

# Introduction

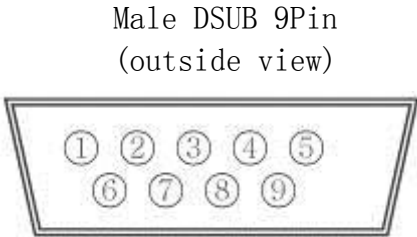
This document describes the hardware interface specification and software protocols of RS232 interface communication between LED LCD and PC or other control unit with RS232 protocol.

# Description

## Hardware specification

LED LCD communication port is in the rear side, near the Tuner.

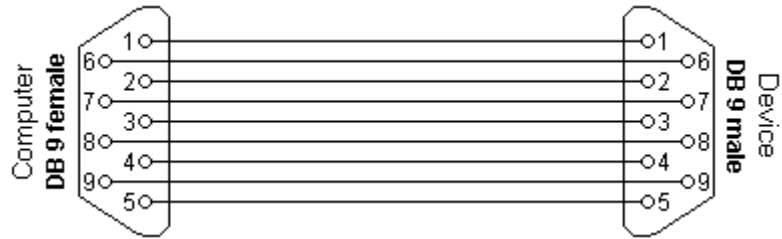
- (1) Connector type: DSUB 9 Pin Male
- (2) Pin Assignment



Pin #	Signal	Remark
1	NC	
2	TXD	Output to TV
3	RXD	Input from TV
4	NC	
5	GND	
6	NC	
7	NC	
8	NC	
9	NC	
frame	GND	



- ◆ Pin2 is TXD, Pin3 is RXD. Pin to Pin connection as below.



- ◆ **Communication Setting**

- ◆ serial port setting:

- ◆ - Baud Rate Select: 9600bps (fixed)
- ◆ - Data bits: 8bits (fixed)
- ◆ - Parity: None (fixed)
- ◆ - Stop Bits: 1(fixed)

## Protocol

- ◆ Command format:

- ◆

No.	Content	Description	Remark
1	0xAA	Head	fixed value
2	0xBB		fixed value
3	0xCC		fixed value
4		Main Command	
5		subcommand	
6	0x00	Length	valid data
7	checksum	checksum	Sum from No. 4 to No. 6.
8	0xDD	End	fixed value
9	0xEE		fixed value
10	0xFF		fixed value

### 1 Code list

Function	Mode	Code	Note
Power	ON	AA BB CC 01 00 00 01 DD EE FF	
	OFF	AA BB CC 01 01 00 02 DD EE FF	
Channels	TV	AA BB CC 02 01 00 03 DD EE FF	
	CVBS	AA BB CC 02 02 00 04 DD EE FF	
	VGA3	AA BB CC 02 0B 00 0D DD EE FF	

	VGA1	AA BB CC 02 03 00 05 DD EE FF	
	VGA2	AA BB CC 02 04 00 06 DD EE FF	
	HDMI1	AA BB CC 02 06 00 08 DD EE FF	
	HDMI2	AA BB CC 02 07 00 09 DD EE FF	
	HDMI3	AA BB CC 02 05 00 07 DD EE FF	
	PC	AA BB CC 02 08 00 0A DD EE FF	
	HDMI4 (4K*2K)	AA BB CC 02 0D 00 0F DD EE FF	
	Android	AA BB CC 02 0A 00 0C DD EE FF	
Volume	000—100	AA BB CC 03 00 xx ** DD EE FF	xx=the amount of volume. EX. The volume is 30(decimal)=1E(Hexadecimal) , xx=1E, **=03+00+1E(Hexadecimal)=21
	MUTE	AA BB CC 03 01 00 04 DD EE FF	
	UNMUTE	AA BB CC 03 01 01 05 DD EE FF	
Aspect	16:9	AA BB CC 08 00 00 08 DD EE FF	
	4:3	AA BB CC 08 01 00 09 DD EE FF	
	Point to point	AA BB CC 08 07 00 0F DD EE FF	
TV channels	ATV 00-99	AA BB CC 05 00 XX ** DD EE FF	
Power of PC	ON	AA BB CC 09 01 00 0A DD EE FF	OK
	OFF	AA BB CC 09 00 00 09 DD EE FF	OK
Function	Mode	Code	Note
Function of Remote Control	WIN	AA BB CC 07 0B 00 12 DD EE FF	
	Space	AA BB CC 07 46 00 4D DD EE FF	
	Alt+Tab	AA BB CC 07 1D 00 24 DD EE FF	
	Alt+F4	AA BB CC 07 1F 00 26 DD EE FF	
	NUM_1	AA BB CC 07 00 00 07 DD EE FF	
	NUM_2	AA BB CC 07 10 00 17 DD EE FF	
	NUM_3	AA BB CC 07 11 00 18 DD EE FF	
	NUM_4	AA BB CC 07 13 00 1A DD EE FF	
	NUM_5	AA BB CC 07 14 00 1B DD EE FF	
	NUM_6	AA BB CC 07 15 00 1C DD EE FF	
	NUM_7	AA BB CC 07 17 00 1E DD EE FF	
	NUM_8	AA BB CC 07 18 00 1F DD EE FF	
	NUM_9	AA BB CC 07 19 00 20 DD EE FF	
	NUM_0	AA BB CC 07 1B 00 22 DD EE FF	
	Display	AA BB CC 07 1C 00 23 DD EE FF	
	Refresh	AA BB CC 07 4C 00 53 DD EE FF	
	Input	AA BB CC 07 07 00 0E DD EE FF	
Home	AA BB CC 07 48 00 4F DD EE FF		

