creo

Trendsetter II 400/800 and Trendsetter II AL
MCE Firmware Version 1.14 Release Notes

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1. SCOPE

This document contains information you need to know to use MCE firmware release 1.14 for the Trendsetter 400/800 II and Trendsetter II AL. Sections include New Features, Bugs Fixed since the last release (1.10.01), Known Bugs, Device Configuration and Device Calibration. The intended audience is test engineers and service personnel.

Please refer to the TechPlanet firmware documentation pages or the Creo Service CD-ROM for information on commands, error messages, and NVS parameters for the Trendsetter MCE.

Common acronyms used in this document are defined in Appendix A.

2. 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.

3. PRELIMINARY CHECKLIST (READ BEFORE YOU BEGIN!)

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

☐ Using the **list version** command, record the following:
current MCE version: _____
current head version: _____

☐ **If the current head version is pre-1.80, you must upgrade the head firmware first!**

☐ Ensure you have the entire controlled release package available.

☐ Check for any updates to the controlled release – for example, new scripts not included in the official Service Shell release. These updates would be stored in the Patches folder of the controlled release package.

☐ Ensure that you allocate at least 4 hours for upgrading and testing the system. After the firmware upgrade, the entire system must be checked to make sure it is operating properly. This includes performing a visual check of plate handling, running a few plots to ensure proper image quality, and instructing the operators on any changes to the system operation. The customer should also be allowed to run a few plates to make sure the machine works to their satisfaction.

☐ If this device is being upgraded from V1.09 or earlier, please see the "Trendsetter II 400/800 MCE Firmware Version 1.10 Release Notes" for important upgrade procedures before beginning with this upgrade.

4. UPGRADE PROCEDURE

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

1. Use the Version Checker applet to identify all firmware components that need to be upgraded. The version checker applet is part of service shell 2.4 and higher. To execute the version checker click on the version checker icon under 'default views'. If the system you are version checking has not been configured then the "**Device is not configured"** message will appear. Please select one of the following actions to continue.

    i. ***If you do NOT have a controlled release CD use "Detect Versions"*:** Detect version will display a menu of supported devices. Once a device is chosen, the version checker will then query all the components for that system. The result of the versions found will be displayed in the version checker window.

    ii. ***If you have a controlled release CD use "Configure System":*** Configure system will ask the user to browse to a version checker file. The controlled release CD will contain a version checker file. This file will be used by version checker to compare versions in the controlled release to versions currently on the device. Click BROWSE and select the version checker file located under the VersionChecker folder on the controlled release CD. The file will have a .ini extension. Then in the RELEASES LISTS box, click the down arrow  and select the controlled release version that you will be installing.

    iii. Note: (Service Shell 2.4 specific) for a system that has already been previously configured with the version checker the behavior of the version checker will change. Once you launch the version checker it will immediately start to test version information. To reconfigure the system, wait for the version checker to complete. Once it has finished querying versions select 'config' in the upper right hand corner of service shell. The next steps will be identical to configure system mentioned above in step B.

2. Run the **FirmwareUpgrade.spt** script from within Service Shell (see Appendix B for details) and select Upgrade Firmware.

<u>For Head Firmware Versions Pre-1.80</u>

If the current head version is pre-1.80, you must upgrade the head firmware before upgrading the MCE firmware. Upgrade the head firmware first by itself, then after the head upgrade completes, continue upgrading the other firmware components.

The script will automatically create backup files for all the NVS parameters on the device, then upgrade the firmware. The script allows several firmware components to be loaded in sequence – for example, MCE Main firmware and Xilinx.

3. Reset the machine with the **reset** command.
4. After the upgrade is complete, run the Version Checker applet again to make sure all components are correct. If the version checker was configured previously in step 1 the version checker will automatically start to query the system. For service shell version 2.5 the version checker will prompt the user if he or she would like to test the versions on the system connected to service shell.
5. Perform the Device Calibration Procedures in Section **Error! Reference source not found.** as required.

