



# A.F.M. Supplement

SUP1\_AFM\_DHR\_P68ISAE\_R0

**RESEARCH PLATFORM CAPABILITY**

**STC 00-001-19**

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**NOTE:**

This supplement must be inserted in section 8 of the P68 VULCANAIR Aircraft Flight Manual.



**APPROVAL**

The original version of this Supplement  
is approved under the authority of EASA  
Approval Number: EASA 10075790  
Date: 12/03/21

## LIST OF EFFECTIVE PAGES

This manual contains the pages identified on the following dates:

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List of latest approved normal revisions		Normal Revision: 00
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00	DEC 08, 2020	Original

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**LIST OF ABBREVIATIONS**

AFM	Aircraft Flight Manual
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## SECTION.1 GENERAL

This supplement is intended to inform the pilot about the equipment limitations, description and operations necessary to the operation when the aircraft is equipped with the “RESEARCH PLATFORM CAPABILITY” as per change No. STC 00-001-19 Version A.

General hereafter supplement or replace those of the standard aircraft described in Section 1 - General when the aircraft is equipped with the “RESEARCH PLATFORM CAPABILITY” as per change No. STC 00-001-19 Version A.

The “RESEARCH PLATFORM CAPABILITY” supplement consists of the installation of equipment allowing the possibility of using the “RESEARCH INSTALLATION” supplement.

When the “RESEARCH PLATFORM CAPABILITY” has been put in place in the aircraft by implementing the STC modification, the aircraft has become the “basic configuration”.

The features retained by the “RESEARCH PLATFORM CAPABILITY” are described in this supplement.

Refer to Supplement No. SUP2\_AFM\_DHR\_P68ISAE\_R0 “RESEARCH INSTALLATION”, for the description when its installation is operational.

### NOTES, CAUTIONS AND WARNING

In this supplement the NOTE, CAUTION and WARNING indications are supplied in accordance with these definitions:

- **NOTE** ● An operating procedure, technique or maintenance practice which is considered essential to emphasize.
- ▲ **CAUTION** ▲ An operating procedure, technique or maintenance practice which may result in a minor damage if not carefully followed.
- ▲ **WARNING** ▲ An operating procedure, technique or maintenance practice which may result in personal injury or loss of life if not carefully followed.

## **SECTION.2      OPERATING LIMITATIONS**

The Limitations hereafter supplement and replace those of the standard aircraft described in Section 2 – Operating Limitations when the aircraft is equipped with the “RESEARCH PLATFORM CAPABILITY” as per change No. STC 00-001-19 Version A.

### **2.1   Weight limits**

- No impacts.

### **2.2   Electrical limits**

- Measurement bay master switch must be permanently set to OFF.
- Experimentation bay master switch must be permanently set to OFF.
- Telemetry switch must be permanently set to OFF.

## SECTION.3 EMERGENCY PROCEDURES

The emergency procedures hereafter supplement or replace those of the standard airplane described in Section 3 - Emergency procedures when the aircraft is equipped with the “RESEARCH PLATFORM CAPABILITY” as per change No. STC 00-001-19 Version B, C or D.

### 3.1 Emergency procedures

#### 3.1.1 Impact of “RESEARCH PLATFORM CAPABILITY” modification to existing procedures:

##### 3.1.1.1 ENGINE FAILURE DURING CRUISE FLIGHT

No change to this procedure

##### 3.1.1.2 ENGINE IN-AIR RESTART

Electrical consumption needs to be reduced for optimum use of available electricity for engine the startup.

AUX PWR (2) master switch.....OFF

##### 3.1.1.3 IN-FLIGHT ENGINE FIRE

AUX PWR (2) master switch.....OFF

##### 3.1.1.4 IN-FLIGHT ELECTRIC OR CABIN FIRE

AUX PWR (2) master switch.....OFF

#### 3.1.1.5 SINGLE ALTERNATOR FAILURE

No change to this procedure

#### 3.1.1.6 DUAL ALTERNATOR FAILURE

Add this operation first at the beginning of the procedure to disconnect experimentation and measurement bays

AUX PWR (2) master switch.....OFF

#### 3.1.1.7 COMPLETE ELECTRICAL FAILURE

Add this operation first at the beginning of the procedure to disconnect experimentation and measurement bays

AUX PWR (2) master switch.....OFF

## **SECTION.4      NORMAL PROCEDURES**

Operation of the aircraft equipped with the "RESEARCH PLATFORM CAPABILITY" does not change the normal procedures of the aircraft described in section 4 - Normal procedures of the basic A.F.M.

## **SECTION.5      PERFORMANCES**

Operation of the aircraft equipped with the "RESEARCH PLATFORM CAPABILITY" does not change the performance of the aircraft described in section 5 - Performance of the basic A.F.M.

