

Thank you for purchasing alstruments !

This application transfer instruments from DCS World to up to 3 Android tablet(s) or phone(s).

It can also display your kneepad pages, [SAM threat pages](#) (can be sorted by name, range and max.altitude), and can [insert waypoints](#) for Hornet and Harrier and [JDAM coordinates](#) for Hornet from F10 map view, just by hovering mouse over target, by automatic dialing them on Hornet UFC or Viper ICP.

For example, with A-10C

- you can use left,right MFCDs and CDU on one tablet and swipe between them,
- or you can use both MPCDs on 1st tablet and swipe between them and CDU on 2nd tablet,
- or left MFCD on 1st tablet, right MFCD on 2nd tablet and CDU on 3rd tablet (and similar with another AC and ins.)

This application consists from 2 parts:

- Server part which run on desktop where your DCS World is istalled - can be downloaded from [here](#).
- Client part can be purchased from [Google Play](#) (the price is still the same – no more fees for added features)

Currently these 7 aircraft and 20 instruments are supported (another will be added later, for the same price):

- A-10C Thunderbolt II - left & right MFCD displays and **CDU navigation computer**
- AV-8B Harrier II Night Attack - left & right **MPCD displays** and **UFC panel**
- F/A-18C Hornet - left & right DDI displays, bottom AMPCD display and **UFC panel**
- Ka-50 Black Shark - Shkval display and ABRIS navigation computer
- AJS 37 Viggen – **radar, data panel, navigation panel**
- Mirage 2000C – radar, **RWR** and **weapons panel**
- F-16C Viper – left & right **MFD** and **ICP** with **DED** display

Requirements and Limitations:

- Please note that due DCS World limitation, instruments must be displayed somewere on your monitor(s). If you have only one, you must "sacrifice" part of your monitor screen to display instruments:

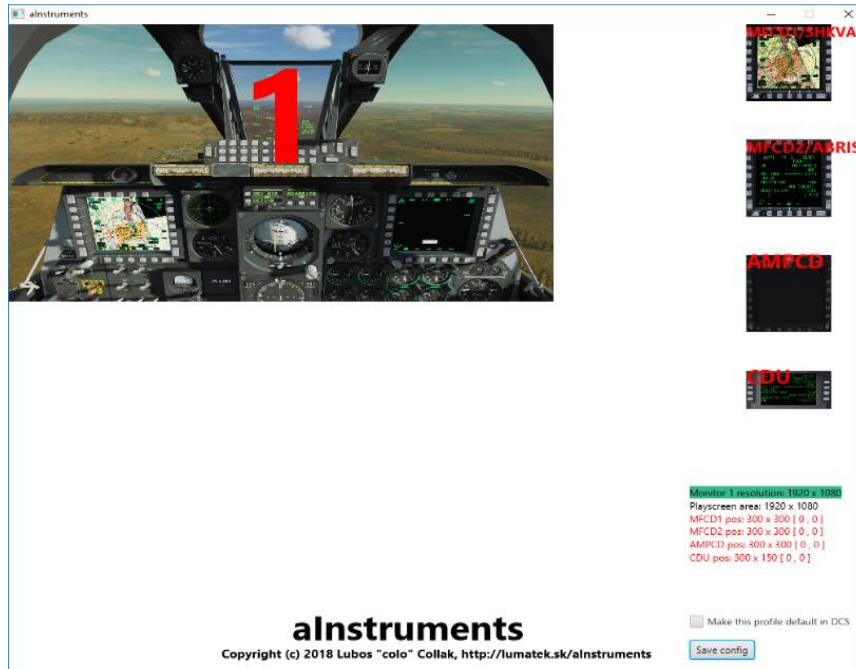


If you have second monitor (or some old or dummy monitor) you can move instruments there.

- DCS World must be running in Windowed mode, so in DCS go to Settings, Options, System and untick "Fullscreen"
- alstruments server requires Java runtimes to be installed, download from <https://www.java.com/en/download/>
- Windows 10 US/EN 64 bit version with DCS World non-steam version installed in standard path for easy configuration, but it runs also on different Windows versions and DCS Steam version if you setup paths correctly.
- Tablet or phone must be running Android 4.1 or higher

QUICKSTART – AUTOCONFIGURATION (if you play DCS World with 1 or 2 monitors)

- run alnstruments on your Android device (can be purchased from Google Play [here](#))
- download and unzip alnstruments server part from <http://lumatek.sk/alnstruments/alnstruments.zip>
- run alnstruments in admin mode (right click on alnstruments.bat and select “Run as Administrator”)
- click “instrument placement and configuration” on desktop app - config with detected monitor(s) will be shown:



- right click on monitor(s) and instruments to change their size, [drag and drop instruments to monitor](#)
- if you want to alnstruments make settings in DCS World for you, tick “Make this profile default in DCS”
- click “Save config”
- now we need add keybindings - click “Add keybindings for instruments” to make keybinding in DCS World
- by default, some instruments are not exported/visible (they are marked on page 1 by **bold font** above in the list of supported aircraft and instruments), so you must export it from DCS by clicking “Export A10CDU, AV8” button

Configuration is done, next time you can start alnstruments in normal mode just by clicking alnstruments.bat

If your monitors positions and resolutions aren't detected correctly, you can input resolutions manually in GUI by running GUI config by holding shift key and clicking “instrument placement and configuration” button on desktop app.

