Thermal 1.x Exposure Head

Firmware Version 2.00 Release Notes

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Kodak
3700 Gilmore Way
Burnaby, BC
Canada V5G 4M1
(604) 451-2700

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Revision History

Revision	Date	Author	Comments
A	08 May 2006	Ken Dyck	Created for TH1.x release 2.00

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1. HOST/EXPOSURE HEAD COMPATIBILITY

Thermal 1.x head firmware is distributed as part of a controlled release package or patch. This firmware has been qualified against certain versions of MPE and MCE 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 whether or not 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- If your head firmware is out-of-date, upgrade the head firmware to the version supported by the controlled release.
- If the device control software and firmware are out-of-date, determine if an upgrade path exists for a newer controlled release.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.
- To access all the features of version 2.00 thermal head 1.x firmware in the MPE or MCE, you must have the following versions of the thermal modules:

	Minimum thermal module version
MPE	4.34 or later
MCE	2.55 or later

2. GETTING STARTED

This document provides release information for thermal 1.x firmware version 2.00, which is a significant upgrade from version 1.97. If you are upgrading from a version earlier than 1.97, read the release notes for each intermediate version to see all of the firmware changes that will occur in your upgrade.

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 1.x Installation Instructions: **TechPlanet** > **Output** > **Thermal Heads** > **Thermal 1.x > Control/settings > Firmware releases** (http://techplanet.creo.com/firmware/CTP/Head/thermal/versions.htm)
- Thermal 1.x exposure head controls and settings: **TechPlanet** > **Output** > **Thermal Heads** > **Thermal 1.x > Control/settings** (http://techplanet.creo.com/output/heads/thermal/nav/control-set.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)
- Thermal 1/1.7 Upgrade Scripts, available at: **TechPlanet > Output > Heads > Thermal 1/17 > Downloads > Firmware Releases** (http://techplanet.creo.com/firmware/CTP/Head/Thermal/versions.htm)

5. NEW FEATURES

The following features were implemented or modified in thermal 1.x firmware version 2.00.

5.1 Increased Verbosity in Figure of Merit Printout

The Figure of Merit printout has two new items. When you print out the Figure of Merit, it looks similar to the following:

```
65 16 890 973 1200 100
```

The values from left to right are:

1. Figure of merit
2. Largest focus error
3. Sample number of largest focus error
4. Total number of samples per drum rotation
5. Average focus sum (New)
6. Surface reflectivity setting (New)

5.2 Decreased Write Laser Turn on Time

The timeouts for turning on the write laser have been optimized. The write laser now turns on 1.8 seconds faster. This should increase throughput from plot to plot.

Note: As in previous releases, the first time the write laser is turned on after the head is reset, it may take up to a minute for the laser to stabilize.

5.3 Option to Disable Edge Detect Error Checking

For customers experiencing problems with edge detection on Sword Excel and Sword Excel with Ultragrain media, after all other troubleshooting options have been exhausted, this new feature will allow plotting to continue. This feature disables the error-checking mechanism in the edge detect algorithm, and the algorithm will return a found edge on the first threshold crossing. This feature is controlled by changing bit zero (0) in the Feature Enable Mask. See section 5.4 for instructions on using Feature Enable Mask.

Note: Using this feature may cause registration errors due to dirt on the edge detect strip or due to plate burs. It is possible also to introduce focus errors at the edge home edge of the plate.

5.4 Feature Enable Masking

As new features are added to the TH1.x firmware, it is useful to have a way to disable and enable individual features. To allow for this, a new enable mask has been added to the NVS memory. The following table lists the features that can be controlled for version 2.00. For future firmware releases it is likely that additional bits will be defined.

TH1.x Firmware	Feature	Bit Number	Enabled	Disabled
2.0	Removing Edge Detection Error Checking	Zero	One	Zero

5.4.1 Modifying the Feature Mask on an MPE

- If the host is running thermal module 4.33 or later, type

```
>> set head enblmask <mask value>
```

- For hosts running an earlier version of the thermal module, type

```
>> mask range
>> set head r5 <mask value>
```

5.4.2 Modifying the Feature Mask on an MCE

- If the host is running EHI version 2.55 or later, type

```
>> set head enblmask <mask value>
```

- This feature is not supported for hosts running an earlier version of the EHI subsystem.

The following table lists all the valid mask values supported in TH1.x firmware version 2.00:

Mask Value	Features Enabled
0	None

1	Removing Edge Detect Error Checking

6. PROBLEMS FIXED

This section lists problems that have been fixed in thermal 1.x firmware version 2.00.

6.1 Removed the Focus Fade Artifact

The focus fade artifact happens during the second half of the plot. The image fades out and the Figure of Merit value goes to zero. No error is reported, so the only way to know if the focus failed is to inspect the plate or monitor the Figure of Merit.

TH1.x firmware version 2.00 fixes this problem.

6.2 Removed the Creeping Banding Artifact

The creeping banding artifact occurs when plot quality gets worse from plot to plot and the Figure of Merit slowly increases over time. Investigation has shown that this artifact is triggered by plotting on the clamps.

TH1.x firmware version 2.00 fixes this problem.

7. KNOWN ISSUES

Without thermal module version 3.38, the new *hms* block and all of its parameters will not be visible. If, after upgrading the head firmware, you receive error 17672 or 17673, type the following commands:

```
>>nvs save hms cal
>>nvs save hms cfg
```

If the error persists after you type the commands above, you can safely disregard it. This error will not affect machine functionality or plot quality in any way.

See Upgrading the thermal head firmware version 2.00 triggers error 17672 or 17673 (on the Thermal 1.x TechPlanet Troubleshooting page).

8. NVS PARAMETER CHANGES

The following NVS parameters have changed in thermal firmware version 2.00:

NVS Parameter	Comment	See Section
set head enblmsk	new	5.3, 5.4

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.
TH1.x	The thermal 1.0 / 1.7x exposure head is a first-generation thermal exposure head manufactured by Kodak.
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.