
Product Specification

# SMART Modular XceedSecure2 SATA Solid State Drive


**2.5” Data Storage**

**December 2009, Rev H**
**PN: 810100015-1N**

RoHS COMPLIANT 2002/95/EC

***www.smartm.com***

# REVISION HISTORY

| Date | Revision | Section(s) | Description |
|---|---|---|---|
| Nov 2008 | A | All | Prepared for release. |
| Dec 2008 | B | Performance | Adjusted performance numbers. |
| Jan 2009 | C | ATA Commands | Added note regarding Security Erase Unit command. |
| Feb 2009 | D | Power | Adjusted numbers based on testing. |
| Apr 2009 | E | Mechanical Drawing and Environmental Testing | Added center line callouts. Removed “pending.” |
| Apr 2009 | F | Secure Erase | Added sentence regarding the use of an external trigger or software to initiate the secure erase operation. |
| Oct 2009 | G | Power and ATA Commands | Added average and rms values for all drive capacities; specified commands the drive blocks when write protect is enabled. |
| Dec 2009 | H | All | Added -34N information. |

**ESD Caution – Handling**

Static electricity may be discharged through this disk subsystem. In extreme cases, this may temporarily interrupt the operation or damage components. To prevent this, make sure you are working in an ESD-safe environment. For example, before handling the disk subsystem, touch a grounded device, such as a computer case, prior to handling.

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Where listed for specific models, performance characteristics for other models may differ.

One gigabyte, or GByte, equals one billion bytes when referring to drive capacity. Accessible capacity may vary based on the operating environment and drive formatting.

America

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# 1.0 INTRODUCTION

This product specification defines the architecture, attributes, performance, technologies, and compliance and regulatory requirements for the XceedSecure2 2.5" SATA data storage drive.

## 1.1 Product Description

The XceedSecure2 2.5" SATA data storage drive is powered by the patented ArrayPro® performance engine to deliver a high-performance solution for a wide range of applications. The XceedSecure2 2.5" SATA solid state drive (SSD) leverages this unique ArrayPro technology to provide true sustained write and read performance.

These 2.5-inch flash SSDs can easily replace standard 2.5-inch hard disk drives (HDDs), providing full HDD functionality with higher reliability and superior performance. In addition, the XceedSecure2 2.5" SATA SSD contains no moving parts. The XceedSecure2 2.5" SATA SSD is far superior to HDDs in terms of ruggedness, shock resistance, environmental resilience, and performance in no-compromise applications.

To meet the unique data security requirements of defense and security applications, EraSure® data security provides multiple levels of data elimination techniques. EraSure Clear provides a fast data elimination function that enables erasing of data in seconds. EraSure Sanitize uses an agency-defined and unique customer-defined pre-programmed sanitization procedure, allowing full media declassification. Combined with the ArrayPro performance engine, EraSure Sanitize delivers unparalleled secure erase performance.

