

STRAIGHT TALK ABOUT DATALINK (ACARS, FANS 1/A+ & ATN)

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EDITOR'S NOTE

As the aviation community continues to implement airspace modernization initiatives, owner/operators want to know about value: If I upgrade my aircraft, what will I get for the often-substantial investment?

The ultimate return on your investment is your ability to continue flying your aircraft, as you're in compliance with the mandates. Replacing obsolete ATC (Air Traffic Control) communication systems will also make your aircraft safer.

This book deals with Datalink functions highlighting FANS 1/A+ (Future Air Navigation Systems), which is one of the Airspace modernization initiatives.

No single communication system fits every aircraft. Let's clarify the types of systems available and note how each system is used, so you can make an informed decision regarding the FAA (Federal Aviation Administration) and EASA (European Aviation Safety Agency) mandates.

In keeping with the principle that the best-equipped equals the best-served, the best oceanic routes, the NAT (North Atlantic) tracks, are mandated for FANS-compliant aircraft only. As of January 30, 2020, ICAO (International Civil Aviation Organization) mandated that all aircraft operating between FL290 and FL410 must be FANS-compliant. FANS-equipped aircraft feature components that enhance communication between flight crews and ATC and provide more accurate position reporting, which makes it possible to fly aircraft closer together. This tracking allows ATC to seamlessly track aircraft over land or oceanic routes and as they transition from one to the other.

Legacy avionics systems without FANS don't provide position reporting in oceanic airspace. Aircraft that lack a FANS system may spend more time flying the less efficient routes because ATC has to build an oversized pocket of airspace to accommodate them. Also, aircraft that are equipped with ATN (Aeronautical Telecommunications Network) may see operational advantages over non-compliant aircraft at airports that are equipped with DCL (datalink communications) capability.

At Duncan Aviation, we're on the cutting edge of avionics technology, and we've thoroughly researched digital Datalink systems such as FANS (Future Air Navigation System), ACARS (Aircraft Communications,

Addressing, and Reporting System) and ATN (Aeronautical Telecommunication Network). After talking to hundreds of customers, we feel we've developed the most valuable information we can provide.

In addition to this Datalink publication, our team of avionics experts has developed Straight Talk booklets for aircraft modernization, WAAS/LPV (Wide Area Augmentation System/Localizer Performance with Vertical Guidance), and ADS-B (Automatic Dependent Surveillance-Broadcast).

Visit www.DuncanAviation.aero/straighttalk for more information.

As always, we look to improve ourselves and our knowledge. Feel free to contact our avionics experts to answer any of your questions and talk about your challenges when the subject arises.

DEVELOPMENT OF FANS

In the early 1980s, ICAO was concerned about the aging infrastructure and inherent faults with traditional air traffic management methods. In an effort to increase aircraft safety and limit human error, ICAO formed a council to study new technologies and operational concepts for the future of air traffic management and FANS.

Traditional ATC systems use antiquated analog systems, such as VHF (Very High Frequency) and HF (High Frequency) radios, inertial navigation systems, transponders, and radar to provide positive or procedural control. FANS relies on digital CNS (Communications, Navigation & Surveillance), which features GPS position and improved surveillance. Enhancing CNS equipment allows authorities to safely reduce separation distances between aircraft, allowing aircraft to fly at their most favorable altitude and consume less fuel while maintaining safe distances among other aircraft.

Separation standards are set to maintain a safe separation between aircraft and reduce encounters with Wake Vortex Turbulence.

RVSM (Reduced Vertical Separation Minimums) reduced the vertical separation of aircraft. One of the goals of FANS 1/A+ is to reduce separation between aircraft from 100nm laterally and 10 minutes trailing to 30nm laterally and 5 minutes trailing.

Datalink Systems

- ACARS
- FANS-1/A (+)
- ATN-B1
- ATN-B2

WHAT IS ACARS?

ACARS or Aircraft Communications, Addressing, and Reporting System, is a digital information service designed to transmit digital data messages between aircraft and ground stations. It was designed by ARINC in the late 1970s to help reduce crew and ATC workloads. The aircraft portion of legacy ACARS was an AFIS DMU (Aerodrome Flight Information Service/Data Management Unit) or UNILINK, FMS (Flight Management System), and VHF/HF radio or Satcom system. Supported applications include:

- PDC (Pre-Departure Clearance)*
- OCL (Obstacle Clearance Limit)
- TWIP (Terminal Weather Information for Pilots)

**The difference between PDC and DCL is that PDC can be delivered to the aircraft by several means (printed on paper, via the internet, from the airline, or via ACARS), while DCL is a direct connection from ATC only delivered to the aircraft via the datalink on a FANS-1/A+ or ATN-capable aircraft. We'll discuss DCL later.*

WHAT IS FANS 1/A+?

Developed by the ICAO, Boeing, Airbus, Honeywell, and others, FANS is a protocol for safely managing the expected increases in the volume of air traffic in the coming years. FANS 1 was developed by Boeing and later adopted by Airbus (FANS A). FANS 1/A uses versions of both systems, which have been used for many years by the airlines. FANS 1/A has two parts: CPDLC (Controller Pilot Data Link Communications) and ADS-C (Automatic Dependent Surveillance-Contract). The + in FANS-1/A+ refers to the fact that the system has the latency timer function that will detect messages that may no longer apply.

