

SuperFlex



**SRA/SFX2100 Series Satellite
Receiver Appliance**



INTERNATIONAL
DATACASTING

Quick Start Guide

Preface

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NOTE: The screen captures shown in this Guide are for reference only and may not exactly match the pages that are displayed on your browser. Not all receiver models and/or versions of the application firmware will support all features described in this guide. If you have any questions regarding availability of certain features, please contact International Datacasting's Customer Service Department (see Chapter 2).

SRA/SFX2100 Series Satellite Receiver Appliance Quick Start Guide International Datacasting Corporation Part No. 90076611-50

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Table of Contents

Chapter 1 - Getting Started	2
General	2
Installation	2
What You Should Have Received	2
Front Panel	3
Rear Panel	4
Equipment Installation	6
Power up procedure	6
Status and Control of the Satellite Receiver	6
Controlling the Receiver with the Terminal Interface	6
Controlling the Receiver with the Web GUI	10
Chapter 2 - Troubleshooting, Safety, Warranty and Contact Information	14
Troubleshooting	14
Preventative Maintenance	14
Troubleshooting Procedures	15
Contacting Your Supplier	15
Shipping & Packaging	15
Warranty & Service	15
Warranty Period	16
Warranty Coverage Limitations	16
Warranty Replacement & Adjustment	16
Liability Limitations	16
Warranty Repair Return Procedure	17
Non-Warranty Repair	17
Contacting IDC for More Information	17
Important EMI & Safety Certification Information	18
Receiver Installation	18
Exterior Equipment Installation	18
Operating & Cleaning	19
Service	19
EMI/EMC Certification	19



Chapter 1

Getting Started

General

International Datacasting Corporation (IDC) would like to thank you for purchasing the SRA2100 or SFX2100 Series SuperFlex Satellite Receiver Appliance (herein referred to as the “satellite receiver”). At International Datacasting, we take pride in our products and believe the satellite receiver that you have chosen will satisfy your needs for years to come. Satellite Communications is our business and quality is our goal. We welcome your comments and respect your opinions.

This Quick Start Guide provides the essential information required to get started with installation and basic operation of your satellite receiver. The intent of this Quick Start Guide is to give you enough information so that you can power up the unit and perform enough operations to communicate with it using the Web GUI. Once you have accessed the Web GUI, you can configure the receiver to lock to a RF carrier, and perform normal operations for your network. On the SFX2100, you will also be able to access the full User’s Guide on the hard drive, from the local console (keyboard, monitor, mouse), which will give you additional details on the full operation of the unit.

Installation

This chapter provides information to familiarize you with the SRA2100 and basic SFX2100 series satellite receiver appliance, as it comes out of the box. This information can be used to step through a preliminary investigation of the unit you have received, as well as initially applying power to ensure that it is operating correctly and has not been damaged during transit.

The illustrations that are provided in this chapter identify indicators and connectors on the satellite receiver, in the rack mount configuration. Acquaint yourself with these parts as illustrated, and refer to the physical unit itself. Throughout the remainder of this Guide, reference will be made to these parts. There are no adjustable components on the receiver, only display indicators.

Varying levels of Status and Control for configuration of the satellite receiver are available through one of the following: locally using the Terminal Interface, locally or remotely using the Web based Graphical User Interface (GUI), remotely using SNMP, or remotely using NetManager. This Quick Start Guide will describe the essential functions for the Terminal Interface and the Web GUI so that you can begin communicating and configuring the receiver.

What You Should Have Received

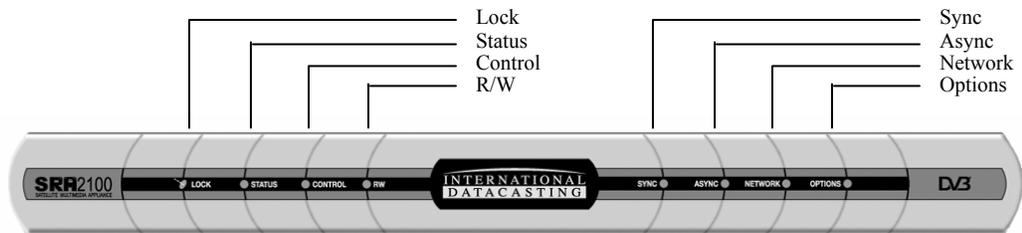
You should have received the following package:

- One (1) SRA2100 or SFX2100 series satellite receiver appliance;
- One (1) power cord, suitable for use in your country;
- One (1) copy of this Quick Start Guide (optional) – also available online from the IDC customer service FTP site, as well as the full SRA/SFX2100 User’s Guide – see Chapter 2 for contact information.

It is highly recommended that you retain the box and foam packaging that came with the unit, in the rare event that it has to be shipped back for repair.

Front Panel

Once you have removed the satellite receiver from the box, please familiarize yourself with the front panel, as shown in the figure below. The function of each indicator is summarized in the table under the figure.

