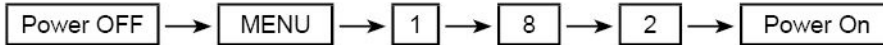


## 4.3. Factory Mode Adjustments

### 4-3-1. Entering Factory Mode

To enter 'Service Mode' Press the remote -control keys in this sequence :

- If you do not have Factory remote control



- If you have Factory remote control



- If you don't have Factory remote control, can't control some menus.

#### ■ Initial SERVICE MODE DISPLAY State

Option
Control
SVC
Expert
ADC/WB
Advanced

```
T-MST10PAUSC-xxxx
T-MST10PAUSC S-xxxx
E-Manual : X6ATSCA-1000

EDID SUCCESS
HDCP SUCCESS
CALIB : AV/COMP/PC/HDMI/
Option : 40A6AF0D,US,5300,NONE
FactoryCS : 0x2fa43374

root=/dev/mmcblk0
SDAL-0.106.0.0
RFS : "X10P 0017"
2011-XX-XX
FUNC-TAG-ERR

Type :40A6AF0D
Model : UN40EH5300
Wired MAC SUCCESS
Wireless MAC SUCCESS

DRM X
Factory Data Ver : 100
EERC Version : 174
DTP-AP-COMP-869
DTP-BP-HAL-0325-01
DTP-BP-0818

Date of purchase mm/dd/yyyy
```

## 4-3-2. Factory Data



### Note

- Version of the software is written in 0002.
- Black : I should not be possible to adjust or change that does not require a change item
- Blue : Adjustment Services for the corresponding
- Red : Items that are secured

### ■ Option

Factory Menu Name	Data	Range
Factory Reset	-	-
Type	-	32A6AF0D / 40A6AF0D / 46P6AF0D 50P6AF0D
Local Set	US	
Model	UE5300	
SVC Model	5300	
Tuner	SI_ATSC2	
Ch Table	NONE	
Front Color	U-S-C-5K	

### ■ Control

Factory Menu Name	Data	Range
<b>EDID</b>		
EDID ON/OFF	Off	
EDID WRITE ALL	...	
EDID WRITE HDMI	...	
EDID WRITE PC	...	
EDID Ver	...	
EDID Port		
EDID WRITE DVI	...	
<b>Sub Option</b>		
RF Mute Time	600ms	
RS-232 Jack	UART	Debug/UART
Watchdog	OFF	
WD COUNT	0	
LVDS FORMAT	JEIDA	
Language_Arabic	US	
TOOLS Support	104	
LNA Support	0	

Factory Menu Name	Data	Range
NETWORK Support	Int-Wifi	
IPERF	Stopped	
Info Link Country	None	
Info Link Server Type	development	
TTX List	-	
TTX Group	-	
24Px4 Support	OFF	
Power Indicator Support	ON	
BD Wise Support	ON	
Data Service Support	OFF	
IIC Bus Stop	OFF	
Visual Test	Disable	
Emergency Log Copy		
Checksum	0x0000	
View Log		
Select Log Type	MICOM	
Log View		
Delete Log		
Gemstar On/Off	OFF	
WSS Support	OFF	
PVR Support	OFF	
CI Support	OFF	
Eeprom Reset		
Spread Spectrum		
LVDS Spread	ON	
Period	40K	
Amplitude	1.5	
DDR Spread	1.0% Spread	
Echo-FS LVDS SSC ON/OFF	1	
Echo-FS LVDS SSC MFR	1	
Echo-FS LVDS SSC MRR	10	
Echo-FS DDR SSC ON/OFF	1	
Echo-FS DDR SSC MFR	1	
Echo-FS DDR SCC MRR	15	
NT72312 LVDS SSC ON/OFF	ON	
NT72312 LVDS SSC Period	30K	
NT72312 LVDS SSC Modulation	1.00%	

