

# DENSITÉ series

## **IRG-3401** **High Density ASI/IP Gateway** Guide to Installation and Operation

M945-9900-100

16 September 2013



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A **BELDEN** BRAND

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## Electromagnetic Compatibility



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

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**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.

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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
- ENV 50204 Radiated EMF Immunity – RF 900 MHz Pulsed
- EN 61000-3-2 Harmonic current emission limits
- EN 61000-3-3 Voltage fluctuations and flicker limitations
- 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 transient immunity
- EN 61000-4-6 Conducted disturbances immunity
- EN 61000-4-11 Voltage-dips, short-interruption and voltage variation immunity

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*GUIDE TO INSTALLATION AND OPERATION*

# 1 IRG-3401 High Density ASI/IP Gateway

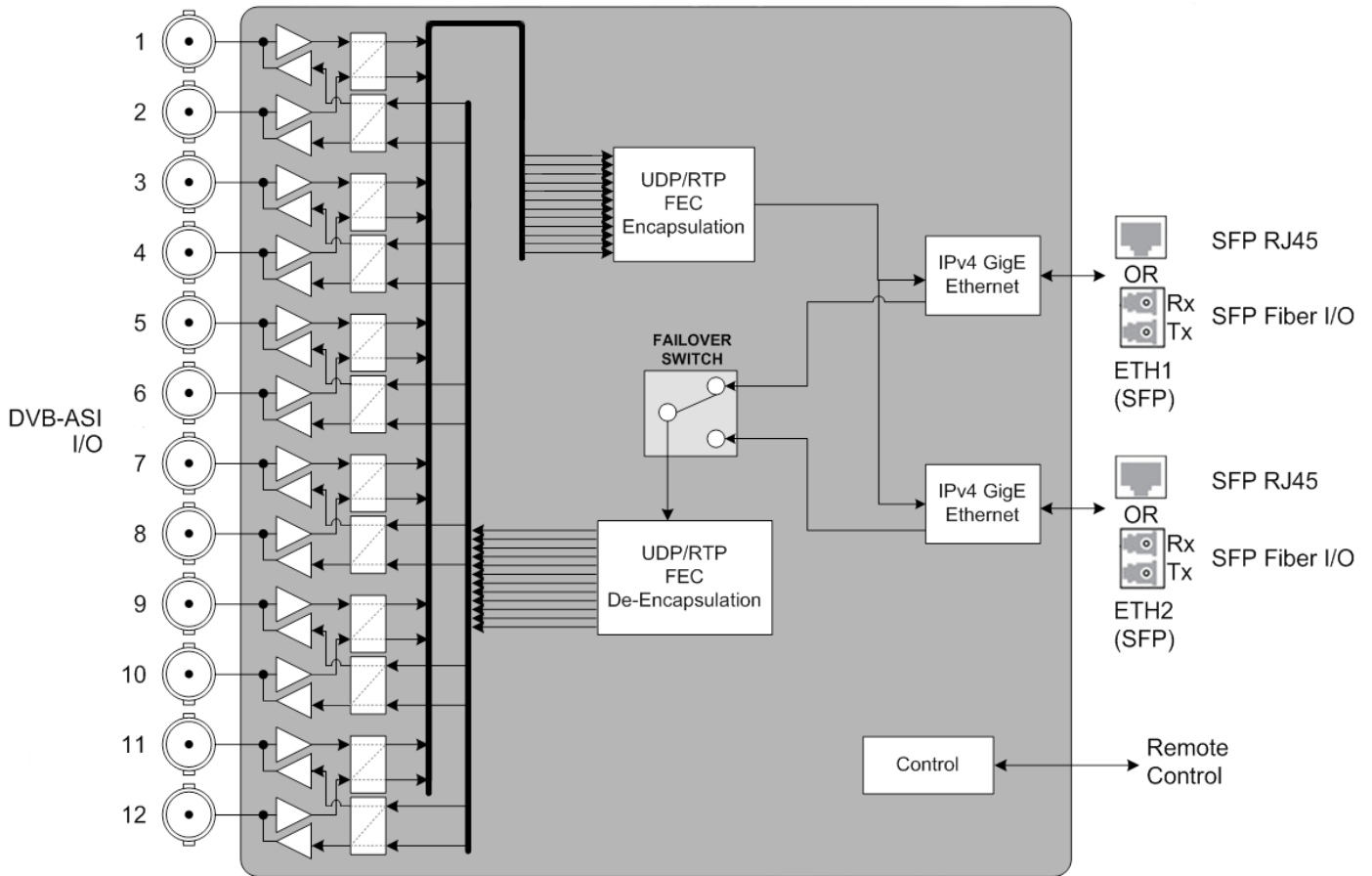
## 1.1 Introduction

The IRG-3401 facilitates Cable, Satellite and IPTV operator's migration towards IP infrastructures by offering a flexible highly-integrated DVB-ASI/IP bidirectional gateway that can bridge any type of MPEG transport stream from/to IP networks. The high density allows 120 gateways per 3RU Densité3 frame and helps saving substantial rack space in high channel count environment. Its scalability through modularity is the ideal solution in the ever-changing environment of increasing TV channel lineups.

## 1.2 Features

- Very high density gateway with 12 gateways per card / 120 gateways per 3RU frame
- Handle most demanding streams:
  - Up to 213Mbps per DVB-ASI
  - Total of 800Mbps on Ethernet
- Configure each DVB-ASI as an input or output
- Convert legacy ASI devices to IP with simultaneous IP to ASI and ASI to IP conversions
- Full Redundancy to avoid service interruptions:
  - Pair DVB-ASI I/O's as main and backup
  - Copy TS streams on both ports simultaneously (port mirroring on both on both IP and ASI sides)
  - Automatic change over switch for both Ethernet ports and DVB-ASI ports
- Flexible IP connectivity through two distinct SFP ports for optical or electrical modules
- MPEG Cop3 FEC Support for better signal integrity over IP
- UDP/RTP encapsulation 1 to 7 TS/IP packet
- Better multicast traffic control using IGMPv3 MSM/SSM
- IP jitter removal

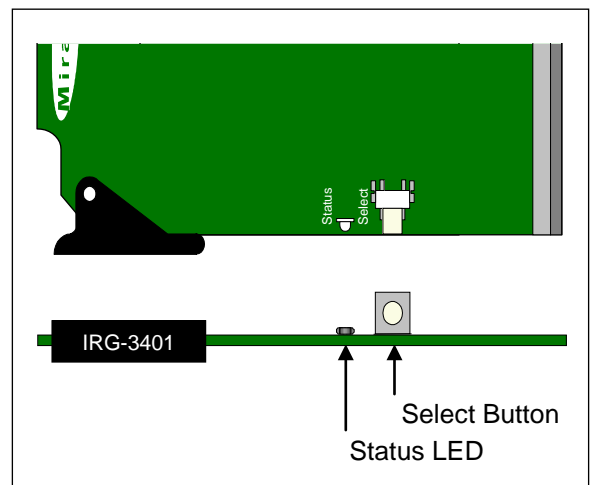
### 1.3 Block Diagram



### 1.4 Front Card-edge Interface

The front card-edge of the IRG-3401 incorporates two elements:

- Status LED (see section 3.2)
- Select Button (see section 3.3)



## 2 Installation

### 2.1 Preparation

The following items are required for the installation of your IRG-3401 in a Densité 3-series frame:

- IRG-3401 High density ASI/IP gateway card.
- IRG-3401-3DRP double-slot-width rear panel.

