Introduction

This Systems guide is an essential tool for all ATR flight crew and engineer to learn or review ATR systems operation. To make learning process easier, systems are introduced in a user-friendly and efficient training method, including diagram and schematic display as appropriate.

This guide is a comprehensive document that efficiently complements FCOM 1st part – Systems description. Systems are organized as per FCOM chapter, including their ATA classification along with cockpit location. Cockpit panels familiarisation is presented with each relevant system description in a separate annex.

This new guide release is intended for training on ATR 42-500 and 72-212A. It presents a generic aircraft not customized to your own aircraft systems. Should you find any discrepancy between Systems guide and your customized ATR operational documentation (AFM, FCOM & QRH), the latter takes precedence.

NB: This Systems guide is also available for ATR 42-300 and 72-200 not PEC. This document will also be developed for the ATR-600.

The Training and Flight Operations support team.
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1. Doors location

- Cargo door
- Pilot communication hatch
- Emergency exit type III
- Rear entry door / emergency exit type I
- Service door / emergency exit type I
- Pilot emergency hatch
- Forward avionics access hatch
- Aft avionics compartment door
2. Cargo door panel

**ARMD light**
- Selector armed green light is ON, when actuator selection switch working conditions are met:
  - cover panel opened
  - door unlocked by operating handle: all hooks are disengaged and FWD latchlock is unfastened

**LCHD light**
blue light is ON when all door hooks and latch locks are fully engaged

**GND HDL light**
Ground handling bus ON BAT red light is ON when ground handling bus is directly supplied by HOT main bat bus: means that the battery is discharging even if the BAT toggle switch is in OFF position (visible even when the cover panel is closed)
This red light is ON when:
- The refueling panel is open
- The cargo door control panel is open
- The passenger door is open and alert, that the battery is discharging before leaving the aircraft

**Actuator selection switch**
is used to operate the door (OPEN or CLOSE) when the CARGO DOOR ARMD green light is on

**Panel cover switch**
connects the ground handling bus on line when the panel cover is opened and allows operation of cargo door. During the opening, a self test of the MFC 1A and 2A is performed to initiate the control system of the cargo door.

**CARGO LIGHT switch**
allows activation of the cargo bay light from outside

3. Doors panel

**DOORS lights**
CABIN and CARGO aural alarms are inhibited when the Condition Lever 1 is on FTR or FUEL SO SVCE and FWD COMPT aural alarms are inhibited when the Condition Lever 2 is on FTR or FUEL SO

**CAB OK and SVCE OK**
Light on when SW TEST depressed and check microswitches operation

**SW TEST**
Tests continuity of microswitch system (on ground, doors opened)

**UNLK**
At least 1 micro switch is opened

**Panel cover switch**
connects the ground handling bus on line when the panel cover is opened and allows operation of cargo door. During the opening, a self test of the MFC 1A and 2A is performed to initiate the control system of the cargo door.
4. External lights

A - Navigation lights
B - Taxi and T/O lights
C - Landing lights
D - Wing lights
E - Beacon lights
F - Strobe lights
G - Logo lights
H - Emergency light

Memo panel
Cabin panel

NO SMKG OFF

NO SMKG

SEAT BELTS OFF

SEAT BELTS
5. EXT LT panel

BEACON and NAV supplied by SVCE BUS and BUS 1
LOGO supplied by SVCE BUS

TAXI & T.O Supplied by ACW BUS 2

STROBE, LAND supplied by ACW BUS 1 (Left Hand), ACW BUS 2 (Right Hand)

WING Supplied by DC BUS 2

6. MEMO panel

SEAT BELTS illuminates blue when associated switch is selected ON

NO SMKG illuminates blue when associated switch is selected ON

7. Signs panel

NO SMKG and SEAT BELTS Blues Lts on MEMO panel when ON. (DC BUS 2)

ON emergency exit lights illuminates. Supply: DC STBY or 6 V BAT packs

ARM Emergency lights illuminate when <18 V on STBY bus or if both DC GEN off line. Emergency lights extinguish when >20V on STBY bus and at least 1 GEN operating