Factory Menu Name	Data	Range
NT72312 DDR SSC ON/OFF	ON	
NT72312 DDR SSC Period	30K	
NT72312 DDR SSC Modulation	1.00%	
DDR Margin		
A CTRL_OFFSET_0_3	0x0	
A CTRL_OFFSET_D	0x0	
B CTRL_OFFSET_0_3	0x0	
B CTRL_OFFSET_D	0x0	
H.264 Margin	8	
MPEG Margin	1000	
2nd mips	ON	
2nd mips count	0	
Region	USA	
PnP Language	ENG_US	
PC Auto Ident	Enable	
OTP Lock	...	
Auto Power	MEMORY	
Key SENSITIVITY	Not used	
OTA Support	OFF	
FKP Down		
WIFI REGION	S	
e-Pop Default	ON	
OPTION_SWU		
OPTION_MEDIAPLAY		
3D OPTIMIZE VALUE	1	
ECO IC TYPE	NLS1006	
Energy Star Logo	ON	
Fast USB Booting	ON	
Nume of Network Stream	0	
CI+1.3	OFF	
<b>Hotel Option</b>		
Hospitality Mode	OFF	
Power On	...	
Menu OSD	...	
Operation	...	
Music Mode	...	
External Source	...	

Factory Menu Name	Data	Range
Eco Solution	...	
Cloning	...	
<b>Shop Option</b>		
Shop Mode	OFF	
Exhibition Mode	OFF	
3D Cube	OFF	
<b>Sound</b>		
High Devi	OFF	
Carrier Mute	ON	
Volume Curve	Type1	
Speaker Delay Normal	100	
Pilot Level High Thld	0x30h	
Pilot Level Low Thld	0x10h	
FM Prescale	0x14h	
AM Prescale	0x1Ah	
NICAM Prescale	0x14h	
Amp Volume	0xCBh	
Amp Scale	0x35h	
Amp Check Sum	0x1F7F8964	
Woofer Type	1	
Woofer Scale	0x8ah	
Woofer Check Sum		
Speaker EQ	ON	
PEQ Test	0	
<b>Amp Model</b>	<b>NTP7412</b>	
Speaker cut-off Freq	4	
SPDIF PCM Gain	-9	
FM M Prescale	48	
BTSC Mono Prescale	25	
BTSC stereo Prescale	47	
SAP Prescale	43	
A2Ident High Thld	31	
A2Ident Low Thld	2	
Carrier2 Amp High Thld	4	
Carrier2 Amp Low Thld	3	
Carrier2 SNR High THR	16	
Carrier2 SNR Low THR	80	

Factory Menu Name	Data	Range
Audio-IP Test	Ready	
TruBass CheckSum	0xFFFFFFFF	
PWM Mode	BD	
Mic Scale	0	
SubWoofer Support	0	
India Sound	OFF	
<b>Config Option</b>		
Num of ATV	1	
Num of DTV	1	
Num of AV	1	
Num of SVIDEO	0	
Num of COMP	1	
Num of HDMI	3	
Num of PC	0	
Num of SCART	0	
Num of DVI	0	
Num of OPTICAL Link	1	
Num of MEDIA	1	
Num of PANEL KEY	6	
Num of USB Port	2	
Num of HeadPhone	0	
Num of RVU	1	
MFT Offset	62.5	
Select LCD/PDP	LCD	
HDMI/DVI SEL	1	
Indicator Led	ON	
Wall Mount	OFF	
HV Flip	ON	
Num Of Display	2	
DVI/HDMI SOUND	Auto	
HDMI HOT PLUG	Disable	
HOTPLUG SWITCHING	Boot	
HOTPLUG DURATION	1200ms	
CLK TERM DURATION	300ms	
HDMI FLT CNT SIG	100ms	
HDMI FLT CNT LOS	100ms	
UNSTABLE BAN CNT	3500ms	

