Thermal Trendsetter Spectrum
MPE Firmware 1.40 Release Notes

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1. SCOPE

This document describes the important changes to the Thermal Spectrum firmware that come with version 1.40. It applies whether you are upgrading from a previous version of Spectrum MPE firmware.

The intended audience for this document is all Spectrum development, integration, production, field service and response center personnel. There is a separate document intended for customer eyes, which describes the new features in this release but excludes the CreoScitex-specific information included in this document.

Common acronyms used in this document are defined in Appendix A and the formatting conventions are outlined in Appendix B.

2. PRELIMINARY CHECKLIST (READ BEFORE YOU BEGIN!)

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

1. ☐ If you are upgrading a base Trendsetter to a Spectrum (installing the proofing hardware for the first time), you must first upgrade the base Trendsetter to MPE firmware version 2.20b. If this is a base Trendsetter you are upgrading, use the **list version** command and record the following.

   Current Trendsetter MPE version: _____

   You must then upgrade the MPE firmware to base Trendsetter **V2.20b** before continuing. Ensure that you have read the Thermal 3244 Trendsetter MPE Firmware Version 2.20b Release Notes and have the firmware available.

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

   Current MPE version: _____

   Current head version: _____

3. ☐ Ensure you have the TTSS140.HEX file available. This is the Spectrum firmware 1.40.

4. ☐ Version 1.40 is only compatible with Head Version 1.62 and above. If the current head version is less than 1.62, then you will need to upgrade the head after the Spectrum MPE firmware has been loaded. Ensure that you have read the Thermal Head Firmware Version 1.62 Release Notes and have the firmware available.

5. ☐ Ensure that you allocate at least 6 hours for upgrading and testing the system.

3. UPGRADE PROCEDURE

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

1. Save all current NVS using both the **fsave all** command (see Appendix C) and the **nvs dump** command. Save the files to the workstation directory E:\Service\Nvs. Use the file names S<#>_<nnn>.mem for the fsave all file, and S<#>_V<nnn>.nvs for the nvs dump file (# is the machine number, and nnn is the current (before upgrade) version number.

   fsave all file name: _____

   nvs dump file name: _____

2. Load new firmware (see Appendix D).

3. Reset the machine with the **reset** command.

4. This f/w release is only compatible with Thermal Head firmware 1.62 and above. If the thermal head firmware is less than 1.62, you will need to upgrade the Thermal Head firmware **NOW**. See Thermal Head Firmware Version 1.62 Release Notes for more details.

5. Reset the machine with the **reset** command.

6. Issue the **nvs upgrade <previous version>** command (for example: **nvs upgrade 1.24**) where <previous version> is the current MPE version recorded above in *Section 2. Preliminary Checklist*. Ensure that this command completes successfully with the **upgrade complete** message and no error messages.

7. All the NVS values changed during the upgrade are displayed on the diagnostic monitor. Please save these as a log file to the workstation in the following format:

   E:\NVS\UPGRADE*yymmdd*.txt where *yymmdd* is the date of the upgrade.

   Upgrade file name: E:\NVS_____.txt

8. If error #19000 *Air Supply Below Threshold* or error #15397 *Vacuum ADC calibration required* occurs, you will need to re-calibrate the pressure and vacuum sensor by calling **cal pressure** and **cal vac** command. See Appendix E. step 4 for more detail.

9. Perform a drum calibration to avoid dead-band errors. This procedure can be fount at http://intranet.creo.com/support/docs/733176aa.PDF

10. Perform a load cal to avoid incorrect plate size errors. This is done by entering **load <*mainscan size in mm*> cal**

11. If the machine is setup with Thermal Blueline media (or Thermal Dylux media), you need to modify its media code. Type **set media *n* mcode 6** followed by **nvs save media *n***. ***n*** is the media number of the Dylux media. Once you are done, type **list media** to see the available media.

12. Test the loading and unloading of all carriers on site via workstation command. This is done by selecting **load carrier/unload carrier** menu item on workstation menu bar.

13. Save all current NVS using the **nvs dump** command. Save the files to the workstation directory E:\Service\Nvs. Use the file names S<#>_V140.nvs for the nvs dump diff file (# is the machine number).

nvs dump file name: _____

4. TROUBLE SHOOTING TIPS

The following are possible problems you may encounter after the upgrade and the solutions.

4.1 Unable to Approve Proofing Jobs in Print Console

After the upgrade, when the user attempts to approve a proofing job, the following warning occurs:

Warning: Job with ID: 5 cannot be approved because device proof format "30x40_Proof" is not configured in the device

However, the user was able to approve the same job prior to the upgrade. The most likely cause for this is “missing media”. Try checking the following:

1) In Print Console, click the *Configuration* button, and then select the *Device Media* folder.
2) In the *Device Media* folder, click on each of the color in the proofing media, and check the *Media Number In Device*. If a proofing color is properly setup in the device, this number IS NOT ZERO.
3) If you find a proofing color with *Media Number In Device = 0*, you may click the Delete button to remove the media if it is no longer used. Alternatively, you may check under the **set media *x*** and the **set hdm *y*** in firmware. Make sure both the **name** and **color** fields are setup properly “character-by-character”, “case-sensitive”. Once all fields are corrected, re-start Print Console.

