FOR INFO

45.00 CONTENTS

GENERAL

The purpose of the Central Maintenance System (CMS) is to facilitate maintenance tasks by directly indicating the fault messages in the cockpit, and allowing some specific tests.
Two maintenance levels are possible:
At the line stop : Equipment removal
At the main base : Troubleshooting

COMPONENTS

The CMS includes:
- The Built In Test Equipment (BITEs) of all electronic systems ;
- Two fully-redundant Central Maintenance Computers (CMCs) ;
- Three Multipurpose Control Display Units (MCDUs), also used for the FMGS, ACMS (Aircraft Condition Monitoring System) and ATSU, which dialogue with the CMC for information display or initiation of tests ;
- One printer (A4 format).

Normally, only CMC 1 is used, while CMC 2 is on standby.
CMC 2 will automatically take over, if CMC 1 fails.
A pushbutton on the overhead panel enables the transfer to CMC 2 to be forced, by setting CMC 1 to the off position.

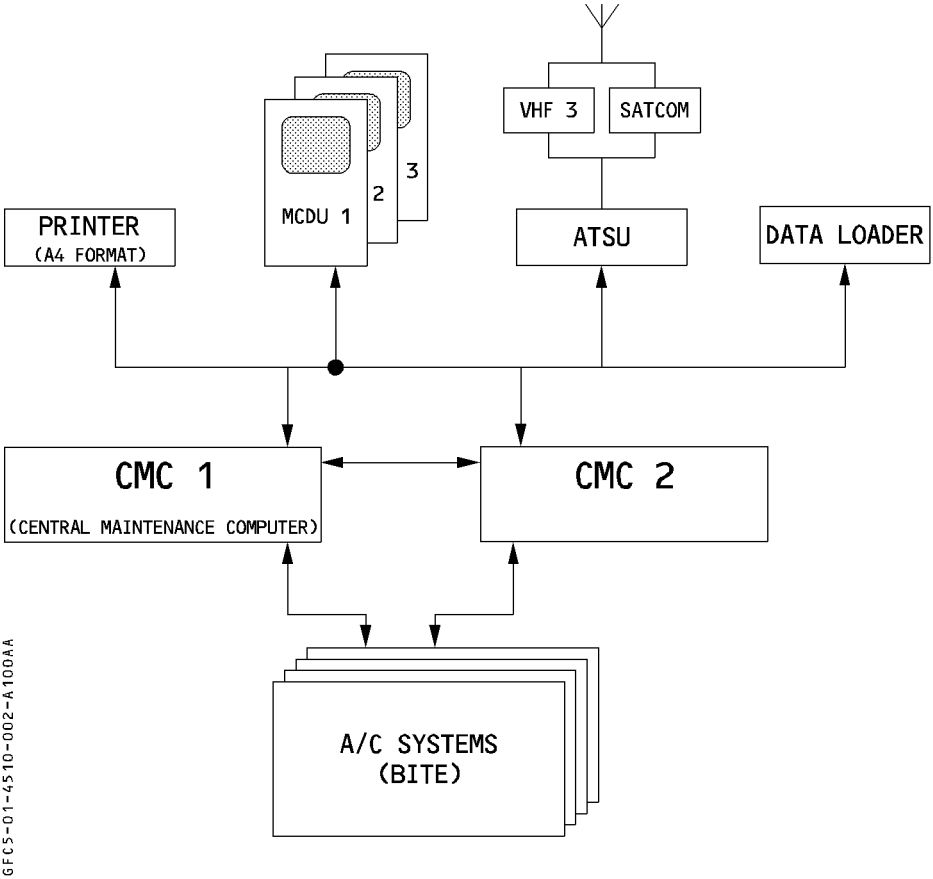
MODES OF OPERATION

The CMS operates in two main modes:
- In flight, the NORMAL or REPORTING mode ;
- On ground, the INTERACTIVE or MENU mode.

In NORMAL mode, the CMS records and permanently displays the failure messages transmitted by each system BITE.
In INTERACTIVE mode, the CMS allows the connection of any BITE system with the MCDU, in order to initiate a TEST, or to display the maintenance data stored and formatted by the system's BITE.

ARCHITECTURE

R



FAILURE CLASSIFICATION

There are three classes of failure :

Class 1: Failures indicated to the flight crew by means of a flight deck effect (e.g. ECAM or instrument flags).

R Class 2: Failures which can be left uncorrected until the next scheduled maintenance check (with a maximum delay of 600 FH).

Class 3: Failures not indicated to the flight crew, with no fixed time quoted for correction.

R

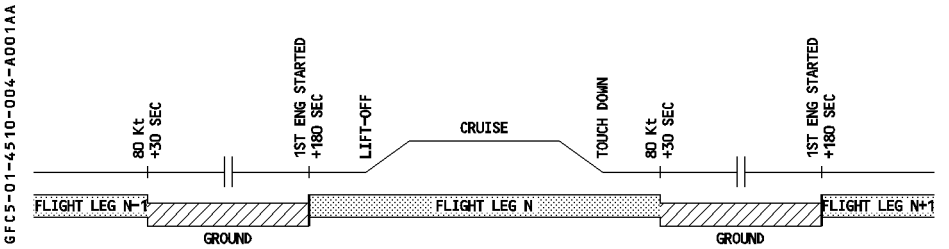
Failure Classes	Class 1	Class 2	Class 3
Operational consequences	YES	NO	NO
Indication to the flight crew	YES Automatically displayed in real time : - Warning or caution messages on Engine Warning Display - Flags on Primary Flight Display, or Navigation Display, or System Display - Local warning	YES STATUS flashing at the end of the flight : - Maintenance Status messages on SD	NO
Dispatch consequences	Refer to MEL may be : "GO" "GO IF" "NO GO"	MEL not applicable. "GO" without conditions. Corrections can be deferred for 600 flight hours.	MEL not applicable No fixed time quoted for corrections. However correction is recommended to improve the dispatch reliability.
Indication to the maintenance team	YES Automatically print out at the end of each flight : Failure messages on the CMC Post Flight Report		YES On request when needed Failure messages on CMC Class 3 Report

Note : Most Class 1 failures have an operational consequence on the current flight. Some Class 1 failures, such as MINOR FAULT, have no operational consequence on the current flight, but must be corrected in accordance with the MEL preamble, or the time specified in the associated dispatch condition of the MEL.

