Full ACARS/CMU Functionality
ACARS VDL Mode 2 Capability

UniLink™

Communications Management Unit UL-800/801

FANS CPDLC and ADS-C
European ATN B1 CPDLC (DLS IR)
CPDLC Departure Clearance (DCL)

UNIVERSAL™ AVIONICS
an Elbit Systems Company

Increasingly congested skies demand a data link system with optimum management of two-way air-to-ground communications. The Universal Avionics UniLink UL-800 and UL-801 Communications Management Unit (CMU) provides superior operations and control of digital communications between the pilot and Air Traffic Controller (ATC) in the exceedingly complex Communication, Navigation, Surveillance (CNS) Air Traffic Management (ATM) environment.

Combined with the Universal Avionics Satellite-Based Augmentation System (SBAS)–Flight Management Systems (FMS), the UniLink UL-800/801 CMU provides an opportunity to take full advantage of the safety and efficiency benefits that advanced data link capabilities offer.

UniLink UL-800/801 CMU

A Platform for the Future CNS/ATM Environment

Equipping your aircraft with the UniLink UL-800/801 CMU provides compatibility with current and future capabilities of worldwide data link communications:

- Future Air Navigation System (FANS) 1/A+
- Aeronautical Telecommunications Network, Level B1 (ATN B1)
- Data Communications (Data Comm) Controller-Pilot Data Link Communications Departure Clearances (CPDLC DCL)

North Atlantic Tracks

The UniLink UL-800/801 CMU is fully compliant with the FANS 1/A+ mandate affecting operators in the North Atlantic Track System (NATs) and some Pacific Ocean routes. With FANS 1/A+ capabilities, operators gain preferred routing and options for altitudes with more favorable winds when in the NATs. Preferred routing provides lower fuel burn and shorter station-to-station times, helping operators gain efficiencies that save fuel, time, and money.

European Airspace

Compatibility with the ATN internetwork architecture that is the future of data link communications is provided with the UniLink UL-800/801 CMU. This network allows ground / ground, air / ground, and avionic data sub-networks to interoperate by adopting common interface services and protocols based on the International Organization for Standardization (ISO) Open Systems Interconnection (OSI) Reference Model.

UniLink also provides the ATN B1 CPDLC functionality, outlined in the SESAR Data Link Services Implementing Rule (DLS IR), which will be mandated in Europe. The DLS IR, formerly known as the Link 2000+ Programme, requires all existing aircraft operating above FL285 in European airspace to be retrofitted for ATN B1 CPDLC by February 2020 for both retrofit and forward fit installations, unless exempt from the requirement.

U.S. National Airspace System

The FAA's Data Comm is a term applicable to a growing set of data communication elements and systems including CPDLC. The FANS capability embedded in the UniLink UL-800/801 CMU consists of both CPDLC and ADS-C functionality and provides a means for direct communication between the pilot and ATC through CPDLC technology. Data Comm is in place and enabled today, continuing to expand across the U.S. as the FAA works toward its NextGen initiatives.

Data Comm also includes CPDLC DCL, which affords pilots the benefit of requesting digital departure clearances through the UniLink UL-800/801 CMU vs traditional voice communications. CPDLC DCL is much more efficient than the older voice DCL acceptance or revision requests. Domestic operators who frequent busy U.S. airports that offer CPDLC DCL service will desire this capability, regardless of the need for oceanic FANS.

Pilots can take advantage of CPDLC DCL technology to put them in the front of the line, eliminating the need to wait for radio breaks to submit their request. Simply perform a digitally "texted" message over the VHF spectrum through a LOS VHF radio interfaced with the UniLink. The UniLink UL-801 model has an integral VHF Comm radio to provide the communication link.

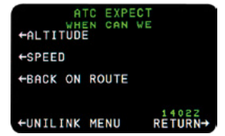
Features

- Provides reliable digital communication between the aircraft and the ground (ground to air and air to ground text messaging)
- Meets the FANS 1/A+ and European ATN B1 mandates
- ACARS functions including Out–Off–On–In (OOOI) and, Airline Operational Control (AOC)
- Auto aircraft position reporting and aircraft tracking
- Updated weather information including text
- AOC messaging, FANS, and ATN B1 message handling and uplink / downlink messages from peripheral systems
- FMS Flight Plan uplink from service provider
- Uplink forecast winds

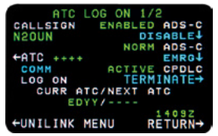
Flight Information Services

Flight Information Services are available through the VHF radio or a capable approved Inmarsat Packet Mode Data or Iridium Short Burst Data (SBD) SATCOM system.