## **SECTION.6      WEIGHT AND BALANCE**

The Weight and Balance hereafter supplement and replace those of the standard aircraft described in Section 6 - Weight and Balance when the aircraft is equipped with the "RESEARCH PLATFORM CAPABILITY" as per change No. STC 00-001-19 Version A.

After the installation of the "RESEARCH PLATFORM CAPABILITY" in the aircraft a new Weight and Balance report shall be issued and incorporated into the onboard aircraft documentation.

This new Weight and Balance report identified as: "Weight and Balance report for the aircraft equipped with the "RESEARCH PLATFORM CAPABILITY" modification" shall be used in addition to the supplement: "SUP2\_AFM\_DHR\_P68ISAE\_R0 RESEARCH INSTALLATION" for Weight and Balance calculations.

## SECTION.7 DESCRIPTION

The description hereafter supplement and replace those of the standard aircraft described in Section 7 - System description and operation when the aircraft is equipped with the "RESEARCH PLATFORM CAPABILITY" as per change No. STC 00-001-19 Version A.

### 7.1 General

The complete installation of the STC modification consists in the following items:

Implemented to create the aircraft "Basic configuration":

1. SUP1\_AFM\_DHR\_P68ISAE\_R0 "RESEARCH PLATFORM CAPABILITY", the following items are permanently installed in the aircraft.
  - New position of ELT remote switch and chronometer,
  - Permanent (linked to research platform capability) installations of:
    - Cameras in the cockpit (electrical and mechanical installation),
    - Antennas on the fuselage:
      - Spatial trajectography (GPS1, GPS2),
      - Experimental system (GPS3),
      - Reference time (GPS4),
      - Telemetry (TM1).
    - Sensors on the fuselage:
      - Static pressure sensor (PS),
      - Outside Air Temperature sensor (OAT),
    - Sensors on the flight controls:
      - Aileron deflection (DL),
      - Elevator deflection (DM),
      - Rudder deflection (DN),
      - Elevator tab position (DTM),
      - Rudder tab position (DTN),
      - Flaps position (DV),
      - Elevator effort (EDM),
      - Rudder effort (EDN),
    - Sensors on the aircraft nose:

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- Angle of attack (ALFD, ALFG),
  - Side-slip measure (BET),
  - USB and RJ45 plugs near each seats 1/2/4/5/6,
- In the rear cabin compartment, a support interface plate is equipped with connecting ports that allow the wirings connection of the different systems of the “Research Installation”. (refer to the SUP2\_AFM\_DHR\_P68ISAE\_R0 “RESEARCH INSTALLATION” for the details of the installation).



2. SUP2\_AFM\_DHR\_P68ISAE\_R0 "RESEARCH INSTALLATION", the following items are installed upon requests of research actions.
- Installations of rails on attachment points in baggage compartment.
  - ballast support in the baggage compartment, on rails
  - a measurement bay, on rails, allowing record of:
    - Aircraft data parameters
  - an experimentation bay, on seat tracks:
    - a recording and visualization system for the physiological parameters (eyetracking),
    - an acquisition and visualization central data for the recorded photos and videos.

