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Adherent Stream View

User Guide

For the SV970/AT970 Stream View

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Stream View Product Family - Stream View

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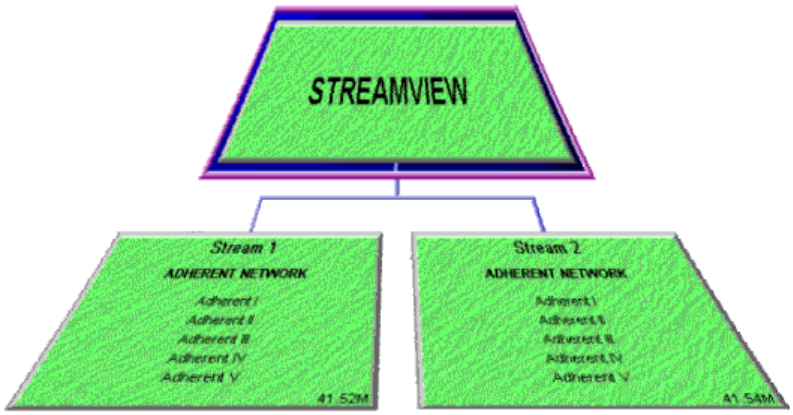
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About the User Guide

Who this manual is for

This manual is intended for the use by the following personnel:

Installation/configuration engineer

This is the engineer responsible for installing and configuring Stream View, and also for upgrading the hardware and software. This manual also contains information about the procedures for fault finding.

Stream View operator

This is the person in the control room whose responsibility it is to monitor transmissions and take remedial action when a fault arises. This manual contains information about how to interpret the front panel LED's, how to extract information from Stream View, how to clear alarms and how to keep the unit in good operational order.

System engineer

This is the person responsible for designing and monitoring an entire system in which one or more Stream View units are to be integrated. This manual contains information about Stream View operations and tests, and details of interface connections for additional equipment such as distribution amplifiers, etc. All the cabling and cooling requirements are also included here in order to ensure that the Stream View is correctly installed in a rack system.

Purpose of this manual

The objectives of this manual are:

- To describe the set of functions available in the Stream View and how to use them via the software Graphical User Interfaces.
- To explain how to install and use the Stream View for correct and safe operation.

Remote operations

Contact your supplier or Adherent for further information on how to link several Stream View units together and control operation remotely from a central point.

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Documentation conventions

Safety advice

General advice



This caution symbol is used to mark information about procedures which could prevent damage to the equipment or which are important to its correct operation and measurement accuracy. Make sure you have understood all the requirements before proceeding.

Important safety information regarding the installation and use of the Stream View is given in sections 1 and 2. You must take note of this before installing and operating the Stream View.

Electric shock



This sign indicates safety procedures or advice relating to the presence of high voltages.

Electro-static discharge precaution



This sign marks precautions for preventing damage to sensitive equipment by Electro-static discharges.

Advice & suggestions



This information direction symbol is used to mark important non-safety critical advice and suggestions for operation of the Stream View.

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Safety notices and advice

This section contains important information for the safe installation and operation of the Stream View unit.

Electrical and physical safety



Read the following safety warnings carefully before installing and applying power to the Stream View hardware. Check the technical specification at the end of this manual for operating specifications such as mains supply voltage, supply frequency and external ambient temperature range.

Earthing

Make sure that the unit is earthed via the electrical power connection cord before the unit is switched on. Do not use a power outlet, extension lead or cable that does not have proper grounding.

Electric shock

The unit must be connected to an easily accessible mains socket, to allow quick disconnection from mains power if necessary. Use only new fuses of the correct current, voltage and type.

Do not operate the Stream View without all the covers and panels in place.

Multiphase mains supplies

Where there are multiphase mains supplies or distribution grids make sure that the Stream View hardware and connected equipment comply with the local standards and legislation. If prohibited by local standards/legislation, do not connect the Stream View to equipment that is on a different mains supply phase. Observe any local standards/legislation for connection to equipment on another phase if this is permitted.

If in any doubt about the polarity or earthing of a mains supply have it checked by a qualified electrician before connecting the Stream View to the mains supply or to any other equipment which is connected to that supply.

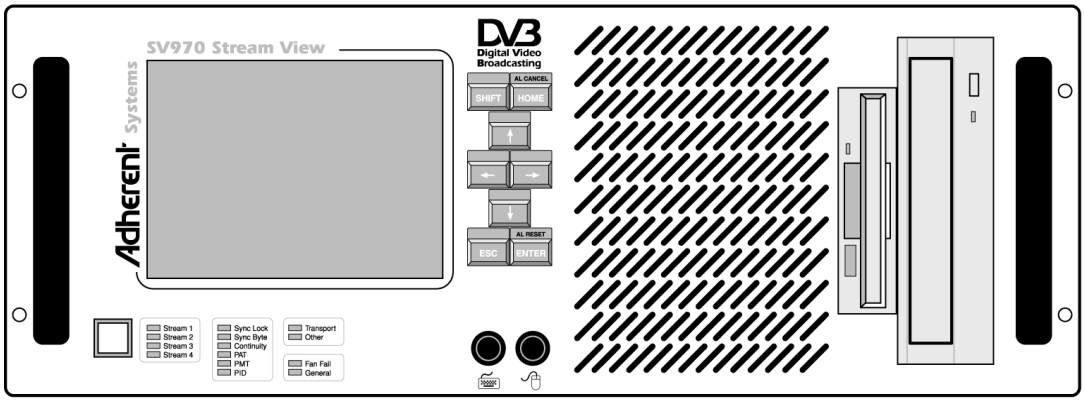
Follow the operating and safety instructions of both the Stream View hardware and all other equipment to which it is connected. Ensure that external equipment is correctly installed and electrically safe before connecting it to the Stream View hardware.

General Operating Environment

Do not operate this equipment under unsuitable conditions, or in the presence of flammable gases or fumes. Do not leave the unit near heat sources, in direct sunlight or in the presence of excessive dust or vibration. The technical specification for this equipment is detailed at the end of this manual.

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About Stream View SV970



Stream View front panel

Stream View SV970/AT970 is a real-time compressed digital video monitoring system that can handle up to four transport streams and constantly check that they conform to the DVB specification ETR290 (Reference **[1]**) and the ATSC specifications (Reference **[2]** to **[5]**). In a modern broadcast environment, transport streams originate from a variety of sources. The sources may be multiplexed many times along the transmission chain to form a composite stream for final transmission. The Stream View can be used at different points along the chain to ensure that the transport streams remain conformant after the processing steps.

Unpacking the Stream View

Carefully remove the Stream View from its packaging. Retain all the packaging in case the Stream View is to be moved to a new location or returned to Adherent for service at a later date.

Check to make sure that all of the components listed in the Delivery Note are present and appear undamaged. Contact your supplier immediately if anything has been lost or damaged in transit. As a minimum, you should receive the following items:

- Stream View Unit
- SV970/AT970 User Manual
- Windows NT CD-ROM
- Windows NT Set-up Floppy Disks
- Windows NT License
- CPU Card User Manual
- Stream View CD-ROM
- Mains lead

You may receive additional items if you have purchased any of the options. Your Delivery Note will also state which interfaces have been fitted to the Stream View. Make sure these match your original order.

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Stream View Features

Stream View supports many different types of physical interfaces in the form of Interface Cards. Each transport stream that is fed into Stream View passes through an interface card, which translates the signal into a common parallel data format type. The output from the interface card is then internally fed to an MPEG-2 Interface Card (MIC), which decodes the signal, extracting all the signal parameters.

The information extracted from each of up to the four transport streams is then processed and analysed by the Stream View application software and displayed on the screen.

Measurements

The measurement sets for the SV970 and the AT970 units are essentially the same with any differences being dictated by the associated standard. Refer to the **Reference** chapter for a more detailed description of the standards-based tests.

DVB Unit (SV970)

The following measurements and calculations are performed in real time:

- DVB 1st, 2nd and 3rd priority measurements as specified in ETR290 (with the exception of tests 3.3, 3.9, 3.10 and the three out of the eleven sub-tests of SI minimum repetition rate test related to scheduled tables as defined in ETR211 - Terrestrial Model).
- Adherent proprietary tests – Program and PID Occupancy.
- Single Frequency network (SFN) tests.
- Bitrates of each transport stream plus its components.
- Graphical PSI/SI displays.

ATSC Unit (AT970)

The following measurements and calculations are performed in real time:

- DVB 1st and 2nd priority measurements as specified in ETR290.
- PSIP table tests.
- Program Paradigm Error tests.
- Bitrates of each transport stream plus its components.
- Graphical PSI/PSIP displays.

Transport stream interfaces

Stream View has been designed to integrate into a transmission environment and supports all of the following transport stream interfaces:

- Parallel Interface (SPI)
- ASI
- ASI+ (ASI & M2S)
- G703
- G703+
- L-Band

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- GPSI – SMPTE (19Mbit/s)
- GPSI MkII (19Mbit/s and 38Mbit/s)

A different interface can be used on each of the four streams within the Stream View unit. See the **Interface** chapter in this manual for further information about these interfaces.

Error logging

Each stream being monitored has its own dedicated error log showing a history of the status of each transport stream.

You can inspect each error log locally, and save them for future reference. This can be of use in fault tracking, compiling error statistics, pinpointing common equipment failures and taking remedial action.

An entry is added to the log each time the Stream View detects an error on any of the streams. See the **Log Format** section under the **Operation** chapter later in this manual for details of the information written to the log for each entry.

Enabling/Disabling Test

Any of the tests being carried out by the Stream View can be disabled. This may be required where streams may contain a known error and the user may not wish to raise an alarm when that test fails. No processing is carried out for a test that has been disabled.

Maintenance Mode

The entire unit, or any of the individual streams being monitored may be put into maintenance mode. In this mode, no alarms (TTL, relays or audible) will be raised. However, the unit will continue to monitor for errors and the errors will be logged in the log file. The enabling and disabling of maintenance mode is reported in the log file.

This mode is useful if the other components in the digital transmission chain are being serviced or set-up and the user knows that errors may be inserted into the stream as a result of this.

Any of the components in maintenance mode will be clearly indicated on the screen by a change of colour.

Program/PID Occupancy

There are two separate screens that display bitrate information; one screen showing the bitrate for each of the PIDs in the transport stream and the other showing the cumulative bitrate for each of the programs in the transport stream. The user can set upper and lower limit alarms on either a PID by PID basis or on a program basis. An alarm will be activated if the bitrate falls outside the limits defined.

Bit-rate Integration Period

The user can define the integration period over which the bit-rate is calculated. This feature is useful where very low bit-rate rate data is being transmitted (e.g. radio channels) and the default integration period of 1s will not provide accurate and stable results. A larger integration period under these circumstances will provide a more stable bit-rate reading.

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The integration period can be set on a stream by stream basis but is global for all PIDs in that stream.

When a new value is set by the user, e.g. x seconds, the bit-rate displayed between 0 and x seconds will be a value integrated over 1 second intervals (accumulative) until the time x has been reached. After that, the integration period is over a sliding window of x seconds in steps of 1 second.

The integration period is adjusted by setting the value from the PID Occ test on the Status screen where repetition rates are set for other DVB tests (see **Operation** chapter)

Non-volatile User Settings

When the user changes any of the settings from the user interface, these affect the working set of parameters in the Stream View. When the unit is power cycled, the user's last settings (i.e. immediately before power down) will be restored.

In addition to these dynamic non-volatile settings, the user has up to 8 different slots in which they can save different settings that can then be recalled. These are effectively stored in 8 different blocks in a database. The user may assign specific names to these 8 slots via the System Configuration File mechanism.

System Configuration File

The System Configuration File method of loading these values allows the user to pre-define a standard set of values for the range of parameters in a single text file. This single file can then be used to set a standard configuration in a number of units with relative ease.

PCR Inaccuracy Calculations

Second priority test 2.4 is the PCR Inaccuracy calculations for the programs in the stream. Stream View provides two methods of calculations for this test and the method is user selectable from a menu.

Stream View calculates the inaccuracy of a PCR value, as an *ideal PCR value* minus the *actual PCR value*. To calculate the ideal PCR value, data comprising the most recent 256 PCRs is used. A straight line is fitted through a plot of each PCR value against it's position in the stream, calculated from the start of monitoring. In the case of the 'Line fit differential' measurement method, the *ideal PCR value* is read from this straight line at the position of the actual PCR. In the case of the 'Previous point differential' measurement method, the *ideal PCR value* is found by using the slope of the straight line to project forward from the most recently found PCR.

The two methods can give significantly different results, depending on the characteristics of the stream. The results from the 'Line fit differential' method are more likely to represent the way a typical decoder will react to the stream. The 'Previous point differential' method more accurately reflects the buffer model calculations in the MPEG-2 specification (ISO 13818-1).

The default method for this calculation is 'Previous point differential'.

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PMT Section Repetition Test

ETR 290 test 1.5 states that a PMT section must be repeated on the PID identified as the PMT PID more frequently than every 0.5 seconds. However, this test does not take into account the possibility of more than one PMT being assigned the same PID. For example, in the situation where two PMT sections are assigned to a particular PID, the failure of the PMT section for one of the programs to be present at all would not cause a failure of this test provided that the other PMT section were repeated in the given time. This would clearly be an unacceptable situation since an entire program map could be missing and no error reported. For this reason the test is applied such that a PMT section *relating to each Program* must be repeated on the PID identified as the PMT PID more frequently than every 0.5 seconds.

Discontinuity Test

In addition to the continuity count tests specified in ETR 290 1.4, a discontinuity error will be raised on failure to comply with ISO/IEC 13818-1 section 2.4.3.5 which states that the discontinuity_indicator in the adaptation field may not be set to 1 in more than 2 consecutive packets of the same PID.

Alarms

Stream View provides alarms for each monitored transport stream. The alarm outputs are provided as TTL and closed-contact relay outputs at the rear of the unit.

All alarms are user-configurable and can be used to trigger other monitoring/recording equipment or drive audible alarms. See the **Operation** chapter for more details on how to use alarms.

Remote control

The Stream View is provided with networking facilities so that one or more units can be networked together to allow central control. All of the information on each of the Stream View screens, as well as the LED status, is available via the network connection so the status of an entire monitoring suite can be viewed on one central terminal instead of inspecting each Stream View separately.

A full specification for setting up such a remote control for a suite of Stream View units is beyond the scope of this manual. For more details, contact your supplier or Adherent.

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User Definable Repetition Rates

In order to provide additional flexibility for the user, the facility is provided to change the repetition rates for the various tests. The default values for all these tests is the ETR-290 (DVB) standard and the user can vary these to a different value if they knows that the actual repetition rates for certain tables/sections in the stream do not conform to the DVB specification.

The following table shows the DVB and ATSC tests for which the repetition rates can be changed, along with their default values.



The SI minimum repetition rates can only be changed via the System Configuration File and not through the user interface and the SI maximum repetition rate is not currently user variable.

ETR290	Indicator	Default rate
1.3	PAT_error	0.5s (SV970) 100ms (AT970)
1.5	PMT_error	0.5s (SV970) 400ms (AT970)
1.6	PID_error	1s
2.3	PCR_error	40ms
2.4	PCR_accuracy_error	500ns
2.5	PTS_error	0.7s
3.1	NIT_error	10s
3.2	SI Maximum Repetition Rate SI Minimum Table Repetition Rates (as defined in ETR 211 for terrestrial) - NIT - BAT - SDT Multiplex - SDT Other - EIT P/F Multiplex - EIT P/F Other - EIT Schedule Multiplex - EIT Schedule Other - TDT - TOT	25ms 10s 10s 2s 10s 2s 2s 10s 10s 30s 30s
3.4	Unreferenced_PID	1s
3.5	SDT_error	2s
3.6	EIT_error	2s
3.8	TDT_error	30s

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ETR290	Indicator	Default rate
	SFN_Error	1000µs

ATSC Test No.	Indicator	Default rate
3.1	Master Guide Table (MGT)	150ms
3.2	System Time Table (STT)	1000ms
3.3	Terrestrial Virtual Channel Table (TVCT)	400ms
3.4	Cable Virtual Channel Table (CVCT)	400ms
3.5	Regional Ratings Table (RRT)	60000ms
3.6	Event Information Table (EIT)	500ms

???ATSC tests are for section repetition intervals not tables

Environment

See the **Reference** chapter for a full product specification detailing operating and storage conditions.

Operating conditions

Do not operate this equipment under unsuitable conditions, or in the presence of flammable gases or fumes. Do not leave the unit near heat sources, in direct sunlight or in the presence of excessive dust or vibration.

Storage conditions

Only store the unit in clean, dry conditions. Do not store the unit near heat sources, in direct sunlight or in the presence of excessive dust or vibration.

If the unit has been stored in a very cold or hot environment, allow it to stand in the operating environment for up to 24 hours before applying power. This is to allow the internal components to reach an acceptable operating temperature.

Modification and maintenance

Under no circumstances, except when advised by your supplier or Adherent technical support, should any hardware other than that supplied by Adherent be fitted internally to any Stream View system.

Additional cards, supplied by Adherent, are described in the **Interfaces** section of this User Guide, or will be covered by documentation supplied with the particular card.

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Shutting Down Stream View

It is essential to shut down all applications before the mains power at the rear of the unit is removed. The application shutdown procedure is initiated by pressing the on/off switch at the front of the unit. If power is lost or the machine accidentally powered down while the software is running there may be problems on restarting. See the **Operation** chapter for details of the shutdown procedure.

Customer support

For operational support, please use the E-mail address or phone number supplied inside the front cover of this manual. For servicing information, please contact Adherent.

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Installation

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Installation

This section contains instructions on the following topics:

- Installing the Stream View unit.
- Configuring the software settings.

The Stream View comes factory pre-set (hardware & software) by Adherent for your application to minimise installation & commissioning time.

Installation Requirements

Power supply

Stream View requires the following mains power supply:

- Voltage: 90–135V or 180–265V AC switch selectable.
- Frequency: 45–63Hz.
- Input current: 0.43A at 230V AC; 0.86A at 115V AC.
- Power consumption is a maximum of 300W.



IMPORTANT: DO NOT use the mains *outlet* socket at the rear of the unit.

Cooling

The Stream View unit is fitted with front to back positive pressure cooling system and hence has air vents on the front and rear of the unit. The air vents must not be covered under any circumstances, and it is recommend to leave a minimum clearance of 200mm directly in front and behind the Stream View box.

Installing the Stream View

Follow these steps to install the Stream View.

If the Stream View has been stored or exposed to temperatures outside of the safe operating range it should be placed in the intended operating environment and allowed to attain the ambient temperature before continuing with installation. Under extreme differences of temperatures allow up to 24 hours to adjust.

Check the size and layout of the components against intended place of installation to ensure that they will fit and be able to operate safely. Read the safety notices to ensure that the Stream View will be electrically safe, not subjected to extremes of heat (including sun, studio or other high intensity light sources), humidity or electro-magnetic interference.

Make all transport stream cable connections to the interface cards at the back panel.

1. Plug in the mains lead and switch on.

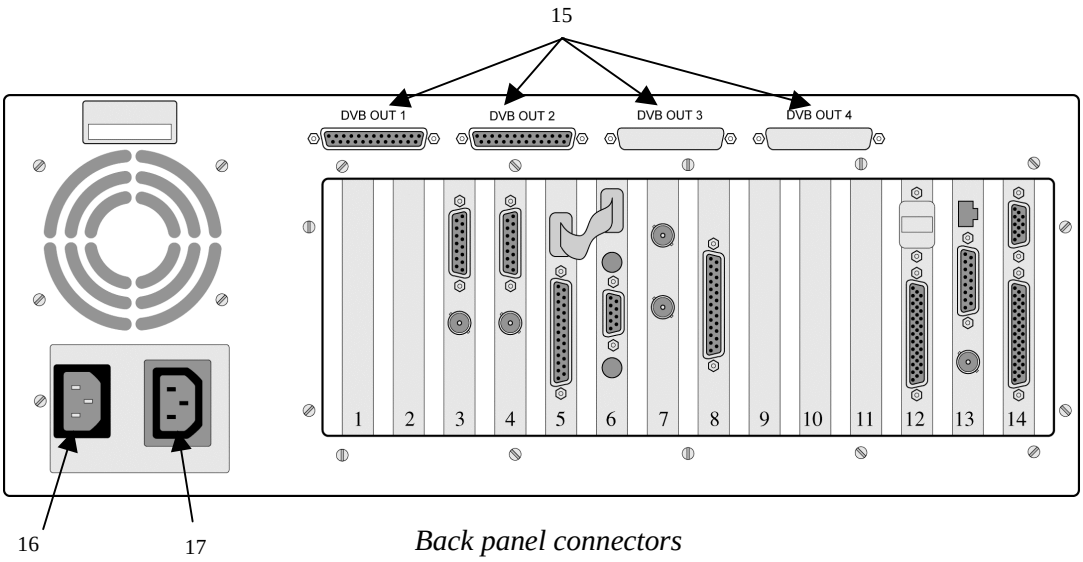


IMPORTANT: DO NOT make or break any connections on the back panel while the power is on. This may cause permanent damage to the hardware.

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Back panel connectors

There are a number of inputs and outputs at the rear of the unit. These are described in detail below. The configuration shown is for a two stream monitoring system with one ASI Interface card and one DVB Parallel Interface option fitted.



Back panel connectors

MPEG I/F Cards (PC slots 1 to 4)

These four PC slots are intended for the MIC cards that will be responsible for some pre-analysis of the data before it is passed to the application software for processing. There will be one of these cards for each stream that is being monitored. You should not connect anything to the MIC card connectors.

PC parallel/serial connections (PC slot 5)

These are standard PC connections. Do not connect anything to any of these connectors.

PC CPU card (slot 6)

These are standard PC connections. Do not connect anything to any of these connectors.

Interface cards (slots 7 to 10)

All interfaces are installed in these slots. See the **Interfaces** chapter for details of each interface type.

An Interface card in slot 7 will correspond to **Stream Status - Stream 1** on the front panel LED display. Similarly an interface card in slot 8 will correspond to **Stream 2**, slot 9 to **Stream 3** and slot 10 to **Stream 4**.

Blank (PC Slot 11)

This slot is reserved for future expansion. There is no card fitted here.

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PC video card (PC slot 12)

These are standard PC connections, but you don't need to connect anything to them to operate the Stream View. There is a terminator on the VGA out connector that should not be removed.

PC network card (PC slot 13)

This card provides the network interface for linking multiple units together and controlling from a central point. The card provides connections for the following types of networks:

- 10BASE-T (RJ45 Twisted Pair)
- 10BASE-2 (BNC Thin Coax)
- 10BASE-5 (15-way D-Type AUI Thick Coax)

This network connection will only be needed when the Stream View is to be controlled remotely. This is beyond the scope of this manual. Contact your supplier or Adherent for further information on this feature.

System Monitor Card (PC slot 14)

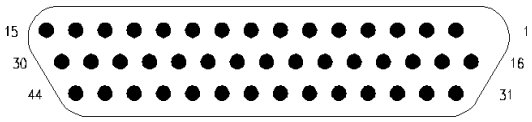
The System Monitor Card (SMC) performs many monitoring functions as well as providing the external alarm interfaces.

Four types of alarms are available for each test carried out. These comprise an audible alarm (internal buzzer), a TTL output and 2 relay outputs (open and close contacts). These may be used to trigger other events external to the unit. You can select which of the four alarms will be activated when an error is detected for any particular test.

All the TTL and relay alarms from the System Monitor Card are brought out on the high-density 44-way D-Type connector at the rear of the unit.

Each TTL output is capable of driving only *one* TTL input. Each relay is rated at 24V DC, maximum of 1A DC. The total switched power on the relays must not exceed 3W.

Table 1 below shows the pin details for the connector and how the relays and the TTL signals are distributed for each of up to four streams that can be monitored. For example, for Stream 1, TTL out is on pin 3, Relay 1 is on pins 4, 5 & 19 and Relay 2 is on pins 10, 11 & 25.



44-Pin Connector Pin-out Details

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Pin Number	Signal Name	Monitoring
16	System 0V (Ground)	N/A
33	TTL Out	Box-wide
3	TTL Out	Power Good
1	TTL Out	Stream 1
5	Relay 1 Common	Stream 1
4	Relay 1 Normally Open Contact	Stream 1
19	Relay 1 Normally Closed Contact	Stream 1
11	Relay 2 Common	Stream 1
10	Relay 2 Normally Open Contact	Stream 1
25	Relay 2 Normally Closed Contact	Stream 1
17	TTL Out	Stream 2
21	Relay 1 Common	Stream 2
20	Relay 1 Normally Open Contact	Stream 2
6	Relay 1 Normally Closed Contact	Stream 2
27	Relay 2 Common	Stream 2
26	Relay 2 Normally Open Contact	Stream 2
12	Relay 2 Normally Closed Contact	Stream 2
32	TTL Out	Stream 3
8	Relay 1 Common	Stream 3
7	Relay 1 Normally Open Contact	Stream 3
22	Relay 1 Normally Closed Contact	Stream 3
14	Relay 2 Common	Stream 3
13	Relay 2 Normally Open Contact	Stream 3
28	Relay 2 Normally Closed Contact	Stream 3
2	TTL Out	Stream 4
24	Relay 1 Common	Stream 4
23	Relay 1 Normally Open Contact	Stream 4
9	Relay 1 Normally Closed Contact	Stream 4
30	Relay 2 Common	Stream 4
29	Relay 2 Normally Open Contact	Stream 4
15	Relay 2 Normally Closed Contact	Stream 4

Table 1 Signal details of the alarms output connector

For normal operation (i.e. no errors), the TTL outputs are at low level (0V) and the relays are in their open state. Any alarms will toggle these states provided the alarm has been enabled at the user interface.

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DVB outputs (labelled 15 on the rear panel drawing)

These four 25-way D-type connectors, found along the top of the back panel, carry the DVB/ATSC parallel output signals directly from the MIC cards. Using these outputs, you can feed the DVB/ATSC signal into other equipment, such as Adherent's Stream Station, to record or analyse the signal. One of these outputs is available for each stream being monitored.

Power input (labelled 16 on the rear panel drawing)

This is a standard 3-pin IEC mains input connector. Connect your mains input supply here.

Power output (labelled 17 on the rear panel drawing)



This is a standard 3-pin IEC mains output connector. **You must not use this socket.**

Box wide alarms

Certain measured parameters (e.g. DC Power supply levels, internal temperature, and fan status) apply to the whole unit. All these box-wide parameters are checked against factory set pre-defined limits. If any of these limits are violated, then an alarm can be activated. You can activate an audible alarm and/or an external TTL alarm. The external TTL alarm is available on pin 33 of the same connector on the System Monitor Card as for all the other alarm outputs.

Power Good Status

An additional external signal is provided to indicate that the unit is powered on. When switched on, this TTL output will go active high (+5V). In the event of the unit PSU failing, or the unit being switched off, this signal will go low (0V). This TTL output is provided on pin 3 of the same connector on the System Monitor Card as for all the other alarm outputs.

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Software Installation

All the software required for operation should already have been installed on the Stream View when it was configured at Adherent, and so no further software installation should be necessary.

Installing software upgrades

If Adherent produces a new version of the application software, it will be delivered to you on CD-ROM. Follow the procedure below to install new software:

1) Upon inserting the CD-ROM into the CD drive it should auto-run. If for some reason it does not, a keyboard and mouse will need to be attached to the unit.

2) Using the keyboard and mouse, access Windows Explorer and double-click on the CD-ROM drive icon or enter and run the command `d:\setup.exe` from the Run Command dialog (Start Up → Run…).

3) Using either method, the installation script will run and finally display a message box asking the user to confirm that the unit should be rebooted. Select the **Yes** button.

   The unit will reboot and load the necessary firmware.

4) When the firmware has been loaded, select **OK** in the displayed dialog and wait for the MS-DOS window to be closed.

5) When the MS-DOS window has been closed, switch the unit off (power down) and on (power up) again.

6) When the unit reboots the Stream View software will run automatically.

Some installation troubleshooting solutions are given in

Installation Troubleshooting, page 5 - 4.

Installing other components

Adherent can provide additional interface cards and MICs to increase the capacity of your Stream View (up to a maximum of four separate transport streams). The procedure for installing these is covered in the **Interfaces** chapter.

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Operation

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Operation

This section describes how to use Stream View to monitor digital video transport streams, how to obtain information from the menus and other screens, and how to set up and deal with alarms.

Starting up Stream View

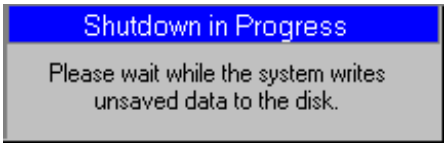
If Stream View has been turned off, you can start it up again by pressing the power button on the bottom-left of the front panel. The boot up process takes a few minutes, during which time all but one LED will be off. During the entire boot up process, the single 'on' LED will 'walk' down the bank of LEDs. When Stream View is ready for operation, the Home screen of the software interface will be displayed, and the LEDs will illuminate, the colour of which will depend upon the status of the inputs – see the table below.

Shutting down Stream View

Press and hold the power switch in for 3 seconds and Stream View will start the shutdown procedure, making sure the software files are closed properly. The start of the shutdown will be indicated by all but one LED being switched off. **As soon as the shutdown sequence starts, release the power switch**. The 'on' LED will be red. Release the on/off switch once the shutdown process has started. This single red LED will 'walk' up the bank of LEDS during the shutdown process. The unit will switch off automatically when the shutdown is complete.



During the shut down process, Windows NT will display the following message box:



If the unit does not shut down automatically within one minute of this message being displayed, perform a 'hard' shutdown by pressing and holding down the On/Off switch for eight seconds

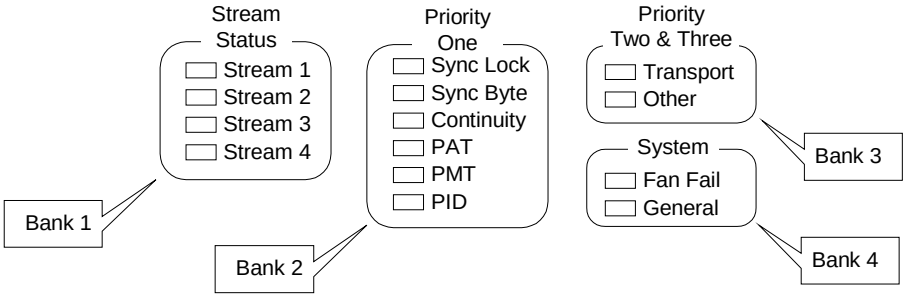


Warning: It is extremely important that the proper shutdown process is followed before power is removed from the unit. If power is removed from the unit without following the shutdown process, the operating system may be corrupted due to files not being closed properly and the unit may not start up properly.

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LED operation

The following diagram shows the layout of the LEDs on the front panel. The LEDs are basically segmented into 4 banks as shown on the diagram.



LED bank arrangement on the front panel

During normal operation, the LEDs on the front panel of Stream View show the status of the transport streams, along with any 1st, 2nd or 3rd Priority errors which have arisen (see the **Reference** chapter for a detailed description of these errors). The LEDs are designed to draw your attention to a problem with a transport stream, which you can then inspect in more detail on the information screens by using the keypad.

All the LEDs are capable of displaying any one of four states. The colour will depend on the error state of the tests they are monitoring, as shown in the following table:

Colour	Meaning
Green	Operation normal — no error detected.
Red	Error detected and still present.
Yellow	Transient error, which has now corrected itself.
Off	The corresponding test has been disabled.

LED colour meanings

These colours are also used in the software interface to show the status of the transport streams on-screen. See the **Reference** chapter for a more detailed description of the Priority tests and/or the **Troubleshooting** chapter for likely solutions to errors.

Stream LEDs

LEDs in Bank 1 (on the LED bank diagram above) show the overall status of the incoming streams. The number of LEDs active (i.e. lit) in this bank will depend on number of streams being monitored (i.e. number of MIC cards fitted). The remaining LEDs will be off. A red or a yellow LED on the corresponding stream indicates an error condition on that stream.

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1st, 2nd and 3rd Priority error LEDs

The LEDs in Bank 2 and Bank 3 (on the LED bank diagram above) divide the errors between them. It is important to note that these LEDs indicate the ORed status of ALL the streams being monitored in the unit. This means that the user cannot determine which stream any indicated error is on without referring to Bank 1 LEDs as well. The following table provides a scenario related to Sync Byte and Continuity errors on a Stream View monitoring two streams (assuming no errors on any other tests):

Stream 1 LED	Stream 2 LED	Sync Byte LED	Continuity LED	User Action
Green	Green	Green	Green	System OK – no errors
Green	Red	Red	Green	Sync Byte error on Stream 2
Red	Red	Red	Green	Sync Byte error on both Stream1 and Stream 2
Red	Red	Red	Red	Not possible to determine which error is on which stream without using the log or status screens (described later in this chapter)

System error LEDs

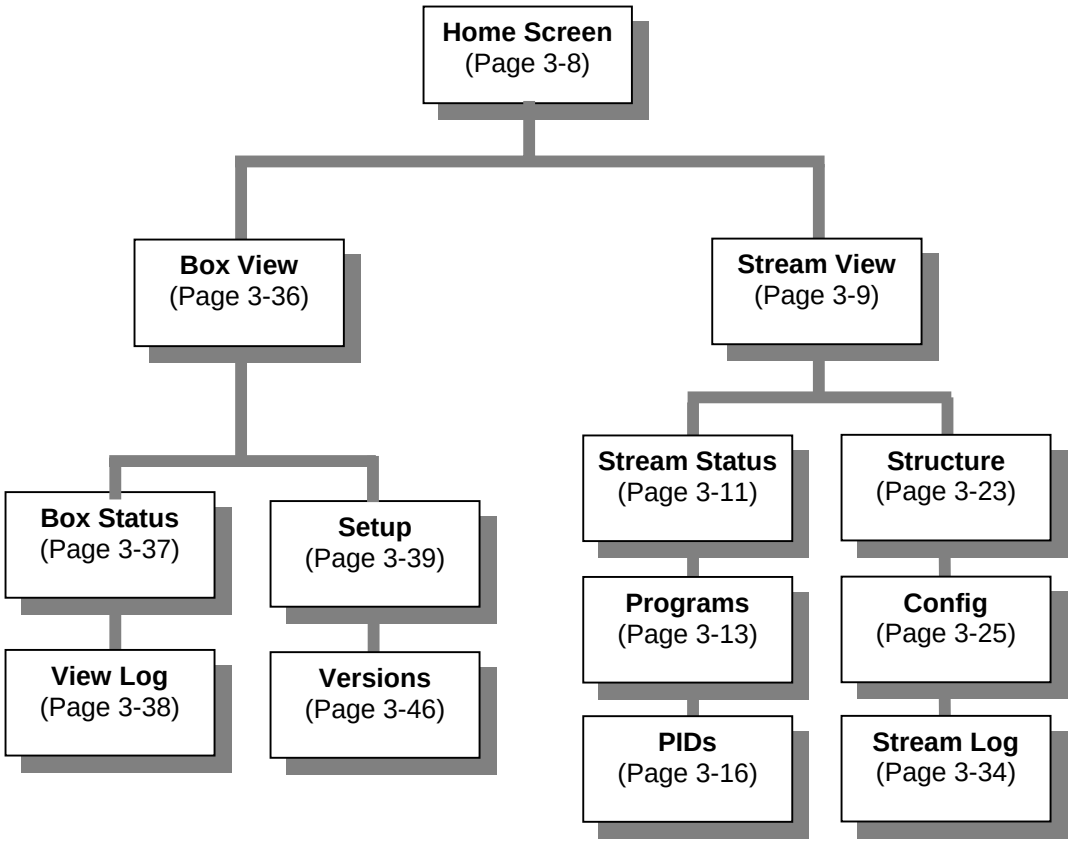
The LEDs in Bank 4 (on the LED bank diagram above) show the status of the unit itself. If any of the LEDs in this bank indicate an error (i.e. they are yellow or red), then there is a fault within the unit. Several parameters are monitored within the unit (DC power supply voltage levels, fan status, hard disk drive and internal temperature). If any of these parameters fall outside factory-set pre-defined limits, an alarm is raised. Most of these alarms are early warning indications that the unit may fail if the cause of the alarm is not attended to and the problem fixed. A more detailed description of any of the errors is added to the log file. This can be viewed for further information.

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Software Interface

Menu map

In addition to the LED indicators, a comprehensive user interface is also provided. This is available via the LCD screen and navigation is via the set of keys on the front panel. There are a number of different screens which provide a variety of information. The diagram below shows how the main menu and information screens are connected on the Stream View. Each of the boxes represents a different screen on the display. These are described in more details later in this chapter.



Menu and Screen Map

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The Keys

There are eight keys on the Stream View front panel that you can use to navigate around the menu and information screens:

Key	Use
→ ↓ ↑ ←	Move the menu cursor (a red outline box) around the menu options. They also move the highlight/cursor up and down a list of items. The ← and → keys can sometimes be used to move to an adjacent screen and in Structure View, they are used to expand and collapse tree structures.
ENTER	Selects the current menu item or command.
ESC	Returns you to the previous menu.
HOME	Takes you to the top screen of the menu tree from whichever screen you are currently on.
SHIFT	Allows you to use the **AL CANCEL** and **AL RESET** commands on the **HOME** and **ENTER** keys.
AL CANCEL	This function is selected by holding the SHIFT key down and pressing the ENTER key. All alarms are cancelled by this operation. This entails resetting the audible and the external TTL & relay alarms. However, the status on the screen does not change.
AL RESET	This function is selected by holding the SHIFT key down and pressing the HOME key. All alarms are reset by this operation. This includes resetting the audible and the external TTL & relay alarms as well as clearing the status on the screen.