Factory Menu Name	Data	Range
HDMI Err Cnt	1	
HDMI ROBIN	ON	
HDMI Callback	OFF	
HDMI CTS Thld	8	
HDMI CTS Cnt1	1	
HDMI EQ	AUTO	AUTO/Low/Middle/High/Strong
HDMI Write Type	Separate	
HDMI Switch	NONE	
DVI SET TIME	300ms	
Type Of PANEL KEY	None	
EcoSensor Support	ON	
LEDMotionPlus Support	ON	
Natural Mode Support	ON	
All Share Support	ON	
Relax Mode Support	OFF	
BT Support	OFF	
3D Support	OFF	
H Write		
HDMI Sync	DE	
HeadPhone Port		
FANET	ON	
Support MultiMedia Key	ON	
Config_AV_PATH		
Num of IPTV	1	
PVR RECORD NUM	0	
Num of RUI	1	
5 Way Function Key	R BOTTOM	
Contents Bar	OFF	
Num of Tuner	1	

## ■ SVC

Factory Menu Name	Data	Range
<b>Test pattern</b>		
LOGIC Pattern Sel		
LOGIC Level Sel		
Echo-FS Pre Test Pattern	0	

Factory Menu Name	Data	Range
Echo-FS Post Test Pattern	0	
Echo-FS FRC FDISPLY ON/OFF	OFF	
Echo-FS 3D FDISPLAY ON/OFF	OFF	
Echo-FS PC Mode ON/OFF	OFF	
NT72312 Pre Test Pattern	0	
NT72312 Post Test Pattern	0	
NT72312 PC mode ON/OFF	OFF	

## ■ SVC

Factory Menu Name	Data	Range
N/D ADJ	OFF	
Source	...	

## ■ ADC/WB

Factory Menu Name	Data	Range
<b>ADC</b>		
AV Calibration	Success	
Comp Calibration	Success	
PC Calibration	Success	
HDMI Calibration	Success	
<b>ADC Target</b>		
1st_AV_Low	64	
1st_AV_High	880	
1st_AV_Delta	2	
1st_COMP_Y_Low	64	
1st_COMP_Cb_Low	512	
1st_COMP_Cr_Low	512	
1st_COMP_Y_High	940	
1st_COMP_Cb_High	512	
1st_COMP_Cr_High	512	
1st_COMP_Delta	2	
1st_PC_Low	16	
1st_PC_High	1004	
1st_PC_Delta	2	
2nd_ACH_Low	4	
2nd_ACH_High	940	
2nd_PC_Low	4	



Factory Menu Name	Data	Range
2nd_PC_High	940	
2nd_Delta	2	
ADC Result	1	
1st_Y_GH	250	
1st_Y_GL	246	
1st_Cb_BH	...	
1st_Cb_BL	...	
1st_Cr_RH	...	
1st_Cr_RL	...	
2nd_R_L	130	
2nd_G_L	130	
2nd_B_L	130	
2nd_R_H	108	
2nd_G_H	108	
2nd_B_H	108	
<b>White Balance</b>		
Sub Brightness	128	
R-Offset	128	
G-Offset	128	
B-Offset	128	
Sub Contrast	128	
R-Gain	128	
G-Gain	128	
B-Gain	128	
Movie R-Offset	128	
Movie B-Offset	128	
Movie R-Gain	128	
Movie B-Gain	128	

## 4.4. White Balance

### 4-4-1. Calibration

1. Into the Factory Mode.
2. Select **SVC** Menu.
3. Select **ADC/WB** menu.
4. Select **ADC** menu.



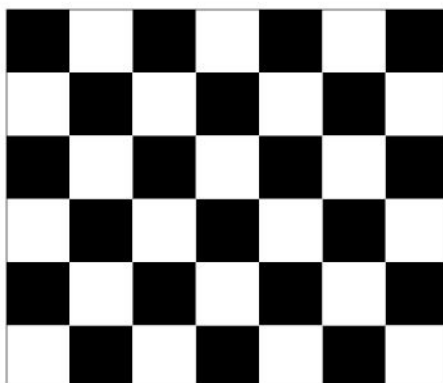
### 4-4-2. Service Adjustment

You must perform Calibration in the Lattice Pattern before adjusting the White Balance.

