ELIUM RS232/Network Control Protocol Description

1. General

Date: 04.02.2016
Revision: 2.38
Scope: The goal of this document is to describe how ELIUM IRD Receiver can be controlled through RS232 connector (RS-RC mode) or via network TCP connection (NET-RC mode).

2. The RS232/Network attachment

One of the many features implemented in ELIUM IRD Receiver application is the possibility of bidirectional controlling the IRD Receiver through RS232 connection or via network TCP connection according to this Protocol description.

3. Example application

ELIUM IRD Receiver can be controlled from your PC. Be aware that only two wires of nine are used (RX and TX) in the case of RS-RC mode. The TCP port 26 is the default communication port in the case of NET-RC mode.

4. Working conditions

The communication can work correctly only if the following conditions are fulfilled.

For the RS-RC mode (via RS232 connection):

- Baud: 115.200 (default)
- Parity: none
- Data Bits: 8
- Stop Bits: 1
- Flow Control: none

For the NET-RC mode (via network TCP connection):

The TCP communication port is configurable by the server side (IRD Receiver) but selected port number should not be used by other applications. The client (PC) connects to the server (IRD Receiver) with its network address and port via TCP and fulfils the commands described below to control the IRD Receiver.

5. Attention:

Please mention that after switching on the unit by pushing the Power Switch, the unit is starting and during this procedure should not be disturbed. If you send anything during the starting procedure, the unit can go to Firmware update procedure. So it is recommended waiting until receive "#SYSTEM READY" text information from application part.

6. Note:

In certain moments ELIUM IRD Receiver sent other "#" lines too.
The syntax is: #?/text/?#

They give information about: Boot, Application Version etc. These lines should not be taken into account.

7. Commands without additional return value

Each command starts with "<" char and ends with ">". Immediately after ">" sign is received, command will be perfomed.

If command is not recognized (for example, if <ABC> command is sent), the following text should appear on your terminal window:

#COMMAND: <ABC>
#ERROR: Command not supported

If command is supported and was received correctly you should get:

#COMMAND : <ON>
#OK

The line "#COMMAND:" is sent before command is performed. It only indicates that certain string of chars was received by Receiver. After that, command is performed and, if this action is finished, the line "#OK" should be sent.

In order to simplify (from programmer point of view) the reception of responses (so called confirmations) the first sign sent from Receiver is always "#". So, host should wait for "#", the next letter should indicate whether everything was all right or not (#C, #E or #C, #O)

Command	**Description**
<ON>	Turn on Receiver (doesn´t work in normal mode)
<OFF>	Turn off Receiver (doesn´t work in Standby mode)
<REB>	Reboot Receiver. Parameters are not erased.
<SSS n>	Set RS232 Baud Rate Supported values are: 9600, 19200, 38400, 115200. However, Boot Loader will not change its Baud Rate which is 115.200. Only application may work with the new speed. Baud Rate will be changed immediately. After that, application will always start with the new Baud Rate.
<CMX n>	Set left cooler maximum temperature (n=50, 55, 60, 65, 70, 75)
<CMXL n>	Set left cooler maximum temperature (n=50, 55, 60, 65, 70, 75)
<CMXR n>	Set right cooler maximum temperature (n=50, 55, 60, 65, 70, 75)
<CMN n>	Set left cooler minimum temperature (n=20, 25, 30, 35, 40, 45)

<CMNL n>	Set left cooler minimum temperature (n=20, 25, 30, 35, 40, 45)
<CMNR n>	Set right cooler minimum temperature (n=20, 25, 30, 35, 40, 45)
<TXT 1>	Teletext on
<TXT 0>	Teletext off
<TXT n>	Select Teletext page (n=100 .. 999)
<TXT R>	Simulates <Key RED> for teletext navigation.
<TXT G>	Simulates <Key GREEN> for teletext navigation.
<TXT Y>	Simulates <Key YELLOW> for teletext navigation.
<TXT B>	Simulates <Key BLUE> for teletext navigation.
<EPG 1>	EPG Electronic Program Guide on
<EPG 0>	EPG Electronic Program Guide off
<EPG R>	EPG move to right site
<EPG L>	EPG move to left site
<EPG U>	EPG move up
<EPG D>	EPG move down
<EPG I>	EPG get event information of the selected event
<EPG E>	EPG leave event information, move back to EPG
<CPI 1>	Current Program Information on
<CPI 0>	Current Program Information off
<CPI U>	Current Program Information scroll up
<CPI D>	Current Program Information scroll down
<FCP 1>	Freeze current Picture on
<FCP 0>	Freeze current Picture off
<AVM 1>	Audio and Multifeed Option on
<AVM 0>	Audio and Multifeed Option off
<AVM U>	Audio and Multifeed Option move up
<AVM D>	Audio and Multifeed Option move down
<AVM L>	Audio and Multifeed Option move left
<AVM R>	Audio and Multifeed Option move right
<RCL>	Return to last Channel
<MNU>	Menue
<EXT>	Exit and leave Menue
<CNF>	Confirm the selected Option

