

Synergy Nano and Quattro Certificate of Volatility



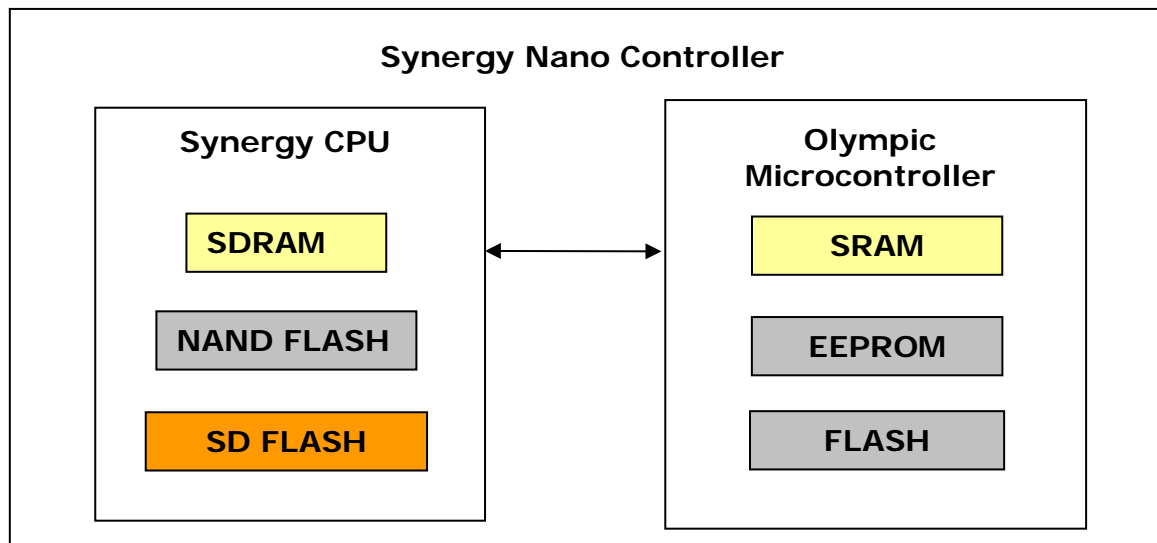
Overview

This is a statement regarding the volatility of customer data stored in the memory devices in the Synergy Nano, Nano 2, Quattro and Quattro 2 environmental test chamber controllers manufactured by Tidal Engineering Corporation.

The Synergy Nano (refers to Nano and Nano 2) and Quattro Controllers (refers to Quattro and Quattro 2) use two classes of memory devices to store data: volatile (SDRAM and SRAM) and non-volatile (EEPROM, NOR and NAND Flash).

Power cycling the system erases SDRAM and SRAM memory devices during the power up self test. Flash and EEPROM devices aren't erased when power is cycled. The detailed function of these different memory components are described in the diagram below and the Certificate of Volatility (COV) that follows.

In addition, the steps required to sanitize the Synergy Nano and Quattro are covered. The Synergy Nano and Quattro Controller Models provide rear access to the SD Flash memory card. This allows the SD Flash memory card to be removed from these controllers and sanitized. The steps necessary to Format the NOR Flash are also covered.



Synergy Nano and Quattro CPU (MARVEL PXA270)

Memory	Usage	COV implication
64MB SDRAM	Program data memory	Erased when power cycled
32MB NOR FLASH	Operating System and Flashdisk	Format Flashdisk to sanitize
1GB SD Flash	Synergy application and application data	Remove from controller to sanitize.