CPDLC (Controller Pilot Data Link Communications)

CPDLC allows two-way, digital communication between a controller and a pilot when an aircraft is out of range of traditional analog VHF voice-radio communications. As with terrestrial-based messaging between cell phones, CPDLC communicates between ATC and the aircraft flight crews via text messages. The CPDLC application has three primary functions:

- Facilitates the exchange of messages between the pilot and the ATC who is currently in control of the aircraft
- Clarifies dialogue between ATC and the aircraft crew who speak different languages (negates difficulty understanding accents because all communication is text-based)
- Allows the crew to review ATC instructions

ADS-C (Automatic Dependent Surveillance-Contract)

ADS-C is both a standard and an application that automatically sends reports from an aircraft to an ATC unit and requires no action from the pilot. The report includes data, such as the aircraft identification and address, air vector, ground vector, projected profile, meteorological data, min/max ETA, and EPP (Extended Projected Profile) data. When operating in normal mode, the system generates three types of reports:

- Periodic—The ATC can set or alter the update rate as needed (a higher update rate is usually required in high-traffic areas)
- Event—A change in vertical rate, lateral deviation, or altitude automatically triggers a report
- Demand—ATC can request an update as needed, and this does not affect an existing contact preset rate

There is a fourth type of contract; unlike the previous three, it is initiated and cancelled by the pilot, not the controller. This Emergency Contract is automatically triggered by a MAYDAY message.

WHAT IS ATN-B1 (Aeronautical Telecommunications Network-Baseline-1)

ATN-B1 (PM CPDLC and Link 2000+) is the ICAO engineering designation for this technology standard. ATN-B1 is a datalink service that consists of the following:

- (CM) application—Context management
- CPDLC—Controller Pilot Data Link Communications for ATC communications

Although ATN-B1 is similar to the FANS/CPDLC system used in North Atlantic airspace, ATN-B1 uses a VHF VDL Mode 2 radio instead of a Satcom. It is meant to be used in areas where ground surveillance already exists because there is no surveillance component to this technology.

WHAT IS ATN-B2 (Aeronautical Telecommunications Network-Baseline 2)

ATN-B2 (Data Comm) will enable additional capabilities not incorporated in FANS-1/A+ or ATN-B1. ATN-B2 CPDLC will include context management, CPDLC, and ADS-C over the Internet Protocol suite. B2 provides additional services for both CPDLC and ADS-C.

This program is being rolled out in two segments:

Segment 1, Phase 1 allows for tower services DCL (Departure Clearances) to be obtained via CPDLC at all airports that currently support FANS-1A+ technology. In 2016, the FAA rolled out DCL Data Comm services at 55 US airports.

Segment 1, Phase 2 rollout allows for initial en-route services of CPDLC.

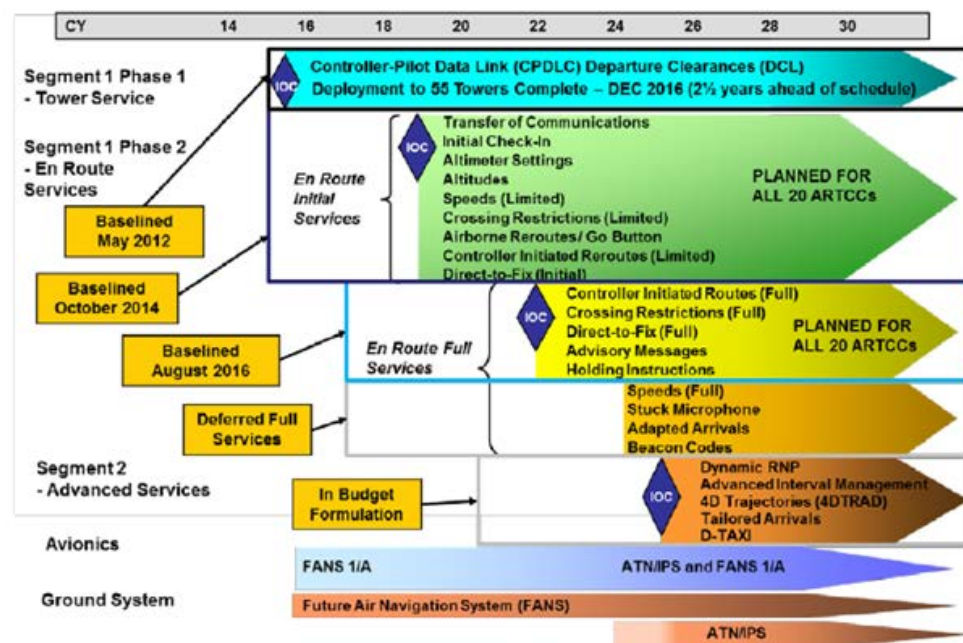
- Transfer of communications
- Initial check in
- Altimeter settings
- Altitudes
- Speed
- Crossing restrictions
- Airborne reroutes
- Controller initiated reroutes
- Direct to fix

Segment 2 will allow for more advanced or full en-route services and technologies.

- Controller initiated routes
- Crossing restrictions
- Direct to fix

- Advisory messages
- Holding instructions

Note: Once full en-route services are implemented, push-to-load functionality will be required as part of the aircraft certification. Push-to-load refers to the capability for ATC to upload a flight plan change via the datalink to the aircraft FMS (flight management system), and the flight crew to accept this change and have it automatically load that change into the FMS.