## 7.2 ELT remote switch and Chronometer

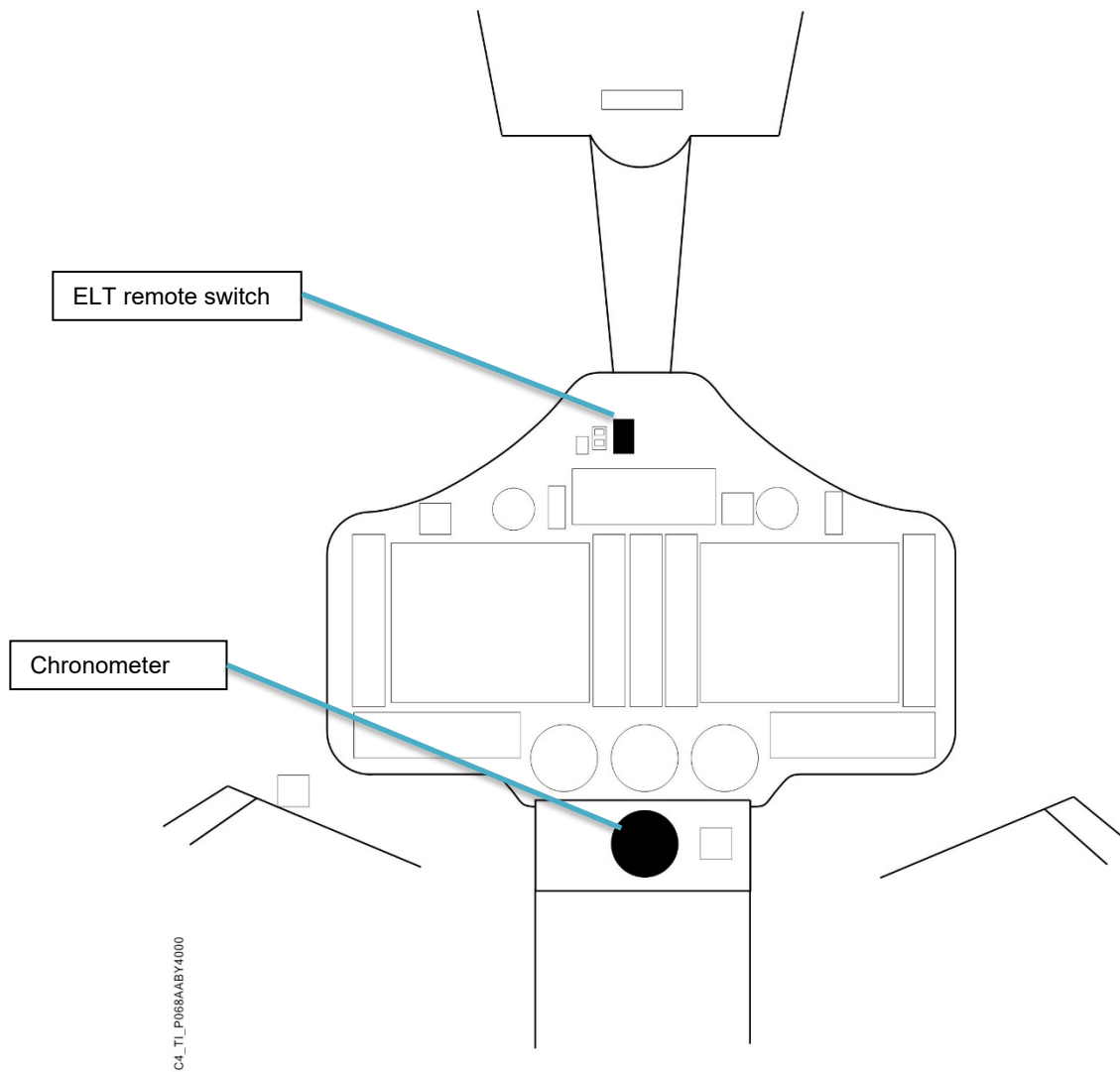


Figure 1 - ELT remote switch and chronometer

## 7.3 Installation of equipment in cockpit

### 7.3.1 Advisory lights for Experimentation and measurement bays

Advisory lights advise the pilot when the experimentation bay (EB) or the measurement bay (MB) are ON and supplied with electricity.