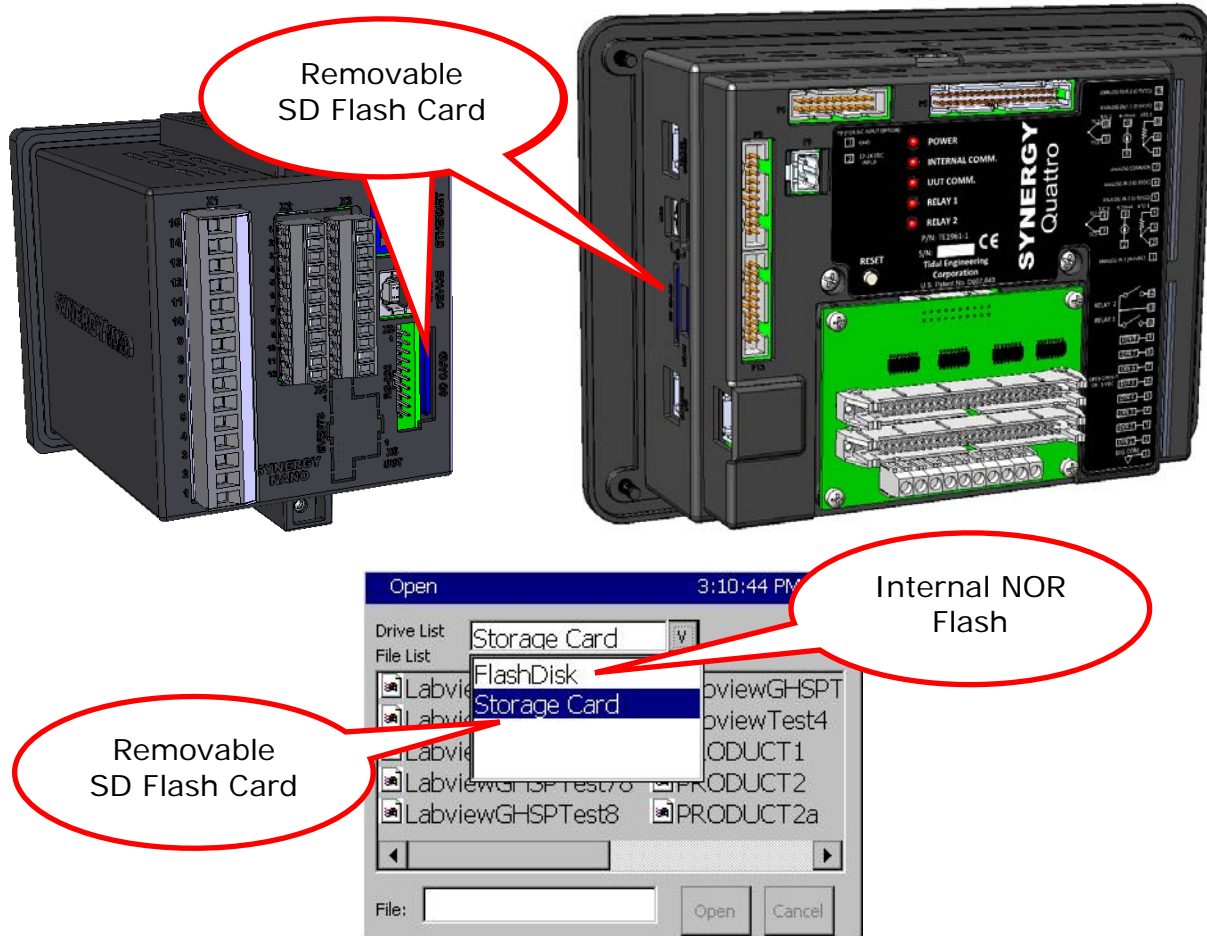
Synergy Nano 2 and Quattro 2 CPU (NVIDIA Tegra 2)



Memory	Usage	COV implication
256 MB SDRAM	Program data memory	Erased when power cycled
512MB SLC FLASH	Operating System and Flashdisk	Format Flashdisk to sanitize
1GB SD Flash	Synergy application and application data	Remove from controller to sanitize.

