Kodak

Thermal 2 Imaging Head

Firmware Version 1.08 Release Notes

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Revision History

Revision	Date	Author	Comments
A-A	20 Feb 2007	Ken Dyck	Created for TH2 firmware V1.08
B-A	14 Feb 2008	Harry Chen	Added fix for focus learn failure in V1.08j

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1. HOST/EXPOSURE HEAD COMPATIBILITY

Thermal 2 head firmware is distributed as part of a controlled release. This firmware has been qualified against certain versions of MPE, MCE and GMCE firmware for each output device. Head firmware should only be loaded as part of a controlled release package. If you are installing a replacement head:

- See **TechPlanet > Output > All CTP Devices Home Page > Controlled releases** to determine if your head is compatible with the device control software and firmware. If it is compatible, you can install the head without changing any firmware.
- If your head firmware is out-of-date, upgrade the head firmware to the version supported by the controlled release.
- If the device control software and firmware are out-of-date, determine if an upgrade path exists for a newer controlled release. If an upgrade path exists, upgrade the host to the correct controlled release. Otherwise, a head downgrade may be necessary.

2. GETTING STARTED

This document provides release information for thermal 2 firmware version 1.08, which is a significant upgrade from version 1.07. If you are upgrading from a version older than 1.07, read the release notes for each intermediate version to see all of the firmware changes that have been implemented.

Note: This document does not provide specific information about any host platform.

Formatting conventions used in this document:

- All references to monitor commands are in `courier font`. Monitor commands for the exposure head are preceded by the `TH2 >` prompt and monitor commands for the host are preceded by the `>>` prompt.
- All references to NVS parameters are in *italics*.
- All references to scripts are **bold**.

3. LASER SAFETY PRACTICES

To use this document, you *must* have attended an exposure head introductory course given by the Kodak service training department, product specialist or engineering support team. You must be familiar with the necessary safety precautions when working with a thermal head.

DANGER! Never operate the host device with the write laser beam on and a door open. Do not use the service bypass jigs to bypass the door interlocks.

4. RELATED RESOURCES

- Thermal 2 exposure head home page: **TechPlanet > Output > Heads > Thermal 2 Head** (http://techplanet.creo.com/output/heads/thermal_2/nav/index.htm)
- Thermal 2 exposure head firmware: **TechPlanet > Output > Heads > Thermal 2 Head > Control/settings > Firmware releases** (http://techplanet.creo.com/firmware/CTP/Head/Thermal2/versions.htm)
- Thermal 2 exposure head controls and settings: **TechPlanet > Output > Heads > Thermal 2 Head > Control/settings** (http://techplanet.creo.com/output/heads/thermal_2/nav/control-set.htm)
- Thermal 2 exposure head troubleshooting: **TechPlanet > Output > Heads > Thermal 2 Head > Troubleshooting** (http://techplanet.creo.com/output/heads/thermal_2/nav/troubles.htm)
- Service Shell: **TechPlanet > Output > Service Tools > Service Shell** (http://techplanet.creo.com/output/service_tools/service_shell/nav/v2-x/index.htm)
- Controlled Releases: **TechPlanet > Output > All CTP Devices > Control/settings** (http://techplanet.creo.com/output/computer_to_plate/all_ctp/nav/control-set.htm)

5. NEW FEATURES

The following features were implemented or modified in thermal 2 firmware version 1.08.

5.1 Fast Focus Log (PR10993)

In an effort to make the focus logging system more usable, features have been added to make it quicker and easier to set up.

New commands added:

- `TH2 > log dump:` This command reads the log buffer in the head and displays it in a compressed format. Using fewer characters in the monitor window cuts the log dump time by more than 80% on average. To parse the compressed data the tii_foclog.spt file must be version 2.120 or later.
- `TH2 > log focsetup:` This command is used to configure the most common focus parameters. If the basic setup is required, this command eliminates the need to run the logsetup.spt script.

New parameters added:

- *log maximumsize*: This parameter specifies how much data to collect. This parameter should be set to the number of samples that should be collected. Use this parameter to limit the log size and decrease download times.

- *log autolog*: When set to true, this parameter tells the head to log sample data during each plot. This eliminates the need to set the log mode to sample each time before collecting data. When the *autolog* parameter is set to true, each plot will erase the data from the previous plot and overwrite it with the data from the current plot.

