



RAIU-1000-01
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ICD

Interface Control Document

RAIU-1000-01-ICD

Radar Adaptor Interface Unit Telephonics RDR-1500 series

General Description

This specification applies to the Radar Adaptor Interface Unit RAIU-1000-01 and its variants.

The adaptor unit is designed as an upgrade to an existing AVDU series Display and is mounted on the rear face of the display using an adaptor plate that locates on the monitor side mounting holes. The unit interfaces between the Telphonics RDR 1500 Radar and an AVDU series display by modifying the signals from the radar into a form suitable for display on the monitor.

The unit houses an alarm circuit for the Radar providing a status indicator warning that the RADAR is transmitting while the aircraft is on the ground. The output may be presented to the operator as an indicating Lamp.

This Unit contains:

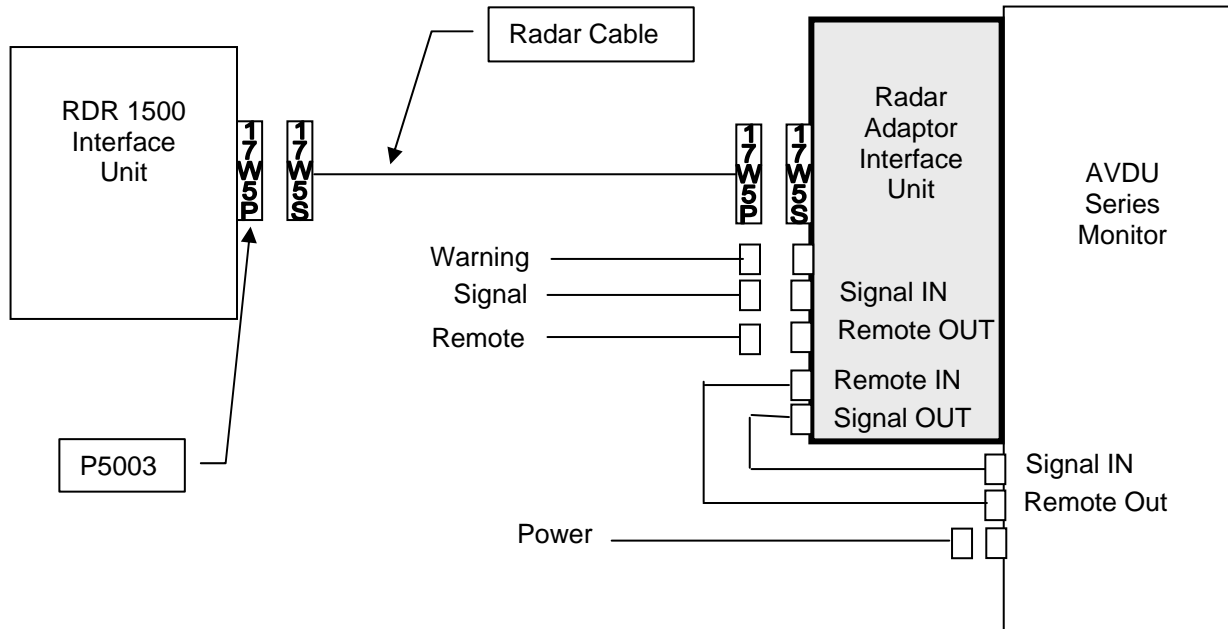
- Power input filter and Power supply module
- Radar Adaptor Panel Electronic Circuit (PEC)

The unit when fitted to an AVDU series monitor may replace the functions of a Telphonics IN-1502H Radar indicator.