CMS FUNCTIONS

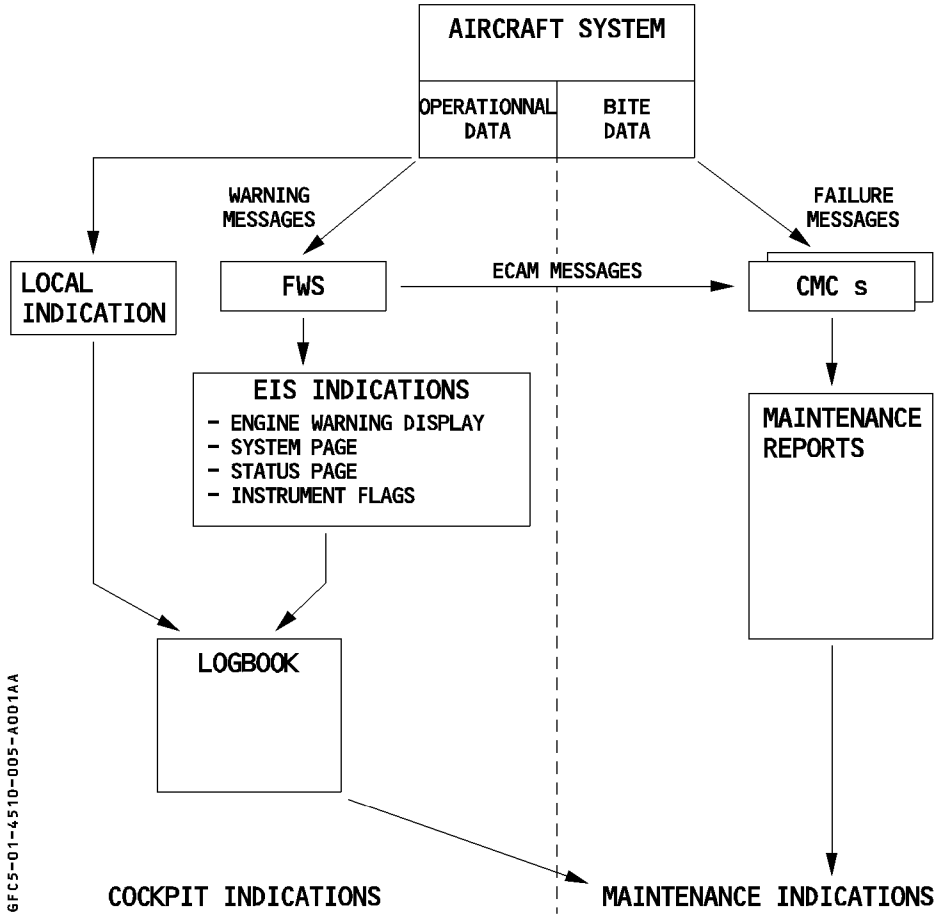
The main functions of the CMS are:

- acquisition and storing of messages transmitted by the connected system BITEs or by the Flight Warning Computer (Warning / Caution titles).
- elaboration of the maintenance phases.



