SONY

RS-232C PROTOCOL MANUAL 1st Edition

LCD DIGITAL COLOR TV

KDL-40XBR5 KDL-46XBR5 KDL-52XBR5

SXRD PROJECTION TV

KDS-Z60XBR5 KDS-Z70XBR5

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1. Communication Parameter

Communication system	RS-232C
Synchronous system	Asynchronous communication
Baud rate	9600 bps
Character length	8 bit
Parity	None
Start bit	1 bit
Stop bit	1 bit
Flow control	None

2. Pin Configuration

Display side (D-sub 9-pin male) Host side (D-sub 9-pin)







- External view -

- External view -

Pin No.	Signal		Pin No.	Signal
1	NC		1	NC
2	RD		2	RD
3	TD	$\vdash \wedge$	3	TD
4	NC		4	NC
5	GND		5	GND
6	NC		6	NC
7	NC		7	NC
8	NC		8	NC
9	NC		9	NC

4. Communication Data Format

(a) Control (Host → Request of Write to Display)

Item	Value
Header	0x8C: Control
Category	0x00 (fixed)
Function	0xXX
Data1 (Length)	0xXX (=X-3 byte)
Data2 (Data1)	0xXX
:	0xXX
:	0xXX
Data (X-3)	0xXX
Check Sum	0xXX
	Header Category Function Data1 (Length) Data2 (Data1) : : : Data (X-3)

^{*} Check Sum: The total from No.1 to No. X, when value exceeds 255, 1byte of data is confirmed the bottom.

(b) Answer (Display → Response to host)

1 Control answer

Item	Value						
Header	0x70: Answer						
Answer*	0x00: Completed (Normal End)						
	0x01: Limit Over						
	(Abnormal End-Exceed maximum value)						
	0x02: Limit Over						
	(Abnormal End-Exceed minimum value)						
	0x03: Command Canceled (Abnormal end)						
	0x04: Parse Error (Data Format Error)						
Check Sum	0xXX						
	Header Answer*						

	,
3 Check Sum 0xX	X
* 0x00: Completed	Normal response.
0x01: Limit Over	The packets was received normally, but the
	data value was over the upper limit.
0x02: Limit Over	The packets was received normally, but the
	data value was over the lower limit.
0x03: Command canceld	The packet is received normally but either the
	value of data is incorrect or request is not
	permitted for the current host value.
0x04: Parse Error	Received not defined format data or check
	sum Error.

^{*} Check Sum: The total from No.1 to No. X, when value exceeds 255, 1byte of data is confirmed the bottom.

3. Restriction for Communication

- * Send control command after 20 seconds of power on.
- * Strictly keep to send next command after receiving answer response from Display.
- * Set the command interval to 500ms or more.
- * Value range for direct command is same as user can change by menu.
- * When set is at standby mode, only receives Power ON command.
- * To turn on the set, first set standby command as Enable. After this, the set can receive Power ON command.

5. Command Example

Select CH

	Head	Category	Function	Length													Check Sum
(Terr) Analogue: Last ch	0x8c	0x00	0x04	0x0d	0x01	0x02	0xff	0xXX									
(CATV) Digital : 85.3 ch	0x8c	0x00	0x04	0x0d	0x01	0x03	0x00	0x08	0x05	0x2c	0x03	0xff	0xff	0xff	0xff	0xff	0xXX
(CATV) Analogue: 125 ch	0x8c	0x00	0x04	0x0d	0x01	0x03	0x01	0x02	0x05	0xff	0xXX						

Select Language

	Head	Category	Function	Length					Check Sum
English1"eng"	0x8c	0x00	0x07	0x05	0x00	0x65	0x6e	0x67	0xXX
Spanish "spa"	0x8c	0x00	0x07	0x05	0x00	0x73	0x70	0x61	0xXX
French "fre"	0x8c	0x00	0x07	0x05	0x00	0x66	0x72	0x65	0xXX