<MP3>	Start movieNET mp3 audio player
<IRADIO>	Start movieNET internet radio player
<NAV U>	Move up
<NAV D>	Move down
<NAV L>	Move left
<NAV R>	Move right
<INF>	Info, activates the OSD menu with program informations
<TVL>	Activates the OSD menu with a list of available programs
<PAG u>	Moves the cursor in the program list 10 lines up. In normal mode it switches to current program + 10.
<PAG d>	Moves the cursor in the program list 10 lines down In normal mode it switches to current program - 10.
<PAG n>	Moves the cursor in the program list +- n lines down In normal mode it switches to current program +/- n.
<DIG n>	Simulates a digit input from the remote control (n = 0..9)
<YAM n>	Set RGB/YPbPr-Mode 0 RGB 1 YPbPr
<YAR n>	Set digital video output resolution 0 576p 1 720p 60Hz 2 720p 50Hz 3 1080i 50Hz 4 1080p 60Hz 5 1080p 24Hz 6 1080p 25Hz 7 1080p 30Hz 8 480p
<YARAN n>	Set analog video output resolution 0 PAL 1 SECAM 2 NTSC
<ALM msg>	Define "msg" as alive-message. Msg will be send with a leading and a trailing CR/LF pair.
<ALT n>	Starts or stops alive-message sending. 0 = stop sending, 1..n = send the text defined with ALM every n seconds.
<SBM msg>	Define "msg" as in-standby-message. Msg will be send with a leading and a trailing CR/LF pair during IRD Standby.

<SBT n>	Enables or disables in-standby-message sending. 0 = disable continuous sending, 1..n = send the text defined with SBM every n seconds during IRD Standby. If the text defined with SBM command is not empty and continuous sending is disabled (n = 0), the in-standby-message will be send only once during IRD Standby.
<PFM msg>	Define "msg" as power-fail-message. Msg will be send with a leading and a trailing CR/LF pair. The command should be used only for the IRD devices with a second redundant power supply.
<PFT n>	Enables or disables power-fail-message sending. 0 = disable sending, 1..n = send the text defined with PFM every n seconds during power supply failure. The command should be used only for the IRD devices with a second redundant power supply.
<NPM n>	Enable or disable EPG event (program change) notifications. n = 0 – disable EPG event notifications n = 1 – enable EPG event notifications If enabled, the EPG event notification in format #EPG: current program (event) title will be send after the current program change.
<TRM n>	Enable or disable TV/Radio mode change notifications. n = 0 – disable TV/Radio mode change notifications n = 1 – enable TV/Radio mode change notifications If enabled, the TV/Radio mode change notification in format #TVR: TV or #TVR: Radio will be send after the TV/Radio mode change.
<VLM n>	Enable or disable volume/mute state change notifications. n = 0 – disable volume/mute state change notifications n = 1 – enable volume/mute state change notifications If enabled, the volume/mute state change notification in format #VOL: On;100 with current mute state (On/Off) and current volume value will be send after the volume or mute state change.

<CPM n>	Enable or disable channel change notifications. n = 0 – disable channel change notifications n = 1 – enable channel change notifications If enabled, the channel change notification in format #CHN: TV;1;ZDF HD or #CHN: Radio;125;Radio Paloma with the mode (TV/Radio), new channel number and title will be send after the current channel change.
<PWM n>	Enable or disable ON/OFF (Standby) state change notifications. n = 0 – disable ON/OFF (Standby) state change notifications n = 1 – enable ON/OFF (Standby) state change notifications If enabled, ON/OFF (Standby) state change notification in format #PWR: On or #PWR: Off will be send after ON/OFF (Standby) state change.
<EXTMSG msg>	Show OSD messagebox with the text defined in "msg" parameter msg = message text (UTF8)
<EXTPOPUP msg>	Show OSD popup hintbox with the text defined in "msg" parameter msg = message text (UTF8)
<SEXTMSGX n>	Set relative horizontal position for OSD messagebox/hintbox window left side (see <EXTMSG>/<EXTPOPUP> commands above) n = -1 – the window is horizontally aligned to the screen center n = 0..100 – relative position (in percent of the screen width) The current value can be received with <GEXTMSGX> command (see below).
<SEXTMSGY n>	Set relative vertical position for OSD messagebox/hintbox window top side (see <EXTMSG>/<EXTPOPUP> commands above) n = -1 – the window is vertically aligned to the screen center n = 0..100 – relative position (in percent of the screen height) The current value can be received with <GEXTMSGY> command (see below).
<SAC n>	Set Audio Channels (Audio1) n = 0 – Audio channel 1 n = 1 – Audio channel 2 …

	n = 1000 (AC3) – Dolby Audio channel 1 n = 1001 (AC3) – Dolby Audio channel 2 … Available channels can be retrieved by the GAC command.
<SAC m n>	Set Audio Channels m = 0 – Audio1 output m = 1 – Audio2 output n = 0 – Audio channel 1 n = 1 – Audio channel 2 … n = 1000 (AC3) – Dolby Audio channel 1 n = 1001 (AC3) – Dolby Audio channel 2 … Available channels can be retrieved by the GAC command.
<LCK n>	Lock/Unlock Keys n = 0 unlocks the Frontpanel-Keys and n <> 0 locks them
<LCI n>	Lock/Unlock IR-Remotecontrol n = 0 unlocks the IR-Remotecontrol and n <> 0 locks it
<RMC c>	Simulates an input via remote control. Possible codes for 'c' are: 0 Key '0' 1 Key '1' 2 Key '2' 3 Key '3' 4 Key '4' 5 Key '5' 6 Key '6' 7 Key '7' 8 Key '8' 9 Key '9' i Key OK m Key EXIT b Key MENU u Key UP j Key DOWN k Key RIGHT h Key LEFT e Key TXT d Key EPG f Key REC/STOP g Key INFO x Key Yellow (MP3/JPEG / MUSIC) c Key Red (DVR / PVR) v Key RADIO/TV

