

RS232 Serial Protocol for Hantarex TV

Introduction

This document describes the technical specifications for serial protocol implementation.

Physical link is standard RS232-C protocol. The following set of **direct commands** has to be implemented according to the details described in this document:

Direct commands

1. Power ON
2. Power OFF
3. Direct TV source select + Program select 00 to 09
4. SCART1
5. VGA
6. S-Video
7. CVBS
8. HDMI1
9. HDMI2
10. YUV
- 11-12-13. TXT functions
14. Volume
15. SCART2
16. MEDIA
17. Direct DVBT source select + Program select 00 to 09
18. Volume UP
19. Volume DOWN
20. Channel UP
21. Channel DOWN
22. Cursor move UP
23. Cursor move DOWN
24. Cursor move LEFT
25. Cursor move RIGHT
26. MENU
27. ENTER (OK key on remote)
28. EXIT
29. NUMBER (number key on remote)

Technical specifications

RS232-C format

Baud rate: 9600 1start/8data/no-parity/1 stop

This is the list of the commands to be supported.

Each command (named "send") is 8 byte long and last byte is Carriage Return 0x0D

Each command is send from PC to monitor. No answerback is requested. The monitor just execute the command if the command format is correct (same as per Infra-Red remote control)

1. **POWER OFF** (POWR0---)

send 50 4F 57 52 **30** 20 20 20 0D

Action: The monitor executes OFF action.

2. **POWER ON** (POWR1---)

send 50 4F 57 52 **31** 20 20 20 0D

Action: The monitor executes ON action.

3. Direct CHANNEL selection

send 44 43 43 48 **30 32** 20 20 0D --> 'DCCH02--'

Action: The monitor changes to TV program 02.

In addition, if current source is not-TV, change source to TV before selecting PR02

4. VGA selection (INP51+space+space+space+0x0d)

send 49 4E 50 **35 31** 20 20 20 0D

Action: The monitor changes to VGA source.

5. RGB-scart1 selection (INP10+space+space+space+0x0d)

send 49 4E 50 **31 30** 20 20 20 0D

Action: The monitor changes to SCART-RGB source.

6. S_Video selection (INP41+space+space+space+0x0d)

send 49 4E 50 **34 31** 20 20 20 0D

Action: The monitor changes to S-Video source.

7. CVBS selection (INP20+space+space+space+0x0d)

send 49 4E 50 **32 30** 20 20 20 0D

Action: The monitor changes to CVBS source.

8. HDMI 1 selection (INP50+space+space+space+0x0d)

send 49 4E 50 **35 30** 20 20 20 0D

Action: The monitor changes to HDMI1 source.

9. HDMI 2 selection (INP52+space+space+space+0x0d)

send 49 4E 50 **35 32** 20 20 20 0D

Action: The monitor changes to HDMI2 source.

10. Component selection (INP33+space+space+space+0x0d)

send 49 4E 50 **33 33** 20 20 20 0D

Action: The monitor changes to Component source.

11. TXT selection OFF(TEXT0+space+space+space+0x0d)

send 54 45 58 54 **30** 20 20 20 0D

Action: The monitor Switch off TXT.

12. TXT selection ON(TEXT1+space+space+space+0x0d)

send 54 45 58 54 **31** 20 20 20 0D

Action: The monitor Active TXT.

13. TXT selection page(DCPG+**100**+ space+0x0d)(PAGE **100**)

send 44 43 50 47 **31 30 30** 20 0D

Action: selection pages from 100 to 899.

14. Volume (VOLM+**XX**+space+space +0x0d)(**xx**= from 0 to 60)

send 56 4F 4C 4D **33 30** 20 20 0D (Vol=**30**)

Action: Set Volume = 30 (half position).

send 56 4F 4C 4D **30 30** 20 20 0D (Vol=**00**)

Action: Set Volume = 00 (MIN position).

send 56 4F 4C 4D **36 30** 20 20 0D (Vol=**60**)

Action: Set Volume = 100 (MAX position).

15. SCART2 selection (INP11+space+space+space+0x0d)

send 49 4E 50 31 31 20 20 20 0D

Action: The monitor changes to SCART2 source.

16. MEDIA selection (INP21+space+space+space+0x0d)

send 49 4E 50 32 31 20 20 20 0D

Action: The monitor changes to SCART-RGB source.

17. Direct DVBT source select + CHANNEL selection

send 44 56 42 54 30 32 20 20 0D --> 'DVBT02--'

Action: The monitor changes to DVBT program 02.

In addition, if current source is not-DVBT, change source to DVBT before selecting PR02

18. Volume UP (VOUP+space+space+space+space +0x0d)

send 56 4F 55 50 20 20 20 20 0D

Action: Increment volume one step.