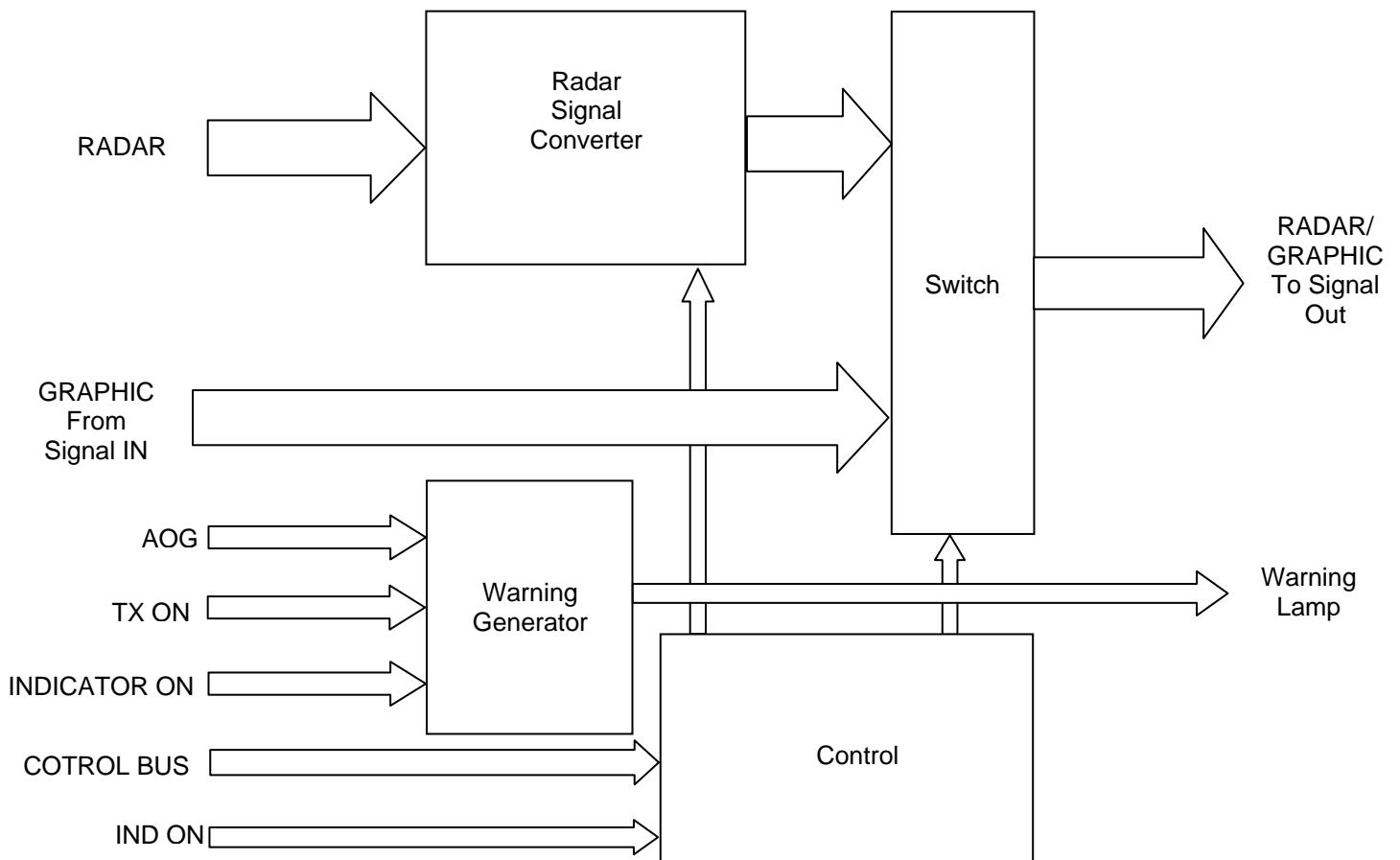
Installation of the adaptor does not require modification to an AVDU-2640 series monitor.