	n Key LAST t Key ON/OFF a Key MUTE J Key PIP K Key FREEZE L Key ZOOM M Key AUDIO VIDEO A Key MODE B Key Green (DVD / MOVIE) C Key Blue (GAME / MEDIA) D Key << (rew. back) E Key PLAY/PAUSE F Key >> (rew. forward) G Key | << (go prev.) H Key >>| (go next) I Key TIMER
<REC 1>	Starts recording of current program.
<REC 0>	Stops current recording.
<REC D>	Stops current recording and deletes record file.
<TSHFT 1>	Starts timeshifting with a current recording.
<TSHFT 0>	Stops timeshifting.
<MPLAY 1>	movieNET movie browser on
<MPLAY =s>	Starts movieNET movie player, audio player or picture viewer for media file defined in 's' parameter s = media file path in format of <GRL>/<GML>/<GAL>/<GPL> return (see <GRL>,<GML>,<GAL>,<GPL> below) or custom media file path in the following format: <container>;<file name> The <container> is the one of the following: HDD[1..2] = HDD connected to eSata[1..2]; NFS[1..4] = network drive mounted to Network Drive [1..4] (in NFS); INET = link to the internet radio station The <file name> is the full file path (including subfolders) to the media file, starting direct from file/subfolder name (without '/'), or the full link to internet radio station (in the case of "INET"). For example: <MPLAY =MOVIE;HDD1;movie1.ts> or <MPLAY =HDD1;myaudio/mysong1.mp3> or <MPLAY =INET;http://st1.myradio.net:8080/live.mp3>
<MPLAY 0>	movieNET movie browser off / stops movieNET movie player, audio player or picture viewer started with <MPLAY =s>

<MPLAYLIST +=s>	Add media file defined in 's' parameter to movieNET movie player or audio player play queue s = media file path in format of <GRL>/<GML> return (see <GRL>,<GML> below) or custom media file path in the following format: <container>;<file name> The <container> is the one of the following: HDD[1..2] = HDD connected to eSata[1..2]; NFS[1..4] = network drive mounted to Network Drive [1..4] (in NFS); The <file name> is the full file path (including subfolders) to the media file, starting direct from file/subfolder name (without '/'). For example: <MPLAY =MOVIE;HDD1;movie1.ts> or <MPLAY =HDD1;myaudio/mysong1.mp3>
<MPLAYLIST clear>	Clear movieNET movie player and audio player play queue
<MPLAY list>	Start movieNET movie player for media file play queue made with <MPLAYLIST +=s> command (see above).
<APLAY list>	Starts movieNET audio player for media file play queue made with <MPLAYLIST +=s> command (see above).
<MPLAY LOOP n>	Enables/disables movieNET movie player playback loop for the current media file or for the play queue made with <MPLAYLIST +=s> command (see above). n = 0 – Loop is disabled n = 1 – Loop is enabled for the current file n = 2 – Loop is enabled for the play queue
<APLAY LOOP n>	Enables/disables movieNET audio player playback loop for the current media file or for the play queue made with <MPLAYLIST +=s> command (see above). n = 0 – Loop is disabled n = 1 – Loop is enabled for the current file n = 2 – Loop is enabled for the play queue
<MPPAUSE>	Pause for the current playback in movieNET movie player Pause for the current playback in movieNET audio player
<MPPLAY>	Play for the current(paused) playback in movieNET movie player Play for selected movie in movieNET movie browser Play for the current(paused) playback in movieNET audio player
<MPSTOP>	Stop for the current playback (played movie) in movieNET movie player / return to movieNET movie browser Stop for the current playback in movieNET audio player

<MPFF>	Jump 2% forward for the current playback in movieNET movie player
<MPFF n>	Jump n minutes forward for the current playback in movieNET movie player (possible n values are 1, 5 and 10 only)
<MPRW>	Jump 2% backward for the current playback in movieNET movie player
<MPRW n>	Jump n minutes backward for current playback in movieNET movie player (possible n values are 1, 5 and 10 only)
<MPSTA>	Jump to start of the current playback in movieNET movie player and audio player
<MPMID>	Jump to the middle of the current playback in movieNET movie player
<MPEND>	Jump to end of the current playback in movieNET movie player Jump to the next file in the movieNET audio player play queue made with <MPLAYLIST +=s> command (see above).
<MPTIME>	Show/hide timeline for the current playback in movieNET movie player
<MPTMORD>	Change time order (asc/desc) in timeline for the current playback in movieNET movie player
<SSU n>	Set the subtitle stream / disable subtitling for the current channel n = the number of the one of the available DVB or TTX subtitles; n = 0 disables subtitling; Available subtitles can be received by the <GSU> command.
<PICVIEW 1>	pictureNET image viewer on
<PICVIEW 0>	pictureNET image viewer off
<PICVIEW F>	Jump 1 image forwards in pictureNET image viewer
<PICVIEW FF>	Jump 10 images forwards in pictureNET image viewer
<PICVIEW FFF>	Jump to the last image in pictureNET image viewer
<PICVIEW B>	Jump 1 image backwards in pictureNET image viewer
<PICVIEW BB>	Jump 10 images backwards in pictureNET image viewer
<PICVIEW BBB>	Jump to the first image in pictureNET image viewer
<PICVIEW INF>	Show OSD infobar in pictureNET image viewer
<PICVIEW MNU>	Acivate configuration OSD menu in pictureNET image viewer <EXT> , <CNF> and <NAV U/D/L/R> commands should be used for OSD navigation (see the information above).
<PICVIEW PLAY>	Start slideshow in pictureNET image viewer