Keypad functions

Alarm Cancel/Reset

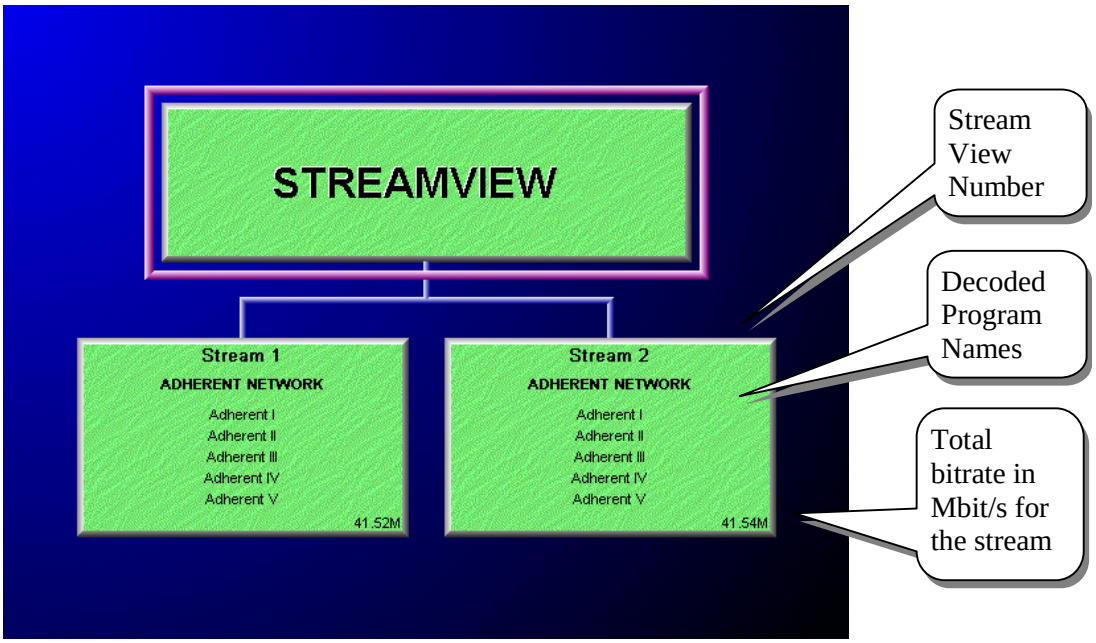
The alarm cancel/reset functions may be carried out independently for an individual stream alarm and box only alarm or on a global basis. When the user is on the Home screen, then executing an alarm cancel/reset will be performed globally for any error anywhere in the system (streams or box). When the user is on any of the sub-screens from the Home screen (box details or particular stream details), then executing an alarm cancel/reset will be performed for that particular part of the system (the selected stream or box).

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Home screen

This is the main home screen of the user interface and is displayed on start-up. It shows each of the streams connected to the Stream View. The number of boxes that appear below the 'Local' box should tally with the number of MIC cards installed (one MIC card monitoring one stream). If for some reason the number of boxes do not match, then the software has not been able to locate the card(s) – it (they) may be faulty. Under these circumstances you should consult your supplier.

While a stream is being monitored, the program information in it is decoded and the program names are displayed in the appropriate box. This provides an indication that the stream has been successfully recognised and the monitoring process has commenced.



Home screen showing two streams being monitored

Under normal (no errors) condition, all the status boxes on the home screen will be green. As soon as an error is detected in any of the incoming streams or a failure within the box, then the appropriate box will turn red (or yellow if the error is transient). The top-level box labelled 'STREAMVIEW' shows the status of the unit while the individual boxes below show the status of each of the streams. In the above example, two streams are being monitored

Wherever you are in the hierarchy of menus and sub-menus, you can press the **HOME** button to return to this screen.

You can carry out the following actions from this screen:

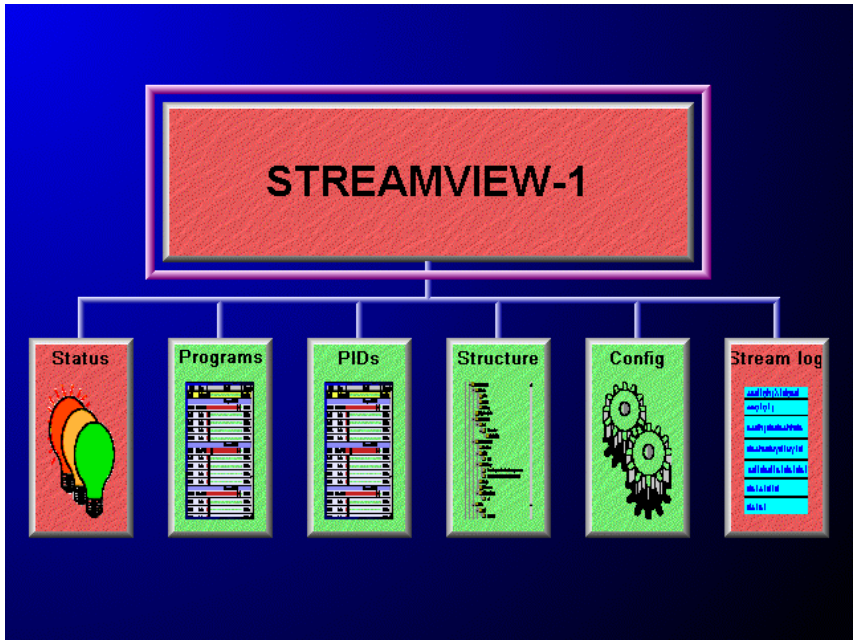
- Pressing the ENTER key on the 'STREAMVIEW' box takes you to the box menu screens. These screens are described fully under the Box Information Screens section later in this chapter.
- Pressing the ENTER key on any of the stream boxes (labelled 'Stream 1' and 'Stream 2') takes you to screens where you can view information screens about the selected stream. These screens are described fully under the Stream Information Screens section later in this chapter.

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Stream Information Screens

These screens show information relevant to the transport stream you selected on the Home screen. The Stream View Select screen appears, and you can select the information screen you wish to view.

Stream View Select screen



Stream View Select screen

This menu screen allows you to navigate to a number of other screens that provide different types of information/facilities. To display any of the additional screens, move the cursor over a particular icon using the arrow keys, and then press the **ENTER** key. The screens (all of which are described in more detail elsewhere in this chapter) are as follows:

STREAMVIEW-1 Icon: This will take you back to the Home screen.

Status Icon: This will take you to the Stream Status screen that shows the status of the individual errors being tested for on the selected stream as well as allowing alarm configuration.

Programs Icon: This will take you to the Stream Program screen that displays the total bitrates for each of the programs detected in the stream by the Stream View. This feature is not currently available.

PIDs Icon: This will take you to the PID Occupancy screen that displays all the PID numbers detected in the stream and which programs are carried by which PID numbers.

Structure Icon: This will take you to the Structure View screen that displays all the tables that have been extracted from the stream being monitored. The information is displayed in a hierarchical format.

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Config Icon: This will take you to the Stream Configuration screen that allows you to view/configure various parameters.

Stream Log Icon: This will take you to the screen that displays the log for the selected stream only. Separate logs are available for each stream and 'box-wide' (see page 3-38); each log can be up to 64K entries.

The Status, Programming, PIDs and Stream Log icons in this menu can be any one of three colours, with the following meanings:

Colour	Meaning
Red	A problem has been detected with the transport stream, and can be investigated by selecting this option.
Yellow	There was a transient error.
Green	There is currently no error.

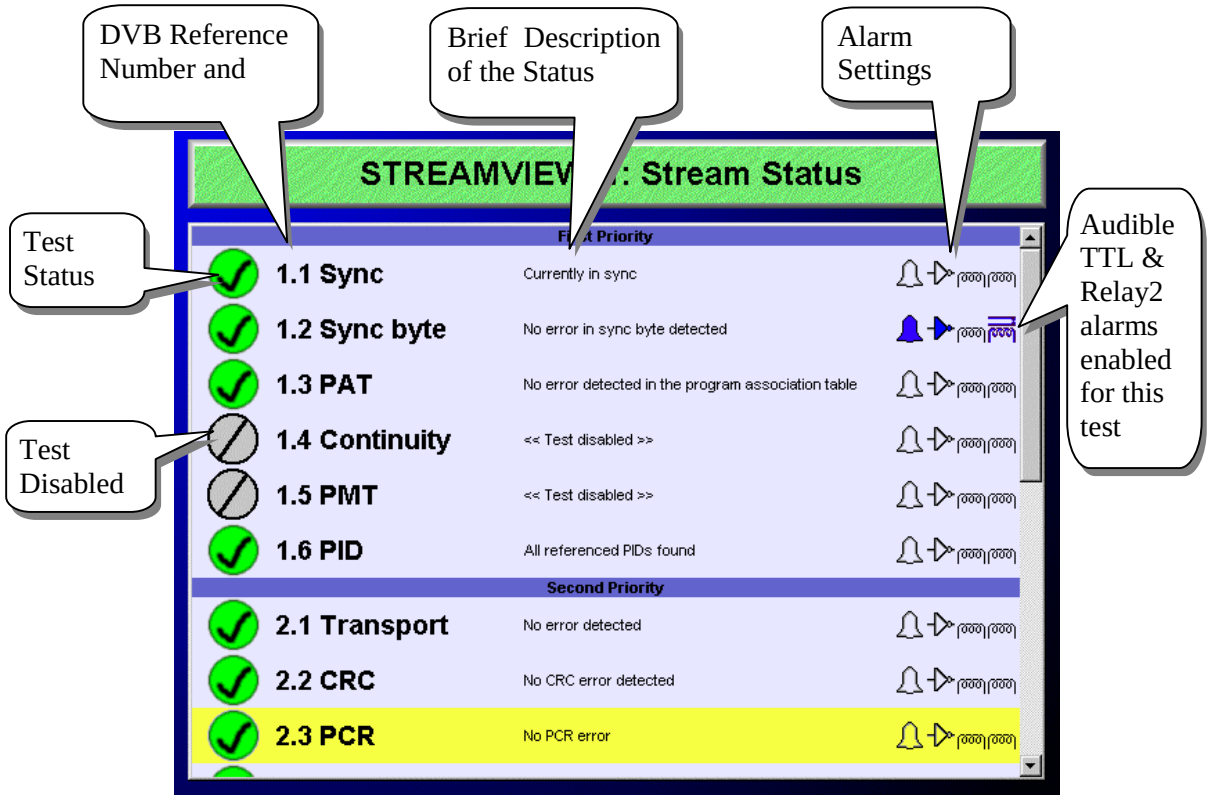
Menu colour interpretation

The remaining icons are always green.

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Stream Status screen

This screen shows the status of all the tests currently being performed on the incoming stream.



Stream Status screen

For each test, you can select up to four types of alarm that can be activated when an error on that test occurs. The alarms may be:

	An internal audible alarm.
	A TTL output on the rear of the unit, allocated to the stream.
	Either of the two relay outputs on the rear of the unit, allocated to the stream.

The circle to the left of the test shows the current status of the test. This circle can take any one of four forms:

Red with a cross to indicate the test has failed.

Green with a tick to indicate test has passed.

Blank yellow to indicate that a transient error has occurred.

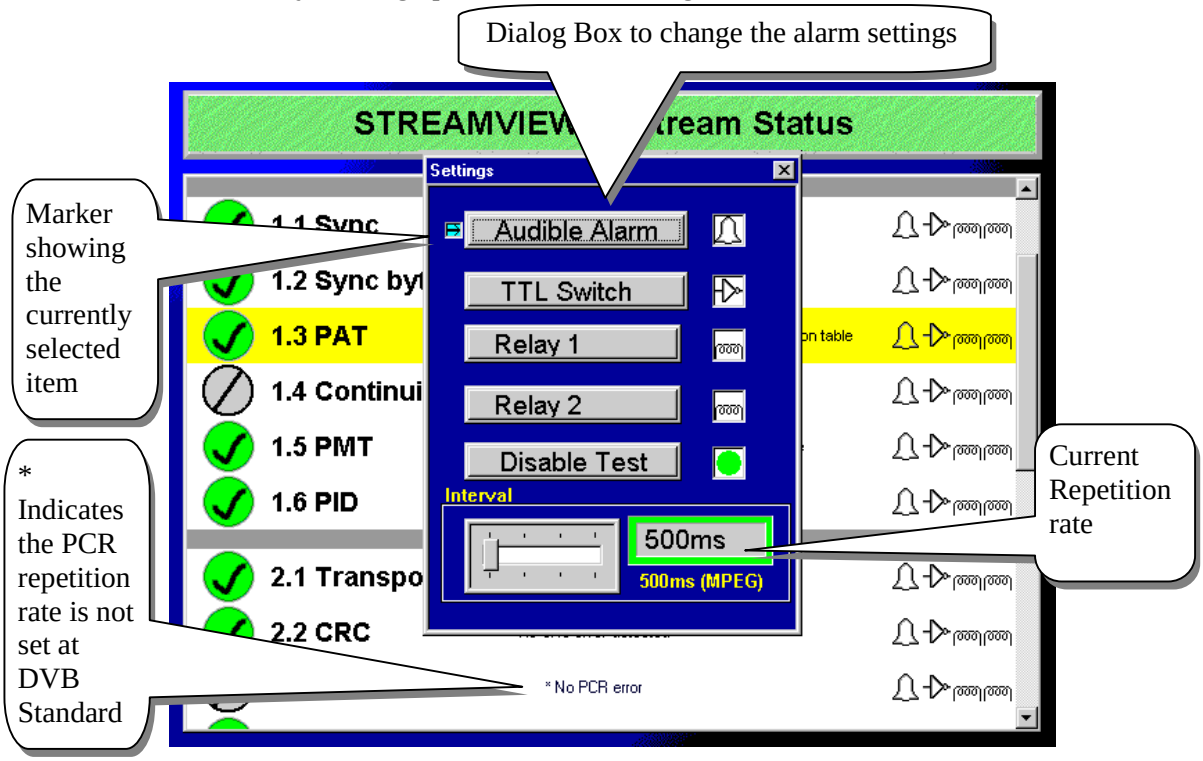
Blank grey with a black line through it to indicate the test has been disabled.

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To set any of the alarms, disable/enable tests or change section/table repetition rate (where applicable):

Use the ↑ and ↓ keys to highlight the test for which you want to change the settings.

Press the **ENTER** key to bring up the additional dialog box as shown on the screen below:



Use the ↑ and ↓ keys to select the item you want to change. Pressing the **ENTER** key on a button will toggle the function. Use the ← and → keys on the slider bar to alter the repetition rate. Where applicable, the default repetition rate is shown underneath the current setting. In addition, the box showing the current value is highlighted with a green border when the value coincides with the relevant standard.

When the repetition rate is set to a value other than the relevant standard, an indication is provided on the main page by placing an * at the start of the text as shown for the PCR test above.

You can repeat the process in step 3 for as many items on this dialog menu as you wish.

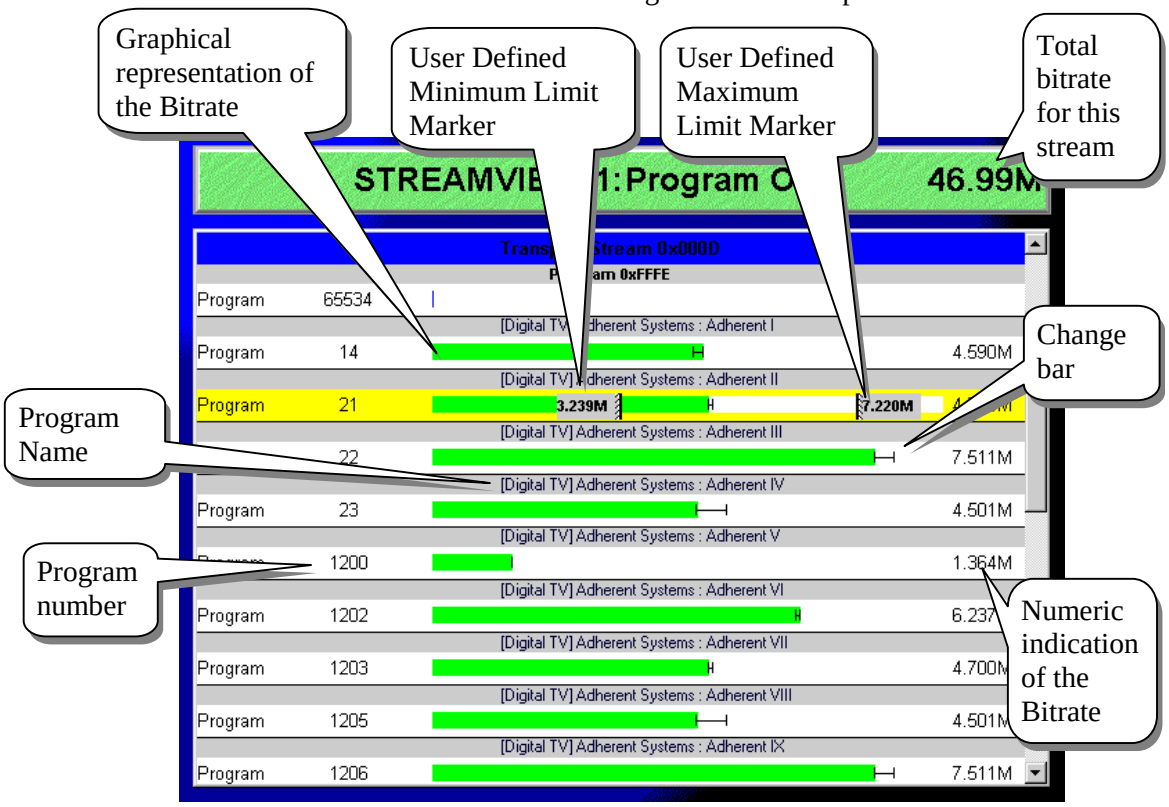
When you have finished with the settings on this pop-up dialog menu, press the **ESC** key to exit. The dialog menu will then be removed and you will revert back to the Stream Status screen and your selection will be executed.

Continue the steps 1 to 6 for as many different settings on the different tests as you wish.

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Program Occupancy screen

This screen shows the information about the Program in the transport stream.



Program Occupancy screen

On this screen, all the programs detected in the incoming transport stream are displayed. The bit-rate shown is the sum of the individual bit-rates for all the PIDs that make up the program. The screen provides the user with a quick overview of the program contents of the transport stream.

The table shows the following information:

- Program Name
- Program Number
- A bar representing the transmission bitrate
- The bitrate in bit/s.

The range of bitrates that have been observed for each program are indicated by the Change bar.

If the lower and upper limits have been set (as for the program in the screen shown above), then these are shown by the two bars. The exact numeric values of the limits will only be displayed on the screen (in bits/second) when you highlight that particular program with the cursor (as for the program in the screen shown above).

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For each of the programs, you can set the upper and lower limits of the bitrate. If the incoming bitrate falls outside these values, then an alarm is indicated on the screen, the graphical bitrate bar will go from green to red. On the front panel the 'Other' LED is used to indicate this alarm. This test can also activate the external alarm outputs. The test appears as Prog occ in the Adherent proprietary sub-section at the end of the Status screen.

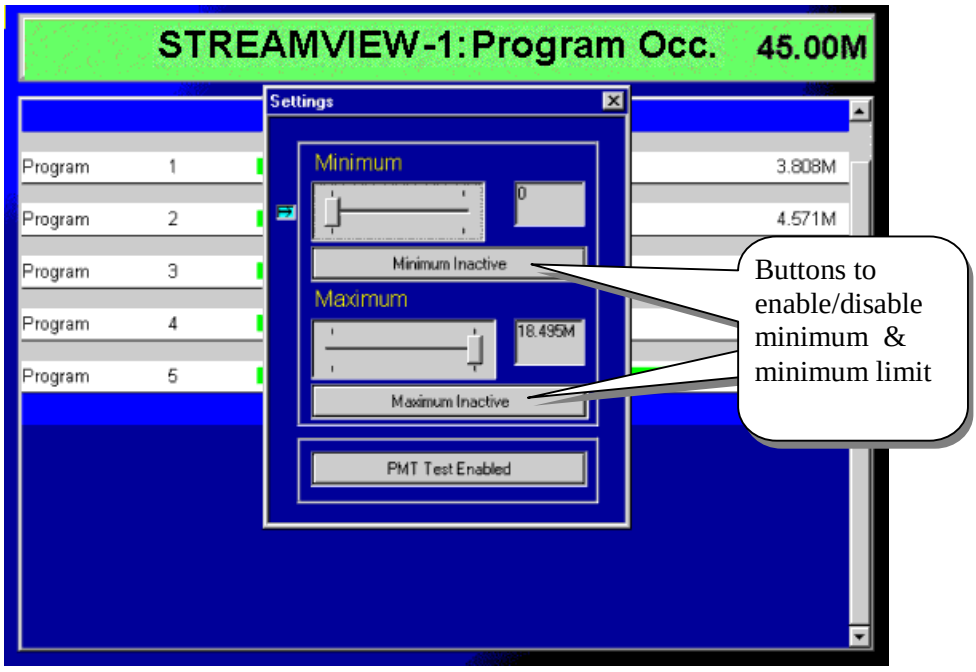
It is possible that in certain transport streams, different programs may reference a single PID; for example, programs may reference one PCR PID. In these cases, the PID bit-rate will be included in all the programs from which the PID is referenced.. Hence the total bit-rate of all the programs may add up to more than the total stream bit-rate displayed at the top of the page.

A facility exists to disable the PMT test (DVB Test 1.5) for specific programs. This allows the PMT test to be enabled for the whole stream, but programs with known problems can be excluded.

The limits and PMT test enabled state for each program may be may be set from this page as:

Select the required program (using the ↑ and ↓ keys).

Press the **ENTER** key. A dialog box appears to allow the limits to be set (press the **ESC** key to exit editing at any time):



Program Occupancy Limits Settings screen

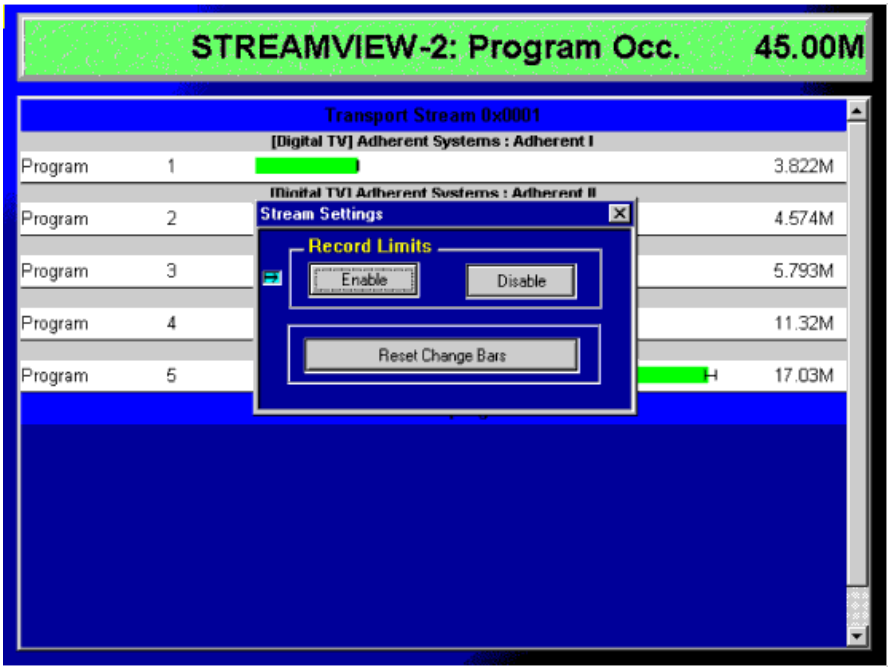
Use the ↑ and ↓ keys to select the item you want to change. Pressing the **ENTER** key on a button will toggle the function. Use the ← and → keys on the slider bar to alter the limits. Pressing the **SHIFT** key while using the ← and → keys will change the increment step size to 10% of the maximum bit-rate detected in the stream. Without the **SHIFT** being pressed, the increment step size is 1% of the maximum bit-rate detected in the stream.

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When you have finished with the settings on this pop-up dialog menu, press the **ESC** key to exit. The dialog menu will then be removed and you will revert back to the Program Occupancy screen and your selection will be executed.

It is also possible to reset the change bars, and enable the maximum and minimum bitrates observed for each PID in the stream to be recorded in the log (at an interval specified on the Stream Configuration screen) from this screen by following the procedure outlined below:

1. Select the Transport Stream line at the top of the screen (using the ↑ and ↓ keys).
2. Press the **ENTER** key to display the **Stream Settings** dialog:



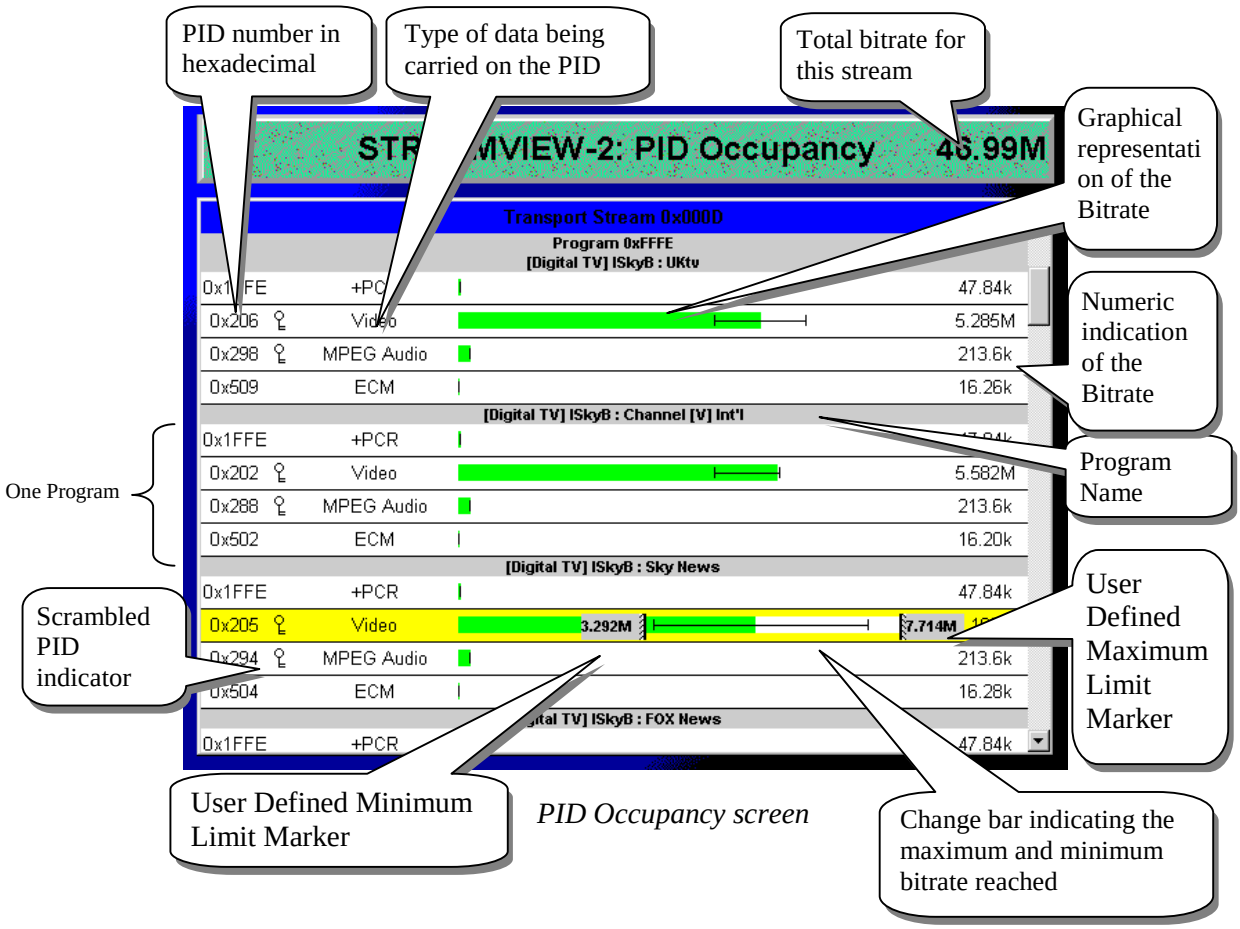
Program Occupancy Stream Settings dialog

3. Using the ↑ and ↓ keys, select the item to be changed.
4. The Record Limits can be enabled or disabled and the Change Bars can be reset by selecting the appropriate button and pressing **Enter**.
5. When the required settings have been edited, press the **ESC** key to exit. The dialog will be removed and the Program Occupancy screen redisplayed with the appropriate changes made.

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PID Occupancy screen

This screen shows the information about which Program or table is carried by each of the PIDs:



PID Occupancy screen

The PIDs are all grouped on a Program basis so that their contents can be determined. The group of PIDs belonging to the same program is proceeded by a group heading (Program Name).

PIDs that do not carry data belonging to a program are grouped together, sorted by PID numbers and displayed further down the screen.

The table shows the following information:

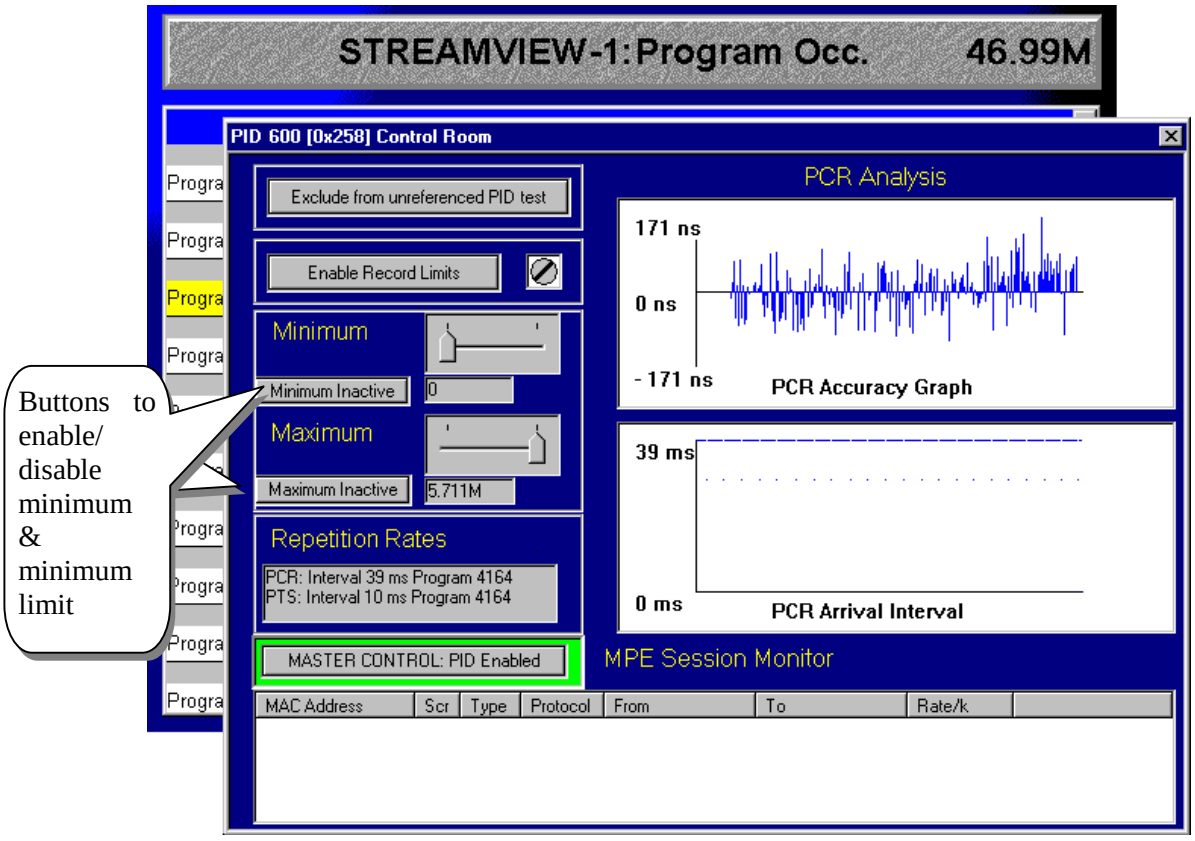
- PID number
- Scrambled state (a key is shown if the PID is scrambled)
- Type of data (video, audio etc)
- A bar representing the transmission bitrate
- The bitrate in bit/s.

The PID Number can be configured to be displayed in hexadecimal or decimal format from the Stream Configuration screen.

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Settings

The Settings dialog is opened by selecting the required PID (using the ↑ and ↓ keys) and pressing the **ENTER** key; press the **ESC** key to exit editing at any time. The descriptions following apply solely to the selected PID.



PID Occupancy Limits Settings screen

Use the ↑ and ↓ keys to select the item you want to change. The icon indicates the active selection. Pressing the **ENTER** key on a button will toggle the function. Use the ← and → keys on the slider bar to alter the limits. Pressing the **SHIFT** key while using the ← and → keys will change the increment step size on the slider bar to 10% of the maximum bit-rate detected in the stream. Without the **SHIFT** being pressed, the increment step size is 1% of the maximum bit-rate detected in the stream.

When you have finished with the settings on this pop-up dialog menu, press the **ESC** key to exit. The dialog menu will then be removed and you will revert back to the PID Occupancy screen and your selection will be executed.

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Bitrate Range

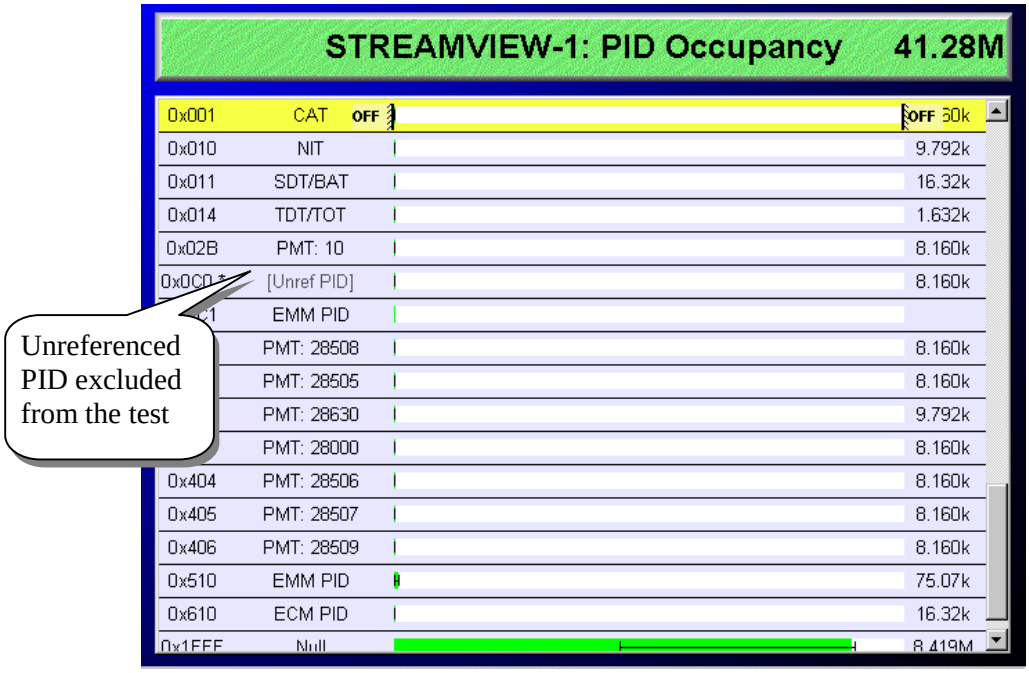
For any PID, the maximum and minimum bitrate limits can be set. The range of bitrates that have been observed for each PID is indicated by the Change Bars.

If the maximum and minimum limits have been set (as for PID 0x205 in the screen shown above), then these are shown by the bar graphic – '|————|'. The exact numeric values of the limits will only be displayed on the PID Occupancy screen (in bits/second) when you highlight that particular PID with the cursor (as for PID 0x205 in the screen shown above).

For each of the PIDs, you can set the maximum and minimum limits of the bitrate. If the incoming bitrate falls outside these values, then an alarm is indicated on the PID Occupancy screen, the graphical bitrate bar will go from green to red. On the front panel the 'Other' LED is used to indicate this alarm. This test can also activate the external alarm outputs. The test appears as PID Occ in the Adherent proprietary sub-section on the Status screen.

Unreferenced PIDs

A particular PID can be excluded from the Unreferenced PID test by selecting the **Exclude from unreferenced PID test** button. In some streams, there may be an Unreferenced PID of which the user is aware and does not wish an alarm to be raised when it is detected. Excluding that PID from this test will ensure that the alarm is not raised. A PID number that has been excluded from the Unreferenced PID test is indicated by an asterisk next to the PID number on the PID Occupancy screen; the description is 'greyed' out.