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Adaptor scheme

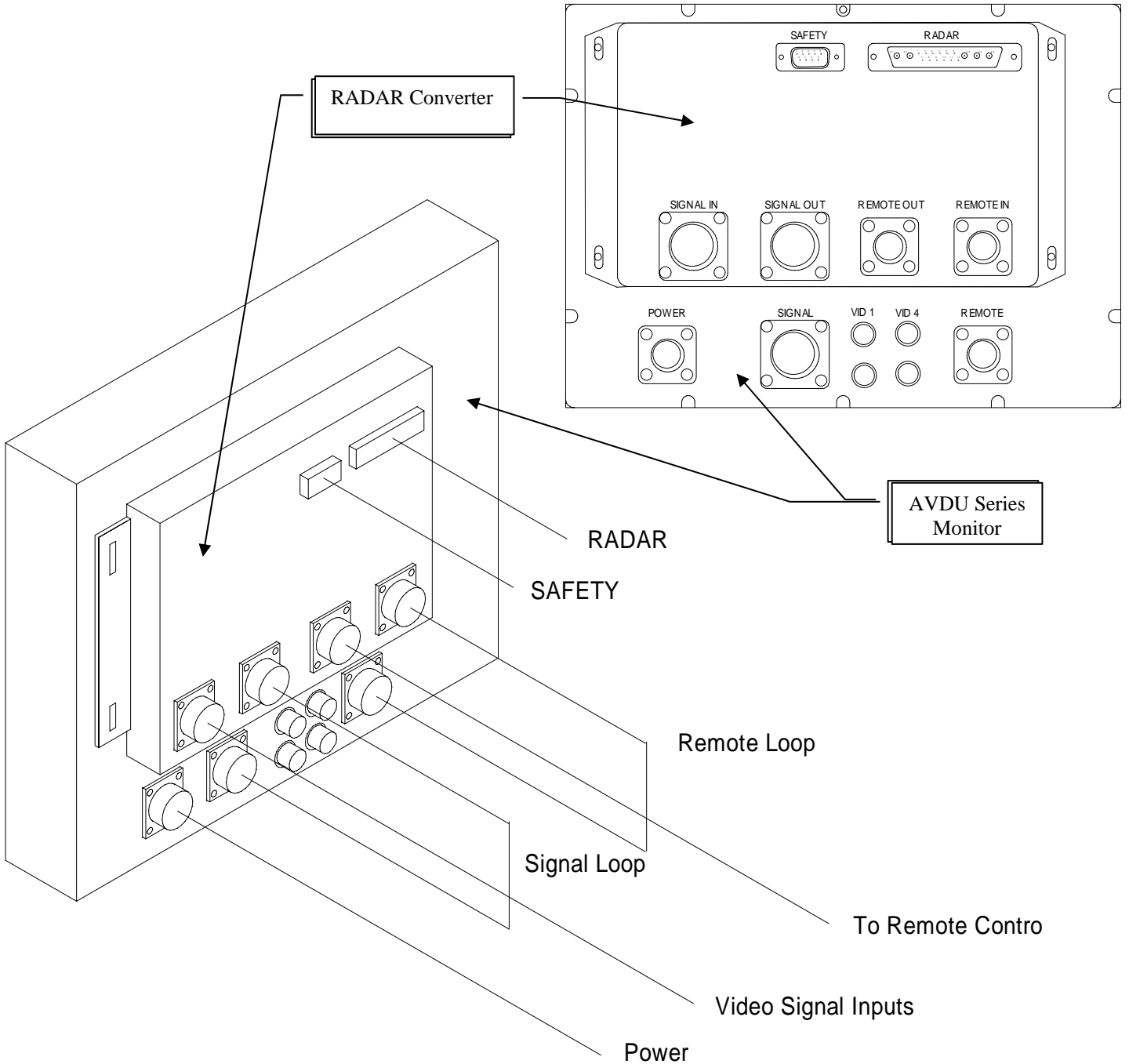


Block Diagram



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Typical Connection scheme



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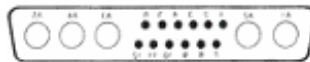
Mating Connector part numbers.

