

ACCREDITED SOLUTION

EXPLORER[®] – Streambox[®] ACT-L3[™] Encoder & SBT3 Decoder



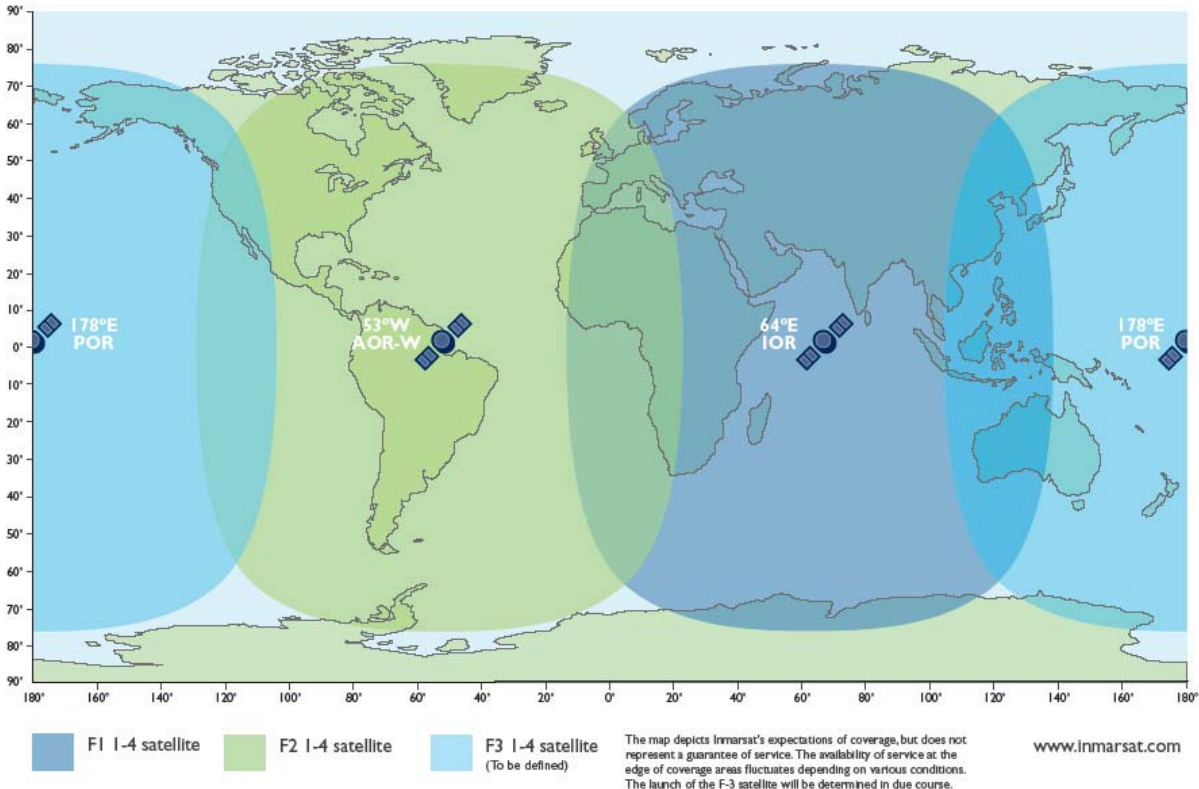
Document Name: EXPLORER – Streambox ACT-L3 Encoder & SBT3 Decoder

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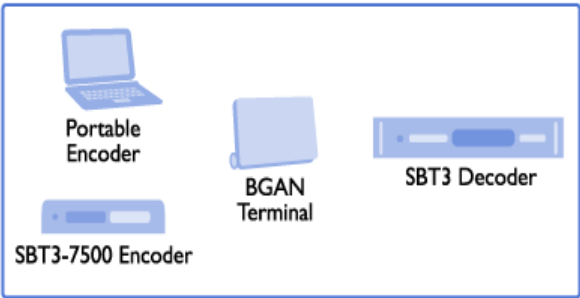
Introduction: This document describes the Streambox ACT-L3 Encoder and SBT3 Decoder and how it can be setup to work with the EXPLORER terminals.