Log PID Limits

It is also possible to configure the system to record the minimum and maximum limits for a particular PID in the log at an interval set on the Stream Configuration screen (**Min/Max Bitrate Record Interval**); the **Enable Record Limits** button is used for this purpose.

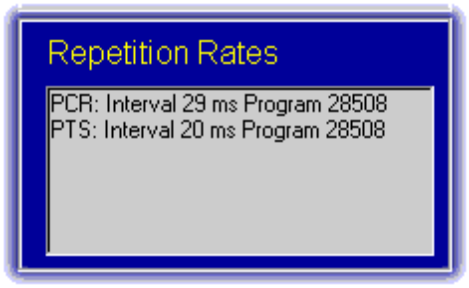
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Master Control – PID Enabled

This button toggles the removal of the selected PID from all analysis and disables PID-specific tests (repetition rate tests on PAT, PMT, SDT, NIT, TDT, EIT, PCR and PTS + PCR Inaccuracy test). Note that, when enabled, this option stops all analysis of the PID including the updating of PCR displays, MPE analysis and repetition rate information.

Repetition Rates

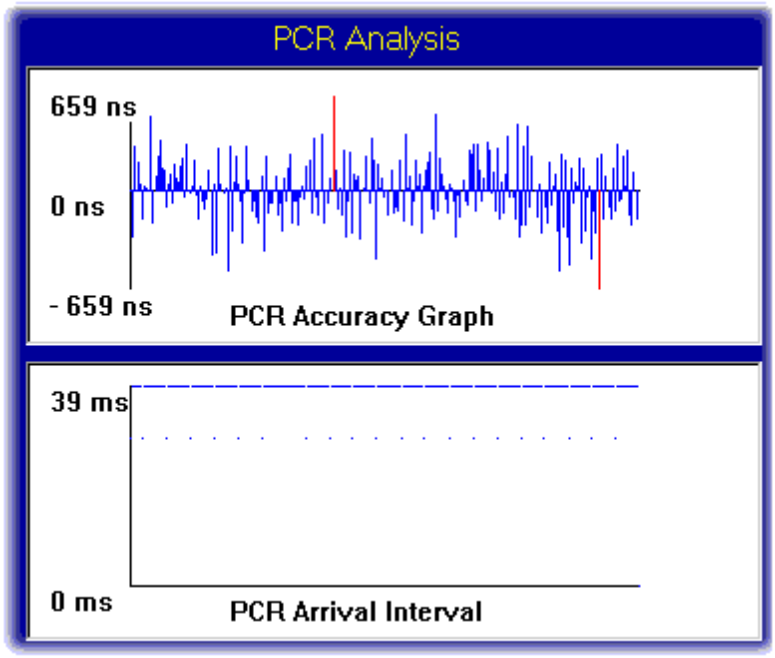
The Repetition Rates panel reports the repetition rates of monitored entities carried in the selected PID (An entity is either an SI table, section, PCR or PTS).



PCR Analysis

Stream View performs real time analysis PCRs where they are present.

The PCR Accuracy graph shows the difference, on the y-axis, between the actual and expected values for each PCR. The scale is adjusted as necessary to include the maximum value.



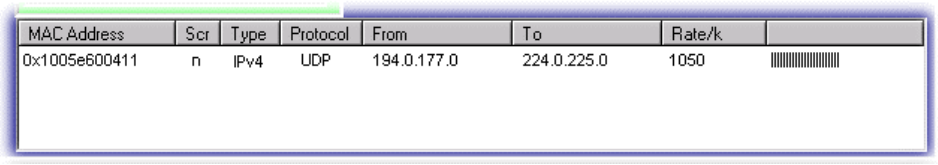
The MPEG-2 and DVB standards specify that PCRs must be within ±500ns of the time predicted by the PCR calculated transport rate. Values shown in red are those that exceed the expected transport rate; this can be set in the Status view

The PCR Arrival Interval provides a display of the arrival time interval between successive PCRs (256 sample window). The interval is displayed on the y-axis; the scale is adjusted as necessary to include the maximum value. Conformance with the DVB standards recommends an interval of 40ms; this can be set form the Status view. Points outside the limit set are displayed in red.

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MPE Session Monitor

The Multi-Protocol Encapsulation (MPE) provides a mechanism for transporting data network protocols on top of the MPEG-2 Transport Streams in DVB networks. It has been optimised for carriage of the Internet Protocol (IP), but can be used for transportation of any other network protocol by using LLC/SNAP (Logical link Control / Subnetwork Access Protocol) encapsulation. It covers unicast (datagrams targeted to a single receiver), multicast (datagrams targeted to a group of receivers) and broadcast (datagrams targeted to all receivers). 48 bit MAC addresses are used for addressing receivers.



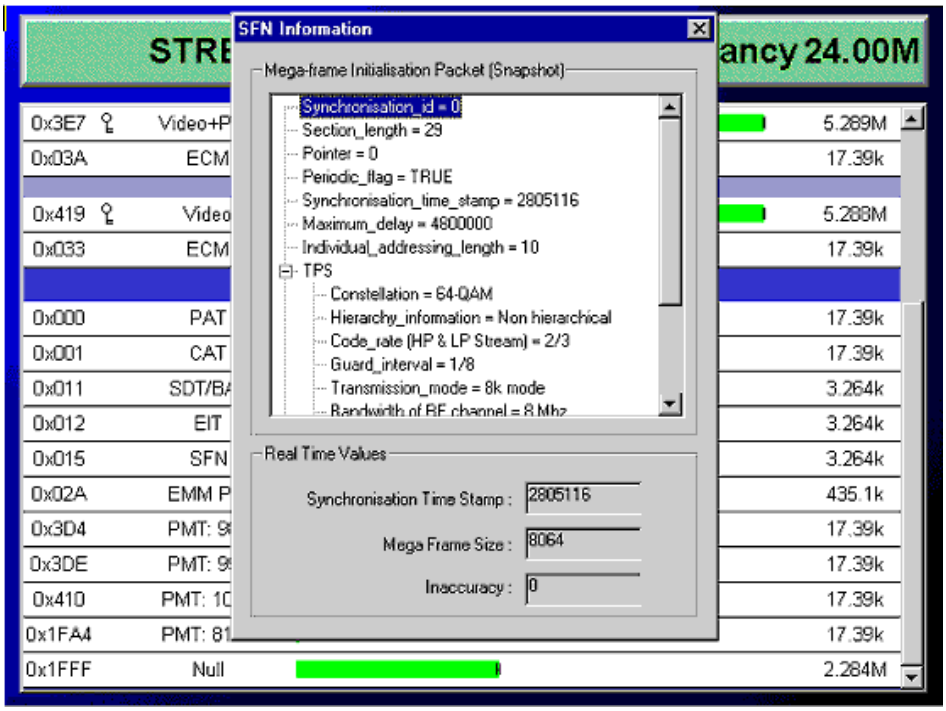
The window presents a real-time view of all active MPE sessions detected. It uses the MAC address as a unique identifier for each session and displays useful header fields from the Network and Transport layers such as source and destination identifiers as well as flow rates. (Note that active MPE sessions are deemed to have at least one packet every 600s.)

When there are more sessions than can be fitted in the window, scroll bars will be displayed. Use the ↑ and ↓ keys to make the MPE Session Monitor the active selection and then use the ← and → keys to scroll through the sessions. To leave the session monitor, use the ↑ and ↓ keys to make another selection.

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Single Frequency Network (SFN) PID

Where a SFN PID (0x15) exists in a stream, a different dialog is displayed when the PID is selected and the **ENTER** key pressed.



Program Occupancy – SFN Information

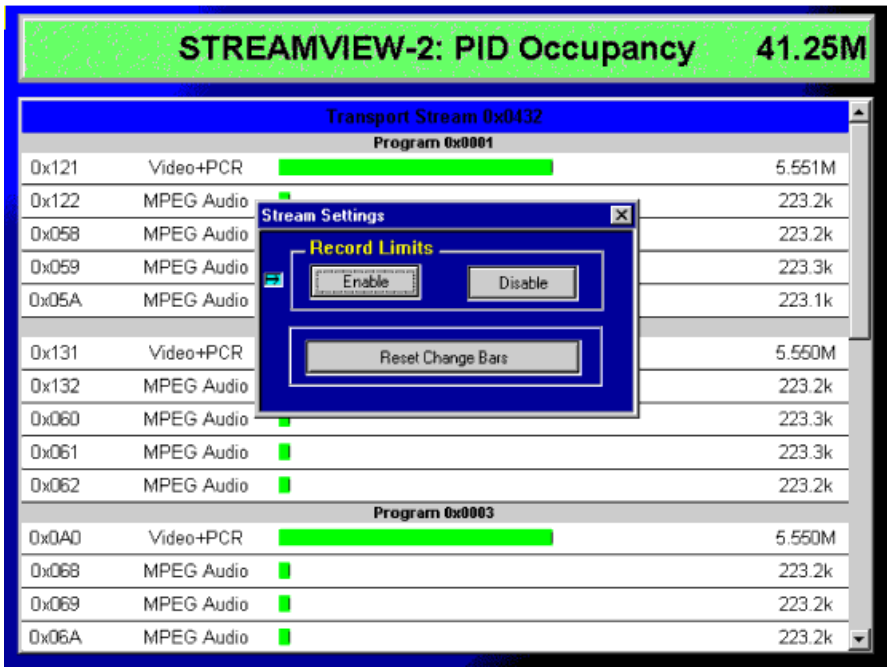
The information shown in the bottom section (**Real Time Values**) is updated in real time. It contains the Synchronisation Time Stamp extracted from the Mega-frame Initialisation Packet (MIP); also the Mega-frame Size and Inaccuracy which are derived values.

The information shown in the upper pane is a snapshot of the Mega-frame Initialisation Packet, including a breakdown of the TPS MIP and the functions descriptors. This can be updated at any time by pressing Shift+**ESC** and can be navigated in the same way as the Structure information described in the next section.

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As with the Program Occupancy screen, it is also possible to reset the Change Bars and enable or disable recording limits for all PIDs as follows:

1. Select the Transport Stream line at the top of the screen (using the ↑ and ↓ keys).
2. Press the **ENTER** key to display the **Stream Settings** dialog:



PID Occupancy Stream Settings dialog

3. Using the ↑ and ↓ keys, select the item to be changed.
4. The Record Limits can be enabled or disabled and the Change Bars can be reset by selecting the appropriate button and pressing **Enter**.
5. When the required settings have been edited, press the **ESC** key to exit. The dialog will be removed and the PID Occupancy screen redisplayed with the appropriate changes made.

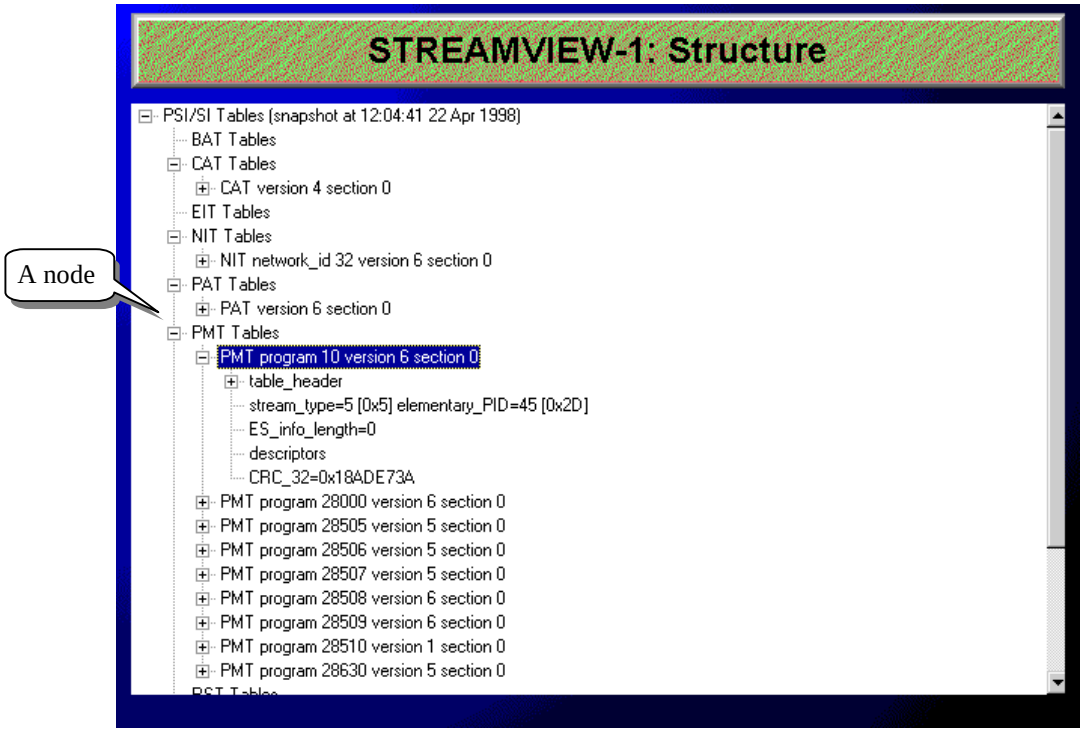
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Structure View screen

This screen shows transport stream structure. A snapshot of the table structure is built up and displayed when the user enters this screen. The tree can be updated with the most recent information by pressing Shift+**ESC**.

The screen below shows the following DVB information:

- Structure of the Service Information (SI) and Program Specific Information (PSI), including their payload information.
- List of all Active Packet Identifiers (PIDs).



Structure View(DVB) screen

In the DVB version, some of the DVB information displayed will depend on the Regional Setting in the box Setup screen, i.e. DVB, DVB(DTG), DVB(Nordic), DVB(ARIB), since there are regional variations in the specification of some of the descriptors. In addition, if the TMCC Acquisition option is set on the Stream Configuration screen, an extra branch will be added to the tree which displays a snapshot of the TMCC basic information (see References, page 6-38).

The following information is displayed on the ATSC Structure screen:

- Structure of the Program Service Information (PSI), Program Specific Information Protocol (PSIP; A/65), Data Broadcast Tables (A/90) including their payload information and the Program Identifier Table (A/57) (See also References, page 6-38)
- List of all Active Packet Identifiers (PIDs).

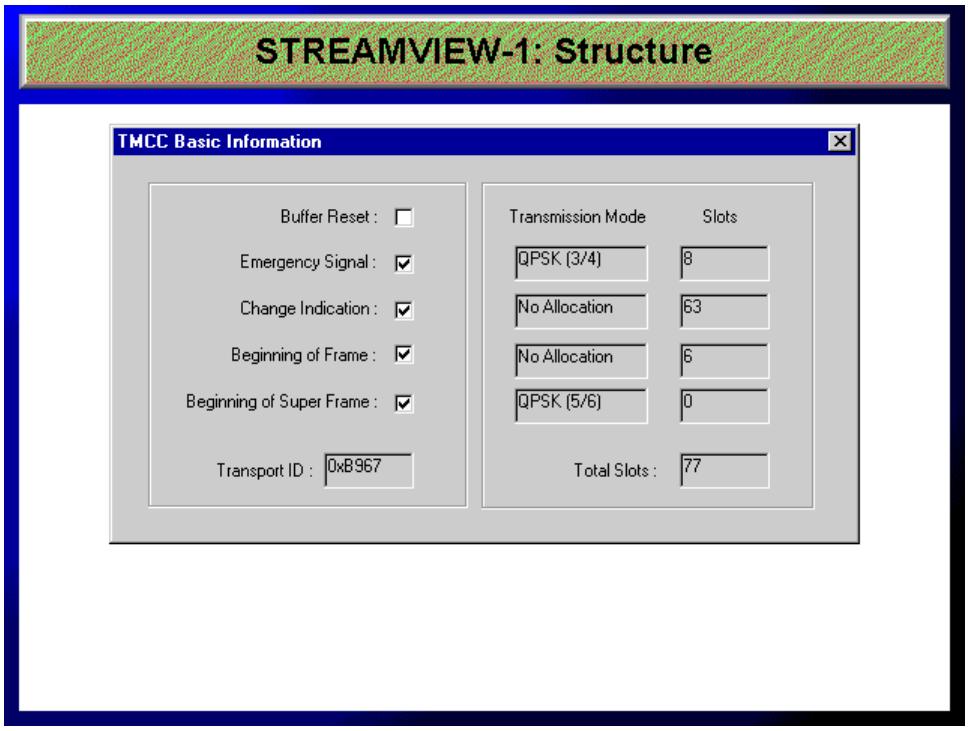
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A tree diagram, with the 'root node' or highest level component at the top is represented in this structure. A square box indicates components that contain more information beneath them in the structure. If the node has a minus sign in the box the level of detail below it is displayed. The lower levels may be hidden or displayed by using the ← and → keys.

If the box contains a plus sign, there is another level contained by the node which is currently hidden. Move on to this node using the ↑ and ↓ keys and press the → key to display the next level of information.

Components that are connected to a branch of the tree without a square box are leaf nodes. They display the lowest and finest level of detail.

In the DVB version of the software, if the Display TMCC in Structure View option is set on the Stream Configuration screen, the snapshot of SI information will be replaced by TMCC basic information displayed in real time as shown below:



TMCC Basic Information dialog

With the appropriate security permissions OpenTV descriptors will be analysed.

Stream View will analyse DVB MHP (Multimedia Home Platform) AIT table information. (See References, page 6-38.)

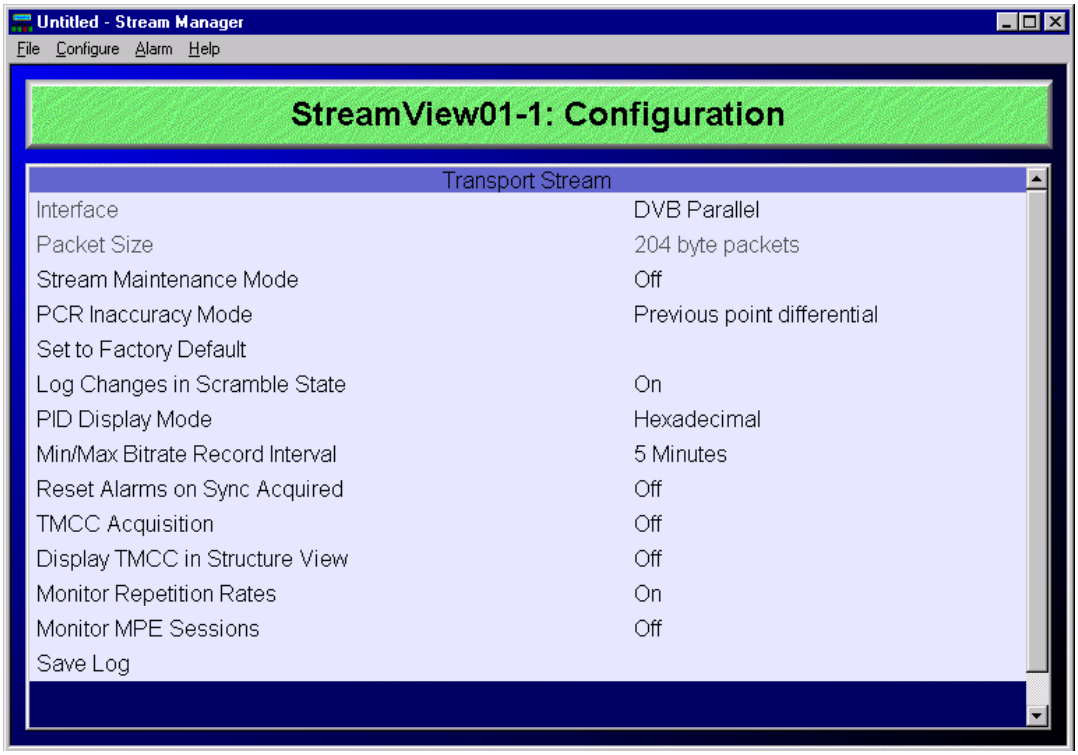
Registered network names are labelled according to ETR162 (see References, page 6-38) with respect to registered network names, etc.

Stream View will analyse ARIB SI (see References, page 6-38)

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Stream Configuration screen

This page allows the user to configure the stream through a number of settings.



Stream Configuration screen

The **Interface** type shown is the type of interface that has been fitted for this stream. The application software automatically detects & selects the interface type (**DVB Parallel** in this example). For the L-Band, G703, G703 and GPSI MkII interface cards, a further dialog box can be accessed by moving the cursor to the relevant line on the menu and pressing the **Enter** key. The dialog boxes displayed allow various parameters of the associated interface card to be modified.

Whenever the user installs a new interface (see *Interfaces* chapter), this setting should be checked to ensure the application has correctly identified and selected the interface. If the expected interface is not shown here, then this could point to an installation problem.

The **Packet Size** (either of 188 or 204) is automatically detected for the incoming stream and displayed on this page for information only

Stream Maintenance Mode may be selected for a particular stream or for the complete unit (i.e. the box status and ALL streams being monitored). This page allows selection of maintenance mode for the selected stream only. For the unit maintenance mode, see the **Setup** page under the **Box Menu**. When Maintenance mode is selected, the external alarms (TTL, relays, and audible) are disabled. However, the unit continues to monitor for errors and write error log entries into the log file.

The **PCR Inaccuracy Mode** may be selected to either **Previous point differential** or **Line differential**.

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The **Set to Factory Default** menu item will default all values to the factory defaults for the selected stream. Refer to the *System Configuration File* section in the *Reference* chapter for a list of the parameters affected by this action.

Changes in the scramble state of packets is normally recorded in the error log of a stream. However, setting **Log Changes in Scramble State** to **Off** will suppress reports of scramble state changes. Recording of scramble state changes can be turned on again by changing the setting to **On**.

The **PID Display Mode** item can be set to Hexadecimal or Decimal, and determines how the PID numbers should be displayed in the PID Occupancy screen.

The **Min/Max Bitrate Record Interval** item determines the interval at which minimum and maximum bitrates are recorded in the log file if **Enable Record Limits** has been enabled in the PID or Program Occupancy screen.

The **Reset Alarms on Sync Acquired** item can be set to On or Off, and determines whether the alarms (and LEDs) for the stream should be reset to green if sync is regained after it has been lost.

The TMCC Acquisition option determines whether Stream View should monitor TMCC information in the stream). When this option is set, a snap shot if the TMCC basic information is shown at the bottom of the Structure view. This option is only available in the DVB version of the software

The Display TMCC in Structure View option sets whether TMCC information is shown in the Structure View instead of the normal SI Information. This option is also only available in the DVB version of the software.

The Monitor Repetition Rates option determines whether Stream View should monitor repetition rates on this stream. It may be desirable to switch this off when there are a large number of programs in the stream, as calculating the repetition rates could take a significant amount of processing power.

The **Monitor MPE Sessions** option allows MPE monitoring to be turned on and off.

The **Save Log** function saves the log of errors for the currently selected stream to a floppy disk as the compressed file A:\SVLOG.CS_. The user will be notified of the progress of the operation via a dialog box. It should be noted that the process of copying the log may take a significant amount of time.

The Save Log process is described below (Save Log (Stream Errors) Function, page 3-27).

An additional option called **Virtual Channel Table Mode** is available for the ATSC version of this software.

The A/65 (PSIP) standard (*Reference **[3]***) encompasses two modes of transmission; terrestrial broadcast and cable transmission. The requirements of the standard are different for each transmission mode. Firstly there are two variants of the Virtual Channel Table (VCT): the Terrestrial Virtual Channel Table (TVCT) specific to terrestrial broadcast, and the Cable Virtual Channel Table (CVCT) specific to cable transmission. Secondly the first four EITs are mandatory only for terrestrial broadcast.

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The Virtual Channel Table Mode, allows the unit to be configured such that the tests performed reflect the differences in transmission mode. The options for this mode are as follows:

EIT Test On, Either VCT	In this mode both the TVCT and the CVCT are considered valid for the purposes of the VCT repetition rate test. The first four EITs are tested for at a repetition rate of all four within the time period specified (default 500ms).
Stream Type Inferred From VCT	In this mode the stream type, terrestrial or cable, is inferred from the VCT. If terrestrial the EIT test is performed.
Stream Type Terrestrial	In this mode the stream type is assumed to be terrestrial. The CVCT is not considered valid for the purposes of the VCT repetition test. The four EITS are tested when this option is selected..
Stream Type Cable	In this mode the stream type is assumed to be cable. The TVCT is not considered valid for the purposes of the VCT repetition test. The EITs are not tested when this option is selected.

Save Log (Stream Errors) Function

This function saves the log of unit errors to a floppy disk as the compressed file A:\SVLOG.CS_. The user will be notified of the progress of the operation via a dialog box. It should be noted that the process of copying the log may take a significant amount of time.

In order to decompress the file, it must be transferred to a desktop PC that has the Expand utility (supplied on the Stream View installation CD-ROM) also installed on it.

To decompress the file, the user should perform the following operations:

1) Copy the compressed log file A:\SVLOG.CS_ from the floppy disk to the hard disk of another PC.
2) Start the MS-DOS Command Prompt (Start menu ➔ Command Prompt).
3) Change to the directory containing the log file.
4) Enter the command - **EXPAND^SVLOG.CS_^SVLOG.CSV**

The compressed file SVLOG.CS_ is decompressed and written to the file SVLOG.CSV.

The EXPAND.EXE utility, which is used to decompress the compressed log file, is supplied on the installation CD-ROM. It can be installed on a desktop PC, with a CD-ROM drive, in the following manner:

1) Insert the CD-ROM in the drive.
2) The install program will run automatically.
3) Quit the installation program by clicking on the **CANCEL** option of the install dialog followed by clicking on the **EXIT SETUP** option of the next dialog box.
4) Double click on the MY COMPUTER icon on the desktop.

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5) Click with the right mouse button on the CD0ROM drive icon and select **Explore** (this will display the contents of the CD rather than running it).

6) Copy the **EXPAND.EXE** application into the WINDOWS directory (or any directory in your MSDOS path).

The uncompressed file is in comma-delimited format (CSV) which means that it can be read in a text editor, and also imported into spreadsheet and database applications for further analysis.

Each line in the file is in the format:

```
code,source,stream,date,time,state,text
```

and the fields are defined as follows :

Part	Meaning
Code	This is an 8 digit hexadecimal number. For example 12345678. The code values are listed in the *Reference* section of this User Guide.
Source	The source of the event which will normally be the UNC name (i.e. the Computer Name for the box).
Stream	0 (zero) for box wide error events (as described in *Status screen* section in this chapter) and 1,2,3 or 4 for specific individual stream events
Date	Date of the log entry. The date format is DD MMM YYYY
Time	Time of the log entry – shortly after the event occurred. Format for the time field is HH:MM:SS. (A decimal point and fractions of a second may be included in future releases.)
State	This is a hex number indicating the colour red, yellow or green. The values are 1000, 2000 or 3000 respectively. Hence, 1000 would indicate an error has started and the 2000 would indicate when the error has stopped.
Text	Free-format human-readable text enclosed in quotation marks. The maximum length of this field is 128 characters.

The following three pieces of information are written to the saved log file using the special code 99999999. The log entry format as described above is used except that the fields not applicable are left blank. The text in quotes is the actual text inserted into the saved log while the other entries are translated into actual values e.g. ‘Software Version Number’ will be a sequence of numbers depending on the actual version, ‘Date File Was Written’ will be converted into a date and so on.

99999999,,,Date File Was Written,,,‘Saved Date’

99999999,,,, Time File Was Written,,‘Saved Time’

99999999,,,,,,‘ProductSuiteVersion’ Software Version Number

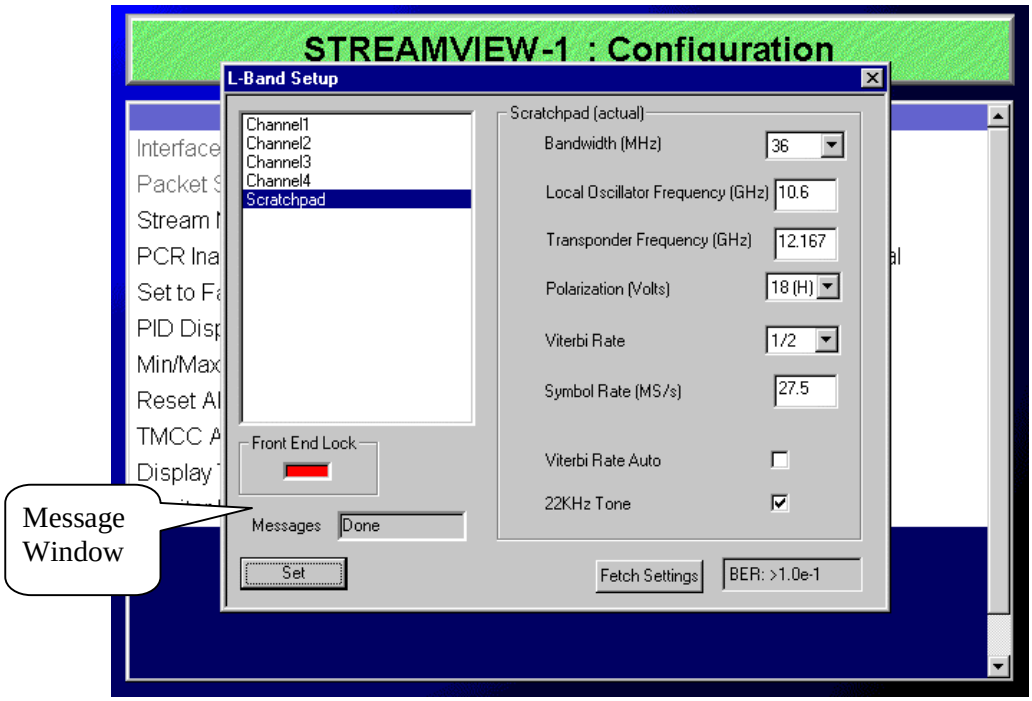
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Code values

The code values are used both by the interface (to identify errors) and by the log; the values are listed in the ***Reference*** section of this User Guide. The values shown are the first 4 digits of the 8-digit number. The other 4 digits hold extra information and are not necessary to process the log file. The code value is unique for each of the error types hence the start time and the end time of any particular error can be easily determined by sorting the data on this and the State fields.

L-Band Card Settings

This dialog box allows the L-Band card to be tuned to the one of pre-defined settings.



L-Band Setup Dialog

When this dialog box screen is entered, the settings shown in the various list boxes will reflect the current setting of the L-Band card (see also *Reference* section, ***Interface Card Settings***).

The text box lists all the pre-defined channels (defined using the System Configuration File which is described later in this chapter) from which a selection may be made. Use the ↑ and ↓ keys to highlight the desired channel. Once the channel has been selected, use the **SHIFT**+↑ and **SHIFT**+↓ arrow keys to move to the **Set** button and press the **ENTER** key. This will program the L-Band card to the selected channel. If the actual parameters need to be viewed for the selected channel (frequency, viterbi rate etc.), then move to the **Fetch Settings** button and press the **ENTER** key. This will display the parameters for the channel in the appropriate greyed out text boxes.

In the above example, Channel1, Channel2, Channel3 and Channel4 are predefined channels using the System Configuration File

If the parameters selected match the incoming signal, the L-Band tuning module will achieve front end lock, In this case, the Front End Lock LED will change from red to green.

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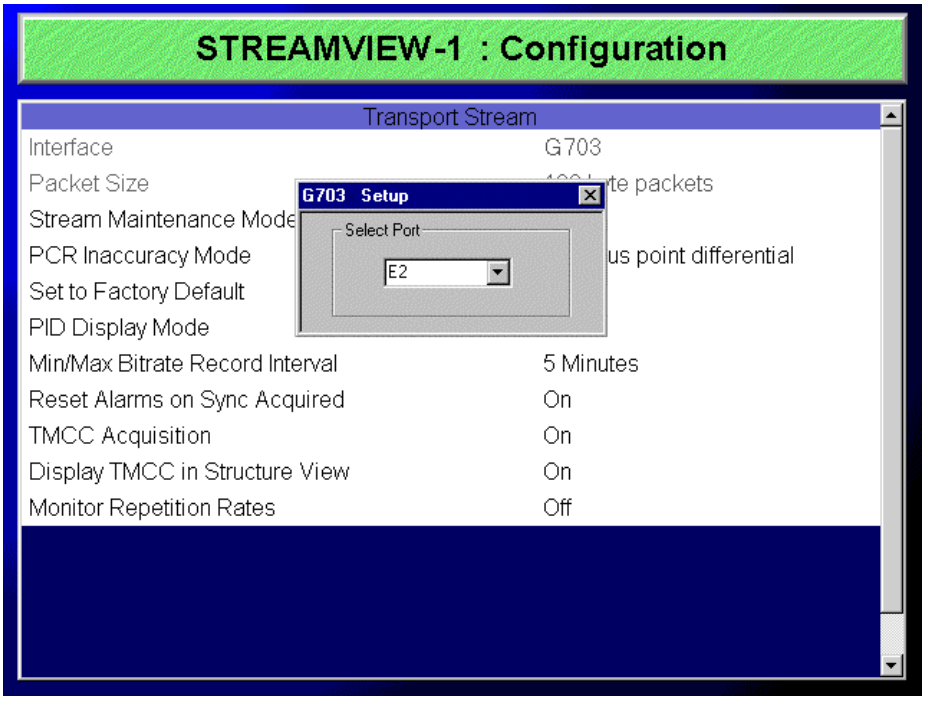
When the user initiates either the **Set** or **Fetch Settings** function, there is a delay while the parameters are being downloaded to or fetched from the hardware. This is indicated by displaying a message in the message window. When the action has completed, a Done message will appear in this window. The user should not attempt to carry out further modifications to the settings until the Done message has been displayed.

The L-Band card may also be tuned by editing the various parameters using a keyboard. The keyboard can be plugged into the front of the unit and by pressing the F12 key, the various text boxes will become un-protected and can be edited. When the F12 key is pressed, an addition channel named **Scratchpad** will appear in the list of channels. The user can use this temporary channel to tune the parameters manually from the keyboard.

By using the **SHIFT**+↑ and **SHIFT**+↓ arrow keys, the user may toggle to any of the editable boxes and change the parameter. Some parameters have limited settings which can be toggled between using the ← and → arrow keys (e.g. Bandwidth) while others can be edited by keying in the required numeric values (e.g. Frequency).

G703 Card Settings

For the G703 E3 version, only E2 and E3 interface options are available. For the G703 DS3 version, only E2 and DS3 interface options are available.



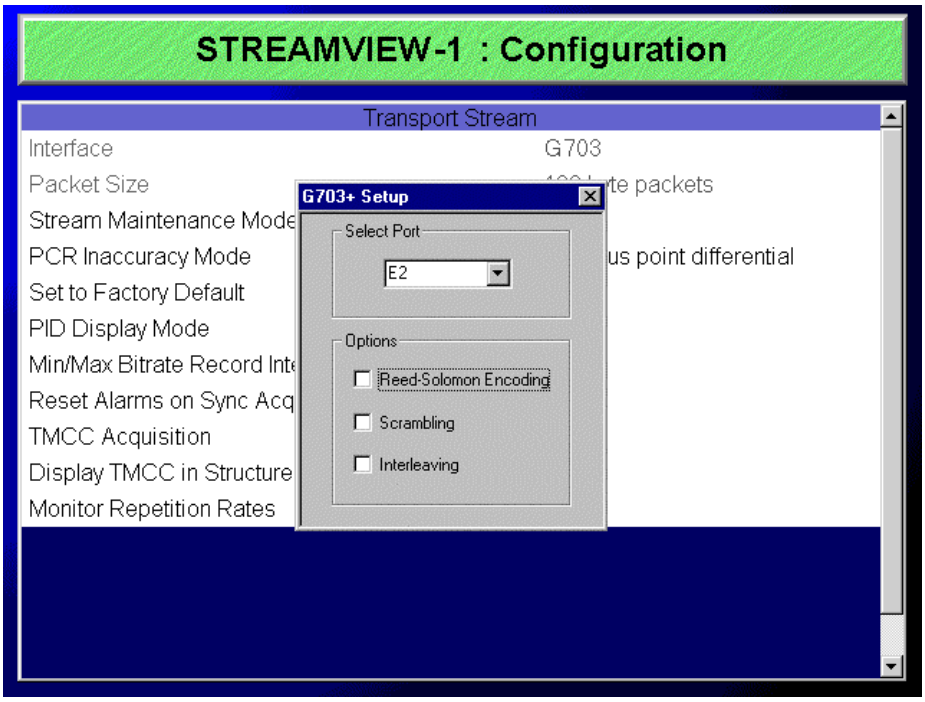
G703 Setup dialog

Use the ← and → keys to step through the options in the drop-down box. When the desired option is displayed, use the **Esc** key to exit from the dialog box and for the new setting to take effect.

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G703+ Card Settings

For the G703+ E3 version, only E2 and E3 interface options are available.



G703+ Setup dialog

Use the **SHIFT+**↑ and **SHIFT+**↓ keys to move to a particular field. In the options page, use the **ENTER** key to turn an option on and off when the option field is active (an option is enabled when the check mark is present). Use the ← and → keys to step through the options in the **Select Port** drop-down box. When the desired settings are displayed, use the **Esc** key to exit from the dialog box and for the new setting to take effect.

In addition, the following options are available on this card:

Reed Solomon — The decoder is able to correct up to eight byte errors. The Reed Solomon decoder will append the amount of byte errors corrected followed by the number of bit errors corrected to the last two bytes of all packets received. If the received transport stream is not constructed of 204 bytes packets, then the hardware will disable the Reed Solomon function. If the received transport stream does not contain valid Reed Solomon data and Reed Solomon has been selected, then the input stream will be corrupted.

