4K AV over IP Quick Setup Guide

Your Encoders (ENCs) and Decoders (DECs) are **pre-configured** to your specification (see attached).

Follow these instructions for a 1, 2, 3 AV over IP experience:

1. Begin with all ENCs and DECs and other network equipment **disconnected** from the AVoIP network switch

2. Configure your Network Switch
    a. We have attached setup instructions for the network switch that you told us you will use. Please see the following pages
    b. If you did not tell us which network switch you will use or have changed network switches, you MUST use a switch from our Verified Switches List (QR code)
    c. See pages 4-7 for brands & models. Setup instructions for each follow
    d. If you are stacking network switches, you **must use 10G fiber SFPs**

3. Connect IR Emitters (optional)
    a. Connect the striped wire (IR signal) to pin 1. Connect the solid wire (ground) to pin 2
    b. If you are using KD-App Source & Display Control feature, you **must** use I/O port 1
        i. If using Compass Control Pro, the programmer specifies the port number
    c. If you are using KD-App Source & Display Control feature with a Video Wall, connect **all** IR emitters into Decoder 1 (top-left) of the video wall.

4. Install ENCs and DECS
    a. **Do not stack units**. Units **must** have proper ventilation or damage may occur
    b. Ensure that all CAT6 terminations are proper and cables pass 1 Gbps signal
    c. For ENCs, connect HDMI sources to HDMI Input (not the HDMI Pass-through)
    d. For KD-IP922DECs, connect displays to HDMI Output (not the Local HDMI Input)

5. Connect ENCs and DECs into Network Switch and Power ON the Network Switch
    a. **IMPORTANT:** Network Switch must already be configured (step #2 above)
    b. Wait 5-10 minutes for the equipment to bootup

6. Connect Window's PC into Network with ethernet cable
    a. Set a unique static IP address to your PC matching the first 3 octets of the ENCs and DECs
    b. Download KDMS Pro (QR Code) and extract zip file. Open KDMS_Pro application.
        i. **IMPORTANT:** Do not remove the application from the folder
    c. Choose SCAN > NETWORK SCAN and KDMS Pro will find your system

7. Control the system using KDMS Pro's control UI section
    a. For HDMI routing, choose the display first, then the desired source
    b. For video wall control, choose the Video Wall button at bottom
    c. **IMPORTANT:** Do not adjust ENC or DEC properties without consulting Technical Support
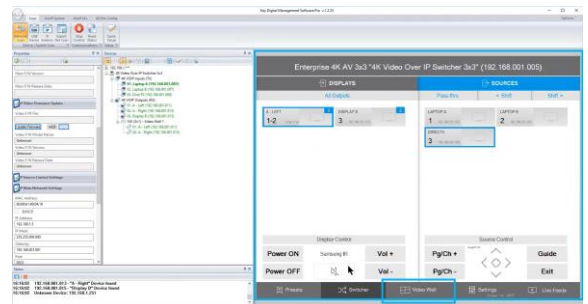
8. If applicable, you may now add your WiFi router to the network, join the WiFi network from your iPad, download the Key Digital App and control the system.

**Key Digital 4K AV over IP Encoder / Decoder System Addition Guide**

Your Encoders (ENCs) and Decoders (DECs) are **pre-configured** to your specification (see attached).

Follow these instructions for a 1, 2, 3 AV over IP experience:

KDMS Pro

1. Connect all new ENCs and DECs to the network. Do not shut down the pre-existing ENCs and DECs
   a. Wait 2 minutes for the equipment to bootup

2. Connect Window's PC into Network with ethernet cable
   a. Set a unique static IP address to your PC. Match the first 3 octets of the ENCs and DECs
   b. Download KDMS Pro (QR 1). Extract zip file. Open KDMS_Pro application.
      i. **IMPORTANT:** Do not remove the application from the folder
   c. Choose SCAN > NETWORK SCAN and KDMS Pro will find your system
   d. The new equipment should appear at the bottom of the scan as OTHER 4K AVOIP DEVICES

3. In the AVOIP SYSTEM tab, click BUILD FROM SCAN
   a. Name the new system, then click OK. Wait 5-20s as system file populates
   b. Verify all devices are present in IP SYSETM window
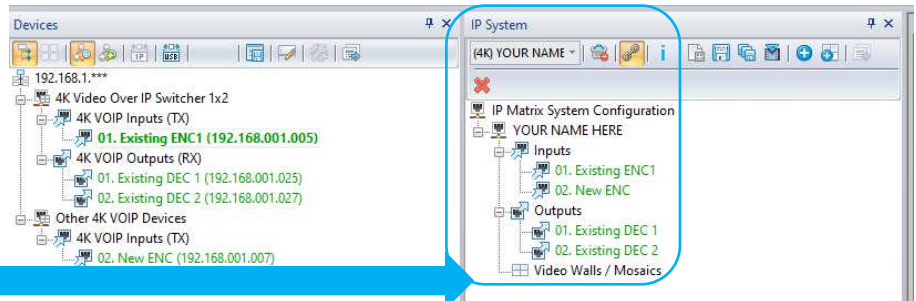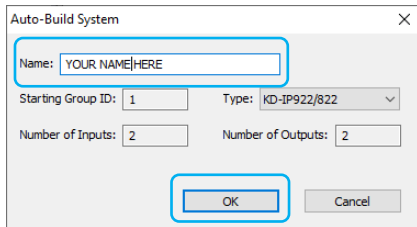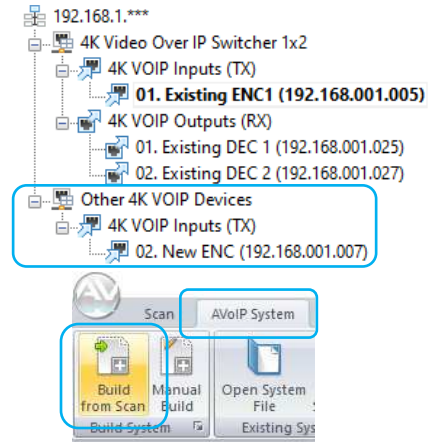
4. Click the SAVE AS button to save a copy of the switch file to the PC.

5. Click LOAD TO UNITS, then START LOAD
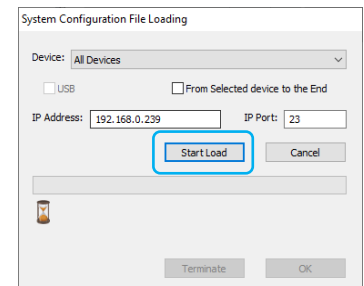
OPTIONAL SETTINGS:

   A. Source & Display Control may be set as desired (QR 2)

   B. Video Wall settings must be re-applied with each system load (QR 3)
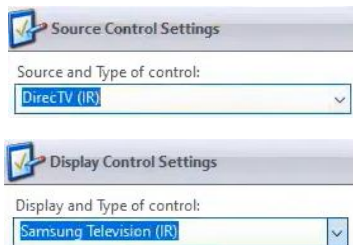
Source & Display Control

Video Wall

AV over IP Video Wall Control Commands

Applies to KD-IP822, KD-IP922, KD-IP1022 Models

Introduction

Video walls within your Key Digital AV over IP system may be controlled/managed from control system or PC using the commands in this document.

Video walls are initially added to your AV over IP system using KDMS Pro software.

Then, use the "sub" video wall control commands to manage the layout(s) within the video wall.