6. RS232C Command List

	[a] Function		C		[h]I on ath	[o] Dongo/Curitoh	Cada					
	[a] Function Syntax	Code		mano	(Include	[c] Range/Switch (byte0:	Code	byte1:		byte2-n:		Detail
	Syrilax	Code		_	CheckSum)	Syntax	Code	Syntax	Code	Syntax&		Detail
			>	Power On		Syritax	Code	Syritax	Code	code		
			P P	er						code		
			Stand by	ο								
	5		S	Д		0.55	0.00					055: 1 5 11
Mode Control	Power				0x02	OFF	0x00					OFF is always Enable ON is Enable When Standby
COULLOI		0x00		Ena								Command(0x02) received
		UXUU	ble	ble								Enable(0x01)
					0,,00	ON	0x01					Lilable(0x01)
	Standby Command		 		0x02 0x02	Disable	0x00					
	Standby Command		Dia	Enc	0.02	Disable	0,00					
		0x01	able	Ena	000	Faabla	004					
			able	DIE	0x02	Enable	0x01					
						T I .						1
	Input Select				0x02	Toggle	0x00					select input same as RC
					0x02	TV	0x01					select last TV channel
					0x03	Video	0x02	#1	0x01			-
								#2	0x01			╡
								#3	0x03			1
					0x03	Component	0x03		UNUU			1
		0,,00	Dis	Ena				#1	0x01			1
		0x02	able				<u> </u>	#2	0x02			
					0x03	HDMI						
							0x04	#1	0x01			4
		1						#2	0x02			4
								#3	0x03			#4 is only overlights for OVDD
					0. 00	DC	0x05	#4	0x04			#4 is only available for SXRD model
		1			0x03	PC		#1	0.04			4
	Program Select				0×03	LinDaum	0,00		0x01			select program(channel)
	i Togrami Select				0x03	UpDown	0x00	Up Down	0x00 0x01			same as RC control.
					0x0d	Direct	0x01	Terr Digital		byte2-byte11	+	Same as ICC control.
					UXUU	Direct	UXUI	Ten Digital	0.001	(10 byte Fix length,		
										include terminator)		
										Channel number the		
										following value can		
								Terr Analogue	0x02	be set.:		
			Dis	Ena ble						0x00-0x09,0x2c,0xFF		
		0x04								(terminator)		
								CATV	0x03	In CATV(US) case,		
										set 0x2c as".".		
										if all values are full by		
										"0xFF", system will '		
										tune last channel.		
	Volume Control				0x03	UpDown	0x00	Up				
									0x00			
								Down	0x00 0x01			
		0x05		Ena	0x03	Direct	0x01					
		0x05	Dis able		0x03	Direct	0x01	Down	0x01			
		0x05			0x03	Direct	0x01	Down	0x01			
		0x05						Down	0x01			
	Audio Muting	0x05	able	ble	0x03 0x02	Direct Toggle	0x01	Down	0x01			values in cycle:
	Audio Muting		able Dis	ble Ena	0x02			Down	0x01			Unmuting
	Audio Muting	0x05 0x06	able Dis	ble	0x02	Toggle	0x00	Down values	0x01 0xnn			values in cycle: Unmuting Muting
	Audio Muting		able Dis	ble Ena	0x02		0x00	Down values Unmuting	0x01 0xnn			Unmuting
			able Dis	ble Ena	0x02 0x03	Toggle	0x00 0x01	Down values Unmuting Muting	0x01 0xnn	"eng"		Unmuting Muting
	Audio Muting Language		able Dis	ble Ena	0x02	Toggle	0x00 0x01	Down values Unmuting Muting English	0x01 0xnn	"eng"		Unmuting Muting byte 1-3: ASCII "eng"
			able Dis	ble Ena	0x02 0x03	Toggle	0x00 0x01	Down values Unmuting Muting English French	0x01 0xnn	"fre"		Unmuting Muting
	Language		able Dis	ble Ena	0x02 0x03	Toggle	0x00 0x01	Down values Unmuting Muting English	0x01 0xnn			Unmuting Muting byte 1-3: ASCII "eng"
	Language		able Dis	ble Ena	0x02 0x03	Toggle Direct	0x00 0x01	Down values Unmuting Muting English French	0x01 0xnn	"fre"		Unmuting Muting byte 1-3: ASCII "eng"
			able Dis	ble Ena	0x02 0x03 0x05	Toggle	0x00 0x01 0x00	Down values Unmuting Muting English French	0x01 0xnn	"fre"		Unmuting Muting byte 1-3: ASCII "eng"
	Language		able Dis	ble Ena	0x02 0x03 0x05	Toggle Direct	0x00 0x01 0x00 0x00	Down values Unmuting Muting English French	0x01 0xnn	"fre"		Unmuting Muting byte 1-3: ASCII "eng"
	Language		able Dis	ble Ena	0x02 0x03 0x05	Toggle Direct Toggle	0x00 0x01 0x00 0x00	Down values Unmuting Muting English French Spanish	0x01 0xnn 0x00 0x01	"fre"		Unmuting Muting byte 1-3: ASCII "eng" (for English) supported values: OFF: 0x00
	Language		able Dis	ble Ena	0x02 0x03 0x05	Toggle Direct Toggle	0x00 0x01 0x00 0x00	Down values Unmuting Muting English French Spanish	0x01 0xnn 0x00 0x01	"fre"		Unmuting Muting byte 1-3: ASCII "eng" (for English) supported values: OFF: 0x00 15 min: 0x0F
	Language		able Dis	ble Ena	0x02 0x03 0x05	Toggle Direct Toggle	0x00 0x01 0x00 0x00	Down values Unmuting Muting English French Spanish	0x01 0xnn 0x00 0x01	"fre"		Unmuting Muting byte 1-3: ASCII "eng" (for English) supported values: OFF: 0x00 15 min: 0x0F 30 min: 0x1E
