



RMTF-170-3G-TT **RMTF-170-3G-RM**

17.3" Audio/Video Tabletop/Rack Mount Monitors
User Guide

User Guide

Part Number 821824, Revision A

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CHAPTER 1: Installation

Introduction

Overview

The RMTF-170-3G-TT and RMTF-170-3G-RM monitors set a new standard in LCD monitors for broadcast and professional video applications. They provide a 17.3", 10-bit, 1920 x 1080 resolution, 16:9 format, anti-glare IPS LCD screen. All video formats are scaled to fit on the screen in the highest quality using 12-bit digital processing, precision scaling, and gamma correction to produce the best images possible. For use outdoors, an optional Sun Shade (part number 829201) is available for the RMTF-170-3G-TT.

The RMTF-170-3G-TT is a tabletop monitor and the RMTF-170-3G-RM is a rack mounted monitor. Except for the mounting style, these monitors are identical, so for convenience, this manual will generally only refer to them as RMTF-170-3G.

Features

The RMTF-170-3G audio/video monitor is designed for confidence monitoring of two 3G/HD/SD-SDI inputs, one of which has a regenerated output. It also can monitor one HDMI, and one CVBS composite analog video input. The input signals are easily selected and displayed. Two to sixteen audio channels may be selected for visual monitoring on bar graph style level meters. On screen markers, waveform, vector, and histogram displays can be enabled on this full-featured monitor. Focus Assist and Zebra modes can be engaged to assist with camera adjustments. Camera Look Up Tables (LUT) are supported, as well. A single speaker with a left / right mix provides audio monitoring. A headphone jack is also provided for external stereo audio monitoring.

Parameters are selected and adjusted using an On Screen Display (OSD) Menu. There are also four function buttons which can immediately enable or disable selected features. These buttons can double as user preset selectors which can call up any of four preprogrammed video setups.

Safety

Instructions

1. Read, keep, and follow all of these instructions; heed all warnings.
2. Do not use this equipment near water.
3. Use only a dry cloth to clean the equipment.
4. Do not block any ventilation openings.
5. Do not install near any heat source such as a radiator, heat register, amplifier, or

stove.

6. Do not attempt to plug the unit into a two-blade outlet (with only two prongs of equal width).

Important:

By design, this monitor will only plug into a three-prong outlet for your safety. If the plug does not fit into the outlet, contact an electrician to replace the obsolete outlet.

7. Protect the power cord from being walked on or pinched, particularly at plug connection on the equipment and at the socket.
8. Use only the attachments/accessories specified by the manufacturer.
9. Unplug the equipment during lightning storms or when unused for long periods of time.
10. Refer all servicing to qualified service personnel. Servicing will be required under all of the following conditions:
 - a. The equipment has been damaged in any way, such as when the power-supply cord or plug is damaged.
 - b. Liquid had been spilled or objects have fallen onto the equipment.
 - c. The equipment has been exposed to rain or moisture.
 - d. The equipment does not operate normally.
 - e. The equipment has been dropped.

Safety Symbols



The symbol to the left warns of electric shock hazard inside the unit. Disconnect the power cord before removing access panels when installing upgrades. Only qualified service personnel are to operate the equipment with covers removed, and are to exercise caution to avoid personal injury.

Mounting

The RMTF-170-3G-TT is designed to be placed on a tabletop or other flat surface. Position either unit at ear/eye level for best high frequency response and visual observation of the display screen. Please adhere to the clearances listed in Table 1-1.

The RMTF-170-3G-RM is designed to be mounted in 6RU of a standard 19" rack. It may be tilted forward for easier viewing. Position either unit at ear/eye level for best high frequency response and visual observation of the display screen. Please adhere to the following clearances:

Table 1-1: Recommended Clearances

| Clearance | Surface |
|-----------|------------------------------------------|
| 24" | Front |
| 3" | Rear |
| 2" | Sides |
| 1.75" | Top and Bottom (if near other equipment) |
| 0" | Top and Bottom (if no other equipment) |

Heat Dissipation

The ambient temperature near the product should not exceed 40° Celsius (104° Fahrenheit). When rack mounting, adjacent devices can be rack mounted in proximity to the unit if this temperature is not exceeded. Otherwise, allow a 1RU (1.75"/44.45mm) space above and below the unit for air circulation. For table top operation, in warm environments, allow an inch of space above and below the unit for air circulation.

Important

The heat generated by the digital circuitry, power supplies, and other components is vented by slots in the back of the unit. Therefore, as a safety precaution, you must allow proper ventilation on these surfaces.

Sympathetic Vibration

Sympathetic vibration from other equipment (cables, etc.) in the rack may be serious enough to interfere with the unit's sound quality. If you experience sympathetic vibrations, use thin card stock, felt, foam, or weather-stripping between the vibrating surfaces. Tie loose cables securely with cable ties.

Mechanical

The sturdy chassis is very shallow from front to back making it very stable when used with its table stand. It can be tilted forward or backward for viewing, if necessary. The weight of internal components is distributed fairly evenly around the unit.

Electrical Interference

Be careful to avoid mismatched cable types and other similar causes of undesired reflections in digital signal systems. If severe enough, such reflections can result in corruption of the digital data stream. As with any audio equipment, maximum immunity from electrical interference requires the use of shielded cable; however, satisfactory results can sometimes be obtained without it. The internal circuitry ground is connected to the chassis.

Power

The unit connects to the AC mains power source (14W, 100 to 240 VAC, ±10%,

50/60Hz) through the IEC connector provided on the rear panel. Alternately, it can be powered from a camera battery, which installs on the rear panel.

When the mains plug or appliance coupler is used as the disconnect device, the disconnect device should remain operable.

Compliance

FCC

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

ICES-003

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

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

CHAPTER 2: Local Operation

The RMTF-170-3G front and rear panels are described in this chapter.

Front Panel

Figure 2–1: Front Panel Layout



1. **Tally Lights:** This tri-color (red/green/amber) light is controlled through a RJ45 connector on the rear panel. For more information about the RJ45 connector, refer to the Rear Panel section of this chapter. When first connected to power, the Tally Light glows amber until the unit is ready for operation.
2. **LCD Screen:** The LCD screen displays the audio meters, waveform, vector, or histogram displays, menus, and OSD features superimposed over the video.
3. **Power:** The **Power** button turns the LCD screen to On or Standby mode. The adjacent **Power Indicator** glows green to indicate On and red to indicate Standby. To prevent the operator from accidentally switching the monitor to Standby mode, the **Power** button must be held for 2 seconds.
4. **Input:** The **Input** button selects the video/audio input to be monitored from the

various connectors on the rear panel. The currently selected input source is indicated when the **Input** button is pressed. Repeated presses change the input source.