	Menu	AA BB CC 07 0D 00 14 DD EE FF	
	Delete	AA BB CC 07 40 00 47 DD EE FF	
	Energy	AA BB CC 07 4E 00 55 DD EE FF	
	UP	AA BB CC 07 47 00 4E DD EE FF	
	DOWN	AA BB CC 07 4D 00 54 DD EE FF	
	LEFT	AA BB CC 07 49 00 50 DD EE FF	
	RIGHT	AA BB CC 07 4B 00 52 DD EE FF	
	ENTER	AA BB CC 07 4A 00 51 DD EE FF	
	Point	AA BB CC 07 06 00 0D DD EE FF	
	Back	AA BB CC 07 0A 00 11 DD EE FF	
	CH+	AA BB CC 07 02 00 09 DD EE FF	
	CH-	AA BB CC 07 09 00 10 DD EE FF	
	VOL+	AA BB CC 07 03 00 0A DD EE FF	
	VOL-	AA BB CC 07 41 00 48 DD EE FF	
	PageUp	AA BB CC 07 42 00 49 DD EE FF	
	PageDown	AA BB CC 07 0F 00 16 DD EE FF	
	F1	AA BB CC 07 45 00 4C DD EE FF	
	F2	AA BB CC 07 12 00 19 DD EE FF	
	F3	AA BB CC 07 51 00 58 DD EE FF	
	F4	AA BB CC 07 5B 00 62 DD EE FF	
	F5	AA BB CC 07 44 00 4B DD EE FF	
	F6	AA BB CC 07 50 00 57 DD EE FF	
	F7	AA BB CC 07 43 00 4A DD EE FF	
	F8	AA BB CC 07 1A 00 21 DD EE FF	
	F9	AA BB CC 07 04 00 0B DD EE FF	
	F10	AA BB CC 07 59 00 60 DD EE FF	
	F11	AA BB CC 07 57 00 5E DD EE FF	
	F12	AA BB CC 07 08 00 0F DD EE FF	
	RED	AA BB CC 07 5C 00 63 DD EE FF	
	GREEN	AA BB CC 07 5D 00 64 DD EE FF	\
	YELLOW	AA BB CC 07 5E 00 65 DD EE FF	\
	BLUE	AA BB CC 07 5F 00 66 DD EE FF	\
<b>Function</b>	<b>Mode</b>	<b>Code</b>	<b>Note</b>

**Status Checking Code:**

Function	Search Code	Reply Code	Status	Example
Check Power Status	AA BB CC 01	AA BB CC 80 00 00 80 DD EE FF	ON	
	02 00 03 DD EE FF	AA BB CC 80 01 00 81 DD EE FF	OFF	
Check volume	AA BB CC 03 02 00 05 DD EE FF	AA BB CC 82 00 xx ** DD EE FF	Volume is xx	
Check	AA BB CC 03	AA BB CC 82 01 00 83 DD EE FF	MUTE	

audio status	03 00 06 DD EE FF	AA BB CC 82 01 01 84 DD EE FF	UNMUTE	
Check input status	AA BB CC 02 00 00 02 DD EE FF	AA BB CC 81 01 00 82 DD EE FF	TV	
		AA BB CC 81 02 00 83 DD EE FF	AV	
		AA BB CC 81 03 00 84 DD EE FF	VGA1	
		AA BB CC 81 04 00 85 DD EE FF	VGA2	
		AA BB CC 81 05 00 86 DD EE FF	HDMI3	
		AA BB CC 81 06 00 87 DD EE FF	HDMI1	
		AA BB CC 81 07 00 88 DD EE FF	HDMI2	
		AA BB CC 81 08 00 89 DD EE FF	PC	
		AA BB CC 81 0A 00 8B DD EE FF	ANDROID	
		AA BB CC 81 0D 00 8E DD EE FF	HDMI (4k*2K)	
		AA BB CC 81 0C 00 8D DD EE FF	WHDI	
		AA BB CC 81 0B 00 8C DD EE FF	VGA3	
Check PC status	AA BB CC 09 02 00 0B DD EE FF	AA BB CC 83 00 00 83 DD EE FF	ON	
		AA BB CC 83 01 00 84 DD EE FF	OFF	
		AA BB CC 83 02 00 85 DD EE FF	SLEEP	
		AA BB CC 83 03 00 86 DD EE FF	Hibernate	

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