Thermal 3244 Trendsetter
MPE Firmware Version 2.52B Release Notes

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1. Scope

This document describes changes to the Thermal Trendsetter firmware in version 2.52b. Starting at version 2.05x, a lower-case alpha character (either 'a' or 'b') is appended to the firmware version number. The 'a' and 'b' versions of Trendsetter firmware are normally released together. The reasons for this were outlined in the "Scope" section of the release notes for version 2.05x. The essence of this information has been retained and moved near the end of this and all future release notes. If you are unsure of the meaning of the letters appended to the release version numbers please read section 8 "Trendsetter Firmware Version Numbers". In this release, the corresponding 'a' version has not been released as there is no change in functionality for the 'a' version from 2.51a.

2. Preliminary Checklist (read before you begin!)

Please ensure the following checklist is performed before the upgrade is started.

1. ☐ Using the **list version** command, record the following:

   current MPE version: _____

   current head version: _____

2. ☐ Ensure you have the TTSB_252.HEX (for version 2.52b) file available.

3. ☐ Thermal Trendsetter Firmware Version 2.52b is compatible only with Thermal Head Firmware Version 1.62 and higher. If the current thermal head firmware version is less than 1.62, you will need to upgrade the head after the MPE firmware has been upgraded. The current thermal head firmware version at the time of this MPE release is 1.74.

4. ☐ Check that you have an E-version MPE (part no. 10-3692A) and not an older A-version (part no. 10-0733A). It is not absolutely necessary, but **strongly recommended** that the E-version MPE is used with this firmware.

3. Upgrade Procedure

To upgrade the MPE firmware, please perform the following steps:

1. Save all current NVS (see Appendix C).
2. Load new firmware (see Appendix D).
3. If the current head version is 1.74, issue the **nvs upgrade head 1.62** command[1].
4. Issue the **nvs upgrade <previous version>** command (for example: **nvs upgrade** 2.10).
5. Reset the machine with the **reset** command.

[1] The **nvs upgrade 1.62** (yes, 1.62) command is to synchronize the new hdm parameters supported by 2.52 MPE firmware and the head.

4. NVS Changes

The following table details which NVS parameters have changed since the previous release. The **nvs upgrade** command (issued as a standard part of the firmware upgrade procedure) will ensure these parameters are set correctly. Some parameters in this table may not specify an upgrade value. In these cases, the default value or some other aspect of the parameter has changed but the value saved in NVS memory will remain unchanged.

NVS System	Param Name	Old Default	New Default	Upgrade Value	Description	Refer to Section
DEBRIS	**NFC**	**---**	**2226.510**	**2226.510**	Constant to calculate nozzle flow	5.2
DEBRIS	**NFE**	**---**	**2053.038**	**2053.038**	Constant to calculate nozzle flow	5.2
DEBRIS	**BFC**	**---**	**2789.703**	**2789.703**	Constant to calculate bellmouth flow	5.2
DEBRIS	**BFE**	**---**	**1839.091**	**1839.091**	Constant to calculate bellmouth flow	5.2
DEBRIS	**SE**	**---**	**0**	**0**	Elevation of site (above sea level)	5.2
DEBRIS	**PZ**	**---**	**0.125**	**0.125**	Zero pressure reading	5.2
DEBRIS	**PNMAX**	**---**	**6.227**	**6.227**	Maximum nozzle pressure	5.2
DEBRIS	**PBMAX**	**---**	**24.880**	**24.880**	Maximum bellmouth pressure	5.2
DEBRIS	**PBMAXDIFF**	**---**	**2.490**	**2.490**	Max bellmouth pressure difference	5.2
DEBRIS	**FZ**	**---**	**17.000**	**17.000**	Zero flow	5.2
DEBRIS	**FL**	**---**	**65.000**	**65.000**	Flow low threshold	5.2
DEBRIS	**FMIN**	**---**	**71.000**	**71.000**	Flow minimum threshold	5.2
DEBRIS	**FMAR**	**---**	**76.000**	**76.000**	Flow marginal threshold	5.2
DEBRIS	**FMAXDIFF**	**---**	**8.500**	**8.500**	Flow maximum difference	5.2
DEBRIS	**NSI**	**---**	**1**	**1**	Nozzle sensor installed	5.2
DEBRIS	**BOD**	**---**	**300**	**300**	Blower turn off delay	5.2
DEBRIS	**NST**	**---**	**0**	**0**	Sensor type	5.2
DEBRIS	**MAXFCRS**	**---**	**3.000**	**3.000**	Max. flow change rate (Setra)	5.2
DEBRIS	**MAXFCRM**	**---**	**14.000**	**14.000**	Max. flow change rate (Motorola)	5.2
DEBRIS	**PCE**	**---**	**1125.000**	**1125.000**	Pressure correction exponent	5.2
SYS	**SCON**	**---**	**0**	**0**	SCON installed	5.2
SYS	**SBAUD**	**---**	**9600**	**9600**	SCON baud rate	5.2