Datalink services are available in most of the world's oceanic routes and in much of the terrestrial airspaces, as well. The services provide invaluable support at transfer points where aircraft enter domestic airspace or exit domestic airspace and enter oceanic. The enhanced communication abilities aid the ATC on both sides of the NAT tracks and particularly when a controller at one center hands off an aircraft to another ATC center. With a FANS-equipped aircraft, the handoff occurs seamlessly behind the scenes.

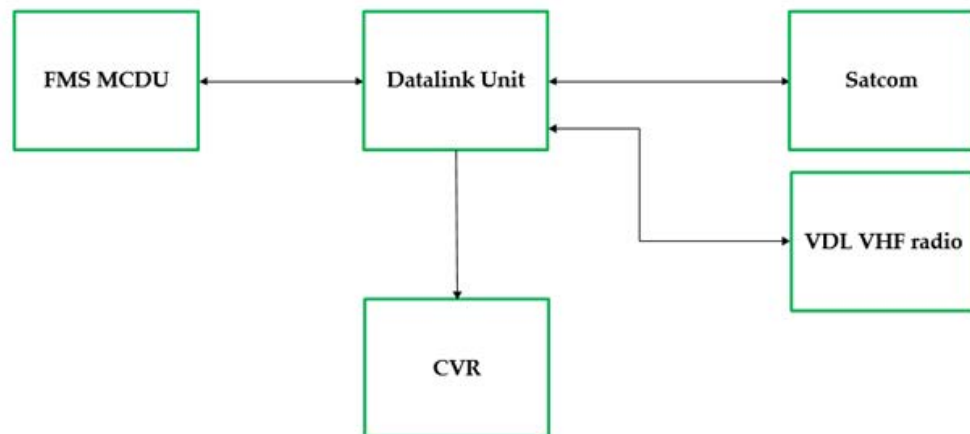
The type of datalink service available for your make/model depends entirely upon what certification path is available, and that's based upon what equipment is installed in the make/model of aircraft.

EQUIPMENT DIAGRAMS

What follows is a brief overview of the equipment affected by FANS.

Currently, FANS and ATN are options for OEM aircraft equipped with Garmin 1/3/5000, Collins Aerospace Pro Line 21/Fusion, and Honeywell Aerospace Primus Epic. Because OEM SBs (service bulletins) and STCs (Supplemental Type Certificates) for late-model aircraft stipulate a path to certification, we are going to forego a conversation about equipment on those aircraft. Some SBs, such as the Falcon EASY platform, are available to Duncan Aviation and other service centers, and others, such as those for large-cabin Gulfstreams, are not. Because most of the production aircraft have been taken care of by the OEMs, we'll focus here on FANS equipment for retrofit aircraft.

Generic FANS System



Datalink. The heart of any FANS installation is the datalink unit. Each equipment provider has a datalink unit that has FANS or FANS/ATN capability. The datalink will interface with the FMS (Flight Management System) to provide a connection between the crew in the cockpit and ATC. The crew will log on to the applicable network to establish the connection between the aircraft and ATC.

FMS. An FMS CDU (Control Display Unit) is the user interface for most FANS 1/A systems. An FMS that was installed as part of a WAS upgrade is likely to have an upgrade path to FANS 1/A. Honeywell, Collins, and Universal all require a WAAS/LPV FMS as a prerequisite to FANS.

VHF Transceiver. ATN-B1/B2 requires a VDL (VHF Data Link) specification. Although ICAO has defined four VDL modes, ICAO has designated VDL Mode 2 to be used with the ATN function. FANS-equipped aircraft can use this VDL radio for VHF transmissions, too.

CVR. EASA and the FAA consider CPDLC texts to be a communications' feature. As such, it is mandated that the CVR (Cockpit Voice Recorder) record those text messages. Older CVRs, including many digital voice recorders, do not meet the specification (TSO-C177) required to record datalink communications.

Satcom. One function of FANS 1/A is that it permits ATCs to monitor aircraft outside the range of ground-based radar. Traditionally, flight crews report their positions via HF radio. HF radio systems are costly and require a great deal of power. The radios can be unreliable due to atmospheric conditions, which may cause interference and noise.

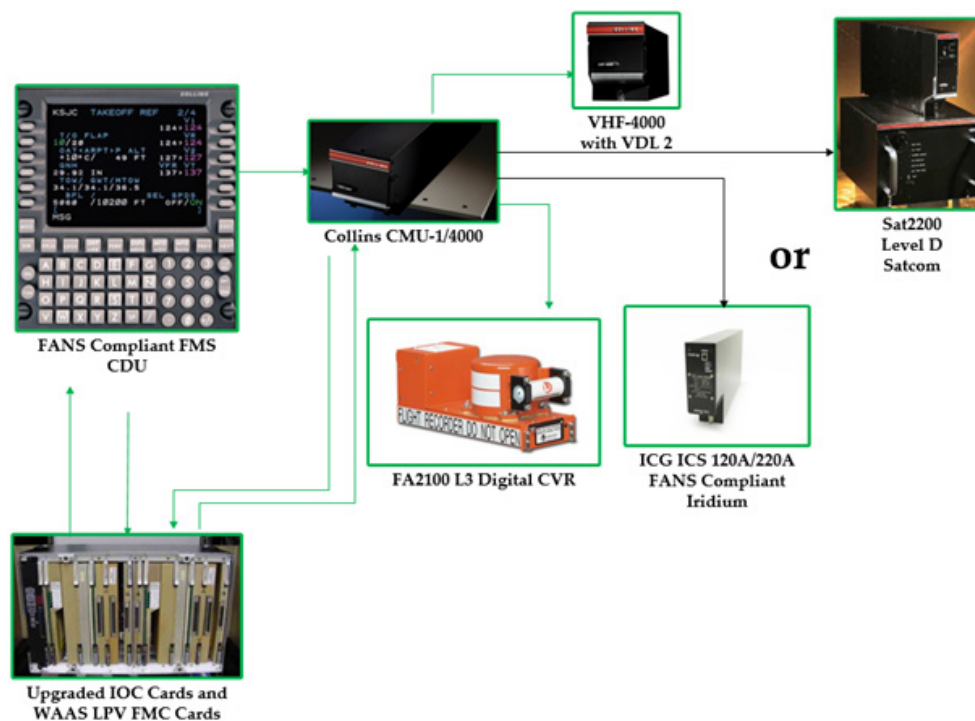
Incorporating a FANS 1/A-compliant (Level D certification) Satcom alleviates these concerns by providing a more reliable and dedicated datalink channel that is available regardless of the aircraft's distance from a ground station. The two satellite networks available for FANS 1/A are the Inmarsat and Iridium networks.