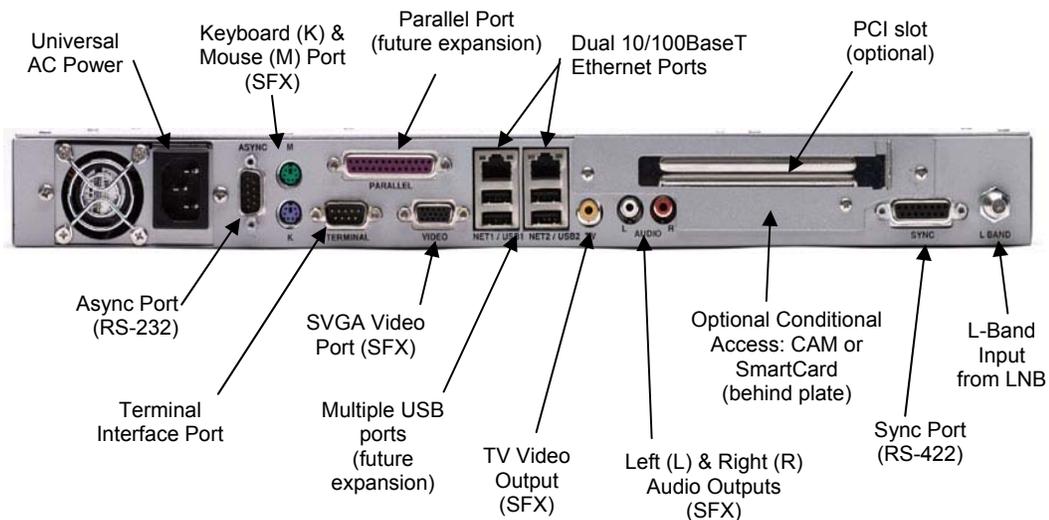


Indicator	Description
LOCK	<p>Indicates receiver lock to incoming satellite DVB carrier on the L-Band input.</p> <p>Off – no power and no lock.</p> <p>Solid Green – unit is locked to the DVB carrier.</p> <p>Solid Red – the unit is not locked to the DVB carrier.</p>
STATUS	<p>Indicates various power-up states of the receiver, including LNB DC power status to the L-Band connector.</p> <p>Off – no power is applied to the receiver.</p> <p>Solid Green – normal operation and one of:</p> <ol style="list-style-type: none"> 1. the LNB is being powered by the receiver; current draw is between 50 and 350 mA; or 2. the receiver has not been configured to power the LNB. <p>Solid Orange – power is being supplied to the LNB, and it is under current (power drawn is <50 mA, which may possibly indicate an open circuit).</p> <p>Solid Red – boot and normal operation, can be one of:</p> <ol style="list-style-type: none"> 1. during the boot, start-up and initialization of the receiver application firmware, remains red until startup is completed, then turns solid green, orange, or remains red, depending on LNB status; and 2. during operation, power is being supplied to the LNB and it is over current (power drawn is >350 mA, which may possibly indicate a short circuit).
CONTROL	<p>Indicates the authorization for the receiver to process control commands from the Network Control Channel (NetManager NCC PID stream for the DVB Carrier).</p>
R/W	<p>Indicates read/write activity of the storage device in the receiver (either compact flash disk (SRA) or</p>

Indicator	Description
	hard drive (SFX)), including activity during bootup.
NETWORK	Indicates the authorization and data activity on the satellite network interface. Solid Green – satellite network interface is authorized (enabled), but there is no data activity. Flashing Off/Green – satellite network interface is authorized and there is data activity. Flashing Off/Orange – if decryption option is installed, satellite network interface is authorized and there is data activity, but the data is not being decrypted. Off – satellite network interface is not authorized.
SYNC	Purpose: provides indication of the authorization and data activity on the synchronous interface. Colour: off/green, where: Solid Green – the SYNC port is authorized, but there is no data activity. Flashing Off/Green – the SYNC port is authorized and there is data activity. Off – the SYNC port is not authorized.
ASYNC	Purpose: provides indication of the authorization and data activity on the asynchronous interface. Colour: off/green, where: Solid Green – the ASYNC port is authorized, but there is no data activity. Flashing Off/Green – the ASYNC port is authorized and there is data activity. Off – the ASYNC port is not authorized.
OPTIONS	Indicates status of decryption options installed in the receiver, as applicable. Off indicates that no options are installed.

Rear Panel

Please refer to the figure below and table following for a brief description of each essential connectors on the rear panel.



