# **HISTORY**

Model Name: RS-232C

PROTOCOL MANUAL

Part No. : 9-883-638-02

When clicking an item, it's detail is displayed.

Date	SUPP./CORR.	Description of SUP/COR	Change of main text
2007.7	_	NEW	_
2007.12	SUPP1	Deletion of KDS-Z60XBR5/Z70XBR5. Addition of note for Stand by Command.	Yes

# SONY®

RS-232C PROTOCOL MANUAL 1st Edition (Revised 1)

LCD DIGITAL COLOR TV

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

### **Table of Contents**

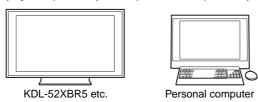
1. Communication Parameter	1
2. Pin Configuration	1
3. Restriction for Communication	1
4. Communication Data Format	1
5. Command Example	2
6 RS-232C Command List	3

#### 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	<del></del>	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)

Header Category Function	0x8C: Control 0x00 (fixed)						
<u> </u>	,						
Function	0VV						
	0xXX						
Data1 (Length)	0xXX (=X-3 byte)						
Data2 (Data1)	0xXX						
:	0xXX						
:	0xXX						
Data (X-3)	0xXX						
Check Sum	0xXX						
	: : Data (X-3)						

<sup>\*</sup> 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.

<sup>\*</sup> 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

S. S	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		Com	mand	[h]l on ath	[c] Range/Switch	20do					
	[a] Function Syntax	Code		mano	(Include	byte0:	Jode	byte1:		byte2-n:		Detail
	Syntax	Code		_	CheckSum)	Syntax	Code	Syntax	Code	Syntax&		Detail
			>	Power On		Syritax	Code	Syritax	Code	code		
			P P	er						code		
			Stand by	ο								
	_		S	Д	0.00	0.55						055: 1 5 11
Mode Control	Power				0x02	OFF	0x00					OFF is always Enable ON is Enable When Standby
Control		0x00		Ena								Command(0x02) received
		UXUU	ble	ble								Enable(0x01)
					0,,00	ON	0x01					Lilable(0x01)
	Standby Command	_	<del>                                     </del>		0x02 0x02	Disable	0x00					
	Standby Command		Dia	Enc	0.02	Disable	0,000					
		0x01		Ena ble	000	Fashla	004					Set as Enable before sending
			able	DIE	0x02	Enable	0x01					Power on.
						T I .						
	Input Select				0x02	Toggle	0x00					select input same as RC select last TV channel
					0x02	TV	0x01					selectiast i v channel
					0x03	Video	0x02	#1	0x01			1
						Component 0x03		#2	0x01			1
							#3	0x03			1	
					0x03			OXOG			1	
		0,402	Dis	Ena				#1	0x01			1
		0x02	able				<u></u>	#2	0x02			]
	1	1			0x03	HDMI	1					
		1					0x04	#1	0x01			1
		Ī						#2	0x02			1
	1	1					1	#3	0x03			#4 is only qualitable for OVDD
	1	1			0.00	DC	0.05	#4	0x04			#4 is only available for SXRD mode
		Ī			0x03	PC	0x05	#1	0.04			1
	Drogram Salast				0,403	HaDaura	0,00		0x01			select program(channel)
	Program Select	Ī			0x03	UpDown	0x00	Up Down	0x00 0x01			same as RC control.
					0x0d	Direct	0x01	Terr Digital		byte2-byte11		Same as IVC Control.
					UXUU	Direct	UXUI	Tell Digital	0.001	(10 byte Fix length,		
										include terminator)		
		0x04								Channel number the		
										following value can		
								Terr Analogue	0x02	be set.:		
			Dis	Ena						0x00-0x09,0x2c,0xFF		
				ble						(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	0x01			
		0x05		Ena ble	0x03	Direct	0x01	values	0xnn			
	1	0,000					1		1			
		Ī					1		1			
			<u> </u>				1	<b> </b>	ļ			<u> </u>
	Audio Muting	1			0x02	Toggle	0x00		1			values in cycle:
		0500		Ena			1		1			Unmuting Muting
	ĺ	0x06	able	ble	0x03	Direct	0201	Unmuting	0x00			Imadig
	1	1			UXUS	שוופטו	UXUI	Muting	0x00			1
	Language	-	t		0x05		0x00	English	5701	"eng"		byte 1-3: ASCII "eng"
	Language	Ī			0,000		0,000	_	1	"fre"		(for English)
	1	1					<u> </u>	French	ļ			(.5. 2.19.01)
		_L	L	L				Spanish	<u></u>	"spa"		
	Off Timer(SLEEP)				0x02	Toggle	0x00					
		1				33			1			
					0x03	Direct	0x01	timer offset	0xnn			supported values:
	ĺ	1	1				1	1	1			OFF: 0x00
		Ī					1		l			15 min: 0x0F
	ĺ	1	1				1		1			30 min: 0x1E
	ĺ	1	1				1		1			45 min: 0x2D
		Ī	D:	E			1		l			60 min: 0x3C
		0x0C		Ena			1		l			90 min: 0x5A
	1		able	ble			1		1			120 min: 0x78
	1	1					1		1			
		Ī					1		l			
	1	1					1		1			
		Ī					1		l			
				1			1		1			
							1		I	ī		ī
	Display				0x02	Toggle	0x00					same as display (info) kev
	Display	0.00		Ena	0x02	Toggle	0x00					same as display (info) key
	Display	0x0F	Dis able		0x02	Toggle	0x00					same as display (info) key

