

## Interface Control Document

# AVDU-2102-xx-yy-ICD



## General Description

This document applies to the 210mm (8.4") Colour TFT-LCD display AVDU-2102-xx-yy and its variants.

The monitor supports the SVGA (800(H) x 600(V)) screen format and 16.7M colours (RGB 8/6-bits data) at high response speeds optimised for high-speed motion video typical in airborne surveillance applications.

This Display contains:

- Power input filter and power supply module
- Video display driver Panel Electronic Circuit (PEC )
- Inverter PEC for the backlight
- Backlight light box assembly

The unit is designed to connect directly and provide power to an associated external remote device (e.g. Digital video Recorder VRDV-4000-01).



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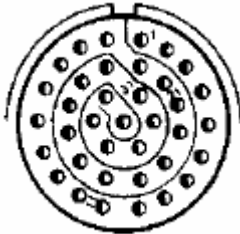

### Change Record

Issue No. Change	Replaced		Added	Removed	Reason for Change	Completed: Date, Name
	Old	New				
A					First Issue	JAN 2005
B					Key legends added DVI option added	July 14 <sup>th</sup> 2005

## Interface Control Document

### Electrical Connections

#### Monitor connectors (AVDU-2102-01)

Power connector	
 <p>Size 20 contacts Wire Size 24,22,20 Gauge 3, 5, 7.5A max</p>	<b>Unit connector</b> D38999/20WB 98PN   FLANGE MT RECEP 6 WAY PIN
	<b>Mating half (cable connector)</b> D38999/26WB 98SN   PLUG 6 WAY SKT
	G8801-11M   SIZE 11 Backshell
Signal connector	
 <p>Size 22D contacts Wire size 28,26,24,22 Gauge 1.5, 2, 3, 5A max</p>	<b>Unit Connector</b> D38999/20WD 35PN   FLANGE MT RECEP 37 WAY PIN
	<b>Mating Half (cable connector)</b> D38999/26WD 35SN   PLUG 37 WAY SKT
	G8801-15M   SIZE 15 Backshell
Remote OUT	
 <p>Size 22D Contacts Wire size 28,26,24,22 Gauge 1.5, 2, 3, 5A max</p>	<b>Unit connector</b> D38999/20WB 35SN   FLANGE MT RECEP 13 WAY Socket
	<b>Mating Half (cable connector)</b> D38999/26WB 35PN   PLUG 13 WAY Plug
	G8801-11M   SIZE 11 Backshell
Video IN/OUT connectors	
	<b>Unit connector</b> Isolated BNC

*For pin outs see table on next page*



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Power Connector	
A	+28V DC Power
B	28V DC Power Return
C	Chassis
D	+ Heater (not fitted)
E	- Heater (not fitted)
F	Enable (Ground to pin B for Disable)

Signal Connector			
1	Video 2	S-Video : Chroma in	
2		Ground	
3		S-Video : Luma in	
4		Ground	
5	Video 1*	Composite video in	
6		Ground	
7	Video 3	Luma in / Green in	
8		Ground	
9		Cb in / Blue in	
10		Ground	
11		Cr in / Red in	
12		Ground	
13	Video 5	S-Video_2 : Chroma in	
14		Ground	
15		S-Video_2 : Luma in	
16		Ground	
17	Video 4*	Composite video in_2	
18		Ground	
19	Video 6 YCrCb/RGB selected internally	Cr in_2 / Red in_2	
20		Ground	
21		Luma in_2/Green in_2 (SOG)	
22		Ground	
23		Cb in_2 / Blue_2	
24		Ground	
25		/Composite sync in	
26		Ground	
27	Graphic 1	PCR	Red, analogue
28		AGND	Analogue ground red
29		PCG	Green, analogue
30		AGND	Analogue ground green
31		PCB	Blue analogue
32		AGND	Analogue ground blue
33		HS_IN	Horizontal sync or composite sync, input
34		DGND	Digital ground
35		VS_IN	Vertical sync, input
36		DGND	Digital ground
37	NC	No connection	

Remote Connector	
1	+28V DC Output
2	28V Return
3	Chassis
4	Data (+)
5	Data (-)
6	Data screen
7	+12V DC Output
8	12V DC return
9	RS422 + Out
10	RS422 - Out
11	
12	Lighting Bus
13	Inhibit

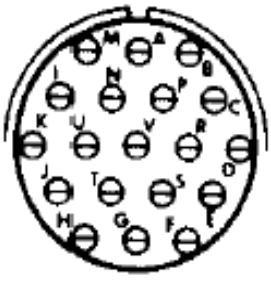
\*Video 1 and Video 4 are looped to BNC connectors on the rear panel.

