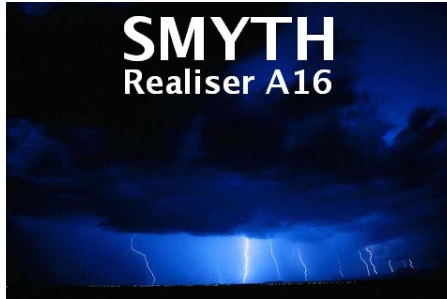


Installing new firmware to your Realiser A16

Rev 2.10 April 18, 2022



Updating your A16 with rev 2.10 April 18, 2022, is only necessary if your A16's firmware is older. The current revision of your firmware is found in SETTINGS>UPDATES/ABOUT as described below in step 5. If an update is required, please begin with **STEP 1**.

Issues fixed with this update

(APM110 hardware)

1. Many of the extended Atmos listening modes (11.x.x, 12.x.x, 13.x.x, etc) had some of their height channels incorrectly routed during the loading process causing these height channels to remain muted over the headphones. The routing tables have been corrected.
2. Basic HDMI CEC signalling has been implemented to improve the eARC function.

(All hardware variants)

3. Auro 3D menus, listening rooms and Presets have been added to the A16 system in preparation for the release of Auro 3D decoding.

A16 Firmware update procedure

(All hardware variants)

STEP 1. The new firmware for the Realiser A16 is uploaded through the micro-SD card slot on the front panel. First, obtain a micro-SD card (commonly 16 GB) and ensure it is formatted as FAT32. Second, create a 'realiser' folder in the root directory and copy the firmware file FIRMA001.SVS into the realiser folder. Insert this micro-SD card into the slot on the front of your A16.

STEP 2. Power up the A16 ensuring the power indicator LED is steady green. You can power it up using the remote control or by momentarily depressing either User A or User B volume knobs. Now turn off

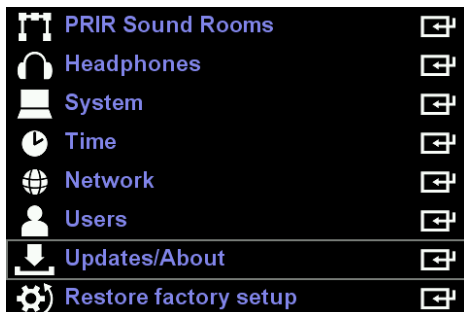
the A16 by pushing in and holding in the User A volume knob for at least 3 seconds. The LCD screen will switch off and the power indicator LED will turn red. Release the User A volume knob.

STEP 3. Push in and hold in the User B volume knob and, simultaneously, push in and release the User A volume knob. Then release the User B volume knob. The action of holding in B and depressing A activates the firmware update manager as shown below. The power indicator LED will also be blinking green.

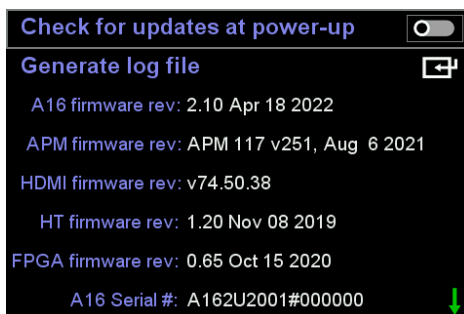


STEP 4. Using the remote control, press the ENTER key twice to begin the firmware update. The A16 will enter a long period (30-45 minutes) of authenticating the software, loading and rebooting. When the unit first reboots it will begin updating the firmware for the individual hardware modules. Once the firmware modules have been reprogrammed the unit will reboot using the normal power-up sequence to the Speaker Map display for User A.

STEP 5. To confirm the firmware update was a success please check the A16 revision number displayed in UPDATES/ABOUT accessed via the SETTINGS page.

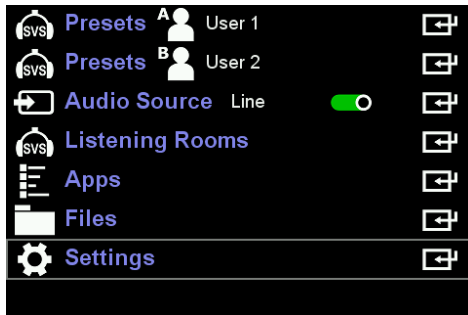


Confirm the A16 firmware rev is 2.10 Apr 18 2022. The other revision numbers shown in this example may be different to what you see on your screen.