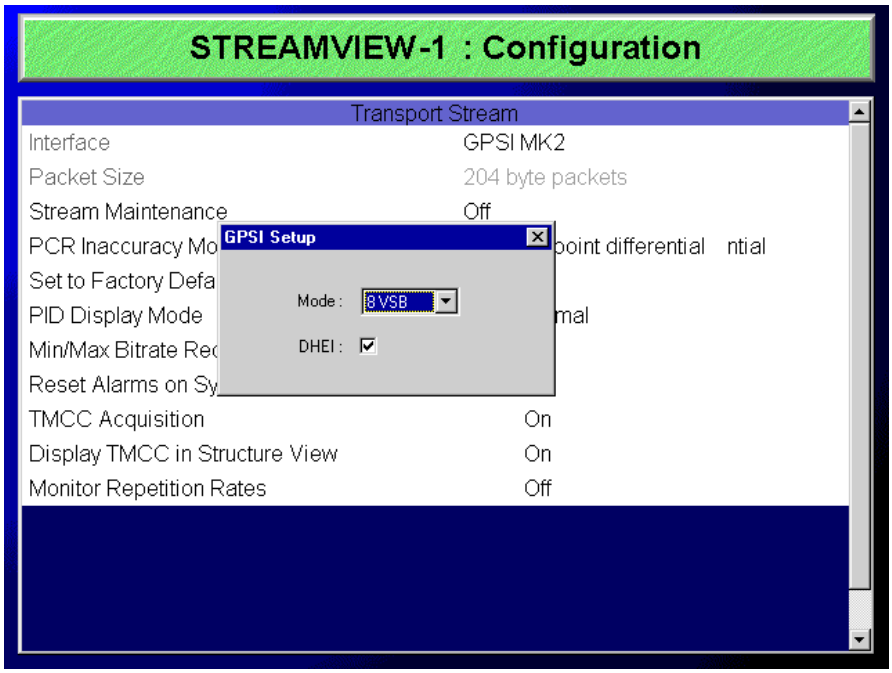
Scrambling — When selected, scrambling is enabled. If the received transport stream has not been scrambled, and de-scrambling has been selected, then the hardware will not sync to the input stream.

Interleave — When selected, interleaving./de-interleaving is enabled. If the received transport stream is not constructed from 204 byte packets, then the hardware will disable the interleaving function. If the received transport stream has not been interleaved, and de-interleaved has been selected, then the input stream will be corrupted.

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GPSI MkII Card Settings

Use the **SHIFT+↑** and **SHIFT+↓** keys to move to a particular field. In the Mode field use the ← and → keys to select the option 8VSB or 16VSB. For the DHEI field, use the Enter key to toggle it on and off.

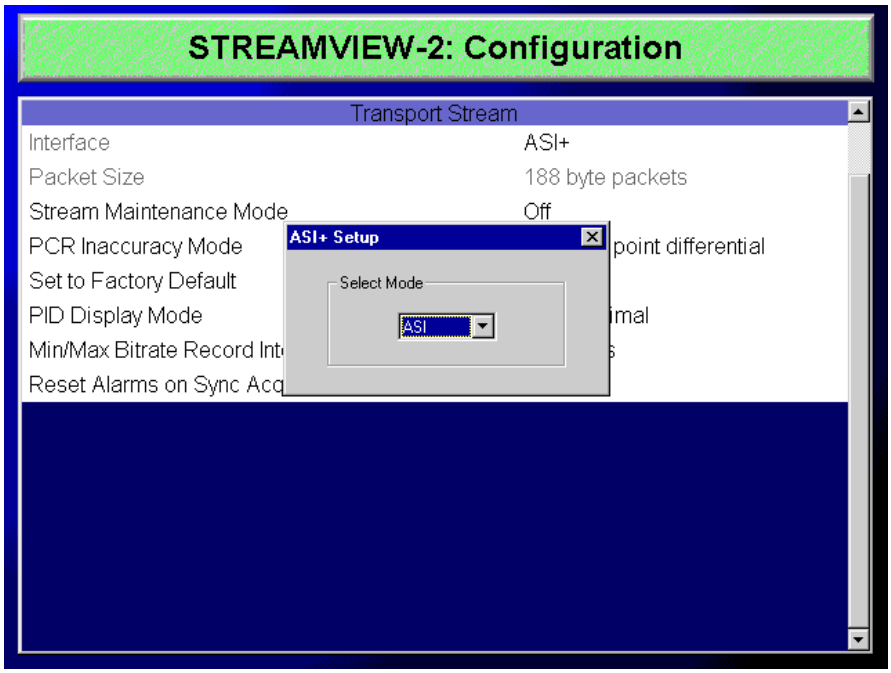


GPSI MkII Setup dialog

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ASI+ Card Settings

In the Mode field use the ← and → keys to select MS2 or ASI which specifies the type of input to the card.



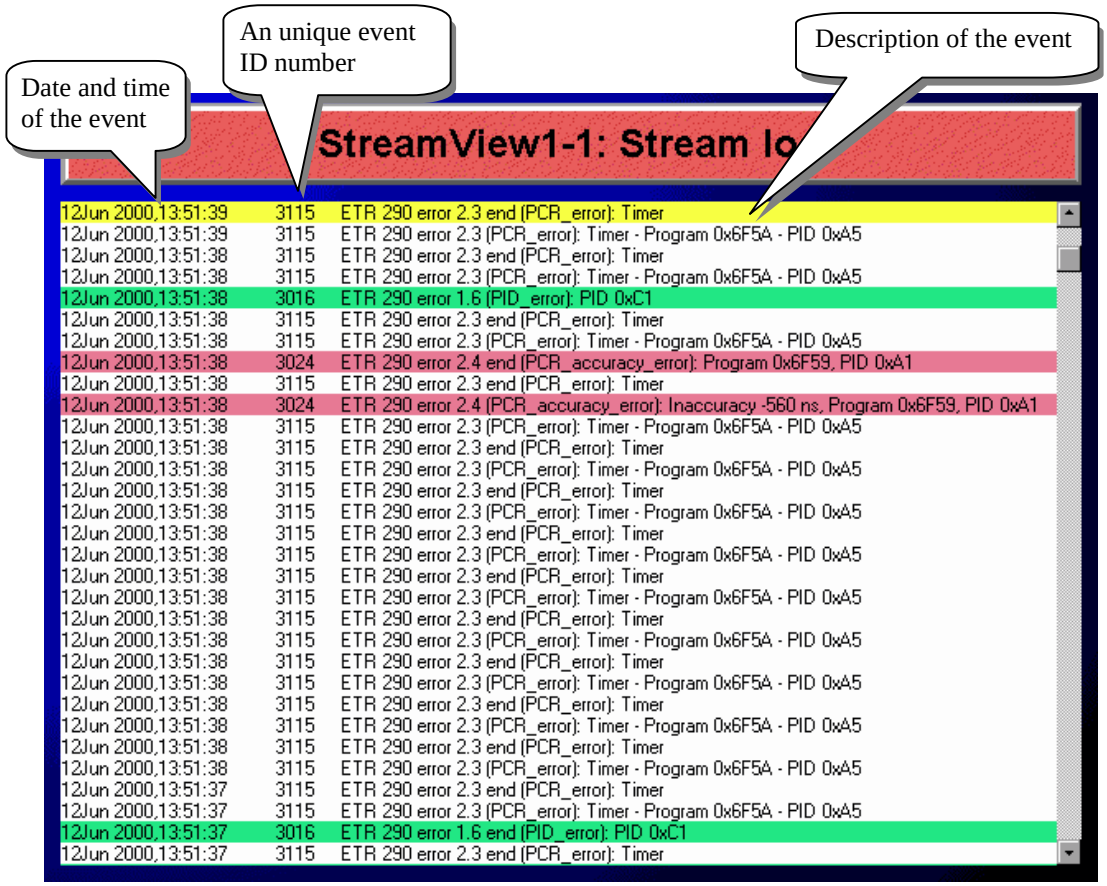
ASI+ Setup dialog

The loopthrough feature on the ASI+ interface card will only work when the ASI+ mode is selected.

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Stream Log screen

This screen shows event log for the stream currently selected. This information is a sub-set of the composite log i.e. the data displayed here has been filtered for this stream from the main log:



Log screen

The log file contains the following information:

- The date and time the log entry was written into the file.
- A unique event ID number related to the type of error (see the Error Code Value tables in the Reference section).
- A description of the event.

Use the ↑ and ↓ keys to scroll through the log. The entire line of the selected log entry is highlighted with the yellow cursor.

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As the log can contain a large number of entries, there are further key operations which are available on this screen to allow easier navigation. These are as follows:

- Press the **SHIFT** and ↑ for page up.
- Press the **SHIFT** and ↓ for page down.
- Press the **SHIFT** and ← to go to the top of the log and stay at the top when new entries are added.
- Press the **SHIFT** and → to go to the end of the log.

Colour Coding Errors

Errors of the same type can be colour-coded for easy recognition. Up to five colours can be allocated to different error-types. Only five colours can be used, further selections will not work until a current selection is disabled.

To colour-code an error type, highlight an error of the correct type using the navigation keys described above.

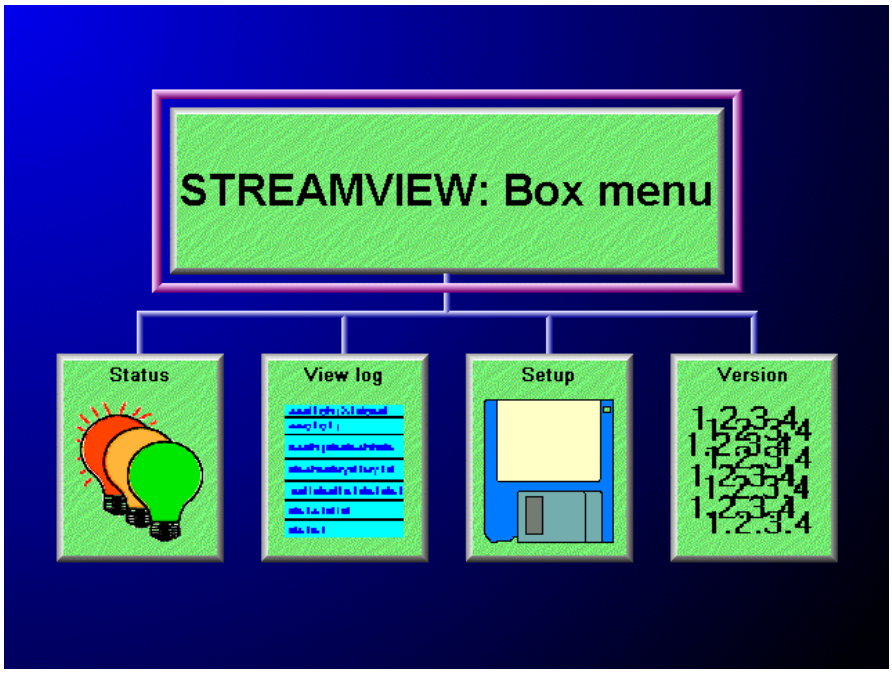
Press the **ENTER** key. All errors of the same type will be highlighted with one colour.

The colour-coding can be removed by highlighting one of the colour-coded errors and pressing the **ENTER** key.

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Box Information Screens

This menu shows the available options that are related to the functions of the entire Stream View box.



Box menu screen

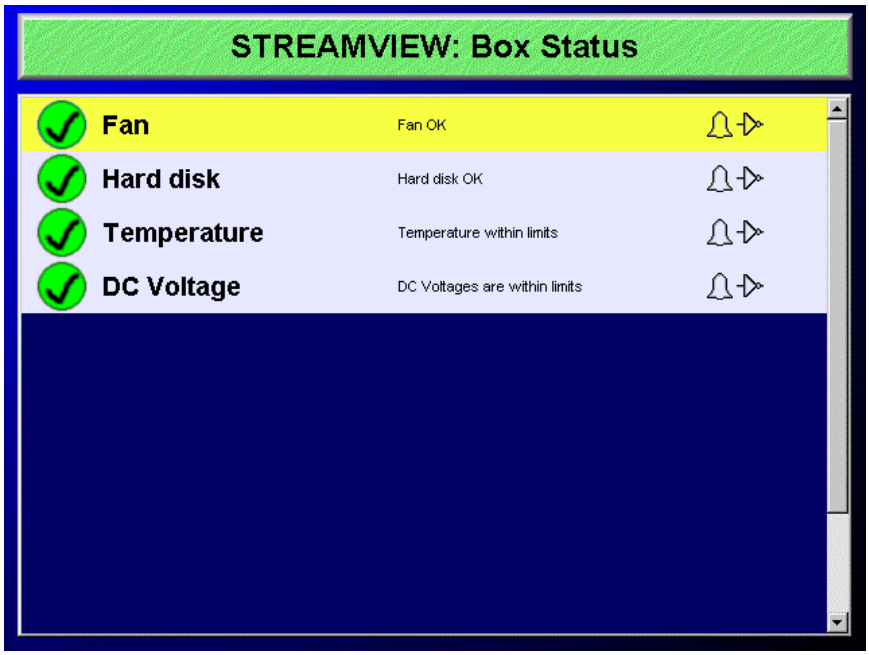
This screen allows you to navigate to a number of other screens that provide different types of information/facilities. To display any of the additional screens, move the cursor over a particular icon using the arrow keys, and then press the **ENTER** key. The screens (all of which are described in more detail elsewhere in this chapter) are as follows:

- Box Menu Icon: This will take you back to the Home screen.
- Status Icon: This will take you to the Box Status screen that shows the status of the box wide tests.
- View Log Icon: This will take you to the screen that displays the log for 'box-wide' errors. (see the Stream Information Screen section in this chapter for information about view the log file for an individual stream). There is a maximum limit of 64K entries in the log file.
- Setup Icon: This will take you to the Setup screen that allows the user to carry out box & stream set-up operations
- Versions Icon: This will take you to the Versions screen that displays versions numbers of all the software components currently loaded on the Stream View.

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Status screen

A number of functions are constantly monitored within the Stream View box. The status of all these are shown on this screen, together with the alarm status for each parameter:



Status screen

The following parameters are shown:

Parameter	Meaning
Fan	Shows the status of the two internal fans.
Hard Disk	Shows whether any of the factory pre-defined disk parameters are violated.
Temperature	Shows an error if the temperature inside the box rises above the factory pre-defined limits.
DC Voltage	Shows an error if any of the DC voltage rails within the unit (+5V, -5V, +12V, -12V) fall outside factory pre-defined limits.

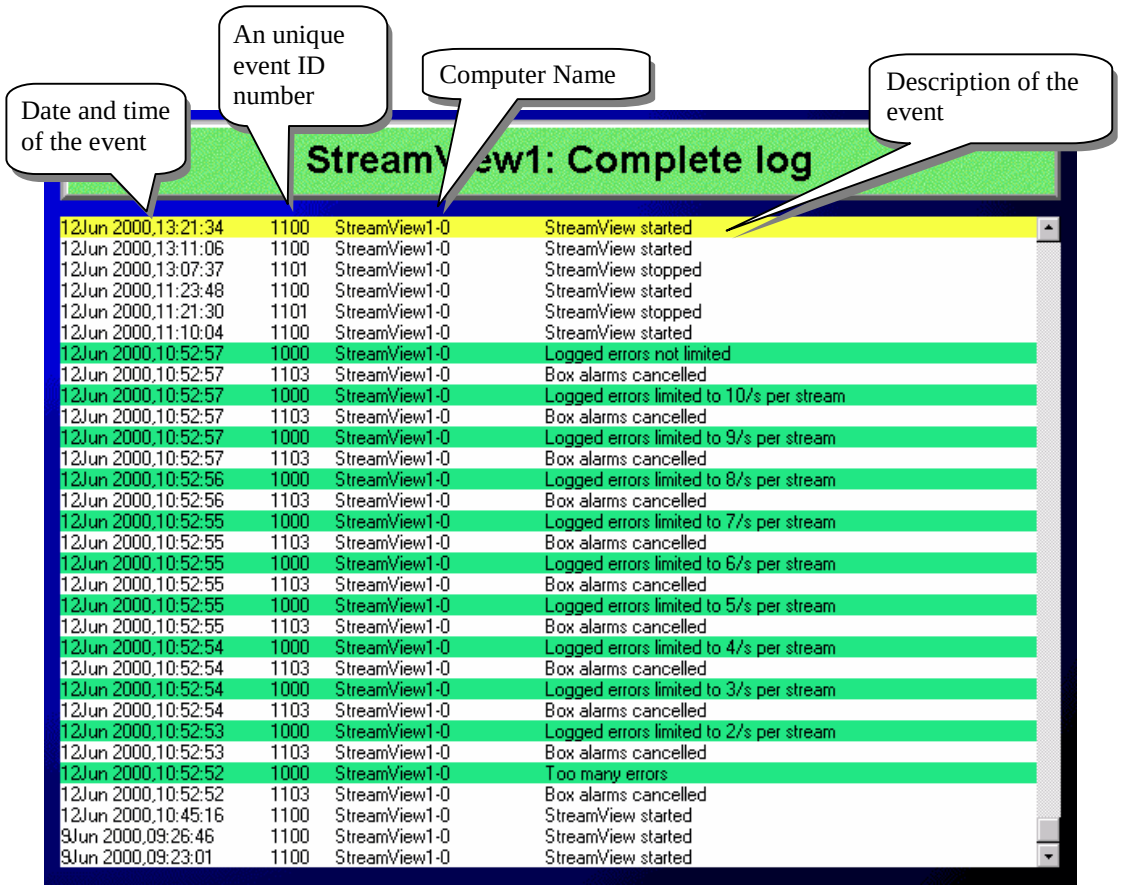
When an error is reported in the log file for any of these tests, additional information is also shown that allows a particular component of the test to be pinpointed (which fan has failed, what are the temperature values, which voltage rail is faulty etc.).

The alarms may be set/reset in exactly the same way as for the status screen. See the **Stream Information Screen** section earlier in this chapter.

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Log screen

This screen shows displays unit errors, i.e. Fan, Hard Disk, Temperature and DC Voltage. (To view a log file for a specific stream, refer to the **Stream Log screen**, page 3-34.)



Log screen

The log file contains the following information:

- The date and time the log entry was written into the file.
- A unique event ID number related to the type of error (see the Error Code Value tables in the Reference section).
- The Computer Name (StreamView1) - followed by a number (-0) which indicates that the errors shown are 'box-wide'.
- A description of the event.

To scroll through the log, first press the ↓ key. This will highlight the top line of the log, and at this point no new entries will be added to the view. The user can then navigate through the rest of the log using the ↑ and ↓ keys; the current line will be highlighted.

Since the log can contain a large volume of entries, the following key operations are available from this screen to allow easier navigation:

- Press the **SHIFT** and ↑ for page up.
- Press the **SHIFT** and ↓ for page down.

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- Press the **SHIFT** and ← to go to the top of the log. New entries will be added to the top of the log view as they occur.
- Press the **SHIFT** and → to go to the end of the log.

Colour Coding Errors

Errors of the same type can be colour-coded for easy recognition. Up to five colours can be allocated to different error-types (The colours will be re-used as new error types are identified.)

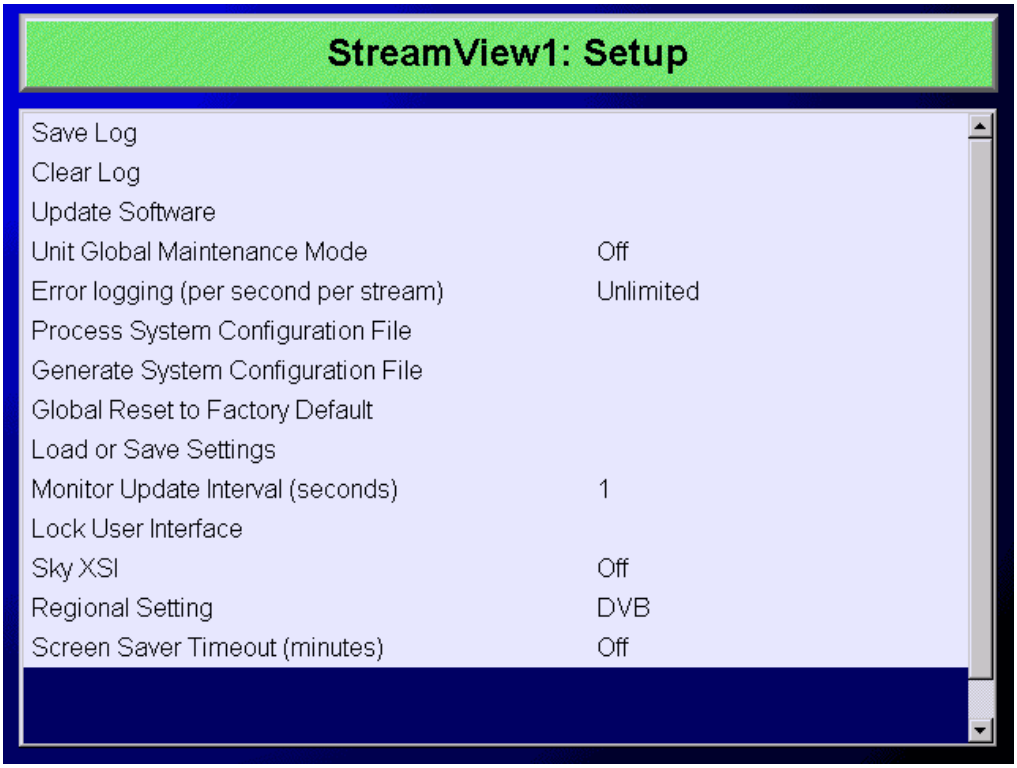
To colour-code an error type, highlight an error of the correct type using the navigation keys described above.

Press the **ENTER** key. All errors of the same type will be highlighted with one colour.

The colour-coding can be removed by highlighting one of the colour-coded errors and pressing the **ENTER** key.

Setup screen

This screen allows the user to perform some box-wide functions.



Setup screen

The following functions available on this page:

- Save Log allows the user to save the unit error log on to diskettes.
- Clear Log allows the user to clear the entire log.

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- Update Software allows the user to install new versions of the Stream View application.
- Put the whole unit into Maintenance Mode.
- Processing the System Configuration file.
- Generating a System Configuration.
- Global Reset to Factory Defaults.
- Loading or Saving Settings.
- Updating the Monitoring Interval.
- Locking the User Interface.
- Setting the DVB Region (DVB version only).
- Setting the Screen Saver Timeout.

Any of these functions can be initiated by first selecting the function using the ↑ and ↓ keys and then pressing the **ENTER** key. This either executes the function or toggles the setting. The user should then follow the instructions on the screen.

Save Log (Unit Errors) Function

This function saves the log of unit errors to a floppy disk as the compressed file A:\SVLOG.CS_. The user will be notified of the progress of the operation via a dialog box. It should be noted that the process of copying the log may take a significant amount of time.

In order to decompress the file, it must be transferred to a desktop PC that has the Expand utility (supplied on the Stream View installation CD-ROM) also installed on it.

To decompress the file, the user should perform the following operations:

1) Copy the compressed log file A:\SVLOG.CS_ from the floppy disk to the hard disk of another PC.
2) Start the MS-DOS Command Prompt (Start menu ➔ Command Prompt).
3) Change to the directory containing the log file.
4) Enter the command - **EXPAND_SVLOG.CS_SVLOG.CSV**

The compressed file SVLOG.CS_ is decompressed and written to the file SVLOG.CSV.

The EXPAND.EXE utility, which is used to decompress the compressed log file, is supplied on the installation CD-ROM. It can be installed on a desktop PC, with a CD-ROM drive, in the following manner:

1) Insert the CD-ROM in the drive.
2) The install program will run automatically.
3) Quit the installation program by clicking on the **CANCEL** option of the install dialog followed by clicking on the **EXIT SETUP** option of the next dialog box.
4) Double click on the MY COMPUTER icon on the desktop.

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5) Click with the right mouse button on the CD0ROM drive icon and select **Explore** (this will display the contents of the CD rather than running it).

6) Copy the **EXPAND.EXE** application into the WINDOWS directory (or any directory in your MSDOS path).

The uncompressed file is in comma-delimited format (CSV) which means that it can be read in a text editor, and also imported into spreadsheet and database applications for further analysis.

Each line in the file is in the format:

```
code,source,stream,date,time,state,text
```

and the fields are defined as follows :

Part	Meaning
Code	This is an 8 digit hexadecimal number. For example 12345678. The code values are listed in the *Reference* section of this User Guide.
Source	The source of the event which will normally be the UNC name (i.e. the Computer Name for the box).
Stream	0 (zero) for box wide error events (as described in *Status screen* section in this chapter) and 1,2,3 or 4 for specific individual stream events
Date	Date of the log entry. The date format is DD MMM YYYY
Time	Time of the log entry – shortly after the event occurred. Format for the time field is HH:MM:SS. (A decimal point and fractions of a second may be included in future releases.)
State	This is a hex number indicating the colour red, yellow or green. The values are 1000, 2000 or 3000 respectively. Hence, 1000 would indicate an error has started and the 2000 would indicate when the error has stopped.
Text	Free-format human-readable text enclosed in quotation marks. The maximum length of this field is 128 characters.

The following three pieces of information are written to the saved log file using the special code 99999999. The log entry format as described above is used except that the fields not applicable are left blank. The text in quotes is the actual text inserted into the saved log while the other entries are translated into actual values e.g. ‘Software Version Number’ will be a sequence of numbers depending on the actual version, ‘Date File Was Written’ will be converted into a date and so on.

99999999,,,Date File Was Written,,‘Saved Date’

99999999,,,, Time File Was Written,,‘Saved Time’

99999999,,,,,,‘ProductSuiteVersion’ Software Version Number

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Code values

The code values are used both by the interface (to identify errors) and by the log; the values are listed in the ***Reference*** section of this User Guide. The values shown are the first 4 digits of the 8-digit number. The other 4 digits hold extra information and are not necessary to process the log file. The code value is unique for each of the error types hence the start time and the end time of any particular error can be easily determined by sorting the data on this and the State fields.

Clear Log Function

This function allows the user to clear the entire log of all the entries.



Note: The log entries for *all* streams monitored will be deleted. It is not possible to undo this change.

The user will be prompted to ensure that he wants to take this action.

Update Software Function

Whenever Adherent issues new versions of the application software, this function allows the user to install this upgrade. See the **Software Installation** section in the **Installation** chapter for instructions on carrying out the upgrade.

Unit Global Maintenance Mode

This feature allows the user to put the whole unit into maintenance mode. Regardless of what alarm conditions are set for any of the tests, when the unit is in maintenance mode, no alarms are activated. However, the monitoring function continues and errors are logged in the log file. The action of user putting the unit in and out of maintenance mode is also logged in the log file.

Error Logging Speed

Errors that are detected are recorded in a log file on the hard disk. Streams that have a very large number of streams will cause a lot of information to be written to the hard disk. It is possible, under these circumstances, for the performance of the user interface to degrade and the response to key presses and screen updates slow down. This feature allows the user to restrict the number of errors per second written to the log file thereby ensuring the performance at the user interface is maintained.

It is important to note that although the errors over and above the rate specified in this setting are discarded, real time monitoring continues and the LEDs on the front panel and the alarm status are updated without loss of information and thus reflect the true status of the stream.

The user options for this field are variable rate settings from One to Ten errors/per second (per stream), All Errors to be logged, or No Errors (i.e. logging disabled).

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Process/Generate System Configuration File

The Stream View provides a large number of user variable parameters that offer maximum flexibility by allowing the system to be tuned to customer needs depending on the types of Transport Streams being monitored. However, providing this flexibility means that if there are a number of machines to set-up, or the user requires a number of different settings to be available for loading at different times, the manual-entry process can be very time consuming. The System Configuration File method of setting these parameters provides an easy mechanism to set-up a number of units. The System Configuration File is generated on a remote computer using a standard text editor; the file can then be processed by the Stream View to implement the parameters defined.



A System Configuration File Parser, shipped on the product CD-ROM, can be used to check the file syntax and format of the System Configuration File. This will ensure that there are no errors to be detected when the file is being processed on the Stream View unit itself (see below)

The menu item **Process Configuration File** will read and process the file named SV97001.INI from the diskette in the diskette drive. Note that if this command is executed from a remote machine (with the Remote software running), the file will be processed from a diskette in the local diskette drive of the remote machine. If the command was executed from the local machine (i.e. the Stream View), then the file will be processed from a diskette in the local diskette drive.

Under certain circumstances where the user has manually set-up a Stream View, and would then like to set-up other units to the same specification, the facility is available to re-generate the System Configuration File from the settings on the Stream View. The menu item **Generate System Configuration File** is used to carry out this operation. The generated file, named SV97001.INI, is in the same format as the System Configuration File format and can then be processed directly by other Stream View units. The file will be saved to a diskette in the diskette drive. Note, if this command is executed from a remote machine (with the Remote software running), then the file generated will be copied to a diskette in the local diskette drive of the remote machine. If the command was executed from the local machine (i.e. the Stream View), then the file generated will be copied to a diskette in the local diskette drive.

During normal operation, the Stream View uses a non-volatile working set of parameters. This working set defines the entire state of the unit. Any operation carried out by the user to change any parameter affects only this working set; the change can be made from the user interface or via the configuration file. When the System Configuration file is processed the parameters specified in the file are changed in the working set area. The **Generate System Configuration File** process will write the parameters from the working set area to the configuration file.

Details of the System Configuration file are given in the **Reference** section of this manual.

System Configuration File Parser

This System Configuration File Parser is a standalone utility (`CONFIGPARSER.EXE`) that runs under Windows 95/NT. It may be run directly from the installation CD-ROM or from the hard drive of a PC.

To load a configuration file into the parser, click on the **Select File** button on the main parser window and select the required file. The file will be verified and any errors or warnings displayed in the main window.

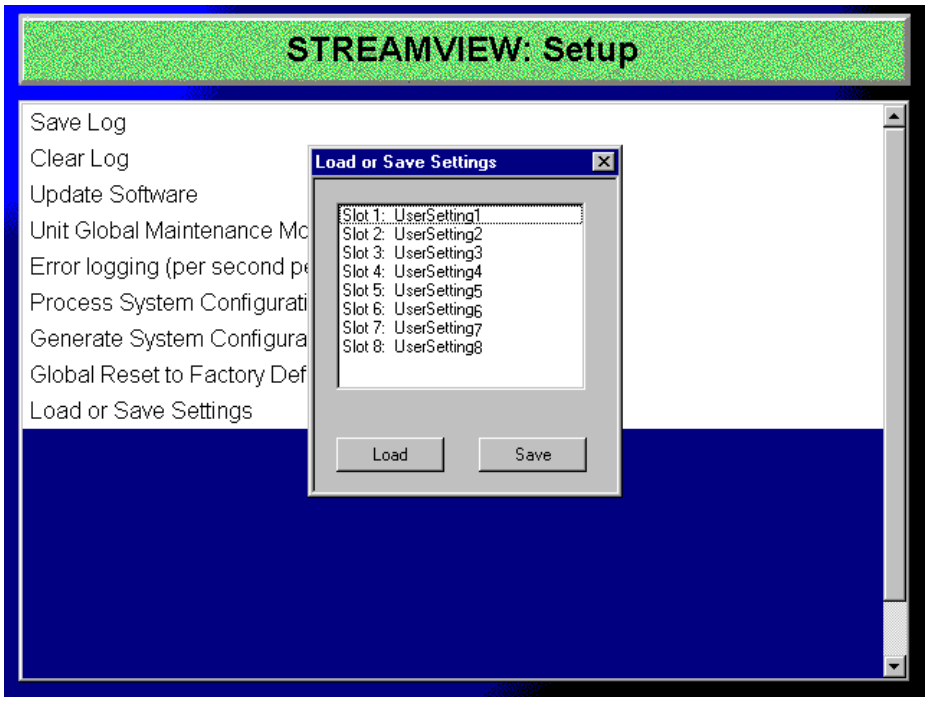
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Reset to Factory Defaults

When this option is initiated via the user interface, certain parameters will be reset back to the factory defaults. This affects the entire Stream View unit, that is, some box parameters and some of the parameters for *all* of the streams.

The specific parameters affected are listed in the table in the [Set to Factory Defaults] subsection of the System Configuration File; refer to the **Reference** section of this manual.

Load or Save Settings



Load or Save Settings dialog

The user can save and restore to and from the working set up to eight Stream View settings via this menu item. This feature provides a convenient way of saving and recalling the entire state of the unit.

Use the ↑ and ↓ arrow keys to select the file name to be used. Then use the **SHIFT** + ↑ and **SHIFT** + ↓ arrow keys to toggle between the **Save** and **Load** buttons; press the **ENTER** key to carry out the selected item.

Warning: Performing the Load function will restore the saved settings and overwrite the current working set. The restored values will become the new working set.

Monitor Update Interval

This feature sets the interval at which the user interface will poll for updated information.

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Lock User Interface

This locks the user interface so that all key presses are ignored. Once initiated, the software will revert to the Home Screen, and a message will be displayed indicating that the user interface is locked. The interface can be unlocked by invoking the keyboard sequence specified in the registry entry :

HKEY_LOCAL_MACHINE\SOFTWARE\Adherent\StreamManager\Settings\UnlockSequence

The sequence is a comma-delimited string of numbers which is loaded when the application first starts up. The numbers are mapped onto the keys in the following way.

SHIFT(1)		HOME(2)
	↑ (3)	
← (4)		→ (5)
	↓ (6)	
ESC(7)		ENTER(8)

If no sequence is defined in the registry, the default sequence '1, 3, 5, 7' (SHIFT, ↑, →, ESC) should be used to unlock the interface.

It should be noted that the sequence cannot be changed once the user interface application is running.

Sky XSI

Sky XSI tables and descriptors can be analysed correctly with this setting ON and the appropriate security permissions. Note that the setting will always revert to Off if the security permissions are not in place.
(For more information, contact Adherent or your local distributor)

Regional Setting

This feature is only available on the DVB version of Stream View. It determines the way in which the descriptors in the Structure View are interpreted, as some of them vary from region to region. The options are :

- DVB – default setting uses standard DVB interpretations of descriptors.
- DVB(DTG) – uses DVB and additional DTG interpretations
- DVB(Nordic) – uses DVB and additional Nordic interpretations
    - DVB(ARIB) – uses DVB and additional ARIB interpretations
- DVB(Aus) – uses DVB and Australian DTV interpretations.

Screen Saver Timeout

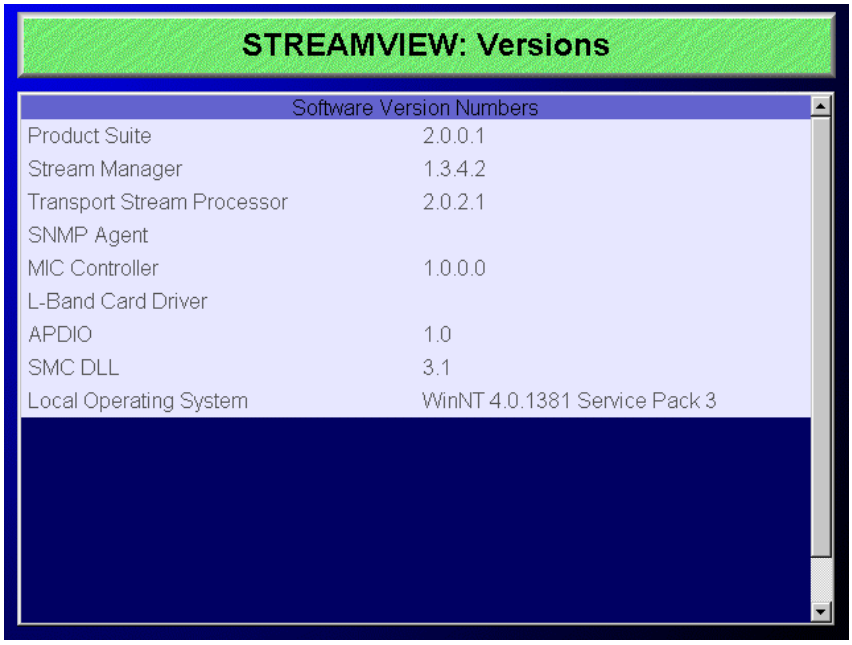
This feature allows a timeout to be set which specifies the amount of time after the last key is pressed before the screen saver is activated by shutting down the display. The display will be re-activated when the user presses any key.

The screen saver may be disabled by setting the value to Off.

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Versions screen

This screen shows versions of the various system software components that are installed on the unit. The first line, labelled **Product Suite**, shows the version number of the entire suite of software. Where there is no version number next to a module, then that module is not installed in this software release.