Change between instruments on tablet(s):

A-10C : swipe left/right between MFCD and from bottom to top for CDU view

F/A-18C Hornet : swipe left / right between MDIs, bottom / top for AMPCD view and UFC panel

AV 8B Harrier : swipe left / right between MPCDs, bottom / top for UFC panel

AJS 37 Viggen: swipe from bottom / top to switch between radar and data panel(navigation)

KA-50 Blackshark: swipe from bottom / top to switch between Shkval and ABRIS instruments

Mirage 2000C: swipe left / right between radar and RWR instruments, top / bottom for weapons panel

INSTALLATION – DESKTOP PART (not needed if you have done QUICKSTART from page 2)

- run alnstruments on your Android device (can be purchased from Google Play [here](#))
- download and unzip alnstruments server application from <http://lumatek.sk/alnstruments/alnstruments.zip>
- start alnstruments server application by clicking on alnstruments.bat file

DCS World folder standard paths:

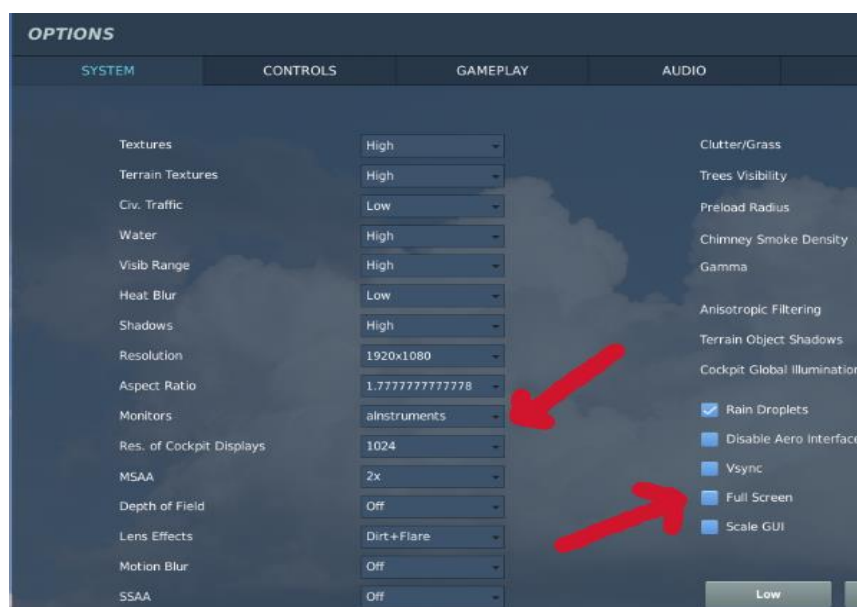
- “game path” C:\Program Files\Eagle Dynamics\DCS World
- “user profile path” C:\Users\YOURUSERNAME\Saved Games\DCS

If you have installed DCS World to different folder or you have Steam version of DCS World, your game path will differ, you can change it by click “DCS path” button, changes will be remembered.

If you have another Windows language version than US,EN,FR,GR,SK you can change user profile path by clicking “DCS user profile path” button, changes will be remembered.

Manual monitor configuration – required if you have more than 2 monitors

- Copy file “alnstruments.lua “ from unzipped alnstruments desktop folder - Templates subfolder to C:\Program Files\Eagle Dynamics\DCS World\Config\MonitorSetup and make modifications of your monitor geometry and instruments placement in this file.
- Change instruments positions to match alnstruments.lua positions and click “Save instrument positions”
- “alnstruments” must be selected in field “Monitors” (if it is not visible see figure 1. below)
- DCS World must be running in Windowed mode, so in DCS go to Settings, Options, System and untick “Fullscreen”



Adding of keybindings

Click “Add keybindings for instruments A10, AV8...” button - It will copy keybindings files to your DCS World settings and it will not overwrite your own keybindings

If you already have made changes to key mapping in DCS World, you must manually copy key templates for each aircraft: e.g. for A10C, you must copy “Keyboard.diff.lua.a10” to your DCS profile folder C:\Users\USERNAME\Saved Games\DCS\Config\Input\A-10C\keyboard and rename it to Keyboard.diff.lua

Exporting additional instruments

Some of instruments aren't exported by default in DCS World – i.e. they are not visible on monitor.

These are marked by **bold font** on page 1 in list of supported aircraft and instruments.

If you don't like to use any of these instruments then exporting of instruments are not needed. (e.g. A10C MFCDs)

You can export instruments

- automatically - by running alstruments in admin mode (by right clicking on alstruments.bat and selecting "Run as Administrator") and exporting instruments just by clicking "Export A10CDU, AV8" button.
- manually - then you must overwrite templates from alstruments Templates subfolders to DCS World folders (be sure to make backup copies of original files before overwriting them)

A10C CDU instrument

"CDU_init.lua" from alstruments14 server folder - Templates subfolder

To: C:\Program Files\Eagle Dynamics\DCS World\Mods\aircraft\A-10C\Cockpit\Scripts\CDU\indicator

AV8B Harrier MPCD's

"MPCDL_init.lua" and "MPCDR_init.lua" from Templates subfolder

To: C:\Program Files\Eagle Dynamics\DCS World\Mods\aircraft\AV8BNA\Cockpit\MPCD\indicator

AJS 37 Viggen radar & navigation panel

"init.lua" from Templates\ViggenRADAR subfolder

To: C:\Program Files\Eagle Dynamics\DCS World\Mods\aircraft\AJS37\Cockpit\scripts\Radar\Indicator

"init.lua" from Templates\ViggenNAV subfolder

To: C:\Program Files\Eagle Dynamics\DCS World\Mods\aircraft\AJS37\Cockpit\scripts\Data\Indicator

Mirage 2000C RWR & weapon panel

"RWR_init.lua" from Templates\Mirage subfolder

To: C:\Program Files\Eagle Dynamics\DCS World\Mods\aircraft\M-2000C\Cockpit\RWR

"PCA_UR.init.lua" from Templates\ViggenNAV subfolder

To: C:\Program Files\Eagle Dynamics\DCS World\ Mods\aircraft\M-2000C\Cockpit\PCA_PPA

"PCA_BR.init.lua" from Templates\ViggenNAV subfolder

To: C:\Program Files\Eagle Dynamics\DCS World\ Mods\aircraft\M-2000C\Cockpit\PCA_PPA

INSTALLATION – CLIENT PART (on tablet or mobile phone)

On tablet, go to Google Play and purchase alnstruments from store and run client application on tablet.

Both server and client part must be running on the same LAN and have IP connectivity.

