

Operators Manual

AVDU-3820-xx-09-OPS

Issue B

OPERATORS MANUAL

AVDU-3820-xx-09-OPS

Ruggedised 15" Display with Touch screen



Operators Manual

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1 General Description

This manual applies to the AVDU-3820-xx-yy 15" AMLCD Display system with Touch screen.

This manual relates to an upgrade to the base operation man machine interface version. Upgrades to the man machine interface are indicated in a firmware upgrade identification plate at the rear of the unit and on the On Screen Display (OSD) of the associated monitor

This manual relates to the following man machine interface versions:

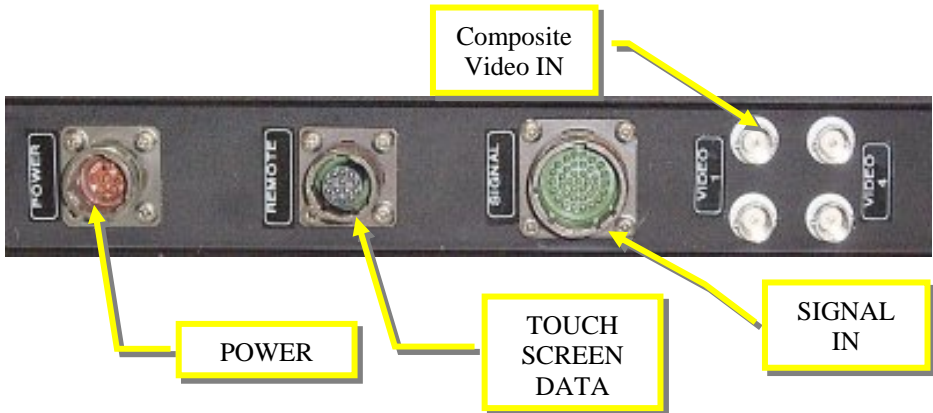
Control system Version 1.20 (Baseline Enhanced configuration)

On Screen display Version 1.6.0F (Version displayed in the OSD)

The display system features multiple video inputs and an integral touch screen interface with RS422 communication to external devices.

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2 Equipment connections



Ensure power is removed when connecting or disconnecting cables.

The Power connector carries Power to the unit

Data to and from the Touch screen is carried via RS422 using the Remote connector.

The signal connector carries six Video and one Graphic input to the display. The Video 3 input is RGB differential to STANAG 3350

The unit loops composite video (Video 1 and Video 4 through BNCs on the rear of the display as well as through the signal connector.

3 Control Key Functions and legend



The unit power is controlled from the power on switch integrated with the brightness control. When power is applied to the monitor the default input (VGA Graphic) is automatically selected.

- **VGA** – Selects the RGBHV Graphic video image
- **1** – Selects the composite video image from the Signal connector or BNC
- **2**– Selects the component Y/C video image from the Signal connector
- **3** - Selects the differential component RGSB video image from the Signal connector
- **4** – Selects the composite video image from the Signal connector or BNC
- **5**– Selects the component Y/C video image from the Signal connector
- **6** - Selects the differential component RGBS video image from the Signal connector
- **PIP** – Inserts the last selected Video Image in the Graphic image

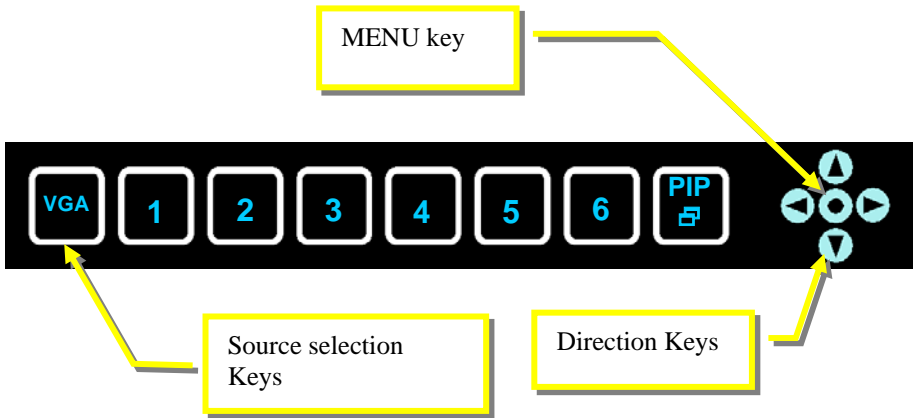
The Menu, UP, Down, Left and Right keys (top above) operate the On-screen display menu system

The brightness rotary control adjusts the display illumination. The button Backlight may be adjusted using the up and down direction keys in Graphic (VGA) mode (see over).