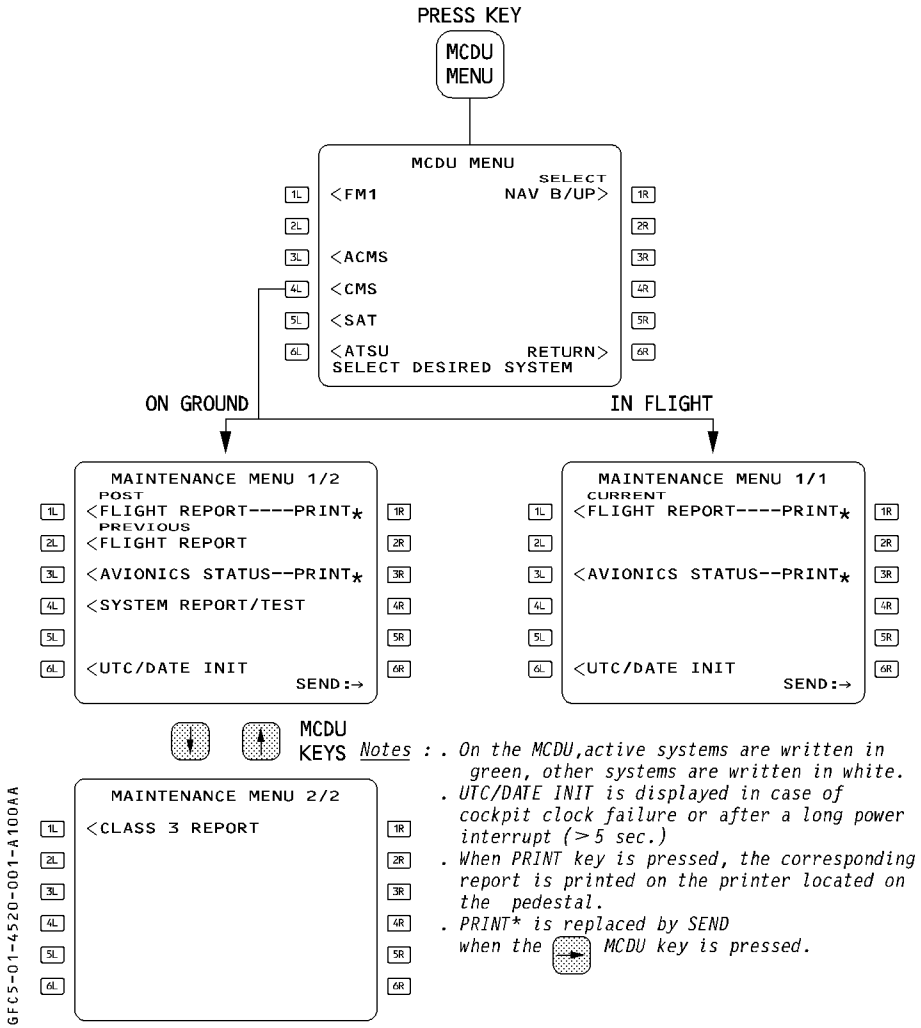
- elaboration of the maintenance reports.
  - · POST OR CURRENT FLIGHT REPORT
    Presents all ECAM warning / caution and failure messages (class 1 or 2 failures) recorded during the last flight leg or current flight leg.
    Available in flight and on ground.
  - · PREVIOUS FLIGHT REPORT
    Presents all ECAM and failure messages recorded during the 63 previous flight legs (post flight reports).
    Available on ground only.
  - · AVIONICS STATUS
    Presents in real time the systems affected by a failure.
    Available in flight and on ground.
  - · CLASS 3 REPORT
    Presents the class 3 failure messages detected during the last flight leg.
    Available on ground only.
  - · SYSTEM REPORT / TEST
    Allows interactive dialogue between any system and the MCDU.
    Available on ground only.

COCKPIT / CMS INTERFACE



MAINTENANCE MENU

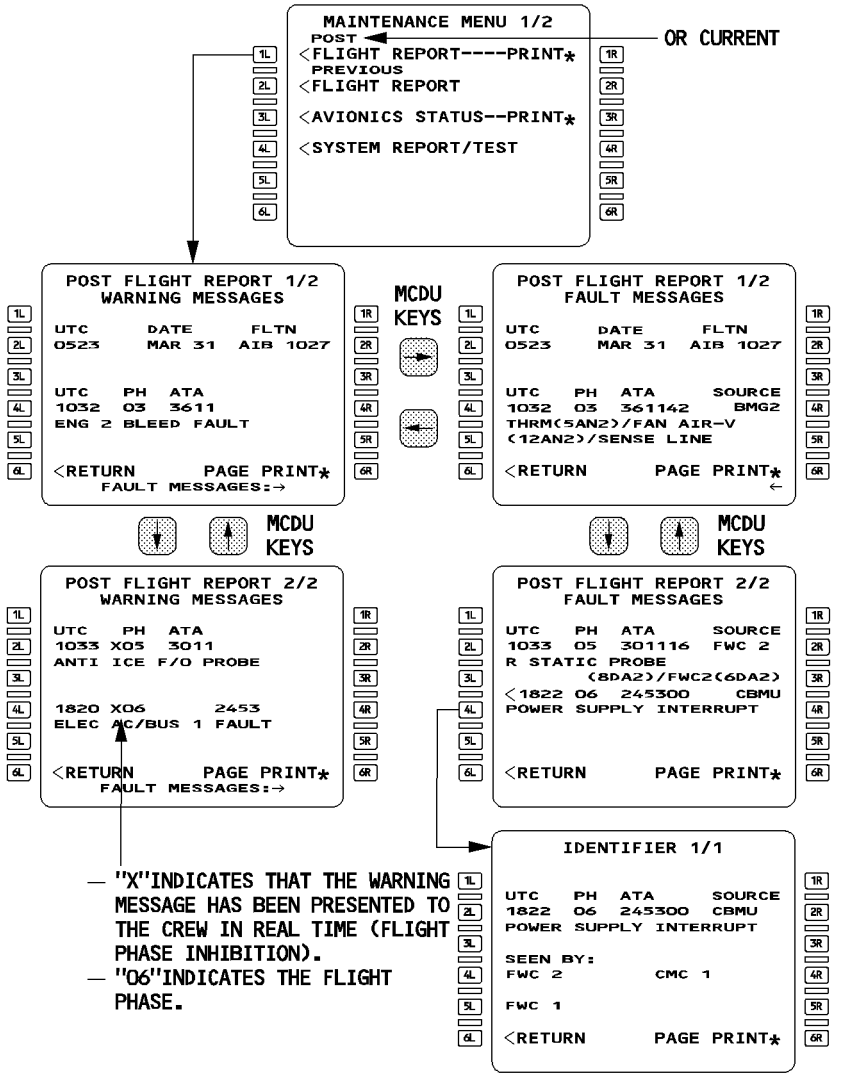
The CMS uses menus displayed on the MCDU. The operator chooses the functions or reports via these menus.
Pressing the "MCDU MENU" key and then selecting CMS gives access to the MAINTENANCE MENU page. These pages are different in flight and on ground.



Notes :
- *On the MCDU, active systems are written in green, other systems are written in white.*
- *UTC/DATE INIT is displayed in case of cockpit clock failure or after a long power interrupt (> 5 sec.)*
- *When PRINT key is pressed, the corresponding report is printed on the printer located on the pedestal.*
- *PRINT* is replaced by SEND when the → MCDU key is pressed.*

POST OR CURRENT FLIGHT REPORT

POST FLIGHT REPORT on ground or CURRENT FLIGHT REPORT in flight, presents all class 1 and 2 failures and all system failure messages received by the CMS during the last flight leg or current leg.