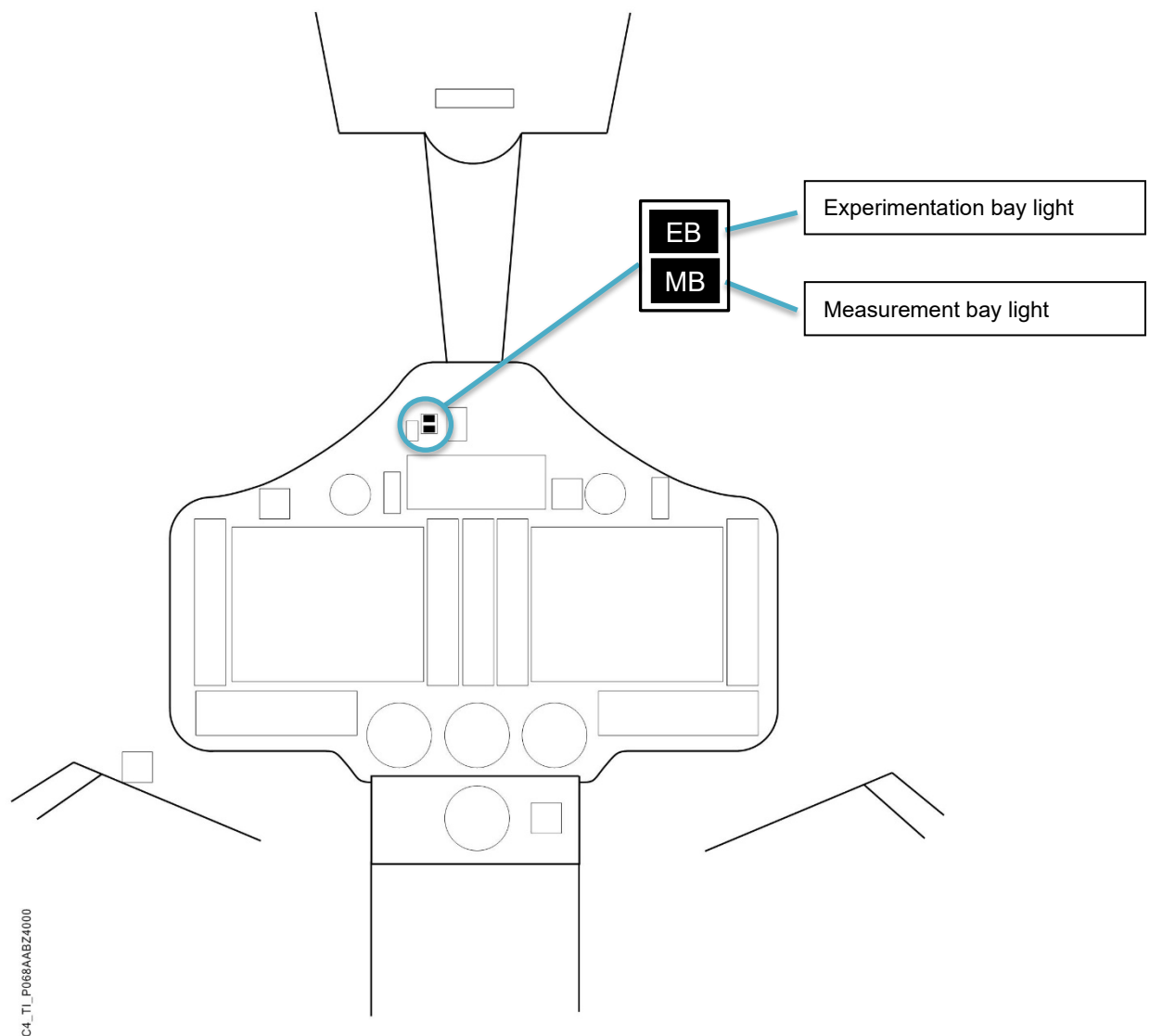
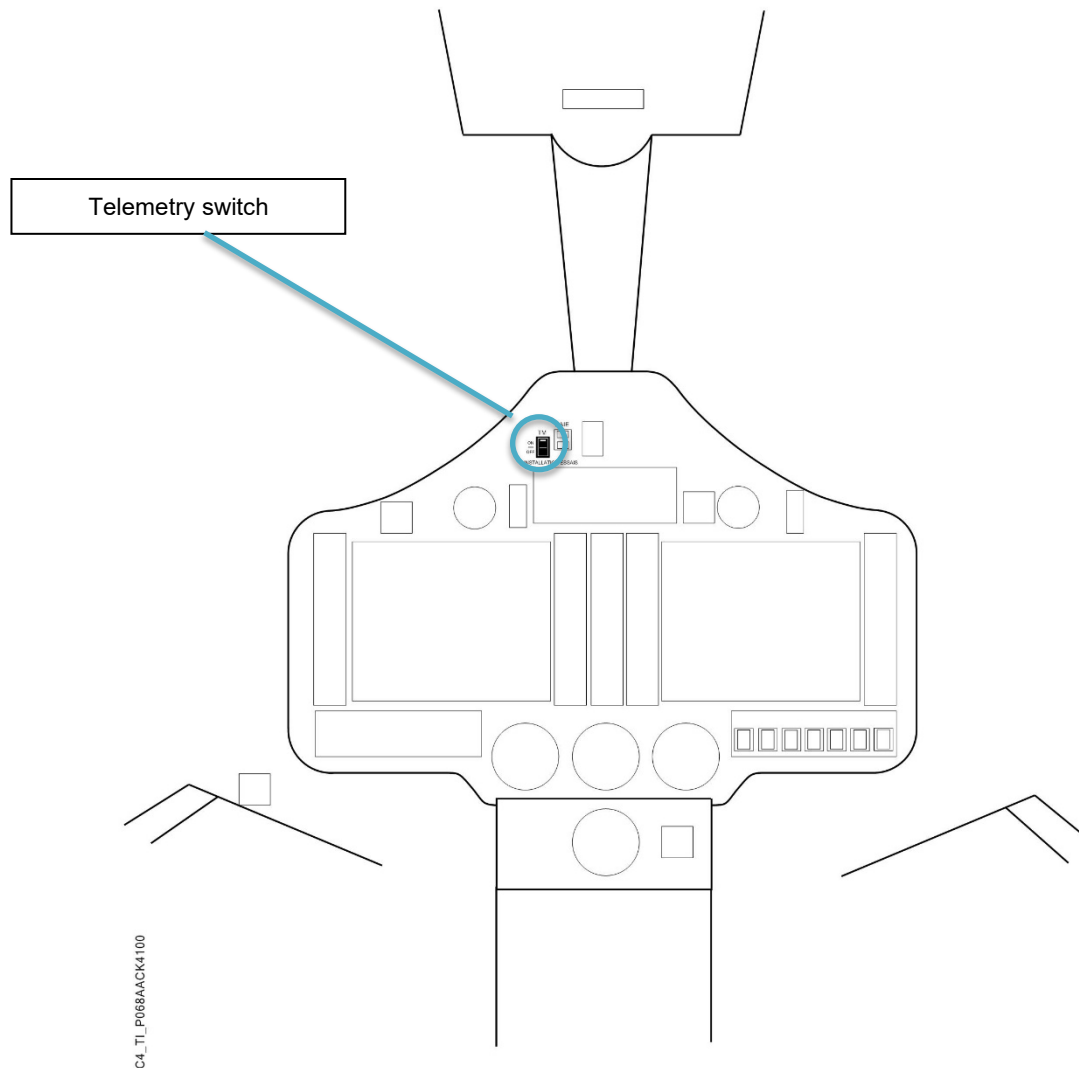


