

REMOTE CONTROL COMMANDS

A4.1 Introduction

The design of *HD RANGER 2* based on a microprocessor, allows data to be exchanged between the equipment and a remote controller (usually a personal computer) via USB. By this way, data can be obtained from the equipment and also control it remotely. These data can be stored and subsequently processed for use in maintenance work. Furthermore, the remote control allows tracking and monitoring installations.

A4.2 Protocol for communication between the *HD RANGER 2* and a PC

This protocol is controlled by software and is using a virtual serial port over an USB interface. Data and information are exchanged using messages consisting of ASCII alphanumerical characters. This method ensures easy carrying between different types of personal computers.

To activate the virtual serial port, a special driver must be installed. The driver is included with the purchased instrument.

► Connections

The cable between the *HD RANGER 2* and the PC is supplied with the equipment.

You need at least **Windows XP** to work with *HD RANGER 2*. Drivers only work for Windows operative systems. What drivers do is to create a virtual COM port, so the software application can "see" the equipment.

A4.3 Operation Mode

The *HD RANGER 2* accepts remote commands at any time, which the instrument is on. That is, it is not necessary to put the instrument in special remote control mode; rather, this mode is selected immediately when it detects a complete command during the time necessary for its execution. The protocol communication is as follows:

- 1.- *HD RANGER 2* transmits a XON code (11H) every second. The aim is to indicate to any possible remote device that the equipment is ready to receive data.
- 2.- At this moment, data streams can be sent it. Each data stream is composed by:
 - a. Stream beginning: '*' (code 2AH).
 - b. Set of characters that describe data message.
 - c. CR (carriage return, code 0DH).
- 3.- Once a data stream has been sent, will be received a XOFF (code 13H) indicating that the transmission is stopped.
- 4.- Next, in case of correct message an ACK (acknowledge, code 06H) is expected or a NAK (not acknowledge, code 15H) in the opposite case.
- 5.- If the sent message requires answers it will be sent at this moment.
- 6.- Once completed the data stream transmission, the *HD RANGER 2* will send a XON (code 11H) indicating that already it is prepared to receive a new data stream.

A typical communication chronogram would be as follows:

	PC (REMOTE CONTROLLER)		<i>HD RANGER 2</i>
1)		<-----	XON
2)	*?TV<CR>	----->	
3)		<-----	XOFF
4)		<-----	ACK 5
5)		<-----	*TV0<CR>
6)	wait...		
7)		<-----	XON

(all characters are transmitted in ASCII code).

Commands should always be sent in capital letter and cannot be edited online, i.e., once a character is received it is stored in the *HD RANGER 2* buffer and cannot be rectified by sending an erase code.

Commands in remote control are divided into two groups, orders and interrogations. Orders modify a variable or the equipment status. Interrogations respond with information concerning equipment status or the value of a variable. For interrogative command, it is necessary to add the character '?' after the character '*'.

A4.4 **Virtual Serial Port Configuration**

In order to ensure error-free communication between the computer and the *HD RANGER 2* you must programme following communication parameters into the control console via USB:

Rate:	115200 bits/s
Data bits:	8 bits
Parity:	No
Stop Bits:	1

A4.5 Remote commands table

Remote Commands	Short Description
BATTERY	It provides information about the battery actual status
CAPTURE	It makes and read screen captures
CAPTURE READ	It reads a file with the current screen capture
DISEQC	It gets a list of available diseqc programs and can send a specific one
EQUIPMENT POWER OFF	It shutdowns the equipment
EQUIPMENT SN	It provides the serial number of the equipment
INSTALLATION	It provides information about all the installations
INSTALLATION CURRENT	It provides information about the current installation
INSTALLATION CURRENT CLEAR	It removes all files of the current installation. The installation itself is not remove, only its contents
INSTALLATION CURRENT REMOVE	It removes the files of the same type in the current installation
INSTALLATION FILE	It reads an "xml" file of the current installation and sends it to a PC
INSTALLATION FILE ZIP	It reads an "xml" file of the current installation and sends all the installation files zipped to a PC
INSTALLATION PC FILE	It sends a file of the current installation to the PC
INSTALLATION PC ZIP	It sends a file from a PC to the equipment zipped with all files of the installation
INSTALLATION REMOVE	It removes an installation
IP CONFIG	It sets IPTV parameters
LNB	It provides / configures the LNB output
LTE	It provides / configures the LTE filter status
MEASURE	It provides information of all active measurements
MODE	It provides / sets the operation mode of the equipment
NAM	It provides the program name
PRINT SCREEN	It makes a screenshot in PNG format
PSI	It provides / configures services
PSI SERVICE	It provides / configures services
RTC	It provides / sets date and time
SIGNAL	It provides / configures the signal type
SPECTRUM	It configures the span and/or the reference level
TS MUX CONTROL	It selects the input and output transport stream
TUNE	It provides / configures the frequency
TUNE CH	It provides / configures the channel
TUNE PLAN	It configures a channel plan
VER	It provides the version of the main software application
VIDEO	It configures the video source