In addition, you may also want to check whether the proof type is setup correctly in the firmware as well as in the Print Console.

4.2 Unable to make proof - Error 17038 “special plot mode not supported”

The likely cause of this is the *media owp* parameter is not setup correctly. Please make sure *media owp* = 1.

4.3 Unable to image at 1600dpi due to various carriage errors

For Spectrum EL, 1600dpi (as well as 1200dpi) are not supported. Remove these resolutions from the mode parameters.

For other models, try reducing the *carriage psteps* to 26.

4.4 Unable to load plate/carrier due to “larger than expected” error

Try setting *al soff* to 170. In addition, try running **load <mainscan size in mm> cal** with a plate.

4.5 Plating at V speed (>300rpm) causes images to be scrambled

Make sure *sys ntu* is set at 40.

4.6 V speed machine has image artifacts caused by debris on plate/proof

Make sure *sys dbin* is set at 1 and the debris removal cabinet is properly installed and function properly.

4.7 Unable to make plate in narrow mode for EL models

Make sure *head swidthn* is either 120 or 224. If *head swidthn* is 120, also make sure that the *hdm n dsn* is not setup more than 250rpm.

4.8 Error 7005 “Carriage Operation Timed Out” for EL models

This error occurs when making a narrow mode plot with high drum speed (>250 rpm). Reduce the *hdm n dsn* shall solve the problem.

4.9 Unable to make proof in narrow mode

Narrow mode proofing is yet to be supported. Wait for Version 1.50 release.

4.10 Unable to pickup trailing edge clamps reliably

Try increasing *aldly tes* to 0.3 seconds.

4.11 Unable to load Imation or Kodak proofing media reliably

Make sure *alproof sus* is 0.

4.12 Various External Debris Blower Errors

The external debris blower is only available on the V models. For all other models, check the following:

- *Sys dbin* is 0. This indicates whether external debris blower is installed.
- *Media abl* is 0. This indicates the media requires the debris blower in order to image. Since only V models has debris blower installed, all other models should set the *media abl* to 0.

Remember to save the NVS **and** reset the machine/workstation in order to clear the error messages.

4.13 Cannot configure Media Index in Allegro Workstation Due to Invalid Exposure

This problem also causes the Allegro to eject the proofing carrier every time during startup. Try the following steps:

1. Shut down the Creo Allegro software.
2. Open a DOS box on the workstation.
3. Run the registry editor by typing regedt32 at the command line.
4. Select the window with HKEY_LOCAL_MACHINE highlighted at the top of the window.
5. Use the mouse to select the following directory:

   HKEY_LOCAL_MACHINE/SOFTWARE/Creo/RIPSW/V1.xx/MediaTypes/

6. Delete the DefaultExposure key from each of the media if the DefaultExposure is set to 0. The **Delete** function is in the **Edit** menu.
7. Exit the registry editor program and restart Allgro.

5. NVS CHANGES

The following table details which NVS parameters have changed in this release.

5.1 New NVS Parameters

The following table details which NVS parameters are added in this release

NVS System	Param Name	Default	Range	Upgrade Value	Description	Refer to Section
Head	**hsslope**	**0.000**	**0 to 32.767**	**0**	hp_sum_slope - Head power sum calibration slope.	
Head	**hsoffset**	**0**	**-32767 to 32767**	**0**	hp_sum_offset - Head power sum calibration offset.	
Hdm	**sv**	**2.770**	**0 to 11.000**	**2.770 or PI*ds*D**	surface_velocity	
Hdm	**svn**	**2.770**	**0 to 11.000**	**2.770 or PI*ds*D**	surface_velocity_nrw	
Hdm	**sens**	**170.000**	**0 to 500.000**	**170.000**	nominal_sensitivity	
Hdm	**sensadj**	**0**	**-100% to 100%**	**0**	sensitivity_adjust	
Hdm	**Plots**	**0**	**0 to 65535**	**0**	total_plots. Reserved for future use.	
Hdm	**Fplots**	**0**	**0 to 65535**	**0**	Failed_plots. Reserved for future use.	