### 2.2 Installation in the Densité frame

The IRG-3401 and its associated rear connector panel must be mounted in a Densité 3-series frame. The card has connectors which plug into a mid-frame mother board for distribution of power and for connection to the controller card, and a second connector which plugs directly into the rear connector panel for input and output.

The IRG-3401 is available for Densité 3, Densité 3 mini and Densité 3+ FR1 frames. The same rear panel is used for all frames.

#### 2.2.1 Installing the Rear Connector Panel

The rear connector panel must be installed in the Densité frame before the card can be inserted.

All Densité-series cards and rear panels can be installed with the frame power on.

See section 2.3 for details of the signal connections.

***The rear connector panel must be installed with the card out of the frame.***

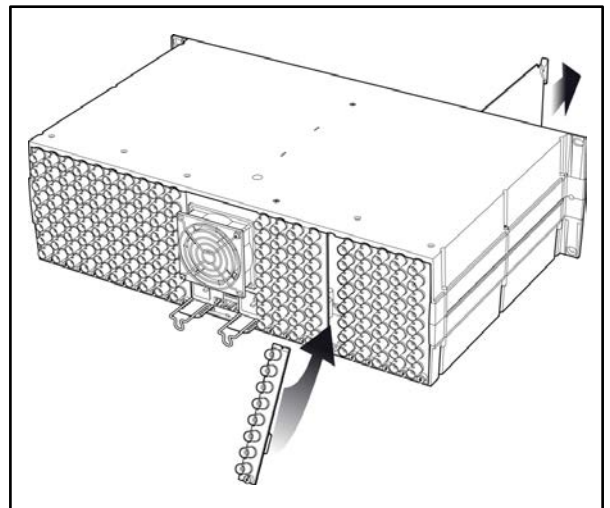
- To remove an existing card from the slot, tilt the swivel handle on the front of the card to lever the connectors apart, then use the handle to pull the card straight out of the slot.

***To install the connector panel:***

1. If any cards are installed in the slots whose rear panels are being changed, remove them as described above.

Note that the IRG-3401 panel occupies two slot-widths on the frame.

2. Remove the existing panel or panels (either blank or belonging to existing cards that are being changed) by releasing the captive screw(s) at the bottom.
3. Position the new panel and secure it in place with the captive screw(s) at the bottom.



## 2.2.2 Installing the IRG-3401 card

Once the rear connector panel has been installed, install the IRG-3401 card as follows:

1. Open the front panel of the frame.
2. Slide the IRG-3401 card into the slot and push gently on the handle to seat the connectors.
  - For this double-slot-width rear panel, insert the card into the right-most slot, as seen from the front of the frame. If the card is inserted into the wrong slot, the status LED on the front of the card will flash red. The card will not be damaged.
3. Close the front panel of the frame.

## 2.3 Rear Panel Connections

The IRG-3401-3DRP rear panel incorporates these connections:

<b>ASI IN/OUT</b>	12 x BNC connectors Input/Output of signals conforming to EN50083-9 (V2:3/98) DVB ASI
<b>ETH1 GigE</b> <b>ETH2 GigE</b>	2 x SFP modular sockets, supporting RJ-45 or optical modules Input/Output of signals conforming to IEEE 802.3 1000Mbps Ethernet.
	Transport: UDP/RTP with FEC Pro-MPEG CoP3 1-7 TS/IP Unicast or Multicast with IGMPv3 MSM/SSM





### 3 Operation

#### 3.1 Control options

The IRG-3401 can be controlled in two different ways:

- The local control panel and its push-buttons can be used to move through a menu of parameters and to adjust parameter values (see section 3.3)
- Miranda's iControl system can be used to access the card's operating parameters from a remote computer, using a convenient graphical user interface (GUI). (see section 3.4)

#### 3.2 Card-Edge Status LED

The status monitor LED is located on the front card-edge of the IRG-3401, and is visible through the front access door of the Densité frame. This multi-color LED indicates the status of the IRG-3401 by color, and by flashing/steady illumination.

The chart shows how the various error conditions that can be flagged on the IRG-3401 affect the LED status.

- If a cell is gray, the error condition cannot cause the LED to assume that status
- If more than one LED status is possible for a particular error condition, the status is configurable. See Section 3.4.6 for details.
- The factory default status is shown by a ⚙

The LED will always show the most severe detected error status that it is configured to display, and in the chart error severity increases from left to right, with green representing no error/disabled, and flashing red the most severe error.

Error Condition	LED Status			
	Green	Yellow	Red	Flashing Red
No errors	⚙			
Hardware failure				⚙
No rear				⚙

If the LED is Flashing Yellow, it means that the card is selected for local control using the Densité frame's control panel. See Section 3.3 for details.

#### 3.3 Local control using the Densité frame control panel

##### 3.3.1 Overview

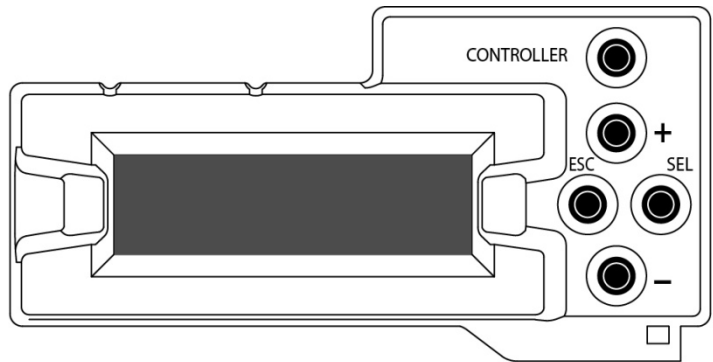
Push the SELECT button on the IRG-3401 card edge (see Section 1.4) to assign the local control panel to operate the IRG-3401. Use the control panel buttons to navigate through the menu, as described below.

All of the cards installed in a Densité frame are connected to the frame's controller card, which handles all interaction between the cards and the outside world. There are no operating controls located on the cards themselves. The controller supports remote operation via its Ethernet ports, and local operation using its integrated control panel.

The local control panel is fastened to the front of the CPU-ETH2 controller card, and when installed can be accessed by opening the front door of the frame. The panel consists of a display unit capable of displaying two lines of text, each 16 characters in length, and five pushbuttons.

The panel is assigned to operate any card in the frame by pushing the SELECT button on the front edge of that card.

- Pushing the CONTROLLER button on the control panel selects the Controller card itself.
- The STATUS LED on the selected card flashes yellow



**Figure 3.1** Densité Frame local control panel

The local control panel displays a menu that can be navigated using the four pushbuttons located beside the display. The functionality of the pushbuttons is as follows:

[+] [-] Used for menu navigation and value modification

[SELECT] Gives access to the next menu level. When a parameter value is shown, pushing this button once enables modification of the value using the [+] and [-] buttons; a second push confirms the new value

[ESC] Cancels the effect of parameter value changes that have not been confirmed. Pushing [ESC] causes the parameter to revert to its former value.

Pushing [ESC] moves the user back up to the previous menu level. At the main menu, [ESC] does *not* exit the menu system. To exit, re-push the [SELECT] button for the card being controlled.

If no controls are operated for 30 seconds, the controller reverts to its normal standby status, and the selected card's STATUS LED reverts to its normal operating mode.

### 3.3.2 Menu for local control

The IRG-3401 has operating parameters which may be adjusted locally at the controller card interface.

- Press the SELECT button on the IRG-3401 front card edge to assign the Densité frame's local control panel to the IRG-3401
- Use the keys on the local control panel to step through the displayed menu to configure and adjust the IRG-3401.

The complete menu structure is shown in the Annex to this document, beginning on page 23.