MEDIA	**DOPT**	**---**	**See 5.3**	**0**	Debris options required for media	5.2
MEDIA	**EI**	**---**	**59**	**59**	Emissions intensity of media	5.2
MEDIA	**ABL**	**0**	**---**	**---**	Parameter removed	5.2
MEDIA	**DR**	**0**	**---**	**---**	Parameter removed	5.2
CONFIG	**SSZ**	**44**	**45**	**45**	Maximum allowable subscan size	5.3

5. New Features

5.1 New Model Support

The following table lists the model types available in this release (all model names in **boldface** are currently offered):

Model	OW	Swidth	Drum Speed	Head Type	Description
TS4AS	**1**	**192**	**185**	**1.7**	**SquareSpot E-Model with no geometric or temperature correction (non-Quantum)**
TS4AF	**0**	**192**	**185**	**1.7**	**SquareSpot E_Model with no geometric or temperature correction (non-Quantum)**
TS41S	0	192	N/A	1.0	Not currently offered (TS4F)
TS47S	1	192	185	1.7	Not currently offered (TS4_S)
TS4_S	**1**	**192**	**185**	**1.7**	**Trendsetter 400 Quantum S**
TS41F	0	192	N/A	1.0	Not currently offered (TS4F)
TS47F	0	192	185	1.7	Not currently offered (TS4_F)
TS4_F	**0**	**192**	**185**	**1.7**	**Trendsetter 400 Quantum F**
TS47V	0	224	250	1.7	Not currently offered (TS4_V)
TS4_V	**0**	**224**	**360**	**1.7**	**Trendsetter 400 Quantum V**
TS81E	0	192	N/A	1.0	Not currently offered, original E-model (TS3E)
TS8AS	**1**	**192**	**185**	**1.7**	**SquareSpot E-Model with no geometric or temperature correction (non-Quantum)**
TS8AF	**0**	**192**	**185**	**1.7**	**SquareSpot E-Model with no geometric or temperature correction (non-Quantum)**
TS81S	0	192	N/A	1.0	Not currently offered (TS8_S)

TS87S	0	192	185	1.7	Not currently offered (TS8_S)
TS8_S	**1**	**192**	**185**	**1.7**	**Trendsetter 800 Quantum S**
TS81F	0	192	N/A	1.0	Not currently offered (TS8_F)
TS87F	0	192	185	1.7	Not currently offered (TS8_F)
TS8_F	**0**	**192**	**185**	**1.7**	**Trendsetter 800 Quantum F**
TS87V	0	224	250	1.7	Not currently offered (TS8_V)
TS8_V	**0**	**224**	**360**	**1.7**	**Trendsetter 800 Quantum V**

The description indicates in parenthesis the previous configuration name for that model. These names should be upgraded to the current model name in the table using the **config <password> update** command issued within the first 2 minutes after resetting the device.

In addition to supporting the current offering of Trendsetters (in **boldface** above), this release also recognizes the following additions to the 4-page configuration lineup: TS4_S and TS4_F. These are 'S and 'F' speed variants of the 4-page configuration that was previously only available in the 'V' speed ('S' speed was available only with the 'EL' Proofer option).

5.2 Universal Debris Removal Cabinet Support

This release provides support for the Universal Debris Removal Cabinet (UDRC) that replaces the Morgan Cabinet. The base model UDRC-B is backwards compatible with the Morgan Cabinet and supports Particulate Only Collection (POC) debris removal. The UDRC-L model supports POC and Particulate and Chemical Collection (PACC) debris removal. The parameters *sys dbin*, *sys scon*, and *sys sbaud* are used to configure the device to support each type of debris removal.

The table below shows what values these parameters must be set to:

Debris Cabinet Type	***dbin***	***scon***	***sbaud***
None	0	0	9600
Morgan, UDRC-B	1	0	9600
UDRC-L	2	1	9600

The previous debris related configuration options in the *media* NVS subsystem (*media <n> abl*, *media <n> dr*) have been replaced by *media <n> dopt* which uses bit positions to enable or disable debris options. Bit position 0 (decimal 1) is for the whisker jet and replaces the *dr* parameter. Bit position 1 (decimal 2) is for POC debris removal and replaces the *abl* parameter. The value of *media <n> dopt* is set when doing an **nvs upgrade** and depends on the values that

were in *abl* and *dr*. For example, if both *dr* and *abl* were set, then *media <n> dopt* would be set to 3 after the **nvs upgrade** command. It is possible to view the values permitted for this parameter on the device by using the **debris option** command. The following table summarizes the possible values for *media <n> dopt*:

Debris Option**	**Options Enabled**
1	Whisker jet only
2	POC debris removal only (no whisker jet)
3	Whisker jet and POC debris removal
4	CTP PACC debris removal only (no whisker jet)
5	Whisker jet and CTP PACC debris removal
8	Flexo PACC debris removal only (no whisker jet) *
9	Whisker jet and Flexo PACC debris removal *

* Option not applicable for Trendsetter
** All options not indicated on this table are invalid.

