

CDLS Simulator

The *CDLS Simulator* is meant as the last possible troubleshooting step in case of malfunction, or emergency. Please review the troubleshooting guidelines below before proceeding.

Fault isolation procedures Troubleshooting guidelines

Please refer to TSM 52-51-00 page block 201 for detailed fault isolation procedure

Suspected cause or component

Symptom

	Upper/lower strike	Centre strike	Control unit	Keypad	Incorrect code programming	Door adjustment	Door upper attachment
FAULT light + TOP/MID/BOT LED	●	●					
FAULT light + CHAN1/CHAN2 LED			●				
Buzzer does not ring after emergency code entry			●	●	●		
OPEN light stays ON when door closed		●					
Door difficult to open/close in flight						●	●

Note: This document will not be updated on a regular basis

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Aircraft System Maintenance Aids


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A320 Family

ATA 5251 - Cockpit Door Locking System (CDLS)

TRoubleshooting GUIDELINES

This handbook is intended to provide trouble-shooting guidelines to isolate and correct a fault of the Cockpit Door Locking System



System description
Fault isolation procedures
Troubleshooting guidelines

AIRBUS

FAULT light + TOP/MID/BOT LED illuminated

→ Pre SB 25-1444 /MOD 35219:
Replace applicable electric strike 30MQ/31MQ/32MQ

→ Post SB 25-1444/MOD 35219 (see FCOM chapter 3.02.25):
Set and held toggle switch 26MQ to UNLOCK for 10s

FAULT light + CHAN1/CHAN2 LED illuminated

→ Replace control unit 24MQ

Buzzer does not ring after emergency code entry

→ Check and ensure that CDLS codes have been properly programmed (contact designated airline CDLS coordinator)

→ If codes have been properly programmed:
- If the green LED on the keypad 25MQ flashes:
Replace control unit 24MQ
- If the green LED on the keypad 25MQ does not flash:
Replace the keypad 25MQ

OPEN light stays ON when door closed

→ Replace centre electric strike 31MQ

Door difficult to open/close in flight

→ Check and ensure correct door rigging as per AMM task 52-51-00-820-001

→ If door upper attachment damaged: apply SB 25-1326

In general, please refer to TSM 52-51-00 page block 201 for detailed fault isolation procedure and corrective actions

System description

System power

The cockpit door has an electro-mechanically operated release system (CDLS) for the cockpit security.



The CDLS is powered by the normal busbar 204PP through the circuit breaker 1MQ at the circuit breaker panel 122VU.
The cockpit door is locked when the CDLS is energized

System operation

Normal entry request



The cockpit door is unlocked and can be pushed open.

Emergency entry request



The cockpit door is unlocked after a programmable time delay and can be pushed open.

Note:
In both cases, if the toggle switch 26MQ is set to LOCK, the cockpit door is locked for 5 to 20 min. and the emergency access, buzzer and keypad are inhibited.

Cockpit rapid decompression

If there is a rapid loss of pressure in the cockpit, pressure sensors cause the control unit 24MQ to de-energize the electrical release strikes.

Cockpit door is unlocked and opens under pressure difference.

Fault indication

Unserviceable control unit pressure sensor



Note:
These lights may come on during pressurization test of the fuselage.
When the pressure decreases these lights go off and the CDLS is operative again.

Unserviceable electrical release strike



Centre pedestal panel 119VU Overhead control unit 24MQ

Additional help and training can be found on the TSM.

Installation

In order to set up the simulator, one must run two commands, and have [docker-compose](#) installed.

```
xhost + # needed to run XCT
docker-compose up
```

CAN Gateway



The CAN Gateway is meant to simulate the behavior of a single-channel [XMC-A825-16](#). The simulator simply forwards sample traffic from a flight simulator to the network, and provides the necessary services to bootstrap the network.

The CAN Gateway bridges traditional systems that run over CAN to services that run over Ethernet/UDP on the plane's on-board [AFDX](#) network.

The CDLS simulator attempts to replicate accurately the network and traffic likely to be seen on a real aircraft, but due to technical limitations, some differences might apply in practice. Any differences will be noted in this document **in bold**.

