Trendsetter 400/800 II, Autoloader, and Spectrum MCE Firmware Version 1.18.11 Release Notes

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1. SCOPE

This document contains information you need to know to use release 1.18.11 of the MCE Trendsetter 400/800 II, Trendsetter 400/800 II AL, and Trendsetter 400/800 II Spectrum firmware. Sections include New Features, Bugs Fixed since the last release (1.18.10), 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. UPGRADE PROCEDURE

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

1. This step must be performed before upgrading the firmware:

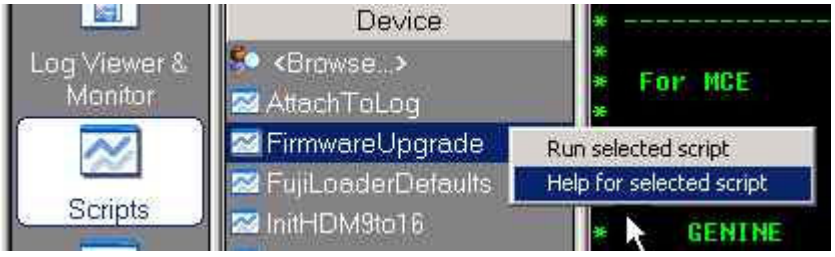
Important Note 1!

You must upgrade ServiceShell before upgrading firmware.
Use the new FirmwareUpgrade script to upgrade all the firmware.

Service Shell should always be upgraded before upgrading firmware. However, it is particularly important to upgrade to Service Shell 2.5 for this firmware version because the new upgrade script includes a special procedure that is required for properly installing the new versions of firmware.

It is critical that the new BOOT module be downloaded *before* any other new firmware module, including main firmware, POST, Xilinx, etc. For example, if you download new main firmware onto an MCE with BOOT v1.09, the new main firmware will fail to run. To recover from this, you will have to download the previous version of whatever module(s) you have downloaded and then proceed by downloading the new BOOT. For this reason, it is highly recommended to use the new Firmware Upgrade script whenever you need to download new firmware to the MCE.

2. For the rest of the Upgrade Procedure, please see the detailed upgrade document *FirmwareUpgrade.pdf*. This document can be opened from the script view in ServiceShell by right-clicking on the Firmware Upgrade script, and clicking Help for selected script. Then click the link to the pdf file:



The *FirmwareUpgrade.pdf* file can also be found in the d:\ServiceShell\Scripts\device folder.

3. Make the following hardware change for all devices:

Important Note 2!

If the dongle is present on J37, it must be removed. The serial communication cable on the MCE board at J40 must be moved to J37.

This firmware/hardware change fixes a problem with communications errors that may be encountered when using UDRC-L debris removal cabinets. Port J40 is un-buffered whereas port J37 is buffered. The un-buffered J40 port in some cases introduced enough transmission errors to cause communication with UDRC-L cabinets to fail.

The dongle at J37 must be removed for ALL devices. These changes should be made regardless of whether a UDRC-L cabinet is being used or not.

See *5.2 Debris Removal Communications Errors* for the required steps.

4. This must be checked if the device uses a UDRC-L debris removal cabinet:

Important Note 3!

You MUST ensure that the "*media <number> emissionsintensity*" parameter is set correctly for all media.

You MUST also ensure that the "*media <number>* debrisoptions" parmeter is set correctly (4 or 5 for PACC) for all hazardous media.

The pixel counting logic in both the MCE main firmware 1.18.11 and the Xilinx firmware 1.94 has been fixed. The pixel counting bugs present in previous versions of MCE and Xilinx firmware usually caused the filter to expire sooner than required, and as a consequence some devices have had their "*media <number> emissionsintensity*" parameter reduced below the specified value in order to compensate for this bug. Some devices may have also had their "*media <number> debrisoptions*" parameter changed from using UDRC-L.

Now that this bug is fixed, **these parameters must be checked and returned to the values specified for each media**. This ensures that the filter life is depleted at the appropriate rate. See the corresponding Media Technical Note on TechPlanet for appropriate values for these parameters.

4. NEW FEATURES AND CHANGES

No new features were added in this release of firmware.

