

# RX8200 CONFIGURATION GUIDE

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## 1 INTRODUCTION

The RX8200 Receiver is an MPEG-4 AVC/ MPEG-2/DVB compliant receiver designed for reception of video, audio and data Services over satellite.



Figure 1 RX8200 Satellite Receiver

The Satellite Receiver interfaces directly to a Low-Noise Block (LNB) on a satellite dish and takes an intermediate frequency (IF) input in the band 950 - 2150 MHz (L-band). The unit can provide DC power and polarisation switching to the LNB.

The receiver can be tuned to a Reuters satellite channel frequency and polarisation. The input is down-converted via an LNB to provide an L-band input to the Receiver. The received Reuters satellite channel contains two services within a single video Service (**Reuters Live Service**) and a data channel (**World News Express**).

### 1.1 FRONT PANEL CONTROLS

The physical interface for the Front Panel consists of an alphanumeric LCD display, pushbuttons, and a status LED that can be used to set-up and monitor the unit. User input is via six pushbuttons comprising four cursor pushbuttons: Left, Right, Up, and Down; and two edit control pushbuttons: Edit and Save.



Figure 2 RX8200 Front Panel Controls

Each pushbutton has an integral green LED except Save, which has an integral red LED. When lit these LEDs indicate to the User which pushbutton is currently active.

### 1.2 FRONT PANEL LEDS

Receiver status as follows:

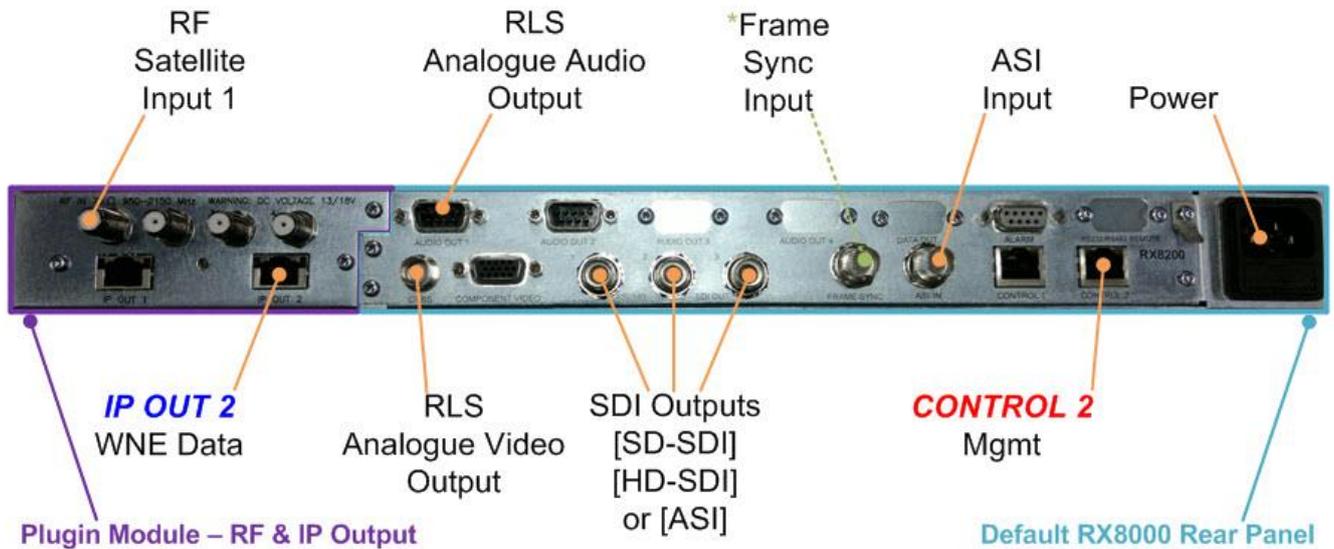
A **red** status LED is used to indicate an RX8200 Receiver fault condition, e.g. a missing or faulty input signal. It should be off for correct operation, although it may be lit briefly during power up.

An **orange** status LED is used to indicate that the RX8000 Receiver is locked to a Transport Stream, but also indicates incorrect conditions or incorrect system functioning.

A **green** status LED is used to indicate that the RX8000 Receiver is locked to a Transport Stream and also indicates correct conditions and correct system functioning.

## 2 RECEIVER INSTALLATION AND CABLE CONNECTIONS

The receiver should be mounted in a standard 19-inch rack in a cooled machine room.



\*Frame Sync is not enabled by default on an RX8200, please contact us if this option is necessary.

Figure 3. Rear Connections On RX8200

### 2.1 RF CONNECTION

Connect an RF coaxial cable that is carrying the Reuters RLS/WNE satellite signal to **RF In 1** on the rear of the RX8200.



Figure 4. RF Connection on RX8200.

## 2.2 IP DATA AND MANAGEMENT CONNECTION

Connect the Ethernet 3 (*eth3*) network card of the WNE HPDL180 G6 server to the RX8200 (labelled *IP OUT 2*) using an ethernet cable for WNE IP Data.

Connect the Ethernet 1 (*eth1*) network card on the server to the management port (labelled *CONTROL 2*) on the RX8200 for management access. Figure 5 shows how these connections should be made between both devices.

NIC interfaces should be auto sensing so a standard straight ethernet cable is sufficient for a direct connection.