5. CHANGES SINCE VERSION V1.10.01

5.1 New Product Configurations

New configurations have been added. The new complete set of configurations is as follows:

```
Code        Description
----------------------------------------
TS8_SE      Trendsetter II 800 S
TS8_FE      Trendsetter II 800 F
TS8_VE      Trendsetter II 800 V
TS4_S       Trendsetter II 400 Quantum S
TS4_V       Trendsetter II 400 Quantum V
TS8_S       Trendsetter II 800 Quantum S
TS8_F       Trendsetter II 800 Quantum F
TS8_V       Trendsetter II 800 Quantum V
SP4LSE      Trendsetter II 400 S Manual Spectrum
SP4LFE      Trendsetter II 400 F Manual Spectrum
SP4LVE      Trendsetter II 400 V Manual Spectrum
SP4RSE      Trendsetter II 400 S Spectrum
SP4RFE      Trendsetter II 400 F Spectrum
SP4RVE      Trendsetter II 400 V Spectrum
SP8LSE      Trendsetter II 800 S Manual Spectrum
SP8LFE      Trendsetter II 800 F Manual Spectrum
SP8LVE      Trendsetter II 800 V Manual Spectrum
SP8RSE      Trendsetter II 800 S Spectrum
SP8RFE      Trendsetter II 800 F Spectrum
SP8RVE      Trendsetter II 800 V Spectrum
SP4LS       Trendsetter II 400 Quantum S Manual Spectrum
SP4LF       Trendsetter II 400 Quantum F Manual Spectrum
SP4LV       Trendsetter II 400 Quantum V Manual Spectrum
SP4RS       Trendsetter II 400 Quantum S Spectrum
SP4RF       Trendsetter II 400 Quantum F Spectrum
SP4RV       Trendsetter II 400 Quantum V Spectrum
SP8LS       Trendsetter II 800 Quantum S Manual Spectrum
SP8LF       Trendsetter II 800 Quantum F Manual Spectrum
SP8LV       Trendsetter II 800 Quantum V Manual Spectrum
SP8RS       Trendsetter II 800 Quantum S Spectrum
SP8RF       Trendsetter II 800 Quantum F Spectrum
SP8RV       Trendsetter II 800 Quantum V Spectrum
PS8R        Proofsetter Spectrum
TSAL8_SE    Trendsetter II 800 S Autoloader
TSAL8_FE    Trendsetter II 800 F Autoloader
TSAL8_VE    Trendsetter II 800 V Autoloader
TSAL4_S     Trendsetter II 400 Quantum S Autoloader
TSAL4_V     Trendsetter II 400 Quantum V Autoloader
TSAL8_S     Trendsetter II 800 Quantum S Autoloader
TSAL8_F     Trendsetter II 800 Quantum F Autoloader
TSAL8_V     Trendsetter II 800 Quantum V Autoloader
NEWS50      Trendsetter II NEWS 50
NEWS70      Trendsetter II NEWS 70
NEWS100     Trendsetter II NEWS 100
NEWS150     Trendsetter II NEWS 150
NEWS200     Trendsetter II NEWS 200
TSMCE       Trendsetter II Default
```

5.2 NVS Changes

The following table details NVS parameter changes in this release.

NVS System	Param Name	Old Default	New Default	Description	Refer to Section
mhauto	**KeepTableDown**	**--**	**0**	Enables or disable the keeptabledown feature (1 = enable, 0 = disable)	5.4
mhauto	**UnloaderMSR**	**4**	**2**	Unload stepper motor microsteps per mm. New default supports change to 16 tooth pulley (from 24 tooth)	5.5
mhauto	**UnloaderSPM**	**1.700**	**2.550**	Unload stepper motor steps per mm. New default supports change to 16 tooth pulley (from 24 tooth)	5.5
drum	**Ipk**	**8.5**	**10.0**	The peak (or maximum) current applied to the drum motor when changing velocity or position	5.9
mh	**TECAdjust**	**--**	5.000 mm	Added as NVS parameter	5.14
mh	**TECMargin**		--	Deleted as NVS parameter	5.14
mh	**LECMargin**		--	Deleted as NVS parameter	5.14
prd	**TEMargin**	**--**	7.000 mm	Added as NVS parameter	5.14
prd	**LEMargin**	**--**	6.096 mm	Added as NVS parameter	5.14

5.3 Added Support for PDB Rev.H Boards

The firmware will now detect if Rev H or newer of the PDB board is installed. If it is installed, the firmware will use the four new analog inputs on this version of the PDB. The firmware names of the new analog inputs are: AI_5Volts, AI_24VFuse, AI_24VSafe, and AI_48VSafe. The **system** command has been modified to report the voltage level read from these inputs if the Rev H board is detected.

5.4 Keep Table Down

Applicable devices:

⇒ Trendsetter II AL

Enabling this feature will cause the unload table to normally be in the down position. It will only go up just before a plate is about to be automatically unloaded. When this feature is disabled, the unload table will operate as before and will normally be in the up position.

To enable this feature use: **set mhauto KeepTableDown 1**
To disable this feature use: **set mhauto KeepTableDown 0**

5.5 Unload Table NVS Changes for 16 Tooth Pulley

Applicable devices:
⇒ Trendsetter II AL

Changed the defaults for UnloaderMSR (microsteps / mm) and UnloaderSPM (steps / mm) to support the change to a 16 tooth pulley (from 24 tooth) on the unload table stepper motor. This pulley change is to help give the unload traveler more torque. **The new 16 tooth pulley must be installed before changing these parameters to the new defaults.**

5.6 Maximum Mainscan Size for TS400AL and TS800AL Increased

Applicable devices:
⇒ Trendsetter II AL

The maximum mainscan size for plates has been increased to 839mm from 813mm, and the maximum film size increased to 838mm from 813mm. For TS800AL, it is important to make sure the largest size plate is loaded in the center so that when it is rotated on the unload table, the corners of the plate do not hit the sides or back of the table.

