BBG-1078-ANC-MON

3G/HD/SD-SDI Standalone Ancillary Data Monitoring Probe with Multiple-Protocol Data Payload SDI/HDMI Display and Fault Detection/Forwarding

Product Manual

Cobalt Digital Inc.

2506 Galen Drive
Champaign, IL 61821
Voice 217.344.1243 • Fax 217.344.1245
www.cobaltdigital.com

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Congratulations on choosing the Cobalt® BBG-1078-ANC-MON 3G/HD/SD-SDI Standalone Ancillary Data Monitoring Probe with Multiple-Protocol Data Payload SDI/HDMI Display and Fault Detection/Forwarding. The BBG-1078-ANC-MON is part of a full line of modular processing and conversion gear for broadcast TV environments. The Cobalt Digital Inc. line includes video decoders and encoders, audio embedders and de-embedders, distribution amplifiers, format converters, remote control systems and much more. Should you have questions pertaining to the installation or operation of your BBG-1078-ANC-MON, please contact us at the contact information on the front cover.

Manual No.:	BBG-1078-ANC-MON-OM
Document Version:	V1.1
Release Date:	October 25, 2018
Applicable for Firmware Version (or greater):	2.067 or greater
Description of product/manual changes:	- Initial non-preliminary release. This firmware version has significant user interface changes versus prior firmware versions and the use of this new Product Manual is **strongly** recommended.

Table of Contents

Chapter 1

Introduction

Overview

This manual provides installation and operating instructions for the BBG-1078-ANC-MON 3G/HD/SD-SDI Standalone Ancillary Data Monitoring Probe with Multiple-Protocol Data Payload SDI/HDMI Display and Fault Detection/Forwarding unit (also referred to herein as the BBG-1078-ANC-MON).

This manual consists of the following chapters:

- **Chapter 1, "Introduction"** – Provides information about this manual and what is covered. Also provides general information regarding the BBG-1078-ANC-MON.
- **Chapter 2, "Installation"** – Provides instructions for installing the BBG-1078-ANC-MON in a frame, and connecting signal and control cabling to the BBG-1078-ANC-MON.
- **Chapter 3, "Operating Instructions"** – Provides overviews of setup/operating controls and instructions for using the BBG-1078-ANC-MON.

This chapter contains the following information:

BBG-1078-ANC-MON Software Versions and this Manual

When applicable, Cobalt Digital Inc. provides for continual product enhancements through software updates. As such, functions described in this manual may pertain specifically to devices loaded with a particular software build.

The Software Version of your device can be checked by viewing the **Status > Card Info** menu. See Checking BBG-1078-ANC-MON Device Information (p. 3-7) in Chapter 3, “Operating Instructions” for more information. You can then check our website for the latest software version currently released for the device as described below.

Note: Not all functionality described in this manual may appear on devices with initial software versions.

Check our website and proceed as follows if your device’s software does not match the latest version:

Device Software **earlier** than latest version	Device is not loaded with the latest software. Not all functions and/or specified performance described in this manual may be available. You can update your device with new Update software by going to the **Support>Firmware Downloads** link at www.cobaltdigital.com. Download “Firmware Update Guide”, which provides simple instructions for downloading the latest firmware for your device onto your computer, and then uploading it to your device through DashBoard™. **Software updates are field-installed.**
Device Software **newer** than version in manual	A new manual is expediently released whenever a device’s software is updated **and specifications and/or functionality have changed** as compared to an earlier version (a new manual is not necessarily released if specifications and/or functionality have not changed). A manual earlier than a device’s software version may not completely or accurately describe all functions available for your device. If your device shows features not described in this manual, you can check for the latest manual (if applicable) and download it by going to the device’s web page on www.cobaltdigital.com.

Cobalt Reference Guides

From the Cobalt® web home page, go to **Support>Reference Documents** for easy to use guides covering network remote control, card firmware updates, example card processing UI setups and other topics.

Manual Conventions

In this manual, display messages and connectors are shown using the exact name shown on the BBG-1078-ANC-MON itself. Examples are provided below.

- Connector names are shown like this: **SDI IN A**

In this manual, the terms below are applicable as follows:

- **BBG-1078-ANC-MON** refers to the BBG-1078-ANC-MON 3G/HD/SD-SDI Standalone Ancillary Data Monitoring Probe with Multiple-Protocol Data Payload SDI/HDMI Display and Fault Detection/Forwarding unit.
- **Frame** refers to the HPF-9000, OG3-FR, 8321, or similar 20-slot frame that houses Cobalt® or other cards.
- **Device** and/or **Card** refers to a Cobalt® or other card.
- **System** and/or **Video System** refers to the mix of interconnected production and terminal equipment in which the BBG-1078-ANC-MON and other cards/devices operate.
- Functions and/or features that are available only as an option are denoted in this manual like this:

Warnings, Cautions, and Notes

Certain items in this manual are highlighted by special messages. The definitions are provided below.

Warnings

Warning messages indicate a possible hazard which, if not avoided, could result in personal injury or death.

Cautions

Caution messages indicate a problem or incorrect practice which, if not avoided, could result in improper operation or damage to the product.

Notes

Notes provide supplemental information to the accompanying text. Notes typically precede the text to which they apply.

Labeling Symbol Definitions

	Important note regarding product usage. Failure to observe may result in unexpected or incorrect operation.
	Electronic device or assembly is susceptible to damage from an ESD event. Handle only using appropriate ESD prevention practices. If ESD wrist strap is not available, handle card only by edges and avoid contact with any connectors or components.
	Symbol (WEEE 2002/96/EC) For product disposal, ensure the following: • Do not dispose of this product as unsorted municipal waste. • Collect this product separately. • Use collection and return systems available to you.

Safety and Regulatory Summary

Warnings

! WARNING ! **To reduce risk of electric shock do not remove line voltage service barrier cover on frame equipment containing an AC power supply. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.**

Cautions

CAUTION **This device is intended for environmentally controlled use only in appropriate video terminal equipment operating environments.**

CAUTION **The BBG-1078-ANC-MON FPGA is designed for a normal-range operating temperature around 85° C core temperature. Operation in severe conditions exceeding this limit for non-sustained usage are within device operating safe parameters, and can be allowed by setting this control to Disable. However, the disable (override) setting should be avoided under normal conditions to ensure maximum card protection.**

EMC Compliance Per Market

Market	Regulatory Standard or Code
United States of America	FCC "Code of Federal Regulations" Title 47 Part15, Subpart B, Class A
Canada	ICES-003
International	CISPR 24:2010 IEC 61000-4-2:2008 IEC 61000-4-3:2006 with A1:2007 and A2:2010 IEC 61000-4-4:2004 IEC 61000-4-6:2008 IEC 61000-6-3:2006 with A1:2010 CISPR 22:2008

BBG-1078-ANC-MON Functional Description

Figure 1-1 shows a typical layout using the card to show one of the SDI inputs, and numerous status fields related to the input.

Figure 1-2 shows a functional block diagram of the BBG-1078-ANC-MON. The BBG-1078-ANC-MON includes input processing functions to accommodate up to five SDI inputs. User-selectable status fields allow the checking for various ancillary data types (and displaying parametric values or other information as applicable). The BBG-1078-ANC-MON also allows up to any five of the program video input rasters to be displayed in a multiviewer format on the combined video output of the card. The card combined output is available as a 2x DA 3G/HD/SD-SDI output or HDMI/DVI. The output raster format is user-configurable via an output video scaler.

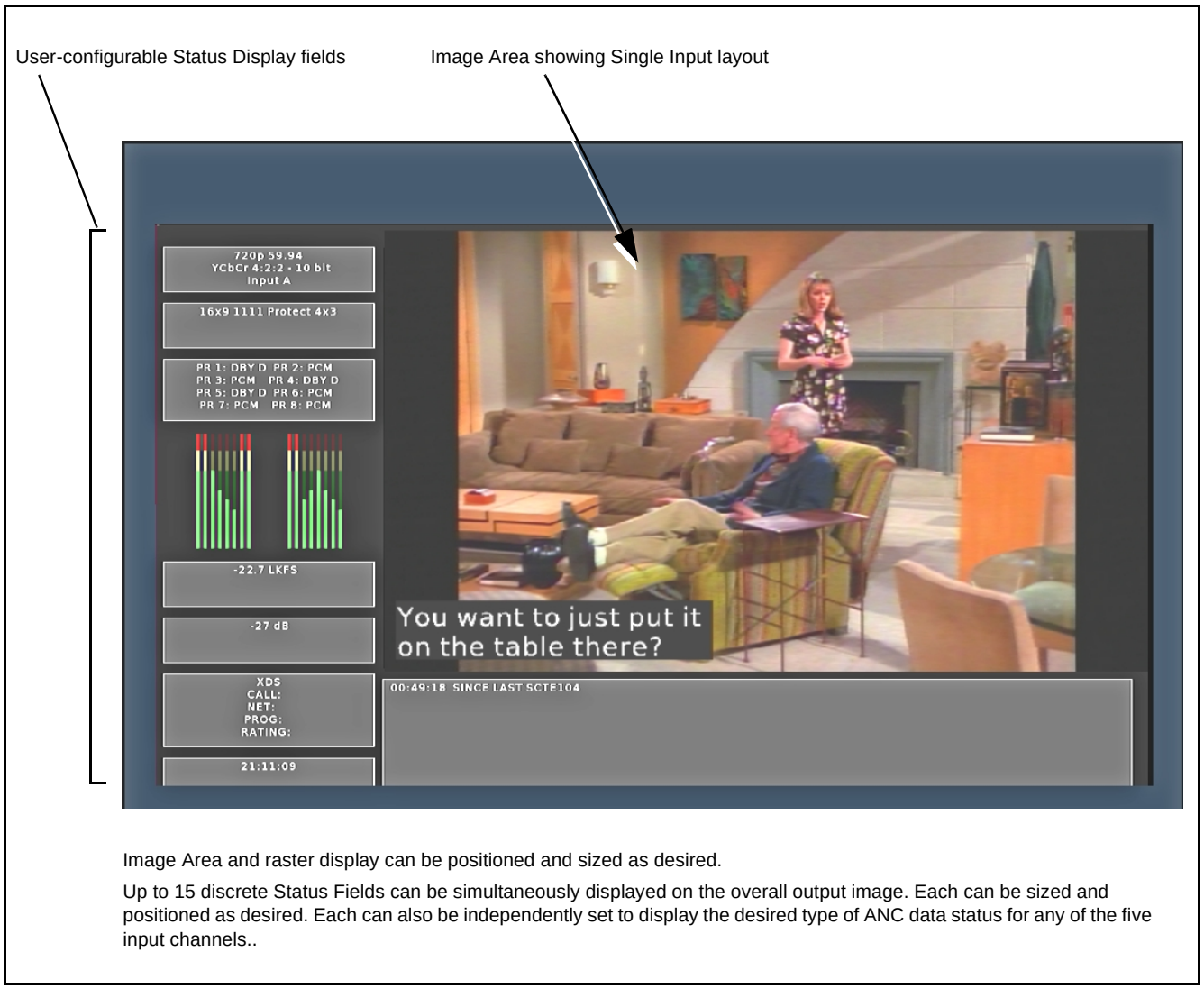

Figure 1-1 Typical BBG-1078-ANC-MON Display Layout and Status Fields

Status Field Displays

Each Status Field can be set to display any of the data types/status as listed below. Associated with each Status Field setup UI is a drop-down to correlate the Status Field with the desired card SDI input (**Input A** thru **Input E**).

- **Input Format** – Shows input raster/rate, as well as colorspace type and encoding of selected input (for example, “720p 59.94 YCbCr 10 bit”). If no input is present, “No Input” is displayed.
- **AFD Coding/Presence** – Shows AFD description/code (for example, “16x9 1111 Protect 4x3””). If AFD coding is not present, “No AFD” is displayed.
- **SCTE104 Log** – Shows elapsed time since last SCTE104 message was present on the selected input.
- **Audio Presence** – Shows breakdown on each embedded pair 1 thru 8 for the selected input (for example, shows “PCM” for pairs containing PCM and shows “DBY D” for pairs consisting of a Dolby D pair).
- **LKFS** – Shows LKFS of up to 5 audio channels for the selected input.
- **Dolby Pair n** – For selected channel pair for selected input, shows dialnorm metadata for Dolby pair (if Dolby is not present on pair, “PCM” is displayed). Drop-down selector allows pair 1 thru pair 8 to be monitored.
- **CC Presence** – Shows presence and type/channel of CEA closed captioning for the selected input (for example, ‘CEA 608 1 CEA 708----” indicating CEA 608 Ch1 detected; no CEA 708). If no CC is detected, dashes are shown for both CEA 608 and 708.
- **CC Overlay** – Provides a burn-in of closed captioning text.
- **XDS** – Shows XDS Call, Net, Prog, and Rating parameters where present for the selected input. If no XDS is present, the fields to the right of each parameter type show blank.
- **User DID/SDID Presence** – Shows presence of user-configurable DID/SDID locations for the selected input.
- **Clock** – Shows “wall clock” time as set using card Clock setup controls.
- **SCTE104 Latest** – Shows latest SCTE104 message. If no message has been received since card alive-time, field is displayed blank.
- **Disabled** – Removes the Status Field and its background from the output raster.

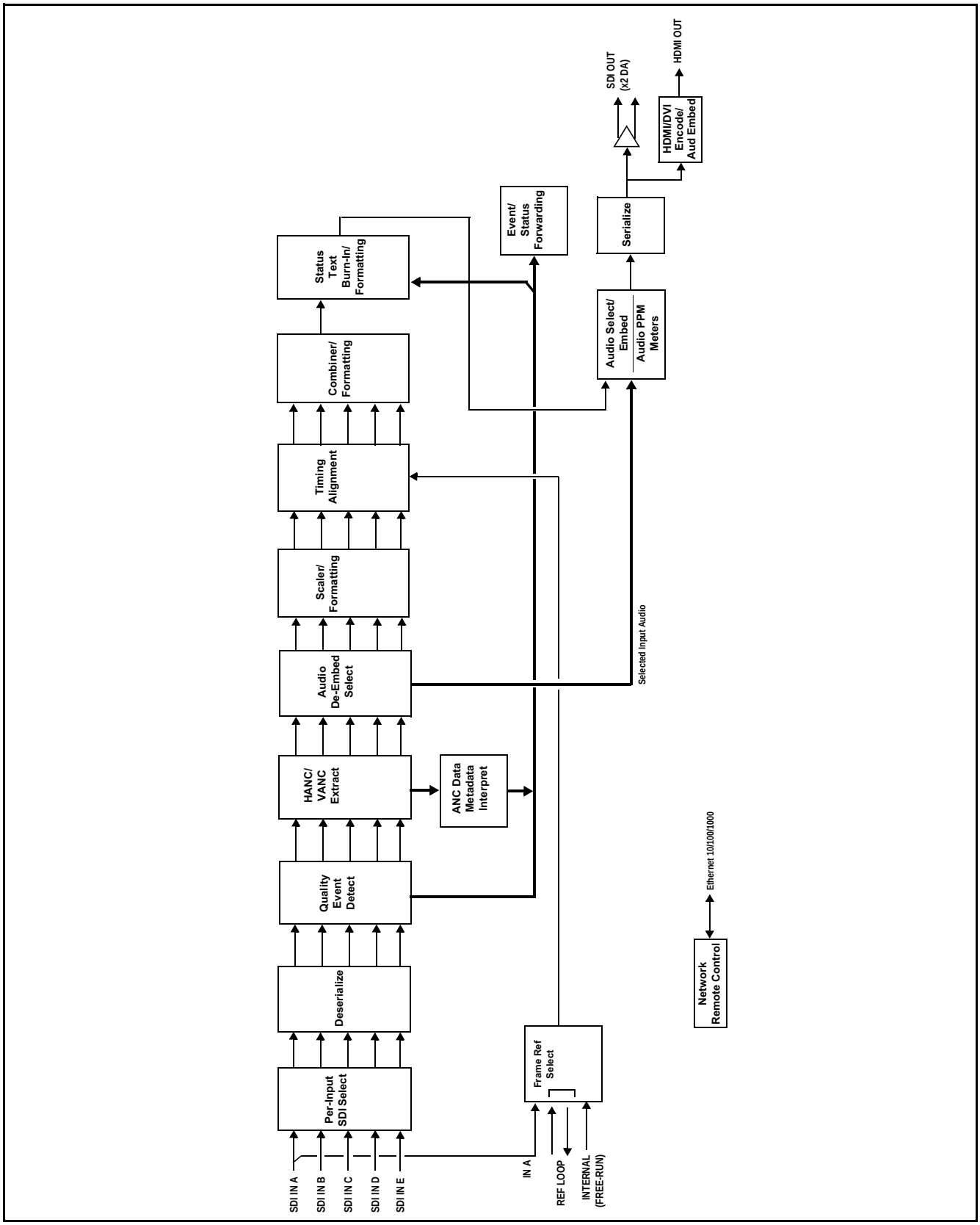

Figure 1-2 BBG-1078-ANC-MON Functional Block Diagram

BBG-1078-ANC-MON Program Video Input/Output Formats

The BBG-1078-ANC-MON provides the following inputs and outputs:

- **Inputs:**
  - **SDI IN A** thru **SDI IN E** – five 3G/HD/SD-SDI coaxial video inputs
- **Outputs:**
  - **3G/HD/SD-SDI OUT** – 2x DA 3G/HD/SD-SDI multi-image video outputs
  - **HDMI/DVI OUT** – Multi-image HDMI/DVI out with selectable audio embedding (suitable for direct connection to monitor panels)

Video Processing Description

The BBG-1078-ANC-MON features input select and validity check functions, timing alignment, and scaling functions as described below.

