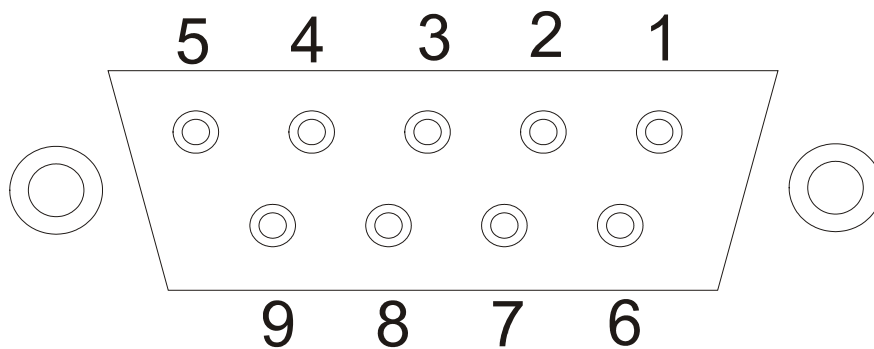


RS-232 Protocol For 568FY0047A

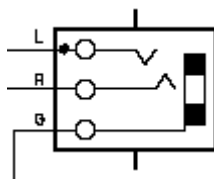
1 Physical Definition

Type A Female D-Sub 9 pin

1. NC
2. TXD (To the Computer)
3. RXD (From the Computer)
4. NC
5. Ground
6. NC
7. NC
8. NC
9. NC



Type B: Mini earphone Jack



- L TXD (To the Computer)
R RXD (From the Computer)
G Ground

2 Electrical Definition:

Signal Level	RS-232 Compliant
Synchronization Method	Asynchronous

Baud Rate	9600Bps(Recommended)
Parity	None
Character Length	8 Bits
Flow control	None
Start Bits	1Bit
Stop Bits	1Bit

3 Basic format for control

The Transmission of data from the Control (Computer or AV Controller) starts with an STX signal, followed by the command, then the parameters, and lastly an ETX signal. If there are no parameters, then the parameter does not need to be sent. There is a Colon that separates the commands from the parameters.

All Commands start with STX (02h) and end with ETX(03h). There is Data outside the STX and ETX that should be ignored.

Option ID number three ASCII digits ranging from 000-999
 A Semicolon separates the ID number from the Command.
 The ID number can be set for the TV in the Service Menu.(received)

Each command is 3 ASCII character plus a Parameter
 A Colon separates the Command from the Parameter.

The Parameter is 1 to 7 ASCII characters long.

After each command is received, the TV shall send back an acknowledgment.
 For most commands, this should be a simple STX , the letters "OK", and an ETX.

If there is an error, the TV shall return STX, the letters "ER", and ETX. There could be parameters added after a Colon if more details are possible.

Examples:

All commands are ASCII. Hex has been included is just for clarification.

Example of a Power KEY for Unit 001:

ASCII	(STX)001;KEY:100(ETX)
Hex	02 30 30 31 3B 4B 45 59 3A 31 30 30 03
TV ASCII Returns:	(STX)OK(ETX)
Hex	02 4F 4B 03

Example of a Power KEY with No Unit Number:

ASCII	(STX)KEY:100(ETX)
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Hex 02 4B 45 59 3A 31 30 30 03
 TV Returns: (STX) OK (ETX)
 Hex 02 4F 4B 03

Example of a Power on Command with Unit 001:

ASCII (STX)001;PWD:1 (ETX)
 Hex 02 30 30 31 3B 50 57 44 3A 31 03
 TV Returns: (STX) OK (ETX)
 Hex 02 4F 4B 03

Example of a Power on Command with No Unit Number:

ASCII (STX)PWD:1 (ETX)
 Hex 02 50 57 44 3A 31 03
 TV Returns: (STX) OK (ETX)
 Hex 02 4F 4B 03

Query Examples:

Use a “?” as the parameter and the TV will return the current Value for that command.
 There is no “OK” sent after a query.

(STX)PWD:?(ETX)

Would return to this status if the TV is ON:

(STX)1(ETX)

Or, this status if TV is OFF:

(STX)0(ETX)

Example of a Volume Query with No Unit Number assumes that the Volume is set at 50.

