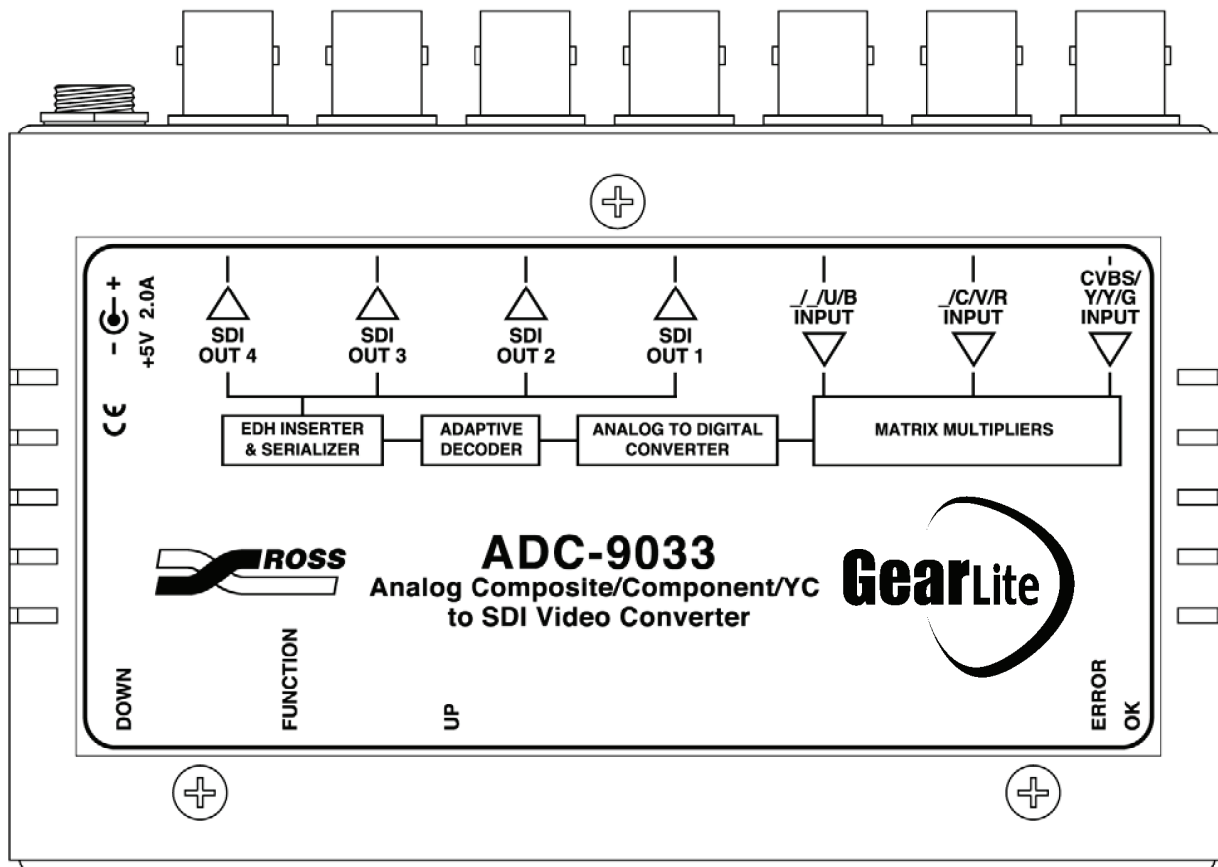




ADC-9033

Analog Composite/Component/YC to SDI Video Converter User Manual



ADC-9033 • Analog Composite/Component/YC to SDI Video Converter User Manual

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Important Regulatory and Safety Notices to Service Personnel

Before using this product and any associated equipment, refer to the “Important Safety Instructions” listed below so as to avoid personnel injury and to prevent product damage.

Products may require specific equipment, and /or installation procedures be carried out to satisfy certain regulatory compliance requirements. Notices have been included in this publication to call attention to these Specific requirements.

Symbol Meanings



Warning

This symbol with the word “**Warning**” within the equipment manual indicates a potentially hazardous situation, which if not avoided, could result in death or serious injury.



Notice

This symbol with the word “**Notice**” within the equipment manual indicates a situation, which if not avoided, may result in major or minor equipment damage or a situation, which could place the equipment in a non-compliant operating state.



**ESD
Suscep-
tibility**

This symbol is used to alert the user that an electrical or electronic device or assembly is susceptible to damage from an ESD event.

Important Safety Instructions



Warning

Read these instructions.

Keep these instructions.

Heed all warning.

Follow all instructions.

The safe operation of this product requires that a protective earth connection be provided. A grounding conductor in the equipment's supply cord provides this protective earth. To reduce the risk of electrical shock to the operator and service personnel, this ground conductor must be connected to an earthed ground.

Do not defeat the safety purpose of the grounding-type plug. A grounding type plug has two blades and a third grounding prong. The third prong is provided for your safety. If the provided plug does not fit in to your outlet, consult an electrician for replacement of the obsolete outlet. Protect the power cord from being walked on or pinching particularly at plugs, convenience receptacles, and point where they exit from the apparatus.

Use only power cords specified for this product and certified for the country of use. Refer to the Product Power Cord Requirement Section that follows.

Indoor Use: “WARNING – TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE”

Do not block ventilation openings. Install in accordance with manufacturer’s instructions.

Do not install near heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

Do not use this apparatus near water.

Only use attachments/accessories specified by the manufacturer.

Unplug this apparatus during lightning storms or when unused for long periods of time.

Clean only with a dry cloth.

To avoid electrical shock, disconnect the A/C power cord before any servicing.

Refer all servicing to qualified personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug damage, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

EMC Notices

US FCC Part 15

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 users will be required to correct the interference at their own expense.



Notice

Changes or modifications to this equipment not expressly approved by Ross Video Ltd. could void the user’s authority to operate this equipment.

CANADA

This Class “A” digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de classe “A” est conforme à la norme NMB-003 du Canada.

EUROPE

This equipment is in compliance with the essential requirements and other relevant provisions of **CE Directive 93/68/EEC**.

INTERNATIONAL

This equipment has been tested to **CISPR 22:1997** along with amendments **A1:2000** and **A2:2002** and found to comply with the limits for a Class A Digital device.



Notice

This is a Class A product. In domestic environments this product may cause radio interference in which case the user may have to take adequate measures.