#### ■ Color Calibration

- Adjust Specification

Source	Setting Mode	Pattern	Use Equipment
HDMI	1280 x 720@60 Hz	Pattern #24 (Chess Pattern)	CA210 & Master MSPG925 Generator



(Chess Pattern)

- Use other equipment only after comparing the result with that of the Master equipment.

Input mode	Calibration	Pattern
CVBS IN (Model_#1)	Perform in NTSC B&W Pattern #24	Lattice
Component IN (Model_#6)	Perform in 720p B&W Pattern #24	Lattice
HDMI IN	Perform in 720p B&W Pattern #24	Lattice

## ■ Method of Color Calibration (AV)

1. Apply the NTSC Lattice (N0. 3) pattern signal to the AV IN 1 port.
2. Press the Source key to switch to "AV1" mode.
3. Enter Service mode.
4. Select the "ADC" menu.
5. Select the "AV Calibration" menu.
6. In "AV Calibration Off" status, press the "▶" key to perform Calibration.
7. When Calibration is complete, it returns to the high-level menu.
8. You can see the change of the "AV Calibration" status from Failure to Success.

## ■ Method of Color Calibration (Component)

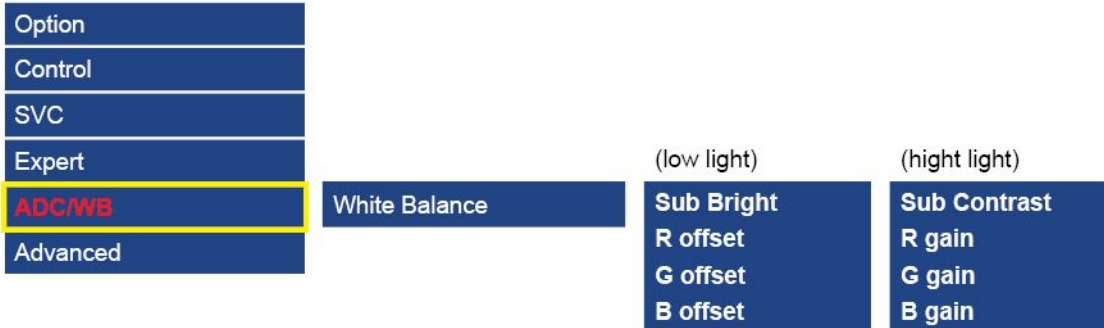
1. Apply the 720p Lattice (N0. 6) pattern signal to the Component IN 1 port.
2. Press the Source key to switch to "Component1" mode.
3. Enter Service mode.
4. Select the "ADC" menu.
5. Select the "Comp Calibration" menu.
6. In "Comp Calibration Off" status, press the "▶" key to perform Calibration.
7. When Calibration is complete, it returns to the high-level menu.
8. You can see the change of the "Comp Calibration" status from Failure to Success.

## ■ Method of Color Calibration (HDMI)

1. Apply the 720p Lattice (N0. 6) pattern signal to the HDMI1/DVI IN port.
2. Press the Source key to switch to "HDMI1" mode.
3. Enter Service mode.
4. Select the "ADC" menu.
5. Select the "HDMI Calibration" menu.
6. In "HDMI Calibration Off" status, press the "▶" key to perform Calibration.
7. When Calibration is complete, it returns to the high-level menu.
8. You can see the change of the "HDMI Calibration" status from Failure to Success.

### 4-4-3. Adjustment

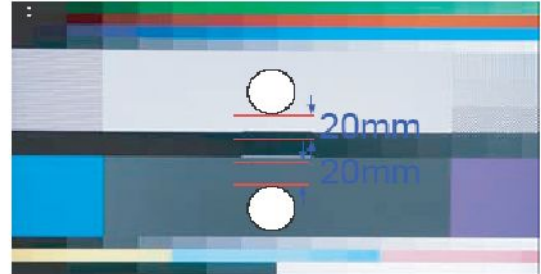
1. Into the Factory Mode.
2. Select **SVC** Menu.
3. Select **ADC/WB** menu.
4. Select **White Balance** menu.



