RS232 control of VSP1250.

The Video Processor / HDMI switch VSP1250 is compatible to be controlled by a connected control-system having a RS232 serial output port (PC, CRESTRON home automation system etc.).

Because the VSP1250 R provides two operation modes

Combination with other T+A devices (RLink system)
In this operation mode the VSP1250R is connected via RLink to the T+A R-System and will be controlled by the system master or surround decoder (e.g.: SR1535 / DD1535).
The connection of the system to the Crestron unit will be done through the RS232/R-Link interface adapter. For details about connecting and operating the adapter see the user manual of the adapter "UM_RS232_Adapt.doc".
Because any selection of sources will be controlled by the RLink system please do **not** use the source selection commands from command tab (appendix 1).

Stand alone mode.
For controlling the VSP 1250 R through an Crestron system please connect the PROGRAM connector on the back side of VSP1250 R with an appropriate cable directly to a serial output of the Crestron unit. Source selection and other VSP 1250 R functions can be controlled by using the commands from the command tab (appendix 1)

Settings for the RS232 interface of the control device are as follows:

Baud rate:	115.200
Data bits:	8
Stop bits:	1
Parity:	none
Flow Control:	none

T+A RS_232 Protocol

The R-series devices use the standard T+A RS232 command protocol as described in detail in the documents “TA_RS232_protocol.doc” and “RS_232_Command_Codes.doc”.

Format of the command telegrams

A command telegram to the R-system master device consists of 6 bytes. The complete telegram should be sent without pauses between the bytes.

Example: SYSTEM_ON command

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6
RS232 adapter Address (always 0x01)	**Telegram length** (R-Link address + R-Link command + R-Link flag byte = 0x03)	**R-Link Address** (0x90/92=Video/ Videoprocessor → see also note below)	**R-Link command** (here: SystemON = 0x57) → see command table “appendix 1”	**R-Link flag byte** (always 0x02)	**Check sum** = sum of bytes 1..5 mod. 0x100
0x01	**0x03**	**0x90**	**0x57**	**0x02**	**0xED**

Byte 1, 2, 3, 5 : these bytes have the fixed values as shown in the table above for all R-system master devices

Byte 4 : R-Link command according to the table of RCII commands (see “RS_232_Command_Codes.doc”)

Byte 6 : check sum == (byte1+byte2+byte3+byte4+byte5) modulo 0x100

Note:
For the current softwareversion of the VSP there is no difference between the addresses 0x90 (videoprocessor) and 0x92 (hdmi switch) and so both addresses are valid.

Format of the acknowledge (ACK) telegrams

The R-System master device will process each received command telegram and it will send an acknowledge telegram approx. 25...35 ms after receiving the command.

The ACK telegram consists of 2 bytes:
Byte 1 is the RS232 address of the command telegram received before (=byte 1 of the command telegram = 0x01).
Byte 2 is the acknowledge byte. If this byte is equal to the check sum of the command telegram (byte_6 of the command) then the command was received correctly. If byte_2 has a value different from the check sum of the command, an error has occurred (see table below).

Format of the ACK telegram:

Byte 1	Byte 2	
RS232 address	**ACK byte**	
0x01	= check sum of command: = check sum –1: = check sum –2:	command correctly received command ignored (system busy) command not executed
	Note: If no ACK telegram is received within 35 milli-seconds after sending a command, there is either a hardware problem (cable etc.) or the telegram is erroneous (wrong address, wrong check sum ....)	

After the ACK telegram, the master device is ready for the next command.

Appendix 1: List of VSP1250R commands (Address 0x90 / 0x92)

Command	Code (HEX)	toggle	Remark
System On / Off			
ON / OFF	0x01	x	System on / off **Hint**: better use the "discrete" System ON / System OFF commands
System ON	0x57		Power ON
System OFF	0x7A		Power OFF
System STBY	0x77		Power OFF
VSP Control			
F3	0x0B	x	Overscan 95% / 100% **Hint**: better use the "discrete" OVSC ON / OVSC OFF commands
Display	0x08	x	Aspect ratio PASS / H-33% / V-33% / V+33% / HV-33% **Hint**: better use the "discrete" Aspect_Pass... Aspect_HV-33 commands
ASPECT_PASS	0xE8		PASS
ASPECT_H-33	0xE9		H-33%
ASPECT_V-33	0xEA		V-33%
ASPECT_V+33	0xEB		V+33%
ASPECT_HV-33	0xEC		HV-33%
OVSC_ON	0xED		Overscan 95%
OVSC_OFF	0xEE		Overscan 100%
OSD Menu Control			
Open SRC Menu	0x1F	x	OSD menu open / close
Cursor left	0x1A		moves cursor to the left
Cursor right	0x25		moves cursor to the right
Cursor up	0x34		moves cursor up
Cursor down	0x2A		moves cursor down
Stop	0x24		leaves current menu level and enters higher level
Prog	0x26		stores current selection
Source selection (stand alone mode only)			
SRC_AV1	0xE0		CVBS input
SRC_AV2	0xE1		Y/C input
SRC_AV3	0xE3		YUV input
SRC_AV4	0xE2		SCART (RGB / CVBS auto detection)
SRC_HDMI1	0xE4		HDMI1
SRC_HDMI2	0xE5		HDMI2
SRC_HDMI3	0xE6		HDMI3
SRC_HDMI4	0xE7		HDMI4
F5	0x36	x	Direct mode ON / OFF

Revision history:

15.02.2007 V1.00
20.11.2012 V1.01 Checksum computation corrected (mod 0x100)