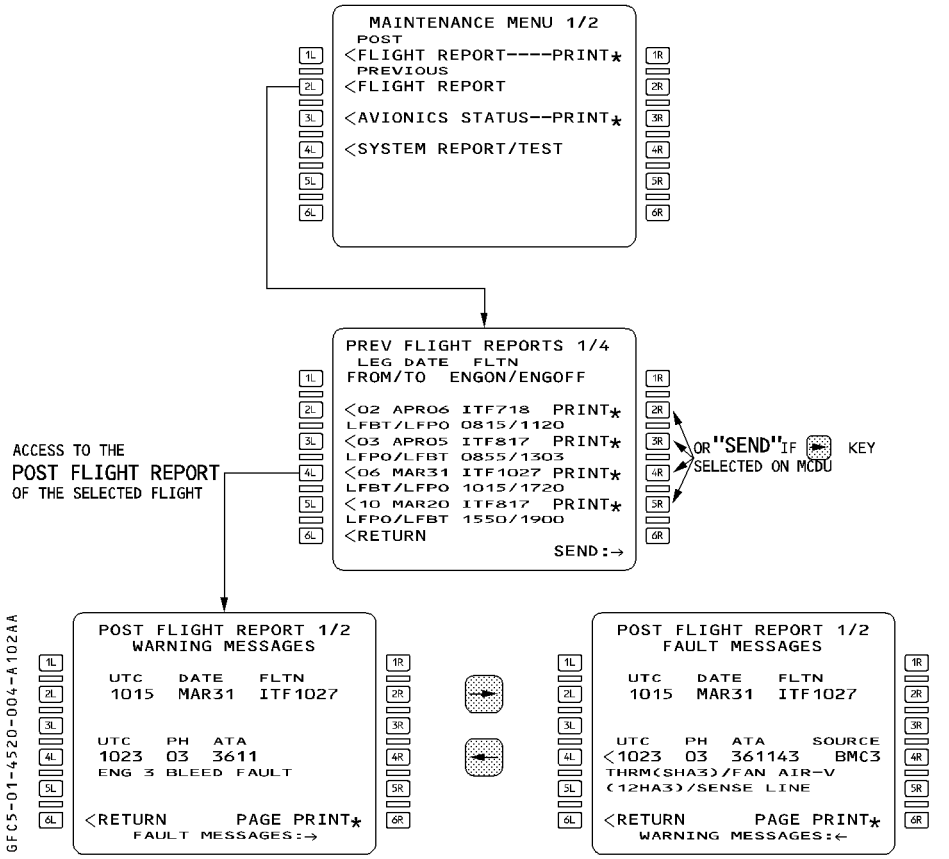
The POST or CURRENT FLIGHT REPORT is automatically printed after engine shutdown, or manually by selecting the PRINT key.
It is also automatically downlinked to the airline ground computer after engine shutdown, or manually by selecting SEND.

POST FLIGHT REPORT printout

MAINTENANCE (CURRENT or) POST FLIGHT REPORT				LEG-00
AIRCRAFT IDENTIFICATION : F-GGEA DATE : MAR31 FLIGHT NUMBER : AIB 1027		ENGINE ON/ENGINE OFF : 1015/1720 FROM/TO : LFBO/LFBT		PRINTING DATE : APR02 UTC : 1406
COCKPIT EFFECTS		FAULTS		
ATA 36-11 MESSAGE DISPLAYED : ENG 2 BLEED FAULT	UTC: 1032 FLIGHT PHASE : TAKEOFF ROLL	ATA 36-11-42 SOURCE : BMC3 MESSAGE : THRM (5HA3)/FAN AIR-V (12HA3)/SENSE LINE	INTERMITTENT	CLASS 1 IDENTIFIERS : CP1C CPC2
ATA 30-11 MESSAGE DISPLAYED : ANTI-ICE F/O PROBE	UTC: 1033 FLIGHT PHASE : CLIMB	ATA 36-11-16 SOURCE : PHC2 MESSAGE : R STATIC PROBE (8DA2)/ PHC2 (6DA2)	HARD	CLASS 1 IDENTIFIERS : ADIRU1 ADIRU2 ADIRU3
ATA 24-53 MESSAGE DISPLAYED : ELEC AC 1.1 BUS FAULT	UTC : 1822 FLIGHT PHASE : CRUISE	ATA 24-53-00 SOURCE : SDAC MESSAGES : POWER SUPPLY INTERRUPT	HARD	CLASS 1 IDENTIFIERS : CBMU
END OF REPORT (or CONTINUED, if more than 1 page)				