5. BUGS FIXED

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

5.1 Pixel Counting Bugs Are Causing Debris Removal Filters To Expire Too Soon

Applies to:
⇨ *Trendsetter 400/800 II*
⇨ *Trendsetter 400/800 II Autoloader*
⇨ *Trendsetter 400/800 II Spectrum*

There were bugs in both the MCE main firmware and the Xilinx firmware that in most cases caused the reported pixel count to be too high. This would cause UDRC-L debris filters to expire before they were fully depleted, requiring a replacement filter to be installed before it was necessary. This bug has been fixed in MCE firmware 1.18.11 and Xilinx 1.94.

Important!

You MUST ensure that the "*media <number> emissionsintensity*" parameter is set correctly for all media.

You MUST also ensure that the "*media <number>* debrisoptions" parmeter is set correctly (4 or 5 for PACC) for all hazardous media.

The pixel counting logic in both the MCE main firmware 1.18.11 and the Xilinx firmware 1.94 has been fixed. The pixel counting bugs present in previous versions of MCE and Xilinx firmware usually caused the filter to expire sooner than required, and as a consequence some devices have had their "*media <number> emissionsintensity*" parameter reduced below the specified value in order to compensate for this bug. Some devices may have also had their "*media <number> debrisoptions*" parameter changed from using UDRC-L.

Now that this bug is fixed, **these parameters must be checked and returned to the values specified for each media**. This ensures that the filter life is depleted at the appropriate rate. See the corresponding Media Technical Note on TechPlanet for appropriate values for these parameters.

5.2 Debris Removal Communications Errors

Applies to:
⇨ Trendsetter 400/800 II
⇨ Trendsetter 400/800 II Autoloader
⇨ Trendsetter 400/800 II Spectrum

There was a problem where communication with UDRC-L cabinets was failing. This is fixed by moving the UDRC-L cabinet from port J40 (an un-buffered port) on the MCE board to port J37 (a buffered port). The un-buffered J40 port in some cases introduced enough transmission errors to cause communication with UDRC-L cabinets to fail.

This version of firmware uses port J37 for UDRC-L cabinets, and J40 is now unused.

For ALL devices (even those without a debris cabinet):

a) Power off the device

b) Remove the dongle at J37 (if present)

c) Move the serial cable on the MCE board at J40 to J37

d) Apply the new J37 label to the serial cable

e) Power the device back on

For devices with UDRC-L cabinets:

a) Check that the MCE is communicating properly with the debris cabinet through J37 by using the command **sif rd 50 40 7f0** (where sport=50 and bid=40). You should see a response similar to the following:

```
TSSP>> sif rd 50 40 7f0
Board 0040h VRegister 07F0h: 01 10 01 00 *** Command Complete
```

b) If a filter is installed in the cabinet, you can also test that the device is communicating with the cabinet by using the **debris pacc on** command. The debris cabinet should turn on.

5.3 Carriage Stops When Returning To Home After a Plot

Applies to:
⇨ *Trendsetter 400/800 II*
⇨ *Trendsetter 400/800 II Autoloader*
⇨ *Trendsetter 400/800 II Spectrum*

In some cases, when the carriage was returning home after a plot was complete it would briefly stop before reaching the home position, and then would immediately start again and reach home. This was due to an error in calculating the home position on the first attempt. This was fixed in Release 1.18.10.

6. 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. More information can be obtained by examining each problem report listed below in the problem report system at http://ccaapplications.creo.com/teamapps/output/reportingsystem/ODRS/.

6.1 PRS 3020: Unable to single step (spectrum step) a carrier load successfully. (Spectrum Step Enable)

6.2 PRS 3029: set hdm x ds 0 is not allowed to be set, value out of range. This is set to zero to enable the sv (surface velocity parameter) to be used instead.

6.3 PRS 3030: Max plate size specified cannot load due to this error - Error! Max main scan size capable by the drum is 832.500 (mm)!

The error message is misleading. The problem is that the TECAdjust parameter needs to be increased to load a plate with this size. Any plate larger than 832.5 mm in the mainscan direction must have sufficient margin on the trailing edge clamp.

6.4 PRS 3034: Media type for film loaded through the cassettes is required. Currently we are patching it, identifying it as a donor.