## 4.5. White Ratio (Balance) Adjustment

1. You can adjust the white ratio in factory mode (1:Calibration, 3:White-Balance).
2. Since the adjustment value and the data value vary depending on the input source, you have to adjust these in CVBS, Component 1 and HDMI 1 modes.
3. The optimal values for each mode are configured by default. It varies with Panel's size and Specification.

- Equipment : CS-210
- Pattern: MIK K-7256 #92 "Flat W/B Pattern" as standard
- Alternate Equipment : CA200& anyone Master supported pattern#92(refer to right photo)
- Use other Equipment only after comparing the result with that of the Master equipment.
- Set Aging time : 60 min



### Calibration and Manual setting for WB adjustment

- HDMI : Calibration at #24 Chessboard Pattern Manual adjustment at #92 pattern (720p)
- COMP: Calibration at #24 Chessboard Pattern Manual adjustment at #92 pattern (720p)
- CVBS: Calibration at #24 Chessboard Pattern Manual adjustment at #92 pattern (NTSC)



#### Note

If finishing in HDMI mode, adjustment coordinate is almost same in AV/COMP mode.

### White Balance Manual adjustment

- UN32EH5300F

P-Mode Input source	Section	Adjustment Coordinate CA-210					
		Hx	264	Hy	274	HY	-
HDMI COMP VIDEO	W/B High	Lx	-	Ly	-	LY	-
	W/B Low	Hx	318	Hy	340	HY	-
MOVIE	W/B High	Lx	-	Ly	-	LY	-
	W/B Low						

Sub Contrast	135	Sub Bright	128		
R-Gain	128	G-Gain	128	B-Gain	128
R-Offset	128	G-Offset	128	B-Offset	128

• UN40EH5300F

P-Mode Input source	Section	Adjustment Coordinate CA-210					
		Hx	264	Hy	274	HY	-
HDMI COMP VIDEO	W/B High	Hx	264	Hy	274	HY	-
	W/B Low	Lx	-	Ly	-	LY	-
MOVIE	W/B High	Hx	318	Hy	340	HY	-
	W/B Low	Lx	-	Ly	-	LY	-

Sub Contrast	135	Sub Bright	128		
R-Gain	128	G-Gain	128	B-Gain	128
R-Offset	128	G-Offset	128	B-Offset	128

• UN46EH5300F

P-Mode Input source	Section	Adjustment Coordinate CA-210					
		Hx	264	Hy	274	HY	-
HDMI COMP VIDEO	W/B High	Hx	264	Hy	274	HY	-
	W/B Low	Lx	-	Ly	-	LY	-
MOVIE	W/B High	Hx	318	Hy	340	HY	-
	W/B Low	Lx	-	Ly	-	LY	-

Sub Contrast	135	Sub Bright	128		
R-Gain	128	G-Gain	128	B-Gain	128
R-Offset	128	G-Offset	128	B-Offset	128

• UN50EH5300F

P-Mode Input source	Section	Adjustment Coordinate CA-210					
		Hx	264	Hy	274	HY	-
HDMI COMP VIDEO	W/B High	Hx	264	Hy	274	HY	-
	W/B Low	Lx	-	Ly	-	LY	-
MOVIE	W/B High	Hx	318	Hy	340	HY	-
	W/B Low	Lx	-	Ly	-	LY	-

Sub Contrast	135	Sub Bright	128		
R-Gain	128	G-Gain	128	B-Gain	128
R-Offset	128	G-Offset	128	B-Offset	128

