<input type="checkbox"/> GENERIC3	<input type="checkbox"/> GENERIC4
Generic1 - 4 identifies up to four optional, generic input devices which can be included in a customer database.				
PORT 3	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> FMS/CDU1	<input type="checkbox"/> FMS/CDU2	<input type="checkbox"/> FMS/CDU3
(A) Top Plug 15C	<input type="checkbox"/> 740 PRINT	<input type="checkbox"/> 741 SDU	<input type="checkbox"/> VM CMC	<input type="checkbox"/> 604 CMC
(B) Top Plug 15D	<input type="checkbox"/> DHC8 IOP1	<input type="checkbox"/> DHC8 IOP2	<input type="checkbox"/> MCDU2	<input type="checkbox"/> MCDU3
	<input type="checkbox"/> 702 FMS1	<input type="checkbox"/> 702 FMS2	<input type="checkbox"/> 702 FMS3	<input type="checkbox"/> 743A GNSS
	<input type="checkbox"/> 750 VDR	<input type="checkbox"/> TEST	<input type="checkbox"/> ADC1	<input type="checkbox"/> ADC2
	<input type="checkbox"/> GENERIC1	<input type="checkbox"/> GENERIC2	<input type="checkbox"/> GENERIC3	<input type="checkbox"/> GENERIC4
PORT 4	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> FMS/CDU1	<input type="checkbox"/> FMS/CDU2	<input type="checkbox"/> FMS/CDU3
(A) Top Plug 14A	<input type="checkbox"/> 740 PRINT	<input type="checkbox"/> 741 SDU	<input type="checkbox"/> VM CMC	<input type="checkbox"/> 604 CMC
(B) Top Plug 14B	<input type="checkbox"/> DHC8 IOP1	<input type="checkbox"/> DHC8 IOP2	<input type="checkbox"/> MCDU2	<input type="checkbox"/> MCDU3
	<input type="checkbox"/> 702 FMS1	<input type="checkbox"/> 702 FMS2	<input type="checkbox"/> 702 FMS3	<input type="checkbox"/> 743A GNSS
	<input type="checkbox"/> 750 VDR	<input type="checkbox"/> TEST	<input type="checkbox"/> ADC1	<input type="checkbox"/> ADC2
	<input type="checkbox"/> GENERIC1	<input type="checkbox"/> GENERIC2	<input type="checkbox"/> GENERIC3	<input type="checkbox"/> GENERIC4

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**ARINC RX 1/3 (CONTINUED)**

<b>PORT 5</b> <b>(A) Top Plug 14C</b> <b>(B) Top Plug 14D</b>	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> FMS/CDU1	<input type="checkbox"/> FMS/CDU2	<input type="checkbox"/> FMS/CDU3
	<input type="checkbox"/> 740 PRINT	<input type="checkbox"/> 741 SDU	<input type="checkbox"/> VM CMC	<input type="checkbox"/> 604 CMC
	<input type="checkbox"/> DHC8 IOP1	<input type="checkbox"/> DHC8 IOP2	<input type="checkbox"/> MCDU2	<input type="checkbox"/> MCDU3
	<input type="checkbox"/> 702 FMS1	<input type="checkbox"/> 702 FMS2	<input type="checkbox"/> 702 FMS3	<input type="checkbox"/> 743A GNSS
	<input type="checkbox"/> 750 VDR	<input type="checkbox"/> TEST	<input type="checkbox"/> ADC1	<input type="checkbox"/> ADC2
	<input type="checkbox"/> GENERIC1	<input type="checkbox"/> GENERIC2	<input type="checkbox"/> GENERIC3	<input type="checkbox"/> GENERIC4
<b>PORT 6</b> <b>(A) Top Plug 13A</b> <b>(B) Top Plug 13B</b>	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> FMS/CDU1	<input type="checkbox"/> FMS/CDU2	<input type="checkbox"/> FMS/CDU3
	<input type="checkbox"/> 740 PRINT	<input type="checkbox"/> 741 SDU	<input type="checkbox"/> VM CMC	<input type="checkbox"/> 604 CMC
	<input type="checkbox"/> DHC8 IOP1	<input type="checkbox"/> DHC8 IOP2	<input type="checkbox"/> MCDU2	<input type="checkbox"/> MCDU3
	<input type="checkbox"/> 702 FMS1	<input type="checkbox"/> 702 FMS2	<input type="checkbox"/> 702 FMS3	<input type="checkbox"/> 743A GNSS
	<input type="checkbox"/> 750 VDR	<input type="checkbox"/> TEST	<input type="checkbox"/> ADC1	<input type="checkbox"/> ADC2
	<input type="checkbox"/> GENERIC1	<input type="checkbox"/> GENERIC2	<input type="checkbox"/> GENERIC3	<input type="checkbox"/> GENERIC4
Press NEXT. <b>ARINC RX 2/3</b> displays.				
<b>PORT 7</b> <b>(A) Top Plug 13C</b> <b>(B) Top Plug 13D</b>	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> FMS/CDU1	<input type="checkbox"/> FMS/CDU2	<input type="checkbox"/> FMS/CDU3
	<input type="checkbox"/> 740 PRINT	<input type="checkbox"/> 741 SDU	<input type="checkbox"/> VM CMC	<input type="checkbox"/> 604 CMC
	<input type="checkbox"/> DHC8 IOP1	<input type="checkbox"/> DHC8 IOP2	<input type="checkbox"/> MCDU2	<input type="checkbox"/> MCDU3
	<input type="checkbox"/> 702 FMS1	<input type="checkbox"/> 702 FMS2	<input type="checkbox"/> 702 FMS3	<input type="checkbox"/> 743A GNSS
	<input type="checkbox"/> 750 VDR	<input type="checkbox"/> TEST	<input type="checkbox"/> ADC1	<input type="checkbox"/> ADC2
	<input type="checkbox"/> GENERIC1	<input type="checkbox"/> GENERIC2	<input type="checkbox"/> GENERIC3	<input type="checkbox"/> GENERIC4
<b>PORT 8</b> <b>(A) Top Plug 12A</b> <b>(B) Top Plug 12B</b>	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> FMS/CDU1	<input type="checkbox"/> FMS/CDU2	<input type="checkbox"/> FMS/CDU3
	<input type="checkbox"/> 740 PRINT	<input type="checkbox"/> 741 SDU	<input type="checkbox"/> VM CMC	<input type="checkbox"/> 604 CMC
	<input type="checkbox"/> DHC8 IOP1	<input type="checkbox"/> DHC8 IOP2	<input type="checkbox"/> MCDU2	<input type="checkbox"/> MCDU3
	<input type="checkbox"/> 702 FMS1	<input type="checkbox"/> 702 FMS2	<input type="checkbox"/> 702 FMS3	<input type="checkbox"/> 743A GNSS
	<input type="checkbox"/> 750 VDR	<input type="checkbox"/> TEST	<input type="checkbox"/> ADC1	<input type="checkbox"/> ADC2
	<input type="checkbox"/> GENERIC1	<input type="checkbox"/> GENERIC2	<input type="checkbox"/> GENERIC3	<input type="checkbox"/> GENERIC4
<b>PORT 9</b> <b>(A) Middle Plug 13B</b> <b>(B) Middle Plug 13C</b>	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> FMS/CDU1	<input type="checkbox"/> FMS/CDU2	<input type="checkbox"/> FMS/CDU3
	<input type="checkbox"/> 740 PRINT	<input type="checkbox"/> 741 SDU	<input type="checkbox"/> VM CMC	<input type="checkbox"/> 604 CMC
	<input type="checkbox"/> DHC8 IOP1	<input type="checkbox"/> DHC8 IOP2	<input type="checkbox"/> MCDU2	<input type="checkbox"/> MCDU3
	<input type="checkbox"/> 702 FMS1	<input type="checkbox"/> 702 FMS2	<input type="checkbox"/> 702 FMS3	<input type="checkbox"/> 743A GNSS
	<input type="checkbox"/> 750 VDR	<input type="checkbox"/> TEST	<input type="checkbox"/> ADC1	<input type="checkbox"/> ADC2
	<input type="checkbox"/> GENERIC1	<input type="checkbox"/> GENERIC2	<input type="checkbox"/> GENERIC3	<input type="checkbox"/> GENERIC4
<b>PORT 10</b> <b>(A) Middle Plug 12D</b> <b>(B) Middle Plug 13D</b>	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> FMS/CDU1	<input type="checkbox"/> FMS/CDU2	<input type="checkbox"/> FMS/CDU3
	<input type="checkbox"/> 740 PRINT	<input type="checkbox"/> 741 SDU	<input type="checkbox"/> VM CMC	<input type="checkbox"/> 604 CMC
	<input type="checkbox"/> DHC8 IOP1	<input type="checkbox"/> DHC8 IOP2	<input type="checkbox"/> MCDU2	<input type="checkbox"/> MCDU3
	<input type="checkbox"/> 702 FMS1	<input type="checkbox"/> 702 FMS2	<input type="checkbox"/> 702 FMS3	<input type="checkbox"/> 743A GNSS
	<input type="checkbox"/> 750 VDR	<input type="checkbox"/> TEST	<input type="checkbox"/> ADC1	<input type="checkbox"/> ADC2
	<input type="checkbox"/> GENERIC1	<input type="checkbox"/> GENERIC2	<input type="checkbox"/> GENERIC3	<input type="checkbox"/> GENERIC4



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<b>ARINC RX 2/3 (Continued)</b>				
<b>PORT 11</b> <b>(A) Middle Plug 3D</b> <b>(B) Middle Plug 5D</b>	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> FMS/CDU1	<input type="checkbox"/> FMS/CDU2	<input type="checkbox"/> FMS/CDU3
	<input type="checkbox"/> 740 PRINT	<input type="checkbox"/> 741 SDU	<input type="checkbox"/> VM CMC	<input type="checkbox"/> 604 CMC
	<input type="checkbox"/> DHC8 IOP1	<input type="checkbox"/> DHC8 IOP2	<input type="checkbox"/> MCDU2	<input type="checkbox"/> MCDU3
	<input type="checkbox"/> 702 FMS1	<input type="checkbox"/> 702 FMS2	<input type="checkbox"/> 702 FMS3	<input type="checkbox"/> 743A GNSS
	<input type="checkbox"/> 750 VDR	<input type="checkbox"/> TEST	<input type="checkbox"/> ADC1	<input type="checkbox"/> ADC2
	<input type="checkbox"/> GENERIC1	<input type="checkbox"/> GENERIC2	<input type="checkbox"/> GENERIC3	<input type="checkbox"/> GENERIC4
<b>PORT 12</b> <b>(A) Middle Plug 3B</b> <b>(B) Middle Plug 3C</b>	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> FMS/CDU1	<input type="checkbox"/> FMS/CDU2	<input type="checkbox"/> FMS/CDU3
	<input type="checkbox"/> 740 PRINT	<input type="checkbox"/> 741 SDU	<input type="checkbox"/> VM CMC	<input type="checkbox"/> 604 CMC
	<input type="checkbox"/> DHC8 IOP1	<input type="checkbox"/> DHC8 IOP2	<input type="checkbox"/> MCDU2	<input type="checkbox"/> MCDU3
	<input type="checkbox"/> 702 FMS1	<input type="checkbox"/> 702 FMS2	<input type="checkbox"/> 702 FMS3	<input type="checkbox"/> 743A GNSS
	<input type="checkbox"/> 750 VDR	<input type="checkbox"/> TEST	<input type="checkbox"/> ADC1	<input type="checkbox"/> ADC2
	<input type="checkbox"/> GENERIC1	<input type="checkbox"/> GENERIC2	<input type="checkbox"/> GENERIC3	<input type="checkbox"/> GENERIC4
Press NEXT. <b>ARINC RX 3/3</b> displays.				
<b>PORT 13</b> <b>(A) Top Plug 2C</b> <b>(B) Top Plug 2D</b>	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> FMS/CDU1	<input type="checkbox"/> FMS/CDU2	<input type="checkbox"/> FMS/CDU3
	<input type="checkbox"/> 740 PRINT	<input type="checkbox"/> 741 SDU	<input type="checkbox"/> VM CMC	<input type="checkbox"/> 604 CMC
	<input type="checkbox"/> DHC8 IOP1	<input type="checkbox"/> DHC8 IOP2	<input type="checkbox"/> MCDU2	<input type="checkbox"/> MCDU3
	<input type="checkbox"/> 702 FMS1	<input type="checkbox"/> 702 FMS2	<input type="checkbox"/> 702 FMS3	<input type="checkbox"/> 743A GNSS
	<input type="checkbox"/> 750 VDR	<input type="checkbox"/> TEST	<input type="checkbox"/> ADC1	<input type="checkbox"/> ADC2
	<input type="checkbox"/> GENERIC1	<input type="checkbox"/> GENERIC2	<input type="checkbox"/> GENERIC3	<input type="checkbox"/> GENERIC4
<b>PORT 14</b> <b>(A) Top Plug 2A</b> <b>(B) Top Plug 2B</b>	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> FMS/CDU1	<input type="checkbox"/> FMS/CDU2	<input type="checkbox"/> FMS/CDU3
	<input type="checkbox"/> 740 PRINT	<input type="checkbox"/> 741 SDU	<input type="checkbox"/> VM CMC	<input type="checkbox"/> 604 CMC
	<input type="checkbox"/> DHC8 IOP1	<input type="checkbox"/> DHC8 IOP2	<input type="checkbox"/> MCDU2	<input type="checkbox"/> MCDU3
	<input type="checkbox"/> 702 FMS1	<input type="checkbox"/> 702 FMS2	<input type="checkbox"/> 702 FMS3	<input type="checkbox"/> 743A GNSS
	<input type="checkbox"/> 750 VDR	<input type="checkbox"/> TEST	<input type="checkbox"/> ADC1	<input type="checkbox"/> ADC2
	<input type="checkbox"/> GENERIC1	<input type="checkbox"/> GENERIC2	<input type="checkbox"/> GENERIC3	<input type="checkbox"/> GENERIC4
<b>PORT 15</b> <b>(A) Middle Plug 10C</b> <b>(B) Middle Plug 10D</b>	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> FMS/CDU1	<input type="checkbox"/> FMS/CDU2	<input type="checkbox"/> FMS/CDU3
	<input type="checkbox"/> 740 PRINT	<input type="checkbox"/> 741 SDU	<input type="checkbox"/> VM CMC	<input type="checkbox"/> 604 CMC
	<input type="checkbox"/> DHC8 IOP1	<input type="checkbox"/> DHC8 IOP2	<input type="checkbox"/> MCDU2	<input type="checkbox"/> MCDU3
	<input type="checkbox"/> 702 FMS1	<input type="checkbox"/> 702 FMS2	<input type="checkbox"/> 702 FMS3	<input type="checkbox"/> 743A GNSS
	<input type="checkbox"/> 750 VDR	<input type="checkbox"/> TEST	<input type="checkbox"/> ADC1	<input type="checkbox"/> ADC2
	<input type="checkbox"/> GENERIC1	<input type="checkbox"/> GENERIC2	<input type="checkbox"/> GENERIC3	<input type="checkbox"/> GENERIC4
<b>PORT 16</b> <b>(A) Middle Plug 13A</b> <b>(B) Middle Plug 14A</b>	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> FMS/CDU1	<input type="checkbox"/> FMS/CDU2	<input type="checkbox"/> FMS/CDU3
	<input type="checkbox"/> 740 PRINT	<input type="checkbox"/> 741 SDU	<input type="checkbox"/> VM CMC	<input type="checkbox"/> 604 CMC
	<input type="checkbox"/> DHC8 IOP1	<input type="checkbox"/> DHC8 IOP2	<input type="checkbox"/> MCDU2	<input type="checkbox"/> MCDU3
	<input type="checkbox"/> 702 FMS1	<input type="checkbox"/> 702 FMS2	<input type="checkbox"/> 702 FMS3	<input type="checkbox"/> 743A GNSS
	<input type="checkbox"/> 750 VDR	<input type="checkbox"/> TEST	<input type="checkbox"/> ADC1	<input type="checkbox"/> ADC2
	<input type="checkbox"/> GENERIC1	<input type="checkbox"/> GENERIC2	<input type="checkbox"/> GENERIC3	<input type="checkbox"/> GENERIC4

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d) ARINC TRANSMIT

- NOTE:**
- If any ARINC TX port is selected as 741 SDU, then SAT must be selected as the Normal or Alternate option in the PRIORITY (SYS CONFIG 1/4) option page.
  - If an ARINC TX choice is displayed in small print and there is no arrow pointing to an LSK that selection is not available for use.
  - VOX tune bus can only be configured for one port.

ARINC TX 1/3				
<b>PORT 1</b> <b>(A) Middle Plug 1A</b> <b>(B) Middle Plug 1B</b>	<input type="checkbox"/> <u>FMS/CDU1</u> <input type="checkbox"/> 741 SDU <input type="checkbox"/> MCDU1 <input type="checkbox"/> 702 FMS1 <input type="checkbox"/> TEST	<input type="checkbox"/> FMS/CDU2 <input type="checkbox"/> VOX TUNE <input type="checkbox"/> MCDU2 <input type="checkbox"/> 702 FMS2	<input type="checkbox"/> FMS/CDU3 <input type="checkbox"/> VM CMC <input type="checkbox"/> MCDU3 <input type="checkbox"/> 702 FMS3	<input type="checkbox"/> 740 PRINT <input type="checkbox"/> 604 CMC <input type="checkbox"/> CVR <input type="checkbox"/> 750 VDR
<b>NOTE:</b> Only TX port with a default.				
<b>NOTE:</b> Test is used by the Engineering Development only. DO NOT CONFIGURE.				
<b>PORT 1 SPEED</b>	<input type="checkbox"/> <u>LOW</u> <b>NOTE:</b> LOW is the only configurable option.			
<b>PORT 2</b> <b>(A) Middle Plug 2A</b> <b>(B) Middle Plug 2B</b>	<input type="checkbox"/> <u>FMS/CDU1</u> <input type="checkbox"/> 741 SDU <input type="checkbox"/> MCDU1 <input type="checkbox"/> 702 FMS1 <input type="checkbox"/> TEST	<input type="checkbox"/> FMS/CDU2 <input type="checkbox"/> VOX TUNE <input type="checkbox"/> MCDU2 <input type="checkbox"/> 702 FMS2	<input type="checkbox"/> FMS/CDU3 <input type="checkbox"/> VM CMC <input type="checkbox"/> MCDU3 <input type="checkbox"/> 702 FMS3	<input type="checkbox"/> 740 PRINT <input type="checkbox"/> 604 CMC <input type="checkbox"/> CVR <input type="checkbox"/> 750 VDR
Ports 2-16 have no default settings.				
<b>PORT 2 SPEED</b>	<input type="checkbox"/> <u>LOW</u> <input type="checkbox"/> HIGH			
<b>PORT 3</b> <b>(A) Top Plug 15A</b> <b>(B) Top Plug 15B</b>	<input type="checkbox"/> <u>FMS/CDU1</u> <input type="checkbox"/> 741 SDU <input type="checkbox"/> MCDU1 <input type="checkbox"/> 702 FMS1 <input type="checkbox"/> TEST	<input type="checkbox"/> FMS/CDU2 <input type="checkbox"/> VOX TUNE <input type="checkbox"/> MCDU2 <input type="checkbox"/> 702 FMS2	<input type="checkbox"/> FMS/CDU3 <input type="checkbox"/> VM CMC <input type="checkbox"/> MCDU3 <input type="checkbox"/> 702 FMS3	<input type="checkbox"/> 740 PRINT <input type="checkbox"/> 604 CMC <input type="checkbox"/> CVR <input type="checkbox"/> 750 VDR
<b>PORT 3 SPEED</b>	<input type="checkbox"/> <u>LOW</u> <input type="checkbox"/> HIGH			
Press NEXT. ARINC TX 2/3 displays.				
<b>PORT 4</b> <b>(A) Top Plug 11A</b> <b>(B) Top Plug 11B</b>	<input type="checkbox"/> <u>FMS/CDU1</u> <input type="checkbox"/> 741 SDU <input type="checkbox"/> MCDU1 <input type="checkbox"/> 702 FMS1 <input type="checkbox"/> TEST	<input type="checkbox"/> FMS/CDU2 <input type="checkbox"/> VOX TUNE <input type="checkbox"/> MCDU2 <input type="checkbox"/> 702 FMS2	<input type="checkbox"/> FMS/CDU3 <input type="checkbox"/> VM CMC <input type="checkbox"/> MCDU3 <input type="checkbox"/> 702 FMS3	<input type="checkbox"/> 740 PRINT <input type="checkbox"/> 604 CMC <input type="checkbox"/> CVR <input type="checkbox"/> 750 VDR
<b>PORT 4 SPEED</b>	<input type="checkbox"/> <u>LOW</u> <input type="checkbox"/> HIGH			
<b>PORT 5</b> <b>(A) Middle Plug 5B</b> <b>(B) Middle Plug 5C</b>	<input type="checkbox"/> <u>FMS/CDU1</u> <input type="checkbox"/> 741 SDU <input type="checkbox"/> MCDU1 <input type="checkbox"/> 702 FMS1 <input type="checkbox"/> TEST	<input type="checkbox"/> FMS/CDU2 <input type="checkbox"/> VOX TUNE <input type="checkbox"/> MCDU2 <input type="checkbox"/> 702 FMS2	<input type="checkbox"/> FMS/CDU3 <input type="checkbox"/> VM CMC <input type="checkbox"/> MCDU3 <input type="checkbox"/> 702 FMS3	<input type="checkbox"/> 740 PRINT <input type="checkbox"/> 604 CMC <input type="checkbox"/> CVR <input type="checkbox"/> 750 VDR
<b>PORT 5 SPEED</b>	<input type="checkbox"/> <u>LOW</u> <input type="checkbox"/> HIGH			

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ARINC TX 2/3 (Continued)				
<b>PORT 6</b> <b>(A) Middle Plug 9A</b> <b>(B) Middle Plug 9B</b>	<input type="checkbox"/> FMS/CDU1 <input type="checkbox"/> 741 SDU <input type="checkbox"/> MCDCU1 <input type="checkbox"/> 702 FMS1 <input type="checkbox"/> TEST	<input type="checkbox"/> FMS/CDU2 <input type="checkbox"/> VOX TUNE <input type="checkbox"/> MCDCU2 <input type="checkbox"/> 702 FMS2 <input type="checkbox"/> HIGH	<input type="checkbox"/> FMS/CDU3 <input type="checkbox"/> VM CMC <input type="checkbox"/> MCDCU3 <input type="checkbox"/> 702 FMS3	<input type="checkbox"/> 740 PRINT <input type="checkbox"/> 604 CMC <input type="checkbox"/> CVR <input type="checkbox"/> 750 VDR
<b>PORT 6 SPEED</b>	<input type="checkbox"/> <u>LOW</u>			
Press NEXT. <b>ARINC TX 3/3</b> displays.				
<b>PORT 7</b> <b>(A) Middle Plug 9C</b> <b>(B) Middle Plug 9D</b>	<input type="checkbox"/> FMS/CDU1 <input type="checkbox"/> 741 SDU <input type="checkbox"/> MCDCU1 <input type="checkbox"/> 702 FMS1 <input type="checkbox"/> TEST	<input type="checkbox"/> FMS/CDU2 <input type="checkbox"/> VOX TUNE <input type="checkbox"/> MCDCU2 <input type="checkbox"/> 702 FMS2 <input type="checkbox"/> HIGH	<input type="checkbox"/> FMS/CDU3 <input type="checkbox"/> VM CMC <input type="checkbox"/> MCDCU3 <input type="checkbox"/> 702 FMS3	<input type="checkbox"/> 740 PRINT <input type="checkbox"/> 604 CMC <input type="checkbox"/> CVR <input type="checkbox"/> 750 VDR
<b>PORT 7 SPEED</b>	<input type="checkbox"/> <u>LOW</u>			
<b>PORT 8</b> <b>(A) Middle Plug 15A</b> <b>(B) Middle Plug 15B</b>	<input type="checkbox"/> FMS/CDU1 <input type="checkbox"/> 741 SDU <input type="checkbox"/> MCDCU1 <input type="checkbox"/> 702 FMS1 <input type="checkbox"/> TEST	<input type="checkbox"/> FMS/CDU2 <input type="checkbox"/> VOX TUNE <input type="checkbox"/> MCDCU2 <input type="checkbox"/> 702 FMS2 <input type="checkbox"/> HIGH	<input type="checkbox"/> FMS/CDU3 <input type="checkbox"/> VM CMC <input type="checkbox"/> MCDCU3 <input type="checkbox"/> 702 FMS3	<input type="checkbox"/> 740 PRINT <input type="checkbox"/> 604 CMC <input type="checkbox"/> CVR <input type="checkbox"/> 750 VDR
<b>PORT 8 SPEED</b>	<input type="checkbox"/> <u>LOW</u>			

e) SERIAL

SERIAL 1/2				
<b>PORT 1</b> <b>TX:</b> <b>(+) Middle Plug 4A</b> <b>(-)Middle Plug 4B</b> <b>RX:</b> <b>(+)Middle Plug 4C</b> <b>(-)Middle Plug 4D</b>	<input type="checkbox"/> <u>NOT USED</u> <input type="checkbox"/> VHF GND SIM <input type="checkbox"/> HI-RES DISPLAY 2	<input type="checkbox"/> LO-RES DISPLAY <input type="checkbox"/> SAT GND SIM <input type="checkbox"/> TEL SIM	<input type="checkbox"/> AERO-M <input type="checkbox"/> IRIDIUM	<input type="checkbox"/> PRINTER <input type="checkbox"/> HI-RES DISPLAY 1
<b>PORT 2</b> <b>TX:</b> <b>(+) Top Plug 8A</b> <b>(-) Top Plug 8B</b> <b>RX:</b> <b>(+) Top Plug 8C</b> <b>(-) Top Plug 8D</b>	<input type="checkbox"/> <u>NOT USED</u> <input type="checkbox"/> VHF GND SIM <input type="checkbox"/> HI-RES DISPLAY 2	<input type="checkbox"/> LO-RES DISPLAY <input type="checkbox"/> SAT GND SIM <input type="checkbox"/> TEL SIM	<input type="checkbox"/> AERO-M <input type="checkbox"/> IRIDIUM	<input type="checkbox"/> PRINTER <input type="checkbox"/> HI-RES DISPLAY 1
<b>PORT 3</b> <b>TX:</b> <b>(+) Top Plug 9A</b> <b>(-) Top Plug 9B</b> <b>RX:</b> <b>(+) Top Plug 9C</b> <b>(-) Top Plug 9D</b>	<input type="checkbox"/> <u>NOT USED</u> <input type="checkbox"/> VHF GND SIM <input type="checkbox"/> HI-RES DISPLAY 2	<input type="checkbox"/> LO-RES DISPLAY <input type="checkbox"/> SAT GND SIM <input type="checkbox"/> TEL SIM	<input type="checkbox"/> AERO-M <input type="checkbox"/> IRIDIUM	<input type="checkbox"/> PRINTER <input type="checkbox"/> HI-RES DISPLAY 1

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Press NEXT. **SERIAL 2/2** displays.

