

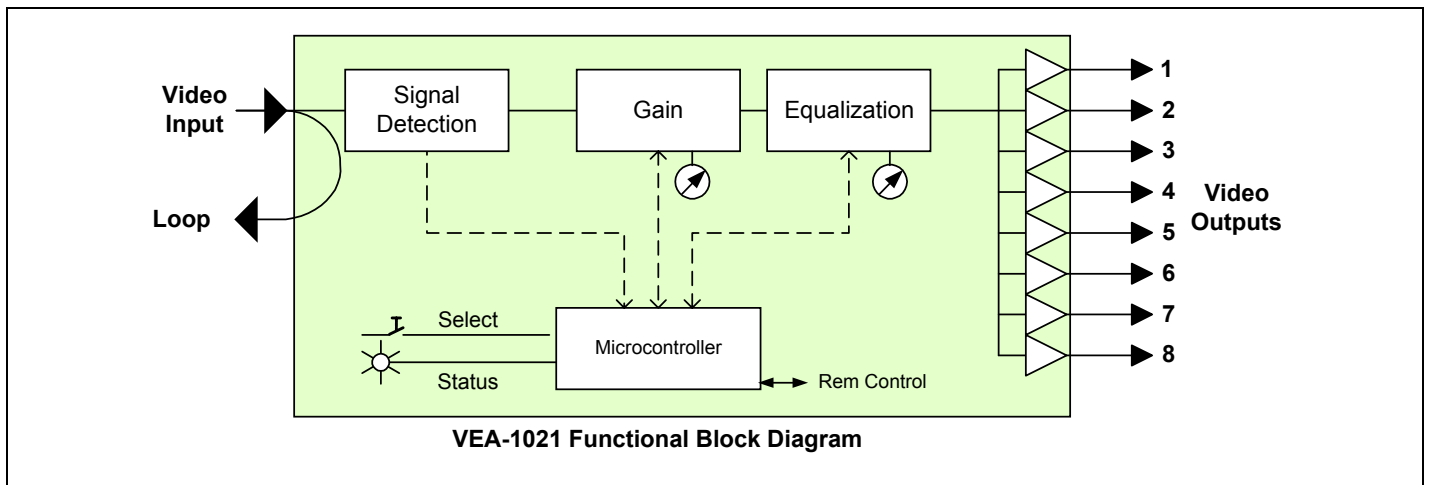
VEA-1021

Introduction

The VEA-1021 is an analog video distribution amplifier with 8 outputs providing clamping and a differential input. Gain and equalization can be controlled from the frame control panel, the remote control system (with menu type adjustments) or automatically (using a test signal at the input). The VEA-1021 will equalize up to 300 m (1000') of Belden 8281 cable. A multi-coloured Led, visible with the door closed, reports the card status. The differential input provides rejection of hum and other artefacts on incoming signals. The VEA-1021 is housed in a Densité frame and a 'single' or 'double' rear connector panel is required.

Features

- Differential 75 Ω looping input with Clamping
- Eight (8) 75 Ω outputs
- Signal presence and 525/625 detection and reporting
- Supports NTSC and PAL video signal formats
- 50 MHz analog video bandwidth
- Equalization up to 300m (1000')
- Status LED (with remote reporting)



Specifications

INPUT

Video signal:Any 1 Vp-p nominal signal
Return loss:> 45 dB up to 10 MHz
Coupling:DC or AC with Clamping
(Hard/Soft/None)
Level:0.3 to 1.5 Vp-p
Impedance:75 Ω bridging
Max. common mode signal : 28 Vp-p
Common mode rejection:> 65 dB to 10 kHz

OUTPUTS (8)

Video signal:1 Vp-p nominal, adjustable
Return loss:> 45 dB up to 20 MHz
Impedance:75 Ω
Phase match between outputs: < 0.1° @ 4.43 MHz
Output isolation signal:> 40 dB @ 10 MHz
Response variation:< 0.1 dB, 1 to 8 loads, to 20 MHz