## 3.4 Remote control using iControl

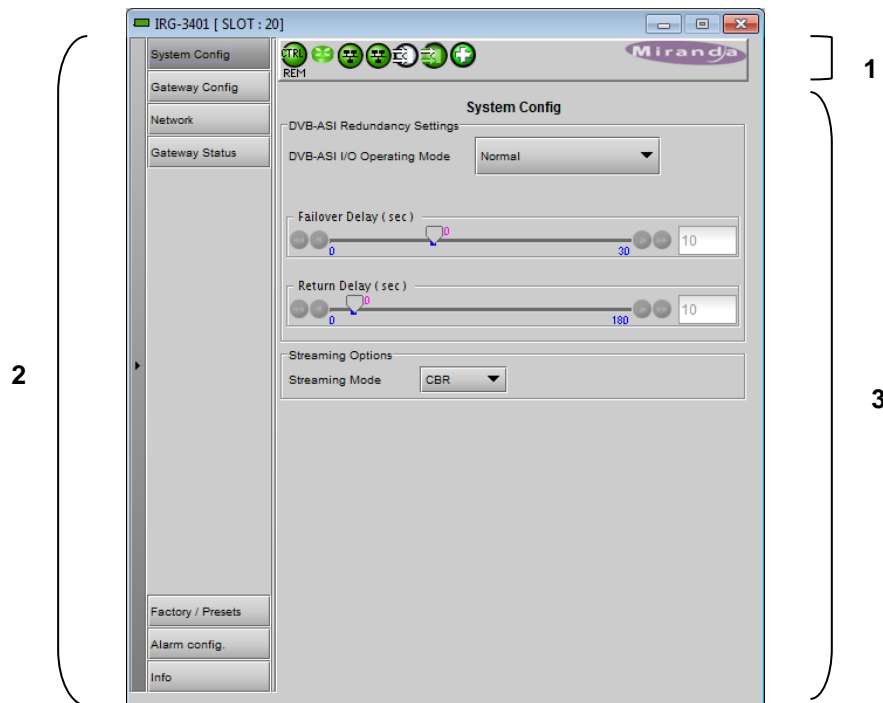
The operation of IRG-3401 may be controlled using Miranda's iControl system.

- This manual describes the control panels associated with the IRG-3401 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 IRG-3401 icon to open the control panel.

### 3.4.1 The iControl graphic interface window

The basic window structure for the IRG-3401 is shown in figure 3.2. The window identification line gives the card type (*IRG-3401*) and the slot number where the card installed in its Densité frame.



**Figure 3.2** IRG-3401 iControl graphic interface window

There are three main sections in the window itself, identified in figure 3.2:

**Section 1.** The top section displays seven icons on the left. These icons report different statuses such as card communication status, input and output status, card health, etc. In some instances, they relate to conditions defined through parameters settings.



Icon # 1 2 3 4 5 6 7










Move the mouse over an icon and a status message appears below the icon providing additional information. If there is an error, the error status message appears in the message area without mouse-over.









- If there are multiple errors, the error messages cycle so all can be seen
- The icon whose status or error message is shown is highlighted with a mauve background

The table below describes the various status icons that can appear, and how they are to be interpreted.

- In cases where there is more than one possible interpretation, read the error message in the iControl window to see which applies.

**Table –iControl Status Icon interpretation**

<b>Icon #1 – Manual Card Configuration</b>	
 <p>(green)</p>	Remote card control activated. The iControl interface can be used to operate the card
 <p>(yellow)</p>	Local card control active, The card is being controlled using the Densité frame control panel, as described in section 3.3. Any changes made using the iControl interface will have no effect on the card.
<b>Icon #2 – Gateway Status</b>	
 <p>(green)</p>	All gateways are OK.
 <p>(red)</p>	At least one gateway is down.
<b>Icon #3 – ETH1 Port Status</b>	
 <p>(green)</p>	IP link up and active.
 <p>(red)</p>	No link (port down)
<b>Icon #4 – ETH2 Port Status</b>	
 <p>(green)</p>	IP link up and active.
 <p>(red)</p>	No link (port down) – Ethernet port redundancy enabled.
 <p>(gray)</p>	Ethernet port not used.

Icon #5 – ASI Redundancy Status	
 (green)	All gateways are using the MAIN ASI input
 (yellow)	At least one gateway is using the backup port
 (gray)	Redundancy turned off.
Icon #6 – Ethernet Redundancy Status	
 (green)	MAIN ethernet in use.
 (yellow)	The backup Ethernet port is being used
 (gray)	Redundancy turned off.
Icon #7 – Health Monitoring	
 (green)	Hardware and software OK
 (red)	Health Monitoring - (error name appears in message area) If this icon appears red, return the card to Miranda.

**Section 2.** The left portion of the window contains a series of labeled buttons, which become highlighted when they are selected; the main panel (3) then displays the appropriate parameters. Each of the panels is described in detail below.

- This section of the window can be hidden or revealed by clicking the arrow icon at the center of the left side border.

**Section 3.** The main panel contains all the parameters specific to the selected focus area. It may contain several tabs to help manage the different parameters.

Each of the panels accessed from the buttons in Section 2, and shown in Section 3, is described individually in the following sections.

### 3.4.2 The System Config panel

#### DVB-ASI Redundancy Settings

Use the *DVB-ASI I/O Operating Mode* pulldown to select the operating mode:

- Normal
- Redundant – Manual
- Redundant – Switch & Return

Each of the 12 DVB-ASI ports can be individually configured as Input or Output in *Normal* operating mode (see the Gateway Status panel).

In *Redundant* mode, the ASI are paired:

- When they are inputs, the first (odd-numbered) is the MAIN input, while the second (even-numbered) is the BACKUP
- When they are outputs, both output the same signal.

The failover to the backup input in the redundant mode depends on three factors:

- Loss of carrier.
- Loss of TS packets (for more than 2 sec with carrier present).
- Presence of a stream filled only with NULL bytes.

In the *Redundant – Switch and Return* mode, the user sets the time delay between the detection of the loss of the main input and the switchover to the backup input, using the **Failover Delay** slider (range 1 to 30 sec), and the delay between the detection that the main input has returned and is stable, and the switch back to the main input, using the **Return Delay** slider (range: 1-180 sec).

#### Streaming Options

Specify the type of bitstream arriving at the IP inputs for conversion to ASI. This setting controls the jitter removal system. This system only works with constant bit rate streams (CBR). In order to adequately pass VBR streams, the jitter removal system has to be disabled.

Use the pulldown to select between:

- VBR (Variable Bit Rate streams are received)
- CBR (Constant Bit Rate streams are received)

Note that this setting applies to all 12 gateways on the card – a mix of VBR and CBR inputs is not allowed or supported.

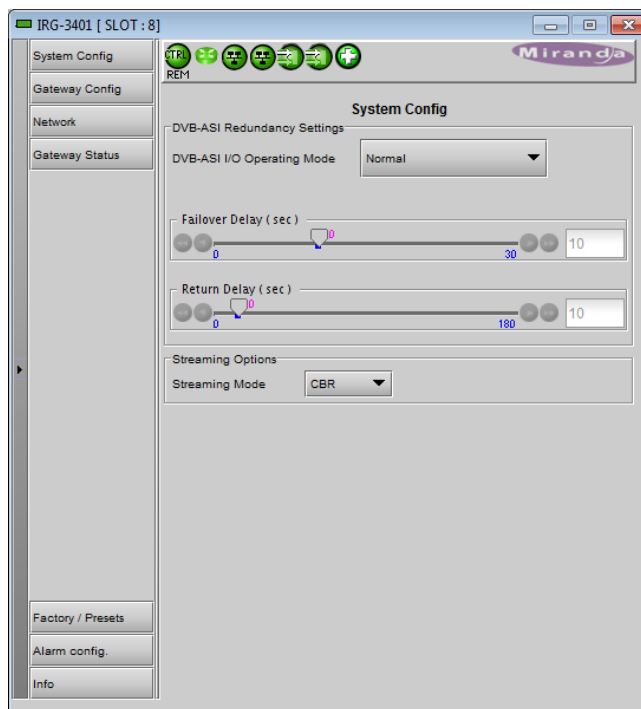


Figure 3.3 System Config panel

### 3.4.3 The Gateway Config panel

#### Gateways tab

This page shows the current configuration of all 12 gateways on the card, and provides controls to modify the configuration.