Olympic Microcontroller (MICROCHIP PIC18F6527-I/PT MCU FLASH 24KX16)

Memory	Usage	COV implication
3.8KB SRAM	Program data memory	Erased when power cycled
48KB FLASH	Program memory	Not customer accessible
1KB EEPROM	Calibration data, serial number	Not customer accessible

Synergy Nano and Quattro Controller with Removable Flash



Certificate of Volatility				
Model: Synergy Nano Part Numbers: TE1858-1, -2, -3, and -4		Model: Synergy Quattro Part Numbers: TE1961-3		
				
Volatile Memory				
Does the item contain volatile memory (i.e., memory whose contents are lost when power is removed)?				
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				
If the answer is 'Yes', please provide the following information for each type (use additional sheets if required):				
Type (SRAM, DRAM, etc.): SDRAM	Size: 64MB	User Modifiable: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Function: Program Memory	Process to Sanitize: Cycle AC Power
Type (SRAM, DRAM, etc.): Olympic Microcontroller RAM	Size: 3.8KB	User Modifiable: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Function: Program Memory	Process to Sanitize: Cycle AC Power
Non-Volatile Memory				
Does the item contain non-volatile memory (i.e., memory whose contents are retained when power is removed)?				
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				
If the answer is 'Yes', please provide the following information for each type (use additional sheets if required):				
Type (BBRAM, Flash, EEPROM, etc.): Olympic EEPROM	Size: 1KB	User Modifiable: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Function: Calibration	Process to Sanitize: N/A
Type (BBRAM, Flash, EEPROM, etc.): Olympic Microcontroller FLASH	Size: 48KB	User Modifiable: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Function: Program storage	Process to Sanitize: N/A
Type (BBRAM, Flash, EEPROM, etc.): NOR FLASH	Size: 32MB	User Modifiable: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Function: Operating System and Flashdisk	Process to Sanitize: Format DSK0: Internal Flash
Type (BBRAM, Flash, EEPROM, etc.): SD Memory card	Size: 1GB	User Modifiable: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Function: Application and Data	Process to Sanitize: Remove and Destroy
Media				
Does the item contain media storage capability (i.e., removable or non-removable disk drives, tape drives, memory cards, etc.)?				
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				
If the answer is 'Yes', please provide the following information for each type (use additional sheets if required):				
Type (Disk, Tape, etc.): SD Memory Card (Secure Digital) Removable: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Size: 1GB	User Modifiable: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Function: Application and Data Storage	Process to Sanitize: Remove and Destroy
Additional Information:				
Vendor Representative Information				
Name: Craig Borax	Title: President	Office Phone: 973-328-1173	Fax/Email: craig.borax@tidaleng.com	

Certificate of Volatility

Model: Synergy Nano 2 Part Numbers: TE1858-21, -22, -23, and -24	Model: Synergy Quattro 2 Part Number: TE1961-23
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Volatile Memory

Does the item contain volatile memory (i.e., memory whose contents are lost when power is removed)?
 Yes No

If the answer is 'Yes', please provide the following information for each type (use additional sheets if required):

Type (SRAM, DRAM, etc.): SDRAM	Size: 256MB	User Modifiable: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Function: Program Memory	Process to Sanitize: Cycle AC Power
Type (SRAM, DRAM, etc.): Olympic Microcontroller RAM	Size: 3.8KB	User Modifiable: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Function: Program Memory	Process to Sanitize: Cycle AC Power

Non-Volatile Memory

Does the item contain non-volatile memory (i.e., memory whose contents are retained when power is removed)? Yes No

If the answer is 'Yes', please provide the following information for each type (use additional sheets if required):

Type (BBRAM, Flash, EEPROM, etc.): Olympic EEPROM	Size: 1KB	User Modifiable: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Function: Calibration	Process to Sanitize: N/A
Type (BBRAM, Flash, EEPROM, etc.): Olympic Microcontroller FLASH	Size: 48KB	User Modifiable: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Function: Program storage	Process to Sanitize: N/A
Type (BBRAM, Flash, EEPROM, etc.): SLC NAND FLASH	Size: 512MB	User Modifiable: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Function: Operating System and Flashdisk	Process to Sanitize: Format DSK0: Internal Flash
Type (BBRAM, Flash, EEPROM, etc.): SD Memory card	Size: 1GB	User Modifiable: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Function: Application and Data	Process to Sanitize: Remove and Destroy

