

DENSITÉ series

VDA-1002

Analog Video Distribution Amplifier

Guide to Installation and Operation

M452-9500-101

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A **BELDEN** BRAND

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Electromagnetic Compatibility



This equipment has been tested for verification of compliance with FCC Part 15, Subpart B requirements for Class A digital devices.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



This equipment has been tested and found to comply with the requirements of the EMC directive 2004/108/CE:

- EN 55022 Class A radiated and conducted emissions
- EN 61000-3-2 Harmonic current emission limits
- EN 61000-3-3 Voltage fluctuations and flicker limitations
- EN 61000-4-2 Electrostatic discharge immunity
- EN 61000-4-3 Radiated electromagnetic field immunity – radio frequencies
- EN 61000-4-4 Electrical fast transient immunity
- EN 61000-4-5 Surge transient immunity
- EN 61000-4-6 Conducted disturbances immunity
- EN 61000-4-11 Voltage-dips, short-interruption and voltage variation immunity

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1 VDA-1002 Analog Video Distribution Amplifier

1.1 Introduction

The VDA-1002 is an analog video distribution amplifier with a differential looping input and 8 outputs. Gain can be controlled from the card edge. Input video signal status is also flagged on the front card edge. The differential input provides rejection of hum and other artefacts on incoming signals. The VDA-1002 may be housed in a Densité 2 or Densité 3 frame, and several different rear connector panels are available.

1.2 Features

- Analog video differential input with passive loop-through.
- Up to eight (8) video outputs, depending on the rear panel in use
- Supports NTSC and PAL video standards
- 90 MHz analog video bandwidth
- Control of gain from the card edge.
- Status LED and remote reporting

1.3 Block Diagram

The block diagram shows the functionality of the VDA-1002.

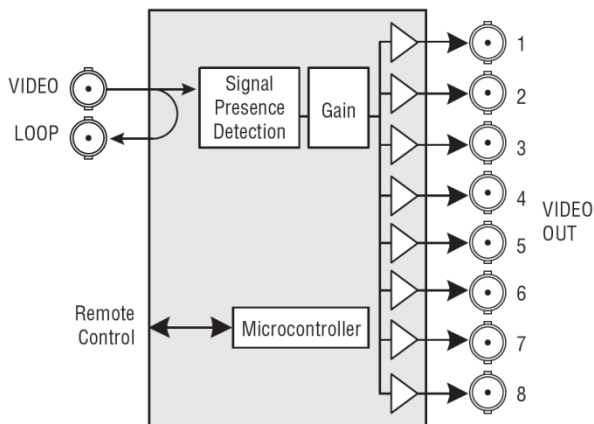


Figure 1.1 Functional block diagram of the VDA-1002

1.4 Front Card-edge Interface

The front card-edge of the VDA-1002 incorporates three elements:

- Status LED (see section 3.2)
- Select Button (see section 3.3)
- Gain control

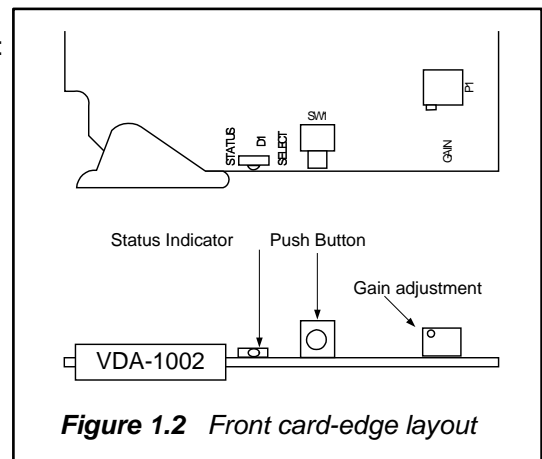


Figure 1.2 Front card-edge layout

2 Installation

2.1 Installation in the Densité frame

The VDA-1002 and its associated rear connector rear panel must be mounted in a Densité 2 or Densité 3 frame. When used in a Densité 3 frame, an extender is supplied to fit the card into the taller frame. It is not necessary to switch off the frame's power when installing or removing the card. See the frame manual for detailed instructions for installing cards and their associated rear panels.

2.2 Rear Panels

Four different rear panels are available for the VDA-1002:

For the Densité 2 frame:

- VDA-1002-SRP Single-slot-width panel Video IN + 4 video OUT
- VDA-1002-SRP/L Single-slot-width panel Video IN + loop-thru; 3 video OUT
- VDA-1002-DRP Double-slot-width panel Video IN + loop-thru; 8 video OUT

For the Densité 3 frame:

- VDA-1002-3SRP Single-slot-width panel Video IN + 7 Video OUT

With the VDA-1002-DRP double-width rear panel installed, the VDA-1002 must be installed in the right-most of the two slots covered by the panel in order to mate with the panel's connectors.

If it is placed in the wrong slot, the front panel LED will flash red. Move the card to other slot for correct operation. No damage will result to the card should this occur.