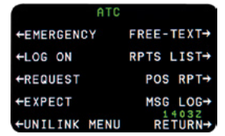
- Pre-departure clearance
- Oceanic clearance
- D-ATIS
- TWIP
- Pushback clearance
- Expected taxi clearance
- CPDLC DCL



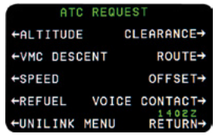
ATC Expect



ATC Log On

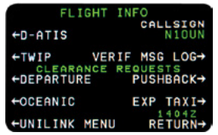


ATC

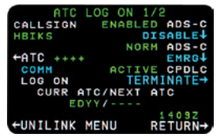


ATC Request

Out–Off–On–In Times



Flight Information Services



Access Message Log

Data Link

UniLink's independent menu-format software integrates seamlessly with the FMSs and provides easy access for sending and receiving data. UniLink affords data link opportunities for:

- Air to ground text messaging via service provider, accessed via internet, fax or email
- Ground to air text messaging via service provider, accessed via internet
- Automatic position reporting (aircraft tracking via service provider)
- ETA updates
- Text weather information including TAF,METAR, SIGMETS, and winds aloft

Routing

The UniLink UL-800/801 supports Air Traffic Services (ATS) Facilities Notification (AFN), allowing the aircraft and the ATS provider to exchange addresses as well as information about the FANS application supported. Communications may be routed using compatible Inmarsat or Iridium satellite systems and via the ACARS high-speed VHF Data Link (VDL) Mode 2 network when within range of these facilities. For increased installation flexibility, the UniLink UL-801 model features an internal VHF Data Radio (VDR) that saves weight and space. The UL-800 supports interface to an external VDL Mode 2 compliant VDR.

Airline Operations

The UniLink can downlink aircraft-acquired data for maintenance and operational analysis including engine data from a Central Maintenance Computer. Meteorological data collection and reporting is supported, as well. UniLink's database-driven user interface and message set is easily customized to match airline operational requirements and is uploaded into UniLink without affecting product software or certification status.

Interfaces

The UniLink UL-800/801 supports Universal Avionics FMS installations, Multi-Function Control Display Unit (MCDU), and ARINC 702A communication protocol. Support for ARINC 739 interface for use with other capable MCDU display units is standard on UniLink.

In installations where FANS approval is sought, a Cockpit Voice Recorder (CVR) capable of recording data link messages is required as part of the system installation. The UniLink UL-800/801 supports transmission of AOC, CPDLC, and FANS data link recording, interfacing with the Universal Avionics CVR or Cockpit Voice and Flight Data Recorder (CVFDR), or other capable systems, via an ARINC 429 data bus.

Field-Loadable Databases

The customer database driven user-interface and message set can be customized to match airline or business operational requirements. UniLink uses three databases: customer (which includes the Aeronautical Operational Control (AOC) database), geographic and ATC. Databases are installed by Universal Avionics and also in the field by customers using a Universal Avionics data loading DTU-100 or Solid-State Data Transfer Unit (SSDTU). UniLink enables application software to be loaded in the field without removal of the equipment from the aircraft installation.

Specifications

Functional

Compliant with ARINC standards 618, 619, 620, 622, 623, 724B and 758
External Interfaces
ARINC 750 VHF Radio (UL-800 only)
ARINC 741 SatCom (supports FANS 1/A+ remote oceanic)
Iridium / Inmarsat SatCom Telephony
ARINC 604 Central Maintenance Computer
ARINC 740 / 744 / 744A Printer
Serial Printer
Universal Avionics Ethernet dataloader SSDTU or DTU-100

Hardware

Size: 1 MCU
Height: 7.64 in.
Width: 0.99 in.
Depth: 15.23 in.
Weight: UL-800: 3.10 lbs.
UL-801: 4.54 lbs.
Internal VDR Radio (UL-801 only): 20 watt; 118-137 MHz, 25 kHz spacing
Antenna: 50 ohm passive VHF, 118-137 MHz
Configuration Module
Built-in Test Equipment (BITE)