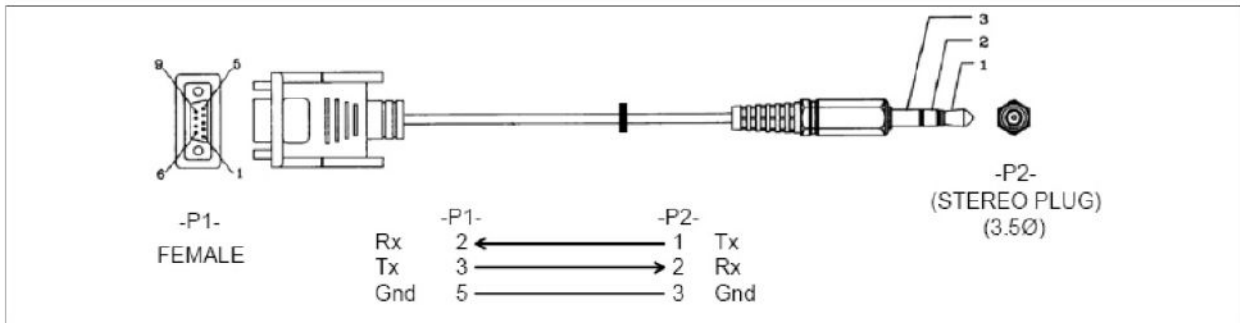
## 4.6. RS-232C

### 1. RS232C Control

- Port : COM#(Serial)
- Bit rate : 9600 (Control)
- Data Bit : 8 bit
- Parity : None
- Stop Bits : 1
- Flow Control : None

### 2. Description of RS232C

Pin#	Name	Full Name
1	CD	Carrier Detect
2	RxD	Received Data
3	TxD	Transmitted Data
4	DTR	Data Terminal Ready
5	GND	Signal Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicator



## 4.7. AV Control Table

Control Item				Cmd1	Cmd2	Cmd3	Value	
General	Power	Power		0x00	0x00	0x00	0x00	
		Off					0x01	
		On					0x02	
	Volume	Direct		0x01	0x00	0x00	(0~100)	
		Up				0x01	0x00	
		Down				0x02	0x00	
	Mute			0x02	0x00	0x00	0x00	
		Ch.	Direct		0x04	-		
			Continuous	Up		0x03	0x00	0x01
Down							0x02	0x00

Control Item				Cmd1	Cmd2	Cmd3	Value
Input	Source List	TV	TV	0x0a	0x00	0x00	0x00
		AV	AV1			0x01	0x00
			AV2				0x01
			AV3				0x02
		S-Video	S-Video1			0x02	0x00
			S-Video2				0x01
			S-Video3				0x02
		Component	Component1			0x03	0x00
			Component2				0x01
			Component3				0x02
		PC	PC1			0x04	0x00
			PC2				0x01
			PC3				0x02
		HDMI	HDMI1			0x05	0x00
			HDMI2				0x01
			HDMI3				0x02
			HDMI4				0x03
		DVI	DVI1			0x06	0x00
			DVI2				0x01
			DVI3				0x02

Control Item				Cmd1	Cmd2	Cmd3	Value
PICTURE	Mode	Dynamic(Entertain)		0x0b	0x00	0x00	0x00
		Standard					0x01
		Movie					0x02
		Natural					0x03
		CAL-NIGHT					0x04



Control Item		Cmd1	Cmd2	Cmd3	Value
	CAL-DAY				0x05
	BD Wise				0x06
	Relax				0x07
BackLight (CellLight)		0~20	0x01	0x00	(0~20)
Contrast		0~100	0x02	0x00	(0~100)
Brightness		0~100	0x03	0x00	(0~100)
Sharpness		0~100	0x04	0x00	(0~100)
Color		0~10	0x05	0x00	(0~100)
Tint	G/R		0x06	0x00	(0~100)
Advanced Settings	Black Tone	Off	0x07	0x00	0x00
		Dark			0x01
		Darker			0x02
		Darkest			0x03
	Dynamic Contrast	Off		0x01	0x00
		Low			0x01
		Medium			0x02
		Hlgh			0x03
	Shadow Detail	-2 ~ 2		0x02	(-2~2)
	Gamma	-3 ~ 3		0x03	(-3~3)
	RGB Only Mode	Off		0x05	0x00
		Red			0x01
		Green			0x02
		Blue			0x03
	Color Space	Auto		0x06	0x00
		Native			0x01
		Custom			0x02
	White Balance	R-Offset(LCD)		0x07	(0~50)
	White Balance	G-Offset(LCD)		0x08	(0~50)
	White Balance	B-Offset(LCD)		0x09	(0~50)
White Balance	R-Gain(LCD)		0x0a	(0~50)	
White Balance	G-Gain(LCD)		0x0b	(0~50)	
White Balance	B-Gain(LCD)		0x0c	(0~50)	
White Balance	Reset(LCD)		0x0d	0x00	
Flesh Tone	-15 ~ 15		0x0e	(-15~15)	
Edge Enhancement	Off		0x0f	0x00	
	On			0x01	