<b>PORT 4</b>	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> LO-RES DISPLAY	<input type="checkbox"/> AERO-M	<input type="checkbox"/> PRINTER
<b>TX:</b>	<input type="checkbox"/> VHF GND SIM	<input type="checkbox"/> SAT GND SIM	<input type="checkbox"/> IRIDIUM	<input type="checkbox"/> HI-RES DISPLAY 1
<b>(+) Top Plug 7A</b>	<input type="checkbox"/> HI-RES DISPLAY 2	<input type="checkbox"/> TEL SIM		
<b>(-) Top Plug 7B</b>				
<b>RX:</b>				
<b>(+) Top Plug 7C</b>				
<b>(-) Top Plug 7D</b>				
<b>PORT 5</b>	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> LO-RES DISPLAY	<input type="checkbox"/> AERO-M	<input type="checkbox"/> PRINTER
<b>TX:</b>	<input type="checkbox"/> VHF GND SIM	<input type="checkbox"/> SAT GND SIM	<input type="checkbox"/> IRIDIUM	<input type="checkbox"/> HI-RES DISPLAY 1
<b>(+) Top Plug 6A</b>	<input type="checkbox"/> HI-RES DISPLAY 2	<input type="checkbox"/> TEL SIM		
<b>(-) Top Plug 6B</b>				
<b>RX:</b>				
<b>(+) Top Plug 6C</b>				
<b>(-) Top Plug 6D</b>				
<b>PORT 6</b>	<input type="checkbox"/> <u>NOT USED</u>	<input type="checkbox"/> LO-RES DISPLAY	<input type="checkbox"/> AERO-M	<input type="checkbox"/> PRINTER
<b>TX:</b>	<input type="checkbox"/> VHF GND SIM	<input type="checkbox"/> SAT GND SIM	<input type="checkbox"/> IRIDIUM	<input type="checkbox"/> HI-RES DISPLAY 1
<b>(+) Top Plug 5A</b>	<input type="checkbox"/> HI-RES DISPLAY 2	<input type="checkbox"/> TEL SIM		
<b>(-) Top Plug 5B</b>				
<b>RX:</b>				
<b>(+) Top Plug 5C</b>				
<b>(-) Top Plug 5D</b>				

f) **GRAPHICS**

- **Low Resolution Display Devices**

These devices include all CDUs, MCDUs, RCDUs, MFD-640 (with MFD SCN 1011.4.7 or earlier). A maximum total of four display devices may be used within any of the three CDU graphics ports. For example:

**EXAMPLE 1**

CDU 1 GRAPHICS DISP ON  
**CDU, RCDU**

CDU 2 GRAPHICS DISP ON  
**CDU**

CDU 3 GRAPHICS DISP ON  
**CDU**

**EXAMPLE 2**

CDU1 GRAPHICS DISP ON  
**CDU, FPCDU**

CDU2 GRAPHICS DISP ON  
**CDU, MFD-LR**

CDU3 GRAPHICS DISP ON

ANY ADDITIONAL SELECTIONS WILL RESULT IN AN ERROR MESSAGE.

- **High Resolution Display Devices**

These devices include all EFI-890Rs and MFD-640 (with MFD SCN 1011.4.8 or later). Additionally, a maximum total of two high resolution display devices may be included within any of the three CDU graphics ports. For example:

**EXAMPLE 1**

CDU 1 GRAPHICS DISP ON  
**CDU, RCDU, HR1**

CDU 2 GRAPHICS DISP ON  
**CDU, HR2**

CDU 3 GRAPHICS DISP ON  
**CDU**

**EXAMPLE 2**

CDU1 GRAPHICS DISP ON  
**CDU, FPCDU, HR1**

CDU2 GRAPHICS DISP ON  
**CDU, HR2**

CDU3 GRAPHICS DISP ON

ANY ADDITIONAL SELECTIONS WILL RESULT IN AN ERROR MESSAGE.

- **CDU Graphics**

CDU1 GRAPHICS DISP ON

Each display device selected here will display only what is displayed on CDU1. Additionally, each HR display device selected here will display the same graphic but in a high resolution format.

CDU2 GRAPHICS DISP ON

Each display device selected here will display only what is displayed on CDU2. Additionally, each HR display device selected here will display the same graphic but in a high resolution format.

CDU3 GRAPHICS DISP ON

Each display device selected here will display only what is displayed on CDU3. Additionally, each HR display device selected here will display the same graphic but in a high resolution format.

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**Graphics Setup**

**CDU/MFD BAUD RATE**

☐ 9600 BPS    ☐ 19.2 KBPS

**CDU1 GRAPHICS DISP ON**

☐ CDU    ☐ RCDU    ☐ MFD-LR    ☐ HR1

There are no defaults. CDU option(s) do not need to be selected if weather graphics are not used.

☐ HR2

LR = Low Resolution; HR = High Resolution

RCDU = Remote CDU

**CDU2 GRAPHICS DISP ON**

☐ CDU    ☐ RCDU    ☐ MFD-LR    ☐ HR1

☐ HR2

**CDU3 GRAPHICS DISP ON**

☐ CDU    ☐ RCDU    ☐ MFD-LR    ☐ HR1

☐ HR2

## 2. VHF CONFIG

VHF CONFIG 1/2				
<b>RADIO TYPE</b>	<input type="checkbox"/> <u>NONE</u>	<input type="checkbox"/> INTERNAL VDR	<input type="checkbox"/> ARINC 750 VDR	
		Internal VDR must be selected if VHF is configured to other than NONE.		
<b>CONTACT TIMER</b>	<input type="checkbox"/> <u>ENABLED</u>	<input type="checkbox"/> DISABLED		
The contact timer verifies that the current VHF frequency is still usable when the channel has not had any uplink traffic received for a period of time. Enabling this option provides better media management performance.				
<b>TRACKER TIMER</b>	<input type="checkbox"/> <u>ENABLED</u>	<input type="checkbox"/> DISABLED		
The tracker timer provides flight following information to the DSP. This setting is enabled by default to provide better ACARS link management performance.				
<b>PREFERRED DSP</b>	<input type="checkbox"/> <u>NONE</u>	<input type="checkbox"/> ARINC	<input type="checkbox"/> SITA	<input type="checkbox"/> AVICOM
<b>NOTE:</b> Although the Preferred DSP is selected with this option, the ARINC, SITA, and AVICOM options may also be enabled/disabled using the listed options. For further coverage information, contact your DSP.				
<b>ARINC</b>	<input type="checkbox"/> ENABLED	<input type="checkbox"/> <u>DISABLED</u>		
<b>SITA</b>	<input type="checkbox"/> ENABLED	<input type="checkbox"/> <u>DISABLED</u>		
<b>AVICOM</b>	<input type="checkbox"/> ENABLED	<input type="checkbox"/> <u>DISABLED</u>		
Press NEXT. VHF CONFIG 2/2 displays.				
<b>ENABLED MODE(S)</b>	<input type="checkbox"/> <u>POA/AOA</u>	<input type="checkbox"/> AOA ONLY	<input type="checkbox"/> POA ONLY	
<b>MINIMUM SQP</b> (Minimum VHF Signal Quality)	Range is 3 – 15; <u>4</u>			
<b>SQP THRESHOLD</b>	Range is 3 – 15; <u>12</u>			
<b>VOICE FREQ CONTROL</b>	<input type="checkbox"/> ENABLED 25KHZ	<input type="checkbox"/> ENABLED 8.33/25KHZ	<input type="checkbox"/> <u>DISABLED</u>	
	VOICE FREQ CONTROL must be set to DISABLED for the UniLink 801.			

### 3. SAT CONFIG

SAT CONFIG		
<b>TRACKER TIMER</b>	<input type="checkbox"/> ENABLED	<input type="checkbox"/> <u>DISABLED</u>
The tracker timer provides flight following information to the service provider once every four hours during SatCom medium inactivity. This setting should be enabled to provide better ACARS link management performance. This timer is applicable when UniLink is configured with an A741 SDU. If Iridium is configured as an AIRPHONE, the tracker timer is not active.		
<b>AUTO RETURN</b>	<input type="checkbox"/> ENABLED	<input type="checkbox"/> <u>DISABLED</u>
If enabled, the UniLink attempts to re-establish the SatCom link every 10 minutes when in Satellite NOCOMM.		

### 4. PRIORITY

- NOTE:**
- If Aero-I SAT (ARINC 741) Packet Data Service is utilized, one of the Normal/Alternate options must be set to SAT.
  - Alternate Comm Priority, which is used for Position Reporting only, overrides Normal Comm Priority.

COMM PRIORITY				
<b>NORMAL</b> (Priority ranking scheme for up to three downlink communications links.)				
<b>1ST</b>	<input type="checkbox"/> NONE	<input type="checkbox"/> <u>VHF</u>	<input type="checkbox"/> SAT	<input type="checkbox"/> TEL
<b>2ND</b>	<input type="checkbox"/> <u>NONE</u>	<input type="checkbox"/> VHF	<input type="checkbox"/> SAT	<input type="checkbox"/> TEL
<b>3RD</b>	<input type="checkbox"/> <u>NONE</u>	<input type="checkbox"/> VHF	<input type="checkbox"/> SAT	<input type="checkbox"/> TEL
<b>ALTERNATE</b> (Used for Position Reporting only.)				
<b>1ST</b>	<input type="checkbox"/> <u>NONE</u>	<input type="checkbox"/> VHF	<input type="checkbox"/> SAT	<input type="checkbox"/> TEL
<b>2ND</b>	<input type="checkbox"/> <u>NONE</u>	<input type="checkbox"/> VHF	<input type="checkbox"/> SAT	<input type="checkbox"/> TEL
<b>3RD</b>	<input type="checkbox"/> <u>NONE</u>	<input type="checkbox"/> VHF	<input type="checkbox"/> SAT	<input type="checkbox"/> TEL

- NOTES:**
- Alternate priority is only applied to automatic position reports in the UASC Corporate Customer Database.
  - Customers are able to limit Auto Position reports to only use the VHF media, SAT media, TEL media or any two media. Likewise, users can choose to send Auto Position reports via all three media options.



## 5. TEL CONFIG

TEL CONFIG 1/2	
<b>AIR PHONE</b> Used for dial up modem calls only and uses an RS-232 serial port configured for IRIDIUM or AERO-M. It is primarily used for obtaining color weather maps but may also provide VHF backup.	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <input type="checkbox"/> <u>NONE</u>   <input type="checkbox"/> <u>IRIDIUM</u>            Baud rate selection applies to Iridium <u>only</u>. Select baud rate supported by the software version as follows:           <ul style="list-style-type: none"> <li>Confirm the UniLink baud rate compatibility with the vendor and the selected DSP.</li> <li>Baud rate must be one of the following:               <div style="margin-left: 20px;"> <input type="checkbox"/> 2400 BPS   <input type="checkbox"/> <u>4800 BPS</u>   <input type="checkbox"/> 9600 BPS             </div> </li> <li>Contact the air phone manufacturer for baud rate compatibility with UniLink.</li> </ul> </div> <div style="width: 45%;"> <input type="checkbox"/> T-T AERO-M            When interfacing with Aero-M, configure the Aero-M Data Port (via the Full Feature Handset only, P/N 405621A) for 9600 baud, Flow Control XON/XOFF, “+++”- Mode Enable, Results Code Enabled and ARQ Mode Enabled. Refer to the TT-3000 Aero-M Installation Manual.         </div> </div>
<b>ACCESS NUMBER</b> The number dialed by the selected AIR PHONE. Used to connect with the selected Datalink Service Provider's MODEM bank.	<div style="border-bottom: 1px solid black; width: 100%; margin-bottom: 5px;"></div> <div style="text-align: right; margin-bottom: 5px;">(Max 19 AN characters, 0-9, P,L, A)</div> <p>The default value is to leave this field blank. Contact Universal Weather and Aviation to obtain the Access Number.</p> <p>Contact your DSP for the access number shown on the TEL CONFIG 1/2 page.</p> <p>A “P” may be entered to insert a pause, an “L” may be entered to insert “#”, or an “A” may be entered to insert “*” as required by the telephony network.</p> <p>Subscription service for UniLink may be obtained through Universal Weather and Aviation, Inc. at 1-801-231-5600.</p>
<b>WX MAPS</b> (Weather Maps)  If DISABLED is selected, it is required that NONE is selected in the AIR PHONE section.	<div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> ENABLED           <input type="checkbox"/> <u>DISABLED</u> </div>

**TEL CONFIG 1/2**

**SUSP MSG**

☐ ENABLED

☐ DISABLED

(Suspend Message)

Enables or disables  
the invocation of the  
TEL SUSPEND  
message following a  
TEL SUSPEND  
event.

Press NEXT. **TEL CONFIG 2/2** displays.

**REDIAL PAUSE**

\_\_\_\_\_ Seconds (5-60 seconds; 30SEC)

Redial Pause specifies the wait between  
telephony redial attempts from 5 to 60  
seconds.

**DIAL ATTEMPTS**

\_\_\_\_\_ Attempts (1-6 attempts; 6)

Dial Attempts specifies the total number of  
dial attempts in a set from 1 to 6.

**AUTO-DELAY**

\_\_\_\_\_ Minutes (1-9 minutes; 5MIN)

Auto-Delay specifies the time between  
sets of redial attempts from 1 to 9 minutes.

## 6. POS REPORT

These settings control the transmission of present position information while the aircraft is on the ground or in the air. These transmissions are sent to the DSP and may be used to provide flight following for aircraft tracking purposes. Transmission reporting time intervals (INTV) may also be configured.

The POS REPORT message is periodic and defaults to every 15 minutes. If the aircraft is configured for VHF, then SAT in the normal priority over the ocean SAT would be used for the position report downlinks which could potentially be costly. In this case the alternate priority would have only VHF which would prevent the downlink of automatic POS REPORT messages when VHF was in NO COMM (i.e. it wouldn't switch to trying SAT).

POS REPORT		
<b>AUTOMATIC REPORTING:</b>		
<b>IN AIR</b>	<input type="checkbox"/> <u>ENABLED</u>	<input type="checkbox"/> DISABLED
<b>ON GROUND</b>	<input type="checkbox"/> ENABLED	<input type="checkbox"/> <u>DISABLED</u>
<b>IN AIR DEFAULT</b>	<input type="checkbox"/> ENABLED	<input type="checkbox"/> <u>DISABLED</u>
<p>When ENABLED is selected, the transmission of in air position reporting is always turned on by default.</p> <p>When DISABLED is selected, the transmission of in air position reporting is always turned off by default. Automatic Position Reporting can be enabled or disabled by the air crew during flight if necessary.</p>		
<p><b>AIR INTV</b> (Air Interval)</p> <p>Air intervals can be modified during flight but always return to the values stored in the configuration at power up.</p>		
	<div style="border-bottom: 1px solid black; display: inline-block; width: 100px;"></div> MINS (Max 2 N characters); <u>15MIN</u> (1 – 99 is acceptable)	
<p><b>GROUND INTV</b> (Ground Interval)</p>		
	<div style="border-bottom: 1px solid black; display: inline-block; width: 100px;"></div> MINS (Max 2 N characters); <u>60MIN</u> (1 – 99 is acceptable)	

Press NEXT. The SYS CONFIG 2/4 page displays.

## C. SYS CONFIG 2/4

SYS CONFIG 2/4			
<b>MEDIA ADVIS</b> (Media Advisory)	<input type="checkbox"/> <u>ENABLED</u>	<input type="checkbox"/> <u>DISABLED</u>	
<b>MET DATA</b> (Meteorological Data)	<input type="checkbox"/> <u>ENABLED</u>	<input type="checkbox"/> <u>DISABLED</u>	
By enabling Met Data for Corporate and American Eagle versions, meteorological data messages are reported to the ground once a Met data message uplink is received from the ground.			
By enabling Met Data for the Air Nova version, meteorological data messages are reported upon enabling. An uplink is not required.			
<b>FLIGHT NO.</b>	<input type="checkbox"/> <u>ENABLED</u>	<input type="checkbox"/> <u>DISABLED</u>	
Enabling the Flight Number allows the entry and display of flight number data on the UniLink Main Menu. The INIT advisory logic will be active when Flight Number is enabled. INIT advisory logic will prompt the user to enter Flight No data on the MAIN menu page.			
<b>OOOI DATA</b> (Out, Off, On, In) Enabling OOOI is recommended if ARINC is selected as the preferred DSP.	<input type="checkbox"/> <u>ENABLED</u>	<input type="checkbox"/> <u>DISABLED</u>	
<b>AIRCRAFT</b> The default value for any of the AIRCRAFT options is to leave the field blank.  ICAO Aircraft Type, Aircraft Registration and Airline ID are required information.	<div style="display: flex; justify-content: space-between;"> <div>TYPE (ICAO Designator)</div> <div>____ _</div> <div>(Max 4 AN characters)</div> </div> <hr/> <div style="display: flex; justify-content: space-between;"> <div>REGISTRATION</div> <div>____ _</div> <div>(Max 7 AN characters)</div> </div> <div style="padding-left: 20px;">Valid Aircraft Registration may contain alpha characters upper case A through Z, numeric characters 0 through 9, a dash/hyphen character (which may not be the first or last character) and from 1 to 7 characters.</div> <hr/> <div style="display: flex; justify-content: space-between;"> <div>AIRLINE ID</div> <div>____ / ____</div> <div>(Max 2 AN characters/3 AN characters)</div> </div> <hr/> <div style="display: flex; justify-content: space-between;"> <div>FIN NUMBER (Fleet Identifier Number)</div> <div>____ _</div> <div>(Max 3 AN characters)</div> </div> <hr/> <div style="display: flex; justify-content: space-between;"> <div>ICAO ADDR</div> <div>____ _</div> </div> <div style="padding-left: 20px;">Obtain the specific ICAO address from your DSP. This information is derived from the registration number of the aircraft.</div>		
<b>CLEARANCES</b> These settings determine Air Traffic Services (ATS) functional options as elected by the customer.	OCEANIC	<input type="checkbox"/> <u>ENABLED</u>	<input type="checkbox"/> <u>DISABLED</u>
	PUSHBACK	<input type="checkbox"/> <u>ENABLED</u>	<input type="checkbox"/> <u>DISABLED</u>
	DEPARTURE	<input type="checkbox"/> <u>ENABLED</u>	<input type="checkbox"/> <u>DISABLED</u>
	EXP TAXI (Expected Taxi)	<input type="checkbox"/> <u>ENABLED</u>	<input type="checkbox"/> <u>DISABLED</u>

## SYS CONFIG 2/4 (Continued)

ALERTS		NEW MSG DISC DURATION (New Message Discrete Duration)
ALERT1	_____	MS (Max 4 N characters) (Milliseconds); <u>100MS</u>
ALERT2	_____	MS (Max 4 N characters) (Milliseconds); <u>100MS</u>
CHIME1	_____	MS (Max 4 N characters) (Milliseconds); <u>100MS</u>
CHIME2	_____	MS (Max 4 N characters) (Milliseconds); <u>100MS</u>
INHIB ON GND (Inhibit on Ground)	_____	KTS (Max 3 N characters) (Knots); <u>50KTS</u>
INHIB ALT (Inhibit Altitude)	_____	FT (Max 5 N characters) (Feet); <u>10,000FT</u>
ALT TYPE (Altitude Type)	<input type="checkbox"/> RADIO RADIO type may only be configured when IOP bus input is used. When RADIO is configured, INHIB ALT must be 2500 feet or below.	<input type="checkbox"/> <u>BARO</u>
AFTER OFF Alerts are turned off during this configured time duration. 0MIN disables this timer, which allows the alerts to occur only above the configured INHIB ALT value.	_____	MIN (Max 2 N characters) (Minutes); <u>5MIN</u>  The timer is <u>off</u> if set to 0MIN.

Press NEXT. The SYS CONFIG 3/4 page displays.

## D. **SYS CONFIG 3/4**

FANS requirements consist of the following:

- The FMS must use SCN 1000.5/1100.5 or later.
- UniLink must be connected to the UNS bus from the FMS (not A429 HS bus).
- If FANS is enabled, the FMS must be configured with FANS enabled.
- If FANS is disabled, the FMS must be configured with FANS disabled.

<b>SYS CONFIG 3/4</b>	
<b>FANS</b> If FANS is enabled, the FMS must be configured for it and must be at SCN 1000.5/1100.5 or later.  Special operational approval and crew training is required to use FANS.	<div style="display: flex; justify-content: space-around;"> <input type="checkbox"/> <b>ENABLED</b> <input type="checkbox"/> <b>DISABLED</b> </div>
<b>FANS AURAL</b> Works in conjunction with the FANS AURAL output discrete and controls the duration of the FANS AURAL alert.  The default value is set to 0MS, which means that the Alerting device will remain active until the message that activated the alert has been viewed. Therefore, it is recommended to set this time duration to some other value than 0MS. A value such as 5000MS (5 seconds) may be suitable in most cases.  It is recommended to set this time duration to a specific value required to support correct operation of the aural alerting device, for example a SONALERT or Aural Warning Generating equipment.  A value of zero is not recommended as it can result in the loss of aural alerts from a new message received if an unread CPDLC message already exists. A value such as 5000MS (5 seconds) may be suitable in most cases	
<b>DELAY MSG TX</b> (Delay Message Transmission)	<div style="display: flex; justify-content: space-between;"> <div style="border-bottom: 1px solid black; width: 40%;"></div> <div style="text-align: right;">             MS (Max 4 N characters) (Milliseconds); <u>0MS</u>              MIN (Max 2 N characters) (Minutes); <u>0MIN</u> </div> </div>
Provides VHF message transmission delays, in minutes, in order to ensure a reliable Line of Sight (LOS) connection after takeoff. Messages designated for delay (within the customer database) will be suppressed during VHF/SAT NOCOMM until the timer expires, at which time the message is routed for delivery over Telephony.	

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**SYS CONFIG 3/4 (Continued)**

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**GROUND DELAY** \_\_\_\_\_

MIN (Max 2 N characters)  
(Minutes); 0MIN

A Delay Advisory displays if a delay time other than zero is entered and the Delay Advisory time has elapsed since the occurrence of the OOOI Out event.

---

**FANS LATENCY**

ATC may instruct the crew to utilize a specific value. It's recommended that the value be configured for 0 (zero).

SEC (Max 3 N characters)  
(Seconds); 0SEC  
Range = 0 - 999

0 = latency is turned off. \_\_\_\_\_

---

**SUPP ADDR**

(Supplemental Address) \_\_\_\_\_

(Max 7 AN characters); the default value is to leave the field blank.

Obtain a specific SUPP ADDRESS from your DSP.

---

Press NEXT. The SYS CONFIG 4/4 page displays. This page displays the log of the recent Config Module Updates, which is organized by Date and Time columns.

### 3. Configuration Procedures

The Flight Management System (FMS) must be configured to use the UniLink Communications Unit before you configure the UniLink system. Refer to the WAAS/SBAS FMS Configuration Manual, report number 34-61-01, for FMS configuration procedures.

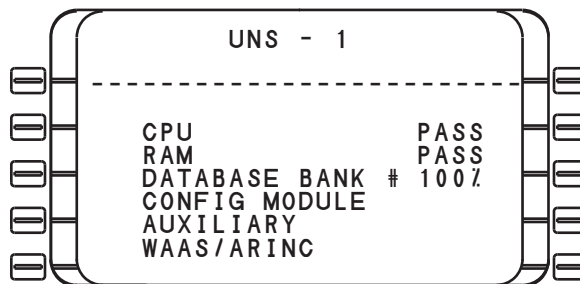
- NOTE:**
- The UASC FMS ARINC receiver port that receives data from the UniLink must be configured for UniLink. Only one receiver port on each FMS may be configured for a datalink device. UniLink and AFIS are mutually exclusive. Only one may be configured.
  - The FMS transmitter port that supplies data to the UniLink must be configured for UNS HS429-1. UNS HS429-1 is mandatory for FANS-capable installations.

The screens throughout these procedures depict a FANS-enabled UniLink. Some screens will appear differently without FANS.

#### A. Starting the FMS

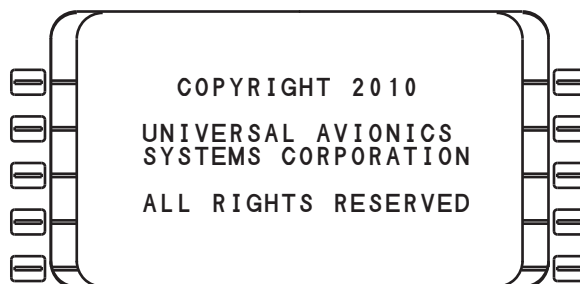
In order to access the UniLink menu, press the ON/OFF/DIM key on the faceplate of the FMS to turn it on. The FMS displays the following:

1. FMS self-test page.



- NOTE:** The DATABASE BANK field displays the number of the bank being tested and the percentage complete. When successfully finished, the numbers change to the word PASS and the FMS proceeds to the CONFIG MODULE test. All tests display as PASS if the self-test completes correctly.