Name	BATTERY		
Description:	It provides information about the battery current status.		
Question:	*?BATTERY <i>parameter</i>		
Response:	*BATTERY <i>parameter_resp</i>		
	<i>parameter</i>	<i>parameter_resp</i>	Description <i>parameter_resp</i>
	<empty>	LEVEL, PERCENT, TIME, SMART BATTERY, CHARGER	It provides a complete set of information about the battery current status (see the following parameters for an explanation).
	LEVEL	XXXXmV	It provides the voltage level in mV.
	PERCENT	XX	It provides the charge remaining as a percentage.
	TIME	XXmin	Provides an estimation of the remaining time of functioning. The time is given in minutes. Message CHARGER_CONNECTED will be the answer if the charger is connected.
	SMART_BATTERY	XXX	It answers YES or NO depending if there is a smart battery or not.
	CHARGER	XXX	It answers ON or OFF depending if charger is connected or not.

Name	CAPTURE	
Description	It builds a file with the current screen data in xml or png format.	
Configuration	*CAPTURE FORMAT=format	
	<i>format</i>	Description <i>format</i>
	PNG	It makes a screen capture in PNG format.
	XML	It makes a screen capture in xml format.
Note:	Before saving the file, this command deletes the previous made capture.	

Name	CAPTURE READ	
Description:	It reads a file with the current screen capture (see command CAPTURE)	
Question:	*?CAPTURE BLOCK= <i>bbbb</i> <CR>	
Response:	*CAPTURE SIZE= <i>size</i>	
	<i>bbbb</i>	Description <i>bbbb</i>
	<i>nnn</i>	<i>bbbb</i> is the number of bytes sent in each data block. The file data is sent in blocks, every block is confirmed with an ACK. The value 'bbbb' can be a decimal one (if starts by 0 to 9, like 1234) or in hex format, if started by "0x" followed by hex characters (like in 0x3FF).
	<i>size</i>	Description <i>size</i>
	<i>nnn</i>	Size in bytes (<i>nnn</i>) of file. Decimal value.
Protocol:	PC→*?CAPTURE BLOCK= <i>bbbb</i> <cr> RANGER→ Xoff It checks if file exists then it sends ACK, otherwise it sends NACK + Xon and aborts the command. RANGER→*CAPTURE SIZE= <i>size</i> . RANGER→Xon. PC→ ACK. RANGER→Xoff. RANGER→block1 + crc (1 byte) + Xon. PC→ It Calculates the block crc if correct send ACK. RANGER→ If detect ACK then send Xoff. RANGER→block2 + crc2 (1 byte) + Xon. PC→ It Calculates the block crc if correct send ACK. Until last block.	

Name	DISEQC	
Description:	It gets a list of available diseqc programs and can send a specific one.	
Question:	*?DISEQC PROGRAMS<CR>	
Response:	*DISEQC PROGRAMS= PROGRAMS= <i>nn</i> <i>program_name</i>	
	Response	Description <i>Inb_resp</i>
	PROGRAMS= <i>nn</i>	<i>nn</i> is the number of available programs
	<i>program_name</i>	the name description of the available programs
Configuration:	*DISEQC PROGRAM= <i>program_name</i>	
	Program_name	Description <i>program_name</i>
	POS_AB_A POS_AB_B etc...	It sends the diseqc program name. This program must exist in the current installation. Check the available programs with *?DISEQC PROGRAMS