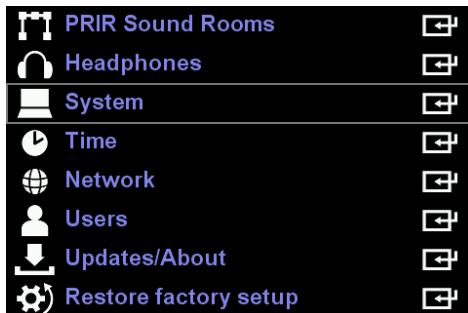


Updates/About page

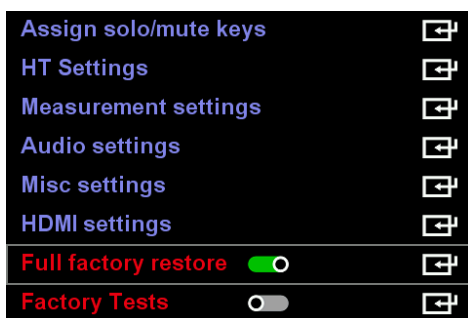
STEP 6. The firmware update is now complete. A **Full factory restore** must be run to properly initialize the Auro 3D Sound Rooms and Presets. Please note this process will result in all Sound Rooms and Presets being erased and reprogrammed back to factory defaults. The users PRIR and HPEQ files held in the internal memory and/or SD card are not affected. On completion of the full factory restore it will be necessary to rebuild any custom Sound Rooms/Presets. To proceed, press BACK and then navigate to 'Settings' and press ENTER.



Then navigate to 'Full factory restore' in the System Page.



Enable the 'Full factory restore' using the ADJ+ key and then press Enter.



The full factory restore will take approximately 25 minutes to complete, thereafter the A16 will automatically return to the User A Speaker Map display.

New features (All hardware variants)

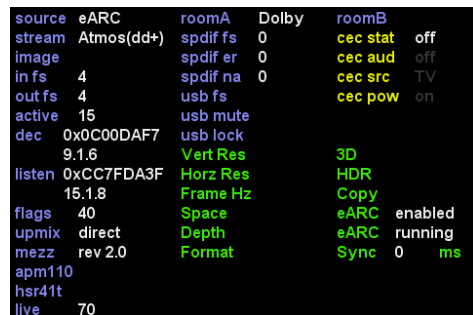
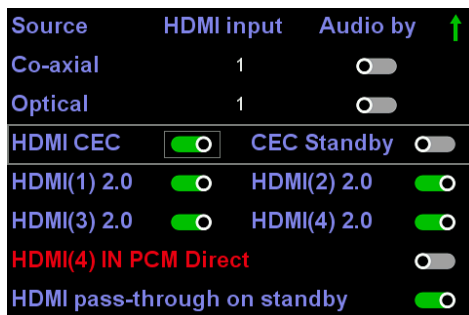
1. Auro 3D decoding

Auro 3D decoding will be available as a cost upgrade in the near future. The 2.10 firmware paves the way for this release by creating menus, sound rooms and presets associated with Auro 3D. More information will be available imminently.

Improved features (APM110/HSR41T hardware)

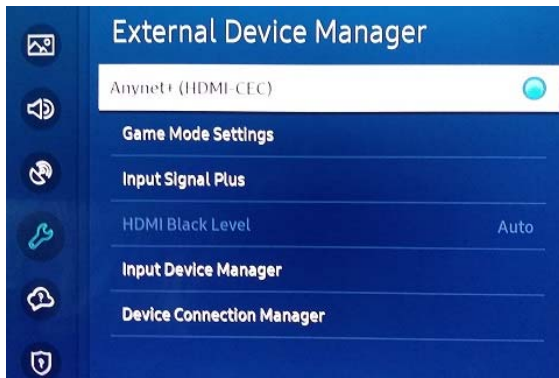
1. eARC input

New CEC functionality has been added to improve A16 eARC connection reliability. Whilst eARC connections are theoretically possible without the help of CEC signalling, most TV manufacturers seem to expect CEC handshaking during an eARC connection setup. HDMI CEC is enabled in the HDMI menu under SETTINGS>SYSTEM>HDMI. In addition, CEC status can be observed in the diagnostic page accessible by pressing enter with the cursor on the audio source selection in the home page. Once audio is passing, CEC may be disabled if desired although TV volume/mute and TV standby control are available while CEC remains enabled.



a) New Connection Procedure

The eARC connection procedure is as follows. In your TV settings ensure that HDMI-CEC is enabled for external HDMI devices. Often this mode is enabled by default. To avoid licensing many TV manufacturers call HDMI-CEC by another name. The list below gives you an idea of what you need to look for to enable it in your TV.