Software Versions screen

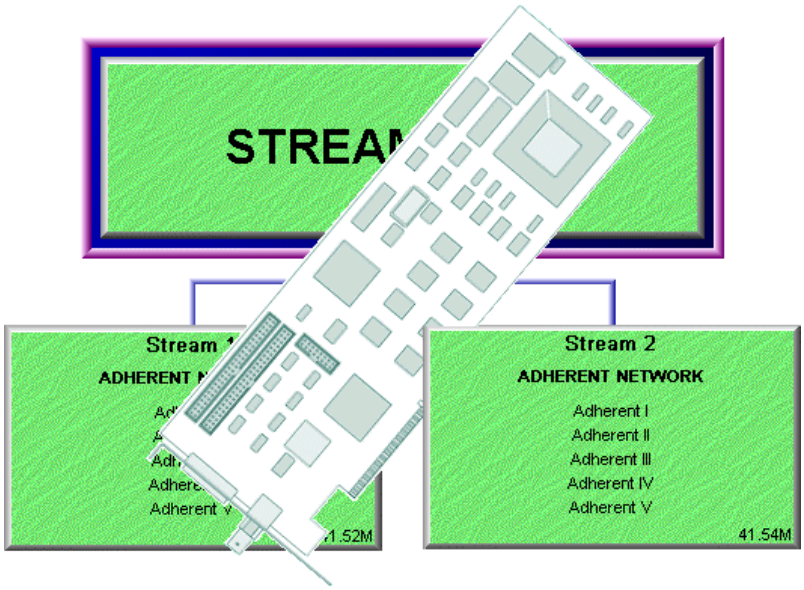
In the event that a customer needs to report a problem, then the version number of each of the modules should be noted before contacting the supplier or Adherent as this information will be required.

There are no user configurable settings on this screen.



Note: The information on this page should be noted down separately so that in the event of a fault that does not allow this screen to be accessed, the information is still available and can be supplied when reporting the fault.

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Interfaces

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Introduction

This section contains information about the different interface cards that are available for the Stream View as well as how these Interfaces are installed. The following Interface types are covered:

- DVB Parallel
- ASI
- ASI+
- G703
- G703+
- GPSI / GPSI MkII
- L-Band

All Interfaces connect to a MPEG-2 Interface Card (described later) and hence it is a common component.

A DVB Parallel interface option is provided directly by each MIC and hence no additional card is required. All the other interfaces are supplied as a separate card and the MIC card.

The interconnection between an Interface card and the MIC card is via two connectors. The first (a 14-way IDC connector) transfers all data transfer from the Interface card to the Interface card. The second (a 50-way IDC connector) facilitates all control signal transfers to and from the MIC card.

Interface cards are installed in spare expansion slots (7 to 10) and connected to the MIC card via the ribbon cables supplied with each card.

Connectors and cables

In order to meet the EMC specification, all cables used to connect signals to the Stream View should be shielded and terminated with connectors with their shells properly connected to the cable shield. See the appropriate section for a specification on cable and connector types to be used with a particular type of interface.



The signal cable must not be directly connected to equipment with a potentially different chassis voltage, such as apparatus in a different building, or to apparatus connected to an electrical supply originating from a different phase.

DVB Parallel Output

For each Interface card installed (regardless of the type), the Stream View provides a DVB Parallel output interface on the rear of the unit via a 25-way D-Type connector. This output loops through the incoming stream data which allows the output to be connected to other external equipment. This output is available in addition to any outputs that may be available on the Interface card itself (see the Interface card specifications to determine if an output is provided). The DVB Parallel output is available directly from the MIC card and is installed as part of a new Interface installation.

The DVB parallel output is provided on a 25-way D-type connector on the rear panel of the unit and conforms to document ISO 2110 (1989)

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Signal Specification

The output signal specification is as follows:

Typical signal level: 600mV (differential) into 100Ω

Maximum signal level: 5V (differential)

Electrical interfaces for this connector conform with EN50083-9 March 1997, *Interfaces for CATV/SMATV Headends and similar Professional Equipment*. The following table details the connector signals:

Pin	**Function**	Pin	**Function**
1	Clock A	14	Clock B
2	System Ground	15	System Ground
3	Data 7A (MSB)	16	Data 7B
4	Data 6A	17	Data 6B
5	Data 5A	18	Data 5B
6	Data 4A	19	Data 4B
7	Data 3A	20	Data 3B
8	Data 2A	21	Data 2B
9	Data 1A	22	Data 1B
10	Data 0A	23	Data 0B
11	DVALID A	24	DVALID B
12	PSYNC A	25	PSYNC B
13	System Ground		

DVB Parallel interface connector pinout

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Installing Interfaces

Safety procedures

It is very important to understand and observe the following safety procedures before opening the Stream View in order to avoid personal injury or damage to the Stream View itself.

Electric shock



Do not operate the Stream View without all the covers and panels in place. Failure to observe this precaution may result in injury or death from electric shock.

Weight



The Stream View weighs around 18kg, and will need to be moved between floor, workbenches and racks during installation. Take care when moving and lifting the unit – it is advisable for this to be carried out by two people.

Static



There are many static-sensitive components within the Stream View box and on the MIC and interface cards. Failure to observe standard antistatic precautions could permanently damage the hardware. When opening the Stream View box, or touching any of the cards, always wear an earthing bracelet properly connected to a ground point.

Preparing to Install New Interfaces

You will need to carry out the following basis preparatory steps in order to install your new interface:

Identify exactly where the components are going to be installed inside the unit.

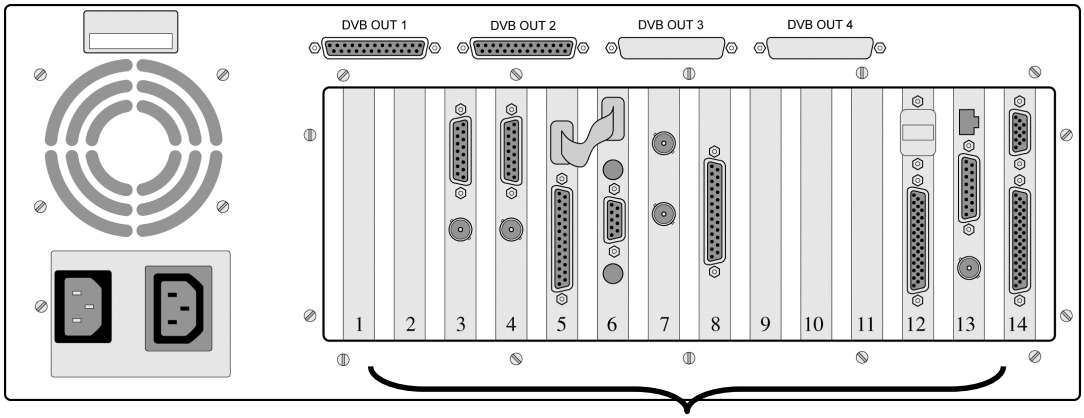
Make the unit safe in order to gain access.

This section describes these initial preparations.

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Choosing Where to Install the Components

For each interface installation, you will need to install a MIC card, the interface and the DVB Parallel output connector. Below is the picture of the rear panel of the Stream View which has already been discussed in the **Installation** chapter.



Slots 1-14

There are four 25-way D-Type connectors (marked **DVB OUT 1**, **DVB OUT 2**, **DVB OUT 3**, and **DVB OUT 4** on the above diagram) which provide the DVB Parallel Output signal for each of the streams being monitored.

You should install the additional MIC and the Interface in the unoccupied slots closest to the CPU card. Thus, MIC card should be fitted in the highest-numbered unoccupied slots (from slots 1 to 4), and interface card should be fitted in the lowest-numbered unoccupied slot (from slots 7 to 10). This allows the interconnecting cables to lie easily over the top of the other cards in between. Hence the slot pairs are 4 & 7, 3 & 8, 2 & 9 and 1 & 10. The cables supplied with the Interface card will be different in length depending on the next available slot pair. You will need to supply this information to your supplier when ordering additional monitoring points for the unit.

You should also identify the next free DVB OUT socket so that the 25-way D-Type DVB Parallel output port can be installed.

In the example above, two interfaces are already installed in slot pairs 4 & 7 and 3 & 8. Slot 7 has an ASI interface installed and slot 8 has DVB Parallel Input interface installed. DVB OUT 1 and DVB OUT 2 connectors are also occupied as they carry the DVB Parallel output signals for the ASI and DVB Parallel Input interfaces respectively.

In this example, the next free slot pair is 2 & 9. Therefore, the MIC Card will be installed in slot 2, the Interface component in slot 9 and the DVB Parallel output would be installed in the blank position marked DVB OUT 3.

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Opening the Stream View

In order to install a new interface, access is required to inside of the unit. Ensure that the safety procedures detailed above have been properly taken into account.

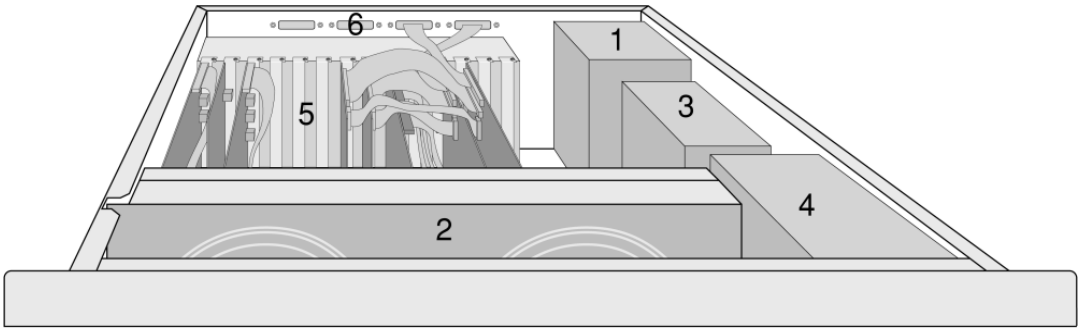
Shutdown the unit safely and remove power. Unplug all other cables connected to the unit.

Remove the Stream View from the rack system (if necessary) and place on a suitable anti-static equipped workbench.

Using a 4mm-crosshead screwdriver, loosen (do not remove) the 28 screws on the top panel and remove it by sliding it back and up.

You are now ready to start the installation procedure. Refer to the appropriate Interface section for instructions on how to complete the installation.

The simplified diagram below shows the main components inside the Stream View:



Inside the Stream View

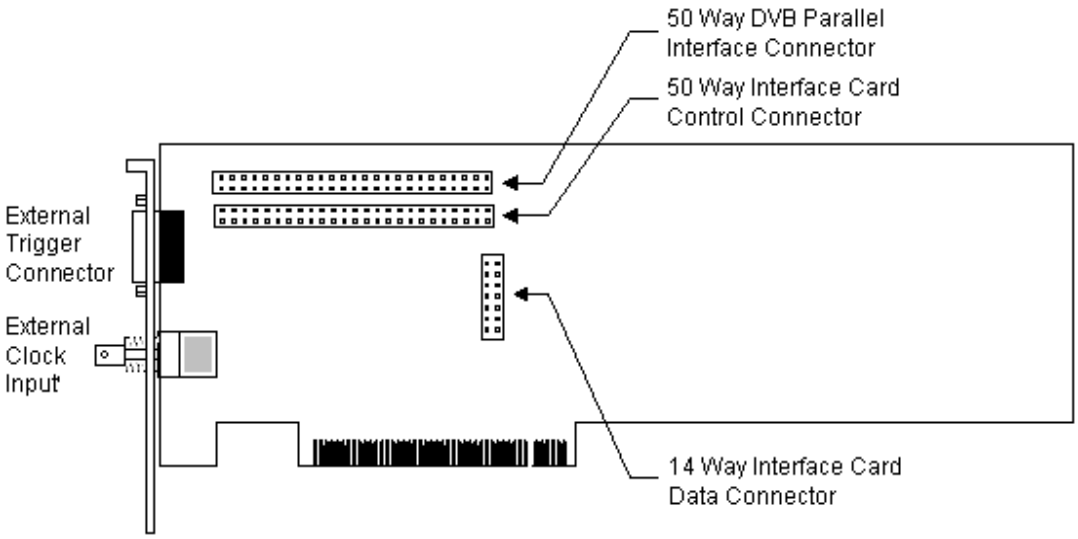
The principal components are as follows:

Component	Description
1	Mains power supply unit.
2	Fan assembly.
3	Hard drive.
4	CD-ROM drive and floppy drive.
5	PCI/ISA slots for various cards.
6	DVB output socket slots.

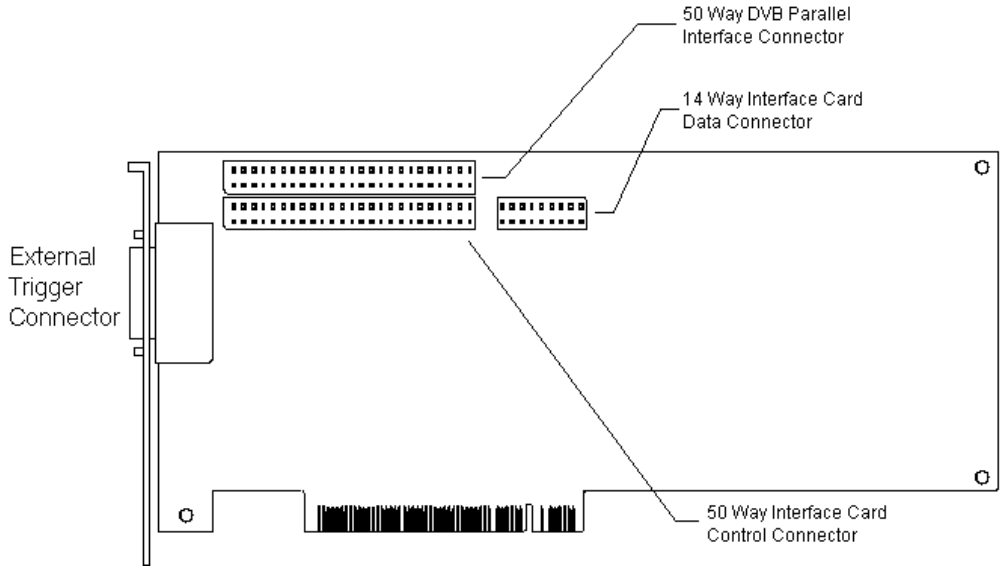
Stream View principal components

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MPEG-2 Interface Card (MIC)



MIC V1.0 card ribbon cable connector sockets



MIC V1.1 card ribbon cable connector sockets

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Functional Overview

The MPEG-2 Interface Card (MIC) forms the (hardware) core of the system working in conjunction with the software application suite provided on Stream View. One of these cards must be present for each stream being monitored and is the common component to all Interface options. It pre-processes the data from the interface cards or the DVB parallel input so that Stream View's application software can analyse it.

No connections should be made to the D-type and the BNC connectors on the endplate.

There are three connectors on the MIC card that are used to connect to other interfaces. These are identified in the picture above. They are:

50-way DVB Parallel Interface connector. This IDC connector provides interface for both DVB Parallel input and output directly.

50-way Interface Card Control connector. This IDC connector connects to an Interface card and provides various control signals.

14-way Interface Card Data connector. This IDC connector connects to an Interface card to provide transfer of data from the Interface card to the MIC card.

DVB Parallel Synchronous interface

Unlike other interface configurations, the DVB Parallel interface only requires a MIC card to be installed in the Stream View i.e. no additional Interface cards are necessary. The DVB input is fed directly into the MIC card.

Signal Specification

The following is the signal specification:

Min. signal level:	200mV (differential)
Max. signal level:	5V (differential)
Impedance:	100Ω

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Connectors and Cables

The 25-way D-type connectors for this cable should be bright tin plating and dimpled with a solder lug attached to the shell which should be connected to the cable screen. The shells for the connectors should be made from metal or metallised plastic and of a type which has a proper provision for allowing a secure connection to the cable screen at the cable entry point.

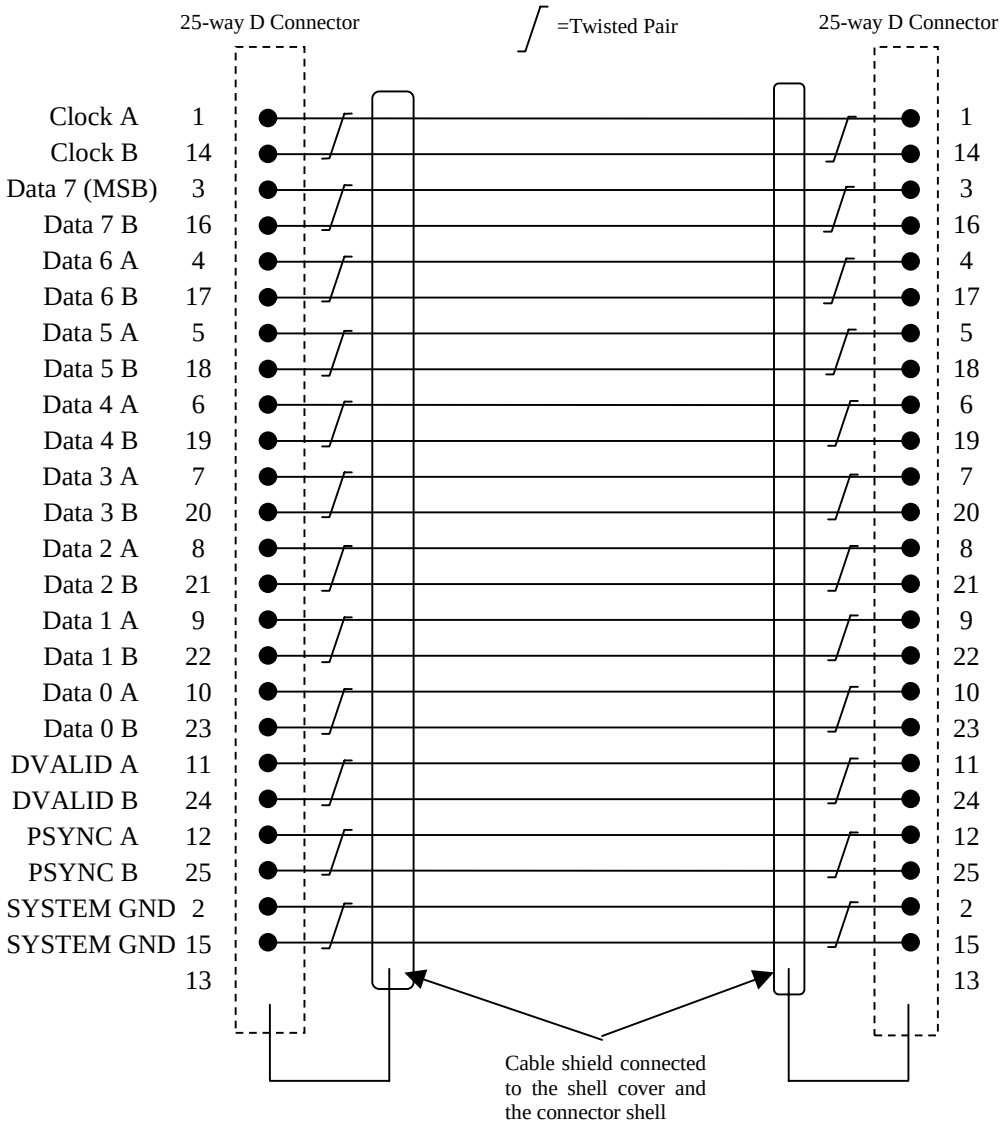
Electrical interfaces for this connector conform with EN50083-9 March 1997, *Interfaces for CATV/SMATV Headends and similar Professional Equipment*. The following table details the connector signals:

Pin	Function	Pin	Function
1	Clock A	14	Clock B
2	System Ground	15	System Ground
3	Data 7A (MSB)	16	Data 7B
4	Data 6A	17	Data 6B
5	Data 5A	18	Data 5B
6	Data 4A	19	Data 4B
7	Data 3A	20	Data 3B
8	Data 2A	21	Data 2B
9	Data 1A	22	Data 1B
10	Data 0A	23	Data 0B
11	DVALID A	24	DVALID B
12	PSYNC A	25	PSYNC B
13	System Ground		

DVB Parallel interface connector pinout

The cable should be 12 twisted pairs 28AWG (7/36), double shielded type suitable for high performance parallel data transmission. The nominal differential impedance should be 100Ω. The connections are as follows:

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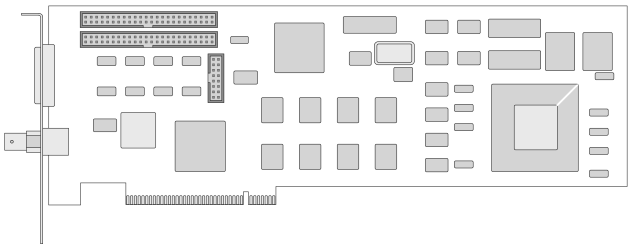
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DVB Interface Installation

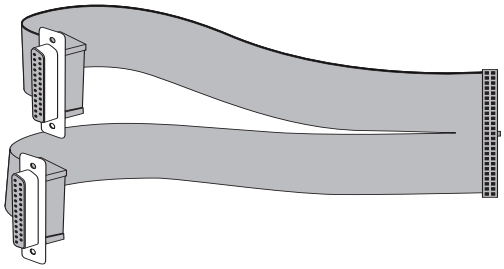
If your new transport stream is DVB parallel format, you do not need to install an interface card. You need only install a MIC card and a split-ribbon connector, as described below.

The following items should be supplied:

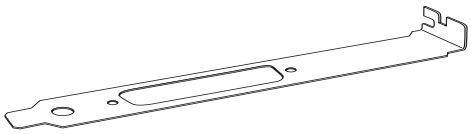
- 1 off MIC Card



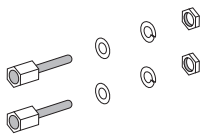
- 1 off Interface Cable



- 1 off Input End Plate



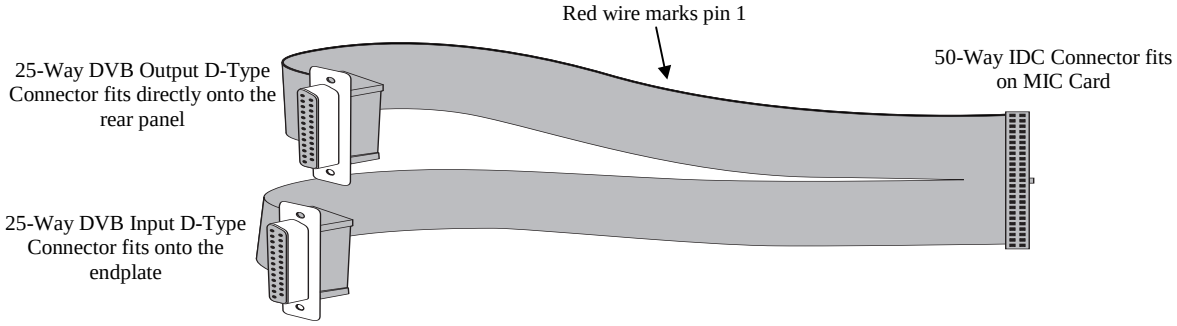
- 4 sets off 4/40UNC Screw Lock (Each set contains a screw, a plain washer, a spring washer and a nut – 2 sets shown in the diagram)



- 1 off tie-wrap



The Interface cable supplied has certain key components which are identified in the following diagram:



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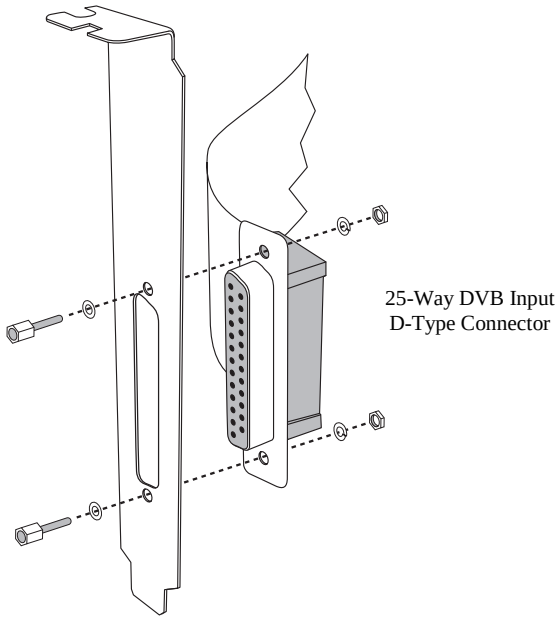
All the connectors that plug into the internal cards are keyed so can only fit into the socket the correct way around.



IMPORTANT: These components are susceptible to damage from Electrostatic discharges. Make sure you do not touch the gold edge connectors on the cards with your fingers. You may leave grease marks causing a bad connection, or send a static surge through the circuitry causing permanent damage to the card. Appropriate anti-static precautions must be taken when handling these components.

Follow the instructions below to install a DVB parallel interface:

1. Identify the next free slots for the components to be installed as described in the *Choosing Where to Install the Components* section above.
2. Gain access to the inside of the unit as described in *Opening the Stream View* section above.
3. Remove the blanking plates from the two slots which will hold the MIC card and the Interface option. Keep the screws removed – you will need them later.
4. Remove the blanking plate from the cutout on the rear panel that will take the 25-way DVB Parallel output connector.
5. Using 2 sets of the 4/40 UNC Screw locks, fix the 25-way D-TYPE DVB Input connector on the Interface cable to the end plate.



6. Plug the 50-way IDC connector on the Interface Cable into the 50-way IDC DVB Parallel connector on the MIC card.
7. Insert the MIC card into its identified slot, pushing it home until the edge connectors are fully inserted in the PCI bus connector. Fasten the card with the securing screw.
8. Using the remaining 2 sets of screw locks, fasten the remaining 25-way D-type connector on the Interface Cable to the DVB Parallel Output port already identified. Fold the excess cable and tie up with the tie-wrap supplied.

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9. Screw the end plate (prepared in step 5) into the slot identified for the Interface option. Ensure the cables are routed tidily in the process.

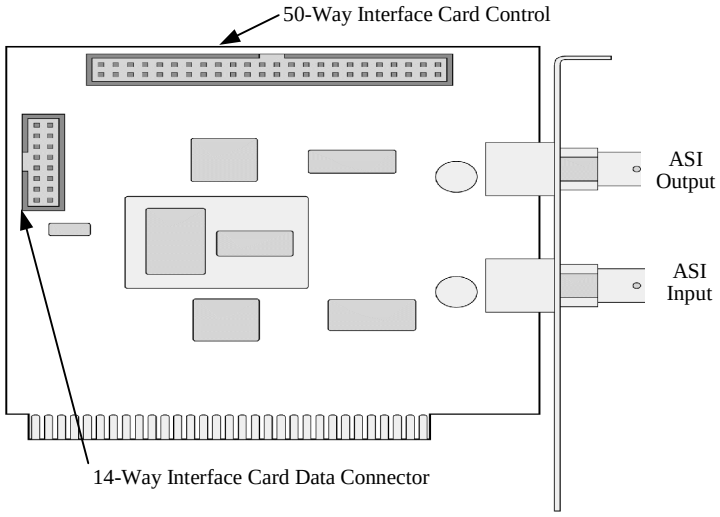
10. Replace the top panel of the Stream View box and do up the screws with the crosshead screwdriver.

11. Replace the Stream View box into the rack system (if necessary) and connect up all the cables (power and signals).

12. Power up the unit. On boot-up, the Stream View will automatically detect and select the additional interface. An additional Stream monitoring box will be added to the Home page screen and the interface type will be displayed on the Config page under that stream menu. See the **Operations** chapter. Verify that the software displays both these items. If the additional components have not been recognised, re-check the installation. Check that cards are seated properly in their sockets and that the right cables are connected to the right connectors. If problems persist, contact your supplier.

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ASI Interface Card



Asynchronous Serial Interface (ASI) card

Functional overview

The Asynchronous Serial Interface (ASI) daughter card allows connection to equipment with an interface compliant with the DVB Asynchronous Serial Interface as defined in DVB document A010 (*Interfaces for CATV/SMATV Headends and Similar professional equipment*). The ASI is a fixed rate data stream operating at 270 Mbit/s. The incoming ASI stream is looped through to the ASI output.

Signal specification

Output Signal level:	800mV p-p ±10% into 75Ω
Output impedance:	75Ω ±5%
Output type:	Transformer coupled (i.e. DC blocked)
Output signal jitter:	less than 10%
Maximum input signal:	2V p-p
Minimum input signal:	200mV p-p
Input impedance:	75Ω ±5%
Maximum DC voltage allowed on input (cable inner OR cable outer):	0V DC (w.r.t. chassis)

Connectors and Cables

Use 75Ω BNC connectors with silver or nickel-plated body for the this cable. The cable should also be 75Ω , single copper conductor 1/0.6mm, double screened with a capacitance of 68pF/m or better and attenuation of 1dB or better at 1MHz. The shield should be connected properly to the connector housing.

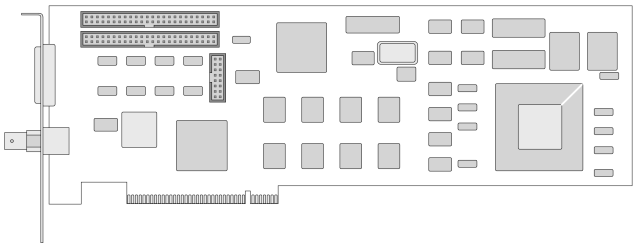
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ASI Card Interface Installation

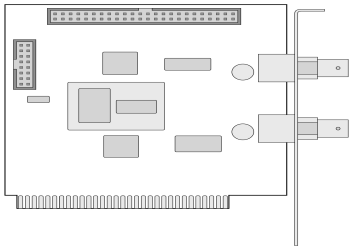
This installation will consist of installing the ASI Interface card, a MIC card and connecting these two cards with interconnecting cables.

The following items should be supplied:

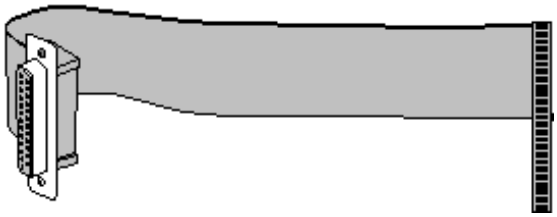
- 1 off MIC Card



- 1 off ASI Interface Card



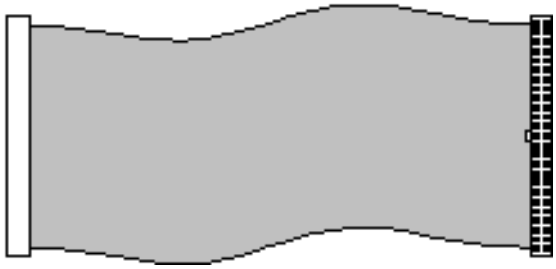
- 1 off DVB Output Interface Cable



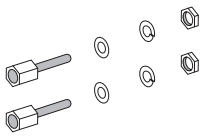
- 1 off Interface Card Data Cable



- 1 off Interface Card Control Cable



- 2 sets off 4/40UNC Screw Lock (Each set contains a screw, a plain washer, a spring washer and a nut – 2 sets shown in the diagram)



- 2 off nuts for BNC connectors

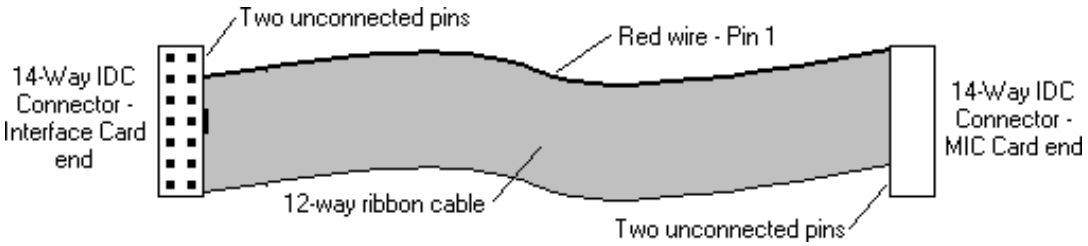


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- 1 off tie-wrap



The Interface Data cable is a special cable consisting of a 12-way ribbon cable terminated with 14-way IDC connectors at each end. This means that two of the pins on the IDC connectors are not connected. It is important that this cable is plugged in correctly. The following diagram shows the cable and identifies some key features:



All the connectors that plug into the internal cards are keyed so can only fit into the socket the correct way around.

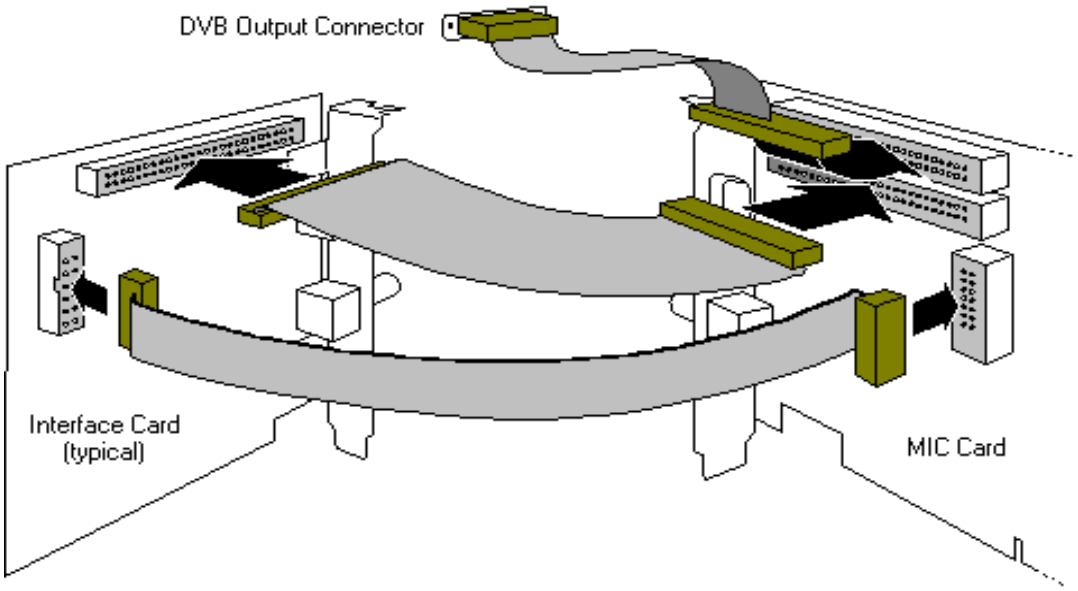


IMPORTANT: These components are susceptible to damage from Electrostatic discharges. Make sure you do not touch the gold edge connectors on the cards with your fingers. You may leave grease marks causing a bad connection, or send a static surge through the circuitry causing permanent damage to the card. Appropriate anti-static precautions must be taken when handling these components.

Follow the instructions below to install the interface:

1. Identify the next free slots for the components to be installed as described in the *Choosing Where to Install the Components* section above.
2. Gain access to the inside of the unit as described in *Opening the Stream View* section above.
3. Remove the blanking plates from the two slots that will hold the MIC card and the interface card. Keep the screws removed – you will need them later.
4. Remove the blanking plate from the cut-out on the rear panel that will take the 25-way DVB Parallel output connector.
5. Plug in the 3 cables supplied (DVB Parallel Output Interface cable, Interface Card Data cable and the Interface Card Control cable) into the MIC card only at this stage. See the following diagram showing where all the cables are plugged.

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6. Insert the MIC card into its identified slot, pushing it home until the edge connectors are fully inserted in the PCI bus connector. Fasten the card with the securing screw.

7. Using the 2 sets of screw locks, fasten the remaining 25-way D-type connector on the DVB parallel Output Interface Cable to the DVB Parallel Output port already identified. Fold the excess cable and tie up with the tie-wrap supplied.

8. Plug the other ends of the 50-way and the 12-way (with 14-way IDC connectors) interface card cables from the MIC card into the 50-way and 14-way IDC connectors on the Interface card.

9. Insert the Interface card into its slot (identified earlier), pushing it home until the edge connectors are fully inserted in the ISA bus connector. Ensure the cables are routed tidily in the process. Fasten the card with the securing screw.

10. Screw the two large nuts supplied onto the two BNC connectors on the Interface card from the rear of the unit. Tighten these securely. These ensure a good ground bonding between the BNC connector shells and the unit chassis.

11. Replace the top panel of the Stream View box and do up the screws with the crosshead screwdriver.

12. Replace the Stream View box into the rack system, if necessary, and connect up all the cables (power and signals).

13. Power up the unit. No further action is required by the user to set-up the interface card. On boot-up, the Stream View will automatically detect and select the additional interface. An additional Stream monitoring box will be added to the Home page screen and the interface type will be displayed on the Config page under that stream menu. See the **Operations** chapter. Verify that the software displays both these items. If the additional components have not been recognised, re-check the installation. Check that cards are seated properly in their sockets and that the right cables are connected to the right connectors. If problems persist, contact your supplier.

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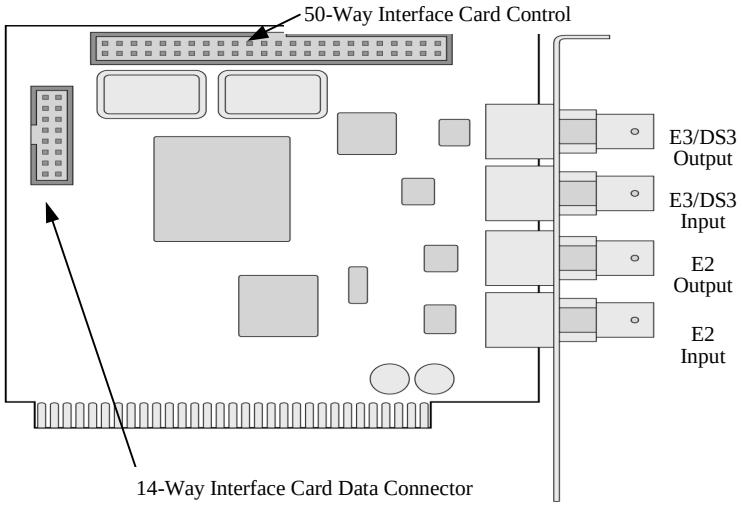
ASI+ Interface Card

The ASI+ Interface Card supports both ASI and DiviCom proprietary M2S interfaces. When used with the Stream View, the input can receive either ASI or M2S signals and the signal type will be automatically recognised and decoded without the user being required to select a specific option. The ASI specification is exactly that of the ASI Interface Card described earlier in this chapter.