- Typical Users:
- ▶ Media
 - ▶ Government and Military
 - ▶ Emergency Response
 - ▶ Disaster Relief

Product Description: The Streambox ACT-L3 Portable Video Transport solution enables broadcasters, government agencies, and enterprises to deliver high quality live and stored broadcast video from anywhere within Inmarsat BGAN coverage when connected to an EXPLORER terminal.



Typically used for mobile news gathering, Streambox's real-time portable video transport systems are ideal when portability, flexibility, and a low power requirement are needed. Performance, reliability, and low end-to-end latency are hallmarks of Streambox solutions. These features ensure unrivalled video quality at low data rates for a wide range of applications including live news gathering, emergency response, and mobile command centres for the armed forces.



During power outages, Streambox systems seamlessly switch to battery power and continue to deliver video without interruption. The ability to gather, edit, and transmit high quality live video, even from the most challenging locations, provides field reporters with ultimate flexibility when reporting and delivering breaking news.

More product information http://www.streambox.com/customers/live_news_solutions.html

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Tested on products:

EXPLORER 700
EXPLORER 500

Software version: 2.03
Software version: 2.03

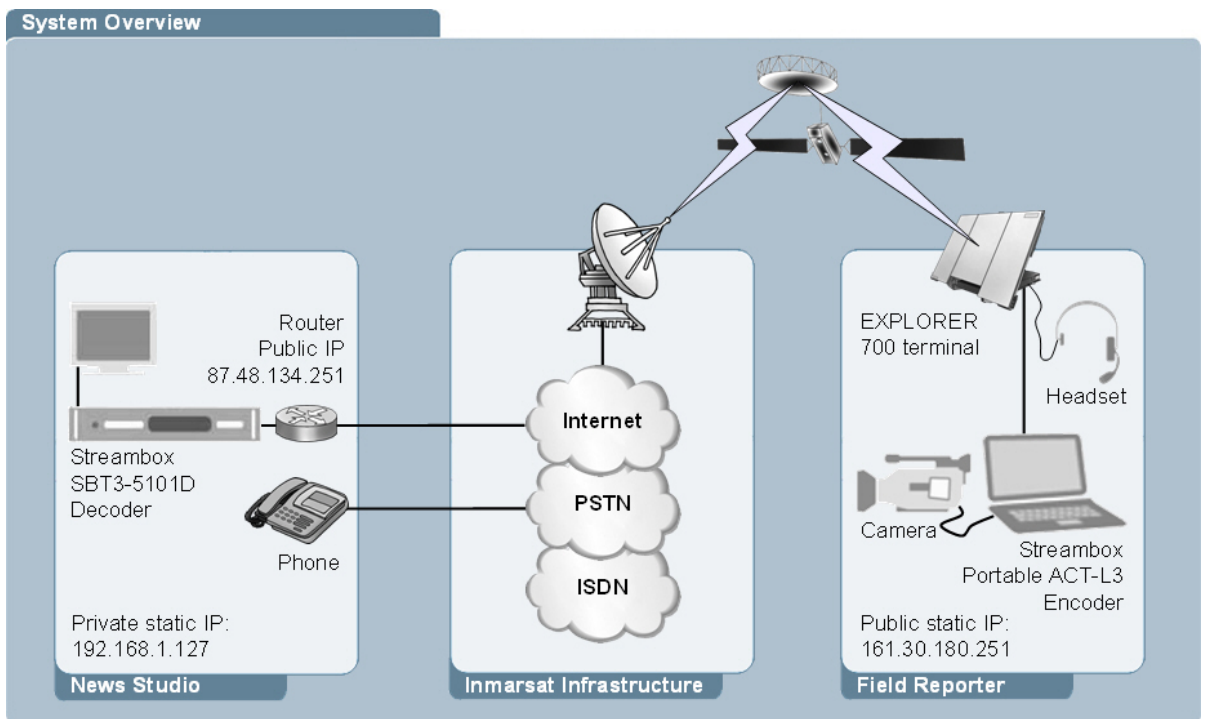
Tested on products:

Software ACT-L3 Encoder
SBT3-5101D Decoder

Software version: 3.62
Software version: 3.62

EXPLORER
Configuration:

The system setup at the remote site consist of a DV camera connected through FireWire to a laptop installed with the Streambox Portable ACT-L3 Encoder software. The laptop is connected to the EXPLORER terminal through Ethernet. See system overview on picture 1 below:



Picture 1: System Overview

The tests were conducted mainly using the Streaming 256kbps. If using Standard Data service the quality of the picture and voice will depend on the bandwidth available as this is a shared channel of up to 492kbps. For important video broadcasts it is recommended to set the EXPLORER terminal to use Streaming 256kbps and pay per minute.

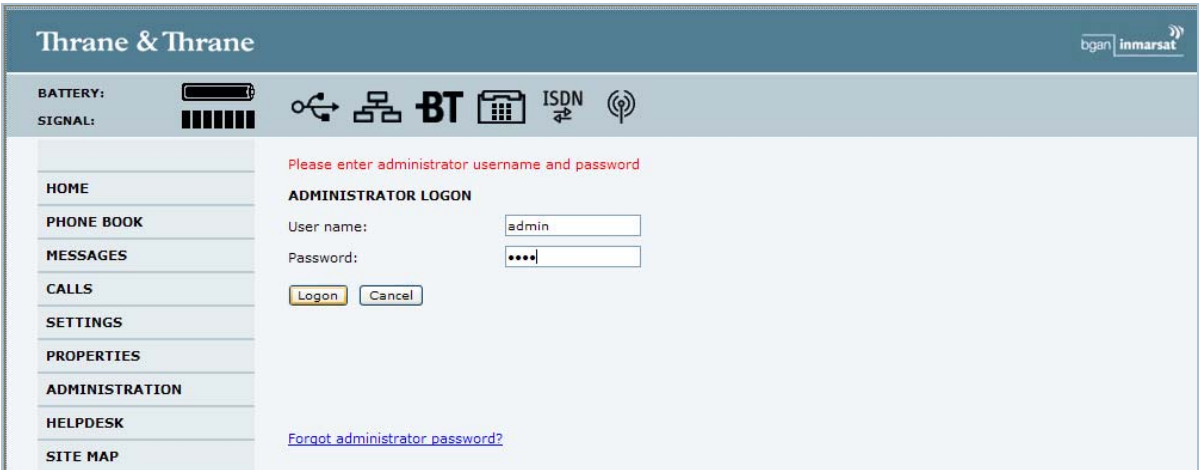
First step is to configure the EXPLORER terminal by connecting a computer to the LAN interface.

After getting an IP address, open your web browser and type <http://192.168.0.1/> Go to *Settings > Interfaces > LAN* and select the Streaming (128 and 256) connections as Secondary profiles and click on the Apply button at the bottom of the web page. Please refer to picture 2 on next page.