To be considered for use in a FANS STC, AC 20-140B requires that the Satcom must have a Level D certification with TSO C159C approval. If the unit is Level D certified, but does not have TSO C159C approval, then the STC must address this with an alternate means of compliance.

Iridium System. Iridium's FANS 1/A-compliant units offer true global coverage. This is important if you're flying an aircraft capable of polar routing. Iridium units are also less expensive to install compared to Inmarsat systems.

Inmarsat Systems. Although more expensive than an Iridium system, most current Inmarsat terminals that are FANS 1/A-compliant also incorporate SBB (SwiftBroadband) terminals for worldwide internet access.

Collins Aerospace FANS 1/A Solution



Datalink. Collins Aerospace's FANS-compliant CMU-1/4000 or RIU (remote interface unit) features datalink architecture that interfaces with the FMS to provide FANS and/or ATN functionality. Aircraft retrofit with a CMU-1000 will have a FANS-1/A+ solution, and aircraft retrofit with an updated CMU-4000 or RIU will have an ATN option, as well.

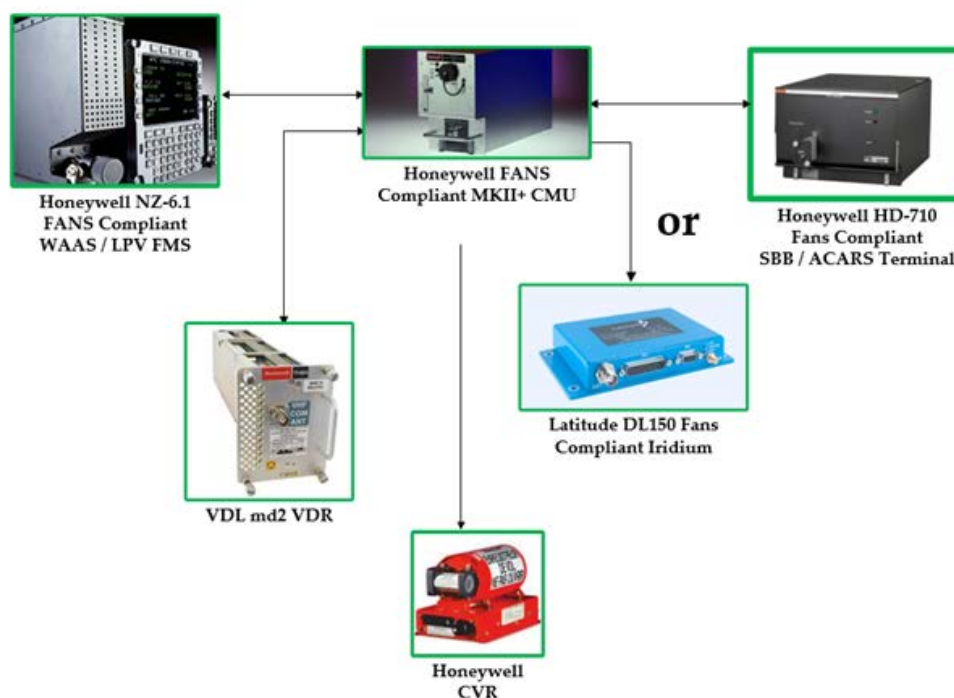
FMS. Collins' FMC-6200 FMSES with WAAS/LPV have an upgrade path for FANS on Challenger 300/604/605, the Falcon 50EX/2000, and Gulfstream G-200 aircraft.

VHF Transceiver. Collins has incorporated VDL Mode 2 into its VHF-4000 platform. The older VHF-22/422 lines currently have no upgrade path (nor is one planned) to incorporate VDL Mode 2 software. This unit is also being incorporated into several Pro Line 4 to 21 upgrade STCs, which again reduces certification time and effort.

CVR. Most of the STCs or SBs for Collins-equipped aircraft update the CVR to the L-3 FA2100 series units to meet the datalink recording requirement.

Satcom. Collins offers both Iridium and Inmarsat systems that have been used in FANS STCs/SBs. The Iridium-based system is the ICG-120A/220A, and it has a dedicated datalink channel built into the Iridium transceiver. The SAT-2200 system includes a dual channel SBB option for worldwide internet access, but legacy systems going back to the SAT-906 system have been used in FANS certifications.