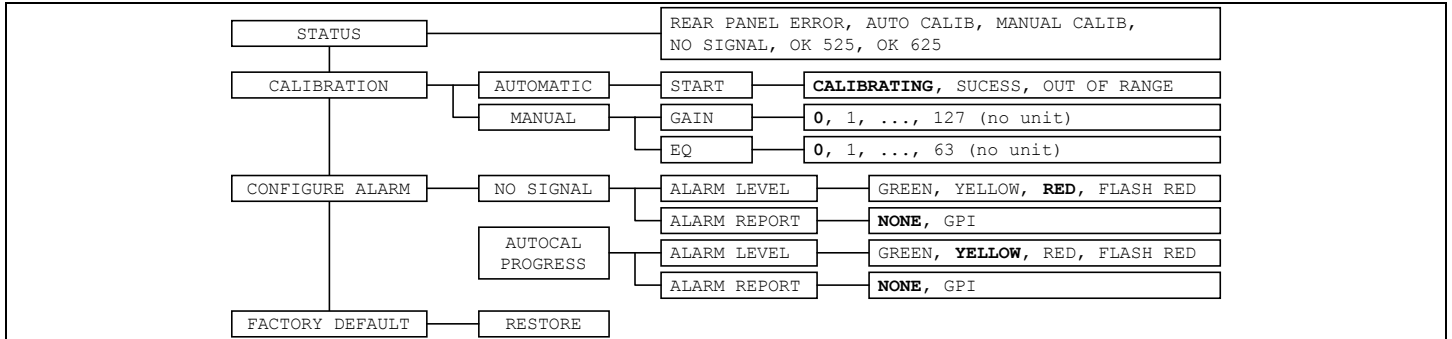
PROCESSING PERFORMANCE

Gain range: \pm 3 dB
Freq. response:< \pm 0.02dB up to 5MHz,
..... \pm 0.05dB up to 10MHz
EQ range:0-300 m Belden 8281,
.....0-200 m Nokia 0.6/2.8
EQ response:< \pm 0.05dB up to 5MHz,
..... \pm 0.15dB up to 10MHz,
Differential gain:< 0.15%
Differential phase:< 0.15° at 8 loads,
.....< 0.1° at 2 loads
Horizontal tilt:< 0.25%, DC coupling
Vertical tilt:< 0.25%, DC coupling
Signal to noise ratio:> 70 dB up to 15 MHz
(rms noise/0.714 V, unweighted)
Chroma/luma delay error: ...< \pm 1 ns
Chroma/luma gain error:< \pm 0.02 dB
Hum:< 1 mV
Processing delay :15 ns
Power:single 2 W
.....Double 2.5 W

Specifications are subject to change without notice.

Menu Introduction

Most parameters are accessed and changed via an easy-to-use menu. The flow chart below outlines the entire VEA-1021 menu path. Each menu is described throughout this section. The procedure and the operation mode are described in the common paragraph of the DENSITÉ manual. The menu organisation is made out of a main menu and several sub-menus. A press on the [SELECT] front panel push button of the VEA-1021 accesses the menu. A lack of activity turns off the display. Default values are written with bold characters.



Menu Description

{STATUS}

Displays status of the different board alarms. The higher-level alarm is displayed, even if not configured to activate the STATUS led.

REAR PANEL ERROR Indicates an absence of the rear panel or an incompatibility between the module and the rear panel. The STATUS led turns on flashing red.

AUTO CALIB Indicates automatic calibration is set, jumper LK2 position 3-4.

MANUAL CALIB Indicates manual calibration is set, jumper LK2 position 1-2.

OK 525 Indicates a valid 525 lines incoming signal

OK 625 Indicates a valid 625 lines incoming signal

NO SIGNAL Indicates an absence of input signal

{CALIBRATION}

Enables the automatic or manual Gain/Equalization calibration

AUTOMATIC Enables automatic calibration

START A press on [SELECT] activates automatic calibration. **CALIBRATING** is displayed, the last character appears as a rotating dash |, /, -, \. Calibration starts, **SUCCESS** is displayed in case of success and **OUT OF RANGE** in case of failure. A press on [ESC] exits the menu without saving.

MANUAL

Enables manual calibration

GAIN

Gain can be set within a range of 0 to 127. These values have no unit. 0 is the default value.

EQ

Equalization can be set within a range of 0 to 63. These values have no unit. 0 is the default value.

{CONFIGURE ALARM}

NO SIGNAL

It is possible to associate the STATUS Led colour and/or a GPI relay activation to each detected error. Alarm relay activation depends of the ENABLE selection of the controller board menu GPI REPORT.

AUTOCAL PROGRESS

It is possible to associate the automatic calibration with a color of the STATUS Led and/or a GPI relay activation.