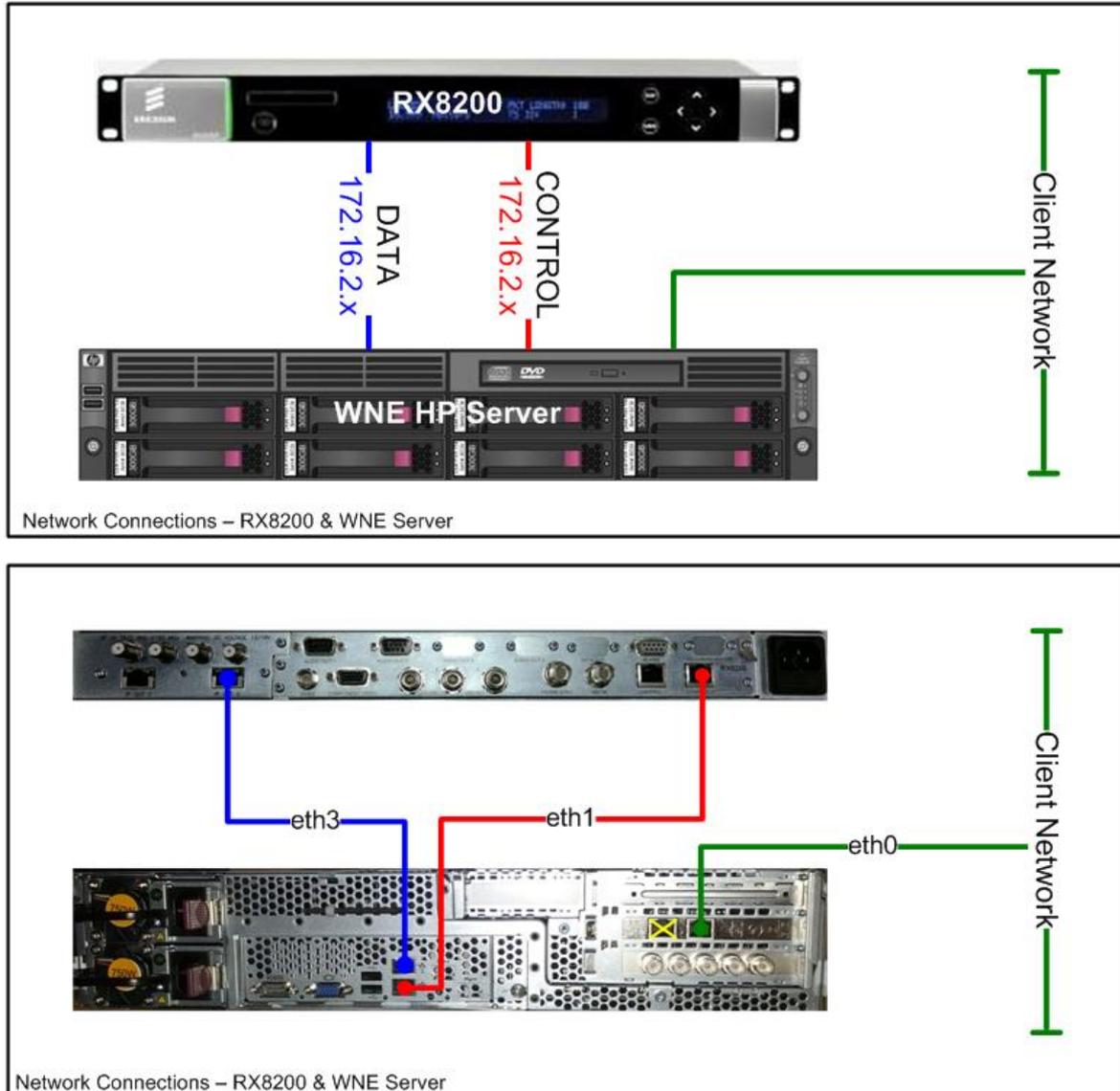


Figure 5. Network Cabling Connection Convention

## 2.3 MANAGEMENT ADDRESS CONFIGURATION

### Default IP Address - 172.16.2.20

Configuration of this IP address must be configured on the front panel of the receiver. When this address change is applied, the WNE Server can be used to access the RX8200 browser page to complete the receiver configuration settings.

## 3 RECEIVER CONFIGURATION

### 3.1 SATELLITE PARAMETERS

To successfully receive the WNE and RLS service you must provide an RF coaxial connection to a satellite antenna positioned on the correct satellite for your region.

The RX8200 receiver can be pre-configured for the region by the engineer performing the installation, but customers still need to confirm if the receiver needs to power the antenna LNB and provide detail on the LNB local oscillator in regions with Ku-band reception.

The table below shows the satellites on which Reuters currently transmit the WNE and RLS services as of 1<sup>st</sup> May 2019.

Region	Americas (North/South)	Europe	Middle East & Africa	Asia
<b>Satellite</b>	Eutelsat 113 West A (SatMex 6)	SES4	Africasat 1A	Asiasat 5
<b>Position</b>	113° West	22° West	46.0° East	100.5° East
<b>Down Link Frequency</b>	12046.500 MHz (Ku-Band)	11126.35 MHz (Ku-Band)	4050Mhz (C-Band)	<b>3960MHz</b> (C-Band)
<b>Symbol Rate</b>	18.9 MS/s	17.25MS/s	30.0 MS/s	30.0 MS/s
<b>FEC</b>	4/5	3/5	5/6	5/6
<b>Modulation</b>	QPSK	8PSK	8PSK	8PSK
<b>Down Link Polarization</b>	Horizontal	Horizontal	Vertical	Horizontal
<b>Coverage Map</b>	<a href="#">Link</a>	<a href="#">Link</a>	<a href="#">Link</a>	<a href="#">Link</a>

## Configuring the RX8200

The most efficient way to configure an RX8200 is by using its web-based management interface. It is also possible to configure most of the receiver functionality through the front panel menu control buttons which takes considerably longer to complete.

### 3.2 USING THE RECEIVER FRONT PANEL MENU SYSTEM

- The four arrow pushbuttons are used to navigate through the receiver menu system. Each arrow pushbutton backlight is illuminated when a further menu can be reached by pressing that pushbutton.
- The edit and save pushbuttons are used to modify User Settings within the menu system. The edit pushbutton backlight is illuminated when the current menu contains a User modifiable setting. To modify a User Setting within a menu, press the edit pushbutton and then use the up and down pushbuttons to change the User Setting. During this edit operation, both the edit and save pushbutton backlights will be illuminated. If a menu contains more than one modifiable User Setting then the left and right pushbuttons are used to select which User Setting will be edited. When a User Setting has been modified, the save pushbutton should be pressed to confirm and action this new User Setting.
- Configure the IP addresses of this receiver for access to the Management and IP Data network interfaces. Once the management IP address has been configured to the default Reuters address (172.16.2.20), the remainder of this receiver configuration can be done through its Internet browser page.

### 3.3 DEFAULT IP ADDRESS – FRONT PANEL CONTROL

The default IP addresses for the Management control should be configured manually through the front panel menu. The Management port called Control 2 (IP2) should be changed to a default IP address of 172.16.2.20. The Subnet address should remain as 255.255.255.0.

#### Management Control 2 – Menu 1.1.3



Figure 6. Control 2 Network Address

### 3.4 CONFIGURATION OF RX8200 ON RLS – FRONT PANEL CONTROL

If you wish to simplify the configuration process, skip to instructions on configuration through a web interface. The steps below are a manual process for configuring RLS only and do not set all WNE configuration parameters.

- Go to Menu 3.2 and select RF INPUT 1. The Receiver can take its signals from four sources. Set-up source 1.
- Scroll to Menu 3.2.2.1. Enter the LNB FREQUENCY then press **Save**. This sets up the LNB frequency for the selected Source in MHz.
- Scroll to Menu 3.2.2.2. Enter the SATELLITE FREQUENCY then press **Save**. This sets up the Satellite frequency for the selected Source in MHz.
- Scroll to Menu 3.2.2.3. Enter the SYMBOL RATE then press **Save**. Sets the symbol rate for the selected Source in Msymbol/s.
- Scroll to Menu 3.2.2.4. Enter the DVB Modulation Standard then press **Save**. This sets up the DVB modulation Standard (DVB-S or DVB-S2). FEC detection is automatic. Currently, this is DVB-S for RLS.
- Scroll to Menu 3.2.2.7. Enter the SEARCH RANGE then press **Save**. This sets up the centre frequency Search Range for the selected Source in kHz. Set this value to 5000kHz.
- Scroll to Menu 3.2.2.10. Enter the LNB POWER as either On or Off and then press **Save**.

### 3.5 CONFIGURATION OF NETWORK ACCESS

Access to the RX8200 should be configured on a client site as shown in **Figure 5** above. The IP Data Output and Management LAN connections should be connected directly to the WNE Server. IP Data and Management functionality are completely separated on the RX8200 hence the requirement for separate network connections.

If a client environment requires multiple WNE server connections to a single RX8200 through a switch then every connected server will still require two individual connections as depicted in **Figure 9** below. See [Appendix 4](#) for a rear visual of network connections