<PICVIEW STOP>	Stop slideshow in pictureNET image viewer
<PICVIEW DELAY n>	Set slideshow delay in pictureNET image viewer n = Slideshow switching delay time in seconds;
<SETUPDIP ip>	Set network fileserver IP-address for further network firmware update or synchronizing channel logos via CIFS(Windows) or NFS(Linux) network share. ip = fileserver IP-address in format <xxx.xxx.xxx.xxx>;
<SETUPDDIR dir>	Set network share name on CIFS(Windows) fileserver or shared path on NFS(Linux) fileserver for further network firmware update or synchronizing channel logos via CIFS(Windows) or NFS(Linux) network share. dir = share name / shared path string;
<SETUPDUSER usr>	Set fileserver user name for further network firmware update or synchronizing channel logos via CIFS(Windows) or NFS(Linux) network share. usr = user name string (It should not be empty for CIFS Windows fileserver. If the Guest Access is used on the server set it correspondingly to "guest");
<SETUPDPSWD pwsd>	Set fileserver user password for further network firmware update or synchronizing channel logos via CIFS(Windows) or NFS(Linux) network share. pwsd = user password string;
<SETUPDFILE file>	Set the firmware update image filename for further network firmware update via CIFS(Windows) or NFS(Linux) network share. file = firmware update image (elium_ird_v*.img) filename string (It should contain only filename of the update image without the full path to the file);
<FWUPDATE CIFS>	Start network firmware update via CIFS (Windows) network share.
<FWUPDATE NFS>	Start network firmware update via NFS (Linux) network share.
<LOGOSYNCWR CIFS>	Synchronize channel logos – load channel logos from IRD to CIFS(Windows) network share.

<LOGOSYNCWR NFS>	Synchronize channel logos – load channel logos from IRD to NFS(Linux) network share.
<LOGOSYNCRD CIFS>	Synchronize channel logos – send channel logos to IRD from CIFS(Windows) network share.
<LOGOSYNCRD CIFS>	Synchronize channel logos – send channel logos to IRD from NFS(Linux) network share.
<SET BG OFF>	Disable Background Streaming <PRT BG n> / <PRR BG n> commands should be used to enable Background Streaming (see the information below). Only for Dual Tuner IRD devices

8. Commands with additional return value

Each command starts with "<" char and ends with ">". Immediately after ">" sign is received, command will be performed.

If command is not recognized (for example, if <ABC> command is sent), the following text should appear on your terminal window:

#COMMAND: <ABC>
#ERROR: Command not supported

If command is supported and was received correctly you should get:

#COMMAND: <PRT 6>
#RET: TV;6;ProSieben
#OK

Command	With Return Value
<TTT>	Turn to TV Mode (doesn´t work in TV Mode) For the correct communication the other commands should not be sent until the answer (for example): #RET: TV #OK is received.
<TTR>	Turn to Radio Mode (doesn´t work in Radio Mode) For the correct communication the other commands should not be sent until the answer (for example): #RET: Radio #OK is received.
<PRT n>	Change TV Channel (n is a number) For the correct communication the other commands should not be sent until the answer (for example): #RET: TV;6;ProSieben #OK is received.
<PRR n>	Change Radio Channel (n is a number) For the correct communication the other commands should not be

	sent until the answer (for example): #RET: Radio;125;SkyRadio #OK is received.
<PRT u>	Switch TV Channel up (current Channel -1) For the correct communication the other commands should not be sent until the answer (for example): #RET: TV;6;ProSieben #OK is received.
<PRT d>	Switch TV Channel down (current Channel +1) For the correct communication the other commands should not be sent until the answer (for example): #RET: TV;6;ProSieben #OK is received.
<PRT =pn>	Switch to TV Channel whose name is equal with pn For the correct communication the other commands should not be sent until the answer (for example): #RET: TV;6;ProSieben #OK is received.
<PRT *pn>	Switch to TV Channel whose name contains pn For the correct communication the other commands should not be sent until the answer (for example): #RET: TV;6;ProSieben #OK is received.
<PRR u>	Switch Radio Channel up (current Channel -1) For the correct communication the other commands should not be sent until the answer (for example):

	#RET: Radio;125;SkyRadio #OK is received.
<PRR d>	Switch Radio Channel down (current Channel +1) For the correct communication the other commands should not be sent until the answer (for example): #RET: Radio;125;SkyRadio #OK is received.
<PRR =pn>	Switch to Radio Channel whose name is equal with pn For the correct communication the other commands should not be sent until the answer (for example): #RET: Radio;125;SkyRadio #OK is received
<PRR *pn>	Switch to Radio Channel whose name contains pn For the correct communication the other commands should not be sent until the answer (for example): #RET: Radio;125;SkyRadio #OK is received.
<PRT BG n>	Set TV Channel for Background Streaming (n is a number) If the requested Channel belongs only to the Tuner which is already used for Foreground (Viewing) and the Foreground Channel belongs only to the same Tuner - the command will be forbidden with error message: #ERROR: Tuner is not available For the correct communication the other commands should not be sent until the answer (for example): #RET: TV;8;Das Erste HD #OK is received. Only for Dual Tuner IRD devices