2. FMS copyright page.





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3. INIT 1/1 menu.

INIT 1/1 menu screen. The screen displays the following information:

- POS INIT 1/1
- DATE 23-AUG-11
- INITIAL POS ID -----
- N 40 51.01
- W 074 03.65
- NAV DATABASE EXPIRES 26-AUG-11
- ←ACCEPT FMC VER 1000.5

- a. LSK [1L] field is highlighted. Enter the local airport identifier.
  - b. Press ENTER.
4. Local Airport Identifier window.

Local Airport Identifier window. The screen displays the following information:

- POS KTUS 1/1
- TUCSON INTL
- NAV N 32 06.97
- ARPT W 110 56.46
- ELEV 2643
- MAG VAR E 12.0
- ←ACCEPT

- a. Press the ACCEPT LSK [5L].
  - b. The INIT 1/1 menu displays.
  - c. Press the ACCEPT LSK [5L].
  - d. Press the DATA key.
5. DATA 1/4 menu.

DATA 1/4 menu screen. The screen displays the following information:

- DATA 1/4
- ←NAV DATA
- ←PILOT DATA
- ←DISK
- UNILINK→
- MAINT→

- a. Press the UNILINK LSK [3R].

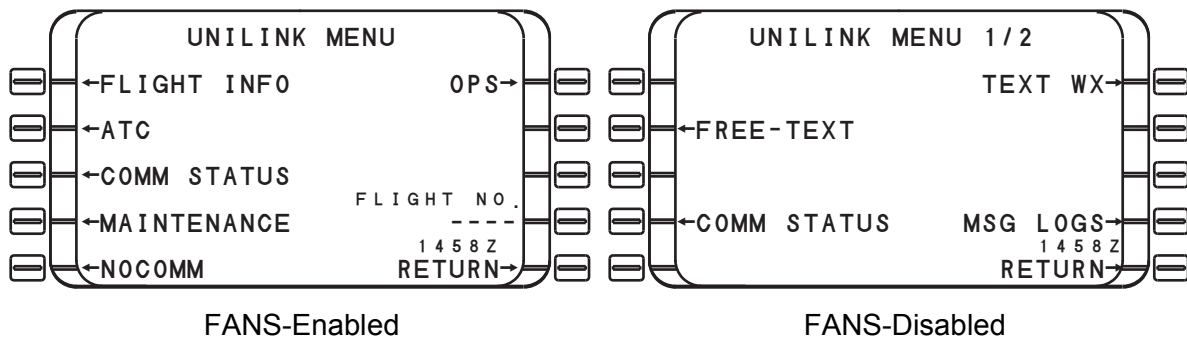
6. UNILINK menu.

**FANS-Enabled**

- If FANS is enabled, the top menu line displays UNILINK MENU. After the UniLink is configured, a different set of configuration options may be displayed than in the FANS-Disabled menu.

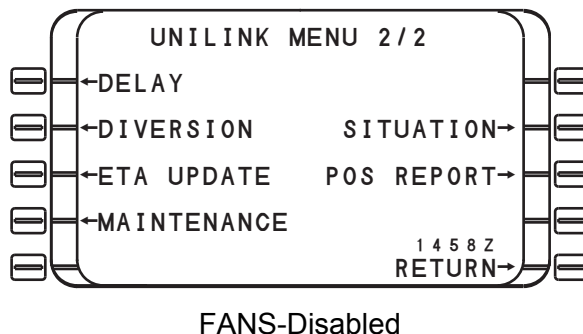
**FANS-Disabled**

- If FANS is disabled, the top menu line displays UNILINK MENU 1/2. Press the NEXT key to access UNILINK MENU 2/2.
- Additional options may appear at LSK [1L], LSK [3L], LSK [2R], and LSK [3R] depending which choices were made during configuration.



**NOTE:** The NOCOMM option may display at LSK [5R] for either a FANS-enabled or FANS-disabled UniLink. This option also displays as SAT NOCOMM, TEL NOCOMM, or VHF NOCOMM, depending on which communications link UniLink has lost.

7. UNILINK 2/2 menu for FANS-Disabled.



8. Press the MAINTENANCE LSK [4L] on either the FANS-enabled or FANS-disabled menu.

Use the completed worksheets, found in the Configuration Worksheets section, and enter that information into UniLink. Work through all the UniLink menus and make any necessary modifications for the configuration.

The steps should be performed in the order indicated by the large number in the corner of the text box.

Some of the items configured are limited to a small number of options that are selectable by pressing a line select key (LSK). The options appear one at a time in a set sequence and are included in the text of the step.

Other items that may be configured are limited to more than a few options. These items are selected by typing the number of the option as presented in a numbered list.

For those items that have many possible configurations, make an entry in a fill-in field. For example, the ICAO has assigned hundreds of aircraft type designators. These type designators consist of not more than four characters. On the Aircraft Configuration page the aircraft type field allows entry of up to four characters.

If an entry field is not highlighted, press the corresponding line select key to move the cursor highlight to the field.

## **B. FANS Block Data Transmission**

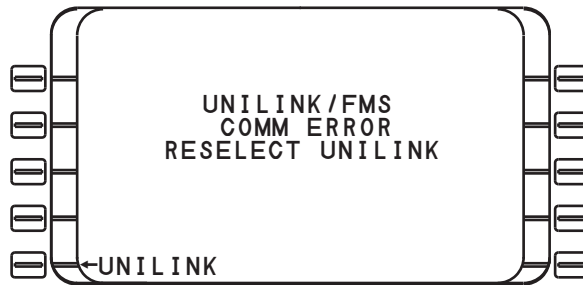
FMS SCN 1000.5/1100.5 or later is capable of transmitting FANS-specific data to support the UniLink FANS functions. In order to enable the transmission of the FMS FANS-specific data, ensure the FMS is configured to transmit over the UNS HS429-1 Bus.

1. Press the DATA key to display the DATA 1/4 page.
2. Press the PREV key to display the DATA 4/4 page.
3. Press DATE to highlight the date.
4. Enter 456789 and then press the ENTER key. The date will revert to the actual initialized date.
5. Press the NEXT key to display the DATA 1/4 page.
6. Press MAINT to display the MAINT 1/1 page.
7. Press CONFIG to display the CONFIG 1/2 page. The EDIT prompt at LSK [1R] is not normally displayed, but is displayed now because the configuration has been unlocked by entering the code on the DATA 4/4 page.
8. Press EDIT to replace EDIT with STORE and allow FMS configuration settings to be changed.
9. Press FMS CONFIG. Access the FMS CONFIG 2/4 page.
10. Press CMU. Enable FANS block data transmission.
11. Press STORE twice to restart the FMS.

## **C. Storing UniLink Options**

When all new or modified UniLink options have been entered, the installer can review the configuration by pressing the REVIEW LSK [4R] on the UniLink SYS CONFIG 1/4 page. This provides easy access to review and confirm any configuration warning from the UniLink.

If all modifications are acceptable, press the STORE LSK [1R]. Wait a few seconds and press the STORE LSK again. This stores the entered information, and verifies that required dependencies and consistency exist between the Configuration Data and the software, and also among the Configuration Data items. UniLink will initialize and the FMS will display the following message:



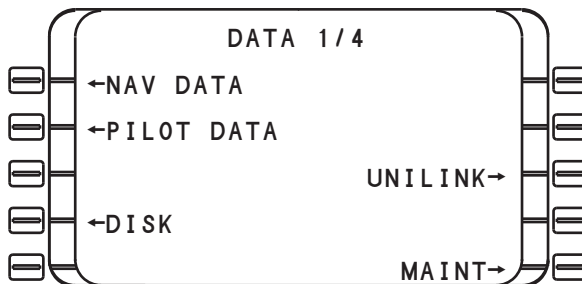
UNILINK, LSK [5L], displays in small capitals. Once the UniLink has rebooted and is ready to process additional information, the word UNILINK redisplay in large capital letters. Pressing the UNILINK LSK [5L] returns the FMS to the UNILINK MENU.

## D. Configuration Edit Mode

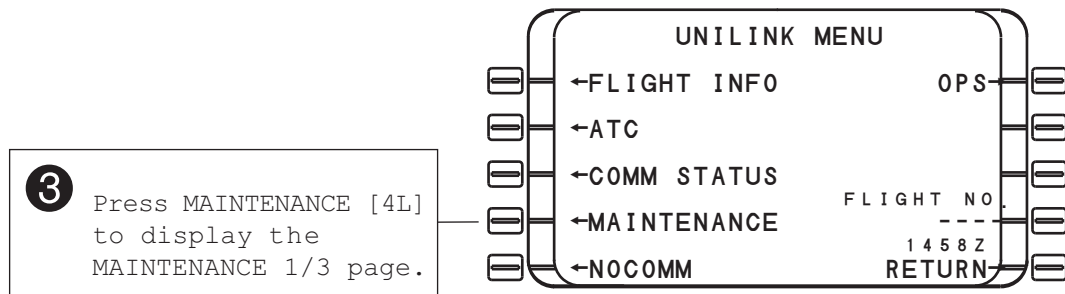
The Configuration Worksheets, found in the Configuration Worksheet section, should have been completed. These worksheets contain the options needed to configure UniLink. Have these worksheets available when implementing the following procedures.

### (1) Selecting the UniLink Display Page

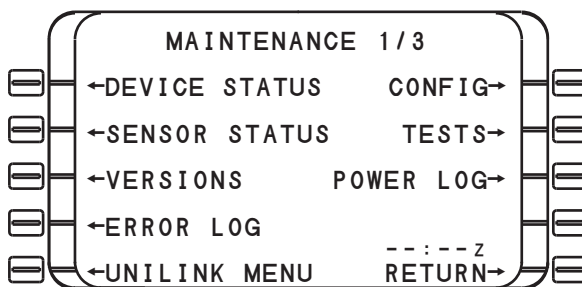
**1** On the FMS, press [DATA] to display the DATA 1/4 page.



**2** Press UNILINK [3R] to display the UNILINK MENU page.

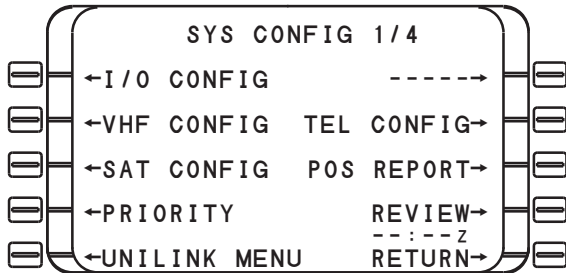


**3** Press MAINTENANCE [4L] to display the MAINTENANCE 1/3 page.

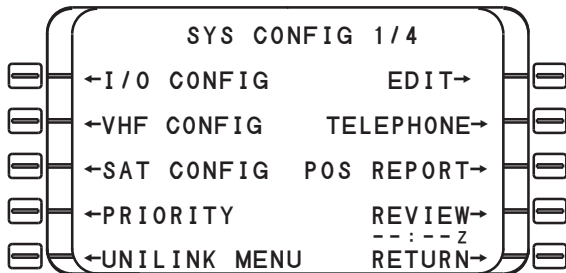


**4** Press CONFIG [1R] to display the SYS CONFIG 1/4 page.

(2) Edit/Store Mode



**1** Push LSK [1R] to highlight the data entry field. Type in the password **456789** and push ENTER. The password will be replaced with the word EDIT and EDIT mode is enabled.



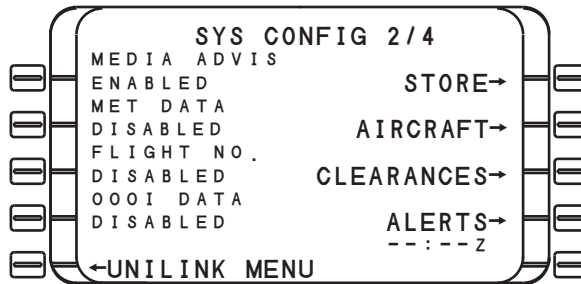
**2** Push EDIT [1R]. The word EDIT is replaced with the word STORE. Do not push STORE [1R] again until the configuration is complete.

**NOTE:** Even though the LSK displays STORE, EDIT mode is active.

**NOTE:** The FMS must be in an **On Ground** condition while you configure the UniLink. The data entry field at [1R] will not be accessible if the UniLink detects a Weight Off Wheels condition.

## E. Aircraft Configuration

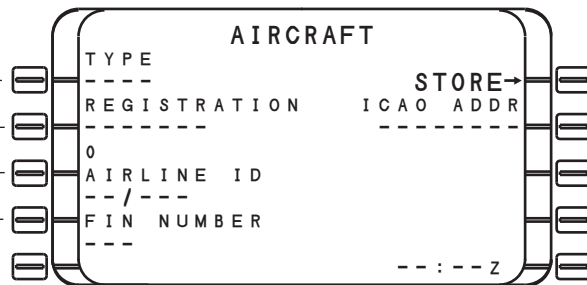
- 1 Press the NEXT key on the FMS to display the SYS CONFIG 2/4 page.



- 2 Press LSK [1L] thru [4L] and select the ENABLED or DISABLED option for each item.

- 3 Press AIRCRAFT [2R] to display the AIRCRAFT page.

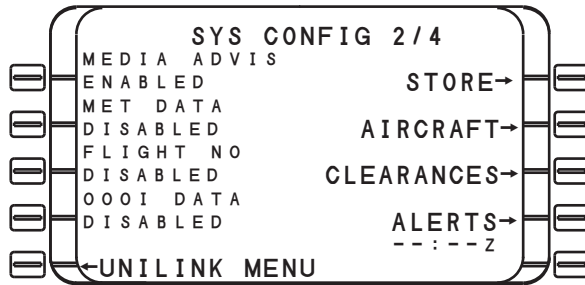
- 4 Press [1L] to highlight the TYPE data entry field. Enter the Type and press ENTER.



- 5 Repeat Step 4 on LSKs [2L], [3L], and [4L] respectively for REGISTRATION, AIRLINE ID, and FIN NUMBER. Press [2R] to highlight the ICAO ADDR field. Enter the ICAO ADDR and press ENTER.

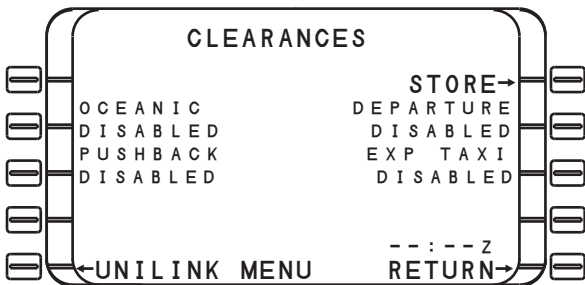
- 6 Press RETURN [5R] to return to the SYSTEM CONFIG 2/4 page.

## F. Clearances



**1** Press CLEARANCES [3R] to display the CLEARANCES page.

**2** Press LSK [2L] and select the ENABLED or DISABLED option for each item. Repeat for LSK [3L].

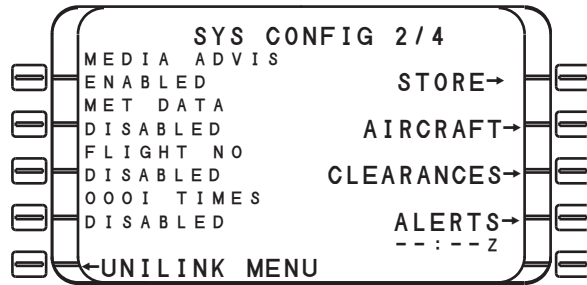


**3** Press LSK [2R] and select the ENABLED or DISABLED option for each item. Repeat for LSK [3R].

**4** Press RETURN [5R] to return to the SYS CONFIG 2/4 page.



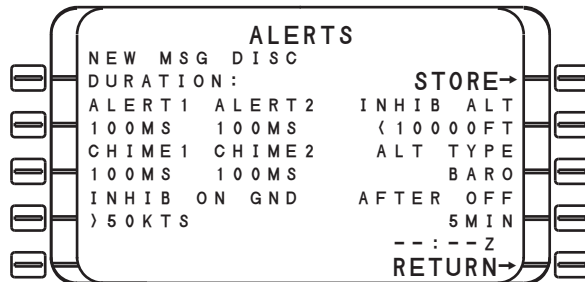
## G. Alerts



**1** Push ALERTS [4R] to display the ALERTS page.

**2** Push LSK [2L] to highlight the data entry field. Enter a value for ALERT1. Push ENTER to move the cursor to the ALERT2 field. Continuing to push the ENTER key moves the cursor to the CHIME1, CHIME2, INHIB ON GND, INHIB ALT, and AFTER OFF fields. Values may be entered in these fields or left as the default if no value is entered.

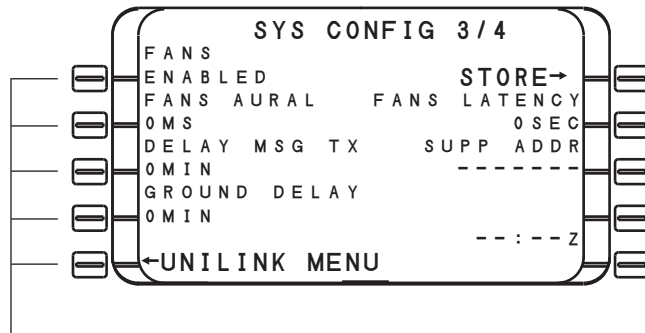
**3** A value for ALT TYPE can only be entered by pushing LSK [4R] and then entering a value.



**4** Push RETURN [5R] to return to the SYS CONFIG 2/4 page.

## H. System Configuration 3/4

- 1 Push NEXT on the FMS keypad to display the SYS CONFIG 3/4 page.



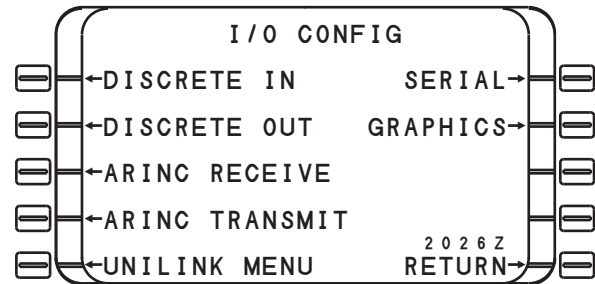
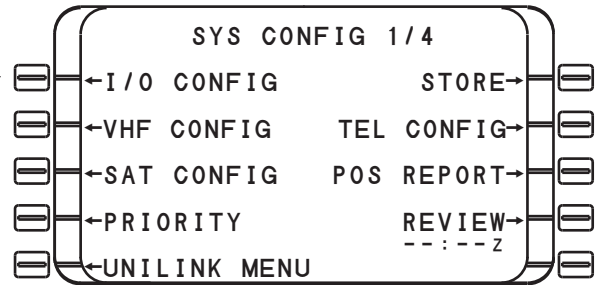
- 2 Push LSK [1L] to toggle enabled/disabled in the FANS field. Push ENTER to move the cursor to the FANS AURAL field. Push LSK [2L] and enter a value. Continuing to push the ENTER key moves the cursor to the DELAY MSG TX, GROUND DELAY, FANS LATENCY, and SUPP ADDR fields. Values may be entered in these fields or left as the default if no value is entered.

**NOTE:** Pushing ENTER cycles through all fields except the FANS field. LSK [1L] must be pushed in order to enter a value in the FANS field.

- 3 Push NEXT twice to return to the SYS CONFIG 1/4 page.

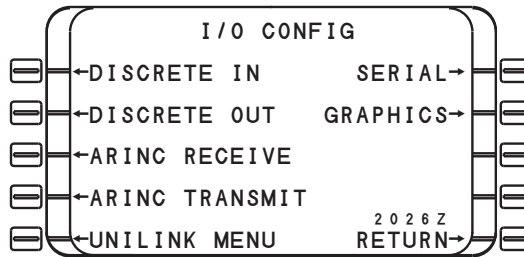
## I. I/O Configuration

**1** Press I/O CONFIG [1L] to display the I/O CONFIG page.

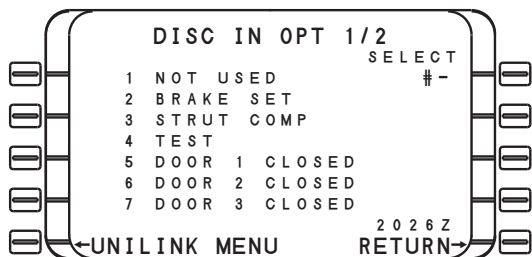
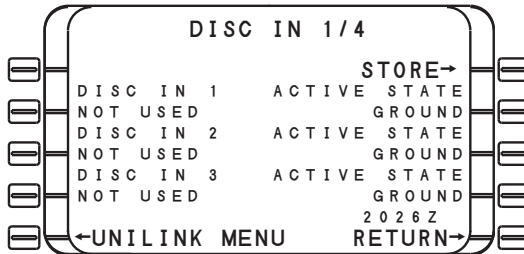


(1) Discrete In

**1** Press DISCRETE IN [1L] to display the DISC IN 1/4 page.



**2** Press LSK [2L] to configure DISC IN 1. The DISC IN OPT 1/2 page displays with a list of all available options.



**3** Enter the number of the desired option and press ENTER. The DISC IN 1/4 page displays.

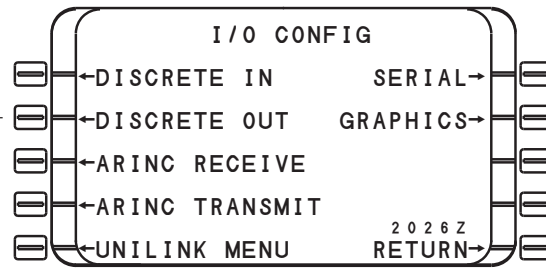
**NOTE:** Press the NEXT or PREV key to toggle between DISC IN OPT pages 1 and 2.

**4** Press LSK [2R] and toggle the active state of the DISC IN 1 between GROUND and OPEN.

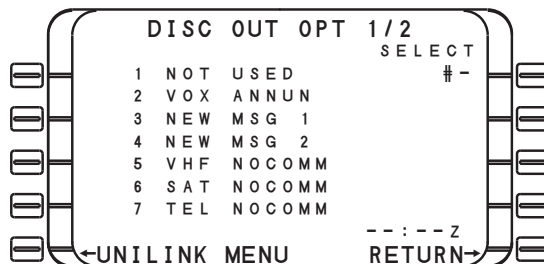
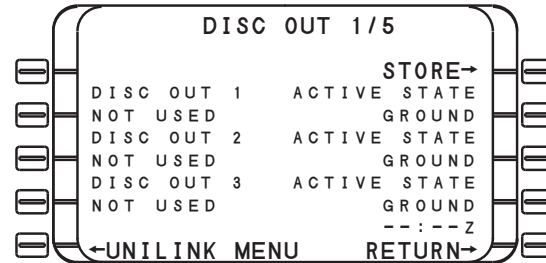
**5** Press NEXT to display the next DISC IN page and repeat steps **2**, **3** and **4** until all 10 discrete inputs are set. Press RETURN [5R].

(2) Discrete Out

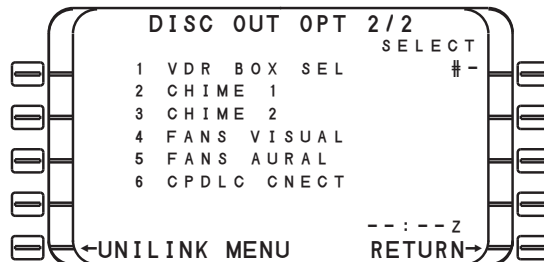
**1** Press DISCRETE OUT [2L] to display the DISC OUT 1/5 page.



**2** Press LSK [2L] to configure DISC OUT 1. The DISC OUT OPT 1/2 page displays with a list of all available options.



**3** Enter the number of the desired option and press ENTER. For more options, press NEXT to display the DISC OUT OPT 2/2 page.



**4** Press LSK [2R] and toggle the active state of the DISC OUT 1 between GROUND and OPEN.

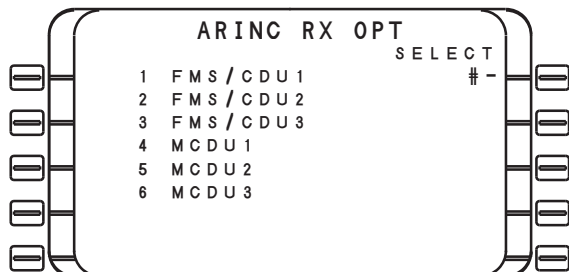
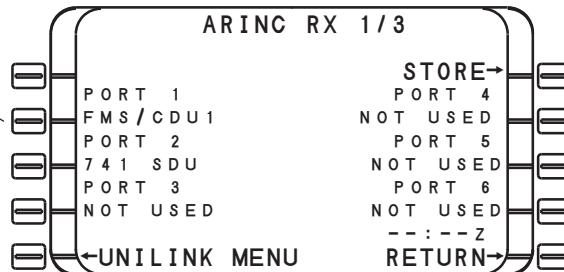
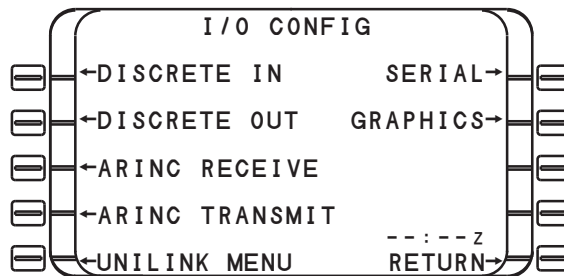
**5** Repeat steps 2, 3, and 4 until all 14 discrete outputs are set and then press RETURN [5R].

(3) ARINC Receive

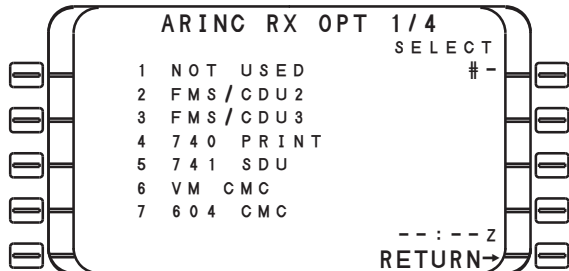
**1** Press ARINC RECEIVE [3L] to display the ARINC RX 1/3 page.