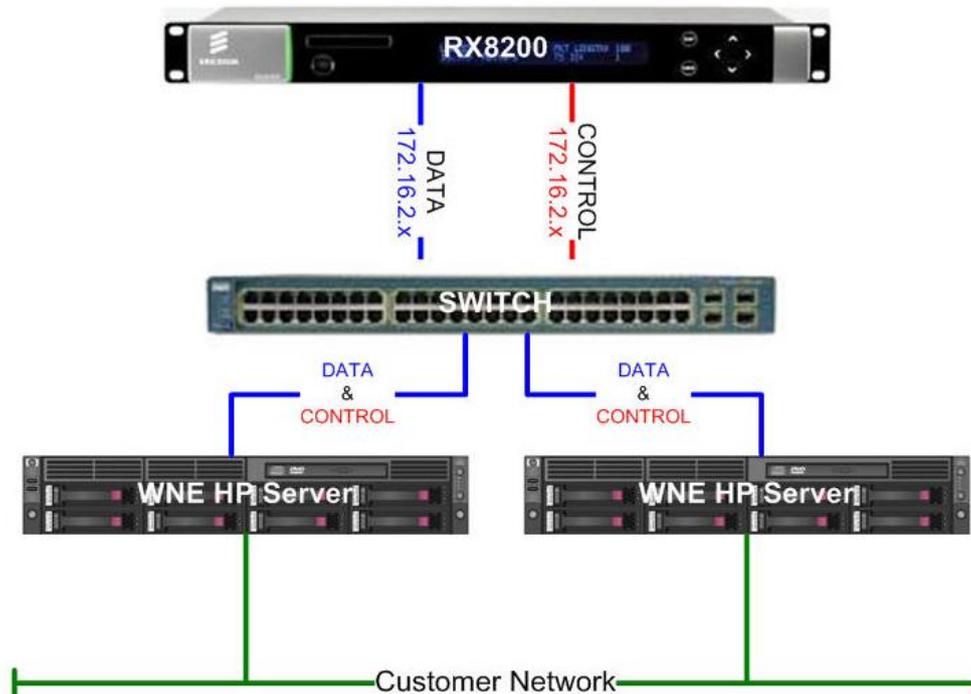


Figure 7. Multiple WNE Servers & Single RX8200

### 3.6 CONFIGURATION OF RX8200 ON RLS – BROWSER INTERFACE

Access the RX receiver through a browser window from the WNE server using its default IP address of <http://172.16.2.20>. With a correctly configured Management IP address, the default Status page of the RX8200 will be displayed.

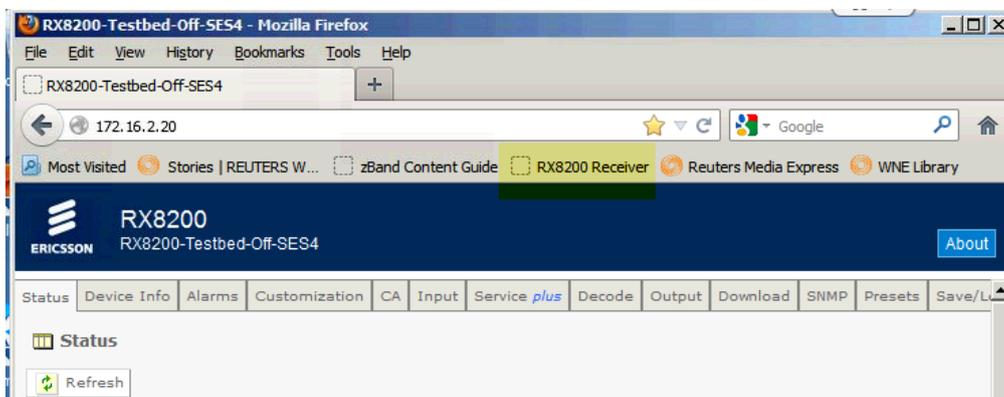


Figure 8 RX8200 Bookmarks Toolbar Shortcut

The screenshot shows the RX8200 web interface with the following details:

- Browser: Mozilla Firefox
- Address: http://172.16.2.20
- Page Title: RX8200 Advanced Modular Receiver
- Navigation: Status (selected), Device Info, Alarms, Customization, CA, Input, Service *plus*, Decode, Output, Download, SNMP, Presets, Save/Load, Help
- Status: Critical
- Refresh button: Refresh
- Device Name: Advanced Modular Receiver
- IP Address #1: 192.168.001.001
- IP Address #2: 172.016.002.020
- Current Status: Critical
- Current Time: 2001-01-01 00:00:00
- Uptime: 0000 00:05:48 DAYS H:M:S
- Input Status: UNLOCKED 0.000 Mbits/s
- Video Status: STOPPED
- Audio 1 Status: STOPPED ---
- Audio 2 Status: STOPPED ---
- CA Status: NO SERVICE
- Output Feed: Descrambled
- Mode: ACTIVE

Time	Severity	Name	Source	Slot	Port	AlarmId	SubId	Info
2000-01-01 00:00:04	Critical	No TS Lock	RX8000	1	0	1007	0	No TS Lock
2000-01-01 00:00:04	Major	Video Not Running	RX8000	1	0	1012	0	Video Not Running
2000-01-01 00:00:04	Major	Audio 1 Not Running	RX8000	1	0	1014	0	Audio 1 Not Running
2000-01-01 00:00:04	Major	Audio 2 Not Running	RX8000	1	0	1015	0	Audio 2 Not Running

Result:

Figure 9. RX8200 Default Status – Not Configured

Alarm messages will be displayed on this *Status* page until all RLS and WNE configurations have been completed. Select the *Input* tab, then select *Input Source* and *Primary Input* as **SAT** and select *Apply Changes* to store this configuration.

The screen shot examples below show a different default management IP address. Please ensure you are using a 172.16.2.20 IP address for Control 2 management interface.

*Please also note that the following screen shots may not be identical to the RX8200 unit to hand as different firmware versions of the unit have additional menu options.*

Configuration of the RLS Service parameters must be configured first.. Select the **Input** tab on the RX8200 browser interface

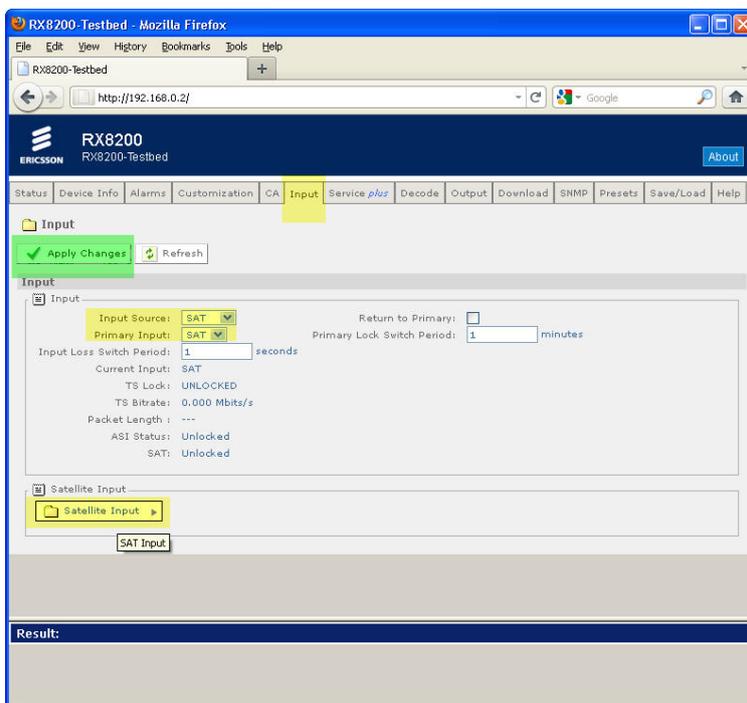


Figure 10. Satellite Input

Select the *Satellite Input* tab at the bottom of the browser page. You will now see a list of the L-band inputs. The RF signal from the satellite dish should be connected to Input 1 as shown in section 2.2 of this document.