19. Volume DOWN (VODW+space+space+space+space +0x0d)

send 56 4F 44 57 20 20 20 20 0D

Action: Decrement volume one step.

20. Channel UP (CHUP+space+space+space+space +0x0d)

send 43 48 55 50 20 20 20 20 0D

Action: Increment channel one step.

21. Channel DOWN (CHDW+space+space+space+space +0x0d)

send 43 48 44 57 20 20 20 20 0D

Action: Decrement channel one step.

22. Cursor UP (CRUP+space+space+space+space +0x0d)

send 43 52 55 50 20 20 20 20 0D

Action: Run cursor move up on remote.

23. Cursor DOWN (CRDW+space+space+space+space +0x0d)

send 43 52 44 57 20 20 20 20 0D

Action: Run cursor move down on remote.

24. Cursor LEFT (CRLF+space+space+space+space +0x0d)

send 43 52 4C 46 20 20 20 20 0D

Action: Run cursor move left on remote.

25. Cursor RIGHT (CRRG+space+space+space+space +0x0d)

send 43 52 52 47 20 20 20 20 0D

Action: Run cursor move right on remote.

26. MENU (MENU+space+space+space+space +0x0d)

send 4D 45 4E 55 20 20 20 20 0D

Action: Run MENU key on remote.

27. ENTER (ENTR+space+space+space+space +0x0d)

send 45 4E 54 52 20 20 20 20 0D

Action: Run OK key on remote.

28. EXIT (EXIT+space+space+space+space +0x0d)

send 45 58 49 54 20 20 20 20 0D

Action: Run EXIT key on remote.

29. **NUMBER** (NUMB+**X**+space+space+space +0x0d)(**X**= from 0 to 9)

send 4E 55 4D 42 30 20 20 20 0D

Action: Run key 0 on remote.

send 4E 55 4D 42 31 20 20 20 0D

Action: Run key 1 on remote.

send 4E 55 4D 42 32 20 20 20 0D

Action: Run key 2 on remote.

send 4E 55 4D 42 33 20 20 20 0D

Action: Run key 3 on remote.

send 4E 55 4D 42 34 20 20 20 0D

Action: Run key 4 on remote.

send 4E 55 4D 42 35 20 20 20 0D

Action: Run key 5 on remote.

send 4E 55 4D 42 36 20 20 20 0D

Action: Run key 6 on remote.

send 4E 55 4D 42 37 20 20 20 0D

Action: Run key 7 on remote.

send 4E 55 4D 42 38 20 20 20 0D

Action: Run key 8 on remote.

send 4E 55 4D 42 39 20 20 20 0D

Action: Run key 9 on remote.

Appendix

RS-232C port specifications

PC Control of the System

- When a program is set, the display can be controlled from the PC using the RS-232C terminal. The input signal (PC/video) can be selected, the volume can be adjusted and various other adjustments and settings can be made, enabling automatic programmed playing.
- Attach an RS-232C cable cross-type (commercially available) to the supplied Din/D-sub RS-232C for the connections.

NOTE

- This operation system should be used by a person who is accustomed to using PCs.

Communication conditions

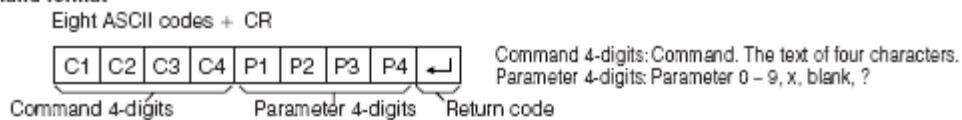
Set the RS-232C communications settings on the PC to match the display's communications conditions. The display's communications settings are as follows:

Baud rate:	9,600 bps
Data length:	8 bits
Parity bit:	None
Stop bit:	1 bit
Flow control:	None

Communication procedure

Send the control commands from the PC via the RS-232C connector. The Display operates according to the received command and sends a response message to the PC. Do not send multiple commands at the same time. Wait until the PC receives the OK response before sending the next command.

Command format



Parameter

Input the parameter values, aligning left, and fill with blank(s) for the remainder. (Be sure that four values are input for the parameter.)
 When the input parameter is not within an adjustable range, "ERR" returns. (Refer to "Response code format".)

0			
0	0	0	9
-	3	0	
1	0	0	
0	0	5	5

When "?" is input for some commands, the present setting value responds.

?			
?	?	?	?