Connector	Description																														
AC Power	The Alternating Current (AC) inlet is the main power disconnect. The power cord connector is used to provide AC power to the satellite receiver. The power requirements for this equipment is quite flexible, with an acceptable power range of 100 to 240 VAC at 50 or 60 Hz.																														
ASYNC Port	<p>This is a 9-pin RS-232 (DTE) DE-9P (male) connector. It is used as a unidirectional (output) low speed asynchronous data port. The pinouts for this port are as follows:</p> <table border="1"> <thead> <tr> <th>PIN</th> <th>Acronym</th> <th>Reference</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>DCD</td> <td>Data Carrier Detect</td> </tr> <tr> <td>2</td> <td>RD</td> <td>Receive Data</td> </tr> <tr> <td>3</td> <td>TD</td> <td>Transmit Data</td> </tr> <tr> <td>4</td> <td>DTR</td> <td>Data Terminal Ready</td> </tr> <tr> <td>5</td> <td>GND</td> <td>Ground</td> </tr> <tr> <td>6</td> <td>DSR</td> <td>Data Set Ready</td> </tr> <tr> <td>7</td> <td>RTS</td> <td>Request To Send</td> </tr> <tr> <td>8</td> <td>CTS</td> <td>Clear To Send</td> </tr> <tr> <td>9</td> <td>RI</td> <td>Ring Indicator</td> </tr> </tbody> </table>	PIN	Acronym	Reference	1	DCD	Data Carrier Detect	2	RD	Receive Data	3	TD	Transmit Data	4	DTR	Data Terminal Ready	5	GND	Ground	6	DSR	Data Set Ready	7	RTS	Request To Send	8	CTS	Clear To Send	9	RI	Ring Indicator
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1	DCD	Data Carrier Detect																													
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4	DTR	Data Terminal Ready																													
5	GND	Ground																													
6	DSR	Data Set Ready																													
7	RTS	Request To Send																													
8	CTS	Clear To Send																													
9	RI	Ring Indicator																													
K (Keyboard) & M (Mouse) Ports	These are standard PS/2 type keyboard and mouse connectors, used when keyboard and mouse are required for the SFX console.																														
TERMINAL Interface Port	This is a 9-pin RS-232 (DTE) DE-9P (male) connector. It is used as a bi-directional low speed asynchronous data port for the Terminal Interface at 9600 baud. Pinouts for this port are the same as the ASYNC port.																														
VIDEO SVGA Port	This is a standard SVGA output, used when the monitor is required for the SFX console. This port is full AGP 4X Rev 2.0 compliant, with support for 2D/3D resolutions up to 1920x1440.																														
NETx Ethernet Ports (2)	<p>These are bi-directional RJ-45 8-wire (female) connectors, with 10/100Base-T auto sensing Ethernet interfaces. Two indicators are provided immediately above the RJ-45 connector:</p> <ol style="list-style-type: none"> 1. Yellow (left) – indicates Link status. On indicates that the Ethernet link has been established, either in 10 Base-T or 100 Base-TX modes. 2. Green (right) – indicates transmit or receive data activity. Off indicates that there is no data activity and flashing green indicates that there is activity. <p>The pinouts for these ports are as follows:</p> <table border="1"> <thead> <tr> <th>PIN</th> <th>Acronym</th> <th>Reference</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>T+</td> <td>Transmit Data +</td> </tr> <tr> <td>2</td> <td>T-</td> <td>Transmit Data -</td> </tr> <tr> <td>3</td> <td>R+</td> <td>Receive Data +</td> </tr> <tr> <td>4</td> <td></td> <td>Not connected</td> </tr> <tr> <td>5</td> <td></td> <td>Not connected</td> </tr> <tr> <td>6</td> <td>R-</td> <td>Receive Data -</td> </tr> <tr> <td>7</td> <td></td> <td>Not connected</td> </tr> <tr> <td>8</td> <td></td> <td>Not connected</td> </tr> </tbody> </table>	PIN	Acronym	Reference	1	T+	Transmit Data +	2	T-	Transmit Data -	3	R+	Receive Data +	4		Not connected	5		Not connected	6	R-	Receive Data -	7		Not connected	8		Not connected			
PIN	Acronym	Reference																													
1	T+	Transmit Data +																													
2	T-	Transmit Data -																													
3	R+	Receive Data +																													
4		Not connected																													
5		Not connected																													
6	R-	Receive Data -																													
7		Not connected																													
8		Not connected																													
L-BAND	This is a 75 ohm, F-type connector that permits connection to the LNB and antenna. An RG-6 or similar cable of less than 200 feet is recommended. High quality cabling may be used to provide additional shielding, lower loss or protection from harsh environments. Direct Current (DC) power is provided to the LNB at either 13 VDC or 18 VDC at 500 mA maximum.																														

Equipment Installation

The following points and precautions should be considered when planning the installation of your satellite receiver.

- The satellite receiver should be placed in a sheltered, but well ventilated location away from sources of water or high humidity, extreme heat or cold, excessive dust, vibration or Electromagnetic Interference (EMI).
- Should any foreign material fall into the satellite receiver (either liquid or solid), unplug the receiver immediately and have a qualified technician examine the unit prior to further operation.
- The satellite receiver should be placed on a stable surface or rack mounted, as applicable.

To install your receiver, you should ensure that you have equipment similar to the following:

- A computer platform (or laptop computer), with a program such as HyperTerminal to talk to the terminal interface. If you wish to use the Web GUI, the minimum platform would consist of a Pentium 75 MHz computer with an installed Local Area Network (LAN) card and Microsoft™ Internet Explorer Version 5.0 or later.
- A spectrum analyzer. Although not essential, this piece of test equipment is highly recommended for installing any satellite equipment.

Power up procedure

It is good practice to do a quick test to ensure the satellite receiver is operational after shipment. To do this, simply plug the supplied AC power cord into the rear panel of the unit and into the proper voltage AC outlet. If you now turn the receiver around so that you are facing the front panel, you should notice the STATUS LED is illuminated and after some period of time, the R/W light starts flashing (indicating that the unit is booting). At this point, ignore the colour of any indicators, as this is just an indication that the receiver has power and is commencing operation. You can now communicate with the unit using the Terminal Interface or the Web GUI, as described in the next sections.

If no indicators have illuminated, power cycle the unit once to make sure, and if there is still a problem, please proceed to Chapter 2 (Troubleshooting).

Status and Control of the Satellite Receiver

As previously mentioned, varying levels of status and control of the satellite receiver can be accomplished by one of the following:

1. Locally, using the Terminal Interface – the essential commands to get started are provided in this Guide;
2. Locally or remotely, using the Web based Graphical User Interface (GUI) – the essential operations are described in this Guide;
3. Remotely, using Simple Network Management Protocol (SNMP) – described in the full User's Guide;
4. Remotely, using International Datacasting's NetManager, via the Network Control Channel (NCC) – described in the full User's Guide.

Controlling the Receiver with the Terminal Interface

The Terminal Interface allows an installer who does not have a computer with an Ethernet port, or the capability of running a web browser, access to enough receiver functions to install the unit and acquire lock to a DVB Carrier.

Simply connect an RS-232 null modem (cross-over) cable between the COM port on a PC and the TERMINAL port (see rear panel figures earlier in this chapter) of the receiver and run a terminal interface program, such as Hyperterm under Windows®. The communications parameters are 9600 baud, 8 data bits, no parity and one stop bit.