<PRR BG n>	Set Radio Channel for Background Streaming (n is a number) If the requested Channel belongs only to the Tuner which is already used for Foreground (Viewing) and the Foreground Channel belongs only to the same Tuner - the command will be forbidden with error message: #ERROR: Tuner is not available For the correct communication the other commands should not be sent until the answer (for example): #RET: Radio;4;1LIVE #OK is received. Only for Dual Tuner IRD devices
<CICAMTSROUTE n>	Get/Set CI CAM Transport Stream Routing n = ? - get the current CI CAM Transport Stream Routing n = 0..3 - set CI CAM Transport Stream Routing 0 Tuner1 - CAM1 / Tuner2 - CAM2 1 Tuner1 - CAM2 / Tuner2 - CAM1 2 Tuner1 - CAM1 - CAM2 3 Tuner2 - CAM1 - CAM2 Example return: #RET: 1;TS1-CAM2/TS2-CAM1 #OK Only for Dual Tuner IRD devices
<GCS>	Get Current Status (On or Standby) #RET: On #RET: Off
<GCM>	Get Current Mode (TV or Radio) #RET: TV #RET: Radio
<GNT>	Get number of TV Channels #RET: 1126
<GNR>	Get number of Radio Channels #RET: 558
<GNT n>	Get number of TV Channels by Tuner (n = 1..2) #RET: 121 Only for Dual Tuner IRD devices
<GNR n>	Get number of Radio Channels by Tuner (n = 1..2) #RET: 121

	Only for Dual Tuner IRD devices
<GCC>	Get Current Channel (Channel Number) #RET: 11
<GCP>	Get Current Program (Name of Program) #RET: Eurosport
<GCC FG>	Get Current Channel (Channel Number) for Foreground (Viewing) #RET: Tuner1;TV;1 Only for Dual Tuner IRD devices
<GCC BG>	Get Current Channel (Channel Number) for Background Streaming #RET: Tuner2;TV;8 Only for Dual Tuner IRD devices
<GCP FG>	Get Current Channel (Name of Program) for Foreground (Viewing) #RET: Tuner1;TV;Das Erste HD Only for Dual Tuner IRD devices
<GCP BG>	Get Current Channel (Name of Program) for Background Streaming #RET: Tuner2;TV;tagesschau24 Only for Dual Tuner IRD devices
<GCV>	Get Current Volume (Level of Volume) #RET: 25
<GCT>	Get Current Time (Day, Month, Year, Hour, Minute) #RET: 24;10;07;11;26
<GCL>	Get Channel list (List of TV and Radio Channels including numbering) Each table row is sent immediately after line: '#RET: '. At the end of transmission lines '#END' and '#OK' are sent.
<GCLPT n m>	Get the part of the current TV channels list (including numbering) n = the program number to start from m = the total number of programs to get from start Each table row is sent immediately after line: '#RET: '. At the end of transmission lines '#END' and '#OK' are sent.
<GCLPR n m>	Get the part of the current Radio channels list (including numbering) n = the ptogram number to start from m = the total number of programs to get from start Each table row is sent immediately after line: '#RET: '. At the end of transmission lines '#END' and '#OK' are sent.

<GCLEXT>	Get Extended Channel List (List of TV and Radio Channels including numbering, SID and Tuner number) Each table row is sent immediately after line: '#RET: '. At the end of transmission lines '#END' and '#OK' are sent. Example return: #RET: TV;1;Das Erste HD;10301;Tuner1 #RET: TV;2;arte HD;10302;Tuner1 ... #RET: TV;8;tagesschau24;28721;Tuner1+2 #RET: TV;9;Einsfestival;28722;Tuner1+2 ... #RET: Radio;1;Bayern 1;28400;Tuner2 #RET: Radio;2;Bayern 2;28401;Tuner2 #END #OK
<GCLEXTPT n m>	Get the part of the current Extended TV channels list (including numbering, SID and Tuner number) n = the program number to start from m = the total number of programs to get from start The format of the answer is the same like the above <GCLEXT> command.
<GCLEXTPR n m>	Get the part of the current Extended Radio channels list (including numbering, SID and Tuner number) n = the program number to start from m = the total number of programs to get from start The format of the answer is the same like the above <GCLEXT> command.
<GCL n>	Get Channel list by Tuner (n = 1..2) List of TV and Radio Channels including numbering. The format of the answer is the same like the above <GCL> command. Only for Dual Tuner IRD devices
<GRL>	Get available movieNET PVR records list Every available PVR record in list is sent in new row in format: #RET: PVR;<container>;<file name> At the end of transmission '#OK' line is sent.