(STX)VOL:?(ETX)

TV Returns: (STX)50(ETX)

- Note: 1) ID number is an optional field. If ID number is supported, TV factory setting menu must include ID number item, the default setting is 000.
 2) ID number 000 is a broadcast address. All device receive command with this address must respond it, even this device does not support ID number.

4 Commands

1) IR KEYS

Command	KEY
Return Code	OK
Query Result	Not support

Parameter	<i>Common Keys</i>	
	0~9	Numeric Keys
	14	Menu
	15	Enter
	17	Up
	18	Down
	19	Left
	20	Right
	21	Power
	22	Input(Source select)
	23	Mute
	24	Dsp(display channel information)
	<i>Other keys</i>	
	25	Picture Mode
	26	Sound mode
	28	Sleep
	30	Aspect(Display mode)
	33	MST(mono/stereo/sap)
	34	Favorite
	35	Picture freeze
	48	Recall
	<i>PIP Keys</i>	
	50	PIP on/off Toggle Mode select
	52	Pip swap
	59	Active Window
	60	Pop
	61	Audio swap

2 Power

Command	PWD	
Return Code	OK	
Query Result	0	Power Off

	1	Power On
Parameter	0	Power Off
	1	Power On
	4	Audio Mute
	5	Audio Un-Mute

3 Channel

Command	CHA
Return Code	OK
Query Result	Return current channel number
Parameter	0~999

4 INPUT

Command	INP	
Return Code	OK	
Query Result	Return current input code.	
Parameter	0	TV(RF1 for main and RF2 for pip)
	1	VIDEO(S-VIDEO)
	2	YPbPr
	3	SCART1
	4	SCART2_VIDEO
	5	SCART2_SVIDEO
	6	VGA
	7	HDMI-1
	8	HDMI-2
9	DTV	

5) VOLUME

Command	VOL
Return Code	OK
Query Result	Return current volume setting.
Parameter	0 100

6 PIP

Command	PIP	
Return Code	OK	
Query Result	0	PIP off
	1	PIP on
Parameter	0	Single picture
	1	Pip on
	2	Pip side by side
	3	Pip Large
	5	Pip Small
	6	Pip Position1(Bottom Right)
	7	Pip Position2(top Left)
	8	Pip Position3(top Right)
	9	Pip Position4(Bottom Left)
	10	Swap
	11	POP on

7) Format

Command	FOR	
Return Code	OK	
Query Result	Return current format code	
Parameter	0	Full Screen
	1	Normal
	2	Zoom
	3	Panoramic
	4	Auto

8) CONTRAST

Command	CON	
Return Code	OK	
Query Result	Return current contrast setting	
Parameter	0 100	

9) BRIGHTNESS

Command	BRT	
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Return Code	OK
Query Result	Return current brightness setting
Parameter	0 100

10) SATURATION

Command	SAT
Return Code	OK
Query Result	Return current saturation setting
Parameter	0 100

11) TINT

Command	TIN
Return Code	OK
Query Result	Return current Tint setting
Parameter	0 100

12) Maximal Volume

Command	MAV
Return Code	OK
Query Result	Return current maximal volume setting
Parameter	0 100

5 Hex Commands

* 0~9

Command	Parameter	Function	Hex Commands
KEY	<i>Common Keys</i>		
	0~9	Numeric Keys	02 4B 45 59 3A 30 30 3* 03
	10	Channel up	02 4B 45 59 3A 30 31 30 03
	11	Channel Down	02 4B 45 59 3A 30 31 31 03
	12	Volume up	02 4B 45 59 3A 30 31 32 03
	13	Volume Down	02 4B 45 59 3A 30 31 33 03