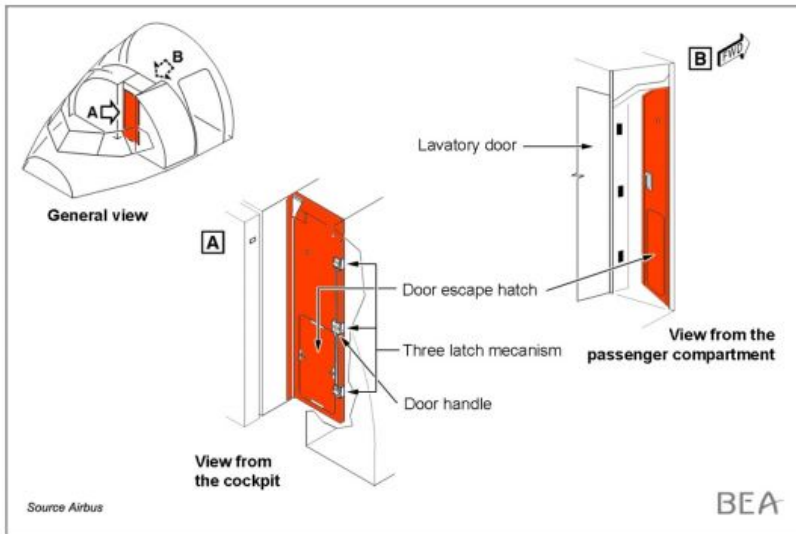
Blackbox

The blackbox contains a Flight Data Recorder emulator and a simple cloud backup solution. It can be used for offline troubleshooting of the flight data. It will log and upload all CAN traffic it sees on the network.



For interactive debugging, it is advised to use the MCDU's built-in XCT toolbox.

The simulator only stores up to 3 minutes of data.



CDLS

The Cockpit Door Locking System contains all the logic used to lock and unlock the cockpit door. It receives information from the keypad over the CANbus, and communicates status indicators back to outside the cockpit.

The CDLS is meant to protect the cockpit, however in case of

emergency, the crew is able to access the cockpit by typing a code in a specially designated keypad.

The new version of the keypad is alphabetic (A-Z) and allows for { and } characters.

It is recommended to use a long password (10 or more characters), and to use difficult to guess words.

In case the password is forgotten, it is possible to enable the lights on the keypad.

The CDLS will instruct the keypad to illuminate keys depending on the status of the door. When the door is unlocked, all lights are green. When the door is locked, the lights are red, or orange. The CDLS will illuminate in orange some of the keys that are part of the password.



It is recommended to keep the lights disabled during the flight.

MCDU

The MCDU is one of the core computers onboard. It also serves as a multi-use

troubleshooting endpoint. The CDLS simulator does not include any of the avionics functions.

The MCDU in the simulator exposes a telnet interface, with two functions. First, it allows to inspect the CANBus traffic, by means of the XCT toolbox, and second, it allows to send commands to the CDLS.

In the simulator, one can connect to the MCDU telnet interface by typing:

```
telnet 127.0.0.1 9923
```

On board the plane, one can connect using the ethernet port located in the back of the unit. One might need to unscrew to be able to access it.

CDLS

The CDLS exposes a troubleshooting interface via telnet, directly on the MCDU. It allows the technician to troubleshoot the CDLS.

Cockpit Door Locking System (CDLS) debug interface

Available commands:

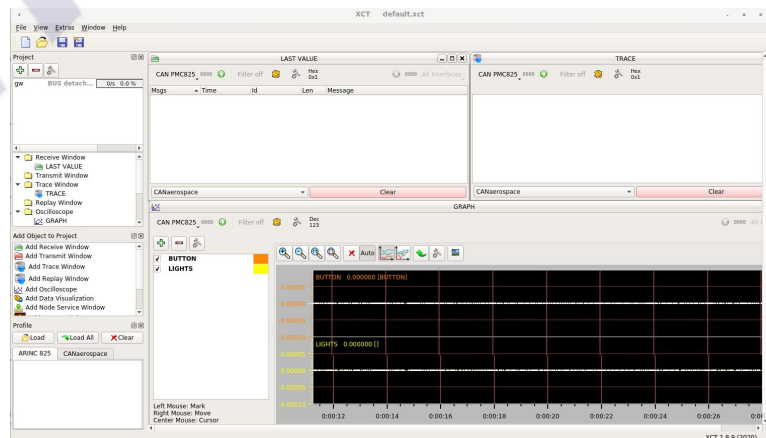
`cdls unlock $CODE`: Tries to unlock the door with \$CODE (range is [A-Z{}])