**2** Press LSK [2L] to configure PORT 1. The ARINC RX OPT page displays with a list of the available options for Port 1.

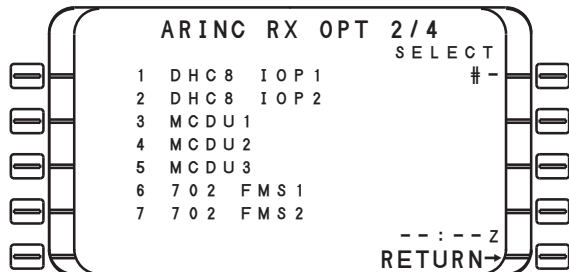
**NOTE:** Choosing Ports 2 - 16 displays one of ARINC RX OPT 1/4 pages.



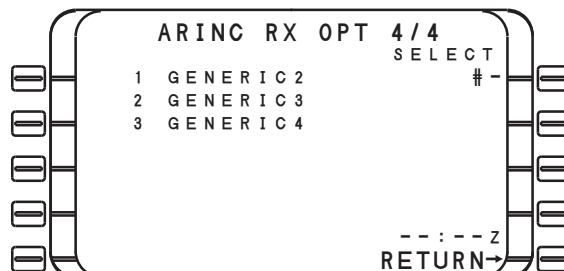
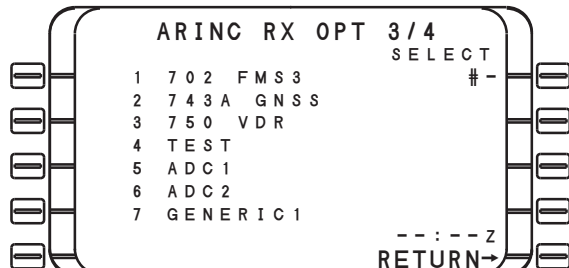
**3** Enter the number of the desired option for port 1 and press ENTER. This automatically returns you to the ARINC RX 1/3 page. Select another port to configure. The ARINC RX OPT 1/4 page displays.



**4** After configuring all the ports on the chosen ARINC RX OPT page, press NEXT to go to the next ARINC RX OPT page.

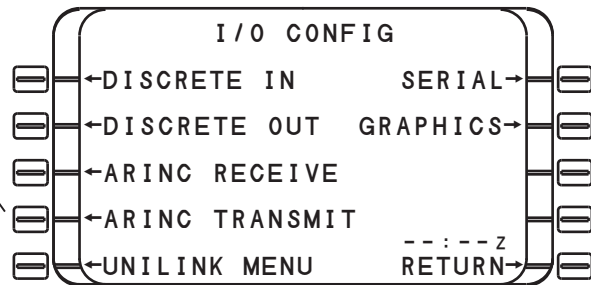


**5** Repeat steps 2 and 3 until all 16 ARINC RX ports are set and then push RETURN [5R].

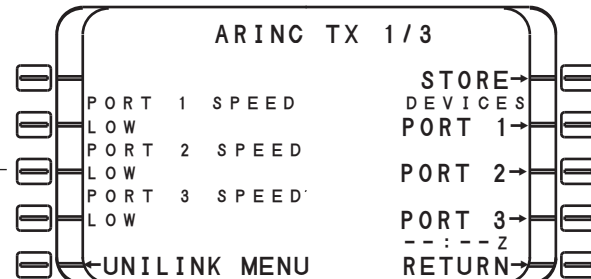


(4) ARINC Transmit

- 1** Press ARINC TRANSMIT [4L] to display the ARINC TX 1/3 page.

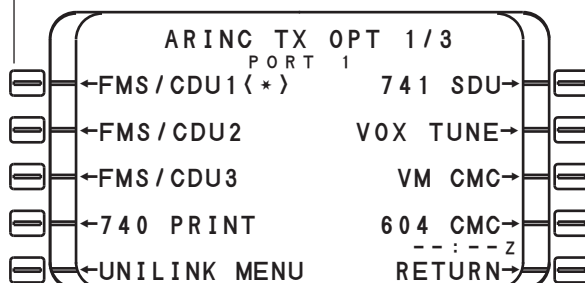


- 2** PORT 1 SPEED defaults to LOW. Press PORT 2 SPEED [3L] and select the LOW or HIGH speed option. Repeat for the rest of the ARINC TX ports. Ports 4 - 8 are on ARINC TX pages 2 and 3.



- 4** Press LSK [1L] and <\*> appears to indicate that the item is selected. Press the LSK again and <\*> disappears. Repeat for each device.

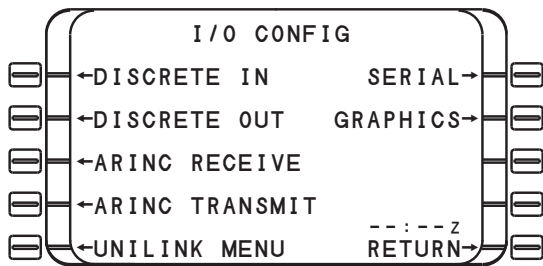
- 3** Press PORT 1 [2R] to display the ARINC TX OPT 1/3 page. A list of devices available for each of the ARINC TX ports displays.



**NOTE:** Multiple port devices can be configured on a single port but no device may be configured so that it resides on more than one port.

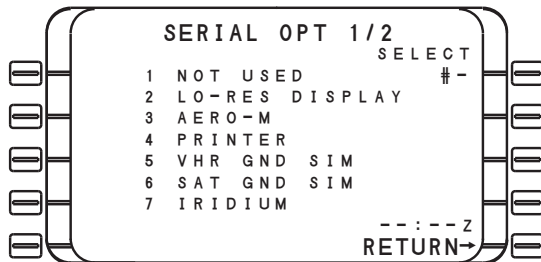
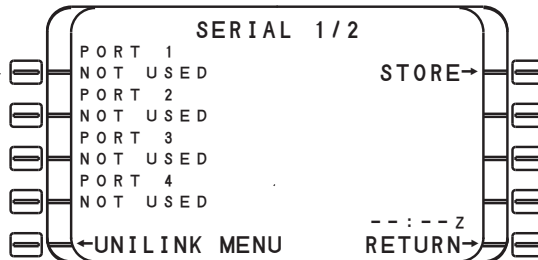
- 5** Press NEXT to display ARINC TX 2/3 and follow the procedure in step 4. Press NEXT again to display ARINC TX 3/3. Once all ARINC TX ports are configured, press RETURN twice to return to the I/O CONFIG page.

(5) Serial Port Configuration



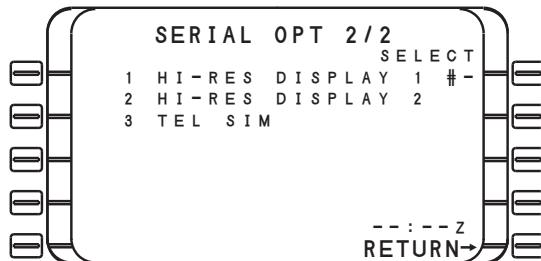
**1** Press SERIAL [1R] to display the SERIAL 1/2 page.

**2** Press PORT 1 [1L] to display the SERIAL OPT 1/2 page.



**3** Type the number of the desired option and press ENTER. This returns you to the SERIAL 1/2 page.

For more options, press NEXT to display the SERIAL OPT 2/2 page.

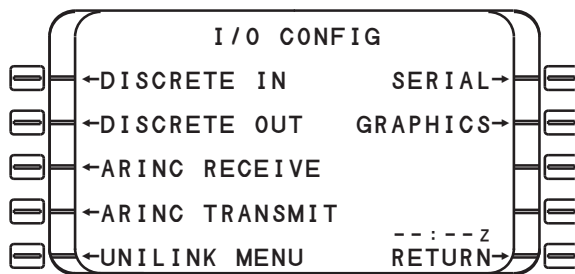


**4** Repeat steps **2** and **3** for each of the six serial ports.

Once all serial ports are configured, press RETURN to display the I/O CONFIG page.

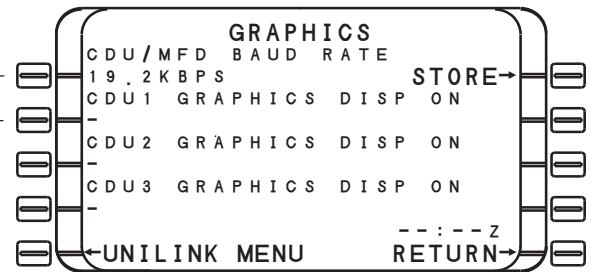


(6) Graphics



**1** Press GRAPHICS [2R] to display the GRAPHICS page.

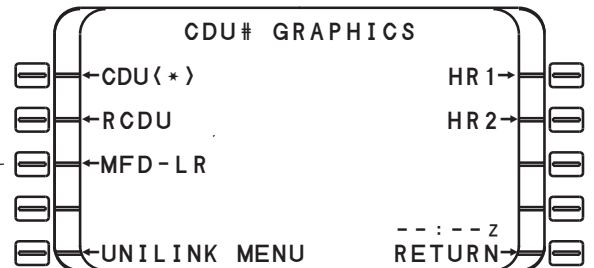
**2** Press CDU/MFD BAUD RATE [1L] to toggle between 9600BPS and 19.2KBPS.



**3** Press LSK [2L] to display and select the graphics configuration for CDU1.

**4** Graphics options are CDU, RCDU, MFD-LR, HR1, and HR2. An <\*> appears to indicate that the item is selected. Press the LSK again and <\*> disappears. All or none of the options may be chosen.

Press RETURN to return to the GRAPHICS page.

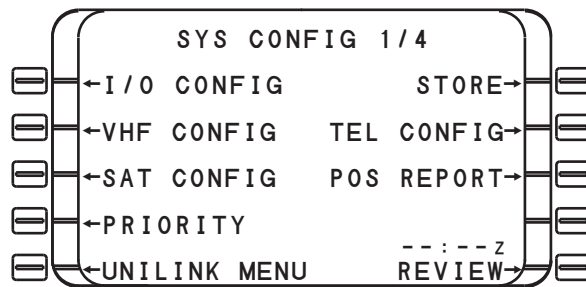


**5** When all CDU graphics displays are configured, press RETURN twice to return to the SYS CONFIG 1/4 page.

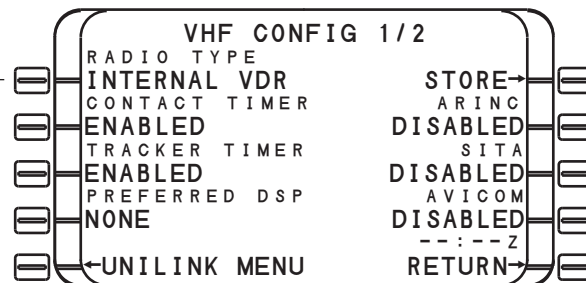
**6** Repeat steps **3** and **4** for CDU2 and CDU3.

## J. VHF Configuration

- 1 Push VHF CONFIG [2L] to display the VHF CONFIG 1/2 page.

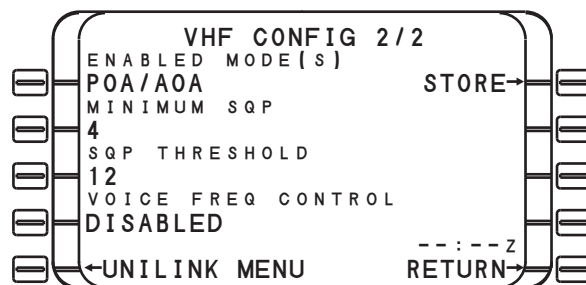


- 2 Push RADIO TYPE [1L] to cycle through the RADIO TYPE options.  
  
Push all other configuration options to cycle through and choose the options.



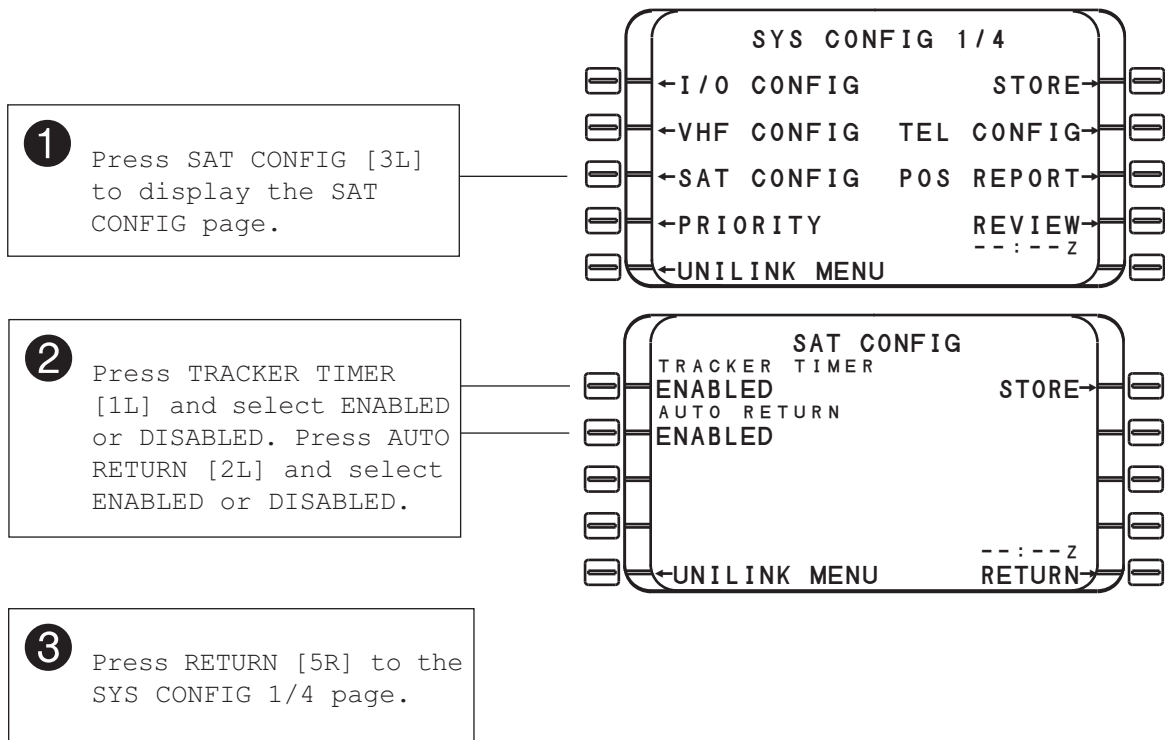
- 3 Push NEXT to display the VHF CONFIG 2/2 page.

- 4 Push ENABLED MODE(S) [1L] to cycle through the ENABLED MODE(S) options. Push all other configuration options to cycle through and choose the options.



- 5 Push RETURN to display the SYS CONFIG 1/4 page.

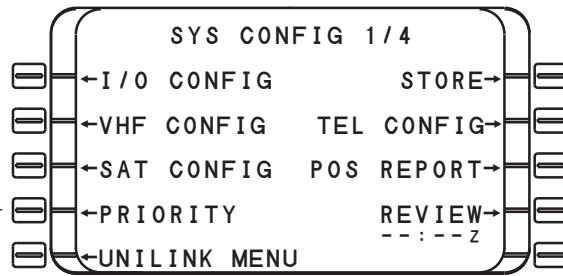
## K. Satellite (SAT) Configuration



## L. Priority Configuration

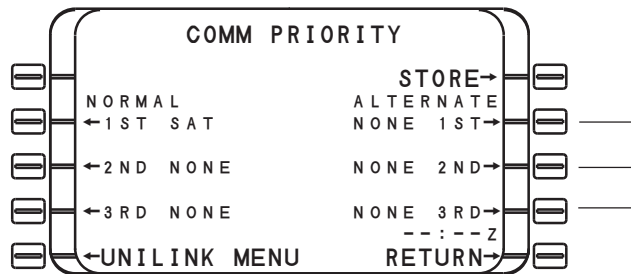
**1**

Press PRIORITY [4L] to display the COMM PRIORITY page.



**2**

Press 1ST [2L] to cycle through the NORMAL options. Based on which option is chosen, not all options will be seen for each choice. Repeat for 2ND [3L] and 3RD [4L].



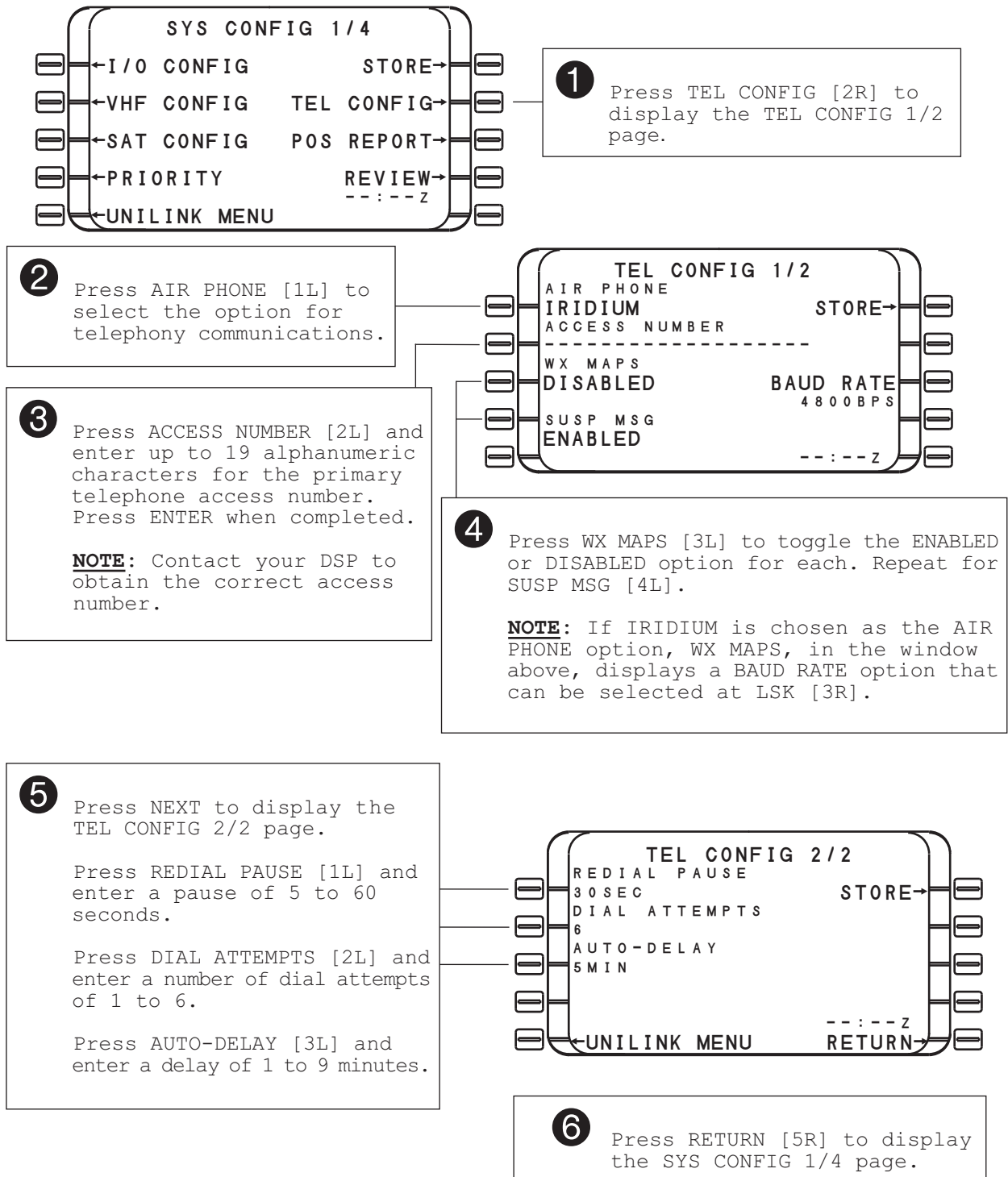
**3**

Press 1ST [2R] to cycle through the ALTERNATE options. Based on which option is chosen, not all options will be seen for each choice. Repeat for 2ND [3R] and 3RD [4R].

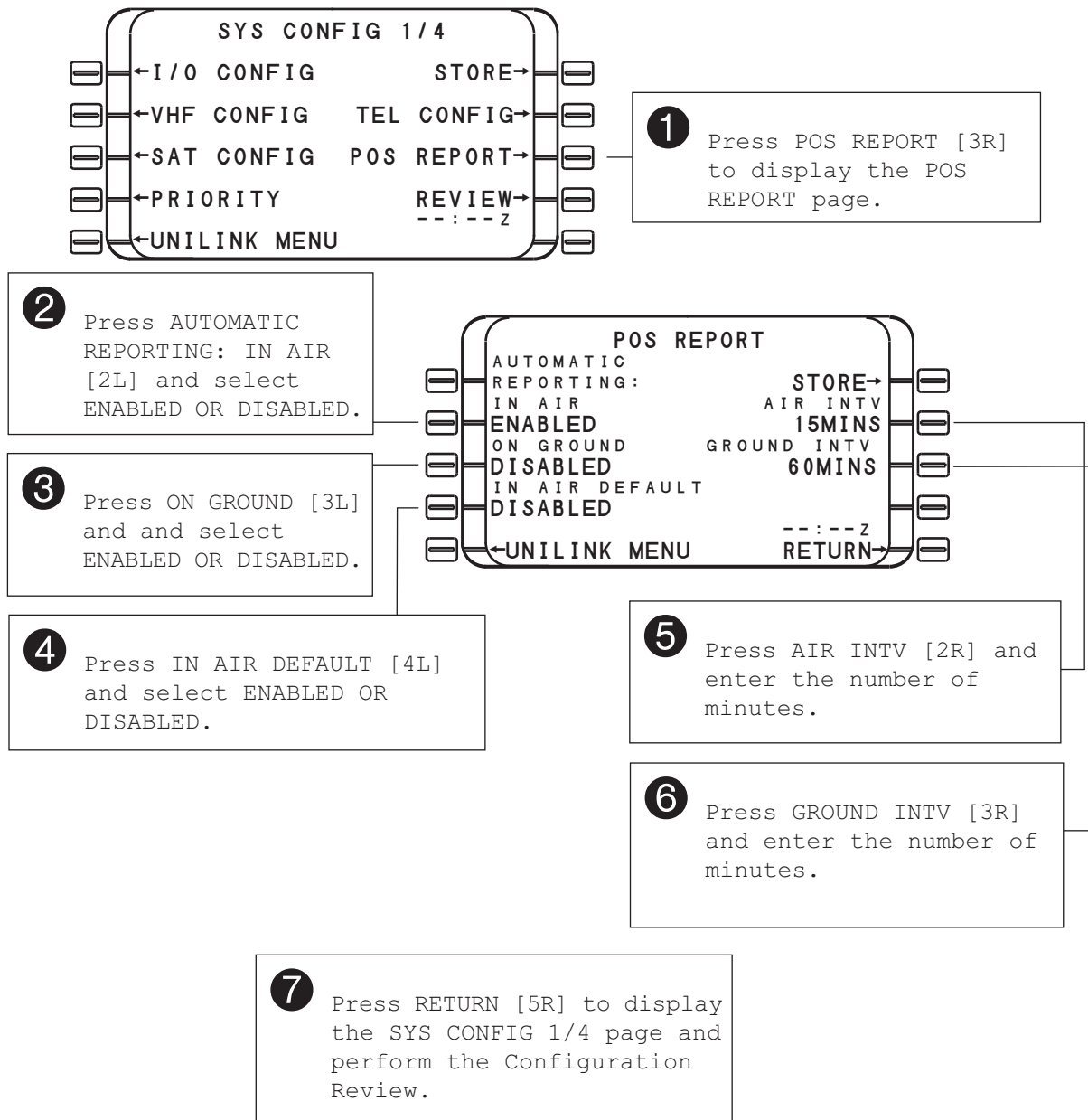
**4**

Press RETURN [5R] to show the SYS CONFIG 1/4 page.

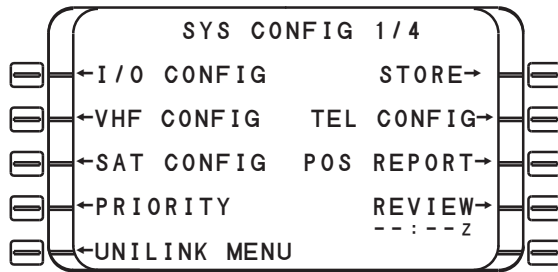
## M. Telephony (TEL) Configuration



## N. Position Report Configuration

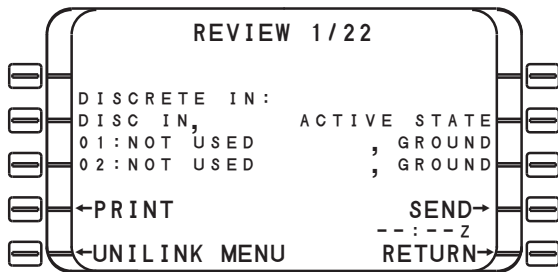


## O. Configuration Review



**1** Press REVIEW [4R] to display the REVIEW 1/22 page.

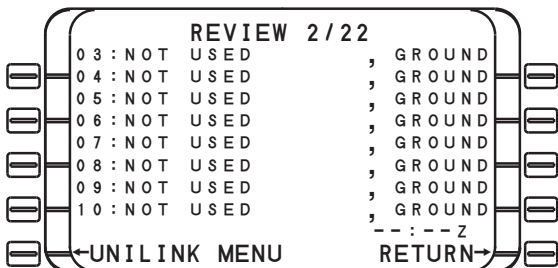
**NOTE:** The REVIEW pages are a visual representation of the contents of the UniLink Configuration Module. After reviewing all pages for errors, press NEXT on the keypad to return to the REVIEW Page 1. If the configuration is correct, press RETURN LSK [5R] to display SYS CONFIG 1/4. Press STORE [1R] twice to save the configuration. If errors were noted during the review, it will be necessary to return to the appropriate configuration page to make the changes.