New function of 12" (only PDP TV)

Control Item		Cmd1	Cmd2	Cmd3	Value
	xvYCC	Off		0x10	0x00
		On			0x01
	Motion Lighting	Off		0x11	0x00
		On			0x01
	LED Motion Plus	Off	0x0a	0x07	0x00
		On(Normal)			0x01
		Cinema			0x02
	Ticker			0x03	
Picture Option	Color Tone	Cool	0x0a	0x00	0x00
		Standard			0x01
		Warm1			0x02
		Warm2			0x03
	Digital Noise Filter	Off		0x02	0x00
		Low			0x01
		Medium			0x02
		High			0x03
		Auto			0x04
		Auto Visualization			0x05
	MPEG Noise Filter	Off		0x03	0x00
		Low			0x01
		Medium			0x02
		High			0x03
		Auto			0x04
	HDMI Black Level	Normal		0x04	0x00
		Low			0x01
	Film Mode	Off		0x05	0x00
		Auto1			0x01
		Auto2			0x02
	Cinema Smooth			0x03	
Auto Motion Plus	Off		0x06	0x00	
	Clear			0x01	
	Standard			0x02	
	Smooth			0x03	
	Custom			0x04	

change Normal → standard mode

New function of 12" (only PDP TV)

Control Item				Cmd1	Cmd2	Cmd3	Value	
			Demo				0x05	
Screen Adjustment	Picture Size	16:9	0x0b	0x0a	0x01		0x00	
		Zoom1					0x01	
		Zoom2					0x02	
		Wide Fit					0x03	
		4:3					0x04	
		Screen Fit					0x05	
		Smart View I					0x06	
		Smart View II					0x07	
		Auto Wide					0x08	
		Wide Zoom					0x09	
		Zoom					0x0a	
Reset Picture	Reset Picture		0x0b	0x0b	0x00		0x00	
3D	3D Mode	Off	0x0b	0x0c	0x00		0x00	
		2D ↔ 3D					0x01	
		Side By Side					0x02	
		Top Bottom					0x03	
		Line By Line					0x04	
		Vertical Line					0x05	
		Checker BD					0x06	
	Frame Sequence					0x07		
	3D ↔ 2D	Off				0x01		0x00
		On						0x01
	3D View Point				0x02		(-5~5)	
	Depth				0x03		(1~10)	
	3D Auto View	Off				0x05		0x00
		Message Notice						0x01
On							0x02	

New function of 12" (only DVB TV)

Control Item				Cmd1	Cmd2	Cmd3	Value
Sound	Sound Mode	Standard		0x0c	0x00	0x00	0x00
		Music					0x01
		Movie					0x02
		Clear Voice					0x03
		Amplify					0x04

Control Item			Cmd1	Cmd2	Cmd3	Value
Equalizer	Balance			0x01	0x00	(0~20)
	100hz				0x01	(0~20)
	300hz				0x02	(0~20)
	1khz				0x03	(0~20)
	3khz				0x04	(0~20)
	10khz				0x05	(0~20)
	Reset				0x06	0x00
SRS TruSurround HD (echo)	Off			0x02	0x00	0x00
Virtual Surround (echo)	On					0x01
SRS TruDialog (echo)	Off			0x03	0x00	0x00
Dialog Clarify (X9)	On					0x01
Preferred Language	English			0x04	0x00	0x00
	Spanish					0x01
	French					0x02
	Korean					0x03
	Japanese					0x04
Multi-Track Sound	Mono			0x05	0x00	0x00
	Stereo					0x01
	SAP					0x02
Auto Volume	Off			0x06	0x00	0x00
	ON					0x01
	Night					0x02
Speaker Select	TV Speaker			0x07	0x00	0x00
	External Speaker					0x01
Sound Select	Main			0x08	0x00	0x00
	Sub					0x01
Sound Reset	Sound Reset			0x09	0x00	0x00
3D Audio	Off			0x0a	0x00	0x00
	Low					0x01
	Medium					0x02
	High					0x03