## 1.2 Key Features

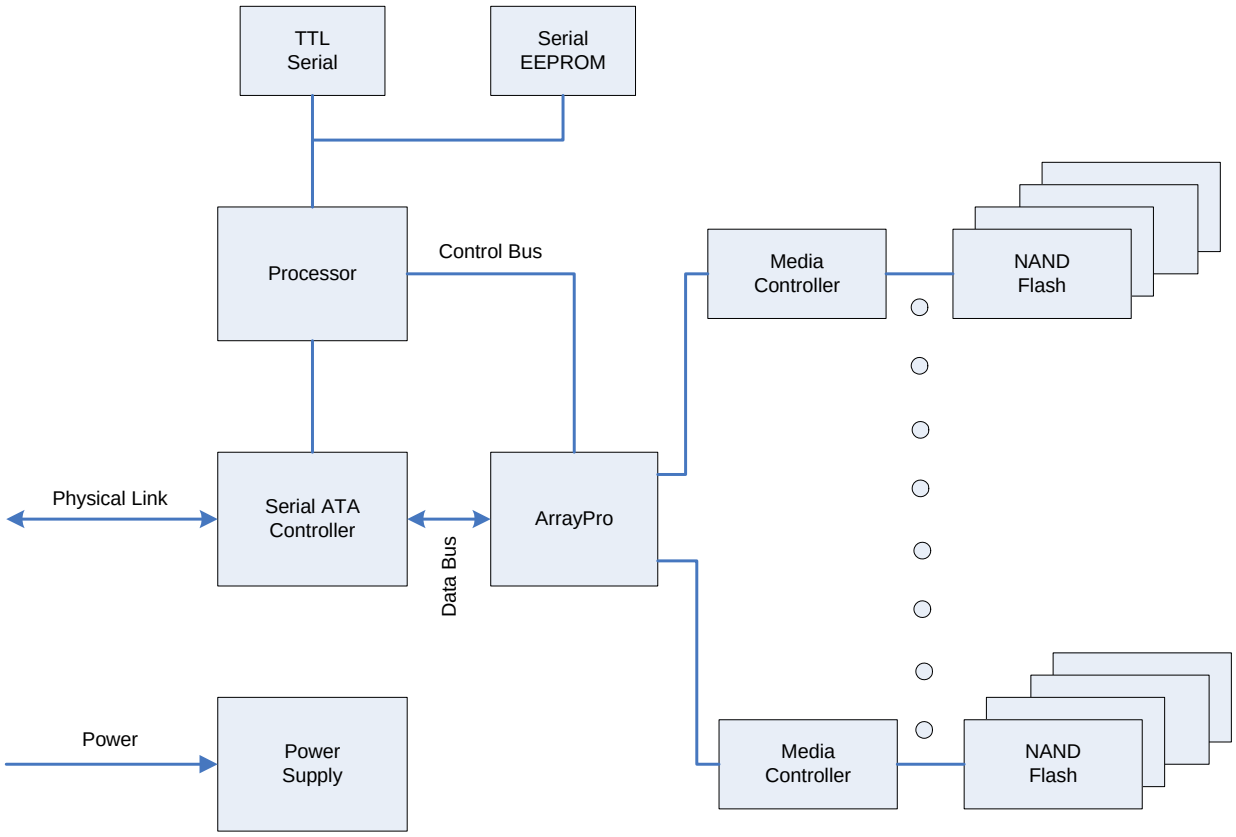
- High capacity in a 2.5" form factor; up to 128 GBytes in 9.5 mm and 256 GBytes in 16.0 mm
- High performance
  - **Burst:** 300 MBytes/sec
  - **Sustained Read:** Up to 100 MBytes/sec [1]
  - **Sustained Write:** Up to 74 MBytes/sec [1]
  - **Access time:** 272 µsec
- ATA-7-compliant with speeds of 1.5 Gbits/sec and 3.0 Gbits/sec
- High reliability with single-level cell (SLC) flash
  - **Mean Time Between Failure:** 1,300,000 hours [2]
  - **Non-Operating Shock:** 1500 *g*, half-sine, 0.5 ms, 1 shock along each axis: X, Y, and Z
  - **Operating Shock:** 50 *g* half-sine, 11 ms, 3 shocks along each axis: X, Y, and Z
  - **Operating Vibration:** Tested with the following categories: 12 for jets; 13 for propeller aircraft; 14 for helicopters; and 20 for ground vehicles
  - **Commercial Operating Temperature:** 0°C to 70°C
  - **Industrial Operating Temperature:** -40°C to 85°C
  - **Data Retention:** 10 years at 25°C

[1] Sustained performance numbers are calculated using an A25FBS-32GC33N drive with 128 KByte transfers.
[2] Calculated using an A25FBS-64GC33N. Based on Telcordia, Ground Benign Controlled at 25ºC.