Inputs/Outputs

ARINC 429: 16-input / 8-output
RS-422/232: 6-input / 6-output
RS-232 Diagnostics Port: 1-input / 1-output
Ethernet: 3 10 / 100 Base-T
Discretes: 10-input / 14-output

Power

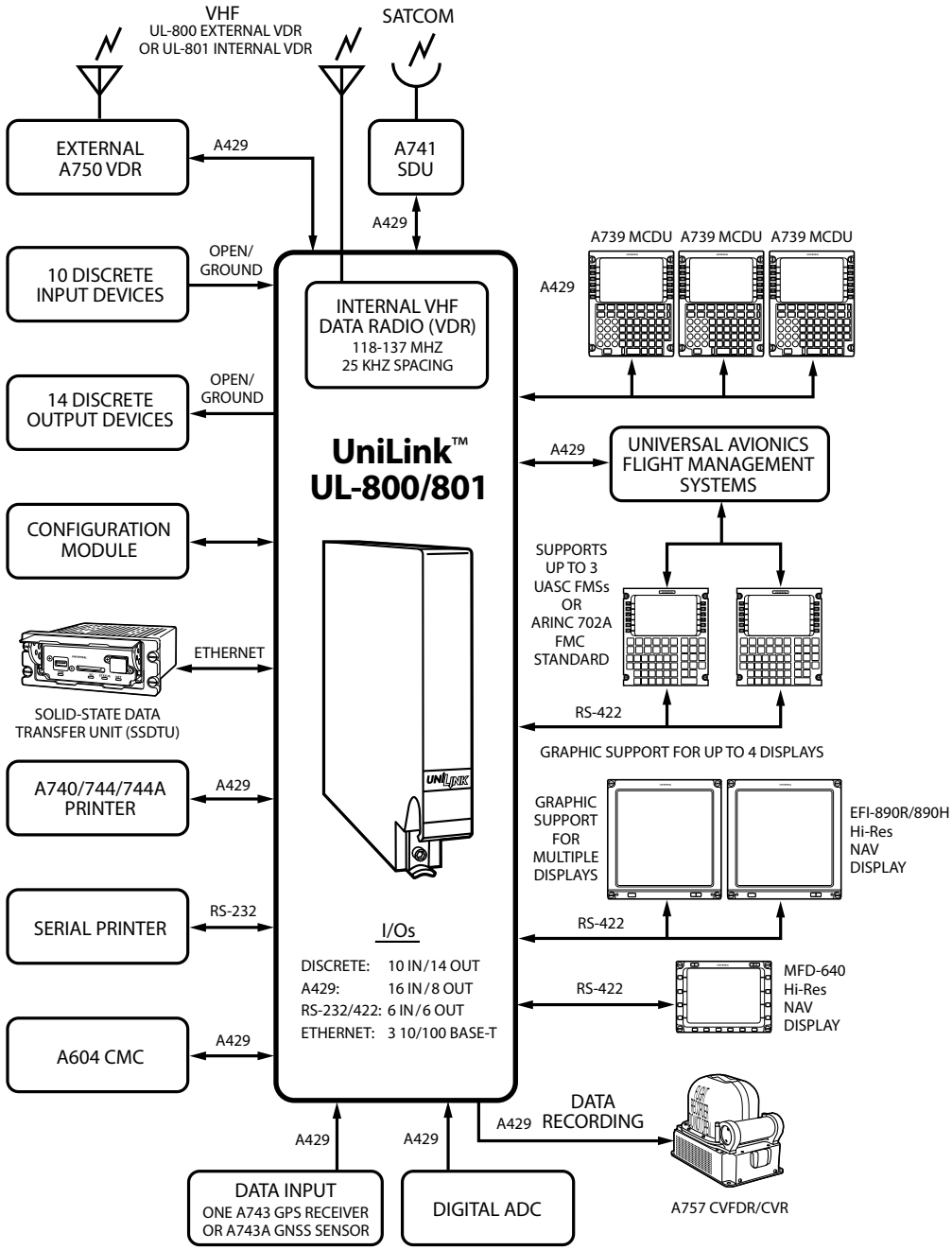
28 VDC nominal
UL-800: 15 watts typical
UL-801: 96 watts typical

FAA TSO/ETSO

C160 VDL Mode 2 Communications Equipment

RTCA Documents

Hardware: DO-160F Environmental Categories
Software: DO-178B Level C



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