A Samsung TV HDMI-CEC menu page

- AOC: E-link
- Hitachi: HDMI-CEC
- LG: SimpLink or SIMPLINK (HDMI-CEC)
- Mitsubishi: NetCommand for HDMI
- Onkyo: RIHD (Remote Interactive over HDMI)
- Panasonic: HDAVI Control, EZ-Sync, or VIERA Link
- Philips: EasyLink
- Pioneer: Kuro Link
- Runco International: RuncoLink
- Samsung: Anynet+
- Sharp: Aquos Link
- Sony: BRAVIA Sync
- Toshiba: CE-Link or Regza Link
- Vizio: CEC

Following this, ensure eARC/ARC is enabled (usually set to AUTO) in your TV sound settings. There may be other TV sound settings pertinent to eARC such as Dolby Atmos support. Enable these also.



A Samsung TV advanced settings menu page

Then in the Realiser settings enable the HDMI CEC mode (found under the HDMI settings menu). Connect from the HDMI (eARC) port on the rear of the TV to the A16 HDMI OUT port using a high-quality HDMI cable that supports Ethernet. Assuming the TV sound is currently set to use the TV speakers, select eARC as the source input in the A16 home menu.



The speaker map and diagnostic pages should indicate the current CEC and eARC status similar to the following.



```

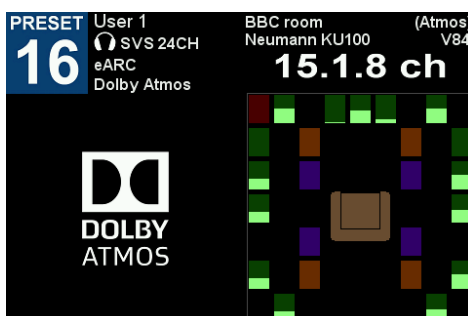
source eARC      roomA Dolby      roomB
stream none      spdif fs 0       cec stat sw+avr
image      spdif er 0       cec aud  off
in fs      0       spdif na 0       cec src  A16
out fs      0       usb fs     0       cec pow  on
active      0       usb mute
dec         0x00000000  usb lock
          0.0.0     Vert Res      3D
listen      0x00000000  Horz Res     HDR
          0.0.0     Frame Hz     Copy
flags        0       Space        eARC  enabled
upmix        direct  Depth        eARC  running
mezz         rev 2.0  Format       Sync  0  ms
apm110
hsr41t
live        115
  
```

Proceed to the TV audio settings and command the TV sound to be output to the external eARC (sometimes called eARC/ARC or just ARC) device.



A Samsung TV Sound Output menu page

The TV soundtrack should now be heard over the A16 headphones. The speaker map and diagnostic menu pages should update to show the connection was successful.



```

source eARC      roomA Dolby      roomB
stream Atmos(mat)  spdif fs 0       cec stat sw+avr
image      spdif er 0       cec aud  on
in fs      4       spdif na 0       cec src  TV
out fs      4       usb fs     0       cec pow  on
active      15      usb mute
dec         0x0C00DAF7  usb lock
          9.1.6     Vert Res      3D
listen      0xCC7FDA3F  Horz Res     HDR
          15.1.8     Frame Hz     Copy
flags        40       Space        eARC  enabled
upmix        direct  Depth        eARC  running
mezz         rev 2.0  Format       Sync  0  ms
apm110
hsr41t
live        141
  
```

The movie soundtrack format (Atmos, 5.1, stereo, etc) will be displayed in the movie introductory screen. In the Netflix example below (Extraction) the soundtrack is advertised as Atmos. However, the TV can on occasions get confused and advertise only 5.1 even when the selected movie is known to have an Atmos soundtrack. If you see this happening our advice is to exit the current movie and select a different one momentarily, then go back and play the original movie.