Hdm	**Retrace**	**0**	**0 to 65535**	**0**	Total_retraces. Reserved for future use.	
Hdm	**Edges**	**0**	**0 to 65535**	**0**	total_edge_detects. Total number of successful edge detect performed on this media.	
Hdm	**fedges**	**0**	**0 to 65535**	**0**	failed_edge_detects. Total number of failed edge detect performed on this media.	
Alproof	**masktray**	**0**	**0 to 1**	**0**	Mask the proofing cassette sensor, used for engineering.	
Alproof	**Dsslow**	**-4.000**	**-100.000 to 0**	**-4.000**	Reserved for future proof handling.	
Alproof	**vrwait**	**25**	**0 to 255**	**25**	Reserved for future proof handling.	
Alproof	**pinchdist**	**50**	**0 to 255**	**50**	Reserved for future proof handling.	
Alproof	**eover**	**0**	**0 to 250**	**0**	Reserved for future proof handling.	
Alproof	**sus**	**0**	**0 to 0**	**0**	Reserved for toggling future proof handling. Must be set to 0 for proper loading/unloading of Imation or Kodak media.	
Alproof	**uramps**	**1**	**1 to 1**	**1**	Reserved for future proof handling.	
Media	**ow**	**0**	**0 to 7**	**1**	overwriting mode	
Media	**owp**	**1**	**0 to 65000**	**1**	ow_pattern – overwriting pattern used.	
Xmedia	**name**	**“”**		**“”**	media_type_name - Name given to extended media.	
Xmedia	**colour**	**“”**		**“”**	proofer_colour - Colour of extended media.	
Xmedia	**bmedia**	**0**	**0 to 16**	**0**	base_media - Base media from which the extended media type gets its imaging parameters.	

5.2 Changed NVS Parameters

The following table details which NVS parameters have been changed in this release

NVS System	Param Name	Old Default	New Default	Range	Description
Drum	**pgh**	**2000**	**1000**	**0 to 65534**	prop_gain_hall
Drum	**igh**	**500**	**0**	**0 to 65534**	integ_gain_hall
Drum	**epos**	**450**	**230**	**0 to 22000**	edge_position
Drum	**pacc**	**6.000**	**15.000**	**0 to 30.000**	position_accel
Drum	**dfrict**	**20**	**15**	**0 to 50**	drum_friction
Drum	**ted**	**0**	**1**	**0 to 1**	tach_encoder_direction
Carriage	**mspeed**	**2000**	**1500**	**0 to 5000**	max_speed

Al	**coff**	**8080**	**7916**	**0 to 20000**	clamp_offset
Al	**lepos**	**9340**	**3147**	**0 to 36000**	le_pos
Al	**ppos**	**6720**	**6608**	**0 to 36000**	park_pos
Head	**casehigh**	**32.000**	**18.000**	**0 to 50.000**	case_high_warning
Head	**caselow**	**28.00**	**16.00**	**0 to 30.000**	case_low_warning
Head	**wkp**	**0.350**	**0.200**	**0 to 60**	wr_laser_Kp
Head	**bpmaxerr**	**2.000**	**3.000**	**0 to 30.000**	us_maxerr
Hdm	**wpower**	**10.000**	**0.000**	**0 to 30.000**	wr_laser_power
Sys	**pgain**	**32**	**16**	**0 to 254**	pll_gain
Sys	**maxis**	**32.200**	**32.460**	**0 to 54.600**	max_image_size
Sys	**ntu**	**60**	**40**	**0 to 254**	nco_tach_update
Mode	**mis**	**77280**	**77904**	**0 to 79200**	mscan_image_size

5.3 Removed NVS Parameters

NVS System	Param Name	Description
Alproof	**sus**	slow_unload_grab toggle
Head	**fpowercal**	fs_laser_pwr_cal
Head	**fmodcal**	fmod_cal
Head	**bpoffset**	us_offset
Sys	**es**	enable_sensitivity
Hdm	**fspeed**	fast_carriage_speed
Hdm	**sspeed**	stnd_carriage_speed

6. NEW FUNCTIONALITY

The following items are new functions added in version 1.40.

6.1 Support for Spectrum EL and V

All models of Trendsetter Spectrums shipped after December 2000 will be imaging time limited. If a drum speed (*hdm <n> ds*) is set higher than that allowed for the throughput specification for the model (S, F, or V), the plot would be aborted with an error (16047: Image: drum speed too fast). The following table shows the imaging time for each model based on 2400 dpi imaging:

Model	Format	Proofing Time	Plating Time	Approximate Drum Speed (Kodak IR Plating)
3230 EL	4 UP	35 mins 4Up. No 8Up	4.1 mins	160 rpm
3230 V	4 UP	20 mins 4Up. No 8Up	0.9 mins	360 rpm
3244 EL	8 UP	35 mins 4Up. No 8Up	6.0 mins	160 rpm
3244 F	8 UP	20 mins 4Up. 32 mins 8Up	3.0 mins	160 rpm
3244 V	8 UP	20 mins 4Up. 32 mins 8Up	1.3 mins	360 rpm

Note that F model is not available in 3230 (4up) Trendsetter. Drum speeds given are approximate and there is some tolerance given. On startup and in the **list version** command, the suffix, S, F, or V, will be displayed as appropriate for the model as well as the EL designation.