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4 Operator controls

The equipment configuration is controlled from a series of rotary controls and push buttons.



1. The Brightness control operates independently of the other controls.

BRT – This rotary control adjusts the illumination level of the display.

Power – This control is a latching control and will turn the display off and on. By default the display powers up in the default VGA Graphic mode.

2. The seven remaining select keys control the displayed image source and appearance.

3. The Menu select key invokes the On Screen Menu Display (OSD) and selects the menu. To select the menu press and hold the centre Menu Key for more than three seconds. To exit the menu, press and hold the centre key for more than three seconds. The menu functions are described in the ext few pages.

4. The four direction keys have five modes depending on the current display mode.

MODE	VGA	VIDEO Live	PIP	MENU
Down	Button illumination Down	Freeze then zoom in	PIP window Down	DOWN
UP	Button illumination UP	Freeze then zoom out	PIP window Up	UP
LEFT	Video Contrast -	Video Contrast -	PIP window Left	LEFT
RIGHT	Video Contrast +	Video Contrast +	PIP window Right	RIGHT

5 Key Backlights

The back illumination of the front panel buttons may be controlled by the lighting bus in the aircraft. (Not implemented) The aircraft lighting bus is connected to the lighting bus contact in the "Power" connector. The signal is fed to the Display where it is processed. The brightness of the key backlights is adjusted by the main brightness knob. The brightness of the key backlights may be adjusted up and down and offset from the aircraft lighting bus setting by using the Up/Down direction keys while in Graphics mode. The offset setting is stored and will be recalled to its previous value when next powered up. The cut-off point is normally adjusted by adjusting the rotary brightness control to minimum the adjusting the offset using the up and down direction keys until the keys are just illuminated.

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6 Display Operation

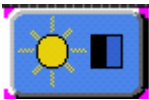
The following refers to a set of push buttons that are fitted to the front of the unit. In addition to power on/off and a rotary controls for backlight brightness the control button interface provides for video source selection and an On Screen Display (OSD) of certain functions that are controlled by backlit momentary type buttons.

Controls	
On/Off – sets the display into standby mode (on and off)	POWER
Brightness – controls display backlight brightness. The display brightness is set by this control	Rotary VR
Menu – turns OSD menu On or Off (Hold the centre button in the direction keys for three seconds)	Menu
The direction keys have the following effect depending on the current mode: Mode: <ul style="list-style-type: none"> a. Graphics input b. Live Video c. Frozen Video d. Menu 	
<ul style="list-style-type: none"> a. Dims the button illumination b. Freezes the Video image (not Graphic) c. Zooms out the Frozen image d. Select down – moves the selector to the next function (down) 	DOWN (-)
<ul style="list-style-type: none"> a. Brightens the button illumination b. Freezes the Video image (not Graphic) c. Zooms in the Frozen image d. Select up – moves the selector to the previous function (up) 	UP (+)
<ul style="list-style-type: none"> a. Adjusts the Video Contrast lower b. Adjusts the Video Contrast lower c. Adjusts the Video Contrast lower d.(-) Select Left – decrease setting 	LEFT
<ul style="list-style-type: none"> a. Adjusts the Video Contrast Higher b. Adjusts the Video Contrast Higher c. Adjusts the Video Contrast lower d.(+) Select Right – increase the setting/confirm the select 	RIGHT