Maintenance/User Serviceable Parts

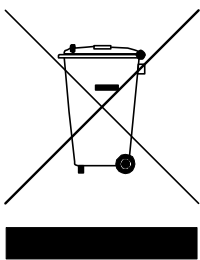
Routine maintenance to this GearLite product is not required. This product contains no user serviceable parts. If the module does not appear to be working properly, please contact Technical Support using the numbers listed under the “Contact Us” section on the last page of this manual. All RossGear GearLite products are covered by a generous 3-year warranty and will be repaired without charge for materials or labor within this period. See the “Warranty and Repair Policy” section in this manual for details.

Environmental Information

The equipment that you purchased required the extraction and use of natural resources for its production. It may contain hazardous substances that could impact health and the environment.

To avoid the potential release of those substances into the environment and to diminish the need for the extraction of natural resources, Ross Video encourages you to use the appropriate take-back systems. These systems will reuse or recycle most of the materials from your end-of-life equipment in an environmentally friendly and health conscious manner.

The crossed-out wheeled bin symbol invites you to use these systems.



If you need more information on the collection, reuse, and recycling systems, please contact your local or regional waste administration.

You can also contact Ross Video for more information on the environmental performances of our products.



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Introduction

In This Chapter

This chapter contains the following sections:

- Overview
- Functional Block Diagrams
- Features

Overview

The **ADC-9033 Analog Composite/Component/YC to SDI Video Converter** is a high-quality signal conversion solution within the growing family of GearLite compact, self-contained modular products. Supporting NTSC, PAL-B, PAL-M, PAL-N (combinational) analog composite video standards, and RGB and YP_RP_B analog component inputs, the ADC-9033 is the ideal analog to SDI converter for virtually all video conversion requirements. All analog RGB, YP_RP_B, and YC video formats are supported, with the converter powering up in the previously selected standard, format and level. All units ship set to 525 YP_RP_B component for SMTE levels.

The ADC-9033 provides high-quality conversion into four separate 270Mb/s SDI coaxial outputs. The use of a 10-bit A to D converter and circuitry, along with a high-quality 3-line adaptive comb filter, ensures clean conversion of composite signals. Proc amp controls on the front edge enable adjustments to the signal in the digital domain. The chassis front edge also provides power, error and function LEDs for visual reference.

A universal power adaptor and line cord, suitable for the country of use, is supplied with each module. Various mounting options are included that enable a wide range of installation choices.

The GearLite ADC-9033 is a high-quality universal analog to SDI video converter making it an ideal solution for existing analog facilities in a growing SDI world.

Functional Block Diagram

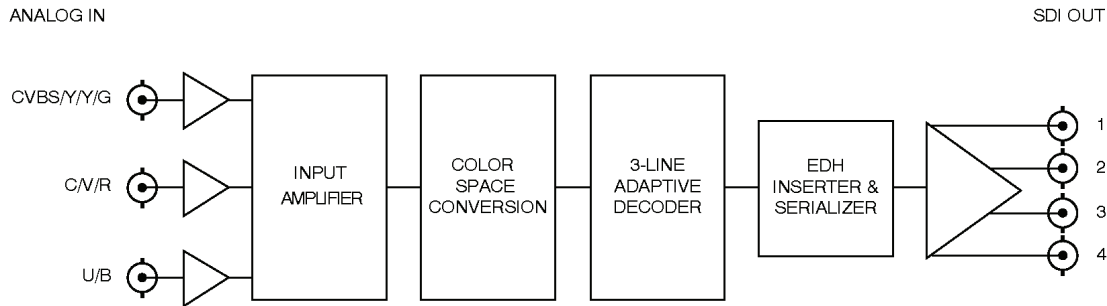


Figure 1. Simplified Block Diagram of ADC-9033 Functions

Features

The ADC-9033 Analog Composite/Component/YC to SDI Video Converter has the following features:

- Composite or Component analog video signal inputs supported:
 - NTSC, PAL-B, PAL-M, PAL-N
 - $Y_P R_P B$ input from Betacam, MII and SMPTE/EBU formats
 - RGB input from SMPTE/EBU and NTSC-related formats
- 1 line + processing delay (refer to specifications)
- 10-bit A to D quantization and signal path
- 3-line adaptive comb filter
- 2X over-sampling for excellent frequency response
- 4 SDI outputs
- Extensive proc amp controls
- Programmable vertical interval blanking
- User-selectable Setup for NTSC and PAL-M standards
- Black Level Offset
- Low jitter
- Input and conversion status indicator LEDs
- Small brick form factor
- 5V universal adapter with locking DC connector
- 3-year warranty

Installation

In This Chapter

This chapter contains the following sections:

- Static Discharge
- Unpacking
- Mounting and Installation
- Velcro Strips
- Flat Metal Plate
- Non-Slip Pads
- Optional Mounting Accessories

Static Discharge

Whenever handling the ADC-9033 Analog Composite/Component/YC to SDI Video Converter and other related equipment, please observe all static discharge precautions as described in the following note:



Static discharge can cause serious damage to sensitive semiconductor devices. Avoid handling circuit boards in high static environments, such as carpeted areas, and when wearing synthetic fiber clothing. Always exercise proper grounding precautions when working on circuit boards and related equipment.

Unpacking

Unpack each ADC-9033 module you received from the shipping container and check the contents against the packing list to ensure that all items are included. If any items are missing or damaged, contact your sales representative or Ross Video directly.

Mounting and Installation

The GearLite 9000 series self-contained modules can be mounted in any convenient location. However, to ensure long life for these products, observe the following precautions and operating requirements:

- Maintain an ambient temperature of 20° to 40°C.
- Allow for air circulation around the chassis for convectional cooling.

Many different mounting positions are possible with the included mounting hardware. Some installation options are permanent and require careful consideration of the final positioning before installation. Please note that in some mounting locations, the power adaptor must be affixed in a similar manner as the chassis.

Other possible options include the use of adhesive magnetic sheets (not included) affixed to the chassis and the power adaptor, for removable mounting on metal cabinets etc.

Cable ties may be necessary in some applications to relieve strain on the mounting hardware and the BNC connectors.

Velcro Strips

The included Velcro strips allow the GearLite module and power supply to be affixed to a permanent location during use and easily removed for adjustments. Carefully consider the installation location before proceeding; the adhesive is very aggressive and is not easily removed. The adhesive will cure fully in 24 hours.

Installing Velcro Strips

1. Remove the protective backing film from the adhesive on the bottom of the two mating Velcro strip sets.
2. Adhere the strip sets to the bottom side of the chassis as shown in Figure 2.