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### Options

#### DVI input option

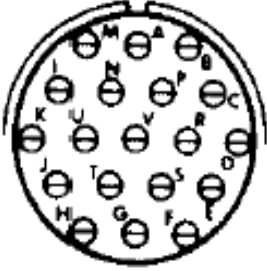
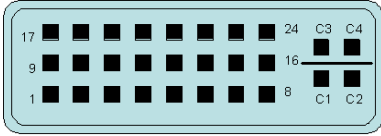
An optional DVI Graphic input (Graphic 2) may be fitted to the display (in addition to the analogue Graphic 1 input)

 <p style="text-align: center;">Size 20 contacts Wire Size 24,22,20 Gauge 3, 5, 7.5A max</p>	<b>Unit connector</b>	
	D38999/20WD-19PN	Flange Mounting Receptacle 19 Pin
	<b>Mating connector</b>	
	D38999/26WD-19SN	Plug 19 way socket
	G8801-15M	SIZE 15 Backshell

Pin	Signal	
A	/RX0	TMDS Data 0-
B	RX0	TMDS Data 0+
C	/RX1	TMDS Data 1-
D	RX1	TMDS Data 1+
E	/RX2	TMDS Data 2-
F	RX2	TMDS Data 2+
G	/RXC	TMDS Data CLK-
H	RXC	TMDS Data CLK+
J	DVI_DDC_CLK DDC	Clock SCL (I <sup>2</sup> C bus)
K	DVI_DDC_DAT DDC	Data SDA (I <sup>2</sup> C bus)
L	DVI_VS_IN	DVI Analogue Vertical Sync
M	+5V	(Optional +5V DC)
N	Ground for +5V	Analogue Ground for +5V, VS
P	Screen/Digital Ground for Data 0	Digital Ground (For Data 0)
R	Screen/Digital Ground for Data 1	Digital Ground (For Data 1)
S	Screen/Digital Ground for Data 2	Digital Ground (For Data 2)
T	Screen/Digital Ground for Data CLK	Digital Ground (For Data CLK)
U	Ground for I <sup>2</sup> C bus	Ground for I <sup>2</sup> C bus
V	Hot Plug	Hot Plug detect

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### Typical Cable for DVI –D input

<p>D38999/26WD-19SN</p> 	<p>DVI connector</p> 	
Pin	Signal	
A	/RX0	TMDS Data 0-
B	RX0	TMDS Data 0+
C	/RX1	TMDS Data 1-
D	RX1	TMDS Data 1+
E	/RX2	TMDS Data 2-
F	RX2	TMDS Data 2+
G	/RXC	TMDS Data CLK-
H	RXC	TMDS Data CLK+
J	DVI_DDC_CLK DDC	Clock SCL (I <sup>2</sup> C bus)
K	DVI_DDC_DAT DDC	Data SDA (I <sup>2</sup> C bus)
L	DVI_VS_IN	DVI Analogue Vertical Sync
M	+5V	(Optional +5V DC)
N	Ground for +5V	Analogue Ground for +5V, VS
P	Screen/Digital Ground for Data 0	Digital Ground (For Data 0)
R	Screen/Digital Ground for Data 1	Digital Ground (For Data 1)
S	Screen/Digital Ground for Data 2	Digital Ground (For Data 2)
T	Screen/Digital Ground for Data CLK	Digital Ground (For Data CLK)
U	Ground for I <sup>2</sup> C bus	Ground for I <sup>2</sup> C bus
V	Hot Plug	Hot Plug detect



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### Control Key Functions and legend

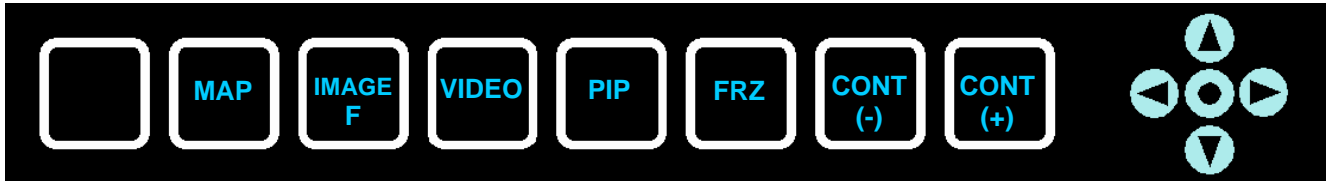
All displays have part numbers that use the following principals:  
AVDU-2102-xx-yy

AVDU	indicates that the product is a display (Advanced Visual Display Unit)
21	Screen diagonal in cm (approximate)
02	This denotes the variant of the display in this series
xx	This denotes the type of front screen fitted: (See section ) 01: Polarised contrast enhancing filter 02: NVG Filter with etched front surface 03: Clear glass with etched front surface  51: Touch screen with Polarised contrast enhancing filter 52: Touch screen with NVG Filter 53: Touch screen with Clear glass
yy	This denotes the configuration of key and controls (See below)

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### AVDU-2102-xx-01

Arrangement for the Button Legends



### Button Functionality

The functionality for the buttons on the Display's front panel. The ON/OFF switch is implemented by the rotary brightness control when turned fully anti clockwise and isolates the power to the unit.

