

# FANS 1/A+ & PM-CPDLC UPGRADE

Honeywell is pleased to announce the availability of an Upgrade Program to provide FANS 1/A+ operations and PM-CPDLC capability for operators with F900A/B/C/EX, Citation X, CL601, Legacy 600/650 and DO-328

Additional aircraft models may become available as STCs are completed



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<b>Effective Dates:</b>	01-January-2020 through 31-December-2020
<b>Revision - Notes:</b>	Initial Release

## 1. Introduction

This Information Bulletin is intended for aircraft installations that do not currently have FANS capability using Honeywell Mark III Communications Management Unit (CMU) or associated equipment.

Controller Pilot Data Link Communications (CPDLC), in conjunction with Automatic Dependent Surveillance – Contract (ADS-C), currently enables the use of Future Air Navigation System 1/A+ (FANS 1/A+) over oceanic airspace. FANS 1/A+ includes the Air traffic Facilities Notification (AFN) that allows the aircraft to logon and connect with a specific ground center for Air Traffic Control (ATC) communications. The ADS-C function provides reports based on requests from one or more ground centers. The CPDLC function allows for uplink clearances, downlink reporting and clearance requests between the aircraft and the controlling ATC center. The solution provided in this offering, using Honeywell’s MKII+ CMU, will support Performance Based Communication and Surveillance (PBCS) operations as defined in FAA Advisory Circular 90-117 (e.g. North Atlantic requirements).

This offering supports VDLM2-MF per ARINC 631-6 used in US and Oceanic airspace. VDLM2-MF is required for FAA FANS En Route services. VDLM2-MF is not mandated, but it does offer operational improvements over basic VDLM2 capabilities.

### **European Airspace PM-CPDLC Mandate:**

From 5 February, 2022, all non-exempt aircraft are required to equip with PM-CPDLC avionics when operating in European Airspace above FL285. The Honeywell MKII+ CMU and EPIC VDR provide a fully compliant PM-CPDLC solution that meets or exceeds the “Best In Class” performance requirements as outlined by the European Commission responsible for the implementation of Datalink Services Implementation Rule 29/2009 (sometimes also referred to as ATN-B1) in European Airspace.

This upgrade program includes the following products:

<b>MODEL</b>	<b>DESCRIPTION</b>
Mark II+ CMU	Communication Management Unit
CMU APM	Aircraft Personality Module
FMS FANS Upgrade	Upgrade to FMS 6.1.1 or 6.2.1
CD-830 CDU	FMS & Datalink Control Display Unit
TR-866B VHF Data Radio	VDL Mode 2 Data Radio (VDR)
HFR5 or Lightweight CVR	Cockpit Voice Recorder
MCS-7120 (HD-710)	Safety Services Inmarsat Satcom
AMT-700 w/Type F DLNA	Satcom Antenna Inmarsat
Aspire SSU 300	Safety Services Unit (SSU) Iridium Satcom
1541-F-900x	Satcom Antenna Iridium

## 2. Program Description

Compliance to FANS 1/A+ is currently required on the North Atlantic Track Minimum Navigation Performance Specification (NAT MNPS) tracks when using Flight Levels 350-390. In 2017 the FANS requirement expanded to ICAO NAT region for these flight levels, and in 2020 will expand the coverage to all flight levels above FL285.

Additionally, the FAA FANS 1/A+ (direct data link between pilot and controller) using VHF Digital Link Mode 2 Multi-Frequency avionics for en route services began in 2018. These services will expand to full operational capability for air route traffic control centers in the continental United States in 2022.

Data Comm delivers digital tower pre-departure clearance services, including route revisions, as well as enroute services, thereby enabling controllers to provide flight crews with frequency handoffs, altitude changes and inflight reroutes. Flight crews can also send digital messages to controllers.