Name	EQUIPMENT POWER OFF
Description	It shutdowns the equipment
Order	*EQUIPMENT POWEROFF

Name	EQUIPMENT SN
Description	It provides the serial number of the equipment
Question	*?EQUIPMENT SN
Response	*EQUIPMENT SN = <i>equipment_resp</i>
	<i>equipment_resp</i> Description <i>equipment_resp</i>
	nnn Unique numeric code that identifies the equipment

Name	INSTALLATION		
Description	It provides information about all the installations		
Question	*?INSTALLATION <i>install</i>		
Response	*INSTALLATION <i>install_resp</i>		
	<i>install</i>	<i>install_resp</i>	Description <i>install_resp</i>
	<empty>	NUMBER=nn	Number (nn) of installations
	CURRENT	NAME=name	Name (name) of current installation
		TER-CH=nn	Number (nn) of terrestrial channel plans in the current installation
		SAT-CH=nn	Number (nn) of satellite channel plans in the current installation
		DISEQC=nn	Number (nn) of DISEQC programs in the current installation
		SCREEN=nn	Number (nn) of print screens in the current installation
		DATALOGGER=nn	Number (nn) of dataloggers in the current installation
		SP=nn	Number (nn) of spectrum captures in the current installation
		MER=nn	Number (nn) of captures MERxcarrier in the current installation
		ECHOES=nn	Number (nn) of echo captures in the current installation
		CONSTELLATION=nn	Number (nn) of constellation captures in the current installation
	NUMBER=nn	NAME=name	Name of the installation with index "nn"

Name	INSTALLATION CURRENT		
Description	It provides information about the current installation		
Question	*?INSTALLATION CURRENT <i>current=nn</i>		
Response	*INSTALLATION NAME= <i>current_resp</i>		
	<i>current</i>	Description <i>nn</i> (decimal value)	Description <i>current_resp</i>
	<empty>	<empty>	Available data from the current installation
	TER-CH	Terrest. channel plan index	Terrestrial channel plan name with "nn" index
	SAT-CH	Sat. channel plan index	Satellite channel plan name with "nn" index
	DISEQC_PROGRAM	DISEQC program index	DISEQC program name with "nn" index
	PNG	Print screen file index	Print screen file name with "nn" index
	DATALOGGER	Datalogger index	Datalogger name with "nn" index
	SPECTRUM	Capture index	Spectrum capture name with "nn" index
	CONSTELLATION	Constellation index	Constellation capture name with "nn" index
	ECHOES	Capture index	Echo capture name with "nn" index
	MER	Capture index	MER capture name with "nn" index
	NUMBER	Installation index	Installation name with "nn" index

Name	INSTALLATION CURRENT CLEAR
Description	It removes all files of the current installation. The installation itself is not remove, only its contents
Order	*INSTALLATION CURRENT CLEAR

Name	INSTALLATION CURRENT REMOVE	
Description	It removes the files of the same type in the current installation	
Order	*INSTALLATION CURRENT REMOVE <i>tag=name</i>	
	<i>tag</i>	Description <i>tag</i>
	SPECTRUM TER-CH SAT-CH DISEQC_PROGRAM PNG CONSTELLATION ECHOES MER DATALOGGER SPECTROGRAM MEROGRAM TS	Spectrum capture file Terrestrial channel plan file Satellite channel plan file DISEQC program file Print screens file Constellation capture file Echo capture file MER x carrier capture file Datalogger file Spectrogram file Merogram file Transport stream file
	<i>name</i>	Description <i>name</i>
	<empty>	It removes all files belonging to the same type, which is determined by the <i>tag</i>
	abcd	It removes the file with name ("abcd") of the type indicated by the <i>tag</i>

