FRS-1101

DESCRIPTION

The FRS-1101 is an SDI frame synchronizer used to solve timing issues in a digital facility. The card can be set in delay or synchronizer mode. When adding the proc-amp option, the card becomes a high quality processing amplifier providing control and adjustment of the digital video signal for applications such as incoming feeds. VANC data is passed or blanked, while the VBI can be passed, blanked or processed on a line-by-line basis.
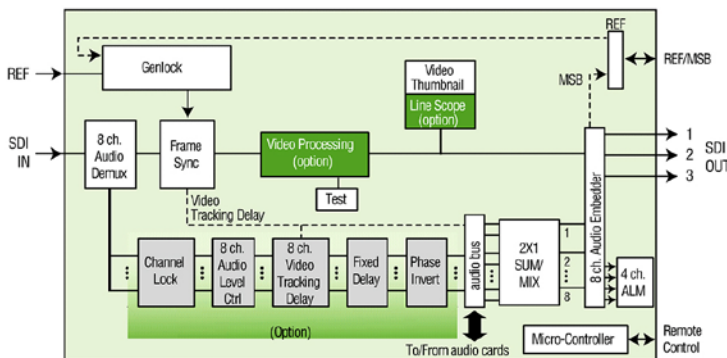
When the audio processing option is added, the card allows de-embedding of 8 channels of audio, processing (gain, delay, and phase) and then re-embedding into the SDI. When the FRS-1101 is combined with one or multiple audio cards, the operator can select any of the audio channels for embedding into the SDI signal. Each audio output channel can be composed of a mix of any two audio input channels. New technology includes Thumbnail & ALM (audio level meter) generation and an optional Waveform/Vectorscope over IP of the output signal which allows the operator to control and see the changes made to the signal.

This card operates with the MSB-1121 Monitoring Switching Bridge which allows the output of any module in a Densité frame to be monitored. Multiple MSB-equipped frames may be cascaded, eliminating the need for dedicated monitoring routers.

Features and Benefits

- SDI isolated input with auto-detection 525/625
- Reference input
- 10-bit processing
- Handles hot switching
- Frame Sync: timing, full phasing and freeze modes
- Additional delay of up to 2 frames
- Line sync operation mode removes input timing glitches for a continuous output signal
- Freeze or black on input error detection
- Video processing control (option)
- Ancillary Data Blanking or pass-through
- Audio processing of 8 channels of embedded audio (option)
- Thumbnail & ALM generation
- Waveform/Vectorscope over IP option (operates with iControl)
- Provides output to Monitoring Switching Bridge option (MSB-1121)

FUNCTIONAL BLOCK DIAGRAM

SPECIFICATIONS (cont'd)

EXTERNAL REFERENCE
SIGNAL:	NTSC SMPTE 170M, PAL ITU 624-4 or Composite sync
RETURN LOSS:	> 35 dB up to 5.75 MHz

VIDEO OUTPUTS
SIGNAL (3): SDI SMPTE 259M-C (270 Mbps)
RETURN LOSS: > 15 dB up to 270 MHz
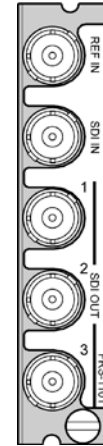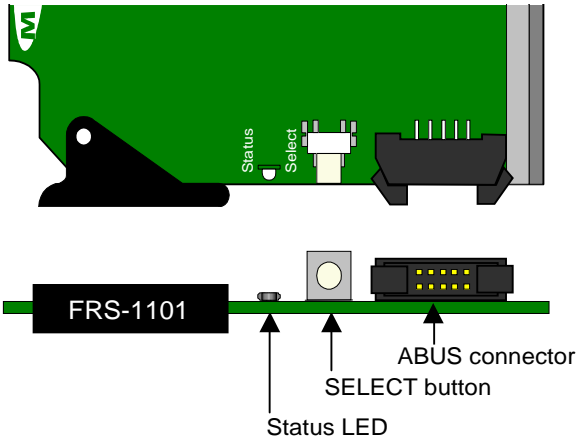JITTER: < 0.2 UI (0.74ns) pp (WIDEBAND)

VIDEO PROCESSING PERFORMANCE
SIGNAL PATH:	10 bits
PROCESSING:	12 bits
PROCESSING DELAY:	10 µs (min)
TEST GENERATOR:	75 % color bars with 100 % white bars
POWER:	3.5 W

AUDIO PROCESSING PERFORMANCE (OPTION)
SIGNAL PATH:	20 or 24 bits
SAMPLING:	48 kHz
PROCESSING DELAY:	20 µs (min)
TEST GENERATOR:	1 kHz, as per EBU

SPECIFICATIONS

INPUT
SIGNAL:	SMPTE 259M-C (270 Mbps)
EMBEDDED AUDIO:	SMPTE 272M-C
CABLE LENGTH:	300m (900') of Belden 1694A
RETURN LOSS:	>15 dB up to 270 MHz

Status LED
SELECT button
ABUS connector
FRS-1101

FRS-1101 Rear Connector Panel

INSTALLATION

Make sure you have ordered and received the FRS-1101 and its associated rear panel. If any of the following items are missing, contact your distributor or Miranda Technologies Inc.

*   FRS-1101 SDI Frame Synchronizer/Processor
*   FRS-1101-SRP Rear Panel (see figure)

The FRS-1101 must be mounted in a DENSITÉ frame. The installation includes both the FRS-1101 module, and the rear panel module. It is not necessary to switch off the power

from these frames when installing or removing the FRS-1101.

When the FRS-1101 is used in conjunction with an audio module such as the UAP-1781, the ABUS flat cable must be installed between the ABUS connector of the FRS-1101 and the connector on the audio module. The ABUS flat cable is supplied with the audio module.

Detailed instructions for installing cards and their associated rear panels in the Densité frame are given in the Densité Frame manual.

OPERATION

Overview

The primary control interface for the FRS-1101 is Miranda's iControl system. The iControl interface is explained in detail beginning on the next page.

The DENSITÉ frame incorporates a controller card, located in the center of the frame. It is equipped with an LCD display and a control panel. The controller handles error reporting and local and remote control for all cards installed in the frame. The display and control panel are assigned to the card in the frame whose SELECT button has been pushed.

Local User Interface – status reporting and control

The status monitor LED is located on the front card-edge of the FRS-1101 module, and is visible through the front access door of the DENSITÉ frame.

The FRS-1101 STATUS LED is green under normal operation. When the FRS-1101 detects an error, the STATUS LED turns yellow or red. Pushing the SELECT

button will cause the STATUS LED to flash yellow, and the card identification and the current status message will be shown on the controller card's display. The STATUS LED will revert to it's normal state upon a second push of the button, or after a short delay. The color of the status LED and the reporting of errors are user-configurable via the Log Config panel of the iControl interface. See page 13 for details.

After pressing the SELECT button on the FRS-1101 card, use the keys on the local control panel (described in the Controller card manual) to step through the displayed status messages. The message structure is shown below.

> Here is an example of a status message when no input is detected

F	R	S	-	1	1	0	1							
N	O		S	I	G	N	A	L						

See page 19 for a detailed explanation of how to use the local control panel and menu to configure the FRS-1101, as an alternative to configuration via iControl.

iControl Interface

The operation of the FRS-1101 may be controlled using Miranda's iControl system. This manual describes the control panels associated with the FRS-1101 and their use. Please consult the iControl User's Guide for information about setting up and operating iControl.

In *iControl Navigator* or *iControl Websites*, double-click on the FRS-1101 icon to open the control panel.

Note the following features of this panel:

Status Icons - At the top, to the left of the Miranda logo, are five status icons that report various aspects of the card's operation:
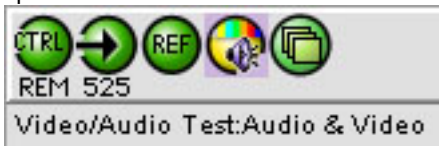
(a)   (b)   (c)   (d)   (e)

(a) this icon shows whether manual card configuration of this DCP-1721 is on [LOC] or off [REM]

(b) this icon reports the input format (525 or 625 lines)

(c) reference status – green if OK, red if an error has been detected, white if the reference is absent

(d) Audio/video test – green during normal operation, yellow (as shown) when Test Mode is activated

(e) ABUS multiple card configuration – green if configuration and card setup are OK; red if there is a mismatch between the FRS-1101 configuration and the actual card setup

Move the cursor over an icon to see its current status in the **message area** below the icons. If there is an error status,

the message will appear automatically. If there are multiple error messages, the display will cycle through them

Panel selection buttons – the buttons on the left side of the panel are used to select the contents of the main portion of the screen. The selected button is highlighted, and the main screen heading matches the button name. The column of buttons can be hidden/revealed by clicking the arrow icon at the left-hand side.

User Presets – the buttons at the bottom left control the saving and recovery of sets of user-defined card configurations

All of the individual control panels are described in detail below.

Video Processing

This panel is available when the Video Procamp Option is enabled. See *Options* section for more details.