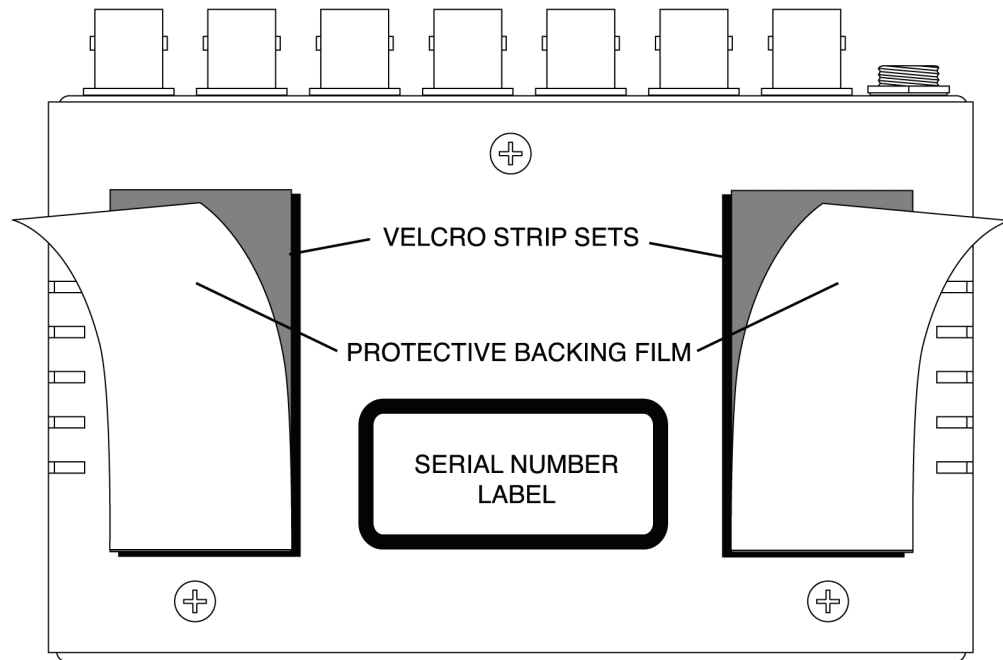


Figure 2. Velcro Installation Option

3. To apply the adhesive Velcro to the mounting location:
 - remove the protective backing film from the top of the adhesive strips
 - press the chassis into position on the mounting surface
4. To mount the power adaptor, apply the remaining mating Velcro strip set, repeating the previous steps.

Flat Metal Plate

Use the flat metal plate for permanent mounting to a rack, a desk, or any other location where bolts or screws can be applied. Be sure to position the module to allow for operator adjustments, if required.

Installing the Flat Metal Plate

1. Affix the flat metal plate to the bottom of the module using the chassis screws as shown in Figure 3.

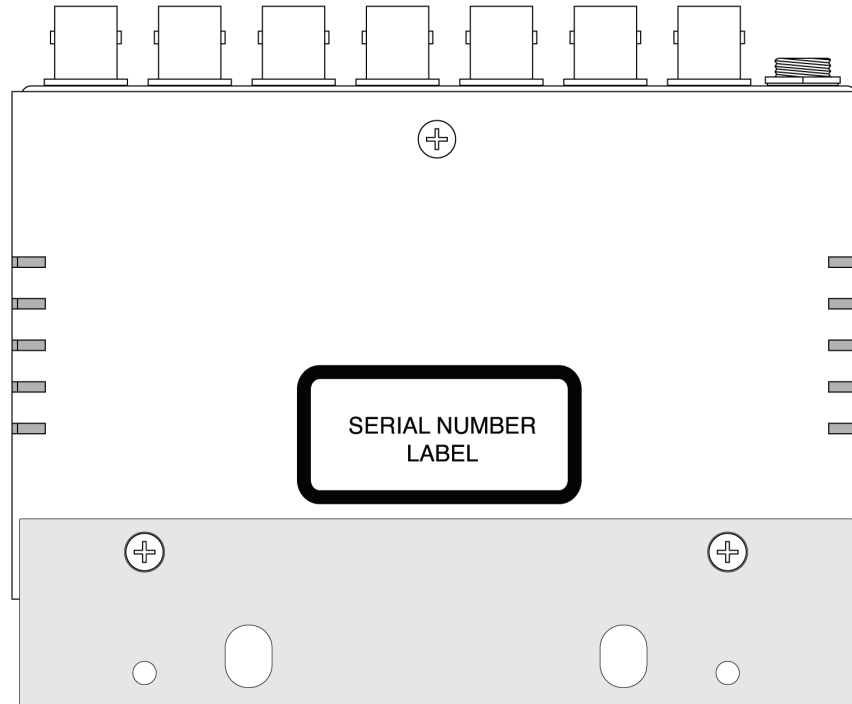


Figure 3. Flat Metal Plate Installation Option

2. Affix the metal plate by the two extended holes to the desired location with customer supplied bolts or screws according to the installation requirements.

Non-Slip Pads

Four non-slip adhesive pads have been supplied for desktop placements. Simply remove the protective backing film from the adhesive and affix one non-slip pad to each of the four corners on the bottom of the chassis. Two pads can be used at the rear of the module to help support it when mounted in the GRF-9000 GearLite Rack Frame (see “**Optional Mounting Accessories**”).

Optional Mounting Accessories

Ross Video is committed to providing practical solutions for the needs of your high-quality broadcast facility. The following products may be ordered separately to expand your installation options. Refer to Chapter 6, “**Ordering Information**” for details.

BPM-9000

The BPM-9000 Angle Mounting Bracket enables a single GearLite module to be installed in positions not possible with the flat metal plate. The installer must provide screws or bolts for installing in the desired location. The bracket has a 90° angle.

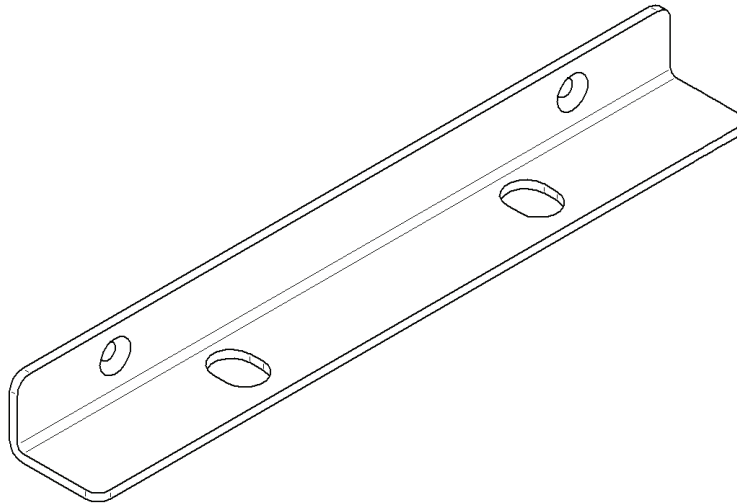


Figure 4. BMP-9000 90° Mounting Bracket

GRF-9000

The GRF-9000 GearLite Rack Frame is a rack mounting frame system for GearLite modules. The mounting system provides convenient organization for up to nine GearLite modules in only a 2RU space.