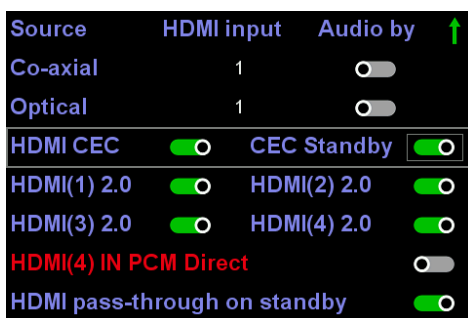


b) A16 Volume/Mute control using TV remote

Whilst HDMI CEC is enabled and an eARC connection is active the volume of the User A headphone can be adjusted either using the TV remote volume control, the left most volume knob on the A16 or the using the A16 remote. User B headphone volume is not controlled by the TV.

c) A16 Standby when TV Standby activated

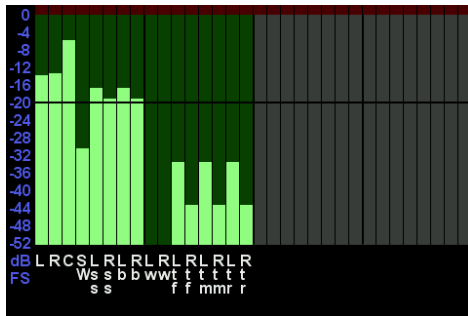
Whilst both HDMI CEC and CEC Standby are enabled and an eARC connection is active, placing the TV into standby (using the TV remote power button) will also place the A16 into standby. Conversely, when the TV is brought out of standby the A16 will follow suit.



d) eARC Pass-Through to avoid Down-mixing

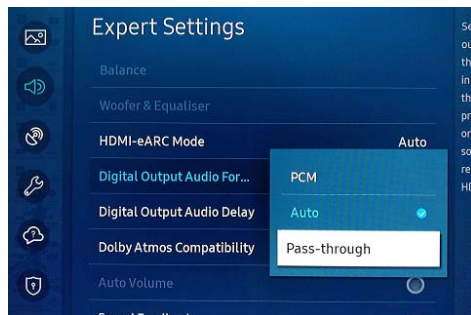
Due to the desire to mix menu sounds and voice prompts into the TV sound, streaming movie soundtracks are often subject to Atmos decoding, mixing, and Atmos re-encoding within the TV (or Apple TV box or Amazon Firestick, etc) prior to transmission through an eARC link. Where the internal processing power available for these Atmos decode/encode steps is limited (entry level TVs etc), the

resulting multi-channel audio format is often a down-mixed version of the original Atmos bitstream. For example, as of April 2022, many Netflix Apps will render streaming 9.1.6ch Atmos soundtracks to just 5.1.2ch. Even if the eARC downstream playback device (Realiser A16) advertises the ability to decode higher than 5.1.2ch, for example 9.1.6ch, the TV will simply copy the Ls/Rs audio into all surround channels (Lss/Rss Lb/Rb) and the Ltm/Rtm audio into all height channels (Ltf/Rtf Ltm/Rtm, Ltr/Rtr) and keep the wides muted (Lw/Rw) as a way of honoring the 9.1.6ch request in the least complex manner.



A 9.1.6ch Atmos soundtrack that has passed through the internal TV 5.1.2ch decoder

Over time, as the processing power within the TV sets improve, this down-mixing limitation will likely disappear. In the meantime, for users that wish to avoid the decode-mix-encode step, most TVs include a digital audio Pass-through mode that can be activated under the advanced audio settings. With pass-through active, TV menu sounds etc., will not be heard over the A16 headphones. Note that not all TVs have a Pass-through option and some that do only allow it to be activated when the source is HDMI.



A Samsung TV advanced audio menu page

e) REALISER A16 product name over HDMI

Lastly, as a result of enabling CEC handshaking, the product name 'Realiser A16' may appear on the TV screen against the HDMI (eARC) port used to connect back to the A16. However, it is important to remember that this refers to the presence of the A16 as a potential source of video, in other words the normal (non-eARC) mode of operation. For eARC operation you must not select this HDMI source, but some other source. For example, another HDMI port if watching a movie on Blu Ray or Netflix, Disney+ etc., if watching a streaming movie.

Imminent A16 Features (all hardware variants)

- 1) Extend ASYNC PRIR measurements to 24 channels
- 2) Extend OH key group to 10 overhead/height speakers

New A16 Features in Development (all hardware variants)

- 1) Auro3D certification
- 2) Vertical Headtracking mode
- 3) Low delay gaming mode
- 4) Extend optical stabilisation mode to User B head tracking

----- END -----