5.7 Unload Table Stepper Motor Hold State to Half Current

Applicable devices:
⇒ Trendsetter II AL

The unload step motor current during the hold state has been reduced to half current when the traveler is in the home position. This was done to help keep down the stepper motor temperature.

5.8 Geometric Correction now Enabled on E-Model Devices

All E-model devices now have rotational correction and scaling adjustment enabled.

5.9 Drum Amp Ipk Increased

The drum amp Ipk default has been increased to 10.0A from 8.5A.

5.10 Manual Bypass Mode

Applicable devices:
⇒ Trendsetter II AL

This feature was also included in the Trendsetter II AL Firmware V1.10.01.01 Patch Release.
Firmware support has been added for the manual bypass mode that is selected through Print Console. This allows a job to be loaded manually and unloaded automatically.

5.11 Plate Exit Timeout Increased

Applicable devices:
⇒ Trendsetter II AL

This change was also included in the Trendsetter II AL Firmware V1.10.01.04 Patch Release.
The timeout for plates leaving the unload table into the processor has been increased from 60 seconds to 90 seconds. This gives a slow processor more time to remove the plate from the unload table.

5.12 Processor Busy Timeout Increased

Applicable devices:
⇒ Trendsetter II AL

This change was also included in the Trendsetter II AL Firmware V1.10.01.04 Patch Release.
The timeout for the unload table waiting for the processor to become ready to accept plates has been increased from 30 seconds to 90 seconds.

5.13 Reset Unload Table Traveler Position on Every Move to Home

Applicable devices:
⇒ Trendsetter II AL

This change was also included in the Trendsetter II AL Firmware V1.10.01.04 Patch Release.
The unload table traveler position is now reset every time the traveler moves home. This is to ensure that if the unload traveler is losing steps, the error in traveler position does not accumulate and will be eliminated on the next move home.

5.14 Leading and Trailing Edge Parameters

The TECMargin and LECMargin parameters have been deleted and replaced with the TEMargin, LEMargin, and TECAdjust parameters. The old TECMargin parameter affected both the image size and the amount of plate covered by the TE clamps – these attributes could not be controlled independently. The three new parameters TEMargin, LEMargin, and TECAdjust allow the image size and clamp cover to be controlled separately. The old parameters will be automatically upgraded to the new parameters.

5.14.1 TEMargin Parameter

This NVS parameter affects the distance from the trailing edge of the plate to the last imaged pixel.

5.14.2 LEMargin Parameter

This NVS parameter affects the distance from the leading edge of the plate to the first imaged pixel. You MUST follow this procedure to actually change where the first pixel is imaged

relative to the leading edge:

1. Change this NVS parameter.
2. Perform geometric correction procedure using inch-grid plot (100) to determine new GC Mshift value.
3. Change GC Mshift NVS parameter accordingly.

5.14.3 TECAdjust Parameter

This NVS parameter adjusts the amount that the trailing edge magnetic clamp covers the plate. Any changes in the parameter will affect the length of plate being clamped by the TEC. Before adjusting this parameter, make sure the LoadPos and TECParkPos parameters are properly calibrated.

To verify or adjust the TE clamp cover:
1. Load a plate and using the TEC as guide, draw a line on the plate.
2. After unloading the plate, measure the distance between the edge of the plate and the line.
3. Calculate "desired TE clamp cover distance minus value from step 2"
4. For positive values in step 3, add the amount to the current TECAdjust parameter to increase the cover.
For negative values in step 3, subtract the amount from the current TECAdjust parameter to decrease the cover. Please note that the value stored in mm in NVS does not directly correspond to what the device will actually clamp. For example, if the value stored in NVS is 7 mm the device could only be clamping 5 mm.

6. BUGS FIXED SINCE VERSION 1.10.01

The following bugs have been fixed in this release of the firmware.

6.1 Bug fixed: PR6183 Bay Update Fails

Applicable devices:
⇒ Trendsetter II AL

In some cases, updating the bay with new plates (using the **bay** command or through PrintConsole) would cause the error:

```
*** Command Failed: 34013
[The parameter range is invalid (name='MediaIndex' key=2108)]
```

This bug is now fixed.

6.2 Bug fixed: PR6227 Current Command Preempted

Applicable devices:
⇒ Trendsetter II AL

See PRS 6227.