The sub video wall commands are as follows, and should be sent in the following sequence:

1. SPOxxSWVy
   a. Set number of sub video wall vertical displays (y) to output/decoder xx
2. SPOxxSWHy
   a. Set number of sub video wall horizontal displays (y) to output/decoder xx
3. SPOxxSWPy
   a. Set sub video wall position (y) to output/decoder xx
4. SPOxxVWE
   a. Enable video wall with settings as applied in commands 1, 2, and 3
5. SPOxxSIyy
   a. Outputs/decoder xx select input/encoder yy

Example: 6Hx4V main video wall containing two 2Hx2V and one 4Hx4V sub video walls

Main Video Wall (6x4)

Sub Video Wall (2x2)   Sub Video Wall (4x4)
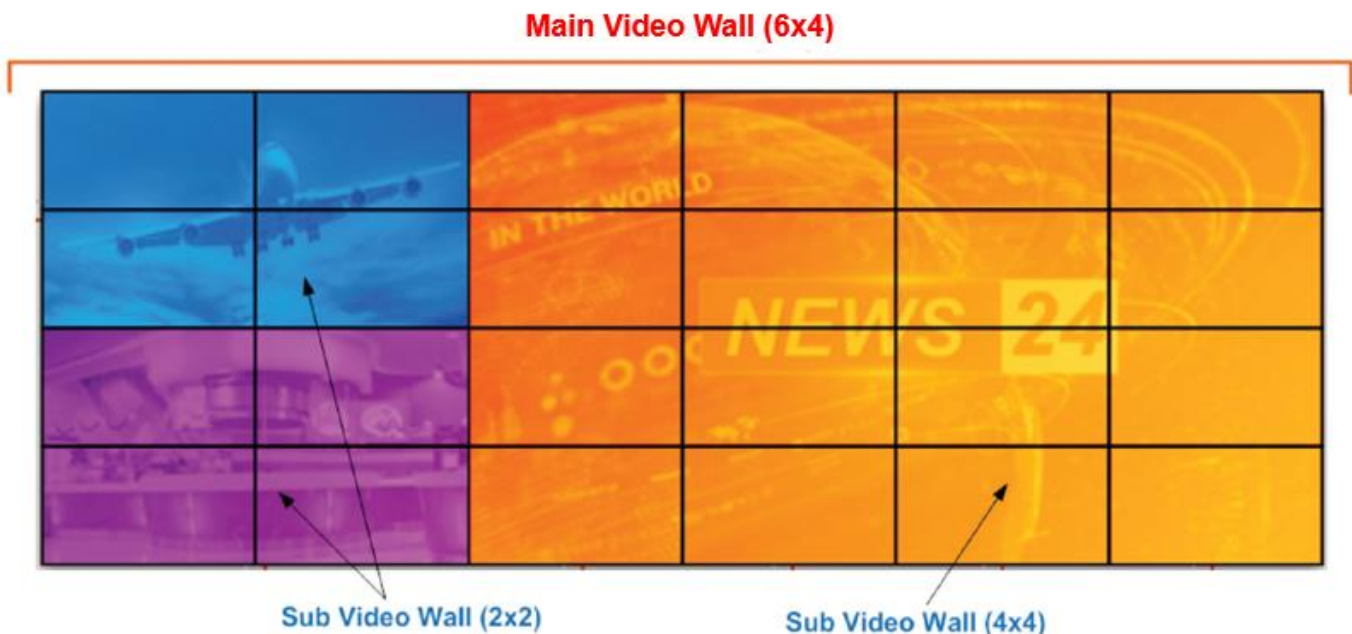
Control Interface

In Key Digital's 4K AV over IP system, any encoder or decoder may be the control interface.

Send commands to the Main IP address of the desired unit and it will forward commands to the needed decoder or encoder.

Recommendations

- Do not use Encoder # 1 as your control interface. Encoder 1 is regularly parsed by KDMS software while open
- Choose an encoder / decoder that is not already used by your control system to control your AV over IP routing matrix.
- Use a unique encoder / decoder as the control interface per video wall.

For example, if your system has standard AV over IP matrixing plus 2 video walls; reserve Encoder 1 as the interface with KDMS Pro, use Encoder 2 as the control interface for the matrixing commands, use Encoder 3 as the control interface for video wall 1, and use Encoder 4 as the control interface for video wall 2.

Initial Setup

The follow commands are sent from KDMS Pro when the video wall is added and the configuration file is loaded to the system. These commands establish the dimensions of the Main video wall.

There is no need to send the commands again.

SPO01VWE SPO01VID1 SPO01MWH4 SPO01MWV4 SPO01MWP1 1	SPO02VWE SPO02VID1 SPO02MWH4 SPO02MWV4 SPO02MWP2 2	SPO03VWE SPO03VID1 SPO03MWH4 SPO03MWV4 SPO03MWP3 3	SPO04VWE SPO04VID1 SPO04MWH4 SPO04MWV4 SPO04MWP4 4
SPO05VWE SPO05VID1 SPO05MWH4 SPO05MWV4 SPO05MWP5 5	SPO06VWE SPO06VID1 SPO06MWH4 SPO06MWV4 SPO06MWP6 6	SPO07VWE SPO07VID1 SPO07MWH4 SPO07MWV4 SPO07MWP7 7	SPO08VWE SPO08VID1 SPO08MWH4 SPO08MWV4 SPO08MWP8 8
SPO09VWE SPO09VID1 SPO09MWH4 SPO09MWV4 SPO09MWP9 9	SPO10VWE SPO10VID1 SPO10MWH4 SPO10MWV4 SPO10MWP10 10	SPO11VWE SPO11VID1 SPO11MWH4 SPO11MWV4 SPO11MWP11 11	SPO12VWE SPO12VID1 SPO12MWH4 SPO12MWV4 SPO12MWP12 12
SPO13VWE SPO13VID1 SPO13MWH4 SPO13MWV4 SPO13MWP13 13	SPO14VWE SPO14VID1 SPO14MWH4 SPO14MWV4 SPO14MWP14 14	SPO15VWE SPO15VID1 SPO15MWH4 SPO15MWV4 SPO15MWP15 15	SPO16VWE SPO16VID1 SPO16MWH4 SPO16MWV4 SPO16MWP16 16

Example: Four 2x2 sub video walls
The following commands must be received for <u>each decoder</u> each time the video wall layout changes.

Top Left has selected Input 01. Top Right has selected input 02. Bottom Left has selected input 03. Bottom right has selected input 04.

SPO01SWV2 SPO01SWH2 SPO01SWP1 SPO01VWE SPO01SI01 **1**	SPO02SWV2 SPO02SWH2 SPO02SWP2 SPO02VWE SPO02SI01 **2**	SPO03SWV2 SPO03SWH2 SPO03SWP1 SPO03VWE SPO03SI02 **3**	SPO04SWV2 SPO04SWH2 SPO04SWP2 SPO04VWE SPO04SI02 **4**
SPO05SWV2 SPO05SWH2 SPO05SWP3 SPO05VWE SPO05SI01 **5**	SPO06SWV2 SPO06SWH2 SPO06SWP4 SPO06VWE SPO04SI01 **6**	SPO07SWV2 SPO07SWH2 SPO07SWP3 SPO07VWE SPO07SI02 **7**	SPO08SWV2 SPO08SWH2 SPO08SWP4 SPO08VWE SPO08SI02 **8**
SPO09SWV2 SPO09SWH2 SPO09SWP1 SPO09VWE SPO09SI03 **9**	SPO10SWV2 SPO10SWH2 SPO10SWP2 SPO10VWE SPO10SI03 **10**	SPO11SWV2 SPO11SWH2 SPO11SWP1 SPO11VWE SPO11SI04 **11**	SPO12SWV2 SPO12SWH2 SPO12SWP2 SPO12VWE SPO12SI04 **12**
SPO13SWV2 SPO13SWH2 SPO13SWP3 SPO13VWE SPO13SI03 **13**	SPO14SWV2 SPO14SWH2 SPO14SWP4 SPO14VWE SPO14SI03 **14**	SPO15SWV2 SPO15SWH2 SPO15SWP3 SPO15VWE SPO15SI04 **15**	SPO16SWV2 SPO16SWH2 SPO16SWP4 SPO16VWE SPO16SI04 **16**

Example: Sub 4x4

The following sets of commands need to be received for <u>each decoder</u> each time the video wall layout changes.