Input Video Select Function

Up to five individual SDI inputs can be received by the card. Any of the inputs can be queried by various data monitors for selected data and conditions.

Input Video Layout

The active video raster of up to five of the any five SDI inputs can be fed to the card output as a multiviewer Picture-In-Picture (PiP) display, along with a band of user-configurable status displays surrounding the image area. User controls allow the sizing and positioning of each PiP image.

Quint Timing Alignment Function

This function provides for frame alignment control of the five SDI inputs using an external reference signal, **SDI Input A**, or card internal clock reference as a frame reference. As such, the card can accommodate asynchronous program video inputs. Selectable failover allows alternate reference selection should the initial reference source become unavailable or invalid.

This function also allows frame offset delay to be added between the output video and the frame sync reference. Frame sync can select from either of two card frame reference sources, input video, or free-run (internal) timing.

SCTE 104 Log Setup

This tool provides setup of SCTE 104 log queries where various message types can be propagated or ignored. Propagated messages are deposited into a log (which can be downloaded through DashBoard if desired). A message history is also displayed.

Output Format (Scaler) Function

The scaler function provides output conversion to 3G/HD 1080 interlaced or progressive outputs. (Background fill of this device is optimized for 1080 formats, therefore all output format choices are limited to 1080 choices.)

The card allows output video raster/rate choices unrelated to the input rates (for example, PAL 50Hz rate for NTSC 59.94Hz input rates). However, frames will be dropped/duped when performing such conversions.

Audio Processor Description

Audio Select/Embed

The audio processor operates as an internal audio router for selecting card video input embedded channels 1-16 as channels (as a four-group package) to be embedded into the combined PiP SDI and HDMI video outputs. The audio processor function operates with the timing alignment function to align audio with the selected reference.

Note:
- Output audio always corresponds to a single selected video input. Output embedded channels cannot be sourced from a mix of various input embedded channels.
- To maintain conformance with CEA-861D HDMI audio channel line-up specifications and industry standard SDI convention, the HDMI output swaps between the C and LFE channels for the HDMI output.

Audio PPM Meters

The audio of any video input can be displayed as audio PPM meters. The setup controls provide audio meters in several formats (channel count) as desired (from 2-bar stereo up to all four embedded audio groups for the audio associated with the selected input). User controls allow setting meter complement, position, size, and other graphic attributes.

User Presets

Most layout and functional query setup on the card is largely user configurable. As such, there are no “out of the box” templates (since the layout and functional aspects are highly flexible). However, when a setup is completed, all aspects (or only desired aspects) can be saved to a preset, which allows permanent saving of the setup as well as instant recall of the setup. In this manner, numerous custom setups can be saved and recalled as desired.

User Control Interface

BBG-1078-ANC-MON uses an HTML5 internal web server for control/monitoring communication, which allows control via a web interface with no special or unique application on the client device. Connection to the device to the network media connection is via a standard 10/100/1000 RJ-45 Ethernet connection. The device can also be controlled using openGear® DashBoard™ remote control, where it appears as a frame connection.

Technical Specifications

Table 1-1 lists the technical specifications for the BBG-1078-ANC-MON 3G/HD/SD-SDI Standalone Ancillary Data Monitoring Probe with Multiple-Protocol Data Payload SDI/HDMI Display and Fault Detection/Forwarding unit.

Table 1-1 Technical Specifications

Item	Characteristic
Part number, nomenclature	BBG-1078-ANC-MON 3G/HD/SD-SDI Standalone Ancillary Data Monitoring Probe with Multiple-Protocol Data Payload SDI/HDMI Display and Fault Detection/Forwarding
Power consumption	< 18 Watts maximum. Power provided by included AC adapter; 100-240 VAC, 50/60 Hz. Second DC power connection allows power redundancy using second (optional) AC adapter.
Installation Density	Up to 3 units per 1RU space
Environmental: Operating temperature: Relative humidity (operating or storage): Dimensions (WxHxD): Weight:	 32° – 104° F (0° – 40° C) < 95%, non-condensing 5.7 x 1.4 x 14.7 in (14.5 x 3.5 x 37.3 cm) Dimensions include connector projections. 6 lb (2.8 kg)
Ethernet communication	10/100/1000 Mbps Ethernet with Auto-MDIX via HTML5 web interface
Front-Panel Controls and Indicators	Backlit LCD display and menu navigation keys. Display and controls provide unit status display and full control as an alternate to web GUI control.

Table 1-1 Technical Specifications — continued

Item	Characteristic
Program Video Input	Up to five video inputs; 3G/HD/SD-SDI Data Rates Supported: SMPTE 424M, 292M, SMPTE 259M Impedance: 75 Ω terminating Receive Cable Length: 3G/HD/SD-SDI: 120/180/320 m (Belden 1694A) Return Loss (SDI): > 15 dB up to 1.485 GHz > 10 dB up to 2.970 GHz
Serial Digital Video Output	Number of Outputs: Two 3G/HD/SD-SDI BNC Impedance: 75 Ω Return Loss: > 15 dB at 5 MHz – 270 MHz Signal Level: 800 mV ± 10% DC Offset: 0 V ± 50 mV Jitter (3G/HD/SD): < 0.3/0.2/0.2 UI
HDMI Video Output	HDMI CEA-861D
Frame Reference Input	Looping 2-BNC connection. SMPTE 170M/318M “Black Burst”, SMPTE 274M/296M “Tri-Level” Return Loss: >35 dB up to 5.75 MHz
Redundant (or spare) AC power supply (optional)	BBG-1000-PS

Warranty and Service Information

Cobalt Digital Inc. Limited Warranty

This product is warranted to be free from defects in material and workmanship for a period of five (5) years from the date of shipment to the original purchaser, except that 4000, 5000, 6000, 8000 series power supplies, and Dolby® modules (where applicable) are warranted to be free from defects in material and workmanship for a period of one (1) year.

Cobalt Digital Inc.'s (“Cobalt”) sole obligation under this warranty shall be limited to, at its option, (i) the repair or (ii) replacement of the product, and the determination of whether a defect is covered under this limited warranty shall be made at the sole discretion of Cobalt.

This limited warranty applies only to the original end-purchaser of the product, and is not assignable or transferrable therefrom. This warranty is limited to defects in material and workmanship, and shall not apply to acts of God, accidents, or negligence on behalf of the purchaser, and shall be voided upon the misuse, abuse, alteration, or modification of the product. Only Cobalt authorized factory representatives are authorized to make repairs to the product, and any unauthorized attempt to repair this product shall immediately void the warranty. Please contact Cobalt Technical Support for more information.

To facilitate the resolution of warranty related issues, Cobalt recommends registering the product by completing and returning a product registration form. In the event of a warrantable defect, the purchaser shall notify Cobalt with a description of the problem, and Cobalt shall provide the purchaser with a Return Material Authorization (“RMA”). For return, defective products should be double boxed, and sufficiently protected, in the original packaging, or equivalent, and shipped to the Cobalt Factory Service Center, postage prepaid and insured for the purchase price. The purchaser should include the RMA number, description of the problem encountered, date purchased, name of dealer purchased from, and serial number with the shipment.

Cobalt Digital Inc. Factory Service Center
2506 Galen Drive
Champaign, IL 61821 USA
www.cobaltdigital.com
Office: (217) 344-1243
Fax: (217) 344-1245
Email: info@cobaltdigital.com

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Phone:	(217) 344-1243
Fax:	(217) 344-1245
Web:	www.cobaltdigital.com
General Information:	info@cobaltdigital.com
Technical Support:	support@cobaltdigital.com

Chapter 2

Installation

Overview

This chapter contains the following information:

Installing the BBG-1078-ANC-MON

Note:
- Where BBG-1078-ANC-MON is to be installed on a mounting plate (or regular table or desk surface) **without** optional frame Mounting Tray BBG-1000-TRAY, affix four adhesive-backed rubber feet (supplied) to the bottom of BBG-1078-ANC-MON in locations marked with stamped “x”. If feet are not affixed, chassis bottom cooling vents will be obscured.
- Where BBG-1078-ANC-MON is to be installed **with** optional frame Mounting Tray BBG-1000-TRAY, **do not** affix adhesive-backed feet.

Installing Using BBG-1000-TRAY Optional Mounting Tray

BBG-1000-TRAY allows up to three BBG-1078-ANC-MON to be mounted and securely attached to a 1 RU tray that fits into a standard EIA 19” rack mounting location. Install BBG-1078-ANC-MON unit into tray as described and shown here.

1. If installing BBG-1078-ANC-MON using optional frame Mounting Tray BBG-1000-TRAY, install BBG-1078-ANC-MON in tray as shown in Figure 2-1.

2. Connect the input and output cables as shown in Figure 2-3.

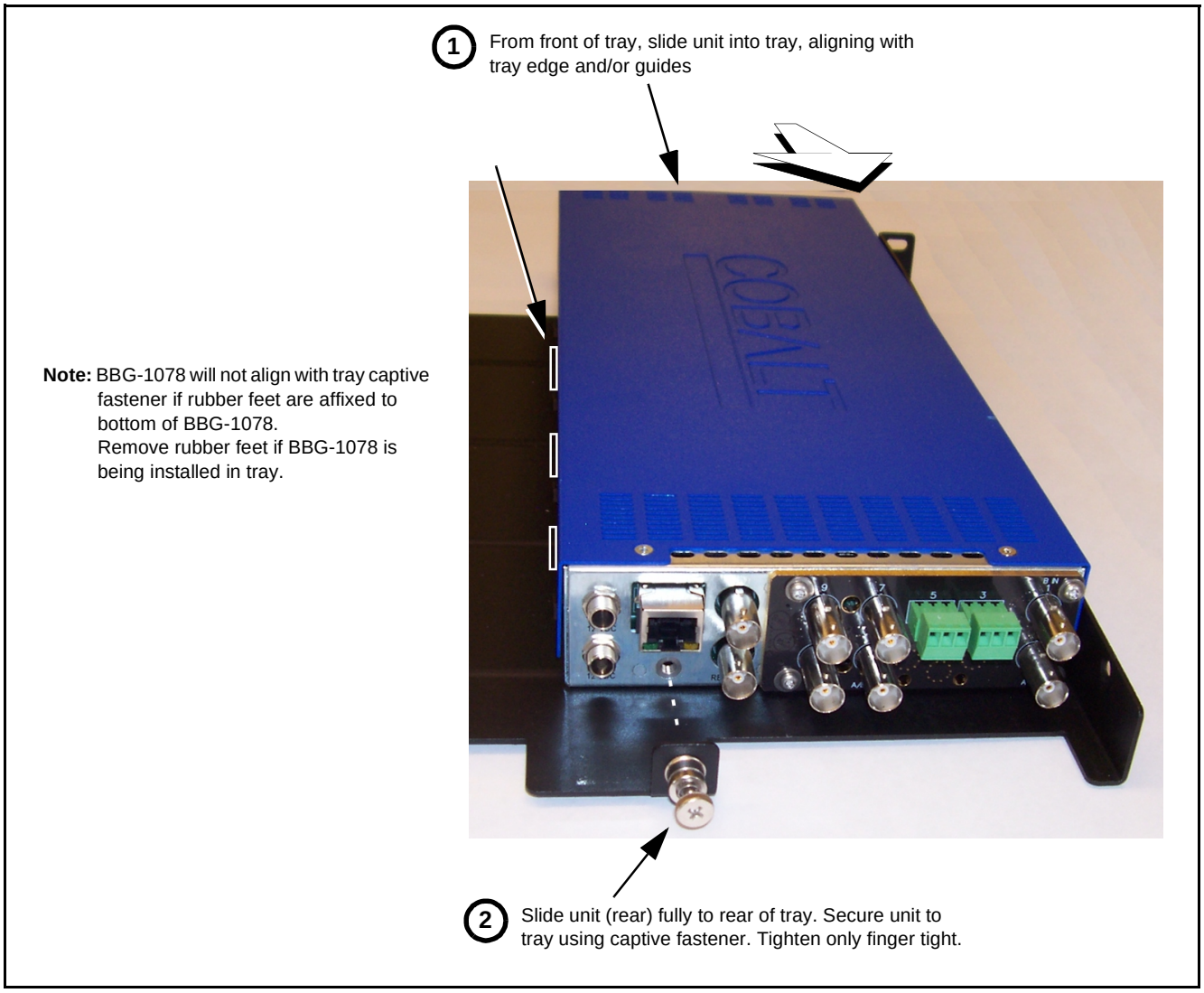


Figure 2-1 Mounting BBG-1078-ANC-MON Using Frame Mounting Tray

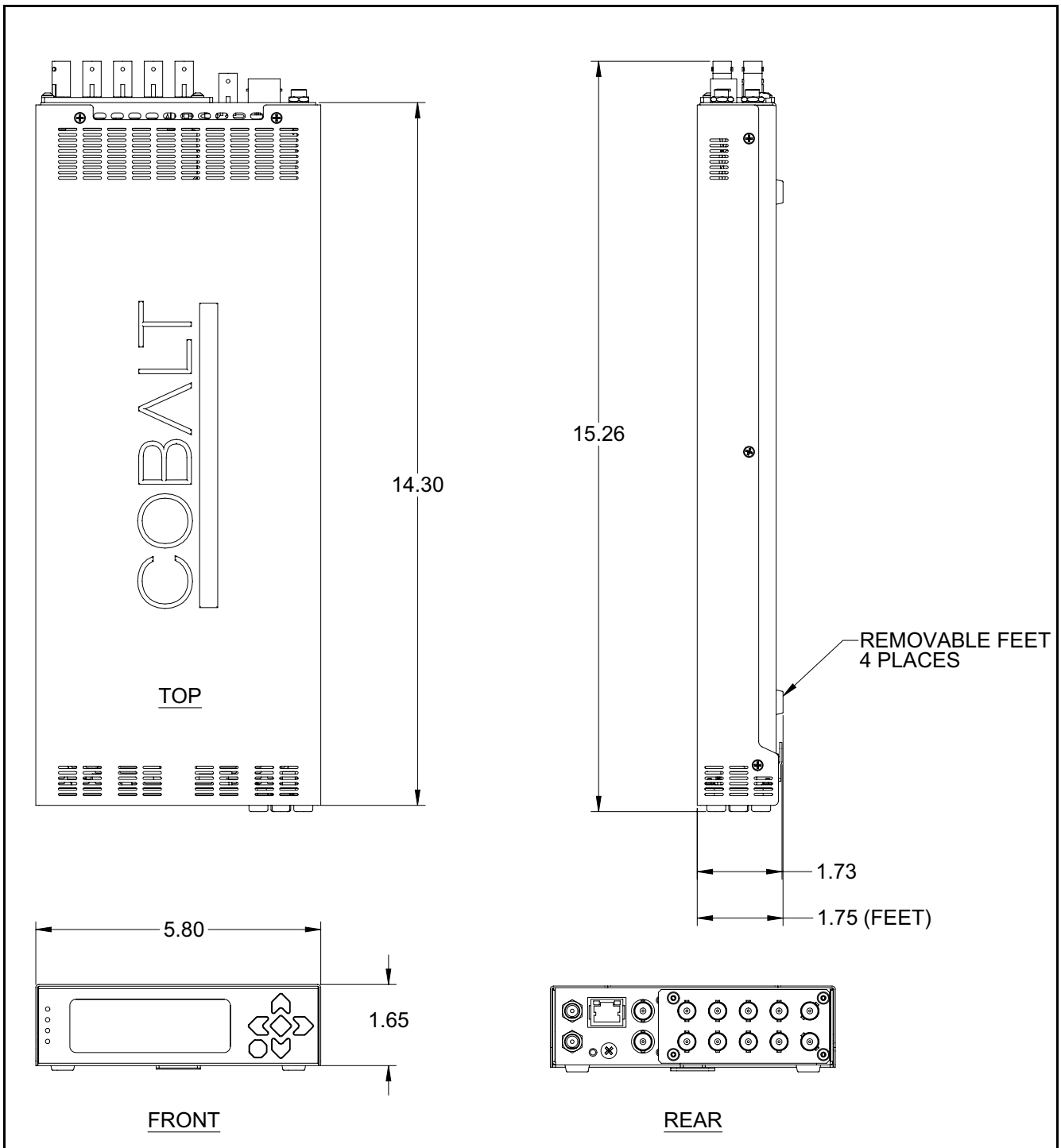
BBG-1078-ANC-MON Unit Dimensions

Figure 2-2 shows the BBG-1078-ANC-MON physical dimensions and mounting details for cases where BBG-1078-ANC-MON will be installed in a location not using the optional **BBG-1000-TRAY** mounting tray.

Rear Panel Connections

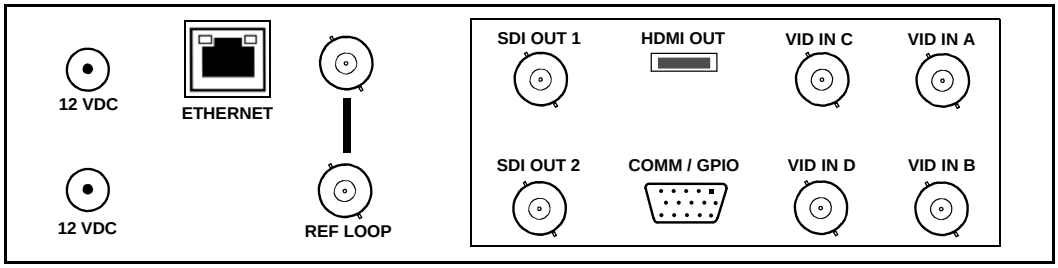
Perform rear panel cable connections as shown in Figure 2-3.