ALL GAIN: -800, -799, …, 799, 800: Sets luma and chroma gains to a specific value. When other gains are individually set, *ALL GAIN* reflects the average value of the combined gains for a given output format.
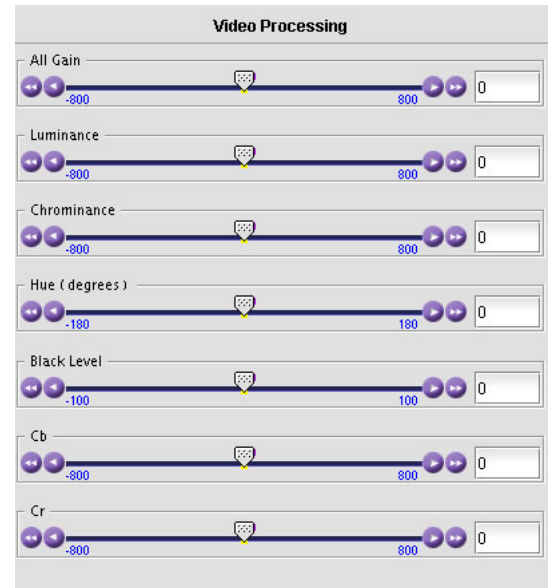
LUMA GAIN: -800, -799, …, 799, 800: sets luma gain to a specific value.

CHROMA GAIN: -800, -799, …, 799, 800: sets chroma gain to a specific value.

HUE:-180, -179, …, 179, 180: sets hue to a specific value in degrees.

BLACK LEVEL: -100, -99, …, 99, 100: in NTSC mode, sets Black level to a specific value.

Cb ; Cr : -800, -799, …, 799, 800: sets the gains for the individual components of the video signal to a specific value.

Audio Processing

This panel is available when the Audio Procamp Option is enabled. See *Options* tab section on page 14 for more details.

Audio De-Embedding sub section:

> *Group Detected:* If an embedded audio group is detected on the input signal, its icon is green.

> *CH 1-4,* and *CH 5-8* pull-down boxes: select the AES group to be used as source for channel 1 to 4 and 5 to 8.

CH 1-4 and *CH 5-8* tabs:

Each of these tabs controls *Levels* and *Fixed Delays* for two pairs of channels; each channel is provided with a set of controls.

> *Levels* sub-tab: grouped by pair of channels, each channel has the following controls: a *Level* slider (from -96 to 12 dB) , an input box where the desired level may be input directly, a *Mute* icon button and a *Phase Invert* checkbox. At the bottom is a *Lock* checkbox that "locks" both channel sliders together for levels and delay, so that moving one slider moves the other one as well.

> *Fixed Delay* sub-tab : inserts an audio delay offset from the nominal value. For each channel, two sliders allow delay to be adjusted. The *Coarse* slider adjusts the delay in ms, from 0 ms to 2000 ms while the *Fine* slider provides sample increments, from 0 to 47.
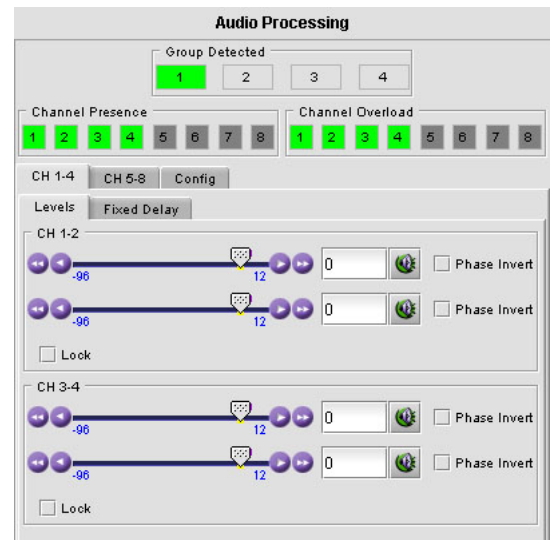
Config tab:

This tab sets the card's behavior in the event of a loss or absence of audio signal .

Signal Threshold: –72, -66, -60, -54, -48 dB: Signal absence is declared when the signal level is lower than the signal threshold during the selected period. The threshold can be set through the pull-down box. The default value is –60 dBFS.

Delay: The signal absence period can be adjusted from 0 to 255 seconds. The default value is set to 15 s.

Tracking Delay: use this checkbox to enable fixed delay tracking.

Word Length 20 bits, 24 bits: sets embedded audio resolution.
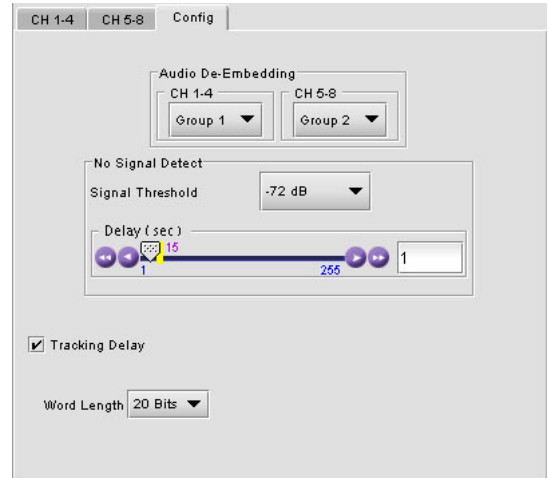
Audio Output

When the FRS-1101 is combined with up to two audio cards such as the UAP-1781 Universal Audio Processor, these parameters provide extended controls over audio embedding.

CH 1-2, CH 3-4, CH 5-6, CH 7-8 Tabs: each of these tabs controls a pair of channels; each channel is provided with a set of controls.

  Operation Mode: Off, A, SUM (A+B), Mix: This menu allows for each output signal the source selection between single channel and the sum or mix of two channels.

    Off: The output channel is muted.

    A: Output a single channel, as selected in the *Source A* section.

    SUM (A+B):Output the sum of the two channels selected in the *SOURCE A* and *SOURCE B sections*.

    Mix: Output a mono mix of the two channels selected in the *SOURCE A* and *SOURCE B sections*.

  SUM (A+B) Level: –6 dB, -3 dB, 0 dB: apply the selected attenuation to the output when the SUM (A+B) mode is selected.

  MUTE: to mute this channel check this box.

 Source A & Source B*: ABUS Select: A1, A2*: selects the Audio Bus to be used for this channel (*A1* or *A2*).

  Channel*: Channel 1, …, Channel 8*: selects the source channel to be used from the Audio Bus.

  Level (dB): -96, -95, …, -1, 0: applies an attenuation to the source.

Note: to be available, *SOURCE A* and *SOURCE B* must be made available through *Multiple Cards config,* in the *ABUS* tab (see page 16).

EMBEDDING Tab:

CH1,2,3,4, and *CH 5,6,7,8:* the pulldown box allows to choose the AES audio group to be used for embedding audio channels 1 to 4 and 5 to 8.
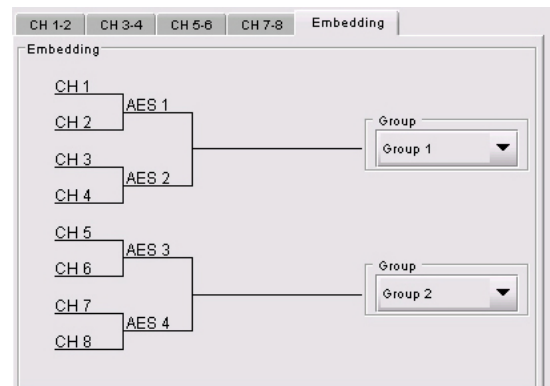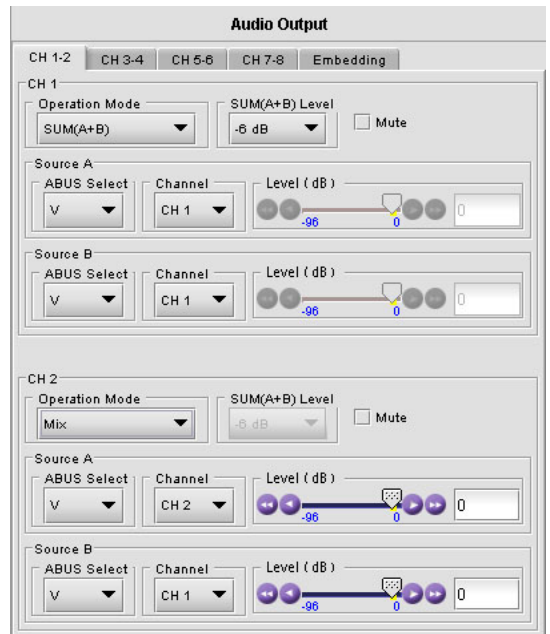
Thumbnail

Thumbnails are used to monitor the video output signal of the FRS-1101. Streaming parameters are set using these controls.

ENABLE: OFF, VIDEO: enables thumbnail streaming or turn streaming OFF

SIZE: SMALL, MEDIUM, LARGE: select the size of the thumbnail image to be sent by the streaming encoder.

PLAYER: OFF,THUMBNAIL: Click on the Thumbnail box to enable the thumbnail Player. A window opens in the top section and shows a thumbnail associated with the SDI video stream that is being encoded by the FRS-1101.