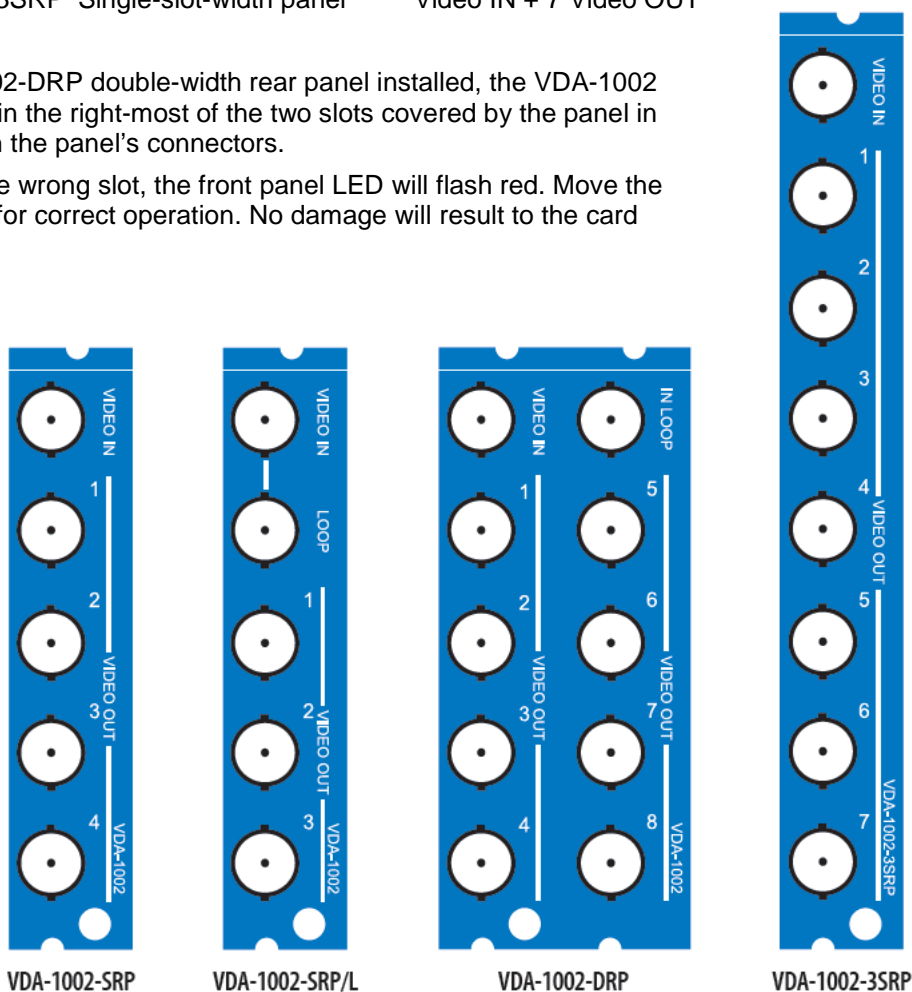


Figure 2.1 VDA-1002 Rear Panels

3 Operation

3.1 Video Gain Control

Use the front card-edge gain pot (see figure 1-2) to adjust the video gain for the desired output level.

3.2 Card-Edge Status LED

The status monitor LED is located on the front card-edge of the VDA-1002, and is visible through the front access door of the Densité frame. This multi-color LED indicates the status of the VDA-1002 by color, and by flashing/steady illumination.

The chart shows how the various error conditions that can be flagged on the VDA-1002 affect the LED status.

- If a cell is gray, the error condition cannot cause the LED to assume that status
- If more than one LED status is possible for a particular error condition, the status is configurable. See Section 3.4.14 for details.
- The factory default status is shown by a ⚙

The LED will always show the most severe detected error status that it is configured to display, and in the chart error severity increases from left to right, with green representing no error/disabled, and flashing red the most severe error.

Error Condition	LED Status			
	Green	Yellow	Red	Flashing Red
No errors	⚙			
No signal			⚙	
No rear panel or wrong rear panel				⚙

If the LED is Flashing Yellow, it means that the card is selected for local control using the Densité frame’s control panel. See Section 3.3 for details.

3.3 Local control using the Densité frame control panel

3.3.1 Overview

Push the SELECT button on the VDA-1002 card edge (see Section 1.4) to assign the local control panel to operate the VDA-1002. Use the control panel buttons to navigate through the menu, as described below.

All of the cards installed in a Densité frame are connected to the frame’s controller card, which handles all interaction between the cards and the outside world. There are no operating controls located on the cards themselves. The controller supports remote operation via its Ethernet ports, and local operation using its integrated control panel.

The local control panel is fastened to the front of the CPU-ETH2 controller card, and when installed can be accessed by opening the front door of the frame. The panel consists of a display unit capable of displaying two lines of text, each 16 characters in length, and five pushbuttons.

The panel is assigned to operate any card in the frame by pushing the SELECT button on the front edge of that card.