6.5 PRS 3036: "scan sp" group does not follow the proper naming convention. If the bit is a sensor the name should have the word sensor in it

6.6 PRS 6013: Warning message required on media/hdm NVS change with media manager enabled

6.7 PRS 6044: 'set ehi tstk 0' should warn user that this setting is zero when beam balance should be preformed

6.8 PRS 6089: Using 'Sim mh' - 'the current command has been preempted' occurs.

6.9 PRS 6131: Firmware fails to unload after cancelling. (Perhaps related to the media handler being previously enabled)

6.10 PRS 6176: Aborting a plot (with vbs = customer) sometimes causes the carriage never to return

6.11 PRS 6255: Gapless imaging set when firmware sent an 8up proof.

6.12 PRS 6325: Unable to read LIONEL board info with list version all command.

6.13 PRS 6489: Add readable diagnostic messages for DCAPI and TPA commands

6.14 PRS 6507: Spectrum stuck in 'set drum status to carrier on' after the drum vac timeout error

6.15 PRS 6566: Firmware crash.... PC could not recover

6.16 PRS 6605: No suspend prompt on TPA jobs if error occurred while plotting

6.17 PRS 6632: Plate too small on load, creates havoc

6.18 PRS 6838: MCE firmware should cancel job when an invalid image parameter is received

6.19 Alarm buzzer not working properly

The alarm buzzer does not sound when a suspend occurs during a proof. The behaviour of the alarm buzzer with respect to suspends needs to be properly defined and implemented. There is currently no PRS entry for this problem.

7. DEVICE CONFIGURATION PROCEDURES

7.1 Configuring the Device Model

Applies to:
⇨ Trendsetter 400/800 II
⇨ Trendsetter 400/800 II Autoloader
⇨ Trendsetter 400/800 II Spectrum

All available model configurations can be 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 and setting the options appropriately (see next section), reset the machine and use the **config** command on its own to verify that the model was set correctly.

7.2 Enabling Options

Applies to:
⇨ Trendsetter 400/800 II
⇨ Trendsetter 400/800 II Autoloader
⇨ Trendsetter 400/800 II Spectrum

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** enabled for all Autoloader configurations
- **option rotator enable** enabled if rotator is installed on Autoloader models
- **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.

7.3 Using Dylux

Applies to:
⇨ Trendsetter 400/800 II Spectrum

The procedure for setting up Dylux media on the MCE is slightly different than the MPE. The carrier thickness for Dylux is set using the following command:

set prd defaultcarrierthk xxx

The media type must be set to “blueline”, using this command:

set media x type 18

When loading Dylux media from the diagnostic prompt, you must specify the image side with the load command, as in this example:

load m 770 s 1055 is 1

The “is <n>” parameter specifies which side you are loading, either 1 or 2. Consult the syntax of the load command for more information. Note that if you do not specify the media index of the Dylux media in the load command, you must specify the media type as “i 18”, meaning blueline.

One more note about Dylux: for the MPE you are instructed to specify a subscan dimension that is one inch smaller than the actual size of the media in PrintConsole. The reason is because the MPE firmware adds a 0.5” margin at the home and away edges of the media. This is *not* done for the MCE. You must specify the correct size of the media in PrintConsole. If you desire the 0.5” margins for Dylux jobs, specify them in PrintConsole.

8. IMPORTANT DIFFERENCES FROM MPE

This section discusses service procedures that differ from MPE-based machines.

8.1 Setting the proof unload offset

Applies to:
⇨ Trendsetter 400/800 II Spectrum

On the MPE, there are two parameters that control the distance between the edge of the media to the position where the vacuum roller contacts the media to peel it off the drum: the Unload Offset (UO) and the Media Pick Offset (MPO). These have been replaced on the MCE with a single parameter called the UnloadOffsetAdjust, measured in +/- mm.

The nominal unload offset on the MCE is 8 mm. Use the UnloadOffsetAdjust parameter to correct what is actually measured when an unload is performed. For example, if the unload offset is actually measured as 10 mm, then set the UnloadOffsetAdjust parameter to -2 to compensate to achieve the desired offset of 8 mm. For Fuji proof modes, where the desired offset may be 6 mm, if 4 mm is measured then set this parameter to +2.

8.2 Vacuum threshold units

Applies to:
⇨ Trendsetter 400/800 II Spectrum

These have been changed from raw sensor values to kPa. This avoids confusion caused by reading different levels on different types of sensors. In other words, no matter what the raw sensor values are, the kPa values should remain the same.