Connector to mate with Adaptor RAIU-1000-01 "RADAR" on Display adaptor



(Photo shows an incorrect backshell – see below)

- 1 Solder cup, sizes DC, with empty size 8 cavities, P/N with through hole 3,05 mm
ITT-CANNON DCM-17W5S-A191-A197
- 5 -RG197B/U Coaxial socket
Solder braid
DM53742-5001 or
DM53742-5099



- 1 Hood and clamp slide

Positronic Industries D37000GVL0
(Shell size 4)

Connector to mate with RADAR Interface unit RDR IU-1507A

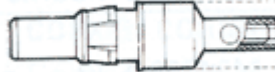


(Photo shows an incorrect backshell – see below)

- 1 Solder cup, sizes DC, with empty size 8 cavities, P/N with through hole 3,05 mm
ITT-CANNON DCM-17W5P-A191-K87
- 5 -RG197B/U Coaxial plug
Solder braid
DM53740-5001 or
DM53740-5099



12 size 20 contacts and 5 coax inserts



- 1 Hood and slide studs

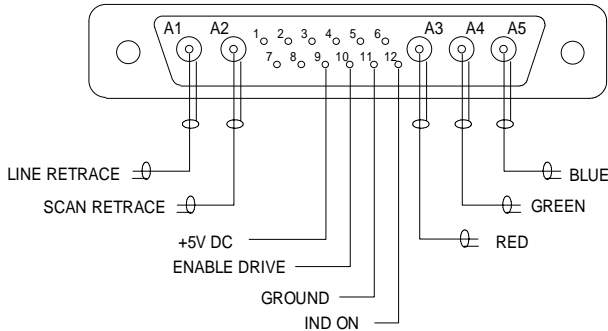
Positronic Industries D37000GVL0
(Shell size 4)

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Electrical Pin assignments - External Connections

1. RADAR Signal connector

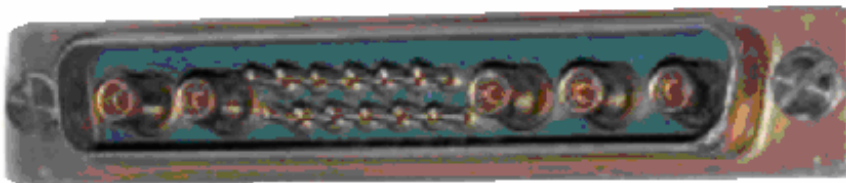
This connector accepts the signals from the RDR 1500 Series Radar Interface unit.



Pin 10 ENABLE will be grounded inside the adaptor (through a link to pin 11) This informs the Radar Interface unit a display is present.

Pin 12 IND ON may be used (selected with a link) to select the RADAR image for display in place of the Graphics input to the monitor when the RADAR is turned on. Alternatively the RADAR image may be displayed from the front panel or remote control. A1 to A6 and Enable Drive and IND on are all TTL levels. (TTL 1= +5V, 0 = 0V.)

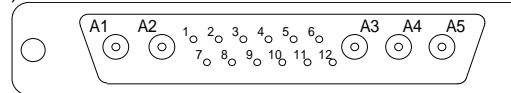
“RADAR” Connector on unit



(Photo shows an incorrect fittings for mating backshell – see below)

- 1 Type DCM-17W5P

ITT-CANNON P/N
Solder bucket sockets
Solder cup, sizes DC, with empty size 8 cavities
P/N with through hole 3,05 mm
DCM-17W5P-A191-K87
or
PCB mounted Coaxial straight Solder pins with
through hole 3.05mm
Plug DCM-17C5P-OL4-A191-K87
(Does not require separate coax inserts)



(Face View of pins)

- 5 ITT-CANNON P/N

Straight solder braid Plug RG179B/U
DM53740-5001 Gold over Nickel
or
Straight solder braid Plug RG179B/U
DM53740-5099 Gold over Copper
or
RG197B/U Crimp
ITT-CANNON Plug D130322-2 Gold over Ni



- 1 Mating Connector retention features.
Rear Panel Mount vibration Locking system
Positronic Industries P/N **D9/370000V50**

To mate with Positronic Industries
D37000GVL0 (Shell size 4)