	[a] Function		Com	mand	[b]Length	[c] Range/Switch	Code					
	Syntax	Code			(Include	hutoO.		byte1:		byte2-n:		Detail
	1			_	CheckSum)	Syntax	Code	Syntax	Code	Syntax&		1
			5	ō		1		,		code		
			9	er						0000		
			Stand by	Power On								
			Š	P								
	Closed Caption		T .		0x02	Toggle Display	0x00					toggle between Off and On
					0x03	Direct Display	0x01	OFF	0x00			
					onco	2oo. 2.op.ay	ono.	ON	0x01			
					0x04	Direct Setting	0x02	Analog	0x00	CC1	0x01	
					0,01	Direct County	ONOL	ruidiog	OXOO	CC2	0x02	
										CC3	0x02	
										CC4	0x04	1
										CC4 T44		1
										Text1	0x05	4
										Text2	0x06	
		040	Dis	Ena						Text3	0x07	
		0x10	able	ble						Text4	0x08	
								Digital	0x01	Service1	0x01	4
										Service2	0x02	
										Service3	0x03	
									Service4	0x04		
										Service5	0x05	
			1					Ì		Service6	0x06	j
			1					Ì		CC1	0x07	
	İ		1					Ì		CC2	0x08	1
	İ		1					Ì		ICC3	0x09	
	İ		1					Ì		CC4	0x0a	1
re	Picture Mode		$\overline{}$		0x02	Toggle	0x00	i	1		- CAUG	values in cycle :
.6	I IOLUIC IVIOUE		1		UNUZ	i oggio	0,000	I				Vivid
	İ		1					Ì				Standard
	ĺ		1					l				
	ĺ		1					l				Cinema
	ĺ		1					l				Custom.
	ĺ		1					l				
			Dis	Ena								
		0x20	able									
			abic	DIC	0x03	Direct	0x01	Vivid	0x00			
								Standard	0x01			
								Cinema	0x02			
								Ooa	0.102			
								Custom	0x03			
								Oustoni	0.000			
	Cine Motion		+			Off	0x00					change only current Input
	Cine Motion		Die	Г		Oii	UXUU					change only current Input
	İ	0x2A	DIS	Ena	0x02	Auto 1	0,,00	<del> </del>	+		-	1
	İ	1	able	bie	****	Auto1	0x02	<del>                                     </del>	+		-	4
	<u> </u>		₩	<b>—</b>		Auto2	0x03		+			1
	Advanced Iris					Min	0x00				1	change only current Input
											_	
						Low	0x01					only available for SXRD mod
						Low	0x01					only available for SXRD mod
						Low	0x01 0x02					only available for SXRD mod
												only available for SXRD mod
			Dia	Eng		Mid						only available for SXRD mod
		0x2B		Ena	0x02		0x02					only available for SXRD mod
		0x2B	Dis able		0x02	Mid High	0x02 0x03					only available for SXRD mod
		0x2B			0x02	Mid	0x02					only available for SXRD mod
		0x2B			0x02	Mid High max	0x02 0x03 0x04					only available for SXRD mod
		0x2B			0x02	Mid High	0x02 0x03					only available for SXRD mod
		0x2B			0x02	Mid High max Auto1	0x02 0x03 0x04 0x05					only available for SXRD mod
		0x2B			0x02	Mid High max	0x02 0x03 0x04					only available for SXRD mod
	District	0x2B				Mid High max Auto1 Auto2	0x02 0x03 0x04 0x05 0x06	Lia	0,00			only available for SXRD mod
	Picture		able	ble		Mid High max Auto1	0x02 0x03 0x04 0x05		0x00			only available for SXRD mod
	Picture		able	ble	0x03	Mid High max Auto1 Auto2 UpDown	0x02 0x03 0x04 0x05 0x06 0x00	Down	0x01			only available for SXRD mod