Once connected, swipe on tablet from left/right and top/left:

A-10C : swipe left/right between MFCD and from bottom to top for CDU view

F/A-18C Hornet : swipe left / right between MDIs, bottom / top for AMPCD view and UFC panel

AV 8B Harrier : swipe left / right between MPCDs, bottom / top for UFC panel

AJS 37 Viggen: swipe from bottom / top to switch between radar and data panel(navigation)

KA-50 Blackshark: swipe from bottom / top to switch between Shkval and ABRIS instruments

Mirage 2000C: swipe left / right between radar and RWR instruments, top / bottom for weapons panel

DUAL MFCD/MDI/MPCD MODE

From version 1.8 upwards, you can use instruments for displaying A10C (MFCDs), Hornet (MDIs), Viper (MFDs) and Harrier (MPCDs) instruments in dual mode – i.e. side by side on tablet in portrait mode.

Start tablet app and desktop app as usually, wait for connection – once connected click on “Enable Dual MFCD mode” checkbox. You can swap orientation by clicking “Upsidedown Dual MFCDs” checkbox.

Swipe down on A10C for CDU, swipe down on Hornet for AMPCD, swipe up to return to MFCDs/MDIs.

Once you switch to dual mode, you cannot go back to single MFCD/MDI/MPCD mode, only by restarting tablet and desktop app.

Only one tablet is supported – i.e. you cannot have dual MFCDs on one tablet and CDU on second tablet for A10C, and you cannot have dual MDIs on one tablet and AMPC on second tablet for Hornet.

(this will be implemented in later version)

ROTATION OF MFCD/MDI/MPCD

From version 1.9 upwards, you can rotate instruments individually – 0, 90, 180 and 270 degrees are supported. Rotation is remembered in config.txt file on desktop (parameter named “rotationT1”, “rotationT2” and “rotationT3” for maximum up to 3 tablets) and activated automatically once tablet(s) with desktop are connected and after kneepad pages are transferred.

Just click under tablet number: T1, T2, T3 and click on desired instrument orientation:

“Top” for portrait 0 degree rotation

“Down” for portrait 180 degree rotation

“Right” for landscape rotation

“Left” for upside down landscape rotation

You can change orientation on the fly just as instruments type.

Please note that you cannot rotate CDU, Abris, and Viggen Navigation instruments.

SAMs and kneepad pages are not rotated as well.

AUTO ADDING OF MAP OBJECT COORDINATES TO WAYPOINT OR JDAM,JSOW

(Hornet and Harrier only)

Requirements:

- You must have updated keybindings for F/A-18C Hornet and Harrier - just click “Add keybindings for instruments...” on desktop app to update keybindings, or, if you use your own keybinding, and do not want to overwrite them, you can add keybindings manually in DCS World – Options (please see appendix on this manual for added UFC keys for Hornet and Harrier)
- If you have multiple monitors, your F10 map view should be located as the most left upper part of monitors (i.e. when you switch to map, coordinates should be visible on top left corner of the same area when you see your cockpit)

Only if it is not, you can specify position of coordinates by entering variables:

mapx,mapy,mapw,maph line by line into config.txt file for example:

mapx=1920

mapy=0

mapw=350

maph=30

This example is for map located on second right monitor if first monitor has resolution 1920x1080, mapw and maph si width and height of map coordinates visible on map view in pixels including label “MAP”, coordinates, and elevation including letter “m” or letters “ft”.

- **From version 2.4 only GPS precise coordinates are supported**
 - you can change map coordinates mode in DCS World F10 map view by pressing left ALT + Y key.
 - correct coordinates are in format: Nxx-xx-xx.xx Eyy-yy-yy.yy , elevation
for example N43-36-32.12 E40-31-57.23, 168 m or N43-36-32.12 E40-31-57.23, 57 ft
 - you can use metric or imperial elevation on map – it is automatically processed

TRANSFER MAP COORDINATES AS WAYPOINT

You can use instruments for adding any map object coordinates as Hornet or Harrier waypoint – i.e. you just stop mouse in F10 map view over map object and coordinates will be extracted and entered via UFC as waypoint. Metric and imperial coordinates (elevation) are supported.

Hornet usage:

- Select HSI -> DATA subpage on Hornet LEFT/RIGHT MDI or BOTTOM AMPCD
(this must match selected checkbox LEFT/RIGHT MDI or BOTTOM AMPCD on desktop app under “Hornet – long touch on tablet settings” label, also “Waypoint” checkbox must be selected)
- Select waypoint number which you like to add/update by pressing osb buttons near arrows located on right side on this subpage
- Switch to map by pressing F10 button and place mouse cursor over object or map place
- Long touch (> 1 second) anywhere on tablet and release, view will be switched back to cockpit and coordinates will be entered by auto pressing controls on Hornet UFC. Don't press or click anything until coordinates are entered.

Harrier usage:

- Select Menu -> EHSD-> DATA on MPCD display
- Select waypoint number which you like to update by pressing osb buttons near arrows located on right side on this subpage
- Switch to map by pressing F10 button and place mouse cursor over object or map place
- Long touch (> 1 second) anywhere on tablet and release, view will be switched back to cockpit and coordinates will be entered by auto pressing controls on Harrier UFC. Don't press or click anything until coordinates are entered.

TRANSFER MAP COORDINATES TO JDAM or JSOW – Hornet only

You can use instruments for adding any map object coordinates as JDAM preplanned coordinates – can be useful when you want to add multiple objects to multiple JDAM bombs, so you can hit multiple targets in single pass - just stop mouse in F10 map view over map object and coordinates will be extracted without need to remember/write coordinates from map and entering it manually for each JDAM bomb. Metric and imperial coordinates (elevation) are supported.

Usage:

1. On Desktop in Hornet cockpit, on selected MDI or AMPCD

(this must match selected checkbox LEFT/RIGHT MDI or BOTTOM AMPCD on desktop app under “F-18C Hornet long touch on tablet settings” label, also “JDAM coords” checkbox must be selected)

Stores page -> Select JDAM e.g. J-84 -> JDAM DSPLY -> QTY -> STAx -> MSN -> PPx (upper row)

For example PP1 means preplanned coordinates 1

Video how you should go to this menu <https://youtu.be/YJjKFzMqHRo?t=20> (to second 56 of video)

2. Switch to map by pressing F10 button and place mouse cursor over object or map place
3. Long touch (> 1 second) anywhere on tablet and release, view will be switched back to cockpit and coordinates will be entered by auto pressing controls on Hornet UFC. Don't press or click anything until coordinates are entered.
4. If you wish select another JDAM -> RETURN -> STAx -> MSN -> PPx and continue from point 2

FRAMELESS (VIEW ONLY MODE)

From version 2.2 upwards, you can use instruments for displaying MFCD/MDI/AMPCD in frameless mode. In this mode frames and buttons of MFCDs will be not visible.