- Enable/Disable a gateway by clicking the selection checkbox in the leftmost column (“En”) of the table.
- Select a gateway by clicking anywhere in its row in the table.
- Edit the configuration of the selected gateway using the controls at the bottom.

These functions can be edited here:

- Dir – the arrow shows the direction of signal flow between ASI and IP through the gateway. Click the arrow to change the direction.
- Stream Address – The IP address (source or destination, depending on the direction of signal flow) of the stream (unicast or multicast)
- Stream Port – Source or destination port.
- Stream Source – Useful only when IGMP is used. In this protocol, the card deals with a switch to subscribe to one or many streams coming from different IP addresses. When IGMP is used, the field “stream address” is used to talk to a “group” while the “stream source” indicates the exact source from which we want to receive the stream.
- Protocol: Use the pulldown to select between:
  - UDP (User Datagram Protocol)
  - RTP (Real-time Transport Protocol)

**Note that only one gateway at a time can be fed by a “socket” (stream IP address + port).**

The status of the IP stream is shown by the background color of the Stream Address and Stream Port columns. Mouse-over to pop-up this information on the panel itself:

- IP Input:
 

Green	Transport Stream is present
Red	No stream at the IP address
- IP Output:
 

Gray	Normal operation
Orange	No route to host IP (In unicast streaming, this means that the specified unicast address is unreachable)

The status of the ASI input is shown by the background color of the Gateway column when the DVB-ASI side is selected as INPUT using the direction arrow.

- ASI Input:
 

Green	Transport stream present
Red	No transport stream at the ASI input
- ASI Output: Gray The background is always gray for an ASI output

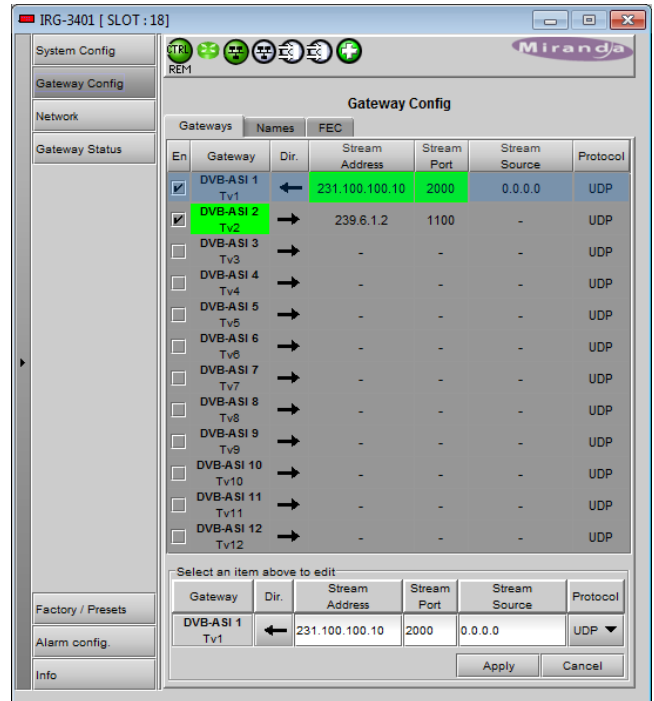


Figure 3.4 Gateway Config panel – Gateways tab

**Names tab**

The table shows the 12 DVB-ASI I/O, and in the *Gateway Name* column, the user can edit the name for each.

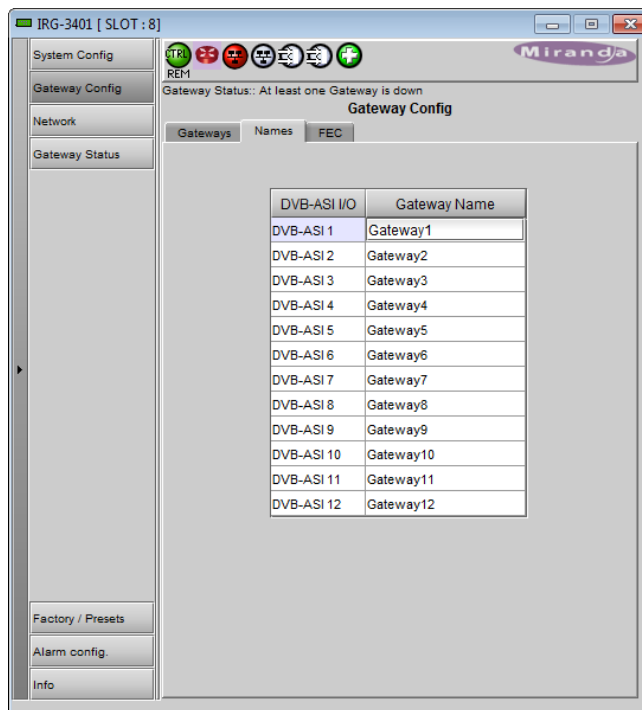


Figure 3.5 Gateway Config panel – Names tab

**FEC tab**

FEC (Forward Error Correction) is used only when the RTP protocol is selected for a gateway in the Gateways tab.

- Check the FEC EN checkbox to enable FEC.
- You must configure D and L for each FEC-enabled gateway.

Note – FEC code is defined over a block of data packets that is D rows by L columns in size. The values of D and L are user-definable and can be set to optimize the data rate in a channel. A smaller block size offers less error correction capability, but introduces less overhead and latency into the data stream.

The panel allows the user to select values in the following ranges:

- D 4 – 20; default value is 4
- L 1 – 20; default value is 8

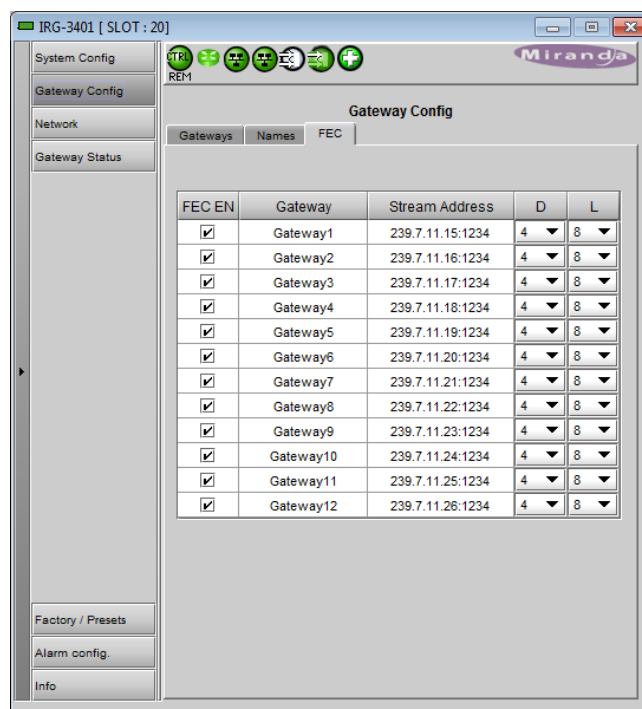


Figure 3.6 Gateway Config panel – FEC tab



### 3.4.4 The Network panel

#### Settings Tab – Network Configuration

Enter the IP Address, Mask and Gateway for the two ethernet ports (ETH1 and ETH2) on the IRG-3401 into the data boxes.