- Superior flash management
  - Error Correction Code (ECC)/Error Detection Code (EDC) - up to 6 bytes in a 512-byte sector
  - Static Wear Leveling
  - Bad Block Management
  - > 260 years @ 200 GBytes/day (64 GByte drive) [3]
- Three-year limited warranty

## 1.3 Block Diagram

**Figure 1:** XceedSecure2 2.5" SATA SSD Block Diagram




[3] Based on 128 KByte block transfers and continuous, sequential writes to the drive. The number does not include file system overhead, which may vary depending on the file system. The total life span of the drive depends on both the write endurance numbers and MTBF. One kilobyte, or KByte, is equal to 1024 bytes.

### 1.4 Optional Features

- Conformal Coating
- BGA Underfill

## 2.0 PRODUCT SPECIFICATIONS

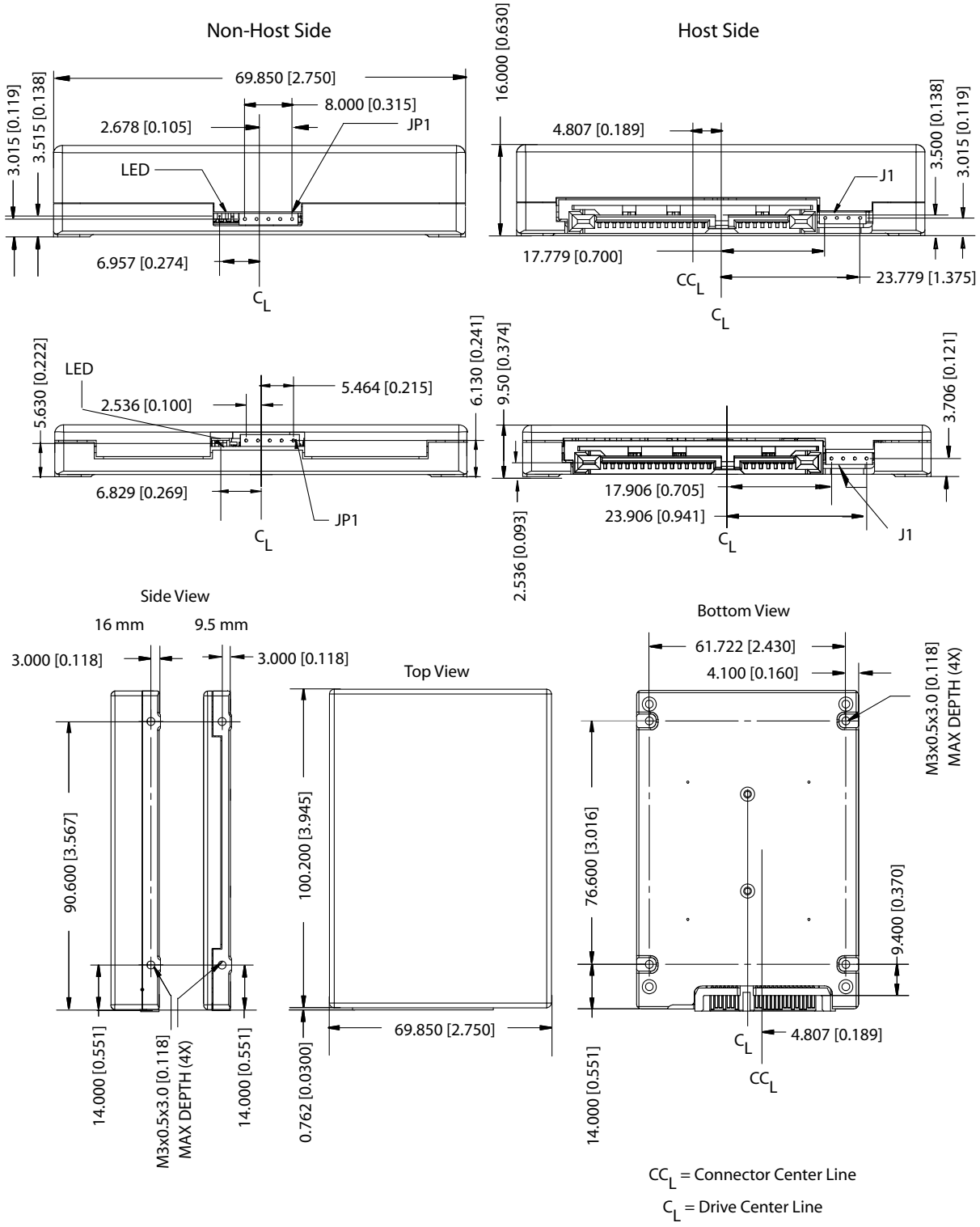
### 2.1 Physical Characteristics

The following table describes the XceedSecure2 2.5" SATA SSD dimensions, with the maximum weight. For detailed mounting configurations, see Figure 2.

**Table 1:** Physical Dimensions

| Parameter | Model | Value (Max) | Capacities |
|---|---|---|---|
| Height | A25FBS-32GC33N | 9.50 mm [0.37”] | 32, 64, 128 GBytes |
| | A25FBS-256GC34N | 16.00 mm [0.63”] | 256 GBytes |
| Weight | A25FBS-33N | 104.80 g [3.70 oz] | 128 GBytes |
| | A25FBS-34N | 172.00 g [6.07 oz] | 256 GBytes |
| Depth | All | 100.20 mm [3.94”] | |
| Width | All | 69.90 mm [2.75”] | |

**Figure 2:** XceedSecure2 2.5" SATA SSD Physical Dimensions (in mm [inches])




Mechanical specifications comply with Serial ATA Revision 2.6 Specification available from the Serial ATA International Organization.

## 2.2 Interface

The XceedSecure2 2.5" SATA SSD supports ATA modes of operation, as shown in Table 2, and complies with the ATA/ATAPI-7; ANSI INCITS 397-2005, AT Attachment with Packet Interface-7 standard.