Note:
- The BBG-1078-ANC-MON BNC inputs are internally 75-ohm terminated. It is not necessary to terminate unused BNC video inputs or outputs.
- External frame sync reference signal (if used) must be terminated if a looping (daisy-chain) connection is not used. Unterminated reference connection may result in unstable reference operation.



Notes: 1. All dimensions in inches.
2. If BBG-1078 is mounted on flat surface, either rubber feet must be installed, or mounting surface must be open to mate with cooling vents on bottom of BBG-1078 chassis.

Figure 2-2 BBG-1078-ANC-MON Dimensional Details



Connector	Function
12 VDC −⊂+	Dual DC power IN connectors (diode-isolated). Single AC adapter (supplied) can be connected to either connector. Dual adapters can be connected to provide power redundancy.
10/100/1000 ETHERNET	Gigabit Ethernet control/monitoring connection. Communication activity status is shown by integral status LEDs.
REF LOOP	Looping 75Ω reference connection for connection to house black burst or tri-level reference connections
Signal Connectors	
VID IN A thru **VID IN D**	Four 3G/HD/SD-SDI video input BNCs
SDI OUT 1 / **SDI OUT 2**	Two 3G/HD/SD-SDI video output BNCs
HDMI OUT	HDMI/DVI output (auto-sensing or manual mode force. 5.1 audio embedded to HDMI.
Note: Rear panel may show COMM/GPIO connections/ports. While present, these connection are currently reserved and NC.	

Figure 2-3 BBG-1078-ANC-MON Rear Panel Connectors

Chapter 3

Operating Instructions

Overview

This chapter contains the following information:

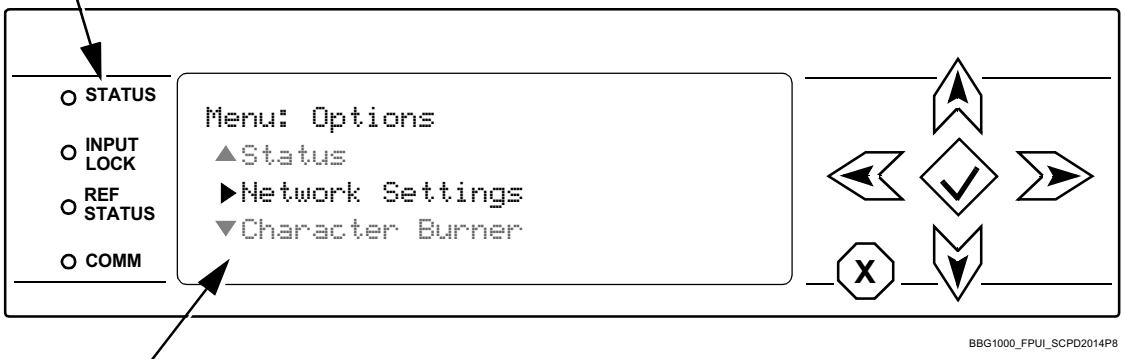
Perform the setup procedures here in the sequence specified. All procedures equally apply to all models unless otherwise noted.

Note: All instructions here assume BBG-1078-ANC-MON is physically connected to the control physical network as described in Chapter 2. Installation.

BBG-1078-ANC-MON Front Panel Display and Menu-Accessed Control

Figure 3-1 shows and describes the BBG-1078-ANC-MON front panel displays and menu-accessed user interface controls. Initial network setup is performed using these controls.

- **STATUS** LED illuminated green shows unit power is OK and unit is functional.
- **INPUT LOCK** LED illuminated green shows at least one video input is locked to video.
- **REF STATUS** LED illuminated green shows valid reference is being received.
- **COMM** LED illuminated green shows Ethernet connection is OK.



BBG1000_FPUI_SCPD2014P8

Alphanumeric display shows configuration items, and shows and allows changes of settings when a menu item is accessed.

▲ and ▼ arrows denote scroll up or down to access the menu item.

▶ arrows denotes a menu item is accessed to be selected (in the example above, **Network Settings**).

Press the ✓ button to now access and enter the menu item. When this button is pressed, the selected menu item is displayed, along with its sub-menus.

In this example showing the Network Settings menu, `Menu: Network Settings` as menu item is displayed (indicating this is the actively selected menu item) and its sub-menus are now displayed:

```
Menu: Network Settings
▶ IP: 10.99.11.162
▼ Netmask: 255.255.255.0
▼ Gateway: 10.99.11.1
```

In this example, with ▶ pre-selecting the IP: sub-menu, pressing the ✓ button again opens the IP: sub-menu.

```
IP
▲
010.099.011.162
▼
```

The carets above and below a character indicate this character is ready for editing. Use the ▼ and ▲ buttons to decrement or increment the value.

Use the ≪ and ≫ buttons to navigate to other characters.

To exit a sub-menu or a menu, press the X button. This locks in any changes and proceeds to the last-selected sub-menu or menu item. Repeatedly press the button to step up through sub-menus and then to other menus. Access other menu items using the ▼ and ▲ buttons.

The display backlight automatically brightens with any navigation arrow activity, and then goes dim after a few moments.

Figure 3-1 BBG-1078-ANC-MON Front Panel Display and Menu Controls

Connecting BBG-1078-ANC-MON To Your Network

BBG-1078-ANC-MON ships with network protocol set to DHCP and populates its address with an addressed allocated by your DHCP server. If your network does not have a DHCP server, the BBG-1078-ANC-MON address field will be blank, and a static address must then be assigned. All initial network settings are performed using the Front Panel Display menu-accessed control (as described on the previous page). Refer to this page for instructions of using the front-panel menu navigation.

Access the Network Settings menu and configure network settings as follows:

Connecting BBG-1078-ANC-MON To Network

1. Power-up BBG-1078-ANC-MON and connect Ethernet cable connection to media. Wait for BBG-1078-ANC-MON to complete booting.
When **`Product: BBG-1078`** ... is displayed, device is ready for configuration.

2. Press ◇ and access the **`Network Settings`** menu. Current network settings are displayed (as configured by host DHCP server).
Note: It is recommended to now change the settings to use a static IP address of your choice. The following steps describe using a static IP address.

3. In **`Network Settings > Mode`**, change setting to **`Mode: Static`**.

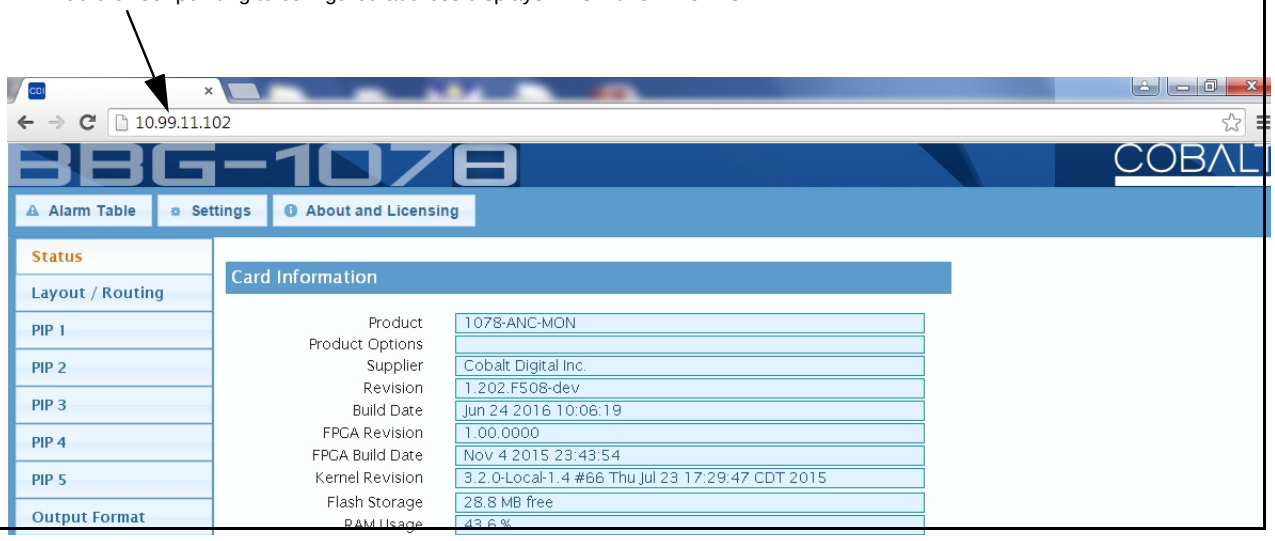
4. Configure the following fields as desired and appropriate for your network connection (examples shown below).

```
Menu: Network Settings
  IP: 10.99.11.102
  Netmask: 255.255.255.0
  Gateway: 10.99.11.1
  Mode: Static
```

5. Press (X) to commit changes and exit the setup menu.
Note: Current IP address of BBG-1078-ANC-MON can now be checked from the front panel by accessing this at any point.

6. At this point, BBG-1078-ANC-MON can now be accessed with a web browser pointing to the configured address. Browse to the configured address and check connectivity.

Web browser pointing to configured address displays BBG-1078-ANC-MON



Finding a BBG-1078-ANC-MON Device in DashBoard

(See Figure 3-2) If BBG-1078-ANC-MON is configured with an address within a network also available via DashBoard, a BBG-1078-ANC-MON device appears as a frame entity in the DashBoard Basic Tree View.

Note: BBG-1078-ANC-MON DashBoard remote control is also available by opening the device in DashBoard similar to opening an openGear® card.

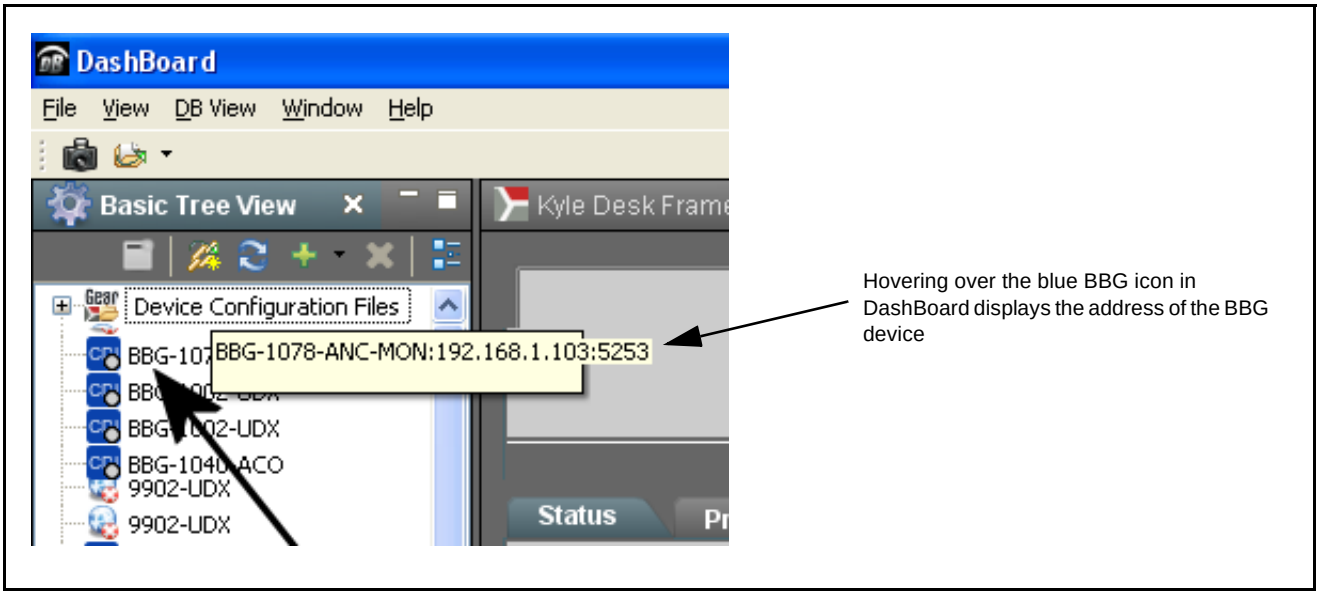


Figure 3-2 Finding BBG-1078-ANC-MON Using DashBoard

Control and Display Descriptions

This section describes the web user interface controls for using the BBG-1078-ANC-MON.

The format in which the BBG-1078-ANC-MON functional controls appear follows a general arrangement of Function Submenus under which related controls can be accessed (as described in Function Menu/Parameter Menu Overview below).

Function Menu/Parameter Menu Overview

The functions and related parameters available on the BBG-1078-ANC-MON are organized into function **menus**, which consist of parameter groups as shown below.

Figure 3-3 shows how the BBG-1078-ANC-MON and its menus are organized, and also provides an overview of how navigation is performed between devices, function menus, and parameters.

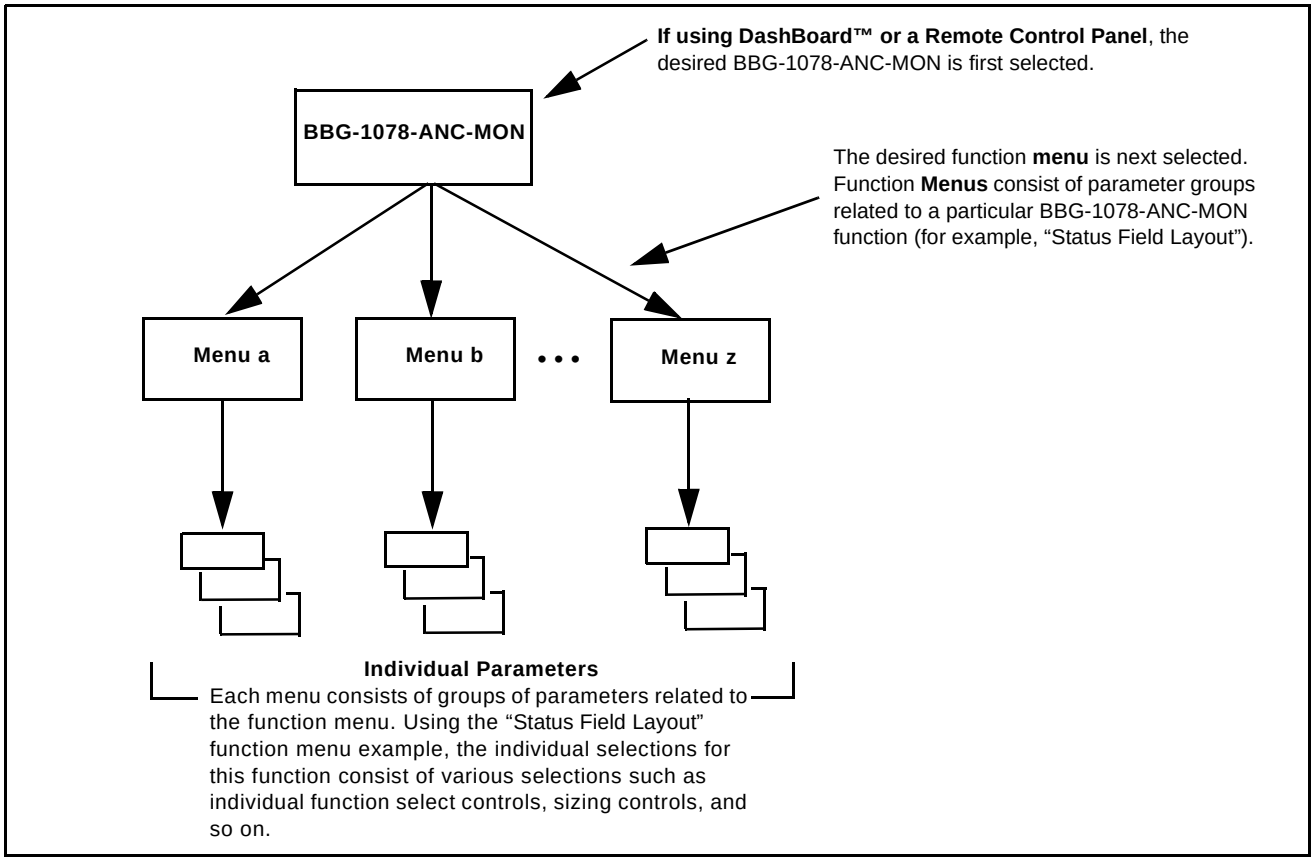


Figure 3-3 Function Menu/Parameter Menu Overview

Web User Interface

Note: The web interface for this release is not yet formalized. Not all controls may be available. It is receommended at this time to used DashBoard to control the BBG-1078-ANC-MON device. See Finding a BBG-1078-ANC-MON Device in DashBoard (p. 3-4) to find the device and use DashBoard remote control to access and control the BBG-1078-ANC-MON.

Display Theme

(See Figure 3-4.) The BBG-1078-ANC-MON user interface theme selection offers light and dark themes suited for various users and environments.

Figure 3-4 Web UI Display Themes for Example BBG-1000 Device

Checking BBG-1078-ANC-MON Device Information

The operating status and software version the BBG-1078-ANC-MON device can be checked by clicking the **Status** main menu tab. Figure 3-5 shows and describes the BBG-1078-ANC-MON device information status display.

Note: Proper operating status is denoted by green icons for the status indicators shown in Figure 3-5. Yellow or red icons respectively indicate an alert or failure condition. Refer to Troubleshooting (p. 3-34) for corrective action.