- After any change, you must click *Apply* to confirm the new values, or *Cancel* to leave the existing values unchanged.

Use the radio buttons to activate or disable Ethernet Port Redundancy.

**Note that the two IP addresses configured in this panel should NOT be in the same subset**

#### Settings Tab – Redundancy Control

When Ethernet Port Redundancy is active:

- ETH1 is designated as the MAIN port
- ETH2 is designated as the BACKUP port
- The redundancy controls are active.

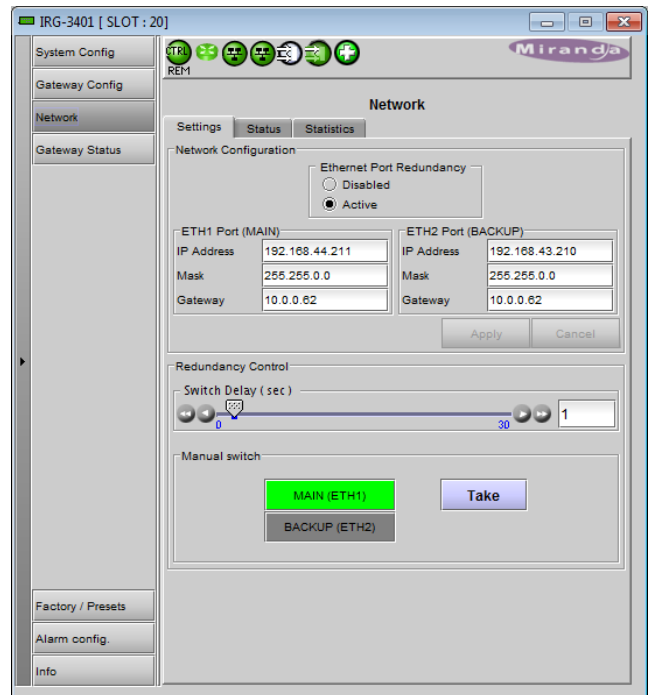
Switch Delay – set the time, in seconds, during which an error condition must be continuously detected before a switch to the backup port is made. The error conditions are:

- Loss of carrier
- Loss of at least one stream among the enabled gateways

#### Manual Switch

Unlike the ASI inputs, the card does not know the state of the backup port while using the main port. This means that if the main is found to be in error, the card will switch without knowing if the backup is valid. For this reason, there's no automatic return on the IP side. Once the switch occurs, the user has to do the "return" operation manually if he wants to return to the main port.

If Ethernet Port Redundancy is active when the ETH ports are functioning as outputs, the paired ports are mirrored; that is, they both carry the signal from the active input.



**Figure 3.7** Network panel – Settings tab

### Status Tab

This tab reports on the status of the ETH1 and ETH2 ports, and of the SFP module associated with each port, if installed.

There are no operating controls or settings on this tab.



Figure 3.8 Network panel – Status tab

### Statistics Tab

This tab displays continuously-updated statistics about the data passing through each of the ethernet ports.

- **Throughput:** Traffic in Megabits per second received and transmitted by the card on each port.
- **Bytes:** The total number of bytes transmitted and received since the last reset on each port.
- **Packets:** The total number of Ethernet packets transmitted and received since the last reset on each port.

The accumulated statistics can be reset for a fresh start by clicking the *Reset ETH Statistics* button.



Figure 3.9 Network panel – Statistics tab

### 3.4.5 The Gateway Status panel

This panel reports on the total streaming bitrate for all 12 gateways on this IRG-3401 card..

Note - this bitrate represents the total streaming bitrate of the twelve gateways but not the total throughput. The RTP protocol and especially the use of FEC adds many bits to this value. The user must pay special attention to this to avoid exceeding the maximum bandwidth of the IRG card. The throughput line of *the Network – Statistics* tab gives the total bandwidth used by all gateways based on the configuration in use.

The table reports the status of the twelve gateways on the card:

- **Status** – Icon is green (OK) if the status of both the DVB-ASI I/O and Stream IP columns is OK (green or gray – see the notes on color coding below); otherwise it will be red (error condition) or gray (gateway unused)
- **DVB-ASI I/O** – Lists the 12 gateways on the card. When the ASI side is selected as the input, the background color shows the status – see below.
- **Dir** – the arrow shows the direction of signal flow through the gateway.
- **Stream IP Address** – the IP address (source or destination, depending on the direction of signal flow) of the stream (unicast or multicast). The background color shows the status – see below.
- **ETH** – identifies which ETH port is carrying the stream
- **Approx. Bitrate** – data flow through the gateway.
- **TS\_ID** – Transport Stream identification number.

The status of the IP stream is shown by the background color of the Stream IP Address column. Mouse-over to pop-up this information on the panel itself:

- IP Input: Green Transport Stream is present  
Red No stream at the IP address
- IP Output: Gray Normal operation  
Orange No route to host IP  
(In unicast streaming, this means that the specified unicast address is unreachable)

The status of the ASI input is shown by the background color of the Gateway column when the DVB-ASI side is selected as INPUT using the direction arrow.

- ASI Input: Green Transport stream present  
Red No transport stream at the ASI input
- ASI Output: Gray The background is always gray for an ASI output

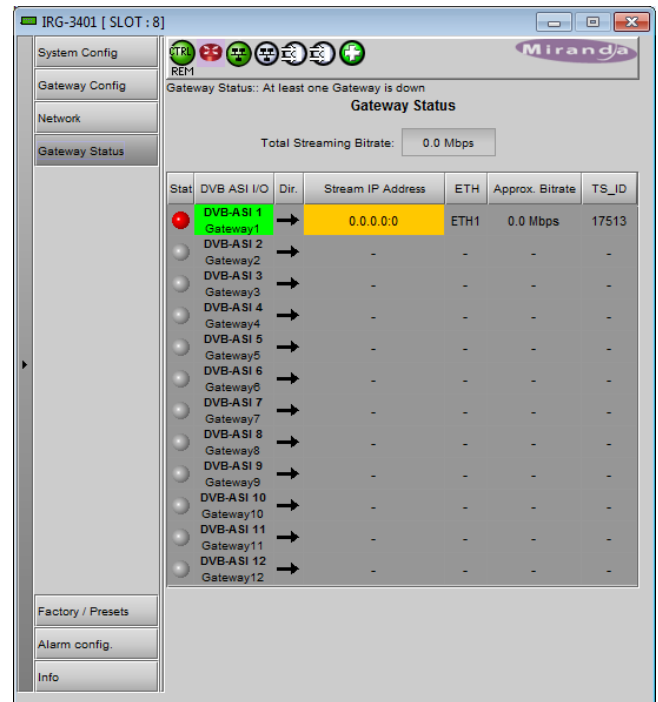


Figure 3.10 Gateway Status panel

### 3.4.6 The *Factory / Presets* panel

Click the *Load Factory* button to reset all parameters on this IRG-3401 card to factory-defined default values.

- Exception – the “Network Config” and Gateway names will remain unchanged.

#### *User Presets*

The IRG-3401 has memory registers which can hold up to 5 user-defined parameter settings.

**Select** any one of the five presets using the pull-down list. The name of the currently-selected User Preset is shown on the pulldown box.