**2** Press SEND [4R] to transmit a Configuration Report downlink.

**NOTE:** When SEND is pressed, the QUEUED message displays over the SEND LSK.

**3** Press NEXT to display the each sequential review page.



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SYSTEMS CORPORATION  
UL-801 Installation Manual

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REVIEW 3/22
DISCRETE OUT:
DISC OUT,      ACTIVE STATE
01:NOT USED    , GROUND
02:NOT USED    , GROUND
03:NOT USED    , GROUND
04:NOT USED    , GROUND
05:NOT USED    , GROUND
--:--Z
←UNILINK MENU      RETURN→

```

```

REVIEW 4/22
06:NOT USED    , GROUND
07:NOT USED    , GROUND
08:NOT USED    , GROUND
09:NOT USED    , GROUND
10:NOT USED    , GROUND
11:NOT USED    , GROUND
12:NOT USED    , GROUND
13:NOT USED    , GROUND
--:--Z
←UNILINK MENU      RETURN→

```

```

REVIEW 5/22
14:NOT USED    , GROUND

ARINC RX:
RX PORT 01:FMS/CDU1
RX PORT 02:NOT USED
RX PORT 03:NOT USED
RX PORT 04:NOT USED
RX PORT 05:NOT USED
--:--Z
←UNILINK MENU      RETURN→

```

```

REVIEW 6/22
RX PORT 06:NOT USED
RX PORT 07:NOT USED
RX PORT 08:NOT USED
RX PORT 09:NOT USED
RX PORT 10:NOT USED
RX PORT 11:NOT USED
RX PORT 12:NOT USED
RX PORT 13:NOT USED
--:--Z
←UNILINK MENU      RETURN→

```

```

REVIEW 7/22
RX PORT 14:NOT USED
RX PORT 15:NOT USED
RX PORT 16:NOT USED

ARINC TX:
TX PORT 01:FMS/CDU1
SPEED:LOW
TX PORT 02:-----
--:--Z
←UNILINK MENU      RETURN→

```

```

REVIEW 8/22
SPEED:LOW
TX PORT 03:-----
SPEED:LOW
TX PORT 04:-----
SPEED:LOW
TX PORT 05:-----
SPEED:LOW
TX PORT 06:-----
--:--Z
←UNILINK MENU      RETURN→

```