Media

Does the item contain media storage capability (i.e., removable or non-removable disk drives, tape drives, memory cards, etc.)?
 Yes No

If the answer is 'Yes', please provide the following information for each type (use additional sheets if required):

Type (Disk, Tape, etc.): SD Memory Card (Secure Digital) Removable: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Size: 1GB	User Modifiable: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Function: Application and Data Storage	Process to Sanitize: Remove and Destroy
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Additional Information:

Vendor Representative Information

Name: Craig Borax	Title: President	Office Phone: 973-328-1173	Fax/Email: craig.borax@tidaleng.com
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The following appendices cover the processes that can be used to clear/sanitize the Synergy Controller's Flash Memory.

Appendix A: Formatting DSK0: Internal Flash on the Synergy Controller

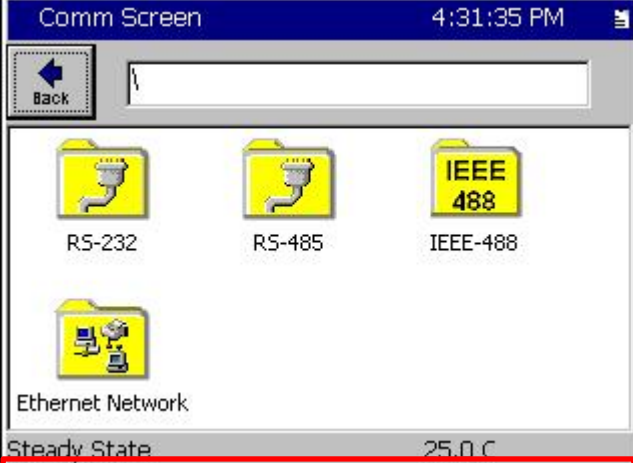
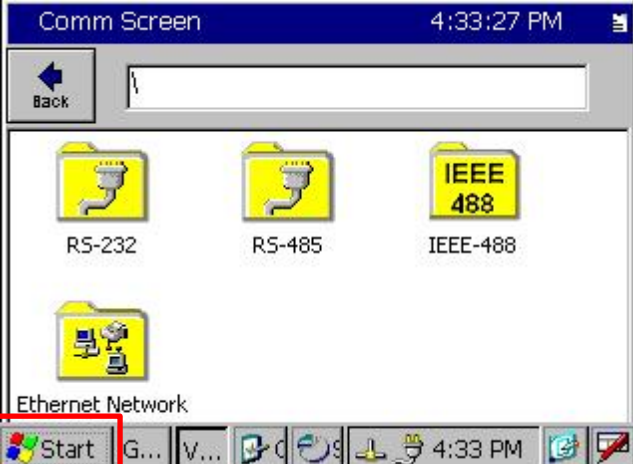
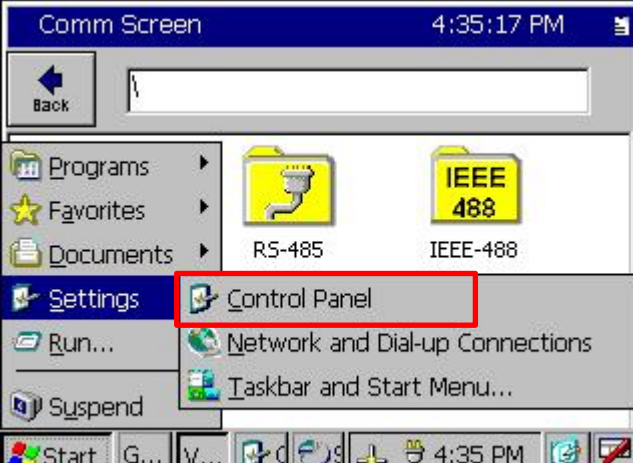
Appendix B: Formatting the SD Card in a Separate Computer

