

# BK-Airbus

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## Feature:

- **Hight performance**

Crystal: 16MHz

Power: 5VDC – 0.6W minimun

- **Low power consume**

Less than 0.6w in DC5V  
temperature 25oC

- **Multiple mode operation**

6 mode operation and 5 menu  
option in Lcd interface.

- **User interface lcd16x2**

User interface with lcd and keypad  
to choose option menu.

- **Dual keypad scan**

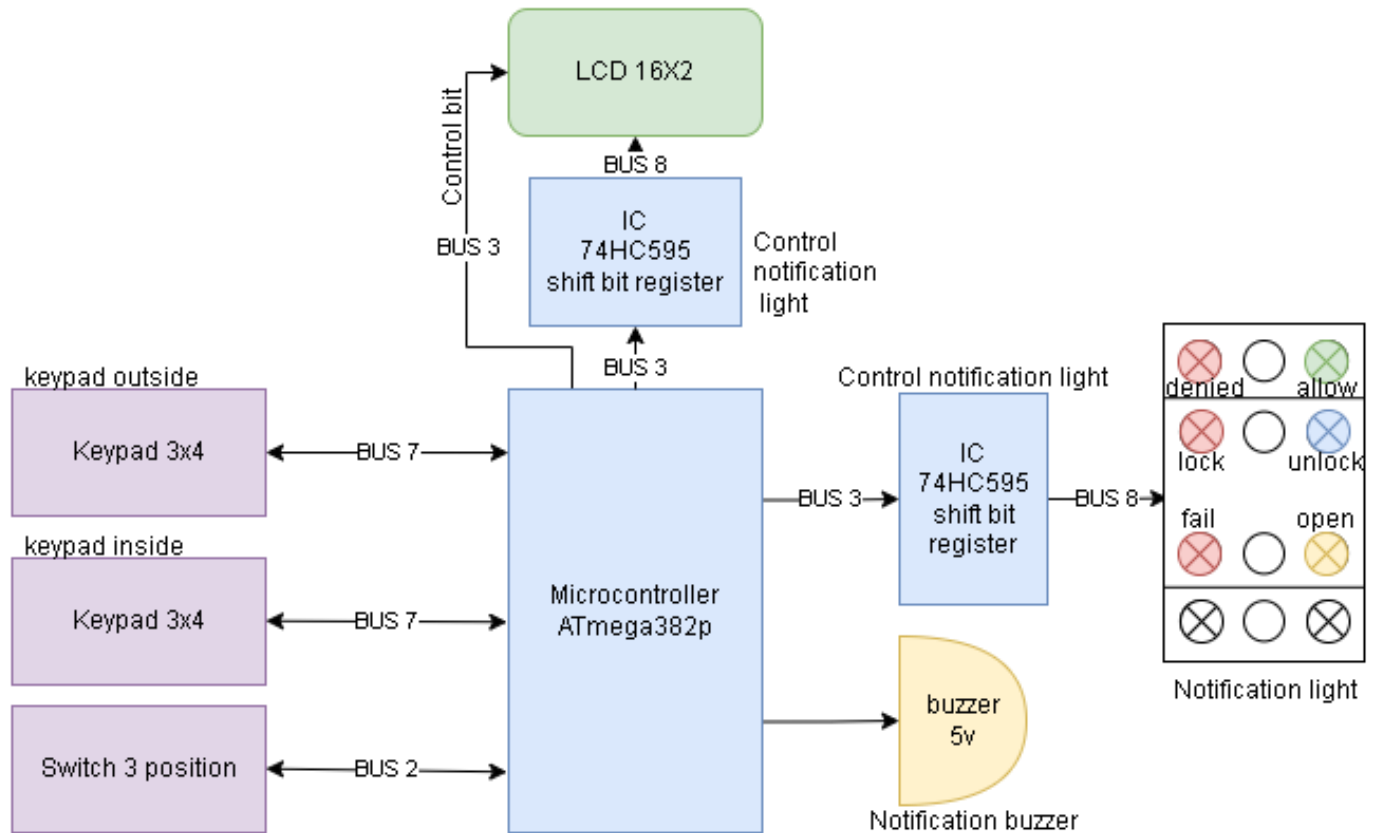
Dual scan keypad, priority to keypad  
inside cockpit.