- Pushing the CONTROLLER button on the control panel selects the Controller card itself.
- The STATUS LED on the selected card flashes yellow

The local control panel displays a menu that can be navigated using the four pushbuttons located beside the display. The functionality of the pushbuttons is as follows:

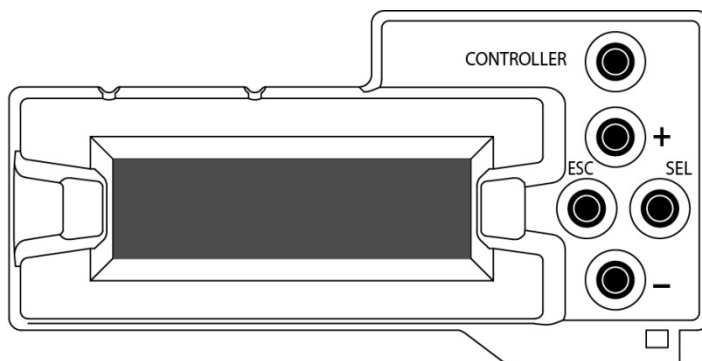


Figure 3.1 Densité Frame local control panel

[+] [-] Used for menu navigation and value modification

[SELECT] Gives access to the next menu level. When a parameter value is shown, pushing this button once enables modification of the value using the [+] and [-] buttons; a second push confirms the new value

[ESC] Cancels the effect of parameter value changes that have not been confirmed; pushing [ESC] causes the parameter to revert to its former value.

Pushing [ESC] moves the user back up to the previous menu level. At the main menu, [ESC] does *not* exit the menu system. To exit, re-push the [SELECT] button for the card being controlled.

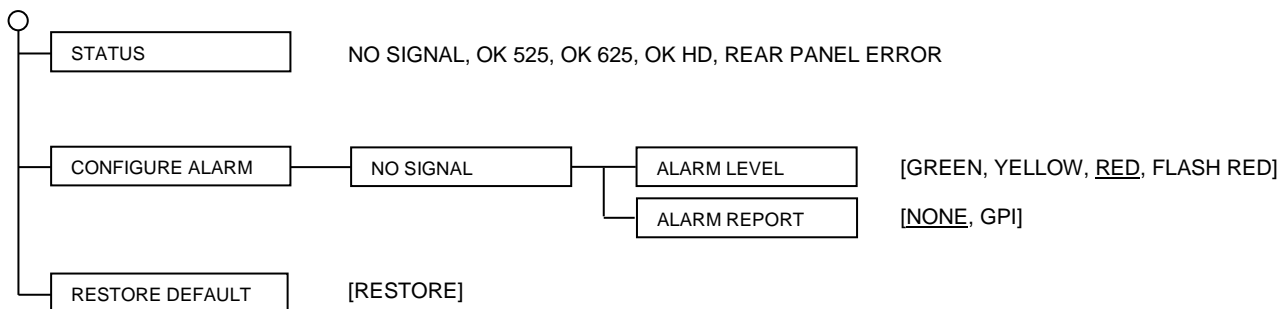
If no controls are operated for 30 seconds, the controller reverts to its normal standby status, and the selected card's STATUS LED reverts to its normal operating mode.

3.3.2 Menu for local control

The VDA-1002 has operating parameters which may be adjusted locally at the controller card interface.

- Press the SELECT button on the VDA-1002 front card edge to assign the Densité frame's local control panel to the VDA-1002.
- Use the keys on the local control panel to step through the displayed menu to configure and adjust the VDA-1002.

The complete menu structure is shown here:.



Sets all parameters shown above to their underlined default values.

Alarm Level: sets the color that the card-front Status LED will display when this error is detected

Alarm Report: sets whether an alarm detected on this card will trigger the alarm GPI on the Densité frame rear panel.

4 Specifications

Input

Signal:.....	1 Vpp nominal
Return loss:	>35 dB up to 10 MHz
Coupling:	DC
Level:	0.3 to 1.5 Vcc
Impedance:	75 ohms bridging
Common mode signal:	28 Vpp
Common mode rejection:	>65 dB to 10 kHz

Output

Signal (8):	1 Vpp nominal, adjustable
Return loss:	>42 dB up to 10 MHz
Impedance:	75 ohms
Phase match between outputs:	<0.1 ° @ 4.43 MHz
Cross talk:.....	> 40 dB @ 10 MHz
Response variation:.....	<0.1 dB, 1 to 8 loads, to 20 MHz

Processing Performance

Gain:	±3 dB
Frequency response:	±0.05 dB up to 5 MHz
	±0.15 dB up to 10 MHz
	-3 dB @ 90 MHz typically
Differential gain:.....	<0.15 %
Differential phase:	<0.15 ° with 8 loads
	<0.1° with 2 loads
Horizontal tilt:.....	<0.1% DC coupling
Vertical tilt:	<0.1 % DC coupling
S/N :.....	>70 dB up to 15 MHz (rms noise/0.714V, unweighted)
Chroma/luma delay:	< ±1 ns
Chroma/luma gain:	< ±0.02 dB
HUM:	<1 mV
Processing delay	15 ns

Power: SRP and SRP/L rear panels:.....	1.5 W
DRP and 3SRP rear panels:	2W