Due to the potential for releasing dangerous substances when PACC debris removal is not enabled when required (both CTP and Flexo), the parameter *media <n> dopt* is protected from inadvertent modification by means of a password. In order to set a value for this parameter, use the following command:

`set media <n> dopt "hazardous" <debris option>`

The command syntax for the new debris support replaces the previous command of **dr** with the following:

`Syntax: debris [option | (<#>|(whisker|poc|pacc)) [<on|off>] | all off]`

Typical operations are:

debris - displays current task state

debris <debris option> - displays status of debris removal type(s)

debris <debris option> <on|off> - enables/disables specified debris removal type(s)

debris option – displays available debris options and values for those options

The <**debris option**> parameter may be one of **whisker**, **poc**, **pacc**, or a numeric value from the table above (i.e. **debris 3 on** will enable the whisker jet and the POC debris removal).

For more information, please see the UDRC Operator Manual.

5.3 Subscan Size Increased

The subscan size (*config ssz*) has been changed from a default of 44” to 45” in this release. Note that this value is not modified by the **nvs upgrade** command but upon startup of the machine if it is configured as an 8-page machine.

5.4 Head Information Output

With this release, head information is output during a **list version**. Entry Imaging heads will be displayed in the first line of output:

```
Thermal (Entry Imaging) 3244E S Trendsetter - Master Processor Electronics *
```

The speed designation (‘S’ speed in this case) will follow the format of the output device (3230 or 3244). Note that ‘E’ is appended to the format as well.

For a Squarespot head, the output will be similar to the following:

```
Thermal (40W) 3244 F Trendsetter - Master Processor Electronics *
```

In this case, this is a Squarespot head on an ‘F’ speed Trendsetter.

For the Entry Imaging head, the string “(Entry Imaging)” will also be displayed next to the PHC hardware version number in the **list version** command as follows:

```
--- Trendsetter Specific ---
  Trendsetter software version: 2.33b (TEE board Support)
          TEE hardware version: 05
          MPE hardware version: 05
          ALE hardware version: 03
          DPE hardware version: 04  DPE DRAM type = 0x15
--- Thermal Specific ---
      Thermal software version: 2.93
          PHC hardware version: 3 (Entry Imaging)
               PHC LCA version: 3.00
          LVD hardware version: 1
               LVD LCA version: 1.03
         Head firmware version: 1.80 detected
```

Note that this indicates whether an Entry Imaging head is installed in the device where as the first line discussed above indicates whether the device is configured to use an Entry Imaging head.

5.5 Multiple Rotation Acceleration

This release allows for the carriage to accelerate to plotting speed over more than a single drum rotation in order to accommodate higher drum speeds. In the past, the acceleration of the carriage to plotting speed was accomplished in a single rotation of the drum. As drum speeds are increased, the carriage will stall as it is no longer able to reach its plotting speed within a single drum rotation. Allowing the carriage to accelerate over multiple rotations solves this problem.

5.6 Overwriting Disable Option for Test Plots

When performing test plots, it is possible to disable overwriting on a per plot basis by using the **noow** switch to the plot command. This allows non-overwritten test plots to be performed on Entry Imaging devices that force overwriting to maintain image quality. The syntax of the **plot** command is as follows:

`plot [<pattern#> [<tenths>] [h] [noow]`

For series plots:

`plot [<pattern#>] [<series type>] [<series start>] [<series step>] [noow]`

Note that it is not necessary to use the **noow** switch for the **plot synch** series plot as overwriting is turned off for this plot by default. There is no way to enable overwriting for the **plot synch** command.

5.7 Brisque SCSI Reset

This release fixes a problem with Brisque connectivity where a reset of the SCSI bus during startup by Brisque requires the *scsi init* command to be issued on the diagnostic port in order to connect to the device.

5.8 Focus Learn at Edge of Media

When learning focus at the very edge of the media as is done during a diagnostic plot, the first 3 swaths will be out of focus. This can also occur when performing workstation plots that are close to the edge of the media. This release partially corrects this problem. However, due to the limitations of the hardware, the first swath may be out of focus depending on the plate edge.

6. Bug Fixes

6.1 HDM Values Not Saved After Plot

A bug in the 2.50 and 2.51 releases caused values that were modified temporarily but not saved, to be saved in the head and in the MPE after a plot command was issued. For example, if *hdm <n> wpower* were modified from 9.0 to 10.0 without being saved using the **nvs save hdm** command and a **plot** was performed, the value of *hdm <n> wpower* would remain at 10.0 even after a **reset**. This has been corrected in this release.

