

SynFlash

A/V signal reference generator for Syncheck™

Firmware v2.2 README

What has changed?

To use v2.2 (and above), circuit board modification is required of SynFlash units sold before December 2010, including serial numbers F1V3003 to F1V3050. Do not install this update into unmodified SynFlash units, instead use v2.0 or v1E. Units with serial number F1V3051 and later were modified at the factory, no further change is required. Modification instructions, firmware, and an updated user manual are available for free at: <http://www.pharoahaudio.com/syncheckproducthomepage/downloads.html>

Operational changes from v2.0 to v2.2:

- Flash/pips with duration of 1 frame are now standard for all interlaced and progressive formats. (Prior to this version, some formats produced flash/pips of 2 frame duration.)
- New modes have been added for frame rates above 30, giving a choice of either 1 or 2 frame duration flash/pips. For rates of 30 and below, operation is similar to earlier versions. For rates above 30, the Mode switch cycles through 10 choices. The first 5 choices provide flash/pip duration of 1 frame, the remaining 5 choices provide flash/pip duration of 2 frames with slower repetition speeds, and give the appearance that SynFlash is operating with video frame rates ½ as fast as they actually are. (This is similar to how v2.0 operates.)
- “One per second” mode now operates as expected at all supported frame rates and flash/pip durations. The 25p compromise has been eliminated.
- The Field select switch has been relabeled. F1 = “Lower”, F2 = “Upper”. This is only a label change, the switch operation is unchanged.

Operational changes from v1E to v2.0 (v1E is the original firmware shipped with all units prior to Feb 2011.)

- Synflash now starts in 1 flashpip per second mode, when a valid reference with standard frame rate is detected at turn on. **1080p/25 users see note 7.** (Previously, SynFlash started in either 8 frames per flashpip or 10 frames per flashpip, depending on detected frame rate.)
- When a “pull down” frame rates is detected (23.976, 29.97, 59.94) the green reference LED will flash at a moderate rate. All other valid references will cause a steady reference LED.
- When flashpip mode of 8, 10, or 12 frames per flashpip is selected, SynFlash puts a repeating pause into the flashpip repetitions. This update changes the length of the pause. Now, after 12 flashpips a pause equal to 4 additional flashpips occurs. (Previously, after 14 flashpips a pause equal to 2 flashpips occurred.)
- Reference error detection and recovery, especially after a change of video frame rate and/or format, has been improved.
- The placement of individual flashpip start/end points (within any particular video frame) has been altered to more closely match standard active video area. Changes are implemented for NTSC, PAL, 525p, 720p, and 1080p. (Previously, a flashpip event could start up to 4 lines ahead of active video and extended up to 2 lines beyond active video.)
- Battery drain has been reduced by approximately 20 percent during operation. Drain during sleep mode is reduced approximately 50 percent.

The following changes apply to v2.0 ONLY:

- Fixed bug with 1080p tri level sync, to correctly make 1 per second flashpip spacing. **NOTE:** 1080p reference produces a flashpip duration of almost 2 frames. A flashpip begins with active video on a given frame and continues until end of active video in the following frame. Flashpip duration for all other formats (not 1080p) is 1 frame (excluding non-active video area).
- **IMPORTANT:** Changed behavior of 1080p/25 flashpip spacing. Since 1080p/25 flashpip events are 2 frames in duration, as explained in note 6, a true “1 per second” flashpip sequence is not possible with odd numbered frame rates. Therefore, when a 1 per second rate is selected with 1080p/25 reference, the flashpip events alternate spacing between 24 and 26 frames. The *longterm* average spacing is 1 per second, but the *actual* spacing is always either 24 (25-1) or 26 (25+1). The placement of each flashpip event relative to the reference signal is always correct as explained in note 5.