5. **F1/U1, F2/U2, F3/U3, F4/U4 Function/User Keys:** These keys are dual purpose. Momentarily pressing **F1, F2, F3,** or **F4** will activate the assigned function. The default assignments are as listed in Table 2-1. The action of each **Function Key** can be selected from a wide variety of actions in the Function Key Menu as described in Table 2-9. Holding **U1, U2, U3,** or **U4** for 2 seconds will instead activate the **User Preset** associated with the key. Refer to Table 2-9.

Table 2-1: Default Function Key Actions

| Key | Default Action |
|-----|----------------|
| F1 | Scan |
| F2 | Marker |
| F3 | Audio Meters |
| F4 | Blue Only |

6. **OK/Menu:** Press this button to display the OSD Menu. Refer to the **OSD Menus** section of this chapter for operation and content of these menus. When the OSD Menu is displayed, pressing this button accepts selections in the menus and sub-menus.
7. **Down:** When the OSD Menu is not being displayed, pressing this button displays the Quick Menu, which cycles through frequently used volume and image controls. Refer to the **Quick Menu** section of this chapter. When the OSD Menu is displayed, the **Down** button navigates down through the menu and sub-menu selections and can be used to adjust the settings.
8. **Up:** When the OSD Menu is displayed, the **Up** button navigates down through the menu and sub-menu selections and can be used to adjust the settings. It also adjusts the items in the Quick Menu.
9. **Left/Exit:** In the OSD Menu, this button backs out of selections. In the Quick Menu, this button reduces the value of any selection.
10. **Right/Next:** In the OSD Menu, this button advances into selections, or advances to the next menu page. In the Quick Menu, it increases the value of any selection.

On-Screen Display Features

Functions and parameters can be selected and adjusted using the On Screen Display (OSD) Menu. Refer to the **OSD Menus** section of this chapter.

Overlays can be added by the operator for **Area & Safety Markers, Center Marker,** and to display names as **IMD (In Monitor Display)** for identification.

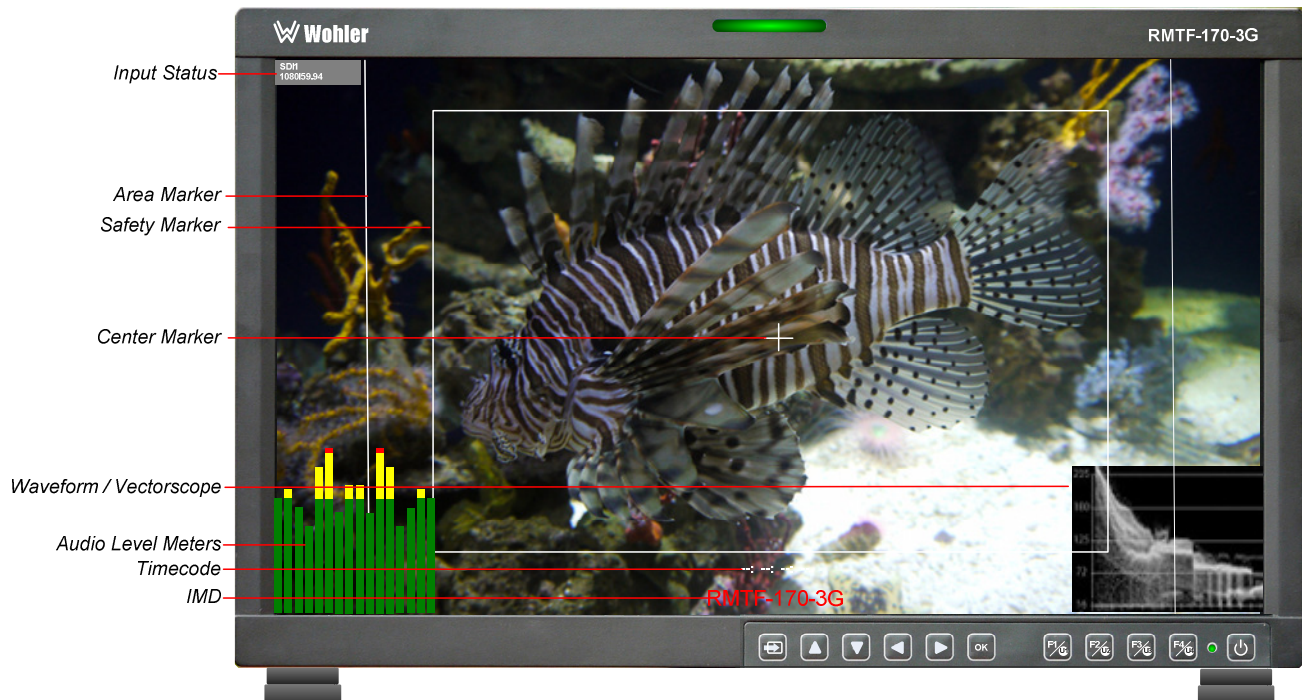
Video effects such as **Monochrome, Blue Only, Focus Assist, False Color Exposure Assist,** and other features can be used to assist setup. For convenience and quicker access, these and other features can be assigned to the **Function Keys.**

Audio level meter displays, for up to sixteen channels, can be displayed on either the left or the right of the display. They can show VU, PPM (PK) or both with assignable -20db or -18db reference levels.

Waveform (Y or Line), **Vectorscope**, or **Histogram** can be shown in various positions almost anywhere on the screen.

The de-embedded **Timecode** from the HD/SD-SDI source displays on the lower part of the screen.