```

REVIEW 9/22
SPEED:LOW
TX PORT 07:-----
SPEED:LOW
TX PORT 08:-----
SPEED:LOW

SERIAL:
PORT 1: NOT USED
--:--Z
←UNILINK MENU      RETURN→

```

```

REVIEW 10/22
PORT 2: NOT USED
PORT 3: NOT USED
PORT 4: NOT USED
PORT 5: NOT USED
PORT 6: NOT USED

GRAPHICS:
CDU/MFD BAUD:19.2KBPS
--:--Z
←UNILINK MENU      RETURN→

```

```

REVIEW 11/22
CDU1:-----
CDU2:-----
CDU3:-----

VHF CONFIG:
RADIO:NONE
CONTACT TIMER:ENABLED
TRACKER TIMER:ENABLED
--:--Z
←UNILINK MENU      RETURN→

```

```

REVIEW 12/22
PREFERRED DSP:NONE
ARINC:DISABLED
SITA:DISABLED
AVICOM:DISABLED

ENABLED MODE:POA/AOA
MINIMUM SQP:4
SQP THRESHOLD:12
--:--Z
←UNILINK MENU      RETURN→

```



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REVIEW 13/22	
VOICE FREQ CTRL: DISABLED	
SAT CONFIG: TRACKER TIMER:DISABLED AUTO RETURN:DISABLED	
COMM PRIORITY:	
←UNILINK MENU	---:---Z RETURN→

REVIEW 14/22	
NORMAL 1ST:VHF NORMAL 2ND:NONE NORMAL 3RD:NONE ALTERNATE 1ST:NONE ALTERNATE 2ND:NONE ALTERNATE 3RD:NONE	
TEL CONFIG:	
←UNILINK MENU	---:---Z RETURN→

REVIEW 15/22	
AIR PHONE:NONE ACCESS NUMBER: -----	
WX MAPS:DISABLED SUSP MSG:ENABLED BAUD RATE:4800BPS REDIAL PAUSE:30SEC DIAL ATTEMPTS:6	
←UNILINK MENU	---:---Z RETURN→

REVIEW 16/22	
AUTO-DELAY:5MIN	
POS REPORT: IN AIR:ENABLED ON GROUND:DISABLED IN AIR DEFAULT:DISABLED AIR INTV:15MIN GROUND INTV:60MIN	
←UNILINK MENU	---:---Z RETURN→

REVIEW 17/22	
SYS CONFIG 2/4: MEDIA ADVIS:ENABLED MET DATA:DISABLED FLIGHT NO.:DISABLED OOOI DATA:DISABLED	
AIRCRAFT:	
←UNILINK MENU	---:---Z RETURN→

REVIEW 18/22	
TYPE:--- REGISTRATION:----- AIRLINE ID:--/--- FIN NUMBER:--- ICAO ADDR:-----	
CLEARANCES: OCEANIC:DISABLED	
←UNILINK MENU	---:---Z RETURN→

REVIEW 19/22	
PUSHBACK:DISABLED DEPARTURE:DISABLED EXP TAXI:DISABLED	
ALERTS: ALERT1:0000MS ALERT2:0000MS CHIME1:0000MS	
←UNILINK MENU	---:---Z RETURN→

REVIEW 20/22	
CHIME2:0000MS INHIB ON GND:050KTS INHIB ALT:10000FT ALT TYPE:BARO AFTER OFF:05MIN	
SYS CONFIG 3/4: FANS:ENABLED	
←UNILINK MENU	---:---Z RETURN→

REVIEW 21/22	
FANS AURAL:0MS DELAY MSG TX:00MIN GROUND DELAY:00MIN FANS LATENCY:0SEC SUPP ADDR:-----	
SYS CONFIG 4/4: CONFIG MOD UPDATES:	
←UNILINK MENU	---:---Z RETURN→

REVIEW 22/22	
DATE            TIME	
26-AUG-11    1702Z	
26-AUG-11    1702Z	
26-AUG-11    1702Z	
←UNILINK MENU	---:---Z RETURN→



# Maintenance, Checkout, and Troubleshooting

## 1. UniLink Ground Checkout Procedures

### A. Post Installation Test

For instructions on testing the UniLink following the initial installation in an aircraft, the installer should refer to the installation Ground and/or Flight Test Plans that are part of the UniLink installation (TC, STC, Field Approval) certification package.

The installation approval applicant should contact Universal Avionics Certification Department for Ground and/or Flight Test Plan templates that can be used for developing customized test plans.

### B. Return to Service

The following defines the conditions under which tests, specified below, should be conducted.

- (1) **Safety Precautions**  
User should follow all appropriate safety precautions.
- (2) **Power Input**  
Unless otherwise specified, tests should be conducted with the equipment powered by the aircraft's electrical power generating system.
- (3) **Associated Equipment or Systems**  
Unless otherwise specified, turn on all aircraft electrically operated equipment and systems before conducting these tests.
- (4) **Environment**  
During tests, the equipment should not be subjected to environmental conditions that exceed those specified by the equipment manufacturer.
- (5) **Warm-up Period**  
No warm-up period is required. However, some time must be allowed for all associated equipment to boot up properly and stabilize.

### C. UniLink to FMS/CDU Communications

**NOTE:** This procedure should be completed for each FMS/CDU connected to the UniLink.

- (1) Verify that DATA 1/4 page is displayed an active UNILINK prompt.
- (2) From the DATA 1/4 page, press the UNILINK LSK [3R] and verify the UNILINK MENU 1/2 page is displayed.
- (3) Press RETURN LSK [5R]. Verify that the DATA 1/4 page is displayed.
- (4) Repeat test steps 1 through 3 for each FMS/CDU connected and configured for UniLink.

## **D. Version Check**

- (1) From the UNILINK MENU Page 1, press NEXT.
- (2) Press MAINTENANCE LSK [4L].
- (3) Press VERSIONS LSK [3L].
- (4) Verify the correct UniLink SCN and Part Number appears on the screen.

## **E. Device Status**

- (1) Ensure all peripheral devices are powered on.
- (2) Press the DEVICE STATUS LSK [1L] on the MAINTENANCE 1/3 page.
- (3) Verify that the device status is OK for all applicable configured peripheral devices such as FMSs, MCDUs, CDUs, low and high resolution graphics devices, and CVRs. Press NEXT to cycle thru the DEVICES pages.

## **F. UniLink to Display Processor RS-422 Communications**

This procedure applies only to display devices wired and configured to support weather graphics.

- (1) From the MAINTENANCE 1/3 page, press the TESTS LSK [2R].
- (2) Press the IMAGE LSK [2L].
- (3) The IMAGE TEST IN PROGRESS pop-up message will appear.
- (4) Verify that the test image below is presented on all appropriate display devices.



- NOTE:**
- This is a Low Resolution test image and will be displayed as such on High Resolution display devices as well. UniLink does not generate a High Resolution test image.
  - It is recommended that you delete the test image following test completion.

## **G. UL-801 VHF Communications**

VHF datalink service coverage on the ground may be limited. Coverage may be affected by ground obstacles and may be restricted due to poor line of sight of the VHF ground station antenna.

- (1) The VHF communications status is indicated on the UniLink COMM STATUS page. Press COMM STATUS LSK [4L] on the UNILINK MENU 1/2 page.
- (2) If VHF COMM STATUS is COMM/IDLE, a request for ATIS information can be performed on the ground. Otherwise, if the VHF COMM STATUS is NOCOMM/SCANNING, the aircraft should be relocated elsewhere until the status of COMM/IDLE is obtained.
- (3) To request D-ATIS, from the UNILINK MENU Page 1:
  - Press the FLIGHT INFO LSK.
  - Press the D-ATIS LSK.
  - Press AIRPORT. Type KORD, for example, or your airport identifier.
  - Press LSK [ENTER].
  - Press SEND to transmit the request.
    - If QUEUED is displayed above the SEND prompt, the VHF probably is not connected to the ACARS system.
    - If Sending, SENT is displayed. The request was received and acknowledged. Your request will be shortly received by UniLink and available for viewing.

## **H. OOOI Sensor Test**

- (4) Ensure Door and Park Brake discrete inputs are connected and configured.
- (1) From UNILINK MENU 2/2 page, press the MAINTENANCE LSK [4L].
- (2) Press SENSOR STATUS LSK [2L].
- (3) Open and close the door.
- (4) Verify the DOORS status changes accordingly.
- (5) Release and set parking brake.
- (6) Verify the BRAKE status changes accordingly.
- (7) Verify the AIR/GROUND status is ON GROUND.

**NOTE:** If the aircraft is on jacks, the status will be IN AIR.

## **I. Printer Test**

- (1) Verify that printer power is on and has passed its self-test.
- (2) With the DATA page 1/4 displayed, press UNILINK LSK [3R]. The UNILINK MENU 1/2 will display.
- (3) Press the NEXT key.
- (4) Press MAINTENANCE LSK [4L] to display the MAINTENANCE 1/3 page.
- (5) Press TESTS LSK [2R] to display the TESTS page.
- (6) Press PRINTER LSK [1L]. The printing message pop-up message will display and a test pattern will be sent to the printer.
- (7) The TESTS page will again display.

## **J. Checking the UL-801 FANS ALERTS Output Discretes**

This procedure applies only to FANS-enabled aircraft.

- (1) From the DATA 1/4 page, press UNILINK LSK [3R]. The UNILINK MENU 1/2 page will display.
- (2) Press the NEXT key.
- (3) Press MAINTENANCE LSK [4L] to display the MAINTENANCE 1/3 page.
- (4) Press TESTS LSK [2R] to display the TESTS page.
- (5) Press FANS ALERTS LSK [1R]. The FANS DISCRETE TEST IN PROGRESS pop-up message will appear.
- (6) Verify that all appropriate FANS Visual and Aural alerts activate momentarily.

## **K. Checking the UL-801 Self-Test (Optional)**

This test simply reboots the UniLink. After the reboot process, verify that the UniLink prompt becomes active.

## **L. Checking the UL-801 Weather Graphics using a SatCom-based Telephony System**

**NOTE:** Ensure that the selected DSP supports Weather Graphics uplinks.

- (1) Press the DATA key to display the DATA 1/4 page.
- (2) Press UNILINK LSK [3R] to display UNILINK MENU 1/2.
- (3) Press WX MAPS LSK [2R] to display the WX MAP REQUEST page.
- (4) Press SIG WX LSK [2R] and the SIGNIFICANT WX page will display.
- (5) Press SEND LSK [4R]. This prompts UniLink to place a call to the selected DSP.
- (6) The QUEUED and SENDING messages display. After a few minutes, the FMS UniLink will display NEW WX ADVISORY under the ADVISORY area. Press the LSK to the left of the ADVISORY message to display the message.
  - a) If a UniLink page is not currently displayed on the FMS, the MSG icon light will flash.
- (7) Press the MSG key on the FMS to display the MESSAGES 1/X page. The UNILINK WX MAP RCVD message will appear.
- (8) Pressing the UniLink prompt will display the UNILINK MENU 1/2 page.

- (9) Press LSK [5L] to display the weather map. Verify that the correct map has been received.

## **M. Checking the UL-801 ARINC 741 SatCom (SAT)**

**NOTE:** Ensure that the selected DSP provides this service.

- (1) Verify that the SatCom SDU is powered up, initialized, and logged on.
- (2) From the UNILINK MENU 1/2 page, press COMM STATUS.
- (3) If the SatCom status is NOCOMM/UNAVAILABLE, UniLink has not detected label 270 from the SatCom. This indicates the Sat Link is unavailable.
- (4) If the SatCom status is NOCOMM/CONNECTING, the SatCom Link is available, UniLink will send a Link Test message, and wait for an acknowledgement from the ACARS network to confirm connectivity to the network.
- (5) If SatCom status is COMM/IDLE, the SatCom Link connectivity to the ACARS network has been confirmed and UniLink is ready to send and receive messages via the SatCom link.

All tests are now complete.

## 2. Error Messages

A complete list of defined error messages is shown in the following tables:

- The Pop-up Error Messages table shows the error conditions that result in a pop-up window error message. These errors are deemed significant enough to warrant immediate, detailed annunciation.
- The General Error Messages table shows the general error messages that may result in a NEW ERROR MSG advisory alert, as well as the recommended actions for resolution.
- The Configuration Error Messages shows possible configuration error messages, as well as the recommended actions for resolution.
- The Hidden Error/Status Messages shows unannunciated error/status messages that are normally hidden from the error log.

### A. Pop-up Window Error Messages

Pop-up Window Error Messages	
Pop-up Window Text	Condition
FMS/MCDU CONFIG ERROR. CONFIG NOT SAVED.	User attempt to STORE configuration data that does not configure the same FMS or MCDU on RX Port 1 and TX Port 1.
FMS/VDR SHARE TX PORT. CONFIG NOT SAVED.	User attempt to STORE configuration data with an ARINC 429 transmit port configured to interface to both a UASC FMS and an ARINC 750 VDR.
FMS/MCDU CONFIG ERROR. CONFIG NOT SAVED	User attempt to STORE configuration data with both a UASC FMS/CDU and an MCDU configured together.
UNABLE TO WRITE TO CONFIG MODULE.	User attempt to STORE configuration data with Configuration Module error.
DISPLAY PROCESSOR FAIL	A configured display processor has failed or experienced a communication failure, or too many bad slots have been detected.



## B. General Error Messages

UniLink error messages may be found by using either of the following two processes:

- (1) Press the MSG key to see the messages.
  - a) Press the NEXT key to scroll through the messages.
- (2) Press the MAINTENANCE LSK [4L] on the UNILINK MENU 1/2 page.
  - a) Press the ERROR LOG LSK [4L] on the MAINTENANCE 1/3 page.

**NOTE:** The Error Log contains all error messages including configuration error messages. The messages found when pressing the MSG key are only applicable to configuration errors.

- b) Press the NEXT key to scroll through the messages.

General Error Messages	
Text	Action/Description
FMS1 INOP	Cycle power to UniLink and FMS1. If condition persists contact UASC.
FMS2 INOP	Cycle power to UniLink and FMS2. If condition persists contact UASC.
FMS3 INOP	Cycle power to UniLink and FMS3. If condition persists contact UASC.
CDU1 DP INOP	Cycle power to UniLink and CDU1. If condition persists contact UASC. If condition is recent or frequent for a particular device, examine connection between the graphics display device and UniLink.
CDU2 DP INOP	Cycle power to UniLink and CDU2. If condition persists contact UASC. If condition is recent or frequent for a particular device, examine connection between the graphics display device and UniLink.
CDU3 DP INOP	Cycle power to UniLink and CDU3. If condition persists contact UASC. If condition is recent or frequent for a particular device, examine connection between the graphics display device and UniLink.
REMOTE CDU1 DP INOP	Cycle power to UniLink and RCDU1. If condition persists contact UASC. If condition is recent or frequent for a particular device, examine connection between the graphics display device and UniLink.
REMOTE CDU2 DP INOP	Cycle power to UniLink and RCDU2. If condition persists contact UASC. If condition is recent or frequent for a particular device, examine connection between the graphics display device and UniLink.
REMOTE CDU3 DP INOP	Cycle power to UniLink and RCDU3. If condition persists contact UASC. If condition is recent or frequent for a particular device, examine connection between the graphics display device and UniLink.
MFD-LR1 INOP	Cycle power to UniLink and MFD1. If condition persists contact UASC. If condition is recent or frequent for a particular device, examine connection between the graphics display device and UniLink.

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General Error Messages	
Text	Action/Description
MFD-LR2 INOP	Cycle power to UniLink and MFD2. If condition persists contact UASC. If condition is recent or frequent for a particular device, examine connection between the graphics display device and UniLink.
MFD-LR3 INOP	Cycle power to UniLink and MFD3. If condition persists contact UASC. If condition is recent or frequent for a particular device, examine connection between the graphics display device and UniLink.
HR-1 INOP	Cycle power to UniLink and high-resolution display 1 (MFD-640 or EFI-890R). If condition persists contact UASC. If condition is recent or frequent for a particular device, examine connection between the graphics display device and UniLink.
HR-2 INOP	Cycle power to UniLink and high-resolution display 2 (MFD-640 or EFI-890R). If condition persists contact UASC. If condition is recent or frequent for a particular device, examine connection between the graphics display device and UniLink.
MCDU1 INOP	Cycle power to UniLink and MCDU1. If condition persists contact UASC. If condition is recent or frequent for a particular device, examine connection between the graphics display device and UniLink.
MCDU2 INOP	Cycle power to UniLink and MCDU2. If condition persists contact UASC. If condition is recent or frequent for a particular device, examine connection between the graphics display device and UniLink.
MCDU3 INOP	Cycle power to UniLink and MCDU3. If condition persists contact UASC. If condition is recent or frequent for a particular device, examine connection between the graphics display device and UniLink.
HF RADIO INOP	Cycle power to UniLink and HF radio.
SDU INOP	Cycle power to UniLink and SDU. If condition persists contact UASC.
TEL INOP	Cycle power to UniLink and telephone system. If condition persists contact UASC.
CMC INOP	Cycle power to UniLink and CMC. If condition persists contact UASC.
A740 PRINTER INOP	Cycle power to UniLink and Printer. If condition persists contact UASC.
SERIAL PRINTER INOP	No action required. Temporary condition that will correct with next job UniLink sends to printer.
VHF VDLM2 RADIO INOP	Cycle power to UniLink and radio. If condition persists contact UASC.
THE SYSTEM IS RUNNING LOW ON NVRAM AND SHOULD BE RESTARTED.	Cycle power to UniLink.
THE SYSTEM IS CRITICALLY SHORT OF NVRAM. SYSTEM RESTART IS IMMINENT.	Cycle power to UniLink.

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General Error Messages	
Text	Action/Description
SERIAL PRINTER FAILURE	Examine the printer and its serial and power connections.
PRINT JOB TOO LARGE	No action required. UniLink has attempted to forward a corrupted uplink to the printer. Re-request uplink data.
[Hardware port] FAIL example: ARINC TX PORT 1 FAIL	Cycle power to UniLink. If condition persists contact UASC.
THE FATAL ERROR LOG HAS BEEN CORRUPTED	No action required. Old messages are discarded and the log is automatically restarted.
THE FATAL ERROR LOG CONTAINS A NEW ENTRY	No action required. If condition is frequent, contact UASC.
PROTOCOL ERROR LOG CORRUPT. OLD PROTOCOL ERRORS DISCARDED. LOGGING OF PROTOCOL ERRORS WILL RESTART.	No action required. Old messages are discarded and protocol error logging is automatically restarted.
LINK ERROR LSK [device name, count, first/last occurrence]	No action required. Protocol errors are automatically corrected, usually with no impact to the user. If condition is frequent for a particular device, examine connection between device and UniLink.