Name	INSTALLATION FILE	
Description	It reads an "xml" file of the current installation and sends it to a PC	
Question	*?INSTALLATION CURRENT <i>tag=name</i> BLOCK= <i>bbbb</i>	
Response	*INSTALLATION SIZE= <i>size</i>	
	<i>tag</i>	Description <i>tag</i>
	SPECTRUM	It reads spectrum captures in the current installation
	TER-CH	It reads terrestrial channel plans in the current install
	SAT-CH	It reads satellite channel plans in the current install
	DISEQC_PROGRAM	It reads DISEQC programs in the current installation
	PNG	It reads print screens in the current installation
	CONSTELLATION	It reads constellation captures in the current install
	ECHOES	It reads echo captures in the current installation
	MER	It reads MER x carrier captures in the current install
	DATALOGGER	It reads datalogger in the current installation
	SPECTROGRAM	It reads spectrograms in the current installation
	MEROGRAM	It reads merograms in the current installation
	TS	It reads transport stream in the current installation
	<i>name</i>	Description <i>name</i>
	abcd	Name ("abcd") of the capture.
	<i>bbbb</i>	Description <i>bb</i>
	nnn	Byte (nnn decimal) size to which the file will be divided to be send
	<i>size</i>	Description <i>size</i>
	nnn	File byte (nnn decimal) size when send

Name	INSTALLATION FILE ZIP	
Description	It reads an "xml" file of the current installation and sends all the installation files zipped to a PC	
Question	*?INSTALLATION CURRENT ZIP BLOCK= <i>bbbb</i>	
Response	*INSTALLATION SIZE= <i>size</i>	
	<i>bbbb</i>	Description <i>bb</i>
	<i>nnn</i>	Byte (<i>nnn</i> decimal) size to which the file will be divided to be send
	<i>size</i>	Description <i>size</i>
	<i>nnn</i>	File byte (<i>nnn</i> decimal) size when send

Name	INSTALLATION PC FILE	
Description	It sends a file of the current installation to the PC.	
Order	*INSTALLATION CURRENT tag= <i>name</i> SIZE= <i>size</i> BLOCK= <i>bbbb</i>	
	<i>tag</i>	Description <i>tag</i>
	SPECTRUM	Spectrum captures files to the current installation
	TER-CH	Terrestrial channel plans files to the current install
	SAT-CH	Satellite channel plans files to the current instal.
	DISEQC_PROGRAM	DISEQC programs files to the current installation
	PNG	Print screens files to the current installation
	CONSTELLATION	Constellation captures files to the current install
	ECHOES	Echo captures files to the current installation
	MER	MER x carrier captures files to the current install
	DATALOGGER	Datalogger files to the current installation
	SPECTROGRAM	Spectrograms files to the current installation
	MEROGRAM	Merograms files to the current installation
	TS	Transport stream files to the current installation
	<i>name</i>	Description <i>name</i>
	<i>abcd</i>	Capture name ("abcd").
	<i>size</i>	Description <i>size</i>
	<i>nnn</i>	File byte (<i>nnn</i> decimal) size when send
	<i>bbbb</i>	Description <i>bbbb</i>
	<i>nnn</i>	Byte (<i>nnn</i> decimal) size to which the file will be divided to be send

Name	INSTALLATION PC ZIP	
Description	It sends a file from a PC to the equipment zipped with all files of the installation	
Order	*INSTALLATION ZIP NAME= <i>name</i> SIZE= <i>size</i> BLOCK= <i>bbbb</i>	
	<i>name</i>	Description <i>name</i>
	abcd	Name ("abcd") of the installation
	<i>size</i>	Description <i>size</i>
	nnn	Byte (nnn decimal) size of the file when send
	<i>bbbb</i>	Description <i>bbbb</i>
	nnn	Byte size (nnn decimal) of blocks that will be send from the ZIP file

Name	INSTALLATION REMOVE	
Description	It removes a installation	
Order	*INSTALLATION NAME= <i>name</i> REMOVE	
	<i>name</i>	Description <i>name</i>
	abcd	Installation name ("abcd")

Name	IP CONFIG		
Description:	It provides / configures the IP parameters such as: DHCP option, MAC address, IP address and subnet MASK.		
Question:	*?IP <i>ip_option</i>		
Response:	*IP <i>ip_option=ip_resp</i>		
	<i>ip_option</i>	<i>ip_response</i>	
	<empty>	MAC, DHCP, IP and MASK	
	MAC	MAC address	
	DHCP	DHCP protocol enabled / disabled	
	ADDRESS	IP address	
	MASK	Subnet MASK	
Configuration:	*IP <i>ip_option=ip_config</i>		
	<i>ip_option</i>	<i>ip_config</i>	Description <i>Ite_conf</i>
	DHCP	ON	It enables DHCP protocol
		OFF	It disables DHCP protocol
	ADDRESS	www.xxx.yyy.zzz	It sets IP address
	MASK	www.xxx.yyy.zzz	It sets Subnet mask