- **Reliable function**

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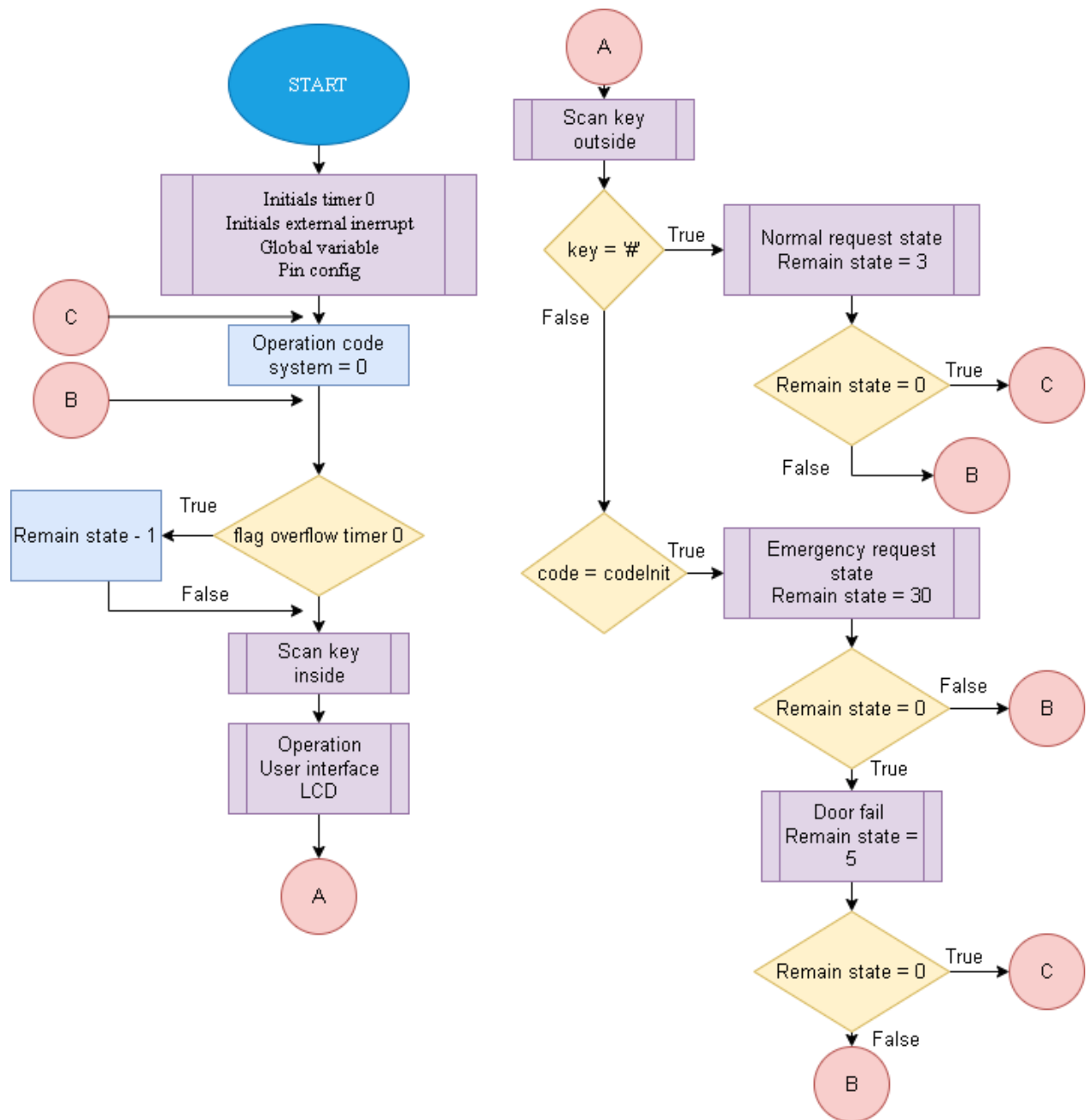
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## 1. Hardware block diagram