Figure 2 - Advisory lights for experimentation and measurement bays

### 7.3.2 Telemetry switch

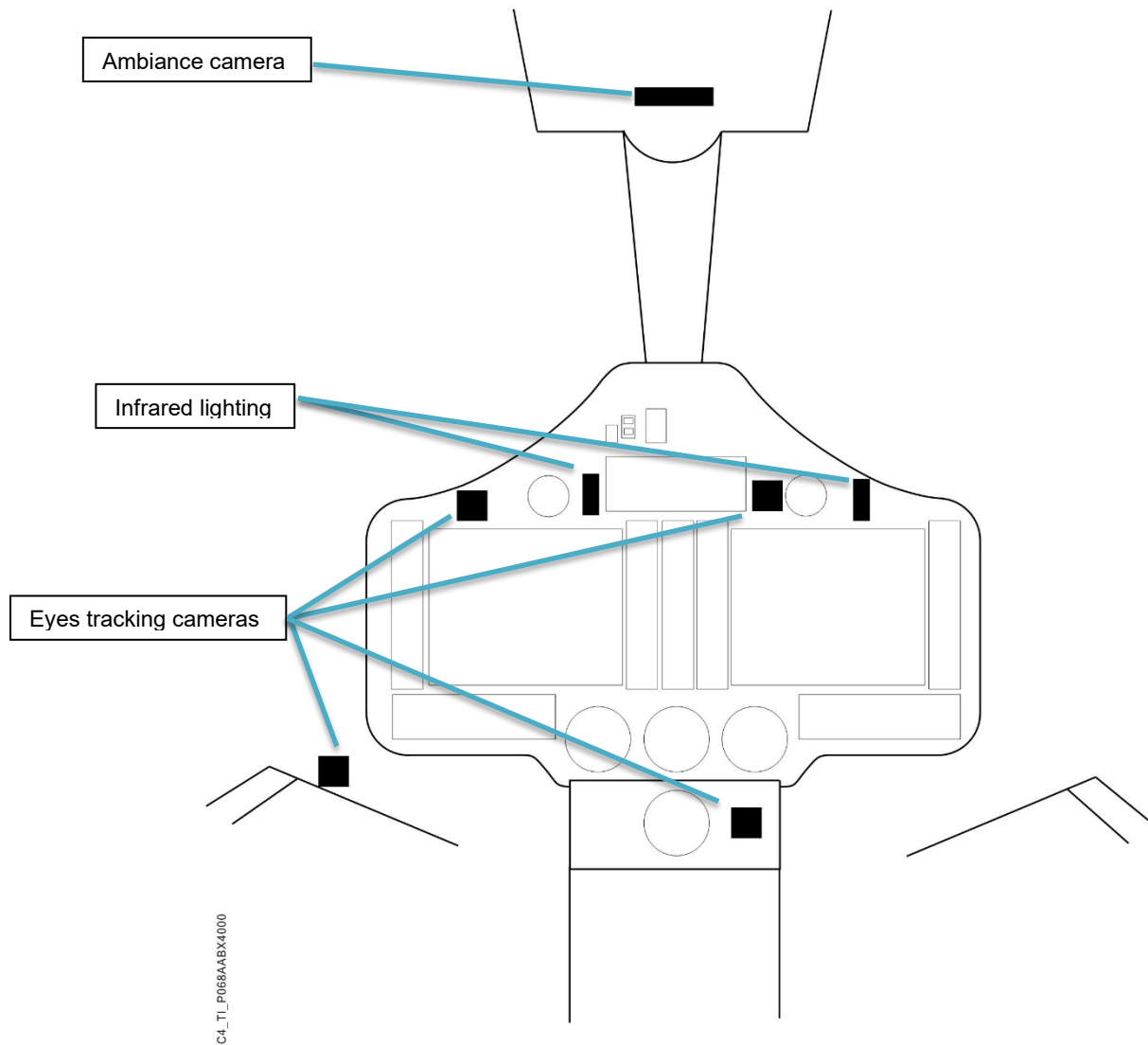
The switch allows to power up the telemetry system.