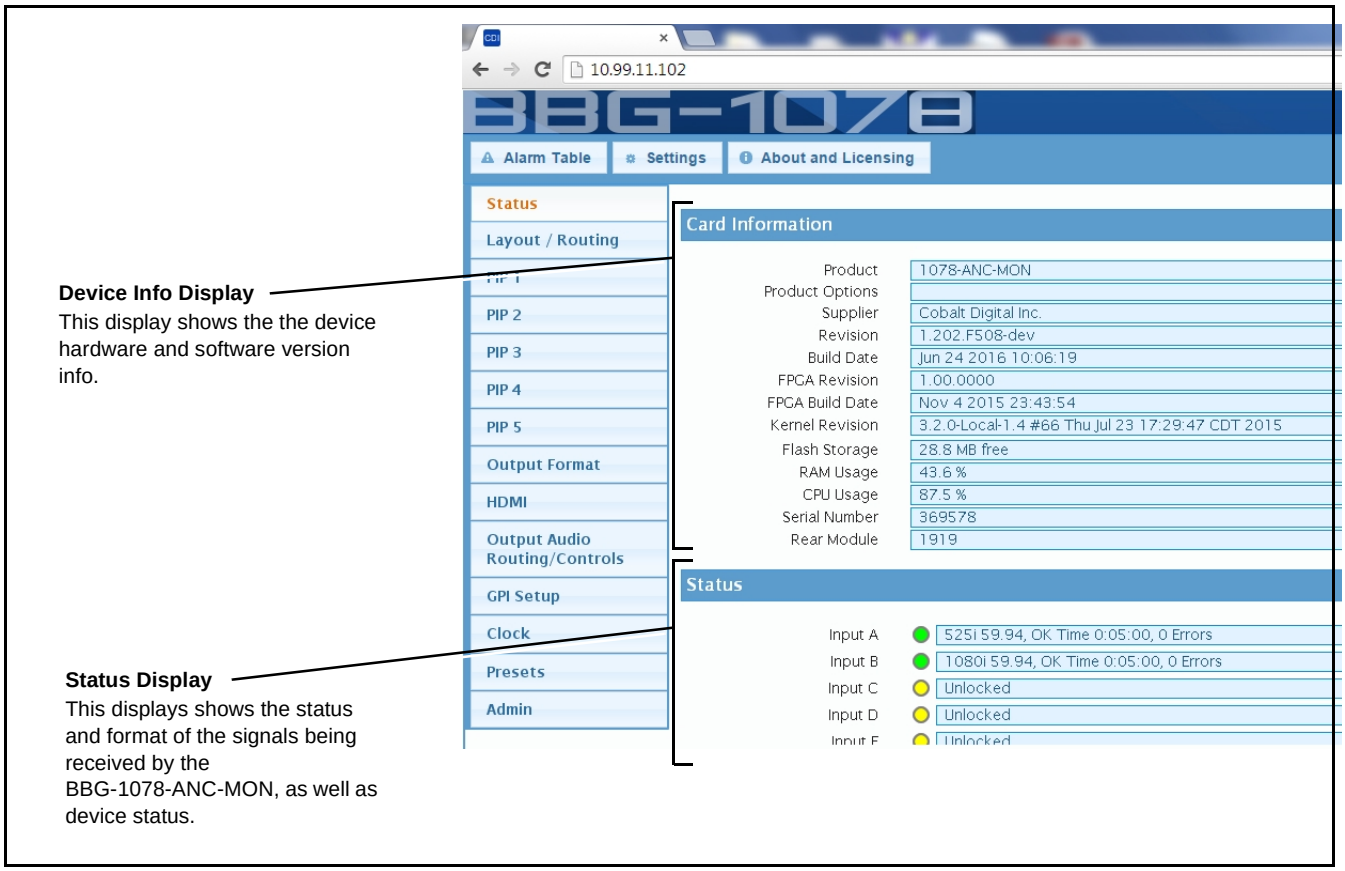


Figure 3-5 Typical Web GUI Device Info/Status Utility

DashBoard™ User Interface

(See Figure 3-6.) The device function menus are organized in DashBoard™ using tabs. When a tab is selected, each parametric control or selection list item associated with the function is displayed. Scalar (numeric) parametric values can then be adjusted as desired using the GUI slider controls. Items in a list can then be selected using GUI drop-down lists.

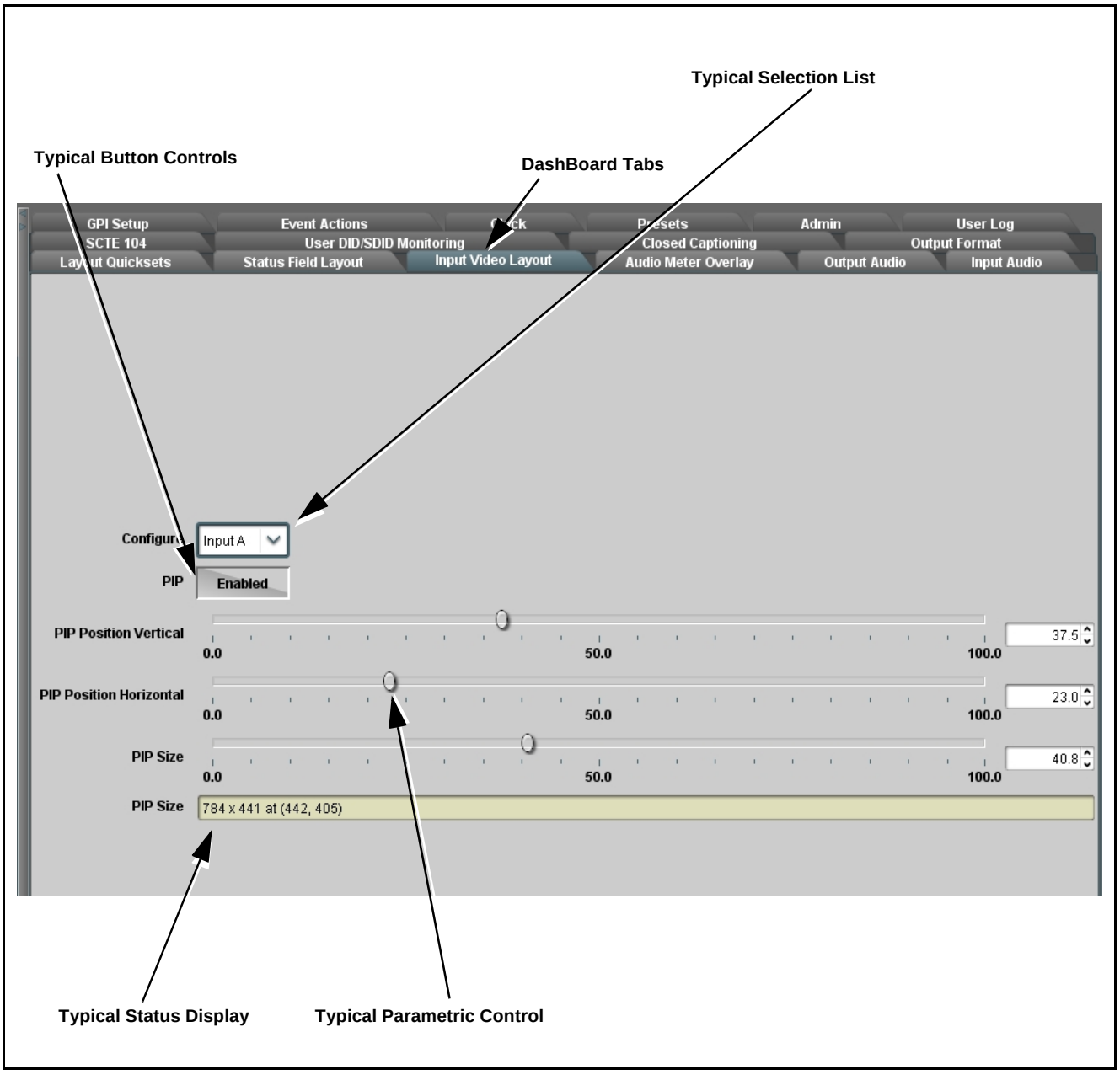


Figure 3-6 Typical DashBoard Tabs and Controls

Overview of Status Displays on Output Video

Figure 3-7 shows an example output video view showing four input rasters combined in a user-configured quad multiviewer output format, as well as various Status Field displays positioned around the program images set to monitor various Input Video channels. When a Status Field is set as **Disabled**, the Status Field disappears from the output raster with the background fill taking its place.

Input video raster insertion, sizing and positioning is entirely user-configurable. Sizing and positioning of any status field is also entirely user-configurable.

- For detailed description of Status Field Layout setup see Status Field Layout Controls (p. 3-12)
- For detailed description of Input Video Layout setup see Input Video Layout Controls (p. 3-16)

Overview of Setting Up Images and Status Fields on Output Raster

Because the BBG-1078-ANC-MON allows full flexibility of program video image insertion as well as up to 15 Status Fields (which can be set from numerous choices of data type monitored as well as full flexibility of the input monitored for each Status Display field), the following steps will help in organizing and laying out the overall display to meet your requirements.

Note: The following is a brief overview. Refer to BBG-1078-ANC-MON Function Menu List and Descriptions (p. 3-11) for detailed information about using control to set display attributes.

- Decide which input video channels need to be displayed. For each input channel desired to be displayed, set sizing and positioning as described in Input Video Layout Controls (p. 3-16). It is recommended to size and position image rasters such that room is available for inserting Status Fields without obscuring too much of the image rasters.
- Decide which data types are to be displayed. Using the up to 15 available Status Fields, set each (as needed) to display the data type needed as well as the input channel to which the monitoring is to correlate. If less than all 15 status fields are needed, leaving the unneeded fields set to Disabled removes the field(s) from the raster. Set Status Fields as described in Status Field Layout Controls (p. 3-12).

The steps above describe the basic tasks to set up BBG-1078-ANC-MON for image and status display. Many other functions are available. Read and understand **all** sections of BBG-1078-ANC-MON Function Menu List and Descriptions (p. 3-11) to fully benefit from all device functions as applicable to your needs.

In this example, four input video rasters are simultaneously displayed. Status Fields 1 thru 9 (of 15 available Status Fields) are enabled for burn-in display. The layout shown here is an example; **any** Input Video **A** thru **E** raster or Status Field **1** thru **15** can be positioned and sized **anywhere** on the output raster as desired.

Many other data types (not shown here) can also be displayed. See Status Field Layout Controls (p. 3-12) for more information.

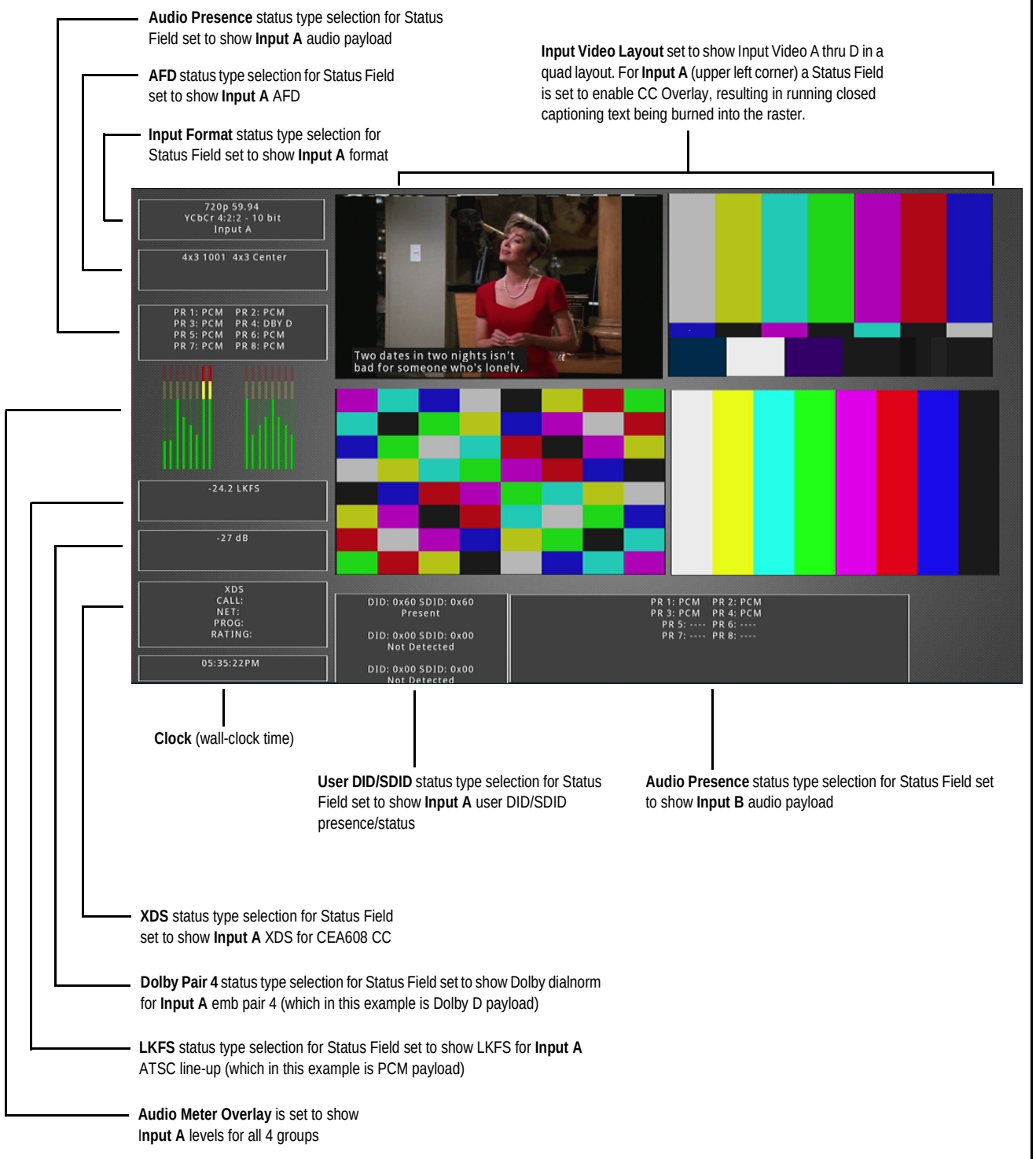


Figure 3-7 Overview of Status Displays on Output Video

BBG-1078-ANC-MON Function Menu List and Descriptions

Table 3-1 individually lists and describes each BBG-1078-ANC-MON function menu and its related list selections, controls, and parameters. Where helpful, examples showing usage of a function are also provided. Table 3-1 is primarily based upon using DashBoard™ to access each function and its corresponding menus and parameters.

Note:
- All numeric (scalar) parameters displayed can be changed using the slider controls, ⇕ arrows, or by numeric keypad entry in the corresponding numeric field. (When using numeric keypad entry, add a return after the entry to commit the entry.)
- User interface depictions here may show DashBoard UI. Web UI are similar.

On the web GUI itself and in Table 3-1, the function menu items are organized using main menu tabs as shown below.

Some functions use **sub-tabs** to help maintain clarity and organization. In these instances, Table 3-1 shows the ordinate tab along with its sub-tabs. Highlighted sub-tabs indicate that controls described are found by selecting this sub-tab (in this example, the **Dolby Metadata** sub-tab on the **Audio Monitoring Setup** page).

The table below provides a quick-reference to the page numbers where each function menu item can be found.

Table 3-1 BBG-1078-ANC-MON Function Menu List

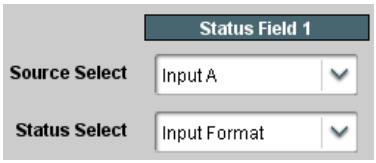
Layout Quicksets	This tab/page is reserved. Use Status Field Layout Controls and Input Video Layout Controls to perform layouts (see next pages).
Status Field Layout	Provides controls for inserting (enabling) up to 15 Status Fields. Provides controls for setting data type monitored/displayed for each status field as well as correlating the status display to an input channel.

Status Fields are enabled and inserted using the **Status Field** (1 thru 15) drop-downs by:

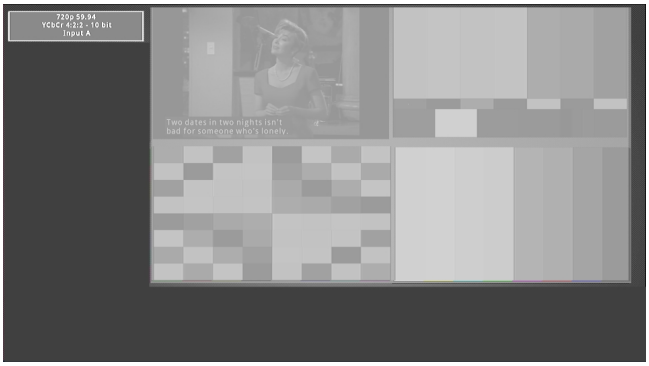
- Selecting the data type to be monitored/displayed (**Status Select**) and correlating the status field to an input video channel to be monitored using the **Source Select** drop-down selectors.
- Sizing and positioning the individual Status Field displays using the **Position / Size** controls. (see p. 3-15 for details).

Example:

- In this example, Status Field 1 is to be used to show Input Format for Input A.
  The **Source Select** drop-down is set to **Input A**.
  The **Status Select** drop-down is set to **Input Format**.



- The Status Field insertion is now active. Using the Position - Size controls, the insertion can be placed anywhere on the output raster as desired (in this example, the status fields are positioned and sized to be placed around the program video PiP insertions).



Note: When any Status Field is set to disabled, its data display and background box are removed from raster insertion. Make certain any unused Status fields are set to Disabled so that the unused status fields do not take up any raster area.

Note: Status Field 1 controls are shown. Identical independent controls are provided for Status Field **2** thru **15**. Therefore, only the **Status Field 1** controls are shown here.