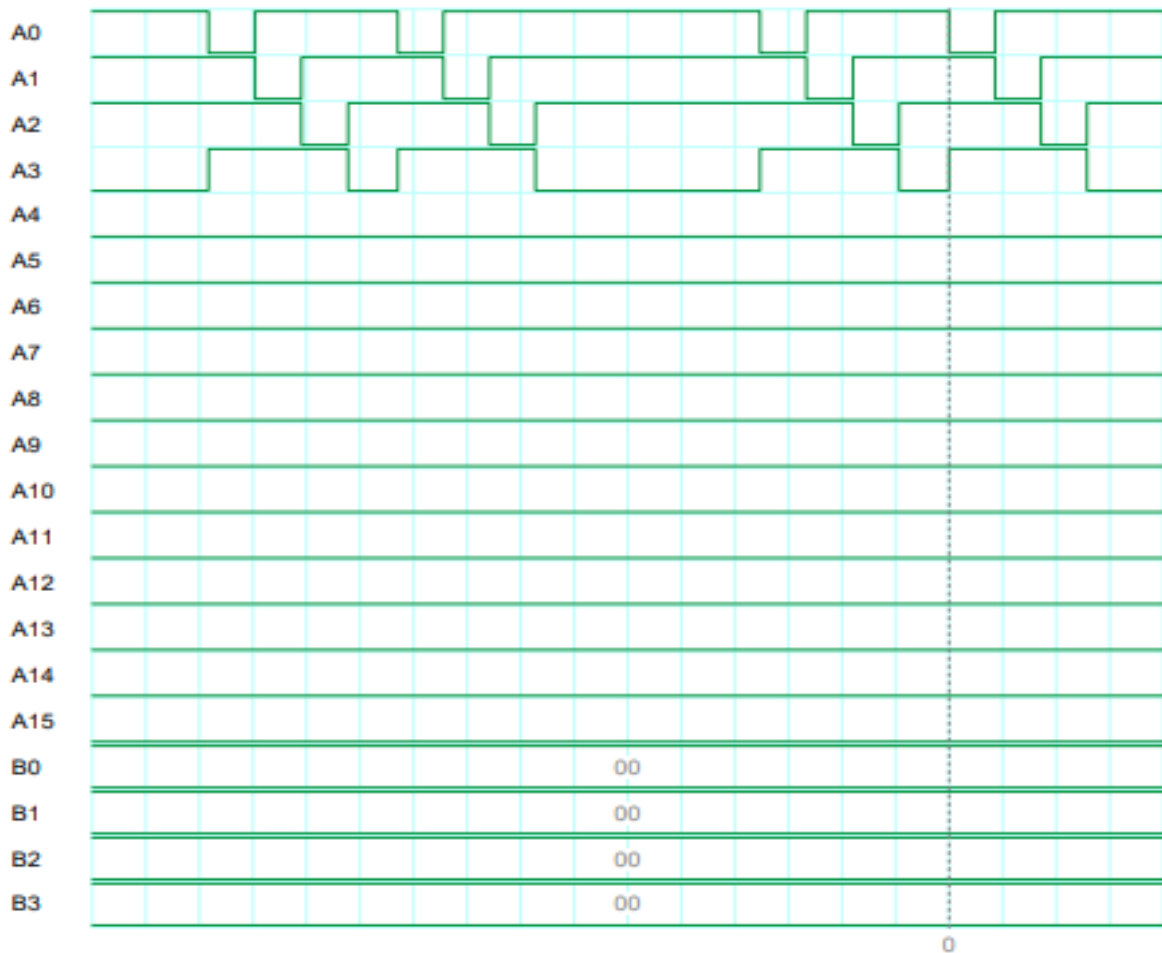
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## 2. Summary flowchart software