PROTOCOL ERROR LSK [device name, count, first/last occurrence]	
CTS BUSY LSK [device name, count, first/last occurrence]	No action required. Protocol errors are automatically corrected, usually with no impact to the user. If condition is frequent for a particular device, examine connection between device and UniLink.
CTS TIMEOUT LSK [device name, count, first/last occurrence]	
MSG RETRY LSK [device name, count, first/last occurrence]	
SYN LSK [device name, count, first/last occurrence]	
MSG TIMEOUT LSK [device name, count, first/last occurrence]	
DSC RETRY LSK [device name, count, first/last occurrence]	
DSC TIMEOUT LSK [device name, count, first/last occurrence]	
SPW RETRY LSK [device name, count, first/last occurrence]	
SPW TIMEOUT LSK [device name, count, first/last occurrence]	
TX BUF FULL LSK [device name, count, first/last occurrence]	
RX PORT 1: UASC FMS DETECTED. OVERRIDING PORT CONFIGURATION FOR MCDU	Configure UniLink with ARINC receive port 1 as FMS/CDU1 and transmit port 1 as FMS/CDU1.
RX PORT 1: MCDU DETECTED. OVERRIDING PORT CONFIGURATION FOR UASC FMS	Configure UniLink with ARINC receive port 1 as MCDU1 and transmit port 1 as MCDU1.

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General Error Messages	
Text	Action/Description
STATUS TIMEOUT LSK [count, first/last occurrence]	No action required. Protocol errors are automatically corrected, usually with no impact to the user. If condition is frequent, examine connection between the printer and UniLink.
ENQ TIMEOUT LSK [count, first/last occurrence]	
RECORD TIMEOUT LSK [count, first/last occurrence]	
RECORD RESEND LSK [count, first/last occurrence]	
PRINTER FAIL LSK [count, first/last occurrence]	
DOOR OPEN LSK [count, first/last occurrence]	
TEST LSK [count, first/last occurrence]	
INIT LSK [count, first/last occurrence]	
OVERRUN LSK [count, first/last occurrence]	
BUSY LSK [count, first/last occurrence]	
INVALID CTS LSK [count, first/last occurrence]	
ERASE FAULT LSK [device name, count, first/last occurrence]	If condition is recent or frequent for a particular device, examine connection between the graphics display device and UniLink.
TOO MANY FAILED SLOTS LSK [device name, count, first/last occurrence]	
UNEXPECTED EOF LSK [device name, count, first/last occurrence]	
UNKNOWN IMAGE FORMAT LSK [device name, count, first/last occurrence]	
GIF ERROR LSK [device name, count, first/last occurrence]	
TRANSMIT FAIL LSK [device name, count, first/last occurrence]	
INVALID GX HEADER LSK [count, first/last occurrence]	If condition is recent or frequent, examine connection between telephone system and UniLink.
VDL MODE A NOT SUPPORTED	Cycle power once to the VDR. If condition persists, replace VDR or contact UASC.
VDL MODE 2 NOT SUPPORTED	Cycle power once to the VDR. If condition persists, replace VDR or contact UASC.
VDR TX WARN FAULT	Cycle power once to the VDR. If condition persists, replace VDR or contact UASC.
VDR STATUS FAULT	Cycle power once to the VDR. If condition persists, replace VDR or contact UASC.
CTRL PROTOCOL CMU ERROR	Cycle power once to the VDR. If condition persists, replace VDR or contact UASC.
CTRL PROTOCOL VDR ERROR	Cycle power once to the VDR. If condition persists, replace VDR or contact UASC.
ACARSIP CMU ERROR	Cycle power once to the VDR. If condition persists, replace VDR or contact UASC.

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General Error Messages	
Text	Action/Description
ACARSIP VDR ERROR	Cycle power once to the VDR. If condition persists, replace VDR or contact UASC.
ASIP CMU ERROR	Cycle power once to the VDR. If condition persists, replace VDR or contact UASC.
ASIP VDR ERROR	Cycle power once to the VDR. If condition persists, replace VDR or contact UASC.
VDR SOFTWARE LOAD FAULT	Cycle power once to the VDR. If condition persists, contact UASC.

## C. Configuration Error Messages

Configuration Error Messages	
Text	Action
MEMORY ALLOCATION ERROR--UNABLE TO LOAD CONFIGURATION MODULE.	Attempt to store configuration. If condition persists contact UASC.
ERROR READING CONFIGURATION MODULE FROM NON-VOLATILE MEMORY.	Attempt to store configuration. If condition persists contact UASC.
CONFIGURATION MODULE CRC CODE FAILURE.	Attempt to store configuration. If condition persists contact UASC.
CONFIGURATION MODULE VERSION INCOMPATIBLE WITH SOFTWARE--CONFIGURATION UPDATE REQUIRED.	Verify UniLink software update and configuration, and store the configuration.
CONFIGURATION MODULE REVISION OLDER THAN SOFTWARE REVISION--CONFIGURATION UPDATE REQUIRED.	Verify UniLink software update and configuration, and store the configuration.
AN ADC AND AN IOP BUS MAY NOT BE CONFIGURED TOGETHER	An IOP bus cannot be configured concurrently with a DADC. Configure UniLink accordingly.
CONFIGURATION UPDATED FROM OLDER FORMAT. SOME DEFAULT VALUES USED. CONFIGURATION SHOULD BE VERIFIED AND RESAVED.	Once the configuration has been stored this message will not appear. A newer configuration revision should be used.
CONFIGURATION MODULE REVISION NEWER THAN SOFTWARE REVISION--EXTRA DATA IGNORED.	Once the configuration has been stored this message will not appear.
ONE OR MORE ARINC DEVICES HAS A TRANSMIT PORT BUT NO RECEIVE PORT.	Configure UniLink with a receive port for each configured transmit port listed on the ARINC TRANSMIT page.
ONE OR MORE ARINC DEVICES HAS A RECEIVE PORT BUT NO TRANSMIT PORT.	Configure UniLink with a transmit port for each configured receive port listed on the ARINC RECEIVE page.
THE SAME DEVICE IS ASSIGNED TO MORE THAN ONE ARINC 429 TRANSMIT PORT.	Any given device cannot be configured on more than one transmit port; configure UniLink accordingly.
AN A702 FMS OR GENERIC DEVICE IS CONFIGURED BUT LACKS A DEFINITION IN THE CUSTOMER DATABASE.	Load UniLink with a customer database that supports an ARINC 702 FMS or generic device, as appropriate.
MULTIPLE CMC DEVICES CONFIGURED.	Configure UniLink with either no CMC or a single CMC, as appropriate, because UniLink cannot be configured with multiple CMC devices.
THE UASC FMS THE ARINC 702 FMS AND THE GNSS RECEIVER MAY NOT BE CONFIGURED TOGETHER.	Configure UniLink with the same navigation source only (i.e., the UASC FMS(s), the ARINC 702 FMS(s), or the GNSS receiver) because UniLink cannot be configured with dissimilar navigation sources concurrently.

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<b>Configuration Error Messages</b>	
<b>Text</b>	<b>Action</b>
AN ADC AND A GNSS RECEIVER MAY NOT BE CONFIGURED TOGETHER	Configure UniLink with DADC device(s) or GNSS receiver. DADC and GNSS are dissimilar altitude sources and cannot be configured concurrently, configure UniLink accordingly.
AN ADC AND AN ARINC 702 FMS MAY NOT BE CONFIGURED TOGETHER	A digital air data computer cannot be configured concurrently with an ARINC 702 FMS, configure UniLink accordingly.
AN IOP BUS MAY NOT BE CONFIGURED TOGETHER WITH AN ARINC 702 FMS OR THE GNSS RECEIVER.	An IOP bus cannot be configured concurrently with an ARINC 702 FMS or with a GNSS receiver; configure UniLink accordingly.
AN MCDU IS CONFIGURED BUT AN ARINC 702 FMS OR GNSS RECEIVER IS NOT CONFIGURED.	When an MCDU is configured, configure UniLink with an ARINC 702 FMS or a GNSS receiver.
IN ORDER FOR AN MCDU INSTALLATION TO DISPLAY WEATHER MAPS AT LEAST ONE DISPLAY MUST BE SET TO MFD-LR OR HR-1 OR HR-2	If the MCDU(s) is wired and configured as an ARINC 739A MCDU, configure UniLink with a low-resolution MFD-640 and/or a high-resolution MFD-640/EFI-890R. (See 0 and 2.)
IN ORDER FOR AN MCDU INSTALLATION TO DISPLAY WEATHER MAPS NO DISPLAY MAY BE SET TO CDU OR RCDU.	If the MCDU(s) is wired and configured as an ARINC 739A MCDU, configure UniLink with a low-resolution MFD-640 and/or a high-resolution MFD-640/EFI-890R. Ensure no MCDU, wired as an ARINC 739A MCDU, is configured as a CDU. (See 0 and 2).
MORE THAN TWO REMOTE CDU GRAPHIC DEVICES CONFIGURED	Configure UniLink with no more than two RCDU displays.
REMOTE CDU-1 CONFIGURED WITHOUT PRIMARY CDU-1 CONFIGURED.	When configuring a remote CDU for graphics, configure both the RCDU and the corresponding primary CDU.
REMOTE CDU-2 CONFIGURED WITHOUT PRIMARY CDU-2 CONFIGURED.	When configuring a remote CDU for graphics, configure both the RCDU and the corresponding primary CDU.
REMOTE CDU-3 CONFIGURED WITHOUT PRIMARY CDU-3 CONFIGURED.	When configuring a remote CDU for graphics, configure both the RCDU and the corresponding primary CDU.
NO MORE THAN FOUR DISPLAY PROCESSORS MAY BE CONFIGURED ON THE LOW-RES DISPLAY PORT	Configure UniLink with four or fewer graphic devices on the low-resolution display serial port.
ARINC TEST DEVICE CONFIGURED.	Remove the TEST DEV selection from any ARINC RECEIVE port; it is used for test purposes only.
A VHF RADIO IS CONFIGURED BUT NO VALID AIRCRAFT REGISTRATION IS CONFIGURED.	When an A750 VDR is configured, configure UniLink with a valid aircraft registration in the REGISTRATION field on the A/C CONFIG page.
A VHF RADIO IS CONFIGURED BUT NO VALID AIRLINE/AGENCY ID IS PRESENT.	Configure UniLink with a valid airline/agency identifier in the left portion of the AIRLINE ID field on the A/C CONFIG page.

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<b>Configuration Error Messages</b>	
<b>Text</b>	<b>Action</b>
SATCOM IS CONFIGURED BUT NO VALID AIRCRAFT REGISTRATION IS CONFIGURED.	Configure UniLink either with a valid aircraft registration in the REGISTRATION field on the A/C CONFIG page or with no ARINC transmit and receive ports for an SDU.
SATCOM IS CONFIGURED BUT NO VALID AIRLINE/AGENCY ID IS PRESENT.	Configure UniLink either with a valid airline/agency identifier in the left portion of the AIRLINE ID field on the A/C CONFIG page or with no ARINC transmit and receive ports for an SDU.
AN AIR PHONE DEVICE IS CONFIGURED BUT NO VALID TELEPHONE NUMBER IS PRESENT.	Configure UniLink either with a valid telephone number in the TEL ACCESS NUMBER field on the TEL CONFIG 1/2 page or do not configure UniLink for an air phone (NONE in the AIR PHONE field on the TEL CONFIG 1/2 page).
A VALID TELEPHONE NUMBER IS PRESENT BUT NO AIR PHONE DEVICE IS CONFIGURED.	Configure UniLink either with the correct air phone device in the AIR PHONE field or with no telephone number in the TEL ACCESS NUMBER field on the TEL CONFIG 1/2 page.
VHF APPEARS IN NORMAL MEDIA PRIORITY SELECTIONS BUT NO VHF RADIO IS CONFIGURED.	Configure UniLink either with the correct VHF radio in the RADIO TYPE field on the VHF CONFIG 2/2 page or without VHF in any of the three NORMAL fields on the COMM PRIORITY page.
VHF APPEARS IN ALTERNATE MEDIA PRIORITY SELECTIONS BUT NO VHF RADIO IS CONFIGURED.	Configure UniLink either with the correct VHF radio in the RADIO TYPE field on the VHF CONFIG 2/2 page or without VHF in any of the three ALTERNATE fields on the COMM PRIORITY page.
SATCOM APPEARS IN NORMAL MEDIA PRIORITY SELECTIONS BUT NO SDU IS CONFIGURED.	Configure UniLink either with ARINC transmit and receive ports for an SDU or without SAT in any of the three NORMAL fields on the COMM PRIORITY page.
SATCOM APPEARS IN ALTERNATE MEDIA PRIORITY SELECTIONS BUT NO SDU IS CONFIGURED.	Configure UniLink's ARINC transmit and receive ports for an SDU or configure UniLink with no SAT in any of the three ALTERNATE fields on the COMM PRIORITY page.
TELEPHONY APPEARS IN NORMAL MEDIA PRIORITY SELECTIONS BUT NO AIR PHONE DEVICE IS CONFIGURED.	Configure UniLink either with the correct air phone device in the AIR PHONE field on the TEL CONFIG 1/2 page or without TEL in any of the three NORMAL fields on the COMM PRIORITY page.
TELEPHONY APPEARS IN ALTERNATE MEDIA PRIORITY SELECTIONS BUT NO AIR PHONE DEVICE IS CONFIGURED.	Configure UniLink either with the correct air phone device in the AIR PHONE field on the TEL CONFIG 1/2 page or without TEL in any of the three ALTERNATE fields on the COMM PRIORITY page.
VHF IS CONFIGURED BUT IS NOT IN EITHER MEDIA PRIORITY LIST.	Configure UniLink either with VHF in the desired priority NORMAL and/or ALTERNATE fields on the COMM PRIORITY page or with NONE in the RADIO TYPE field on the VHF CONFIG 2/2 page.



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<b>Configuration Error Messages</b>	
<b>Text</b>	<b>Action</b>
SATCOM IS CONFIGURED BUT IS NOT IN EITHER MEDIA PRIORITY LIST.	Configure UniLink either with SAT in the desired priority NORMAL and/or ALTERNATE fields on the COMM PRIORITY page or with no ARINC transmit and receive ports for an SDU.
TELEPHONY IS CONFIGURED BUT IS NOT IN EITHER MEDIA PRIORITY LIST.	Configure UniLink either with TEL in the desired priority NORMAL and/or ALTERNATE fields on the COMM PRIORITY page or with NONE in the AIR PHONE field on the TEL CONFIG 1/2 page.
THE VHF SIMULATOR INTERFACE IS CONFIGURED. THIS INTERFACE IS FOR DEVELOPMENT ONLY.	Remove the VHF GND SIM selection on the SERIAL setup pages; it is used for test purposes only.
THE SATCOM SIMULATOR INTERFACE IS CONFIGURED. THIS INTERFACE IS FOR DEVELOPMENT ONLY.	Remove the SAT GND SIM selection on the SERIAL setup pages; it is used for test purposes only.
THE TELEPHONY SIMULATOR INTERFACE IS CONFIGURED. THIS INTERFACE IS FOR DEVELOPMENT ONLY.	Remove the TEL SIM selection on the SERIAL setup pages; it is used for test purposes only.
A SERIAL PORT IS ASSIGNED TO IRIDIUM BUT NO COMPATIBLE TELEPHONY DEVICE IS CONFIGURED.	Configure UniLink either with IRIDIUM in the AIR PHONE field on the TEL CONFIG 1/2 page or with no serial port as IRIDIUM on the SERIAL setup pages.
THE CONFIGURED TELEPHONY DEVICE IS /IRIDIUM BUT NO COMPATIBLE SERIAL PORT IS CONFIGURED.	Configure UniLink either with the correct serial port as IRIDIUM on the SERIAL setup pages or with NONE in the AIR PHONE field on the TEL CONFIG 1/2 page.
A SERIAL PORT IS ASSIGNED TO AERO M BUT NO COMPATIBLE TELEPHONY DEVICE IS CONFIGURED.	Configure UniLink either with T-T Aero-M in the AIR PHONE field on the TEL CONFIG 1/2 page or with no serial port as Aero-M on the SERIAL setup pages.
THE CONFIGURED TELEPHONY DEVICE IS AERO M BUT NO COMPATIBLE SERIAL PORT IS CONFIGURED.	Configure UniLink either with the correct serial port as Aero-M on the SERIAL setup pages or with NONE in the AIR PHONE field on the TEL CONFIG 1/2 page.
THE NEW-MESSAGE-ANNUNC-INHIBIT FUNCTION IS CONFIGURED TO USE RADIO ALTITUDE BUT NO IOP BUS IS CONFIGURED.	Configure UniLink either with DHC8 IOPn in the correct PORT n field on the ARINC RECEIVE pages or with BARO in the ALT TYPE field on the ALERT CONFIG page.
THE NEW-MESSAGE-ANNUNC-INHIBIT FUNCTION IS CONFIGURED TO USE RADIO ALTITUDE BUT THE CONFIGURED ALTITUDE THRESHOLD VALUE IS TOO LARGE.	Configure UniLink either with a value equal to or less than 2500 in the INHIB ALT field or with BARO in the ALT TYPE field on the ALERT CONFIG page.
THE VHF VOX-ANNUN OUTPUT DISCRETE IS CONFIGURED BUT NO ARINC 750 VDR IS CONFIGURED.	Configure UniLink either with the external A750 VDR in the RADIO TYPE field on the VHF CONFIG 2/2 page or with no DISC OUT n field as VOX ANNUN on the DISC OUT pages.
THE VDR MODE-SELECT OUTPUT DISCRETE IS CONFIGURED BUT NO ARINC 750 VDR IS CONFIGURED.	Configure UniLink either with the external A750 VDR in the RADIO TYPE field on the VHF CONFIG 2/2 page or with no DISC OUT n field as VDR VOX SEL on the DISC OUT pages.

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Configuration Error Messages	
Text	Action
THE VHF-NOCOMM OUTPUT DISCRETE IS CONFIGURED BUT NO VHF RADIO IS CONFIGURED.	Configure UniLink either with the correct radio in the RADIO TYPE field on the VHF CONFIG 2/2 page or with no DISC OUT n field as VHF NOCOMM on the DISC OUT pages.
THE SAT-NOCOMM OUTPUT DISCRETE IS CONFIGURED BUT NO SDU IS CONFIGURED.	Configure UniLink either with ARINC transmit and receive ports for an SDU or with no DISC OUT n field as SAT NOCOMM on the DISC OUT pages.
THE TEL-NOCOMM OUTPUT DISCRETE IS CONFIGURED BUT NO TELEPHONE IS CONFIGURED.	Configure UniLink either with the correct air phone in the AIR PHONE field on the TEL CONFIG 1/2 page or with no DISC OUT n field as TEL NOCOMM on the DISC OUT pages.
ARINC IS CONFIGURED BUT OOOI IS DISABLED.	Configure UniLink either with ENABLED in the OOOI TIMES field on the SYS CONFIG 2/4 page or with OFF in the ARINC field on the DSP SETUP page.
AN ARINC VOICE TUNE BUS TRANSMIT PORT IS CONFIGURED BUT NO A750 VDR IS CONFIGURED.	Configure UniLink either with the external A750 VDR in the RADIO TYPE field on the VHF CONFIG page or with no ARINC transmit port with device VOICE TUNE BUS.
AN ARINC TRANSMIT PORT IS CONFIGURED FOR BOTH VOX TUNE AND SOME OTHER FUNCTION. THE VOX TUNE PORT CANNOT BE SHARED.	The VOX TUNE bus cannot be configured concurrently with another device; configure UniLink accordingly.
THE SETTINGS FOR VOICE FREQUENCY TUNING, THE VOICE TUNE BUS, AND THE VHF MODE-SELECT OUTPUT DISCRETE ARE INCONSISTENT WITH ONE ANOTHER.	Configure UniLink either with: The VOICE FREQ CONTROL field on the VHF CONFIG page set to ENABLE 25 or ENABLE 8.33/25, AND an ARINC transmit port with device VOICE TUNE BUS, AND a DISC OUT n field configured as VDR VOX SEL. <b>OR</b> The VOICE FREQ CONTROL field on the VHF CONFIG page set to DISABLE, AND no ARINC transmit port with device VOICE TUNE BUS, AND no DISC OUT n field as VDR VOX SEL.
VHF VOICE FREQUENCY TUNING IS ENABLED BUT NO A750 VDR IS CONFIGURED.	Configure UniLink either with the external A750 VDR in the RADIO TYPE field on the VHF CONFIG page or with DISABLE in the VOICE FREQ CONTROL field on the VHF CONFIG page.