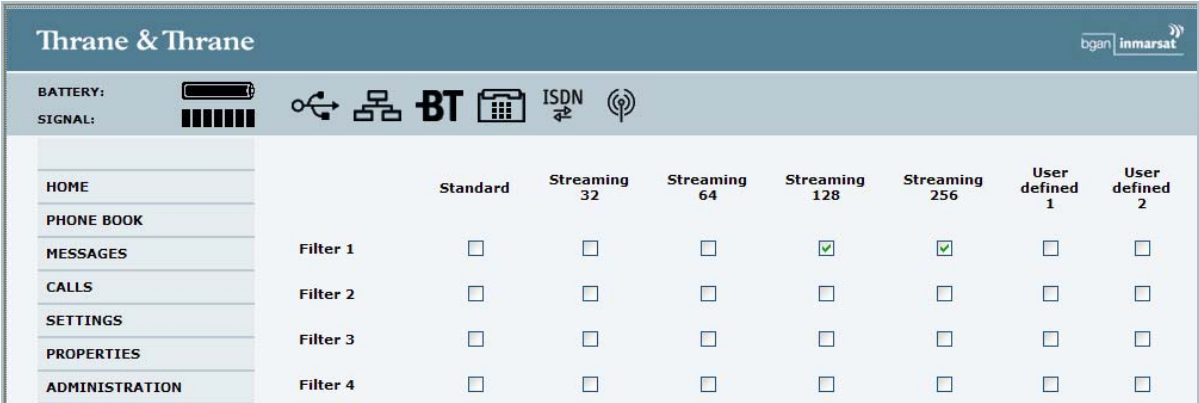
Picture 2: LAN configuration

Next step is to configure a filter to ensure that only video and audio data is transferred on the streaming connection. Click on Administration and logon as Administrator (default User name: admin, Password: 1234). This will give you access to the Traffic Flow Templates and filter configuration menus in the terminal. Refer to picture 3 on next page.



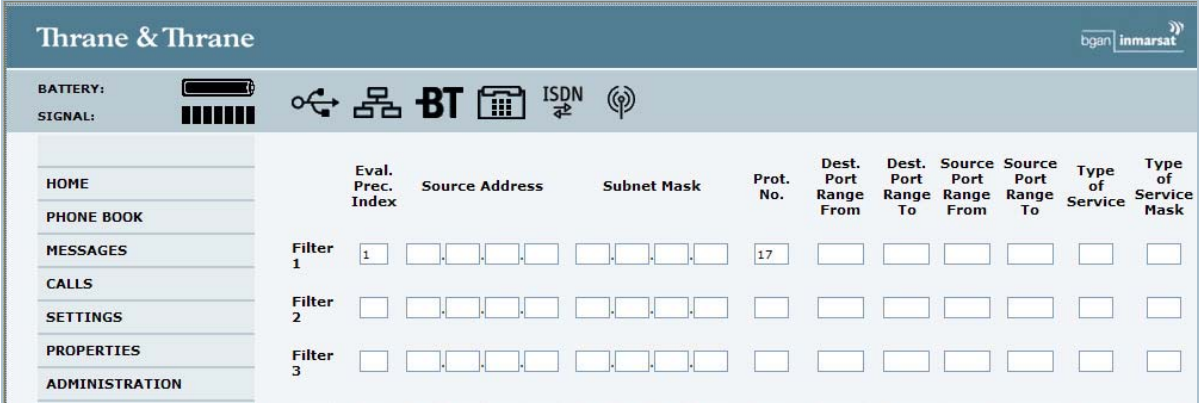
Picture 3: Administration page

First activate the Traffic flow template Filter 1 on Streaming 128 and Streaming 256 connections that will be used. Remember to Apply at the bottom of the web page. Please refer to picture 4.



