

IR CODES

- This feature is not available for all models.

Code (Hexa)	Function	Note
08	 (POWER)	Remote control Button (Power On/Off)
95	 ENERGY SAVING	Remote control Button
AF	 LIVE ZOOM  LIVE ZOOM/*	Remote control Button
B5	APP	Remote control Button
0B	 INPUT  (INPUT)	Remote control Button
F0	TV/RAD  	Remote control Button
10-19	Number Key 0-9 Alphabet buttons  (Space)	Remote control Button
53	LIST	Remote control Button
1A	Q.VIEW	Remote control Button
02		Remote control Button
7C	SMART  (HOME)	Remote control Button
00	 P PAGE  PAGE	Remote control Button
03		Remote control Button
09	 (MUTE) MUTE 	Remote control Button
01	P PAGE  PAGE 	Remote control Button
AB	GUIDE	Remote control Button
0C	PORTAL	Remote control Button
AA	 INFO INFO 	Remote control Button
40	 / 	Remote control Button
41	 / 	Remote control Button
44	OK 	Remote control Button
07	 / 	Remote control Button
06	 / 	Remote control Button
43	SETTINGS  (Q. Settings, Settings)	Remote control Button
28	 (BACK) BACK	Remote control Button
5B	EXIT	Remote control Button

Code (Hexa)	Function	Note
72		Remote control Button
71		Remote control Button
63		Remote control Button
61		Remote control Button
20	 TEXT	Remote control Button
21	T.OPT (T.Option)	Remote control Button
39	SUBTITLE	Remote control Button
B1		Remote control Button
B0		Remote control Button
BA		Remote control Button
8F		Remote control Button
8E		Remote control Button
DC	 /*	Remote control Button
9F	DATA /*	Remote control Button
91	AD AD /*	Remote control Button
E8	ALARM /*	Remote control Button
30	AV MODE/*	Remote control Button
79	 RATIO	Remote control Button
7E	 SIMPLINK	Remote control Button
1E	FAV	Remote control Button
BD	 REC/*	Remote control Button

EXTERNAL CONTROL DEVICE SETUP

RS-232C Setup

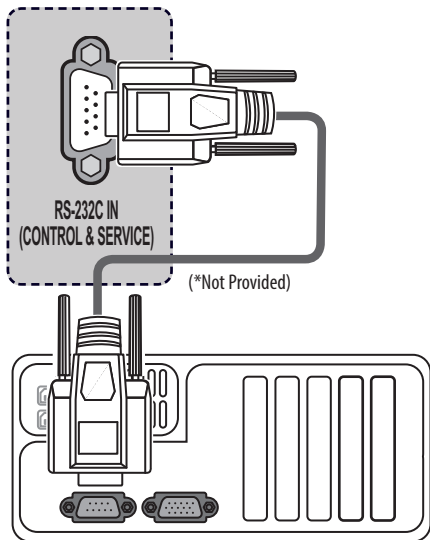
- Image shown may differ from your TV.

Connect the RS-232C (serial port) input jack to an external control device (such as a computer or an A/V control system) to control the product's functions externally.

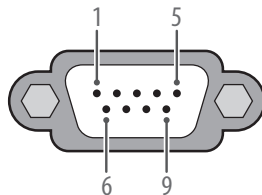
Connect the serial port of the control device to the RS-232C jack on the product back panel.

! NOTE

- RS-232C connection cables are not supplied with the product.

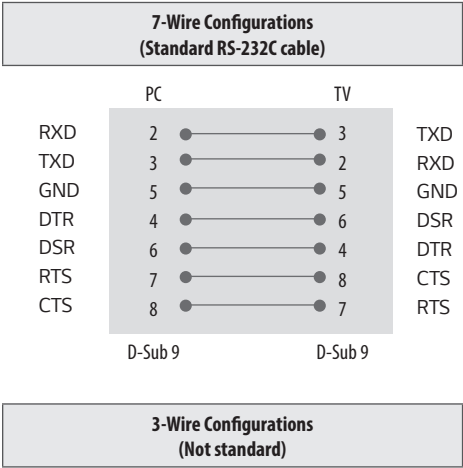


Type of Connector : D-Sub 9-Pin Male



No.	Pin name
1	3.5 V
2	RXD (Receive data)
3	TXD (Transmit data)
4	IR OUT from TV
5	GND
6	No Connection
7	No Connection (5 V available in some models)
8	No Connection
9	No Connection (12 V available in some models)

RS-232C Configurations



Set ID

Set ID number. "Real Data Mapping".