The V models are also known as the V2 or V++. These machines have debris removal cabinets connect to them.

To configure the machine, the **config "<password>" "<model>"** command is used (note the double quotes are required). For Trendsetter Spectrum, valid models are the following:

SP4LS – Trendsetter 3230 S + Spectrum EL

SP4RV- Trendsetter 3230 V + Spectrum

SP8LS – Trendsetter 3244 S + Spectrum EL

SP8RF – Trendsetter 3244 F + Spectrum

SP8RV – Trendsetter 3244 V + Spectrum

For existing machines (shipped before December 2000) will not be able to operate at drum speed higher than 250 rpm (same as before, the range of the *hdm <n> ds* parameter allowed a maximum setting of 250 rpm in previous versions of firmware). You do not need to configure existing machines since the firmware will do this automatically.

6.2 Support for Debris Removal Monitoring

When imaging at higher drum speeds (>250rpm), debris removal becomes necessary for many media types including the Kodak 830 media. Support for debris removal has been expanded to include monitoring of vacuum levels during the plot. Also, to avoid having the debris removal cabinet turns on and off for each plot, the cabinet is left on after a plot. If another job is not started during the next 10 minutes, the cabinet is then turned off.

The commands **dr on**, **dr off**, and **dr** are all still available for manually turning the cabinet on and off, and for checking the status.

Three new NVS parameters set the threshold levels for maximum/minimum vacuum levels:

- *sys dbhs (dblower_high_stop)* – default 30 – blower shuts off above this value
- *sys dblw (dblower_low_warning)* – default 10 – warnings are displayed below this level
- *sys dbls (dblower_low_stop)* – default 12 – blower shuts off below this level.

If the vacuum level drops below the *sys dbls* level, or above the *sys dbhs* level, the firmware will suspend at the end of the plot. If it drops below the *sys dblw* level, warning messages will be displayed. When running Print Console, these warnings will show up as large error messages during plotting, or warnings in the history log when not plotting. When running an Allegro workstation, these warnings will show up in red letters in the history log.

If the firmware reports that the filter is not present, it will not allow the plot to start. If the filter is actually present, it is possible to mask this error – use **mask on 34**, then **nvs save status 2**.

Note: this flag is always masked by default if the *sys dbin* parameter is set to 0.

6.3 Extended media

There are now 16 extended media slots, which are mapped to existing media slots. This is to be used when two media types with different names have all of the same parameters. To set an extended media use the alias command.

alias <*extended media number*> <*extended media name*> <*base media number*>

To view all alias and real media, the list media command can be used. The extended media are only supported by the Print Console workstation.

6.4 Increase Plate load/unload

Plate loading and unloading is now much faster. The *al soff* parameter will be changed to 170 during the nvs upgrade. The “load cal” function should be used to fine-tune the loading sensor.

Carrier load/unload remain unchanged.

6.5 Increased Plate Imaging speeds

Drum speeds up to 400rpm are now supported. To ensure proper drum tracking, the *sys ntu (nco_tach_update)* parameter has been decreased to 40. This parameter is updated as part of the **nvs upgrade** command. The *sys pgain* and *sys ntu* parameters will be upgraded to 16 and 40 respectively. Note that only V speed machines will be able to run at 400rpm.

6.6 Special Proofing Unload

The *alproof sus* parameter is reserved for future proof media handling, it must be set to 0 with current firmware. Also reserved are the *dsslow, pinchdist, vrwait, media mlc, proof rlc*, and *proof rams* parameters.

6.7 Changes to head NVS

There have been many changes to the head NVS parameters, some of which will not take effect until head code V1.70 is released.