Note: you must check the VIDEO box in the ENABLE section to see the video image.
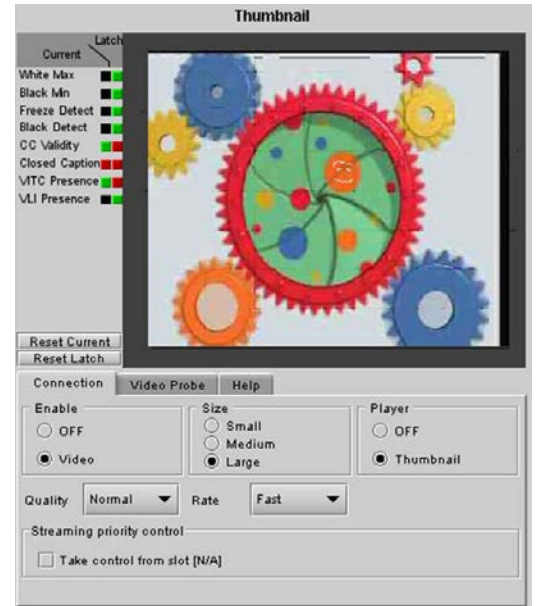
> Quality and Refresh Rate:

> ▪ Use the left-hand pulldown to select the video quality to be sent by the streaming encoder. The choices are Poor, Normal and HiQ (e.g. high quality).

> ▪ Use the right-hand pulldown to select the refresh rate for the transmitted thumbnails. The choices are:
> > Fast, 1 sec, 2 sec, … 10 sec.

Streaming Priority Control: Click the *Take control from Slot [##]* checkbox to force the Densité Controller for this frame to assign more bandwidth for this card's streaming output. Only one card in the frame can use this feature. It has no effect unless you *have selected Fast for the refresh rate. The actual slot number of this card, as shown in the window title bar, will appear when the checkbox is ticked.*

Video Probing

Video probing is an optional feature of the FRS-1101. See page 16 for information about ordering and installing this option.

The Probing status section at the top left of the panel shows both the current and latched status of each of the probed parameters.

- The current status is active whenever the Probing option is enabled. It can be reset for confirmation using the Reset Current button beneath the display
- The occurrence of an error is flagged *Red* in the Latch status column, and remains flagged until the latch is cleared using the Reset Latch button beneath the display

The status may appear as follows:

🟩 Green icon – status OK

🟥 Red icon – error detected

⬜ Grey Icon – measurement enabled, but no video input presence

⬛ Black icon – measurement not enabled

Controls for the video probing feature are found in the **Video Probe** tab.

On the left, it displays a list of buttons, one for each of the parameters that can be tested by the video probe feature.

- Click on a button to access the set-up controls for probing that parameter
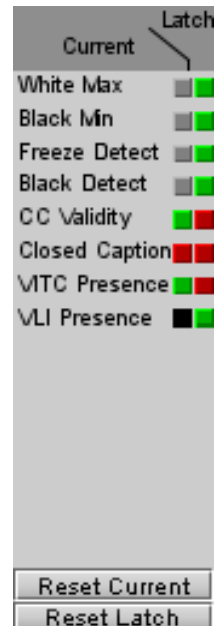
Many of these control sets include sliders marked **Set Duration** and **Clear Duration,** which have these functions:

- Set Duration: Set the interval between the time an error is first detected and the time when it is flagged. This allows the user to filter out short-duration errors if desired. Range is usually 0 to 90 sec.
- Clear Duration: Set the interval between the time an error is no longer detected and the time when the error flag is cleared. Range is usually 0 to 10 sec.
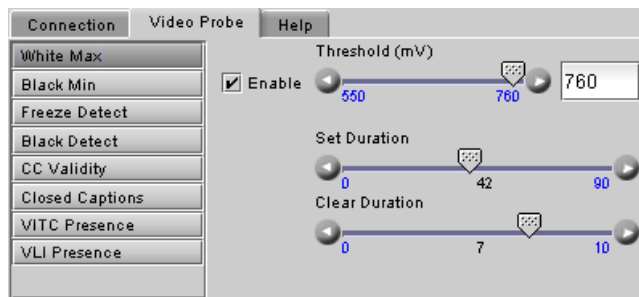
White Max

Detects whether the peak white level in the signal has gone higher than a specified threshold.

Check the Enable box to turn detection ON

Set the threshold level using the slider, or type a value directly into the data box

- Range: 550 to 760 mV

Use the sliders to establish the Set and Clear durations (defined above)
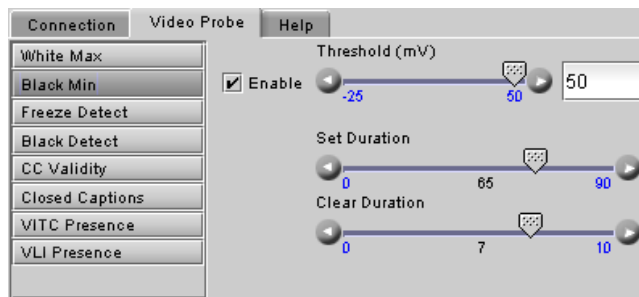
Black Min

Detects whether the black level in the signal has fallen below a specified threshold.

Check the Enable box to turn detection ON

Set the threshold level using the slider, or type a value directly into the data box

- Range: –25 to +50 mV

Use the sliders to establish the Set and Clear durations (defined above)

Freeze Detect

Detects whether the picture is frozen by looking for changes in content. Image quality affects the measurement and must be specified.

Check the Enable box to turn detection ON

Use the pulldown to specify image quality:

- Options: Noisy, Normal, Hi-Q

Use the sliders to establish the Set and Clear durations (defined above)

Black Detect

Detects whether the picture is black by detecting whether it remains below a specified threshold.

Check the Enable box to turn detection ON

Set the threshold level using the slider, or type a value directly into the data box

- Range: 0 to 140 mV

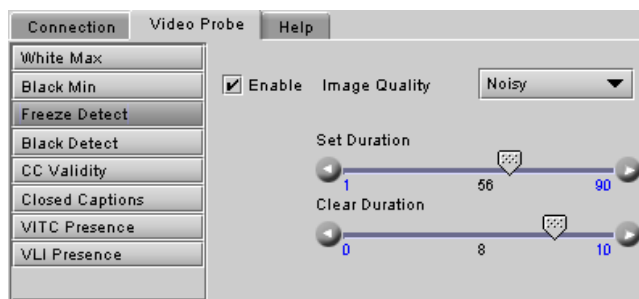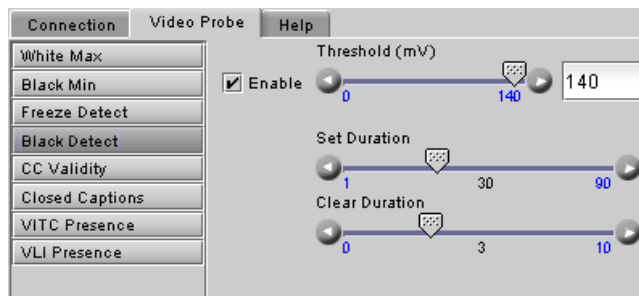Use the sliders to establish the Set and Clear durations (defined above)

CC Validity
Detects the validity of closed caption data (525 line systems)

Check the Enable box to turn detection ON

Set the time for which the CC must be continuously detected as invalid for an error to be flagged using the Error Duration slider, or type a value directly into the data box

- Range: 1 to 250 sec
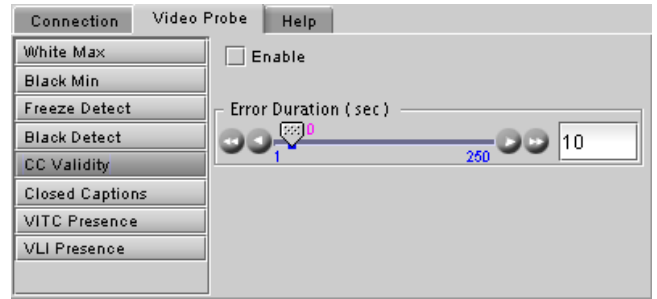
Closed Captions
Detects the presence of Closed Caption text only. Control codes are not included in the detection process.

Check the Enable box to turn detection ON

The Immediate Status icon shows the current status of CC – green for present, red for absent

Click the Display CC checkbox to display the closed captions in the thumbnail display

Click the Display XDS checkbox to enable display of the extracted XDS data in the thumbnail display.

Set the time for which the CC must be continuously detected as absent for an error to be flagged, using the Error Duration slider, or type a value directly into the data box

- Range: 1 to 250 sec
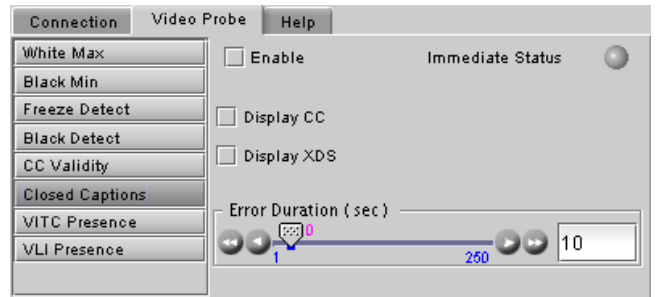
VITC Presence
Detect the presence of Vertical Interval Time Code (VITC) on a selected line in the SDI data stream, and choose whether to extract it.

Check the Enable box to turn detection ON

The VITC Presence icon shows the current status of VITC detection – green for present, red for absent

Click the Extract checkbox to extract the VITC and display it in the thumbnail.

Use the *Line* pulldown to select the line for detection.
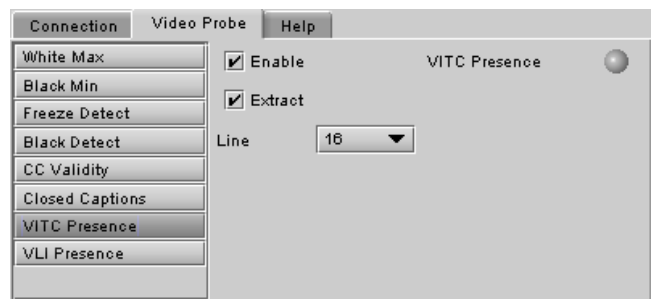
VLI Presence
Detects the presence of Video Line Index (VLI) data in an SDI video signal.