Non-Epic Honeywell Based FANS 1/A



Datalink. Honeywell has two standalone datalink units: the MK III CMU (Mark III Communications Management Unit) and the MKII+ CMU. Either CMU replaces the AFIS (Aircraft Flight Information System) DMU that Honeywell has manufactured for many years. They interface with FMSes equipped with 6.1.1 software (WAAS and beyond). This is the path to certification used for aircraft equipped with Honeywell SPZ-8000/8400/8500 or Primus 1000/2000 avionics suites in the Gulfstream GIV/GV and the Falcon 900B/900C/900EX. The major difference between the two units is that the MKIII is a FANS-only unit, while the MKII+ is compliant for both FANS and ATN.

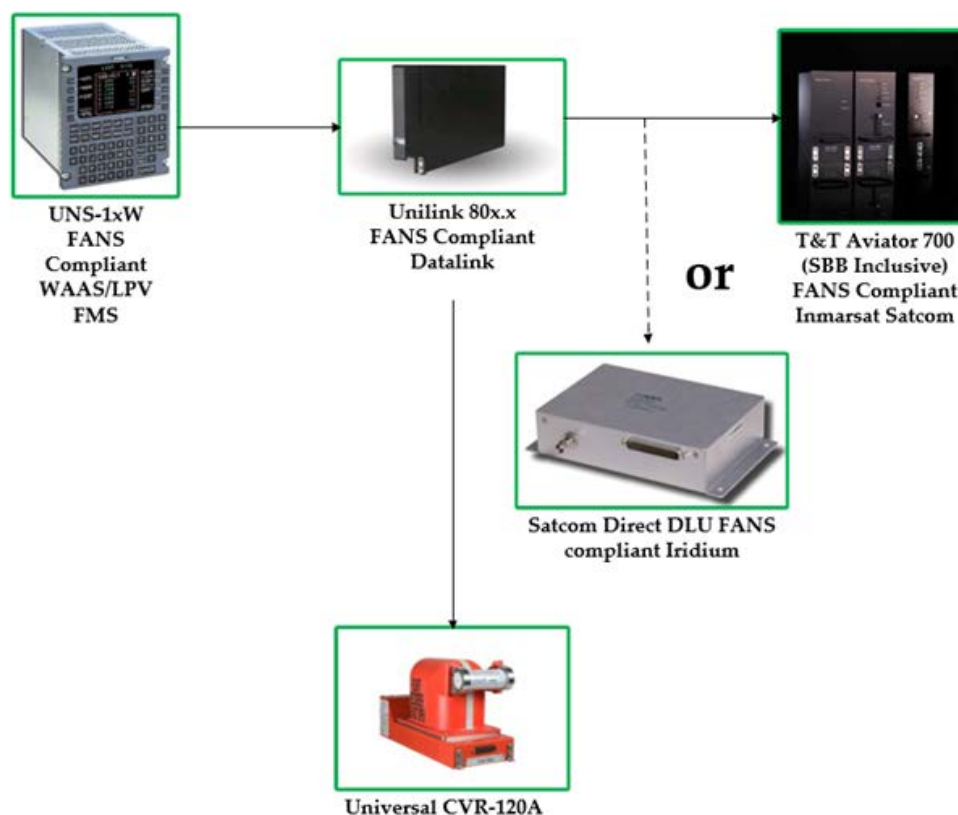
FMS. In order to update to a FANS-compliant system, the Honeywell-equipped aircraft must have updated the FMSES to NZ software v6.1.1 as a prerequisite, which changes the system designation from NZ-2000 to NZ-2010 in most cases. For aircraft with a MKII+, the CDU also requires an update to the CD-830 touchscreen.

VHF Transceiver. Honeywell will require a standalone VDR (VHF Data Radio). The VDR is a VDL Mode 2-compliant VHF radio that is used with a FANS/ATN installation. Honeywell communications units that are part of the Honeywell Epic Radio package require a VDR radio upgrade in order to incorporate VDL Mode 2 capability.

CVR. Honeywell has a compliant SSCVR (Solid State Cockpit Voice Recorder) that is used in the Falcon EASy II FANS upgrades, but many of the third-party STCs for FANS are using the L-3 FA2100 CVR series to meet the datalink recording requirement.

Satcom. The Honeywell HD-710 is a favorite of OEMs for both ACARS and SBB. The HD-710 has a FANS 1/A-compliant, two-channel SBB terminal. The HD-710 is used by Bombardier, Dassault, and Gulfstream.

Universal Avionics Based FANS 1/A



Datalink. Universal Avionics offers the UL 800/801 FANS 1/ACMU. UL 800/801 is compatible with all Universal WAAS/SBAS (Wide Area Augmentation System/Satellite Based Augmentation System) FMSes. Universal also offers an upgrade path for all existing non-WAAS/SBAS Universal FMSes to a compliant system.

FMS. All current Universal FMSes (UNS-1Ew, Fw & Lw) are compliant for use with FANS and will interface with the UL-800/801 Unilink.

VHF Transceiver. UL 801 incorporates an internal VHF VDL Mode 2 radio in the LRU (Line Replaceable Unit), supporting all options of datalink messaging.

CVR. Universal makes the CVR-120A CVR, which meets the TSO-C177 requirement for datalink recording.