The Terminal Interface is designed to be a simple interface that is compatible with most terminal equipment. A basic TTY-type terminal is supported. Generally, most commands do not support other terminal types and the interface will not generate or accept ANSI control codes unless specifically documented for each command below. Since most terminal devices connected to the receiver will probably be DOS/Windows based, the interface sends both carriage return and line feed characters at the end of each line.

To initiate a terminal session, enter the username **monitor** or **admin** and the appropriate password.

After processing an input line (or after return is pressed on a blank line), the interface will display the '#' prompt on the terminal.

The terminal interface will remain active until an exit command is issued to logout.

Essential terminal commands to get started are described below, along with their parameter lists. Typing in a command with the wrong parameter list will cause a short usage help message to be displayed. Please note that terminal Interface commands are case sensitive. Commands can be entered exactly as shown, or all in lower case. However, all command parameters must be entered exactly as shown. Parameters shown in square brackets are optional and do not have to be entered. If they are not entered, they will remain unchanged, unless defined otherwise. However, if all parameters are shown as optional, at least one has to be entered.

Help

Usage: **Help**

This command displays a list of available commands. This list will also be displayed if an unrecognized command is entered. This list may include some useful Linux shell commands as well.

exit

Usage: **exit**

Log off the system so that a username and password will be required before any further actions can be performed. This command takes no parameters.

SetCarrier

Usage: **SetCarrier [-A/-B] [-f <frequency>] [-s <symbol rate>] [-m {q/b}] [-v <Viterbi rate>] [-n <NCC Pid>] [-t {e/d}] [-p {h/v}] [-d <description>]**

Note that this command is available only to the **admin** user.

This command enters the DVB Carrier definitions (A or B, or both) and facilitates setting of the receiver's tuner/demodulator to the specified DVB Carrier (A). The absence of -A or -B will apply the definition to both carriers. The individual parameters are defined below:

- A** Applies the command to DVB Carrier A
- B** Applies the command to DVB Carrier B
- f** Is the frequency of the carrier in Hz, in the numeric range **950000000 - 2150000000** Hz.
- s** Is the symbol rate of the carrier in symbols per second, in the numeric range **256000 - 45000000** S/s.
- m** Is the modulation scheme, using one of the options: **q** for QPSK
- v** Is the Viterbi rate of the carrier, using one of the options: **Auto, 1/2, 2/3, 3/4, 5/6, 7/8**.

- n Is the PID number of the NCC PID (in hex), in the numeric range **0x20** to **0x1FFE**. Specifying **0** disables the NCC PID.
- t Enables or disables the 22 kHz tone to the LNB, using one of the options: **e** for enable, **d** for disable.
- p Is the polarization of the LNB, and sets the output DC voltage from the receiver to the LNB, using one of the options: **h** for horizontal (18VDC standard or 15 VDC optional) and **v** for vertical (13VDC standard or 11 VDC optional). Note that the SetLNB command enables or disables the output voltage.
- d Is a short description (up to 31 characters) of the DVB Carrier.

GetCarrier

Usage: **GetCarrier**

This command displays the DVB Carrier definitions that currently exist in the receiver. This command takes no parameters and displays the current settings for the parameters that can be set using **SetCarrier**.

SetLNB

Usage: **SetLNB [-r <minimum AFC range>] [-p {e/d}] [-o {f/p}] [-f {ON/OFF}]**

Note that this command is available only to the **admin** user.

This command sets the LNB characteristics applicable to both carriers (A & B) of the receiver. The individual parameters are defined below:

- r Is the minimum AFC range in Hz, in the numeric range **0** to **2000000** Hz. If this parameter is not provided, an AFC range of 10% of the carrier symbol rate is default.
- p Enables or disables the LNB power supply, which supplies DC voltage to the LNB from the L-Band connector on the rear panel. The options are: **e** for enable (on), **d** for disable (off). When enabled, the voltage output will be determined by the polarization setting in the SetCarrier command.
- o Is the AGC optimization type, using one of the options: **p** for performance mode, **f** for fast acquisition mode.
 Selecting performance mode optimization forces the receiver to step through individual gain stages in the Digital Filter to determine the best Bit Error Rate (BER) performance. This feature should only be used if there are large adjacent carriers to the DVB Carrier of interest.
 Selecting fast acquisition mode forces the receiver to select a default Digital Filter that performs well under most conditions.
- f Enables or disables LNB frequency reversal, using one of the options: **ON** or **OFF**. If the parameter is not provided, OFF is default.
 Frequency reversal permits the use of other LNB variants that may use low side Local Oscillators (LOs) instead of high side LOs (the use of LNBs such as older C-Band type with low side LOs can cause spectral inversion, and this feature can make the LNB appear "normal" when setting the L-Band frequency of the DVB Carrier using the SetCarrier command).

GetLNB

Usage: **GetLNB**

This command displays the current LNB settings (i.e. those that can be set through the SetLNB command). This command takes no parameters and provides the current values of the parameters that can be set with **SetLNB**.

GetRFMetrics

Usage: **GetRFMetrics [-r n]**

This command displays the current RF metrics information. The optional **-r n** parameter indicates repeat mode. In this mode, the metrics information will be output continuously (every **n** seconds) until a key is pressed on the controlling

terminal. If this parameter is omitted, the RF metrics information will be displayed only once. The following information is displayed: Signal Level and Quality in %, Reed-Solomon Uncorrected Packets, Carrier to Noise in dB, Eb/No in dB, and Viterbi Bit Error Rate (BER). Zeros will be displayed if the receiver is not locked to a carrier, otherwise valid data will be displayed.

SetIP

Usage: **SetIP -i <Interface Name> [-a <IP address>] [-n <netmask>] [-d {e/d}]**

Note that this command is available only to the **admin** user.