Check the Enable box to turn detection ON

Click the Extract checkbox to extract the detected aspect ratio value and display it in the Aspect Ratio data box.
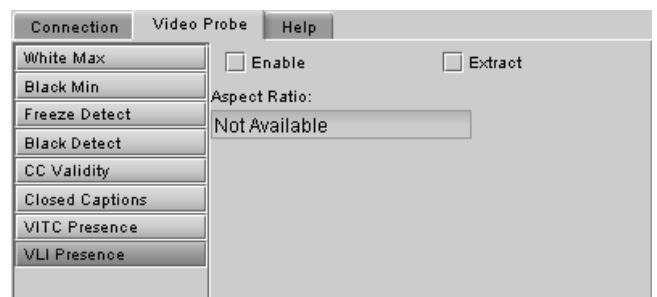
The *Help* tab displays a window with a pulldown list of all the probed parameters at the top. When one is selected, the window shows descriptive text and drawings where appropriate, explaining what the probe is measuring for this parameter.

RALM

The Real-time Audio Level Meter (RALM) visually displays the status of each audio channel present. The window displays four 2-channel meters.

RALM Connections sub-tab:

(applies to local display in the iControl panel)

> *CH 1&2, CH 3&4, CH 5&6* and *CH 7&8*: audio meters for each pair of channels may be turned on (RALM) or OFF. Note: you need to check the desired channels in the *RALM Remote Control* sub-section below in order to enable the RALM button.
>
> *Reset counter* button resets the overload counter.

RALM Remote Control sub-section:
allows the transmission of RALM data to the iControl server.

> *CH 1-2, CH 3-4, CH 5-6, CH 7-8* checkboxes*:* turn the meter off or on.
>
> *Speed: Slow, Medium* or *Fast:* select the meter refresh rate from the pull-down list, either fast, medium or slow.
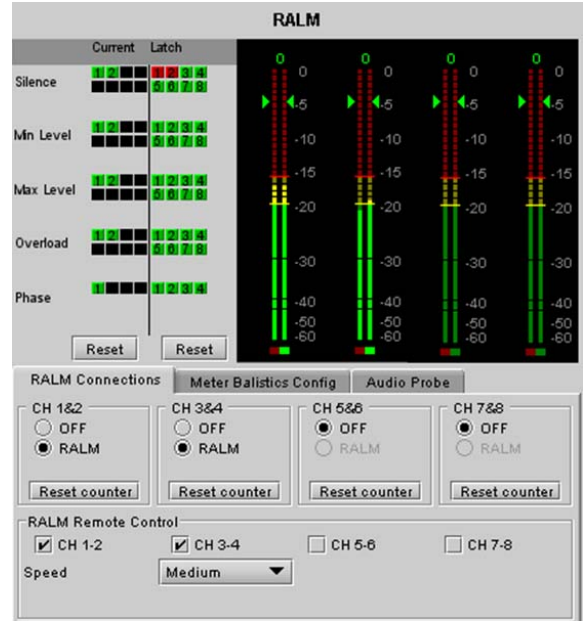
Meter Ballistic Config sub-tab:

> *Type* pull-down box*:* this pull-down offers a list of the available meter types, whose ballistics are identified by the standard to which they conform.
>
> *Upper Zone Limits (dB)* :select the crossover level between the upper and middle zones of the meter (the range of values shown in the pull-down list depends on the type of meter selected)
>
> *Lower Zone Limits (dB):* select the crossover level between the middle and lower zones of the meter (the range of values shown in the pull-down list depends on the type of meter selected)
>
> *Color samples* : the three samples show the current selected color for the upper, middle and lower zones of the meter. Click on the color sample of a zone to open a color selection panel to choose a different color for that zone.
>
> *Overload Cursor (dB)*:The overload cursor appears on the meter as an arrowhead in the meter scale. The two pulldown boxes set the position of the overload cursor on the left and right meters (the range of values shown in the pull-down list depends on the type of meter selected).
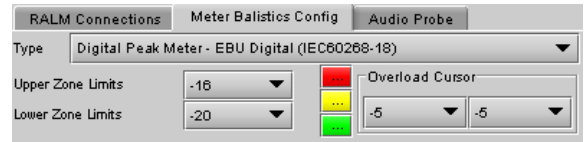
Meter functionality:

- The meter is divided into three zones:
- The dividing points are specified in the Upper Zone Limits and Lower Zone Limits boxes. Click in the box and scroll to the desired value.
- The color of the meter in each zone is selectable. Click on the colored square corresponding to the zone to open a color selection dialog.

- The level at which the channel is to be considered in Overload can be specified using the Channels Overload boxes. Click in the box to see a scrollable list, and select the desired level.

- The Overload Counter shows a running count of the number of overloads detected.

- The Phasemeter is a small meter that represents the phase correlation factor. Nominal position is in the center, which indicates the absence of signal. The red side, up to the left end of the meter indicates the level of phase opposition and the green side, up to the right end indicates the level of phase amplitude.
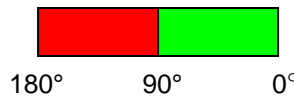
180°   90°   0°
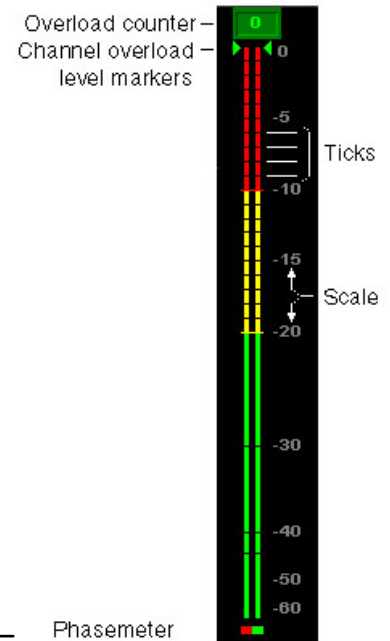
Audio Probing

Audio probing is an optional feature of the FRS-1101. See page 16 for information about ordering and installing this option.

The Probing status section at the top left of the RALM panel shows both the current and latched status of each of the probed parameters.

- The current status is active whenever the Probing option is enabled. It can be reset for confirmation using the Reset button beneath the Current column

- The occurrence of an error is flagged *Red* in the Latch status column, and remains flagged until the latch is cleared using the Reset button beneath the Latch column

The status may appear as follows:

■ Green icon – status OK

■ Red icon – error detected

■ Grey Icon – measurement enabled, but no video input presence

■ Black icon – measurement not enabled

Controls for the audio probing feature are found in the **Audio Probe** tab.

On the left, it displays a list of buttons, one for each of the parameters that can be tested by the audio probe feature.

- Click on a button to access the set-up controls for probing that parameter

All of these control sets include sliders marked **Threshold**, **Set Duration** and **Clear Duration,** which have these functions:

- Threshold   Set the level at which the probe will switch between error and no error detection. The range of values for the threshold slider, and whether the error condition is above or below the threshold, depends on the type of error being detected.
- Set Duration: Set the interval between the time an error is first detected and the time when it is flagged. This allows the user to filter out short-duration errors if desired. Range is usually 0 to 90 sec.
- Clear Duration: Set the interval between the time an error is no longer detected and the time when the error flag is cleared. Range is usually 0 to 10 sec.

Silence
Check whether the audio level (integrated over 10 ms) remains below a low-level threshold. Both channels checked separately.

Threshold: set the level (in dB) below which an Audio Silence error will be flagged.

➢   Threshold range: -80 to -40 dB
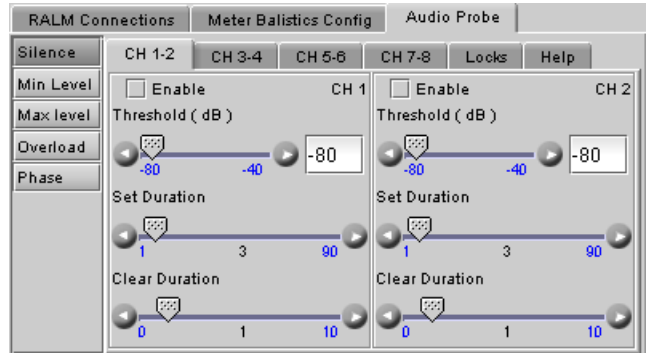
Min Level
Check whether the average audio level (integrated over 300 ms) remains below a low-level threshold. Both channels checked separately.

Threshold: set the level (in dB) below which an Audio Min Level error will be flagged.

➢   Threshold range: -40 to -20 dB
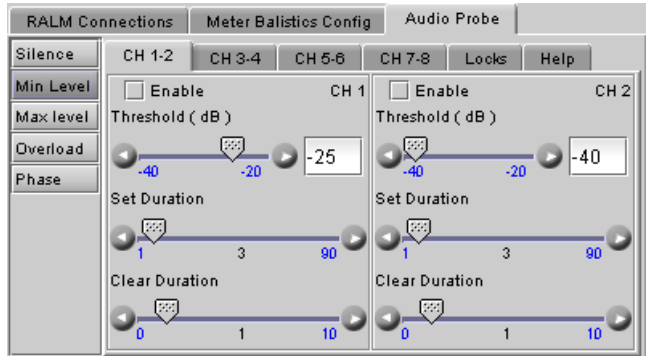
Max Level
Check whether the average audio level (integrated over 300 ms) remains above a high-level threshold. Both channels checked separately.

