

Flash XDR/nanoFlash ASI FAQ

1. What is ASI?
 - DVB-ASI is asynchronous serial interface described by EN50083-9. It is used to transport MPEG-2 over coaxial cable, wireless, or fiber optic at 270 Mbps (same rate as SD-SDI). The MPEG-2 (long-GOP) data rate over ASI can be from ~5 to ~15 Mbps for standard definition video and ~18 to ~214 Mbps for high definition video. ASI can also carry MPEG-4 video as well.
2. How do I get it on my Flash XDR/nanoFlash?
 - The ASI feature is a \$995 option added to your Flash XDR/nanoFlash either at the time of purchase or easily enabled via a firmware update in the field using a compact flash card. The option is activated via a file loaded into the Flash XDR/nanoFlash tied to the serial number of your unit.
3. Why use ASI over coax cable when coax can carry uncompressed HD-SDI?
 - At 270 Mbps, quality coax cable can be run >400 meters with modern, quality SDI/ASI transmitters/receivers, while at 1485 Mbps (HD-SDI), coax can only be run ~200 meters. Also, a single coax running ASI can carry 11, 19 Mbps video streams. ASI maximum data rate is an aggregate ~214 Mbps over one cable.
4. How do you do wireless HD?
 - MPEG-2 long-GOP is a very efficient CODEC due to the time based compression algorithms used. This means that the CODEC only saves the video data that has changed over time. I-Frame based CODECs such as JPEG, DV, etc. compress each frame individually, storing extra data that is not necessarily needed. MPEG-2 long-GOP is about 2-3 time more efficient than I-frame based CODECs. This means low bit-rate high definition MPEG-2 long-GOP still looks very good. To do wireless over a reasonable distance, low bit-rate is the key. Wireless modulators/demodulators from companies like Broadcast Microwave Services (BMS) have been tested and verified to work with the Flash XDR/nanoFlash.
5. What about decoding the ASI stream?
 - The Flash XDR/nanoFlash works as both an ASI encoder and decoder. The ASI decoder is only designed to work with a Flash XDR/nanoFlash encoder.
6. Why not make a universal ASI decoder?
 - Affordable universal ASI decoders currently exist.
7. Does the Flash XDR/nanoFlash operate in byte or burst mode?
 - The Flash XDR/nanoFlash currently operates in burst mode.
8. Does the Flash XDR/nanoFlash operate in 188 or 204 byte packets?
 - 188 byte packets are ASI packets without any error correction, while the 204 byte packets incorporate error correction and are used mainly in wireless

application. The Flash XDR/nanoFlash encodes with 188 byte packets. The ASI decode function supports both as wireless modulators/demodulators output a 204 byte packet.

9. How do I get the video/audio into the Flash XDR/nanoFlash?

- The Flash XDR and nanoFlash both accept HD/SD-SDI video with embedded audio. The nanoFlash also accepts HDMI video with embedded audio. The Flash XDR has 2 channel balanced analog audio inputs with phantom power and microphone support. The nanoFlash has 2 channel unbalanced analog audio input to go with the 2 channel embedded audio support.

10. What bit-rates does the Flash XDR/nanoFlash support?

- 5, 6, 7, 8, and 9 Mbit for standard definition (4:2:0)
- 19, 25, 35 Mbit for high definition (4:2:0)
- 50 Mbit for high definition (4:2:2). Note that your decoder will need to be able to support 4:2:2 decoding. The Flash XDR/nanoFlash is able to decode 4:2:2.

11. Why doesn't the Flash XDR/nanoFlash support X/custom bit-rate?

- To make the Flash XDR/nanoFlash simple to use, we pre-defined bit-rates that are common in the industry. If you need a specific bit-rate, drop us an email and we will consider putting it in.

12. What about 4:2:2 ASI encoding?

- The Flash XDR/nanoFlash can encode video at 50 Mbit 4:2:2. This offers supreme quality at the cost of bandwidth.