The video wall has selected input 01.

SPO01SWV4 SPO01SWH4 SPO01SWP1 SPO01VWE SPO01SI01 **1**	SPO02SWV4 SPO02SWH4 SPO02SWP2 SPO02VWE SPO02SI01 **2**	SPO03SWV4 SPO03SWH4 SPO03SWP3 SPO031VWE SPO03SI01 **3**	SPO04SWV4 SPO04SWH4 SPO04SWP4 SPO04VWE SPO04SI01 **4**
SPO05SWV4 SPO05SWH4 SPO05SWP5 SPO05VWE SPO05SI01 **5**	SPO06SWV4 SPO06SWH4 SPO06SWP6 SPO06VWE SPO06SI01 **6**	SPO07SWV4 SPO07SWH4 SPO07SWP7 SPO07VWE SPO07SI01 **7**	SPO08SWV4 SPO08SWH4 SPO08SWP8 SPO08VWE SPO08SI01 **8**
SPO09SWV4 SPO09SWH4 SPO09SWP9 SPO09VWE SPO09SI01 **9**	SPO10SWV4 SPO10SWH4 SPO10SWP10 SPO10VWE SPO10SI01 **10**	SPO11SWV4 SPO11SWH4 SPO11SWP11 SPO11VWE SPO11SI01 **11**	SPO12SWV4 SPO12SWH4 SPO12SWP12 SPO12VWE SPO12SI01 **12**
SPO13SWV4 SPO13SWH4 SPO13SWP13 SPO13VWE SPO13SI01 **13**	SPO14SWV4 SPO14SWH4 SPO14SWP14 SPO14VWE SPO14SI01 **14**	SPO15SWV4 SPO15SWH4 SPO15SWP15 SPO15VWE SPO15SI01 **15**	SPO16SWV4 SPO16SWH4 SPO16SWP16 SPO16VWE SPO16SI01 **16**

Example: 3x3 sub video wall with 7 individual displays

The following sets of commands need to be received for <u>each decoder</u> each time the video wall layout changes.

The 3x3 video wall has selected input 01. The other displays have been configured as a 1x1 video wall and select inputs 02 through 08.

SPO01SWV3 SPO01SWH3 SPO01SWP1 SPO01VWE SPO01SI01 **1**	SPO02SWV3 SPO02SWH3 SPO02SWP2 SPO02VWE SPO02SI01 **2**	SPO03SWV3 SPO03SWH3 SPO03SWP3 SPO03VWE SPO03SI01 **3**	SPO04SWV1 SPO04SWH1 SPO04SWP1 SPO04VWE SPO04SI02 **4**
SPO05SWV3 SPO05SWH3 SPO05SWP4 SPO05VWE SPO05SI01 **5**	SPO06SWV3 SPO06SWH3 SPO06SWP5 SPO06VWE SPO06SI01 **6**	SPO07SWV3 SPO07SWH3 SPO07SWP6 SPO06VWE SPO07SI01 **7**	SPO08SWV1 SPO08SWH1 SPO08SWP1 SPO08VWE SPO08SI03 **8**
SPO09SWV3 SPO09SWH3 SPO09SWP7 SPO09VWE SPO09SI01 **9**	SPO10SWV3 SPO10SWH3 SPO10SWP8 SPO10VWE SPO10SI01 **10**	SPO11SWV3 SPO11SWH3 SPO11SWP9 SPO11VWE SPO11SI01 **11**	SPO12SWV1 SPO12SWH1 SPO12SWP1 SPO12VWE SPO12SI04 **12**
SPO13SWV1 SPO13SWH1 SPO13SWP1 SPO13VWE SPO13SI05 **13**	SPO14SWV1 SPO14SWH1 SPO14SWP1 SPO14VWE SPO14SI06 **14**	SPO15SWV1 SPO15SWH1 SPO15SWP1 SPO15VWE SPO15SI07 **15**	SPO16SWV1 SPO16SWH1 SPO16SWP1 SPO16VWE SPO16SI08 **16**

Complete API

- Commands are not case-sensitive
- Spaces are shown for clarity; commands should NOT have any spaces
- All commands must end with a carriage return
- After a new command is received, an acknowledgement should be received from the unit/system
- Send to the Main IP address, port 23.
- If using TeraTerm / PuTTy, use Other / Raw, not Telnet