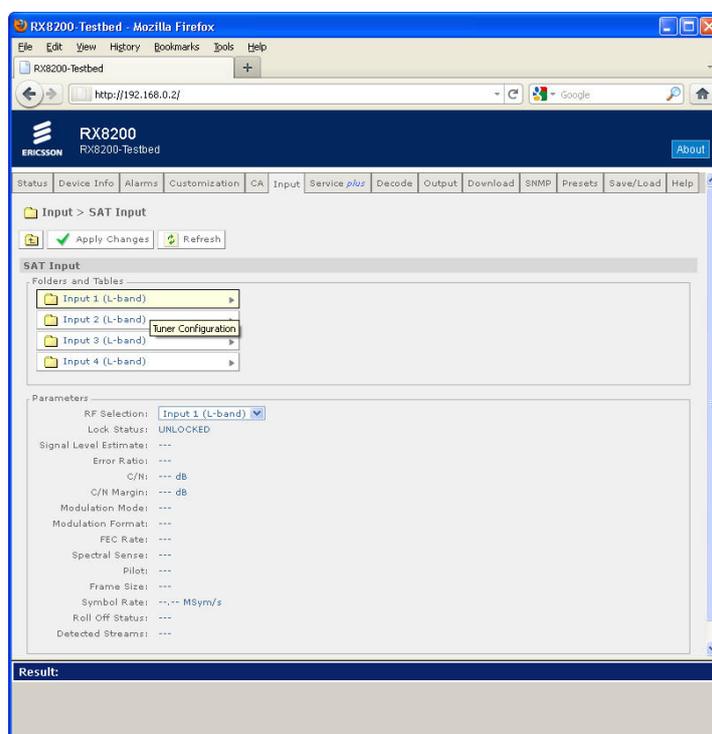


Figure 11. Satellite Input Screen

Configure the satellite input parameters for the client site. Please use the Global Satellite Coverage options in this document to determine the local settings required for your client region. Ask a client engineering representative for the frequency details of the LNB connected to their in-house satellite dish.

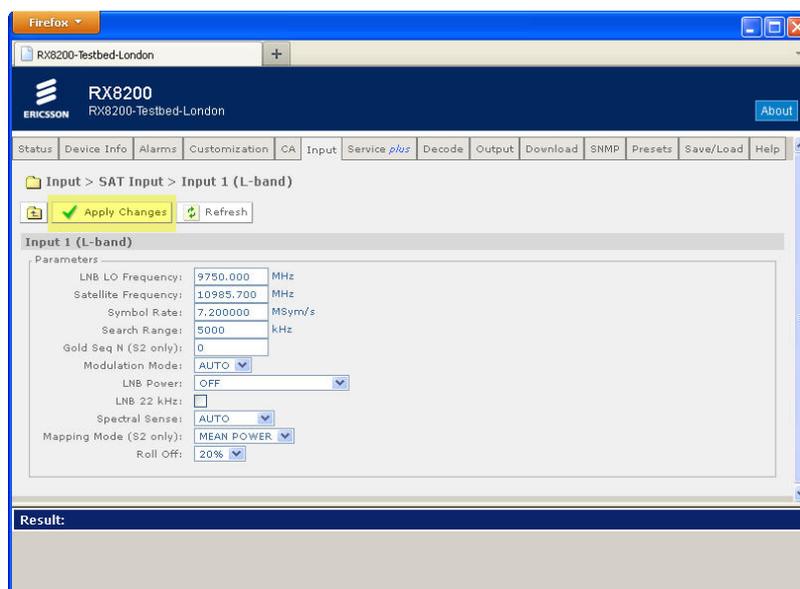


Figure 12. L-band Input 1 Configuration

When all the configuration parameters have been entered click on the **Apply Changes** tab to ensure the settings are saved. The receiver should now be tuned into the RLS service and the Front Panel LED of the RX8200 should have changed to an Orange colour. This will also be reflected on the home Status page of the receiver

For WNE, two multicast IP addresses exist to distinguish between PAL/625 and NTSC/525 on Reuters WNE (i.e.), each broadcast stream exists on a separate multicast address.

These addresses are provided below:

Standard	IP Address	MAC Address Hexadecimal
525/HD60	224.14.14.14	01:00:5E:0E:0E:0E
625/HD50	224.14.14.15	01:00:5E:0E:0E:0F

Figure 13. Multicast Addresses on WNE

To configure the transmission standard specific to your region, navigate to the *Decode* tab of the RX receiver browser page.

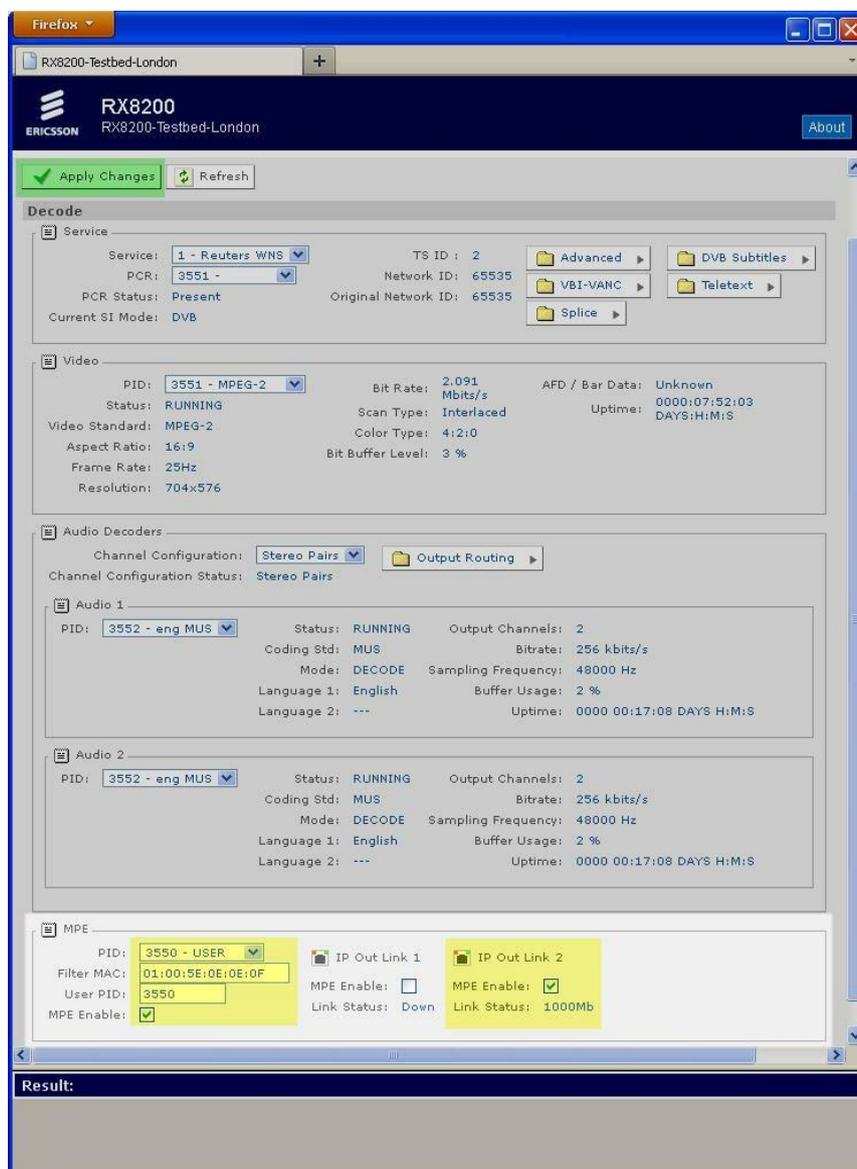


Figure 14. Configuring Multicast MAC Address and PID

Within the **MPE** section, make sure the following information is included:

- *PID*: – From the drop down tab, the PID 3550 – USER should be available once the receiver is tuned into RLS. If not then it will appear after the User PID has been selected and the changes applied to the receivers configuration.
- *Filter MAC*: - Enter the MAC address as shown in **Multicast Address** graphic above for your region.
- *User PID*: - 3550
- *MPE Enable*: - Select this box.
- Also ensure that the *MPE Enable* tick box is enabled for **IP Out Link 2** and then click **Apply Changes** to store this configuration.

To change the IP Output 2 address select the *Output* tab. As this network Interface directly connects to the WNE Server the IP address convention used globally is 172.16.2.2.