*Figure 3 - Telemetry switch*

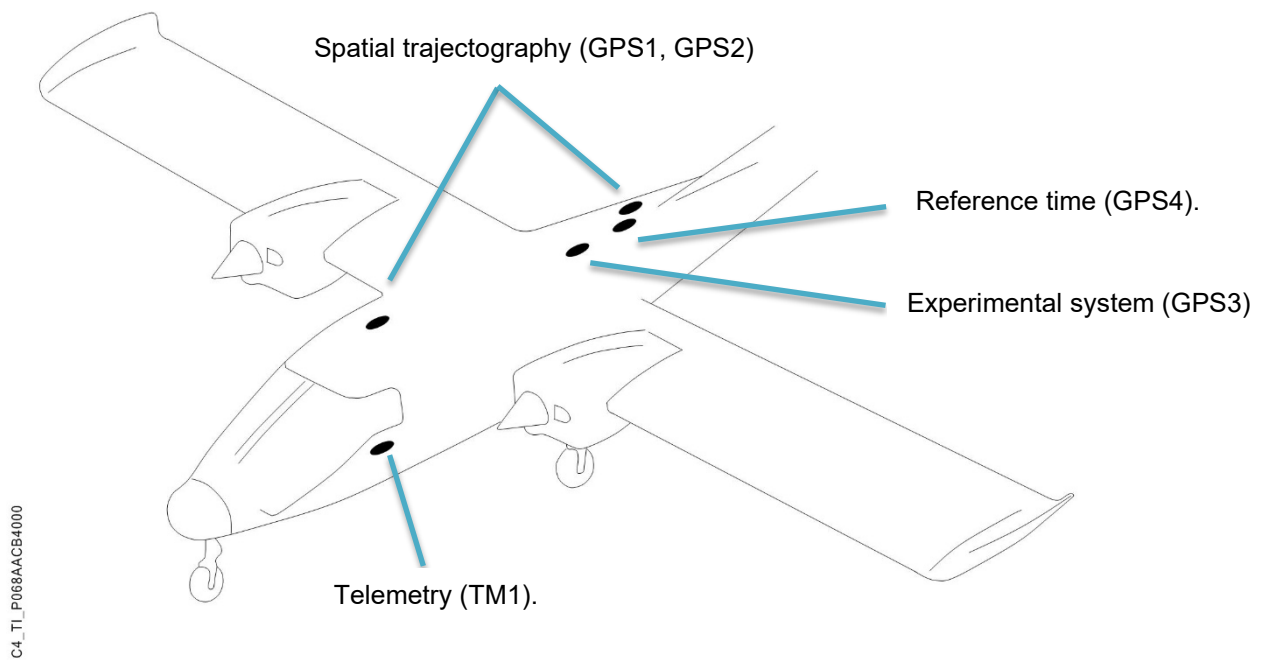
### 7.3.3 Cameras and eyes tracking system

The system is intended to record the pilot eyes reactions all along the flight phases