For installation and connection details, refer to the ASI Interface Card section; substitute ASI+ for ASI in that section.

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G703 E2/E3/DS3 Interface Card



G703 E2/E3/DS3 interface card

Functional Overview

The G703 Interface card allows connection to equipment with an unframed G703 interface at bitrates of 8.448, and 34 and 45 Mbit/s. This card DOES NOT support framed or interleaved G703 at this time. There are two variants of the card supporting bitrates as defined below:

- 8.448/34.368 Mbit/s (E2/E3)
- 8.448/44.736 Mbit/s (E2/DS3)

Which Interface card has been dispatched/fitted will depend on that ordered.

E2 Port Signal specifications

Coding:	HDB3
Signal Levels Compliant with ITU (CCITT) recommendation G.703	
Frequency Reference:	8.448 MHz ±30ppm
Input and Output Impedance:	75Ω ±5%
Nominal peak output voltage (into 75Ω):	±2.73V ±10%

E3 Port (Option) Signal specifications

Coding:	HDB3
Signal Levels Compliant with ITU (CCITT) recommendation G.703	
Frequency Reference:	34.368 MHz ±20ppm
Input and Output Impedance:	75Ω ±5%
Nominal peak output voltage (into 75Ω):	±1V ±10%

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DS3 Port (Option) Signal specifications

Coding: B3Zs

Signal Levels Compliant with ITU (CCITT) recommendation G.703

Frequency Reference: 44.736 MHz ±20ppm

Input and Output Impedance: 75Ω ±5%

Connectors and Cables

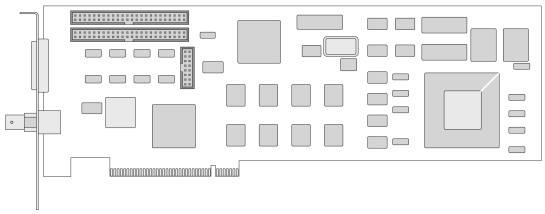
Use 75Ω BNC connectors with silver or nickel plated body for the this cable. The cable should also be 75Ω , single copper conductor 1/0.6mm, double screened with a capacitance of 68pF/m or better and attenuation of 1dB or better at 1MHz. The shield should be connected properly to the connector housing.

G703 Card Interface Installation

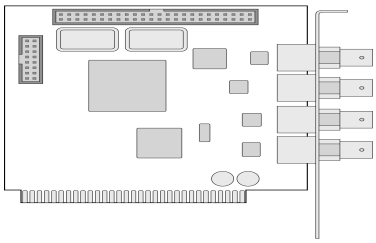
This installation will consist of installing the G703 Interface card, a MIC card and connecting these two cards with interconnecting cables.

The following items should be supplied:

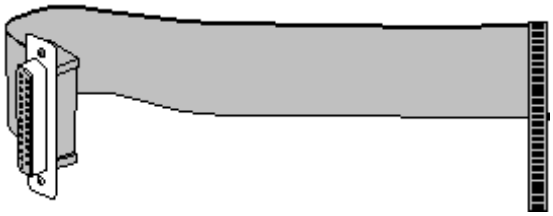
- 1 off MIC Card



- 1 off G703 Card



- 1 off DVB Output Interface Cable

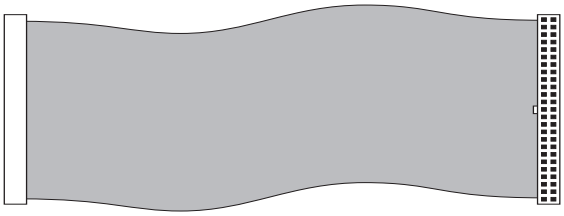


- 1 off Interface Card Data Cable

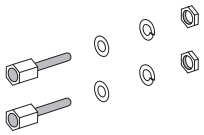


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- 1 off Interface Card Control Cable



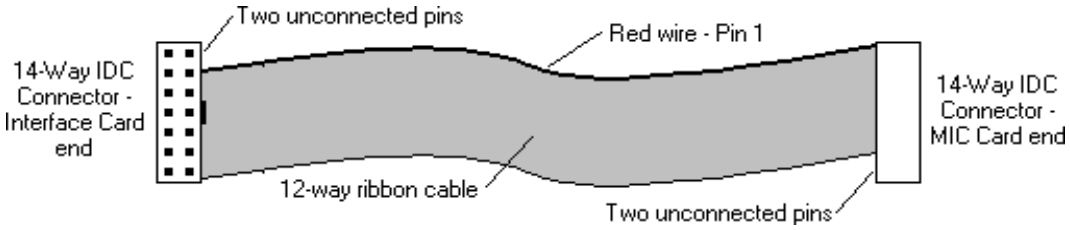
- 2 sets off 4/40UNC Screw Lock (Each set contains a screw, a plain washer, a spring washer and a nut – 2 sets shown in the diagram)



- 1 off tie-wrap



The Interface Data cable is a special cable consisting of a 12-way ribbon cable terminated with 14-way IDC connectors at each end. This means that two of the pins on the IDC connectors are not connected. It is important that this cable is plugged in correctly. The following diagram shows the cable and identifies some key features:



All the connectors that plug into the internal cards are keyed so can only fit into the socket the correct way around.



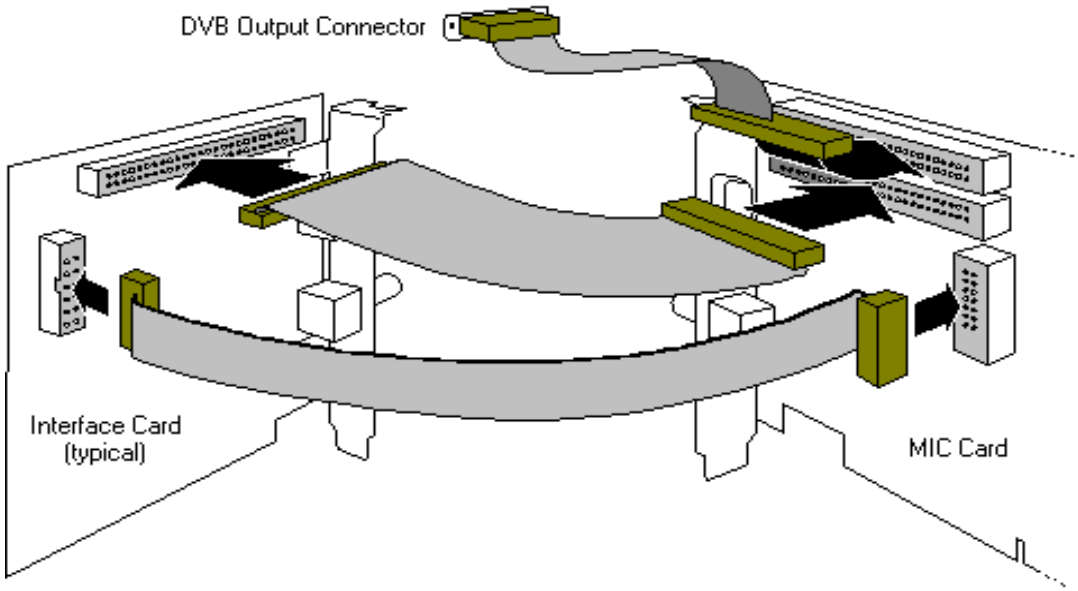
IMPORTANT: These components are susceptible to damage from Electrostatic discharges. Make sure you do not touch the gold edge connectors on the cards with your fingers. You may leave grease marks causing a bad connection, or send a static surge through the circuitry causing permanent damage to the card. Appropriate anti-static precautions must be taken when handling these components.

Follow the instructions below to install the interface:

1. Identify the next free slots for the components to be installed as described in the *Choosing Where to Install the Components* section above.
2. Gain access to the inside of the unit as described in *Opening the Stream View* section above.
3. Remove the blanking plates from the two slots which will hold the MIC card and the interface card. Keep the screws removed – you will need them later.
4. Remove the blanking plate from the cut-out on the rear panel that will take the 25-way DVB Parallel output connector.

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5. Plug in the 3 cables supplied (DVB Parallel Output Interface cable, Interface Card Data cable and the Interface Card Control cable) into the MIC card only at this stage. See the following diagram showing where all the cables are plugged.



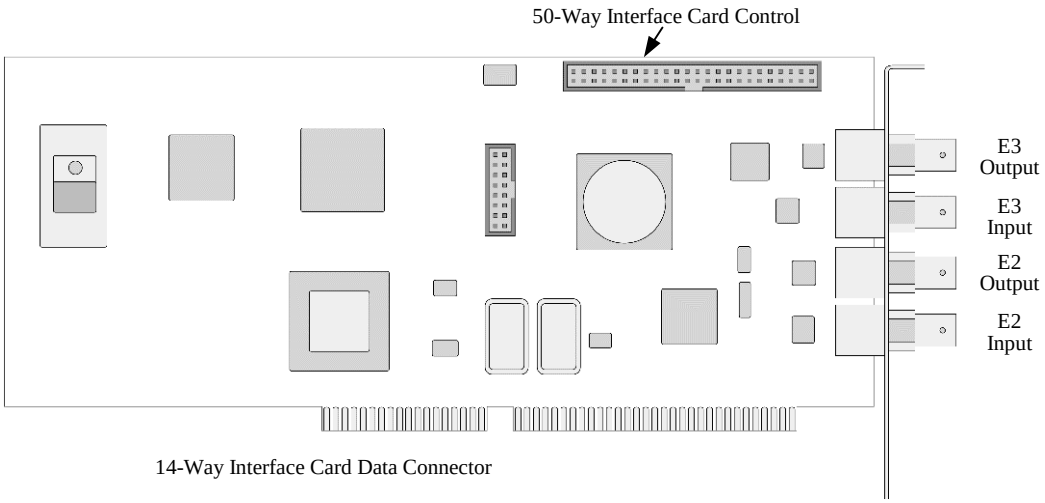
6. Insert the MIC card into its slot (identified earlier), pushing it home until the edge connectors are fully inserted in the PCI bus connector. Fasten the card with the securing screw.
7. Using the 2 sets of screw locks, fasten the remaining 25-way D-type connector on the DVB parallel Output Interface Cable to the DVB Parallel Output port already identified. Fold the excess cable and tie up with the tie-wrap supplied.
8. Plug the other ends of the 50-way and the 12-way (with 14-way IDC connectors) interface card cables from the MIC card into the 50-way and 14-way IDC connectors on the Interface card.
9. Insert the Interface card into its slot (identified earlier), pushing it home until the edge connectors are fully inserted in the ISA bus connector. Ensure the cables are routed tidily in the process. Fasten the card with the securing screw.
10. Screw the four large nuts supplied onto the four BNC connectors on the Interface card from the rear of the unit. Tighten these securely. These ensure a good ground bonding between the BCN connector shells and the unit chassis.
11. Replace the top panel of the Stream View box and do up the screws with the crosshead screwdriver.
12. Replace the Stream View box into the rack system, if necessary, and connect up all the cables (power and signals).

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13. Power up the unit. No further action is required by the user to set-up the interface card. On boot-up, the Stream View will automatically detect and select the additional interface. An additional Stream monitoring box will be added to the Home page screen and the interface type will be displayed on the Config page under that stream menu. See the Operations chapter. Verify that the software displays both these items. If the additional components have not been recognised, re-check the installation. Check that cards are seated properly in their sockets and that the right cables are connected to the right connectors. If problems persist, contact your supplier.

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G703+ E2/E3 Interface Card



G703+ E2/E3 interface card

Functional Overview

The G703+ Interface daughter board allows connection to equipment with an unframed G703 interface at bitrates of 8.448 and 34 Mbit/sec.

Real time Reed Solomon encoding/decoding (204, 188, T=8 to CCIR 723) is provided in hardware for all interfaces. When Reed Solomon coding is used the interleaving and framing specified in ETS300 421 is applied. This card does not support DS3.

Transmission and reception occurs on a half-duplex basis. Transmission can be synchronised with the internal high stability reference clock (±20 ppm) or to the network clock attached to the receive G703 port.

Process Definition

Reed Solomon 204, 188, T=8 encoding/decoding to CCIR723

Interleaving/de-interleaving as specified in ETS 300 421

Scrambling/de-scrambling as specified in ETS 300 421

E2 Port Signal specifications

Coding:	HDB3
Signal Levels Compliant with ITU (CCITT) recommendation G.703	
Frequency Reference:	8.448 MHz ±30ppm
Input and Output Impedance:	75Ω ±5%
Nominal peak output voltage (into 75Ω):	±2.73V ±10%

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E3 Port Signal specifications

Coding:	HDB3
Signal Levels Compliant with ITU (CCITT) recommendation G.703	
Frequency Reference:	34.368 MHz ±20ppm
Input and Output Impedance:	75Ω ±5%
Nominal peak output voltage (into 75Ω):	±1V ±10%

Connectors and Cables

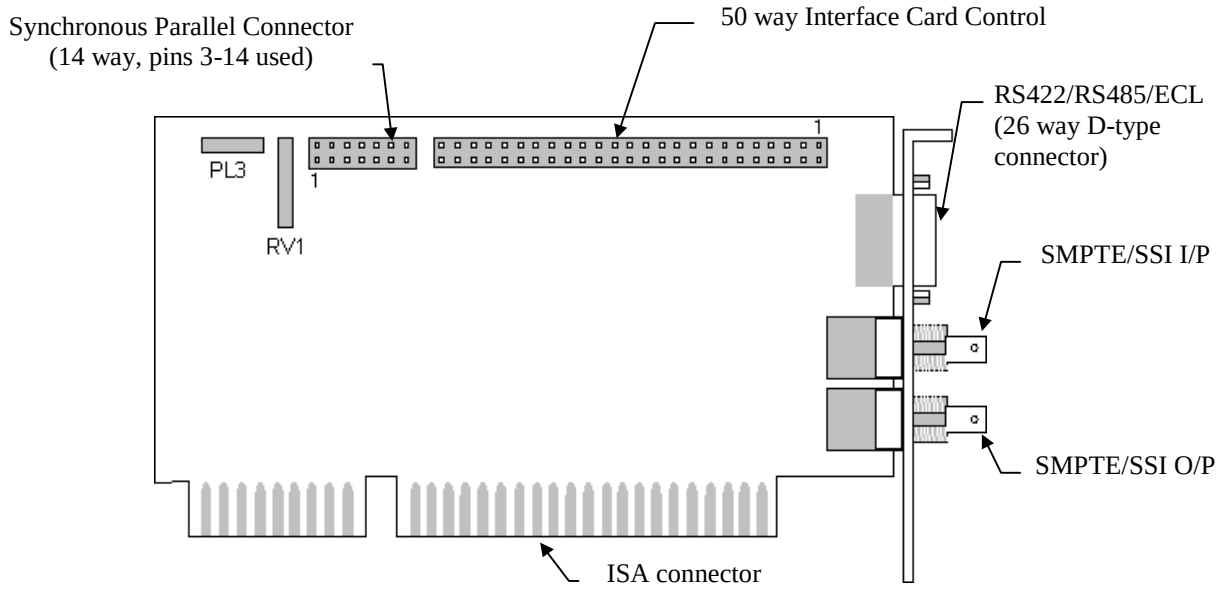
Use 75Ω BNC connectors with silver or nickel plated body for the this cable. The cable should also be 75Ω , single copper conductor 1/0.6mm, double screened with a capacitance of 68pF/m or better and attenuation of 1dB or better at 1MHz. The shield should be connected properly to the connector housing.

G703+ Card Interface Installation

Follow the installation instructions for the G703 card. Instead of the G703 card, you will receive the G703+ card. All other delivered items remain the same.

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GPSI Interface Card



Note that the data IN and OUT connectors are described with respect to the GPSI adapter i.e. GPSI OUT acts as a signal source from the adapter.

Functional Overview

The General Purpose Serial Interface (GPSI) daughter card is a multiple interface, general input/output card.

The General Purpose Serial Interface (GPSI) daughter card allows connection to a broad range of ATSC and DVB equipment where a high-speed (19.39Mbit/s) SMPTE 310M serial interface is used. The following interfaces may be made available at a future date: RS422/RS485, ECL and DVB SSI.

The GPSI MkII card also allows the SMPTE 310M interface but at both 19.39Mbit/s (8VSB compatible and 38.78Mbit/s (16VSB compatible). Additionally the card will also support the use of DHEI via the ECL input

The GPSI card is able internally to recover or generate the clock signal on the bi-phase interface with on-board PLL and LSI logic. The GPSI adapter has on-board high precision clock references which support ATSC 8-VSB.

The system provides software programmable input and output selection. The same flexibility is extended to clock source selection for receive and transmit.

PC Compatibility: .....reduced height short ISA slot, 16 bit.

MPEG Packet support.....188, 204, and 208 byte packets. The GPSI can add or strip 20 bytes to convert between 188, and 208 byte packet formats.

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SMPTE 310M interface

Transmitter

Interface: ..... Bi-phase Code output

Data Rate:..... 19,392,658.46bit/s @ 2.8ppm for 8VSB;
1Mbit/s to 44Mbit/s controlled by MIC

Signal Level: ..... 800mVp-p nominal; 1Vp-p max

Data Channel:..... 75Ω nominal; BNC connector.

Receiver

Interface: ..... Bi-phase Code Input

Data Rate:..... 1Mhz to 32MHz with automatic clock recovery;
25MHz to 44MHz (needs external Bi-phase or NRZ clock)

Signal Level: ..... 200mVp-p minimum; 5Vp-p max

Data Channel:..... 75Ω nominal; BNC connector.

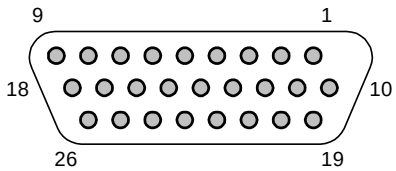
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Connectors and Cables

RS422/RS485/LVDS/ECL Connector

The 25-way D-type connector for this interface should be bright-tin plated and dimpled with a solder lug attached to the shell which should be connected to the cable screen. The shell for the connector should be made from metal or metallised plastic and of a type which makes proper provision fo a secure connection to the cable screen at the cable entry point.

The pin numbering for the 26 way D-type RS422/RS485/ECL connector is:



The pin allocation, detailed by pin number, is:

Pin	Function
1	RS422 Data out –ve
2	RS422 Data out +ve
3	RS422 Data in –ve
4	RS422 Data in –ve
5	Ground
6	ECL Clock out –ve
7	ECL Clock out +ve
8	ECL Clock in –ve
9	ECL Clock in –ve
10	Chassis_0V
11	RS422 Clock out –ve
12	RS422 Clock out +ve
13	RS422 Valid out +ve

Pin	Function
14	Ground
15	ECL Data out –ve
16	BIPHASE Clock in +ve
17	BIPHASE Clock in –ve
18	CHASSIS_0V
19	RS422 Clock in –ve
20	RS422 Clock in +ve
21	RS422 OVALIDN
22	Ground
23	ECL Data out +ve
24	ECL Data out –ve
25	ECL Data out +ve
26	Ground

Electrical interfaces for the D-type connector should conform with EN50083-9 March 1997, *Interfaces for CATV/SMATV Headends and similar Professional Equipment*.

BNC Connectors

Use 75Ω BNC connectors with silver or nickel-plated body. The cable should be 75Ω, single copper conductor 1/0.6mm double-screened with a capacitance of 68pF/m or better and attenuation of 1dB or better at 1MHz. The cable shielding should be properly connected to the connector housing.

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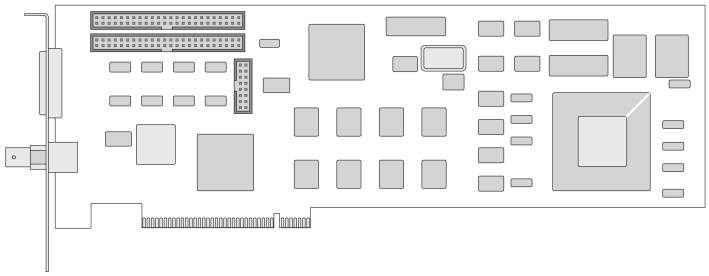
GPSI Card Interface Installation

WARNING: The GPSI card has non isolating connector shields (i.e. the connector shield is bonded directly to the case) and must only be connected to equipment with the same earth potential.

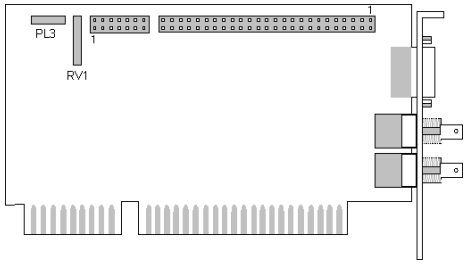
This installation will consist of installing the GPSI Interface card, an MIC card and connecting these two cards with interconnecting cables.

The following items should be supplied:

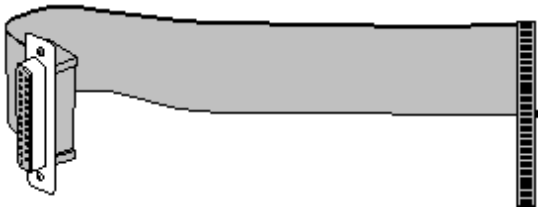
1 off MIC Card



1 off GPSI Interface Card



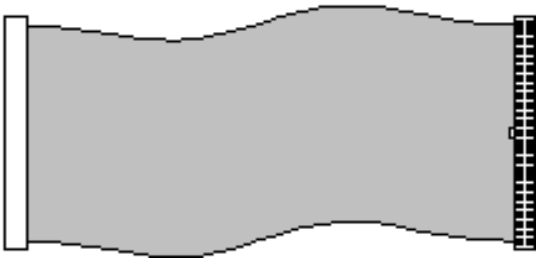
1 off DVB Output Interface Cable



1 off Interface Card Data Cable



1 off Interface Card Control Cable



2 sets off 4/40UNC Screw Lock (Each set contains 1 screw, 1 plain washer, 1 nut - 2 sets shown in the diagram)

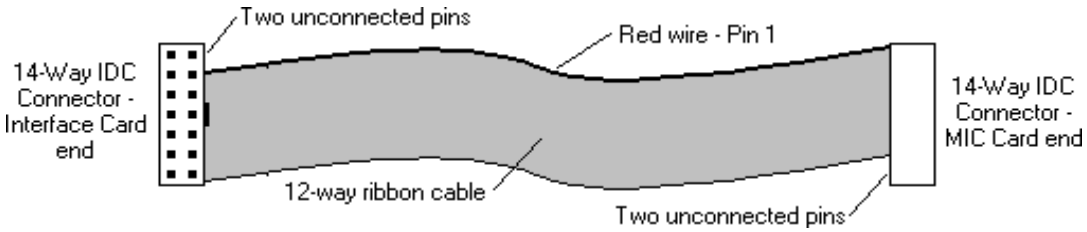


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1 off tie-wrap



The Interface Data cable is a special cable consisting of a 12-way ribbon cable terminated with 14-way IDC connectors at each end. This means that two of the pins on the IDC connectors are not connected. It is important that this cable is plugged in correctly. The diagram below shows the cable and identifies some key features:



All connectors that plug into the internal cards are keyed, so that they can only fit into their respective sockets with the correct orientation.

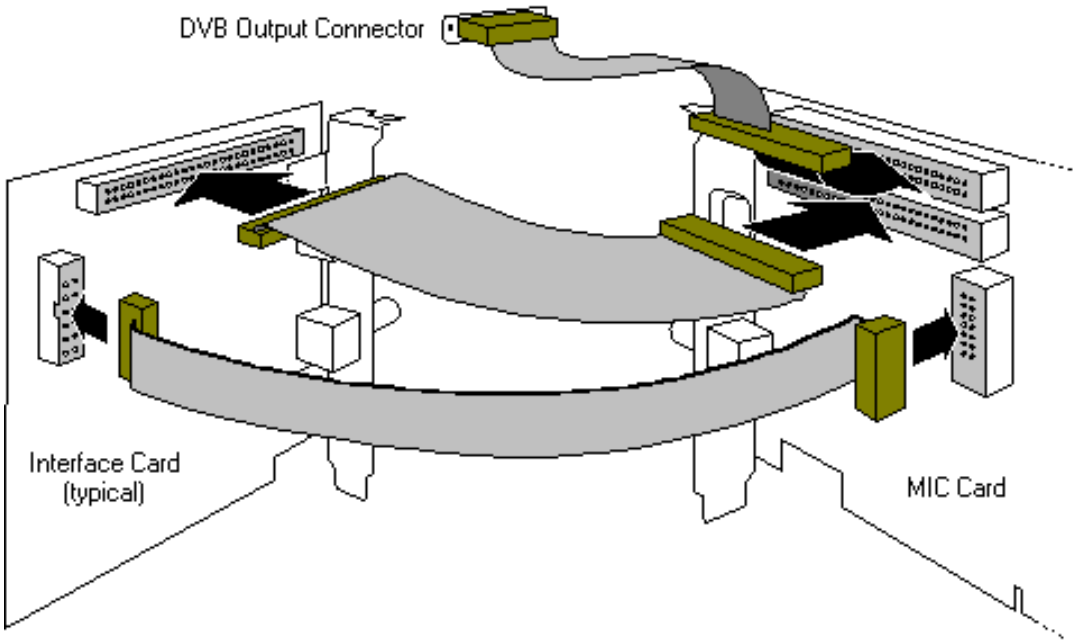


IMPORTANT: These components are susceptible to damage from electrostatic discharges. Make sure that you do not touch the gold edge connectors on the cards with your fingers. You may leave grease marks and cause a bad connection, or send a static surge through the card's circuits causing permanent damage to the card. Appropriate anti-static precautions must be taken when handling these components.

Follow the instructions below to install the interface:

1. Identify the next free slots for the components to be installed as described in the *Choosing Where to Install the Components* section above.
2. Gain access to the inside of the unit as described in *Opening the Stream View* section above.
3. Remove the blanking plates from the two slots that will hold the MIC card and the interface card. Retain the screws – you will need them later.
4. Remove the blanking plate from the cut-out on the rear panel that will take the 25-way DVB Parallel output connector.
5. Plug in the 3 cables supplied (DVB Parallel Output Interface cable, Interface Card Data cable and the Interface Card Control cable) into the MIC card only at this stage. See the following diagram showing where all the cables are plugged.

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6. Insert the MIC card into its identified slot, pushing it home until the edge connectors are fully inserted in the PCI bus connector. Fasten the card with the securing screw.

7. Using the 2 sets of screw locks, fasten the remaining 25-way D-type connector on the DVB parallel Output Interface Cable to the DVB Parallel Output port already identified. Fold the excess cable and tie up with the tie-wrap supplied.

8. Plug the other ends of the 50-way and the 12-way (with 14-way IDC connectors) interface card cables from the MIC card into the 50-way and 14-way IDC connectors on the Interface card.

9. Insert the Interface card into its slot (identified earlier), pushing it home until the edge connectors are fully inserted in the ISA bus connector. Ensure the cables are routed tidily in the process. Fasten the card with the securing screw.

10. Screw the two large nuts supplied onto the two BNC connectors on the Interface card from the rear of the unit. Tighten these securely. These ensure a good ground bonding between the BNC connector shells and the unit chassis.

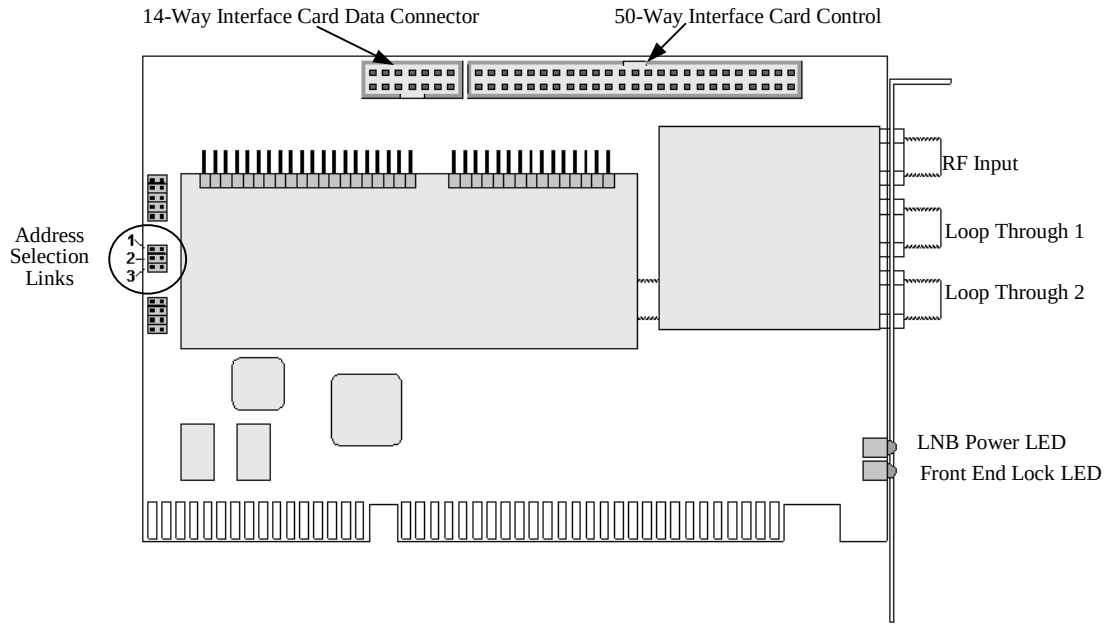
11. Replace the top panel of the Stream View box and do up the screws with the crosshead screwdriver.

12. Replace the Stream View box into the rack system, if necessary, and connect up all the cables (power and signals).

13. Power up the unit. No further action is required by the user to set-up the interface card. On boot-up, the Stream View will automatically detect and select the additional interface. An additional Stream monitoring box will be added to the Home page screen and the interface type will be displayed on the Config page under that stream menu. See the **Operations** chapter. Verify that the software displays both these items. If the additional components have not been recognised, re-check the installation. Check that cards are seated properly in their sockets and that the right cables are connected to the right connectors. If problems persist, contact your supplier.

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L-Band Interface



L-Band interface card

Functional Overview

The L-Band Interface daughter card allows connection to QPSK equipment operating in and around the L-Band frequency range (950MHz to 2150MHz). It will internally I-Q demodulate the signal with its on-board AGC control, Viterbi decoder and FEC decoder. The output of the module is connected directly to the MIC card Transport Stream Input.

The module will tune the full Satellite IF band, which is considerably wider than the L-Band itself, and will tune from 950MHz to 2150MHz. As LNB support is included, this allows the module to be used with a stand alone TVRO dish.

The L-Band Interface allows the user to monitor and/or record the transport streams from within the L-Band signal.

Decoding and receiver BER value is available during operation.

The input RF signal is looped-through to two active ‘loop-through’ outputs.

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Signal Specifications

General

PC Compatibility:	reduced height short ISA slot, 16 bit.
Input Connector	Type “F” with dual loop through outputs

RF Performance

Input Frequency Range:	950MHz to 2150 MHz, 100kHz steps
Modulation Format:	QPSK, 15 to 30Mbaud
Input Level Range	-30dBm to -60dBm for $<10^{-6}$ CBER
Termination Impedance:	75Ω nominal
Return loss	Better than -10dB across frequency range
Receiver Bandwidth	27MHz and 36MHz, user modifiable
Loop through Loss	Less than 4dB across band
Loop through Outputs Isolation	30dB typical reverse isolation

Additional Functionality

LNB Support	13V dc and 18Vdc , ±1V each setting, 200mA max
Maximum DC Level at Input	+25V
Enhanced LNB support	Continuous Tone 22kHz ±20 %, 600mV nominal
In Lock indication	Rear panel LED
LNB Power indication:	Rear panel LED
Transport Stream Output:	CMOS levels, internal only, MIC compatible
Possible Viterbi Values:	1/2, 2/3, 3/4 4/5, 5/6, 6/7, 7/8, 8/9
Reed Solomon	204 Byte Packets

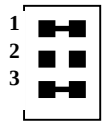
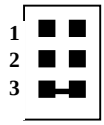
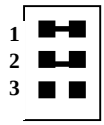
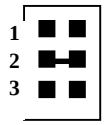
Connectors and Cables

Use F-Type connectors with silver or nickel-plated body for this connector. The cable should be 75Ω, single copper conductor 1/0.6mm, with a capacitance of 60pF/m or better and attenuation of 2dB or better at 10MHz. The shield should be connected properly to the connector housing and the cable diameter should be suitable for the F-type connectors.

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L-Band Card Pre-Installation Set-up

Each L-band card has its own address on the ISA bus. Each card within a single machine must have a different address, and these can be configured within the range 300h-370h by setting the triplet of jumpers. The L-Band card diagram above shows the position of these jumpers. The card address will depend on which slot in the Stream View has been identified for this new card. **It is extremely important that the slot number and the card address match.** The following table shows the jumper settings, the card address and the relationship to the slot number on the Stream View:

Jumper Positions	Card I/O Address	Slot Number
	320h	7
	330h	8
	340h	9
	350h	10

ONLY one of the above addresses should be used.

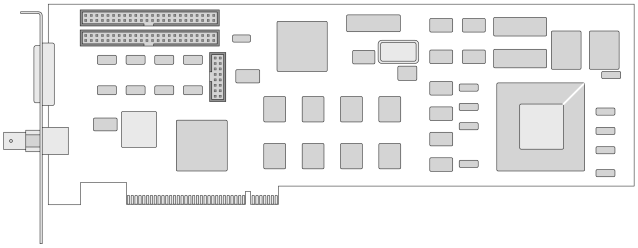
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L-Band Interface Installation

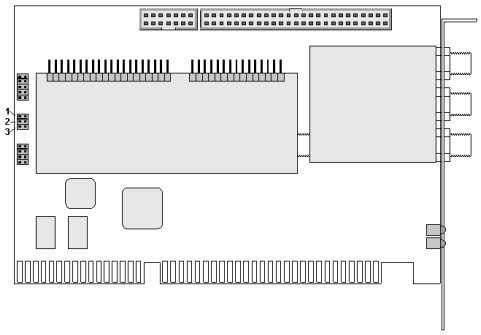
This installation will consist of installing the L-Band Interface card, a MIC card and connecting these two cards with interconnecting cables.

The following items should be supplied:

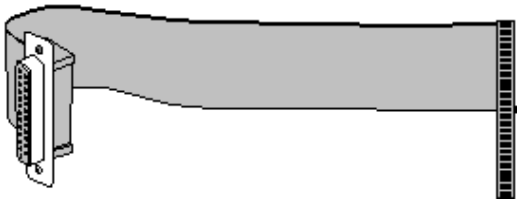
- 1 off MIC Card



- 1 off L-Band Card



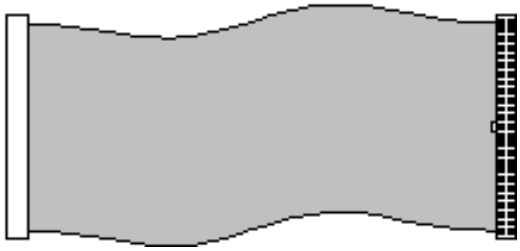
- 1 off DVB Output Interface Cable



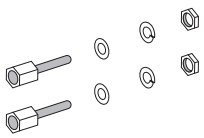
- 1 off Interface Card Data Cable



- 1 off Interface Card Control Cable



- 2 sets off 4/40UNC Screw Lock (Each set contains a screw, a plain washer, a spring washer and a nut – 2 sets shown in the diagram)

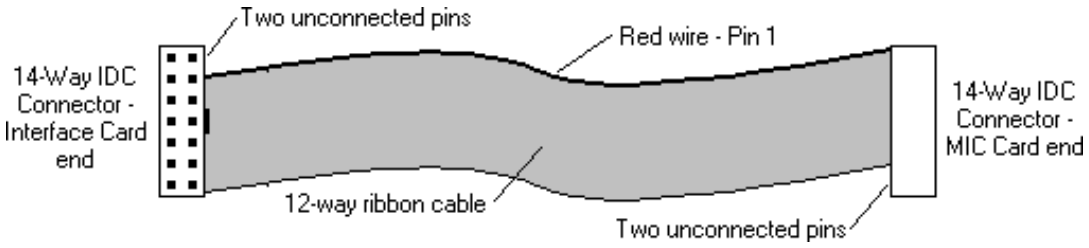


- 1 off tie-wrap



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The Interface Data cable is a special cable consisting of a 12-way ribbon cable terminated with 14-way IDC connectors at each end. This means that two of the pins on the IDC connectors are not connected. It is important that this cable is plugged in correctly. The following diagram shows the cable and identifies some key features:



All the connectors that plug into the internal cards are keyed so can only fit into the socket the correct way around.