	Picture	0x2B 0x23	able	ble		Mid High max Auto1 Auto2	0x02 0x03 0x04 0x05 0x06					only available for SXRD mod
			able	ble	0x03 0x03	Mid High max Auto1 Auto2 UpDown Direct	0x02 0x03 0x04 0x05 0x06 0x00	Down values	0x01 0xXX			only available for SXRD mod
	Picture Brightness	0x23	Dis able	Ena ble	0x03	Mid High max Auto1 Auto2 UpDown	0x02 0x03 0x04 0x05 0x06 0x00	Down values Up	0x01 0xXX 0x00			only available for SXRD mod
			Dis able	Ena ble Ena	0x03 0x03 0x03	Mid High max Auto1 Auto2 UpDown Direct UpDown	0x02 0x03 0x04 0x05 0x06 0x00 0x01	Down values Up Down	0x01 0xXX 0x00 0x01			only available for SXRD mod
		0x23	Dis able	Ena ble Ena	0x03 0x03	Mid High max Auto1 Auto2 UpDown Direct	0x02 0x03 0x04 0x05 0x06 0x00	Down values Up	0x01 0xXX 0x00			only available for SXRD mod
	Brightness	0x23	Dis able	Ena ble Ena	0x03 0x03 0x03 0x03	Mid High max Auto1 Auto2 UpDown Direct UpDown	0x02 0x03 0x04 0x05 0x06 0x00 0x01	Down values Up Down values	0x01 0xXX 0x00 0x01 0xXX			only available for SXRD mod
		0x23 0x24	Dis able Dis able	Ena ble Ena ble	0x03 0x03 0x03	Mid High max Auto1 Auto2 UpDown Direct UpDown	0x02 0x03 0x04 0x05 0x06 0x00 0x01	Down values Up Down values Up	0x01 0xXX 0x00 0x01 0xXX			only available for SXRD mod
	Brightness	0x23 0x24	Dis able Dis able Dis	Ena ble Ena ble	0x03 0x03 0x03 0x03 0x03	Mid High max Auto1 Auto2 UpDown Direct UpDown Direct UpDown	0x02 0x03 0x04 0x05 0x06 0x00 0x01 0x00 0x01	Down values  Up Down values  Up Down values  Up Down	0x01 0xXX 0x00 0x01 0xXX 0x00 0x01			only available for SXRD mod
	Brightness	0x23	Dis able Dis able	Ena ble Ena ble	0x03 0x03 0x03 0x03	Mid High max Auto1 Auto2 UpDown Direct UpDown	0x02 0x03 0x04 0x05 0x06 0x00 0x01	Down values Up Down values Up	0x01 0xXX 0x00 0x01 0xXX			only available for SXRD mod
	Brightness Color	0x23 0x24	Dis able Dis able Dis	Ena ble Ena ble	0x03 0x03 0x03 0x03 0x03 0x03	Mid High max Auto1 Auto2 UpDown Direct UpDown Direct UpDown Direct UpDown Direct UpDown	0x02 0x03 0x04 0x05 0x06 0x00 0x01 0x00 0x01 0x00	Down values  Up Down values  Up Down values  Up Down values	0x01 0xXX 0x00 0x01 0xXX 0x00 0x01 0xXX			only available for SXRD mod
	Brightness	0x23 0x24	Dis able Dis able Dis	Ena ble Ena ble	0x03 0x03 0x03 0x03 0x03	Mid High max Auto1 Auto2 UpDown Direct UpDown Direct UpDown	0x02 0x03 0x04 0x05 0x06 0x00 0x01 0x00 0x01	Down values  Up Down values  Up Down values  Red	0x01 0xXX 0x00 0x01 0xXX 0x00 0x01 0xXX	Up	0x00	only available for SXRD mod
	Brightness Color	0x23 0x24	Dis able Dis able Dis able	Ena ble Ena ble	0x03 0x03 0x03 0x03 0x03 0x03	Mid High max Auto1 Auto2 UpDown Direct UpDown Direct UpDown Direct UpDown Direct UpDown	0x02 0x03 0x04 0x05 0x06 0x00 0x01 0x00 0x01 0x00 0x01	Down values  Up Down values  Up Down values  Up Down values	0x01 0xXX 0x00 0x01 0xXX 0x00 0x01 0xXX	Down	0x00 0x01	only available for SXRD mod