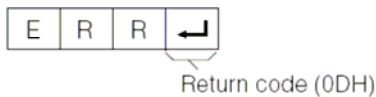
Appendix

Response code format

Normal response



Problem response (communication error or incorrect command)



Commands

CONTROL ITEM	COMMAND	PARAMETER	CONTROL CONTENTS
POWER SETTING	P O W R	0 _ _ _	POWER OFF (STANDBY)
INPUT SELECTION A	I T G D	_ _ _ _	INPUT SWITCHING (TOGGLE)
	I T V D	_ _ _ _	TV (CHANNEL FIXED)
	I A V D	* _ _ _	INPUT1 - 5 (1 - 5)
CHANNEL	D C C H	* _ _ _	TV DIRECT CHANNEL (1 - 99)
	C H U P	_ _ _ _	CHANNEL UP
	C H D W	_ _ _ _	CHANNEL DOWN
INPUT SELECTION B	I N P 1	0 _ _ _	INPUT1 (CVBS)
	I N P 1	1 _ _ _	INPUT1 (RGB)
	I N P 2	0 _ _ _	INPUT2 (CVBS)
	I N P 2	1 _ _ _	INPUT2 (Y/C)
	I N P 3	0 _ _ _	INPUT3 (CVBS)
	I N P 3	1 _ _ _	INPUT3 (Y/C)
	I N P 3	2 _ _ _	INPUT3 (RGB)
	I N P 3	3 _ _ _	INPUT3 (COMPONENT)
	I N P 4	0 _ _ _	INPUT4 (AUTO)
	I N P 4	1 _ _ _	INPUT4 (S-VIDEO)
	I N P 4	2 _ _ _	INPUT4 (VIDEO)
	I N P 5	0 _ _ _	DIGITAL PC
	I N P 5	1 _ _ _	ANALOGUE PC
	I N P 5	2 _ _ _	DIGITAL AV
	I N P 5	3 _ _ _	ANALOGUE AV
AV MODE SELECTION	A V M D	0 _ _ _	TOGGLE
	A V M D	1 _ _ _	STANDARD
	A V M D	2 _ _ _	MOVIE
	A V M D	3 _ _ _	GAME
	A V M D	4 _ _ _	USER
A V M D	5 _ _ _	DYNAMIC	
VOLUME	V O L M	* _ _ _	VOLUME (0 - 60)

CONTROL ITEM	COMMAND	PARAMETER	CONTROL CONTENTS
POSITION	H P O S	* * * _	H-POSITION (AV) (- 10 - + 10)
	H P O S	* * * _	H-POSITION (PC) (0 - 180)
	V P O S	* * * _	V-POSITION (AV) (- 20 - + 20)
	V P O S	* * * _	V-POSITION (PC) (0 - 100)
	C L C K	* * * _	CLOCK (0 - 180)
	P H S E	* * * _	PHASE (0 - 40)
WIDE MODE	W I D E	0 _ _ _	TOGGLE (AV)
	W I D E	1 _ _ _	NORMAL (AV)
	W I D E	2 _ _ _	ZOOM 14:9 (AV)
	W I D E	3 _ _ _	PANORAMA (AV)
	W I D E	4 _ _ _	FULL (AV)
	W I D E	5 _ _ _	CINEMA 16:9 (AV)
	W I D E	6 _ _ _	CINEMA 14:9 (AV)
	W I D E	7 _ _ _	NORMAL (PC)
	W I D E	8 _ _ _	CINEMA (PC)
	W I D E	9 _ _ _	FULL (PC)
W I D E	1 0 _ _	DOT BY DOT (PC)	
MUTE	M U T E	0 _ _ _	TOGGLE
	M U T E	1 _ _ _	MUTE
	M U T E	2 _ _ _	MUTE OFF
DOLBY VIRTUAL	A C D V	0 _ _ _	TOGGLE
	A C D V	1 _ _ _	ON
A C D V	2 _ _ _	OFF	
DUAL SCREEN	T W I N	0 _ _ _	DUAL SCREEN OFF
	T W I N	1 _ _ _	DUAL SCREEN ON
AUDIO CHANGE	A C H A	_ _ _ _	TOGGLE
SLEEP TIMER	O F T M	0 _ _ _	OFF
	O F T M	1 _ _ _	SLEEP TIMER 30 MIN
	O F T M	2 _ _ _	SLEEP TIMER 1 HOUR
	O F T M	3 _ _ _	SLEEP TIMER 1 HOUR 30 MIN
	O F T M	4 _ _ _	SLEEP TIMER 2 HOUR
	O F T M	5 _ _ _	SLEEP TIMER 2 HOUR 30 MIN
TEXT	T E X T	0 _ _ _	TEXT OFF
	T E X T	1 _ _ _	TEXT ON (TOGGLE)
	D C P G	* * * _	DIRECT PAGE JUMP (100 - 899)

NOTE

- If an underbar (_) appears in the parameter column, enter a space.
- If an asterisk (*) appears, enter a value in the range indicated in brackets under CONTROL CONTENTS.