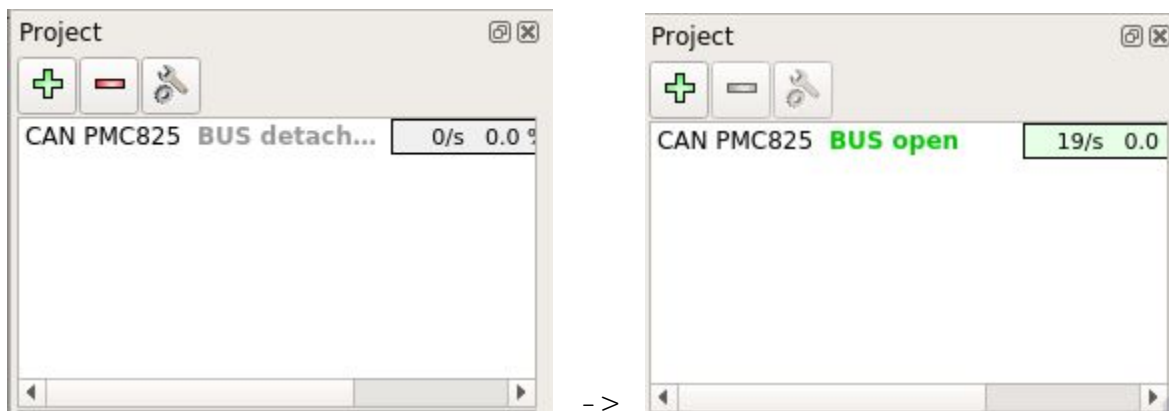
`cdls help`: Shows this message

XCT

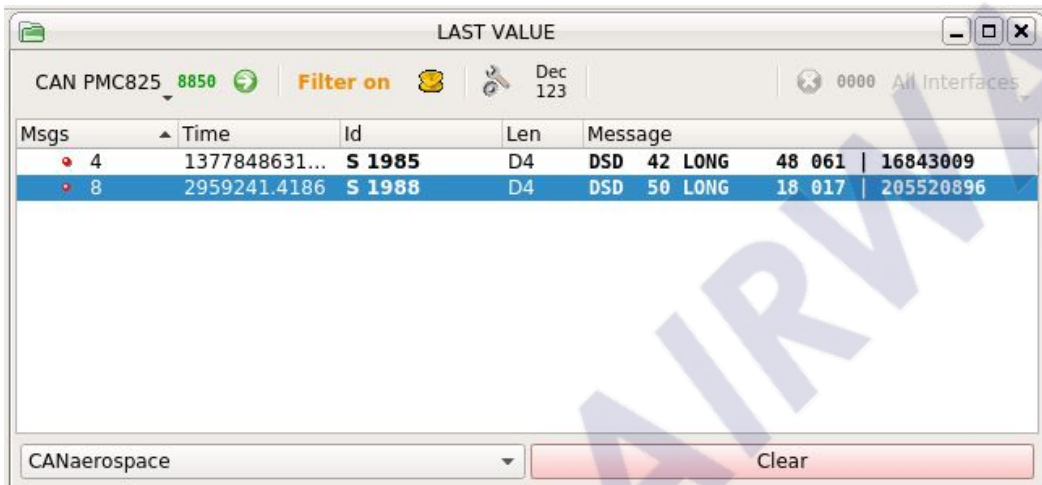
When typing `xct` on the simulator, the XCT toolbox will be opened on the host computer.

It is necessary to click on the BUS to enable it (by clicking on the word BUS)



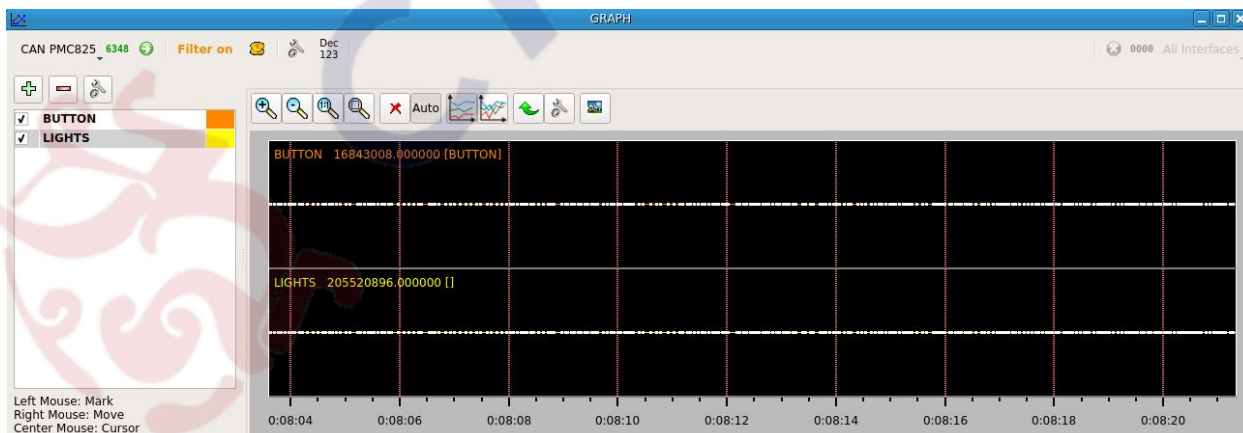


To filter the results, it is necessary to click on "Filter off":



This will limit the traffic to ids 1985 and 1988. Customizing the filter is possible.

The oscilloscope shows the value of different components over time.



Testing through the cdls unlock command on the MCDU is an easy way to generate traffic and inspect it using the XCT.

More information about XCT is available [here](#).