This command sets the IP characteristics of a network interface on the receiver. This is important so that you can initially gain access to the Web GUI server on the receiver. Even though IP Address, netmask, and DHCP are options, one must be entered. If any parameter is not specified, its value will not change. The individual parameters are defined below:

- i Selects which network interface will be set with this command, using one of the options: **net1** (first Ethernet port eth0), **net2** (second Ethernet port eth1), or **sat** (satellite receiver interface sat0).
- a Indicates the IP address of the receiver in dotted decimal notation (e.g. 192.168.0.1)
- n Indicates the Net Mask of the receiver in dotted decimal notation (e.g. 255.255.255.0)
- d Indicates whether DHCP is enabled or disabled, using one of the options: **e** for enabled, **d** for disabled.

GetIP

Usage: **GetIP**

This command displays the IP characteristics of all known interfaces in the receiver. This command takes no parameters and displays the current settings for the parameters that can be set using **SetIP**.

GetInfo

Usage: **GetInfo**

This command displays the current identity and front panel status information for the receiver. This command takes no parameters and the display is only provided once. The output provides the following information: Receiver name and description, MAC addresses for the network interfaces, type of receiver, the colour of each front panel LED, enabled software/hardware options, and the version of the embedded firmware.

ConfigEth

Usage: **configeth [-c {10h/10f/100h/100f/auto}] -i <interface> [-h] [-m]**

Note that this command is available only to the **admin** user.

This command sets the hardware parameters of the host's Ethernet interfaces. The individual parameters are defined below:

- c** Sets the speed and duplex of the Ethernet port. Allowable values are:
- 10h – 10 Mbps, half duplex
 - 10f – 10 Mbps, full duplex
 - 100h – 100 Mbps, half duplex
 - 100f – 100 Mbps, full duplex
 - auto – autonegotiate speed and duplex
- Normally, interfaces should be set to autonegotiate. If **-c** is not specified, this command displays the current settings of the selected Ethernet interface.
- i** Specifies the Ethernet interface to apply this command. The <interface> name must be either "eth0" or "eth1".
- h** Displays a usage message.
- m** Causes **configeth** to display its output in a machine friendly (rather than a human-friendly format). This option is not generally used by interactive users.

Controlling the Receiver with the Web GUI

All accessible functions within the SRA/SFX series satellite receiver can be controlled using the Web Graphical User Interface (GUI). The receiver acts as a web server in this case, serving out GUI pages to a PC with a browser. Communications between the browser PC and the receiver is via a LAN connection to one of the Ethernet ports on the rear panel, using the http protocol.

The Web GUI is compatible with the following web browsers:

1. Internet Explorer V5.0 or later, running under Windows® '95, '98, 2000 or Windows NT or XP.
2. Mozilla V0.98 or later, running under Linux.

The Web GUI is best used with browsers that are displayed at a resolution of 1024 x 768 or greater, although 800 x 600 resolution is sufficient. However, at 800 x 600 resolution, you may need to use the scroll bars more often.

Typically, an Ethernet crossover cable is used in the field when the receiver is being aligned to the satellite signal and a point-to-point connection is required between the receiver and the browser PC. To communicate between the satellite receiver and the browser PC, it is necessary that the IP address of the customer's computer be set to the same subnet as the receiver. The factory default IP address of the Net1 (eth0) interface is 192.168.0.1 and the Net2 (eth1) interface is 192.168.1.1. Typically, you will have to use the **SetIP** command in the Terminal Interface to set the IP address to another value. If you do not know the IP address of the receiver, you can discover it by using the **GetIP** command in the Terminal Interface.

When the browser PC and the receiver are connected together via a hub or switch in a LAN configuration (typically using Ethernet "straight through" cables), the same rule as above, applies.

If the browser PC and the receiver are on different LAN's connected by the Internet, communications between the two can only be made if the receiver IP address is known. Typically, the satellite receiver would be set up on its LAN with a gateway to the Internet.

Once the receiver is set up with an IP address that is known, you can access the receiver by typing the IP address in the Address line of the browser. The Web GUI uses port 80, so only the IP address is required in the Address line. In the SFX, this port is generally forwarded through port 2100. If access is successful, you will be required to login to the receiver, as shown in the example Internet Explorer login page in the figure below.

SFX2100R : SFX2100R

You must enter a username and password to login.

Username

Password

Remember login permanently?

Provided you know the password, login is available at the following levels:

1. SRA and SFX: Monitor status only – login as username **monitor**
2. SRA only: Monitor status and allow limited control of receiver functions – login as username **user**
3. SRA and SFX: Monitor status and allow full control of all receiver functions – login as username **admin**

Should you enter an incorrect username and/or password, the login page will report an error.

Once you have successfully logged in, the Main Menu page will appear and you are connected to an operational Web GUI. An example of the Main Menu page for the SRA and SFX are shown in the figures at the end of this chapter. Please refer to the full User's Guide for details on navigating through the Web GUI.

Depending on the configuration of the default page for port 80 of the SFX2100, you will either enter the Main Menu page of the Cockpit, or to a web page, which will allow you to access the Main Menu page of the Cockpit via a link. The default local or remote page can be set under the Utilities menu item (see full User's Guide for more detail). If a web page is specified as a default, then port 80 must be used for access.

The Main Menu Tool Bar across the top of the Main Menu page presents all the main menu options available with this receiver. This area remains displayed at all times and you can click on any of the tool bar options at any time to return to a known location in the menu structure. The table below describes each Main Menu Tool Bar item.

