

- iMS4 Synthesizer Firmware Version History

**Applies to iMS4 rev-D onwards.**

**Earlier revisions are not field programmable.**

**FW v4-1-154**

Added support for 32-bit frequency resolution in Single Tone and Tone Buffer modes

Requires SDK v1.8.12

**FW v4-1-153**

- Support for the LTC2499 ADC for RF amplifiers fitted with a Diagnostics board:  
Works in both single ADC mode (one diagnostics board with up to 4 amplifier channels) and split ADC mode (two diagnostics boards with up to 2 amplifier channels each). The firmware polls both addresses to see if there is one or two ADCs on the I2C bus and automatically controls both if it finds two. The firmware will work with either the LTC2499 or legacy AD7998 ADC and will auto-detect either based on I2C address. No software change required. The SDK interface to the diagnostics remains the same.
- One-wire interface support added. This is used for a temperature sensor fitted to a compatible RF amplifier or AO device. The code polls the one-wire master on the diagnostics I2C bus at startup. If present, it will use it to poll the one-wire bus on demand looking for a single temperature sensor only.

The firmware is completely interchangeable between older STCN75 temperature sensors and later DS18S20 one-wire temp sensors. The software usage through the SDK is identical and backwards compatible

The AOD diagnostics can be plugged and unplugged 'live' and the iMS will pick up the change.

- Fixed a bug whereby the GetLoggedHours() function would fail to return any data. Software will now report hours usage correctly for Synth, RFA and AOD
- Fixed a bug where the monitor boards would sometimes appear to be not there and not return temperature readings if the diagnostics bus was busy elsewhere (e.g. reading the ADC).
- Fixed the bug related to the external ADC input.

**FW v4-1-149**

Added support to use Enhanced Tone Mode (ETM ) for rev D's, rev E's and in-system upgrades.

**FW v4-1-144**

Added support for faster double edge FPI clocking. This provides an increase in maximum Image Clock rate from ~2.7 to ~3.5MHz in X-Y deflector applications

**FW v4-1-131**

SDIO is now pipelined equivalently to RF image data so that synchronous output does not corrupt at image clock rates <2.5MHz.

Software reset (using ConfigureNHF) now works correctly: DDS is correctly re-initialised.

2025-1-10

**FW v4-1-129**

Firmware update to provide a programmable delay between the RF output pairs and the Image clock.  
Ch1 delay = Ch2 delay. Ch3 delay = Ch4 delay

**FW v4-1-128**

Firmware update to resolve interlock enable issue.  
Applicable to RF amplifiers controlled via iMS4 rear panel connector J5.  
Previous firmware(s) required the DC supply to the RF amplifier be applied prior to the iMS4 power-on.