PREVIOUS FLIGHT REPORT

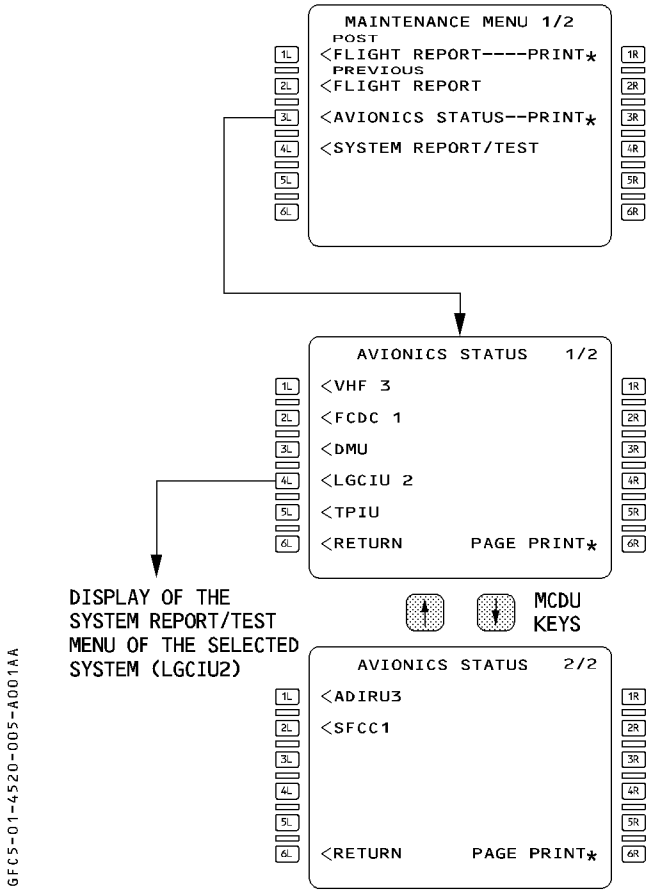
This report provides access to the POST FLIGHT REPORTS of the 63 previous flight legs.



On ground, the operator can either print a flight report or a screen copy. The format is identical to that of the POST FLIGHT REPORT. The operator can send a flight report to the airline ground computer by selecting the corresponding SEND key.

AVIONICS STATUS

R This screen displays the list of systems affected by a Class 1 or 2 failure.
R The Operator can press the button next to a system to directly call up that system page
R without going through the SYSTEM REPORT/TEST menu.
R



In flight, or on ground, the operator can either print the complete AVIONICS STATUS report, or only a copy of the screen.

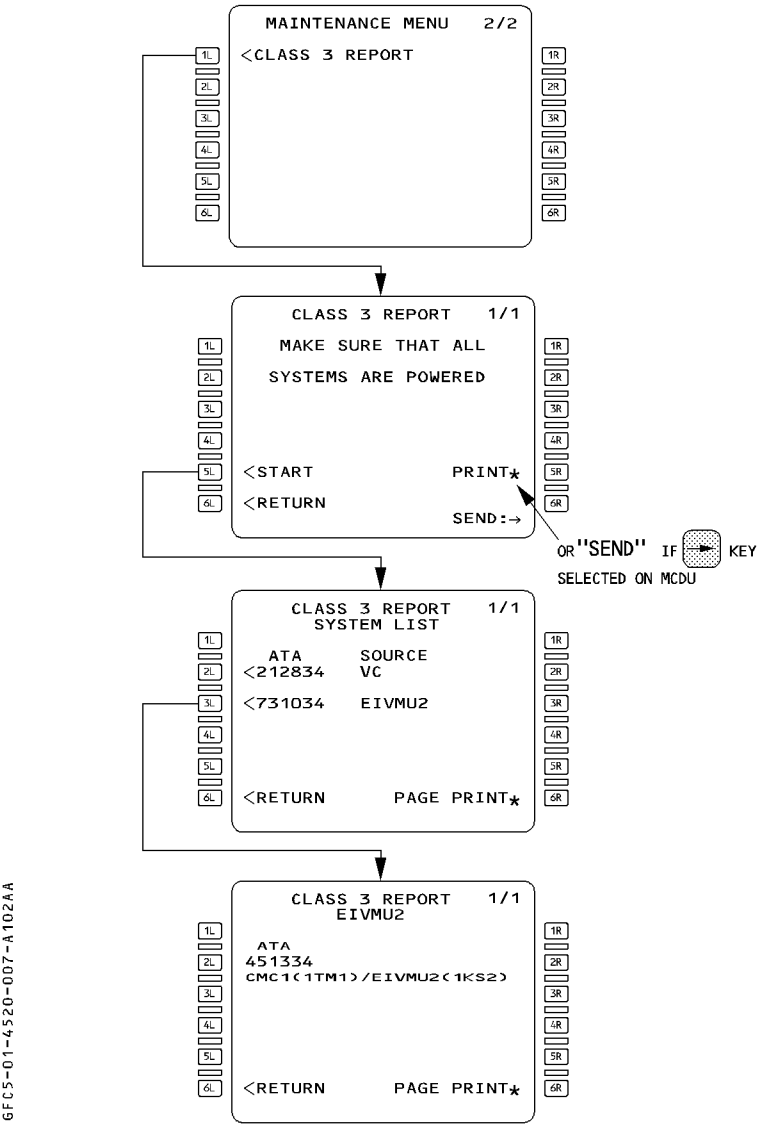
In flight or on ground, the operator can print either the complete AVIONICS STATUS report or only a screen copy.

AVIONICS STATUS print out

MAINTENANCE AVIONICS STATUS			
AIRCRAFT IDENTIFICATION : F-GGEA	PRINTING	DATE : APR10	UTC : 1830
VHF3 TPIU	FCDC1 ADIRU3	DMU SFCC1	LGCIU2
END OF REPORT (or CONTINUED, if more than 1 page)			

CLASS 3 REPORT

This report is only created on ground, upon operator request. It presents all class 3 failures detected during the last flight leg, and classifies them by ATA reference number.