- Removed *head fpowercal*, *head fmodcal*, and *head pboffset* NVS parameters because they weren't being used.
- Changed *head wkp (wr_laser_Kp)* default to 0.2; and *head bp_max_err* default to 3% to match the production setting.
- Removed *sys enable_sensitivity* parameter, changing its name to *reserved3*, since it was no longer used. Its functionality is now provided by laser modes 1 and 2 in Thermal Head Firmware version 1.56 or higher.
- Moved *surface_reflectivity (sr)* and *surface_depth (sd)* from the media subsystem to the hdm subsystem so that they travel with the head. If Thermal Head Firmware less than V1.70 is running, then these values will not be displayed. The corresponding media parameters can still be used as they were before. With Head Firmware V1.70 or higher, the hdm values will be visible, while the two media parameters will show up as *reserved2* and *reserved3*. When upgrading the head firmware (**nvs upgrade head** command), the media values will be copied over to the corresponding hdm parameters.
- Removed *media sens (default_sensitivity)*, renaming that parameter *reserved1*. Created a new parameter *hdm sens (nominal_sensitivity)*. This was done because the media sensitivity is head dependent, so should travel with the head. This new hdm parameter will be displayed regardless of the Head Firmware version. This hdm parameter will be set to its default value of 170mJ/cm^2 by the **nvs upgrade** command. It will again be initialized to this same value with the **nvs upgrade head** command.
- Added the *hdm sensadj (sensitivity_adjust)* parameters to tweak the *hdm sens (nominal_sensitivity)* parameter. This parameter, like the *hdm sens* parameter, will be displayed regardless of the Head Firmware version. It also will be upgraded to its default value of 0% both by the MPE upgrade and the head upgrade command.
- Added support for a new exposure/sensitivity adjust plot series. The command **plot <pattern> exp** can be used to plot an exposure series to determine the best sensitivity setting for the media. An exposure series is a plot in which the sensitivity adjust is increased for every strip. The result of this series can be used to set the new *hdm sensadj* parameter.
    - The sensitivity is used to generate the *hdm wpowere* setting, which is only used with the new laser modes 1 and 2.
    - NOTE: this command should not be used if the head was integrated at the factory with firmware V1.38 or lower.
- Added support to force calculation of the *hdm wpowere* setting. Currently, *wpowere* is only calculated during an automatic stroke cal, the interval of which is set by the *sys tstk* parameter. If an exposure parameter (such as drum speed or sensitivity) is changed, and

you are operating in laser mode 1 or 2, *wpowere* should be updated. The command **plot <pattern> <width> exp** can be used to force calculation of *wpowere* in this case.

- Replaced nvs values *hdm carriage_speed* and *hdm carriage_speed_nrw* with *hdm sv (surface_velocity)* and *hdm svn (surface_velocity_nrw)*. These new parameters are used to set the drum speed if the drum speed is set to 0. Surface velocity is simply the drum speed using units of m/sec rather than rpm. This functionality is not fully supported until head code V1.70 or higher is installed. These parameters will not be upgraded until the head is upgraded (**nvs upgrade head** command). Until then, do NOT set the drum speed to 0.

- Added five new parameters to the hdm subsystem which will be used to store plotting statistics by media inside the head. Those parameters are: *plots (total_plots), fplots (failed_plots), retrace (total_retraces), edges (total_edge_detects), fedges (total_failed_edge_detects)*. These parameters will not be visible until Thermal Head Firmware V1.70 or higher is installed. These parameters will be initialized using the **nvs upgrade head** command once Head Firmware V1.70 is installed.

- Moved *fheadcal* from head subsystem to hdm subsystem as some media-dependency exists. This parameter will not be visible until Thermal Head Firmware V1.70 or higher is installed.

6.8 Miscellaneous

6.8.1 Added Diagnostic Text

- Added displays to the **cal vac** command so the calibration values will be displayed on the diagnostic terminal before and after **cal vac** is run.
- When **nvs dump** or **nvs dump diff** is completed, *"NVS Dump complete"* will be printed. If user aborts the nvs dump process (by hitting a key), *"NVS Dump NOT complete!!!!!!"* will be displayed.
- Prompt at end of **nvs upgrade** to remind user to save log file.
- If a new offset value cannot be determined during the **cal pressure** command, the original offset parameter will be restored.
- Add **mask range on** or **mask range off** to mask/unmask range checking, this will make scripts easier to write. **mask range** will still act as a toggle to mask range checking, as well as display the masking status.
- Typing **drum** with no parameters will now display the current ntu (nco_tach_update) value.

6.8.2 Test Patterns

New patterns added in this release

- Plot 114 - GC Pattern with Dashed Lines to all products.
- Plot 20 - "blank gap" used for testing blank skipping.
- Plot 100, Inch grid plot updated. It was not 1" from the leading edge of the plate if *gc mss* was set to 240.

6.8.3 Firmware Version Information in NVS

To support future upgrades, a firmware version is now stored in NVS. This number resides in *config ver* and is of the format XXXYYZZ where XXX is the firmware version (i.e. 250 for 2.50), YY is an indicator of the type (typically will be 04 to indicate a release version), and ZZ is the build number (i.e. 00 for build 00).

6.8.4 Changes to NVS Defaults

The *aldly tes* parameter was upgraded to 0.1 seconds to increase the speed of the load/unload sequence. Variability in the trailing edge magnetic sensors can cause errors in picking up the trailing edge clamps when the *aldly tes* parameter is set at 0.1 seconds. The default has been changed to 0.3 seconds to provides more reliable operation.

6.9 Dvac Counter

Added dvac counter reset functionality.
dvac now displays the dvac life time usage with other dvac stats
dvac counter displays the dvac life time usage only
dvac counter reset resets the dvac life time usage to 0
Added pop-up warning when dvac_on_time is greater than 6500 hours. The popup will occur on every reset after the dvac time has reached 6500 hours.