The activation of the relay is linked to the selection of ENABLE of GPI REPORT menu.

ALARM LEVEL

Associates to each error the STATUS led colour: GREEN, YELLOW, RED and FLASH RED. This selection has no influence on the {STATUS} menu display.

ALARM REPORT

The default value NONE is assigned to errors. Alarm relay activation will be associated to an error when GPI is set.

{FACTORY DEFAULT} – configuration par défaut

RESTORE

resets the module with the factory default parameters.

Status and Report

This table shows the *STATUS* led colour and the report action according to the level of a given error condition. Notice that the "Flashing Yellow" indicates that the SELECT button on the front panel has been pushed, and the card is being accessed via the communication protocol.

Factory default. ☼

| | Non requested Messages | GPI Report | Green | Yellow | Red | Flashing Red | Flashing Yellow |
|--|------------------------|------------|-------|--------|-----|--------------|-----------------|
| No signal detected on Input 1 | ☼ | | | | ☼ | | - |
| Automatic Calibration | ☼ | | | ☼ | | | - |
| Card accessed via the communication protocol | | | | | | | Oui |
| Rear Panel not matching | - | - | - | - | - | Oui | - |

Note: The non requested message affectation to an alarm status can only be accessed by the communication protocol (serial port)

Calibration

First-time calibration

To ensure proper operation of the VEA-1021's auto-calibration feature, a one-time calibration procedure must be done. This calibration sets the card to unity gain and equalisation. Make sure that all VEA-1021 outputs are correctly terminated.

Needed:

- Signal generator: full-field colour bars with 100% luma, 75% chroma;
- Accurate measuring equipment (for luma and chroma levels);
- Small flat head screwdriver (potentiometer adjustment).

IMPORTANT: The cable length between the signal generator and the VEA-1021 must have a length of nearly 100 m. The First-time Calibration adjusts the performance of the card for short cable lengths.

1. 100% luma level adjustment

- Connect the 100/75 colour bars signal directly on the VEA-1021's input connector situated at the back of the (DENSITÉ) frame, using the 100 m cord.
- Connect an output to the measuring equipment.
- Before inserting the VEA-1021 into it's slot, place a jumper over pins 1-2 "G/EQ ADJ" of header LK2.
- Insert card. Wait approximately 10 seconds for the output to stabilize to the current gain and EQ adjustments.

The LED is yellow.

Using the measuring equipment to visualise the result, slowly turn the "GAIN CAL" potentiometer (P3) situated on the card edge to adjust the white level to 100%.

| Format | 100% white level |
|-----------------|-------------------|
| NTSC with setup | 714 mV or 100 IRE |
| NTSC no setup | 714 mV or 100 IRE |
| PAL | 700 mV |

NOTE: The output reacts slowly when the potentiometer is turned and it is constantly fluctuating when no turning is done. This is normal. The card is continually comparing the input signal to the potentiometer value.

2. Equalisation adjustment

- Keeping the card in the slot.
- Using the measuring equipment to visualize the result, slowly turn the 'EQ CAL' potentiometer to adjust the peak-to-peak level of the red bar in the 100/75 colour bars signal at the output of the VEA-1021.

Another method is to use a vectorscope and make all colour vectors converge upon the center of their respective tight tolerance boxes.

| Format | 75% p-p red level |
|-----------------|--------------------|
| NTSC with setup | 626 mV or 87.7 IRE |
| NTSC no setup | 677 mV or 94.9 IRE |
| PAL | 664 mV |

NOTE: Again, the output reacts slowly when the potentiometer is turned and it is constantly fluctuating when no turning is done. This is normal. The card is continually comparing the input signal to the potentiometer value.

When the desired result is attained, remove the VEA-1021 from the slot. **The following auto-calibration is necessary to save these gain and EQ adjustments.**

Auto-calibration

This calibration adapts the VEA-1021 to the system. Send the full-field 100/75 colour bars signal through the system to correct the attenuation caused by cable length.