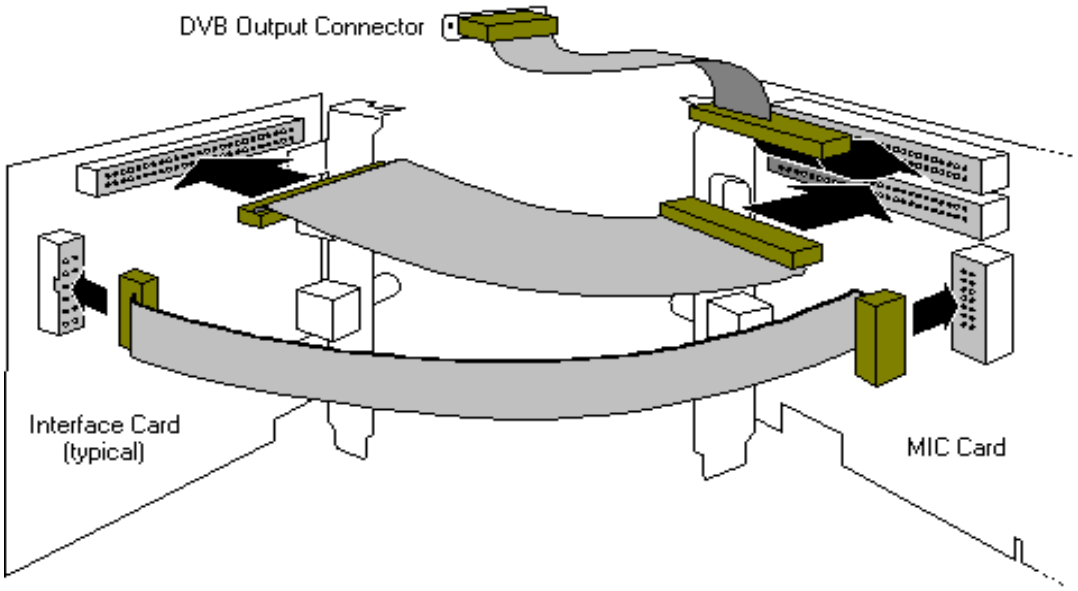


IMPORTANT: These components are susceptible to damage from electrostatic discharges. Make sure you do not touch the gold edge connectors on the cards with your fingers. You may leave grease marks causing a bad connection, or send a static surge through the circuitry causing permanent damage to the card. Appropriate anti-static precautions must be taken when handling these components.

Follow the instructions below to install the interface:

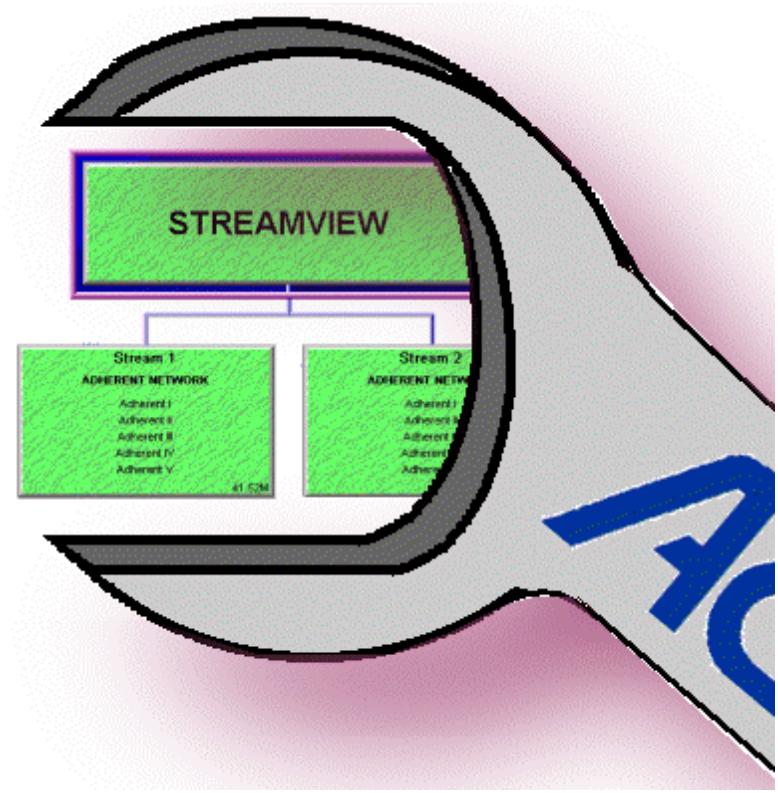
1. Identify the next free slots for the components to be installed as described in the **Choosing Where to Install the Components** section above.
2. Gain access to the inside of the unit as described in **Opening the Stream View** section above.
3. Remove the blanking plates from the two slots that will hold the MIC card and the interface card. Keep the screws that held the blanking plates – you will need them later.
4. Remove the blanking plate from the cut-out on the rear panel that will take the 25-way DVB Parallel output connector.
5. Plug in the 3 cables supplied (DVB Parallel Output Interface cable, Interface Card Data cable and the Interface Card Control cable) into the MIC card only at this stage. See the following diagram showing where all the cables are plugged.

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6. Insert the MIC card into its slot (identified earlier), pushing it home until the edge connectors are fully inserted in the PCI bus connector. Fasten the card with the securing screw.
7. Using the 2 sets of screw locks, fasten the remaining 25-way D-type connector on the DVB parallel Output Interface Cable to the DVB Parallel Output port already identified. Fold the excess cable and tie up with the tie-wrap supplied.
8. Plug the other ends of the 50-way and the 12-way (with 14-way IDC connectors) interface card cables from the MIC card into the 50-way and 14-way IDC connectors on the Interface card.
9. Insert the Interface card into its slot (identified earlier), pushing it home until the edge connectors are fully inserted in the ISA bus connector. Ensure the cables are routed tidily in the process. Fasten the card with the securing screw.
10. Replace the top panel of the Stream View box and do up the screws with the crosshead screwdriver.
11. Replace the Stream View box into the rack system, if necessary, and connect up all the cables (power and signals).
12. Power up the unit. On boot-up, the Stream View will automatically detect and select the additional interface. An additional Stream monitoring box will be added to the Home page screen and the interface type will be displayed on the Config page under that stream menu. See the **Operations** chapter. Verify that the software displays both these items. If the additional components have not been recognised, re-check the installation. Check that cards are seated properly in their sockets and that the right cables are connected to the right connectors. If problems persist, contact your supplier.

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Troubleshooting & Maintenance

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Stream View troubleshooting 5-3
DVB error troubleshooting 5-5
Maintenance 5-9
Air filter 5-9
LCD Display 5-10

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Troubleshooting

This section contains information to allow you to fix problems you may encounter during normal operation of the Stream View.

Stream View troubleshooting

Problem: Unit does not power up

Ensure that a known good mains supply source is available. In addition, also ensure that the mains cable is securely plugged into the unit. Check that the fuse in the mains plug is operational. If in doubt, check the mains cable by using it on other known working equipment.

Press the on/off button on the front panel. This switch should light up green immediately. If this does not happen, it is most likely that there is a fault inside the box. Report the unit as faulty (either to your internal maintenance department or the supplier).

Problem: No display on the LCD

Check that the unit is switched on – see above.

If the unit is being switched on, the display should be active within 2 seconds. If nothing is displayed during power-up, the display or the video card may be faulty. Report the unit as faulty.

If the display goes blank while the unit is running, it may have activated the screen saver. This is to improve the lifetime of the backlight on the LCD. Press any one of the keys on the front panel. It is safest to press the SHIFT key as this key alone does not carry out an operation. The display should exit from the screen saver mode and display information. Note, it may take 2–3 seconds for the display to come up again. If the display is still not active, then shut down the unit and power back up again. Ensure the display is active otherwise report the unit as faulty.

Problem: The Transport Stream is not being monitored on one of the channels

Make sure that the cable carrying the input stream is securely connected to the input of the interface of the faulty channel.

Even though there is a cable plugged in, there may be no data present or the data may not be valid. Try and determine this in the following way. If the unit has multiple cards, and one of the other cards is working, plug the cable from the non-working card into the working card. If the cable carries a valid stream, then this should show up on the working card. If the unit does not have multiple cards or the other cards do not have the same interface types you will have find other test equipment which will be able to check there is data present on the cable. This check eliminates the input stream (which may have been invalid or not present) being the cause of the problem. If the cable has been checked to be carrying a valid stream, plug the cable back into the original card under test.

Make sure that the correct interface type is identified in the Configuration screen. See the **Operations** chapter.

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If all the above checks have passed, then shut down the unit, and power up again. If, on power-up, the stream is still not being monitored, then the interface card, the MIC card or the interconnecting cables are faulty. If spare parts are available, swap them out one at a time to determine which component is faulty. If it has not been possible to correct the problem, report the unit as faulty.

Problem: None of the channels are monitoring the Transport Streams

Carry out the same process of checks above as for a single monitoring point faulty. If valid data present has been determined on the input cables, and the fault is not cured by the power down/up cycle, then report the unit as faulty.

Problem: One or more keys on the front of the unit are not functional

Switch the unit off and on. If the keys are still not functional, report the unit as faulty.

Installation Troubleshooting

The installation procedure is described in ***Software Installation***, page 2 - 8.

Problem: Over 60 seconds have elapsed since I inserted the installation CD but the install screen has not appeared yet or the setup box has appeared but is stuck at 99% loaded.

Plug in a keyboard and use the key combination ALT+F4 to manually quit Stream Manager.

Problem: My Stream View has hung when installing the firmware.

Turn the unit off and then on, the firmware installation should then proceed normally.

Problem: Stream View is running but I get error messages when I try to view the log.

The log reader application has not registered properly, attach a keyboard and manually run "C:\Program Files\Adherent\StreamView\Logreader.exe" - this will register the application.

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DVB error troubleshooting

The following table lists the DVB errors and provides an indication of the possible causes and the action to be taken.

DVB Error	Causes	Action
Sync loss	Transport stream not present at the input to Stream View.	Check cabling.
Sync byte error	Bit errors in the transport stream.	Check cabling.
PAT error	PAT error may be raised due to the absence of a PAT or the repetition rate falling outside the limit set by the DVB of 0.5s.	Multiplexer or re-multiplexer is at fault.
Continuity count error	Missing packets, or incorrectly generated continuity counts.	If the incoming transport stream has been through a switched network then this indicates a network failure, otherwise the multiplexer or re-multiplexer is faulty.
PMT error	PMT error may be raised due to the absence of a PMT or the repetition rate falling outside the limit set by the DVB of 0.5s.	Multiplexer or re-multiplexer is at fault.
PID error	A PID has been referenced but has not occurred.	Multiplexer or re-multiplexer is at fault.
Transport error	A transport error indicates that the transport stream contains uncorrectable errors.	The transmission chain is suffering from severe degradation. Increased transmitter power or a more robust modulation scheme is required.
CRC error	Each table has a cyclic redundancy check. If this fails then it indicates that the table is corrupted.	The Multiplexer or re-multiplexer is failing to insert the CRC correctly. The transmission chain is suffering from severe degradation. Increased transmitter power or a more robust modulation scheme is required. In this case it is likely that there will be a Transport error indicated as well.

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DVB Error	Causes	Action
PCR error	The Program Clock Reference has to be sent with a repetition period of less than 40ms.	The encoder, multiplexer or re-multiplexer is failing to insert PCRs at the minimum rate.
PCR accuracy error	The Program Clock Reference has to be accurate to within ±500ns.	The encoder, multiplexer or re-multiplexer is failing to generate PCRs correctly.
PTS error	The Presentation Time stamps should occur at least every 700ms.	The test can only be performed on a transport stream which is not scrambled. If the stream is not scrambled then the encoder is failing to insert a PTS at the correct rate.
CAT error	A transport stream containing scrambled services must have a Conditional Access Table.	The multiplexer or re-multiplexer is failing to insert a CAT. The transport stream contains services with the scrambling control bits incorrectly set.
NIT error	The Network Information Table has to be present in the transport stream on PID 0x0010 with a repetition period of less than 10s. No other information should be sent on PID 0x0010.	Multiplexer or re-multiplexer is at fault. The multiplexer or re-multiplexer is failing to insert an NIT. The multiplexer or re-multiplexer is failing send the NIT at the right rate. The multiplexer or re-multiplexer is sending something other than the NIT on PID 0x0010.
Unreferenced PID	Each PID has to be referenced in the Program Map Table (PMT).	The multiplexer or re-multiplexer is not generating the PMTs correctly. The multiplexer or re-multiplexer has been set up incorrectly.

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DVB Error	Causes	Action
SDT error	The Service Descriptor Table (SDT) has to be present in the transport stream on PID 0x0011 with a repetition period of less than 2s. No other information should be sent on PID 0x0011.	Multiplexer or re-multiplexer is at fault. The multiplexer or re-multiplexer is failing to insert an SDT. The multiplexer or re-multiplexer is failing send the SDT at the right rate. The multiplexer or re-multiplexer is sending something other than the SDT on PID 0x0011.
EIT error	The Event Information Table (EIT) has to be present in the transport stream on PID 0x0012 with a repetition period of less than 2s. No other information should be sent on PID 0x0012.	Multiplexer or re-multiplexer is at fault. The multiplexer or re-multiplexer is failing to insert an EIT. The multiplexer or re-multiplexer is failing send the EIT at the right rate. The multiplexer or re-multiplexer is sending something other than the EIT on PID 0x0012.
RST error	The RST has to be present on PID 0x0013. No other information should be sent on PID 0x0013.	The multiplexer or re-multiplexer is failing to insert an RST.
TDT error	The Time Date Table (TDT) has to be present in the transport stream on PID 0x0014 with a repetition period of less than 30s. No other information should be sent on PID 0x0014.	Multiplexer or re-multiplexer is at fault. The multiplexer or re-multiplexer is failing to insert an TDT. The multiplexer or re-multiplexer is failing send the TDT at the right rate. The multiplexer or re-multiplexer is sending something other than the TDT on PID 0x0014.

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SFN Error	Possible cause(s) may include:
More than one MIP per mega-frame. Less than one MIP per mega-frame.	MIPs are being inserted at the wrong rate. The parameters defining the mega-frame size in the tps_mip are wrongly encoded.
Invalid mega-frame size	The values defining the mega-frame size in the tps_mip are wrongly encoded.
MIP CRC error	MIP corrupted / miscoded
MIP section_length error	MIP miscoded
MIP inconsistent periodicity	The MIP is not periodic but the periodic flag is set to TRUE.
MIP timing jitter exceeds limits	MIP synchronisation_time_stamp coded incorrectly Clock jitter at the SFN adapter.

Adherent Proprietary Tests

Occupancy Limit Error	Possible cause(s) may include:
Pid limits exceeded error	The Pid bandwidth has exceeded either the minimum or maximum limits imposed from the Pid Occupancy Viewer.
Program limits exceeded error	The Program bandwidth has exceeded either the minimum or maximum limits imposed from the Program Occupancy Viewer.

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Maintenance

Air Filter

Material: Declon DEC6 30ppi
Dimensions: Width - 11.5cm, Height - 15.5cm

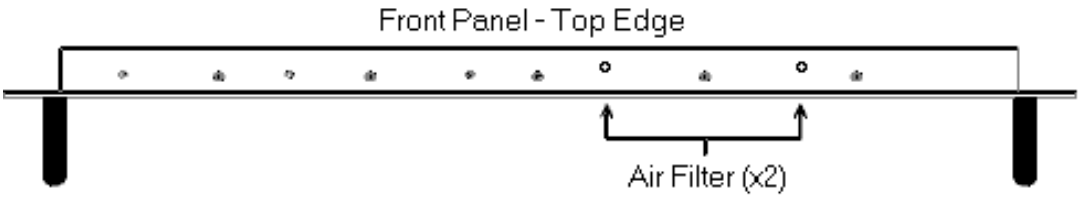
The Air Filter is located immediately behind the front panel grill. Maintaining the filter requires access to inside of the Stream View unit. It is essential that the safety and shutdown procedures detailed in the **Overview** section of this manual are observed.

Shutdown the unit safely and remove power. Unplug all other cables connected to the unit.

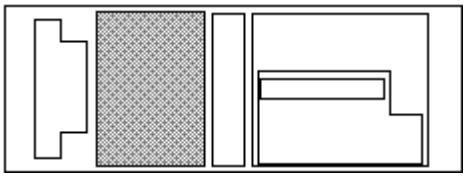
Remove the Stream View from the rack system (if necessary) and place on a suitable anti-static equipped workbench.

Using a 4mm-crosshead screwdriver, *loosen* (do not remove) the 28 screws on the top panel and remove it by sliding it back and up.

Just behind the top of the Front panel, there are two countersunk screws that hold the air filter cover in place. Undo them both.



The adjacent diagram illustrates the position of the air filter viewed from the *rear* of the front panel.



Pull the top of the filter cover back using the turned-back handle where the two screws were positioned. It should hinge at the bottom end and come away from the Front panel altogether.

You should now be able to remove the filter material.

The filter should be replaced if, even after cleaning, it appears to be clogged with dust or it is damaged in any way. If the filter is to be replaced, material of an equivalent specification must be used to ensure the correct airflow and filtering.

To be fully effective, the filter material must cover *all* of the holes in the Front panel. When replacing the filter, ensure that it is correctly positioned.

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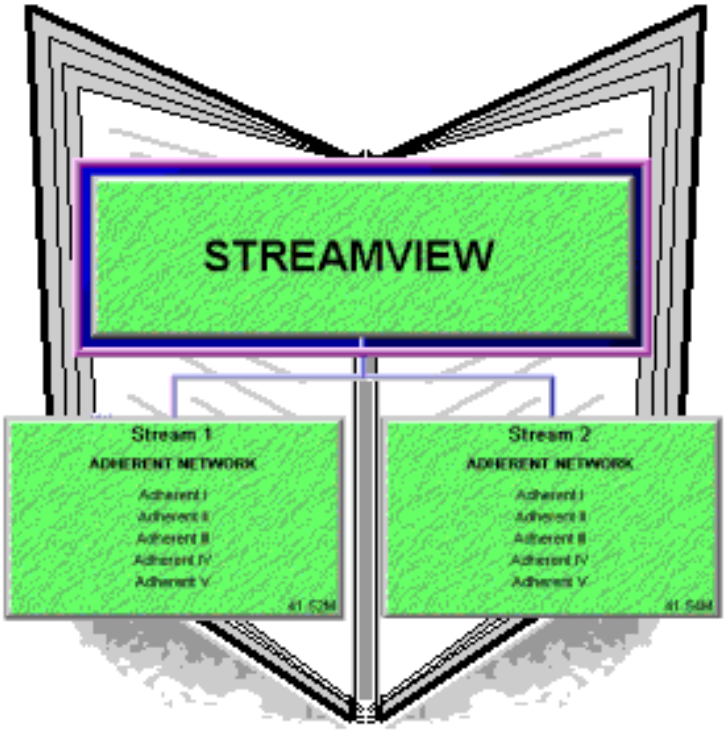
LCD Display

The only maintenance required by the LCD display is occasionally to be cleaned. However it is important that the correct materials and procedure are employed if the display is not to be damaged.

When the panel needs cleaning, it is usually sufficient to wipe it with an absorbent, soft, lint-free cloth or tissue. Water should not be allowed to come into contact with the display; if it does, it should be wiped away immediately since prolonged contact may cause discolouration or spots.

Solvents should not be used since they may attack the surface of the LCD panel.

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Reference

Reference 6-3
DVB specifications 6-3
ATSC specifications 6-11
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System Configuration File 6-16
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Reference

This section contains the following information:

- Detailed DVB specifications, showing 1st, 2nd and 3rd Priority tests
- ATSC specifications
- SFN Errors
- Proprietary tests
- Hardware specifications
- Configuration file format.

DVB Specifications

This section describes the tests designated by the international regulations on digital video broadcasting (DVB) (ETR290 – Ref: [1]). Each data packet has a packet header block which contains information about the data packet and the transport stream in general. Checking these parameters is a quick way to perform a 'health check' on the transport stream.

The tests are grouped into three priority sections:

- First Priority tests check that the transport stream can be decoded.
- Second Priority tests check that the transport stream parameters lie in the range recommended for continuous monitoring.
- Third Priority tests check some additional parameters that might be of special interest to certain applications.

This set of tests, however, is not exhaustive, so even if they are all compliant, it does not necessarily mean that the Transport Stream is error-free. See the Troubleshooting section for details of likely causes if any of these errors occur during normal operation.

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First Priority tests (DVB)

These tests are necessary for Transport Stream decoding (basic monitoring).

No.	Indicator	Description
1.1	TS_sync_loss	Loss of synchronisation with consideration of hysteresis parameters
1.2	Sync_byte_error	Sync_byte not equal to 0x47.
1.3	PAT_error	PID 0x0000 does not occur at least every 0.5s. PID 0x0000 does not contain a PAT. Scrambling_control_field is not 00 for PID 0x0000.
1.4	Continuity_count_error	Incorrect packet order. A packet occurs more than twice. Lost packet.
1.5	PMT_error	Sections with table_id 0x02, (i.e. a PMT), do not occur at least every 0.5s on the PID which is referred to in the PAT. Scrambling_control_field is not 00 for all PIDs containing sections with table_id 0x02 (i.e. a PMT).
1.6	PID_error	Referred PID does not occur for a user-specified period.

First priority DVB tests

1.1 TS_sync_loss

The most important function for the evaluation of data from the MPEG-2 TS is the sync acquisition. The actual synchronisation of the TS depends on the number of correct sync bytes necessary for the device to synchronise and on the number of distorted sync bytes which the device can not cope with.

It is proposed that five consecutive correct sync bytes (ISO/IEC 13818-1 [1], annex G.01) should be sufficient for sync acquisition, and two or more consecutive corrupted sync bytes should indicate sync loss.

After synchronisation has been achieved the evaluation of the other parameters can be carried out

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1.2 Sync_byte_error

The indicator ‘Sync_byte_error’ is set as soon as the correct sync byte (0x47) does not appear after 188 or 204 bytes. This is fundamental because this structure is used throughout the channel encoder and decoder chains for synchronisation. It is also important that every sync byte is checked for correctness since the encoders may not necessarily check the sync byte. Apparently some encoders use the sync byte flag signal on the parallel interface to control randomiser re-seeding and byte inversion without checking that the corresponding byte is a valid sync byte.

1.3 PAT_error

The Program Association Table (PAT), which only appears in PID 0x0000 packets, tells the decoder which programs are in the transport stream, and points to the Program Map Tables (PMT), which in turn point to the components video, audio and data streams that make up the program.

If the PAT is missing, then the decoder can do nothing, no program is decodable.

A PID 0x0000 should contain nothing but a PAT.

1.4 Continuity_count_error

For this indicator three checks are combined. The preconditions ‘Incorrect packet order’ and ‘Lost packet’ could cause problems for IRD which are not equipped with additional buffer storage and intelligence. It is not necessary for the test equipment to distinguish between these two preconditions as they are logically OR-ed, together with the third precondition, into one indicator.

The latter is also covering the packet loss that may occur on ATM links, where one lost ATM packet would cause the loss of a complete MPEG-2 packet.

The precondition ‘a packet occurs more than twice’ may be symptomatic of a deeper problem that the service provider would like to keep under observation.

1.5 PMT_error

The Program Association Table (PAT) tells the decoder how many programs there are in the stream and points to the PMTs which contain the information where the parts for any given event can be found. Parts in this context are the video stream (normally one) and the audio streams and the data stream (e.g. Teletext). Without a PMT the corresponding program is not decodable.

1.6 PID_error

It is checked whether there exists a data stream for each PID that occurs. This error might occur where TS are multiplexed, or demultiplexed and again remultiplexed.

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Second Priority tests (DVB)

These tests are recommended for continuous or periodic monitoring.

No.	Indicator	Description
2.1	Transport_error	Transport_error_indicator in the TS header is set to 1.
2.2	CRC_error	CRC error occurred in CAT, PAT, PMT, NIT, EIT, BAT, SDT or TOT table
2.3	PCR_error	PCR discontinuity of more than 100ms occurring without specific indication. Time interval between two consecutive PCR values more than 40ms.
2.4	PCR_accuracy_error	PCR accuracy of selected programme is not within ±500ns.
2.5	PTS_error	PTS repetition rate more than 700ns.
2.6	CAT_error	Packets with Transport_scrambling_control not 00 present, but no section with table_id 0x01 (i.e. a CAT) present. Section with table_id other than 0x01 (i.e. not a CAT) found on PID 0x0001.

Second priority DVB tests

2.1 Transport_error

The primary Transport_error indicator is Boolean, but there should also be a resettable binary counter which counts the erroneous TS packets. This counter is intended for statistical evaluation of the errors. If an error occurs, no further error indication should be derived from the erroneous packet.

There may be value in providing a more detailed breakdown of the erroneous packets, for example, by providing a separate Transport_error counter for each program stream or by including the PID of each erroneous packet in a log of Transport_error events. Such extra analysis is regarded as optional and not part of this recommendation.

2.2 CRC_error

The CRC check for the CAT, PAT, PMT, NIT, EIT, BAT, SDT and TOT indicates whether the content of the corresponding table is corrupted. In this case no further error indication should be derived from the content of the corresponding table.

2.3 PCR_error

The PCRs are used to re-generate the local 27MHz system clock. If the PCR do not arrive with sufficient regularity then this clock may jitter or drift. The receiver/decoder may even go out of lock. In DVB a repetition period of not more than 40ms is recommended.

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2.4 PCR_accuracy_error

The accuracy of ±500ns is intended to be sufficient for the colour subcarrier to be synthesised from system clock.

2.5 PTS_error

The Presentation Time Stamps (PTS) should occur at least every 700ms. They are only accessible if the TS is not scrambled.

2.6 CAT_error

The CAT is the pointer to enable the IRD to find the EMMs associated with the CA system(s) that it uses. If the CAT is not present, the receiver is not able to receive management messages.

Third Priority tests (DVB)

These tests are for application dependent monitoring.

No.	Indicator	Description
3.1	NIT_error	Section with table_id other than 0x40 or 0x41 or 0x72 (i. e. not an NIT or ST) found on PID 0x0010. No section with table_id 0x40 or 0x41 (i.e. an NIT) in PID value 0x0010 for more than 10s.
3.2	SI_repetition_error	Repetition rate of SI tables outside of specified limits.
3.3	Buffer_error	**TB_buffering_error** overflow of transport buffer (TBn) **TBsys_buffering_error** overflow of transport buffer for system information (Tbsys) **MB_buffering_error** Overflow of multiplexing buffer (MBn) or if the vbv_delay method is used: underflow of multiplexing buffer (Mbn) **EB_buffering_error** Overflow of elementary stream buffer (EBn) or if the leak method is used: underflow of elementary stream buffer (EBn) though low_delay_flag and DSM_trick_mode_flag are set to 0 else (vbv_delay method) underflow of elementary stream buffer (EBn) **B_buffering_error** overflow or underflow of main buffer (Bn) **Bsys_buffering_error** overflow of PSI input buffer (Bsys)

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No.	Indicator	Description
3.4	Unreferenced_PID	PID (other than PAT, CAT, CAT_PIDs, PMT_PIDs, NIT_PID, SDT_PID, TDT_PID, EIT_PID, RST_PID, reserved_for_future_use PIDs, or PIDs user defined as private data streams) not referred to by a PMT within 0.5 seconds (note)
3.5	SDT_error	Sections with table_id = 0x42 (SDT, actual TS) not present on PID 0x0011 for more than 2s. Sections with table_ids other than 0x42, 0x46, 0x4A or 0x72 found on PID 0x0011
3.6	EIT_error	Sections with table_id = 0x4E (EIT-P/F, actual TS) not present on PID 0x0012 for more than 2s. Sections with table_ids other than in the range 0x4E - 0x6F or 0x72 found on PID 0x0012.
3.7	RST_error	Sections with table_id other than 0x71 or 0x72 found on PID 0x0013
3.8	TDT_error	Sections with table_id = 0x70 (TDT) not present on PID 0x0014 for more than 30s. Sections with table_id other than 0x70, 0x72 (ST) or 0x73 (TOT) found on PID 0x0014
3.9	Empty_buffer_error	Transport buffer (TB_n) not empty at least once per second or transport buffer for system information(TB_{sys}) not empty at least once per second or if the leak method is used multiplexing buffer (MB_n) not empty at least once per second.
3.10	Data_delay_error	Delay of data (except still picture video data) through the TSTD buffers superior to 1s or delay of still picture video data through the TSTD buffers superior to 60s.
Note: it is assumed that transition states are limited to 0.5s, and these transitions should not cause error indications.		

Third priority DVB tests

3.1 NIT_error

Network Information Tables (NITs) as defined by DVB contain information on frequency, code rates, modulation, polarization etc. of various programs which the decoder can use. It is checked whether NITs are present in the TS and whether they have the correct PID.

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3.2 SI_repetition_error

For SI tables a maximum and minimum periodicity is specified for the terrestrial delivery system in ETR 211 (see User Definable Repetition Rates, page 1-11 and References, page 6-38). This is checked for this indicator.

3.3 Buffer_error

For this indicator a number of buffers of the MPEG-2 reference decoder are checked whether they would have an underflow or an overflow.

3.4 Unreferenced_PID

Each non-private program data stream should have its PID listed in the PMTs.

3.5 SDT_error

The SDT describes the services available to the viewer. It is split into sub-tables containing details of the contents of the current TS (mandatory) and other TS (optional). Without the SDT, the IRD is unable to give the viewer a list of what services are available. It is also possible to transmit a BAT on the same PID, which groups services into ‘bouquets’.

3.6 EIT_error

The EIT describes what is on now and next on each service, and optionally details the complete programming schedule. The EIT is divided into several sub-tables, with only the ‘present and following’ information for the current TS being mandatory. The EIT schedule information is only accessible if the TS is not scrambled.

3.7 RST_error

The RST is a quick updating mechanism for the status information carried in the EIT.

3.8 TDT_error

The TDT carries the current UTC time and date information. In addition to the TDT, a TOT can be transmitted which gives information about a local offset in a given area.

3.9 Empty_buffer_error

The related buffers of the MPEG-2 reference decoder are supposed to be empty at least once per second for re-multiplexing facilities.

3.10 Data_delay_error

The delay of any data through the MPEG-2 reference decoder is supposed to be at less than or equal to one second, except for still picture video data. For still picture video data, the delay of any data through the MPEG-2 reference decoder is supposed to be less than or equal to 60s.

As a further extension of the checks and measurements mentioned above, an additional test concerning the SI is recommended: all mandatory descriptors in the SI tables should be present and the information in the tables should be consistent.

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SFN Tests

Single Frequency Network (SFN) tests are not strictly part of the DVB Specification, but are included in the DVB version of Stream View for testing Single Frequency networks (For further information, see References, page 6-38).

These tests are only performed if PID 0x15 (21) is present in the transport stream – this PID is reserved by DVB for the Mega-frame Initialisation Packet (MIP) which has a structure defined in the reference (page 6-38). The header information from this packet is displayed in the PID Occupancy view by selecting Pid 0x15 (21) and pressing **ENTER**.

SFN errors are indicated on the Stream Status page if *any* of the following conditions are not met :

- There is one (and only one) MIP per mega-frame.
- Valid mega-frame size.
- Valid MIP CRC value.
- Valid MIP section_length field
- MIPs are periodic if the periodic field is set TRUE
- Pointer fields are valid and consistent.
- The MIP timing information in the synchronisation_time_stamp is stable to within 1ms (currently, but will be user-definable time period in 100ns steps). If this fails, a jitter entry will be added to the error log.



Note: All SFN tests switch to amber as transient errors and thus the SFN indicator in the Status page should never go red. The SFN test is passed through to the Other LED on the front panel.

Repetition Rates

The following information is extracted from ETR211 (see References, page 6-38):

Terrestrial Delivery System

For terrestrial delivery systems, bandwidth within a single transmitted TS is a valuable resource and in order to safeguard the bandwidth allocated to the primary services receivable from the primary multiples, the following minimum repetition rates are specified in order to reflect the need to impose a limit on the amount of available bandwidth used for this purpose:

a) all sections of the NIT shall be transmitted at least every 10 seconds;

b) all sections of the BAT shall be transmitted at least every 10 seconds, if present;

c) all sections of the SDT for the actual multiplex shall be transmitted at least every 2 seconds;

d) all sections of the SDT for other TSs shall be transmitted at least every 10 seconds, if present;

e) all sections of the EIT Present/Following Table for the actual multiplex shall be transmitted at least every 2 seconds;

f) all sections of the EIT Present/Following Tables for other TSs shall be transmitted at least every 20 seconds, if present.

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The repetition rates for further EIT tables will depend greatly on the number of services and the quantity of related SI information. The following transmission intervals should be followed if practicable but they may be increased as the use of EIT tables is increased. The times are the consequence of a compromise between the acceptable provision of data to viewer and the use of multiplex bandwidth.

a) *all sections of the EIT Schedule table for the first full day for the actual TS, shall be transmitted at least every 10 seconds, if present; **

b) *all sections of the EIT Schedule table for the first full day for other TSs, shall be transmitted at least every 60 seconds, if present; **

c) *all sections of the EIT Schedule table for the actual TS, shall be transmitted at least every 30 seconds, if present;*

d) *all sections of the EIT Schedule table for other TSs, shall be transmitted at least every 300 seconds, if present; **

e) *The TDT and TOT shall be transmitted at least every 30 seconds.*

* - not tested

ATSC Specifications

This section describes the tests that the Stream View carries out on the transport stream to check that it conforms to the international regulations on digital video broadcasting specified by the Advanced Television Systems Committee (See References, page 6-38).

Each data packet has a packet header block which contains information about the data packet and the transport stream in general. Checking these parameters is a quick way to perform a 'health check' on the transport stream.

The tests are grouped into three sections. The First, Second and Third Priority tests correspond with the DVB ETR290 tests in so far as they relate to ATSC, that is:

- First Priority tests check that the transport stream can be decoded.
- Second Priority tests check that the transport stream parameters lie in the range recommended for continuous monitoring.

For details of the First and Second Priority tests refer to the DVB Specifications DVB Specifications section (page 6-3 et seq)

- Additionally, ATSC tests specific to A/53 and A/65 (PSIP) requirements.

This set of tests, however, is not exhaustive, so even if they are all compliant, it does not necessarily mean that the Transport Stream is error-free. See the Troubleshooting section for details of likely causes if any of these errors occur during normal operation.

Additional ATSC Tests

Program Paradigm

The Program Paradigms provide a simple mechanism for quickly recognizing the programs of interest and further identifying the transport bit streams containing elements of the program thus enabling quick acquisition.

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PSIP Table tests

The ATSC has defined it's own set of tables which take the place of the DVB defined SI. The table below summarises the main characteristics of each PSIP table and defines the minimum sets of tests that are performed by the AT970 Stream View unit.

No.	PSIP Table	PID	Table ID
3.1	Master Guide Table (MGT)	0x1FFB	0xC7
3.2	System Time Table (STT)	0x1FFB	0xCD
3.3	Terrestrial Virtual Channel Table (TVCT)	0x1FFB	0xC8
3.4	Cable Virtual Channel Table (CVCT)	0x1FFB	0xC9
3.5	Regional Ratings Table (RRT)	0x1FFB	0xCA
3.6	Event Information Table (EIT)	Found from MGT	0xCB
3.7	Extended Text Table (ETT)	Found from MGT	0xCC

- The location and identity of each table is checked.
- The following items are also checked on each table:
  - Scrambling control bits – 00
  - Adaption field control bits – 01
  - CRC32 – True
- Section repetition rates are checked where applicable (see User Definable Repetition Rates, page 1-11 and References, page 6-38).
- The Base PID is checked to ensure that the first five tables conform to PID 0x1FFB.

3.1 Master Guide table

The MGT lists version numbers, length in bytes, and PIDs for all of the PSIP tables with the exception of the STT which works independently from the other tables.

3.2 System Time table (STT)

The STT provides the current date and time of day information.

3.3 Terrestrial Virtual Channel table (TVCT)

The TVCT contains a list of attributes for virtual terrestrial channels carried in the Transport Stream.

3.4 Cable Virtual Channel table (CVCT)

The CVCT contains a list of attributes for virtual cable channels carried in the Transport Stream.

3.5 Regional Ratings table (RRT)

The RRT carries rating information for multiple geographical regions.

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3.6 Event Information table (EIT)

The EIT contains information (titles, start times, etc.) for events on defined virtual channels. An event is, in most cases, a typical TV program, however its definition may be extended to include particular data broadcasting sessions and other information segments.

3.7 Extended Text table (ETT)

The ETT contains Extended Text Message (ETM) streams, which are optional and are used to provide detailed descriptions of virtual channels (channel ETM) and events (event ETM).

Additional Table Display

The ATSC version of Stream View will also analyse the ATSC Data Broadcast Standard (currently document T3-504 2/6/2000) which defines new tables and descriptors (and a stream_type for the transmission of framework information).

The new tables are:

- Data entry table (DET)
- Data Service Table (DST)
- Long Term Service Table (LTST)
- Network Resources Table (HRT)

The new descriptors are:

- data_service_descriptor
- pid_count_descriptor
- download_descriptor
- component_name_descriptor
- module_link_descriptor
- CRC32_descriptor
- group_link_descriptor

A new stream_type, 0x95, is defined as ‘Service description Framework information’ and labelled in the PID view as ‘SDF info’.