Figure 2-2: Display Features

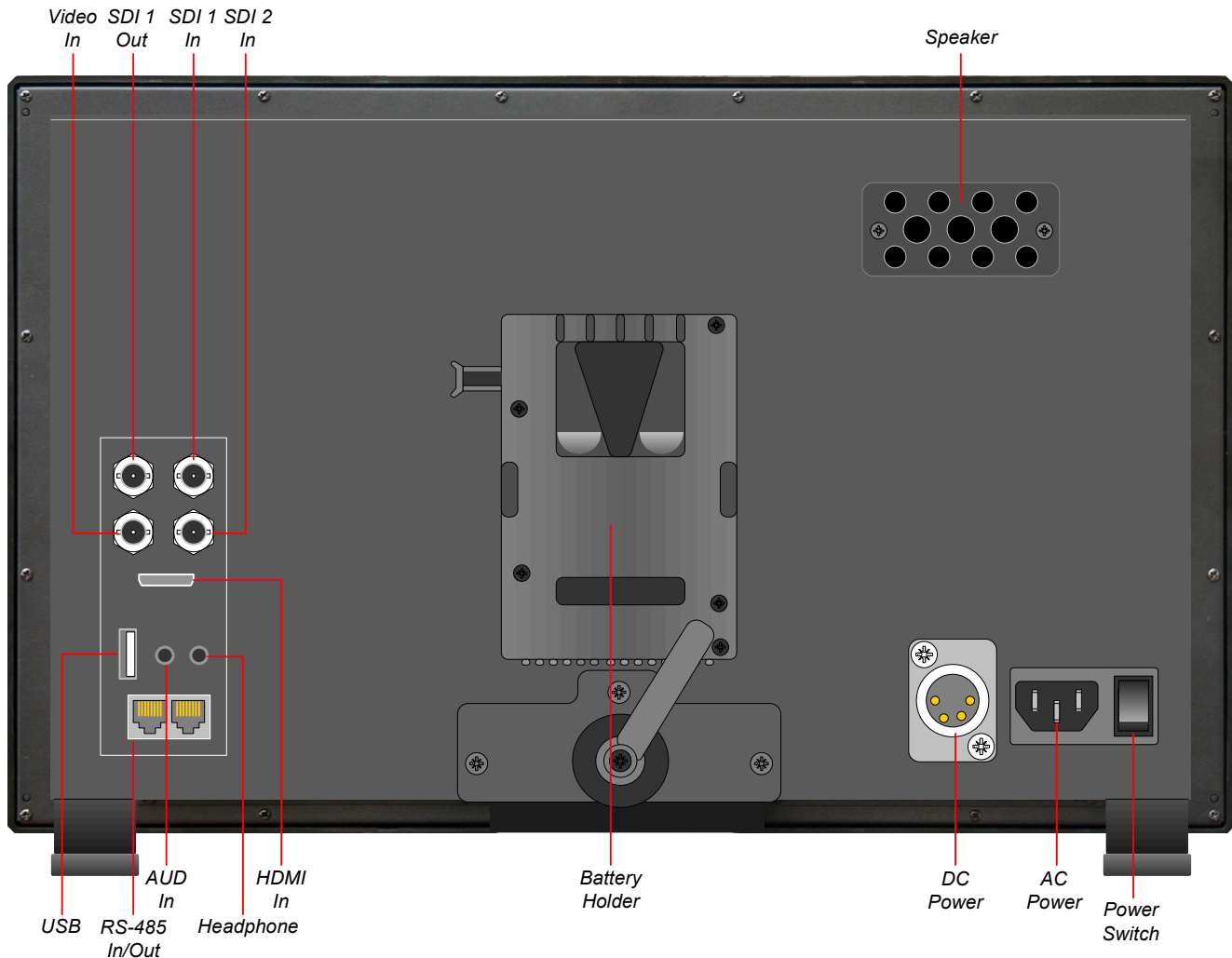


1. **Input Status:** Displays the detected input and video parameters of the signal: vertical active line count, (i)nterlaced or (p)rogressive, and field/frame rate in Hz. This display is controlled by a setting in the Config Menu. Refer to Table 2-9.
2. **Area Marker:** Used to mark an alternate aspect ratio area of the image. You can set whether to display it, the brightness, and the matte mode in the Config Menu. Refer to Table 2-9.
3. **Safety Marker:** This is used to mark a percentage area, inside of the image, safe for titles to be located. You can set whether to display it, as well as its display mode, in the Config Menu. Refer to Table 2-9.
4. **Center marker:** Cross hairs are displayed in the center of the screen, marking the center of the image. You can set whether to display them in the Config Menu. Refer to Table 2-9.
5. **IMD:** The IMD Menu provides settings to customize the IMD (In Monitor Display) text area to show a static line of characters, numbers, and certain symbols or to receive dynamic messages to be displayed. Refer to Table 2-10.
6. **Audio Level Meters:** Levels for the audio channels are displayed on up to sixteen bar graph meters as left/right pairs. The meters can appear on the left or the right side of the screen. Refer to Table 2-9.

7. **Timecode:** The de-embedded timecode from the HD/SD-SDI source displays on the lower part of the screen. The timecode setting is located in the Config Menu. Refer to Table 2-9.
8. **Waveform/Vectorscope/Histogram:** These can be displayed only for SDI signals. The waveform and vector of the input signal display are configurable in the Config Menu. Refer to Table 2-9.

Rear Panel

Figure 2-3: Rear Panel Layout



Important:



By design, the supplied AC mains power cord will only plug into a three-prong grounded outlet for your safety. If the plug does not fit into the outlet, contact an electrician to replace the obsolete outlet. The symbol to the left warns of electric shock hazard inside or outside the unit. Disconnect the power cord before removing access panels.