Threshold: set the level (in dB) above which an Audio Max Level error will be flagged.

➢   Threshold range: -20 to 0 dB
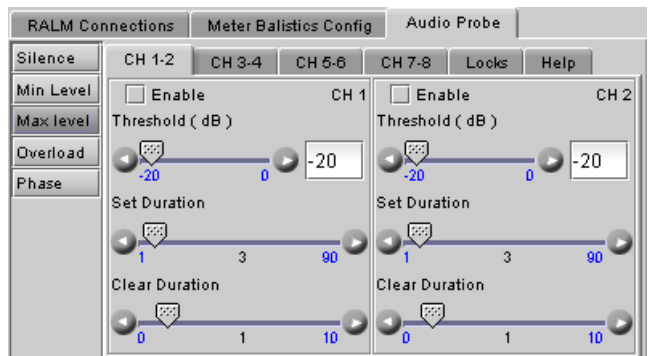
Overload
Detect the highest level present in the signal. Both channels checked separately. The integration time is 10 ms, and the peak value is latched for 1 second.

Threshold: set the level (in dB) above which an overload error will be flagged.

> ➢ Threshold range: -12 to 0 dB
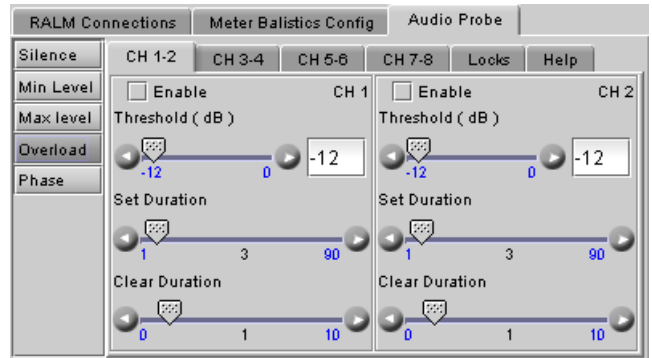
Phase
Detect phase errors between the two channels.

Threshold: set the value (in degrees) above which a phase error will be flagged

> ➢ Threshold range: 95 to 180 degrees
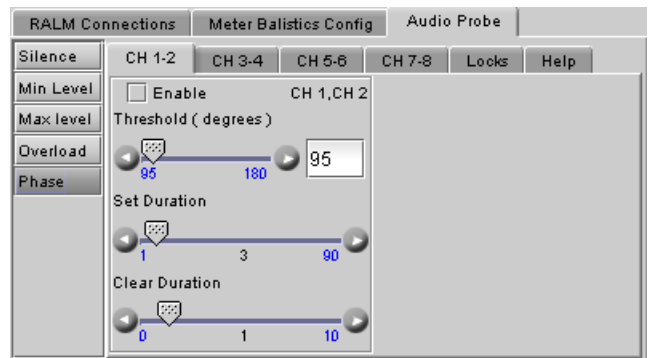
Locks
In most of the tests described above, parameters for the two channels in a pair are adjusted independently. If desired, the adjustments for the two channels can be locked together so that both change if either one is adjusted.

> ➢ Click the checkbox for each the channel pair whose controls are to be locked together
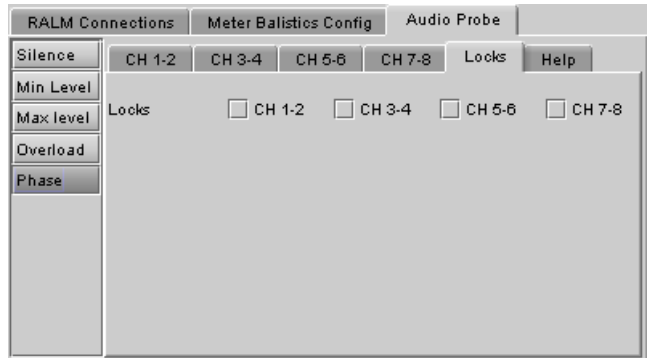
Help
The *Help* tab displays a window with a pulldown list of probed parameters at the top. When one is selected, the window shows descriptive text and drawings where appropriate, explaining what the probe is measuring for this parameter.
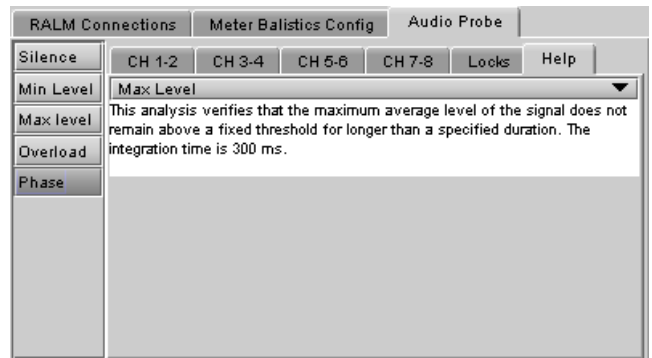
Blanking

This panel sets up the handling of VBI data.

VBI: PROCESS, PASS, BLANK, LINE BY LINE: select whether the overall VBI data field will be processed, will pass or be blanked. If *Line By Line* is selected, use the right-side panel to set each line individually.

VANC, HANC:PASS, BLANK: select whether the vertical ancillary data field and horizontal ancillary data field will pass or be blanked.

LINE BY LINE: Available when Line by Line is checked in the previous section. Radio buttons allows the selection of conditions for each line of the VBI data field.
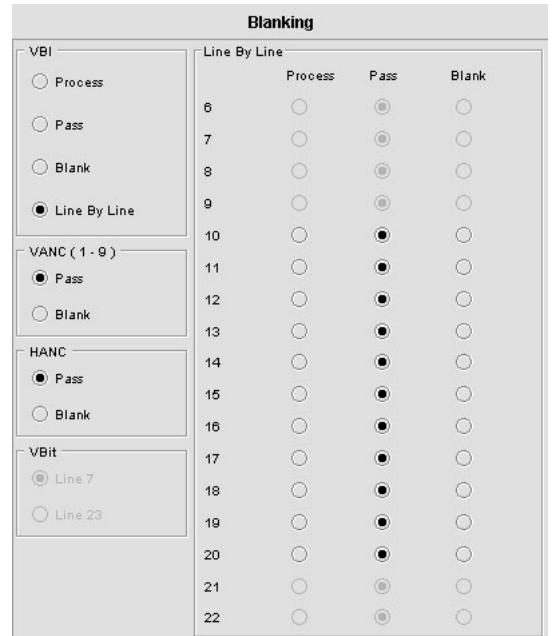
Timing

These controls provide access to timing adjustments which affect the signal outputs. There are two slider controls, each with a data reporting box which shows the current value, and into which values can be typed directly. If the Frame Sync option is not enabled, only the Horizontal delay may be accessed.

VERTICAL (Lines): 0, 1, …, 523, 524 (for 525 operation), 623, 624 (for 625 operation): sets the number of lines of vertical delay. This control is available when the *Frame Sync mode* has been activated in the Operation Mode panel.

HORIZONTAL (µs): 0, 0.037,0.064 …, 63.5 (for 525 operation), …,64 (for 625 operation): set the horizontal delay in µs.

FRAME DELAY Pulldown box: set the delay to 0, 1 or 2 frames.
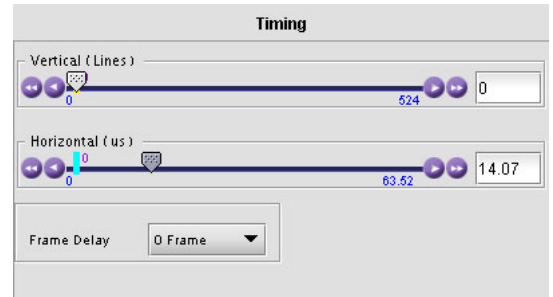
Reference Input

These controls allow selection of the reference signal.

REFERENCE SOURCE: Select between *AUTO*, *EXTERNAL* (use the REF input signal connected to the rear panel), *URS* (see below) or *INPUT* (use the input video signal as reference) as the reference source. AUTO mode searches for available signal in this order: REF input, URS and finally video input signal.

URS[1] FORMAT (not available at this time): Select between *OFF*, *525* or *625* for the Universal Reference Signal format.

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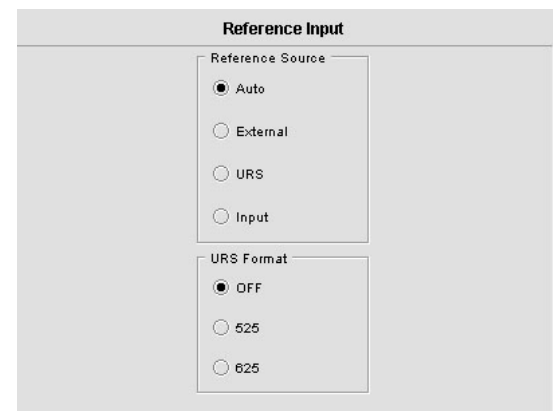
[1] [1]The URS is a single signal that is capable of distributing to all cards in a Densité frame a frequency reference and frame alignment references for all video and audio signals.