**Table 2:** ATA Modes of Operation

| Mode | Support |
|---|---|
| PIO | 0, 1, 2, 3, 4 |
| Multiword DMA | 0, 1, 2 |
| Ultra DMA | 0, 1, 2, 3, 4, 5, 6, 7 |

## 2.3 Performance

Tables 3 and 4 show the performance specifications, which are based on the A25FBS-32GC33N.

### 2.3.1 Sustained and Random Performance

**Table 3:** Sustained and Random Read/Write Performance

| Parameter | Value |
|---|---|
| Burst Read | 300 MBytes/sec [4] |
| Burst Write | 300 MBytes/sec |
| Sustained Read [5] | Up to 100 MBytes/sec |
| Sustained Write | Up to 74 MBytes/sec |
| Random Read [6] | 2913 Input/Output Operations Per Second (IOPS) |
| Random Write | 32 IOPS |

### 2.3.2 Access/Startup Times

**Table 4:** Access/Startup Performance

| Parameter | Value (Typ) |
|---|---|
| Start Up Time (Reset to Busy) | 25 µsecs |
| Start Up Time (Reset to Not Busy) | 2.5 sec |
| Access Time | 272 µsec |
| Seek Time | 0 |

4 One megabyte, or MByte, equals 1,048,576 bytes.
5 Sustained performance values are based on 128 KByte transfers.
6 Random performance values are based on 4 KByte transfers.

## 2.4 Capacity

Table 5 describes the available memory capacities for the XceedSecure2 2.5" SATA SSD.[7]

**Table 5:** XceedSecure2 2.5" SATA Capacities

| Uninitialized Drive Capacity (GBytes) | Shipped Sector Count in LBA Mode [8] | Cylinder Heads Sectors (CHS) | | | |
|---|---|---|---|---|---|
| | | Number of Logical Cylinders | Number of Logical Heads | Logical Sectors Per Track | Current Capacity (CHS) |
| **9.5 mm SSD** | | | | | |
| 32 | 60899328 | 16383 | 16 | 63 | 16514064 |
| 64 | 121847040 | 16383 | 16 | 63 | 16514064 |
| 128 | 244012608 | 16383 | 16 | 63 | 16514064 |
| **16.0 mm SSD** | | | | | |
| 256 | 488025216 | 16383 | 16 | 63 | 16514064 |