	Brightness Color	0x23 0x24 0x25	Dis able Dis able Dis able Dis able	Ena ble Ena ble Ena	0x03 0x03 0x03 0x03 0x03 0x03	Mid High max Auto1 Auto2 UpDown Direct UpDown Direct UpDown Direct UpDown Direct UpDown	0x02 0x03 0x04 0x05 0x06 0x00 0x01 0x00 0x01 0x00	Down values  Up Down values  Up Down values  Red	0x01 0xXX 0x00 0x01 0xXX 0x00 0x01 0xXX	Up Down values	0x00 0x01 0xnn	only available for SXRD mod
	Brightness Color	0x23 0x24	Dis able Dis able Dis able	Ena ble Ena ble Ena	0x03 0x03 0x03 0x03 0x03 0x03	Mid High max Auto1 Auto2 UpDown Direct UpDown Direct UpDown Direct UpDown Direct UpDown	0x02 0x03 0x04 0x05 0x06 0x00 0x01 0x00 0x01 0x00 0x01	Down values  Up Down values  Up Down values  Up Red Green Red	0x01 0xXX 0x00 0x01 0xXX 0x00 0x01 0xXX 0x00 0x01 0xXX	Down	0x01	only available for SXRD mod
	Brightness Color	0x23 0x24 0x25	Dis able Dis able Dis able Dis able	Ena ble Ena ble Ena	0x03 0x03 0x03 0x03 0x03 0x03	Mid High max Auto1 Auto2 UpDown Direct UpDown Direct UpDown Direct UpDown Direct UpDown	0x02 0x03 0x04 0x05 0x06 0x00 0x01 0x00 0x01 0x00 0x01	Down values  Up Down values  Up Down values  Up Red Green	0x01 0xXX 0x00 0x01 0xXX 0x00 0x01 0xXX	Down	0x01	only available for SXRD mod
	Brightness  Color  Hue	0x23 0x24 0x25	Dis able Dis able Dis able Dis able	Ena ble Ena ble Ena	0x03 0x03 0x03 0x03 0x03 0x03 0x04	Mid High max Auto1 Auto2 UpDown Direct UpDown Direct UpDown Direct UpDown Direct UpDown Direct UpDown Direct UpDown	0x02 0x03 0x04 0x05 0x06 0x00 0x01 0x00 0x01 0x00 0x01 0x00	Down values  Up Down values  Up Down values  Red Green  Green	0x01 0xXX 0x00 0x01 0xXX 0x00 0x01 0xXX 0x00 0x01 0x01 0x01	Down	0x01	only available for SXRD mod
	Brightness Color	0x23 0x24 0x25	Dis able Dis able Dis able Dis able	Ena ble Ena ble Ena ble	0x03 0x03 0x03 0x03 0x03 0x03	Mid High max Auto1 Auto2 UpDown Direct UpDown Direct UpDown Direct UpDown Direct UpDown	0x02 0x03 0x04 0x05 0x06 0x00 0x01 0x00 0x01 0x00 0x01	Down values  Up Down values  Up Down values  Red Green  Red Green  Up	0x01 0xXX 0x00 0x01 0xXX 0x00 0x01 0xXX 0x00 0x01 0x00 0x01 0x00	Down	0x01	only available for SXRD mod
	Brightness  Color  Hue	0x23 0x24 0x25	Dis able Dis able Dis able Dis able	Ena ble Ena ble Ena ble Ena	0x03 0x03 0x03 0x03 0x03 0x03 0x04	Mid High max Auto1 Auto2 UpDown Direct UpDown Direct UpDown Direct UpDown Direct UpDown Direct UpDown Direct UpDown	0x02 0x03 0x04 0x05 0x06 0x00 0x01 0x00 0x01 0x00 0x01 0x00	Down values  Up Down values  Up Down values  Red Green  Green	0x01 0xXX 0x00 0x01 0xXX 0x00 0x01 0xXX 0x00 0x01 0x01 0x01	Down	0x01	only available for SXRD mod