Satcom. Many of the STCs for Universal equipment are using various Iridium and Inmarsat solutions. The Iridium options are usually from Latitude Technologies, Satcom Direct, Collins Aerospace, or Gogo Business Aviation.

Cobham (formerly Thane and Thane) produces the Aviator 700, which is an Inmarsat system that can be upgraded to an Aviator 700D to comply with FANS 1/A. It incorporates worldwide, high-speed internet connectivity.

DATALINK NETWORK OPERATION

The flight crew will be required to log on to both the CPDLC and ADS-C networks. Once a successful ATC connection has been established, the crew will be notified of the connection via message on the FMS CDU saying, "ATC connection established." The aircraft will then communicate with the ground network via either VHF VDL radio if the aircraft has line-of-sight to a ground station or the Satcom system (Inmarsat or Iridium) if they do not.

Note: Pilots must file a flight plan, such as the one pictured below, that notes their intent to use datalink communication during a flight with the applicable codes for how the aircraft is equipped.

Datalink communications compliance guide version 06.21

INTEROP (Check all that apply)	Subnetworks (Check all that apply)	CSP	RCP	RSP	Limitations (If no limitations, type "N/A")
<input type="checkbox"/> FANS 1/A (+) with functional integration "push to load" <input type="checkbox"/> FANS 1/A (+) without functional integration "push to load" <input type="checkbox"/> ATN B1 <input type="checkbox"/> B2	<input type="checkbox"/> VDL Mode 0/A <input type="checkbox"/> VDL Mode 2 TSO C-160/Equivalent* <input type="checkbox"/> VDL Mode 2 TSO C-160a or later/Equivalent* <input type="checkbox"/> HFDL <input type="checkbox"/> SATCOM (Iridium) <input type="checkbox"/> SATCOM (Inmarsat) *See Table 6	<input type="checkbox"/> Rockwell-Collins (ARINC) <input type="checkbox"/> SITA <input type="checkbox"/> Other: (Enter Below)	Select	Select	<input type="checkbox"/> U.S. Domestic CPDLC En Route Only <input type="checkbox"/> ADS-C Only <input type="checkbox"/> U.S. Domestic CPDLC En-Route Prohibited <input type="checkbox"/> PBCS Prohibited <input type="checkbox"/> Other: (Enter Below) (Use standardized wording from Table 5 and 6 for free text)

Note:
"If PBCS Prohibited" is selected in the Limitations section, select "N/A" for both RCP and RSP values.

After the aircraft is logged onto the network, the aircraft datalink will communicate with ATC using a CSP (Communication Service Provider) network. The most common example of CSPs in the US are ARINIC Direct, Satcom Direct, and Honeywell Forge. The CSP must monitor the performance of the system for the following:

- Failure notifications
- Recording datalink messages
- CSP integrity
- Compliance with RCP (return communication performance)*
- Adequate subnetwork coverage for the route flown.

** RCTP (Required Communication Technical Performance) is the delay between when a CSP receives a message from ATC until that message arrives at the intended aircraft. There can be a delay when, for instance, an aircraft is in the middle of the ocean, and the message is going from a ground station to a satellite and back to the airplane. There's a window of time during which the message must be received.*

CPDLC DCL—For aircraft equipped with FANS, CPDLC-DCL (departure clearance) is available for use at 55 airports in the US. After the crew logs on to the system, the logon is accepted if DCL is part of the flight plan. The CPDLC-DCL message will give the flight crew messages to cover departure procedures, initial altitude, beacon code, and departure frequencies.

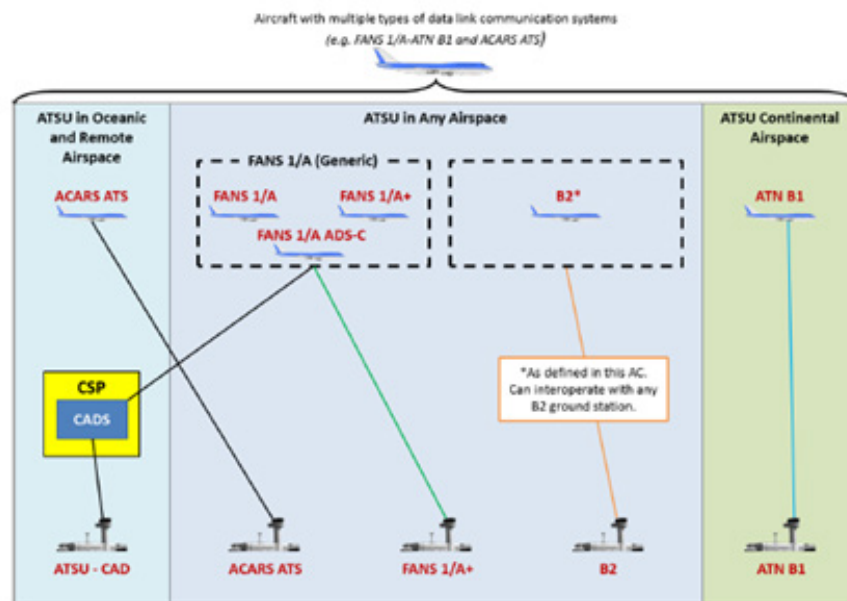
Note: CPDLC-DCL is US-based; there is an international DCL that is similar to PDC, and it is ACARS-based. CPDLC-DCL is transferred only via datalink. PDC can be transferred to aircraft by many options—paper, voice, etc.