6.3 Bug fixed: PR2348 Exit problem when unloading small plates

Applicable devices:
⇒ Trendsetter II AL

This fix was also included in the Trendsetter II AL Firmware V1.10.01.01 Patch Release.
There was a bug that occurred when a narrow plate was being automatically unloaded. If the plate was narrow enough that it only exited over the AL_SensorTableEntryHome and not the AL_SensorTableEntryAway sensor, the unload would not always function properly. The load ramp would start closing on the plate before it had fully exited the engine. This bug is now fixed.

6.4 Bug fixed: Occasional Random Crashing

Applicable devices:
⇒ Trendsetter II AL

This fix was also included in the Trendsetter II AL Firmware V1.10.01.04 Patch Release.
The MCE firmware would occasionally crash and then reset during an auto unload. For most devices this would occur very rarely or never; however, it was unpredictable and could occur during any auto unload.

7. KNOWN BUGS

This section lists the known problems that have not been fixed for this release of the firmware. Where possible, workarounds to the problems are described.

7.1 Cannot set HDM drum speed to zero

See PRS #3029.

7.2 Cannot load maximum plate size

See PRS #3030.

7.3 TH1.x heads require script to initialize when installed

See PRS #3073.

7.4 Test Plot Applet not supported

This release does not support the Test Plot Applet. Support will be added in the next minor release of the firmware.

8. DEVICE CONFIGURATION PROCEDURES

8.1 Configuring the Device Model

All available model configurations can been displayed using the **config** command by itself. The model is configured using the **config <password> <model>** command, for example (command is case-sensitive):

config <password> SP8RV

After using this command, reset the machine then use the **config** command on its own to verify that the model was set correctly.

8.2 Enabling Options

Use the **option** command to list all options, and enable/disable options applicable to the model. Ideally, all required NVS parameters would be configured automatically when the model is configured. This has not yet been done, in part because a single model can have different options that change its characteristics. The following list defines what settings must be verified when a model or feature is changed (do **access dev** first to gain access to commands):

- **option autoloader disable** disabled for all Spectrum configurations
- **option spectrum enable** enabled for all Spectrum configurations
- **option debris udrcb enable** if UDRC-B is installed
- **option debris udrcl enable** if UDRC-L is installed

After using this command, reset the machine then use the **option** command on its own to verify that the options were set correctly.

APPENDIX A: COMMON ACRONYMS

MCE	Master Control Electronics
CTP	Computer to Plate (this includes Trendsetters and Platesetters)
NVS	Non-Volatile-Storage
PDB	Power Distribution Board
GENINE	Generic I/O Node Electronics Board
LIONEL	Little I/O Node Electronics Board
POST	Power-On Self Test
BBR	Boot-block Recovery
PC	Print Console
TH2	Thermal 2 Head
TH1.7x	Thermal 1.7x Head
WS	Workstation
TSAL	Trendsetter Autoloader
TS	Trendsetter – base model
SP	Trendsetter Spectrum
NEWS	Trendsetter NEWS

APPENDIX B: NVS BACKUP/RESTORE AND LOADING FIRMWARE

Service Shell is required to load new firmware, and to backup or restore NVS parameters. A script has been written to simplify these tasks.

As part of the Service Shell install, a script named **FirmwareUpgrade.spt** is copied to the Device scripts folder. A document describing how to configure Service Shell and how to use the script is also included in the **d:\ServiceShell\scripts\device** folder. Service Shell is installed on every workstation before it leaves the factory, so this document will be present on every workstation. An updated copy with more MCE-specific information is available in the Trendsetter MCE Controlled Release V1.0.

Inside Service Shell, left-click on the Scripts icon, then left-click on the Device group. Double-click on FirmwareUpgrade.spt to start the script. It is very important to use this script for the upgrade to make sure a full NVS backup is performed.

RAM vs. FLASH Parameters in MCE Machines

There are two separate types of NVS parameters that are accessed by the MCE firmware. Most parameters are stored in RAM. A few parameters that are not expected to be changed frequently are stored in Flash. Both sets of parameters must be backed up to fully capture the state of the machine; and both sets of parameters must be loaded onto a new board to restore the machine to its previous state. The FirmwareUpgrade.spt script automatically creates two separate files, one for each type of NVS, and expects both files when restoring parameters.

NVS parameters in general provide the following:

- Storage for machine-dependent 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.

All parameters are saved immediately as soon as they are changed.

When firmware is upgraded on a device, any new parameters will automatically be set to their default value. If a more complicated upgrade procedure is required, a script will be created to perform this upgrade, and this script will be released with the firmware.

IMPORTANT: BEFORE UPGRADING THE FIRMWARE OF ANY MACHINE YOU MUST BACKUP THE CONTENTS OF THE CURRENT NON-VOLATILE STORAGE IN CASE IT BECOMES NECESSARY TO REVERT TO THE PREVIOUSLY INSTALLED VERSION OF FIRMWARE!