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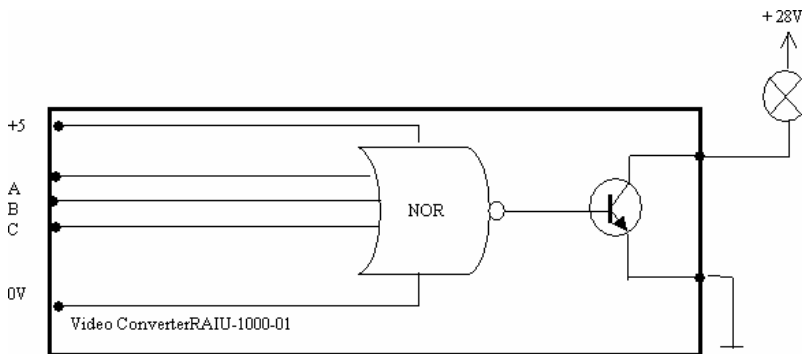
2. RADAR Safety connector

This connector accepts the safety signals from the aircraft and provides an open collector output to drive an external indicator. The warning lamp lights to warn that the RADAR is transmitting while the Aircraft is on the ground.

The signals A,B,C are TTL 1= +5V, 0 = 0V.

$$L = \overline{A+B+C}$$

i.e. Lamp lights when A=0 and B=0 and C=0



Pin	Signal
1	Ground (Logic)
2	A = Aircraft on ground. (On ground = 0, Airborne = 1)
3	B = RT on/off (Stby / Test / WX) (Transmitting= 0)
4	C = Monitor (Off / WX) (Monitor On= 0)
5	+5V input (Optionally Supplied on this pin or derived internally via a diode protected connection to the Radar +5V Pin 9 on the RADAR connector)
6	Lamp Ground
7	Lamp Drive (The maximum current in the lamp 100mA)
8	
9	

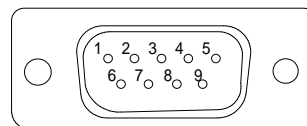
A,B,C are pulled low internally with 2k2 ohm resistors to cater for a O/C or fault condition.
A = 0 B=0 C=0>> for external warning light on .i.e. lamp will light in an O/C condition.
The external device must pull or drive the A, B and C lines high for "normal" operation.