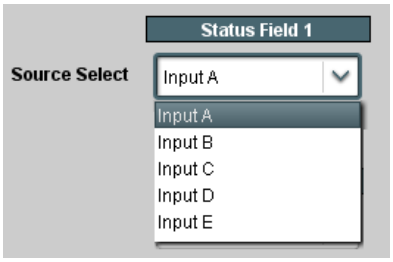
• **Input Video Source Select** 	Sets the status field to correlate its monitoring to a desired input video channel (**Input A** thru **Input E**).

Table 3-1 BBG-1078-ANC-MON Function Menu List — continued

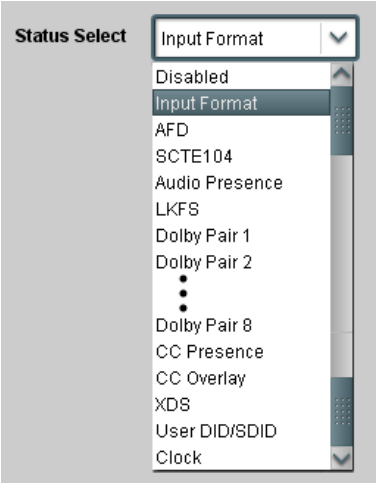
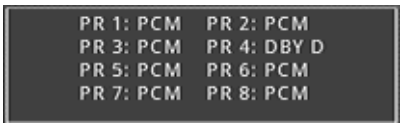
Status Field Layout	(continued)
• Status (Data Type) Select 	Selects the data type monitoring function for the selected Status Field (1 thru 15) from the choices shown and described below. **Note:** If a status field is not needed to be displayed, use the **Disabled** choice. When any Status Field is set to disabled, its data display and background box are removed from raster insertion.
•• *Input Format* Display 	Provides display of input format for the SDI input selected for the status field. Shows raster and frame rate, colorspace/word length, and the input associated with the status field.
•• *AFD* Display 	Provides display of any AFD coding present for the SDI input selected for the status field. If SDI input does not contain AFD coding, **No AFD** is displayed.
•• *SCTE104* Display 	Provides condensed summary display of last three SCTE 104 messages present for the SDI input selected for the status field. (In this example, splice start normal, splice end normal, and splice cancel messages were received, with time stamps noted for each.) The running time on the last line indicates elapsed time since last messaged received. **Note:** This status field type is a condensed summary only. Highly detailed message history is available using the SCTE 104 tab.See SCTE 104 Status Setup Controls (p. 3-23) for details.
•• *Audio Presence* Display 	Provides display of audio payload for all 8 embedded pairs for the SDI input selected for the status field. In the example here, all pairs are PCM except pair 4 which is carrying Dolby D (“DBY D”). If no payload is present, associated pair(s) show blank (“...”).
•• *LKFS* Display 	Provides display of short-term moving average ATSC A/85 LKFS for the SDI input selected for the status field. **Note:** • Individual channels comprising the LKFS complement and measurement window time are selected using the **LKFS** subtab on the **Input Audio** tab/page. See Audio Monitoring Setup Controls (p. 3-22) • LKFS display is intended for use with PCM audio and can only be used with SDI Input A.

Table 3-1 BBG-1078-ANC-MON Function Menu List — continued

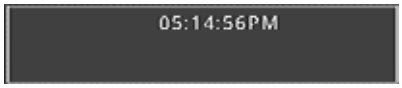
Status Field Layout	(continued)
•• ***Dolby Pair (1-8)*** **Display** 	Provides display of Dolby Dialnorm metadata for the selected embedded channel pair of the SDI input selected for the status field. If pair is not carrying Dolby, “PCM” is displayed.
•• ***CC Presence*** **Display** 	Provides display of CEA608 and CEA708 closed-captioning presence of the SDI input selected for the status field. (In this example, display shows CEA608 service CC1 is detected. If showing all dashes, indicates no services detected.) **Note:** CC Presence display can only be used with SDI Input A.
•• ***CC Overlay*** **Display** 	Provides running decoded text payload of CEA608 / CEA708 closed-captioning for the SDI input selected for the status field. **Note:** CC Overlay display can only be used with SDI Input A.
•• ***XDS Presence*** **Display** 	Provides display of CEA608 Extended Data Service (XDS) of the SDI input selected for the status field. If XDS content is not present, blanks are displayed. **Note:** XDS Presence display can only be used with SDI Input A.
•• ***User DID/SDID*** **Display** 	Provides display of presence of user-specified DID/SDID ANC insertions of the SDI input selected for the status field. **Note:** User DID/SDID locations are set using the **User DID/SDID Monitoring** tab/page. See User DID/SDID Monitoring Setup Controls (p. 3-24)
•• ***Clock*** **Display** 	Provides clock display of wall-clock time. **Note:** • Clock display is not associated with Source Select SDI input. For display of this data type, Source Select can be disregarded. • Clock is set and displays time in accordance with clock setting poerformed using the Clock tab/page. See Clock (Wall-Clock Time/LTC) Controls (p. 3-27)

Table 3-1 BBG-1078-ANC-MON Function Menu List — continued

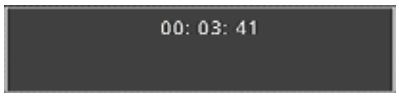
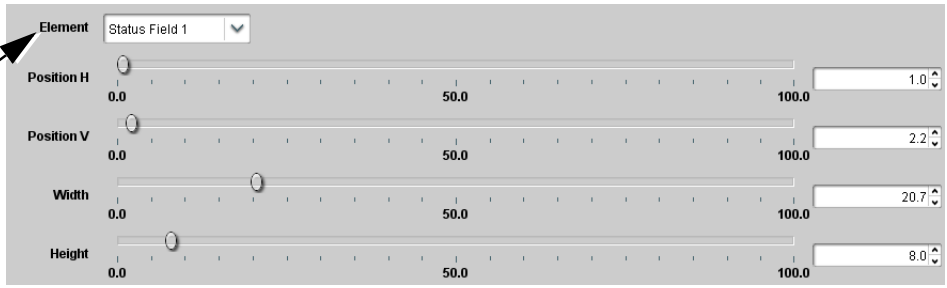
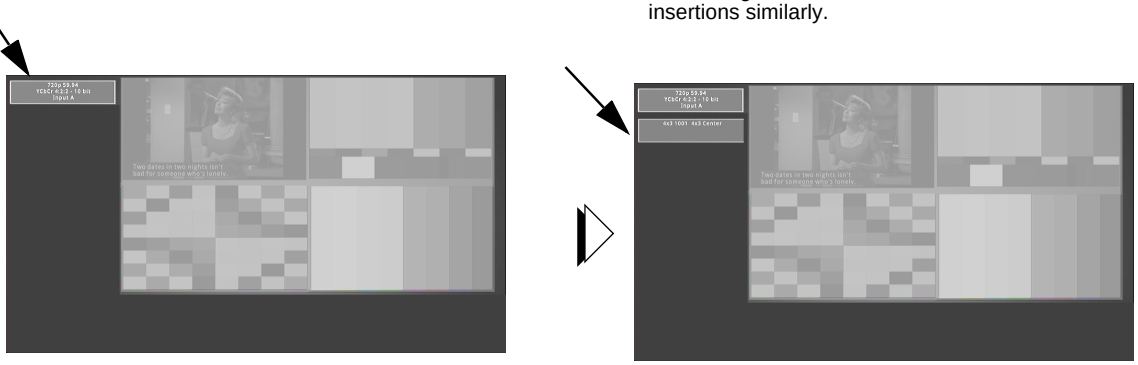
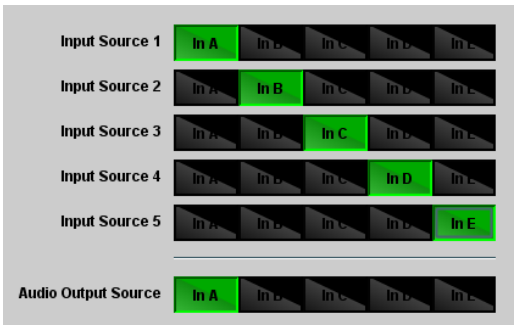
Status Field Layout	**(continued)**
•• ***Time Code* Display** 	Provides time code display for the SDI input selected for the status field. **Note:** Time code must be in the format of ATC_VITC for timecode to be reported. Other formats will show blank.
Positioning and Sizing Status Fields Within the Output Raster Each enabled Status Field is positioned one-at-a-time using the shared **Position H** / **Position V** and **Width** / **Height** controls. Sizing and positioning of each Status Field is done individually by selecting the Status Field to be manipulated using the **Element > Status Field** drop-down. When the field is selected, it can now be sized and positioned using the slider controls.  **Example:** First, Status Field 1 (set to display data type Input Format) is enabled. It is sized and positioned to be at the upper LHS of the program image display, bordering the PiP multiviewer program video display. Next, Status Field 2 (set to display data type AFD) is enabled. It is sized and positioned to position it directly under Status Field 1. For a layout with status fields wrapping around the program video images, this can be continued for other Status Field insertions similarly. 	
Input Selection	Select inputs to be applied to be applied to the card.
• **PiP Input Source Select** 	Routes the card SDI inputs (VID IN A thru VID IN E as **In A** thru **In E**, respectively) to the card inputs. (In this example, VID IN A thru VID IN E are respectively routed as PIP 1 thru PIP 5 input sources.) The **Audio Output Source** selector routes a selected input audio to serve as the audio present on the card SDI output. **Note:** A CVBS input is automatically detected by the card input, with the CVBS ADC converter automatically engaged.

Table 3-1 BBG-1078-ANC-MON Function Menu List — continued

Input Video Layout	Provides controls for sizing and positioning up to five input video program video PiPs within the output raster.

Input video insertions are enabled using the **Configure** drop-down and setting **PIP** to **Enabled**.

Note: When any input video PIP is set to disabled, the raster is not inserted into the output video image (although "unviewed" inputs can still be monitored as desired using the Status Field Layout Controls (p. 3-12)). Make certain any unused inputs or inputs not to be displayed are set to Disabled so that the unused image area doesn't take up any raster area.

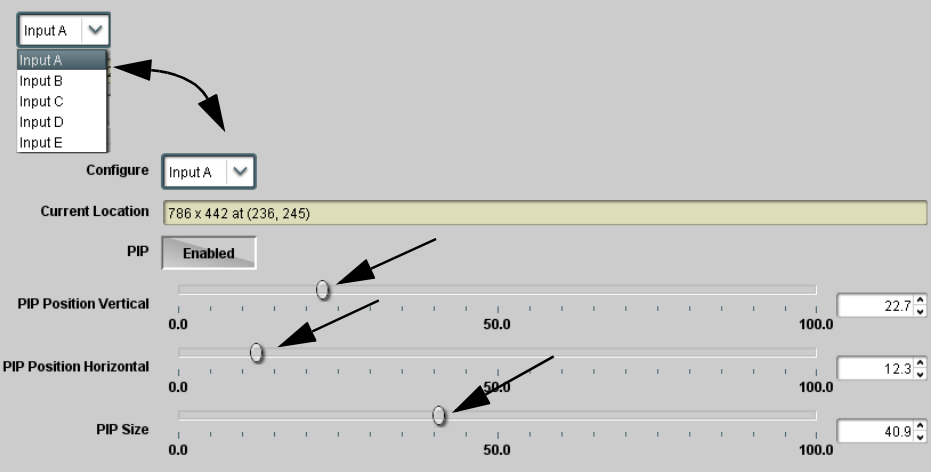
Positioning and Sizing Program Video PiPs Within the Output Raster

Each enabled input video PiP is positioned one-at-a-time using the shared **PIP Position (V, H)** and **PIP Size** controls.

Insertion, sizing and positioning of each PiP is done individually by selecting the **Input** to be manipulated using the **Configure** drop-down and setting **PIP** to **Enabled**.

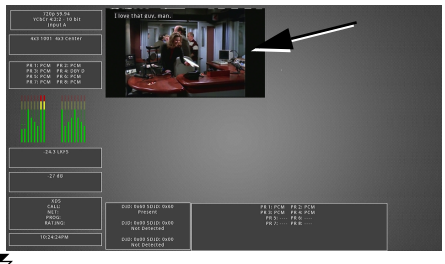
When the input is selected and enabled, it can now be sized and positioned using the slider controls.

Current Location display shows the user-configured PiP size and x,y origin coordinates

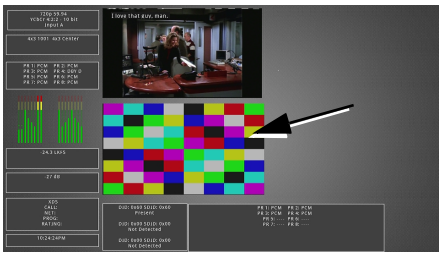


Example (Quad-Split Layout):

First, Input A is enabled and inserted. It is sized and positioned (using the controls described above) to be at the upper LHS of the image space raster.



Next, Input B is enabled and inserted (**Configure** > **Input B**). It is sized and positioned (using the controls described above) to position it directly under the Input A raster.



Finally, Inputs C and D (one-by-one) are is enabled and inserted. They are sized and positioned to be to right of Inputs A and B.

Table 3-1 BBG-1078-ANC-MON Function Menu List — continued

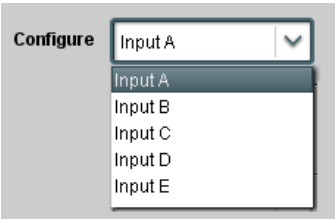
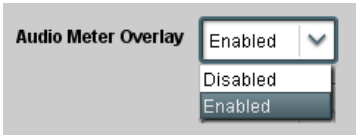
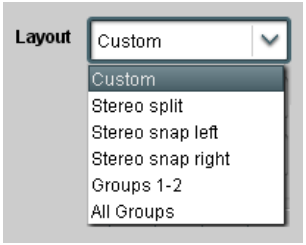
Audio Meter Overlay	Provides controls for each SDI input to insert active-video area audio meters (bars), and set insertion rules and attributes such as layout, size and position.
Note: • Audio meters are correlated with the embedded audio associated only with each respective SDI input. A contiguous group of bars cannot display levels sourced from multiple inputs. However, each video input can be set to display its own audio meters as desired. • When Audio Meter Overlays are enabled for multiple inputs, each meter grouping can be individually positioned, sized, and set up as described here.	
• PiP Configure Select 	Individually selects embedded audio from any of the five video inputs to be selected as source for Audio Meter insertion setup (as described below).
• Meter Insertion Enable/Disable 	Enables or disables Audio Meter insertion for selected input source.
• Layout Select 	Selects from several preset layout templates and custom from the choices shown and depicted below. **Note:** Stereo selections are always correlated to embedded channels 1 and 2.

Table 3-1 BBG-1078-ANC-MON Function Menu List — continued

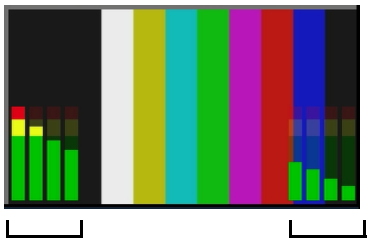
Example Meter Layouts

Stereo snap left

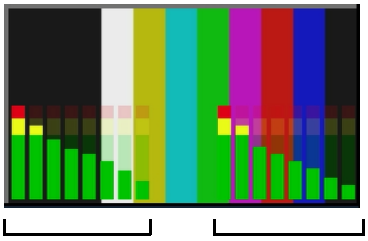
Stereo snap right

Stereo split

Groups 1-2



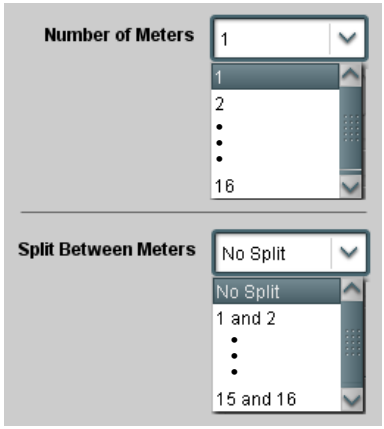
All Groups

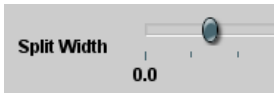


Custom

In this example, ch 1-4 on left, and ch 5-6 on right; 6 meters total

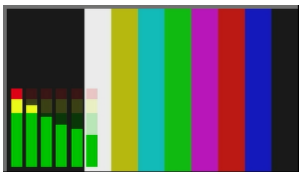
- **Number of Meters / Split Between Meters / Position (Custom Mode only)**





Where **Custom** mode is selected, allows for custom number of meter channels displayed, as well as a split between meters (if desired) which can be set between any pair.

Split Width controls sets the space between the space between the division set using the **Split Between Meters** control.



Split Width set at minimum (no split)

Split Width set at maximum (split pushes 2nd pair flush right)

Position controls raise the meter base when the control setting is increased, and move the display as a unit left or right.

Note: Where custom channel number complement is configured, channel correlation is always contiguous assignments starting at embedded channel 1.

Table 3-1 BBG-1078-ANC-MON Function Menu List — continued

Audio Meter Overlay	(continued)
• **Meter Width Control** 	Sets the relative height of the audio bars.  **Width** set at middle  **Width** set at less
• **Meter Height Control** 	Sets the relative height of the audio bars.  **Height** set at middle  **Height** set at less
• **Meter Opacity Control** 	Sets the relative opacity of the audio bars.  **Opacity** set at middle  **Opacity** set at less
• **Meter Brightness Control** 	Sets the relative brightness of the Audio Meter insertion.