Help Command (H). Returns entire API in readable format

```
--------------------------------------------------------------------------
--                      Key Digital Systems HELP                        --
--------------------------------------------------------------------------
--    KD-IP922ENC       F/W Version : BV1.01.01, MV1.05.06, AV0.04.05   --
--                                                                      --
-- PN        : Power On                                                 --
-- PF        : Power Off                                                --
-- H         : Help                                                     --
-- STA       : Show Global System Status                                --
-- STPIxx    : Show Video Input xx Status                               --
-- STPIxxxx  : Show Video Input xxxx Status                             --
-- STPOxx    : Show Video Output xx Status                              --
-- STPOxxxx  : Show Video Output xxxx Status                            --
--                                                                      --
-- Video Output Setup Command ( xxxx=[0~1024], yyyy=[1~1024] )          --
-- SPO xxxx SI yyyy  : Set Output xxxx to Video Input yyyy              --
-- SPO xx yy     : Set Output xx to Video Input yy                      --
-- xxByy.        : Set Output xx to Video Input yy                      --
-- Bxxyy         : Set Output xx to Video Input yy                      --
-- SPO xxxx SIU  : Set Output xxxx Video Input Up                       --
-- SPO xxxx SID  : Set Output xxxx Video Input Down                     --
-- SPOASI yyyy   : Set All Outputs to Video Input yyyy                  --
-- SPO A yy      : Set All Outputs to Video Input yyyy                  --
-- yyAll.        : Set All Outputs to Video Input yy                    --
-- SPOASIU       : Set All Outputs to Video Input Up                    --
-- SPOASID       : Set All Outputs to Video Input Down                  --
-- SPOAPT        : Set All Outputs to Pass Through                      --
-- SPO xxxx VM E/D : Set Output xxxx Video Mute Enabled/Disabled        --
-- SPO xxxx ON/OFF : Set Output xxxx ON/OFF                             --
-- SPO xxxx DBG ON/OFF : Set Output xxxx Debug Mode ON/OFF              --
-- SPOA VM E/D   : Set All Outputs Video Mute Enabled/Disabled          --
-- SPOA ON/OFF   : Set All Outputs ON/OFF                               --
-- SPOA DBG ON/OFF : Set All Outputs Debug Mode ON/OFF                  --
--                                                                      --
-- Video Wall Setup Command xxxx=[0~1024], yyyy=[0~9999] )              --
```

```
-- SPO xxxx VWE/D    : Set Video Wall E=Enable/D=Disable              --
-- SPO xxxx VID yy   : Set Group ID of Video Wall                    --
-- SPO xxxx MWH yy   : Set Number of Horizontal Main Display y=[1~10] --
-- SPO xxxx MWV yy   : Set Number of Vertical Main Display y=[1~10]   --
-- SPO xxxx MWP yyy  : set Position of Main Display yyy=[1~100]       --
-- SPO xxxx SWH yy   : Set Number of Horizontal Sub Display y=[1~10]  --
-- SPO xxxx SWV yy   : Set Number of Vertical Sub Display y=[1~10]    --
-- SPO xxxx SWP yyy  : set Position of Sub Display yyy=[1~100]        --
-- SPO xxxx BWL yyyy : Set Bazel Width(mm) by yyyy=[1~9999]           --
-- SPO xxxx BHL yyyy : Set Bazel Height(mm) by yyyy=[1~9999]          --
-- SPO xxxx SWL yyyy : Set Screen Width(mm) by yyyy=[1~9999]          --
-- SPO xxxx SHL yyyy : Set Screen Height(mm) by yyyy=[1~9999]         --
-- SPO xxxx MSL yyy  : Move Screen Position to Left yyy=[0~480]       --
-- SPO xxxx MSR yyy  : Move Screen Position to Right yyy=[0~480]      --
-- SPO xxxx MSU yyy  : Move Screen Position to Up yyy x=[0~270]       --
-- SPO xxxx MSD yyy  : Move Screen Position to Down yyy=[0~270]       --
-- SPO xxxx SUH yyyy : Scale Up Horizontal Screen by yyyy=[0~9999]    --
-- SPO xxxx SUV yyyy : Scale Up Verical Screen by yyyy=[0~9999]       --
-- SPO xxxx SRR y    : Set Screen Rotation by y=[0:0', 1:180', 2:270'] --
-- SPO xxxx VFC y    : Set Screen Resolution Scaling by y=[0~2]       --
--                     [0:bypass, 1:1080p, 2:720p]                    --
--                                                                    --
-- IP922ENC Audio Setup Command ( xxxx=[0~1024,A] A=All )             --
-- SPE xxxx AS y  : Set Input xxxx Audio Source to y [1=HDMI, 2=EXT.] --
-- SPE xxxx AF y  : Set Input xxxx Audio Format to y [1=MONO, 2=STEREO]--
-- SPE xxxx AFGET : Get Input xxxx Audio Format                       --
-- SPE xxxx AV yy : Set Input xxxx Audio Volume to yy=[00-99],U,D     --
-- SPE xxxx AB yy : Set Input xxxx Audio Balance to yy=[00-40],U,D    --
-- SPE xxxx AL yy : Set Input xxxx Audio Bass to yy=[00-24],U,D       --
-- SPE xxxx AM yy : Set Input xxxx Audio Middle to yy=[00-24],U,D     --
-- SPE xxxx AH yy : Set Input xxxx Audio Treble to yy=[00-24],U,D     --
-- SPE xxxx AD yy : Set Input xxxx Audio Delay to yy=[00-99],U,D      --
-- SPE xxxx A E/D : Set Input xxxx Audio Mute E=Enabled/D=Disabled    --
--                                                                    --
-- IP922DEC Audio Setup Command ( xxxx=[0~1024,A] A=All )             --
-- SPD xxxx AF y  : Set Output xxxx Audio Format to y [1=MONO,2=STEREO]--
-- SPD xxxx AFGET : Get Output xxxx Audio Format                      --
-- SPD xxxx AV yy : Set Output xxxx Audio Volume to yy=[00-99],U,D    --
-- SPD xxxx AB yy : Set Output xxxx Audio Balance to yy=[00-40],U,D   --
-- SPD xxxx AL yy : Set Output xxxx Audio Bass to yy=[00-24],U,D      --
-- SPD xxxx AM yy : Set Output xxxx Audio Middle to yy=[00-24],U,D    --
-- SPD xxxx AH yy : Set Output xxxx Audio Treble to yy=[00-24],U,D    --
-- SPD xxxx AD yy : Set Output xxxx Audio Delay to yy=[00-99],U,D     --
-- SPD xxxx A E/D : Set Output xxxx Audio Mute Enabled/Disabled/Toggle --
--                                                                    --
-- IP922DEC Video Setup Command ( xx/xxx/xxxx=[0000~1024,A] A=All )   --
```

```
-- SPD xxxx VS y  : Set Output xxxx Video Source to y [1=IP, 2=Local]  --
--                                                                      --
-- MC Network Setup Command( xxx=[000-255], zzzz=[0001~9999], y=[1~3] )--
-- SPCETIPA xxx.xxx.xxx.xxx : Set Host IP Address to xxx.xxx.xxx.xxx   --
-- SPCETIPM xxx.xxx.xxx.xxx : Set Net Mask to xxx.xxx.xxx.xxx          --
-- SPCETIPR xxx.xxx.xxx.xxx : Set Route IP Address to xxx.xxx.xxx.xxx  --
-- SPCETIPP zzzz            : Set TCP/IP Port to zzzz                  --
-- SPCETDCP E/D             : Set DHCP E=Enable/D=Disable              --
-- SPCETIPB                 : Apply New Network Config                 --
-- SPCETLN x y              : Set LAN Port x Speed to y=[1=1G,2=100K]  --
--                                                                      --
-- Video over IP Network Setup Command(xxx=[000-255], y=[1~2])         --
-- SPAETMOD y               : Set IP mode by y [1=AutoIP, 2=Static]    --
-- SPAETIPA xxx.xxx.xxx.xxx : Set Host IP Address to xxx.xxx.xxx.xxx   --
-- SPAETIPM xxx.xxx.xxx.xxx : Set Net Mask to xxx.xxx.xxx.xxx          --
-- SPAETIPR xxx.xxx.xxx.xxx : Set Route IP Address to xxx.xxx.xxx.xxx  --
-- SPAETIPB                 : Apply New Network Config                 --
--                                                                      --
-- Control I/O Port Setup Command ( x=[0~3], y=[0~9], z=[0001-9999] )  --
-- SPB x CM y    : Set Control Mode of I/O Port x=[1~3] by y           --
--    [1=IP922 Control, 2=Compass Control, 3=Open API, 4=Control Ext.] --
-- SPB x PC y    : Set Port Configuration of I/O Port x=[1~3] by y     --
--      [0=None, 1=IR IN, 2=IR OUT, 3=RS232, 4=TRIGGER IN, 5=TRGGER OUT] --
-- SPB 1 IRS y  : Set IR Source by y [1=IR Sensor, 2=Serial IR ]       --
-- SPB x RSB y  : Set RS232 Baud Rate of I/O Port x=[2~3] by y bps     --
--               [0=115200, 1=57600, 2=38400, 3=19200, 4=9600, 5=4800]--
-- SPB x RSL y  : Set RS232 Data Length of I/O Port x=[2~3] by y=[7~8] --
-- SPB x RSP y  : Set RS232 Parity Bit of I/O Port x=[2~3] by y=[0~2]  --
--               [0=None, 1=Odd, 2=Even]                              --
-- SPB x RSS y  : Set RS232 Stop Bit of I/O Port x=[2~3] by y=[1~2]    --
-- SPB x OSL y  : Set Output Level of I/O Port x by y [1=MIN ~ 7=MAX]  --
-- SPB x TCP zzzz : Set TCP Port of I/O Port x[0=I/O Port Cfg.] by zzzz--
-- SPB x IGD zzz  : Set IR IN/RS232 RxD Group ID of I/O Port x by zzz  --
-- SPB x OGD zzz  : Set IR OUT/RS232 TxD Group ID of I/O Port x by zzz --
--                                                                      --
-- System Control Setup Command ( xx=[0000-1024], y=[1~4], z=[0-4] )   --
-- SPC DN cccccccccccccccc     : Set Device Name                      --
-- SPC SID xxxx : Set System Group ID xxxx for Multicast,[0000=Unicast]--
-- SPCFB E/D    : Set Panel Button E/D (E=Enable,D=Disable) at IP922DEC--
-- SPCDF        : Reset to Factory Default All                        --
-------------------------------------------------------------------------
```