9. DEVICE CALIBRATION PROCEDURES

If the firmware is being loaded into a new machine or the NVS parameters have been erased without making a backup, then the following NVS parameters must be calibrated:

9.1 Setting the Plate Measuring Sensor Offset

Applies to:
⇨ Trendsetter 400/800 II
⇨ Trendsetter 400/800 II Autoloader
⇨ Trendsetter 400/800 II Spectrum

The *mh DistSensorToLEC* parameter specifies the nominal distance between the Leading Edge Clamps (LEC) and the optical plate measuring sensor on the load ramp. This parameter is used by the firmware to measure the main-scan size of plates as they are being wound onto the drum. On an Autoloader, to calibrate this parameter, place a stack of plates of a known size into the bay, load the correct plate size information from the workstation, and verify that the media mainscan size is correct by entering the **bay 1** command from the diagnostic terminal.

Type **load cal** through diagnostics. This will cause a plate to be loaded. The plate size will be measured and the *mh DistSensorToLEC* parameter will be calibrated as the plate is wound onto the drum. The new value is automatically updated and saved.

9.2 Calibrating the Unload Table Cup Rotate Position

Applies to:
⇨ Trendsetter 400/800 II Autoloader

The *mhauto UtRotatorPos* parameter specifies the nominal position for the unload table traveler to move to before rotating the unload vacuum cups. The firmware moves the traveler to this position and checks the rotate position sensor before attempting to rotate the cups. If the sensor is not tripped, then the traveler is moved slowly towards the away end of the table until the sensor is tripped or the firmware gives up and suspends.

Calibrate this parameter with the unload table in the down position (use the **table down** command). Move the traveler home by typing **table home**. Then type **table move rotate**. This command will move the traveler to the position specified by *mhauto UtRotatorPos*. The center of the optical interrupter tab on the traveler should be 1-2 millimeters towards the home side of the rotate position sensor, and the sensor should be tripped (check the sensor using the **table** command). Adjust the position by changing the *mhauto UtRotatorPos* parameter and re-typing **table move rotate**. The new value is automatically saved when it is changed.

On machines with short unload tables (most Trendsetter 400 and NEWS machines), the *mhauto UtRotatorPos* parameter should be set to 500 to make sure the traveler stops in the correct place when it is dragging a plate along the unload table.

9.3 Enabling Plate Rotation

Applies to:
⇨ Trendsetter 400/800 II Autoloader

The rotator is enabled in firmware by typing **access expert** then **option rotator enable**. Plate rotation is controlled from Print Console. If the rotator option is enabled, then a "Rotate Plate" checkbox will show up in the Media Size settings in Print Console. If this box is checked, Print Console will tell the Trendsetter to rotate the plate during unload.

Without Print Console, rotation can be tested by typing:

- **load bay 1 r 1** to load a plate from the bay and tell it to rotate on unload, or
- **unload r 1** to unload the plate on the drum and tell it to rotate.

9.4 Adjusting Eject Speed and Distance

Applies to:
⇨ Trendsetter 400/800 II Autoloader

9.4.1 Eject distance

The plate will be pushed towards the processor at fast speed, then slowed down to match the processor intake speed.

The *exit FastDistance* parameter determines when the traveler slows down. This parameter should be set to the distance (in mm) from the traveler home position to the position of the far end of plate when the speed changes. To adjust this distance, enter **set exit fastdistance <nn>** where <nn> is the new value in millimeters.

To adjust the distance that the plate moves at slow speed, enter **set exit slowpush <nn>** where <nn> is the new distance value in millimeters.

The new values will be saved automatically when they are changed.

9.4.2 Eject speed

Enter **set exit velocity** to see the current slow speed setting.

Use the **table move <position> <velocity>** command to test different speeds and determine the best speed. Enter **set exit velocity <nn>** where <nn> is the new speed setting. The new value will automatically be saved.

10. OTHER NOTES

10.1 Stroke Width and Overwriting Patterns

Regardless of how the stroke width is configured in the head, when an overwriting pattern is used for particular media, the pattern itself defines the stroke width that will be used for all plots on that media. For example, all Spectrum heads allow 224 pixel stroke widths, but when imaging Fuji TPM or DuPont Staccato 20, the overwriting pattern uses a stroke width of 216, so if the media slots for Fuji and DuPont are configured for 224 pixels the firmware will automatically switch the head to 216 pixels while plotting and then change back to 224 when done – this is normal behavior.

APPENDIX A: COMMON ACRONYMS

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

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.

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. Furthermore, this release of firmware requires a new BOOT module to be installed on the MCE, and requires the POST, Xilinx and OVWR modules to be re-installed. **If the new BOOT module is not installed before the new firmware is, the new firmware will not execute!** The upgrade script will take care of this for you, so it is important that you use it.

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!