The European Commission has mandated the installation of Protected Mode Controller Pilot Data Communication (PM-CPDLC) on some in service aircraft by February 2022. This mandate is the first of a number of expected compulsory upgrades to the datalink systems on aircraft. The SES-DLS mandate is expected to be followed by additional datalink requirements. Although some aircraft may be exempted from this mandate, PM-CPDLC equipage still offers improvements when operating in the European airspace. Many operators subscribe to the “Best Equipped, Best Served” concept. Honeywell has a commitment to provide system upgrades to upcoming mandates in the foreseeable future.

In addition to FANS communications via Inmarsat Satellite constellation, Honeywell also offers a solution enabling communications via the Iridium Satellite constellation. The system offering in this information bulletin provides capability for FANS Over Iridium (FOI). The particular means of satellite communication is dependent on the aircraft level certification (STC or OEM Service Bulletin).

### **3. Honeywell FANS & PM-CPDLC Upgrade Overview**

The system described in this Information Bulletin accommodates the current NAT FANS 1/A+ requirements, plus will also support the FAA Future Air Navigation System 1/A+. This system upgrade also meets the requirements for PM-CPDLC as mandated in Europe. This Information Bulletin addresses the Communication Management Unit, the Flight Management System, the Control Display Unit, the VHF Data Radio, the Satcom System and the Cockpit Voice Recorder.

In addition to these upgrades, compliance with the NAT FANS 1/A+ requirement also requires a “Safety Services” Satcom. Also included is a database connection to Honeywell’s GoDirect, a service provider for the datalink capabilities of the system.

With the ICAO implementation of Performance Based Communications and Surveillance (PBCS) beginning 29 March 2018, the FAA released Advisory Circular AC90-117 for data link communications. The new Advisory Circular aligns with international PBCS operational capabilities, as well as incorporating data link communication expansion in the U.S. This new guidance requires all U.S. operators to amend their current A056 LOA/OpsSpec to demonstrate PBCS capabilities. PBCS capabilities include a Latency Timer function. This bulletin includes information for PBCS capable versions of the equipment.

#### **3.1 Components**

##### **3.1.1 Mark II+ CMU**

The Mark II+ CMU provides support for ACARS protocols, VDL Mode A, VDL Mode 2 Multi-Frequency, Satcom and HF data link. The system supports Oceanic Clearance messages as required for FANS 1/A+ in the North Atlantic. Additionally, integration with the NZ-2000/-2010 FMS, Primus 2000, Primus 1000 and SPZ-8000 FMSs (Version 6.1.1 and 6.2.1, or later). The system supports cockpit voice recorders with the datalink recording, printer interfaces and message routing prioritization for FANS and PM-CPDLC.

The Mark II+ supports both FANS-1/A CPDLC in the Flight Management System, and provides ATN PM-CPDLC (ATN-B1) functionality within the CMU. The Mark II+ provides for VDLM2-MF and is available in an ARINC 758 configuration to provide a common platform for both retrofit and forward-fit applications. The Mark II+ also supports datalink recording and has been designed in conjunction with both the Honeywell HFR5 and Light-Weight Solid-State Cockpit Voice Recorder to meet regulatory Datalink Recording requirements.

The Mark II+ provides all ACARS routing functions over both the classic character-orientated Mode A ACARS protocol (POA-Plain Old ACARS) and the bit-orientated VHF Datalink (VDL) Mode 2 protocol (AOA-ACARS Over AVLC). The Mark II+ retains full compatibility with FANS-1/A+ implementations, as well as stand-alone ATN PM-CPDLC, to meet North American, Oceanic, and European airspace requirements.

##### **3.1.2 VHF Data Radio Datalink Mode 2 with Multi Frequency Capability**

The VHF Data Radio (VDR), installed with a Mini-Cabinet, is a typical communications radio that will transfer data at rates of 31.5 kbps in a 25 kHz channel spacing using D8PSK modulation and voice in 8.33 kHz channels. The frequency band is the standard 118-137 MHz. The radio supports modes 0, A, 2 and 2 with multi-frequency capability. This VDR is in current production and fielded on a number of aircraft platforms.