*Figure 4 - Camera and eyes tracking system*

## 7.4 Installation of antennas and sensors on fuselage



*Figure 5 - Antennas and sensors on fuselage*

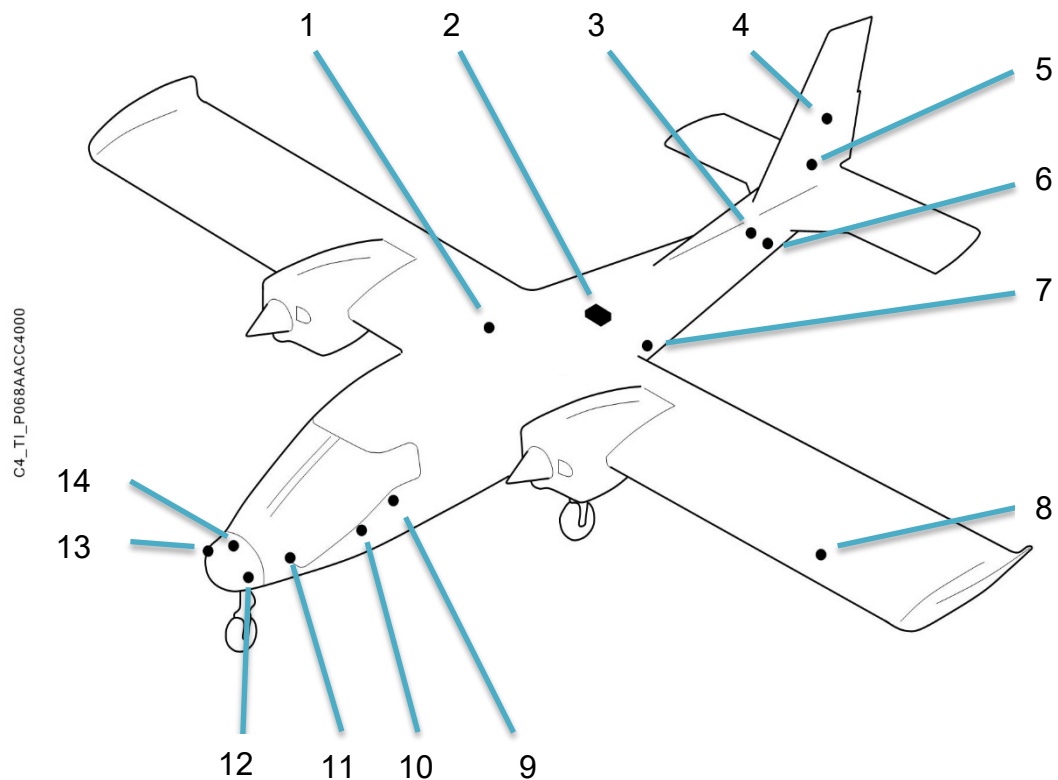


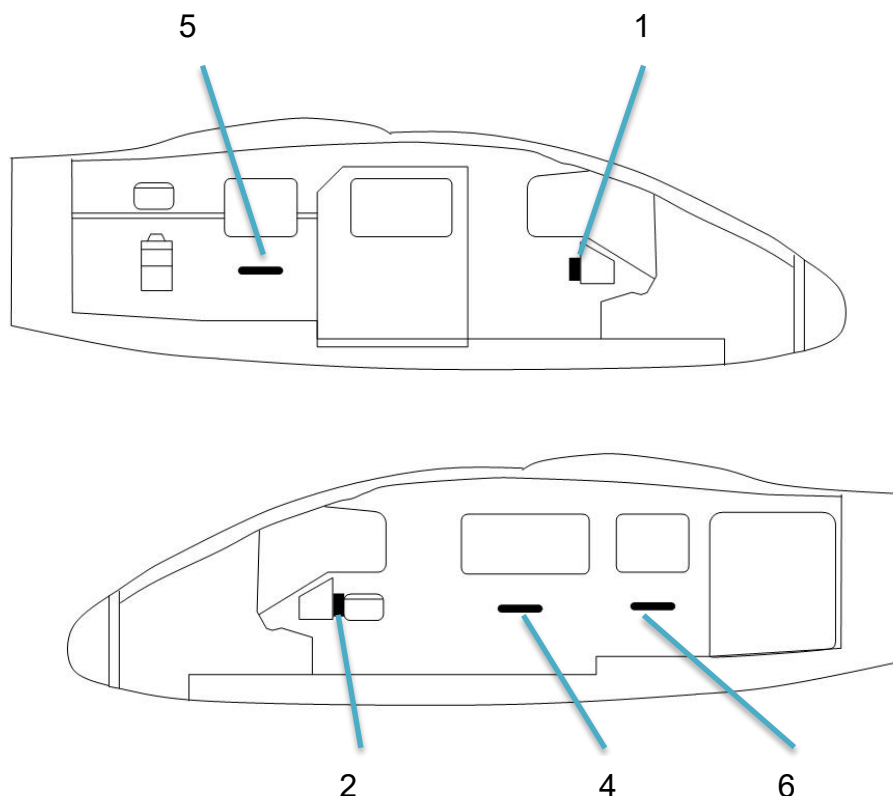
Figure 6 - Sensors on fuselage

1. Flaps position (DV)
2. Differential pressure sensor (ADC)
3. Elevator tab position (DTM)
4. Rudder tab position (DTN)
5. Rudder deflection (DN)
6. Elevator deflection (DM)
7. Static pressure sensor (PS)
8. Aileron deflection (DL)
9. Outside air temperature sensor (OAT)
10. Elevator effort (EDM)
11. Rudder effort (EDN)
12. Angle of attack left (ALFG)
13. Angle of attack right (ALFD)
14. Side-slip measure (BET)

## 7.5 Installation of RJ45 and USB ports in cockpit / cabin

### 7.5.1 Seats equipped with RJ45 and USB ports:

RJ45 and USB connections are available to pilots and passengers through ports near each seats on cabin side walls, to get aircraft network.