WEATHER MAPS ARE ENABLED BUT NO AIR PHONE IS CONFIGURED.	Configure UniLink either with the correct air phone in the AIR PHONE field or with DISABLED in the WX MAPS field on the TEL CONFIG 1/2 page.
CDU 1 IS CONFIGURED FOR GRAPHICS BUT FMS 1 OR MCDU 1 IS NOT CONFIGURED.	Configure UniLink either with ARINC transmit and receive ports for FMS 1 or MCDU 1, as appropriate, or with NONE in the CDU 1 GRAPHICS DISP ON field on the GRAPHICS setup page.

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<b>Configuration Error Messages</b>	
<b>Text</b>	<b>Action</b>
CDU 2 IS CONFIGURED FOR GRAPHICS BUT FMS 2 OR MCDU 2 IS NOT CONFIGURED.	Configure UniLink either with ARINC transmit and receive ports for FMS 2 or MCDU 2, as appropriate, or with NONE in the CDU 2 GRAPHICS DISP ON field on the GRAPHICS setup page.
CDU 3 IS CONFIGURED FOR GRAPHICS BUT FMS 3 OR MCDU 3 IS NOT CONFIGURED.	Configure UniLink either with ARINC transmit and receive ports for FMS 3 or MCDU 3, as appropriate, or with NONE in the CDU 3 GRAPHICS DISP ON field on the GRAPHICS setup page.
AT LEAST ONE CDU IS CONFIGURED FOR GRAPHICS BUT WEATHER MAPS ARE DISABLED AND NO SERIAL LO- OR HI-RES DISPLAY IS CONFIGURED.	Configure UniLink either with ENABLED in the WX MAPS field on the TEL CONFIG 1/2 page and with LO-RES DISPLAY, HI-RES DISPLAY 1, or HI-RES DISPLAY 2 in the correct PORT n field on the SERIAL setup pages or with NONE in all CDU n GRAPHICS DISP ON fields on the GRAPHICS setup page.
A SERIAL LO- or HI-RES DISPLAY IS CONFIGURED BUT WEATHER MAPS ARE DISABLED AND NO CDU IS CONFIGURED FOR GRAPHICS.	Configure UniLink either with ENABLED in the WX MAPS field on the TEL CONFIG 1/2 page and with the correct value in the appropriate CDU n GRAPHICS DISP ON field(s) on the GRAPHICS setup page or with no PORT n field as LO-RES DISPLAY, HI-RES DISPLAY 1, or HI-RES DISPLAY 2 on the SERIAL setup pages.
WEATHER MAPS ARE ENABLED BUT NO SERIAL LO- OR HI-RES DISPLAY IS CONFIGURED AND NO CDU IS CONFIGURED FOR GRAPHICS.	Configure UniLink either with LO-RES DISPLAY, HI-RES DISPLAY 1, or HI-RES DISPLAY 2 in the correct PORT n field on the SERIAL setup pages and with the correct value in the appropriate CDU n GRAPHICS DISP ON field(s) on the GRAPHICS setup page or with DISABLED in the WX MAPS field on the TEL CONFIG 1/2 page.
WEATHER MAPS ARE ENABLED AND A SERIAL LO- or HI-RES DISPLAY IS CONFIGURED BUT NO CDU IS CONFIGURED FOR GRAPHICS.	Configure UniLink either with the correct value in the appropriate CDU n GRAPHICS DISP ON field(s) on the GRAPHICS setup page or with DISABLED in the WX MAPS field on the TEL CONFIG 1/2 page and with no PORT n field as LO-RES DISPLAY, HI-RES DISPLAY 1, or HI-RES DISPLAY 2 on the SERIAL setup pages.
WEATHER MAPS ARE ENABLED AND AT LEAST ONE CDU IS CONFIGURED FOR GRAPHICS BUT NO SERIAL LO- OR HI-RES DISPLAY IS CONFIGURED.	Configure UniLink either with LO-RES DISPLAY, HI-RES DISPLAY 1, or HI-RES DISPLAY 2 in the correct PORT n field on the SERIAL setup pages or with DISABLED in the WX MAPS field on the TEL CONFIG 1/2 page and with NONE in all CDU n GRAPHICS DISP ON fields on the GRAPHICS setup page.
AT LEAST ONE CDU IS CONFIGURED FOR GRAPHICS AND A SERIAL LO- or HI-RES DISPLAY IS CONFIGURED BUT WEATHER MAPS ARE DISABLED.	Configure UniLink either with ENABLED in the WX MAPS field on the TEL CONFIG 1/2 page or with NONE in all CDU n GRAPHICS DISP ON fields on the GRAPHICS setup page and with no PORT n field as LO-RES DISPLAY, HI-RES DISPLAY 1, or HI-RES DISPLAY 2 on the SERIAL setup pages.

<b>Configuration Error Messages</b>	
<b>Text</b>	<b>Action</b>
HR-1 IS CONFIGURED FOR GRAPHICS BUT NO HI-RES DISPLAY 1 SERIAL INTERFACE IS CONFIGURED.	Configure UniLink either with an HI-RES DISPLAY 1 serial port or remove HR1 from the GRAPHICS setup configuration.
HR-2 IS CONFIGURED FOR GRAPHICS BUT NO HI-RES DISPLAY 2 SERIAL INTERFACE IS CONFIGURED.	Configure UniLink either with an HI-RES DISPLAY 2 serial port or remove HR2 from the GRAPHICS setup configuration.
HI-RES DISPLAY 1 SERIAL INTERFACE IS CONFIGURED BUT NO HR-1 IS CONFIGURED FOR GRAPHICS.	Configure UniLink either with a HR1 on the GRPAHICS setup page or remove HI-RES DISPLAY 1 from the SERIAL configuration.
HI-RES DISPLAY 2 SERIAL INTERFACE IS CONFIGURED BUT NO HR-2 IS CONFIGURED FOR GRAPHICS.	Configure UniLink either with a HR2 on the GRPAHICS setup page or remove HI-RES DISPLAY 2 from the SERIAL configuration.
PRE-DEPARTURE CLEARANCE IS ENABLED BUT NO VALID AIRCRAFT TYPE IS PRESENT.	Configure UniLink either with a valid four-character ICAO aircraft type designator in the TYPE field on the A/C CONFIG page or with DISABLED in the PREDEPARTURE field on the CLEARANCES page.
A750 VDR CONFIGURED ON LOW-SPEED TRANSMIT PORT.	Configure the ARINC 429 transmit port, which is configured to A750 VDR, to HIGH speed.
A429 TRANSMIT PORT SET TO A750 VDR AND VM CMC	Configure the ARINC 429 transmit port to either A750 VDR or VM (Vibro-Meter) CMC.
ARINC 429 PORTS CONFIGURED FOR ARINC 750 VDR BUT VHF RADIO TYPE NOT SET TO ARINC 750 VDR	Configure RADIO TYPE to A750 VDR.
VHF RADIO TYPE SET TO ARINC 750 VDR BUT NO ARINC 429 PORTS ARE CONFIGURED FOR AN ARINC 750 VDR.	Configure ARINC 429 transmit and receive ports to A750 VDR.
VHF RADIO TYPE SET TO A750 VDR AND VDR MODE-SELECT DISCRETE IS CONFIGURED BUT THE DISCRETE ACTIVE STATE IS NOT SET TO OPEN	If an A750 VDR is installed and VDR voice select discrete is configured, set the discrete 'active' state to 'OPEN'.
VHF RADIO CONFIGURED BUT ICAO AIRCRAFT ADDRESS MISSING	Configure UniLink with a legal ICAO aircraft address, which ranges from 00000001 octal through 77777776 octal and is normally included on the aircraft registration document.
ILLEGAL ICAO AIRCRAFT ADDRESS	Configure UniLink with a legal ICAO aircraft address, which ranges from 00000001octal through 77777776 octal and is normally included on the aircraft registration document.
FANS DISABLED – NO VALID AIRCRAFT REGISTRATION IS CONFIGURED	Configure UniLink either with a valid aircraft registration in the REGISTRATION field on the A/C CONFIG page or with FANS as DISABLED.
FANS DISABLED – VHF RADIO OR SDU NOT CONFIGURED	Configure UniLink with a VHF radio and/or an SDU, or do not configure FANS.

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Configuration Error Messages	
Text	Action
FANS DISABLED – ATC DATABASE NOT INSTALLED	Configure UniLink with FANS functionality ENABLED and load a valid ATC database or configure UniLink with FANS disabled.
FANS DISABLED – DUAL UASC FMS NOT CONFIGURED	Configure UniLink for two UASC FMSs or configure UniLink with FANS disabled.
SQP MIN IS SET BELOW THREE	Configure SQP MIN with a value greater than three.
SQP THRESHOLD IS BELOW ONE OR ABOVE EIGHT	Configure the SQP threshold with a value greater than one but less than eight.
CVR CONFIGURED ON LOW-SPEED TRANSMIT PORT.	Configure the ARINC 429 transmit port, which is configured to CVR, to HIGH speed or assign the CVR to a high speed port.
<p><b>NOTE 1:</b> If an MCDU is wired and configured as an ARINC 739A MCDU, which does not display graphics, a low-resolution MFD-640 or a high-resolution MFD-640/EFI-890R must also be configured in order to display graphics. If an MCDU is wired and configured as a UASC FMS CDU, the MCDU is able to receive graphics and, therefore, no other device is necessary to display graphics.</p> <p><b>NOTE 2:</b> A low-resolution MFD-640 and high-resolution MFD-640/EFI-890R are configured on the GRAPHICS setup page in the appropriate CDU n GRAPHICS DISP ON field(s).</p> <p><b>NOTE 3:</b> The SQP threshold is the difference between the SQP of the currently tracked ground station and the value of the SQP of another ground station necessary to initiate a handoff.</p>	

## D. Hidden Error/Status Messages

Hidden Error/Status Messages	
Text	Action/Description
UNKNOWN ERROR	Cycle power to UniLink. If condition persists contact UASC.
THE PORTION OF FLASH MEMORY CONTAINING THE MTBF COUNTER HAS BEEN CORRUPTED AND THE MTBF COUNT IS NO LONGER VALID	Cycle power to UniLink. If condition persists contact UASC.



## Appendix 1

This appendix contains industry-standard acronyms, abbreviations, and terms used in the UniLink Installation manual.

### 1. Acronyms, Abbreviations, and Terms

Acronym/Abbreviation/Term	Description
ACARS	Aircraft Communications Addressing and Reporting System
ACK	Acknowledgment
ADC	Air Data Computer
ADS-C	Automatic Dependent Surveillance - Contract
AFN	ATS Facilities Notification
ALT	Altitude
ALTRV	Altitude Reservation
AOA	ACARS Over Aviation VHF Link Control (AVLC)
AOC	Aeronautical (Airline) Operational Control
ARINC	Aeronautical Radio, Incorporated (Data Interface Format Standard)
ATC	Air Traffic Control
ATIS	Automatic Terminal Information System (see D-ATIS)
ATM	Air Traffic Management
ATN	Aeronautical Telecommunications Network
ATS	Air Traffic Services
AVLC	Aviation VHF Link Control
BCS	Block Check Sequence
CDA	Current Data Authority
CDB	Customer Database
CDU	Control Display Unit
Circuit Mode Data	A full duplex bi-directional communication link in which data is transmitted and received simultaneously. A hand shake must be established prior to data being exchanged. Supported by a UniLink RS-232 port configured for TEL.
CLX	Clearance
CM	Configuration Module
CMU	Communication Management Unit
CNS	Communication Navigation Surveillance
COMM	Communication (also referred to as COM)
CPDLC	Controller-Pilot Datalink Communications

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Acronym/Abbreviation/Term	Description
CRC	Cyclic Redundancy Check
CSDB	Commercial Standard Data Bus (Data Interface Format Standard)
CTS	Clear to Send
CVFDR	Cockpit Voice and Flight Data Recorder (UASC)
CVR	Cockpit Voice Recorder
D-ATIS	Digital Automatic Terminal Information System (also referred to as ATIS)
DEPT CLX	Departure Clearance
DLSP	Datalink Service Provider (also referred to as DSP)
DM	Downlink Message
DP	Display Processor
DPSK	Differential Phase Shift Keying
DTU	Data Transfer Unit (UASC)
DTU-100	Data Transfer Unit-100 (UASC)
DSP	Datalink Service Provider (also referred to as DLSP)
EFB	Electronic Flight Bag
EFI	Electronic Flight Instrument
EFI-890R	Electronic Flight Instrument-890R (UASC)
EMI	Electromagnetic Interference
ETA	Estimated Time of Arrival
ETD	Estimated Time of Departure
EXP	Expected
EUROCAE	European Organisation For Civil Aviation Equipment
FAA	Federal Aviation Administration
FANS	Future Air Navigation Systems
FL	Flight Level
FLT NO	Flight Number
FMC	Flight Management Computer (UASC)
FMS	Flight Management System (UASC)
FPL	Flight Plan
FREQ	Frequency
FSK	Frequency Shift Keying
GND SPD	Ground Speed
GNSS	Global Navigation Satellite System
GPS	Global Positioning System



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Acronym/Abbreviation/Term	Description
HS	High Speed
ICAO	International Civil Aviation Organization
ID	Identification, Identifier
IFR	Instrument Flight Rules
IOP	Input/Output Processor
I/O	Input/Output
LAN	Local Area Network
LOS	Line of Sight
LRU	Line-Replaceable Unit
LS	Low Speed
LSK	Line Select Key
MARSA	Military Assumes Responsibility for Separation of Aircraft
MCDU	Multifunctional Control Display Unit (UASC)
MCDU	Multi-Purpose Control Display Unit (ARINC)
MCU	Modular Concept Unit
MDM	Modem
MFD	Multifunction Display
MIC	Microphone
MSG	Message
MSK	Minimum Shift Keying
MVFR	Marginal Visual Flight Rules
ND	Navigation Display
NDA	Next Data Authority
NOCOMM	No Communication
NO CVG	No Coverage
NVM	Non-volatile Memory
ONBD	Onboard
OOOI	Out, Off, On, In (used to detect and report changes to the major flight phases of the aircraft)

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Acronym/Abbreviation/Term	Description
Packet Mode Data	A half duplex bi-directional communication link in which data is accumulated in packets of various lengths and sent out in a burst or bursts so therefore does not support voice communications. Packet switching is the process of routing and transferring data by means of addressed packets so that a channel is occupied during the transmission of the packet only. Upon completion of the data transfer, the channel is made available for the transfer of other traffic. Supported by a UniLink ARINC port configured to provide VHF and SAT capability.
PDC	Pre-departure Clearance
PFD	Primary Flight Display
PIREP	Pilot Weather Report
POA	Plain Old ACARS
POS	Position
PTT	Push-to-Talk
RCDU	Remote Control Display Unit
RCVD	Received
RF	Radio Frequency
RPTS	Reports
RTS	Request to Send
RQD	Required
RTE	Route
RX	Receive
SAT	Abbreviation for Satellite Communications Link. The SAT link provides communication via Iridium Short Burst Data (SBD) and packet mode data Inmarsat equipment that utilizes a specific satellite constellation.
SatCom	Satellite Communications
SCN	Software Control Number
SDU	Satellite Data Unit
SELCAL	Selective Calling
SIGMET	Significant Meteorological Information
SITA	Society of International Aeronautical Telecommunications (Societe Internationale de Telecommunications Aeronautiques)
SQP	Signal Quality Parameter
SSDTU	Solid State Data Transfer Unit (UASC)

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Acronym/Abbreviation/Term	Description
TEL	Abbreviation for telephony. The telephony communication link provides a circuit mode data connection via a dial-up modem. A hand shake must be established prior to data being exchanged. Only an RS-232 capable SatCom can be used.
TWIP	Terminal Weather Information for Pilots
TX	Transmit
UASC	Universal Avionics Systems Corporation
UL	UniLink (UASC)
UM	Uplink Message
Unverified Message	An Unverified message is one that does not contain safeguards to prevent data corruption during transmission. Such messages are labeled AOC on the page in which they are displayed. See Verified Message.
USB	Universal Serial Bus
UTC	Universal Time Coordinated
VDL	VHF Digital Link
VDR	VHF Data Radio
Verified Message	A Verified message is one that has been safeguarded against potential data corruption during transmission and is determined to be error-free using CRC code comparisons and validity indicators. See Unverified Message.
VHF	Very High Frequency terrestrial-based packet mode. This is a data communications link used for obtaining textual weather, D-ATIS, and the transmission of position reporting, OOOI, and safety services communications (UniLink Flight Information Services). Does not support weather graphics.
VOX	Voice
VSWR	Voltage Standing Wave Ratio
WOW	Weight On Wheels
WPT	Waypoint
WX	Weather
XMT	Transmit
XOFF	Transmission Off
XON	Transmission On

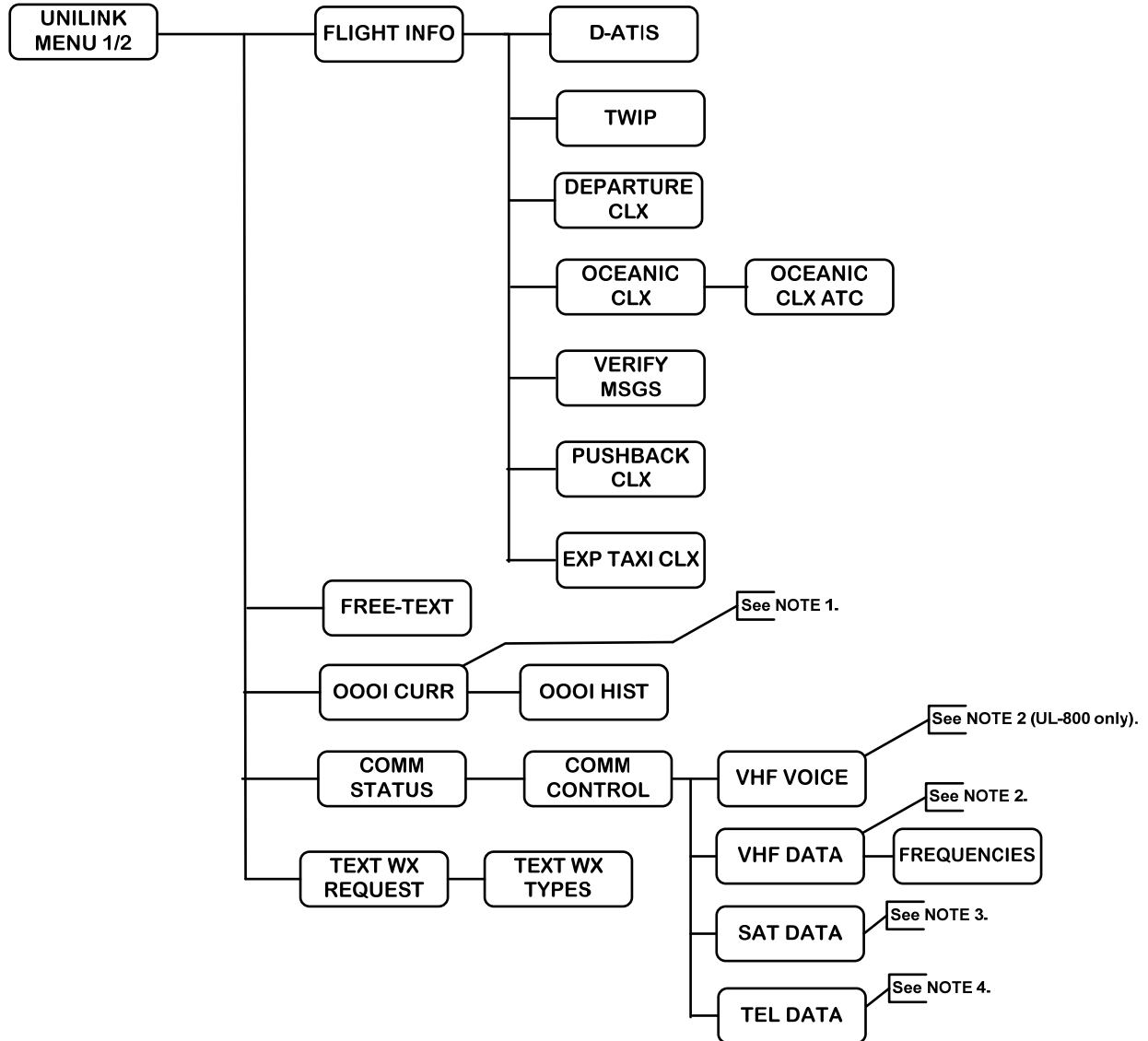


## Appendix 2

This appendix contains UniLink Menus and subordinate menus. Pages illustrated with dashed boxes are optional and are only available when the functionality reflected on the pages is enabled via UniLink-configured options.

### 1. UniLink Menus and Submenus – without FANS

#### A. UniLink Menu 1/2

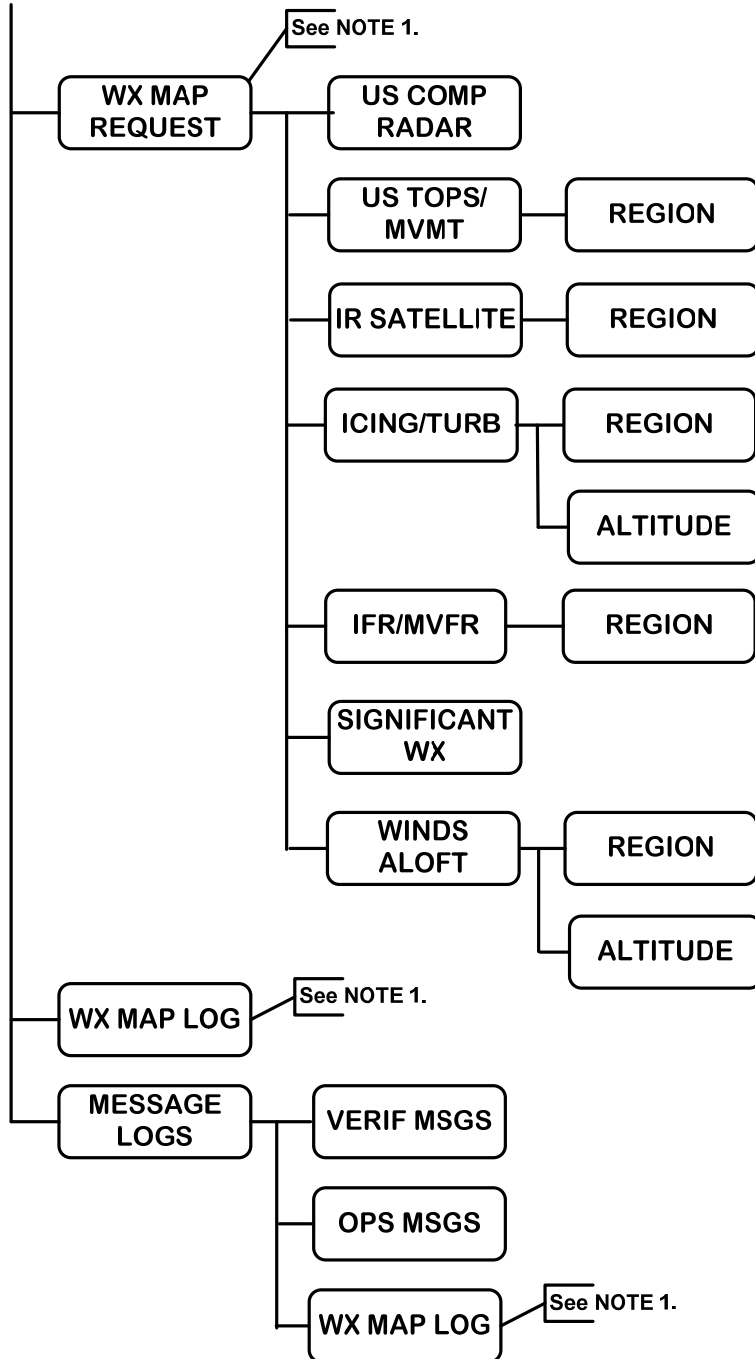


#### NOTES:

1. Only available if OOOI is enabled in configuration.
2. Only available if VHF is enabled in configuration.
3. Only available if DATA is enabled in configuration.
4. Only available if TEL is enabled in configuration.

## UniLink Menu 1/2 – Continued

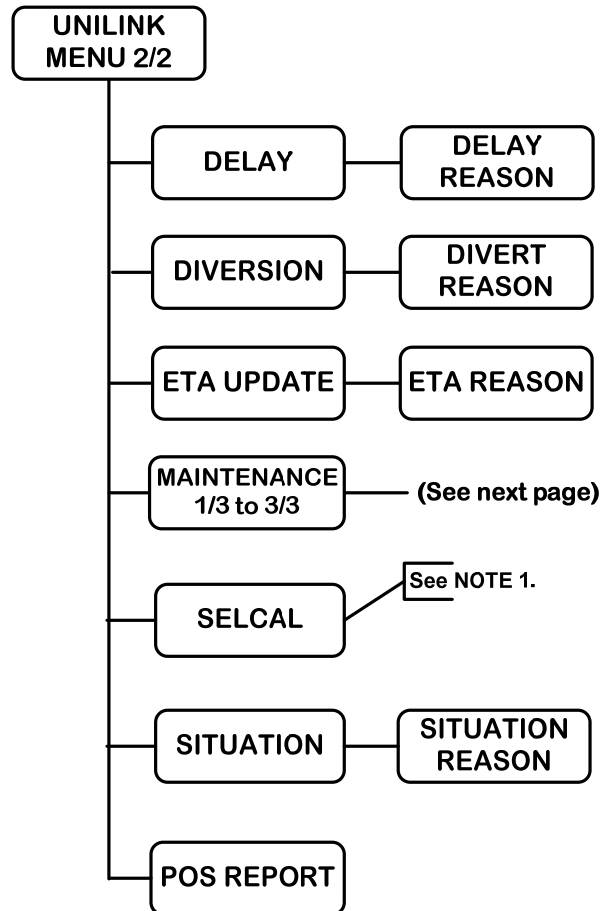
UNILINK  
MENU 1/2  
Continued



### NOTES:

1. Only available if TEL is enabled in configuration.

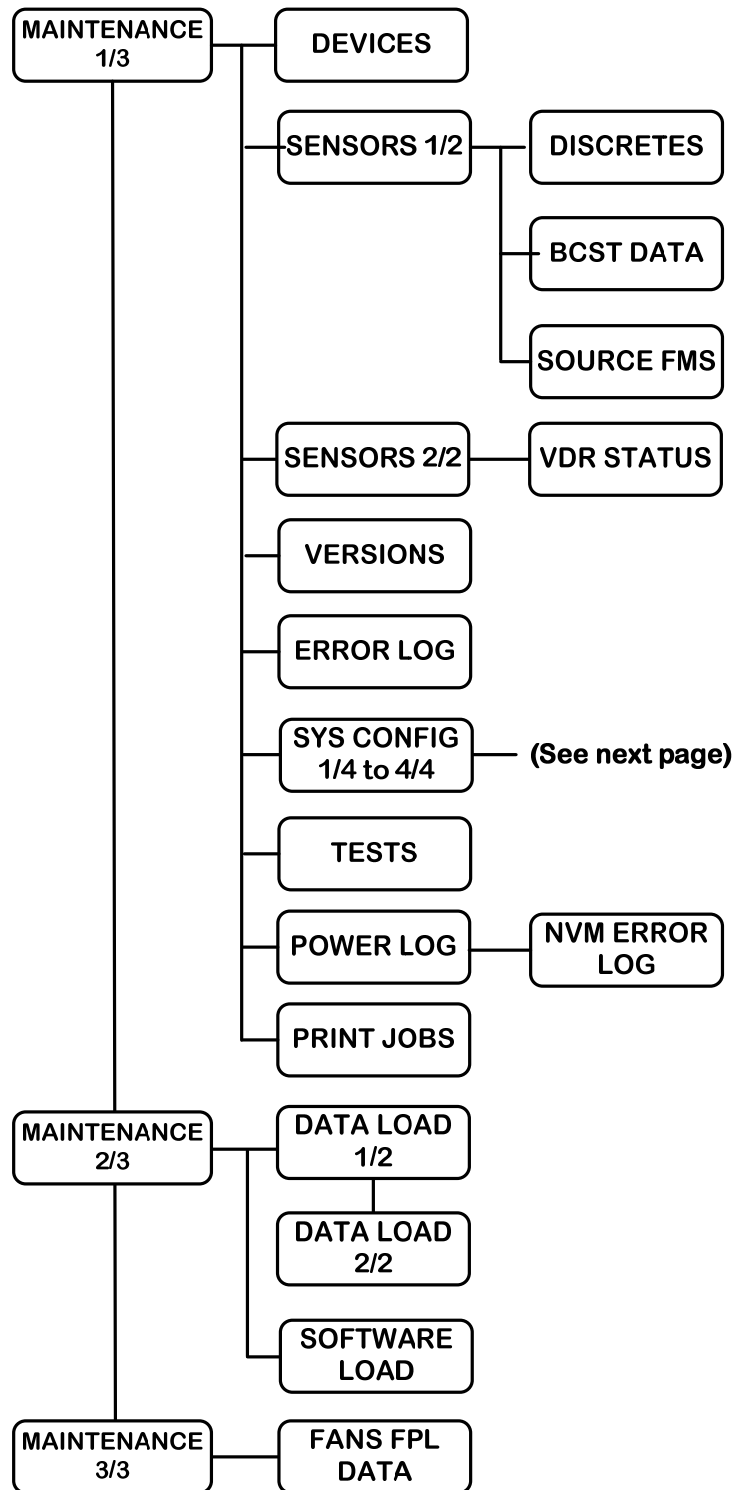
**B. UniLink Menu 2/2**



**NOTES:**

1. Check with DSP for availability of this feature.

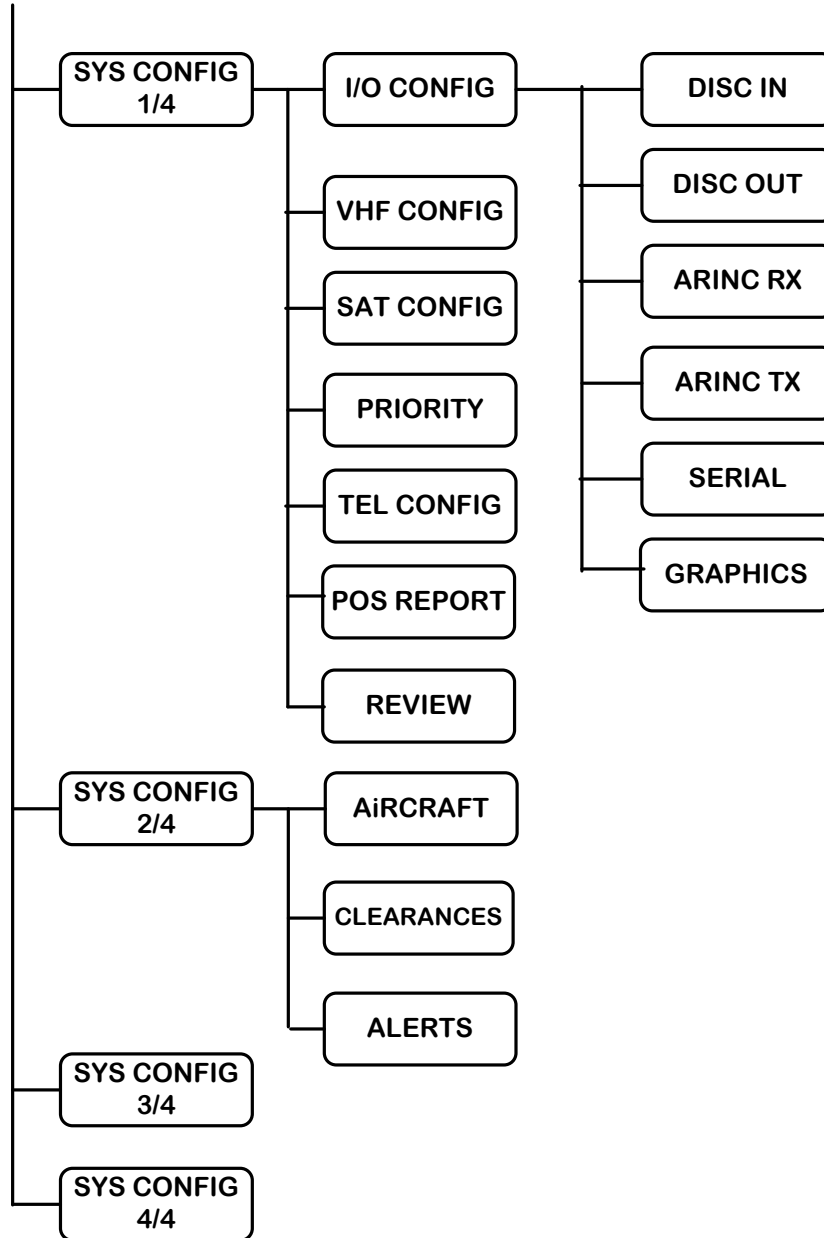
## C. Maintenance Menu





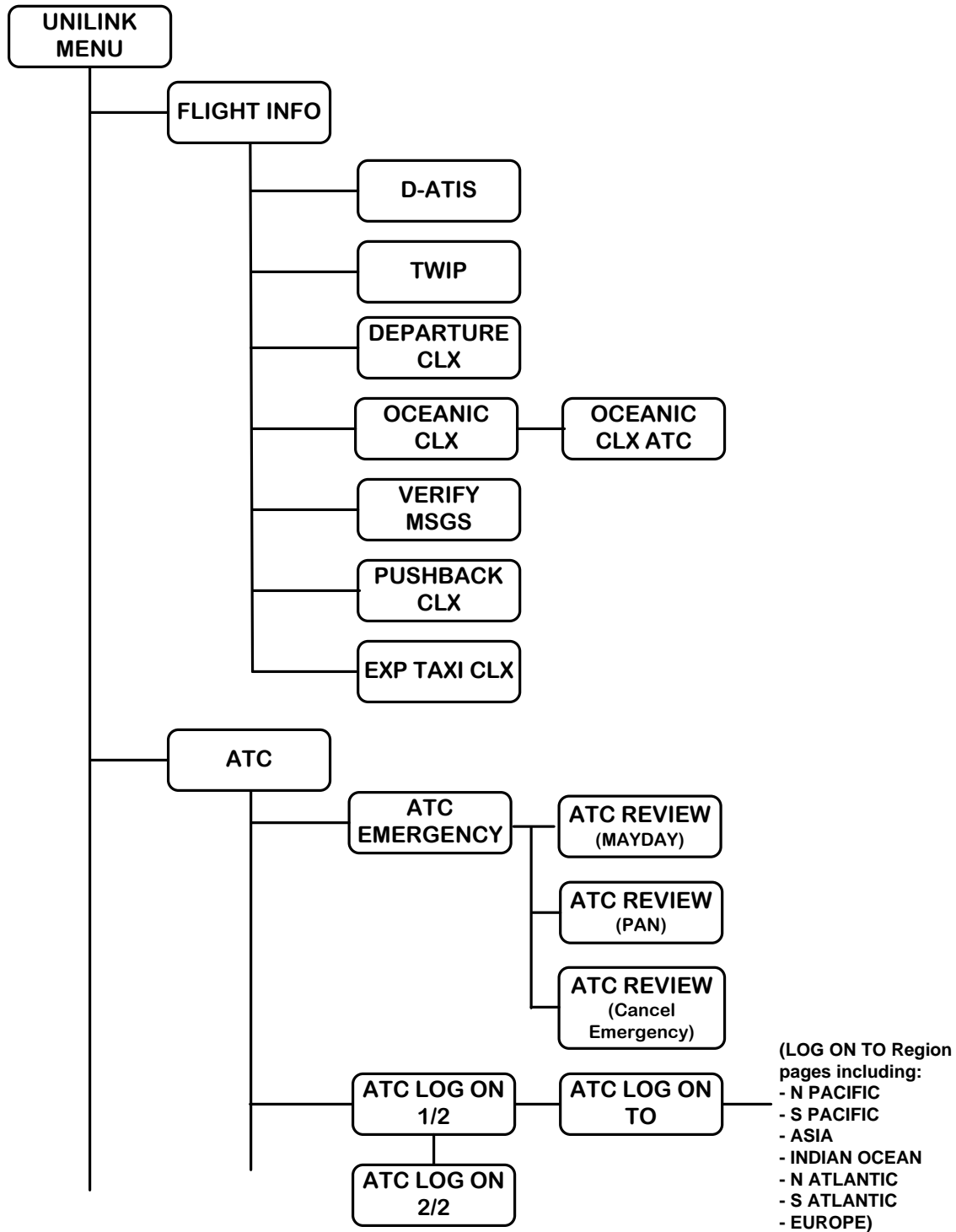
## D. Configuration Menu

MAINTENANCE 1/3  
(continued from  
previous page)



## 2. UniLink Menus and Submenus – with FANS

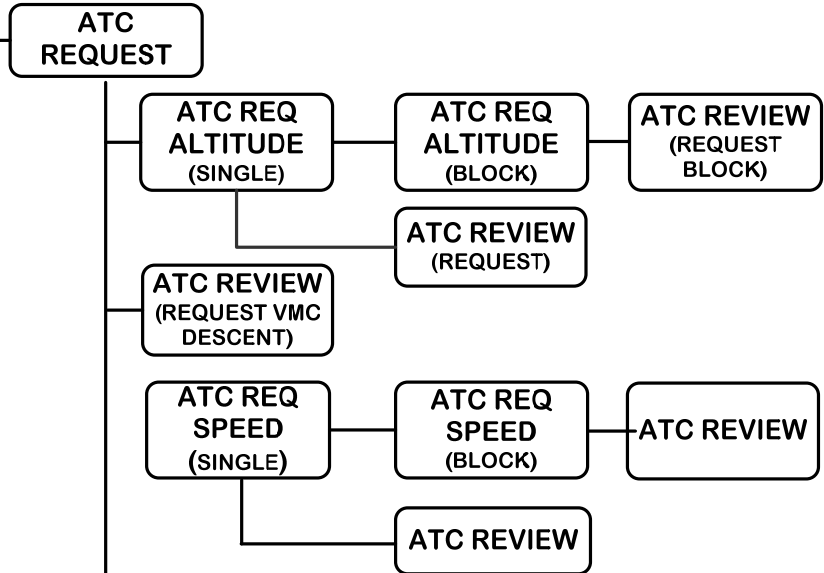
### A. UniLink Menu 1/2



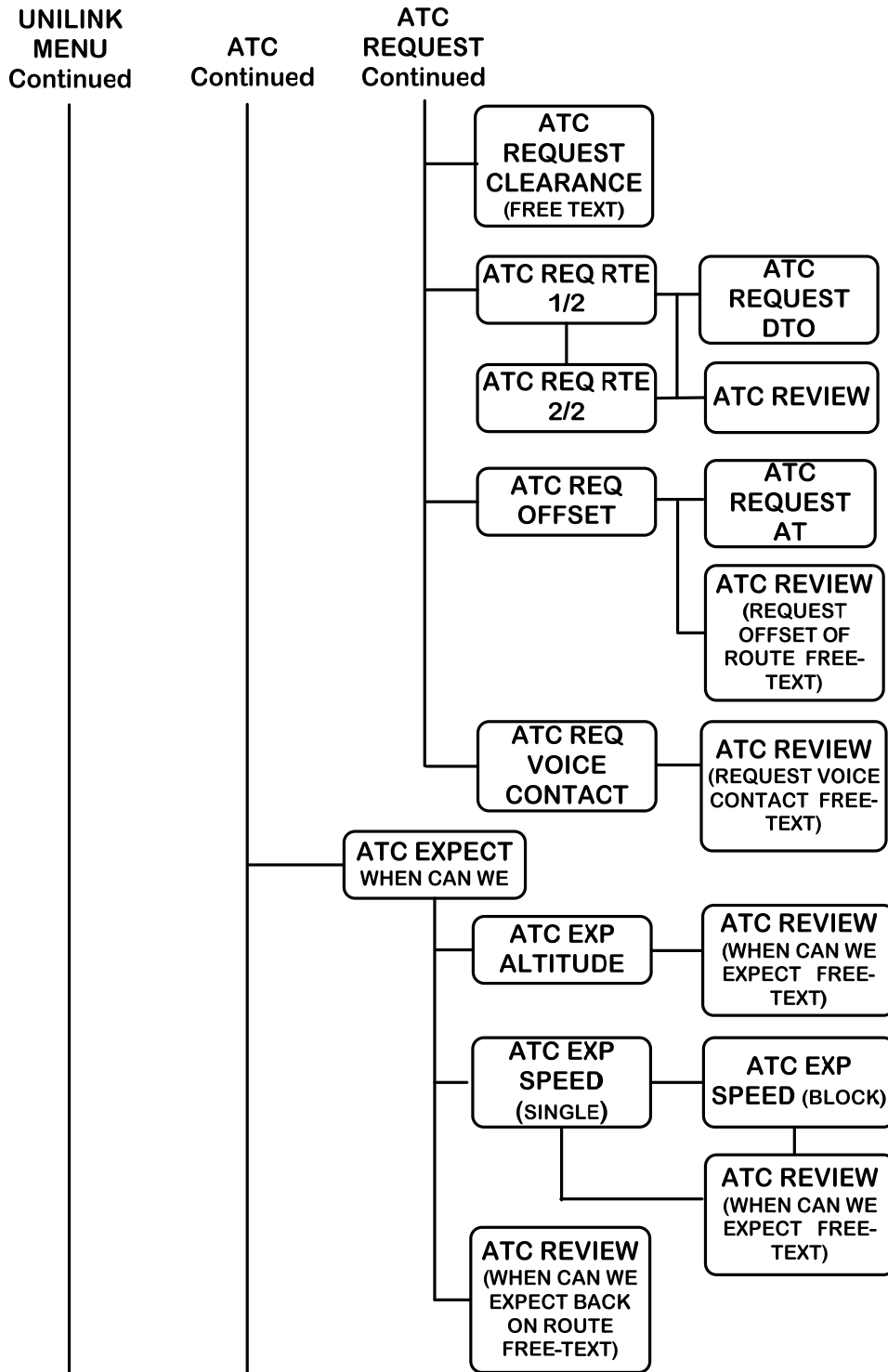
## UniLink Menu 1/2 – Continued

UNILINK  
MENU  
Continued

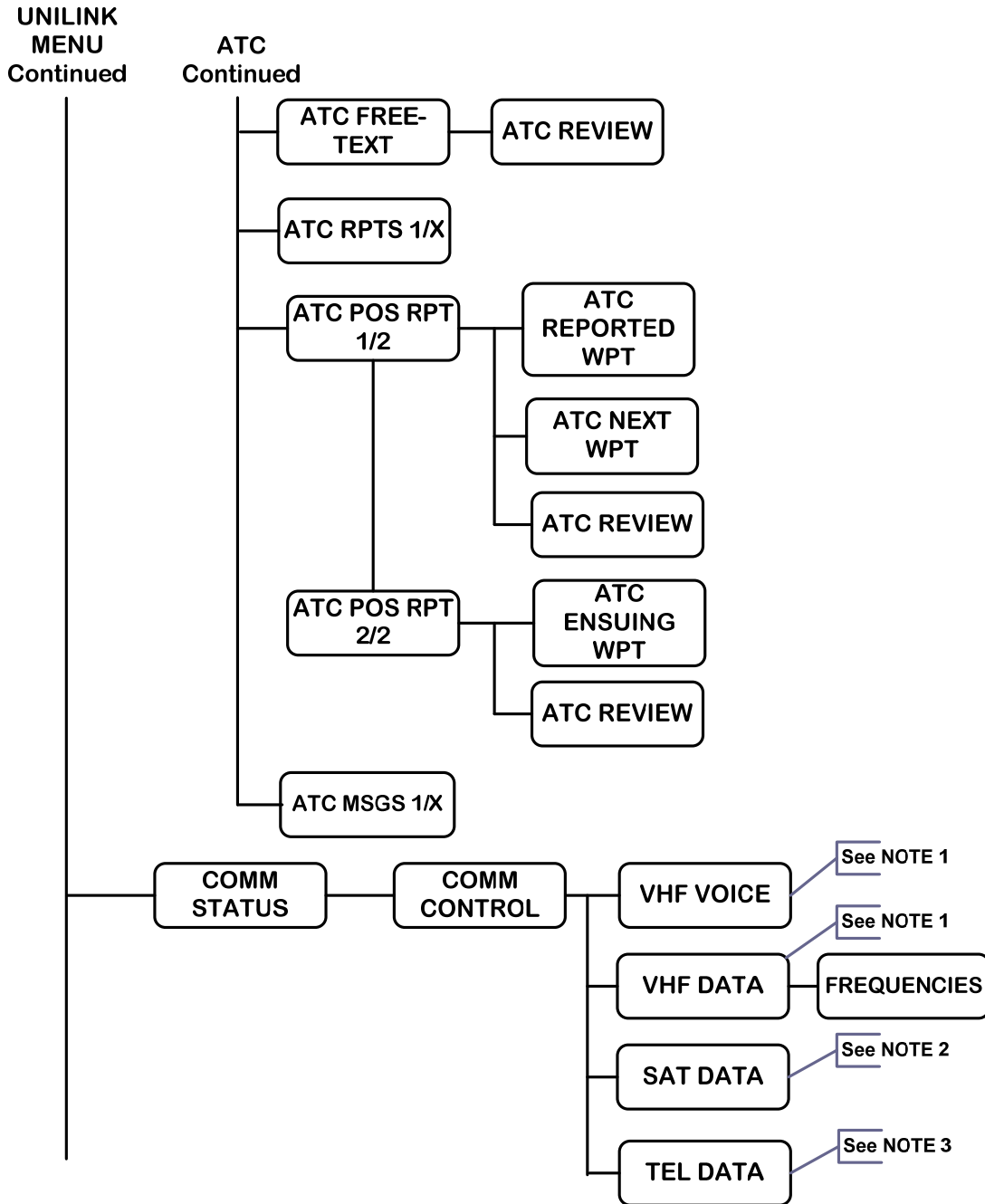
ATC  
Continued



## UniLink Menu 1/2 – Continued



## UniLink Menu 1/2 – Continued

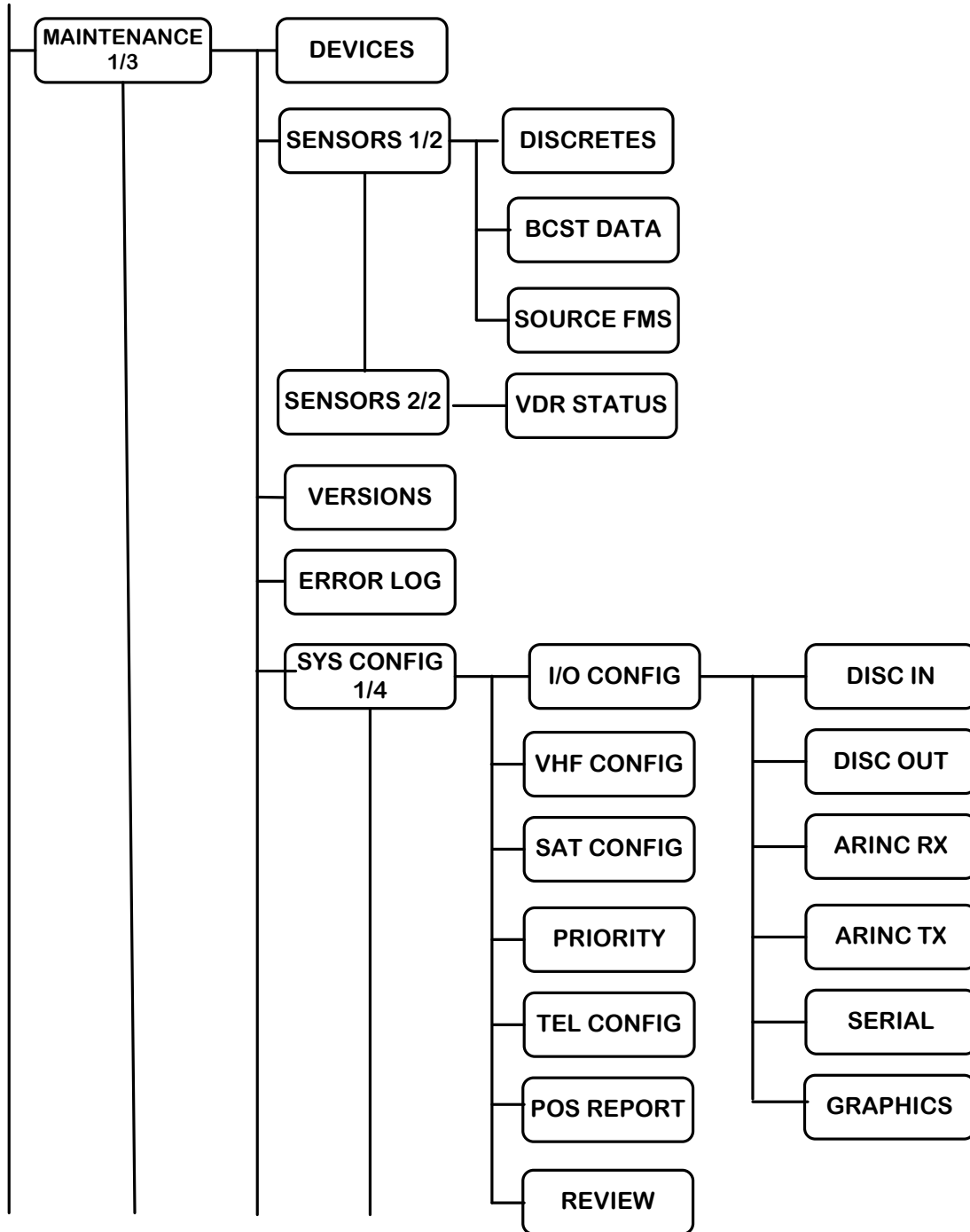


### NOTES:

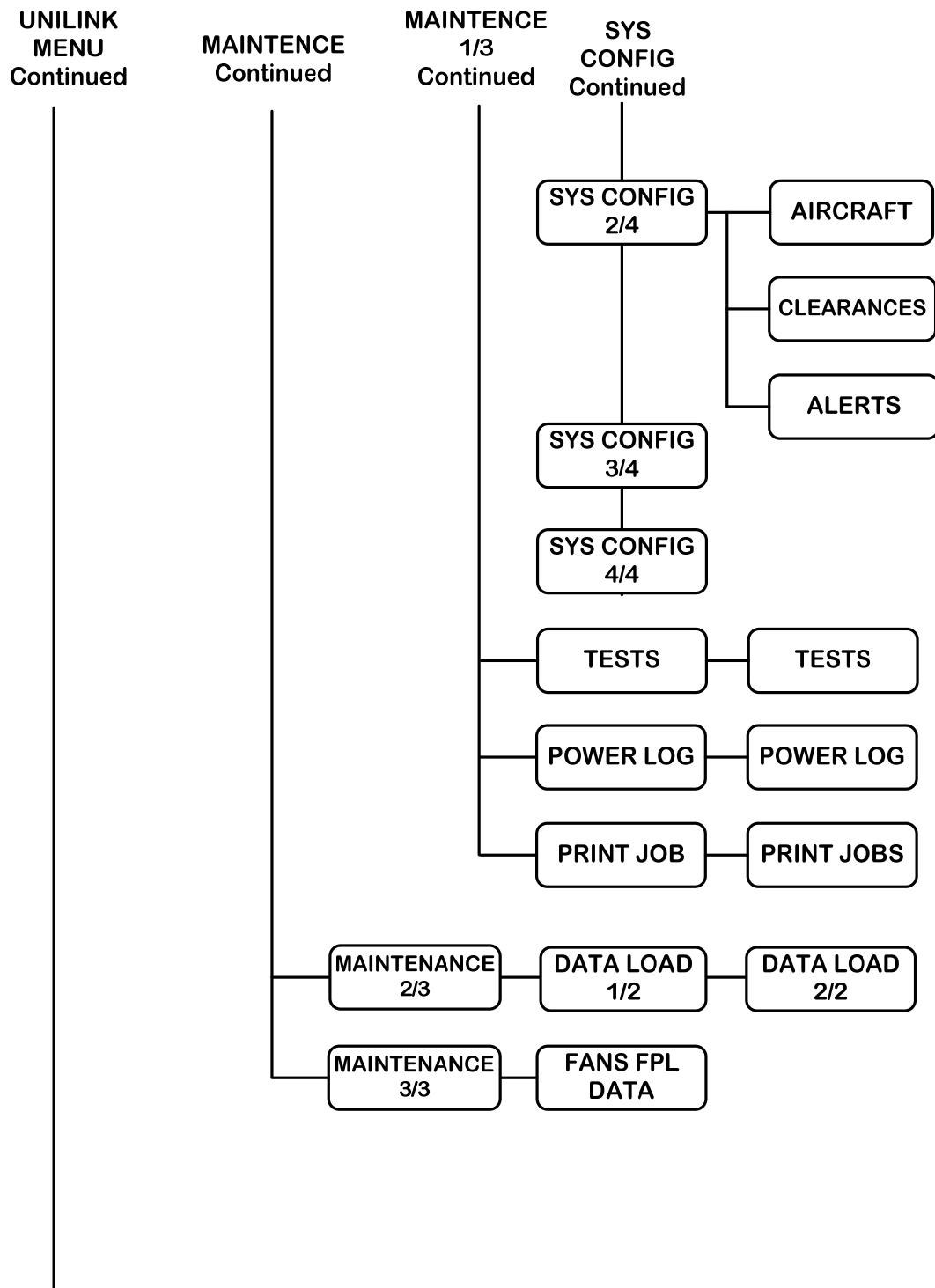
1. Only available if VHF is enabled in configuration (UL-800 only).
2. Only available if SAT is enabled in configuration.
3. Only available if TEL is enabled in configuration.

## B. Maintenance Menu

UNILINK  
MENU  
Continued

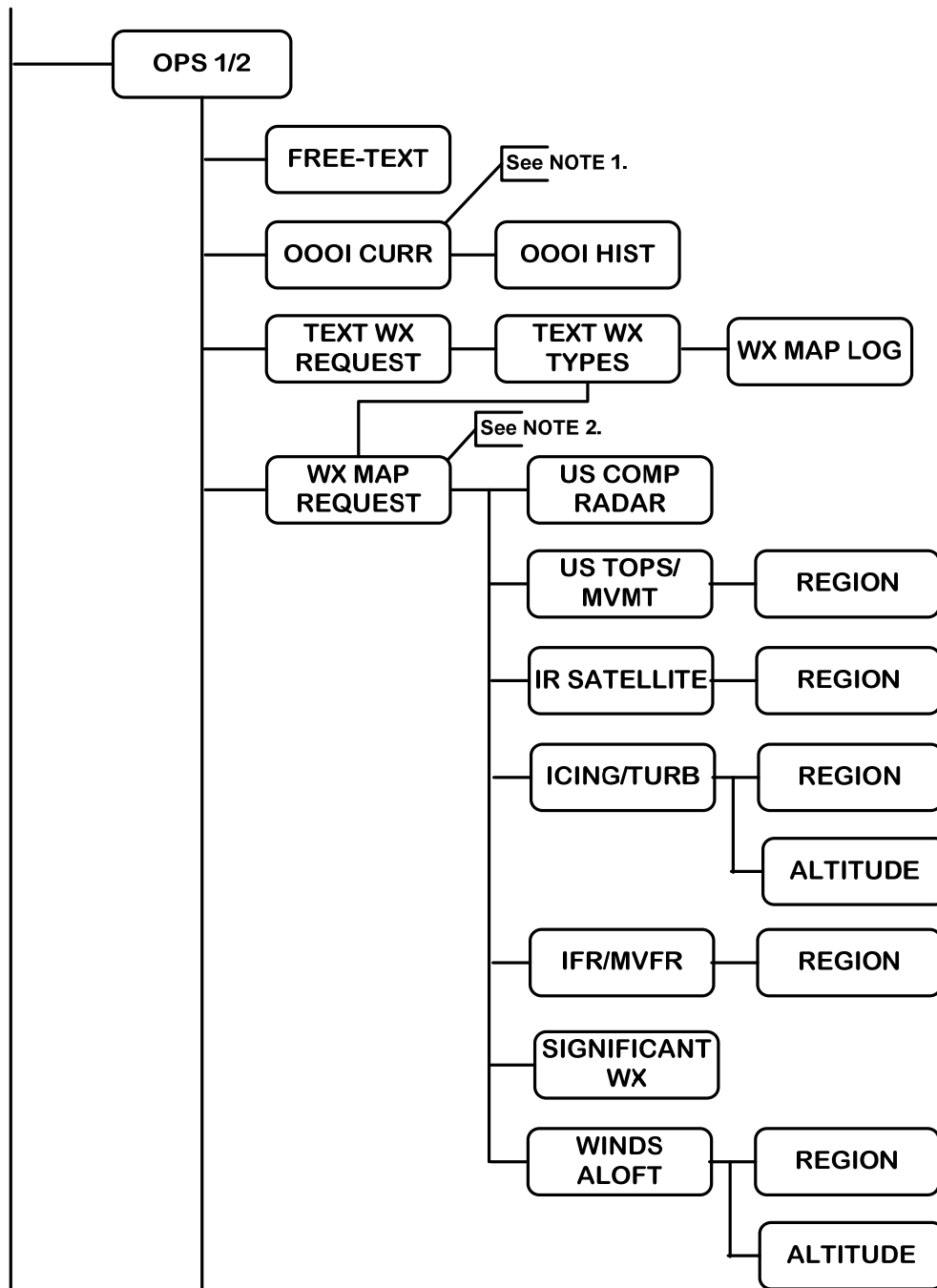


**B. Maintenance Menu – Continued**  
**Includes Configuration Menu choices**



## C. OPS Menu

UNILINK  
MENU  
Continued

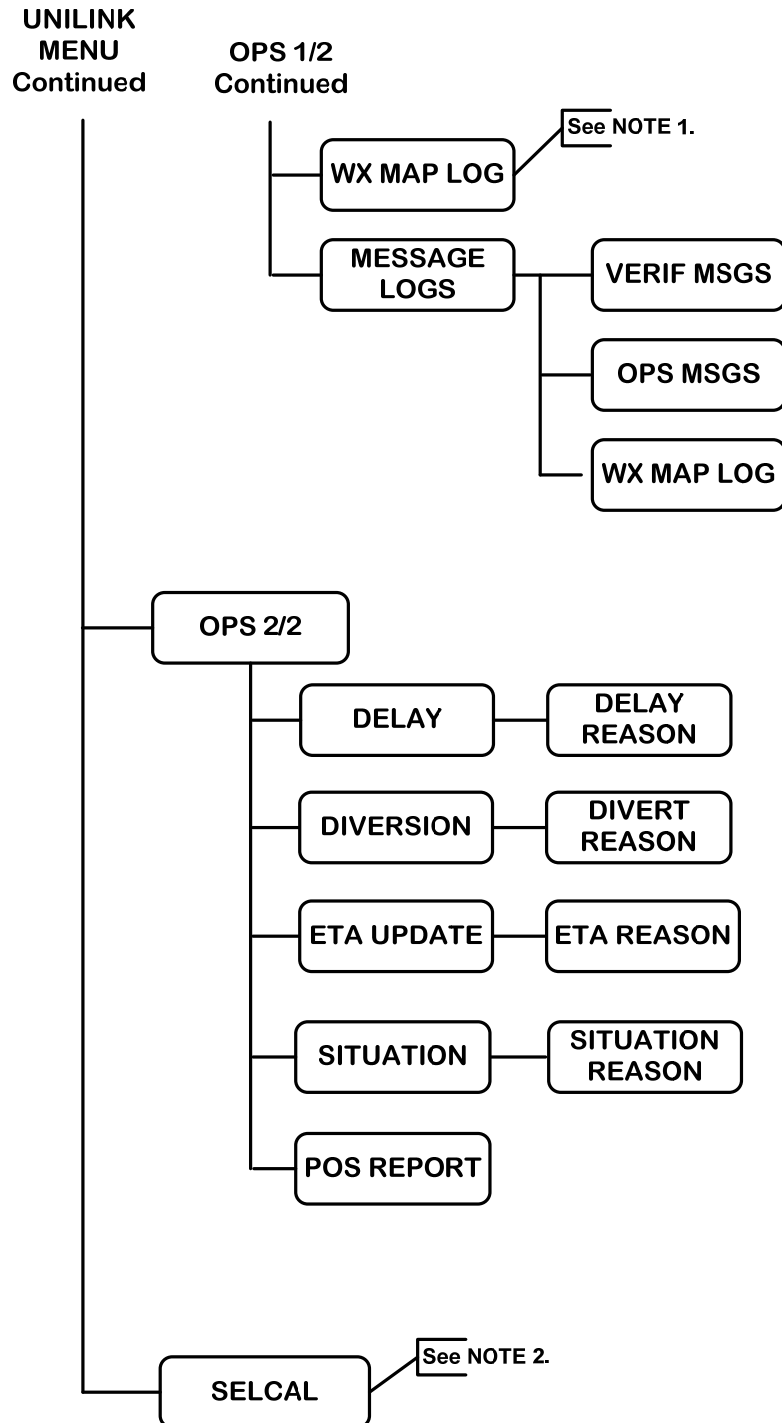


### NOTES:

1. Only available if OOOI is enabled in configuration.
2. Only available if TEL is enabled in configuration.



## OPS Menu – Continued



### NOTES:

1. Only available if TEL is enabled in configuration.
2. The SELCAL option only displays when associated messages are available. Check with DSP for availability of this feature.



## Appendix 3

This appendix contains a list of Datalink Service Providers (DSP) that may be used with the UniLink.

### 1. Datalink Service Providers

Providers	Contact Information
ARINC Direct	<a href="https://direct.ARINC.net">https://direct.ARINC.net</a>
Honeywell OneLink Aero-I and Aero-M Communication Services	941-360-0680 (24 hr.) 602-822-7502 (Fax) <a href="mailto:Aviation.Services@Honeywell.com">Aviation.Services@Honeywell.com</a>
Sat Com Direct	888-448-9003 321-777-3000 321-777-3702 (Fax)
SATCOM1	+ 45 4615 4546 <a href="http://satcom1.com/">http://satcom1.com/</a>
Sita	<a href="http://www.sita.aero/">http://www.sita.aero/</a>
Universal Weather and Aviation	801-231-5600 713-944-1622 713-943-4610 (Fax)