DISARM system deactivated
8. Internal lighting

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9. LT panel

**INST**
Selects activation and intensity of main panel instrument integral lighting

**DSPL knob**
selects activation and intensity of all digit lighting

**PNL rotary selector**
selects activation and intensity of glareshield, pedestal and overhead panels instrument integral lighting

**FLOOD knob**
selects activation and intensity of pedestal panel flood lighting. (OFF TO BRT)

10. ANN LT panel

**STORM switch**
On position, flood lights are ON with maximum intensity and fluorescent tubes are ON

**STBY COMPASS switch**
to illuminate the STBY COMPASS
ON and OFF position

11. Side panel

**CAPT CONSOLE LT knob**
selects activation and intensity of the respective lateral console

**CAPT READING LT knob**
selects activation and intensity of the respective spot light

12. FLT COMPT LT panel

**DOME switch**
BRT: dome lights are supplied with maximum intensity
DIM: dome lights are dimmed
OFF: both dome are off

**DOME light**
the F/O dome light becomes BRT when the switch is in BRT or DIM if:
– dual DC GEN loss
– or on ground, with BAT supply only

**STORM switch**
On position, flood lights are ON with maximum intensity and fluorescent tubes are ON

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A - Aircraft general
B. Multi Function Computer

FCOM 1.01
Numerous logic functions are performed by two independent computers (MFC1 and MFC2). Each computer includes two independent modules (A and B).

The purpose of these computers is to:
- monitor, control, authorise operation of the aircraft systems
- manage system failures and flight enveloppe anomalies and command triggering of associated warning

**Example:**

<table>
<thead>
<tr>
<th>SYSTEM</th>
<th>FUNCTION</th>
<th>MODULE</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLIGHT</td>
<td>STICK PUSHER</td>
<td>1A 1B 2A 2B</td>
</tr>
<tr>
<td>CONTROLS</td>
<td>STALL WARNING</td>
<td></td>
</tr>
</tbody>
</table>

- The stick pusher function is integrated in modules 1A, 1B, 2A and 2B.
- The stall warning function is integrated in modules 1B and 2B.
- The stick pusher function is available if modules (1A AND 2A) OR (1A AND 2B) OR (1B AND 2A) OR (1B AND 2B) operate. This function is therefore not available if modules (1A AND 1B) OR (2A AND 2B) are lost.
- The stall warning is available if modules 1B OR 2B operate. This function is therefore not available if modules 1B AND 2B are lost.

**FAULT** illuminates and the CCAS is activated when a malfunction or electrical supply fault is detected. The module automatically becomes inoperative. This light also flashes during self-test of the module.

During powering, since all 4 modules are selected ON, the following sequence is executed:
- MFC 1A and MFC 2A FAULT lights flashing (self-test of these modules)
- MFC 1B and MFC 2B FAULT lights extinguish

**NOTE:** Here, if the cargo door control panel is opened, the self test of MFC 1A and 2A are already done, and only the MFC 1B and 2B are tested. (See chapter A.2)
C. Centralized crew alerting system

FCOM 1.02
1. Cockpit philosophy

In normal operation, all the lights are extinguished (Dark cockpit philosophy). With few exceptions, the lights illuminate to indicate a failure or an abnormal condition.

- Normal operation
- Warning indication
- Caution indication
- Other than normal basic operation
- Temporarily required system in normal operation
- Back up or alternate system selected
2. CCAS description

The CCAS draws crew’s attention when a failure is detected and guides the crew to the system affected by the failure.

Three types of visual devices are used:
- MASTER WARNING and MASTER CAUTION lights
- CREW ALERTING PANEL (CAP) lights
- LOCAL ALERT lights

Detection sequence

INFORMATION

IDENTIFICATION

ISOLATION

Example: ACW Generator 1 failure

![Diagram showing components and alerting system]

- MASTER CAUTION light flashing + Single Chime
- ELEC light on the CAP
- Local alert: fault light on the ACW gen 1 push-button
Dear Customer,

This is an extract of the ATR Systems - 2010 edition, available in paper or electronic copy. Should you need any further information, please contact the ATR Training Center atc@atr.fr

Yours faithfully,

Your ATR Training & Flight Operations support team