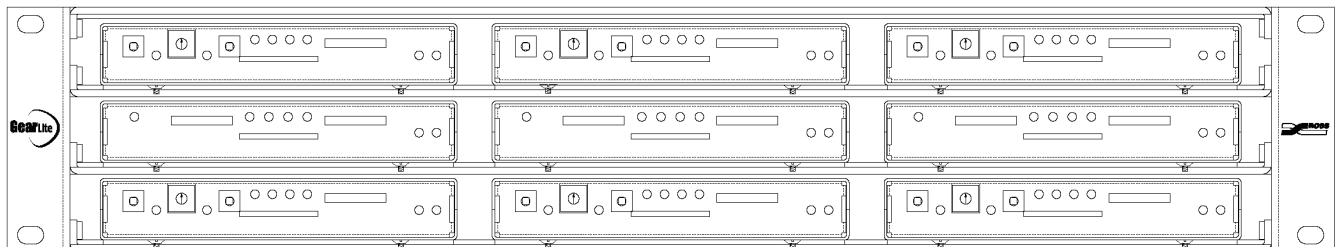


Figure 5. GRF-9000 with Nine GearLite Modules Installed

The flat metal plate and small plastic label (see Figure 6) included with every GearLite module are used to mount a module into the GRF-9000. Complete instructions are included in the GRF-9000 User Manual.

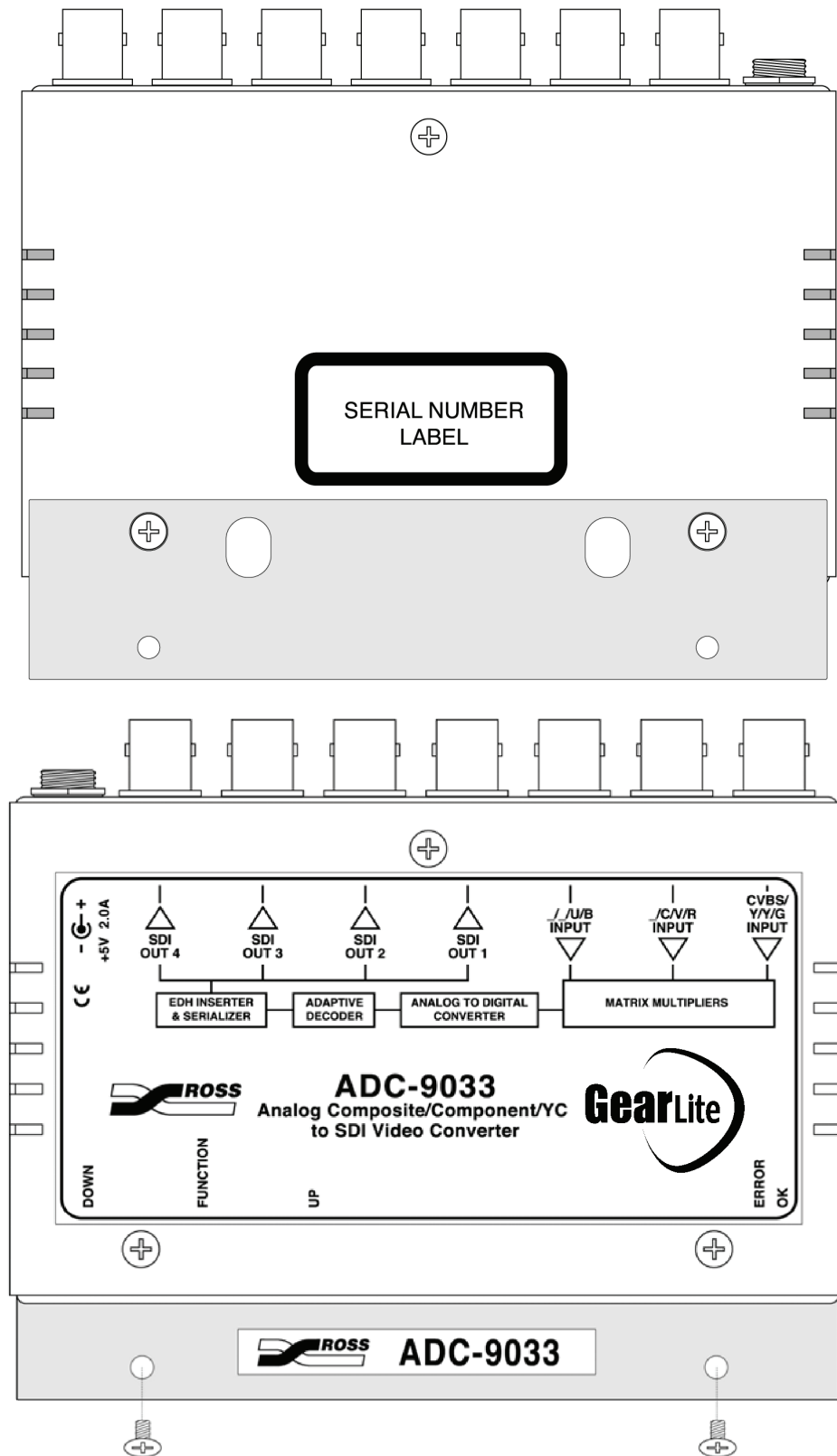


Figure 6. Flat Metal Plate and Label Positions for GRF-9000 Mounting

Setup and Operation

In This Chapter

This section provides details of all operating modes and features.

The following topics are discussed:

- Cable Connections
- User Controls
- Setup and Configuration
- Function Setup and Configuration Menu Table
- Function Menu Notes

Cable Connections

Connect the analog input and SDI output cables to the ADC-9033 according to the designations indicated on the chassis label. The input is internally terminated at 75 Ohms. It is not necessary to terminate unused outputs.