1. **SDI 1 In:** This input connector accepts 3G/HD/SD-SDI video signals. It is

- compliant with SMPTE 424M, SMPTE 259M, SMPTE292M/ITU-R BT601. It can be viewed using the **SDI1** selection on the **Input** button menu.
2. **SDI 1 Out:** This connector provides a regenerated duplicate of the **SDI 1 In** signal. This connection is compliant with SMPTE 424M, SMPTE 259M, SMPTE292M/ITU-R BT601.
 3. **SDI 2 In:** This is the second 3G/HD/SD-SDI video signal input. This connection is compliant with SMPTE 424M, SMPTE 259M, SMPTE292M/ITU-R BT601. It can be viewed using the **SDI2** selection on the **Input** button menu.
 4. **Video In:** This is the input for an analog CVBS video signal. It can be viewed using the **Video** selection on the **Input** button menu.
 5. **HDMI In:** This input supports HDMI and DVI signals. It uses an HDMI Type-A connector. It can be viewed using the **HDMI** selection on the **Input** button menu.
 6. **AUD In:** An analog stereo audio input related to the Line 1 video signal is provided on a standard 1/8" stereo jack. This has a 47K Ω input impedance and will accept up to a 5dBu signal. This input is selected when the **Video** selection is made on the **Input** button.
 7. **USB:** A dual purpose USB connector is provided which can be used to load a camera look up table (LUT). This connector can also be used for software upgrades.
 8. **Headphone:** A standard 1/8" stereo headphone jack is provided. The speaker will mute when a headphone is inserted into this jack.
 9. **Audio Out:** A pair of analog outputs is provided on RCA jacks. They will output the audio from the selected video source to be used with external amplifiers and speakers if needed. They have a 500 Ω output impedance and will produce up to a 5dBu signal.
 10. **AC Power Connector:** The supplied IEC cord plugs into this connector. The required power is 100 to 240VAC 50/60Hz.
 11. **DC Power Connector:** A standard XLR-4F connector can plug into this XLR-4M connector to supply 11 to 17VDC at 3A to the product as an alternative to AC power.
 12. **Battery Holder:** An optional 11.0 to 16.8 V camera battery can be mounted to the rear panel for portable use in the field.
 13. **Power Switch:** This switch removes all power from the product. Normally, since this switch is on the rear panel, it is left in the **1 (On)** position and the front panel **Power** button is used to start and stop product operation.
 14. **RS-485 In/Out:** These RJ-45 jacks are used for dynamic Tally/IMD controls. Two jacks are provided for in & out daisy chain arrangements. They are wired identically. Refer to Figure 2-4 below for the pinout and to Table 2-2 for terminal connections. Either CAT5 or CAT6 cables may be used for these jacks.
 15. **Speaker:** The audio monitoring speaker is positioned on the rear panel. The volume of the speaker is controlled using the Quick Menu. Refer to the Quick Menu section of this chapter.

Rear Panel Connectors

The following figure and table detail the connections of the RS-485 connectors on the rear panel. The tables are also silkscreened on the rear panel of the unit for your convenience.

Figure 2-4 RS-485 Pinout

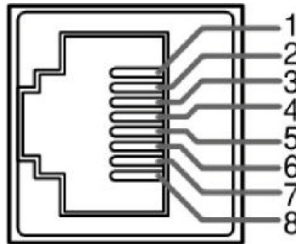


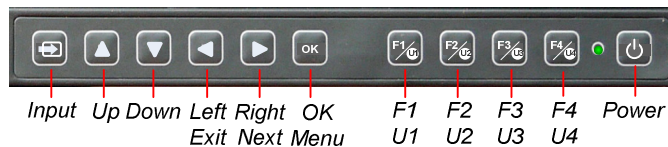
Table 2-2: RS-485 I/O Connections

| Pin | RS-485 Terminal Name |
|------|----------------------|
| 1, 2 | GND |
| 3 | Tx- (pair A) |
| 4 | Rx+ (pair B) |
| 5 | Rx- (pair B) |
| 6 | Tx+ (pair A) |
| 7, 8 | NC |

Front Panel Menu Operation

In the following descriptions, refer to Figure 2-5 for the location of each control button.

Figure 2-5: Screen Control Buttons



Input

The Input button lets you select between available inputs for viewing. Press the Input button repeatedly to switch between the connected inputs: **SDI1**, **SDI2**, **VIDEO**, and **HDMI**.

Quick Menu

The Quick Menu provides quick access to a few commonly used features, as listed in Table 2-3. The Quick Menu appears as shown in Figure 2-6.

Figure 2-6: Quick Menu - Volume Setting



The following is a description of how to use the Quick Menu:

1. Press the **Down** button to display the Quick Menu and select through the items that can be adjusted, as listed in Table 2-3.
2. Use the **Left** and **Right** buttons to change the value for the item displayed.
3. Press the **Down** button again to display the next adjustable item.
4. The Quick Menu will time out with no button presses. Alternatively, you may press the **OK** button for the menu to disappear.

Table 2-3: Quick Menu

| Parameters | Default Value | Domain Range |
|------------|---------------|--------------|
| VOLUME | 16 | 0 - 31 |
| BRIGHTNESS | 50 | 0 - 100 |
| CONTRAST | 50 | 0 - 100 |
| SATURATION | 50 | 0 - 100 |
| BACKLIGHT | 5 | 0 - 10 |
| SHARPNESS | 8 | 0 - 63 |

OSD Menus

The OSD Menus allow you to adjust a wide variety of control parameters for the monitor. Refer to Table 2-4 through Table 2-11 for typical values and domain ranges. The following is a description of how to use the OSD Menus:

1. Press the **OK/Menu** button to display the Main Menu.
2. Use the **Up** and **Down** buttons to navigate through the menus.
3. Press the **OK** button to enter the parameter selections in the chosen submenu.
4. Use the **Up** or **Down** buttons to cycle through the submenu selections.
5. When the desired option is highlighted, press the **OK** button to select it.
6. Use the **Up** or **Down** buttons to adjust the parameter value up or down, make a selection, or turn a function on or off.
7. Press the **OK** button to accept your parameter change -or- press the **Left** button to cancel your change.

8. Press the **Left** button to back out of any submenu, and finally to remove the OSD Menus from the screen.

OSD Menu

The following tables describe the information and settings available in the OSD Menu system. Use the instructions in the previous section to navigate the menus.