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## 3. Signal scan keypad

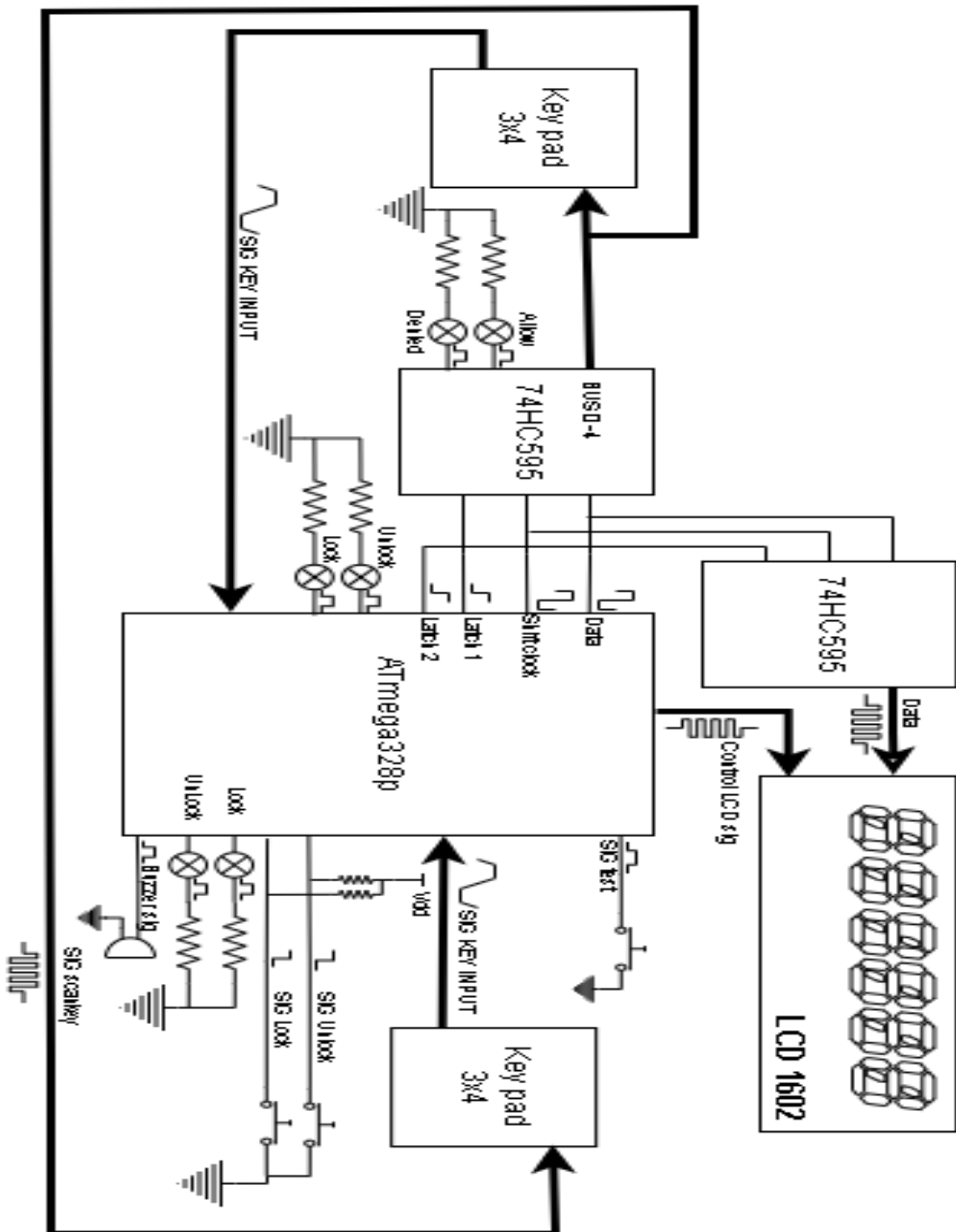


Display Scale 50.00 uS  
Time Scale 250.00 nS  
Position -300.00 uS

**NOTE:** Frequency scan keypad inside and outside about 2KHz, so minimum time remain pushing keypad is 0.5ms.

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## 4. Details hardware design