14	Menu	02 4B 45 59 3A 30 31 34 03	
15	Enter	02 4B 45 59 3A 30 31 35 03	
17	Up	02 4B 45 59 3A 30 31 37 03	
18	Down	02 4B 45 59 3A 30 31 38 03	
19	Left	02 4B 45 59 3A 30 31 39 03	
20	Right	02 4B 45 59 3A 30 32 30 03	
21	Power Off	02 4B 45 59 3A 30 32 31 03	
22	Input	02 4B 45 59 3A 30 32 32 03	
23	Mute	02 4B 45 59 3A 30 32 33 03	
24	Display	02 4B 45 59 3A 30 32 34 03	
<i>Other keys</i>			
25	Picture Mode	02 4B 45 59 3A 30 32 35 03	
26	Sound Mode	02 4B 45 59 3A 30 32 36 03	
28	Sleep	02 4B 45 59 3A 30 32 38 03	
30	Aspect	02 4B 45 59 3A 30 33 30 03	
33	stereo	02 4B 45 59 3A 30 33 33 03	
34	Favorite	02 4B 45 59 3A 30 33 34 03	
35	Picture Freeze	02 4B 45 59 3A 30 33 35 03	
48	Recall	02 4B 45 59 3A 30 34 38 03	
<i>PIP Keys</i>			
50	Pip Size	02 4B 45 59 3A 30 35 30 03	
52	Pip Swap	02 4B 45 59 3A 30 35 32 03	
59	Active Window	02 4B 45 59 3A 30 35 39 03	
60	Pop	02 4B 45 59 3A 30 36 30 03	
61	Audio Swap	02 4B 45 59 3A 30 36 31 03	
PWD	?	Query Result	02 50 57 44 3A 3F 03
	0	Power Off	02 50 57 44 3A 30 30 30 03
	1	Power On	02 50 57 44 3A 31 03
	4	Audio Mute	02 50 57 44 3A 30 30 34 03
	5	Audio Un-Mute	02 50 57 44 3A 30 30 35 03
CHA	?	Query Result	02 43 48 41 3A 3F 03
	0~999	Set Channel	02 43 48 41 3A 3* 3* 3* 03
INP	?	Query Result	02 49 4E 50 3A 3F 03
	0	TV(RF)	02 49 4E 50 3A 30 30 30 03

	1	VIDEO	02 49 4E 50 3A 30 30 31 03
	2	YPbPr	02 49 4E 50 3A 30 30 32 03
	3	SCART1	02 49 4E 50 3A 30 30 33 03
	4	SCART2_VIDEO	02 49 4E 50 3A 30 30 34 03
	5	SCART2_SVIDEO	02 49 4E 50 3A 30 30 35 03
	6	VGA	02 49 4E 50 3A 30 30 36 03
	7	HDMI-1	02 49 4E 50 3A 30 30 37 03
	8	HDMI-2	02 49 4E 50 3A 30 30 38 03
	9	DTV	02 49 4E 50 3A 30 30 39 03
VOL	?	Query Result	02 56 4F 4C 3A 3F 03
	0-100	Set Volume	02 56 4F 4C 3A 3* 3* 3* 03
PIP	?	Query Result	02 50 49 50 3A 3F 03
	0	Single picture	02 50 49 50 3A 30 30 30 03
	1	Pip on	02 50 49 50 3A 30 30 31 03
	2	Pip side by side	02 50 49 50 3A 30 30 32 03
	3	Pip Large	02 50 49 50 3A 30 30 33 03
	5	Pip Small	02 50 49 50 3A 30 30 35 03
	6	Pip Position1	02 50 49 50 3A 30 30 36 03
	7	Pip Position2	02 50 49 50 3A 30 30 37 03
	8	Pip Position3	02 50 49 50 3A 30 30 38 03
	9	Pip Position4	02 50 49 50 3A 30 30 39 03
	10	Swap	02 50 49 50 3A 30 31 30 03
	11	Pop on	02 50 49 50 3A 30 31 31 03
FOR	?	Query Result	02 46 4F 52 3A 3F 03
	0	Full Screen	02 46 4F 52 3A 30 30 30 03
	1	Normal	02 46 4F 52 3A 30 30 31 03
	2	Zoom	02 46 4F 52 3A 30 30 32 03
	3	Panoramic	02 46 4F 52 3A 30 30 33 03
	4	Auto	02 46 4F 52 3A 30 30 34 03
CON	?	Query Result	02 43 4F 4E 3A 3F 03
	0-100	Set Contrast	02 43 4F 4E 3A 3*3* 3* 03
BRT	?	Query Result	02 42 52 54 3A 3F 03
	0-100	Set Brightness	02 42 52 54 3A 3* 3*3* 03

SAT	?	Query Result	02 53 41 54 3A 3F 03
	0-100	Set Saturation	02 53 41 54 3A 3*3* 3* 03
TIN	?	Query Result	02 54 49 4E 3A 3F 03
	0-100	Set Tint	02 54 49 4E 3A 3* 3* 3* 03
MAV	?	Query Result	02 4D 41 56 3A 3F 03
	0-100	Set maximal volume	02 4D 41 56 3A 3* 3* 3* 03