Button No.	Legend		Function
1			No function
2	MAP	Graphic 1	Selects the Graphic input from a PC on the Signal Connector at the rear of the Display. Pressing the button while in PIP mode will remove the PIP
3	IMAGE F	Graphic 2 DVI-D	Selects the DVI video input from the DVI signal Connector at the rear of the Display. Pressing the button while in PIP mode will remove the PIP
4	VIDEO	Video toggle	Selects the remaining video inputs from the signal Connector or BNCs at the rear of the Display (Composite). Pressing the button while in PIP mode will remove the PIP
5	PIP	Graphic/ Video PIP	Selects the last elected Video input superimposed as a picture over the Graphics video input (Picture In Picture). Pressing the button again removes the PIP
6	Freeze		Freezes and unfreezes the video image
7	'CONT (-)'		Adjusts the display contrast down. (Graphic or Video Depending o the mode)
8	'CONT (+)'		Adjusts the display contrast up.

The Menu select key invokes the On Screen Menu Display (OSD) and selects the menu when held down for more than 5 seconds. To exit the menu press and hold the key for >5 seconds

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

MODE	Graphic 1 or 2 MAP/IMAGE F	VIDEO	PIP	MENU/OSD
<b>Down</b>	Dim the brightness of the keys	Zoom out if frozen	Move PIP Down	DOWN
<b>UP</b>	Increase the Brightness of the keys	Zoom in if frozen	Move PIP UP	UP
<b>LEFT</b>	MAP Contrast -	Video Contrast -	Move PIP Left	LEFT
<b>RIGHT</b>	MAP Contrast +	Video Contrast +	Move PIP Right	RIGHT

## Interface Control Document

### AVDU-2102-xx-02

Arrangement for the Button Legends



#### Button Functionality

The functionality for the buttons on the Display's front panel. The ON/OFF switch is implemented by the rotary brightness control when turned fully anti clockwise and isolates the power to the unit.

Button No.	Legend		Function
1	MIX	Video 1	Selects the Video 1 input from the signal Connector or BNC at the rear of the Display (Composite).
2	ESM	Y/C 1	Selects the remaining Video 2 input from the signal Connector at the rear of the Display (Component Y/C 1).
3			
4			
5			
6	Freeze		Freezes and unfreezes the video image
7	'CONT (-)'		Adjusts the display contrast down. (Graphic or Video Depending o the mode)
8	'CONT (+)'		Adjusts the display contrast up.

The Menu select key invokes the On Screen Menu Display (OSD) and selects the menu when held down for more than 5 seconds. To exit the menu press and hold the key for >5 seconds

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

MODE	VIDEO	MENU/OSD
<b>Down</b>	Dim the brightness of the keys	DOWN
<b>UP</b>	Increase the Brightness of the keys	UP
<b>LEFT</b>	Video Contrast -	LEFT
<b>RIGHT</b>	Video Contrast +	RIGHT



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### Handling Precautions

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

- 1) Since front window is an optical assembly and is easily damaged, observe precautions in order not to scratch it.
- 2) Be sure to turn off power supply when inserting or disconnecting the input connectors.
- 3) Wipe off water or fluid droplets immediately. Long contact with water or other fluids may cause discoloration or spots.
- 4) When the front window surface is soiled, wipe it with absorbent cotton or other soft cloth.
- 5) Since the panel is made of glass, it may break or crack if dropped or bumped on hard surface.
- 6) Since CMOS LSI is used in this module, take adequate static electricity precautions and ensure correct human earth bonding when handling.
- 7) Do not open nor modify the assembly.
- 8) Do not press the front window sheet a in any direction.
- 9) At the insertion or removal of the power and signal interface connectors, ensure that the sockets are free from debris and be sure not to damage the interface pins
- 10) After installation of the display into a mounted position, do not twist nor bend the display even momentary. When designing a suitable mounting, it should be taken into consideration that no bending/twisting forces are applied to the display from outside. Otherwise the TFT -LCD module or backlight may be damaged.

#### 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.

#### IMPORTANT USAGE NOTE

This equipment is for use by developers and integrators, the manufacturer accepts no liability for damage or injury caused by the use of this product. It is the responsibility of the developer, integrators or other user of this product to:

- Ensure that all necessary and appropriate safety measures are taken.
- Obtain suitable regulatory approvals as may be required.
- Check power settings to all component parts before connection.

#### Disclaimer

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## Interface Control Document

AVDU-2102-xx with DVI option