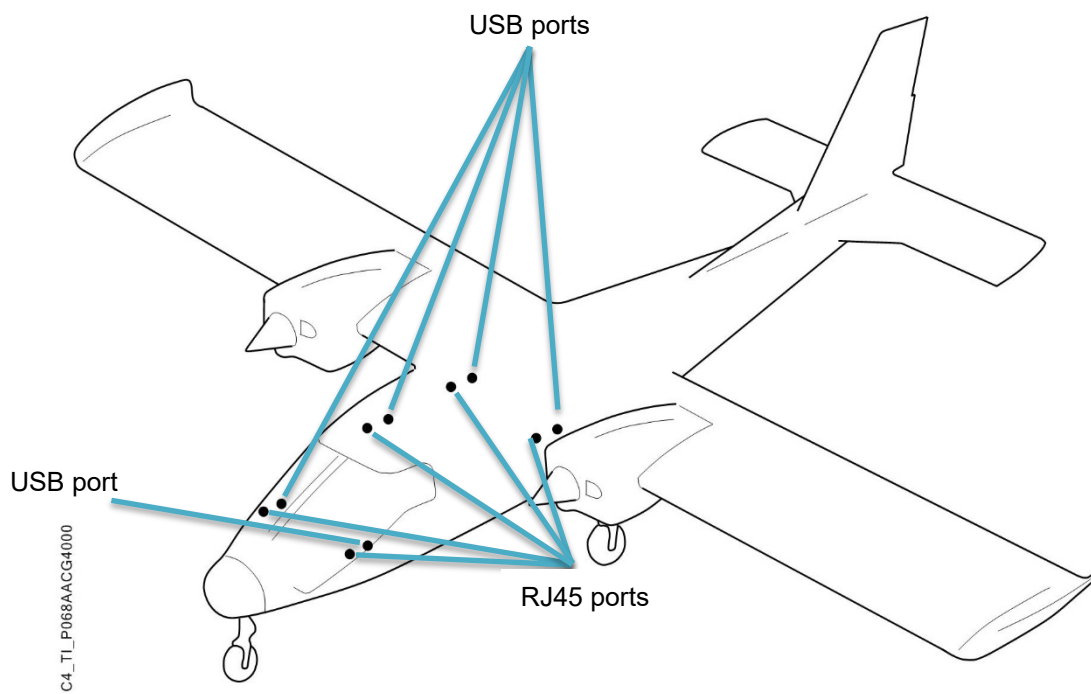


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Figure 5 - RJ45 and USB port in cockpit/cabin

1. #1 Front left seat.
2. #2 Front right seat.
4. #4 Intermediate right seat.
5. #5 Rear left seat.
6. #6 Rear right seat.



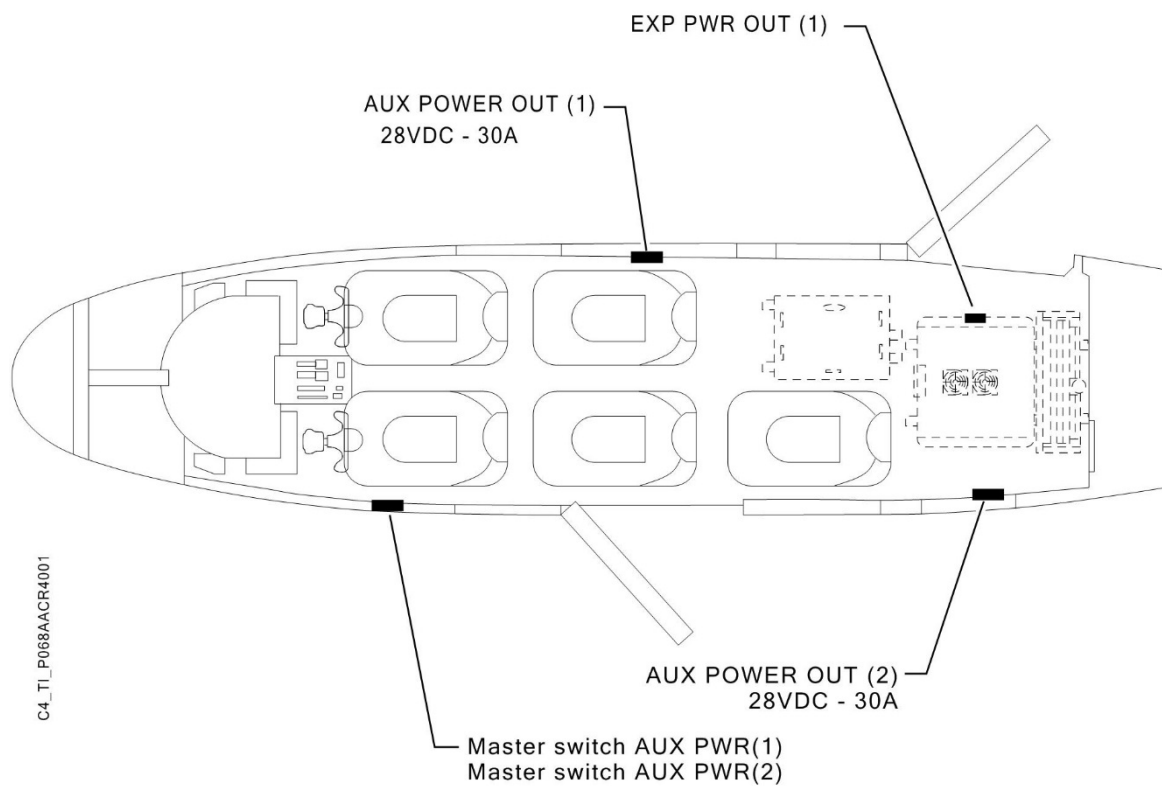


*Figure 6 - Location of RJ45 and USB ports besides seats*

## 7.6 Power supply for experimentation and measurement bays

Power supply outputs are available on cabin side walls to connect experimentation and measurement bays.

Bays master switches are available to the pilot on the left panel on side wall.



*Figure 7 - Power supply for experimentation and measurement bays*