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## Operation mode: Standard mode

Num	Mode name	Description	Buzzer	Allow	Denied	Open	Fail	Door
1	Normal request	This mode is the most common, someone outside press # to request enter the cockpit.	Yes	No	No	No	No	Lock
2	Allow Enter Cockpit	When pilot press button unlock door to notify to allow someone outside can enter cockpit.	No	yes	No	yes	No	Unlock
3	Deny Enter Cockpit	When pilot press button lock door to notify and deny any enter cockpit request. In this mode any enter request can't be sent to cockpit.	No	No	Yes	No	No	Lock
4	Emergency enter request cockpit	When someone haven't outside received any response from cockpit, then they enter Pin in keypad outside to send special request enter cockpit.	Yes	blinking	No	blinking	No	Lock

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## Operation mode: Standard

Num	Mode name	Description	Buzzer	Allow	Denied	Open	Fail	Door
5	Security system failure	This special mode is transferred from mode 4 (Emergency enter request cockpit) when timeout mode (30 second) and it still haven't any response (press lock door) from pilot	No	Yes	No	Yes	Yes	Unlock
6	Test system interface	This mode is usually used as soon as pilot enters cockpit and presses test button	Yes	Yes	Yes	Yes	Yes	Lock and unlock <sup>1</sup>
7	Strick mode	This mode is not often used. If it is activated, which you cannot send any request to cockpit. This mode can be activated by selecting mode in LCD.	No	No	No	No	No	Lock

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<sup>1</sup> NOTE: Only led notification door lock/unlock active, door is still LOCK.

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## Operation mode: Extension