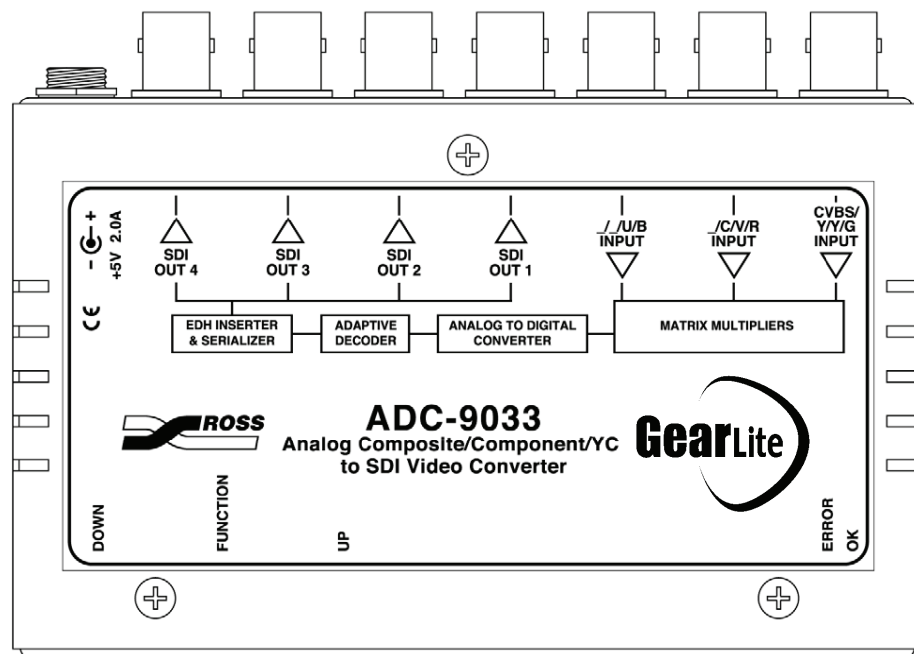


Figure 7. ADC-9033 Cable Connections Indicator Label

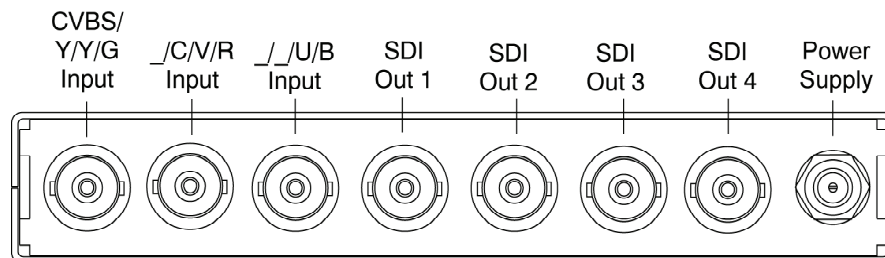


Figure 8. ADC-9033 Rear Connections Configuration

Power Adaptor and Supply

Connect the PS-9000 power adaptor to the power supply connector. The PS-9000 provides regulated +5V DC (5%) @ up to 2A. The DC power cord has a locking connector that securely fastens into the power supply DC jack on the ADC-9033. The ADC-9033 has a standard miniature power jack (center pin positive). If using an adaptor other than the PS-9000, ensure that the polarity is correct and that the voltage is +5V DC regulated to 5% and it can supply sufficient current for the ADC-9033. Use of improper adaptors may damage the ADC-9033 and will void the warranty.

Installations outside of North America using line voltages of 200 – 240 Volts require a plug, certified for the country of use, to be installed on the supplied line cord.

See the Important Regulatory and Safety Notices section at the front of this manual for details.

If using an adaptor other than the PS-9000, ensure that:

- the polarity is correct
- the voltage is +5V DC regulated to 5%
- sufficient current for the ADC-9033 is supplied



Caution

Use of improper adaptors may damage the ADC-9033 and will void the warranty.

Installations outside of North America using line voltages of 200 – 240 Volts require a plug, certified for the country of use, to be installed on the supplied line cord.

See the Important Regulatory and Safety Notices section at the beginning of this manual for details.

User Controls

The following are general descriptions of the user controls identified in Figure 9, presented in normal operating sequence.

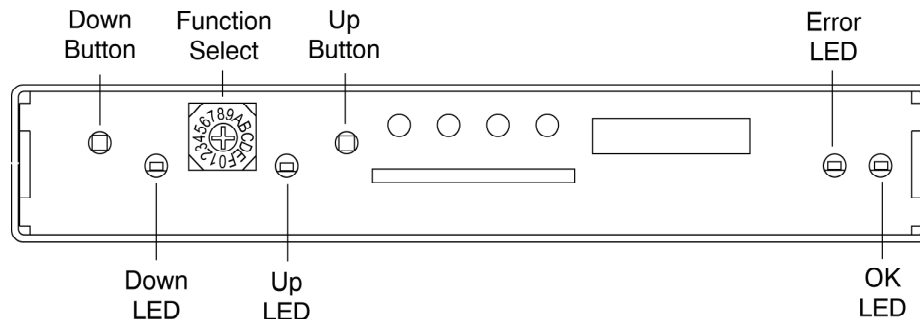


Figure 9. ADC-9033 Front Edge Operational Components

Status and Selection LEDs

The front panel of the module has four LEDs (Down, Up, Error, OK) that display the status of the input signals, and indicate menu function and configuration selections. The LED displays are described in Table 1.

Table 1. Selection and Status LED Descriptions

LED	Reference	Function
OK (Green)	Input Signal	LED will be <i>continually lit</i> when a “valid”* input signal is present and no anomalies have been detected. The card is functioning normally.
Error (Red)	Input Signal	LED will be <i>continually lit</i> when an “invalid”* signal has been detected, or no input is present on the input. The SDI output is muted in this case. LED will <i>flash</i> when color sync is not locked either due to an absence of a color signal or an incorrect video standard setting. Applies to composite and Y/C formats.
Down (Yellow)	Function Menu	For menu items that have multiple selections, the LED will be in a state as indicated in the Function Setup and Configuration Menu. For menu items that have a range: • LED will be <i>lit and flashing</i> when the selected menu item is adjusted to the lower limit. • LED will be <i>continually lit</i> when greater than the lower limit, but equal to or less than unity. • LED will be <i>unlit</i> when the selected menu item is adjusted above unity.
Up (Yellow)	Function Menu	For menu items that have multiple selections, the LED will be in a state as indicated in the Function Setup and Configuration Menu. For menu items that have a range: • LED will be <i>lit and flashing</i> when the selected menu item is adjusted to the upper limit. • LED will be <i>continually lit</i> when less than the upper limit, but equal to or greater than unity. • LED will be <i>unlit</i> when the selected menu item is adjusted below unity.