Table 2-4: Status Display Menu Structure

| Status Display | | | | |
|-----------------------------|----------------|---------------------------|-----------------------------------------------|--|
| Parameters | Default Value | Domain Range | Description | |
| INPUT | SDI-1 | SDI-1, SDI-2, Video, HDMI | Display only, for the value of the parameter. | |
| SIGNAL FORMAT | 4:2:2 YCbCr 10 | Refer to Table 3.2 | | |
| COLOR RANGE | | 64 - 940 | | |
| YCbCr COLOR MATRIX | ITU-R BT.709 | | | |
| GAMMA | 2.2 | | | |
| COLOR TEMP | D65 | D32, D93, D65, D56, D50 | | |
| COLOR SPACE | P3 | | | |
| CAMERA LUT TYPE | CAMERA SDR | | | |
| USER PRESET | USER1 | USER1 - USER4 | | |
| Menu Page 2 | | | | |
| MODEL | RMTF-170-3G | | | |
| SERIAL NUMBER | - | | | |
| FIRMWARE VERSION | - | | | |

Table 2-5: Input Config Menu Structure

| Input Config | | | |
|--------------------|---------------|---------------------------------------|--------------------------------------------------------------------------|
| Parameters | Default Value | Domain Range | Description |
| SDI IN1 | ON | OFF, ON | Enables or disables the input choices available in the Input Select Menu |
| SDI IN2 | ON | OFF, ON | |
| VIDEO | ON | OFF, ON | |
| HDMI | ON | OFF, ON | |
| NTSC PHASE | 0 | -50 to 50 | Only for NTSC signal format |
| SIGNAL FORMAT | AUTO | Refer to Table 3.2 | Input signal format |
| COLOR RANGE | 64 - 940 | 64 - 940 64 - 1023 0 - 1023 | Set color range. |
| YCbCr COLOR MATRIX | AUTO | AUTO ITU-R BT.709 ITU-R BT.2020 | Set YCbCr color matrix |

Table 2-6: Color Management Menu Structure

| Color Management | | | |
|-----------------------------|-------------------------------------------|------------------------------------------------------|----------------------------------------------|
| Parameters | Default Value | Domain Range | Description |
| GAMMA | 2.2 | 1.8, 2.2, 2.4, 2.6, 2.8, bt.1886, PQ, HLG | Adjust Gamma. |
| COLOR TEMP | D65 | D93, D65, D61, D55, DCI, USER1, USER2 | Set the color temperature. |
| RED GAIN | 512 | 0 to 512 | Set the gain for each color. |
| GREEN GAIN | | | |
| BLUE GAIN | | | |
| COPY FROM | D93 | D93, D65, D61, D55, DCI | Copies this set of color parameters to USER. |
| RESET | Resets Gain and Offset to Factory Default | | |
| COLOR SPACE | EBU | NATIVE SMPTE-C EBU ITU-709 ITU2020 P3 | Select the color matrix. |
| Menu Page 2 | | | |
| CAMERA LUT | ON | ON, OFF | Enable or disable camera LUT. |

| | | | |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|----------------------------------------|
| CAMERA LUT TYPE | CAMERA SDR | CAMERA SDR CAMERA HDR USER | Set a LUT from the corresponding list. |
| CAMERA SDR | 2.2 | Refer to Table 2-8 | Load the selected SDR LUT. |
| CAMERA HDR | | Refer to Table 2-8 | Load the selected HDR LUT. |
| USER | USER1 | USER1 - USER16 | Load a custom LUT file. |
| LOAD LUT FILE | <p>Use these steps to load a LUT file from a USB Flash Drive:</p> <ol style="list-style-type: none"> 1. Insert the Flash Drive and select LOAD LUT FILE. 2. Select USER. 3. Select the desired file from the Flash Drive. 4. Choose User1 - User16 as a storage location. 5. Press OK/Menu. 6. Turn off the Power button, wait 15 seconds and turn it on again. 7. In this menu, set Camera LUT Type to USER. 8. Set USER to the storage location you chose in step 4. | | |

Table 2-7: Supported Camera LUTs

| Camera LUT | Look Up Table (LUT) Name | Company |
|------------|--------------------------------|------------|
| SDR | ARRI_LogC_Rec709 | ARRI |
| | BMD_4KFilm_Rec709 | Blackmagic |
| | BMD_4KFilmV2_Rec709 | |
| | BMD_4KFilmV3_Rec709 | |
| | BMD_CCFilm_Rec709 | |
| | BMD_CCFilmV2_Rec709 | |
| | Canon_CLog1Cine_Rec709_FF_V1.1 | |
| | Canon_CLog2Cine_Rec709_FF_V1.1 | |
| | Canon_CLog3Cine_Rec709_FF_V1.1 | |
| | DJI_Phantom3DLog_Rec709_Improv | DJI |
| | DJI_Phantom4DLog_Rec709 | |
| | DJI_Phantom4DLog_Rec709_Improv | |
| | DJI_X5DLog_Rec709_Improv | |
| | FUJI_FLogFGamut_FLogRec709_V1 | Fujifilm |
| | FUJI_FLogFGamut_WDRRec709_V1 | |
| | GoPro_Protune_Rec709 | GoPro |
| | JVC_JLog1_Rec709_Daylight | JVC |
| | JVC_JLog1_Rec709_Tungsten | |
| | Panasonic_VLog_V709_V1 | Panasonic |
| | RED_L3G10RWG_Rec709_R1_V1.13 | RED |

| | | |
|-----|------------------------------|------|
| | RED_L3G10RWG_Rec709_R2_V1.13 | Sony |
| | RED_L3G10RWG_Rec709_R3_V1.13 | |
| | RED_L3G10RWG_Rec709_R4_V1.13 | |
| | Sony_SLog2SGamut_LCRec709 | |
| | Sony_SLog2SGamut_LCRec709A | |
| | Sony_SLog3SG3Cine_LCRec709 | |
| | Sony_SLog3SG3Cine_LCRec709A | |
| HDR | ARRI_LogC_HLG_Rec2020 | OSEE |
| | ARRI_LogC_PQ_Rec2020 | |
| | Canon_Clog2Cin_HLG_Rec2020 | |
| | Canon_Clog2Cin_PQ_Rec2020 | |
| | Canon_Clog3Cin_HLG_Rec2020 | |
| | Canon_Clog3Cin_PQ_Rec2020 | |
| | Panasonic_VLog_HLD_Rec2020 | |
| | Panasonic_VLog_PQ_Rec2020 | |
| | RED_L3G10_HLG_Rec2020 | |
| | RED_L3G10_PQ_Rec2020 | |
| | Sony_SLog3_Cin_HLG_Rec2020 | |
| | Sony_SLog3_Cin_PQ_Rec2020 | |
| | Sony_SLog3_SG3_HLG_Rec2020 | |
| | Sony_SLog3_SG3_PQ_Rec2020 | |

Table 2-8: Gamma Range vs Camera LUT

| Camera LUT | Gamma Range |
|-------------|---------------------------------------------|
| CAMERA SDR | 1.8, 2.2, 2.4, 2.6, 2.8 BT.1886 |
| CAMERA HDR | PQ, HLG |
| USER or OFF | 1.8, 2.2, 2.4, 2.6, 2.8 BT.1886, PQ, HLG |