6.10 WS Interface Changes

- Added support for 0% exposed status messages to so user sees 0% before plotting has begun.
- When processing a launch image command a check is performed to make sure the requested ID is not already active. Previously, the firmware went through the image tasks starting at 0, and if an image task was inactive, the new image was assigned to that task regardless of the IDs associated with the other tasks.
- The resolution query doesn't fail immediately if it finds a resolution that is too high. Modes with a resolution greater than the maximum the device supports are now simply ignored.
- Added firmware query of the print console version. It defaults to 0, meaning not running. It is set when a "PC Vx.xx" message is sent down. This lets the firmware know what functionality is supported by the workstation.
- Only valid media and proof type will be queried by the workstation.

7. BUG FIXES

- Fixed endless plot bug that would occur when ending an image on a blank with more than 1 deceleration rotation.

- Fix code so that system will not crash if the rip_dpi is set to 0 for the current or default mode.

- Fixed bug (introduced in Aug 1999) that would cause a small section of image to appear at the end of 1200 dpi plots, when using the FDPE and a 2400 dpi thermal head. This bug could

also end up introducing garbage into the plot if the RIP is slow, by allowing plotting to occur when there isn't enough actual data yet.

- If the firmware should ever crash, vital information about the failure will now be printed to the diagnostic terminal.
- Proofing is no longer possible under narrow mode.
- Fix the Low On Message problem when several false edge detects have occurred.

8. KNOWN DEFICIENCIES

8.1 Low System Pressure can cause PLL Errors or Focus Errors

It is possible for a low spike in system air pressure to cause PLL errors or focus errors. The firmware detects the low air pressure and stops the drum, but the plotting control detects this as a pll error, or as a focus error because the index was not detected as expected. The errors that may be reported are 16012 ("PLL unable to maintain drum tracking") or 17674 ("focus error, check LC-BP cable").

Filtering the system pressure has reduced the chance of this occurring.

8.2 Dylux media error recovery

When an error occurs while plotting the first side of the Dylux media, after clearing out of the error, the device will ask user to load the second side of the Dylux media. The user will have to cancel the loading of the second side.

8.3 Step Axis 1 Communication Error

This error typically occurs when the machine is just powered up and the workstation is also launching. The occurrence of this error is rare and the user can click on the resume button to clear the error.

8.4 Abort switch toggle

When the abort switch is pressed, then quickly depressed the media will unload with no suspend sent to the workstation. This also occurs when the door is opened and closed quickly, and when the air pressure temporarily drops below threshold.

8.5 1600 DPI F or V speed machines

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.

8.6 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.

The **plot <pattern> synch** command is unable to plot correctly on EL-model machines.

8.7 Series plots have gaps in each stripe

While plotting the drum speed series or the power series, some gaps are introduced in each stripe causing the head to be imaging on the clamp thus various focus errors would occur and the plot would be aborted prematurely.

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
TTSS	Thermal Trendsetter Spectrum
TTSP	Thermal Proofsetter
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

IMPORTANT: PRIOR TO BACKUP AND RESTORE NVS, ENSURE ALL MEDIA ON THE DRUM IS UNLOADED VIA DIAGNOSTIC MONITOR OR WORKSTATION COMMANDS.

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 check 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	Using Windows "Terminal" Program
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: Proofsetter Startup Procedure

When building a Proofsetter, these three commands are called to setup the proofing related NVS parameters. The following is a list of these commands and the NVS parameters they change. The NVS settings listed here can be used as the factory recommended settings.

1. **proof startup** – this command added non-head dependant Proofsetter parameters to the NVS.

NVS System	Param Name	Upgrade Value	Description
media 1-8	**---**	**---**	All NVS parameters in media 1-8 locations in base Trendsetter are copied to media 1-8 locations in Proofsetter
media 1-8	**colour**	**""**	proofer_colour
media 1-8	**ssca**	**0**	sscan_scale_adjust
media 1-8	**ow**	**0**	overwriting
media 1-8	**mlc**	**0**	media_load_clean
media 1	**name**	**"Matchprint Laser"**	media_type_name - Only upgrade to this value if the media name is blank to begin with.
media 9-12	**name**	**"Matchprint Laser"**	media_type_name
media 13-16	**name**	**""**	media_type_name
media 9	**colour**	**"Cyan"**	proofer_colour
media 10	**colour**	**"Magenta"**	proofer_colour
media 11	**colour**	**"Yellow"**	proofer_colour
media 12	**colour**	**"Black"**	proofer_colour
media 13-16	**colour**	**""**	proofer_colour
media 9-12	**mcode**	**4**	media_code
media 13-16	**mcode**	**0**	media_code
media 9-16	**abl**	**0**	ablative
media 9-16	**sens**	**170.000**	default_sensitivity
media 9-16	**inv**	**0**	invert
media 9-16	**ssca**	**0**	sscan_scale_adjust
media 9-16	**cthk**	**381**	carrier_thickness
media 9-16	**escan**	**0**	extra_scanlines
media 9-16	**esp**	**50**	exp_series_pattern
media 9-12	**thk**	**102**	default_thickness
media 13-16	**thk**	**305**	default_thickness
media 9-12	**mdt**	**1000**	max_door_time
media 13-16	**mdt**	**0**	max_door_time
media 9	**sr**	**320**	surface_reflectivity
media 10	**sr**	**260**	surface_reflectivity
media 11	**sr**	**340**	surface_reflectivity