### **3.1.3 Cockpit Voice Recorder (optional)**

Datalink recording (DLR) of certain message sets is required by the FAA in support of the FANS1/A+ mandate. Honeywell has included mandate compliant Communications Management Unit and Cockpit Voice Recorder in this offering.

### **3.1.4 FMS Update**

FANS functionality is enabled, when the FMS is updated with version 6.1.1 or 6.2.1 software and the FMS is configured for FANS operation. When enabled, the system will provide datalink functionality of FANS 1/A+ (per RTCA DO-258A).

### **3.1.5 Safety Services Satcom**

FANS communication outside of VHF coverage requires a Satcom system that meets the software requirements of DO-178B Level D for both voice and data. Honeywell's current Safety Services Satcom offering includes two versions of MCS-7120 (HD-710) described in this Information Bulletin.

The system supports FANS Over Iridium (FOI) operation. This Information Bulletin provides information for the Iridium compatible Satcom equipment required for FOI operation.

Alternative Third-Party Safety Services Satcoms are also supported by the offered configuration.

#### **3.1.5.1 MCS-7120 Inmarsat Satcom**

The Phase 3B HD-710 (p/n 1252-A-3700-04) is a standalone Satcom that provides two channels of Swift64 high speed data or one channel of SwiftBroadband (SBB) for use in the cabin. It also provides one channel of Aero H+ voice for use by the crew that meets the FANS-1/A+ requirements for communication with ATC and a dedicated data channel for CPDLC and Aircraft Communication Reporting and Addressing System (ACARS). The HD-710 uses the Williamsburg SDU Controller Interface (WSCI) protocol to interface with the audio system and the FMS to allow dialing through the FMS and audio through the pilot's headsets for voice communication.

The Phase 4 HD-710 (p/n 1252-SA-3800-01) contains all the features of the Phase 3B HD-710 plus an additional channel of Aero-H+ for the cockpit (or the cabin subject to preemption by the cockpit) and a CEPT E1 interface used by older handsets such as Magnastar.

#### **3.1.5.2 AMT-700 Inmarsat High Gain Antenna**

The AMT-700 High Gain Antenna (HGA) works with the MCS-7120 to communicate with the Inmarsat satellites. The AMT-700 consists of two components: the Antenna System and a Type F Diplexer with Low Noise Amplifier (DLNA). The AMT-700 is designed to ARINC 781 standards and is Inmarsat approved for SBB multi-channel operation.

#### **3.1.5.3 Aspire 300 Satcom**

The Aspire 300 Satellite Communications System brings consistent and reliable voice and data functionality for the cockpit in a robust, lightweight solution. The multi-channel Iridium Aspire 300 provides the cockpit a fully approved communications system to satisfy the FANS over Iridium (FOI) CPDLC requirements. The system contains three 9523 L-Band Modems. Additionally, with the small size and footprint of its components, the Aspire 300 has the potential to replace legacy HF radio systems for Safety Services, resulting in significant weight savings and greatly improved system performance.

## 3.2 Services

An optional Airline Operational Control (AOC) Database that enables the Honeywell GoDirect Datalink Flight Services is also available. Honeywell GoDirect provides flight support services, including VHF and satellite datalink communications support. GoDirect provides communications to datalink equipped aircraft worldwide. GoDirect's robust two-way Aircraft Communications Addressing and Reporting System (ACARS) data communications systems are compatible with all major VHF and satellite networks across the globe, including CPDLC. GoDirect also provides a wide variety of essential flight support services including our industry leading Flight Sentinel® service designed to help you fly more efficiently and avoid hazardous weather and ATC delays.

## 4. STC Availability

Table 4-1 describes the STC availability for each applicable platform.