13. Can the Flash XDR/nanoFlash support both 16X9 and 4X3 standard definition?

- Yes, there is an option in the video menu to specify whether the SD video is compressed as 4X3 or 16X9.

14. What video formats are supported?

- 1080i60/59.94/50
- 1080p30/29.97/25/24/23.96
- 720p60/59.94/50
- 576i, 486i (PAL, NTSC)

15. How is the audio handled?

- The 2 channel audio, either from embedded or analog source, is compressed using MPEG1 layer 2 at 384 Kbps.

16. What is the latency through the encode/decode process?

- Encoding takes approximately 4 frames or ~120 mSec.
- Decode takes approximately 4 frames or ~120 mSec

17. What are the PIDs of the PCR, PMT, program number, video, and audio? Are they programmable?

- Video PID: 0x0810 (decimal 2064)

- Audio PID: 0x0814 (2068)
 - PCR PID: 0x0134 (308)
 - PMT PID: 0x0081 (129)
 - Program number: 0x01 (1)
 - In the near future, a firmware update will be released that will make these values programmable.
18. How have you verified compatibility with ASI decoders and adherence to the ASI specification?
- Tektronix MTS 400 MPEG/ASI analyzer no errors
 - Miranda IRD-3802 ASI decoder fully functional
 - Miranda HD-Bridge DEC+ ASI decoder fully functional
 - Tandberg RX1290 ASI decoder fully functional
 - Sencore IRD3187A ASI decoder fully functional
 - Flash XDR/nanoFlash ASI decoder fully functional
19. Can this be used to generate digital television (DTV) over coax?
- Yes, when paired up with a QAM modulator, you can create a DTV signal that any DTV television can decode and display. This coax can be run long distance and multiple channels can be ganged together. An example is the Blonder Tongue AQM QAM modulator.
20. Can I use multiple units to create multiple channels on a DTV cable network (for a school, hotel, etc.)?
- Yes, multiple units can be paired with QAM modulators to create a multi channel DTV network.
21. Can the ASI output of a Flash XDR/nanoFlash be broadcast over a LAN/WAN?
- Yes, you can use an ASI to USB adapter (like the Alitronika AT4USB), TSReader software, and VLC to broadcast over a LAN/WAN. You can then view the video/audio on a client computer using VLC. Another option is to use an ASI to Ethernet converter.
22. Can the Flash XDR/nanoFlash record to Compact flash while it is encoding to ASI?
- Not at this time.
23. Can the Flash XDR/nanoFlash record ASI to a card and then play off the card to an ASI stream at a later time?
- Not at this time.
24. Can the Flash XDR/nanoFlash still be used as a recorder once ASI is activated?
- Yes, there is a menu option to put the unit in ASI mode. Take the unit out of ASI mode and it acts like a solid state recorder.
25. How much power does the Flash XDR/nanoFlash use?
- The Flash XDR uses 12-14 watts (depending on if analog audio is activated).

- The nanoFlash uses 7 watts.
26. Can the Flash XDR/nanoFlash be configured to power up automatically and start encoding/decoding?
- Yes, this was done to support remote units so if the power was removed, when it came back, the unit would power up and start encoding/decoding as soon as it sees a valid video/ASI signal.
27. Does the Flash XDR/nanoFlash store settings through a power cycle?
- Yes, all settings are stored.
28. How do I start the Flash XDR/nanoFlash encoding or decoding?
- The Flash XDR/nanoFlash automatically starts encoding when it sees a valid video signal and decoding when it sees a valid ASI signal.
29. How do I know the quality of the video is any good?
- We use the Sony 6th generation MPEG-2 CODEC. This is the same CODEC used in the PDW-800 professional XDCAM-HD camera.
30. How can I get more information?
- Please send any questions to sales (at) convergent-design.com or call (720) 221-3861 (US Mountain Time)