6.2 Buffer Ready Problem

This release fixes the buffer ready problem that required the cutting of a trace on the ALE board. Please refer to Volume 5, Issue 22 of the PSU for more information on this problem.

6.3 TEC Microswitch Detection

This release fixes problems with microswitch detection of the TE clamps on the backbone.

6.4 TIF Artifact Fix

As S-speed machines use overwriting when plotting, there was a problem in 2.51 that caused artifacts on plate when used in this mode. This release fixes this problem.

7. Known Deficiencies

7.1 Missing Swath Problem

A swath will be missed at the end of a SCSI transfer during a plot under the following conditions:

1. Verbosity set to 2 (*verbose all 2*) **and**
2. Drum speed greater than 250 RPM **and**
3. PACC debris removal enabled (*sys dbin 2*).

This missing swath will be approximately 1.5” from the end of the plate. The message “WARNING: FDPE Hardware not updated after swath <n>!” will be displayed in most cases when this occurs.

7.2 HMS Subsystem Not Accessible

As 2.52 is based on the 2.51 release, support for newer head features in 1.80 is limited. Specifically, the *hms* subsystem is not accessible to the MPE firmware. As a result, checksum error warnings in the *hms* subsystem will be displayed during startup as shown below.

```
*** Exposure Head unsolicited message: code 17672
        [ checksum error in HMS calibration block           ]
*** Exposure Head unsolicited message: code 17673
        [ checksum error in HMS configuration block         ]
```

These warnings can be safely ignored.

7.3 Bench Mode Requires “drum tpr” to be 9000

When running in bench mode (*sys bench* set to 1), the *drum tpr* parameter must be 9000. Otherwise, some registers are not setup properly and plots will fail.

7.4 1600dpi Plots May Fail During a Retrace

A 1600dpi plot will often fail with a carriage state error (error #07017) if a retrace is needed. If this occurs, check the *carriage psteps* value. Reducing the *psteps* value to 29 should temporarily fix the problem. However, reducing the value could cause the carriage to stall at higher drum speeds. Refer to the firmware error page at ErrorNumber07017.html.

7.5 Unexpected Message Dump 0104

When a plot is cancelled during a edge detect and he subsequent completion of edge detect fails, an unexpected message error is displayed similar to the following:

```
    Dumping message information:
        Message type = state
        Message ID: 9
        Message state = reserved
        Task ID: Image 0
        Message command group: 1
        Message command code: 4
        Message flags:
            Preempt:    No
            Reserve:    No
            Release:    No
        Message state = 99
Image 0 : [Unload] received resp_msg, cmd = 051D, type = 1
MPE -> Host: [ U 2 32701 14 0 MPE Software: Unexpected message    ]
        [ in mailbox mbx_image0, message code 0104h        ] (7865)
```

This is not a cause for concern and the plate will be unloaded as expected. Note that this does not happen if the edge detect succeeds after the cancellation of the plot during edge detect.

7.6 PLOT Command Problems

The **plot on** command will not work reliably above 300rpm to check PLL tracking. Note that in order for the **plot on** command to work, the drum speed in the currently active media (*hdm <n> ds*) should be equivalent to the drum speed that is being tested. The firmware uses the currently active media's drum speed setting to determine how to setup the PLL (i.e. to use SCLK64, SCLK32, or SCLK16) not the current drum speed.

7.7 New MPE Boards Crash When Loading FDPE Xilinx

Brand new MPE boards connected to machines without a head installed will crash upon startup of the firmware due to inability to load FDPE Xilinx. This does not normally affect field service but is more of an issue for those in startup and production. Until a fix is found, ensure that the **nvs init state creo** command is used prior to loading current firmware. It may also be necessary to disconnect the FDPE board temporarily in order to start up the firmware initially.

8. Trendsetter Firmware Version Numbers

Trendsetter ‘a’ firmware releases (Part No. 19-3049x-x)

Trendsetter firmware version numbers with an ‘a’ appended denote support for machines using the original plate loading electronics. These systems use two electronic boards commonly known as the **L**oad-**U**nload **E**lectronics (LUE) board and the **T**rendsetter **I**nter**F**ace (TIF) board.

All Trendsetters sold before July 1, 1997 are considered “base” models without the potential to be fitted with the new “autoloader” or “proofing” options. Such machines still require ongoing support for bug fixes and any other new functionality common to all types of trendsetter regardless of its plate loading electronics.

Note also that ‘a’ version Trendsetters do not support the various speed designations available at the time of this release (i.e. S, F, and V).

Until further notice, all firmware that supports base model Trendsetters using LUE and TIF boards will have a version number with the suffix ‘a’. The Creo part number for these firmware releases is 19-3049x-x. This is the original part number for all previous Trendsetter firmware releases up to and including 2.04.

