

Optimizing SD Card Life in ASPECT® Control Engines

Issue Date: March 29th 2019

Product: ASPECT®

Product Version: < 3.02.01

Summary

The lifespans of SD Cards have a defined maximum number of write cycles per the manufacturer’s specifications. Recognizing the practical lifetime limitations associated with SD card technology, assigning limits to the amount of log data stored in the **ASPECT®** database can prolong the life of the SD card. This bulletin describes how to limit **Audit Trail** writes and lists the suggested and tested logging limits for **MATRIX Series** devices.

Background

ASPECT® 3.02.01 introduced standard limits for **Alarm** and **Trend logging**, to ensure proper housekeeping in the **ASPECT®** database. As this is now considered best practice, customers are advised to add these limits to existing projects.

Features and Installation

Note: If a **MATRIX Series** controller has been configured to write analog (floating point) samples in a loop without a reasonable **deadband**, or if audit logging has been configured for more than 1 million entries, you may experience issues with the performance of the microSD card.

If you have experienced issues with **microSD** cards, please contact technical support for more information about obtaining a replacement card.

Cylon recommends the use of **microSD** cards that are intended for prolonged and frequent datalogging to further extend the reliable lifetime of the card. **MATRIX Series** controllers are now shipping with an increased endurance industrial grade **microSD** card. The new industrial grade **microSD** card will be 4GB, consistent with other industry control engines. A new datasheet for the **MATRIX Series** is available for download [here](#).

Replacement **MATRIX Series microSD** cards (Part No. MIS004) must be purchased through Cylon. This ensures that the **MATRIX Series** controller performs as expected.

For any **MATRIX Series** controllers still in warranty at the date of this technical bulletin, Cylon will ship a replacement **microSD** card at the customer’s request. Customers are asked to contact Technical Support to initiate the process.

This Bulletin provides technical information and configuration instructions for the following:

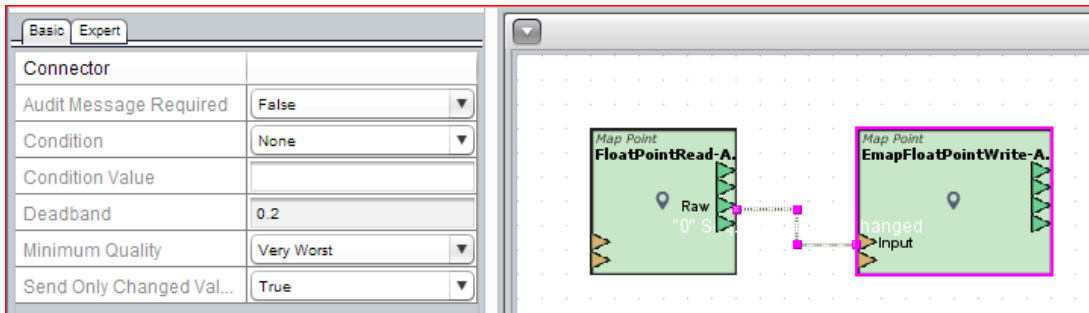
- Reducing MATRIX Series Audit Trail Writes 2
- Recommended Logging Parameter Limits 2
- Replacing an existing MATRIX Series SD card 3



Reducing MATRIX Series Audit Trail Writes

When an eMAP project is configured to write from a map point on one device to a map point on a different device using an eMAP protocol float write operation, **ASPECT®** Control Engines (ACEs) running versions of **ASPECT®** earlier than v3.02.01 writes to the **Audit Trail** every time the value of the point changes. This can lead to unnecessary Audit table writes.

Unnecessary database writes caused by this behavior can be avoided by configuring connections with a **deadband** as shown below, to reduce the number of audit log messages:



Note: Safeguards have been added in **ASPECT®** v3.02.01 to eliminate the need for this connection deadband.

Recommended Logging Parameter Limits

To ensure optimal performance in the **ASPECT®** database, customers should ensure that the following values are used as maximums for the relevant parameters:

MATRIX Series

Parameter	Recommended setting
Cleanup Trends	True
Cleanup Trends Max Rows (<i>Samples/Point</i>)	9,000 *
Cleanup Alarms	True
Cleanup Alarm Max Rows	5,000
Cleanup Retain Open Alarms	True
Cleanup Audit Trails	True
Cleanup Audit Trails Max Rows	50,000
Cleanup Map Status Tables	True
Cleanup Map Status Rows	50,000

* 9,000 rows equate to approximately:
 3 months of data @ 15 min interval,
 4.5 weeks of data @ 5 min intervals,
 6 days of data at 1 min intervals

Note: For recommended settings for the **NEXUS** and **Enterprise** refer to *Cylon Bulletin 427 Recommended ASPECT® Database Settings*.

Replacing an existing MATRIX Series SD card

Replacing a faulty or corrupted SD card

If an SD card in a **MATRIX Series** controller has failed, such that the card is unreadable and the database is irretrievable, proceed as follows:

1. Obtain a high-endurance microSD card from Cylon.
2. Insert the microSD card into a PC.
3. Format the new microSD card to FAT32 format.
4. Create folder on the microSD card called "database" (note: this is case sensitive).
5. Switch the **MATRIX Series** controller OFF.
6. Remove the old microSD card, and replace it with the new microSD card.
7. Switch the **MATRIX Series** controller ON.

Note: Unless the controller is power-cycled as described or otherwise restarted, the database will not be created.

Upgrading a working SD card to a high-endurance SD Card

Cylon recommends the use of microSD cards that are intended for prolonged and frequent datalogging to further extend the reliable lifetime of the card. If you are using a **MATRIX series** device that has a less robust microSD card, proceed as follows:

1. Obtain a high-endurance microSD card from Cylon.
2. Insert the new microSD card into a PC.
3. Format the new microSD card to FAT32 format.
4. Switch the **MATRIX Series** controller OFF.
5. Remove the old microSD card
6. Copy the "database" folder from the old microSD card to the new one.
7. Place the new microSD card in the **MATRIX Series** controller.
8. Switch the **MATRIX Series** controller ON.

Note: Unless the controller is power-cycled as described or otherwise restarted, it may not write reliably to the database.

Customer Impact

Customers running projects on **MATRIX Series** devices running versions of **ASPECT®** earlier than v3.02.01 are advised to control Audit Trail writes by using **deadband** (as described on page *Reducing MATRIX Series Audit Trail Writes* on page 2).

All customers are advised to use the recommended Logging Parameter limits whenever practical.

Customers should use microSD cards that are intended for prolonged and frequent datalogging.

Note: New **MATRIX Series** controllers now ship with an increased endurance industrial grade microSD card, and replacement microSD cards for existing controllers are available from Cylon. For any **MATRIX Series** controllers still in warranty at the date of this technical bulletin, Cylon will ship a replacement microSD card.