After removing the VEA-1021 from the slot, there are three ways to perform an auto-calibration. First, remove the jumper over pins 1-2 of LK2. Then,

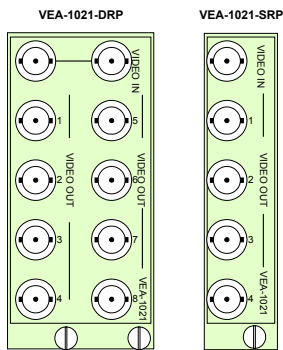
- **Without (DENSITÉ) controller:** place it over pins 3-4 "AUTO-CAL" of LK2. Insert the card. The LED is yellow. Wait approximately 20 seconds for the LED to return green. Remove the card and place the jumper over pins 5-6 "NORMAL" of LK2 and insert the card.
- **With (DENSITÉ) controller:** place it over pins 5-6 "NORMAL" of LK2. Insert the card. Wait for the LED to become green. Enter the VEA-1021's menu by pressing the attention button on the card edge. With the chassis controller, from "STATUS" press [-], from "CALIBRATION" press [SELECT], from "AUTOCALIBRATION" press [SELECT], from "START" press [SELECT], then "AUTOCALIBRATING" will appear. The auto-calibration ends with either "SUCCESS" or "OUT OF RANGE". If out of range, there is no input signal or the correction needed is out of the VEA-1021's range. Check the input signal.
- **With iControl:** Select auto-calibration and wait for the result. If the result is out of range, there is no input signal or the correction needed is out of the VEA-1021's range. Check the input signal.

The VEA-1021 is now calibrated and ready for use.

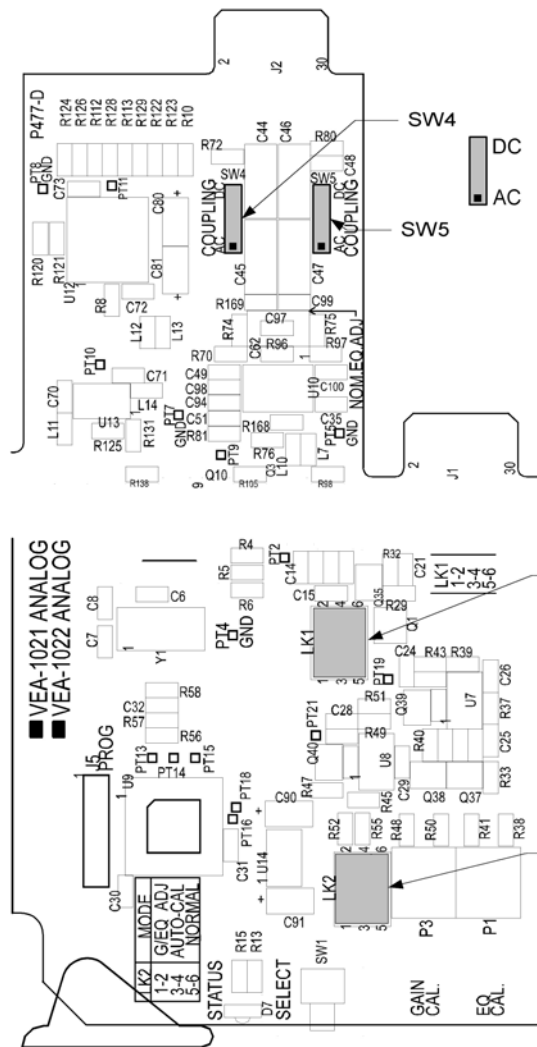
NOTE: The "GAIN ADJ" and "EQ ADJ" potentiometers are used to set the reference gain and equalization levels. These levels are used during the auto-calibration process. Hence, turning the potentiometers while in normal mode (jumper on pins 5-6 "NORMAL" of LK2) will have no immediate effect. The effect will be seen only after the next auto-calibration. If this happens, the First-time Calibration and Auto-calibration procedures described above must be redone.

Connections

VEA-1021 is used with the single rear panel VEA-1021-SRP that includes 1 input to 4 outputs or with a double rear panel VEA-1021-DRP, that includes 1 input to 8 outputs.



Board Presentation



Configuration

| | |
|----------|--|
| GAIN CAL | Trim for fine gain adjustment. |
| EQ CAL | Trim for fine equalization adjustment. |
| LK1 | 3-position jumper for clamping configuration. 1-2 None , 3-4 Hard , 5-6 Soft |
| LK2 | 3-position jumper for configuration of the calibration mode 1-2 G/EQ ADJ – gives an access to P3 and P1 potentiometers for adjustment of nominal level of the reference signal. 3-4 AUTO CAL – activates an automatic calibration equivalent to the calibration of the controller board. 5-6 NORMAL – normal operation, in this mode do not modify the potentiometer adjustments, the nominal levels may be readjusted. |