media 12	**sr**	**280**	surface_reflectivity
media 13-16	**sr**	**100**	surface_reflectivity
media 9	**sd**	**25**	surface_depth
media 10	**sd**	**55**	surface_depth
media 11	**sd**	**0**	surface_depth
media 12	**sd**	**45**	surface_depth
media 13-16	**sd**	**0**	surface_depth
media 9-13	**dr**	**0**	debris_removal
media 13-16	**dr**	**1**	debris_removal
media 9-13	**ow**	**1**	overwriting
media 13-16	**ow**	**0**	overwriting
media 9-16	**mlc**	**1**	media_load_clean
media 1-16	**owp**	**1**	Over_writing_pattern
proof 1	**name**	**"22x30_Proof"**	proof_type_name
proof 2	**name**	**"30x40_Proof"**	proof_type_name
proof 3	**name**	**"22x26_Proof"**	proof_type_name
proof 4	**name**	**"15x22_Proof"**	proof_type_name
proof 5-8	**name**	**""**	proof_type_name
proof 1-2	**rmsz**	**762**	receiver_msz
proof 3	**rmsz**	**660**	receiver_msz
proof 4	**rmsz**	**381**	receiver_msz
proof 5-8	**rmsz**	**0**	receiver_msz
proof 1, 3, 4	**rssz**	**559**	receiver_ssz
proof 2	**rssz**	**1016**	receiver_ssz
proof 5-8	**rssz**	**0**	receiver_ssz
proof 1-2	**dmsz**	**794**	donor_msz
proof 3	**dmsz**	**692**	donor_msz
proof 4	**dmsz**	**413**	donor_msz
proof 5-8	**dmsz**	**0**	donor_msz
proof 1-2	**rmss**	**41**	receiver_ms_shift
proof 3	**rmss**	**143**	receiver_ms_shift
proof 4	**rmss**	**422**	receiver_ms_shift
proof 5-8	**rmss**	**0**	receiver_ms_shift
proof 1-4	**dut**	**250**	dvac_unload_thresh
proof 5-8	**dut**	**0**	dvac_unload_thresh
proof 1-8	**ub**	**1**	use_border
proof 1, 3-8	**wf**	**0**	wide_format
proof 2	**wf**	**1**	wide_format
proof 1-4	**dvct**	**46**	dvac_carrier_thresh

proof 5-8	**dvct**	**0**	dvac_carrier_thresh
proof 1	**dvrt**	**220**	dvac_receiver_thresh
proof 2	**dvrt**	**120**	dvac_receiver_thresh
proof 3	**dvrt**	**220**	dvac_receiver_thresh
proof 4	**dvrt**	**300**	dvac_receiver_thresh
proof 5-8	**dvrt**	**0**	dvac_receiver_thresh
proof 1	**dvdt**	**500**	dvac_donor_thresh
proof 2	**dvdt**	**400**	dvac_donor_thresh
proof 3	**dvdt**	**500**	dvac_donor_thresh
proof 4	**dvdt**	**560**	dvac_donor_thresh
proof 5-8	**dvdt**	**0**	dvac_donor_thresh
proof 1-2	**rlhp**	**55**	rec_lower_hole_pos
proof 3	**rlhp**	**157**	rec_lower_hole_pos
proof 4	**rlhp**	**436**	rec_lower_hole_pos
proof 5-8	**rlhp**	**0**	rec_lower_hole_pos
proof 1-2	**dlhp**	**38**	donor_lower_hole_pos
proof 3	**dlhp**	**139**	donor_lower_hole_pos
proof 4	**dlhp**	**418**	donor_lower_hole_pos
proof 5-8	**dlhp**	**0**	donor_lower_hole_pos
proof 1-8	**rdc**	**0**	receiver_drum_clean
proof 1	**rlc**	**1**	receiver_load_clean
proof 2	**rlc**	**0**	receiver_load_clean
proof 3-4	**rlc**	**1**	receiver_load_clean
proof 5-8	**rlc**	**0**	receiver_load_clean
proof 1	**hpos**	**320**	hole_position
proof 1	**hpos**	**300**	hole_position
proof 1	**hpos**	**340**	hole_position
proof 1	**hpos**	**360**	hole_position
proof 5-8	**hpos**	**0**	hole_position
proof 1-8	**rams**	**0**	Rev_active_media_seal
proof 1-8	**rwon**	**0**	rec_wait_on_media
aldrv 1,2	**---**	**default**	all NVS parameters in aldrv 1 and aldrv 2 are saved to their default values.
alproof	**---**	**default**	all NVS parameters in alproof are saved to their default values.