Unit Status Command (STA). Returns unit status and settings in readable format:

```
----------------------------------------------------------------------
--                     Key Digital Systems Status              --
----------------------------------------------------------------------
--    KD-IP922ENC       F/W Version : BV1.01.01, MV1.05.06, AV0.04.05  --
--                                                             --
-- Device Name = Input 1, System ID = 0001                 --
-- Power = ON , Forced HPD = OFF, MMS mode = 0, 0  DC=000        --
--                                                             --
-- Master Controller Network Setting Status                    --
-- MAC Address = 60:89:b1:90:06:b6                             --
-- Host IP Address = 192.168.001.005                           --
-- Net Mask = 255.255.000.000                                  --
-- Router IP Address = 192.168.001.001                         --
-- TCP Port = 0023,   DHCP = Disable , Link = ON               --
-- LAN1 = 1G-BT, LAN2 = 100BT                                  --
--                                                             --
-- Video over IP Network Setting Status                        --
-- MAC Address = 60:89:b1:91:06:b6                             --
-- IP Mode = Static                                            --
-- Host IP Address = 192.168.001.006                           --
-- Net Mask = 255.255.000.000                                  --
-- Router IP Address = 192.168.001.001                         --
--                                                             --
-- Control I/O Ports Status                                    --
-- Main : TCP = 4580                                           --
-- I/O1: CM=Compass   , CFG=IR OUT   ,OSL=7, RS=057600-8-0-0 , IRS=2   --
--       TCP=4581, IGD=0001, OGD=0002                          --
-- I/O2: CM=Compass   , CFG=RS232    ,OSL=7, RS=000000-11-0-0 , IRS=2   --
--       TCP=4582, IGD=0003, OGD=0004                          --
-- I/O3: CM=Compass   , CFG=IR OUT   ,OSL=7, RS=000000-11-0-0 , IRS=2   --
--       TCP=4583, IGD=0005, OGD=0006                          --
--                                                             --
--         Video Input Status                                  --
-- 0001: DN=INPUT 1         , MAC=60:89:b1:90:06:b6, GID=0001, LINK=ON --
--       IP=192.168.001.005 , VA=HDMI, HPD=ON  ,HCP=OFF , AUD=2CH PCM  --
--       AS=HDMI, AV=99, AB=20, AL=12, AM=12, AH=12, AD=00, MUTE=OFF   --
----------------------------------------------------------------------
```

System Status Command (STAA). Returns status of all units within system in readable format:

```
--------------------------------------------------------------------------
--                   Key Digital Systems Status                         --
--------------------------------------------------------------------------
--    KD-IP922ENC       F/W Version : BV1.01.01, MV1.05.06, AV0.04.05   --
--                                                                      --
-- Device Name = Input 1, System ID = 0001                     --
-- Power = ON , Forced HPD = OFF, MMS mode = 0, 0  DC=000                --
--                                                                      --
-- Master Controller Network Setting Status                            --
-- MAC Address = 60:89:b1:90:06:b6                                      --
-- Host IP Address = 192.168.001.005                                    --
-- Net Mask = 255.255.000.000                                           --
-- Router IP Address = 192.168.001.001                                  --
-- TCP Port = 0023,   DHCP = Disable , Link = ON                        --
-- LAN1 = 1G-BT, LAN2 = 100BT                                           --
--                                                                      --
-- Video over IP Network Setting Status                                --
-- MAC Address = 60:89:b1:91:06:b6                                      --
-- IP Mode = Static                                                     --
-- Host IP Address = 192.168.001.006                                    --
-- Net Mask = 255.255.000.000                                           --
-- Router IP Address = 192.168.001.001                                  --
--                                                                      --
-- Control I/O Ports Status                                            --
-- Main : TCP = 4580                                                    --
-- I/O1: CM=Compass   , CFG=IR OUT   ,OSL=7, RS=057600-8-0-0 , IRS=2    --
--       TCP=4581, IGD=0001, OGD=0002                                   --
-- I/O2: CM=Compass   , CFG=RS232    ,OSL=7, RS=000000-11-0-0 , IRS=2   --
--       TCP=4582, IGD=0003, OGD=0004                                   --
-- I/O3: CM=Compass   , CFG=IR OUT   ,OSL=7, RS=000000-11-0-0 , IRS=2   --
--       TCP=4583, IGD=0005, OGD=0006                                   --
--                                                                      --
-- IP922ENC Video Input Status                                         --
-- 0001: DN=INPUT 1         , MAC=60:89:b1:90:06:b6, GID=0001, LINK=ON --
--       IP=192.168.001.005 , VA=HDMI, HPD=ON  ,HCP=OFF , AUD=2CH PCM  --
--       AS=HDMI, AV=99, AB=20, AL=12, AM=12, AH=12, AD=00, MUTE=OFF   --
-- 0002: DN=INPUT 2         , MAC=60:89:b1:98:ff:02, GID=0002, LINK=ON --
--       IP=192.168.001.007 , VA=HDMI, HPD=ON  ,HCP=ON  , AUD=2CH PCM  --
--       AS=HDMI, AV=99, AB=20, AL=12, AM=12, AH=12, AD=00, MUTE=OFF   --
-- 0003: DN=INPUT 3         , MAC=60:89:b1:90:00:2e, GID=0003, LINK=ON --
--       IP=192.168.001.009 , VA=HDMI, HPD=ON  ,HCP=ON  , AUD=2CH PCM  --
--       AS=HDMI, AV=99, AB=20, AL=12, AM=12, AH=12, AD=00, MUTE=OFF   --
-- 0004: DN=INPUT 4         , MAC=60:89:b1:90:00:27, GID=0004, LINK=ON --
--       IP=192.168.001.011 , VA=HDMI, HPD=ON  ,HCP=ON  , AUD=2CH PCM  --
--       AS=HDMI, AV=99, AB=20, AL=12, AM=12, AH=12, AD=00, MUTE=OFF   --
```

```
--                                                               --
-- IP922DEC Video Output Status                                  --
-- 0001: DN=OUTPUT 1           , MAC=60:89:b1:92:00:10, GID=0001, LINK=ON --
--       IP=192.168.001.013, IN=0001, OUT=ON , HPD=ON , HCP=OFF, DG=OFF--
--       AV=99, AB=20, AL=12, AM=12, AH=12, AD=00, MUTE=OFF       --
--       VW=OFF, VID=00, MWH=01, MWV=01, MWP=001, SWH=01, SWV=01  --
--       SWP=001, BWL=0001, BHL=0001, SWL=0001, SHL=0001, MSL=000 --
--       MSR=000, MSU=000, MSD=000, SUH=0001, SUV=0001, SRR=1, VFC=1 --
-- 0002: DN=OUTPUT 2           , MAC=60:89:b1:92:18:92, GID=0002, LINK=ON --
--       IP=192.168.001.015, IN=0002, OUT=ON , HPD=ON , HCP=OFF, DG=OFF--
--       AV=99, AB=20, AL=12, AM=12, AH=12, AD=00, MUTE=OFF       --
--       VW=OFF, VID=00, MWH=01, MWV=01, MWP=001, SWH=01, SWV=01  --
--       SWP=001, BWL=0001, BHL=0001, SWL=0001, SHL=0001, MSL=000 --
--       MSR=000, MSU=000, MSD=000, SUH=0001, SUV=0001, SRR=1, VFC=1 --
-- 0003: DN=OUTPUT 3           , MAC=60:89:b1:92:00:a3, GID=0003, LINK=ON --
--       IP=192.168.001.017, IN=0003, OUT=ON , HPD=ON , HCP=OFF, DG=OFF--
--       AV=99, AB=20, AL=12, AM=12, AH=12, AD=00, MUTE=OFF       --
--       VW=OFF, VID=00, MWH=01, MWV=01, MWP=001, SWH=01, SWV=01  --
--       SWP=001, BWL=0001, BHL=0001, SWL=0001, SHL=0001, MSL=000 --
--       MSR=000, MSU=000, MSD=000, SUH=0001, SUV=0001, SRR=0, VFC=1 --
-- 0004: DN=OUTPUT 4           , MAC=60:89:b1:9a:00:34, GID=0004, LINK=ON --
--       IP=192.168.001.019, IN=0004, OUT=ON , HPD=ON , HCP=OFF, DG=OFF--
--       AV=99, AB=20, AL=12, AM=12, AH=12, AD=00, MUTE=OFF       --
--       VW=OFF, VID=00, MWH=02, MWV=02, MWP=001, SWH=01, SWV=01  --
--       SWP=001, BWL=0001, BHL=0001, SWL=0001, SHL=0001, MSL=000 --
--       MSR=000, MSU=000, MSD=000, SUH=0000, SUV=0000, SRR=0, VFC=1 --
-------------------------------------------------------------------
```