- * A “valid” signal is defined as any analog video signal standard, input into the ADC-9033, which matches the setting of the **Video Standard** that has been selected in the Function Setup and Configuration Menu. In other words, if the converter is in its default state for NTSC (525/60) video, then

only a 525/60 video signal input will cause the OK LED to be lit.

Any other analog component video signal, of a different standard (625/50, 525/50, 625/60), that is input into the converter will be "invalid" and the Error LED will be lit.

If the **Video Format** selection is incorrect for the input video, but the Video Standard is correct, the Error LED will not be lit. Only an error for input Video Standard is detected.

Function Selection Switch and Down/Up Buttons

The Function Select switch is a 16-position rotary switch used to select specific functions and their options. The Function Select switch works in conjunction with the Down and Up buttons.

First, the function category is selected with the rotary switch, and then the Down and Up buttons are used to select modes or level settings within that function category. The following **Setup and Configuration** section provides complete details on the available functions and their options.

Setup and Configuration

Use the Function Select switch and the Down and Up buttons to configure the ADC-9033 to convert analog video signals to SDI. Settings are described in Table 2.

General Operating Rules

Please note the following important operating rules for the ADC-9033:

- For each of the supported **Video Standards** (NTSC / PAL-B / PAL-M / PAL-N) the card stores the default video settings independently in non-volatile memory.
- The module always powers-up in the last configuration used.
- Always check to see that the Input OK LED is lit. If not, check that the inputs are valid and the correct **Video Standard** has been selected from the function menu.

Function Selection

Start by setting the Function Select switch to Position 0 and adjust your video input to the correct **Video Standard**: NTSC (525/60), PAL-B (625/50), PAL-M (525/50), PAL-N (625/60). NTSC (525/60) is the default standard. See Table 2 Function Setup and Configuration Menu for complete settings information.

Example Configuration:

- To configure the **Video Standard** function, turn Function Select switch to Position 0. The default configuration is NTSC (525/60). The Down LED will be unlit and the Up LED will be flashing, to indicate NTSC (525/60) configuration selection.
- To change **Video Standard** configuration to PAL (625/50), keep Function Select in Position 0 and then press the Down button once. The Down LED will be unlit and the Up LED will be lit, to indicate PAL (625/50) configuration selection.

Function Setup and Configuration Menu Table

A single press of the Down and Up buttons is a “momentary” click of the button unless indicated by “(h)”.

Table Legend

- + Press Up button from default position
- Press Down button from default position
- (h) Hold Up or Down button for 2 - 3 seconds for faster adjustment or special function
- * Factory Default state
- Lit LED display
- Unlit LED display
- ☼ Flashing LED display

Table 2. Function Setup and Configuration Menu

Function Selection Switch Position	Function Menu	Up/Down Buttons Mode Selection Menu See Table Legend for symbol meanings	LED Display See Table Legend for symbol meanings	
			Down (yellow)	Up (yellow)
0	Video Standard ¹	NTSC (525)	●	☀
		PAL-B (625) -	●	○
		PAL-M -	○	●
		PAL-N -	☀	●
1	Video Format ¹	YP _R P _B	●	☀
		Composite -	●	○
		RGB (sync on Green) -	○	○
		RGB -	○	●
		Y/C -	☀	●
2	YP _R P _B /RGB Levels ¹	SMPTE/EBU	○	●
		Betacam -	○	○
		MII or NTSC-Related -	●	○
3	Standard/ VTR Mode (See Function Menu Notes)	Standard Mode On *	●	○
		VTR Mode On -	○	●
4	Video Level	Max Level +(h)	●	☀
		Level between Unity and Max +(h)	●	○
		Unity *	○	○
		Level between Min and Unity - (h)	○	●
		Min Level - (h)	☀	●
5	Black Level Offset	Max Level +(h)	●	☀
		Offset between Unity and Max +(h)	●	○
		Unity *	○	○
		Offset between Min and Unity - (h)	○	●
		Min Level - (h)	☀	●
6	Chroma Level	Max Chroma Level +(h)	●	☀
		Level between Unity and Max + h)	●	○
		Unity *	○	○
		Level between Min and Unity - (h)	○	●
		Min Chroma Level - (h)	☀	●

Function Selection Switch Position	Function Menu	Up/Down Buttons Mode Selection Menu See Table Legend for symbol meanings		LED Display See Table Legend for symbol meanings	
				Down (yellow)	Up (yellow)
7	Hue	+180°	+(h)	●	☀
		Hue between 0° and +180°	+(h)	●	○
		0° *		○	○
		Hue between -180° and 0°	-(h)	○	●
		-180°	-(h)	☀	●
8	U Gain	Max Gain	+(h)	●	☀
		Gain between Unity and Max	+(h)	●	○
		Unity *		○	○
		Gain between Min and Unity	-(h)	○	●
		Min Gain	-(h)	☀	●
9	Setup On (See Function Menu Notes)	On		●	○
		Off	-	○	●
A	Default Set (See Function Menu Notes)	Reset All User Settings to Factory Default state (Unity)	+(h)	See notes	
		Reset Only Proc Amp Settings to Factory Default state (Unity)	-(h)		
B	Force Mono	On	+	●	○
		Off *		○	●
C	VI Blanking	On *		●	○
		Off	-	○	●
D	VI End	VI Ends 1 line <i>before</i> default	-	☀	●
		VI Ends at default * (Line 20 for 525, line 23 for 625)		○	●
		VI Ends 1 line <i>after</i> default	+	●	○
		VI Ends 2 lines <i>after</i> default	+	●	☀
E	Status Report	See description for details			
F	PLL Enable (See Function Menu Notes)	On *		●	○
		Off		○	●

1 See Table 4, Supported Video Standards.

Function Menu Notes

Some of the menu items in the Function Setup and Configuration Table are explained here in further detail as follows:

Video Standard

Use this menu to select the video standard of the incoming analog video. Please note that not all formats and levels exist for all standards. For example, RGB does not exist for PAL-N or PAL-M since this format exists in 525 and 625 line versions and those are covered by the other two standards. See Table 4, Supported Video Standards.

Video Format

Use this menu to select the video format of the incoming analog video. Please note that not all formats and levels exist for all standards. When PAL-M or PAL-N are the selected video standard the two component formats (Y_PR_PB and RGB) are unavailable. See Table 4, Supported Video Standards.

Y_PR_PB/RGB Level

Use this menu to select the video level of the incoming analog component video. Please note that levels that do not apply for the currently selected video standard and format will be unavailable when in this menu. See Table 4, Supported Video Standards.