Table 3-1 BBG-1078-ANC-MON Function Menu List — continued

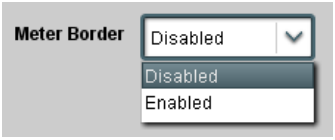
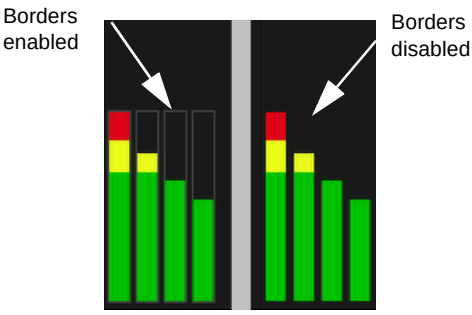
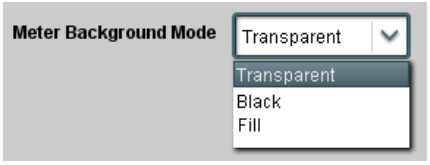
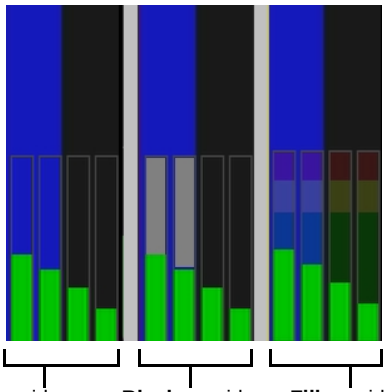
Audio Meter Overlay	(continued)
• **Meter Borders Select** 	Enables or disables limit borders surrounding each audio bar. 
• **Meter Background Select** 	Provides choice of three background themes for each meter bar. 

Table 3-1 BBG-1078-ANC-MON Function Menu List — continued

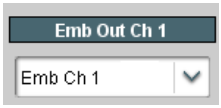
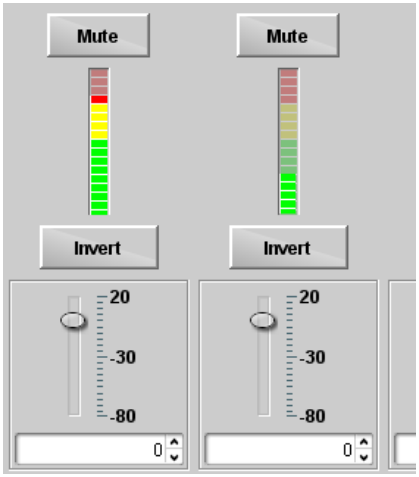
Output Audio	Provides an audio crosspoint allowing the audio source selection for each embedded audio output channel. Also provides Gain, Phase Invert, and Muting controls and peak level meters for each output channel.
Note: • **Embedded Ch 2** thru **Embedded Ch 16** have controls identical to the **Source**, **Gain**, **Mute**, and **Invert** controls described here for **Embedded Ch 1**. Therefore, only the **Embedded Ch 1** controls are shown here. • For each channel, its source and destination should be considered and appropriately set. Unused destination channels should be set to the **Silence** selection.	
• **Embedded Audio Output Input Source** 	Selects the four-group embedded audio to be embedded in the output embedded SDI audio (and HDMI Ch1 - Ch8 embedded audio). (In this example, **Input A** audio is selected as the output four-group audio.)
• **Group Enable/Disable Controls** 	Allows enable/disable of embedded audio groups 1 thru 4 on program video output to accommodate some legacy downstream systems that may not support all four embedded audio groups. **Note:** Changing the setting of this control will result in a noise burst in all groups. This control should not be manipulated when carrying on-air content.
• **Embedded Output Channel Source** 	Using the drop-down list, selects the audio input source to be embedded in the corresponding embedded output channel from embedded Ch 1 thru Ch 16 choices.
• **Channel Mute/Phase Invert/Gain Controls and Peak Level Display** 	Provides **Mute** and phase **Invert** channel controls, as well as peak level meter for each output channel. (Meter shows level as affected by Level control.) **Gain** controls allow relative gain (in dB) control for the corresponding destination Embedded Audio Group channel. (-80 to +20 dB range in 1.0 dB steps; unity = 0 dB) **Note:** Although this device can pass non-PCM data such as Dolby® E or AC-3, setting the gain control to any setting other than default 0 will corrupt Dolby data.

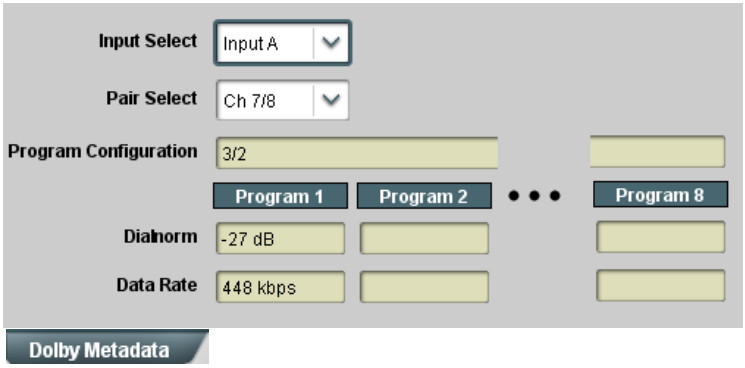
Table 3-1 BBG-1078-ANC-MON Function Menu List — continued

	Provides Dolby metadata display for Dolby input audio. Also provides LKFS setup and measurement displays for PCM input audio.

Dolby Metadata subtab shows Dolby status for embedded pair carrying Dolby content.

For selected SDI input (Input A in this example) and selected embedded pair (pair Ch 7/8 in this example), Dolby status is shown as in the example here.

If selected pair is not carrying Dolby, blanks are shown for all fields.



LKFS subtab allows LKFS channel line-up setup and averaging window setup for PCM payload. Using the settings performed here, this is the data that is shown when LKFS is selected as a status field in Status Field Layout Controls (p. 3-12).

Note: LKFS is available only for SDI Input A.

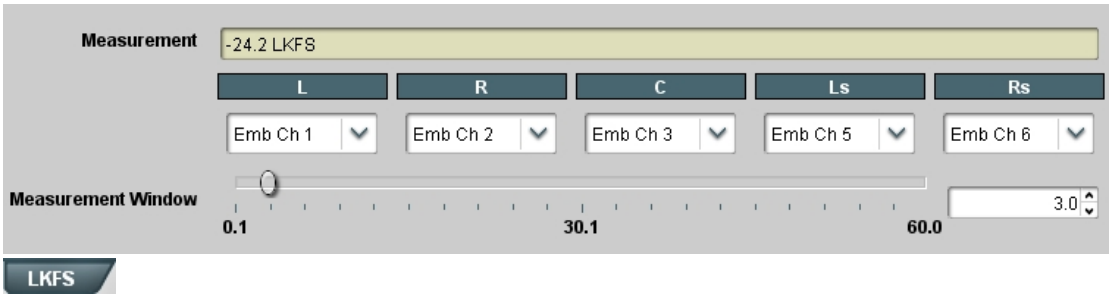


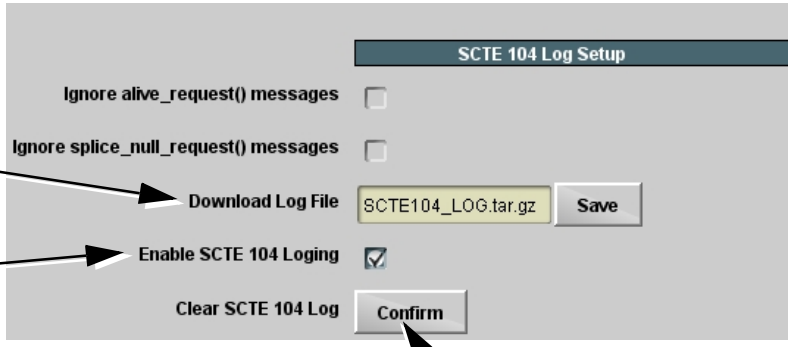
Table 3-1 BBG-1078-ANC-MON Function Menu List — continued

SCTE 104	Provides controls and status displays for displaying SCTE 104 messages including detailed history and metrics. Setup performed here is propagated to Status Field(s) set to display SCTE 104 as a SCTE message summary.
• **SCTE 104 Log Setup**	Provides controls for setting up, saving, and clearing SCTE 104 message activity logging.

Ignore... check boxes allow periodic heartbeat messages to be suppressed from the log.

Download Log File allows log file opens browser to allow download file save.

Enable SCTE 104 Logging serves as master control to enable logging. **This must be checked to generate log files.**



Note: Although the history display shows last three most recent messges, log file records all activity until cleared.

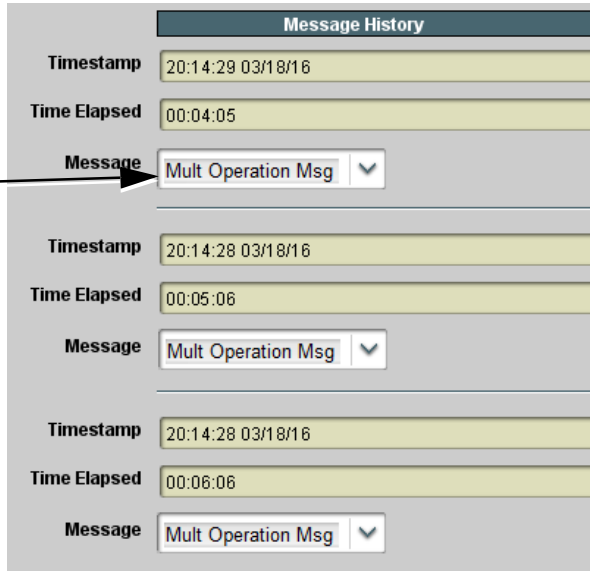
Clear SCTE 104 Log clears any logged data and sets up empty log for new logging file.

• **SCTE 104 Message History Display**	Provides a summary of last three messages received. Also provides an expandable tree view which provides detail status and metrics for each displayed time-stamped activity.

Last three most recent messages are displayed. (The summary shown here is propagated to Status Field display set for SCTE 104 Status (see SCTE 104 Display (p. 3-13) for details.)

Where **Mult Operation Msg** (Multi-Operation Message) appears, this indicates an expansion tree can be opened, showing more details and metrics related to the activity.

Click the arrow to expand or collapse the tree view (as shown in example below). Where text is available, this can also be accessed using this view.



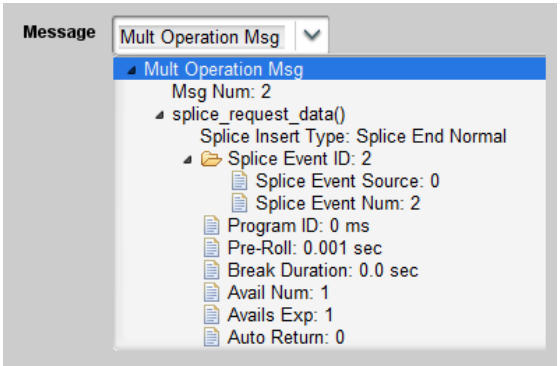


Table 3-1 BBG-1078-ANC-MON Function Menu List — continued

User DID/SDID Monitoring	Provides controls and status displays for setting up DID/SDID monitoring. Setup performed here is propagated to Status Field(s) set to display User DID/SDID monitoring.

User DID/SDID Monitoring allows user definition of up to three DID/SDID monitoring locations.

Note: • DashBoard 4.1 and earlier has DID/SDID settings entered as decimal values. Newer DashBoard versions use hexadecimal entries.

• DID/SDID locations are set here. However, the SDI stream queried is set using the Source Select drop-down on the Status Field (1 thru 15) controls (see Status Field Layout Controls (p. 3-12)). Multiple SDI streams can be checked for user DID/SDID using multiple Status Fields set for the desired SDI stream complement.

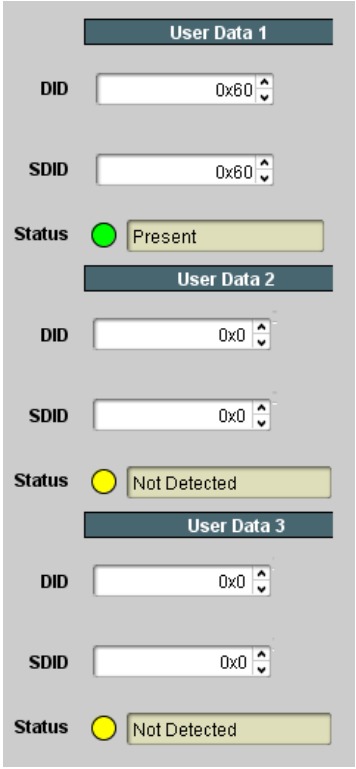


Table 3-1 BBG-1078-ANC-MON Function Menu List — continued

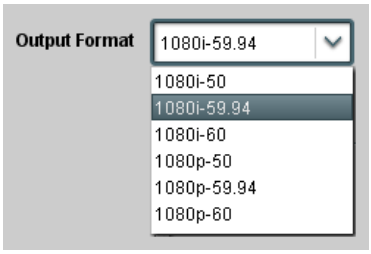
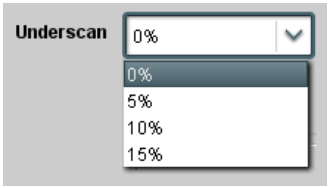
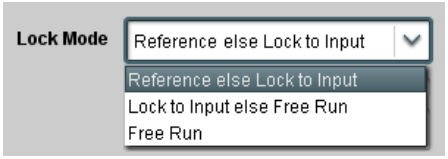
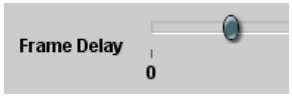
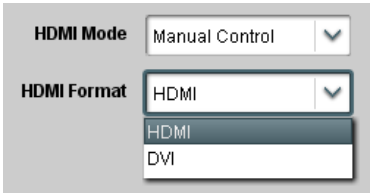
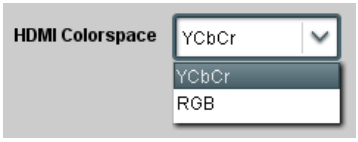
Output Format	Provides controls to set merged multiviewer/status output raster for SDI and HDMI outputs. Also provides settings to force an HDMI or DVI output suitable for direct connection to monitors using a DVI input in case the connection is not detected by the monitor. Also provides color mode controls to match HDMI/DVI output to the color space of the monitor.
• **Output Format Selector** 	Provides conversions to formats as shown. **Note:** • Although drop-down and card will allow output video raster/rate choices unrelated to the input rates (for example, PAL 50Hz rate for NTSC 59.94Hz input rates), cross-rate conversion choices should not be used for critical applications (frames will be dropped when performing such conversions). • Background fill of this device is optimized for 1080 formats, therefore all output format choices are limited to 1080 choices.
• **Underscan Select** 	Provides underscanning to reduce the merged output raster size by choices shown.
• **Video Lock Mode Select** 	Selects lock to reference functions from the choices shown and described below. • **Lock to Reference:** Output video is locked to external reference received on the device **REF LOOP** input, else input. • **Lock to Input A:** Uses Input A program video input video signal as the reference standard, else free-run. • **Free Run:** Quadrant inputs and output video is locked to the card's internal clock. Output video is **not** locked to external reference.
• **Frame Delay Control** 	When Framesync is enabled, specifies the smallest amount of latency delay (frames held in buffer) allowed by the frame sync. The frame sync will not output a frame unless the specified number of frames are captured in the buffer.
• **HDMI Mode Control** 	Sets HDMI/DVI output to use the connected monitor to inform BBG-1078-ANC-MON to automatically detect the monitor format, or to use manual (forced) control. Where the monitor may not be able to provide this handshake signal, it is recommended to use **Manual** mode and force the desired mode as described below.

Table 3-1 BBG-1078-ANC-MON Function Menu List — continued

Output Format	**(continued)**
• **HDMI/DVI Format Manual (Forced) Mode Control** 	When set to Manual Control, sets HDMI output as forced HDMI or DVI mode.
• **HDMI Colorspace Control** 	Forces output colorspace as either YCbCr or RGB.

Note: The HDMI output on this device conforms with CEA-861D HDMI audio channel line-up specifications. As such, a swap between the C and LFE channels for the HDMI output is automatically performed.

If connecting to a device that does not meet CEA-861D HDMI, a Ch3 / Ch4 swap using the Output Audio Routing/Controls may be required to effect desired C - LFE line-up.