- 1

Press **SETTINGS** or **SMART** to access the main menus.
- 2

Press the Navigation buttons to scroll to **General** and press **OK**.
- 3

Press the Navigation buttons to scroll to **Set ID** and press **OK**.
- 4

Scroll left or right to select a set ID number and press **OK**. The adjustment range is 1-99.
- 5

When you are finished, press **EXIT**.

Communication Parameters

- Baud rate: 9600 bps (UART)
- Data length: 8 bits
- Parity : None
- Stop bit: 1 bit
- Communication code: ASCII code
- Use a crossed (reverse) cable.

Command Reference List

(Depending on Model)

	COMMAND1	COMMAND2	DATA (Hexadecimal)
01. Power	k	a	00 to 01
02. Aspect Ratio	k	c	(See p. 4)
03. Screen Mute	k	d	(See p. 5)
04. Volume Mute	k	e	00 to 01
05. Volume Control	k	f	00 to 64
06. Contrast	k	g	00 to 64
07. Brightness	k	h	00 to 64
08. Colour	k	i	00 to 64
09. Tint	k	j	00 to 64
10. Sharpness	k	k	00 to 32
11. OSD Select	k	l	00 to 01
12. Remote control lock mode	k	m	00 to 01
13. Balance	k	t	00 to 64
14. Colour Temperature	x	u	00 to 64
15. Energy Saving	j	q	(See p. 7)
16. Auto Configure	j	u	01
17. Equalizer	j	v	(See p. 7)
18. Tune Com-mand	m	a	(See p. 8)
19. Programme Add/Skip	m	b	00 to 01
20. Key	m	c	(See p. 8)
21. Control Backlight	m	g	00 to 64
22. Input select	x	b	(See p. 8)

NOTE

- During USB operations such as DivX or EMF, all commands except Power(ka) and Key(mc) are not executed and treated as NG.

Transmission / Receiving Protocol

(Depending on Model)

Transmission

[Command1][Command2][][Set ID][][Data][Cr]

[Command 1] : First command to control the TV. (j, k, m or x)

[Command 2] : Second command to control the TV.

[Set ID] : You can adjust the set ID to choose desired monitor ID number in option menu. Adjustment range is 1 to 99. When selecting Set ID '0', every connected set is controlled. Set ID is indicated as decimal (1 to 99) on menu and as Hexa decimal (0 x 0 to 0 x 63) on transmission/receiving protocol.

[Data] : To transmit command data. Transmit 'FF' data to read status of command.

[Cr] : Carriage Return
ASCII code '0 x 0D'

[] : ASCII code 'space (0 x 20)'

OK Acknowledgement

[Command2][][Set ID][][OK][Data][x]

* The set transmits ACK (acknowledgement) based on this format when receiving normal data. At this time, if the data is data read mode, it indicates present status data. If the data is data write mode, it returns the data of the PC computer.

Error Acknowledgement

[Command2][][Set ID][][NG][Data][x]

* The set transmits ACK (acknowledgement) based on this format when receiving abnormal data from non-viable functions or communication errors.

Data 00 : Illegal Code

01. Power (Command: k a)

► To control Power On/Off of the set.

Transmission

[k][a][][Set ID][][Data][Cr]

Data 00 : Power Off

01 : Power On

Ack

[a][][Set ID][][OK/NG][Data][x]

► To Show TV is Power On/Off.

Transmission

[k][a][][Set ID][][FF][Cr]

Ack

[a][][Set ID][][OK/NG][Data][x]

* Similarly, if other functions transmit '0 x FF' data based on this format, Acknowledgement data feed back presents status about each function.

* OK Ack., Error Ack. and other message may display on the screen when TV is power On.

02. Aspect Ratio (Command: k c)
(Main Picture Size)

► To adjust the screen format. (Main picture format) You can also adjust the screen format using the Aspect Ratio in the PICTURE menu.

Transmission

[k][c][][Set ID][][Data][Cr]

Data 01 : Normal screen (4:3)
(Just Scan Off)

09 : Just Scan

06 : Original (Just Scan Off)

02 : Wide screen (16:9)
(Just Scan Off)

Ack

[c][][Set ID][][OK/NG][Data][x]

* Using the PC input, you select either 16:9 or 4:3 screen aspect ratio.