Click **Load** to load the contents of the selected User Preset into the IRG-3401. 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 IRG-3401 into the selected User Preset. The existing contents of the preset will be overwritten

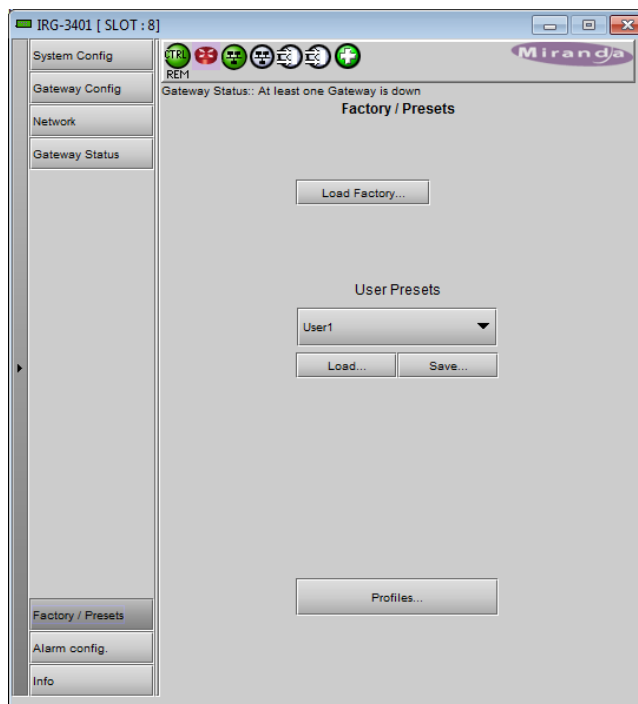


Figure 3.11 *Factory/Presets panel*

#### *Profiles*

This section provides the option to save and recover the entire card configuration (including user presets if desired) on an external disk, or to copy it to another IRG-3401 card.

Click on *Profiles* to open the Profile Copy window.

#### *Copy profile from*

This line shows this IRG-3401 card, and identifies it by App server, Densité frame and slot number, card type and firmware version.

The *Profile* column has a pull-down that allows you to select which profiles you will work with. In this version of the card, the only choice is:

- All

The *Select* column includes a checkbox (preselected checked) to confirm that you want to work with the current card.

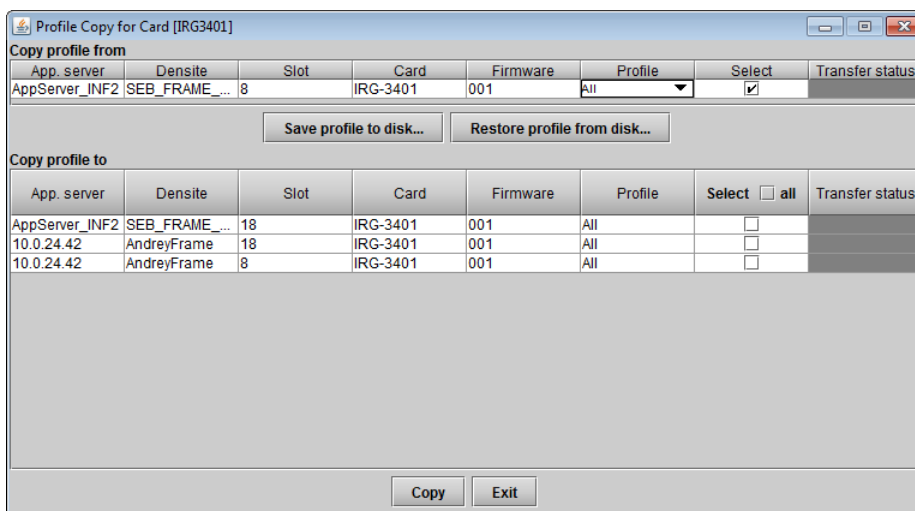


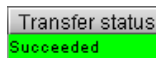
Figure 3.12 *Profile Copy window*

**Save Profile to Disk...**

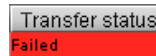
Click this button to open a Save dialog allowing you to specify a file name and location to which the selected profiles for this card will be saved.

*Hint - It is a good idea to create a folder for these files, because they are not explicitly identified as IRG-3401 profiles, and will be difficult to find and identify if not clearly named and conveniently located.*

- Click the save button once the name and location have been identified in the Save box
- If the file is saved correctly, the Transfer Status box on the right of the *Copy profile from* line will indicate *Succeeded* against a green background



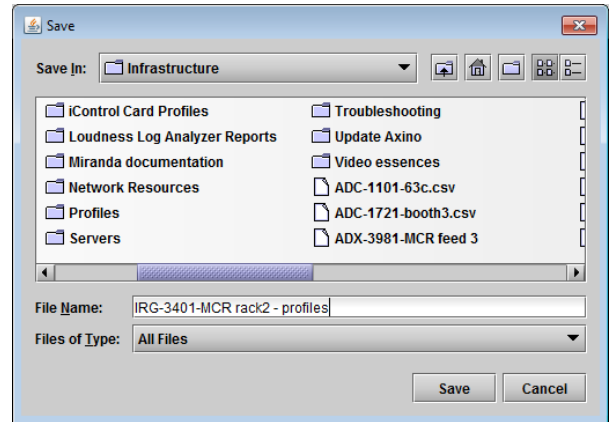
- If the file was not saved for some reason, the Transfer Status box to the right of the *Copy profile from* line will indicate *Failed* against a red background



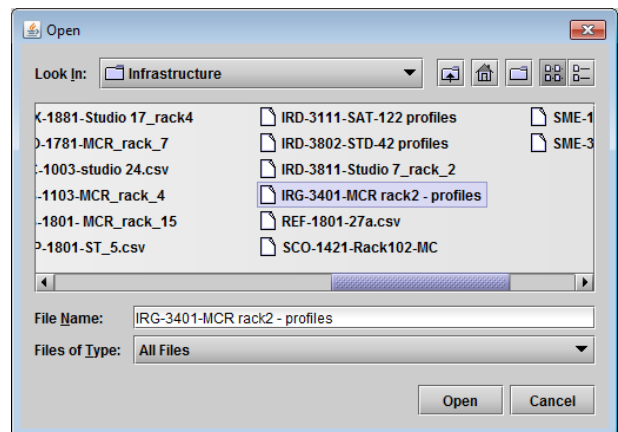
**Restore profiles from disk...**

Click this button to open an *Open* dialog box within which you can locate and select a valid IRG-3401 profile file.

- Click Open to read the contents of the file and to reconfigure this IRG-3401's profiles according to its contents
- While the reconfiguration is in progress, the Transfer Status box on the right of the *Copy profile from* line will indicate *Working* against a yellow background
- When the reconfiguration is complete, the Transfer Status box on the right of the *Copy profile from* line will indicate *Succeeded* against a green background



**Figure 3-13** Save Profile to Disk dialog



**Figure 3-14** Restore Profiles from Disk dialog

**Copy profile to section**

This line shows other IRG-3401 cards that are available on the iControl network, each identified by App server, Densité frame and slot number, card type and firmware version.

The *Profile* column shows the same information as is shown for the current card in the *Copy profile from* line, i.e.:

- All

The *Select* column includes a checkbox to identify which IRG-3401 cards you wish to copy profiles into from the current card.

- For convenience, a *Select all* checkbox is provided in the column header.

Click *Copy* to copy the selected profiles from this card into the selected other IRG-3401 cards.

- While the profile copy operation is in progress, the Transfer Status box on the right of the *Copy profile to* line will indicate *Working* against a yellow background.