5.2 Add Items to Filed Access (PR11044)

The following parameters have been added to field access:

- *Bpd beamposition*
- *Bpd holdcurrent*
- *Bpd highgain*
- *Lvd hvtrim*
- *Sys firmwareversion*

The following commands have been added to field access:

- `Adc info`
- `Bbs sample`
- `Bbs sensor <selection> <gain> <offset>`
- `Bpd sample`
- `Bpd stream (on|off)`
- `Foc (on|on init|off)`
- `Foc cal reflect`
- `Ldd calibrate`
- `Ldd stream (on|off)`

5.3 Display Humidity in Percentage (PR11005)

A new command `TH2 > humidity` has been added to display the humidity in the head as a percentage.

6. PROBLEMS FIXED

This section lists problems that have been fixed in thermal 2 firmware version 1.08.

6.1 Remove Laser Unstable Errors (PR10866 & PR10995)

The laser unstable error can have a variety of root causes and can be raised at various times during the plot cycle. One of the common occurrences is when the

laser is being calibrated. Head firmware version 1.08 provides a fix for this situation only.

There are two main causes for the laser unstable error during calibration:

- The first is an error margin that is too tight. Historically the maximum error allowed when in monitor mode was a fixed value. Over the years this fixed error has proven to be unnecessarily tight. To date there have not been any reported image artifacts due to this error so it is largely ignored. For this reason this build of firmware allows the maximum error to be configured in an NVS parameter. This parameter is *ldd maxmonerror*.
- The second main cause for laser unstable errors during calibration is a long settle time for the write laser.

Since each head will have a different settle time for the laser, an NVS parameter has been added. The new parameter is *ldd calsamples*. Each sample represents $1/10^{th}$ of a second. Increasing this parameter will cause the laser power to be more stable resulting in a more accurate laser power during plotting, and removal of the unstable error. Increasing the settle time only increases the time when the laser is going from an off state to an on state. In other words it does not affect the plot to plot throughput if the laser is left on.

6.2 Limit Clamp Time (PR10986)

The write laser power is monitored during the clamp region of the drum during a plot. For systems with large clamp regions the laser servo is running more than necessary, causing clamp errors. The firmware now limits the clamp time to 1.6 ms.

6.3 Limit Focus Table Size

When plotting on very large drums the Thermal 2 head can become too busy due to the time required to display the large focus table. Firmware version 1.08 fixes this issue by allowing the focus table size to be limited by the *foc maxlearnsize* parameter. If the table size is too large, the firmware slows down the sample rate in order to shrink the focus table.

6.4 Make Laser Power Error Abort Plot (PR11297)

In previous firmware versions, the laser error 2341 `Laser Diode: The laser power output is too low, no beam is present` was a warning. If the laser power dropped during a plot this warning would not notify the workstation that the plot had failed. This error is now raised as a fatal error and will terminate the plot.

6.5 Automatic Retry After Focus Learn Failure

A focus learn may fail when a bad focus table from a previous learn is used on a good plate. Firmware version 1.08j fixes this issue by automatically flushing the

focus table after the first focus learn fails, and retrying the focus learn for a second time.

7. NVS PARAMETER CHANGES

The following NVS parameters have changed in thermal 2 firmware version 1.08:

NVS Parameter	Comment	See Section
Log maximumsize	new	5.1
Log autolog	new	5.1
Ldd maxmonerror	new	6.1
Ldd calsamples	new	6.1
Bpd beamposition	Field access	5.2
Bpd holdcurrent	Field access	5.2
Bpd highgain	Field access	5.2
Lvd hvtrim	Field access	5.2
Sys firmwareversion	Field access	5.2
Foc maxlearnsize	new	6.3

8. GLOSSARY OF COMMON TERMS

Host	Generic term referring to any output device on which an exposure head is installed.
Exposure Head	Generic term referring to any Kodak exposure head.
Thermal 2, TH2	The thermal 2 exposure head is a thermal exposure head manufactured by Kodak.
High Addressability, HA	The High Addressability exposure head is a thermal exposure head manufactured by Kodak. The electronics of the HA exposure head are identical to the TH2.
Tfx, TFX	The TFX exposure head is a thermal exposure head manufactured by Kodak.
Thermal 1.0 / 1.7x	The thermal 1.0 / 1.7x exposure head is a thermal exposure head manufactured by Kodak.
Monitor Redirection	The thermal 2 exposure head implements its own diagnostic port. Monitor redirection allows you to access the diagnostic port through the host.
NVS	Non-volatile storage. Note that non-volatile storage includes battery-backed up RAM, flash, EEPROM, and so on.
NVS Parameters	NVS parameters allow the exposure head to permanently save calibration and configuration parameters.
FPGA	Field Programmable Gate Array