

Thermal 2 Exposure Head

Firmware Version 1.07 Release Notes

Document Number
739-00329A-EN

23 Oct 2006

Copyright 2006 Kodak. All rights reserved.

Revision History

Revision	Date	Author	Comments
A	23 Oct 2006	Ken Dyck	Created for TH2 firmware V1.07

Thermal 2 Exposure Head
Firmware Version 1.07 Release Notes

CONTENTS

Revision History i

1. Host/Exposure Head Compatibility 1

2. Getting Started 1

3. Laser Safety Practices 1

4. Related Resources 1

5. New Features 2
   - 5.1 Added a Serial Link Test Command 2
   - 5.2 Stuck Shutter Detection 2
   - 5.3 Improved BBS Algorithm 3
   - 5.4 Redirection Changes 3
   - 5.5 Added Laser Statistics 3
   - 5.6 Added Host Interface Commands 3

6. Problems Fixed 3
   - 6.1 Clarified Error Message for Invalid Stroke 4
   - 6.2 Improved Timing in the Data Path 4
   - 6.3 Fixed Lens Position Table in Short Images 4
   - 6.4 Fixed Group Size Error 4
   - 6.5 Fixed Swath Label in Focus Error Messages 4
   - 6.6 Clear Unused Stroke Values After Beam Balance 4
   - 6.7 Fixed Hotlink Diagnostics 4

7. NVS Parameter Changes 5

8. Glossary of Common Terms 5

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- If your head firmware is out-of-date, upgrade the head firmware to the version supported by the controlled release.
- If the device control software and firmware are out-of-date, determine if an upgrade path exists for a newer controlled release.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 1.07, which is a significant upgrade from version 1.06. If you are upgrading from a version older than 1.06, 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 1.07.

5.1 Added a Serial Link Test Command

The following command was added to the head firmware in 1.07:

```
TH2 > urt txstring <size>
```

This command transmits a known sequence of characters to the diagnostic port of the head. This command can be used together with redirection to verify the communication between the head and host. See the Thermal 2 head page on Techplanet for more information.

5.2 Stuck Shutter Detection

In this release of head firmware, a feature was added to attempt to detect when the shutter is stuck shut during the plot. The shutter sensor is read shortly after the plot begins. If the amount of light seen by the sensor is too large, the following warning is reported:

```
[02342] Laser Diode: Unexpected light on shutter sensor.
```

This feature has limitations due to the architecture of the head.

- The first limitation is the possibility of false warnings being reported. During a plot the host can close the shutter for a retrace swath. Collecting the power samples takes too long to react to this event. For this reason, there is always a risk of a getting a false warning.
- The second limitation is the possibility of it not reporting a shutter failure. This feature will not raise a warning if the shutter is stuck open, or if the shutter swings shut half way through the plot.

Under most conditions the shutter detection should work as expected, but since we can not guarantee its reliability, the feature can be disabled by setting the shutter detection flag to false.

```
TH2 > set bbs shuttermonitor false
```

5.3 Improved BBS Algorithm

If the head fails beam balance, a new secondary beam balance algorithm will automatically be used to make a second attempt to balance the beam.

To disable the secondary beam balance, set the nvs parameters as follows:

```
TH2 > set bbs balanceNED false
```

5.4 Redirection Changes

In previous versions of head firmware, the head diagnostic strings were sent to the host if redirection was set to pass, but not sent if redirection was set to disable. In version 1.07 the diagnostic strings are sent to the host in redirection mode pass and disable.

5.5 Added Laser Statistics

Four new statistics were added to characterize write laser usage. The table below outlines the changes.

Statistic	Index	Description
Power Setting	4	Stores information about what power setting is used for the write laser. Data is collected every time the laser is turned on.
Current Setting	5	Stores information about what current is used for the write laser. Data is collected every time the laser is turned on.
Laser Cycle Time	6	Stores information about how long the laser was left on. Data is collected every time the laser is turned off.
Current Adjust	7	Stores information about how much current adjustment is needed to maintain constant output power on the write laser. Data is collected every time the laser is turned off.

The statistics stored in the head can be read by typing the command,

```
TH2 > sts info
```

5.6 Added Host Interface Commands

Support was added for host commands to allow access to specific NVS parameters in the head. This gives the host greater flexibility when configuring the head.

Note: This feature is only visible to host firmware developers.

6. PROBLEMS FIXED

This section lists problems that have been fixed in thermal 2 firmware version 1.07.

6.1 Clarified Error Message for Invalid Stroke

In previous versions of head firmware, when the stroke offset or width was set incorrectly the error message indicated a hotlink cable issue rather than an invalid stroke. This has been fixed in version 1.07.

6.2 Improved Timing in the Data Path

The FPGA was rebuilt with stricter timing constraints. This should reduce the number of unexplained data path issues that arise from time to time.

6.3 Fixed Lens Position Table in Short Images

In previous versions of head firmware there was a possibility of having incorrect lens position values for short images. If the short image was inside the shadow region of the leading edge clamp, the commanded lens positions for that area would always be set to zero. This has been fixed in version 1.07.

6.4 Fixed Group Size Error

In thermal 2 firmware version 1.05d, a feature was added to allow configurable selection of pixel grouping sizes for the High Addressability head. There was a defect that caused a beam balance to fail when the group size was set to 8. This has been fixed in version 1.07.

6.5 Fixed Swath Label in Focus Error Messages

Focus errors that occur during a plot should indicate the swath number where the fault was raised. Occasionally, with previous versions of firmware, the focus errors reported a swath of zero. Version 1.07 fixes this by always reporting the correct swath number.

6.6 Clear Unused Stroke Values After Beam Balance

When the stoke offset is adjusted, and a beam balance is performed, the stroke table will be cleared for pixels outside of the stroke boundary.

6.7 Fixed Hotlink Diagnostics

In thermal 2 firmware version 1.05d, a defect was introduced that caused the system to not report hotlink cable failures. This has been fixed in version 1.07.

The hotlink self test has also been improved. During the hotlink self-test, you can query the status and monitor performance in two ways:

- If you are using an MCE with EHI subsystem version 2.10 or greater, use the host command `hotlink status`.
- For all other platforms, use the head command `lvd info`.

7. NVS PARAMETER CHANGES

The following NVS parameters have changed in thermal 2 firmware version 1.07:

NVS Parameter	Comment	See Section
bbs shuttermonitor	new	5.2
bbs balanceNED	new	5.3

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