

# Stream Monitor Options Specification

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### 1. Advanced MPEG Monitoring

Click Alarms Config -> TR 101 290

Click the tick next to the alarm to enable it

Input alarm threshold for each alarm

## Alarms Configuration

☰ Default
☰ Profile 1
☰ Profile 2
☰ Profile 3
☰ Profile 4

☰ Stream Alarms
📶 RF Alarms
🔍 TR 101 290 Alarms

**TR 101 290 alarms (Duration ~10 seconds)**

Priority 1	Alarm	Priority 2	Alarm	Priority 3	Alarm
TS Lock:	<input type="checkbox"/>	Transport err.:	<input type="checkbox"/>	NIT:	<input type="text" value="10000"/> ms <input type="checkbox"/>
PAT:	<input type="text" value="600"/> ms <input type="checkbox"/>	CRC:	<input type="checkbox"/>	SI rep. rate:	<input type="checkbox"/>
Continuity:	<input type="checkbox"/>	PCR:	<input type="text" value="120"/> ms <input type="checkbox"/>	Unreferenced PID:	<input type="checkbox"/>
PMT:	<input type="text" value="600"/> ms <input type="checkbox"/>	PTS:	<input type="text" value="800"/> ms <input type="checkbox"/>	SDT:	<input type="text" value="2500"/> ms <input type="checkbox"/>
Missing PID:	<input type="checkbox"/>	CAT:	<input type="checkbox"/>	EIT:	<input type="text" value="5000"/> ms <input type="checkbox"/>
				RST:	<input type="checkbox"/>
				TDT:	<input type="text" value="31000"/> ms <input type="checkbox"/>

Save

**Conditional access alarms (Duration ~10 seconds)**

	Alarm
ECM maximum interval:	<input type="text" value="500"/> ms <input type="checkbox"/>
Scrambling change interval:	<input type="text" value="15000"/> ms <input type="checkbox"/>
EMM minimum bitrate:	<input type="text" value="50"/> kbps <input type="checkbox"/>

Save

Remember to “Save” the new changes you’ve made

#### 1.1 First Priorities

- TS Lock – Constantly follows for a valid impulse for the synchronization of every 188 bytes. After synchronization has been achieved the evaluation of the other parameters can be carried out.

- PAT - PID 0x0000 is not transmitted every 500 milliseconds or less. A section with a table number different than 0x00 is found at PID 0x0000 (Program Allocation Table). If the PAT is missing then the decoder can do nothing, no program is decodable.
- Continuity – This error indicates incorrect packet sorting. A packet has been sent more than twice at the same time or lost altogether. For this indicator three checks are combined: "Incorrect packet order", "Lost packet" or "Duplicated packet".
- PMT – Sections with table number 0x02 (Program Map Table) are not transmitted every 500 milliseconds or less to the PID, referenced from the PAT table.

Parts in this context are the video stream and the audio streams and the data stream. Without a PMT the corresponding program is not decodable.

- Missing PID – This error indicates that certain PIDs are not transmitted for a specified amount of time.

It is checked whether there exists a data stream for each PID that occurs in the PMT table.

## 1.2 Second Priorities

- Transport error – the mistake indicator in the transport stream is "1"
- CRC - The CRC (Cyclic Redundancy Check) can indicate an error in the transmission of any of the following tables: CAT, PAT, PMT, NIT (Network Information Table), EIT (Event Information Table), BAT (Bouquet Association Table), SDT (Service Description Table) and TOT (Timing Offset Table).
- PCR – If PCR is missing for more than 100 milliseconds without indication of interruption. Also when the time interval between two PCR reports is larger than 50 milliseconds.
- PTS - PTS should occur at least every 800ms. It is only accessible if the TS is not scrambled.
- CAT – A CAT error means that there are encrypted packets in the transport stream, but there is a missing table with number 0x01 (CAT) at PID 0x0001

## 1.3 Third Priorities

- NIT – Active when sections with table numbers, other than 0x40, 0x41 or 0x72, found at PID 0x0010. It is checked whether NITs are present in the TS and whether they have the correct PID.