Input Error

Select the behavior of the SDI output in the event of an error in the input signal:

- If the KILL radio button is selected, the SDI output will be disconnected in case of an input error. The connector will carry no signal.
- If the BLACK button is selected, the SDI output connector will carry a signal with BLACK in the active picture area.
- If the FREEZE button is selected, the SDI output is frozen on the last video frame before the error was detected.
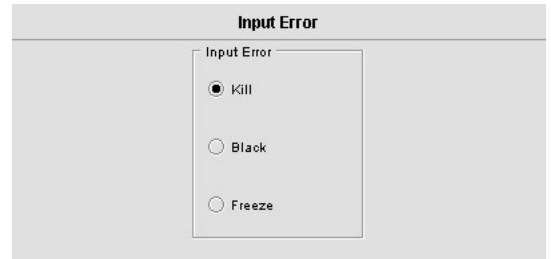
Test

Video sub-section:
Click on the *Color Bars* (75%) checkbox to place a 75% color bar signal on the video output.

Audio sub-section:
Click on the *Tone* checkbox to place audio test tones on the audio outputs of the selected channels (if the Audio option has been enabled).

The test tone is a 1 KHz sine wave:

- left channel – pulsed 3 seconds ON, 250 ms OFF

- right channel – steady tone

The test tone will be placed on the AES (on the Audio Bus to other cards) and embedded outputs. The input groups that were not disembedded are blanked.

Manual Freeze:
Check this box to freeze the output in its current state.
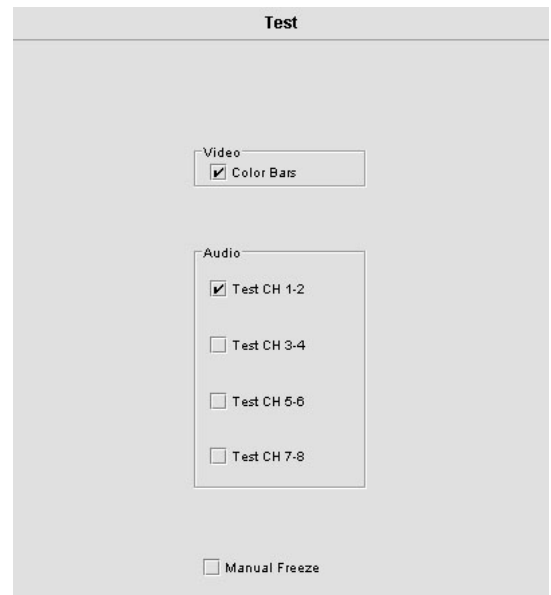
Operation Mode

Using the pull-down box, select the operating mode from the following choices:

- **Frame sync:** lock the FRS-1101 output to the external reference signal
- **Line Sync:** Line Synchronizer Mode is a special operating mode that buffers the input signal and maintains horizontal timing alignment with the reference, absorbing the effect of small timing changes or switching glitches on the input and providing a continuous output that will not freeze.

  The input should be synchronous with the reference, and horizontal timing of the input must remain within a 2-line window for the Line Sync mode to be effective.

  This mode is most useful in applications where signal continuity is important, such as feeding VTRs or MPEG encoders
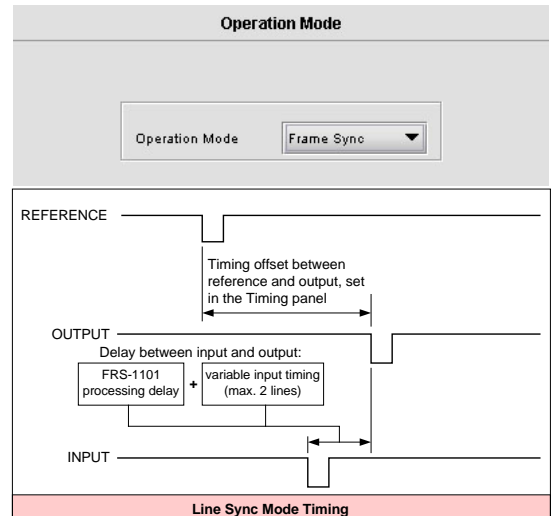
Options

Four options are available for the FRS-1101:

- Video Procamp option (FRS-1101-OPT-PROC),
- Audio Procamp option (FRS-1101-OPT-AUD8)
- Line Scope over IP option (FRS-1101-OPT-LS).
- Probing option (FRS-1101-OPT-PR)

Video Procamp Option
Activate this option on the FRS-1101 card by entering the **activation key** into the Enter Key data box, and clicking the **Enable Option** button.

- The current status of the option is shown in the status box below the Enter Key data box.

- See the text message at the top of the tab for information about purchasing the Video Procamp option and obtaining the activation key.
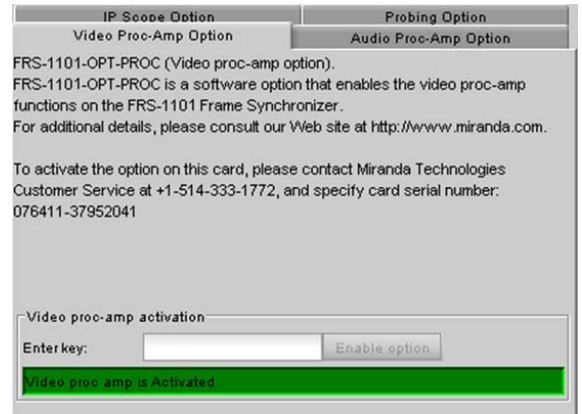
Audio Procamp Option
Activate this option on the FRS-1101 card by entering the **activation key** into the Enter Key data box, and clicking the **Enable Option** button.

- The current status of the option is shown in the status box below the Enter Key data box.

- See the text message at the top of the tab for information about purchasing the Audio Procamp option and obtaining the activation key.
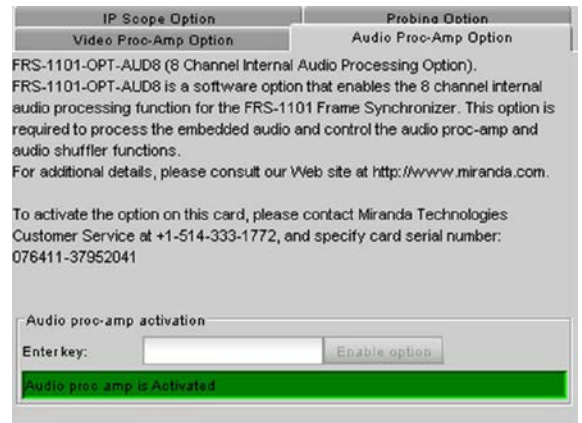
IP Scope Option
The IP Scope option adds a line scope output to the FRS-1101.

This output can be viewed on a standard PC using the iControl Streaming Player, which shows waveform monitor and vectorscope displays.

Activate the IP Scope option on the FRS-1101 card by entering the **activation key** into the Enter Key data box, and clicking the **Enable Option** button.

- The current status of the option is shown in the status box below the Enter Key data box.

- See the text message at the top of the tab for information about purchasing the IP Scope option and obtaining the activation key.

Waveform Monitor and Vector Scope sub-section:

Enable: Click on the checkbox to turn the IP Scope output ON.

Line: Use the slider or type in the data box to select the video line that will be used by the line scope. The current selection is shown in the data box.

Refresh Rate: choose how often the line scope display will be refreshed. Options are 1 sec to 10 sec, and Fast.
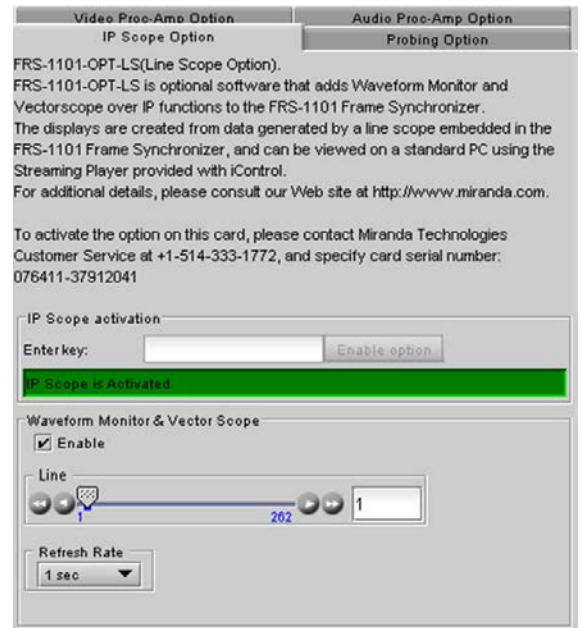
Probing Option

Activate this option on the FRS-1101 card by entering the **activation key** into the Enter Key data box, and clicking the **Enable Option** button.

- The current status of the option is shown in the status box below the Enter Key data box.

- See the text message at the top of the tab for information about purchasing the Audio Procamp option and obtaining the activation key.
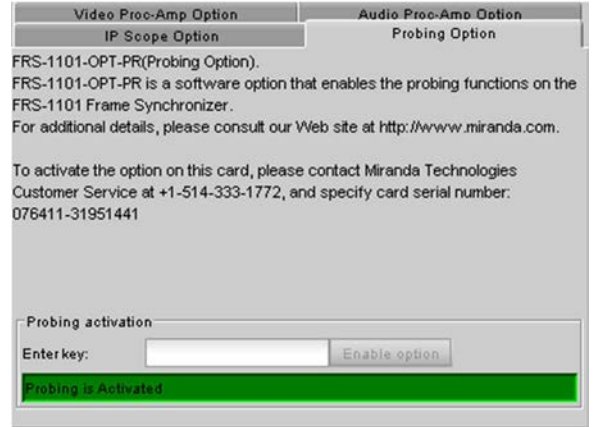
ABUS

When optional audio cards such as the UAP-1781 are used to provide additional audio signals, the ABUS audio bus links installed audio cards and the FRS-1101. The ABUS panel is used to instruct the FRS-1101 about the presence of installed audio cards.