	Language		able Dis	ble Ena	0x02 0x03 0x05	Toggle Direct Toggle	0x00 0x01 0x00 0x00	Down values Unmuting Muting English French Spanish	0x01 0xnn 0x00 0x01	"fre"		Unmuting Muting byte 1-3: ASCII "eng" (for English) supported values: OFF: 0x00 15 min: 0x0F 30 min: 0x1E 45 min: 0x2D
	Language	0x06	Dis able	Ena ble	0x02 0x03 0x05	Toggle Direct Toggle	0x00 0x01 0x00 0x00	Down values Unmuting Muting English French Spanish	0x01 0xnn 0x00 0x01	"fre"		Unmuting Muting byte 1-3: ASCII "eng" (for English) supported values: OFF: 0x00 15 min: 0x0F 30 min: 0x1E 45 min: 0x2D 60 min: 0x3C
	Language	0x06	Dis able	Ena ble	0x02 0x03 0x05	Toggle Direct Toggle	0x00 0x01 0x00 0x00	Down values Unmuting Muting English French Spanish	0x01 0xnn 0x00 0x01	"fre"		Unmuting Muting byte 1-3: ASCII "eng" (for English) supported values: OFF: 0x00 15 min: 0x0F 30 min: 0x1E 45 min: 0x2D 60 min: 0x3C 90 min: 0x5A
	Language		Dis able	Ena ble	0x02 0x03 0x05	Toggle Direct Toggle	0x00 0x01 0x00 0x00	Down values Unmuting Muting English French Spanish	0x01 0xnn 0x00 0x01	"fre"		Unmuting Muting byte 1-3: ASCII "eng" (for English) supported values: OFF: 0x00 15 min: 0x0F 30 min: 0x1E 45 min: 0x2D 60 min: 0x3C
	Language	0x06	Dis able	Ena ble	0x02 0x03 0x05	Toggle Direct Toggle	0x00 0x01 0x00 0x00	Down values Unmuting Muting English French Spanish	0x01 0xnn 0x00 0x01	"fre"		Unmuting Muting byte 1-3: ASCII "eng" (for English) supported values: OFF: 0x00 15 min: 0x0F 30 min: 0x1E 45 min: 0x2D 60 min: 0x3C 90 min: 0x5A
	Language	0x06	Dis able	Ena ble	0x02 0x03 0x05	Toggle Direct Toggle	0x00 0x01 0x00 0x00	Down values Unmuting Muting English French Spanish	0x01 0xnn 0x00 0x01	"fre"		Unmuting Muting byte 1-3: ASCII "eng" (for English) supported values: OFF: 0x00 15 min: 0x0F 30 min: 0x1E 45 min: 0x2D 60 min: 0x3C 90 min: 0x5A
	Language	0x06	Dis able	Ena ble	0x02 0x03 0x05	Toggle Direct Toggle	0x00 0x01 0x00 0x00	Down values Unmuting Muting English French Spanish	0x01 0xnn 0x00 0x01	"fre"		Unmuting Muting byte 1-3: ASCII "eng" (for English) supported values: OFF: 0x00 15 min: 0x0F 30 min: 0x1E 45 min: 0x2D 60 min: 0x3C 90 min: 0x5A
	Language	0x06	Dis able	Ena ble	0x02 0x03 0x05	Toggle Direct Toggle	0x00 0x01 0x00 0x00	Down values Unmuting Muting English French Spanish	0x01 0xnn 0x00 0x01	"fre"		Unmuting Muting byte 1-3: ASCII "eng" (for English) supported values: OFF: 0x00 15 min: 0x0F 30 min: 0x1E 45 min: 0x2D 60 min: 0x3C 90 min: 0x5A
	Language	0x06	Dis able	Ena ble	0x02 0x03 0x05	Toggle Direct Toggle	0x00 0x01 0x00 0x00	Down values Unmuting Muting English French Spanish	0x01 0xnn 0x00 0x01	"fre"		Unmuting Muting byte 1-3: ASCII "eng" (for English) supported values: OFF: 0x00 15 min: 0x0F 30 min: 0x1E 45 min: 0x2D 60 min: 0x3C 90 min: 0x5A
	Language	0x06	Dis able	Ena ble	0x02 0x03 0x05	Toggle Direct Toggle	0x00 0x01 0x00 0x00	Down values Unmuting Muting English French Spanish	0x01 0xnn 0x00 0x01	"fre"		Unmuting Muting byte 1-3: ASCII "eng" (for English) supported values: OFF: 0x00 15 min: 0x0F 30 min: 0x1E 45 min: 0x2D 60 min: 0x3C 90 min: 0x5A
	Language	0x06	Dis able	Ena ble	0x02 0x03 0x05	Toggle Direct Toggle	0x00 0x01 0x00 0x00	Down values Unmuting Muting English French Spanish	0x01 0xnn 0x00 0x01	"fre"		Unmuting Muting byte 1-3: ASCII "eng" (for English) supported values: OFF: 0x00 15 min: 0x0F 30 min: 0x1E 45 min: 0x2D 60 min: 0x3C 90 min: 0x5A
	Language Off Timer(SLEEP)	0x06	Dis able	Ena ble	0x02 0x03 0x05 0x02 0x03	Toggle Direct Toggle Direct	0x00 0x01 0x00 0x00 0x01	Down values Unmuting Muting English French Spanish	0x01 0xnn 0x00 0x01	"fre"		Unmuting Muting byte 1-3: ASCII "eng" (for English) supported values: OFF: 0x00 15 min: 0x0F 30 min: 0x1E 45 min: 0x2D 60 min: 0x3C 90 min: 0x5A 120 min: 0x78
	Language	0x06	Dis able Dis able	Ena ble	0x02 0x03 0x05	Toggle Direct Toggle	0x00 0x01 0x00 0x00	Down values Unmuting Muting English French Spanish	0x01 0xnn 0x00 0x01	"fre"		Unmuting Muting byte 1-3: ASCII "eng" (for English) supported values: OFF: 0x00 15 min: 0x0F 30 min: 0x1E 45 min: 0x2D 60 min: 0x3C 90 min: 0x5A