Main Menu Tool Bar Item	Description
Identity	Items associated with displaying and/or editing the identity of the receiver, including name, MAC Addresses, IP addresses, DHCP enable, etc.
DVB Carrier	Items associated with the RF tuner/demodulator setup of the satellite receiver, including DVB Carrier A/B setup and LNB attributes.
Data Delivery	Items associated with all data delivery to/from the receiver, including PID definitions, multicast and unicast routing, NAT, IGMP, Firewalling, etc.
XD Suite (SFX only)	Items associated with the configuration of the XD client application in the SFX2100.
Player (SFX only)	Items associated with the configuration of the video/audio streaming and file player applications in the SFX2100.
Logging	Items associated with local and remote status logging of receiver events, including RF status and faults.

Main Menu Tool Bar Item	Description
Metrics	Items associated with RF and data metrics displays.
Utilities	Items associated with peripheral utilities required to properly operate the receiver in your network, including Date/Time, Passwords, Ping, etc.
Upgrade	Items associated with the upgrade of application firmware and other software applications required to properly operate the receiver.
Documents (SFX only)	Area where the online User documentation can be stored on an SFX2100.

The area at the bottom of the Main Menu page provides an updated RF status of the DVB carrier being currently received. This area remains displayed at all times and RF metrics information presented here is only valid if the DVB Carrier A/B Lock Status indicates that the receiver is locked to carrier A or B (green square). This display area is updated at the periodic refresh rate set by the RF Metrics Refresh Rate (in seconds). The following metrics are displayed:

RF Metric	Description
Signal Quality	<p>This display gives an indication of the Quality of the incoming data stream. This feature is useful to evaluate the quality of the incoming RF signal. A value from 0% to 100% is shown within the display. The higher the percentage, the better the Carrier To Noise (C/No) or quality of the digital carrier. This display is based on an estimation of incoming noise by the receiver front end and is accurate to $\pm 10\%$.</p> <p>The display bar changes colour, according to the following:</p> <p>Black – receiver is not locked to a carrier. Red – signal quality is too low (1% to 24%). Green – signal quality is in acceptable operating range (25% to 100%).</p>
Signal Level	<p>This display provides a percentage of the signal strength of the DVB carrier that is being received at the L-Band input to the receiver.</p> <p>The display bar changes colour, according to the following:</p> <p>Black – receiver is not locked to a carrier. Red – signal level is too low (1% to 19%) or too high (90% to 100%). Yellow – signal level is marginally too low (20% to 29%) or marginally too high (80% to 89%). Green – signal level is in the acceptable AGC operating range (30% to 80%).</p>
LNB Offset	This indicates what the current LNB offset is, based on the automatic LNB drift tracking mechanism of the receiver. This value is added or subtracted from the set frequency in the DVB Carrier definition to tune to the carrier.
C/No	This value represents the estimated carrier to noise ratio (in dB) at the L-Band input to the receiver. The format of this value is x.y dB.
Eb/No	This value represents the calculated Eb/No (in dB) at the input to the receiver. This value is derived from the C/No value, with compensation for modulation scheme, reed-solomon FEC, viterbi FEC rate, and symbol rate of the carrier.
Viterbi BER	This is the number of bit errors encountered during a fixed frame length of incoming data. This data is obtained from the receiver demodulator chip, and is converted to a BER value in the form x.y E - z.

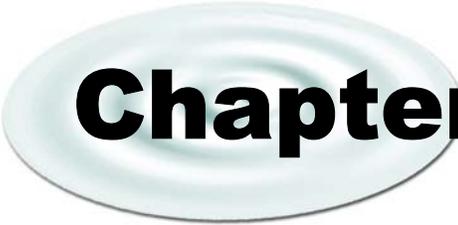
The accuracy of the values reported for C/No and Eb/No are typically ± 1 dB up to a C/No of 15 dB (BER of 1×10^{-12}). With C/No values higher than 15 dB, the accuracy degrades. (A DVB signal can be considered error free at greater than 7 dB Eb/No at 7/8 Viterbi, 4 dB Eb/No at 1/2 Viterbi). Refer to the full User's Guide for more information on the RF metrics accuracy.



Web GUI Main Menu Page (SRA)



Web GUI Cockpit Main Menu Page (SFX)

A light blue oval with a subtle gradient and a slight shadow, containing the text 'Chapter 2' in a large, bold, black sans-serif font.

Chapter 2

Troubleshooting, Safety, Warranty and Contact Information

Troubleshooting

The following are some recommended procedures to follow if your satellite receiver does not operate properly. These procedures should be followed when a system interruption occurs and no obvious cause is immediately apparent, or when experiencing difficulties during installation. This investigation is a general one and implementation may vary from one installation to another.

 **WARNING**

DO NOT OPEN your satellite receiver for any reason as this may VOID your warranty!

Preventative Maintenance

The following actions should be carried out on a routine basis to ensure your satellite receiver remains in serviceable condition.

- Always allow adequate air circulation, especially around the ventilation holes, to prevent any overheating of the receiver.
- Clean your receiver chassis with a dry soft cloth or a soft cloth lightly dampened with a mild cleansing solution. Do not clean the receiver with any type of harsh solution, such as alcohol, and this may damage the finish.
- Ensure cable connections are secure. Check for loose or poor connections.
- Do not allow your cables to become kinked or twisted. Cables are to be connected and secured in such a manner that they will not become subject to constant shifting or accidental disconnection.
- Check your cables for cracks, breaks or abrasions and replace any such cables found.
- Ensure your receiver is on a surface that is stable, or if rack mounted, ensure your unit is properly fastened in the rack.

Troubleshooting Procedures

The quickest indication of a possible problem will be evident from the front panel indicators. Refer back to Chapter 1 on the meaning of the indicators and their associated colours.