Appendix C: Panel Mount SD Card Extension

Appendix D: NISPOM Clear Function

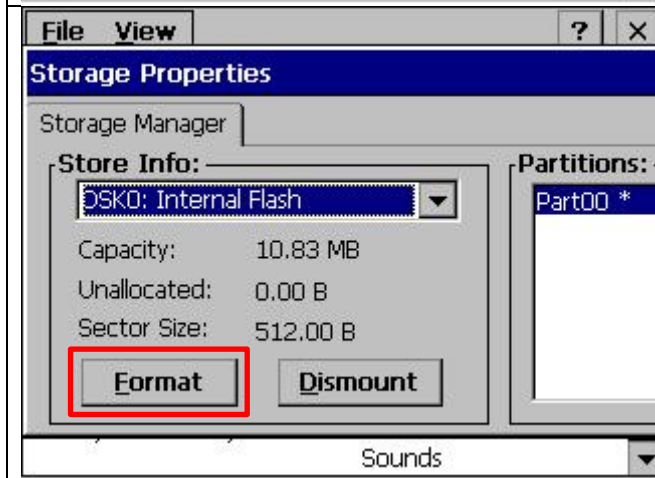
Appendix A: Formatting DSK0: Internal Flash on the Synergy Controller

The Synergy Controller Internal Flash Disk is formatted as follows:

	<p>Open the controller desktop by pressing at the bottom 1/16" of the screen with a stylus. See the red box at the left.</p>
	<p>Press the Start Button as indicated on the left.</p>
	<p>Browse to the Control Panel as shown on the left.</p>



Open the Storage Manager.



Select DSK0: Internal Flash and press Format. Note that the Synergy Nano splash screen file should be the only file in this directory. The Splash screen can be restored to this drive after formatting but it is not critical to the operation of the controller.

Appendix B Formatting the SD Card in a Separate Computer

Removing and installing the SD Memory Card on the Synergy Nano.

The Synergy Controller SD Card socket incorporates a push in/push-out mechanism. To remove the SD card, press on the card to set it to the “Out Position”. To install the card, push it in to set it to the “In Position”.

Removing the SD card



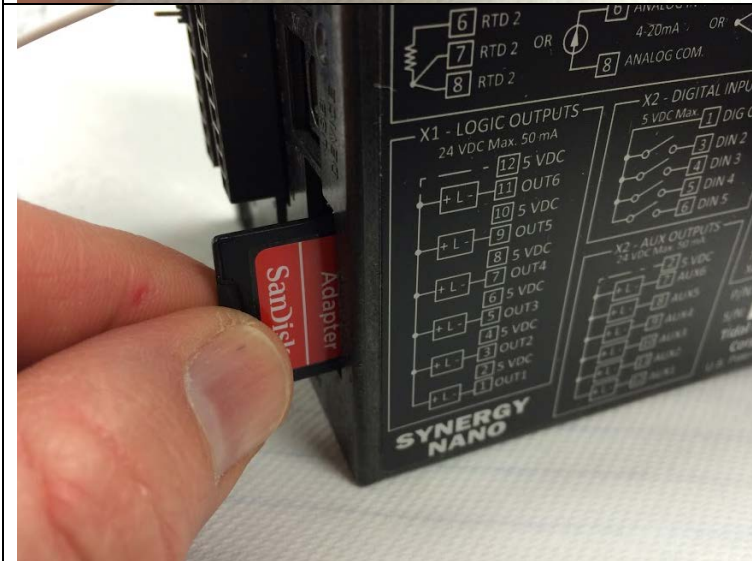
Removing the SD Memory Card
The installed position of the SD card is flush or below the surface of the bezel.



Push the card in slightly to set it in the “Out Position”.