	The <container> is the one of the following: HDD[1..2] = HDD connected to eSata[1..2]; NFS[1..4] = network drive mounted to Network Drive [1..4] (in NFS) For example, possible return is: #RET: PVR;HDD1;arte__20130101_203000__News.ts #RET: PVR;NFS2;ZDF__20130102_213005__Sport.ts #OK
<GML>	Get available movieNET movies list Every available movie in list is sent in new row in format: #RET: MOVIE;<container>;<file name> The <container> is the one of the following: HDD[1..2] = HDD connected to eSata[1..2]; NFS[1..4] = network drive mounted to Network Drive [1..4] (in NFS) For example, possible return is: #RET: MOVIE;HDD1;MyMovie1.ts #RET: MOVIE;NFS2;MyMovie2.m2ts #OK
<GAL>	Get available movieNET mp3 audiofiles list Every available mp3 audiofile in list is sent in new row in format: #RET: MUSIC;<container>;<file name> The <container> is the one of the following: HDD[1..2] = HDD connected to eSata[1..2]; NFS[1..4] = network drive mounted to Network Drive [1..4] (in NFS) For example, possible return is: #RET: MUSIC;HDD1;MySong1.mp3 #RET: MUSIC;NFS2;MySong2.MP3 #OK
<GPL>	Get available movieNET jpeg pictures list Every available jpeg picture file in list is sent in new row in format: #RET: PIC;<container>;<file name> The <container> is the one of the following: HDD[1..2] = HDD connected to eSata[1..2]; NFS[1..4] = network drive mounted to Network Drive [1..4] (in NFS) For example, possible return is: #RET: PIC;HDD1;MyPhoto1.jpg #RET: PIC;NFS2;MyPhoto2.JPEG #OK

<GIRL>	Get current movieNET internet radio stations list Each table row is sent immediately after line: '#RET: '. At the end of transmission lines '#END' and '#OK' are sent. For example, possible return is: #RET: Internet Radio;1;WSHP FM;http://50.22.253.46:80/wshp-fm #RET: Internet Radio;2;Title;http://50.22.253.46:8000/mp396 #END #OK
<GIRC>	Get current movieNET internet radio station #RET: Internet Radio;1;WSHP FM;http://50.22.253.46:80/wshp-fm #OK
<GST>	Get status of Teletext #RET: On #RET: Off
<GPT>	Get current page of Teletext #RET: 54 #RET: Off
<GSQ>	Get Signal quality and power information of the current channel #RET: 99;95
<GSCNR>	Get signal carrier-to-noise ratio (CNR) in dB #RET: 14.250 dB or #RET: 0.000 dB If CNR is not available #RET: N/A
<GSRSSI>	Get signal RSSI in dBm #RET: 57.1 dBm
<GSBER>	Get signal bit-error-rate (BER) #RET: 1E-8
<GSFEC>	Get code rate (FEC) for DVB-S/S2 signal #RET: 2/3 or if FEC is not available #RET: N/A
<GSPSK>	Get demodulated constellation for DVB-S/S2 signal #RET: 8PSK or if DVB-S/S2 constellation is not available #RET: N/A
<GSSTD>	Get signal modulation #RET: DVBC or #RET: DVBS2

<GSQ BG>	Get Signal quality and power for Background Streaming Tuner #RET: 100;100 Only for Dual Tuner IRD devices
<GSCNR BG>	Get signal CNR in dB for Background Streaming Tuner #RET: 9.750 dB Only for Dual Tuner IRD devices
<GSRSSI BG>	Get signal RSSI in dBm for Background Streaming Tuner #RET: 67.0 dBm Only for Dual Tuner IRD devices
<GSBER BG>	Get signal BER for Background Streaming Tuner #RET: 1E-8 Only for Dual Tuner IRD devices
<GSFEC BG>	Get DVB-S/S2 FEC for Background Streaming Tuner #RET: 5/6 Only for Dual Tuner IRD devices
<GSPSK BG>	Get DVB-S/S2 constellation for Background Streaming Tuner #RET: QPSK Only for Dual Tuner IRD devices
<GSSTD BG>	Get signal modulation for Background Streaming Tuner #RET: DVBS Only for Dual Tuner IRD devices
<GSQ n>	Get Signal quality and power by Tuner (n = 1..2) #RET: 100;100 Only for Dual Tuner IRD devices
<GSCNR n>	Get signal CNR in dB by Tuner (n = 1..2) #RET: 9.750 dB Only for Dual Tuner IRD devices
<GSRSSI n>	Get signal RSSI in dBm by Tuner (n = 1..2) #RET: 51.7 dBm Only for Dual Tuner IRD devices
<GSBER n>	Get signal BER by Tuner (n = 1..2) #RET: 5E-7 Only for Dual Tuner IRD devices

<GSFEC n>	Get DVB-S/S2 FEC by Tuner (n = 1..2) #RET: 3/4 Only for Dual Tuner IRD devices
<GSPSK n>	Get DVB-S/S2 constellation by Tuner (n = 1..2) #RET: 8PSK Only for Dual Tuner IRD devices
<GSSTD n>	Get signal modulation by Tuner (n = 1..2) #RET: DVBT Only for Dual Tuner IRD devices
<GTC>	Get temperature from CPU cooler sensor #RET: 54
<GTC C>	Get temperature from CPU cooler sensor #RET: 54
<GTC L>	Get temperature from left board cooler sensor #RET: 54
<GTC R>	Get temperature from right cooler sensor #RET: 54
<VOL n>	Set/Change Volume (n= [+/-][0 .. 100][ON,OFF][?]) ? returns the current volume setting (0..100 or OFF), like the GCV command, but with the additional mute information. ON and OFF turns volume mute on or off. n without a leading sign sets the volume absolute. n with a leading sign sets the volume relative to the current value. #RET: Current volume or OFF if the receiver is muted
<SBR n>	Change analog video brightness (n=0 .. 100) #RET: 45
<SCO n>	Change analog video contrast (n=0 .. 100) #RET: 55
<SSA n>	Change analog video saturation (n=0 .. 100) #RET: 50
<SSH n>	Change analog video sharpness (n=0 .. 100) #RET: 50
<SHU n>	Change analog video hue (n=0 .. 100) #RET: 50
<SBRD n>	Change digital video brightness (n=0 .. 100) #RET: 45
<SCOD n>	Change digital video contrast (n=0 .. 100) #RET: 55