If more detail is required, and the unit is powered, you can use the metrics information in the Terminal Interface or the Web GUI to determine what the problem might be. Refer to Chapter 1 for operation of the metrics.

Record the nature of the problem and power cycle the unit. If this does not correct the problem or at least make one of the above procedures possible, then proceed to the steps below.

Contacting Your Supplier

If you have determined that your satellite receiver is malfunctioning, **DO NOT ATTEMPT TO ALTER OR REPAIR THE UNIT.**

Please contact either your Network Service Provider (NSP) or an IDC Customer Service Representative. The problem may be solvable over the telephone or by e-mail.

Prior to requesting assistance, record the history of the problem. Your NSP or IDC Customer Service Representative will be able to provide more efficient and accurate assistance if you have a complete problem description, including:

- The nature and duration of the problem – review any applicable log files if possible;
- When the problem occurs;
- Any particular application that, when used, appears to create the problem or make it worse;
- The model and serial number of your unit.

Shipping & Packaging

If you need to transport or ship your satellite receiver:

1. Package the unit carefully. We recommend that you keep and re-use the original container.
2. Prior to shipping your unit for repair or return, contact your NSP who will in turn call an IDC Customer Service Representative for a Return Material Authorization (RMA) number. If you are returning the unit, you should include everything you received with the unit. Also, please ensure the following items are identified in your shipping documentation:
 - The serial and part number of the unit being returned;
 - The original cost of the unit;
 - Specify “Made In Canada” on your paper work.
3. Ensure your RMA number is clearly printed on the exterior of your shipping container.

Warranty & Service

International Datacasting Corporation (Seller) warrants the items manufactured and sold by the Seller to be free of defects in material and workmanship for a period of one (1) year from date of shipment. The Seller’s obligation under

its warranty is limited in accordance with the period of time and all other conditions stated in all provisions of this warranty.

This warranty applies only to defects in material and workmanship in products manufactured by the Seller. The Seller makes no warranty whatsoever concerning products or accessories not of its manufacture. Repair, or at the Seller's option, replacement of products or defective parts therein shall be the sole and exclusive remedy for all valid warranty claims.

Warranty Period

The applicable warranty period shall commence on the date of shipment from the Seller's facility to the original purchaser and extend for the stated period following the date of shipment. Upon beginning of the applicable warranty period, all customers' remedies shall be governed by the terms stated or referenced in this warranty. In-warranty repaired or replacement products or parts are warranted only for the remaining unexpired portion of the original warranty period applicable to the repaired or replaced products or parts. Repair or replacement of products or parts under warranty does not extend the original warranty period.

Warranty Coverage Limitations

The following are expressly NOT COVERED under warranty:

- Any loss, damage and/or malfunction relating in any way to shipping, storage, accident, abuse, alteration, misuse, neglect, failure to use products under normal operating conditions, failure to use products according to any operating instructions provided by the Seller, lack of routine care and maintenance as indicated in any operating maintenance instructions, or failure to use or take any proper precautions under the circumstances.
- Products, items, parts, accessories, subassemblies or components, which are expendable in normal use or are of limited life, such as but not limited to bulbs, fuses, lamps, glassware, etc. The Seller reserves the right to revise the foregoing list of what is covered under this warranty.

Warranty Replacement & Adjustment

The Seller will not make warranty adjustments for failures of products or parts which occur after the specified maximum adjustment period. Unless otherwise agreed, failure shall be deemed to have occurred no more than seven (7) working days before the first date on which notice of failure is received by the Seller. Under no circumstances shall any warranty exceed the period stated above unless expressly agreed to in writing by the Seller.

Liability Limitations

This warranty is expressly in lieu of and excludes all other expressed and implied warranties, including but not limited to warranties of merchantability and of fitness for particular purpose, use or applications, and all other obligations or liabilities on the part of the Seller, unless such other warranties, obligations or liabilities are expressly agreed upon to in writing by the Seller.

All obligations of the Seller under this warranty shall cease in the event of its products or parts thereof have been subject to accident, abuse, alteration, misuse or neglect, or which have not been operated and maintained in accordance with proper operating instructions.

In no event shall the Seller be liable for incidental, consequential, special or resulting loss or damage of any kind howsoever caused. The Seller's responsibility for damages shall not exceed the payment, if any, received by the Seller for the unit or product or service furnished or to be furnished, as the case may be, which is the subject of claim or dispute.

Statements made by any person, including representatives of International Datacasting, which are inconsistent or in conflict with the terms of this warranty, shall not be binding upon International Datacasting unless reduced to writing and approved by an officer of the Corporation.

Warranty Repair Return Procedure

Before any warranty repair can be accomplished, a Return Material Authorization (RMA) number must be received. It is at this time, that the Seller will authorize the product or part to be returned to the Seller's facility. The RMA number may be requested by contacting an International Datacasting Customer Service Representative at:

International Datacasting Corporation
2680 Queensview Drive
Ottawa, Ontario, CANADA K2B 8H6

Attn: Customer Service

Tel: 613-596-4120 | Fax: 613-596-4863
Email: service@intldata.ca

Any product returned to the Seller for examination must be sent prepaid via the means of transportation indicated as acceptable to the Seller. The RMA number must be clearly marked on the shipping label. Returned products or parts should be carefully packaged in the original container, if possible, and shipped to the above address.

Non-Warranty Repair

When a product is returned for any reason, the Customer and its shipping agency shall be responsible for all damage resulting from improper packing and handling, and for loss in transit, notwithstanding any defect or nonconformity in the product. By returning a product, the owner grants the Seller permission to open and disassemble the product as required for evaluation. In all cases, the Seller has the sole responsibility for determining the cause and nature of failure, and the Seller's determination with regard thereto shall be final.