Name	LNB		
Description	It provides / configures the LNB output		
Question	*?LNB <i>Inb</i>		
Response	*LNB <i>Inb</i> = <i>Inb_resp</i>		
	<i>Inb</i>	Description <i>Inb_resp</i>	
	OUTPUT	Current selected output	
	ENABLE	LNB enable (ON) or disabled (OFF)	
	VOLTAGE	Last measurement of the LNB output voltage	
	CURRENT	Last measurement of the LNB output current	
	AVAILABLE	Available output with the current configuration	
	UNDERVOLTAGE	Under voltage alarm	
	OVERCURRENT	Overvoltage alarm	
	SHORTCIRCUIT	Short circuit alarm	
	DRAINLED	LED DRAIN lit (ON) or not (OFF)	
Configuration	*LNB <i>Inb</i> = <i>Inb_conf</i>		
	<i>Inb</i>	<i>Inb_conf</i>	Description <i>Inb_conf</i>
	ENABLE	ON	Enables the LNB.
	ENABLE	OFF	Disables the LNB.
	OUTPUT	nnn	LNB output voltage (<i>nnn</i> must be one of the available options seen on the command *?LNB AVAILABLE)

Name	LTE	
Description	It provides/configures the LTE filter status	
Question	*?LTE	
Response	*LTE <i>lte_resp</i>	
	<i>lte_resp</i>	Description <i>lte_resp</i>
	ON	LTE filter enabled
	OFF	LTE filter disabled
Configuration	*LTE <i>lte_conf</i>	
	<i>lte_conf</i>	Description <i>lte_conf</i>
	ON	It enables the LTE filter
	OFF	It disables the LTE filter

Name	MEASURE	
Description	It provides information of all active measurements	
Question	*?MEASURE <i>measure</i>	
Response	*MEASURE <i>measure=measure_resp units</i>	
	<i>measure</i>	Description <i>measure_resp</i>
	<empty>	All the active measures
	POWER	Digital channel power
	LEVEL	Analogue channel level
	C/N	C/N of the measured channel (dB)
	V/A	Video/Audio carrier ratio
	MER	MER measurement value
	CBER	CBER measurement value
	VBER	VBER measurement value
	LBER	LBER measurement value
	LM	Link Margin value
	=	Measurement within scale
	<	Measurement under the value shown
	>	Measurement over the value shown
	<i>units</i>	Description <i>units</i>
	dB	Measurement units for C/N, V/A, MER
	dBm/dBuV/dBmV	Measurement units for POWER, LEVEL

Name	MODE	
Description	It provides/sets the operation mode of the equipment	
Question	*?MODE	
Response	*MODE <i>mode_resp</i>	
	<i>mode_resp</i>	Description <i>mode_resp</i>
	TV	TV mode
	TV+SP+MEASURE	TV mode with spectrum and measurements
	TV+PARAMETERS	TV mode with TS parameters
	SP	Spectrum mode
	SP+MEASURE	Spectrum mode with measurement
	SP+MEASURE+TV	Spectrum mode with TV and measurement
	MEASURE	Measurement mode.
	MEASURE+TV+SP	Measurement mode with TV and spectrum
	MEASURE+PARAMETERS	Measurement mode with demodulator parameters
	ECHOES	Echoes tool
	CONSTELLATION	Constellation tool
Configuration	*MODE <i>mode_conf</i>	
	<i>mode_conf</i>	Description <i>mode_conf</i>
	TV	TV mode
	TV+SP+MEASURE	TV mode with spectrum and measurements
	TV+PARAMETERS	TV mode with TS parameters
	SP	Spectrum mode
	SP+MEASURE	Spectrum mode with measurement
	SP+MEASURE+TV	Spectrum mode with TV and measurement
	MEASURE	Measurement mode
	MEASURE+TV+SP	Measurement mode with TV and spectrum
	MEASURE+PARAMETERS	Meas. mode with demodulator parameters
	ECHOES	Echoes tool
	CONSTELLATION	Constellation tool

Name	NAM	
Description	It provides the program name	
Question	*?NAM	
Response	*NAM <i>nam_resp</i>	
	<i>nam_resp</i>	Description <i>nam_resp</i>
	abc	It provides the program name "abc"