This can be usefull for displaying instrument screen behind for example Thrustmaster Cougar MFDs (as cheap display alternative), or as display for build cockpits (you can use up to three cheap Android tablets instead of HDMI displays)

SAMs THREAD PAGES

From version 1.7 upwards, you can use instruments for displaying SAMs threads pages on tablet.

These are pages with SAMs list, currently all Russian/Soviet SAMs used in DCS World.

No transfer is needed you can use these pages even without connecting tablet to PC.

Use hold gesture on tablet (touch with finger and push at least half second, then release finger)

to enter SAMs pages – gesture must be touched outside instruments buttons, you can use gesture on instruments screen.

Once on SAM page, you can sort them by selecting "... SORT" button located at the right down corner – you can sort SAMs by its name, altitude and range. Press "EXIT" button to return to last used instrument.

Next each SAM, maximum engagement range in km, altitude in metres (if no altitude is specified SAM can reach you at any altitude) and if applicable IAS (speed which is safe to evade missile at any altitude) are displayed.

All values are tested from DCS World for fighter size aircraft without jamming and evasive manoeuvres flying at 7 000 m, 800 IAS without any obstacles in the path of missile.

You can enter SAMs subpages to show typical SAM components (e.g. search and track radar, command center) by touching SAMs icons which name is in white box – i.e. SA-2,3,6,9,10,11,13 – once in subpage press "BACK" button located at right bottom corner to return to SAMs page.

! Do not use tablet back button – i.e. hardware button or button with rounded arrow !

KNEEPAD

From version 1.5 upwards, you can use alnstruments for displaying your kneepad pages.

Pages are automatically transferred from alnstruments desktop app to tablet(s) once they are connected.

Just double tap anywhere on your tablet screen to show kneepad and then swipe left/right between pages.

To return to last instrument just double tap again.

Pages location: Kneepad subfolder of alnstruments on PC (there are 3 pages as examples named t1-t3.jpg)

Pages format: jpg or png

Size limit – per page: 700 kb

Using of reasonable jpg pages with size up to 400kb are recommended.

FAQ

Q: I just have one monitor so can I use alnstruments ?

A: Yes, but you must divide your monitor to playarea (where game will be displayed) and instrument area (usually narrow strip on left or right) where instrument will be displayed and transmitted to your tablet.

Q: This is really awkward to divide monitor to 2 parts, why ?

A: Because it is DCS World limitation, DCS World doesn't support shared memory for instruments, so instruments must be displayed somewhere on monitor to transfer their content to tablet.

Q: Is there any another possibility if I don't like to "sacrify" part of my monitor for instruments?

A: Yes, if you have graphics card with output for more than 1 monitor (which is common in these days) you can attach any old monitor as second monitor and display instruments here. Or you can attach "dummy" monitor – or you can make your own without soldering like [this one](#).

Q: alnstruments have broken my config, how can I undo changes ?

A: alnstruments always make backup of your config files before they are overwritten in this format: `yyyymmdd-hhmmss--configfilename` Please see appendix for more info.

Q: Can I use alnstruments with DCS World beta ?

A: Yes, but you must setup your game and profile paths correctly by click on "DCS path" and "DCS user profile path"

Q: Why I don't see Harriers MPCDs ?

A: You must press ~~shift + 1~~ and ~~shift + 2~~ right shift + 9 and right shift + 0 keys after entering cockpit, because MPCDs are not visible in cockpit by default only in external views (this is Harrier module developer related)

Q: Why I don't see Mirage radar ?

A: You must press right alt + 5 key after entering cockpit, because Mirage radar is not visible in cockpit by default, but only in external views (this is Mirage module developer related)

Q: How I can connect tablet to server part ?

A: alnstruments parts should connect automatically. Start client (tablet) first and then start server part. If not, you can enter IP address of tablet manually - field "Manual – IP address" on server, then press "Set IP"

Q: Should I run this app with administrator rights ?

A: Admin mode is only needed when changing monitor configuration and for exporting instruments (just right-click on alnstruments.bat and select "Run as Administrator"). For normal playing just start alnstruments.bat normally – admin mode is not meant as normal play mode.

Q: I don't see some of my instruments on monitor

A: Not all instruments are exported by default from DCS World – please see section "Exporting additional instruments" on page 4. Please note that after updating your DCS World, you should export instruments again, because DCS installer overwrites them with original files.

Q: Should I backup up my config.txt before updating alnstruments on desktop ?

A: Yes, backup your config.txt file and then copy it over to new version of alnstruments

Q: Should I change A-10 CDU, AV8 Harrier UFC, F-18C Hornet UFC, Mirage 2000C weapon panel resolution?

A: No you should always left resolution for this displays at 300 x 150 pixel. There is no need to set it higher.

Q: Was this app known as DCSpanlesPro before?

A: Yes, I have resumed development after 2 years, most parts have been completely rewritten. It is now more stable, faster and easier to configure with more aircraft and instruments support.

Q: Why it is not free ?

A: Because I have spend nearly 700 hours of developing this product not counting support, doc making, server maintenace. Although this app looks simple, it is not, because it is client-server application – it must grab picture form desktop, make monitor, keys and network configurations, sends input from tablet, requires precision timings etc. It has currently about 24 000 lines of code.

Q: How can I support alnstruments development ?

A: Simply by buying alnstruments on Google Play. [If you like this app, please rate it high on Google Play.](#) You can also subscribe to my [Youtube channel.](#) Flight simulations aren't easy to learn and fly, so as developing apps for simulators isn't too, especially for DCS World.