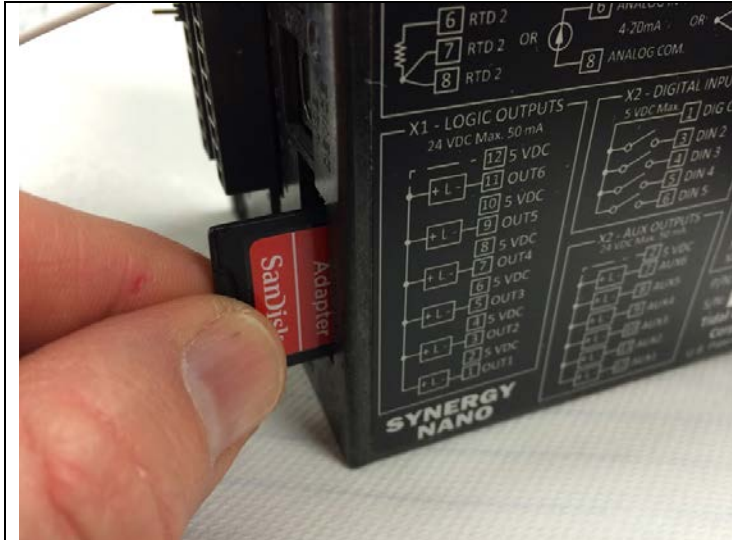


The SD Memory card will stick out slightly as shown at left.



Grasp the edge of the card with the thumb and forefinger and pull the card out of the socket.

Installing the card



Hold the SD card on the straight end with the notch on the bottom as shown at left and insert it into the SD Memory card socket at the rear of the controller.



The SD Memory Card will stick out slightly as shown at left.



Push the card in to seat it.



The final position of the SD Memory Card is flush or below the surface of the bezel.

SD Flash Card Reader

The Synergy Controller's SD Memory Card can be reformatted using a Microsoft Windows® based PC's equipped with an SD Memory Card Flash reader.

Two suitable SD Card Flash readers for PC USB applications are as follows.

 A silver, rectangular SanDisk ImageMate 5-In-1 Reader/Writer with a black USB cable attached to the top. The SanDisk logo is visible on the front face.	<p>Mfg: SanDisk ImageMate® 5-In-1 Reader/Writer P/N: SDDR-99-A15</p>
 A black, rectangular SanDisk Extreme 2.0 USB Reader with a silver front panel. It features multiple card slots labeled 'CF/1394', 'SD', and 'MiniSD'. The SanDisk logo is on the top surface.	<p>Mfg: SanDisk SanDisk Extreme® 2.0 USB Reader P/N: SDDRX3-3in1-901</p>

Copying the Synergy Controller's SD Memory Card contents to your PC

Insert the SD Memory Card in the card reader and browse to the removable drive from "My Computer". Copy the entire contents of the drive to a new folder on the PC.

Copying the Synergy Controller's files from the PC to a blank SD Memory Card

Insert the blank SD Flash Card in the card reader and browse to the removable drive using "My Computer". Copy the entire contents of the folder on the PC to the removable drive.

Destroying the Synergy Controller's SD Memory Card

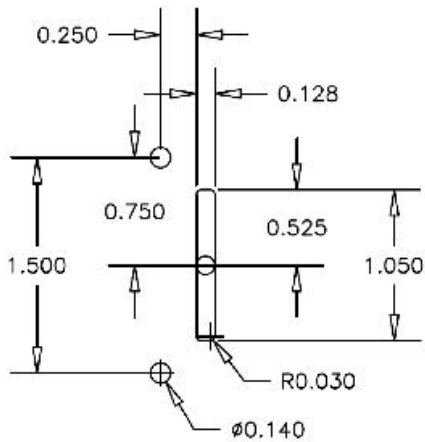
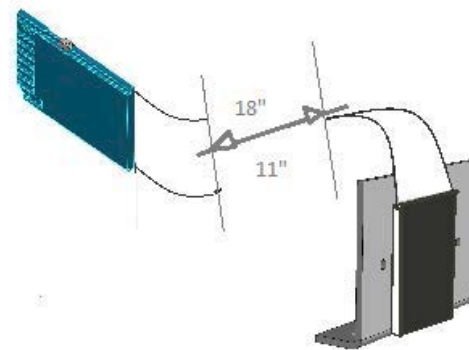
The SD Memory Card can be removed and destroyed with a cutting tool to sanitize it.