API Status (STAA) pertaining to Video Wall

```
-- IP922DEC Video Output Status                                  --
-- 0001: DN=OUTPUT 1           , MAC=60:89:b1:92:00:10, GID=0001, LINK=ON --
--       IP=192.168.001.013, IN=0001, OUT=ON , HPD=ON , HCP=OFF, DG=OFF--
--       AV=99, AB=20, AL=12, AM=12, AH=12, AD=00, MUTE=OFF       --
--       [1] VW=OFF,[2] VID=00,[3] MWH=01,[4] MWV=01,[5] MWP=001,[6] SWH=01,[7] SWV=01 --
--       [8] SWP=001, BWL=0001, BHL=0001, SWL=0001, SHL=0001, MSL=000 --
--       MSR=000, MSU=000, MSD=000, SUH=0001, SUV=0001, SRR=1, VFC=1 --
```

1. Video Wall On / Off
2. Video Wall ID Number
3. Main (physical) wall horizontal displays
4. Main (physical) wall vertical displays
5. Main (physical) wall position
6. Sub wall horizontal displays
7. Sub wall vertical displays
8. Sub wall position

EDID Management Rotary

Use the Encoder's EDID rotary if you wish for your source to output a different video resolution and audio format.

- If setting 0 is selected, use KDMS Pro to select the decoder you wish to copy the EDID from. Or, use command SPCEDIDxxHyy to copy the EDID from the display connected to Decoder yy to the source connected to Encoder xx.
- Although it is not necessary, power cycling the HDMI source may help the detection of the newly selected handshake. There is no need to power cycle the Encoder.

Position	EDID Setting Description
0	Copy EDID from IP922DEC-II
1	1920x1080i, 2CH AUDIO
2	1920x 1080i, DOLBY/DTS 5.1
3	1920x 1080i, HD AUDIO
4	1920x1080p, 2CH AUDIO
5	1920x 1080p, DOLBY/DTS 5.1
6	1920x 1080p, HD AUDIO
7	1920x 1200p, 2CH AUDIO
8	1920x 1200p, DOLBY/DTS 5.1
9	1920x 1200p, HD AUDIO
A	4Kx2K@30, 10.2G, 2CH AUDIO
B	4Kx2K@30, 10.2G, DOLBY/DTS 5.1
C	4Kx2K@30, 10.2G, HD AUDIO
D	1280x720p@60 DVI
E	1920x1080p@60 DVI
F	Copy EDID from Pass-through HDMI Output

KeyCode Open API
User Guide

Applicable Models

Model	Description	I/O Control Ports	Notes
KD-CX800	Controller	3	1 IR, 2 IR/RS-232
KD-IP822ENC/DEC	AV over IP Encoder/Decoder	2	1 IR, 1 IR/RS-232
KD-IP922ENC/DEC 922ENC/DEC-II	AV over IP Encoder/Decoder	3	1 IR, 2 IR/RS-232
KD-IP1022ENC/DEC IP1022ENC/DEC-II	AV over IP Encoder/Decoder	3	1 IR, 2 IR/RS-232

Description

If a Unit's port is configured for use in Open API mode, the device will listen on a dedicated TCP port for that I/O port. The user application/control system can then make a TCP connection to that port and send data to that I/O port.

IP Port number assignments for I/O ports are flexible, and are assigned using KDMS Pro. It is recommended that TCP Port assignments always be no lower than 1024.

All I/O port traffic is limited to only one TCP connection at a time.

Only 1 port may be set to RS-232 per unit.

Setup

1. Use KDMS Pro software to ensure unit's I/O Control ports are set to Open API control mode, with IR or RS232 configuration.
   a. For RS-232, ensure the Baudrate is set according to the device you are controlling. See example image.
2. Send desired command string to the unit's Main IP address
   a. For I/O Control Port 1 (RS-232 not supported), use IP Port 4581*
   b. For I/O Control Port 2, use IP Port 4582*
   c. For I/O Control Port 3, use IP Port 4583*
      *Unless port has assignment has been updated.
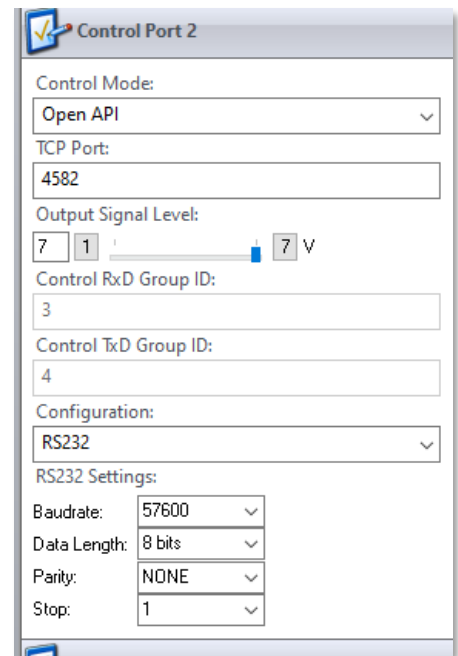
Controlling RS-232 Devices