Table 2-9: User Config Menu Structure

| User Config | | | |
|--------------------|---------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Parameters | Default Value | Domain Range | Description |
| USER PRESET | USER1 | USER1 USER2 USER3 USER4 | Apply the current User Configuration settings to one of the four possible Presets. |
| F1 | SCAN | CAMERA LUT BLUE ONLY MONO MARKER | Set up the F1/U1 Function key action. |
| F2 | MARKER | AUDIO METERS TIME CODE WAVEFORM TYPE VECTORSCOPE HISTOGRAM | Set up the F2/U2 Function key action. |
| F3 | AUDIO METERS | SCAN ASPECT NATIVE MUTE | Set up the F3/U3 Function key action. |
| F4 | BLUE ONLY | IMD DISPLAY FALSE COLOR FOCUS ASSIST PEAK ZEBRA UNDEF (no function) | Set up the F4/U4 Function key action. |
| Menu Page 2 | | | |
| AUDIO SOURCE | EBD | EXT: Analog Inputs EBD: Embedded Signal OFF: No audio | Select the audio source among the available signals. |
| SPEAKER L | EMB CH1 | For an SDI EBD Source: CH1 to CH16 | Select the input channel for the speaker and left headphone. |
| SPEAKER R | EMB CH2 | For a VIDEO Source: CH1, CH2 For an HDMI EBD Source: CH1, CH2 | Select the input channel for the speaker and right headphone. |
| METER DISPLAY | OFF | ON, OFF | Set whether to display the audio meters. |
| METER SELECT | CH1-2 | CH1-2, G1, G2, G3, G4, G1+G2, G1+G3, G1+G4, G2+G3, G2+G4, G3+G4, G1- G4 | Select channels or SDI groups to display on the meters. |
| METER POSITION | LEFT | LEFT RIGHT | Select the displayed position of the audio meters. |

| | | | |
|-----------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| DISPLAY MODE | MODE1 | MODE1: meters only MODE2: meters with channel numbers and frame | Select the appearance of the meters. |
| METER OPACITY | 0 | 0 = 100% 1 = 50% | Set the opacity of the audio meters. |
| Menu Page 3 | | | |
| MARKER | OFF | OFF, ON | Enable or disable the display of the markers that have been set up in this menu. |
| ASPECT MARKER | OFF | 16:9 4:3 15:9 14:9 13:9 1.85:1 2.35:1 Variable Off | Select the aspect marker according to the display aspect ratio. |
| VARIABLE ASPECT | 3.00 | 1.00 - 3.00 in 0.01 steps | When the Aspect Marker is set to Variable, use this ratio. |
| CENTER MARKER | OFF | OFF, ON | Turn center marker display on or off. |
| SAFE AREA MARKER | OFF | OFF 80% 85% 88% 90% 93% 95% | Set safety marker size according to the aspect ratio and scan mode. |
| MARKER FIT | OFF | OFF: Safe Area Marker is based upon the current input source ON: Safe Area Marker is based upon the image within the current aspect | Select Safe Area Marker setup. |
| MARKER LEVEL | 1 | 1: 50% 2: 75% 3: 100% | Set the luminance of all of the markers. |
| MARKER MAT | OFF | OFF, HALF (<i>Background 50%</i>) BLACK (Refer to Figure 2-7) | Set the transparency of the area marker mat. |
| CROSSHATCH | ON | OFF, ON | Set whether to show the crosshatch. |

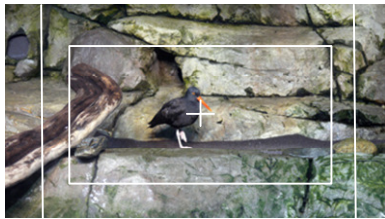
Menu Page 4

| | | | |
|-----------------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| WFM FORM TYPE | OFF | WAVEFORM VECTOR WF, WIDE HDR WFM OFF | Set the type of waveform / vector display. |
| WAVEFORM SIZE | SMALL | SMALL MEDIUM LARGE | Set the size of the waveform display. |
| WAVEFORM LOCATION | TOP RIGHT | <u>SMALL</u> : LEFT UP, CENTER UP, RIGHT UP, RIGHT CENTER, RIGHT DOWN, CENTER DOWN, LEFT DOWN, LEFT CENTER <u>MIDDLE</u> : RIGHT DOWN, CENTER DOWN, LEFT DOWN <u>LARGE</u> : CENTER DOWN | Set the displayed position for the waveform display according to Waveform Size. |
| VECTOR-SCOPE | OFF | OFF, ON | Enable or disable vectorscope display. |
| VECTOR-SCOPE LOCATION | TOP RIGHT | LEFT UP, CENTER UP, RIGHT UP, RIGHT CENTER, RIGHT DOWN, CENTER DOWN, LEFT DOWN, LEFT CENTER | Set Vectorscope location. |
| HISTOGRAM | OFF | OFF LUMA RGB | Enable or Disable histogram display and set histogram mode. |
| HISTOGRAM LOCATION | TOP RIGHT | LEFT UP, CENTER UP, RIGHT UP, RIGHT CENTER, RIGHT DOWN, CENTER DOWN, LEFT DOWN, LEFT CENTER | Set Histogram location. |
| OPACITY | 0 | 0 = 100% (opaque) 1 = 75% 2 = 50% 3 = 25% | Set the transparency of Waveform, Vectorscope, and Histogram |