<SSAD n>	Change digital video saturation (n=0 .. 100) #RET: 50
<SSHD n>	Change digital video sharpness (n=0 .. 100) #RET: 50
<GYAR>	Get digital video output resolution (see <YAR n> above) #RET: 720p 50Hz
<GYARAN>	Get analog video output resolution (see <YARAN n> above) #RET: PAL
<GPI>	Get Program Info. This command returns several information regarding the current program: - current mode TV or Radio - number of channel - name of channel - title of currently broadcasted event - duration of currently broadcasted event (in seconds) - time remaining to the end of the event (in seconds) #RET: TV;7;ProSieben;taff.;3660;1262 This data is taken from Transport Stream. Therefore, host should wait some time before <GPI> command is sent (typically several seconds) after switching on a new channel. Otherwise, empty strings may be returned: #RET: ;;;;;
<GTI>	Get current Multiplex (Transponder) Info This command returns information string for the current transponder including standard (DVB-S/-C/-T, ATV or ASI), satellite, frequency, symbol rate etc. Example return: #RET: DVB-S Astra (19.2E) 11494 H 22000
<VER>	Get device firmware version / serial number For example, possible return is: #RET: 1.02.34 S/N: 12345678901234 #OK
<IPC>	Get IP configuration

	#RET: #ETH1 # IP: 192.168.1.10 Device IP address # MASK: 255.255.255.0 Device netmask # BCAST: 255.255.255.255 Device broadcast address # GW: 192.168.1.1 Default gateway address # DNS: 192.168.1.1 DNS server address #ETH2 # … (Same format as for ETH1) or for DHCP enabled #RET: #ETH1 # DHCP IP: 192.168.1.10 Device IP address # DHCP MASK: 255.255.255.0 Device netmask # DHCP BCAST:255.255.255.255 Device broadcast address # DHCP GW: 192.168.1.1 Default gateway address # DHCP DNS: 192.168.1.1 DNS server address #ETH2 # … (Same format as for ETH1)
<GAC>	Get Audio Channels Returns the available audiochannels in following format: 0 – Audio channel 1 1 – Audio channel 2 … 1000 (AC3) – Dolby Audio channel 1 1001 (AC3) – Dolby Audio channel 1 … Channels can be selected by the SAC command.
<EVT n>	Get current EPG events list for selected TV Channel (n is a number) Returns the available EPG events in following format: #RET: ... [event information] ... ... #RET: ... [event information] ... #END #OK The event information for every event is sent after line: '#RET: '. At the end of transmission line '#END:' is sent. The event information for every event consists of: - current mode (TV) - number of channel - name of channel

	- Event ID - date and time of the event in format dd/mm/yy HH:MM - duration of the event (in minutes) - title of the event For example: #RET: TV;4;arte;295830206700371381;10/03/12 17:30;50;Movie The data for EPG events cache is taken from Transport Stream (for currently used transponder only). Therefore, host should wait some time and use channels from the same transponder before sending EVT command for the selected channel (typically few minutes for the next several days). Otherwise, not all EPG events are stored in cache.
<EVR n>	Get current EPG events list for selected Radio Channel (n is a number) The format of the answer is the same like the above EVT command except that the event information for every event contains - current mode (Radio) instead of TV. Restrictions are also the same as above (see EVT command).
<EVDESC n>	Get the description in detail for the selected EPG event. n = Event ID of the selected EPG event (from the answer of EVT or EVR). Available events (Event IDs) can be retrieved by EVT or EVR command (see the description above).
<GSU>	Get the available subtitle streams for the current channel Returns the available DVB and TTX subtitles in following format (for example): #RET: 1 (DVB) – deu (pid 0x0069) #RET: 2 (TTX) – fra (pid 0x0085, page 651) ... #END #OK If there is no available subtitle streams for the current channel the command return will be empty: #OK