Ensure the *Tx Enable* tab remains deselected. A tick mark should not be displayed in the Tx Enable box as shown in the graphic below.

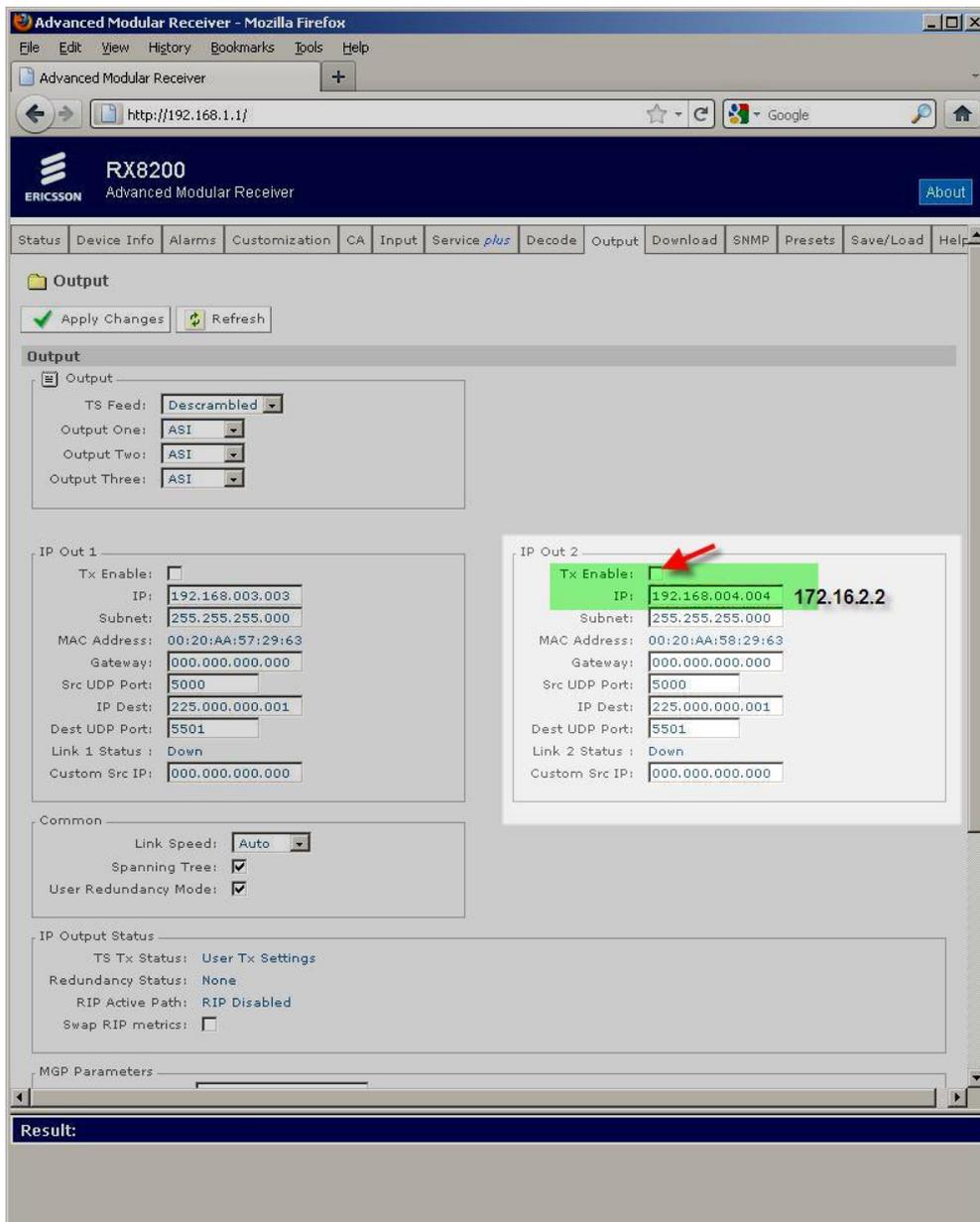


Figure 15. IP Output Interface 2 – Default Settings Shown

Once the IP address has been changed, ensure to select *Apply Changes* to store this new IP address.

The receiver should now be correctly configured for RLS and WNE IP data.

### 3.7 DEFAULT SERVICE PRESET

Now that the receiver has been correctly configured to the RLS Service (which includes the WNE IP Data PIDs) the Service must now be stored for default startup.

Select the *Presents* tab and assign the locked Reuters service to Present Number 1. Enter the number 1 in the *Save Preset Number* window and select *Apply Changes*.