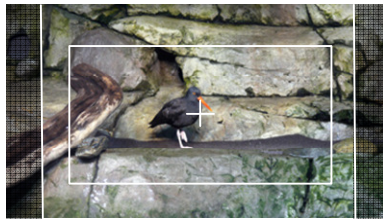
| | | | |
|--------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| FOCUS ASSIST | STANDARD | <p>OFF: Normal Video</p> <p>GRAY: Image is in gray mode and displays edge of images with color selected in Focus Color.</p> <p>COLOR: Displays edge of images with color selected in Focus Color.</p> | <p>Enable or Disable Focus Assist and set mode.</p> <p>When Focus Level value is exceeded, the edge detected will be in the Focus Color.</p> |
| FOCUS ASSIST COLOR | RED | <p>RED</p> <p>GREEN</p> <p>BLUE</p> | Set the color for the detected edge of images. |
| FOCUS ASSIST LEVEL | 50 | 0 - 100 | Set the edge difference value in image. Larger value means more detail detection. |
| PEAK | OFF | OFF, ON | Enable or Disable Peak function. Over sharpen the image. |
| PEAK LEVEL | 1 | 1 - 8 | Set the sharpness level. Higher value gives a sharper image. |
| FALSE COLOR | OFF | OFF, ON | Enable or Disable False Color Exposure Assist function. |
| FALSE COLOR TYPE | SPECTRUM | <p>Spectrum</p> <p>SONY Slog3</p> <p>SONY Slog2</p> <p>ARRI LogC</p> <p>Canon Clog2</p> <p>Canon Clog3</p> <p>Panasonic Vlog</p> <p>RED RedLogFilm</p> <p>RED RL3G10</p> <p>BMD</p> <p>BMD 4K</p> <p>ARRI Rec709</p> <p>SONY LC709A</p> <p>SONY LC709</p> <p>RED G3</p> <p>RED G4</p> | Set the type of False Color Exposure Assist Display. |
| ZEBRA | OFF | OFF, ON | Enables or Disables the Zebra function, comparing luminance with the Zebra Level, and displays zebra pattern wherever luminance is higher. |

| | | | |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------------------------------------------|
| ZEBRA LEVEL | 50 | 0 - 100 | Set the reference level for detecting luminance. |
| Menu Page 6 | | | |
| INTERNAL SIGNAL | OFF | OFF, ON | Enable or Disable the internal color bar signal display. |
| OSD TIME | ON | ON, 10S, 30S, 60S | Set the display timeout of the OSD Menu. |
| TIMECODE | OFF | OFF, ON | Enable or Disable the Timecode display. |
| STATUS DISPLAY | OFF | OFF, ON, AUTO | Set the timeout of the Status Information display. |
| LANGUAGE | ENGLISH | ENGLISH CHINESE | Set product language. |
| MONITOR RESET | Use this selection with caution to reset the product settings to the way they were when it left the factory. IF YOU ARE UNSURE OF WHETHER TO PERFORM A FACTORY RESET, CLICK CANCEL AND THEN CONTACT WOHLER TECHNICAL SERVICE FOR ADVICE. | | |
| UPGRADE FIRMWARE | Use this selection to upgrade the firmware. Follow the directions on the screen. | | |

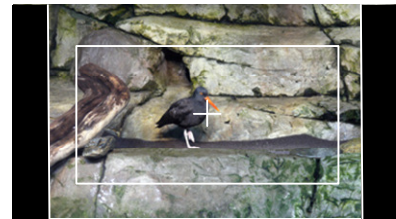
Figure 2-7: Marker Mat Effect



Marker Mat = OFF



Marker Mat = HALF



Marker Mat = BLACK

Table 2-10: IMD Menu Structure

| IMD Menu | | | |
|---------------|---------------|--------------------------------------------------------|---------------------------------------------|
| Parameters | Default Value | Domain Range | Description |
| IMD DISPLAY | ON | ON, OFF | Set whether to enable the IMD. |
| IMD PROTOCOL | LOCAL | TSL3.1 TSL4.0 LOCAL | Select an IMD protocol. |
| IMD CHARACTER | RMTF-170-3G | (Up to 16 characters of text for static LOCAL display) | Set the IMD message.* |
| IMD COLOR | RED | RED, GREEN, YELLOW | Set the color of the IMD characters. |
| MONITOR ID | 0 | 0 - 255 | Set the ID number for each monitor |
| BAUD RATE | 115200 | 2400, 4800, 9600, 19200, 38400, 57600, 115200 | Set the BAUD rate for RS-485 communication. |

* **To enter the characters** for the IMD CHARACTER setting, navigate to the setting and press **Next**. Press **Up** or **Down** repeatedly to locate the first character and press **Next** to move to the next character. Press **Up** or **Down** again repeatedly to locate the second character and press **Next**. Repeat this process until all of the characters (up to 16) have been entered. Then press **OK/Menu** to exit.

Table 2-11: Key Inhibit Menu Structure

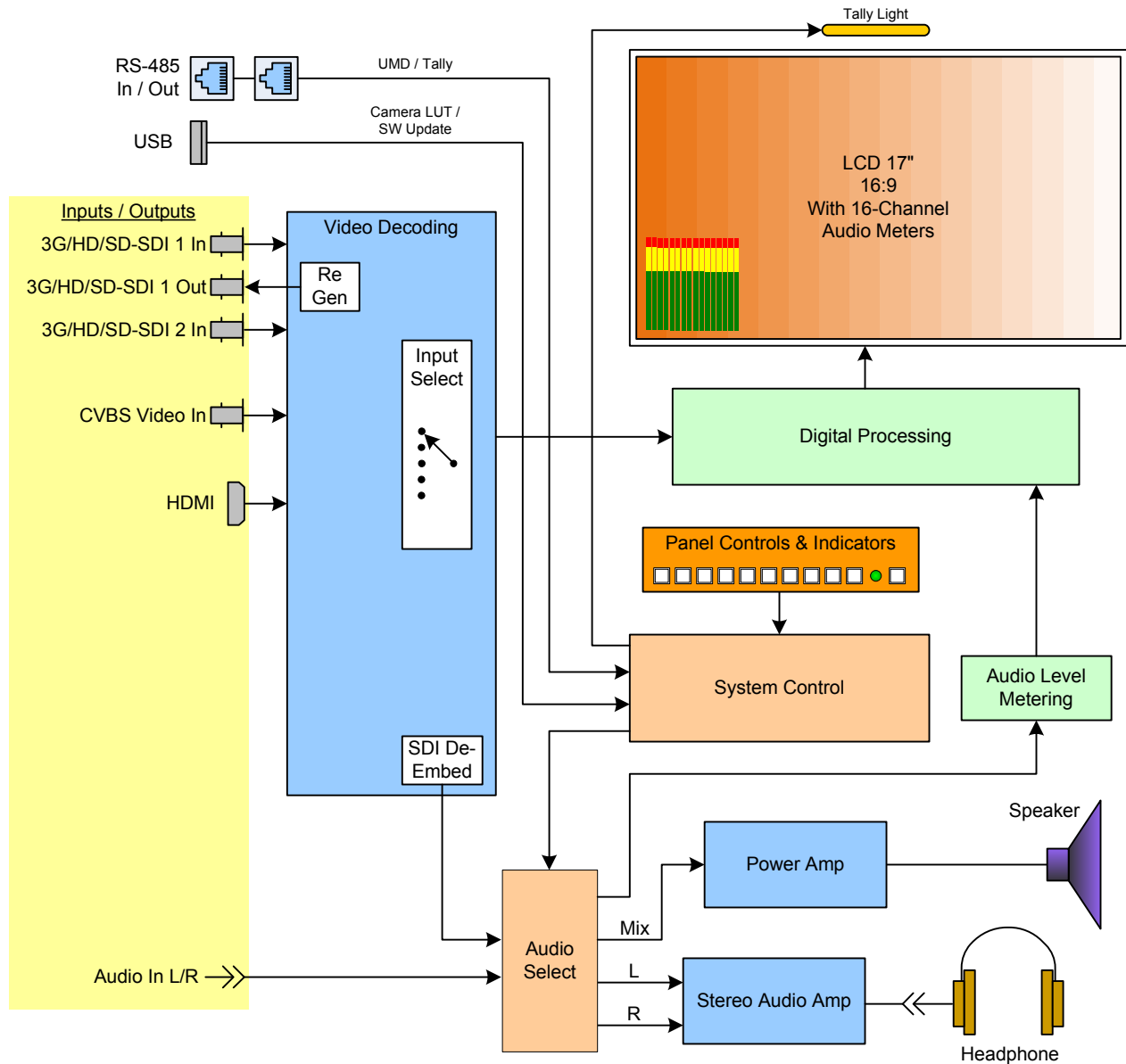
| Key Inhibit | | | |
|-------------|---------------|--------------|--------------------------------------------------------|
| Parameters | Default Value | Domain Range | Description |
| KEY INHIBIT | OFF | OFF, ON | Enable or Disable operator access to front panel keys. |