- When the profile copy operation is complete, the Transfer Status box on the right of the *Copy profile to* line will indicate *Succeeded* against a green background.

### 3.4.7 The Alarm Config panel

This panel allows the alarm reporting of the IRG-3401 to be configured. The panel opens in a new window when the button is clicked, and can be resized if needed.

The panel is organized in columns.

#### Status/Name

This contains an expandable tree listing all the alarms reported by this IRG-3401 card.

- Each alarm name includes an icon that shows its current status

The **Card LED**, **Overall alarm** and **GSM contribution** columns contain pulldown lists that allow the level of contribution of each individual alarm to the alarm named in the column heading to be set.

- Click on the alarm icon to see the possible levels; then click on one to select it



#### Card LED

This column allows configuration of the contribution of selected individual alarms to the status LED located on the front card edge. The Card LED status is shown at the bottom of the alarm tree in the Status/Name column.

#### Overall Alarm

This column allows configuration of the contribution of each individual alarm to the Overall Alarm associated with this card. The Overall Alarm is shown in the upper left corner of the iControl panel, and also appears at the bottom of the Status/Name column.

#### GSM Contribution

This column allows configuration of the contribution of each individual alarm to the GSM Alarm Status associated with this card. GSM is a dynamic register of all iControl system alarms, and is also an alarm provider for external applications. The possible values for this contribution are related to the Overall alarm contribution:

- If the Overall alarm contribution is selected as Disabled, the GSM alarm contribution can be set to any available value

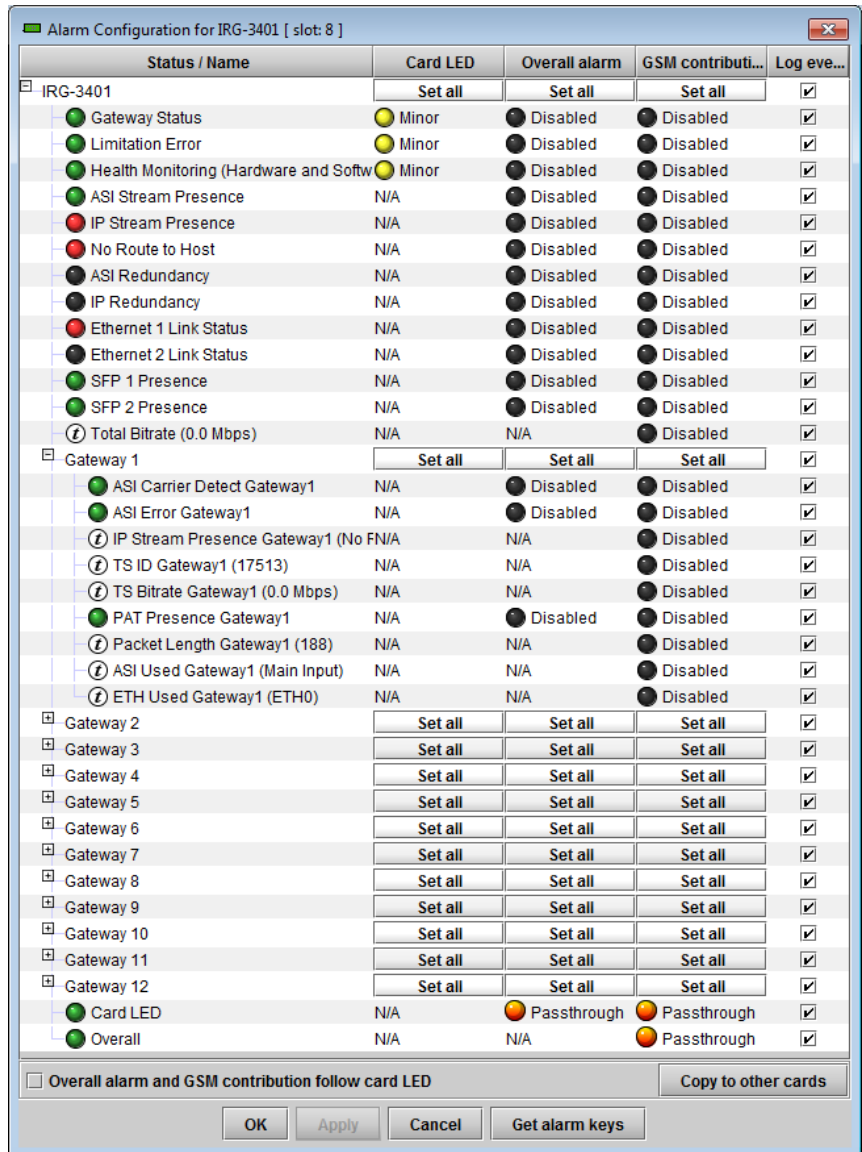







Figure 3.15 Alarm Config panel

- If the Overall alarm contribution is selected as any level other than disabled, the GSM contribution is forced to follow the Overall Alarm.

**Levels associated with these alarms:**

The pulldown lists may contain some or all of the following options:

-  Disabled      The alarm makes no contribution (black icon)
-  Minor      The alarm is of minor importance (yellow icon)
-  Major      The alarm is of major importance (orange icon)
-  Critical      The alarm is of critical importance (red icon)
-  Passthrough      The alarm exists but has no effect (used for text and composite alarms)

**Shortcut:** if you click in one of the Set All boxes beside a section heading, you will open a pulldown that lets you assign a level to all alarms in that section of the column simultaneously.

**Log Events**

iControl maintains a log of alarm events associated with the card. The log is useful for troubleshooting and identifying event sequences. Click in the checkbox to enable logging of alarm events for each individual alarm.

- Note that alarm events on the GPI inputs are detected once their duration surpasses 8 ms, but iControl will not log the alarm event OFF until up to 1.5 sec after the GPI input is released. Therefore, if the GPI is re-triggered quickly after it is released, the logger may not record the release and re-trigger.

At the bottom of the window are several other controls

**Copy to other cards**

Click this button to open a panel that allows the alarm configuration set for this card to be copied into another IRG-3401 card.

- Use the checkboxes to select the cards whose configuration will be changed.

**Get alarm keys**

Click this button to open a save dialog where you can save a file containing a list of all alarms on this card and their current values, along with an Alarm Key for each. The alarm keys are useful for system integration and troubleshooting.

- The file is saved in Excel.csv format

**OK, Apply, Cancel**

- **OK** accepts the settings and closes the window once the card confirms that there are no errors.
- **Apply** accepts the settings, but leaves the window open
- **Cancel** closes the window without applying any changes, and leaves the previous settings intact.

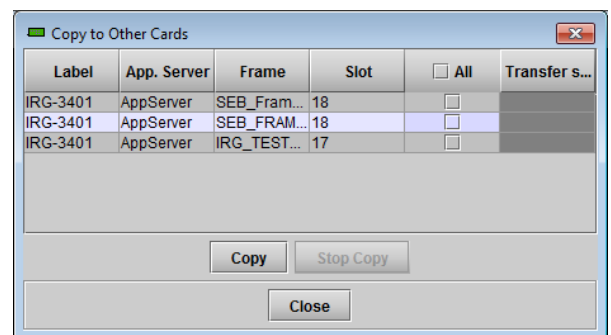


Figure 3.16 Copy to other cards

### 3.4.8 The Info panel

#### Info Tab

When the IRG-3401 is included in an iControl environment, certain information about the card should be available to the iControl system. The user can enter labels and comments that will make this card easy to identify in a complex setup. This information is entered via the Info control panel. This panel also shows other information about the card.