Name	PRINT SCREEN	
Description	It makes a screenshot in PNG format	
Configuration	*PRINT SCREEN= <i>printscreen_conf</i>	
	<i>=printscreen_conf</i>	Description <i>=printscreen_conf</i>
	<empty>	It gives a name by default
	=abc	It gives the name "abc"

Name	PSI	
Description	It provides / sets services	
Question	*?PSI	
Response	*PSI STATUS= <i>status_resp</i> NUMBER= <i>number_resp</i> ONID= <i>onid</i> NID= <i>nid</i> TSID= <i>tsid</i> NETWORK= <i>name</i>	
	<i>status_resp</i>	Description <i>status_resp</i>
	ACQUIRED	Acquired services of channel (in this case, service information is not shown).
	IN_PROGRESS	Acquiring services of channel (in progress).
	FAIL	Acquisition failed.
	STOPPED	Acquisition stopped.
	<i>number_resp</i>	Description <i>number_resp</i>
	<i>nn</i>	Number of services
	<i>Services information</i>	Description <i>service information</i>
	ONID	Original Network id
	NID	Network id
	TSID	Transport Stream id
	NETWORK	Name of service network
Configuration:	*PSI SERVICE= <i>index_conf</i> [AUDIO= <i>index_audio</i>]	
	<i>index_conf</i>	Description <i>index_conf</i>
	<i>nn</i>	Index of service. Selecting service from the index service.
	<i>index_audio</i>	Description <i>index_audio</i>
	<i>nn</i>	Index of audio. OPTIONAL: [AUDIO= <i>xx</i>].
Configuration:	*PSI SID= <i>service_id_conf</i> [AUDIO= <i>index_audio</i>]	
	<i>service_id_conf</i>	Description <i>service_id_conf</i>
	<i>nn</i>	Service id. Selecting service from the service id.
	<i>index_audio</i>	Description <i>index_audio</i>
	<i>nn</i>	Index of audio. OPTIONAL: [AUDIO= <i>xx</i>].

Name	PSI SERVICE	
Description	It provides / configures services	
Question	*?PSI SERVICE= <i>service</i>	
	<i>service</i>	Description <i>service</i>
	CURRENT <i>nn</i>	Current service Index of service
Response	*PSI SERVICE= <i>ss</i> NAME= <i>name</i> PROVIDER= <i>provider</i> SID= <i>sid</i> TYPE= <i>type</i> SCRAMBLED= <i>lcn</i>	
	<i>response</i>	Description <i>response</i>
	<i>ss</i>	CURRENT for current service or index of service.
	<i>name</i>	Service name
	<i>provider</i>	Service provider
	<i>sid</i>	Service id
	<i>type</i>	Type of service (radio/tv/data)
	<i>scrambled</i>	Service (service scrambled) or No (service free)
	<i>LCN</i>	Logical channel number
Question	*?PSI SERVICE=CURRENT AUDIO	
Response	*PSI NUMBER= <i>nn</i> AUDIO= <i>aa</i> PID= <i>pid</i> BITRATE= <i>bitrate</i> TYPE= <i>type</i> FORMAT= <i>format</i> LANGUAGE= <i>language</i>	
	<i>response</i>	Description <i>response</i>
	<i>nn</i>	Audios number
	<i>aa</i>	Index of audio
	<i>pid</i>	PID number
	<i>bitrate</i>	Bitrate in kbps
	<i>type</i>	Type of audio (MPEG-1, DD, DD+...)
	<i>format</i>	Format of audio (Stereo/Mono...)
	<i>language</i>	Language of audio
Question	*?PSI SERVICE= <i>service</i> AUDIO	
Response	*PSI NUMBER= <i>nn</i>	
	<i>response</i>	Description <i>response</i>
	<i>nn</i>	Audios number
Question	*?PSI SERVICE= <i>service</i> AUDIO= <i>aa</i>	
Response	*PSI NUMBER= <i>nn</i> AUDIO= <i>aa</i> PID= <i>pid</i> TYPE= <i>type</i> LANGUAGE= <i>language</i>	
	<i>response</i>	Description <i>response</i>
	<i>nn</i>	Audios number
	<i>aa</i>	Index of audio
	<i>pid</i>	PID number
	<i>type</i>	Type of audio (MPEG-1, DD, DD+...)
	<i>language</i>	Language of audio