03. Screen Mute (Command: k d)

- To select screen mute on/off.

Transmission

[k][d][][Set ID][][Data][Cr]

Data 00 : Screen mute off (Picture on)

Video mute off

01 : Screen mute on (Picture off)

10 : Video mute on

Ack

[d][][Set ID][][OK/NG][Data][x]

- * In case of video mute on only, TV will display On Screen Display(OSD). But, in case of Screen mute on, TV will not display OSD.

04. Volume Mute (Command: k e)

- To control volume mute on/off.
You can also adjust mute using the MUTE button on remote control.

Transmission

[k][e][][Set ID][][Data][Cr]

Data 00 : Volume mute on (Volume off)

01 : Volume mute off (Volume on)

Ack

[e][][Set ID][][OK/NG][Data][x]

05. Volume Control (Command: k f)

- To adjust volume.
You can also adjust volume with the volume buttons on remote control.

Transmission

[k][f][][Set ID][][Data][Cr]

Data Min : 00 to Max : 64

- * Refer to Real data mapping.

Ack

[f][][Set ID][][OK/NG][Data][x]

06. Contrast (Command: k g)

- To adjust screen contrast.
You can also adjust contrast in the PICTURE menu.

Transmission

[k][g][][Set ID][][Data][Cr]

Data Min : 00 to Max : 64

- * Refer to Real data mapping.

Ack

[g][][Set ID][][OK/NG][Data][x]

07. Brightness (Command: k h)

- To adjust screen brightness.
You can also adjust brightness in the PICTURE menu.

Transmission

[k][h][][Set ID][][Data][Cr]

Data Min : 00 to Max : 64

- * Refer to Real data mapping.

Ack

[h][][Set ID][][OK/NG][Data][x]

08. Colour (Command: k i)

- To adjust the screen Colour.
You can also adjust colour in the PICTURE menu.

Transmission

[k][i][][Set ID][][Data][Cr]

Data Min : 00 to Max : 64

- * Refer to Real data mapping.

Ack

[i][][Set ID][][OK/NG][Data][x]

09. Tint (Command: k j)

- To adjust the screen tint.
You can also adjust tint in the PICTURE menu.

Transmission

[k][j][][Set ID][][Data][Cr]

Data Red : 00 to Green : 64

- * Refer to Real data mapping.

Ack

[j][][Set ID][][OK/NG][Data][x]

10. Sharpness (Command: k k)

- To adjust the screen sharpness.
You can also adjust sharpness in the PICTURE menu.

Transmission

[k][k][][Set ID][][Data][Cr]

Data Min : 00 to Max : 32

- * Refer to Real data mapping.

Ack

[k][][Set ID][][OK/NG][Data][x]

11. OSD Select (Command: k l)

- To select OSD (On Screen Display) on/off when controlling remotely.

Transmission

[k][l][][Set ID][][Data][Cr]

Data 00 : OSD off

01 : OSD on

Ack

[l][][Set ID][][OK/NG][Data][x]

12. Remote control lock mode (Command: k m)

- To lock the front panel controls on the monitor and remote control.

Transmission

[k][m][][Set ID][][Data][Cr]

Data 00 : Lock off

01 : Lock on

Ack

[m][][Set ID][][OK/NG][Data][x]

- * If you are not using the remote control, use this mode. When main power is on/off, external control lock is released.
- * In the standby mode, if key lock is on, TV will not turn on by power on key of IR & Local Key.

13. Balance (Command: k t)

- To adjust balance.
You can also adjust balance in the AUDIO menu.

Transmission

[k][t][][Set ID][][Data][Cr]

Data L : 00 to R : 64

- * Refer to Real data mapping.

Ack

[t][][Set ID][][OK/NG][Data][x]

14. Colour Temperature (Command: x u)

- To adjust colour temperature. You can also adjust Colour Temperature in the PICTURE menu.

Transmission

[x][u][][Set ID][][Data][Cr]

Data Warm: 00 to Cool:64

- * Refer to Real data mapping.

Ack

[u][][Set ID][][OK/NG][Data][x]

15. Energy Saving (Command: j q)

- To reduce the power consumption of the TV. You can also adjust Energy Saving in PICTURE menu.