Multiple Card Config sub-section:

The indicators signal the presence of UAP-1781 installed in the chassis. To enable the audio bus, use the pulldown box and select your system's configuration.

Selecting *Video* restricts available audio signals to audio channels embedded in the SD input signal;

Video / A1 or Video / A1 / A2 adds signals incoming from the installed audio cards that have been detected.
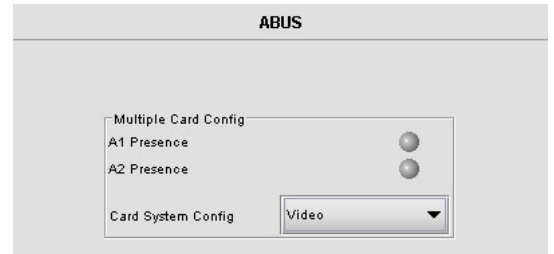
Factory

Click on the *Load Factory* button to restore all parameter settings on the HDC-1861 to their factory default values.

The Menu shown in this manual lists all possible values for these parameters. The Factory Default values are underlined in the Menu.

Info

The Info panel provides the user with information about the FRS-1101.

The boxes titled *Label*, *Short Label and Comments* are editable; the user can enter their own information.

The *Advanced* button displays the card's unique ID within the iControl system, identifying the FRS-1101 card, the slot and frame into which it is installed, and the URL and port of the frame on the network.

The *Remote System Administration* button at the bottom of the window opens a data entry box titled *Joining Locators*, in which the ADD option opens a dialog box in which the user can identify the Locator by its URL.

User Presets

The FRS-1101 has memory registers which can hold up to 5 user-defined parameter settings.

The User preset registers are accessed from the *User Presets* controls at the bottom left of the control panel.

Select any one of the five presets using the pulldown list. The name of the currently-selected User Preset is shown on the on the pulldown icon (e.g. *User1*, *User2*,… *User5*)

- Click *Load* to load the contents of the selected User Preset into the FRS-1101. All parameter settings and values will be replaced by the contents of the selected User Preset.

- Click *Save* to store the current parameter settings and values from the FRS-1101 into the selected User Preset. The existing contents of the preset will be overwritten.

Profiles

Click the Profiles button at the bottom left to open a window allowing parameter settings to be copied from this FRS-1101 card to other FRS-1101 cards.

Copy profile From

App-Server	Densite	Slot	Card	Firmware	Profile	Select	Transfer Status
QC_AppServer	Densite24	14	FRS-1101	200	Current	✔	

Copy Profile To

App-Server	Densite	Slot	Card	Firmware	Profile	Select ☐ All	Transfer Status
MC_AppServer	RK7Densite	4	FRS-1101	200	Current	✔	
MC_AppServer	RK3Densite	8	FRS-1101	200	Current	☐	N/A
DelAppServer	RK2Monitoring	7	FRS-1101	200	Current	✔	

The *Copy Profile From* line shows the current FRS-1101.

The *Copy Profile To* table shows all other FRS-1101 cards available in the local iControl environment

- Click in the individual *Select* boxes to select one or more destination FRS-1101 cards, or click *Select All* to select all of them at once. Those noted as not available (N/A) in the Transfer Status column cannot be selected.

- Click on the *Profile* entry in the source FRS-1101 line to see a pulldown listing the Current profile and all 5 user profiles

Firmware	Profile	Select	T
102	Current ▼	☑	

Current
User1
User2
User3
User4
User5

Firmware	Select ☐ All	T
102	☑	
102	☐	
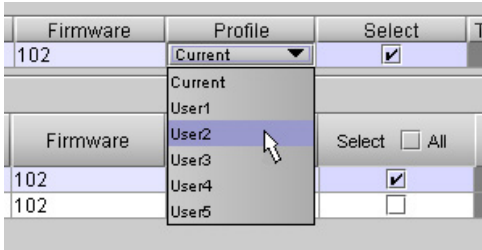
- Click on one to select it as the source profile

- Click Copy to copy the contents of the selected profile into the same-named profile on the destination FRS-1101 cards.

CONFIGURING ERROR STATUS REPORTING

The user can configure the response of the FRS-1101 to errors detected on any of its measured parameters.

- In iControl Navigator, right-click on the FRS-1101 icon, and select *Error/Warning Configuration* from the popup menu.

The Log Config panel opens, showing all measured parameters, and offering the following options for each:

- Select the checkbox between the Name and the Condition Level pulldown to enable reporting of that condition.

- Select the LEVEL that will be associated with a condition from the pulldown:
  - YELLOW = Warning
  - RED = Error

- Click the *Report GUI* checkbox to allow the status of this condition to be reflected in the FRS-1101's icon in iControl screens.
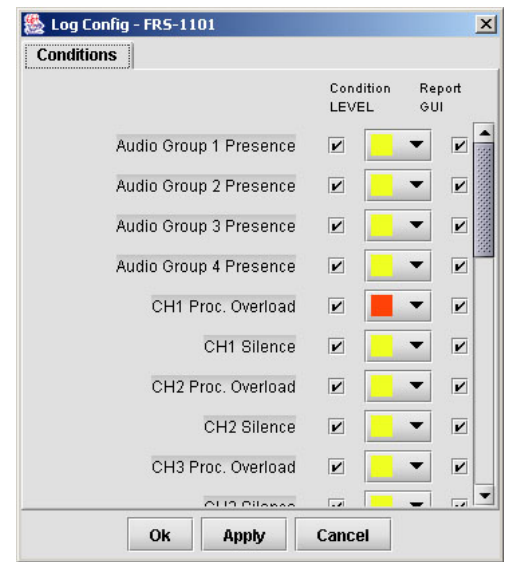
The following chart lists the parameters that are checked for errors, and shows the factory default settings:

	Green	Yellow	Red	Flashing Red
No input signal presence			✪	
Reference mismatch			✪	
No reference			✪	
No audio group 1		✪		
No audio group 2		✪		
No audio group 3		✪		
No audio group 4		✪		
Test		✪		
Card System			✪	
Silence Channel 1		✪		
Silence Channel 2		✪		

Silence Channel 3		✪	
Silence Channel 4		✪	
Silence Channel 5		✪	
Silence Channel 6		✪	
Silence Channel 7		✪	
Silence Channel 8		✪	
Overload		✪	

✪ : Factory default.

FRS-1101 Card Menu

Operating Parameter Adjustment

The FRS-1101 has operating parameters which may be adjusted locally at the controller card interface. After pressing the SELECT button on
the local control panel (described in the Controller card manual) to step through the displayed menu and adjust the parameters. The menus ar

STATUS	
	NO SIGNAL / SDI 525 / SDI 625
	NO EXTERNAL REF / EXTERNAL REF 525 / EXTERNAL REF 625
	NO URS / URS 525 / URS 625
	REF MISMATCH
	NO AES / AES GROUP: 1234
	SILENCE CH 1
	SILENCE CH 2
	SILENCE CH 3
	SILENCE CH 4
	SILENCE CH 5
	SILENCE CH 6
	SILENCE CH 7
	SILENCE CH 8
	OVERLOAD CH 1
	OVERLOAD CH 2
	OVERLOAD CH 3
	OVERLOAD CH 4
	OVERLOAD CH 5
	OVERLOAD CH 6
	OVERLOAD CH 7
	OVERLOAD CH 8
	NO REAR / SINGLE REAR / DOUBLE REAR
	OUTPUT : 525 / 625
	TEST
	A1 MISSING
	A2 MISSING
	CARD SYSTEM
	HARDWARE FAILURE

USER PRESET		
	LOAD:	[USER 1 ,USER 2, USER 3, USER 4, USER 5]
	SAVE:	[USER 1 ,USER 2, USER 3, USER 4, USER 5]

VIDEO PROC		
	ALL GAIN:	[-800, -799, …0…799, 800] * Available with Video Proc Option
	LUMA GAIN:	[-800, -799, …0…799, 800] * Available with Video Proc Option
	CHROMA GAIN:	[-800, -799, …0…799, 800] * Available with Video Proc Option
	HUE:	[-180, -179,…0, …. 179,180] * Available with Video Proc Option
	BLACK LEVEL:	[-100, -99, ..,0, …, 99, 100] * Available with Video Proc Option
	Cb:	[-800, -799, …0…799, 800] * Available with Video Proc Option
	Cr:	[-800, -799, …0…799, 800] * Available with Video Proc Option