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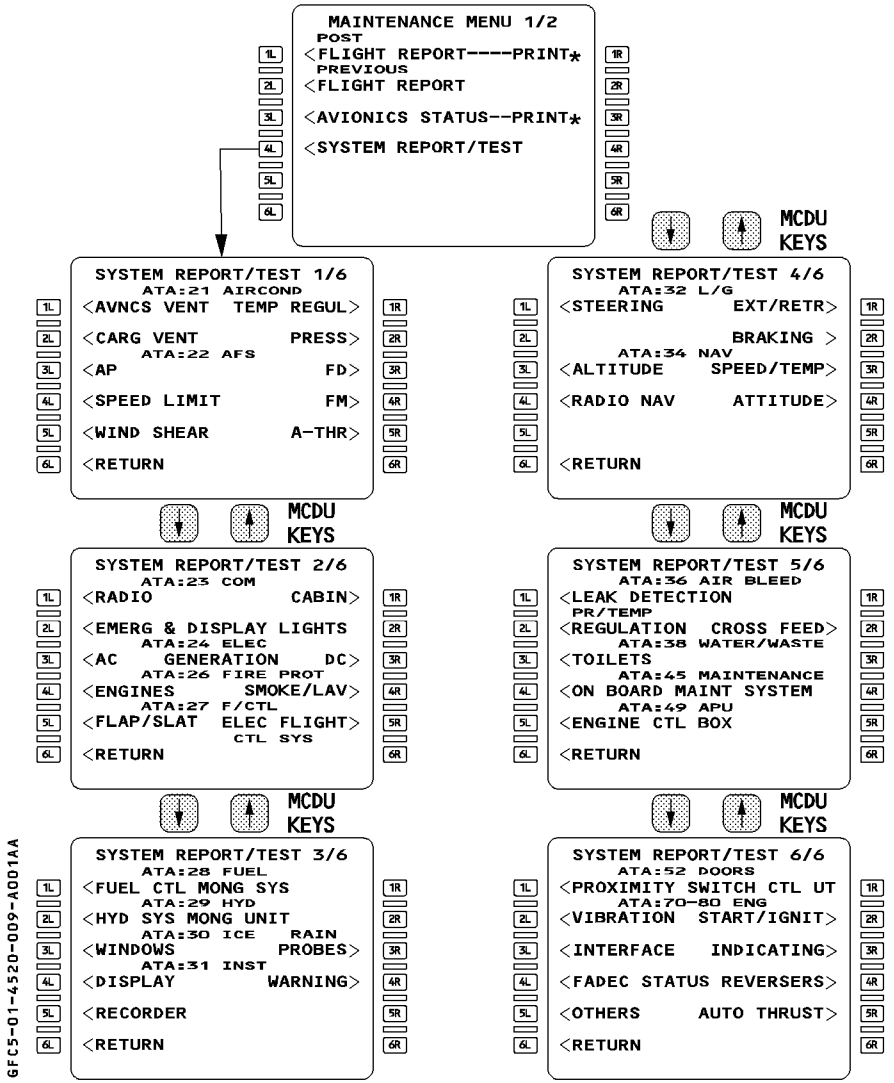
On ground, the operator can either print the complete report or a screen copy. They can also send the complete CLASS 3 REPORT to the airline ground computer.

CLASS 3 REPORT printout

MAINTENANCE CLASS 3 REPORT			
AIRCRAFT IDENTIFICATION : F-GGEA		PRINTING	DATE : APR10 UTC : 1830
SOURCE			
ATA	NAME	ATA MESSAGE :	ATA MESSAGE :
212834	VC	212830 OUTFLOW VALVE 10HL1	213020 TEMP SENSOR 23HK
		451334 CMC1(1TM1)/EIVMU3(1KS3)	
731034	EIVMU2	451334 CMC1(1TM1)/EIVMU3(1KS3)	
END OF REPORT (or CONTINUED, if more than 1 page)			

SYSTEM REPORT / TEST

It allows access to all electronic systems. After the system selection, the CMC enters into the interactive dialogue with this system.
All systems are classified by ATA chapter on six MCDU pages.



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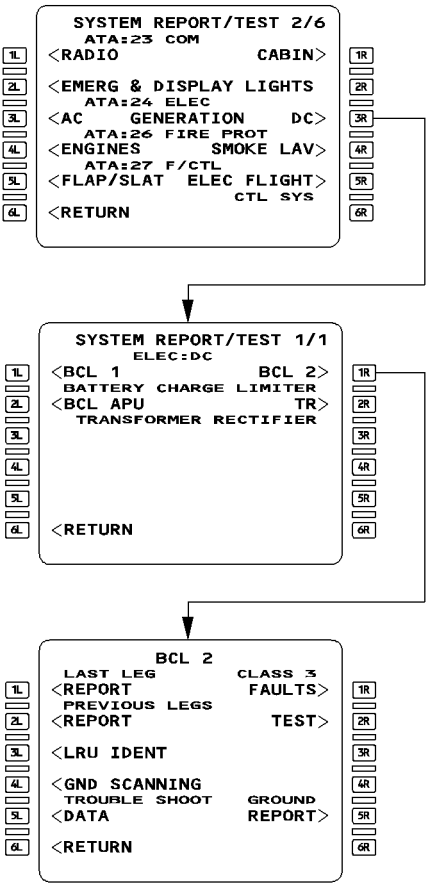
Example : access to BCL 2