7 On Screen Display (OSD) operation.


To turn on the OSD menu:	Press the MENU button and hold for three seconds
Move to next icon:	Press the MENU button momentarily
Select options within icon menu:	Use SEL UP/SEL DN buttons, the selected option is in yellow.
Increase/decrease setting:	Use +/- buttons (SEL RIGHT/LEFT)
Move selection left/right:	Use +/- buttons, the selected option is in green
To confirm the selection:	Use + button (SEL RIGHT)
To turn off the OSD Menu	Press the MENU button and hold for three seconds – this will store the user adjusted settings


On screen Display (OSD) functions

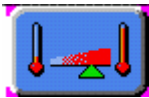


Brightness and Contrast :

The Brightness and contrast of the video and Map are independent

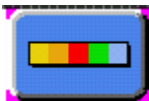
Brightness  Increase/decrease panel brightness level, total: 100 steps **(50)**

Contrast  Increase/decrease panel contrast level, total: 100 steps **(50)**




Colour Temperature : 9500K / 8000K / **6500K** / 5000K


Adjust the warmness of the image displayed. The higher temperature the cooler the image looks like. The lower temperature the warmest image looks.

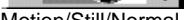


Video Adjustment : (DISPLAYED IN VIDEO MODE ONLY)

Colour:  adjust video colour level

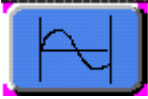
Tint:  adjust video tint level (NTSC video only)

Sharpness:  adjust video image sharpness level

Picture Type  Motion/Still/Normal Select different modes for different Videos
Motion mode – Good for dynamic scenes
Still mode – Steady and sharp image. For still picture displayed.
Normal mode – “Non-flicker” image. For general use


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Video Type: DVD / VCR change bandwidth to match the source (**DVD**)



Frequency and Phase : (DISPLAYED IN PC MODE ONLY)

Frequency  Adjust the image horizontal size

Phase  Fine tune the data sampling position (adjust image quality)

Picture Type : Motion/Still/Normal
 Select still mode to getting a stable still picture displayed inside PIP window.
 Select Normal mode to getting a better display quality for RGB video input
(MOTION)



Video System : Select video system and input signals (DISPLAYED IN VIDEO MODE ONLY)

AUTO : automatic detection of NTSC and PAL system (not applicable in SECAM system)
(AUTO)

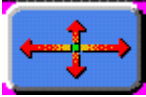
NTSC / NTSC 4.43 : manual select NTSC system

PAL / PAL M : manual select PAL system

SECAM : manual select SECAM system

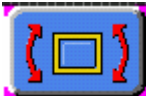


Status : Display graphic information: resolution and frequency (DISPLAYED IN PC MODE ONLY)



Position :
 Image up/down : Use SEL UP/SEL DN to move the image vertically

Image left/right : Use +/- SEL RIGHT/LEFT to move the image horizontally



Rotation : Rotates the image from landscape format to portrait format. (DISPLAYED IN VIDEO MODE ONLY)



Picture in Picture : (DISPLAYED IN PC MODE ONLY)

PIP Size : / 1 / 2 / 3
 Select PIP window size: close, size 1, size 2 to size 24
 Do not set this to zero or no PIP will be displayed in PIP mode

PIP Source : Select video source to be display in PIP window: (**Set to Auto**)

Auto / Comp / Svid/YCbCr

Auto – automatic detection of Composite, S-video and Component

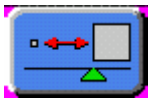
Comp – manual select composite video only

SVid – manual select S-video only

YCbCr/RGB – manual select component video only

(YCbCr/RGB Internally selected)

Horizontal Position		adjust the position of the PIP window horizontally
Vertical Position		adjust the position of the PIP window vertically
Advanced PIP Settings :		
Brightness		adjust the image brightness of the PIP window
Contrast		adjust the image contrast of the PIP window
Sharpness		adjust the image sharpness of the PIP window
Tint		adjust the tint of the image of the PIP window
Colour		adjust the colour of the image of the PIP window



Video Scaling : (DISPLAYED IN VIDEO MODE ONLY)
Use the UP and DOWN arrow keys to select the following scaling modes.