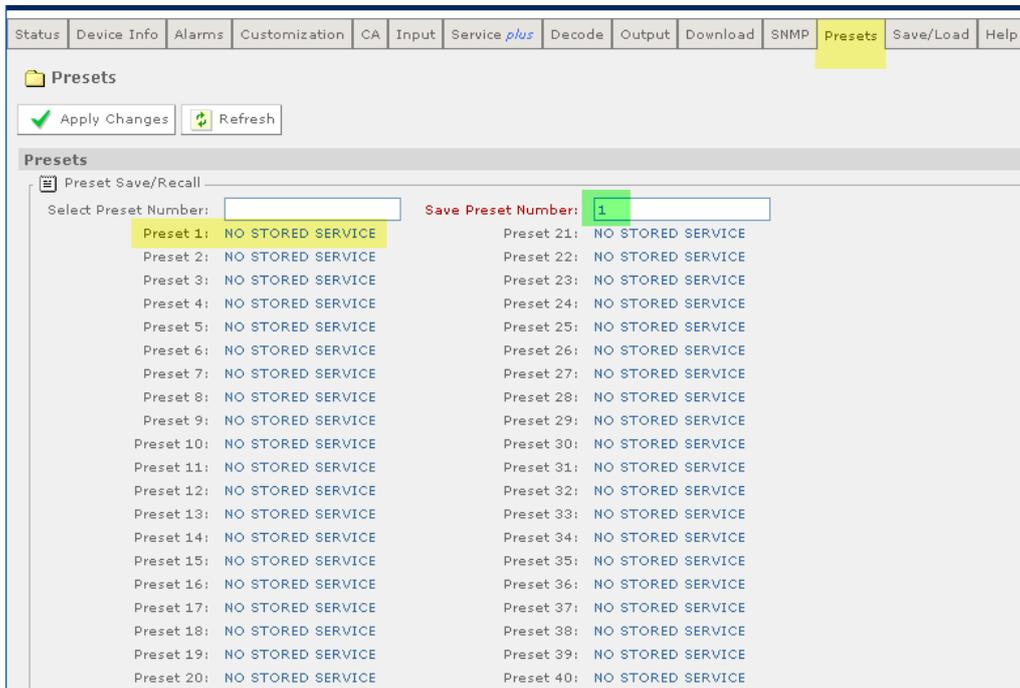


Figure 16. Empty Presets

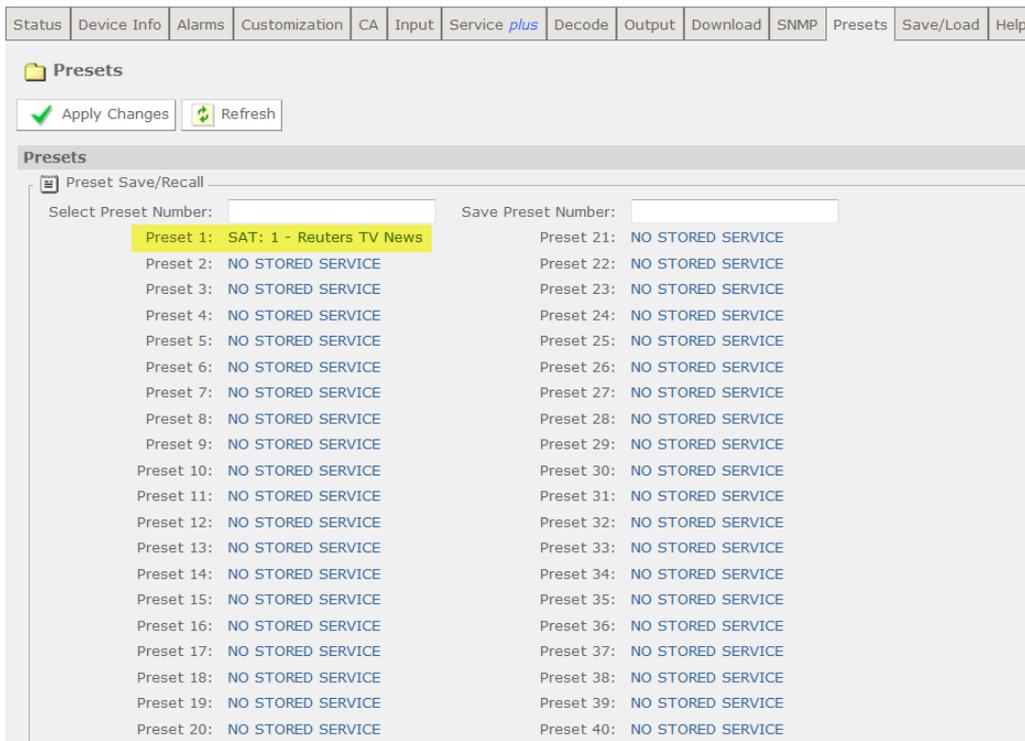


Figure 17. Channel 1 Preset Stored

### 3.8 RESET TO FACTORY DEFAULTS

To clear current configuration settings, either overwrite an existing configuration profile or reset the configuration parameters.

The reset can be done under the *Device Info* page and does not reset the IP address. Select the *Reset Parameters to Factory Defaults*. This reset does not change either of the CONTROL IP addresses.

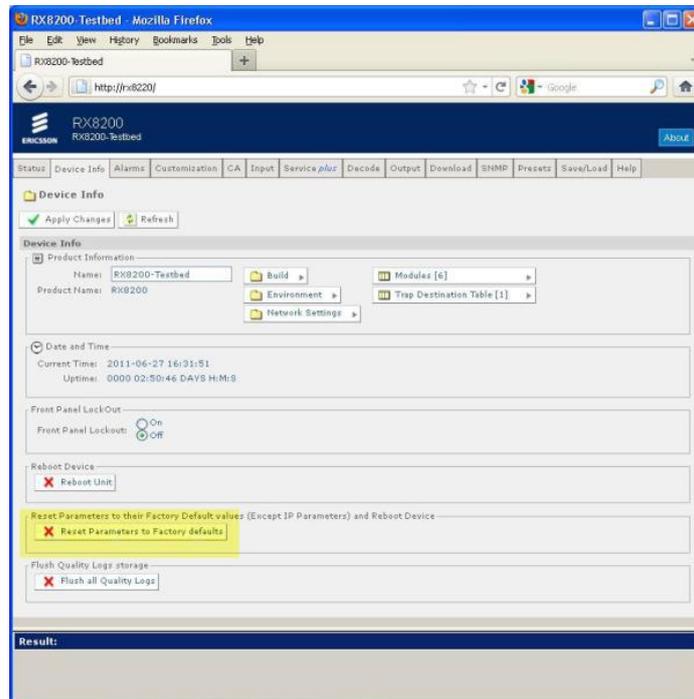


Figure 18. Reset Factory Defaults

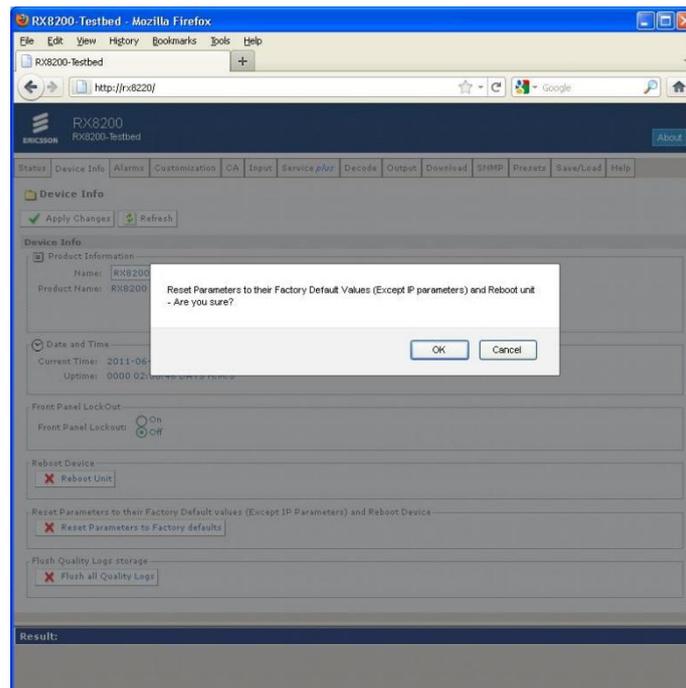


Figure 19. Confirm Factory Reset

## 4 TROUBLESHOOTING

### 4.1 UNABLE TO LOCK TO THE WNE SIGNAL

#### Items to verify:

- Confirm that the Input source is selected as SAT (for satellite feed) as shown in **Figure 36** in [Appendix 3](#). Also ensure that the Primary Input is configured as SAT.
- Confirm the receiver is Enabled for 8PSK as outlined in Appendix 8. Apply an appropriate HD License key if required, reboot and retry.
- Confirm that you've selected the correct multicast address to filter WNE Data as shown in **Figure 39** in [Appendix 3](#).
- Verify the LNB values that have been entered (refer to **Figure 38** in [Appendix 3](#)). Several WNE installations have uncovered a different LNB value when examined by an engineer. For example, if it is believed that a 10GHz LNB is installed, try altering the L-Band frequency value by  $\pm 500\text{MHz}$ . Popular LNB values tend to be 9.5GHz, 9.75GHz, 10GHz, and 10.5GHz.
- Check the quality of the RF coaxial cable connecting to the RX8200. The F connector is a coaxial RF connector commonly used for "over the air" terrestrial television, cable television and universally for satellite television and cable modems, usually with RG-6/U cable or, in older installations, with RG-59/U cable.

### 4.2 NOT GETTING IP DATA FROM WNE

- Is the IP Output Port enabled as shown in Figure 14. IP data will not be output from the RX receiver until this port is enabled.
- Check that the physical ethernet cable is connected to Port 2 and not Port 1
- Check that the MPE Enable check box is enabled under the Decode tab and item MPE as shown in **Figure 40** in [Appendix 3](#).
- Can you ping Port 2? Open a command prompt and ping 172.16.2.2. If not, then the issue lies with either the cable used to connect to the receiver or there is an issue with the network connection.
- Have you tried rebooting either the WNE Server and/or the RX8200 decoder? This often serves to reset network card interfaces.
- Check the RX8200 firmware version. This can be seen from the front panel of the receiver under menu item 1.2.1



Figure 20. RX8200 Firmware Version

- Firmware version v5.12.2 is the latest version (at the time of writing) that should be installed on all RX units. If an earlier version of firmware (e.g. v5.2.4 or v5.11.3) is installed then upgrading to v5.12.2 could resolve IP data reception problems particularly if an installation is running through a network switch. See [Appendix 6](#) for instructions on how to perform an upgrade.