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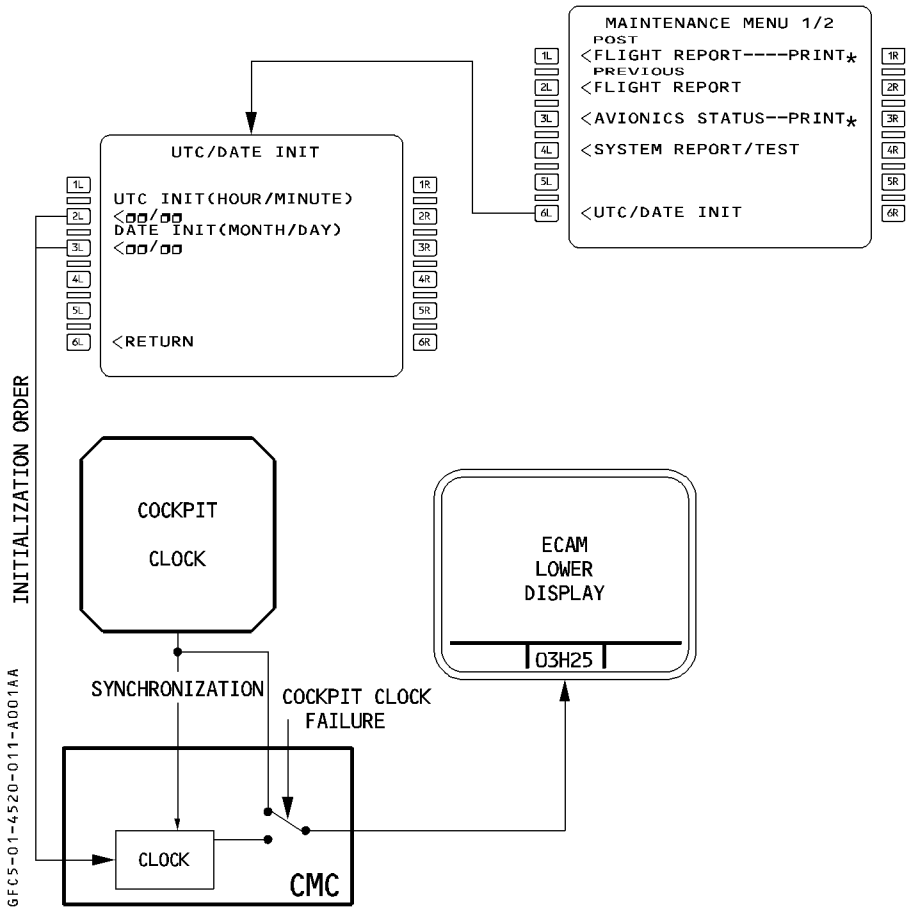
In this example, the operator has accessed to the menu of the selected systems :

- LAST or PREVIOUS LEG REPORT : presents the list of LRU affected by a failure
- LRU IDENT : contains the P / N of all LRUs of the system.
- GND SCANNING : runs the flight monitoring on ground and presents the faulty LRU
- TROUBLE SHOOT DATA : provides system internal data concerning each failure.
- CLASS 3 FAULT : presents class 3 failures detected by the system during the last flight leg.
- TEST : runs the power up test and system test (if any) and display the result.
- GROUND REPORT : presents the list of LRU affected by a failure with the aircraft on ground.

UTC / DATE INIT

R The CMC transmits to the aircraft systems, and the lower ECAM displays the GMT coming from the main clock.
In case of a cockpit clock failure, the internal CMC clock (synchronized on the cockpit clock) takes over. If, in addition, there is a long power interruption (greater than 5 seconds), then crew action is required to initialize the GMT and DATE via the MCDU.



CMC RECONFIGURATION

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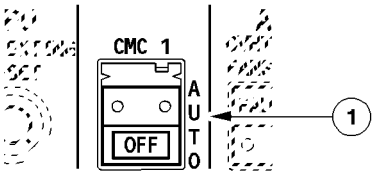

(1) CMC 1 pb sw

AUTO : CMC 1 is active while CMC 2 is in stand-by.
CMC 2 automatically takes over if CMC 1 fails.
OFF : CMC 1 selected off.
CMC 2 is active.

DESCRIPTION

With the data loading system, it is possible to either upload databases and operational software, or to download system reports from various onboard computers.
Data transfer is performed on 3.5 inch disks, via a portable data loader or (◁) the aircraft's fixed Multipurpose Disk Drive Unit (MDDU) . The Data Loader selector, on the overhead panel, enables the applicable aircraft system to be selected.

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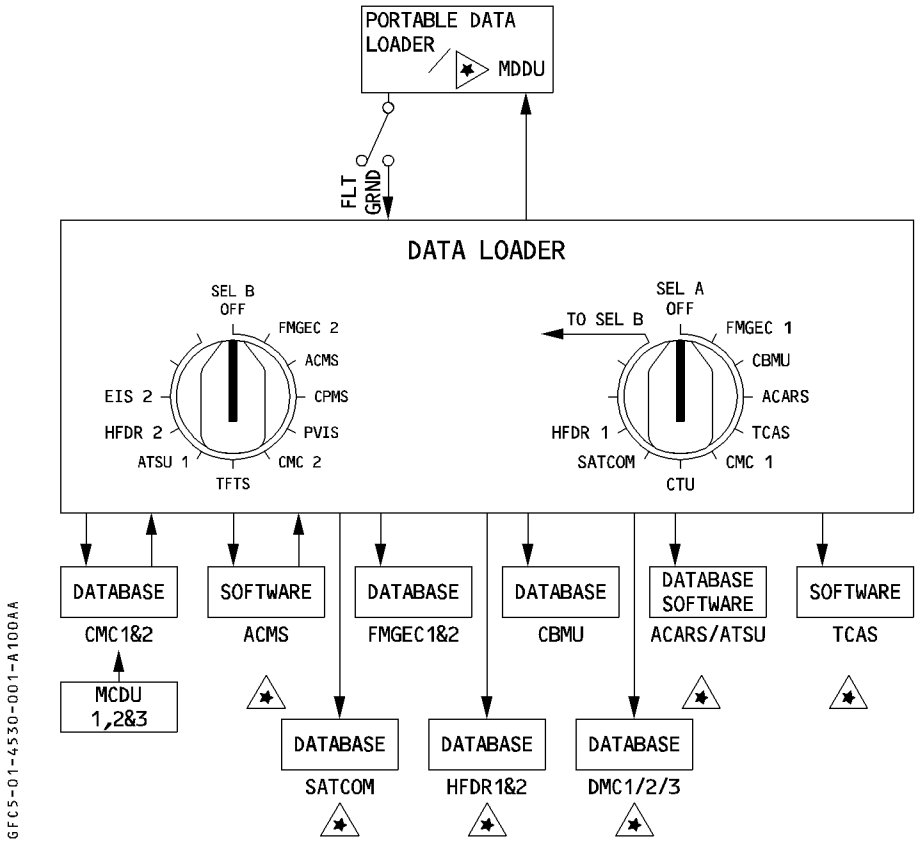