Trendsetter ‘b’ firmware releases (Part No. 19-3143x-x)

Trendsetter firmware version numbers with a ‘b’ appended denote firmware that supports the new plate loading electronics. This system uses a single electronic board that incorporates the functionality of the original LUE and TIF boards. The new board is known as the **T**rendsetter **E**ngine **E**lectronics (TEE) board. The TEE board is more than just a physical condensation of two earlier boards. It also contains the necessary electronics to support the optional “Autoloader” and “Proofing” options for the “base-model” Trendsetter machine.

Until further notice, all firmware that supports base model Trendsetters using TEE boards will have a version number with the suffix ‘b’. The Creo part number for these firmware releases is 19-3143x-x.

Appendix A: Formatting Conventions

The formatting conventions used in this document are as follows:

all NVS parameters are in italics and

commands to be typed into the diagnostic terminal are in bold as well as the diagnostic command responses.

Appendix B: Common Acronyms

MPE	Main Processor Electronics
CTP	Computer to Plate (this includes Trendsetters and Platesetters)
NVS	Non-Volatile-Storage
TTS	Thermal 3244 Trendsetter
T324	Thermal 3244 Platesetter
GVLF	Green VLF Platesetter
TVLF	Thermal VLF Platesetter
GVTS	Green VLF Trendsetter
TVTS	Thermal VLF Trendsetter

Appendix C: Backing UP and Restoring NVS RAM

The NVS RAM in recorder machines provides the following:

- Storage for machine-dependent "configuration and calibration parameters" that must remain intact between power cycles.
- Storage for "state variables" that allow a machine to resume where it left off if power is cycled during loading or imaging.

At power-up, the contents of NVS RAM are copied to regular volatile RAM in the recorder and that is where they are used by the firmware. If any of these parameters are changed for any reason they must be copied back to NVS RAM or the changes will not be preserved after the next power-up. Changing individual NVS parameters is therefore a two-step process:

1. A parameter is first changed in a volatile RAM copy of the parameter
2. The changed value is saved (i.e. copied) to the NVS memory

Generally, there is no need to change "state" variables in NVS RAM since they simply contain a record of where the machine is (or was) during various tasks.

Whenever firmware is upgraded in a recorder machine, some of the NVS calibration and configuration parameters will typically need to be upgraded as well. Simply loading new firmware into a machine will not upgrade the NVS. Steps must be taken to ensure that the NVS is properly configured for the new firmware. This process may be partly or wholly accomplished with the **nvs upgrade** command available from the recorder monitor. In some cases, however it will be necessary for the installer to make certain upgrade configurations depending on the hardware that is present in the particular machine. Instructions on how and when to use **nvs upgrade** as well as any special machine-dependent upgrade procedures will be included near the beginning of this release note.

IMPORTANT: BEFORE UPGRADING THE FIRMWARE OF ANY RECORDER MACHINE YOU MUST BACKUP THE CONTENTS OF THE CURRENT NVS MEMORY IN CASE IT BECOMES NECESSARY TO REVERT TO THE PREVIOUSLY INSTALLED VERSION OF FIRMWARE!

Procedure to Backup and Restore NVS

Previous release notes specified two separate procedures for backing up and restoring NVS memory. There is now only one simplified procedure to follow. This procedure is used to save the entire 32k of NVS RAM. The "**fsave all**" monitor command is used to download the NVS memory to a file and the "**fload memory**" command is used to upload the NVS memory from a file. An overview of the general procedure is shown below

Backing up NVS:

1. Open a log file to collect data that is displayed on the monitor screen
2. Issue a monitor command to allow the desired data to be displayed (and therefore also collected in the log file).
3. Close the log file

Restoring NVS:

1. Issue a command at the monitor that readies the recorder to read a log file.
2. Send the log file to the recorder

Detailed instructions for accomplishing these general steps using various terminal configurations are given in further on in this appendix. An NVS dump file made according to the procedure that follows will be exactly 79508 bytes long. If your file is exactly this long there is a very high probability that it is not corrupt. If you require more assurance concerning the integrity of the file you may examine it with a text editor or listing utility and check for the following:

- The file must consist of exactly 995 lines.

- The first 992 lines will be 78 characters long and look similar to the following

```
S2258000004E56532056657273696F6E203200AAAA55555555555555555555555555555555AABD
```

- Line 993 will be 76 characters long and look similar to the following:

```
S224807FE05555555D5555755575D55DD775555555AA6EAAABBAAAAAAE998E823A4A9FFED671
```

- Lines 994 and 995 (the last two lines) will look exactly like this:

```
S9030000FC
END OF NVS MEMORY DUMP - Close log file and hit [Y] (Y/N)
```

Terminal Program Setup

The PCPLUS terminal utility is usually used for NVS backup and restore. This utility may be run from either DOS (or a DOS window) or it may be used with a "Windows" style interface. It is assumed that the terminal program will be run on the system workstation. If it is run on another PC it may be necessary to change all the hard drive reference letters in this appendix from E: to C:. Any files created on the C: drive of a separate PC (i.e. terminal) should be copied over to the workstation on drive E: for archival purposes The following subsections show the necessary changes to the default configurations of the PCPLUS programs.