- SI rep. rate – Repetition of the service tables is over the specified thresholds. For SI tables a maximum and minimum periodicity are specified in EN 300 468 and TR 101 211. This is checked for this indicator.
- Unreferenced PID – PID, other than PMT PIDs, PIDs with numbers between 0x00 and 0x1F or PIDs which are defined as client data streams, which are not referenced by PMT or PAT tables in 500 milliseconds. Each non-private program data stream should have its PID listed in the PMTs.
- SDT – Sections with table numbers 0x42 missing in PID 0x0011 for more than 2 seconds. Sections with numbers other than 0x42, 0x46, 0x4A or 0x72 found at PID 0x0011. 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 receiver is unable to give the viewer a list of what services are available.
- EIT – Sections with table numbers 0x4E missing in PID 0x0012 for more than 2 seconds. Sections with numbers other than the range of 0x4E-0x6F or 0x72 found at PID 0x0012.
- The EIT (Event Information Table) describes what is on now and next on each service, and optionally details the complete programming schedule. The EIT schedule information is only accessible if the TS is not scrambled.
- RST – Sections with table numbers, other than 0x71 and 0x72, found at PID 0x0013. Two sections with table numbers 0x71 (RST) at PID 0x0013 for less than 25 milliseconds.
- The RST is a quick updating mechanism for the status information carried in the EIT.
- TDT – Sections with table number 0x70 (TDT) missing at PID 0x0014 for more than 30 seconds. Sections with table number other than 0x70, 0x72 (ST), 0x73 (TOT), found at PID 0x0014. Two sections with table number 0x70 (TDT) at PID 0x0014 for less than 25 milliseconds.
- 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 time offset in a given area.

#### 1.4 Conditional Access Alarms (CA)

Under the DVB standard, conditional access system (CAS) standards are defined in the specification documents for DVB-CA (conditional access), DVB-CSA (the common scrambling algorithm) and DVB-CI (the Common Interface). These standards define a method by which one can obfuscate a digital-television stream, with access provided only to those with valid decryption smart-cards. This is achieved by a combination of scrambling and encryption. The data stream is scrambled with a 48-bit secret key, called the control word. Knowing the value of the control word at a given moment is of

relatively little value, as under normal conditions, content providers will change the control word several times per minute. The control word is generated automatically in such a way that successive values are not usually predictable.

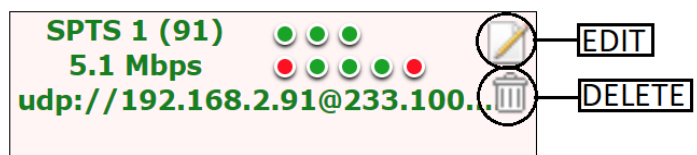
In order for the receiver to unscramble the data stream, it must be permanently informed about the current value of the control word. In practice, it must be informed slightly in advance, so that no viewing interruption occurs. Encryption is used to protect the control word during transmission to the receiver: the control word is encrypted as an entitlement control message (ECM). The CA subsystem in the receiver will decrypt the control word only when authorized to do so; that authority is sent to the receiver in the form of an entitlement management message (EMM). The control word can be transmitted through different ECMs at once. This allows the use of several conditional access systems at the same time.

The contents of ECMs and EMMs are not standardized and as such they depend on the conditional access system being used.

## 2. Alarm Profiles

The Alarm profiles add 4 extra alarm profiles other than the “default” one. Each profile can be applied to follow the carrier or stream you specify and wish to monitor. This allows far more flexible alarms to be set, making overall monitoring a lot easier and simple to manage. Set different thresholds to different profiles and then simply apply the profile to any frequency carrier or stream. Alarm profiles also gives access to advanced Logs for your DVB device.

Alarm profiles are assigned in the **Config -> Config Alarms** menu. Then choose the **edit** option on any DVB frequency carrier you want and set the alarm profile you wish to apply.



### 3. Audio/Video Freeze

Audio/Video freeze option comes with a set of useful features:

- Detection of black screen and video frames with no changes (Video freeze).
- Percentage difference between frames
- Audio freeze detection

Our devices have integrated audio, video freeze monitoring functionality. Each program from the stream is being monitored for quality issues. The video streams can be monitored for **black frames** and **freeze frames**. The audio streams are monitored for **audio freeze** (if no change in level). All the error detections are configurable from the alarm tab for excluding false positive results in different workflows.