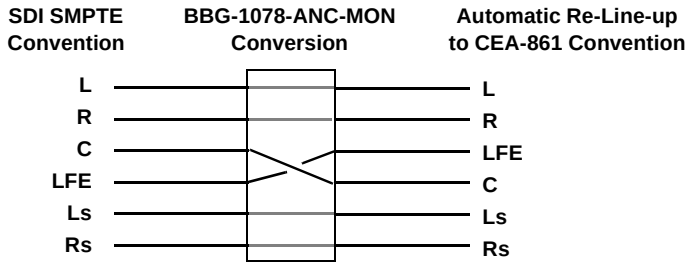


Table 3-1 BBG-1078-ANC-MON Function Menu List — continued

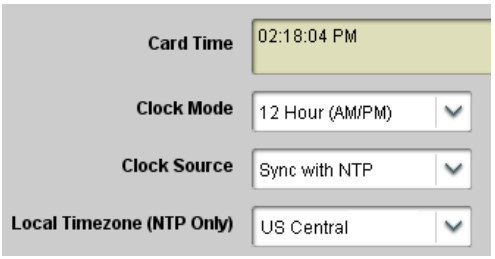
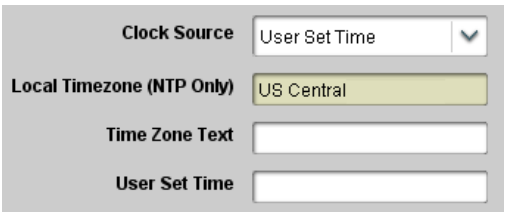
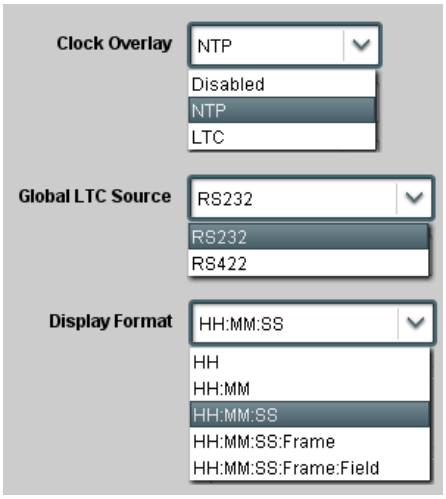
<table>
<tr><td>Clock</td><td>Provides controls for setting and inserting wall-clock time into merged output or as a per-PiP insertion selection.</td></tr>
<tr><td>• Clock Mode / Set Controls
 
</td><td>Allows clock time and display mode to be set as follows:
• Clock Mode selects between 24-hour (“military”) time, or time using AM and PM designations.
• Clock Source selects user-entered arbitrary time or NTP-synced time.
• Local Timezone provides timezone offsets for localization when using NTP time.
• Card Time display shows the currently configured running wall-clock time (whether set as user-entered arbitrary time or NTP-synced time).
Note: NTP syncing is only done at various intervals. To invoke resyncing, power-cycle to device to immediately sync with NTP.</td></tr>
<tr><td>• User Set Mode Controls
 
</td><td>When Clock Source is set to User Set Time, allows entry of user time, and also allows entry of user text identifying the time zone or other text (this time zone text is displayed when entered for either user time or NTP time)
Click Set Time to invoke user set time.</td></tr>
<tr><td colspan="2">Note: Clock can be burned in as an overlay over the merged split output (using the controls below) and/or as a per-PiP insertion using the individual PiP 1 thru PiP 5 UMD/Idents insertion controls. Where insertion as a per-PiP Ident burn-in is desired, the enable control below does not have to be set to Enabled.</td></tr>
<tr><td>• Clock Overlay Select/Enable
 
</td><td>• Clock Overlay allows wall-clock time to be burned into the overall merged video output. Also allows selecting source as NTP/User or external LTC.
• Global LTC Source selects from RS232 or RS422 external timecode source when LTC is selected above.
• Display Format (when LTC is selected above) selects the format of timecode string burn-in overlay insertion from choices shown.
.
Clock Overlay set to Enabled inserts a clock burn-in into the merged video output and not directly bound to any PiP area
 
</td></tr>
</table>

Table 3-1 BBG-1078-ANC-MON Function Menu List — continued

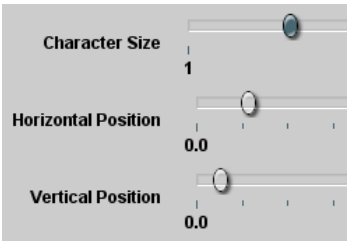
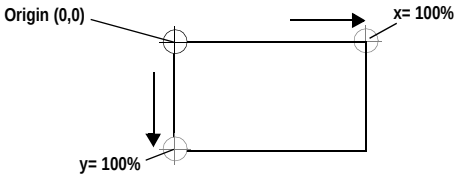
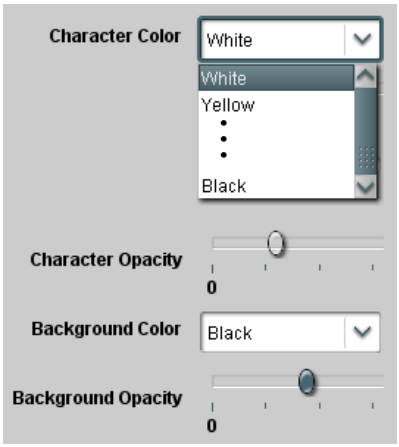
Clock	(continued)
• **Clock Character Size and Custom Position Controls** 	**Horizontal** and **Vertical Position** controls set the origin point for the clock overlay. 
• **Clock Text Character/Background Attributes Controls** 	Provides independent controls for setting the color and opacity of the clock text and its background. • **Color** drop-downs set text or background color from multiple choices. • **Opacity** controls set text or background opacity from 0% (least opacity) to 100% (full opacity).

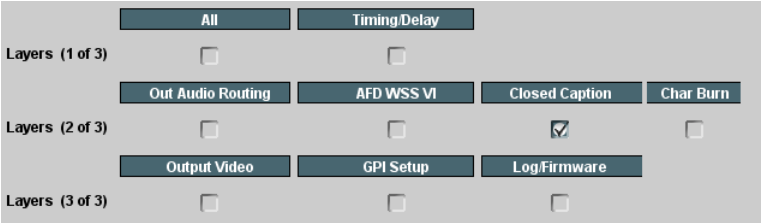
Table 3-1 BBG-1078-ANC-MON Function Menu List — continued

Presets

Allows user control settings to be saved in a one-button Preset and then loaded (recalled) as desired, and provides a one-button restore of factory default settings.

• Preset Layer Select

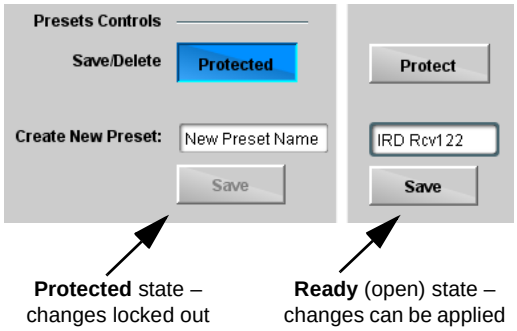
Allows selecting a functional layer (or "area of concern") that the preset is concerned with. Limiting presets to a layer or area of concern allows for highly specific presets, and masks changing card settings in areas outside of the layer or area of concern.



Default **All** setting will "look" at all device settings, and save and invoke **all** settings when the preset is invoked (loaded).

Selecting a layer (in this example, "Closed Caption") will set the preset to **only** "look at" and "touch" closed captioning settings and save these settings under the preset. When the preset is invoked (loaded), **only** the closed caption layer is "touched". Invoking a layered preset will not change any settings that are in effect that are outside of the layer of concern.

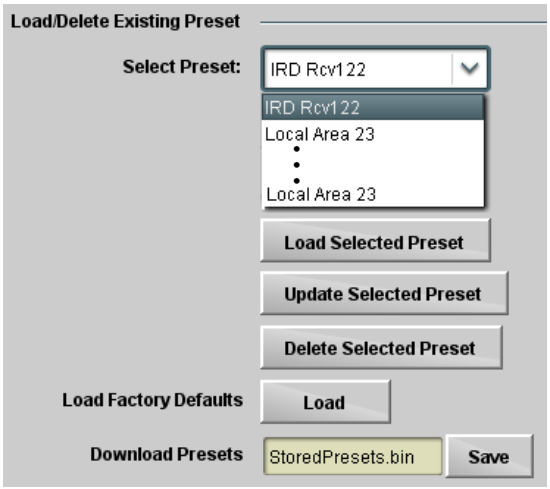
• Preset Enter/Save/Delete



Locks and unlocks editing of presets to prevent accidental overwrite as follows:

- **Protect (ready):** This state awaits Protected and allows preset Save/Delete button to save or delete current settings to the selected preset. **Use this setting when writing or editing a preset.**
- **Protected:** Toggle to this setting to lock down all presets from being inadvertently re-saved or deleted. **Use this setting when all presets are as intended.**
- **Create New Preset:** Field for entering user-defined name for the preset being saved (in this example, "IRD Rcv122").
- **Save:** Saves the current settings under the preset name defined above.

• Preset Save/Load Controls



- **Select Preset:** drop-down allows a preset saved above to be selected to be loaded or deleted (in this example, custom preset "IRD Rcv122").
- **Load Selected Preset** button allows loading (recalling) the selected preset. When this button is pressed, the changes called out in the preset are immediately applied.
- **Update Selected Preset** button allows saving any card settings changes to the selected preset. When this button is pressed, the changes in effect are rolled into the selected preset.
- **Delete Selected Preset** button deletes the currently selected preset.
- **Load Factory Defaults** button allows loading (recalling) the factory default preset. When this button is pressed, the changes called out in the preset are immediately applied.

Note: Load Factory Defaults functions with no masking. The Preset Layer Select controls have no effect on this control and will reset **all** layers to factory default.

- **Download Presets** saving the preset files to a folder on the connected computer.

Table 3-1 BBG-1078-ANC-MON Function Menu List — continued

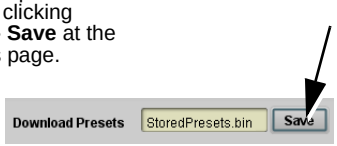
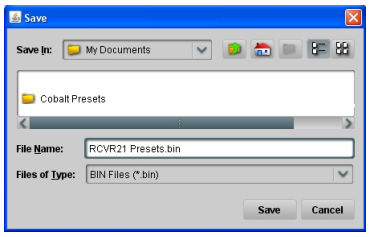
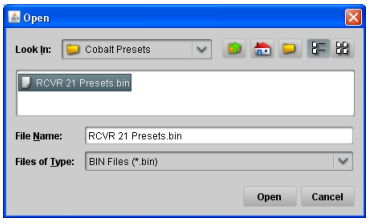
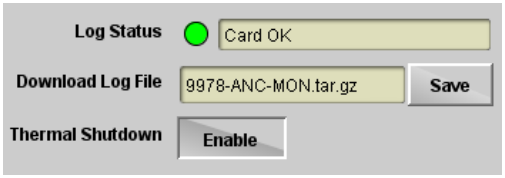
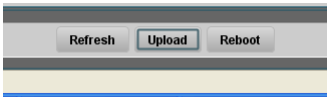
Presets	**(continued)**
Download (save) card presets to a network computer by clicking **Download Presets – Save** at the bottom of the Presets page.  Browse to a desired save location (in this example, *My Documents\Cobalt Presets*). The file can then be renamed if desired (*RCVR21 Presets* in this example) before committing the save. 	**Upload (open)** card presets from a network computer by clicking **Upload** at the bottom of DashBoard.  Browse to the location where the file was saved on the computer or drive (in this example, *My Documents\Cobalt Presets*). Select the desired file and click **Open** to load the file to the card.  **Note:** • Preset transfer between card download and file upload is on a **group** basis (i.e., individual presets cannot be downloaded or uploaded separately). • After uploading a presets file, engagement of a desired preset is only assured by selecting and loading a desired preset as described on the previous page.
Admin	Provides a global operating status and allows a log download for factory engineering support. Also provides controls for selecting and loading firmware upgrade files.
• **Log Status and Download Controls** 	• **Log Status** indicates overall internal operating status. • **Download Log File** allows a operational log file to be saved to a host computer. This log file can be useful in case of a device error or in the case of an operational error or condition. The file can be submitted to Cobalt engineering for further analysis. • **Thermal Shutdown** enable/disable allows the built-in thermal failover to be defeated. (Thermal shutdown is enabled by default). **CAUTION** **The BBG-1078-ANC-MON FPGA is designed for a normal-range operating temperature around 85° C core temperature. Operation in severe conditions exceeding this limit for non-sustained usage are within device operating safe parameters, and can be allowed by setting this control to Disable. However, the disable (override) setting should be avoided under normal conditions to ensure maximum device protection.**

Table 3-1 BBG-1078-ANC-MON Function Menu List — continued

Admin	**(continued)**
• **Firmware Upgrade Controls**	Firmware upgrade controls allow a selected firmware version (where multiple versions can be uploaded to the device's internal memory) to invoke an upgrade to a selected version either instantly, or set to install on the next device reboot (thereby allowing device upgrade downtime to be controlled at a scheduled point in time).

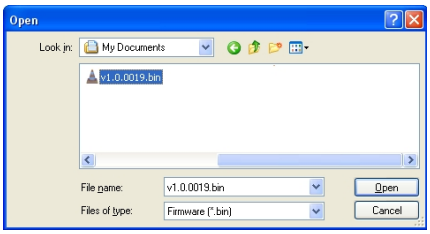
Note: The page/tab here allows managing multiple firmware versions saved on the device. New upgrade firmware from our web site can always be directly uploaded to the device without using this page. Instructions for firmware downloading to your computer and uploading to the device can be found at the **Support>Firmware Downloads** link at www.cobaltdigital.com.

1. Access a firmware upgrade file from a network computer by clicking **Upload** at the bottom of DashBoard.



2. Browse to the location of the firmware upgrade file (in this example, *My Documents\v1.0.0019.bin*).

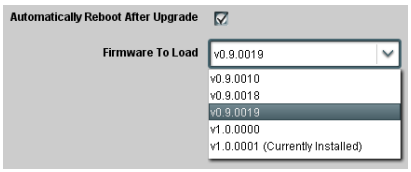
3. Select the desired file and click **Open** to upload the file to the card.



• **Immediate firmware upload.** The card default setting of **Automatically Reboot After Upgrade** checked allow a selected firmware version to be immediately uploaded as follows:

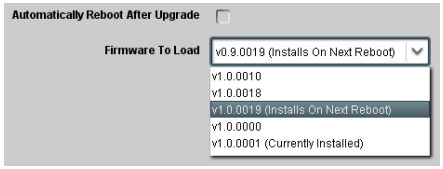
1. Click **Firmware To Load** and select the desired upgrade file to be loaded (in this example, "v1.0.0019").

2. Click **Load Selected Firmware**. The card now reboots and the selected firmware is loaded.



• **Deferred firmware upload.** With **Automatically Reboot After Upgrade** unchecked, firmware upgrade loading is held off until the card is manually rebooted. This allows scheduling a firmware upgrade downtime event until when it is convenient to experience to downtime (uploads typically take about 60 seconds).

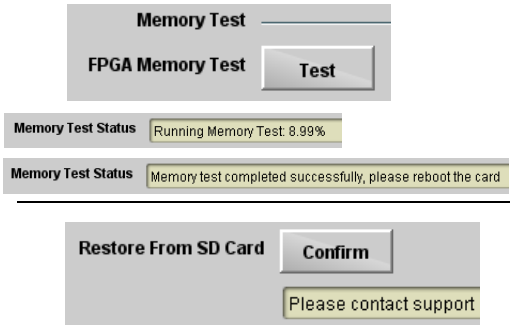
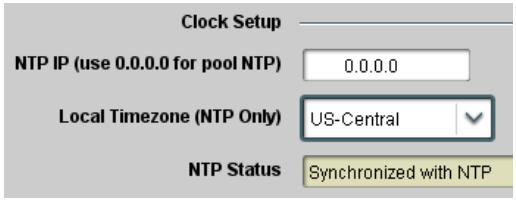
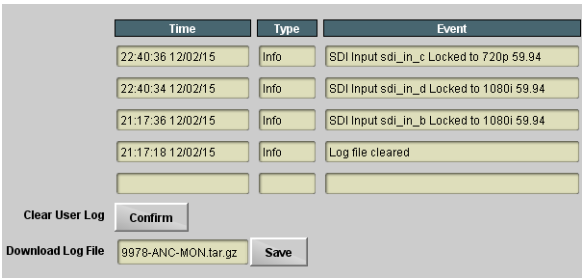
1. Click **Firmware To Load** and select the desired upgrade file to be loaded (in this example, "v1.0.0019"). Note now how the display shows "Installs on Next Reboot".



2. Click **Load Selected Firmware**. The card holds directions to proceed with the upload, and performs the upload only when the card is manually rebooted (by pressing the **Reboot** button).

3. To cancel a deferred upload, press **Cancel Pending Upgrade**. The card reverts to the default settings that allow an immediate upload/upgrade.

Table 3-1 BBG-1078-ANC-MON Function Menu List — continued

Admin	**(continued)**
• **Device Check and Restore Utilities** 	**Memory Test** allows all cells of the device FPGA memory to be tested. This control should **only** be activated under direction of product support. Exercising the memory test is **not** part of normal device maintenance. **Restore from SD Card** allows device rendered inoperable to be restored using an SD memory card fitted to the device internal SD slot. Product support must be contacted prior to performing this operation. Use of any SD card not supplied by support can corrupt the device.
• **NTP Clock Setup** 	Allows device NTP clock IP source and localization. This is the clock/time device will use for logs and other recorded actions. • **NTP IP** sets the IP address where NTP is to be obtained. • **Local Timezone** sets the recorded time to the localized time. • **NTP Status** shows if time is synced with NTP or if an error exists.
User Log	Automatically maintains a log of user actions and input lock status.
User Log shows input lock and other user conditions (with most recent event at top of list). **Clear User Log** clears all entries. **Download Log File** opens a browser allowing the log file to be saved on the host machine.	

Uploading Firmware Using Web Interface and GUI

Firmware (such as upgrades, option keys, and presets .bin files) can be uploaded to BBG-1078-ANC-MON directly via the web html5 interface without going through DashBoard (see Figure 3-8). In addition to allowing uploads without needing a DashBoard connection, this method transfers files typically much faster than using DashBoard.