Appendix C Panel Mount SD Card Extension

Tidal Engineering offers two SD Card Extension kits that can be mounted on the front panel to provide access to the SD Card.

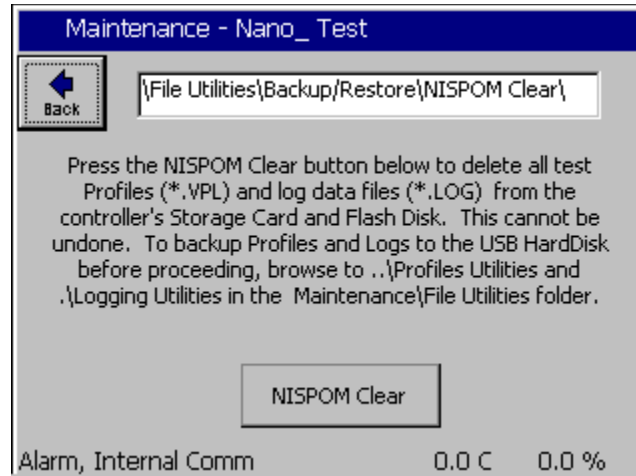
These work with all Synergy Nano and Synergy Quattro controller models

TE2864-18	Synergy Controller Front Panel SD Card Extender, 18"
TE2864-11	Synergy Controller Front Panel SD Card Extender, 11"



Appendix D: NISPOM Clear Function

To simplify the cleaning process when Synergy Controllers are operated in secure areas, version 4.3.15 Build 1074 of the Synergy Controller software include a NISPOM Clear feature.



The Defense Security Services (DSS) "Manual for the Certification and Accreditation of Classified Systems under the NISPOM", defines a "Clear" process that can be used to remove classified information from memory on devices like the Synergy Controller.

This feature will delete the files on the controller according to the following filter set.

- Storage Card\Data*.log
- Storage Card\Data*.conf
- Storage Card\VPL*.*
- FlashDisk*.log
- FlashDisk*.vpl
- FlashDisk*.txt
- FlashDisk*.cfg

This list identifies the files that can contain user data and the locations where these files can exist during the normal (benign) operation of the Synergy Controller Software. This feature will not remove files that are copied or saved or renamed outside the application and therefore it is not designed to protect against laboratory attacks.

Reference 1: "National Industrial Security Program Operating Manual" (NISPOM)"
<https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodm/522022M.pdf>

Reference 2: "Manual for the Certification and Accreditation of Classified Systems under the NISPOM"
<https://www.dss.mil/Portals/69/documents/odaa/ODAA%20Process%20Manual%20Version%203.2.pdf>



About the Synergy Controller Family

Tidal Engineering's Synergy Controllers; the ¼ DIN Synergy Nano, the Synergy Micro 2, and the Synergy Quattro provide state-of-the-art usability and connectivity for environmental test control and data acquisition. They combine the functions of a chamber controller and a data logger and are designed to improve test efficiency by supporting both factory automation and test and measurement protocols and standards.

Synergy Controller feature highlights includes:

- ➔ Color touch screen
- ➔ Ethernet, RS-232 and GPIB communications
- ➔ Built in 100 MB Data logger with USB drive support
- ➔ Data Acquisition, up to 64 T-type thermocouples (Optional)
- ➔ Built-in Web Server for remote control; WebTouch Remote™
- ➔ Compatible with Synergy Manager for PC based control, monitoring and programming.
- ➔ Built-in FTP Server for factory automation and test and measurement applications

For more information regarding these controllers please see the full Synergy Controller Technical Manual on our website at <http://www.tidaleng.com/synergy.htm>

About Tidal Engineering

Headquartered in Randolph, NJ, Tidal Engineering Corporation has been designing and building award-winning embedded hardware and software for test and measurement and data acquisition applications since 1992. The company is recognized for technical expertise in such areas as Embedded IEEE 488, and turnkey SCADA (Supervisory Control and Data Acquisition) systems.

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