Send any RS-232 string to the encoder/decoder/controller over IP on port 4582/4583. Port 1 does not support RS-232 control. Only 1 port may be set to RS-232 per unit.
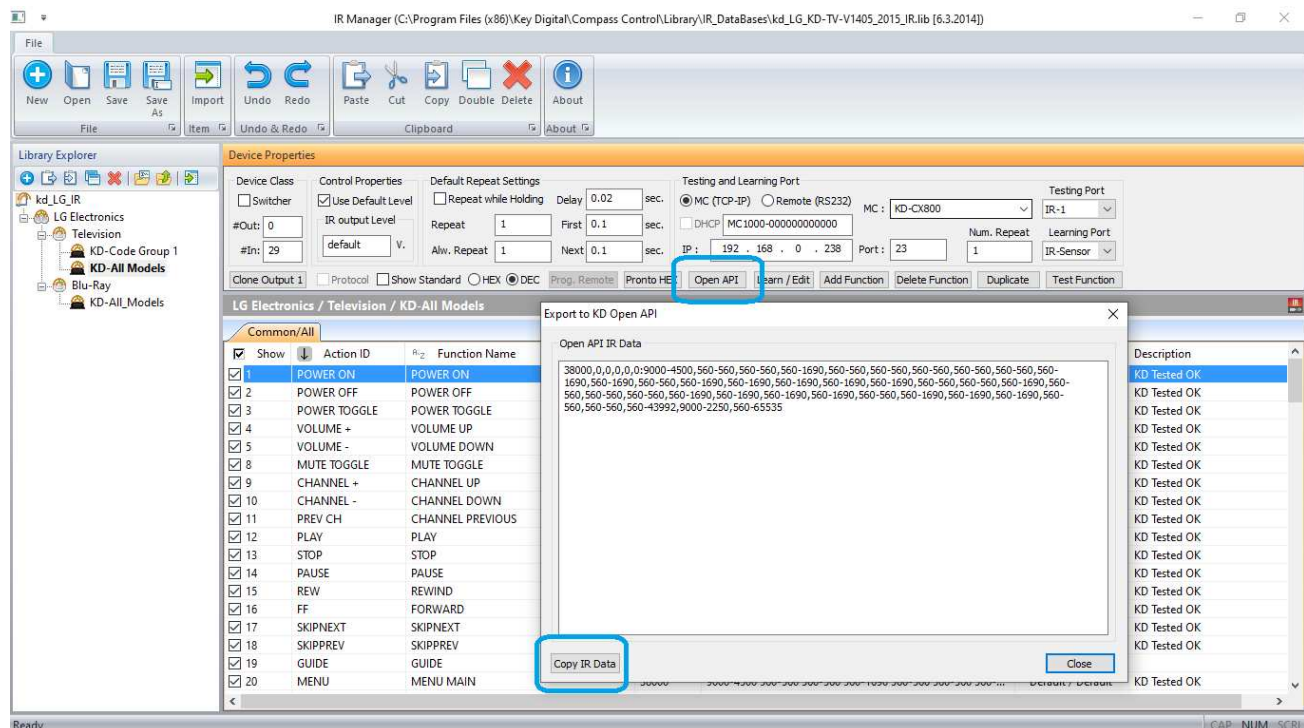
Specify ASCII, HEX, or Binary string format in the user application/control system as the encoder/decoder/controller is transparent and does not apply any formatting.

Include carriage return or line feed characters if required by the device you are controlling.

Collecting Strings for IR Devices

To collect the Open API string for controlling IR Devices:

1. Open Key Digital IR Database Manager v2.0.6 or later.
2. File -> Open to find the Brand of device you need to control.
3. Choose the Device from the Library Explorer list at left of screen.
4. Choose the command you wish to copy the Open API string for
5. Press the Open API button, and Copy IR Data to your clipboard so you may paste it into your User Application/Control System.
6. Add a carriage return at the end of the string sent from User Application/Control system for the KD Open API unit to execute the command.

Common IR Examples

Samsung TV

Power On

38028,0,0,0,0,0:4522-4522,578-1682,578-1682,578-1682,578-552,578-552,578-552,578-552,578-552,578-1682,578-1682,578-1682,578-552,578-552,578-552,578-552,578-552,578-1682,578-552,578-552,578-1682,578-1682,578-552,578-552,578-1682,578-552,578-1682,578-1682,578-552,578-552,578-1682,578-1682,578-552,578-64000,4522-4522,578-1682,578-1682,578-1682,578-552,578-552,578-552,578-552,578-552,578-1682,578-1682,578-1682,578-552,578-552,578-552,578-552,578-552,578-1682,578-552,578-552,578-1682,578-1682,578-552,578-552,578-1682,578-552,578-1682,578-1682,578-552,578-552,578-1682,578-1682,578-552,578-65535

Power Off

38380,0,0,0,0,0:4507-4507,547-1693,547-1693,547-1693,547-547,547-547,547-547,547-547,547-547,547-1693,547-1693,547-1693,547-547,547-547,547-547,547-547,547-547,547-547,547-547,547-547,547-1693,547-1693,547-547,547-547,547-1693,547-1693,547-1693,547-1693,547-547,547-547,547-1693,547-1693,547-547,547-65535

Power Toggle

38028,0,0,0,0,0:4470-4470,525-1656,525-1656,525-1656,525-525,525-525,525-525,525-525,525-525,525-1656,525-1656,525-1656,525-525,525-525,525-525,525-525,525-525,525-525,525-525,525-1656,525-525,525-525,525-525,525-525,525-525,525-525,525-525,525-1656,525-525,525-1656,525-1656,525-1656,525-1656,525-1656,525-1656,525-65535

Volume +

38028,0,0,0,0,0:4522-4522,578-1682,578-1682,578-1682,578-552,578-552,578-552,578-552,578-552,578-1682,578-1682,578-1682,578-552,578-552,578-552,578-552,578-552,578-1682,578-1682,578-1682,578-552,578-552,578-552,578-552,578-552,578-552,578-552,578-552,578-1682,578-1682,578-1682,578-1682,578-1682,578-65535

Volume –

38028,0,0,0,0,0:4522-4522,578-1682,578-1682,578-1682,578-552,578-552,578-552,578-552,578-552,578-1682,578-1682,578-1682,578-552,578-552,578-552,578-552,578-552,578-1682,578-552,578-1682,578-552,578-552,578-552,578-552,578-552,578-552,578-1682,578-552,578-1682,578-1682,578-1682,578-65535

Mute Toggle

38028,0,0,0,0,0:4522-4522,578-1682,578-1682,578-1682,578-552,578-552,578-552,578-552,578-552,578-1682,578-1682,578-1682,578-552,578-552,578-552,578-552,578-552,578-1682,578-1682,578-1682,578-552,578-552,578-552,578-552,578-552,578-552,578-552,578-552,578-1682,578-1682,578-1682,578-65535

HDMI 1

38380,0,0,0,0,0:4507-4507,547-1693,547-1693,547-1693,547-547,547-547,547-547,547-547,547-547,547-1693,547-1693,547-1693,547-547,547-547,547-547,547-547,547-547,547-1693,547-

547,547-547,547-1693,547-547,547-1693,547-1693,547-1693,547-547,547-1693,547-1693,547-547,547-1693,547-547,547-547,547-547,547-65535

HDMI 2

38380,0,0,0,0,0:4507-4507,547-1693,547-1693,547-1693,547-547,547-547,547-547,547-547,547-547,547-1693,547-1693,547-1693,547-547,547-547,547-547,547-547,547-547,547-547,547-1693,547-1693,547-1693,547-1693,547-1693,547-547,547-1693,547-1693,547-547,547-547,547-547,547-547,547-547,547-1693,547-547,547-65535

Sony TV (Bravia)

Power On

40244,0,0,0,0,0:2385-596,596-596,1192-596,1192-596,1192-596,596-596,1192-596,596-596,1192-596,596-596,596-596,596-596,596-64000,2385-596,596-596,1192-596,1192-596,1192-596,596-596,1192-596,596-596,1192-596,596-596,596-596,596-596,596-65535