CHAPTER 3: Technical Info

Table 3-1: Specifications

| Specification | Values/Domains |
|-----------------------|-------------------------------------------------------------|
| AC Power Requirements | 100 V to 240 VAC \pm 10%, 50/60Hz |
| AC Power Consumption | 14 Watts |
| DC Power Requirements | 11 - 17 VDC @ 3A |
| Dimensions | 16.6" H x 10.4" W x 1.9" D 422 mm H x 264 mm W x 49 mm D |
| Weight | 6.6 lbs. (3 kg) |
| Supplied Accessories | AC Power Cord |
| Display Type | IPS-LCD with LED Backlight |
| Number of Displays | 1 |
| Screen Size | 17.3" diagonal per screen |
| Screen Resolution | 1920(H) x 1080(V) |
| Aspect ratio | 16:9, 4:3 |
| Display Area (mm) | 382(H) x 215(V) |
| Viewing Angle | 178°(H) x 178° (V) |
| Color Depth | 262K colors |
| Contrast Ratio | 800:1 |
| Brightness | 300 cd/m ² , typical |
| Backlight | White LED |
| Response Time | 14 ms |
| Video Inputs | Video: PAL/NTSC |
| | SD-SDI: SMPTE 259M, ITU-R BT.656 |
| | HD-SDI: SMPTE 292M/274M/296M |
| | 3G-SDI: SMPTE 425-Level A |
| | HDMI: 1.3a |
| Video Input Impedance | SDI and CVBS: 75 Ω |
| Audio Inputs | 1 Stereo Pair; Analog 1/8" jack |
| Audio Input Impedance | 20k Ω |
| Audio Outputs | 1 Selected Pair; 1/8" Stereo Headphone jack |
| Speaker | 5W (Mono) |
| Dynamic Tally/IMD | RS-485; TSL on RJ-45 |
| LUT / Software Update | USB |

Figure 3-1: RMTF-170-3G Series Block Diagram



Supported Video Formats

The RMTF-170-3G monitor will display the video formats listed on the following page in Table 3-2.

Table 3-2: Video Formats

| Format | Signal Format | SDI | Video | HDMI | |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------|------|--|
| 480i60 | 4:2:2 YCbCr 10 bit | | X | | |
| 576i50 | | | X | | |
| 720p24/23.98 | | X | | | |
| 720p25 | | X | | | |
| 720p30/29.97 | | X | | | |
| 720p50 | | X | | X | |
| 720p60/59.94 | | X | | X | |
| 1080sf24/23.98 | | X | | X | |
| 1080sf25 | | X | | X | |
| 1080sf29.97 | | X | | X | |
| 1080sf30 | | X | | | |
| 1035i60/59.94 | | X | | | |
| 1080i50 | | X | | X | |
| 1080i60/59.94 | | X | | X | |
| 1080p24/23.98 | | | | X | |
| 1080p25 | | X | | X | |
| 1080p30/29.97 | X | | X | | |
| 1080i50 | 4:2:2 YCbCr 12 bit | X | | | |
| 1080i60/59.94 | 4:4:4 YCbCr 10 bit | X | | | |
| 1080p24/23.98 | 4:4:4 YCbCr 12 bit | X | | | |
| 1080p25 | 4:4:4 RGB 10 bit | X | | | |
| | 4:4:4 RGB 12 bit | | | | |
| 1080p30/29.97 | 4:4:4_XYZ_10 bit | X | | | |
| | 4:4:4_XYZ_12 bit | | | | |
| 1080p50 | 4:4:4 YCbCr 10 bit | X | | | |
| 1080p60/59.94 | | X | | | |
| 1080sf24/23.98 | 4:2:2 YCbCr 12 bit 4:4:4 YCbCr 10 bit 4:4:4 YCbCr 12 bit 4:4:4 RGB 10 bit 4:4:4 RGB 12 bit 4:4:4_XYZ_10 bit 4:4:4_XYZ_12 bit | X | | | |
| 1080sf25 | | X | | | |
| 1080sf29.97 | | X | | | |
| 1080sf30 | | X | | | |
| 1080p24/23.98 | | X | | | |
| 1080p25 | | 4:4:4_XYZ_10 bit | X | | |
| | | 4:4:4_XYZ_12 bit | | | |
| 1080p30/29.97 | | X | | | |
| 1080p48/47.95 | | X | | | |
| 1080p50 | 4:4:4 YCbCr 10 bit | X | | | |
| 1080p60/59/94 | | X | | | |