Kodak

Magnus VLF MCU

Slip Sheet Adaptive Threshold

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1. SLIP SHEET ADAPTIVE THRESHOLD FUNCTIONALITY

On certain media, the slip sheet reflection reading may have large variations depending on the number of plates in the cassette bay. The variations are not only caused by slip sheet imperfections (wrinkles/blemishes/coarseness), but are a result of the slip sheet laser reflection getting weaker as the plate count decrements (increasing the distance between the sensor and the plate stack).

The slip sheet adaptive threshold (SSAT) functionality was developed to improve the slip sheet detection by compensating for the reflectivity decreasing as the plate stack gets smaller and the distance between the mirror and the plate surface increases. Its algorithm will automatically adjust the plenum slip sheet sensor threshold value based on the previous threshold and the latest reflectivity measurement. Each time a bay is loaded, the threshold **bay <n> SSSensorAdaptiveThresh** is initialized to the **mhmedia <n> PlenumSSSensorThresh** value. The firmware algorithm then adjusts the **bay <n> SSSensorAdaptiveThresh** each time a plate is picked.

For this feature to work best, fully load the cassette bay with the standard reload quantity of fresh plates so that the algorithm will function properly. Each time the cassette is reloaded the threshold will be reset to **mhmedia <n> PlenumSSSensorThresh** . On the fully loaded bay, calibrate the slip sheet detector sensor threshold according to the procedure on TechPlanet.

To enable this feature, set each bay **bay <n> SSSensorAdaptiveThresh** parameter to a non-zero value for the bays you desire to enable. This parameter will be initialized to the **mhmedia <n> PlenumSSSensorThresh** value each time the cassette is loaded, and adjusted each time a plate is picked.

Example: to enable SSAT for all 4 bays with a slip sheet threshold of 340:

- `>>set mhmedia <n> PlenumSSSensorThresh 40`
- `>>set bay 1 SSSensorAdaptiveThresh 1`
- `>>load bay 1`
- `>>set bay 2 SSSensorAdaptiveThresh 1`
- `>>load bay 2`
- `>>set bay 3 SSSensorAdaptiveThresh 1`
- `>>load bay 3`
- `>>set bay 4 SSSensorAdaptiveThresh 1`
- `>>load bay 4`

Note: Due to the parameters being calibrated to a full stack of plates, it is important to train the operators to always fully load the bay with plates during cassette ejects. This includes when they need to remove a stuck or found slip sheet in the cassette. This is an important step in operations to avoid slip sheet handling errors as the adaptive threshold gets reset on each cassette eject.

To disable this feature, set each **bay <n> SSSensorAdaptiveThresh** to '0' (default) for all bays.

The following NVS parameters have been added to support the SSAT feature:

- `>>bay <n> SSSensorAdaptiveThresh` , which is dynamically updated by the SSAT firmware.
- `>>mhmedia <n> SSSensorOffset` , the offset value used by the SSAT equation.
- `>>mhmedia <n> SSSSensorK1` , the gain applied to the previous threshold value.
- `>>mhmedia <n> SSSSensorK2` , the gain applied to the new measurement.

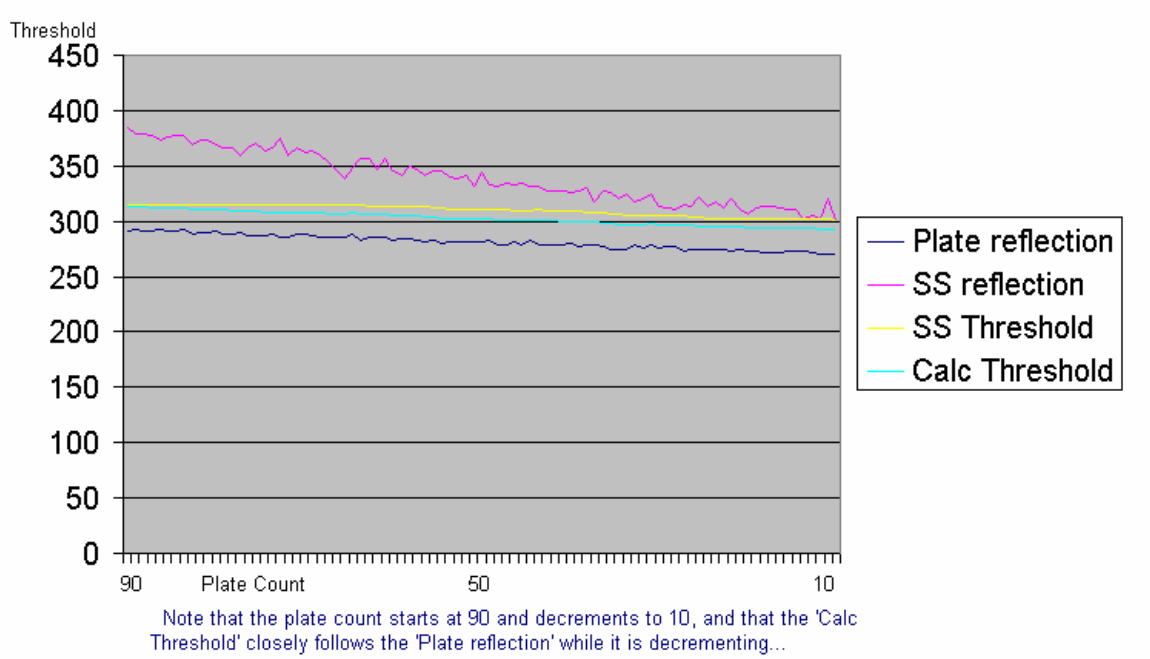
Practical usage case: a field engineer working with Fuji positive media got the best results by setting the SSAT NVS parameters to the following values:

K1 = 0.75

K2 = 0.24

Offset = 33

The implementation of these settings allows the threshold to more closely follow the plate emulsion without too much compensation when picking the first few plates. The graph below shows the behavior of plates and slip sheets being picked with SSAT enabled.



Note: The equation used to determine the new threshold value to be used for the NEXT plate is:

T(n) = K1*T(n-1)+K2*(S(n)+X)

Where:

T = threshold
K1 = gain previous
K2 = gain new
S = sensor reading
X = offset
n = sample #