DESCRIPTION

The printer is the output unit for data printing, which can be either generated manually from the MCDUs, or automatically depending on the system.
The data printouts are described in the CMC FUNCTIONS description (1.45.20), or in the related system descriptions.

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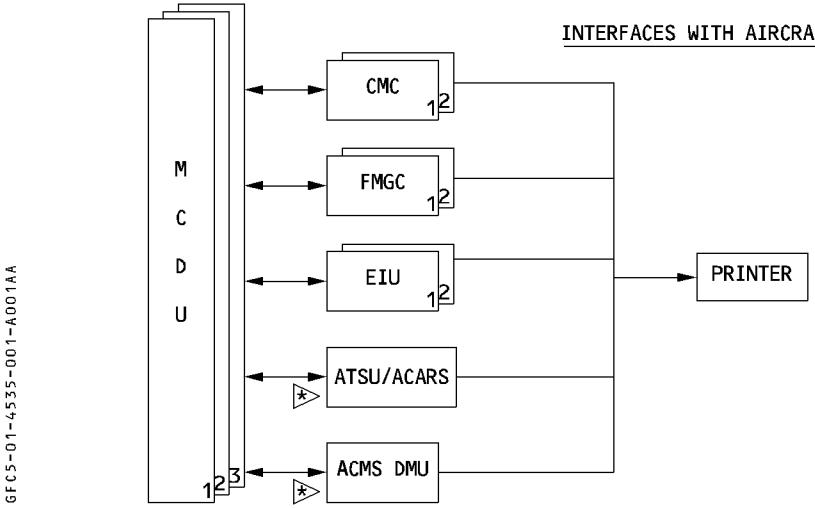
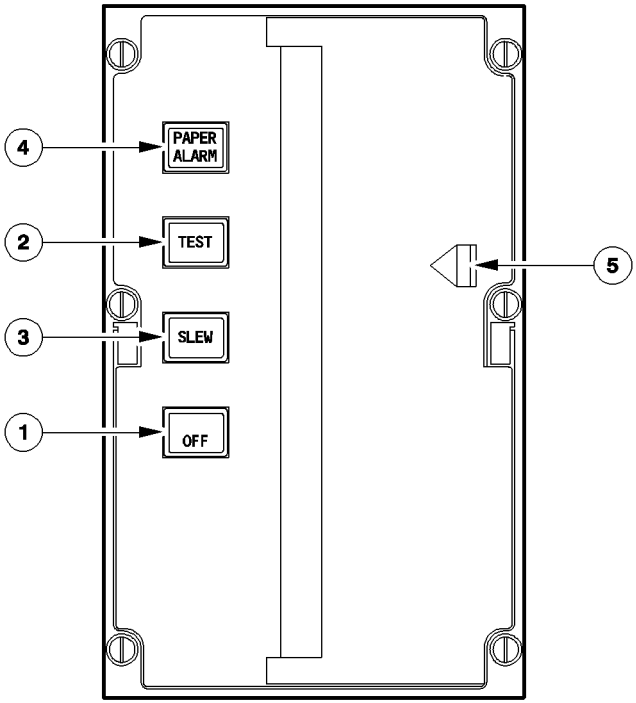


The printer is installed at the rear of the pedestal on the F/O's side.

CONTROLS AND INDICATORS



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(1) OFF pb sw

OFF : OFF light (amber) comes on steady, printer is off.
On : OFF light extinguishes, then after approximatly 30 seconds it illuminates for 10 seconds while power up test is performed. Then the printer is in normal operation provided :
- no indication light on front panel is illuminated
- the access door is closed
- there is paper in front of the print head.

Note : When a printer internal fault is detected the pushbutton illumination will come on steady.

(2) TEST pb

When depressed a printing of a test pattern is performed, provided the printer is not in communication with a connected system. During test the OFF light is flashing.

(3) SLEW pb sw

The SLEW pb sw is used to exit paper from the printer.

(4) PAPER ALARM pb sw

The pb sw is illuminated when there is approximatly less than 25 ft of paper available in the printer.
For testing the PAPER ALARM light the pushbutton is depressed. The illumination goes off approximatly 2 seconds after releasing the pushbutton.

Note : If SLEW and PAPER ALARM pb sw are depressed at the same time.
- *during the printout of a message, the printout is aborted. PAPER ALARM pb illuminates.*
- *while there is no printout, access door is open and paper roll outside the printer, the paper is moved rearward. This function can be used in case of a paper jam inside the printer.*

(5) PRINTER DOOR latch

The printer door latch locks the printer door. The access door is spring loaded and stays open when released. On the inner side of the door, a label gives paper loading instructions.

BUS EQUIPMENT LIST

	NORM			EMER ELEC		
	AC	DC	DC BAT	AC ESS	DC ESS	HOT
CMC 1				GND		
CMC 1 SWITCHING		DC 1				
CMC 2	AC 2					
CMC 2 SWITCHING		DC2				
DATA LOADER	AC 1					
PRINTER	AC1					