Picture 4: Traffic flow templates

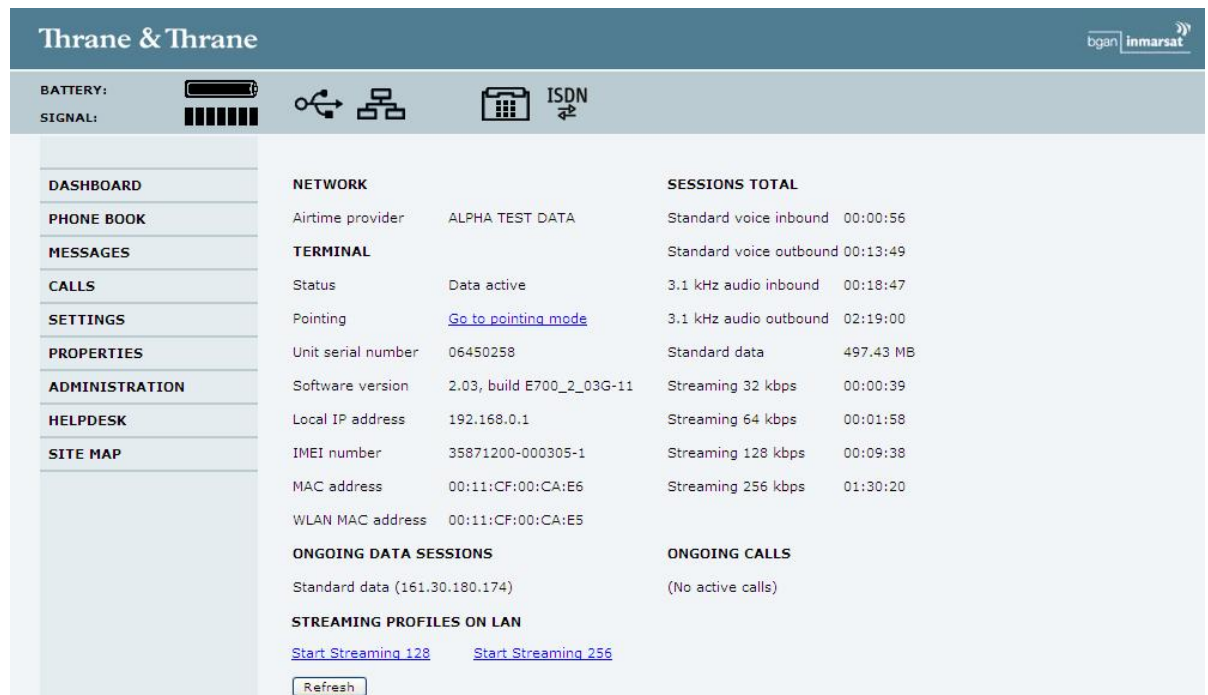
Next step is to configure a UDP Traffic flow filter by typing 1 in the Filter 1 Eval.Prec.Index box and 17 in Protocol No. box. See picture 5 below:
This will force UDP traffic to pass through filter 1 which applies to Streaming 128 and Streaming 256. Press Apply to store the new filter settings.



Picture 5: Traffic flow filters

The TFT settings only need to be configured once as they are stored in non-volatile memory in the EXPLORER.

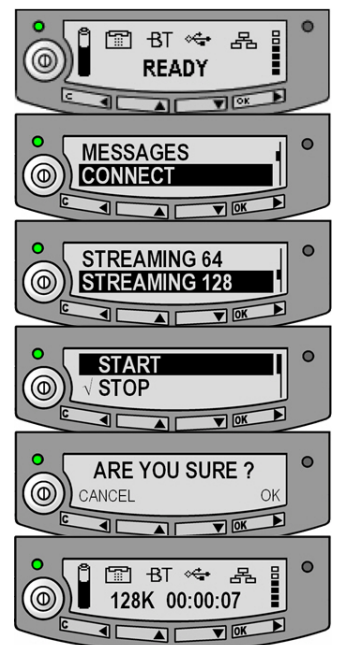
Once one or more Streaming Data profiles has been predefined from the EXPLORER web interface, it will be possible to select, start and stop a Streaming session from the EXPLORER web interface or by using the keypad and display on the EXPLORER terminal.



Picture 6: Start/Stop Streaming from the web interface

To select, start and stop Streaming sessions directly from EXPLORER display/keypad:

- Step 1: Press the ▼ button to enter the menus.
- Step 2: Select CONNECT from the menu by pressing the ▼ key. Press the OK ► key.
- Step 3: Select the Streaming Profile you wish to start or stop by pressing the ▲▼ keys. The list only shows profiles that have been predefined for the LAN interface. Press OK ►.
- Step 4: Select START or STOP and confirm with OK ►.
- Step 5: Press OK ► to initiate the Streaming connection.
- Step 6: Check in the display that the Streaming connection is up.



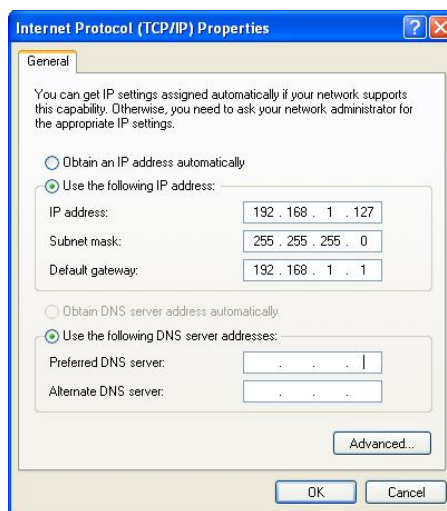
Remember that a Streaming session will remain active until you either stop it from the EXPLORER display or the built-in web interface, or disconnect the LAN cable or switch OFF the EXPLORER.