	[a] Function		Com	mand	[b]Length									
	Syntax	Code			(Include	L. 4 - O.		byte1:		byte2-n:		Detail		
			Stand by	Power On	CheckSum)	Syntax	Code	Syntax	Code	Syntax& code				
	Closed Caption				0x02	Toggle Display	0x00					toggle between Off and On		
					0x03	Direct Display	0x01	OFF	0x00					
					004	Discot Cotting	000	ON	0x01	004	004			
					0x04	Direct Setting	0x02	Analog	0x00	CC1	0x01 0x02	1		
										CC2 CC3	0x02	1		
										CC4	0x04	1		
										Text1	0x05			
										Text2	0x06			
		040	Dis	Ena						Text3	0x07			
		0x10	able					Di-it-I	004	Text4	0x08			
								Digital	0x01	Service1 Service2	0x01 0x02	1		
										Service3	0x02	i		
										Service4	0x04	1		
										Service5	0x05			
										Service6	0x06			
										CC1	0x07			
										CC2	0x08 0x09	-		
										CC3 CC4	0x09	1		
ture	Picture Mode	<u> </u>	l	H	0x02	Toggle	0x00				UNUA	values in cycle :		
oluro			Dis	Ena	0.02							Vivid Standard Cinema Custom.		
		0x20	able	ble	0x03	Direct	0x01	Vivid Standard	0x00 0x01					
								Cinema	0x02					
								Custom	0x03					
	Cine Motion		Dis	Ena		Off	0x00					change only current Input		
		0x2A	able	ble	0x02	Auto1	0x02]		
						Auto2	0x03							
	Advanced Iris					Min	0x00					change only current Input		
						Low Mid	0x01 0x02					only available for SXRD model:		
			Die	Ena		High	0x03							
		0x2B	able		0x02	max	0x04	-						
						Auto1	0x05							
						Auto2	0x06							
	Picture		D:-	Er-	0x03	UpDown	0x00		0x00					
		0x23	able	ble	0x03	Direct	0x01	Down values	0x01 0xXX					
	Brightness		Die	Ena	0x03	UpDown	0x00	Up Down	0x00 0x01					
		0x24	able	ble	0x03	Direct	0x01	values	0xXX					
	Color	0x25	Dis	Ena	0x03	UpDown	0x00	Up Down	0x00 0x01					
		UX25	able	ble	0x03	Direct	0x01	values	0xXX					
	Hue					UpDown	0x00	Red Green	0x00 0x01	Up Down	0x00 0x01			
		0x26	Dis able	Ena ble	0x04	Direct	0x01	Red	0x00	values	0xnn			
	Charpage				0.00	UpDown	0.00	Green	0x01					
	Sharpness	0x28 D	Dis	Ena e ble	0x03	UpDown	0x00	Up Down	0x00 0x01					
					0x03	Direct	0x01	value	0xXX					

