Reference to Figure 83 ATIMS Schematic

ATA 46 INFORMATION SYSTEMS

46–21 ATIMS (AIR TRAFFIC AND INFORMATION SYSTEM)

General

Up to now, flight crew have communicated with air traffic controllers using HF and VHF radio communications which are subject to atmospheric disturbances and so, often difficult to understand.

Furthermore, the transmission networks become saturated due to the air traffic increase, and to the limited capability to exchange complex data (routes, weather information...).

Consequently, the ATIMS has been developed to enable datalink communications and the exchange of complex data or specific reports between the aircraft and the ground centers:

- controller–pilot datalink communications (HF voice in backup) for air traffic management,
- specific airline–aircraft communications (operational control) to improve airline operational costs and flexibility.

System Description

The ATIMS consists mainly of an Air Traffic Service Unit (ATSU) which provides:

- datalink services for ATC
- datalink services to remote Airline Operational Control (AOC) application embedded in the ATSU and in on–board peripherals:
  - Flight Management and Guidance Computer (FMGC),
  - Flight Data Interface Management Unit (FDIMU),
  - Centralized Fault Display Interface Unit (CFDIU),
- management of the datalink media:
  - VHF 3 datalink (mode ACARS also known as ACARS Aviation VHF Link Control (AOA): new frequency, new modulation, new air/ground protocol)
  - Satellite datalink (optional)
  - HF datalink (optional).
- Aircraft Interface software (for host platform services)
- Configuration software (for manufacturer configuration parameters)
- Router parameters software
- AOC application software
- AOC database software.

FWC Interface

The ATSU uses the services provided by the FWCs to activate visual/aural alerts and warnings for the different applications.

MCDU Interface

Two sets of functions are accessed via the MCDU:

- hosted AOC applications,
- air/ground communication management function.

NOTE: If a third MCDU is installed, only two MCDUs upon three can be used simultaneously by the ATSU.

Printer Interface

The AOC applications use the services of the printer for the following purposes:

- print out of received messages (automatic or manually initiated on MCDU)
- MCDU screen hard copies

The air/ground communication management function uses the services of the printer for the following purposes:

- Automatic print out of a message directed to the printer
- MCDU screen hard copy
- Statistics reports
- Audit information
- Company Call message print

RMP Interface

Each of the three RMPs is an interface device for the VDR3 operation. The frequency range is from 118000 to 136975 KHz by 25 KHz or 8.33KHz steps. Each RMP enables the crew to request a switching of the system (between the RMP and the ATSU) which controls the VDR3 (VHF 3 Digital Radio) frequency by pressing the transfer pushbutton switch, located between the two windows:

- When the frequency is displayed in the ACTIVE window of the RMP, the RMP controls the VDR3 frequency.

  Only the Voice mode is available and the selection of the VDR3 frequency is done through the RMP by displaying the selected frequency in the ACTIVE window.
- When the DATA indication is displayed in the ACTIVE window of the RMP instead of the frequency, the ATSU controls the VDR3 frequency whether the VDR3 is in Data or Voice mode.

The RMP sends to the ATSU the pilot request of switching the system controlling the VDR3 between the RMP and the ATSU.

ATC MESSAGE P/B

5VAC FROM 36LP

ATC MSG

ENGINE/WARNING DISPLAY

DATALINK ATSU FAULT
COMPANY DATALINK STBY
COM VHF 3 DATA FAULT
VHF 3 VOICE
COMPANY MSG
COMPANY CALL

DCDU 1 & 2

2119Z FROM KZAK CTL OPEN
DEPART CLEARANCE Nº 146
1400Z 25 JUN 2000
AFR007
FROM LFPG CLRD TO: KJFK
RWY: 09 SID: BNE8A
* REFUSE
< OTHER
ACK *

BRT DIM MSG- MSG+ PRINT PGE- PGE+

6TX1 (2) 103PP (202PP) 28VDC BUS 1 (2)

GROUND DISCRETE

GROUND DISCRETE

DMC

SDAC

FWC

CAPT

F/O

RMP

ACTIVE dAtA STBY/CRS 118.00

VHF1 VHF2 VHF3 HF1 SEL HF2 AM

STBY NAV

NAV VOR ILS MLS ADF BFO OFF

101XP-C 115VAC BUS 1

3TX1

FMGC 1,2
FDIMU
CFDIU
PRINTER
MDDU
ATC XPNDR 1,2

AIR TRAFFIC SERVICE UNIT (ATSU)

101PP 28VDC BUS 1

5TX1

AIR/GND

ATSU SEL FOR DATA LOAD

INPUT PORT SEL

AVAIL STATUS

MCDU

FM1 IND RDY FM2

MCDU MENU
<FMS
<ATSU
<AIDS
<CFDS

CLOCK

RST CHR CHR 37:28 MIN SEC GPS INT SET DATE UTC 15:42 28 HR/MO MIN/DY SEC/Y RUN STP RST 00:34 HR ET MIN

LGCIU 1

DATA LOADING ROUTING BOX

VDR 3
HFDR 1,2
SATCOM

LEGEND:
DCDU DATA LINK CONTROL & DISPLAY UNIT
LGCIU: LANDING GEAR CONTROL INTERFACE UNIT
MDDU: MULTI-PURPOSE DISK DRIVE UNIT (DATA LOADER)
ATC XPNDR: AIR TRAFFIC CONTROL TRANSPONDER
SDAC: SYSTEM DATA ACQUISITION CONCENTRATOR
MCDU: MULTIPURPOSE CONTROL & DISPLAY UNIT
OTHER ABBREVIATIONS ARE EXPLAINED ON THE TEXT PAGE

Figure 83 ATIMS Schematic