**Label:** type the label that appear for this IRG-3401 when it appears in iControl applications

**Short Label** type the short-form label that iControl uses in some cases (8 characters)

**Source ID** type a descriptive name for this IRG-3401

**Comments:** type any desired text

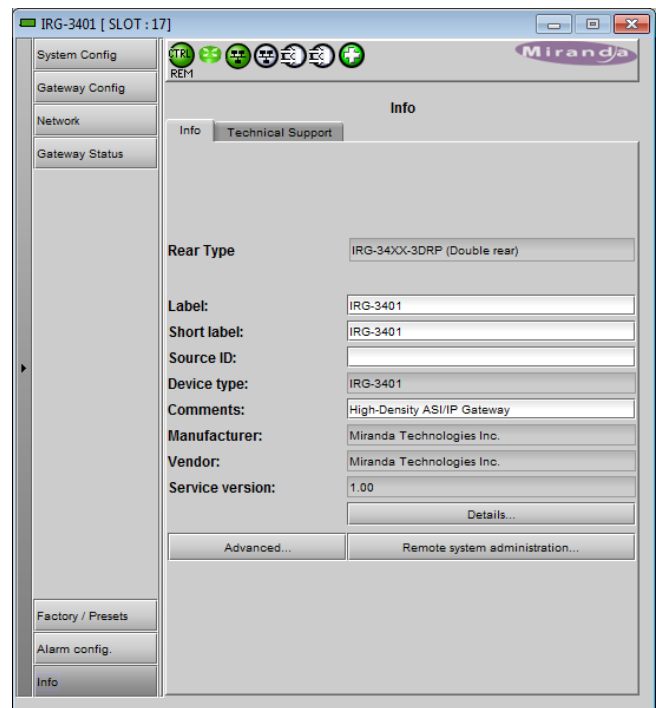


Figure 3.17 Info panel – Info tab

The remaining data boxes show manufacturing information about this card.

- Details...: Reports the Firmware version, service version, and panel version for this card

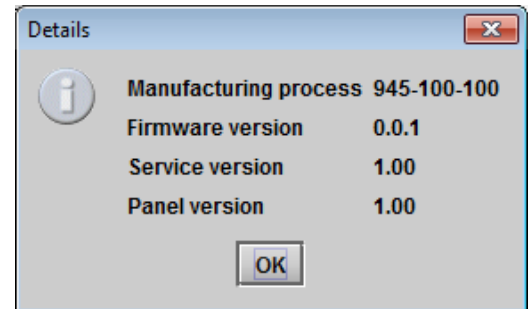


Figure 3.18 Details window

- Advanced...: Shows the Miranda LongID for this card. The Miranda LongID is the address of this IRG-3401 in the iControl network.

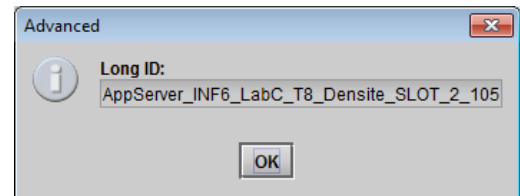


Figure 3.19 Advanced window



- Remote System Administration – opens the Joining Locators data box, which lists remote lookup services to which this IRG-3401 is registered.

**Add:** Force the iControl service for this IRG-3401 to register itself on a user-specified Jini lookup service, using the following syntax in the *Input* data box:

jini://<ip\_address>

where <ip\_address> is the ip address of the server running the lookup service, e.g.:

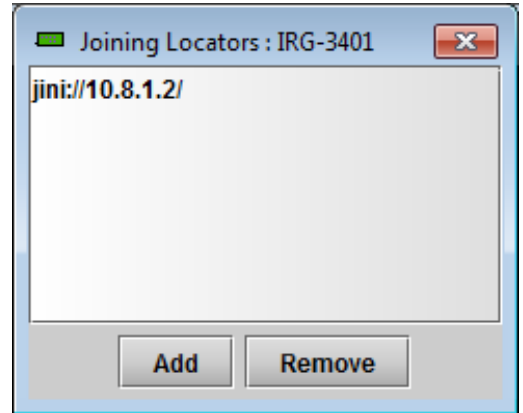
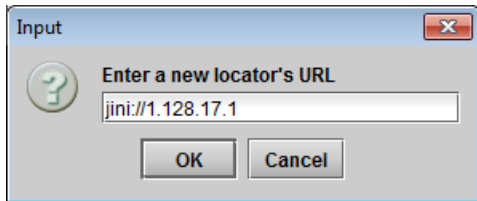


Figure 3.20 Joining Locators window

**Remove:** select one of the services listed in the window by clicking on it, and click *Remove* to delete it from the window.

### Technical Support tab

Click *Get System Snapshot* to generate a file that can assist Miranda Technical Support in troubleshooting your equipment.

Once the file has been generated, a *Save* dialog will open allowing you to name the file and save it in a convenient location. The file will be saved in .zip format.

Miranda Technical Support may request this file in the event that your IRG-3401 requires troubleshooting.



Figure 3.21 Info panel – Technical support tab

## 4 Specifications

### ASI INPUTS/OUTPUTS

Physical:	Twelve (12) BNC connectors configurable independently as input or output
Standards:	EN50083-9 (V2:3/98) DVB ASI
Cable Length:	300 m Belden 1694A at 270 Mbps
Data bit rate:	Each I/O up to 213 Mbps
TS packet size:	188/204 bytes
Return loss:	> 15 dB up to 270 MHz
Output Jitter:	<0.2UI (0.74 ns) pp

### ETHERNET PORTS

Physical:	Two (2) SFP sockets for electrical (RJ45) or optical cartridge
Standards:	IEEE 802.3 1000Mbps Ethernet
Transport:	UDP/RTP with FEC Pro-MPEG CoP3 1-7 TS/IP Unicast or Multicast with IGMPv3 MSM/SSM
Performance:	Up to 800Mbps of streaming

### ELECTRICAL

Power:	15 W
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## ANNEX 1 – IRG-3401 Card Menu

Level 1	Level 2	Level 3	Level 4
Card Status	ETH1 Status	Link Status	[Link Up ; Link Down]
		MAC Address	[xx.xx.xx.xx]
		IP Address	[xxx.xxx.xxx.xxx]
	ETH2 Status	Link Status	[Link Up ; Link Down]
		MAC Address	[xx.xx.xx.xx]
		IP Address	[xxx.xxx.xxx.xxx]
	ETH Redundancy	Selected Port	[Main (ETH1) ; Backup (ETH2)]
	System Health	FPGA Temperature	[temp]
		CPU Temperature	[temp]
		Fan Speed	[rpm]
User Presets	Load	[User1-5]	
	Save	[User1-5]	
Network Settings	ETH1 Port	IP Address	[xxx.xxx.xxx.xxx]
		Netmask Address	[xxx.xxx.xxx.xxx]
		Gateway Address	[xxx.xxx.xxx.xxx]
	ETH2 Port	IP Address	[xxx.xxx.xxx.xxx]
		Netmask Address	[xxx.xxx.xxx.xxx]
		Gateway Address	[xxx.xxx.xxx.xxx]
	Redundant Mode	[Active ; Disabled]	
	Switch Delay (s)	[x seconds]	
Alarm Config	Gateway Status	Alarm Level	[Flash Red ; Red ; Yellow ; Green]
		Alarm Report	[GPI; None]
	Limitation Error	Alarm Level	[Flash Red ; Red ; Yellow ; Green]
Alarm Report		[GPI; None]	
	Health error	Alarm Level	[Flash Red ; Red ; Yellow ; Green]
		Alarm Report	[GPI; None]
Version			
Factory Default	Restore		