Normal

Undersacan

16:9

Nonlinear Scaling Modes : Horiz Clipping / Horiz Offset / Horiz Stretch / Vert Clipping / Vert Offset / Vert Stretch

Graphic Scaling (DISPLAYED IN PC MODE ONLY)

Modes

Use the up and down arrow keys to choose a scalar mode.

Use the + or - key to modify a following scalar parameters.

One to One :

Horizontal Pan



Vertical Pan



Fill Screen : enable full screen expansion for lower resolution Image
(Default)

Fill to Aspect ratio : enable fill screen expansion for lower resolution image according to aspect ratio.

Nonlinear Scaling Modes : Horiz Clipping / Horiz Offset / Horiz Stretch / Vert Clipping / Vert Offset / Vert Stretch

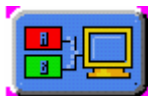
:

Language : Select OSD menu language display

1. English **(Default)**
2. Danish
3. Chinese (Simplified)
- 4.

Video source : Select the input video signal

Analogue RGB / Component Video / **Composite Video** / S-Video






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Utilities :

User Setting :	User Timeout	adjust the OSD menu timeout period in a step of 5 seconds (No user adjustment possible – setting will be overridden)
	DPMS	Disable / Enable the DPMS function When enabled the screen will display an error message when no input is present on the selected image source. The display will go into standby after a short period if there continues to be no input. The display will “wake up” if an image source returns.
	Display Input	Disable /Enable the input source name on screen (Enabled by default)
	Auto Source Select	: Off - Disable auto source select function. Low - Auto source select enable ONLY in power up. High - Auto source select ALWAYS enable. Set to OFF by Default – screen will display an error message when no input is present)
	Gamma:	1.0 (Default setting) 1.6 2.2
	Video Port Select	Select “Port 1” or “Port 2” of the source Composite/SVideo/YCbCr (Do not adjust these settings)

OSD Setting :

OSD Horz Position :		move the OSD menu horizontally
OSD Vert Position :		move the OSD menu vertically
OSD Background :	Translucent / Opaque	
OSD Rotate :	Normal / Rotate	
Freeze Frame :	Freeze the image (use “+” button)	
Zoom :	Zoom level : enable the zoom in function on the image displayed. Use “+” Right button to zoom in the image. Use “-“ Left button to decrease the zoomed image.	
	Horizontal Pan	

Vertical Pan



Direct Access #1: Define the hot key function(Right "+" and Left"-") for one of the following adjustments : Brightness / Contrast / Volume / Freeze / Zoom / Video Source* / PIP

(Automatically set to Contrast)

Direct Access #2: Define the hot key function ("SEL UP" and "SEL DN") for one of the following adjustments : Brightness / Contrast / Volume / Freeze / Zoom / Video Source* / PIP

(Automatically set to Brightness)

Display Orientation : **Normal** / Horizontal Inverse /

Vertical Inverse / Inverse

Calibrate RGB Gain : Colour Calibration

(DISPLAYED IN PC MODE ONLY)

Load Factory Defaults : Recall factory default settings.

* By pressing the hot key, the source is in sequence of Analogue
RGB/Composite Video/S-Video/Component Video.



Volume : Not Implemented

Adjust the audio volume level (functions only if the audio add-on installed)



Exit menu

Do not exit the OSD menu using this mode. The User adjustments will not be saved and the exit mode is indeterminate. To Exit the menu Press and hold the Menu button for three seconds.

In the event that the menu is exited using this method return to the OSD by pressing and holding the Menu key for three seconds twice (the first will not display the OSD, the second will display the OSD. It will then be possible to exit the menu normally (pressing and holding the Menu key for three seconds) and the adjustments will be saved. Alternatively remove power from the unit by turning the system power switch off.

(applies to V1.60F OSD firmware)

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NOTE:

The OSD settings chosen will be stored in memory. The OSD menu can be cleared from the screen by pressing and holding the Menu Key for more than three seconds. Exiting the Menu in this way will allow the system to store the changed parameters and return to the normal operating mode. Moving the selection bar to the EXIT icon pressing the + (Right) button will exit the menu but will cause an error in the function of the keys and is not recommended.