Standard/VTR Mode

This menu enables the module to convert either broadcast quality or non-broadcast quality analog input signals independently, selectable according to the level of the video quality to be received. The level of conversion quality required for a non-broadcast VTR signal is different than a broadcast signal. In the default state, **Standard** mode, a 3-line adaptive filter is employed to assure the highest quality conversion to SDI video output standards. In **VTR** mode, however, the 3-line adaptive filter is disabled and a notch filter is used instead.

Video Level

Use this menu to adjust the video level of the SDI signal to match the white level of the incoming video. This setting also affects the black video level menu so it will be necessary to go back and forth between these two adjustments to get both black and white levels set. This menu has a 2 button quick default to unity (default). Press both up and down buttons at the same time and hold for three seconds. Since the white and black levels are linked together, defaulting the white level will automatically default the black level as well.

Black Level Offset

Use this menu to adjust the level of the SDI signal to match the incoming video black level. This setting is also affected by changes in the Video Level menu (see above), so it will be necessary to go back and forth between these two adjustments to get both black and white levels set. This menu has a 2 button quick default to unity (default). Press both up and down buttons at the same time and hold for three seconds to jump to unity.

Chroma Level

Use this menu to adjust the video chroma level of the SDI signal to match the incoming video color levels. This setting and the U-Gain setting are adjusted together for best results using an SDI vector scope. This menu has a 2 button quick default to unity (default). Press both up and down buttons at the same time and hold for three seconds.

Hue

Use this menu to adjust the video Hue angle of the SDI signal to match the incoming video color levels. This menu is disabled for component formats. This menu has a 2 button quick default to unity (default). Just press both up and down buttons at the same time and hold for three seconds.

U-Gain

Use this menu to adjust the gain in the U component of the SDI signal to match that expected for the incoming video color levels. This setting and the Chroma setting are adjusted together for best results using an SDI vector scope. This menu has a 2 button quick default to unity (default). Press both up and down buttons at the same time and hold for three seconds.

Setup On

If the incoming analog composite video has Setup, then this user-controlled setting should be set to "On". If there is no Setup on the incoming analog composite video, then this user-controlled setting should be set to "Off". This setting controls how the decoder will scale the analog video, and where it will set black in the digital domain. The default setting for this control is determined by the standard in use, with NTSC and PAL-M defaulting to "On", with the Down LED unlit, and the Up LED lit. For RGB setup should be changed from the default On to Off. PAL-B and PAL-N have setup set to Off and the menu locked out.

Default Set

This menu item enables a reset to be done on some or all of the user-controlled settings. Holding the Down button for three seconds will reset the six proc amp level settings (Video, Black Level Offset, Setup On, Chroma, Hue, and U-Gain) to unity and change the setup menu value to On or Off as is normal for the selected standard, format, and level. Holding the Up button for three seconds will reset all user-controlled settings, including the proc amp settings, to their default states.

Note that when selecting this option, the state of the Down and Up LEDs will indicate if any settings are not in their default states. If the Down LED is flashing, it indicates there is at least one proc amp setting that is not in its default state. Defaulting the proc amp will be indicated when the Down LED is lit solid. Likewise, if the Up LED in this setting is flashing, it indicates that at least one user-controlled setting (proc amp setting or otherwise) is not in its default state. Defaulting all user-controlled settings will be indicated when the Up LED is lit solid.

Force Mono

Use this menu to remove the chroma from the output SDI. Setting this option to On results in a monochrome SDI output and also disables the Error LED which reports missing color Sync in the input.

VI Blanking

Use this menu to select whether data or test signals in the vertical blanking get passed or stripped from the SDI output.

VI End

Use this menu to set where the end of blanking and the beginning of video is at the top of the picture. Setting is relative to the normal end of VI blanking for SDI (line 20 for 525, and line 23 for 625). For more info or help on this feature contact the Ross Video Technical Support Department.

Status Report

This menu selection is primarily for Ross Video Test Department use. If an on-board error has occurred with the ADC-9033, this menu item will provide some indication as to the nature of the problem. In Status Report mode, the Down and Up LEDs will flash at the same time and the number of consecutive flashes will indicate the type of error. A simple single flash followed by a long pause before repeating means no error is reported. If multiple flashes occur, record the number of flashes. Use the Down button to clear this error and view if any other errors are concurrent. Please contact the Ross Video Technical Support Department if you require any assistance.

The Up button provides access to the firmware version display. While holding the Up button the Down LED will flash the upper digit of the firmware version. While the DOWN LED is flashing, note the status of the UP LED. If it is on, this indicates that the lower digit is zero. If the Up LED is off then after the down LED is finished the up LED will flash for the lower digit of the version. This is followed by a pause where both LEDs are off and then repeats. Release the Up button to return to the Status Report mode.

PLL Enable

This menu item selects one of two internal clock locking circuits. For normal operation, the default setting of “On” should be maintained. For input video signals which exhibit asynchronous switches between non-timed sources or signals with excessive noise, the “Off” setting provides faster locking, but adds more jitter to the output signal.

Menu Accessibility

Please note that some user-controlled settings may become inaccessible depending upon the Video Standard and Video Format that have been selected from the menu. Table 3 illustrates which menu items are unavailable in each of the video standards and formats.

Table 3. ADC-9033 Menu Access by Video Standard/Format Selection

Switch Position and Menu Item	Analog Video Formats and Standards			
	YP _R P _B / RGB		Composite/YC	
	525	625	NTSC	PAL
0 Video Standard ¹				
1 Video Format ²				
2 YP _R P _B /RGB Levels ³			N/A	N/A
3 Standard/VTR Mode				
4 Video Level				
5 Black Level Offset				
6 Chroma Level				
7 Hue	N/A	N/A		
8 U Gain				
9 Setup On		N/A		N/A
A Default Set				
B Forced Mono				
C VI Blanking				
D VI End				
E Status Report				
F PLL Enable				

¹ Selecting a video standard that is not available for the current video format or level will cause an automatic change in the video format and/or level to an available type.

² Formats available for selection are determined by the current setting of video standard.

³ Levels available for selection are determined by the current setting of video standard and format.

Supported Video Standards

The following table presents the supported video standards, formats and their levels based on selections made in the Function Menu.