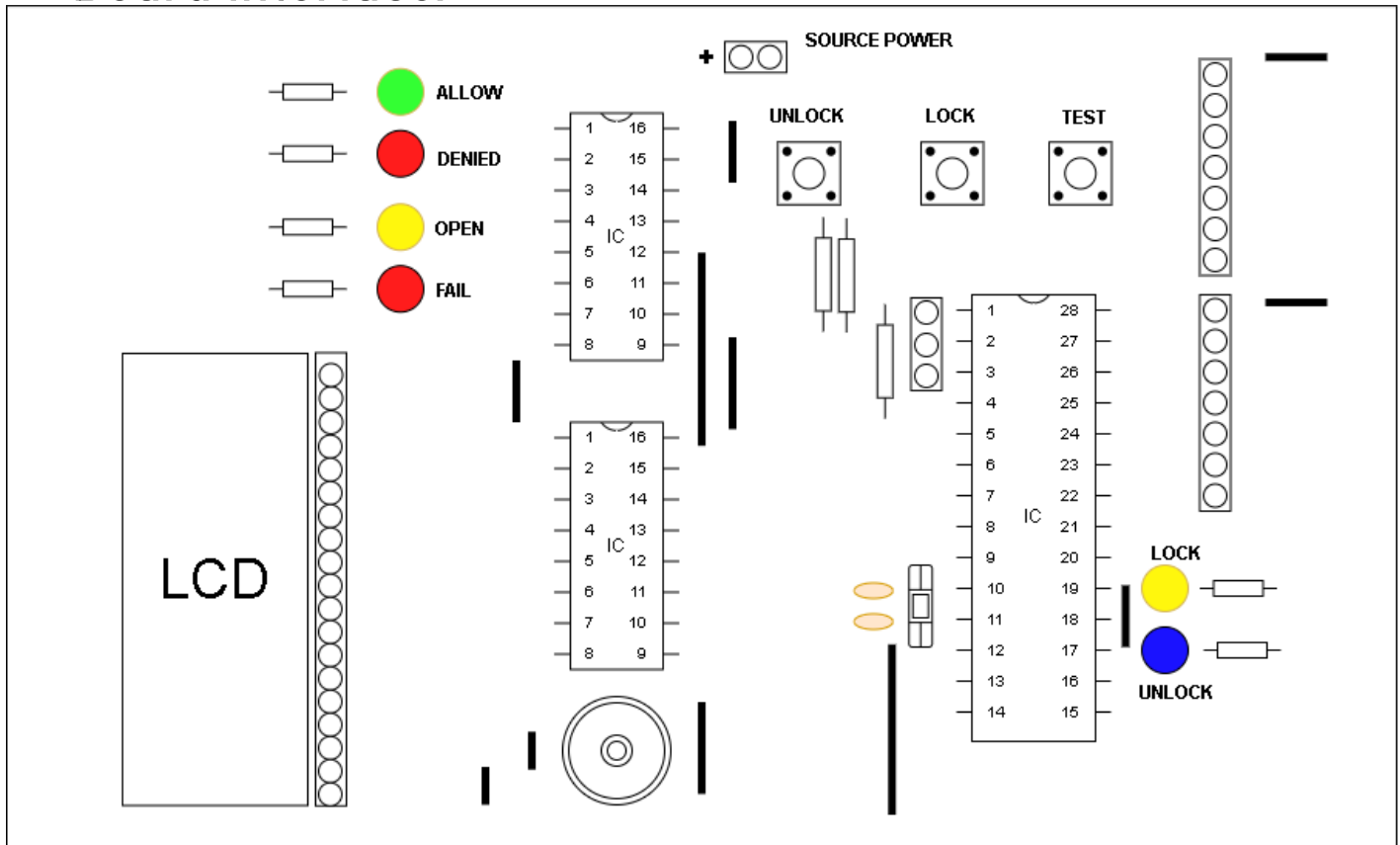
Num	Mode name	Description
1	Test keypad and button	This mode can be activated by selecting in LCD, be usually used by engineer to check condition of both keypad inside and keypad outside. Check condition of lock door and unlock door button. Usually, it be combined with test system interface mode.
2	Test LCD display	This mode can be activated by selecting in LCD, usually be used by engineer to check condition of LCD display, this mode operates manually, pilot check the display by their eye
3	Report condition system	This mode uses information from 2 mode above to create a report to notify pilot about condition of system such as keypad system, button system or display system.
...	And more some extensions operation mode	<ul style="list-style-type: none"><li>-When system starts from cold and dark mode. The system allows to check version of system.</li><li>-Auto turn off display LCD when it is not in using</li><li>-Print report or use SPI to send a report to other system.<sup>2</sup></li></ul>

<sup>2</sup> NOTE: This version no other systems yet, so report is only sent to PC by SPI (Serial protocol interface)



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## Board interface:



- Allow led is installed outside cockpit to notify someone who want to enter cockpit, if Allow led is activated, you can enter cockpit door unlock. (Green led)
- Denied led is also installed outside cockpit. If this led is turned on, you can't enter cockpit (your request is denied) and you can't send any other requests. (Red led)
- Open led is installed inside cockpit to notify pilot status of door. If this led is active, door is opening. (Yellow led)
- Fail led is also installed inside cockpit to notify pilot status of system. If this led is activated, System security door is failed (door is unlocked by an action from outside), door is opening. (Red Led)
- Lock/unlock led present status of door. If led lock is activated, the door is locking else led unlock is activated, door is unlocking (Yellow/blue led)

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## Information design

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STT	Full name	Status	Description
1	Nguyen Thanh Toan	Fullstack Student	Probationary
2	Nguyen Anh Dao	Hardware Student	Probationary
3	Nguyen Minh Quang	Software Student	Probationary
4	Nguyen Minh Nghia	Hardware Student	Probationary
5	...	...	...

## Prototype contact

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Note: This is an opened source. If you want to contribute, please follow this link  
[github.com/nttoan-khiem/bkAirbus](https://github.com/nttoan-khiem/bkAirbus)

or scan QR code is below. To access open source code.