Setting up PROCOMM Plus for DOS (version 2.0)

Hit "Alt-S" and select "Protocol Options" and "General Options"
Set "Abort transfer if CD lost" to "No"

Hit "Esc" to return to "Protocol Options" menu and choose "Ascii"
Set "Character Pacing (milliseconds)" to "0"
Set "Line Pacing (1/10 sec)" to "0"
Set" Pace Character" to "126"
Save and exit

Setting up PROCOMM Plus for Windows 95 (version 4.0)

Under "Setup" - "System" - "System Options…"
Select "Data" Tab
Select "Path" Tab
On the "Capture Path" entry line, set a path for the capture file. For example, E:\NVS (This specifies only the capture file path, not the filename itself). The filename will be prompted for at the time a download is begun.
Select "OK"

Under "Setup" - "Data" - "Transfer Protocol…"
Under "CR options - upload" select "Don't translate CR"
Under "LF options - upload" select "Don't translate LF"
Under "CR options - download" select "Don't translate CR"
Under "LF options - download" select "Don't translate LF"
Be sure to uncheck the "Use" box and specify "~" for the line pace character
Select "OK"

Under "Setup" - "Data" - "Setup Files…"
Under "Meta Keys" select "None"
Under "Translate Table" select "None"
Under "Capture" select "None"
Select "Setup" (brings up "Capture File Options" window).

In "Capture File Options" window"
Disable "Write text as it appears on screen"
Disable "Write filtered text with no emulation escapes"
Enable "Write raw text including all escapes"
Enable "Overwrite existing capture file"
Enable "Query for file name when capture is started"

Detailed NVS Backup Procedure

Steps	Using PCPLUS in a DOS window	Using PCPLUS with windows interface
Prepare recorder to dump all NVS	**fsave all** Y/N prompt appears, ignore for now	**fsave all** Y/N prompt appears, ignore for now
Open log file	**Alt-F1** Pop-up window prompts for a filename	**Alt-F1** Pop-up window prompts for a filename
Name log file	Enter a path plus a name that includes the firmware version before upgrade e.g. **E:\NVS\xxx.MEM** (where xxx is the version number).	Enter filename (without path or extension) that includes the firmware version before upgrade. e.g. **xxx.** (where xxx is the version number). Pcplus adds a ".CAP" extension to this name and uses the previously defined path. Click "OK".
Dump entire NVS to log file	**Y** Data is displayed as it is dumped. The dump will take a few minutes. Eventually the following message is displayed: END OF NVS MEMORY DUMP - Close log file and hit [Y] (Y/N)	**Y** Data is displayed as it is dumped. The dump will take a few minutes. Eventually the following message is displayed: END OF NVS MEMORY DUMP - Close log file and hit [Y] (Y/N)
Close log file	**Alt-F1**	**Alt-F1**
Confirm end of download	**Y**	**Y**
Rename file	Not necessary	Rename the file: **E:\NVS\xxx.CAP** To: **E:NVS\xxx.MEM**

Detailed NVS Restore Procedures

Steps	Using PCPLUS in a DOS window	Using PCPLUS with windows interface
Initialize NVS	**nvs init all creo** All NVS firmware defaults written to NVS	**nvs init all creo** All NVS firmware defaults are written to NVS
Reset the recorder	**reset** Ensures NVS is copied to active RAM	**reset** Ensures NVS is copied to active RAM
Prepare recorder to receive all NVS	**fload memory** "Begin upload…" message appears	**fload memory** "Begin upload…" message appears
Prepare to upload	**PgUp** Pop-up window prompts for protocol	Select "Data" - "Send File"
Select ASCII	**A** Filename prompt appears	ASCII protocol was already selected when PCPLUS was set up.
Enter NVS filename	Enter the path and name of the previously saved configuration file e.g. **E:\FW\xxx.MEM** after hitting ENTER the upload will begin. Pace characters are displayed as the upload progresses. This stops when the upload completes. This will be followed by a "Transfer Successful" message.	Navigate to **E:\FW\xxx.MEM** and Select "Open" Button. The load begins and a "progress" window appears that tracks the progress of the load. When transfer is 100% done a "Transfer Successful" message will appear. Close the progress window.
Reset the recorder	**reset** Ensures NVS is copied to active RAM	**reset** Ensures NVS is copied to active RAM

Appendix D: Loading Firmware

Before loading firmware it is assumed that the installer is running either "Procomm Plus" for DOS or "Procomm Plus" for Windows 95 at the system workstation. It is further assumed that all of the necessary program options have been set up as described in Appendix C "Backing Up And Restoring NVS" and that the "Allegro" software is not running on the workstation.