**Table 4-1 STC Availability**

STC Owner	Aircraft	STC or SB
Honeywell Or	Falcon F900A Falcon F900B	FAA: Expected Q2-2020 TCCA: Expected Q2-2020 EASA: Expected Q2-2020
Dassault Falcon Jet	Falcon F900C Falcon F900EX	FAA ST03605NY TCCA: Approved EASA: Expected Q2-2020
West Star Aviation	Challenger 601	FAA: Expected Q2-2020 EASA: TBD
328 Support Services GmbH	Legacy 600/650	FAA: Expected 2020 EASA: 10072831
Textron Aviation	Citation X	FAA: Expected Q3-2020 EASA: Expected Q3-2020
328 Support Services GmbH	DO-328	FAA: Expected Q2-2020 EASA: 10071168

## 5. Technical Information

**\*\*\*U.S. TAX INCENTIVE\*\*\***

In 2018 the U.S. Government approved a tax code change, as part of the Tax Cut and Jobs Act of 2017, allowing U.S. based Aircraft Owners that use their aircraft for business purposes to take a Tax Write-off equal to 100% of the upgrade cost in the first year, with a few exceptions. Please check with your Tax advisor for details.

### 5.1 Equipment Packaging

Table 5-1 describes the packaging and part numbers for the FANS 1/A+, PM-CPDLC Upgrade. Offering is sold in packages (A, B, or C) from this table. Individual line item pricing is not authorized. Table 5-2 describes the optional components/software and their respective part numbers.

**Table 5-1 Baseline Configuration**

Item	Part Number	Description	Qty	
1	CMU Hardware & Software + GoDirect Services	965-0758-006	Mark II+ CMU	1
		1 of the following	CMU MKII+ Software (-522) (see Note 1)	1
			CMU MKII+ Software (-523) (see Note 2)	
		(see Note 1)	CMU MKII+ GoDirect AOC Database Software	1
		(see Note 1)	CMU MKII+ ATC Database Software	1
		964-0465-001	Aircraft Personality Module	1
			GoDirect Datalink Services VHF & Sat (1 yr. subscription)	1
	GoDirect Flight Planning Services (1 yr. subscription)	1		
2	New VDR & Cabinet	7026201-815	EPIC VDR Mod U	1
		7026240-902	VHF Data Radio Mini-cabinet	1
3	FMS & CDU (Dual)	Multiple	NZ FMS 6.1.1 upgrade from previous FMS 6.1 version (PBCS Capable)	2
		G7830-02/-03	CDU-830 (Black/Gray)	2
			CDU trade-in	2
4	FMS & CDU (Triple)	Multiple	NZ FMS 6.1.1 upgrade from previous FMS 6.1 version (PBCS Capable)	3
		G7830-02/-03	CDU-830 (Black/Gray)	3
			CDU trade-in	3
<b>Package A: CMU, VDR with Dual FMS &amp; CD-830 + GoDirect Services (Items 1+2+3)</b>				
<b>Package B: CMU, VDR with Triple FMS &amp; CD-830 + GoDirect Services (Items 1+2+4)</b>				
<b>Package C: CMU &amp; VDR + GoDirect Services (already have FMS 6.1 &amp; CD-830) (Items 1+2)</b>				



Note	Notes Table 5-1
1	<p style="text-align: center;"><b>CMU MKII+ Software (-522) Operating</b></p> <p>PCMCIA PN: <b>69000882-022</b>                      Floppy Diskette PN: <b>963-2431-022</b></p> <p>Software Verification PN: <b>998-6092-522</b></p> <p style="text-align: center;"><b>CMU MKII+ GoDirect AOC Database Software</b></p> <p>PCMCIA PN: <b>69003877-001</b>                      Floppy Diskette PN: <b>69003877-501</b></p> <p>Software Verification PN: <b>69003877-501</b></p> <p style="text-align: center;"><b>CMU MKII+ ATC Database Software</b></p> <p>PCMCIA PN: <b>69001625-005</b>                      Floppy Diskette PN: <b>963-0101-205</b></p> <p>Software Verification PN: <b>69001264-503</b></p>
2	<p style="text-align: center;"><b>Software applicable for Embraer Legacy 600/650 and Cessna Citation X</b></p> <p style="text-align: center;"><b>CMU MKII+ Software (-523) Operating</b></p> <p>PCMCIA PN: <b>69000882-023</b>                      Floppy Diskette PN: <b>963-2431-023</b></p> <p>Software Verification PN: <b>998-6092-523</b></p> <p><b>Same AOC and ATC Database part numbers in Note 1 apply</b></p>