Adherent Proprietary Tests

Two Adherent proprietary test are included in both the DVB and ATSC tests; viz. Program Occupancy and PID Occupancy. These tests check that bitrates do not fall outside limits set in the Program or PID occupancy screens respectively.

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Technical Specification

This section contains the full technical specification for the Stream View.

Display

Display Type:	6.4” TFT LCD Colour display
Resolution:	640x480
Colours:	256K Colours

Power Requirements

Input Voltage:	90-135 at 110V AC switch setting
	180-265 at 240V AC switch setting
Input Current:	0.86A at 110V AC switch setting
	0.43A at 240V AC switch setting
Frequency:	45-63Hz
Power Consumption:	300W Max.

Environmental Specification

Operating Temperature:	10° C Min.
	40° C Max
Storage Temperature:	0° C Min.
	70° C Max
Humidity:	80% Non-condensing
Cooling:	$+^{ve}$ pressure front to back

Mechanical

Overall Width:	48.2cm (19” rack mount)	
Overall Height:	17.8cm (4U)	
Overall Depth:	60cm	
Weight:	18Kg fully configured	
Air Filter:	Material:	Declon DEC6 30ppi
	Dimensions:	Width - 11.5cm, Height - 15.5cm

Safety Certification

Safety certified to meet EN 60950

EMC Certification

EMC Certified to meet EN 55022 A

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CE Certification

Unit is CE marked.

Monitoring

Max. Data rate:	60Mbits/sec*
Min. Data rate:	250kbits/sec
Transport streams:	Up to 4
Packet sizes:	188 & 204 bytes

* Note: The exact maximum bitrate will depend upon the contents of the transport stream. Transport streams with large amounts of SI information may reduce this figure.

Network interfaces

Single Ethernet card offering options for 10BASE2, 10BASE5 interfaces allowing remote control and monitoring via SNMP.

External Alarm interfaces

8 Relays and 7 TTL interfaces are available.

TTL Low:	$0V < V_{IL} < 0.8V$ DC
TTL High:	$2.4V < V_{IH} < 5V$ DC
TTL Fan out:	1 TTL input
Relays Voltage rating:	24V DC
Relays Current rating:	1A DC
Relays maximum power:	3W

Transport Stream interfaces

- DVB parallel input and output, in accordance with DVB-A010
- Accepts 188 or 204 byte MPEG-2 transport streams
- Asynchronous Serial Interface (ASI)
- G703 at 8/34/45Mbit/s, E2/E3/DS3
- G703+ at 8/34Mbit/s, E2/E3
- GPSI SMPTE 310M (19.329Mbit/s)
- L-Band (950MHz to 2150MHz)

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System Configuration File

The file SV97001.ini is a text-based Stream View configuration file.

The System Configuration File method of loading default values allows the user to pre-define a standard set of values for the range of parameters in a single text file. This single file can then be used to set a standard configuration in a number of units with relative ease.

The file should be generated off-line using a basic text editor (e.g. Windows' Notepad, DOS Edit utility, etc.); the file should be saved in a simple ASCII format. When the file is being generated/edited, the following guidelines should be observed:

- Files can be laid out to suit the user since all spaces and tabs are ignored .
- Strings (in parameter names and values) can contain only the characters A to Z, a to z and 0 to 9, the dash (-) and the underscore (_), unless otherwise stated below.
- The first and last character of any string used for a parameter value must be alphanumeric.
- No spaces are to be used in strings.

When the file has been edited, the syntax of the file can be checked with a System Configuration File Parser utility available from Adherent. This utility will ensure that the file syntax and format is correct.

The file is then processed by the Stream View unit when the appropriate menu item is selected from the Set-up screen (see **Operation** section). All new parameters loaded are non-volatile.



Processing this file will overwrite any existing working values for the settings defined in the System Configuration File.

An example of a Configuration file is provided at the end of this section.

Syntax

The general syntax of the file is as follows:

- [Section Heading]

The file comprises a number of sections, each with a Section Heading (delimited by square brackets).

No section of the file is mandatory. Only sections which are required to make specific settings need be included; e.g. L-Band Interface.

- // Comments

The file may contain comments where each line of comments starts with a double forward slash (//).

- ParameterName = ParameterValue1, ParameterValue2, ……, ParameterValueN

The remainder of the section comprises parameter setup. Each parameter starts with the parameter name followed by an equals sign (=) and any parameter values required; parameter values are separated by a comma.

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Sections

Section [Set To Factory Defaults]

This section of the configuration file allows various parameters to be reset to their factory defaults. If this section is defined anywhere in the configuration file, it will be executed first, i.e. before any other specified parameter is processed.

For this section, the Stream View is divided into five sub-sections – Stream1, Stream2, Stream3, Stream4 and StreamViewUnit. Specifying a sub-section will reset all of the parameters in that sub-section to their factory defaults. The parameters allocated to each sub-section are listed below:



Note: Only the sub-section title needs to be specified to reset all of the associated parameters to their factory defaults.

DVB and ATSC Parameters

[Set to Factory Defaults] Sub-Section	**Factory Defaults**	
Stream1, Stream2, Stream3, Stream4	TestSyncLoss = E TestSyncByte = E TestPAT = E TestContinuity = E TestPMT = E TestPID = E TestTransport = E TestCRC = E TestPCR = E TestPCRAccuracy = E TestPTS = E TestCAT = E TestSI = E TestNIT = E TestSDT = E TestEIT = E TestTDT = E	TestPIDUnreferenced = E PATRepetitionRate = 500ms PMTRepetitionRate = 500ms PIDRepetitionRate = 1000ms PCRRepetitionRate = 40ms PCRAccuracy = 500ns PTSRepetitionRate = 700ms PIDUnreferencedRepetitionRate = 1000ms PIDOcc = 1000ms PIDRate = For ALL PIDs, 0, 0 ProgramRate = For ALL Programs, 0, 0 ExcludePID = ALL PIDS are included in the Unreferenced PID test. StreamMaintenanceMode = D PCRAccuracyAlgorithm = P MPEStreamType = 13
StreamView Unit	TestFan = E TestHardDisk = E TestTemperature = E	TestDCVoltages = E GlobalMaintenanceMode = E ErrorLoggingRate = 4

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DVB Parameters

[Set to Factory Defaults] Sub-Section	Factory Defaults	
Stream1, Stream2, Stream3, Stream4	TestRST = E NITRepetitionRate = 10000ms SDTRepetitionRate = 2000ms EITRepetitionRate = 2000ms TDTRepetitionRate = 30000ms SIRepetitionRateNIT = 10000ms SIRepetitionRateBAT = 10000ms SIRepetitionRateSDTMultiplex = 2000ms	SIRepetitionRateSDTOther = 10000ms SIRepetitionRateEITMultiplexSch = 10000ms SIRepetitionRateEITOtherSch = 10000ms SIRepetitionRateEITMultiplexPF = 2000ms SIRepetitionRateEITOtherPF = 2000ms SIRepetitionRateTDT = 30000ms SIRepetitionRateTOT = 30000ms TestSFN = E SFNTimingTolerance = 1000ns
Stream View Unit	DVBRegion = DVB	

ATSC Parameters

[Set to Factory Defaults] Sub-Section	Factory Defaults	
Stream1, Stream2, Stream3, Stream4	TestBasePID = E TestProgParadigm = E TestMGT = E TestSTT = E TestVCT = E TestRRT = E TestATSCEIT = E	VCTMode = EitherVCT MGTRepetitionRate = 150ms STTRepetitionRate = 1000ms VCTRepetitionRate = 400ms RRTRepetitionRate = 60000ms ATSCEITRepetitionRate = 500ms



Only the parameters listed in the above tables are affected by the factory default function: other definitions in the configuration file are not affected. User Saveable Configuration File Names, L-Band Channel Settings, Computer Name, etc; all of these settings are preserved.

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Section [User Saveable Configuration File Names]

Up to eight different configurations of the Stream View unit can be saved and recalled via the user interface (menus); the settings are stored in the Windows registry. The file names, against which the configurations can be saved are set in this section of the configuration file.

The default file names are as follows:

Slot1 = UserSetting1	Slot5 = UserSetting5
Slot2 = UserSetting2	Slot6 = UserSetting6
Slot3 = UserSetting3	Slot7 = UserSetting7
Slot4 = UserSetting4	Slot8 = UserSetting8

Maximum length file name string = 32 characters



Note: The filenames are simple strings used to label the slots. They should not include any pathnames.

Section [Stream View Unit]

This section allocates parameters which define unit-wide parameters for the Stream View. The parameters are defined below:

Computer Name

This string defines the name assigned to the Stream View unit in the context of a computer network; the name must be unique to the network. It is advisable to consult with your System Administrator.

Maximum string length = 15 characters. The underscore (_) character must not be used in the string.

Note that the name will not be recognised by the network until the configuration file has been implemented *and* the Stream View unit has been power cycled. The user must carry out a manual power cycle.

Alarms

As described elsewhere, Stream View alarms can be enabled and disabled and set to generate an internal audible alarm or activate a TTL alarm output.

The following parameters are designated as unit-wide and allow the state and output to be set:

TestFan = <action>, <output>
TestHardDisk = <action>, <output>
TestTemperature = <action>, <output>
TestDCVoltages = <action>, <output>
GlobalMaintenanceMode = <action> // Global (box wide) Maintenance mode
ErrorLoggingRate = <value> // Value = 0-10, 100 (0 = logging disabled, 100 = No limit)

where:

<action>	=	E (Enable) or D (Disable)
<output>	=	A (Alarm) or T (TTL Output)
<value>	=	integer

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DVB Region

In the DVB version of Stream View, DVB Region specifies the geographical region that the unit is being used in. This affects the way that some of the descriptors are interpreted; there are variations from region to region.

DVBRegion = <region>

where <region> = one of the following: DVB, DTG, Nordic, ISDB, Aus

Sections [Stream_1], [Stream_2], [Stream_3] and [Stream_4]

Parameters in this section can be viewed under two categories: general and interface-specific. The general category includes parameters which apply to a stream without regard for the type of interface fitted (e.g. alarms, repetition rate, etc). The interface-specific settings are, as the name suggests, specific to a type of interface.

Streams 1 to 4 correspond to Interface cards in slots 7 to 10; refer to the **Installation** section for details of physical location of cards and slots in the Stream View unit.

Up to four streams can be identified; each stream must be associated with Interface card parameters and a unique Stream Name. Using [Stream1] to [Stream4], parameters can be specified for each of the streams. This set may include some or all of the general parameters. A Stream Name should be used to uniquely identify each stream.

In addition, specific settings are available for particular interfaces. All interface-specific settings are identified as an ‘interface name’ which takes the form ‘interface card type + optional variant letter’. Certain interface types support up to four independent settings; with the variant letters A, B, C and D. (see section below).

Interface Card Settings

For each of the streams being monitored, the Interface card type must be identified. This is done by assigning the Interface card type an ‘interface name’. Only one interface name can be assigned to a card. Where a choice of interface names is available (A, B, C, D), any one can be assigned to the card.

If the Interface card type does not match the card detected, a fatal error will be reported to the user when the file is being processed.

InterfaceCardSettings = <interfacename>

where: <interfacename> = One of the following:

DVB_Parallel		G703_SettingsA
		G703_SettingsB
ASI,		G703_SettingsC
ASI+		G703_SettingsD
GPSI	(SMPTE)	G703Plus_SettingsA,
		G703Plus_SettingsB,
GPSI_MK2_SettingsA		G703Plus_SettingsC,
GPSI_MK2_SettingsB		G703Plus_SettingsD,
GPSI_MK2_SettingsC		
GPSI_MK2_SettingsD		Lband_SettingsA
		Lband_SettingsB
		Lband_SettingsC

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Lband_SettingsD

Stream Name

This string defines the name assigned to the stream; the name must be unique to the Stream View.

StreamName = <string> where: maximum string length = 15 characters.

Alarms

For each stream, tests can be enabled and disabled and set to generate one of four alarms, viz. an internal audible alarm, a TTL alarm output and activate one of two relays.

DVB and ATSC Alarms

TestSyncLoss = <action>, <output>
TestSyncByte = <action>, <output>
TestPAT = <action>, <output>
TestContinuity = <action>, <output>
TestPMT = <action>, <output>
TestPID = <action>, <output>
TestTransport = <action>, <output>
TestCRC = <action>, <output>
TestPCR = <action>, <output>
TestPCRAccuracy = <action>, <output>
TestPTS = <action>, <output>
TestCAT = <action>, <output>
TestPIDUnrefernced = <action>, <output>

DVB Alarms

TestSI = <action>, <output>
TestNIT = <action>, <output>
TestSDT = <action>, <output>
TestEIT = <action>, <output>
TestRST = <action>, <output>
TestTDT = <action>, <output>
TestSFN = <action>, <output>

ATSC Alarms

TestBasePID = <action>, <output>
TestProgParadigm = <action>, <output>
TestMGT = <action>, <output>
TestSTT = <action>, <output>
TestVCT = <action>, <output>
TestRRT = <action>, <output>
TestATSCEIT = <action>, <output>

where:
<action> = E (Enable) or D (Disable)
<output> = A (Alarm) or T (TTL Output) or R1 (Relay 1) or R2 (Relay 2)

e.g. TestSyncLoss = E, A, T, R2
SyncLoss is enabled and requires Audible, TTL and Relay 2 alarm outputs.

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SFN Timing Tolerance

This specifies the interval used to determine whether there is any jitter in the SFN PID (0x15).

SFNTimingTolerance = <value>

where <value> is an integer in the range 100 to 10000 (ns)

Reset on Sync

This parameter determines whether alarms for the stream should be reset to green when sync is re-acquired after having been lost.

ResetOnSync = On / Off

Enable PID Min Max Record

This specifies a PID that should have its observed minimum and maximum limits recorded in the log file.

EnablePidMinMaxRecord = <value>

where <value> is an integer in the range 0 to 8191.

Set PID Min Max Record All

This specifies whether to record the observed minimum and maximum for all PIDs in the stream in the log file.

SetPidMinMaxRecordAll = On / Off

Disable PID Min Max Record

This specifies a PID that should not have its limits recorded in the log file. It is assumed that this parameter will be used after SetPidMinMaxRecordAll in order to exclude certain PIDs.

DisablePidMinMaxRecord = <value>

where <value> is an integer in the range 0 to 8191.

Set PID Min Max Record Time

This specifies the interval (in minutes) at which PID limits should be recorded in the log file.

SetPidMinMaxRecordTime = <value>

where <value> is an integer in the range 1 to 60.

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Repetition Rates

A number of tests specify a repetition rate for selected PID values. This section allows the repetition rate for each of these tests to be specified.

The general syntax for the Repetition Rate parameter is as follows:
<Repetition Rate name> = <value>

The following table shows the range of values for each of the tests:

DVB and ATSC Repetition Rates

Parameter	Keyword	Minimum	Maximum
PAT repetition rate	PATRepetitionRate	100ms	30000ms
PMT repetition rate	PMTRepetitionRate	100ms	30000ms
PID repetition rate	PIDRepetitionRate	1000ms	60000ms
PCR repetition rate	PCRRepetitionRate	10ms	500ms
PCR Accuracy	PCRAccuracy	107ns	1500ns
PTS repetition rate	PTSRepetitionRate	100ms	5000ms
PID Unref repetition rate	PIDUnreferncedRepetitionRate	1000ms	60000ms

The PIDOcc parameter is an exception and does not form part of the standard DVB tests. The calculations for the bit rates for each PID are integrated over a period. The PIDOcc parameter specifies this period in seconds and can be defined by the user.

Repetition Rate name	Keyword	Minimum	Maximum
PIDOcc	PIDOcc	1000ms	60000ms

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DVB Repetition Rate

Parameter	Keyword	Min.	Max.
NIT repetition rate	NITRepetitionRate	1000ms	30000ms
SDT repetition rate	SDTRepetitionRate	500ms	30000ms
EIT repetition rate	EITRepetitionRate	500ms	30000ms
TDT repetition rate	TDTRepetitionRate	5000ms	120000ms
SI minimum repetition rate:			
- NIT	SIRepetitionRateNIT	1000ms	30000ms
- BAT	SIRepetitionRateBAT	1000ms	30000ms
- SDT Multiplex	SIRepetitionRateSDTMultiplex	1000ms	30000ms
- SDT Other	SIRepetitionRateSDTOther	1000ms	30000ms
- EIT Multiplex (Schedule)	SIRepetitionRateEITMultiplexSch	1000ms	30000ms
- EIT Other (Schedule)	SIRepetitionRateEITOtherSch	1000ms	30000ms
- EIT Multiplex (P/F)*	SIRepetitionRateEITMultiplexPF	1000ms	30000ms
- EIT Other (P/F)*	SIRepetitionRateEITOtherPF	1000ms	30000ms
- TDT	SIRepetitionRateTDT	5000ms	120000ms
- TOT	SIRepetitionRateTOT	5000ms	120000ms

* Present/Following

ATSC Repetition Rate

Parameter	Keyword	Minimum	Maximum
MGT repetition rate	MGTRepetitionRate	50ms	2000ms
STT repetition rate	STTRepetitionRate	1000ms	60000ms
VCT repetition rate	VCTRepetitionRate	50ms	3000ms
RRT repetition rate	RRTRepetitionRate	5000ms	120000ms
ATSC EIT repetition rate	ATSCEITRepetitionRate	50ms	3000ms

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Bit Rate Limits on PIDs

For any PID, the maximum and minimum bit rate limits can be set. If the bit rate falls outside these limits, an alarm will activate (if it is enabled on the Status screen). The bit rate limits for any number of PIDs can be set; each PID must be identified by it's PID number and associated with maximum and minimum values (in bits per second). Setting the bit rate to 0 for either value will disable the check for that limit.

PIDRate = <PID number>, <min rate>, <max rate>

where: <PID number>, <min rate> and <max rate> are all integers

E.g. PIDRate = 180, 1300000, 2500000
Bit rates in PID 180 which are less than 1.3Mbit/s or more than 2.5Mbit/s will cause an alarm output to be generated, provided that the alarm is enabled.

Bit Rate Limits on Programs

For any program (which is a combination of PIDs) the maximum and minimum bit rate limits can be set. If the bit rate falls outside these limits, an alarm will activate (if it is enabled on the Status screen). The bit rate limits for any number of programs can be set; each program must be identified by it's program number and associated with maximum and minimum values (in bits per second). Setting the bit rate to 0 for either value will disable the check for that limit.

ProgramRate = <Program number>, <min rate>, <max rate>

where: <Program number>, <min rate> and <max rate> are all integers

E.g. ProgramRate = 3850, 2700000, 7350000
Bit rates in program 3850 which are less than 2.7Mbit/s or more than 7.35Mbit/s will cause an alarm output to be generated, provided that the alarm is enabled.

Exclude PID

A transport stream may contain a number of unreferenced PIDs. This parameter allows these PIDs to be excluded from the DVB Unreferenced PID test; this ensures that the alarm is not raised when the specified PID is found to be unreferenced.

Exclude PID = <PIDnumber1>, <PIDnumber2>,……<PIDnumbern>

The parameter values <PIDnumber> are PID numbers separated by a comma. Any number of PID numbers can be set; multiple lines are acceptable.

If the parameter is specified without any PID numbers, *all* PIDs (referenced and unreferenced) in the stream will be included in the Unreferenced PID test.

Stream Maintenance Mode

The user can enable or disable the Stream Maintenance mode.

StreamMaintenanceMode = <action>

Where: <action> = E (Enable) or D (Disable)

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PCR Accuracy Algorithm

Two PCR Accuracy calculation algorithms are available for use in the Stream View; Previous Point Fit and Line Fit.

PCRAccuracyAlgorithm = <value>

Where: <value> = P (Previous Point Fit) or L (Line Fit)

MPE Stream Type

The MPE Stream Type comprises a decimal format number in the range 0 to 255.

MPEStreamType = <value>

Interface Card Settings

The following sections detail a set of generic settings which can be assigned to one or more cards of a particular type in a unit.

Section [Lband Channels]

Up to 256 L-Band channels can be defined in this section; each channel must be identified by a unique name. The names (and their associated parameters) are called from the Lband Settings section (see below).

The format of the [Lband Channel] parameters is as follows:

<Name> = <Bandwidth>, <LO_Frequency>, <Transponder_Frequency>, Polarisation, SymbolRate, ViterbiRate, ViterbiRateAuto, 22KHzTone

Where

<Name>	string; unique L-Band Channel name
<Bandwidth>	27 or 36
<LO_Frequency>	Local Oscillator; Floating point number; GHz
<Transponder_Frequency>	Floating point number; GHz
<Polarisation>	0 (Off), 13 or 18 (Volts)
<SymbolRate>	Range: 1.00 to 45.00; Floating Point Number; MSymbols per second
<ViterbiRate>	1/2, 2/3, 3/4, 4/5, 5/6, 6/7, 7/8, 8/9
<ViterbiRateAuto>	0, 1
<22KhzTone>	0, 1

The parameters are order sensitive and *all* eight values *must* be specified.

If a <Name> is specified in the configuration file without any parameters, then this channel setting will be deleted from the list displayed on the Stream View screen. This mechanism provides a method for deleting unwanted channel name settings. If no match for the name is found in the existing list, this line will be ignored.

Floating point numbers may be up to four decimal places.

Some of the parameters are defined in more detail below:

Name

A unique channel name of up to 32 characters. Up to 256 channel names may be identified.

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Bandwidth

This parameter, set to either 27MHz or 36MHz, controls the filter inside the demodulator module. This should be set to 27 for all symbol rates up to 22MSymbols/s and 36 for symbol rates up to 30MSymbols/s.

LO Frequency

The Local Oscillator (LO) frequency of the Low Noise Block (LNB) is dependent on the Transponder frequency and must be such that the difference falls within the input range of the receiver. Typically, these values are 10.6GHz (Hi-Band) and 9.75GHz (Lo-Band) when converting from KU band. The values are 5.7GHz (Hi-Band) and 5.15GHz (Lo-Band respectively when converting from C-Band. This information should be confirmed for the specific type of LNBs used.

Transponder Frequency

The IF frequency which is used to initialise the L-Band Interface card is calculated thus:

Transponder_Frequency – LO_Frequency

If the user wishes to specify the IF frequency rather than the individual LO and Transponder frequencies, set the LO frequency to a value of 0 (zero) and specify the required IF frequency under this parameter (Transponder_Frequency). If the IF frequency is specified, it must be in the range 0.950GHz to 2.150GHz; the tuning increment is 125kHz.

Polarisation

This parameter selects the polarisation by applying 13V (vertical) or 18V (horizontal) to the LNB.

A value of 0 can be used if no voltage is to be applied from this card; i.e. the polarisation voltage is being supplied from an external source.

Symbol Rate

The value of the symbol rate used is entered in this field.

ViterbiRate

This is the harmonic fraction and takes one of the values specified.

ViterbiRateAuto

This flag, values 0 or 1, indicates if the Verterbi Rate will be automatically tracked (0) or not (1). When enabled, the initial value will be that specified in the VerterbiRate parameter.

22kHzTone

The LNB local oscillator (LO) frequency is selected by applying the 22kHz tone as follows:

22kHz Tone Present - Select Hi-Band
22kHz Tone Absent - Select Lo-Band

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Section [Lband_SettingsA] …… [Lband_SettingsD]

For each L-Band Interface card in the unit a default channel name (from the list of channels defined under the [Lband Channels] section) must be defined.

The user can also define a sub-set of channels in a ChannelList, which is applicable only to this interface card; this list is a sub-set of the [Lband Channels] section list. This sub-set is the list which will be presented to the user at the user interface when selecting alternative channels. When the configuration file is read in, syntax checking will be performed to ensure that the list of names under this section all exist in the [Lband Channels] list; names not found in the list will be ignored and the user warned.

The parameters are defined below:

DefaultChannel

Select a name from the names defined in the [Lband Channels] section list. If this parameter is omitted, the first name in the Lband Channels list will be used.

If a configuration file is processed after tuning to a channel, the default channel name in the file will be changed to the name of the last channel used prior to processing the file (see *Tuning from the Scratchpad* below).

ChannelList

This defines a list of names from the channel list separated by a comma. If the line is too long, then the list of names can be continued on a second (and subsequent) line; each line must start with 'ChannelList ='. If this list is omitted then *all* of the channels defined in the [Lband Channels] section will be available to the user to select from.

Tuning from the Scratchpad

If the user tunes an L-Band from the scratchpad, rather than choosing a pre-defined channel and subsequently generates a configuration file, a channel definition of 'Setting for CardX' (where 'X' is 1, 2, 3 or 4, depending on the card) will be generated and added to the Channel List for [Lband_SettingsX].



The channel name 'Setting for CardX' is **reserved** and **must not** be used to program Stream View. The configuration file must be edited and 'Setting for CardX' replaced with a meaningful channel name in the Channel List and the Default Channel

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Section [G703_SettingsA] …… [G703_SettingsD]

For each G703 Setting a single parameter can be defined.

Port Selection = <port> where: <port> E2, E3 or DS3

Section [G703Plus_SettingsA] …… [G703Plus_SettingsD]

For each G703Plus Setting the following parameters can be defined:

PortSelection = <port> where: <port> = E2, E3 or DS3
ReedSolomon = <action> where: <action> = On or Off
Interleaving = <action> where: <action> = On or Off
Scrambling = <action> where: <action> = On or Off

Section [GPSI_MK2_SettingsA]…… [GPSI_MK2_SettingsD]

For each GPSI Mk2 Setting the following parameters can be defined:

Bitrate = <bitrate> where: <bitrate> = 8VSBRate or 16VSBRate
Mode = <mode> where: <mode> = DHEI or SMPTE

Section [ASIPlus_SettingsA] …… [ASIPlus_SettingsD]

For each ASI+ Setting the following parameter can be defined:

Mode = <mode> where: <mode> = ASI or M2S

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Example Configuration File Format

```
[Set To Factory Defaults]

Stream1
Stream2
Stream3
Stream4

StreamViewUnit


[User Saveable Configuration File Names]

Slot1 = <FileName>
Slot2 = <FileName>
Slot3 = <FileName>
Slot4 = <FileName>
Slot5 = <FileName>
Slot6 = <FileName>
Slot7 = <FileName>
Slot8 = <FileName>


[Stream View Unit]

ComputerName = ComputerName

TestFan = <E or D, A, T>
TestHardDisk = <E or D, A, T>
TestTemperature = <E or D, A, T>
TestDCVoltages = <E or D, A, T>
GlobaMaintenanceMode = <E or D>

ErrorLoggingRate = <Value>


[Stream_1]

//[Stream_2], [Stream_3] and [Stream_4]

InterfaceCardSettings = [<interfacename>]

StreamName = <StreamName>
TestSyncLoss = <E or D, A, T, R1, R2>
TestSyncByte = <E or D, A, T, R1, R2>
TestPAT = <E or D, A, T, R1, R2>
TestContinuity = <E or D, A, T, R1, R2>
TestPMT = <E or D, A, T, R1, R2>
TestPID = <E or D, A, T, R1, R2>
TestTransport = <E or D, A, T, R1, R2>
TestCRC = <E or D, A, T, R1, R2>
TestPCR = <E or D, A, T, R1, R2>
TestPCRAccuracy = <E or D, A, T, R1, R2>
TestPTS = <E or D, A, T, R1, R2>
TestCAT = <E or D, A, T, R1, R2>
TestPIDUnrefernced = <E or D, A, T, R1, R2>
```


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```
PATRepetitionRate = <Value>
PMTRepetitionRate = <Value>
PIDRepetitionRate = <Value>
PCRRepetitionRate = <Value>
PCRAccuracy = <Value>
PTSRepetitionRate = <Value>
NITRepetitionRate = <Value>

PIDOcc = <Value>

PIDRate = PID Number, Min Rate, Max Rate

ProgramRate = Program Number, Min Rate, Max Rate

ExcludePID = PID Number, ……, PID Number from Unreferenced PID test

StreamMaintenanceMode = E or D

PCRAccuracyAlgorithm = P or L
```

// The following list is only applicable to the DVB version of the software

```
TestSI = <E or D, A, T, R1, R2>
TestNIT = <E or D, A, T, R1, R2>
TestSDT = <E or D, A, T, R1, R2>
TestEIT = <E or D, A, T, R1, R2>
TestRST = <E or D, A, T, R1, R2>
TestTDT = <E or D, A, T, R1, R2>

PIDUnreferncedRepetitionRate = <Value>
SDTRepetitionRate = <Value>
EITRepetitionRate = <Value>
TDTRepetitionRate = <Value>
SIRepetitionRateNIT = <Value>
SIRepetitionRateBAT = <Value>
SIRepetitionRateSDTMultiplex = <Value>
SIRepetitionRateSDTOther = <Value>
SIRepetitionRateEITMultiplex = <Value>
SIRepetitionRateEITOther = <Value>
SIRepetitionRateTDT = <Value>
SIRepetitionRateTOT = <Value>
```

// The following list is only applicable to the ATSC version of the software

```
TestBasePID = <E or D, A, T, R1, R2>
TestProgParadigm = <E or D, A, T, R1, R2>
TestMGT =< E or D, A, T, R1, R2>
TestSTT = <E or D, A, T, R1, R2>
TestVCT = <E or D, A, T, R1, R2>
TestRRT = <E or D, A, T, R1, R2>
TestATSCEIT = <E or D, A, T, R1, R2>
VCTMode = <EitherVCT, Inferred, Terrestrial, Cable>
MGTRepetitionRate = <Value>
STTRepetitionRate = <Value>
VCTRepetitionRate = <Value>
RRTRepetitionRate = <Value>
ATSCEITRepetitionRate = <Value>
```


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[Lband Channels]

```
<Name1> = <Bandwidth>, <LO_Frequency>, <Transponder_Frequency>,
<Polarisation>, <SymbolRate>, <ViterbiRate>, <ViterbiRateAuto>,
<22KHzTone>

<Name2> = <Bandwidth>, <LO_Frequency>, <Transponder_Frequency>,
<Polarisation>, <SymbolRate>, <ViterbiRate>, <ViterbiRateAuto>,
<22KHzTone>

<Name3> = <Bandwidth>, <LO_Frequency>, <Transponder_Frequency>,
<Polarisation>, <SymbolRate>, <ViterbiRate>, <ViterbiRateAuto>,
<22KHzTone>

...

<NameN> = <Bandwidth>, <LO_Frequency>, <Transponder_Frequency>,
<Polarisation>, <SymbolRate>, <ViterbiRate>, <ViterbiRateAuto>,
<22KHzTone>
```

[Lband_SettingsA]

```
//Lband_SettingsB, Lband_SettingsC and Lband_SettingsD,

DefaultChannel = <NameN>

ChannelList = <NameA>, <NameB>,.....<NameC>
ChannelList = <NameX>, <NameY>,.....<NameZ>
```

[G703_SettingsA]

```
//G703_SettingsB, G703_SettingsC and G703_SettingsD,

PortSelection = <E2,E3,DS3>
```

[G703Plus_SettingsA]

```
//G703Plus _SettingsB, G703Plus _SettingsC and G703Plus _SettingsD,

PortSelection = <E2,E3>
ReedSolomon = <On,Off>
Interleaving = <On,Off>
Scrambling = <On,Off>
```


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Error Code Values

This section sets out the Error Code Values currently defined within StreamView. The values shown are the first 4 digits of the 8-digit number. The other 4 digits hold extra information and are not necessary to process the log file.

Box Events

Event Id	Event Name	Event Description
1000	Any Box Error	The state of any box error
1001	Fan State	The current state of the fan
1002	Hard Disk	The current state of the hard disk
1003	Floppy Disk	The current state of the floppy disk drive
1004	Temperature	Indicates whether temperature is within operating range
1005	DC Voltage	The current state of the DC power supply
1020	Plus 5 Volts	Plus 5 Volts
1021	Plus 12 Volts	Plus 12 Volts
1022	Minus 5 Volts	Minus 5 Volts
1023	Minus 12 Volts	Minus 12 Volts
1030	Local Temperature	Local Temperature
1031	Remote Temperature	Remote Temperature
1032	Fan 1	The current state of fan 1
1033	Fan 2	The current state of fan 2
1100	SV Start	Start Stream View
1101	SV Stop	Stop Stream View
1102	SV Init Fail	StreamView Initialisation Failed
1103	Alarm Reset	Reset Alarm
1104	Event Reset	Reset Event
1105	Clear Log	Clear Log
5001	Global Mmode	Global Maintenance Mode

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Interface Specific Event Ids

General Events

Event Id	Event Name	Event Description
2000	Any Stream Error	The state of any event on this stream
2001	PID Occupancy	PID occupancy exceeds limits
2002	Program Occupancy	Program occupancy exceeds limits
2100	Stream Misc Inf	Stream Miscellaneous Information
2101	Stream Misc Warn	Stream Miscellaneous Warning
2102	Stream Misc Err	Stream Miscellaneous Error

First Priority DVB Errors

Event Id	Event Name	Event Description
3011	Sync	Sync (DVB test 1.1)
3012	Sync Byte	Sync Byte (DVB test 1.2)
3013	PAT Table	PAT Table (DVB test 1.3)
3014	Continuity	Continuity Error (DVB test 1.4)
3015	PMT	PMT (DVB test 1.5)
3016	Pid	Pid (DVB test 1.6)

Second Priority DVB Errors

Event Id	Event Name	Event Description
3021	Transport	Transport (DVB test 2.1)
3022	CRC	CRC (DVB test 2.2)
3023	PCR	PCR (DVB test 2.3)
3024	PCR Accuracy	PCR Accuracy (DVB test 2.4)
3025	PTS	PTS (DVB test 2.5)
3026	CAT	CAT (DVB test 2.6)

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Third Priority DVB Errors

Event Id	Event Name	Event Description
3031	NIT	NIT (DVB test 3.1)
3032	SI Repetition	SI Repetition (DVB test 3.2)
3034	Unref PID	Unreferenced PID (DVB test 3.4)
3035	SDT	SDT Error (DVB test 3.5)
3036	EIT	EIT Error (DVB test 3.6)
3037	RST	RST Error (DVB test 3.7)
3038	TDT	TDT Error (DVB test 3.8)

Other Errors

Event Id	Event Name	Event Description
3100	PAT Err Timer	PAT Error Timer
3101	PAT Err Table Id	PAT Error Table Id
3102	PAT Err Scr	PAT Error Scrambling
3103	PMT Err Timer	PAT Error Timer
3104	PMT Err Scr	PMT Error Scrambling
3105	SDT Err Timer	SDT Error Timer
3106	SDT Err Table Id	SDT Error Table Id
3107	CAT Err Table Id	CAT Error Table Id
3108	NIT Err Timer	NIT Error Timer
3109	NIT Err Table Id	NIT Error Table Id
3110	EIT Err Timer	EIT Error Timer
3111	EIT Err Table Id	EIT Error Table Id
3112	TDT Err Timer	TDT Error Timer
3113	TDT Err Table Id	TDT Error Table Id
3114	CAT Err Scramb	CAT Error Scrambling
3115	PCR Err Timer	PCR Error Timer
3116	PCR Err Disc	PCR Error Disc
3201	MGT Err	MGT Error
3202	STT Err	STT Error

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Event Id	Event Name	Event Description
3203	RRT Err	RRT Error
3204	ATSCEIT Err	ATSCEIT Error
3205	VCT Err	VCT Error
3206	ETT Err	ETT Error
3207	EIT Mode Err	EIT Mode Error
3210	VCT Timer Err	VCT Timer Error
3211	MGT Timer Err	MGT Timer Error
3212	STT Timer Err	STT Timer Error
3213	RRT Timer Err	RRT Timer Error
3214	ATSCEIT Timer Err	ATSCEIT Timer Error
3220	VCT Program Paradigm	VCT Program Paradigm Error
3400	SFN Err	Any SFN Error
3401	SFN No Mip Err	No SFN MIP found
3402	SFN Packet Count Err	Error in SFN Packet Count
3403	SFN Invalid Mip Err	Error in SFN MIP
3404	SFN Timer Err	Error in SFN Timer
5000	Stream Mmode	Stream Maintenance Mode

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List of acronyms

AIT	Application Information Table
ASI	Asynchronous Serial Interface
ATM	Asynchronous Transfer Mode
ATSC	Advanced Television Systems Committee
BER	Bit Error Rate
CAT	Conditional Access Table
CRC	Cyclic Redundancy Code
CSV	Comma Separated Variables
DHEI	DigiCable Headend Expansion Interface
DTG	Digital Terrestrial Group
DVB	Digital Video Broadcasting
ECM	Entitlement Control Message
EIT	Event Information Table
EMM	Entitlement Management Message
IRD	Integrated Receiver Decoders
ISDB	Integrated Services Digital Broadcasting
LED	Light Emitting Diode
LNB	Low Noise Block
MIC	MPEG-2 Interface Card
MIP	Mega-frame Initialisation Packet (ref: SFN)
MPEG	Moving Picture Expert Group
NIT	Network Information Table
PAT	Program Association Table
PCR	Program Clock Rate
PID	Packet Identifier
PMT	Program Map Table
PSI	Program Specific Information
PTS	Presentation Time Stamp
RST	Running Status Table
SDT	Service Description Table
SFN	Single Frequency Network
SI	Serial Interface or Service information
SNMP	Simple Network Management Protocol
SPI	Synchronous Parallel Interface
TDT	Time and Date Table
TMCC	Transmission and Multiplexing Configuration Control (ref: ISDB)
TOT	Time Offset Table
UTC	Universal Time Co-ordinated

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