Interoperability

There are different networks that receive the datalink communications:

- ATSU-CAD (CAD allows ATSU stations to view ADS-C reports, but not CPDLC)
- ACARS-ATS
- FANS 1/A+
- ATN-B1
- ATN-B2

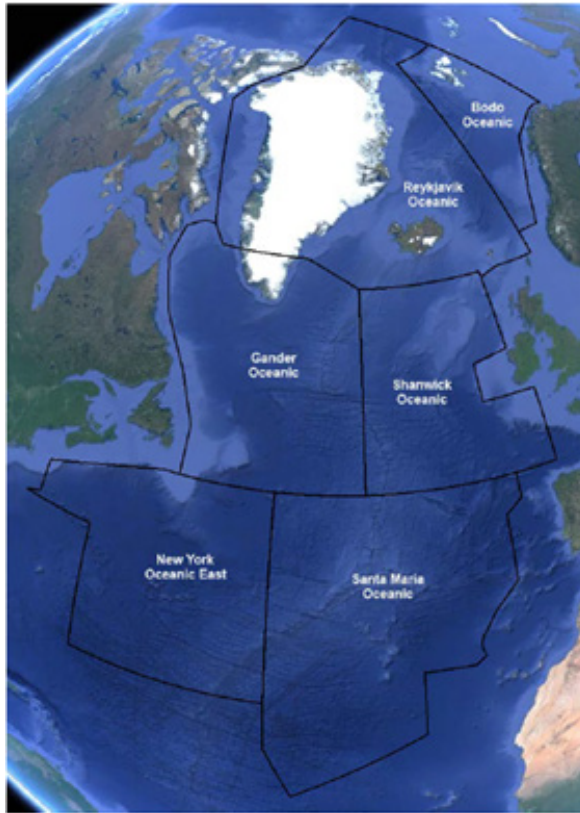
To have interoperability among these networks, the ground station needs to be compliant with each network. For example, if the aircraft is logged onto the FANS 1/A+ network while flying in the NATS and is coming into airspace that has an ATN-B1-compliant network, the ground station must be compliant with both networks or the aircraft will have to log off of the FANS 1/A+ network and log onto the ATN-B1 network on a different station.



LOCATIONS USING FANS 1/A

NAT (NORTH ATLANTIC TRACKS)

The NAT DLM (Data Link Mandate) requires aircraft to be equipped with FANS-1/A+ in the NAT region. (See figure below for NAT region.) Currently, the NAT region incorporates FL290 to FL410 inclusive. The mandate is not applicable for aircraft operating in airspace north of 80 degrees north or where ground surveillance service is provided and is coupled with VHF voice communications' coverage.



EASA MANDATES (ATN B1 REQUIREMENT)

February 5, 2020—All new aircraft produced that are capable of operating above FL 285 and seat 19 passengers or more must be delivered with an ATN B1-compliant system. Any new aircraft that entered service prior to this date are exempt.

FANS 1/A REGULATIONS & CERTIFICATION

This chapter provides recommendations and guidance materials for airlines to help prepare procedures and training programs for its pilots and dispatchers. It also outlines the engineering programs necessary to obtain operational approval to use FANS 1/A.

DESIGN APPROVALS

FAA Advisory Circular (AC 20-140C) *Guidelines for Design Approval of Aircraft Data Link Communication Systems Supporting Air Traffic Services* (https://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/

[go/document.information/documentID/1030033](#)) is guidance material to gain approval for TC (Type Certificates) and STCs (Supplemental Type Certificates) involving aircraft datalink systems intended to support ATS. Numerous technical specifications have been published for the design and certification of FANS 1/A as listed in AC 20-140C.

This AC provides a set of non-mandatory guidelines to obtain approval for TCs and STCs for aircraft with datalink systems. In addition to identifying the configurations for datalink systems, the AC sets out airworthiness requirements for obtaining design approval.

OPERATIONAL AUTHORIZATION

There are companies that specialize in helping operators put together the data package required to obtain a LOA for FANS operational approval. These companies often will walk an operator through the approval process. If an operator has never gone through the FANS operational approval process previously, we recommend that you consider this option. For those of you who want to know about what is required and intend to compile the information yourself, the following information should assist you in the process.

The following link will take you to the FAA Datacomm Flight Operations Group webpage. On this page you'll find links to various guidance materials that will help you obtain operational approval.

https://www.faa.gov/about/office_org/headquarters_offices/avs/offices/afx/afs/afs400/afs410/datacomm/

FAA Advisory Circular AC 90-117

This AC (https://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentid/1030769) provides an overview of datalink communication operations for aircraft flying in US domestic airspace and oceanic and remote continental airspace. It includes operational use guidance, minimum performance, performance monitoring, training requirements, and discrepancy reporting, and it lists services of CSPs.

Per AC 90-117, "Operators must contact their POI (principle operations inspector) to begin the application process for an OpSpec/LOA AO56 authorization."

The following link will take you to the AO56 compliance guide, which will give you the required information for datalink operations (https://www.faa.gov/about/office_org/headquarters_offices/avs/offices/afx/afs/afs400/afs410/datacomm/media/A056_Compliance_Guide.pdf)

If the operator gathers the documents listed below prior to contacting the POI, it should help to expedite the process.