**Table 5-2 Optional Components/Software**

	Part Number	Description	Qty
Cockpit Voice Recorder for Datalink Recording	980-6032-003	Cockpit Voice Recorder (HFR5)	1
	980-6044-003	Cockpit Voice Recorder	1
	980-6113-010	Cockpit Array Microphone	1
Satcom Equipment Inmarsat	1252-A-3700-04	MCS-7120 (HD-710) Phase 3B	1
	1252-A-3800-01	MCS-7120 (HD-710) Phase 4	1
	1428-A-0010-02	AMT-700 Antenna	1
	1242-A-0006	DLNA Type F	1
Satcom Equipment Iridium	1541-A-3600	Aspire 300 Safety Satellite Unit (SSU)	1
	1541-A-8220	Aspire 300 SIM Card Module (SCM)	1
	1541-A-3701	Aspire 300 Software Key to enable 1st Voice	1
	1541-A-3702	Aspire 300 Software Key to enable 2nd Voice	1
	1541-F-9001	SCD SINGLE IRIDIUM ANTENNA	1
IM-803 Option	7014940-912	IM-803 FMS Configuration Module (FANS Enabled), One per FMS unit	1

## 5.2 CDU Trade-In Credit

This offering includes a trade-in credit for older Control Display Units (CDU). The trade-in includes the following parts: CD-820 Base PN 2888, CD-815 Base PN 7022360, CD-810 Base PN 7007549, CD-800 Base PN 7004403.

## 6. Honeywell Maintenance Service Plan (MSP Avionics)

Honeywell Maintenance Service Plan (MSP Avionics) is a maintenance service plan that offers coverage for your Honeywell Avionics. Choose the plan that best meets your needs. Specially priced plans are also available for fleet operators. Take the uncertainty out of repair and maintenance costs. A fixed-price MSP contract guarantees that your repair bills will not exceed your budget. For more information about MSP, please contact Honeywell at [MSPAvionicsSales@Honeywell.com](mailto:MSPAvionicsSales@Honeywell.com).

## 7. Honeywell Forge

**Stay informed** of your flight operation and aircraft connectivity with easy-to-use tools in one integrated dashboard. With Honeywell Forge, get custom alerts so you always know the status of your aircraft/fleet

**Total control** over your connected experience and cost. Give your passengers the connectivity they want while managing your costs. You decide the specific services that best fit your aircraft and operation. We integrate with other service providers across the industry.

**Security** is ingrained into all service and hardware offerings we provide you from concept through delivery and is always on for our customers. The Honeywell global enterprise has been protecting assets for more than 40 years.

**24/7/365 personalized service and support from our team.** Get the best in class in-field support you expect from our global network of people along with key alerts and easy troubleshooting tools. We are here for you anytime - anywhere.

Get the tailored connectivity **experience you expect** from your office or home – whenever and wherever you fly. That means seamless connectivity from the moment you step on board to the moment you step off.

## 8. Contact Information

Find your nearest Sales contact by visiting our [Direct Access Directory for Business Aviation](#). Click on **Area Sales Managers** and use your current location or the Manual Search option. You may also download our **Honeywell Direct Access app**:



The Direct Access mobile app provides business aviation customers quick access to Honeywell Aerospace's technical, business, parts and sales support; the closest dealers and service centers, the Aircraft on Ground (AOG) desk and other valuable resources.

The Direct Access app is free and can be downloaded at the [Apple iTunes](#) and [Google Play](#) stores.

## Technical Support

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The Honeywell Aerospace Technical Support network is available 24x7 to provide global coverage with technical expertise guiding maintenance teams to fix and prevent technical issues for your avionics and mechanical needs. They also support an on-demand global network of deployable experienced field service engineers. For online 24/7 technical support, visit the technical support section of <http://www.MyAerospace.Honeywell.com> to open a case, view case status and access technical solution tutorials and troubleshooting aids.

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