<SUBT>	Get the selected subtitle stream for the current channel Returns the selected DVB or TTX subtitle in following format: #RET: 1 (DVB) – deu (pid 0x0069) #OK If the subtitling is currently disabled the command return will be: #RET: off #OK If there is no available subtitle streams for the current channel the command will return: #ERROR: No subtitles
<GEXTMSGX n>	Get relative horizontal position for OSD messagebox/hintbox (See <SEXTMSGX>/<SEXTMSGY> commands above)
<GEXTMSGY n>	Get relative vertical position for OSD messagebox/hintbox (See <SEXTMSGX>/<SEXTMSGY> commands above)
<GPS>	Get power supply status #RET: on #RET: fail The command should be used only for the IRD devices with a second redundant power supply.
<INFBTM n>	Get/Set OSD Infobar timeout value (n = [0 .. 10] | [?]) n = ? - get current OSD Infobar timeout value in seconds. n = 0 .. 10 - set OSD Infobar timeout value in seconds.
<REC ?>	Get current recording status Returns information for the running recording in following format: #RET: on;<container>;<file name> The <container> is the one of the following: HDD[1..2] = HDD connected to eSata[1..2]; NFS[1..4] = network drive mounted to Network Drive [1..4] (in NFS) For example, possible return is: #RET: on;HDD1;arte__20130101_203000__News.ts If recording is currently disabled the command return will be: #RET: off
<STREAM GET PARAM>	Get current IPTV Streaming settings

	Returns information string in the following format: #RET: <status>;<mode>;<url> where <status> is the one of the following: on – streaming enabled; off – streaming disabled; <mode> is the one of the following: MPTS – multiprogram transport stream; SPTS – single program transport stream; <url> is output stream URL in format: <proto>://<address>:<port>; Example return: #RET: on;MPTS;udp://239.35.10.55:1234 or if the streaming is disabled #RET: off;SPTS;http://10.1.1.55:31339
<STREAM GET STATE>	Get current IPTV Streaming state Example return when the streaming is running: #RET: streaming If the streaming is by any reason not running (e.g. device in menu mode or streaming is disabled): #RET: idle
<STREAM GET CHANNELS>	Get current IPTV Stream programs Each table row is sent immediately after line: '#RET: '. At the end of transmission line '#OK' is sent. Example return for MPTS stream: #RET: TV;1;Das Erste HD;10301;MPTS;udp://239.35.10.55:1234 #RET: TV;2;arte HD;10302;MPTS;udp://239.35.10.55:1234 #RET: TV;3;SWR BW HD;10303;MPTS;udp://239.35.10.55:1234 #OK or for SPTS stream: #RET: TV;8;tagesschau24;28721;URL;udp://239.35.10.55:1234
<MUX LIST>	Get Multiplex (Transponder) List Each table row is sent immediately after line: '#RET: '. At the end of transmission line '#OK' is sent. Example return: #RET: DVB-S;19.2E;10744;H;22000 #RET: DVB-C;322;QAM256;6900 #RET: DVB-T;722000 #OK

<MUX GCL s>	Get Channel List for the given Multiplex (transponder) including numbering and SID s = Multipex (transponder) parameters string which can be received with <MUX LIST> command (see above). Example return: #RET: TV;8;tagesschau24;28721 #RET: TV;9;Einsfestival;28722 #RET: TV;10;EinsPlus;28723 #RET: TV;11;arte;28724 #OK
<MUX SET s>	Switch to the given Multiplex (transponder) s = Multipex (transponder) parameters string which can be received with <MUX LIST> command (see above). Returns the current program after multiplex change. Example return: #RET: TV;5;ZDF HD
<NFS GET CONFIG n>	Get NFS Network Drive configuration n = 1..4 - Network Drive number Returns NFS Network Drive settings in the following format: <type>;<ip>;<share>;<automount>;<user>;<pwd>;<status> where <type> is the one of the following: CIFS – Samba (Windows) fileserver; NFS – NFS (Linux/Unix) fileserver; <ip> is fileserver IP-Address; <share> is fileserver shared folder name; <automount> is the one of the following: on – mount the network drive at startup; off – do not mount the network drive at startup; <user> is shared folder access username; <pwd> is shared folder access password; <status> is the one of the following: on – network drive is currently enabled (mounted); off – network drive is currently disabled (not mounted); Example return: #RET: CIFS;10.1.1.200;Public;off;guest;;on
<NFS SET CONFIG n;s>	Set NFS Network Drive configuration n = 1..4 - Network Drive number s = Network Drive configuration string in the following format:

	<type>;<ip>;<share>;<automount>;<user>;<pwd>;<mount> where <type> is the one of the following: CIFS – Samba (Windows) fileserver; NFS – NFS (Linux/Unix) fileserver; <ip> is fileserver IP-Address; <share> is fileserver shared folder name; <automount> is the one of the following: on – mount the network drive at startup; off – do not mount the network drive at startup; <user> is shared folder access username; <pwd> is shared folder access password; <mount> is the one of the following: on – enable network drive (mount now); off – disable network drive (unmount now); Example return: #RET: CIFS;10.1.1.200;Public;off;guest;;on
<NFS c n>	Get NFS Network Drive status Enable/Disable NFS Network Drive c = ? - get Network Drive status (enabled/disabled) c = ON/OFF – enable/disable Network Drive n = 1..4 - Network Drive number Example return: #RET: on or #RET: off
<NFS DEF STORAGE c>	Get NFS-Storage status Enable/Disable NFS-Storage as PVR default c = ? – get NFS-Storage status, which is the one of the following: ON – NFS-Storage is PVR default; OFF – HDD-Storage is PVR default; c = ON/OFF – enable/disable NFS-Storage as PVR default. The command should be used only when both HDD and NFS Network Drives are available for PVR recording.

9. Special Commands

<CR> [RESET] <CR>	Performs a Hardware-Reset. The Command must be enclosed by carriage return characters. The command will be interpreted by the watchdog-processor and causes an immediate reset on hardware level.