2. **proof integrate** - this command added head dependant Proofsetter parameters to the NVS.

NVS System	Param Name	Upgrade Value	Description

hdm 1-8	**---**	**---**	All NVS parameters in hdm 1-8 locations in base Trendsetter are copied to hdm 1-8 locations in Proofsetter
hdm 9-12	**name**	**"Matchprint Laser"**	media_type_name
hdm 13-16	**name**	**""**	media_type_name
hdm 9	**colour**	**"Cyan"**	proofer_colour
hdm 10	**colour**	**"Magenta"**	proofer_colour
hdm 11	**colour**	**"Yellow"**	proofer_colour
hdm 12	**colour**	**"Black"**	proofer_colour
hdm 13-16	**colour**	**""**	proofer_colour
hdm 9-16	**bmcurve**	**0**	beam_curvature
hdm 9-12	**bmslope**	**-6**	beam_slope
hdm 13-16	**bmslope**	**0**	beam_slope
hdm 9-16	**fmode**	**0**	focus_mode
hdm 9-16	**fspeed**	**198.200**	fast_carriage_speed
hdm 9-16	**sspeed**	**133.300**	stnd_carriage_speed
hdm 9	**ds**	**105.000**	drum_speed
hdm 10	**ds**	**80.000**	drum_speed
hdm 11	**ds**	**120.000**	drum_speed
hdm12	**ds**	**80.000**	drum_speed
hdm 13-16	**ds**	**150.000**	drum_speed
hdm 9-12	**wpower**	**17.500**	wr_laser_power
hdm 13-16	**wpower**	**10.000**	wr_laser_power
hdm 9-16	**bmcurven**	**0**	beam_curvature_nrw
hdm 9-12	**bmslopen**	**-6**	beam_slope_nrw
hdm 13-16	**bmslopen**	**0**	beam_slope_nrw
hdm 9-12	**dsn**	**90.000**	drum_speed_nrw
hdm 13-16	**dsn**	**150.000**	drum_speed_nrw
hdm 9-12	**wpowern**	**16.000**	wr_laser_power_nrw
hdm 13-16	**wpowern**	**10.000**	wr_laser_power_nrw
hdm 9-16	**wpowers**	**0.000**	wr_laser_power_std

3. **nvs upgrade 1.22** – this command updates the NVS parameters changed.

NVS System	Param Name	Upgrade Value	Description
xmedia	**name**	**“”**	media_type_name
xmedia	**colour**	**“”**	proofer_colour
alproof	**sus**	**0**	smooth_unload_sequence
alproof	**masktray**	**0**	mask_load_tray
al	**soff**	**170**	sensor_offset

alproof	**dsslow**	**-4.000**	xunused
alproof	**pinchdist**	**50**	xunused4
alproof	**vrwait**	**25**	xunused5
alproof	**eover**	**0**	unused12
media	**owp**	**1**	ow_pattern
Proof 1-8	**rwon**	**0**	Rec_wait_on_media

4. **cal pressure** and **cal vac** - The analog pressure gauge mounted on the regulator is not accurate. The following procedure is used to set and calibrate the system pressure using the more accurate electronic pressure sensor. When performing this routine, you may need another person to read out the pressure readings on the diagnostic monitor to make the process easier. You will have to remove the access panel to the power distribution box with a flat screwdriver before starting this command. The routine performs an automatic calibration of the system pressure sensor, and then directs you through a short manual procedure to set the system pressure regulator properly. Type **cal pressure** to calibrate the system pressure and follow the instructions on the diagnostic monitor. The routine first directs you to turn off the air to the machine. Do this by pushing the orange rocker switch on the regulator manifold (inside the power distribution box). When directed to turn the air pressure back on do so using the orange rocker switch on the air regulator manifold again. You will then be directed to lower the system pressure to below 75 PSI. Do this by turning the black knob on the bottom of the regulator (inside the power distribution box). Finally you will be directed to slowly increase the system pressure until it reaches 80 PSI. If you increase the pressure too far you will have to start again. Note that the pressure readings are de-bounced for three seconds, so you must increase the system pressure very slowly and stop at 80 PSI for this routine to work.

5. **load cal** - The load ramp sensor must be recalibrated with this firmware. The following procedure is used to calibrate the sensor. Type **load <mainscan size in mm> cal** and load a plate of the correct mainscan size. The routine performs an automatic calibration of the load ramp sensor by changing the sensor_offset parameter.

After the system pressure is calibrated, the vacuum sensors must also be calibrated. Firstly, you must ensure that there is nothing (not even a carrier) on the drum before you start this procedure. Type **cal vac** to calibrate the vacuum sensors. This routine performs an automatic calibration of the vacuum sensor offsets. Wait until the command cully.