Contacting IDC for More Information

Detailed technical Application Notes and Manuals are available from International Datacasting, including information required to use SNMP and advanced SFX2100 applications such as XD.

To obtain copies of these Application Notes, please contact:

Customer Service Department
International Datacasting Corporation
Tel: (613) 596-4120 Fax: (613) 596-9208
Email: service@intldata.ca

or

Sales Department
International Datacasting Corporation
Tel: (613) 596-4120 Fax: (613) 596-4863
Email: sales@intldata.ca

Important EMI & Safety Certification Information

Read these safety and operating instructions before operating your SRA/SFX series satellite receiver. Follow instructions and heed all warnings on your unit and in this manual.

CAUTION: Earth connection is essential before connecting supply. Connect your system to a grounded AC outlet only



Receiver Installation

- Operate from a power source indicated on your receiver or in this manual.
- The AC inlet is the main power disconnect. The socket outlet shall be near the equipment and shall be easily accessible. The power requirements for this equipment are quite flexible with an acceptable power range of 100 to 240 VAC at 50 or 60 Hz. The fuse is part of the power supply. Replacement can only be accomplished by a qualified technician.
- Protect and route power cords so they will not be stepped on or pinched by anything placed on or against them. Be especially careful at plug-ins, convenience receptacles or cord exit points from the equipment. Frayed power cords or damaged plugs are hazardous. Have them replaced by a qualified service technician. Overloaded wall outlets and extension cords may cause fire or electrical shock.
- Always ensure there is adequate ventilation when installing the equipment. Do not cover or block ventilation holes. Doing so may damage the unit or cause a fire.
- Avoid excessive humidity, sudden temperature changes or temperature extremes. Dew may form inside your unit.
- To avoid costly damage or injury, place your unit on a solid, stable surface or mount in a rack free from vibrations. Do not place any heavy objects on top.

Exterior Equipment Installation

Refer to the Figure while reading the instructions below.

- Grounding the dish provides protection against static voltage build-up, which may damage equipment. Grounding also provides some protection against surges induced by nearby lightning strikes. Any coax cable that may be exposed to lightning or power conductors must have its outer shield grounded. There may be additional grounding regulations in your area. It is important for you to consult and follow all the codes and regulations in your area as you install your system.
- The best method of grounding the outer shield of a coax cable is to use a ground block. This block is a barrel connector to which you can install a ground conductor, such as a terminal, or a drilled hole and setscrew. The terminal is where the outer conductor of the coax cable is attached to the grounding electrode. When installed, the grounding block passes the LNB signal and DC voltages straight through while grounding the outer conductor of the coax. One factor determining the ground block location is the location of an acceptable ground electrode. The grounding conductor (the wire that runs between the ground block and the ground electrode) must be in a straight line, if possible from the ground block to the grounding electrode. Also, splices in the conductor between the electrode and the grounding block are prohibited.

- Where coaxial cable is exposed to lightning, the cable shall be connected to the grounding system of the building, as close to the point of cable entry as practical. This can be either inside or outside the building. Therefore, when selecting a location for the grounding block, try to make the ground close to where the cable enters your building.
- The size of the grounding conductor that connects to the ground electrode is to be at least No. 10 copper wire or No. 8 aluminum wire. Insulation over the conductor wire is not required. As with any cable, the grounding connector must be securely fastened to a surface to protect it from physical damage. If the conductor cannot be protected from damage, the size of the wire should be increased to withstand any physical strain placed on it.
- Acceptable ground electrodes are: Grounding Interior Metal Water Piping (cold water), Grounding Rod (must be driven at least 2.44 meters (8 feet) into the ground) and Grounded Metallic Service Raceway.
- The outdoor antenna to be earthed in accordance with National Standards.

Operating & Cleaning

- The unit should be placed in a sheltered location away from sources of water, heat, extreme cold, vibration and electromagnetic interference.
- Use only accessories recommended by the manufacturer to avoid fire, shock or other hazards.
- If your unit has been exposed to rain, moisture or a strong impact, unplug the equipment and have it inspected by a qualified service technician before resuming use.
- Unplug your equipment and disconnect it from the antenna system during a lightning storm or an extended period of discontinued use.
- Unplug your unit before cleaning. Use a damp cloth. Do not use cleaning fluids, alcohol or aerosols, which could enter the unit and cause damage, fire or electrical shock. These substances may also mar the finish of your unit.
- Keep all liquids and foreign objects away from your unit. Never operate the unit if any liquid or foreign object has entered the unit. Electrical shorts could result and possibly cause fire or shock hazards. Unplug your unit immediately and have it inspected by a qualified service technician.
- Never open or remove covers or make any adjustments not described in this manual. Attempting to do so could expose you to dangerous electrical shock or other hazards. It may also void your warranty.

Service

- Do not attempt to service this equipment yourself. Instead, unplug the unit and contact an International Datacasting Customer Service Technician.
- The International Datacasting Customer Service Technician uses only authorized replacement parts or their equivalents. Unauthorized parts may cause fire, electrical shock or other hazards.
- Following any service or repair, the International Datacasting Customer Service Technician performs safety checks to certify that your equipment is in safe operating order.

EMI/EMC Certification

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 in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference

to radio or television reception, which can be determined by turning the equipment off or on, you are encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for assistance.
- Changes or modifications not expressly approved by International Datacasting could void your authority to operate the equipment.

This Class 'A', digital apparatus meets all requirements of the Canadian Interference-causing equipment regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du règlement sur la matériel brouilleur du Canada.

This device also meets the requirements of the CE symbol, in accordance with EN50081-1 and EN50082-1 Class A.