Transmission

[j][q][][Set ID][][Data][Cr]

Power Saving Function					Level				Description
7	6	5	4		3	2	1	0	
0	0	0	0	Low Power	0	0	0	0	Off
0	0	0	0	Low Power	0	0	0	1	Minimum
0	0	0	0	Low Power	0	0	1	0	Medium
0	0	0	0	Low Power	0	0	1	1	Maximum
0	0	0	0	Low Power	0	1	0	1	Screen Off
0	0	0	0	Low Power	0	1	0	0	Auto

- 'Auto' is available in TV that supports 'Intelligent Sensor'.

Ack

[q][][Set ID][][OK/NG][Data][x]

16. Auto Configure (Command: j u) (Only RGB support model)

- To adjust picture position and minimize image shaking automatically. It works only in RGB (PC) mode.

Transmission

[j][u][][Set ID][][Data][Cr]

Data 01 : To set

Ack

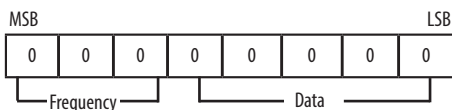
[u][][Set ID][][OK/NG][Data][x]

17. Equalizer (Command : j v)

- To adjust equalize.

Transmission

[j][v][][Set ID][][Data][Cr]



7	6	5	Frequency	4	3	2	1	0	Step
0	0	0	1st Band	0	0	0	0	0	0(decimal)
0	0	1	2nd Band	0	0	0	0	1	1(decimal)
0	1	0	3rd Band	...	...	...	...	...	...
0	1	1	4th Band	1	0	0	1	1	19(decimal)
1	0	0	5th Band	1	0	1	0	0	20(decimal)

Ack

[v][][Set ID][][OK/NG][Data][x]

18. Tune Command (Command: m a)

- Select channel to following physical number.

Transmission

[m][a][][Set ID][][Data 00][][Data 01][][Data 02][Cr]

Data 00 : High channel data

Data 01 : Low channel data

ex. No. 47 -> 00 2F (2FH)

No. 394 -> 01 8A (18AH),

DTV No. 0 -> Don't care

Data 02 : [Antenna]

0 x 00 : Analog Main

0 x 10 : DTV Main

0 x 20 : Radio

[Cable]

0 x 80 : Analog Main

0 x 90 : DTV Main

0 x A0 : Radio

[Satellite] (Depending on Model)

0 x 40 : DTV Main

0 x 50 : Radio Main

Channel data range

Min: 00 Max: 270F (0 to 9999)

Ack

[a][][Set ID][][OK/NG][Data][x]

19. Programme Add/Skip (Command: m b)

- To set skip status for the current Programme.

Transmission

[m][b][][Set ID][][Data][Cr]

Data 00 : Skip

01 : Add

Ack

[b][][Set ID][][OK/NG][Data][x]

20. Key (Command: m c)

- To send IR remote key code.

Transmission

[m][c][][Set ID][][Data][Cr]

Data IR CODES

Ack

[c][][Set ID][][OK/NG][Data][x]

21. Control Backlight (Command: m g)

- To control the backlight.

Transmission

[m][g][][Set ID][][Data][Cr]

Data Min : 00 to Max : 64

Ack

[g][][Set ID][][OK/NG][Data][x]

22. Input select (Command: x b)

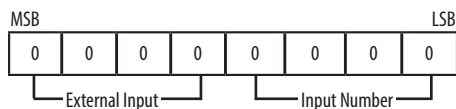
(Main Picture Input)

- To select input source for main picture.

Transmission

[x][b][][Set ID][][Data][Cr]

Data Structure



External Input				Data
0	0	0	0	DTV
0	0	0	1	Analogue
0	0	1	0	AV
0	1	0	0	Component
0	1	1	0	RGB
0	1	1	1	HDMI
1	0	0	0	
1	0	0	1	
1	0	1	0	

Input Number				Data
0	0	0	0	Input1
0	0	0	1	Input2
0	0	1	0	Input3
0	0	1	1	Input4

Ack

[b][][Set ID][][OK/NG][Data][x]

* Real data mapping	
00:	Step 0
:	
A:	Step 10 (Set ID 10)
:	
F:	Step 15 (Set ID 15)
10:	Step 16 (Set ID 16)
:	
64:	Step 100
:	
6E:	Step 110
:	
73:	Step 115
74:	Step 116
:	
CF:	Step 199
:	
FE:	Step 254
FF:	Step 255