## 5 FAQs

### 5.1 HOW DO I SET ASPECT RATIO 16:9 & 4:3

The RX8200 is set by default to output RLS video as it is presented to the device. All Reuters RLS content is delivered at 16:9 material. To change this to output in 4:3 select the *Advanced* option under the Decode tab.

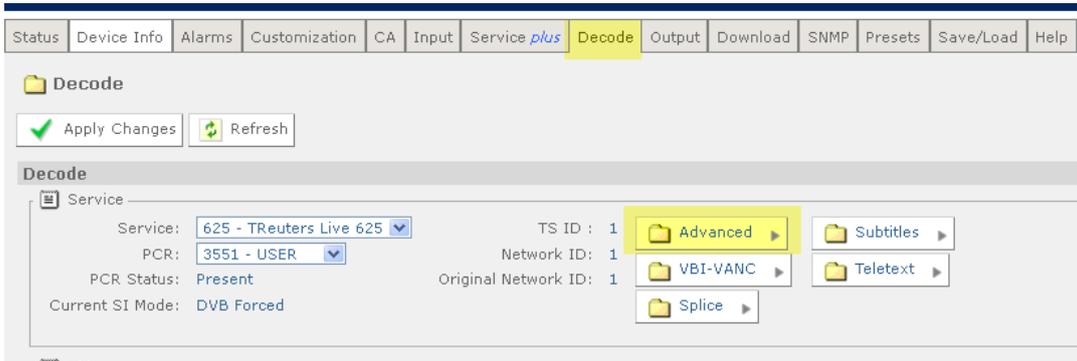


Figure 21. Advanced Video Settings for Aspect Ratio

Select the drop down list for *Screen Aspect Ratio* and select your desired output option and ensure to select the *Apply Changes* button at the top left of the browser screen.

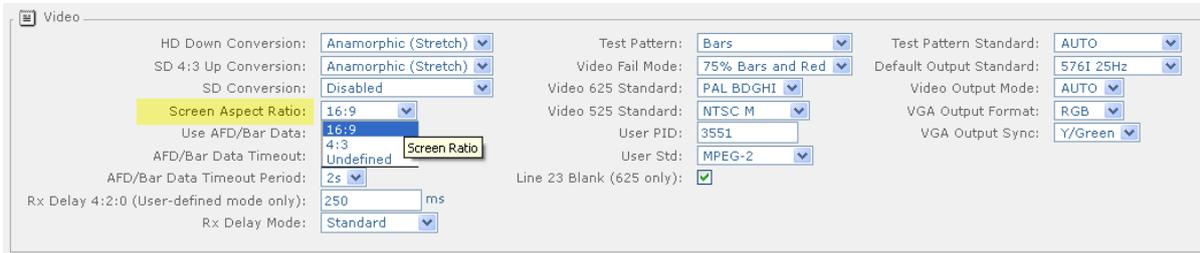


Figure 22. Screen Aspect Ratio

### 5.2 CAN THE RX8200 BE CONFIGURED TO TAKE AN ASI INPUT INSTEAD OF RF?

Yes it can. The RX8200 can be given either an RF or an ASI input. To change to an alternative input, select the Input tab and select the drop down tab for *Input Source* to select, ASI, SDI or Auto. Remember to choose the *ApplyChanges* tab to confirm the selection.

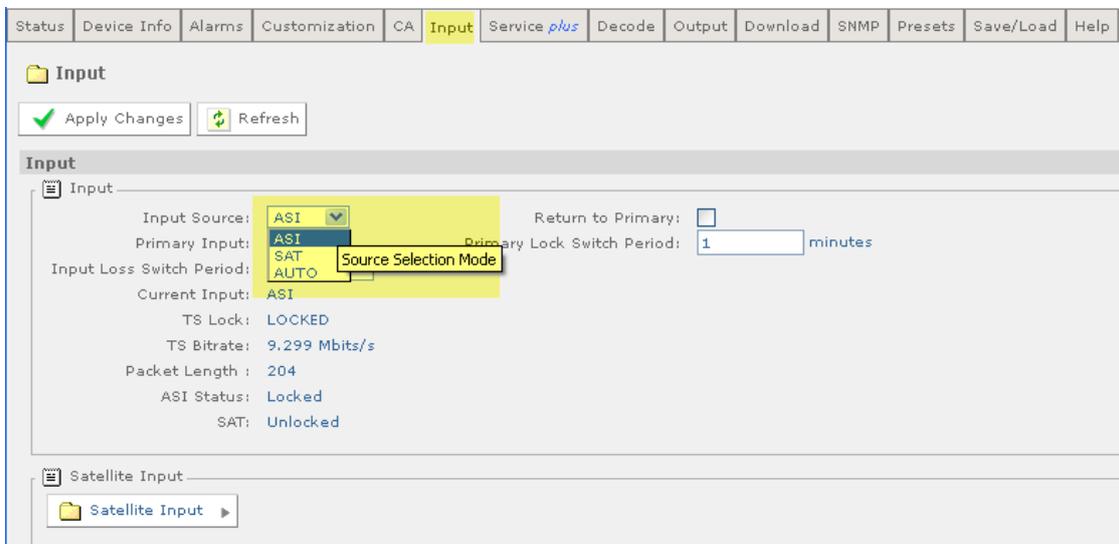


Figure 23. ASI Input

### 5.3 WHAT TYPE OF LNB SHOULD BE USED ON A SATELLITE DISH FOR RECEIVING WNE?

The Reuters recommended specifications for each type of LNB (KU and C Band) are listed below:

#### **Ku Band**

SMW LNB Single - Swedish Microwave - <http://www.smw.se/>



Figure 24. A Light Single Ku Band LNB

#### **C Band**

C-Band & Ku-Band Digi-Ready LNBs – California Amplifier - <http://www.calamp.com/>



Figure 25. *Extended C-Band Professional II LNB*

## APPENDIX 1 TECHNICAL SPECIFICATION

RX8200 Technical Specifications.

### 1.1 PHYSICAL & POWER

- Dimensions: (W x D x H) 442.5 x 545 x 44mm (17.5" x 20.7" x 1.75" approx.)
- Input Voltage: 110 VAC / 240 VAC
- Power Consumption 120W Max. (depending on options fitted)
- Rack height: 1 RU

### 1.2 CONTROL

- Front panel keypad and LCD
- SNMP control, traps and alarms
- Web browser
- IP High Speed Data: MPE based data de-encapsulation Max. bit-rate: 100 Mbps

### 1.3 SATELLITE INPUT OPTIONS

- Connector: 4x F-Type (F), 75 Ohm
- Modulation: DVB-S QPSK
- Receiving Frequency: 950 MHz – 2150 MHz
- Input level: -25 dBm to -65 dBm
- LNB Power: 13V, 18V or off, 22 kHz on/off
- FEC, DVB-S: 1/2, 2/3, 3/4, 5/6, 7/8
- LNB Power: 13V, 18V or off, 22 kHz on/off

### 1.4 VIDEO DECODING OPTIONS

- 4:2:0 Decoding
- MPEG-2 SD Decode
- Profiles: MP@ML
- Max video rate: 15 Mbps (MP@ML)
- Video format: 480i and 576i 29.97, 25 fps

### 1.5 VIDEO OUTPUT OPTIONS

- SD Video Output Composite Video
  - Connector: 2x BNC (F) 75 Ohm
  - Format: PAL / NTSC
- SDI/DVB ASI-C (Switchable)
  - Connector: 2x BNC 75 ohms
  - SD-SDI standard: SMPTE 259M
  - Embedded Audio: SMPTE 272M (SD)
  - Embedded Audio

### 1.6 IP INPUT OPTIONS

- MPEG over Gigabit Ethernet IP Input
- Connector: 2 x RJ 45
- Format: 100/1000BaseT
- Max. input rate: 208Mbps