On the Audio / Video tab the status and frames of all programs can be viewed in a table.

🖥️ Audio/Video Status

Channel	Video Status (V)	Audio Status (A)
Rai 1	OK	OK
Rai 2	OK	OK
EKids	OK	OK
Pro 7	OK	OK
Kabel 1	OK	OK
Magic TV	OK	OK
Bulgaria 24	OK	OK
Tiankov Folk	OK	OK
France 24	OK	OK

The section provides the following information about the program:

- **Video** – Is there a video freeze found
- **Difference** – shows the difference between the last two frames in percentage
- **Audio** – Is there an audio freeze found
- **Time** – Date and time when the last decoding for the specified channel has finished
- **Duration** – Time elapsed for audio / video decoding in seconds

## 4. Program Alarms Profile (included in all versions)

Click **Alarms -> Program Alarms**

From the alarms configuration tab you can set the program configuration for each of the following types (service/program profiles):

- **RADIO**
- **SD**
- **HD**
- **ULTRA HD**
- **CUSTOM**

### ○ Radio Configuration

Click **Alarms -> Program Alarms -> Radio**

You can set the min audio bitrate and max cc errors for the alarm trigger / warning.

- **Audio Freeze** – monitors the audio signal and sends alarm when audio is bad or frozen. Set the desired value for audio freeze in minutes and if the alarm triggers you will receive an email notification. By default the audio freeze is set to 10 minutes.

The screenshot shows the 'Program Alarms' configuration interface for the 'RADIO' profile. The 'Service Alarms Configuration' table is as follows:

	Alarm		Warning	
Min Audio Bitrate:	50 Kbps	<input checked="" type="checkbox"/>	70 Kbps	<input checked="" type="checkbox"/>
Max CC Errors:	20 errors	<input checked="" type="checkbox"/>	10 errors	<input checked="" type="checkbox"/>

Below this is the 'Audio/Video Alarms' section with the following configuration:

	Alarm	
Audio freeze:	10 minutes	<input checked="" type="checkbox"/>

### ○ SD, HD, ULTRA HD, Custom Configuration

**Alarms -> Program Alarms**

In addition to the min audio bitrate and max cc errors you can also configure min service bitrate and min video bitrate.

- **Video Freeze** – monitors the video and sends alarm when frozen/black screen. You can set the desired timeout value for the video freeze in minutes. If the alarm triggers an email notification will be sent. By default the video freeze is set to 10 minutes.

The screenshot shows the 'Program Alarms' configuration interface for the 'SD' profile. The 'Service Alarms Configuration' table is as follows:

	Alarm		Warning	
Min Service Bitrate:	500 Kbps	<input checked="" type="checkbox"/>	1000 Kbps	<input checked="" type="checkbox"/>
Min Audio Bitrate:	50 Kbps	<input checked="" type="checkbox"/>	70 Kbps	<input checked="" type="checkbox"/>
Min Video Bitrate:	500 Kbps	<input checked="" type="checkbox"/>	600 Kbps	<input checked="" type="checkbox"/>
Max CC Errors:	10 errors	<input checked="" type="checkbox"/>	20 errors	<input checked="" type="checkbox"/>

Below this is the 'Audio/Video Alarms' section with the following configuration:

	Alarm	
Audio freeze:	10 minutes	<input checked="" type="checkbox"/>
Video freeze:	10 minutes	<input checked="" type="checkbox"/>

**NOTE:** If there are too many services this timeout may not be respected as the period between two consecutive decoding of a service may take more than the configured timeout. Thus triggering and clearing this alarm may need more than 10 minutes.

## 5. Tuner configuration

There are different possible configurations for the DVB Stream Monitor.

- CATV Monitoring (Cable TV Broadcasters) enabling DVB-C and Analogue TV
- CATV Monitoring (North/South America) enabling QAM-B and Analogue TV
- Terrestrial Monitoring enabling DVB-T and DVB-T2
- Satellite Monitoring enabling DVB-S and DVB-S2
- Additional DOCSIS RF measurements can be added to the device.

**NOTE:** Please, contact us if you want combination of the above standards.