	[a] Function		Comi	mand	[b]Length	[c] Range/Switch	h Code					
	Syntax	Code	00		(Include	byte0:		byte1:		byte2-n:		Detail
	•		>	۲	CheckSum)	Syntax		Syntax	Code	Syntax&		]
			Stand by	Power On						code		
Sound	Sound Mode				0x02	Toggle	0x00					values in cycle: Dynamic Standard Custom
		0x30	Dis able	Ena ble	0x03	Direct	0x01	Dynamic	0x00			
								Standard	0x01			
								Custom	0x02			
	Treble				0x03	UpDown	0x00	Up	0x00			
			Dis	Ena				Down	0x01			-
		0x32	able		0x04	Direct	0x01	plus	0x00	values	0xnn	-
								minus	0x01			
	Bass				0x03	UpDown		Up	0x00			
		2.22	Dis	Ena				Down	0x01			]
		0x33	able		0x04	Direct		plus	0x00	values	0xnn	
	0				0.00	Togglo		minus	0x01			
	Speaker Off	0x36		Ena	0x02 0x03	Toggle Direct	0x00 0x01	OFF	0x00		-	-
		0,00	able	ble	0x03	Direct		ON	0x00	-		
Size/	H Size				0x03	UpDown		Up	0x00			
Shift		0×40		Ena	OX.00	орво	0,100	Down	0x01			
		0x40	able	ble	0x04	Direct	0x01	plus	0x00	value	0xnn	
								minus	0x01			
	H Shift				0x03	UpDown		Up	0x00	values	0xnn	-
		0x41	Dis able	Ena ble	0x04	Direct		Down plus minus	0x01 0x00 0x01	values	OXIIII	
	V Size				0x03	UpDown	0x00	Up Down	0x00 0x01			
		0x42	Dis able	Ena ble	0x04	Direct		plus minus	0x00 0x01	values	0xnn	
	V Shift				0x03		0x00	Up	0x00			
	V Orlint		Die	Ena			0,00	Down	0x00			
		0x43	able	ble	0x04	Direct		plus minus	0x00 0x01	values	0xnn	
Screen	Wide				0x02	Toggle	0x00					
					0x03	Direct	0x01	Wide Zoom Full	0x00 0x01			
		0×44	Dis	Ena				Zoom	0x02			
		0x44	able	ble				Normal	0x03			
								PC Normal PC_Full1	0x05 0x06			]
								PC_Full2	0x07			
								PC_ZOOM	0x08			only available for SXRD model.
	4:3 Mode				0x02	Toggle	0x00					
		0x46	Dis able	Ena ble	0x03	Direct	0x01	Normal	0x04			
							1	Wide Zoom	0x03			]
						1		Full	0x02	1		-  I
				ĺ	Ī	1		Zoom	0x01	-		-{
	l .				l .	<u>I</u>		Off	0x00			1

The material contained in this manual consists of information that is the property of Sony Corporation. Sony Corporation expressly prohibits the duplication of any portion of this manual or the use thereof for any purpose other than the operation of the equipment described in this manual without the express written permission of Sony Corporation.

Le matériel contenu dans ce manuel consiste en informations qui sont la propriété de Sony Corporation. Sony Corporation interdit formellement la copie de quelque partie que ce soit de ce manuel ou son emploi pour tout autre but que des opérations del'équipement à moins d'une permission écrite de Sony Corporation.

El material incluido en este manual contiene información que es propiedad de Sony Corporation.

Sony Corporation prohíbe expresamente la duplicación de cualquier parte de este manual o la utilización del mismo para cualquier fin que no sea la operación del equipo descrito en este manual sin el permiso expreso por escrito de Sony Corporation.

#### **Sony Customer Support:**

http://www.sony.com/tvsupport

or to contact with a support representative:

United States 1-800-222-SONY(7669)

Canada 1-877-899-SONY(7669)

Latin America http://esupport.sony.com/ES/LA