Question	*?PSI SERVICE=CURRENT VIDEO	
Response	*PSI PID= <i>pid</i> BITRATE= <i>bitrate</i> TYPE= <i>type</i> RESOLUTION= <i>resolution</i> FORMAT= <i>format</i> FRAME= <i>frame</i> PROFILE= <i>profile</i>	
	<i>response</i>	Description <i>response</i>
	<i>pid</i> <i>bitrate</i> <i>type</i> <i>resolution</i> <i>format</i> <i>frame</i> <i>profile</i>	PID number Bitrate in kbps Type of video (MPEG-2,H264,...). Resolution of video. Format of video (16:9/4:3...) Freq Profile level
Question	*?PSI SERVICE=xx VIDEO	
Response	*PSI PID= <i>pid</i> TYPE= <i>type</i>	
	<i>response</i>	Description <i>response</i>
	<i>pid</i> <i>type</i>	PID number Type of audio (MPEG-2, H264,...)
Question	*?PSI SERVICE= <i>service</i> DATA	
Response	*PSI NUMBER= <i>nn</i>	
	<i>response</i>	Description <i>response</i>
	<i>nn</i>	Number of datas
Question	*?PSI SERVICE= <i>service</i> DATA= <i>dd</i>	
Response	*PSI NUMBER= <i>nn</i> DATA= <i>dd</i> PID= <i>pid</i> TYPE= <i>type</i>	
	<i>response</i>	Description <i>response</i>
	<i>nn</i> <i>dd</i> <i>pid</i> <i>type</i>	Number of datas Index of data PID number Type of data (txt, subtitles, data...)

Name	RTC		
Description	It provides/sets date and time		
Question	*?RTC <i>rtc</i>		
Response	*RTC <i>rtc=rtc_resp</i>		
	<i>rtc</i>	<i>rtc_resp</i>	Description <i>rtc_resp</i>
	TIME DATE FORMAT	DATE=date TIME=time FORMAT=format hh:mm:ss DD/MM/YYYY DD/MM/YY MM/DD/YYYY YYYY/MM/DD	It shows current date, time and date format Hours:minutes:seconds day/month/year day/month/year (last two digits) month/day/year year/month/day Selected format
Configuration	*RTC <i>rtc=rtc_conf</i>		
	<i>rtc</i>	<i>rtc_conf</i>	Description <i>rtc_conf</i>
	TIME DATE FORMAT	hh:mm:ss DD/MM/YYYY DD/MM/YY MM/DD/YYYY YYYY/MM/DD	Hours:minutes:seconds Date according to the selected format day/month/year day/month/year (last two digits) month/day/year year/month/day

Name	SIGNAL		
Description	It provides/configures the signal type		
Question	*?SIGNAL <i>signal</i>		
Response	*SIGNAL <i>signal=signal_resp</i>		
	<i>signal</i>	Description <i>signal_resp</i>	
	TYPE	Signal standard type	
	CR	Current code rate	
	BANDWIDTH	Signal bandwidth	
	SR	Signal symbol rate	
	SP	Spectral inversion enabled (ON) or disabled (OFF)	
	MODE	Measurement of the FFT in a COFDM modulation	
	GI	Measurement of the guard interval	
	CONSTELLATION	Constellation type	
	HIERARCHY	DVB-T hierarchy	
	COLOR	Type of colour coding	
	STANDARD	Analogue standard type	
	RATE	Field frequency	
Configuration	*SIGNAL <i>signal=signal_config</i>		
	<i>signal</i>	<i>signal_config</i>	Description <i>signal_config</i>
	TYPE	DVB-T	Terrestrial signal standard
		DVB-C	Cable signal standard
		ANALOG	Analogue signal standard
		DVB-S	Satellite signal standard
		DVB-S2	Satellite signal standard (2d generation)
	COLOR	PAL	PAL coding colour
		NTSC	NTSC coding colour
		SECAM	SECAM coding colour
	STANDARD	BG	Analogue standard type BG
		DK	Analogue standard type DK
		I	Analogue standard type I
		N	Analogue standard type N
		M	Analogue standard type M
		L	Analogue standard type L