Table 4. Supported Video Standards

Function Menu Item		
Video Standard	Video Format	Y _P R _P B / RGB Levels
NTSC / 525	Y _P R _P B	SMPTE / EBU
		BetaCam
		MII
	Composite	
	RGB (sync only on Green)	SMPTE / EBU
		NTSC - Related
	RGB (sync on all)	SMPTE / EBU
		NTSC - Related
	Y/C	
PAL-B / 625	Y _P R _P B	SMPTE / EBU
		BetaCam
		MII
	Composite	
	RGB (sync only on Green)	SMPTE / EBU
	RGB (sync on all)	SMPTE / EBU
	Y/C	
PAL-M	Composite	
	Y/C	
PAL-N	Composite	
	Y/C	

Specifications

In This Chapter

This chapter contains the Technical Specifications table.

Technical Specifications

Table 5. ADC-9033 Issue 3A - Technical Specifications

Category	Parameter	Specification
Analog Video Input	Number of Input Signals	1 (3 BNC's available depending on signal type)
	Signal Standards Accommodated	NTSC, PAL-B, PAL-M, PAL-N (combination N)
	Signal Formats Accommodated	RGB as SMPTE/EBU, MII, or NTSC-related (with 525-line signals, any can have setup)
		Y _R P _B as Betacam, MII, or SMPTE/EBU (with 525-line signals, any can have setup)
	Input Impedance	75Ω terminating
	Return Loss	>41dB to 5MHz
	Bandwidth	-3dB @ 6.5MHz
	Line Rate Tilt	<0.5%
	Field Rate Tilt	<0.5%
	CMRR	Better than 50dB @ 50/60Hz
	Differential Phase	<1°
	Differential Gain	<1.5%

Category	Parameter	Specification
Serial Digital Video Output	Number of Outputs	4
	Standard	SMPTE 259M-C (270Mb/s, 525/625 lines)
	Output Impedance	75Ω
	Output Return Loss	>19dB to 300MHz
	Signal Level	800mV ±10%
	DC Offset	<50mV
	Rise and Fall Time	750pS (20 – 80%)
	Overshoot	< 9%
	Outputs Short Circuit Protected	Yes
Performance	Luminance Frequency Response	±0.13dB to 5.5MHz
	Group Delay	<5ns to 5.5MHz
	RMS SNR, Luma Channel	>53dB to 5MHz, unweighted
	RMS SNR, Chroma Channel	>53dB to 5MHz, unweighted
	Thermal Stability	<0.1° / °C
	Quantization	10 bits
	Processing Delay (Analog Input to SDI Output)	1 line + 6.02μs (NTSC) 1 line + 7.63μs (PAL)
Power	Required Voltage	+5V DC (5% regulation)
	Current Consumption	< 650mA typical
	Total Power	3.3W typical
Other	Warranty	3-year transferable
	Thermal Environment	20 – 40°C (68 – 104°F) ambient, non-condensing

Specifications are subject to change without notification

Service Information

In This Chapter

This chapter contains Warranty and Repair Policy information.

Warranty and Repair Policy

The RossGear ADC-9033 is warranted to be free of any defect with respect to performance, quality, reliability, and workmanship for a period of **THREE (3)** years from the date of delivery to the customer. In the event that your RossGear ADC-9033 proves to be defective in any way during this warranty period, Ross Video Limited reserves the right to repair or replace this piece of equipment with a unit of equal or superior performance characteristics.

Should you find that this RossGear ADC-9033 has failed after your warranty period has expired, we will repair your defective product should suitable replacement components be available. You, the owner, will bear any labor and/or part costs incurred in the repair or refurbishment of said equipment beyond the **THREE (3)** year warranty period.

In no event shall Ross Video Limited be liable for direct, indirect, special, incidental, or consequential damages (including loss of profits) incurred by the use of this product. Implied warranties are expressly limited to the duration of this warranty.

This RossGear ADC-9033 Analog Composite/Component/YC to SDI Video Converter User Manual of our Digital Products line provides all pertinent information for the safe installation and operation of your RossGear Product. Ross Video policy dictates that all repairs to the RossGear ADC-9033 are to be conducted only by an authorized Ross Video Limited factory representative. Therefore, any unauthorized attempt to repair this product, by anyone other than an authorized Ross Video Limited factory representative, will automatically void the warranty. Please contact Ross Video Technical Support for more information.

In Case of Problems

Should any problem arise with your RossGear ADC-9033, please contact the Ross Video Technical Support Department. (Contact information is supplied at the end of this publication.)

A Return Material Authorization number (RMA) will be issued to you, as well as specific shipping instructions, should you wish our factory to repair your RossGear ADC-9033. If required, a temporary replacement module will be made available at a nominal charge. Any shipping costs incurred will be the responsibility of you, the customer. All products shipped to you from Ross Video Limited will be shipped collect.

The Ross Video Technical Support Department will continue to provide advice on any product manufactured by Ross Video Limited, beyond the warranty period without charge, for the life of the equipment.

Ordering Information

In This Chapter

This chapter contains ordering information for the ADC-9033 and related products.

Standard Equipment

- **ADC-9033**, Analog Composite/Component/YC to SDI Video Converter, including:
 - one User Manual
 - an installation kit with various mounting hardware
 - one **PS-9000** 5V Universal Power Adaptor and line cord (pre-packaged for the country of use)

Optional Equipment

- **9033DR-004**, additional User Manual
- **PS-9000**, additional 5V Universal Power Adaptor and line cord (pre-packaged for the country of use)
- **BPM-9000**, 90° Angle Mounting Bracket
(90° angle metal mounting bracket for rack and desk installation)
- **GRF-9000**, GearLite Rack Frame (Front)
(Front of rack frame for mounting up to nine GearLite modules in 2RU space)

Your **ADC-9033** Analog Composite/Component/YC to SDI Video Converter is part of the GearLite line of the RossGEAR family of products. Ross Video Limited offers a full line of RossGEAR digital terminal equipment including distribution, conversion, monitoring, synchronizers, encoders, decoders, amplifiers, keyers, switchers, as well as analog audio and video products.

Notes

Notes

Contact Us

Contact our friendly and professional support representatives for the following:

- Name and address of your local dealer
- Product information and pricing
- Technical support
- Upcoming trade show information

PHONE	General Business Office and Technical Support	613 • 652 • 4886
	After Hours Emergency	613 • 349 • 0006
	Fax	613 • 652 • 4425
E-MAIL	General Information	solutions@rossvideo.com
	Technical Support	techsupport@rossvideo.com
POSTAL SERVICE	Ross Video Limited	8 John Street, Iroquois, Ontario, Canada K0E 1K0
	Ross Video Incorporated	P.O. Box 880, Ogdensburg, New York, USA 13669-0880

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