New function of 12"

Control Item		Cmd1	Cmd2	Cmd3	Value
KEY	Key Generation	0x0d	0x00	0x00	refer to table
OSD	Show/Hide Control	0x0e	0x00	0x00	0x00
	Hide				
Get Status	Power (On/Off)	0xf0	0x00	0x00	0x00
	Volume(0~100)	0xf0	0x01	0x00	0x00
	Mute (On/Off)	0xf0	0x02	0x00	0x00
	Channel Number	0xf0	0x03	0x00	0x00
	Source (TV/AV/.../HDMI/...)	0xf0	0x04	0x00	0x00
	Picture Size	0xf0	0x05	0x00	0x00
	3D (On/Off)	0xf0	0x06	0x00	0x00
	Picture Mode	0xf0	0x07	0x00	0x00
	Sound Mode	0xf0	0x08	0x00	0x00

New function of 12"

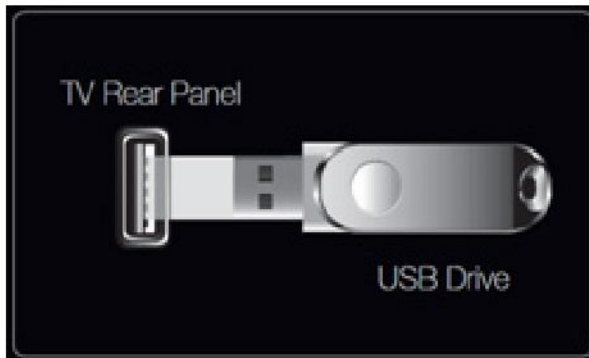
Key value	Value
Up	96 (0x60)
Down	97 (0x61)
Left	101 (0x65)
Right	98 (0x62)
Menu	26 (0x1A)
Internet	147 (0x93)
Enter(OK)	104 (0x68)
EXIT	45 (0x2D)

## 4.8. Software Upgrade

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Samsung may offer upgrades for the TV's firmware in the future. These upgrades can be performed via the TV when it is connected to the Internet, or by downloading the new firmware from [samsung.com](http://samsung.com) to a USB memory device.

- Alternative Software (Backup) shows The previous version that will be replaced.
- Software is represented as 'Year/Month/Day\_Version'. The more recent the date, the newer the software version. Installing the latest version is recommended.



### 4-8-1. By USB

Insert a USB drive containing the firmware upgrade downloaded from [samsung.com](http://samsung.com) into the TV. Please be careful to not disconnect the power or remove the USB drive while upgrades are being applied. The TV will turn off and turn on automatically after completing the firmware upgrade. Please check the firmware version after the upgrades are complete (the new version will have a higher number than the older version). When software is upgraded, video and audio settings you have made will return to their default (factory) settings. We recommend you write down your settings so that you can easily reset them after the upgrade.

### 4-8-2. By Online

Upgrades the software using the Internet.

- First, configure your network. For detailed procedures on using the Network Setting, refer to the 'Setting the Network' instructions.
- If The internet connection doesn't operate properly, connection can be broken, please retry downloading. If the problem still happens, download by USB and upgrade.

### 4-8-3. Alternative Software (Backup)

If there is an issue with the new firmware and it is affecting operation, you can change the software to the previous

- If Software was changed, existing Software is displayed.
- you can change current Software to Alternative Software by 'Alternative Software'.