"Warning" Connector on unit



1 9 pin Male "D" type P/N

1 Slide studs

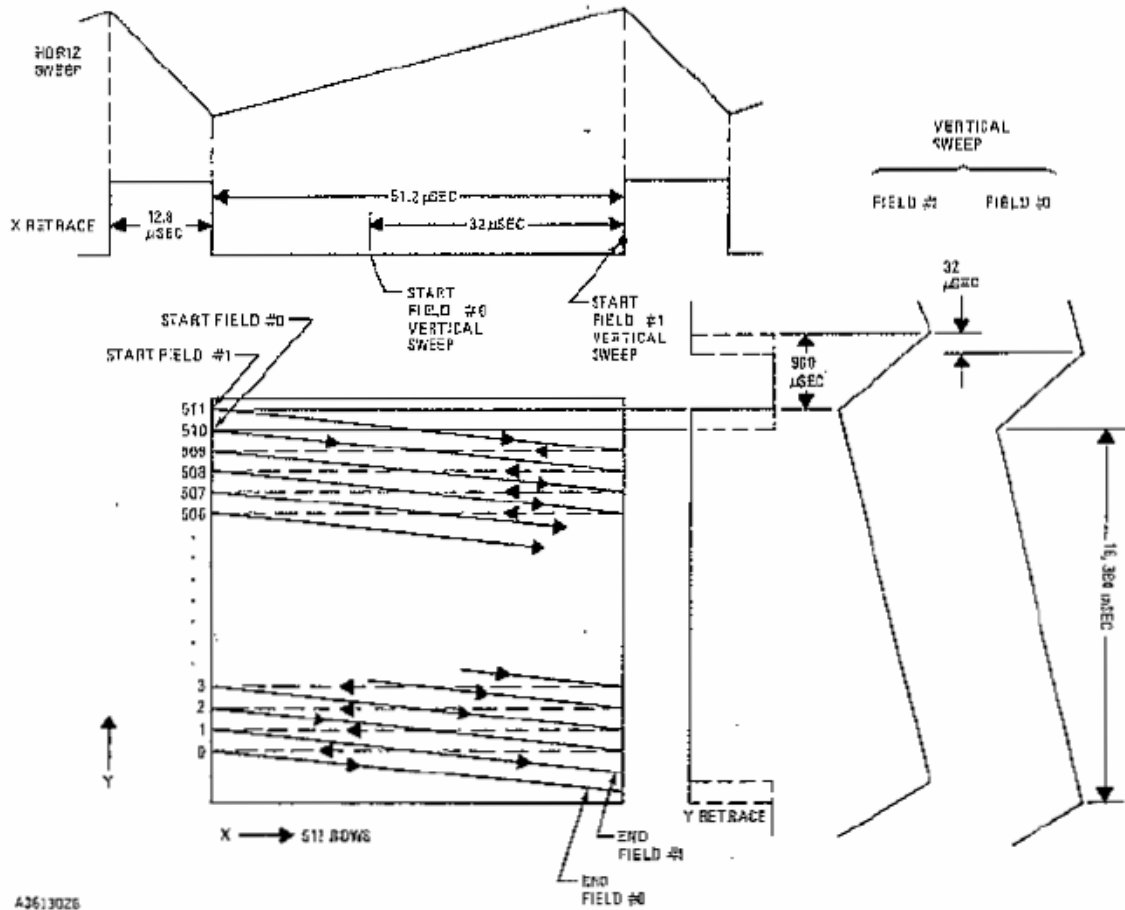


Fittings for Positronic Industries D9000GVL0 (Shell size 1)

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Display Signal format.

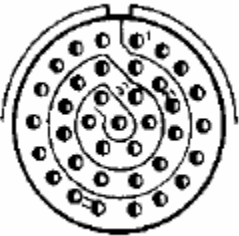

The RDR 1500 series radar signal has the following timing characteristics



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Electrical Pin assignments

Pin assignment

Signal In/Out connector		
 <p>Size 22D contacts Wire size 28,26,24,22 Gauge 1.5, 2, 3, 5A max</p>	Unit Connector "Signal In"	
	D38999/20WD 35PN	FLANGE MT RECEP 37 WAY PIN
	Mating Half (cable connector)	
	D38999/26WD 35SN	PLUG 37 WAY SKT
	G8801-15M	SIZE 15 Backshell
	Unit Connector "Signal OUT"	
	D38999/20WD 35SN	FLANGE MT RECEP 37 WAY SKT
	Mating Half (cable connector)	
	D38999/26WD 35PN	PLUG 37 WAY Plug
	Remote IN/Out connector	
 <p>Size 22D Contacts Wire size 28,26,24,22 Gauge 1.5, 2, 3, 5A max</p>	Unit connector "Remote Out"	
	D38999/20WB 35SN	FLANGE MT RECEP 13 WAY Skt
	Mating Half (cable connector)	
	D38999/26WB 35PN	PLUG 13 WAY Plug
	G8801-11M	SIZE 11 Backshell
	Unit connector "Remote IN"	
	D38999/20WB 35PN	FLANGE MT RECEP 13 WAY PIN
	Mating Half (cable connector)	
D38999/26WB 35SN	PLUG 13 WAY SKT	
G8801-11M	SIZE 11 Backshell	

For pin outs see table on next page



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1. Remote IN connector

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	
10	
11	
12	Lighting bus
13	Inhibit (On/Off)

2. Remote Out connector

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	
10	
11	
12	Lighting bus
13	Inhibit (On/Off)



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3. Input Signal Connector (From External “Signal In” 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	External Graphics	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	Lighting Bus		

4. Output Signal Connector to AVDU series display drive PEC 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	External Graphics or RADAR	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	Lighting Bus		



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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 in any direction.
- 9) At the insertion or removal of the Power and Signal Interface Connector, 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:

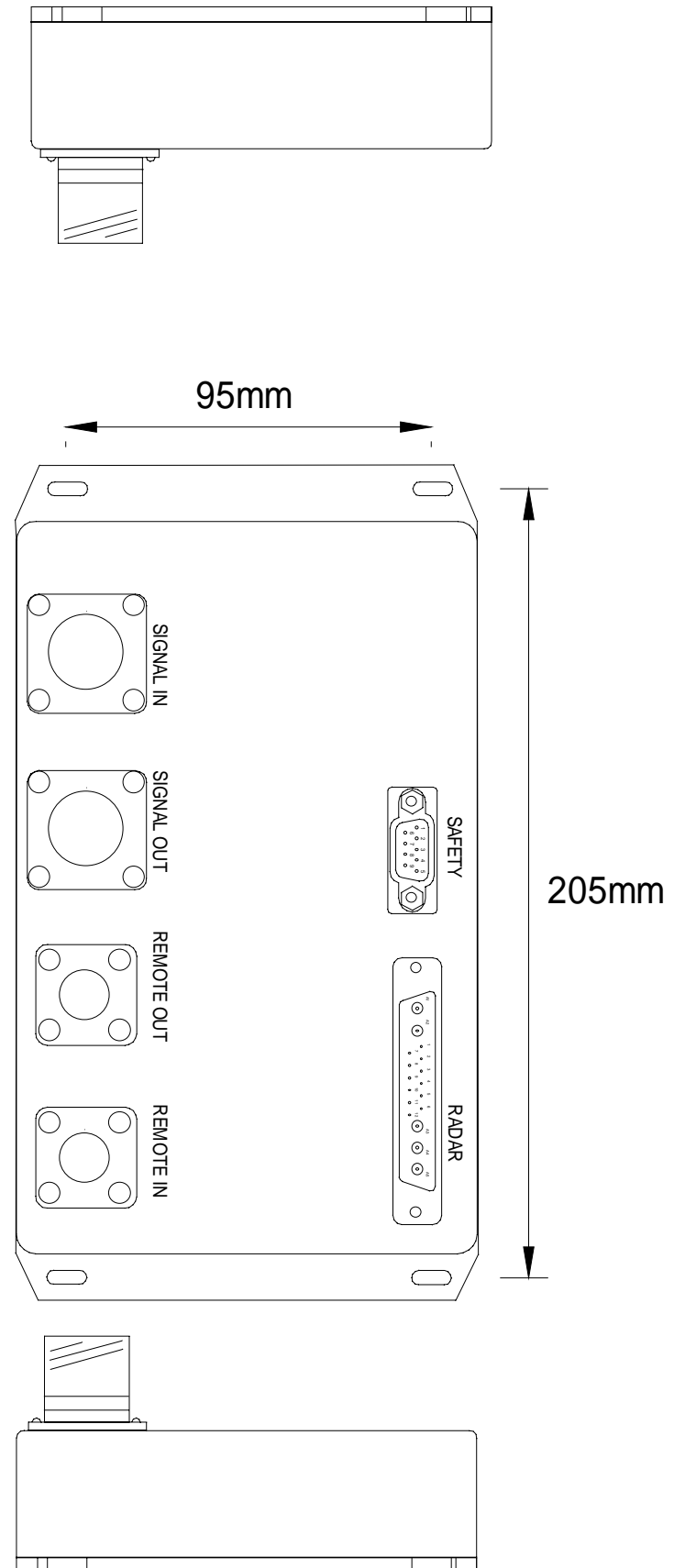
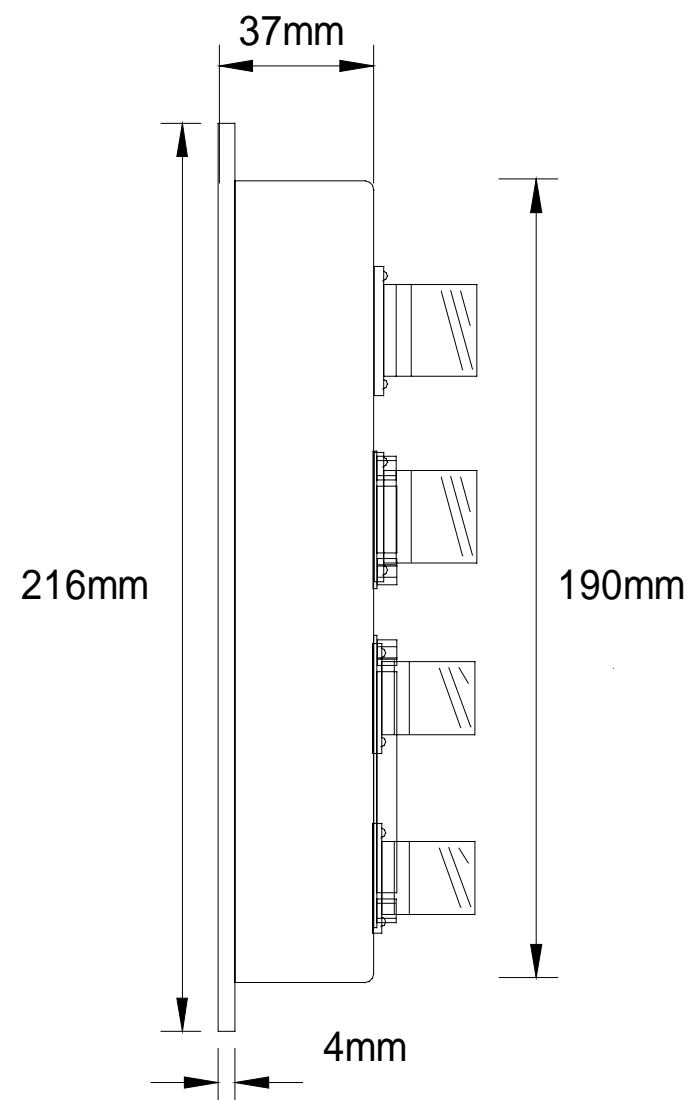
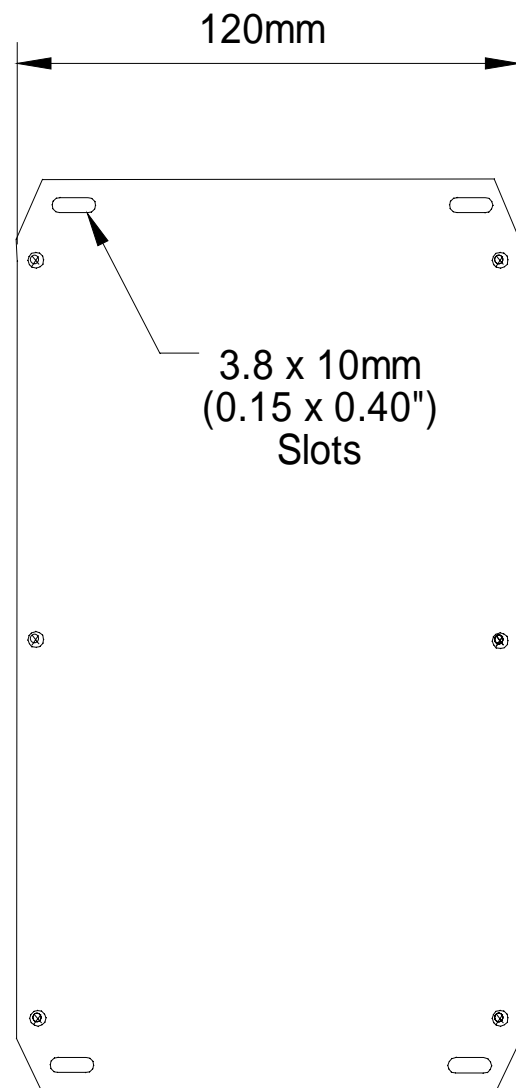
- Ensure that all necessary and appropriate safety measures are taken.
- Obtain suitable regulatory approvals as may be required.
- Check power settings to all component parts before connection.

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The radar converter shown mounted on an AVDU-2640 series monitor