Steps	Using PCPLUS in a DOS window	Using PCPLUS with windows interface
Copy firmware to workstation hard drive:	Create a directory on the WS hard drive to hold the new firmware. Give it a meaningful name that includes the version number for example: **E:\FW\xxx**	Create a directory on the WS hard drive to hold the new firmware. Give it a meaningful name that includes the version number for example: **E:\FW\xxx**
Jump to the bootstrap loader	**reset boot** (Bootstrap loader will sign on and display messages)	**reset boot** (Bootstrap loader will sign on and display messages)
Change baud rate to 38400	hit **Alt-P**, select menu item **7**, hit **Esc**	Click baud rate button and select 38400
ready to load	**fload bank 0**	**fload bank 0**
Prepare to upload	**PgUp** (A pop-up window prompts for protocol)	Select "Data" - "Send File"
Select ASCII	**A** (Filename prompt appears)	(ASCII protocol is already selected)
Enter firmware filename	Enter the path and name of the firmware. Hitting ENTER starts upload Pace characters displayed during load and stop when complete	Navigate to the path and firmware file name. Select the "Open" The load begins. Progress is graphically displayed.
Reset	**reset**	**reset**
Change baud rate to 9600	hit **Alt-P**, select menu item **5**, hit **Esc**	Click baud rate button and select 9600

Appendix E: NVS Backup/Restore and Loading Firmware using Service Shell

Terminal Program Setup

For a detailed terminal setup guide please refer to the system documentation under the "Help" menu in Service Shell.

Service Shell is composed of two parts: Service Host and Service Shell Client. The Service Shell is a **client (**Service Shell Client) application that connects to a remote service host **server (**Service Host) to provide access to the CreoScitex devices. Therefore, in order to communicate with the device, you have to ensure that Service Host is running. If the Service Host is started, you should have a "Service Host" icon  in the system tray.

- If you do not have this icon, you need to start Service Host. To do so, select Start menu/Program/CreoScitex Service Shell and click on "Service Host".
- If you do have this icon and it is red, right click on it and select "Start Service".

When the Service Host is running, you can connect to it using the Service Shell Client. To start the Service Shell Client, select Start menu/Program/CreoScitex Service Shell and click on "Service Shell Client". You will then need to enter the name of the server you wish to communicate with. The Server name is simply the name of the machine running Service Host connected to the device you wish to talk to.

To set up the proper baud rate (9600), com port and monitor fonts go to the "File" menu and select "Preferences…". In the preferences window, select the "COM Port – MPE" preference and then click on the "Edit Preferences…" button to make the required changes.

Important!

When the firmware prompts you for a "Y/N" reply or more generally, when the firmware prompts you for a single character reply, as in the example below:

Example:

```
>> fsave all

Begin download and then press 'Y' to continue ('N' to cancel) (Y/N)
```

You should always follow your answer by the <shift enter> combination rather than only the <enter> key. When Service Shell detects the <shift enter> key, it does not append the carriage return character to your answer.

In cases where the <shift enter> combination is specifically required, the following is an example of the output you would get if you were to use the <enter> key only:

```
>> fsave all
```

```
Begin download and then press 'Y' to continue ('N' to cancel) (Y/N)
y
S2258000004E56532056657273696F6E2032000000280000004102200038183040084000302028
Download Aborted!
```

Note: For newer version of firmware (January 2001) both <shift enter> and <enter> keys will be accepted by the firmware.

NVS Backup Procedure: manually cutting and pasting data

We recommend that you minimize the number of diagnostic messages sent to the monitor window when highlighting NVS backup text to copy. To do so, make sure the device is idle and that all verbose fields are set to zero ("set verbose xxx 0"). Although this is not mandatory, it will greatly facilitate the task.

Steps for Backing up NVS:

- In Windows, open notepad through start menu/programs/accessories.
- In the Service Shell Device Monitor press <enter> a few times to ensure you are at the bottom of the monitor screen.
- Set a bookmark (handy feature) by right clicking the mouse in the monitor window. Select a bookmark colour of your choice. The bookmark will make it easy for you to find the beginning of your NVS backup.
- Enter the command "**fsave all**". Once the device has finished outputting the backup data to your monitor screen (approx. 5 min), click on the coloured square on the right, which matches the colour bookmark that you set. This will bring you back to the beginning of the NVS backup.
- Start highlighting with the first line that looks similar to this:

```
S2258000004E56532056657273696F6E203200AAAA55555555555555555555555555555555AABD
```

Use the "Page Down" key or scroll down with the scroll bar on the left until you reach the end of the back up. The end of the backup will either look like this:

```
S9030000FC
END OF NVS MEMORY DUMP - Close log file and hit [Y] (Y/N)
```

