



AVDU–1010-xx

Installation and Operation Manual

4” LCD Video Display



**Aircraft Video Display Unit
AVDU-1010-xx**

1. Introduction



This document applies to the Real-Time Vision 4" display model AVDU-1010-xx.

The packaged display contains the LCD module LCDM-4002, 4" colour TFT LCD, associated power supplies, connectors and housing.

The display described in this document is housed in a sealed metal environmental housing with an integral filtered aircraft power supply and video input filter module.

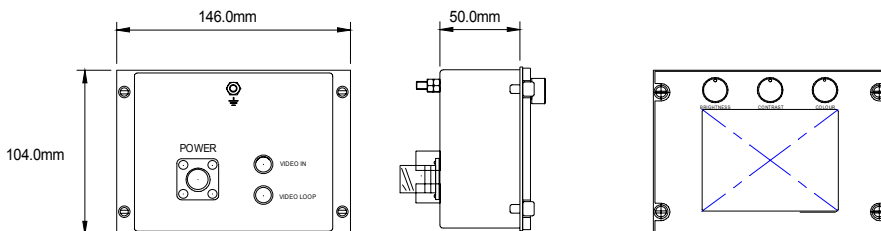
Controls for brightness, contrast and colour are mounted in the front face of the housing.

The unit accepts a single NTSC or PAL colour composite signal and displays this on the 4" screen.



2. Installation

The unit is designed for mounting using the Dzus fasteners fitted on each corner



4. Specifications

Display:	4" colour TFT LCD							
Resolution (pixels):	480(W) x 234(H)							
Active Display Area:	82.1mm(W) x 61.8mm(H)							
Dot Pitch:	0.171mm(W) x 0.264mm(H)							
Colour Configuration:	R.G.B delta							
Back Light:	CCFT							
Input Signal:	NTSC & PAL (auto-switch) composite video signal 1 Vp-p / 75 ohm sync. Negative							
	f_H :	<table> <tr> <td>NTSC</td> <td>PAL</td> </tr> <tr> <td>15.75</td> <td>15.625</td> </tr> <tr> <td>KHz</td> <td>KHz</td> </tr> </table>	NTSC	PAL	15.75	15.625	KHz	KHz
NTSC	PAL							
15.75	15.625							
KHz	KHz							
	f_V :	60 Hz 50 Hz						
	f_C :	3.58 MHz 4.43 MHz						
Power Source:	DC 12 V ~ 32 V							
Power Consumption:	0.13A@28V 7 W max.							
Operating Temperature:	0°C ~ 60°C							
Storage Temperature:	- 30°C ~ 80°C							
Operating Humidity:	Max. 85% RH							
Storage Humidity:	Max. 85% RH							
Overall Dimension:	146mm(W) x 104mm(H) x 50mm(D)							
Mass	850g							

Optical Specifications

Lamp Life-time:	10,000 hr min. (at $T_{amb} = 25^{\circ}C$)
Viewing Angle (min.):	Right 45 deg Left 45 deg Top 10 deg



Brightness:	Bottom 30 deg 250 cd/m ² (typ. with no filter)
Contrast Ratio:	100 (with no filter)

5. Operation

Connections

Connect the video source to the video input BNC connector
Connect the power cable to the power input connector

The video loop output is for monitoring purposes.
The video input is internally terminated with 75 ohms

Turn the unit on by pushing the brightness knob in.

Adjust the brightness contrast and colour controls for optimum image.

Note: The optimum position of the controls has been factory set to the "3 O'clock position.



6. Troubleshooting

General

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

- Video Source
- Power Source
- Cabling
- Display

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

No image:

- Check the brightness, contrast and colour controls. (set to 3 O'clock)
- A lack of image is most likely caused by incorrect connection, lack of power, failure to provide a correct PAL or NTSC signal or incorrect graphic card or video settings.
- If the panel backlight is not working it may still be possible to just see some image on the display.



Image appearance:

- A monochrome image - check the input signal is PAL or NTSC. (SECAM signals will cause a monochrome displayed image).
- A faulty panel can have blank lines, failed sections, flickering or flashing display
- Incorrect graphics card refresh rate, resolution or non interlaced mode will probably cause the image to be the wrong size, to scroll, flicker badly or in the worst case, no image at all.
- Sparkling on the display unit: faulty display power cable.

Backlight:

- Items to check include: Power input, Controls, If adjusting brightness control has no effect the chances are that the backlight has failed.

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.

5. Inspection Standard

5-1 Inspection environment conditions

5-1-1 Room temperature : 20 ~ 25 °C

5-1-2 Humidity : 65 ±5% RH

5-1-3 The viewing line should be perpendicular to the surface of screen.

5-2 Classification of Defects

5-2-1 Dot defect

a). Inspection condition

Inspection distance : 35 ± 5cm

Inspection illumination : 100 ~ 150 Lux

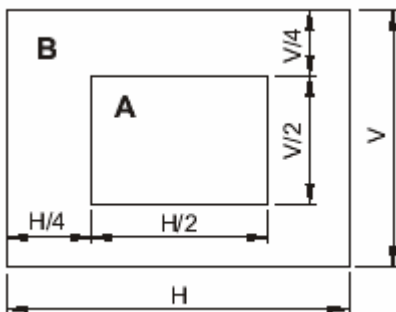
Panel temperature : 30 ± 5 °C

Inspection pattern : full white, full black, red, green and blue screens

b). Acceptable criteria

Item	Area		Total
	A	B	
Blue Black	2	3	4
Red Green White	1	3	3
Total	2	5	7

c). The definitions of A and B zone



5-2-2 Scratch on the polariser

Number = 3 max.

Width ≤ 0.1 mm , Length ≤ 6 mm

5-2-3 Dent on the polariser

Number = 3 max. , Average Diameter ≤ 0.3 mm

5-2-4 Foreign material on the polariser

Number = 2 max. , Average Diameter ≤ 0.5 mm

5-2-5 After image

After displaying a pattern for 5 seconds then switch to a different pattern, the previous pattern should disappear within 10 seconds.

6. WARRANTY

The products are warranted against defects in workmanship and material for a period of one (1) year from the date of purchase provided no modifications are made to it and it is operated under normal conditions and in compliance with the instruction manual.

The warranty does not apply to:

- Product that has been installed incorrectly, this specifically includes but is not limited to cases where electrical short circuit is caused.
- Product that has been altered or repaired except by the manufacturer (or with the manufacturer's consent).
- Product that has subjected to misuse, accidents, abuse, negligence or unusual stress whether physical or electrical.
- Ordinary wear and tear.

Except for the above express warranties, the manufacturer disclaims all warranties on products furnished hereunder, including all implied warranties of merchantability and fitness for a particular application or purpose. The stated express warranties are in lieu of all obligations or liabilities on the part of the manufacturer for damages, including but not limited to special, indirect consequential damages arising out of or in connection with the use of or performance of the products.

**CAUTION**

Whilst care has been taken to provide as much detail as possible for use of this product it cannot be relied upon as an exhaustive source of information. This product is for use by suitably qualified persons who understand the nature of the work they are doing and are able to take suitable precautions and design and produce a product that is safe and meets regulatory requirements.

LIMITATION OF LIABILITY

The manufacturer's liability for damages to customer or others resulting from the use of any product supplied hereunder shall in no event exceed the purchase price of said product.