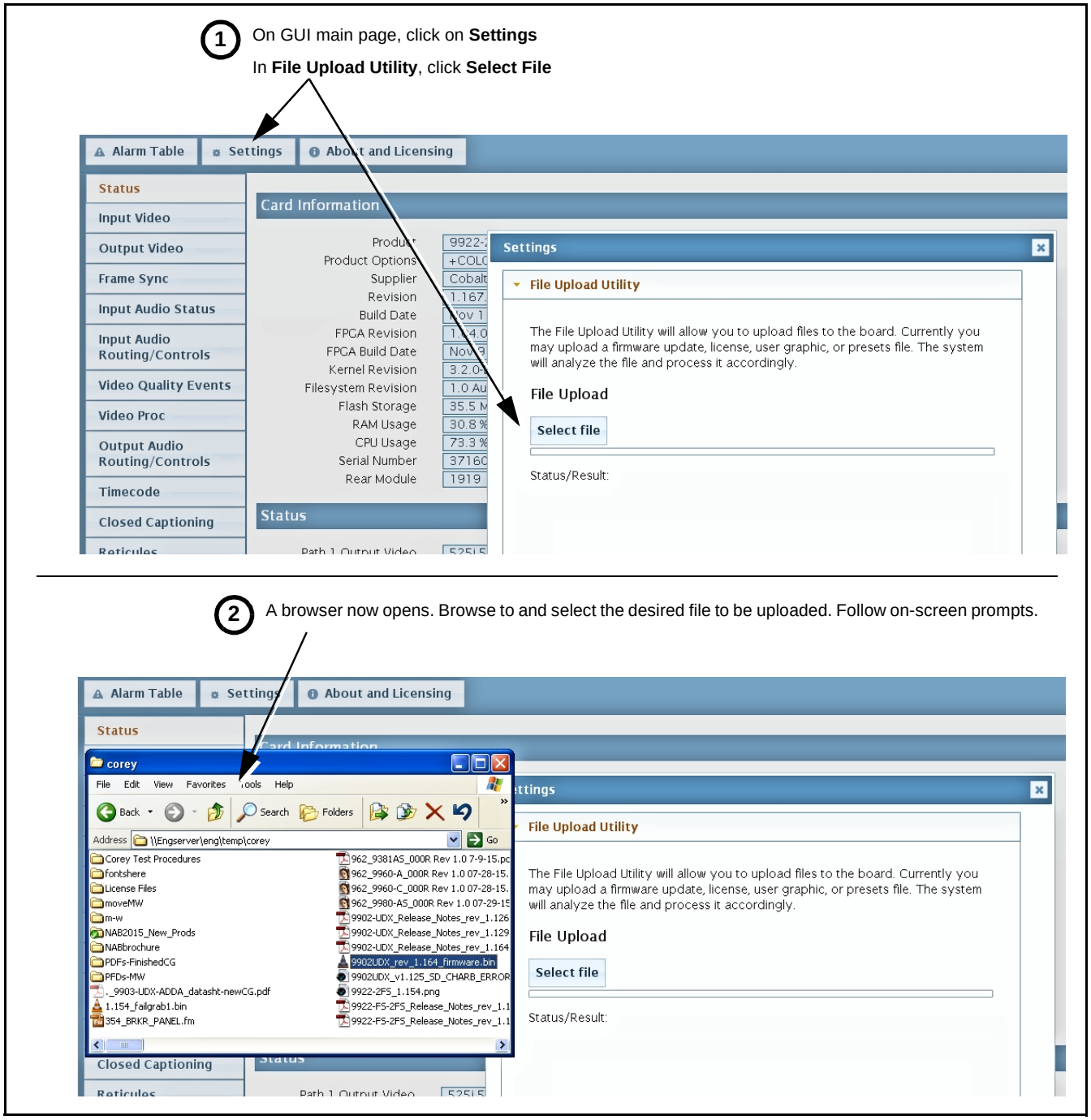


Figure 3-8 Uploads Using Web Interface/GUI

Troubleshooting

This section provides general troubleshooting information and specific symptom/corrective action for the BBG-1078-ANC-MON device and its remote control interface. The BBG-1078-ANC-MON requires no periodic maintenance in its normal operation; if any error indication (as described in this section) occurs, use this section to correct the condition.

Error and Failure Indicator Overview

The BBG-1078-ANC-MON itself and its remote control systems all (to varying degrees) provide error and failure indications.

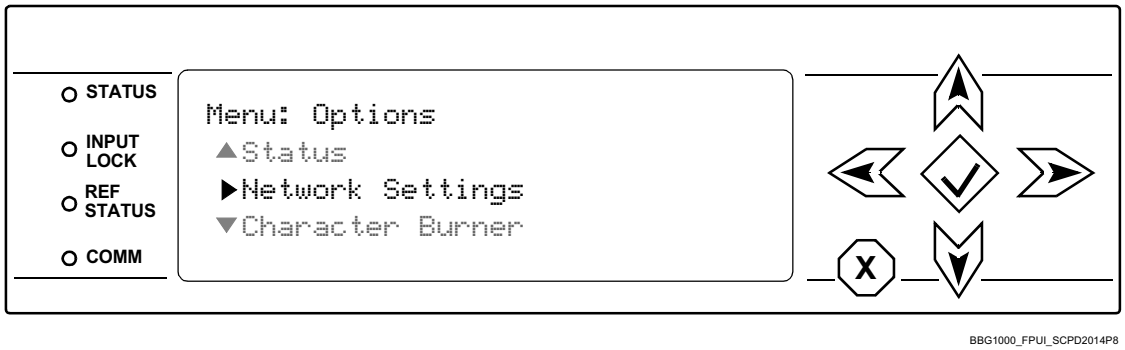
The various BBG-1078-ANC-MON and remote control error and failure indicators are individually described below.

Note: The descriptions below provide general information for the various status and error indicators. For specific failures, also use the appropriate subsection listed below.

- Basic Troubleshooting Checks (p. 3-36)
- BBG-1078-ANC-MON Processing Error Troubleshooting (p. 3-37)

BBG-1078-ANC-MON Front Panel Status/Error Indicators and Display

Figure 3-9 shows and describes the BBG-1078-ANC-MON front panel indicators and display. These indicators and the display show status and error conditions relating to the device itself and remote (network) communications (where applicable). Because these indicators are part of the device itself and require no external interface, the indicators are particularly useful in the event of communications problems with external devices such as network remote control devices.



Item	Function
Alphanumeric Display	Shows device statuses
STATUS LED	Illuminates GREEN indicating BBG-1078-ANC-MON has successfully powered-up and passed self-tests.
INPUT LOCK LED	Illuminates GREEN indicating signal presence for currently-selected input video path. Illuminates ORANGE if input video is lost.
REF STATUS LED	Illuminates GREEN indicating BBG-1078-ANC-MON is receiving valid reference when set up for framesync operation. Illuminates ORANGE if reference is lost or incompatible with input video.
COMM LED	Illuminates GREEN when device is communicating with network connection. Illuminates ORANGE if connection is lost.
Note: The LEDs listed above are always illuminated under normal conditions. An LED that is not lit indicates an error with the device.	

Figure 3-9 BBG-1078-ANC-MON Status Indicators and Display

Basic Troubleshooting Checks

Failures of a general nature (affecting many cards and/or functions simultaneously), or gross inoperability errors are best addressed first by performing basic checks before proceeding further. Table 3-2 provides basic system checks that typically locate the source of most general problems. If required and applicable, perform further troubleshooting in accordance with the other troubleshooting tables in this section.

Table 3-2 Basic Troubleshooting Checks

Item	Checks

Verify power presence and characteristics	• On the BBG-1078-ANC-MON, in all cases when power is being properly supplied all indicators should be illuminated. Any device showing no illuminated indicators should be cause for concern.
	• Check the Power Consumed indication for the BBG-1078-ANC-MON. This can be observed using the Status front-panel or web UI pane.
	  • If display shows **no** power being consumed, either the frame power supply, connections, or the BBG-1078-ANC-MON itself is defective.
	  • If display shows **excessive** power being consumed (see Technical Specifications (p. 1-15) in Chapter 1, “Introduction”), the BBG-1078-ANC-MON may be defective.

Check Cable connection secureness and connecting points	Make certain all cable connections are fully secure (including coaxial cable attachment to cable ferrules on BNC connectors). Also, make certain all connecting points are as intended. Make certain the selected connecting points correlate to the intended device inputs and/or outputs. Cabling mistakes are especially easy to make when working with large I/O modules.
Check status indicators and displays	On BBG-1078-ANC-MON front panel and web interface indicators, red indications signify an error condition. If a status indicator signifies an error, proceed to the following tables in this section for further action.
Troubleshoot by substitution	All devices can be hot-swapped, replacing a suspect device with a known-good item.

BBG-1078-ANC-MON Processing Error Troubleshooting

Table 3-3 provides BBG-1078-ANC-MON processing troubleshooting information. If the BBG-1078-ANC-MON exhibits any of the symptoms listed in Table 3-3, follow the troubleshooting instructions provided.

In the majority of cases, most errors are caused by simple errors where the BBG-1078-ANC-MON is not appropriately set for the type of signal being received by the device.

Note:
- The error indications shown below are typical for the corresponding error conditions listed. Other error indications not specified here may also be displayed on DashBoard™ and/or the BBG-1078-ANC-MON status indicators.
- Where errors are displayed on both the BBG-1078-ANC-MON and network remote controls, the respective indicators and displays are individually described in this section.

Table 3-3 Troubleshooting Processing Errors by Symptom

Symptom	Error/Condition	Corrective Action
BBG-1078-ANC-MON shows **Unlocked** message in BBG-1078-ANC-MON Info pane.	No video input present	Make certain intended video source is connected to appropriate BBG-1078-ANC-MON video input. Make certain BNC cable connections are OK.
Cannot see one of five PiPs on output	PiP obscured by another PiP	When custom layouts are being used, it is easy for a PiP to “hide” underneath another PiP. When using this mode, size all PiPs small enough such that a PiP cannot be obscured.
Audio not processed or passed through device	Enable control not turned on	On **Output Audio Routing/Controls** tab, **Audio Group Enable** control for group 1 thru 4 must be turned on for sources to be embedded into respective embedded channel groups.
Selected Status Field does not display data as expected	• Wrong Input Video source selected	• Make certain expected input video source is correlated and selected for the status field (see Input Video Source Select (p. 3-12)).
	• Status Field data type (as selected using Status Select) is not available for selected input	• Some data type displays (such as LKFS and Closed Captioning) are available only for Input A (see Status (Data Type) Select (p. 3-13)).
Selected upgrade firmware will not upload	Automatic reboot after upgrade turned off	Card **Presets** > **Automatically Reboot After Upgrade** box unchecked. Either reboot the card manually, or leave this box checked to allow automatic reboot to engage an upgrade upon selecting the upgrade.

In Case of Problems

Recovering Card From SD Memory Card

New production cards come equipped with an SD card installed in a slot receptacle on the underside of the card. The data on this SD card can be used to restore a card should the card become unresponsive (can't communicate with DashBoard or other remote control). Recovering a card using the procedure here will restore the card to any installed option licenses and the most recent firmware installed.

1. (See Figure 3-10.) Make certain the card has the proper SD card installed in the under-card slot. If SD card is **not** installed, contact Product Support to obtain an SD card.

Note: If unit is a BBG-1000 Series device, remove the top cover before proceeding.

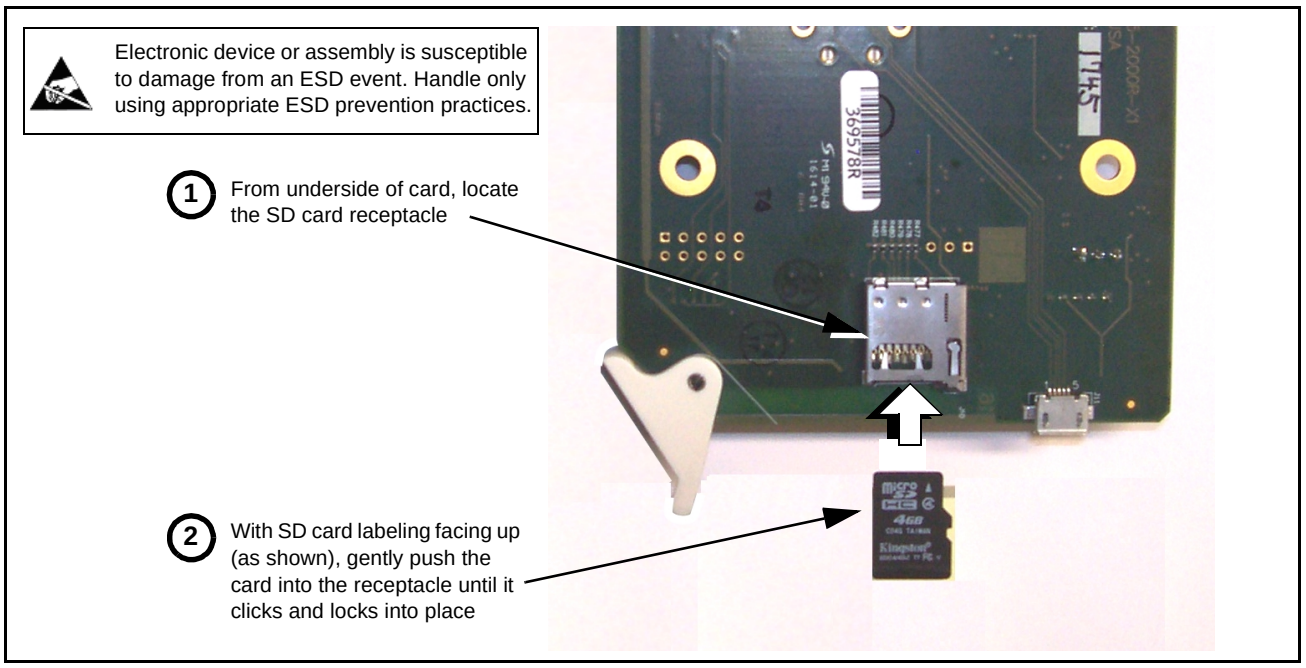


Figure 3-10 SD Card Installation

2. (See Figure 3-11.) With card powered-down, locate the **MMC BOOT** button on the card. Proceed as shown in picture.

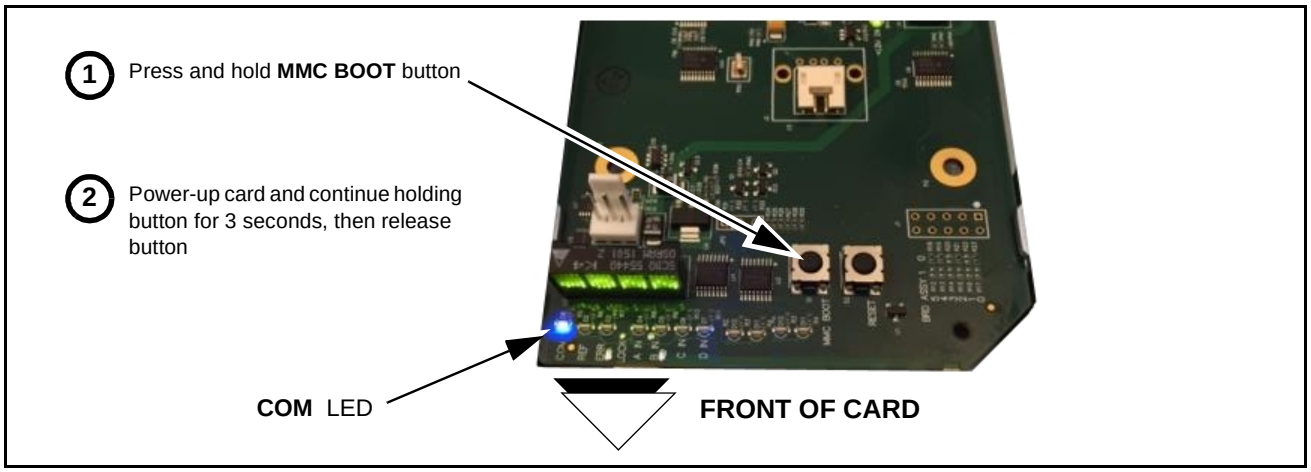


Figure 3-11 MMC Boot Button

3. With button now released, the card will begin reprogramming:
   - **COM** LED illuminates and remains illuminated.
   - When reprogram is complete, **COM** LED turns off, on, and then off again (entire process takes about 1-1/2 minute).
4. Remove power from the card (remove card from slot or power-down BBG-1000 Series unit).
5. Re-apply power to the card. The card/device will display as "***UNLICENSED***" in DashBoard/remote control.
6. In Dashboard or web remote control, go to **Admin** tab and click **Restore from SD Card**. After about 1/2-minute, the card license(s) will be restored and card will be using its most recently installed firmware.
7. Card/device can now be used as normal. On BBG-1000 Series unit, re-install top cover.

Contact and Return Authorization

Should any problem arise with this product that was not solved by the information in this section, please contact the Cobalt Digital Inc. Technical Support Department.

If required, a Return Material Authorization number (RMA) will be issued to you, as well as specific shipping instructions. If required, a temporary replacement item will be made available at a nominal charge. Any shipping costs incurred are the customer's responsibility. All products shipped to you from Cobalt Digital Inc. will be shipped collect.

The Cobalt Digital Inc. Technical Support Department will continue to provide advice on any product manufactured by Cobalt Digital Inc., beyond the warranty period without charge, for the life of the product.

See Contact Cobalt Digital Inc. (p. 1-14) in Chapter 1, "Introduction" for contact information.

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Cobalt Digital Inc.

2506 Galen Drive
Champaign, IL 61821
Voice 217.344.1243 • Fax 217.344.1245
www.cobaltdigital.com