### 1.7 IP HIGH SPEED DATA

- MPE based data de-encapsulation
- Max. bit-rate: 100 Mbps

## 1.8 GLOSSARY OF ABBREVIATIONS

Abbreviation/Term	Description
C-Band	C Band is the original frequency allocation for communications satellites. C-Band uses 3.7-4.2GHz for downlink and 5.925-6.425Ghz for uplink.
DVB	Digital Video Broadcasting
FEC	Forward Error Correction is a system of error control for data transmission, wherein the sender adds redundant data (also known as an error correction code) to its messages.
GUI	Graphic User Interface
IFL	Generically, IFL (Intra-Facility Link) refers to a cable which runs between two facilities.  In satellite usage, the term IFL refers to the cable which connects the ODU (Out-Door-Unit) with the IDU (In-Door-Unit).
IP/DVB	This is the phrase used to describe the delivery of IP content over a DVB satellite network.
K <sub>u</sub> Band	The K <sub>u</sub> band (pronounced "kay-yoo") is a portion of the electromagnetic spectrum within the microwave range of frequencies. K <sub>u</sub> band is primarily used for satellite communications particularly from remote locations back to a television network's studio for editing and broadcasting.
LAN	Local Area Network
L-Band	L band is a frequency range between 390MHz and 1.55GHz which is used for satellite communications and for terrestrial communications between satellite equipment. An LNB is used to convert Ku and C Band frequency bands to L band, which can be transmitted over the IFL and processed by the IDU.
LNB	A low-noise block converter (LNB, for low-noise block, or sometimes LNC, for low-noise converter) is the (receiving, or downlink) antenna of a satellite dish commonly used for satellite TV reception.
LO	A device used to output the frequency of an incoming modulated radio-frequency carrier signal, to produce the required intermediate frequency.
MPEG	Motion Pictures Experts Group. Video file format.
NIC	Network Interface Card
PID	(Process IDentifier) A temporary number assigned to a process or service.
MPE	Multiprotocol Encapsulation, is a Data link layer protocol that provides a means to carry packet oriented protocols (like for instance IP) on top of MPEG transport stream (TS).
WNE	World News Express - IP file-based delivery system for Reuters news content.
RLS	Reuters Live Service - Linear-based delivery system for Reuters news content.

# APPENDIX 2 RX8200 MULTIPLE WNE SERVER CONNECTION

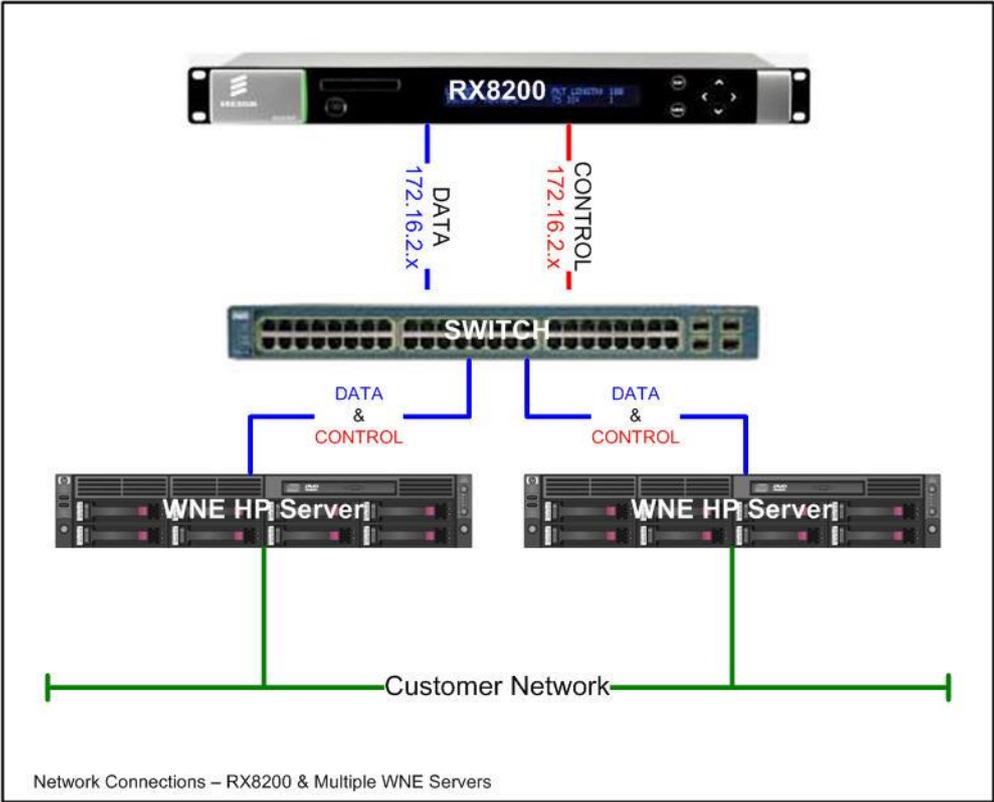


Figure 26 Mutiple WNE Servers with one RX8200 - Front.

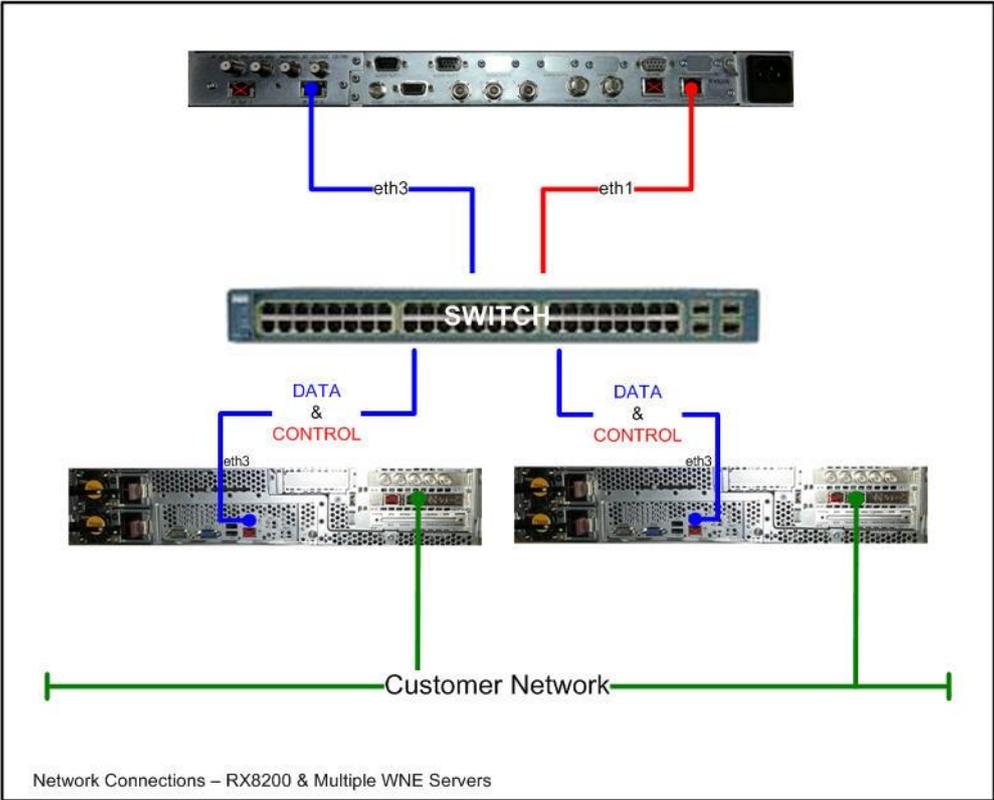


Figure 27. Mutiple WNE Servers with one RX8200 - Rear.