Q: Will you continue developing ?

A: Yes, there are many improvements planned, plese see DCS forum [here.](#)

Q: Where I can post feedback, tips or reqest for improvements ?

A: Please contact me on DCS forum here: <https://forums.eagle.ru/showthread.php?t=111920&page=500>

APPENDIX

A. Paths of config files and backups (standard paths for non-steam DCS World stable version):

DCS World game configuration e.g. graphics options

- options.lua C:\Users\winuser\Saved Games\DCS\Config

Keybindings

- Keyboard.diff.lua C:\Users\USERNAME\Saved Games\DCS\Config\Input\MODULENAME\keyboard

Monitor and instruments positions and geometry

- alstruments.lua C:\Program Files\Eagle Dynamics\DCS World\Config\MonitorSetup

A-10C CDU instrument export

- CDU_init.lua C:\Program Files\Eagle Dynamics\DCS World\Mods\aircraft\A-10C\Cockpit\Scripts\CDU\indicator

AV 8B Harrier left & right MPCDs export

- MPCDL_init.lua C:\Program Files\Eagle Dynamics\DCS World\Mods\aircraft\AV8BNA\Cockpit\MPCD\indicator
- MPCDR_init.lua C:\Program Files\Eagle Dynamics\DCS World\Mods\aircraft\AV8BNA\Cockpit\MPCD\indicator

AJS 37 Viggen radar screen & data (navigation) panel

- init.lua C:\Program Files\Eagle Dynamics\DCS World\Mods\aircraft\AJS37\Cockpit\scripts\Radar\Indicator
- init.lua C:\Program Files\Eagle Dynamics\DCS World\ Mods\aircraft\AJS37\Cockpit\scripts\Data\Indicator

Mirage 2000C RWR & weapon panel

- RWR_init.lua C:\Program Files\Eagle Dynamics\DCS World Mods\aircraft\M-2000C\Cockpit\RWR
- PCA_UR_init.lua C:\Program Files\Eagle Dynamics\DCS World\ Mods\aircraft\M-2000C\Cockpit\PCA_PPA
- PCA_BR_init.lua C:\Program Files\Eagle Dynamics\DCS World\ Mods\aircraft\M-2000C\Cockpit\PCA_PPA

F-16 C Viper

- DED display export file

B. Keybinding used for instruments

All these keybindins are not used in DCS World by default, so it is safe to add them, for example, R Ctrl + 1 means: hold right Control key on your keyboard press "1" key above "QWE.." keys (not "1" key on numpad)

A-10C keyboard mappings (added 70 keys)

Left & Right MFCDs displays

Left MFCD OSB 1	L Ctrl + 1	Right MFCD OSB 1	R Ctrl + 1
Left MFCD OSB 2	L Ctrl + 2	Right MFCD OSB 2	R Ctrl + 2
Left MFCD OSB 3	L Ctrl + 3	Right MFCD OSB 3	R Ctrl + 3
Left MFCD OSB 4	L Ctrl + 4	Right MFCD OSB 4	R Ctrl + 4
Left MFCD OSB 5	L Ctrl + 5	Right MFCD OSB 5	R Ctrl + 5
Left MFCD OSB 6	L Ctrl + 6	Right MFCD OSB 6	R Ctrl + 6
Left MFCD OSB 7	L Ctrl + 7	Right MFCD OSB 7	R Ctrl + 7
Left MFCD OSB 8	L Ctrl + 8	Right MFCD OSB 8	R Ctrl + 8
Left MFCD OSB 9	L Ctrl + 9	Right MFCD OSB 9	R Ctrl + 9
Left MFCD OSB 10	L Ctrl + 0	Right MFCD OSB 10	R Ctrl + 0
Left MFCD OSB 11	L Alt + 1	Right MFCD OSB 11	R Alt + 1
Left MFCD OSB 12	L Alt + 2	Right MFCD OSB 12	R Alt + 2
Left MFCD OSB 13	L Alt + 3	Right MFCD OSB 13	R Alt + 3
Left MFCD OSB 14	L Alt + 4	Right MFCD OSB 14	R Alt + 4
Left MFCD OSB 15	L Alt + 5	Right MFCD OSB 15	R Alt + 5
Left MFCD OSB 16	L Alt + 6	Right MFCD OSB 16	R Alt + 6
Left MFCD OSB 17	L Alt + 7	Right MFCD OSB 17	R Alt + 7
Left MFCD OSB 18	L Alt + 8	Right MFCD OSB 18	R Alt + 8
Left MFCD OSB 19	L Alt + 9	Right MFCD OSB 19	R Alt + 9
Left MFCD OSB 20	L Alt + 0	Right MFCD OSB 20	R Alt + 0

CDU instrument:

CDU SPC key	L Ctrl + L Alt + 1	CDU BCK Key	L shift + 1	CDU LSK R3	R shift + 1
CDU SYS key	L Ctrl + L Alt + 2	CDU BRT RockerSwitch	L shift + 2	CDU LSK R5	R shift + 2
CDU WP key	L Ctrl + L Alt + 3	CDU CLR Key	L shift + 3	CDU LSK R7	R shift + 3
AAP Steer Point Flt Plan	L Ctrl + L Alt + 4	CDU DIM RockerSwitch	L shift + 4	CDU LSK R9	R shift + 4
AAP Steer Point Mark	L Ctrl + L Alt + 5	CDU FA Key	L shift + 5	CDU MK Key	R shift + 5
AAP Steer Point Mission	L Ctrl + L Alt + 6	CDU FPM Key	L shift + 6	CDU NAV Key	R shift + 6
AAP Page Select OTHER	L Ctrl + L Alt + 7	CDU LSK L3	L shift + 7	CDU OSET Key	R shift + 7
AAP Page Select POSITION	L Ctrl + L Alt + 8	CDU LSK L5	L shift + 8	CDU PREV Key	R shift + 8
AAP Page Select STEER	L Ctrl + L Alt + 9	CDU LSK L7	L shift + 9	CDU Search back	R shift + 9
AAP Page Select WAYPT	L Ctrl + L Alt + 0	CDU LSK L9	L shift + 0	CDU Search forward	R shift + 0