Streambox SBT3-5101D Configuration:

The Streambox SBT3-5101D decoder was configured with static IP behind a Linksys WRT54G router which had port forwarding of port 1770 enabled towards the static IP of the Streambox SBT3-5101D decoder.

Setting up the SBT3-5101D Decoder:

- 1) Connect analog audio/video output to the receiving equipment (f.ex a Television)
- 2) Connect an Ethernet cable from the encoder to the Internet, in the test case to the router which again was connected to the Internet with an public IP address.
- 3) Connect a keyboard and mouse to the encoder.
- 4) Plug the mains power cable and switch ON the decoder and wait for it to finish boot up.
- 5) Configure the desired IP address for the decoder, by right-clicking "My Network Places", choose "Properties", choose "Network Connections", right-click "Onboard NIC", choose "Properties", choose "Internet Protocol TCP/IP" and choose "Properties". See example in picture 6.



Picture 6: IP settings

Streambox ACT-L3 Configuration:

The Streambox ACT-L3 PC application was configured to support DHCP so it automatically gets its IP address from the EXPLORER as soon as it registers on the Inmarsat network.

Setting up the ACT-L3 Encoder:

- 1) Connect an Ethernet cable from the ACT-L3 PC to the EXPLORER LAN connector.
- 2) Connect a DV video camera to the ACT-L3 FireWire input.
- 3) Switch on the EXPLORER, ACT-L3 PC and video camera.
- 4) The PC will boot up and automatically start the Streambox ACT-L3 application
- 5) Go to Network menu and change decoder IP address to the IP address for the Streambox SBT3-5101D decoder used at the receiving site.
- 6) Configure the Streambox ACT-L3 with settings show in Table 1 below, depending on which Streaming context is going to be used.
- 7) Start the Streaming Data connection on the EXPLORER.
- 8) The video streaming will now be received by the Streambox SBT3-5101D decoder used at the receiving site.

Settings	BGAN 128kbps	BGAN 256kbps	BGAN 256kbps - CIF
Target Bitrate	110kbps	220kbps	220kbps
VBR Buffer Size	0.8s	0.5s	0.8s
FEC	Off	Off	Off
Video Resolution	QVGA	QVGA	CIF
Color Profile	4:2:0	4:2:0	4:2:0
Closed Captions	Off	Off	Off
Prefer Quality o/Frame Rate	300/40	300/40	300/40
Frame rate	$\frac{1}{3}$	$\frac{1}{2}$	$\frac{1}{2}$
Change Key Frame	300	300	300
Min-Max Filter	Off	Off	Off
Soft Filter	Off	Off	Off
Overlapped DCT Filter	On	On	On
De-interlace	Off	Off	Off
Swap Field Order	Off	Off	Off
Monitor CPU Usage	Off	Off	Off
Live Preview	Off	Off	Off
Audio Codec	CELP	CELP	CELP
Audio Channels	Mono	Mono	Mono
Audio Capture Frequency	48000 Hz	48000 Hz	48000 Hz

Table 1: Encoder settings.

Note:

It is possible to broadcast live video and have a phone call going at the same time. The Streambox offer voice one way i.e. to the studio. In order for the broadcaster to get voice feed back from the studio he/she can use the EXPLORER 2-wire or EXPLORER ISDN handset with an earpiece and microphone or a headset over a Standard voice channel.

Tested:

Tests performed:

- #1 Live broadcast via the EXPLORER 700 on a Streaming 256kbps.
- #2 Live broadcast via the EXPLORER 700 on a Streaming 128kbps.
- #3 Live broadcast via the EXPLORER 500 on a Streaming 128kbps.

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