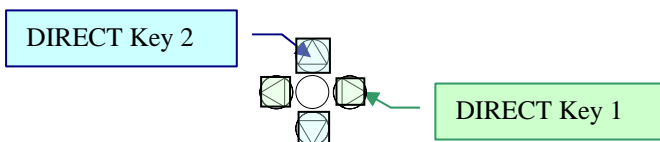
8 A note on Brightness


The front panel brightness control adjusts the illumination level coming from the display unit. It may be adjusted to match the background illumination level present in the aircraft and may be set to very low levels for night operation and high levels for day operation. Care should be taken not to leave the unit powered at high brightness levels when in a static or training mode as high power is drawn by the unit and overheating may occur. There is an independent “brightness” secondary control on the OSD for both the video and the Graphics/map input. This sets the video level of the video or graphic source. It is factory set to its midpoint (50) and it should not be normally necessary to adjust this on a day to day basis.

9 Contrast.

The contrast is normally adjusted using the “Contrast” keys in video mode. Pressing either these keys will display a contrast bar in the centre of the screen. Pressing the keys or holding them will adjust the contrast + or -. The contrast is factory set to its midpoint (50) It should not be necessary to adjust this on a day to day basis unless the contrast level from the sensor video is poor (It is usually better to adjust the sensor settings rather than the “normalised” display. (Holding the key will auto repeat for rapid value change) The contrast settings for the Map and the video are independent and are stored separately.

10 A note on the Direct Keys



The function of the four direct keys can be programmed in two modes using the OSD Utilities menu.  However these are overridden by the button controller and thus may have no function or another assigned function dependant on the display mode. Changing the direct key programming from the factory default settings is therefore not recommended.

Direct Key 1: Direct key one is programmed in the factory to contrast but may be reprogrammed by the user.

Direct Key 2: The function of this key is assigned depending on mode and cannot be user assigned.

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11 TROUBLESHOOTING

A general guide to troubleshooting the flat panel display system it is worth considering the system as separate elements, such as:

- External Equipment; PC settings, video format
- Display Panel (Menu setup, cabling, connection, panel, PC settings)
- Backlight (inverter, cabling, backlight tubes)
- Computer system (display settings, operating system)

Through step-by-step cross checking with instruction manuals and a process of elimination to isolate the problem it is usually possible to clearly identify the problem area.

Removing power from the system may clear a system lockup or return the settings to their default condition.

No image:

- If the panel backlight is not working it may still be possible to just see some image on the display.
- A lack of image is most likely to be caused by incorrect connection, lack of power, failure to provide a correctly formatted signal or incorrect graphic card settings.

Image position:

If it is impossible to position the image correctly, i.e. the image adjustment controls will not move the image far enough, then test using another graphics card. This situation can occur with a custom graphics card that is not close to standard timings or if something is in the graphics line that may be affecting the signal such as a signal splitter (please note that normally a signal splitter will not have any adverse effect).

Image appearance:

- A faulty panel can have blank lines, failed sections, flickering or flashing display
- Incorrect graphics card refresh rate, resolution or interlaced mode will probably cause the image to be the wrong size, to scroll, flicker badly or possibly even no image.
- Internal jumper settings are set at the factory. Incorrect internal jumper settings on the internal controller card may cause everything from total failure to incorrect image.

Continued failure:

If unit after unit keeps failing consider and investigate whether you are short circuiting the equipment or doing something else seriously wrong. Generally after common sense issues have been resolved we recommend step-by-step substitution of known working parts to isolate the problem.

12 Handling Precautions

Handling of the Remote Control should be in compliance with Real-Time Vision's handling principles.

- 1) Be sure to turn off power supply when inserting or disconnecting the input connectors.
- 2) Wipe off water or fluid droplets immediately. Long contact with water or other fluids may cause discolouration or spots.
- 3) Since CMOS LSI is used in this module, take adequate static electricity precautions and ensure correct human earth bonding when handling.
- 4) Do not open nor modify the Assembly.
- 5) At the insertion or removal of the Remote Connectors, ensure that the sockets are free from debris and be sure not to damage the Interface pins

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