Or like this depending how recent the firmware version is. (Firmware version and compile date will vary depending on the version you are using):

```
S9030000FC
Thermal VLF Trendsetter - Master Processor Electronics *
```

```
      MPE Firmware Version 1.50

            Feb 02 2001 11:48:42

END OF NVS MEMORY DUMP - Close log file and hit [Y] (Y/N)
```

- Once you have the entire text highlighted (include version information as well, it will not interfere when loaded back into the device), right click on the highlighted portion and select “Copy to Clipboard”.
- Make your notepad window active, right click on that window and choose Paste from the menu. Your notepad should now contain the hex data you copied from Service Shell. Ensure that the file has no blank lines before the hex data starts, otherwise the file will not load properly.

NO BLANK LINES AT THE TOP OF THE FILE!

```
S2258000004E56532056657273696F6E203200AAAA55555555555555555555555555555555AABD
```

- Save the notepad file as serial#nvs.txt. Example: B525nvs.txt

NVS Restore Procedure

Restoring NVS with Service Shell requires that you know the path to the location of your backup file. If you are downloading firmware remotely, the file to be downloaded has to be located on the Server, which is the computer directly connected to the machine.

In the Service Shell Device Monitor enter the command “**fload memory**”. After the message “Begin ASCII transfer now” appears in the device monitor window, enter the “**sendfile** pathname\filename” command.

Example:

```
>> fload memory
Loading memory:
      File format     = Motorola S-Record
      Pace character  = '~' (ASCII value 126)
      Begin ASCII transfer now ...
sendfile c:\temp\B525nvs.txt
```

Service Shell will then proceed to upload the NVS backup file. A progress bar will be displayed at the bottom. You may close the download progress window, after the download is completed, by clicking on the  at the bottom right corner.

Please Note:

1) If you forget to enter the "**fload memory**" command before issuing the **sendfile** command the following will be displayed:

```
sendfile c:\temp\B525nvs.txt
>> S2258000004E56532056657273696F6E203200000028000000410220003818304008400030202 8
m                                                    ^m Invalid command
>> S225800021002220000000084000000800040840040048000800280000200030000218800400F1
m                                                    ^m Invalid command
>> S225800042800020001104282000004024081010006420800420200008105404080020200404 87
m                                                    ^m Invalid command
>> S225800063022020
<MPE> Can't send data chunk at offset=0x00000000
m              ^m Invalid command
```

2) Downloading from a mapped drive may not work depending on the version of Service Shell you are using. If you get the error shown below using a mapped drive and you are positive you mapped the drive correctly, copy the file to the local server drive. Retype the **sendfile** command with the corrected path name and press enter.

Error you may get using a map drive:

```
<ERROR> Cannot find firmware file
```

Loading Firmware

Loading firmware with Service Shell requires that you know the path to the location of your firmware file. If you are downloading firmware remotely, the file to be downloaded has to be located on the Server, which is the computer directly connected to the machine.

To download firmware, use the following command: "**download** pathname\filename"

Example:

```
download d:\temp\tvts_150.hex
```

Service Shell will then proceed to download the firmware file. A progress bar will be displayed at the bottom. You may close the download progress window, after the download is completed, by clicking on the ☒ at the bottom right corner.

If you are upgrading firmware you must enter the **nvs upgrade** command. To use the command correctly you must know the version you are upgrading from.

Example:

If someone was to upgrade from version 2.5 to 3.0 he or she would enter:

nvs upgrade 2.5

After the firmware version 3.0 was loaded.

Firmware download filename accepted by Service Shell:

It is important when downloading firmware through Service Shell using the **download** command to use the official ".hex" filename. Service Shell detects the kind of download it has to perform based on the filename. Therefore, if you enter a filename that is not recognized by Service Shell, the download will not proceed. For MPE based machine, the name convention is:

Format: UUUU_xxx.hex,

UUUU - the four letter machine identifier

xxx - the firmware version.

Example: TTSB_250.hex

Aborted Download

When initiating downloading the current firmware is first erased off the MPE before the new firmware is loaded. If the firmware load is interrupted by a corrupt file or is manually aborted during the loading process, all that will remain is boot code. No prompt will appear because the MPE is now running boot code, which is set at a different baud rate (38400 bps). The normal diagnostic baud rate is set at 9600 bps. Even though no prompt shows up, do not be alarmed. The **download** command will still work and the firmware download can be restarted. Therefore, if this happens, reenter the **download** command. (Note: the up arrow brings back previously entered command!)

Download command: "**download** pathname\filename"

Please Note:

Downloading from a mapped drive may or may not work depending on the version of service shell you are using. If you get the following error using a mapped drive <ERROR> Cannot find firmware file and you are positive you mapped the file correctly. Copy the file to the local server drive. Retype the **download** command with the corrected path name and press enter.