AUDIO*	DE-EMBED	
* Available with Audio Option or Audio Card connected	CHANNELS 1234:	[GRP 1, GRP 2, GRP 3, GRP 4]
	CHANNELS 5678:	[GRP 1, GRP 2, GRP 3, GRP 4]

```
PROC ──┬── CHANNEL 1 ──┬── LEVEL:            [-96, -95.5, ….0,…..12]  (dB)
       │               │   MUTE:             [OFF / ON]
       │               │   LOCK CH. 1 & 2:   [OFF / ON]
       │               │   PHASE INVERT:     [OFF / ON]
       │               └── FIXED DELAY ──┬── COARSE:   [None, 0, 1, …. 2000]  (msec)
       │                                 └── FINE:     [0, 1, 2, …. 47]  (samples)
       │
       ├── CHANNEL 2 ──┬── LEVEL:            [-96, -95.5, ….0,…..12]  (dB)
       │               │   MUTE:             [OFF / ON]
       │               │   LOCK CH. 1 & 2:   [OFF / ON]
       │               │   PHASE INVERT:     [OFF / ON]
       │               └── FIXED DELAY ──┬── COARSE:   [None, 0, 1, …. 2000]  (msec)
       │                                 └── FINE:     [0, 1, 2, …. 47]  (samples)
       │
       └── CHANNEL 8 ──┬── LEVEL:            [-96, -95.5, ….0,…..12]  (dB)
                       │   MUTE:             [OFF / ON]
                       │   LOCK CH. 7 & 8:   [OFF / ON]
                       │   PHASE INVERT:     [OFF / ON]
                       └── FIXED DELAY ──┬── COARSE:   [None, 0, 1, …. 2000]  (msec)
                                         └── FINE:     [0, 1, 2, …. 47]  (samples)

EMBEDDING ──┬── CHANNELS 1234 TO:   [OFF, GRP 1, GRP 2, GRP 3, GRP 4]
            └── CHANNELS 5678 TO:   [OFF, GRP 1, GRP 2, GRP 3, GRP 4]

OUTPUT MIXERS ──┬── CHANNEL 1 ──── OPERATION MODE:       [OFF, A, SUM(A+B), MIX]
                │
                ├── CHANNEL 2 ──┬── OPERATION MODE:      [OFF, A, SUM(A+B), MIX]
                │               │   ABUS:                [V, A1, A2]
                │               │   CHANNEL SELECT:      [1, 2, 3, …. 8]
                │               │   LEVEL:               [-96, -95, …. 0]  (dB)
                │               │   MUTE:                [OFF / ON]
                │
                ├── CHANNEL 3 ──┬── OPERATION MODE:   [OFF, A, SUM(A+B), MIX]
                │               ├── SOURCE A ──┬── ABUS            [V, A1, A2]
                │               │              └── CHANNEL SELECT  [1, 2, 3, …. 8]
                │               │
                │               ├── SOURCE B ──┬── ABUS            [V, A1, A2]
                │               │              └── CHANNEL SELECT  [1, 2, 3, …. 8]
                │               │
                │               │   SUM (A+B) LEVEL   -6, -3, 0  dB
                │               └── MUTE              [OFF / ON]
                │
                … CH. 4 to 7
                │
                └── CHANNEL 8 ──┬── OPERATION MODE    [OFF, A, SUM(A+B), MIX]
                                ├── SOURCE A ──┬── ABUS            [V, A1, A2]
                                │              ├── CHANNEL SELECT  [1, 2, 3, …. 8]
                                │              └── LEVEL           [-96, -95, …. 0]  (dB)
                                │
                                └── SOURCE B ──┬── ABUS            V, A1, A2
                                               └── CHANNEL SELECT  [1, 2, 3, …. 8]
```

	LEVEL	[-96, -95, …. <u>0</u>] *(dB)*
	MUTE:	[<u>OFF</u> / ON]

TRACKING DELAY*:	[OFF,<u>ON</u>]	
NSD THRESHOLD*:	[<u>-72</u>, -66, -60, -54, -48] *(dB)*	**Available with Audio option only*
NSD DELAY*:	[<u>OFF</u>, 1, 2, 3, 4, ….255] *(sec)*	
WORD LENGTH*:	[<u>20 bits</u>, 24 bits]	

BLANKING			
	VBI (10-20):	<u>PASS</u>, BLANK, PROC, USER	*(525)*
	VBI (6-22):	<u>PASS</u>, BLANK, PROC, USER	*(625)*
	VANC1 (1-9):	<u>PASS,</u> BLANK	*(525)*
	VANC1 (1-6):	<u>PASS,</u> BLANK	*(625)*
	HANC:	<u>PASS,</u> BLANK	

INPUT LOSS
[<u>KILL</u>, BLACK, FREEZE FIELD]

TIMING			
	FRAME DELAY:	[<u>0</u>, 1, 2]	
	VERTICAL:	[<u>0</u>, 1, 2, …. 523, 524] (lines)	*(525)*
		[<u>0</u>, 1, 2, …. 623, 624] (lines)	*(625)*
	HORIZONTAL:	[<u>0</u>, 0.037, 0.064, …. 63,5] (us)	*(525)*
		[<u>0</u>, 0.037, 0.064, …. 64] (us)	*(625)*

REFERENCE		
	SOURCE:	[<u>AUTO</u>, EXTERNAL, URS, INPUT]
	URS FORMAT:	[<u>OFF</u>, 525, 625]

CARD SYSTEM
[<u>NONE</u>, A1, A1 + A2]

TEST		
	VIDEO	[<u>OFF</u> / ON]
	AUDIO CH 1&2	[<u>OFF</u> / ON]
	AUDIO CH 3&4	[<u>OFF</u> / ON]
	AUDIO CH 5&6	[<u>OFF</u> / ON]
	AUDIO CH 7&8	[<u>OFF</u> / ON]

* Available with Audio Option or Audio Card connected

CONFIG ALARMS			
	NO SIGNAL	ALARM LEVEL:	[GREEN, YELLOW, <u>RED</u>, FLASH RED]
		ALARM REPORT:	[<u>NONE</u>, GPI]
	REF MISMATCH	ALARM LEVEL:	[GREEN, YELLOW, <u>RED</u>, FLASH RED]
		ALARM REPORT:	[<u>NONE</u>, GPI]
	NO REF	ALARM LEVEL	[GREEN, YELLOW, <u>RED</u>, FLASH RED]
		ALARM REPORT	[<u>NONE</u>, GPI]
	NO AUDIO GRP 1	ALARM LEVEL	[GREEN, <u>YELLOW</u>, RED, FLASH RED]
		ALARM REPORT	[<u>NONE</u>, GPI]
	NO AUDIO GRP 2	ALARM LEVEL	[GREEN, <u>YELLOW</u>, RED, FLASH RED]
		ALARM REPORT	[<u>NONE</u>, GPI]
	NO AUDIO GRP 3	ALARM LEVEL	[GREEN, <u>YELLOW</u>, RED, FLASH RED]
		ALARM REPORT	[<u>NONE</u>, GPI]

* Available with Audio Option or Audio Card connected

NO AUDIO GRP 4	ALARM LEVEL	[GREEN, <u>YELLOW</u>, RED, FLASH RED]
	ALARM REPORT	[<u>NONE</u>, GPI]
NSD CH 1	ALARM LEVEL	[GREEN, <u>YELLOW</u>, RED, FLASH RED]
	ALARM REPORT	[<u>NONE</u>, GPI]
NSD CH 2	ALARM LEVEL	[GREEN, <u>YELLOW</u>, RED, FLASH RED]
	ALARM REPORT	[<u>NONE</u>, GPI]
NSD CH 3	ALARM LEVEL	[GREEN, <u>YELLOW</u>, RED, FLASH RED]
	ALARM REPORT	[<u>NONE</u>, GPI]
NSD CH 4	ALARM LEVEL	[GREEN, <u>YELLOW</u>, RED, FLASH RED]
	ALARM REPORT	[<u>NONE</u>, GPI]
NSD CH 5	ALARM LEVEL	[GREEN, <u>YELLOW</u>, RED, FLASH RED]
	ALARM REPORT	[<u>NONE</u>, GPI]
NSD CH 6	ALARM LEVEL	[GREEN, <u>YELLOW</u>, RED, FLASH RED]
	ALARM REPORT	[<u>NONE</u>, GPI]
NSD CH 7	ALARM LEVEL	[GREEN, <u>YELLOW</u>, RED, FLASH RED]
	ALARM REPORT	[<u>NONE</u>, GPI]
NSD CH 8	ALARM LEVEL	[GREEN, <u>YELLOW</u>, RED, FLASH RED]
	ALARM REPORT	[<u>NONE</u>, GPI]
OVLD PROCESSING	ALARM LEVEL	[GREEN, <u>YELLOW</u>, RED, FLASH RED]
	ALARM REPORT	[<u>NONE</u>, GPI]
TEST	ALARM LEVEL	[GREEN, <u>YELLOW</u>, RED, FLASH RED]
	ALARM REPORT	[<u>NONE</u>, GPI]

* Available with Audio Option or Audio Card connected

VERSION — FRS-1101: xxx

OPTIONS
VIDEO PROC ON/OFF: Key: xx.xx.xx.xx
AUDIO ON/OFF: Key: xx.xx.xx.xx
LINE SCOPE ON/OFF Key: xx.xx.xx.xx
PROBING ON/OFF Key: xx.xx.xx.xx

FACTORY DEFAULT — [RESTORE]

Electromagnetic Compatibility

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

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

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

- EN 55022 Class A radiated and conducted emissions
- EN 61000-3-2   Harmonic current injection
- EN 61000-3-3   Limitation of voltage changes, voltage fluctuations and flicker
- EN 61000-4-2   Electrostatic discharge immunity
- EN 61000-4-3   Radiated electromagnetic field immunity – radio frequencies
- EN 61000-4-4   Electrical fast transient immunity
- EN 61000-4-5   Surge immunity
- EN-61000-4-6   Conducted disturbances immunity
- EN 61000-4-11 Voltage dips, short interruptions and voltage variations immunity
- ENV 50204   Radiated EMF immunity – RF 900 MHz pulsed

How to contact us:

For technical assistance, please contact the Miranda Technical support centre nearest you:

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