List of Source Documents

- For generic datalink operations—Aircraft/Avionics Manufacturer Documents
- For area of operations specific policy/procedures
- Description of aircraft datalink systems including certification documents and current configuration (e.g., Service Bulletin or STC AFMS supplements)

The aircraft should be configured in accordance with the approved certification configuration for FANS 1/A operations.

As the approved FANS equipment configurations are updated or changed in an aircraft, the operator must update the list and make sure the list of equipment is compliant. When equipment tied to the LOA has been changed, the aircraft operator must contact the local FAA-representative (POI), who is usually the person they deal with at their local FSDO.

Area Of Operations/Routes Where Operator Intends To Use Datalink

- List of areas and/or routes where operator intends to use datalink in that airspace
- List of Air Traffic Centers/Communication Service Providers with which operator intends to communicate via datalink
- List policy/procedures and source documents applicable to each area(s) of operations, such as:
 - State AIP (Aeronautical Information Publications)
 - State NOTAMS (Notice To Airmen)
 - FAA Chart Supplements (Pacific and Alaska Chart Supplement)
- As of 28 Jan 2021, in order to use ATN-B1 in specific areas of EASA airspace (France, Switzerland, Maastricht-Upper Airspace Command), each aircraft must go to the Logon List Dashboard maintained by OneSky. Once the Logon List is accessed, the operator must put in the requested aircraft-specific equipment in the provided lists to be given approval to operate ATN-B1 in those regions

- o Before you can access the dashboard, you must first have an account with OneSky
- The reason for the Logon List is the high rate of provider aborts at the initial rollout of the ATN-B1 mandate. The Logon list also provides a list of proven equipment that meets the requirements

Flight Crew Qualification Programs

1. Academic Training
2. Operational Use Training
3. Currency (Recent Experience)
4. Line Checks and Route Checks

Approved Documentation

1. FANS 1/A Airworthiness Approval Summary
2. MEL (Minimum Equipment List)
3. AFM (Air Flight Manual)

FAQS

HOW DO I GET SERVICE?

ARINC Direct, Satcom Direct, or Honeywell Forge will be happy to help set up service with you. Please keep in mind that a specific service provider may be required as part of a group STC.

IS THE FANS 1/A UPDATE REQUIRED BY EASA OR THE FAA?

For EASA, the ATN-B1 mandate went into effect February 5, 2020. The FAA has no mandate for FANS 1/A compliance. However, we have already seen FANS 1/A-equipped aircraft getting preferential treatment in the oceanic routes, such as NATs.

HOW MANY AIRCRAFT ARE CURRENTLY COMPLIANT?

The airlines and the military have been certifying aircraft for FANS 1/A since the 1980s. There are currently more than 1,000 FANS 1/A-compliant aircraft.

DOES EACH AIRCRAFT TYPE AND SERIAL NUMBER REQUIRE AN STC?

No. Although installing FANS 1/A on an aircraft requires an STC, group STCs and OEM Service Bulletins have been developed to meet the demand.

WHAT AIRCRAFT HAVE FANS STCS BEING DEVELOPED?

Each OEM and facility needs to evaluate which aircraft it makes sense for them to tackle. For a list of paths to certification through Duncan Aviation, visit the Duncan Aviation STC Library: <https://www.DuncanAviation.aero/services/engineering/stc-library>

ARE THERE CERTAIN STEPS THAT FLIGHT DEPARTMENTS CAN TAKE TOWARD COMPLIANCE OR IS A ONE-TIME RETROFIT MORE COST-EFFECTIVE?

Making provisions without an STC is a gamble—you're making deviations without path to certification; however, making equipment upgrades where possible can help amortize the cost of the installation across a couple of maintenance events. For example, FMS upgrades make the most sense because WAAS-capable GPSes are required in a couple of mandates, and you will start seeing the benefit of having this advanced GPS in your aircraft immediately.

KEY TERMS

ACARS—Aircraft Communications Addressing and Reporting System

ACAS—Aircraft Collision Avoidance System

ADS—Automatic Dependent Surveillance

ADS-B—Automatic Dependent Surveillance-Broadcast

ADS-C—Automatic Dependent Surveillance-Contract

ARINC—Aeronautical Radio Incorporated

ATC—Air Traffic Control

ATM—Air Traffic Management

ATN-B1—Aeronautical Telecommunications Network, level B1

ATS—Air Traffic Services

ATSU—Air Traffic Services Unit

CDU—Control Display Unit

CNS—Communications, Navigation, Surveillance

CPDLC—Controller Pilot Data Link Communications

CSP—Communications Service Providers

EFIS—Electronic Flight Instrument Systems

FANS—Future Air Navigation System

FIR—Flight Information Region

FMC—Flight Management Computer

FMS—Flight Management System

GPS—Global Positioning System (USA)

HF—High Frequency (3-30 Mhz)

HFDL—High Frequency Datalink

IATA—International Air Transport Association

ICAO—International Civil Aviation Organization

MCDU—Multipurpose Control Display Unit (ACARS & FMC)

NAT—North Atlantic Tracks

NDA—Next Data Authority

OCS—Oceanic Control System (datalink system for the Auckland FIR)

RNP—Required Navigation Performance

RVSM—Reduced Vertical Separation Minimum

SATCOM—Satellite Communication

SATVOICE—Satellite Voice Communication

SBB—SwiftBroadband

SITA—Société Internationale de Télécommunications Aéronautiques

UM—Uplink message

VDL—VHF Data Link

VHF—Very High Frequency

WAAS—Wide Area Augmentation System

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