Power Off

40244,0,0,0,0,0:2385-596,1192-596,1192-596,1192-596,1192-596,596-596,1192-596,596-596,1192-596,596-596,596-596,596-596,596-64000,2385-596,1192-596,1192-596,1192-596,1192-596,596-596,1192-596,596-596,1192-596,596-596,596-596,596-596,596-65535

Volume +

40244,0,0,0,0,0:2385-596,596-596,1192-596,596-596,596-596,1192-596,596-596,596-596,1192-596,596-596,596-596,596-596,596-64000,2385-596,596-596,1192-596,596-596,596-596,1192-596,596-596,596-596,1192-596,596-596,596-596,596-596,596-65535

Volume –

40244,0,0,0,0,0:2385-596,1192-596,1192-596,596-596,596-596,1192-596,596-596,596-596,1192-596,596-596,596-596,596-596,596-64000,2385-596,1192-596,1192-596,596-596,596-596,1192-596,596-596,596-596,1192-596,596-596,596-596,596-596,596-65535

Mute Toggle

40244,0,0,0,0,0:2385-596,596-596,596-596,1192-596,596-596,1192-596,596-596,596-596,1192-596,596-596,596-596,596-596,596-64000,2385-596,596-596,596-596,1192-596,596-596,1192-596,596-596,596-596,1192-596,596-596,596-596,596-596,596-65535

HDMI 1

40244,0,0,0,0,0:2385-596,596-596,1192-596,596-596,1192-596,1192-596,596-596,1192-596,596-596,1192-596,596-596,1192-596,1192-596,596-596,596-596,596-64000,2385-596,596-596,1192-596,596-596,1192-596,1192-596,596-596,1192-596,596-596,1192-596,596-596,1192-596,1192-596,596-596,596-596,596-65535

HDMI 2

40244,0,0,0,0,0:2385-596,1192-596,1192-596,596-596,1192-596,1192-596,596-596,1192-596,596-596,1192-596,596-596,1192-596,1192-596,596-596,596-596,596-64000,2385-596,1192-596,1192-596,596-596,1192-596,1192-596,596-596,1192-596,596-596,1192-596,596-596,1192-596,1192-596,596-596,596-596,596-65535

AppleTV (4th Gen)

Play/Pause Toggle

38384,0,0,0,0,0:9050-4522,521-604,521-1708,521-1708,521-1708,521-604,521-1708,521-1708,521-1707,521-1709,520-1708,521-1708,521-604,522-602,521-604,521-604,521-1708,521-604,521-1708,521-1708,521-1709,520-1708,521-604,521-1708,521-603,521-1708,521-604,521-604,521-1708,521-1708,521-1708,521-1709,520-1724,521-34043,9016-4523,521-604,521-1708,521-1708,521-1708,521-604,522-1707,521-1708,521-1708,521-1708,521-1708,522-1707,521-604,521-604,521-604,521-604,521-1708,521-604,521-604,521-1708,521-604,521-604,521-604,521-604,523-602,521-1708,521-604,521-604,521-1708,521-1708,521-1708,521-1710,519-1724,521-65535

Stop

38028,0,0,0,0,0:9019-4496,552-1682,552-552,578-1656,578-552,578-552,552-1682,552-1682,552-1682,552-1682,552-1682,552-1682,552-552,578-552,578-552,578-552,552-1682,552-1682,552-552,578-552,578-552,552-1682,552-1682,552-552,578-552,578-1656,578-552,552-552,578-552,578-552,578-552,552-552,578-552,578-43493,8993-2235,552-65535

Menu

37683,0,0,0,0,0:9049-4564,557-557,557-1724,557-1724,557-1724,557-557,557-1724,557-1724,557-1724,557-1724,557-1724,557-1724,557-557,557-557,557-557,557-557,557-1724,557-1724,557-1724,557-557,557-557,557-557,557-557,557-557,557-557,557-1724,557-1724,557-557,557-557,557-557,557-1724,557-557,557-557,557-40017,9049-2255,557-65535

Left

37683,0,0,0,0,0:9049-4564,557-557,557-1724,557-1724,557-1724,557-557,557-1724,557-1724,557-1724,557-1724,557-1724,557-1724,557-557,557-557,557-557,557-557,557-1724,557-1724,557-557,557-557,557-1724,557-557,557-557,557-557,557-557,557-1724,557-1724,557-557,557-557,557-557,557-1724,557-557,557-557,557-40017,9049-2255,557-65535

Right

37683,0,0,0,0,0:9049-4564,557-557,557-1724,557-1724,557-1724,557-557,557-1724,557-1724,557-1724,557-1724,557-1724,557-557,557-557,557-557,557-557,557-1724,557-557,557-1724,557-1724,557-557,557-557,557-557,557-557,557-1724,557-1724,557-557,557-557,557-557,557-1724,557-557,557-557,557-40017,9049-2282,557-65535

Up

37683,0,0,0,0,0:9049-4564,557-557,557-1724,557-1724,557-1724,557-557,557-1724,557-1724,557-1724,557-1724,557-1724,557-1724,557-557,557-557,557-557,557-557,557-1724,557-557,557-1724,557-557,557-1724,557-557,557-557,557-557,557-1724,557-1724,557-557,557-557,557-557,557-1724,557-557,557-557,557-40017,9049-2255,557-65535

Down

37683,0,0,0,0,0:9049-4564,557-557,557-1724,557-1724,557-1724,557-557,557-1724,557-1724,557-1724,557-1724,557-1724,557-1724,557-557,557-557,557-557,557-557,557-1724,557-557,557-557,557-1724,557-1724,557-557,557-557,557-557,557-557,557-1724,557-1724,557-557,557-557,557-557,557-1724,557-557,557-557,557-40017,9049-2255,557-65535

Enter/Select

37683,0,0,0,0,0:9049-4564,557-557,557-1724,557-1724,557-1724,557-557,557-1724,557-1724,557-1724,557-1724,557-1724,557-1724,557-557,557-557,557-557,557-557,557-1724,557-1724,557-557,557-1724,557-557,557-557,557-557,557-557,557-557,557-1724,557-1724,557-557,557-557,557-557,557-1724,557-557,557-557,557-40017,9049-2255,557-65535

FF 30 Seconds

38028,0,0,0,0,0:8993-4496,578-1656,578-552,578-1656,578-552,552-552,578-1656,578-1656,578-1656,578-1656,578-1656,578-1656,578-552,578-552,552-552,578-552,578-1656,578-1656,578-1656,578-1656,578-1656,578-552,552-1682,552-552,578-552,578-1656,578-552,578-552,552-552,578-552,578-552,552-552,578-552,578-41310,8993-2235,552-65535

Rewind 10 Seconds

38028,0,0,0,0,0:8993-4496,578-1656,578-552,578-1656,552-578,552-552,578-1656,578-1656,578-1656,578-1656,578-1656,578-1656,578-552,578-552,552-552,578-552,578-1656,578-552,552-1682,552-1682,552-552,578-552,578-1656,578-552,552-552,578-1656,578-552,578-552,578-552,552-552,578-552,578-552,552-552,578-43493,8993-2235,552-65535

Rewind 30 Seconds

38028,0,0,0,0,0:9019-4496,552-1682,552-552,578-1656,578-552,578-552,552-1682,552-1682,552-1682,552-1682,552-1682,552-1682,552-552,578-552,578-552,552-552,578-1656,578-1656,578-552,578-1656,578-552,578-552,552-1682,552-552,578-552,578-1656,578-552,552-552,578-552,578-552,552-552,578-552,578-552,578-43519,8993-2235,578-65535