AV8B Harrier keyboard mappings (added 73 keys) Left & Right MPCDs displays

Left MPCD OSB 1	L Ctrl + 1	Right MPCD OSB 1	R Ctrl + 1
Left MPCD OSB 2	L Ctrl + 2	Right MPCD OSB 2	R Ctrl + 2
Left MPCD OSB 3	L Ctrl + 3	Right MPCD OSB 3	R Ctrl + 3
Left MPCD OSB 4	L Ctrl + 4	Right MPCD OSB 4	R Ctrl + 4
Left MPCD OSB 5	L Ctrl + 5	Right MPCD OSB 5	R Ctrl + 5
Left MPCD OSB 6	L Ctrl + 6	Right MPCD OSB 6	R Ctrl + 6
Left MPCD OSB 7	L Ctrl + 7	Right MPCD OSB 7	R Ctrl + 7
Left MPCD OSB 8	L Ctrl + 8	Right MPCD OSB 8	R Ctrl + 8
Left MPCD OSB 9	L Ctrl + 9	Right MPCD OSB 9	R Ctrl + 9
Left MPCD OSB 10	L Ctrl + 0	Right MPCD OSB 10	R Ctrl + 0
Left MPCD OSB 11	L Alt + 1	Right MPCD OSB 11	R Alt + 1
Left MPCD OSB 12	L Alt + 2	Right MPCD OSB 12	R Alt + 2
Left MPCD OSB 13	L Alt + 3	Right MPCD OSB 13	R Alt + 3
Left MPCD OSB 14	L Alt + 4	Right MPCD OSB 14	R Alt + 4
Left MPCD OSB 15	L Alt + 5	Right MPCD OSB 15	R Alt + 5
Left MPCD OSB 16	L Alt + 6	Right MPCD OSB 16	R Alt + 6
Left MPCD OSB 17	L Alt + 7	Right MPCD OSB 17	R Alt + 7
Left MPCD OSB 18	L Alt + 8	Right MPCD OSB 18	R Alt + 8
Left MPCD OSB 19	L Alt + 9	Right MPCD OSB 19	R Alt + 9
Left MPCD OSB 20	L Alt + 0	Right MPCD OSB 20	R Alt + 0

UFC – there are also 2 special buttons, R Shift + 9 and R Shift + 0 (you must press them for MPCDs to be visible – see FAQ)

UFC - Button	L Shift + 1	UFC 1 Button	L Ctrl + L Alt + 1	ODU Option 1	L Ctrl + L Win+0
UFC . Button	L Shift + 2	UFC 2/N Button	L Ctrl + L Alt + 2	ODU Option 2	L Ctrl + L Win+1
UFC Altimeter Function B.	L Shift + 3	UFC 3 Button	L Ctrl + L Alt + 3	ODU Option 3	L Ctrl + L Win+2
UFC AWLS Function Btn.	L Shift + 4	UFC 4/W Button	L Ctrl + L Alt + 4	ODU Option 4	L Ctrl + L Win+3
UFC Clear Button	L Shift + 5	UFC 5 Button	L Ctrl + L Alt + 5	ODU Option 5	L Ctrl + L Win+4
UFC Display Brightness Inc	L Shift + 6	UFC 6/E Button	L Ctrl + L Alt + 6		
UFC EMCON Toggle Btn.	L Shift + 7	UFC 7 Button	L Ctrl + L Alt + 7		
UFC Enter Button	L Shift + 8	UFC 8/S Button	L Ctrl + L Alt + 8		
UFC I/P Button	L Shift + 9	UFC 9 Button	L Ctrl + L Alt + 9		
UFC IFF Function Button	L Shift + 0	UFC 0 Button	L Ctrl + L Alt + 0		
UFC ON/OFF Toggle Btn.	R Shift + 1	UFC Target-Of-Opportunity Function Button		R Shift + 5	
UFC RDR Beacon Function	R Shift + 2	UFC Timer Function Button		R Shift + 6	
UFC Save Button	R Shift + 3	UFC Weapons Function Button		R Shift + 7	

F-18C Hornet keyboard mappings (added 99 keys)Left,Right MDI displays & bottom AMPCD display

Left MDI PB 1	L Ctrl + 1	Right MDI PB 1	R Ctrl + 1
Left MDI PB 2	L Ctrl + 2	Right MDI PB 2	R Ctrl + 2
Left MDI PB 3	L Ctrl + 3	Right MDI PB 3	R Ctrl + 3
Left MDI PB 4	L Ctrl + 4	Right MDI PB 4	R Ctrl + 4
Left MDI PB 5	L Ctrl + 5	Right MDI PB 5	R Ctrl + 5
Left MDI PB 6	L Ctrl + 6	Right MDI PB 6	R Ctrl + 6
Left MDI PB 7	L Ctrl + 7	Right MDI PB 7	R Ctrl + 7
Left MDI PB 8	L Ctrl + 8	Right MDI PB 8	R Ctrl + 8
Left MDI PB 9	L Ctrl + 9	Right MDI PB 9	R Ctrl + 9
Left MDI PB 10	L Ctrl + 0	Right MDI PB 10	R Ctrl + 0
Left MDI PB 11	L Alt + 1	Right MDI PB 11	R Alt + 1
Left MDI PB 12	L Alt + 2	Right MDI PB 12	R Alt + 2
Left MDI PB 13	L Alt + 3	Right MDI PB 13	R Alt + 3
Left MDI PB 14	L Alt + 4	Right MDI PB 14	R Alt + 4
Left MDI PB 15	L Alt + 5	Right MDI PB 15	R Alt + 5
Left MDI PB 16	L Alt + 6	Right MDI PB 16	R Alt + 6
Left MDI PB 17	L Alt + 7	Right MDI PB 17	R Alt + 7
Left MDI PB 18	L Alt + 8	Right MDI PB 18	R Alt + 8
Left MDI PB 19	L Alt + 9	Right MDI PB 19	R Alt + 9
Left MDI PB 20	L Alt + 0	Right MDI PB 20	R Alt + 0
AMPCD PB 1	L shift + 1	AMPCD PB 11	R shift + 1
AMPCD PB 2	L shift + 2	AMPCD PB 12	R shift + 2
AMPCD PB 3	L shift + 3	AMPCD PB 13	R shift + 3
AMPCD PB 4	L shift + 4	AMPCD PB 14	R shift + 4
AMPCD PB 5	L shift + 5	AMPCD PB 15	R shift + 5
AMPCD PB 6	L shift + 6	AMPCD PB 16	R shift + 6
AMPCD PB 7	L shift + 7	AMPCD PB 17	R shift + 7
AMPCD PB 8	L shift + 8	AMPCD PB 18	R shift + 8
AMPCD PB 9	L shift + 9	AMPCD PB 19	R shift + 9
AMPCD PB 0	L shift + 0	AMPCD PB 20	R shift + 0