Name	SPECTRUM		
Description	It configures the <i>span</i> and/or the reference level		
Configuration	*SPECTRUM <i>spectrum=spectrum_config</i>		
	<i>spectrum</i>	<i>spectrum_config</i>	Description <i>spectrum_config</i>
	REF	nn.n	Value (nn.n) of the reference level in units of the current band
	SPAN	nnnF	nnn= span value number F= Order of magnitude for the span. F values: <empty> = 1 K= 1 x 10 E3 M=1 x 10 E6 G=1 x 10 E9

Name	TS MUX CONTROL	
Description:	It selects the input and output transport stream	
Configuration:	*TSMUX, DECODER= <i>decoder_input</i> , OUT= <i>asi_out</i>	
	<i>decoder_input</i>	Description <i>decoder_input</i>
	DEMOD	Input from demodulators.
	ASI_IN	Input from ASI_IN.
	IPTV	Input from IPTV (when equipment is on a IPTV mode I.E. IPTV+TV).
	<i>asi_out</i>	Description <i>asi_out</i>
	OFF	No ASI output signal.
	DEMOD	Output from demodulators.
	ASI_IN	Output from ASI_IN.
	IPTV	Output from IPTV (when equipment is on a IPTV mode I.E. IPTV+TV).

Name	TUNE	
Description	It provides/configures the frequency	
Question	*?TUNE	
Response	*TUNE BAND= <i>band_resp</i> FREQ= <i>freq_resp</i>	
	<i>band_resp</i>	Description <i>band_resp</i>
	TER	Terrestrial band
	SAT	Satellite band
	<i>freq_resp</i>	Description <i>freq_resp</i>
	nnnK	nnn=Number value for the frequency; K= (kHz)
Configuration	*TUNE BAND= <i>band_conf</i> FREQ= <i>freq_conf</i>	
	<i>band_conf</i>	Description <i>band_conf</i>
	TER	Terrestrial band
	SAT	Satellite band
	<i>freq_conf</i>	Description <i>freq_conf</i>
	nnnF	nnn= Number value for the frequency F= Order of magnitude for the frequency F values: <empty> = 1 K= 1 x 10 E3 M=1 x 10 E6 G=1 x 10 E9

Name	TUNE CH		
Description	It provides/configures the channel		
Question	*?TUNE CH		
Response	*TUNE BAND= <i>band_resp</i> PLAN= <i>plan_resp</i> CH= <i>ch_resp</i>		
	<i>band_resp</i>	Description <i>band_resp</i>	
	TER	It means that channel belongs to the terrestrial band	
	SAT	It means that channel belongs to the satellite band	
	<i>plan_resp</i>	Description <i>plan_resp</i>	
	xyz	Alphanumeric code that identifies the channel plan	
	<i>ch_resp</i>	Description <i>ch_resp</i>	
	xyz	Alphanumeric code that identifies the channel	
Configuration	*TUNE <i>ch_conf</i>		
	<i>ch_conf</i>	Description <i>ch_conf</i>	
	CH=xyz	"xyz" is an alphanumeric code that identifies a channel	
	CH NEXT	It increases +one channel	
	CH PREV	It decreases -one channel	

Name	TUNE PLAN		
Description	It configures a channel plan		
Configuration	*TUNE PLAN= <i>plan_conf</i>		
	<i>plan_conf</i>	Description <i>plan_conf</i>	
	xyz	Alphanumeric code that identifies a channel plan	

Name	VER		
Description	It provides the version of the main software application		
Question	*?VER		
Response	*VER <i>ver_resp</i>		
	<i>ver_resp</i>	Description <i>ver_resp</i>	
	x.yy.zzz	Alphanumeric code that identifies a version	

Name	VIDEO		
Description	It configures the video source		
Configuration	*VIDEO <i>video</i> = <i>video_conf</i>		
	<i>video</i>	<i>video_conf</i>	Description <i>video_conf</i>
	SOURCE	INTERNAL	It enables internal video source
		EXTERNAL	It enables external video source
	SYSTEM	PAL_50 Hz	It enables the video system selected
		PAL_60 Hz	It enables the video system selected
		NTSC	It enables the video system selected
		SECAM	It enables the video system selected