	Ital Constian		C		Flatt and add	[-1 D/Ci+- -	0-1-					
	[a] Function Syntax	Code	Comi	nand	[b]Length (Include	[c] Range/Switch	Code	byte1:	1	byte2-n:		Detail
	Syritax	Code			CheckSum)	byte0: Syntax	Code	Syntax	Code	Syntax&		Detail
			Stand by	Power On		Syrilax	Code	Syrilax	Code	code		
			star	δo								
Sound	Sound Mode		0)	ш	0x02	Togglo	0x00					values in cycle:
Souria	Souria Mode				UXUZ	Toggle	UXUU					Dynamic
												Standard
												Custom
			D:-									Custom
		0x30		Ena	0x03	Direct	0x01	Dynamic	0x00			
			able	bie				•				
								Standard	0x01			
								Custom	0x02			
	Treble				0x03	UpDown	0x00	Up	0x00			
								_				4
			Die	Ena				Down	0x01			
		0x32	able					_				
			able	bie	0x04	Direct	0x01	plus	0x00	values	0xnn	
								minus	0x01			
I								ius	0.01	1		
	Bass				0x03	UpDown	0x00	Up	0x00			
I	-300				500	[3,00	Down	0x00	İ		1
I			Dis	Enc					0,01	1		
I		0x33	able		0x04	Direct	0x01	plus	0x00	values	0xnn	1
			able	DIE			1 - 70 1				0,	
								minus	0x01	1		
			<u> </u>	<u> </u>		TI-	0.00		1			
	Speaker Off		Dis	Ena	0x02	Toggle	0x00					4
		0x36	able		0x03	Direct	0x01	OFF	0x00			
								ON	0x01			
Size/	H Size		<u> </u>		0x03	UpDown	0x00	Up	0x00			4
Shift		0x40		Ena				Down	0x01			4
			able	ble	0x04	Direct	0x01	plus	0x00	value	0xnn	
							0.00	minus	0x01			
	H Shift				0x03	UpDown	0x00	Up	0x00	voluee	Ovenn	
		0x41	Dis	Ena	004	Disc et	004	Down	0x01	values	0xnn	
		UX41	able		0x04	Direct	0x01	plus	0x00			
								minus	0x01			
	V Size				0x03	L In Dougn	0x00	Up	0x00			
	v Size				0x03	UpDown	UXUU	Down	0x00		_	
			Dia	-	0x04	Direct	0x01	plus	0x00	values	0xnn	
		0x42	able	Ena	0.04	Direct	0.01	minus	0x01	values	OXIIII	
			able	DIE				11111100	OXO I			
	V 01 16											
	V Shift				0x03		0x00	Up	0x00			
		0x43	Dis	Ena	0.04	D'	0.04	Down	0x01	.1	0	4
		0x43	able	ble	0x04	Direct	0x01	plus	0x00	values	0xnn	
								minus	0x01			
C	\A/: -1 -				000	T	000		-			
Screen	Wide				0x02	Toggle	0x00	1		1		
I					1			Ì		İ		
I					0,,00	Direct	004	Mido Zees	0,00	-		
I					0x03	Direct	0x01	Wide Zoom	0x00	-		-
I					1			Full	0x01	İ		
I								Zoom	0,400	1		1
I			Dis	Ena				Zoom	0x02	1		
		0x44	able		1			Normal	0,403	 	-	1
			able	DIE				Normal	0x03	1		
					1			PC Normal	0x05			1
						Ī		PC_Full1	0x05		-	1
I								PC_Full2	0x07		-	1
I					1				5	İ		
								PC_ZOOM	80x0	İ		only available for SXRD models.
										1		
I	4:3 Mode				0x02	Toggle	0x00		1		1	İ
I				l	5.102	. 299.0	3,00	1		1		
				l				1		1		
				l	1			Ì		İ		
			Die	Ena				1		1		1
I		0x46	able						1			
I			auie	nie	0x03	Direct	0x01	Normal	0x04			<u> </u>
				l				Wide Zoom	0x03	ļ		4
1						Ī		Full	0x02			4
Ī						Ī		Zoom	0x01			4
								Off	0x00			

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