UFC

UFC Keyboard Pushbutton – 0	L Ctrl + L Alt + 0	UFC Option Select Pushbutton 0	L Ctrl + L Win + 0
UFC Keyboard Pushbutton – 1	L Ctrl + L Alt + 1	UFC Option Select Pushbutton 1	L Ctrl + L Win + 1
UFC Keyboard Pushbutton – 2	L Ctrl + L Alt + 2	UFC Option Select Pushbutton 2	L Ctrl + L Win + 2
UFC Keyboard Pushbutton – 3	L Ctrl + L Alt + 3	UFC Option Select Pushbutton 3	L Ctrl + L Win + 3
UFC Keyboard Pushbutton – 4	L Ctrl + L Alt + 4	UFC Option Select Pushbutton 4	L Ctrl + L Win + 4
UFC Keyboard Pushbutton – 5	L Ctrl + L Alt + 5	UFC Option Select Pushbutton 5	L Ctrl + L Win + 5
UFC Keyboard Pushbutton – 6	L Ctrl + L Alt + 6	UFC Keyboard Pushbutton – ENT	L Ctrl + L Win + 6
UFC Keyboard Pushbutton – 7	L Ctrl + L Alt + 7	UFC Keyboard Pushbutton – CLR	L Ctrl + L Win + 7
UFC Keyboard Pushbutton – 8	L Ctrl + L Alt + 8		
UFC Keyboard Pushbutton – 9	L Ctrl + L Alt + 9		
UFC ADF Function Select Switch – 1		L Ctrl + L Win + 8	
UFC ADF Function Select Switch – 2		L Ctrl + L Win + 9	
UFC ADF Function Select Switch - OFF		L Ctrl + L Win + 0	
UFC Emission Control Pushbutton		L Alt + L Win + 1	
UFC Function Selector Pushbutton - A/P		L Alt + L Win + 2	
UFC Function Selector Pushbutton - BCN		L Alt + L Win + 3	
UFC Function Selector Pushbutton – D/L		L Alt + L Win + 4	
UFC Function Selector Pushbutton - IFF		L Alt + L Win + 5	
UFC Function Selector Pushbutton - ILS		L Alt + L Win + 6	
UFC Function Selector Pushbutton On/Off		L Alt + L Win + 7	
UFC Function Selector Pushbutton - TCN		L Alt + L Win + 8	
UFC I/P Pushbutton		L Alt + L Win + 9	
UFC COMM 1 Channel Selector Knob - CCW/Decrease		L Shift + L Win + 1	
UFC COMM 1 Channel Selector Knob - CW/Increase		L Shift + L Win + 2	
UFC COMM 1 Channel Selector Knob – PULL		L Shift + L Win + 3	
UFC COMM 1 Volume Control Knob - CCW/Decrease		L Shift + L Win + 4	
UFC COMM 1 Volume Control Knob - CW/Increase		L Shift + L Win + 5	
UFC COMM 2 Channel Selector Knob - CCW/Decrease		L Shift + L Win + 6	
UFC COMM 2 Channel Selector Knob - CW/Increase		L Shift + L Win + 7	
UFC COMM 2 Channel Selector Knob – PULL		L Shift + L Win + 8	
UFC COMM 2 Volume Control Knob - CCW/Decrease		L Shift + L Win + 9	
UFC COMM 2 Volume Control Knob - CW/Increase		L Shift + L Win + 0	

AJS 37 Viggen keyboard mappings (added 30 keys)

Data panel and navigation

Data panel Digit 0	L ctrl + 0	Datapanel Rotary Mode 1 ID-NR	L alt + 1
Data panel Digit 1	L ctrl + 1	Datapanel Rotary Mode 2 TAKT	L alt + 2
Data panel Digit 2	L ctrl + 2	Datapanel Rotary Mode 3 TID	L alt + 3
Data panel Digit 3	L ctrl + 3	Datapanel Rotary Mode 4 VINDRUTA MAL	L alt + 4
Data panel Digit 4	L ctrl + 4	Datapanel Rotary Mode 5 BANA GRANS	L alt + 5
Data panel Digit 5	L ctrl + 5	Datapanel Rotary Mode 6 REF LOLA	L alt + 6
Data panel Digit 6	L ctrl + 6	Datapanel Rotary Mode 7 AKT POS	L alt + 7
Data panel Digit 7	L ctrl + 7		
Data panel Digit 8	L ctrl + 8		
Data panel Digit 9	L ctrl + 9		
Data panel RENSA clear	L alt + 8		

Navigation panel Waypoint B1	L shift + 1
Navigation panel Waypoint B2	L shift + 2
Navigation panel Waypoint B3	L shift + 3
Navigation panel Waypoint B4	L shift + 4
Navigation panel Waypoint B5	L shift + 5
Navigation panel Waypoint B6	L shift + 6
Navigation panel Waypoint B7	L shift + 7
Navigation panel Waypoint B8	L shift + 8
Navigation panel Waypoint B9	L shift + 9
Navigation panel Waypoint Bx	L shift + 0
Navigation panel Waypoint L MAL	R shift + 1
Navigation panel Waypoint LS SKU	R shift + 2

Mirage 2000C (added 5 keys)

Selective jettison OFF	L alt + 1
Selective jettison ON	L alt + 2
Selective jettison Safety Cover close	L alt + 3
Selective jettison Safety Cover open	L alt + 4
VTB (head down display) viewport ON/OFF	L alt + 5

F-16C Viper keyboard mappings (59 keys - added 40, modified 19)

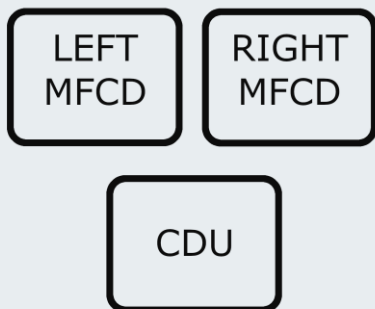
Left & Right MFDs displays - added keys

Left MFD OSB 1	L Ctrl + 1	Right MFD OSB 1	R Ctrl + 1
Left MFD OSB 2	L Ctrl + 2	Right MFD OSB 2	R Ctrl + 2
Left MFD OSB 3	L Ctrl + 3	Right MFD OSB 3	R Ctrl + 3
Left MFD OSB 4	L Ctrl + 4	Right MFD OSB 4	R Ctrl + 4
Left MFD OSB 5	L Ctrl + 5	Right MFD OSB 5	R Ctrl + 5
Left MFD OSB 6	L Ctrl + 6	Right MFD OSB 6	R Ctrl + 6
Left MFD OSB 7	L Ctrl + 7	Right MFD OSB 7	R Ctrl + 7
Left MFD OSB 8	L Ctrl + 8	Right MFD OSB 8	R Ctrl + 8
Left MFD OSB 9	L Ctrl + 9	Right MFD OSB 9	R Ctrl + 9
Left MFD OSB 10	L Ctrl + 0	Right MFD OSB 10	R Ctrl + 0
Left MFD OSB 11	L Alt + 1	Right MFD OSB 11	R Alt + 1
Left MFD OSB 12	L Alt + 2	Right MFD OSB 12	R Alt + 2
Left MFD OSB 13	L Alt + 3	Right MFD OSB 13	R Alt + 3
Left MFD OSB 14	L Alt + 4	Right MFD OSB 14	R Alt + 4
Left MFD OSB 15	L Alt + 5	Right MFD OSB 15	R Alt + 5
Left MFD OSB 16	L Alt + 6	Right MFD OSB 16	R Alt + 6
Left MFD OSB 17	L Alt + 7	Right MFD OSB 17	R Alt + 7
Left MFD OSB 18	L Alt + 8	Right MFD OSB 18	R Alt + 8
Left MFD OSB 19	L Alt + 9	Right MFD OSB 19	R Alt + 9
Left MFD OSB 20	L Alt + 0	Right MFD OSB 20	R Alt + 0

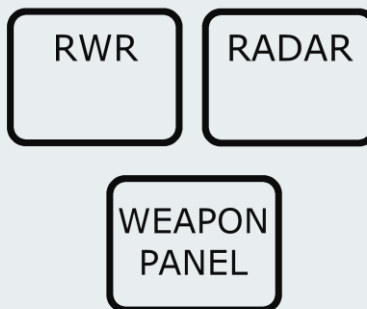
ICP panel – modified keys

ICP button 0	L Ctrl + L Alt + 0	Data control switch DOWN	L Ctrl + L Win + 1
ICP button 1	L Ctrl + L Alt + 1	Data control switch RET	L Ctrl + L Win + 2
ICP button 2	L Ctrl + L Alt + 2	Data control switch SEQ	L Ctrl + L Win + 3
ICP button 3	L Ctrl + L Alt + 3	Data control switch UP	L Ctrl + L Win + 4
ICP button 4	L Ctrl + L Alt + 4	DED decrement	L Ctrl + L Win + 5
ICP button 5	L Ctrl + L Alt + 5	DED increment	L Ctrl + L Win + 6
ICP button 6	L Ctrl + L Alt + 6	WARN reset / NORM	L Ctrl + L Win + 7
ICP button 7	L Ctrl + L Alt + 7	ENTER button	L Ctrl + L Win + 8
ICP button 8	L Ctrl + L Alt + 8	Recall button RCL	L Ctrl + L Win + 9
ICP button 9	L Ctrl + L Alt + 9		

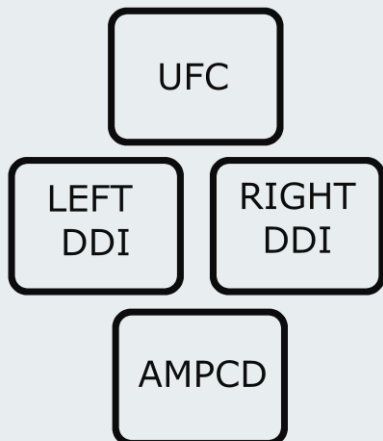
A-10C



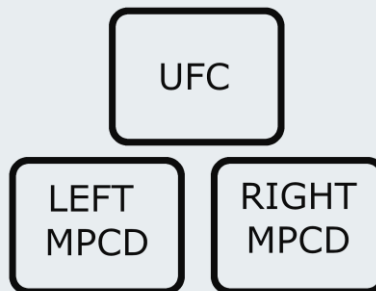
Mirage 2000C



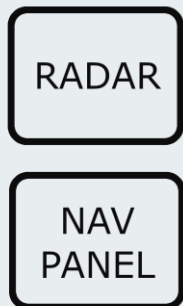
F/A-18C HORNET



AV-8BNA HARRIER



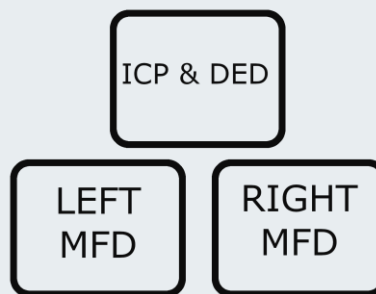
AJ 37 VIGGEN



Ka-50 BLACK SHARK



F-16C Viper



Thank you for your support and patience !