## 2.5 Supply Voltage

**Table 6:** XceedSecure2 2.5" SATA SSD Supply Voltage

| Parameter | Min | Typ | Max | Units |
|---|---|---|---|---|
| Supply Voltage ($V_{CC}$) | 4.75 | 5 | 5.25 | V |

## 2.6 Power Consumption

**Table 7:** XceedSecure2 2.5" SATA SSD Power Consumption (A25FBS-32G33N)

| Parameter | Maximum | | Average | | RMS | |
|---|---|---|---|---|---|---|
| | mA | W | mA | W | mA | W |
| Sustained Read | 970 | 1.9 | 340 | 1.7 | 350 | 1.8 |
| Sustained Write | 900 | 4.5 | 430 | 2.7 | 450 | 2.8 |
| Idle | 550 | 2.8 | 320 | 1.6 | 320 | 1.6 |
| Startup | 640 | 3.2 | 320 | 1.6 | 320 | 1.6 |
| Hot Swap | 620 | 3.1 | 330 | 1.7 | 340 | 1.7 |
| EraSure Clear | 660 | 3.3 | 380 | 1.9 | 380 | 1.9 |
| EraSure Fast Clear and Initialize | 1010 | 5.1 | 360 | 1.8 | 380 | 1.9 |

[7] The ATA specification defines a limited number of bits for the cylinders, heads, and sectors (CHS). When using CHS-mode commands, the host can only access the first 16 GBytes, not the full drive capacity.

[8] This number does not include the OS file system overhead.

**Table 8:** XceedSecure2 2.5" SATA SSD Power Consumption (A25FBS-64G33N)

| Parameter | Maximum | | Average | | RMS | |
|---|---|---|---|---|---|---|
| | mA | W | mA | W | mA | W |
| Sustained Read | 900 | 4.5 | 340 | 1.7 | 350 | 1.8 |
| Sustained Write | 970 | 4.9 | 360 | 1.8 | 370 | 1.9 |
| Idle | 550 | 2.8 | 320 | 1.6 | 320 | 1.6 |
| Startup | 530 | 1.7 | 310 | 1.6 | 320 | 1.6 |
| Hot Swap | 660 | 3.3 | 350 | 1.8 | 350 | 1.8 |
| EraSure Clear | 750 | 3.8 | 370 | 1.9 | 380 | 1.9 |
| EraSure Fast Clear and Initialize | 1360 | 6.8 | 400 | 2.0 | 410 | 2.1 |

**Table 9:** XceedSecure2 2.5" SATA SSD Power Consumption (A25FBS-128G33N)

| Parameter | Maximum | | Average | | RMS | |
|---|---|---|---|---|---|---|
| | mA | W | mA | W | mA | W |
| Sustained Read | 840 | 4.2 | 350 | 1.8 | 360 | 1.8 |
| Sustained Write | 860 | 4.3 | 410 | 2.1 | 430 | 2.2 |
| Idle | 420 | 2.1 | 330 | 1.7 | 330 | 1.7 |
| Startup | 660 | 3.3 | 330 | 1.7 | 330 | 1.7 |
| Hot Swap | 570 | 2.9 | 340 | 1.7 | 350 | 1.8 |
| EraSure Clear | 550 | 2.8 | 390 | 1.9 | 390 | 1.9 |
| EraSure Fast Clear and Initialize | 1190 | 5.6 | 420 | 2.1 | 440 | 2.2 |

**Table 10:** XceedSecure2 2.5" SATA SSD Power Consumption (A25FBS-256G34N)

| Parameter | Maximum | | Average | | RMS | |
|---|---|---|---|---|---|---|
| | mA | W | mA | W | mA | W |
| Sustained Read | 1100 | 5.5 | 590 | 3.0 | 600 | 3.0 |
| Sustained Write | 1100 | 5.5 | 680 | 3.4 | 690 | 3.5 |
| Idle | 640 | 3.2 | 570 | 2.9 | 570 | 2.9 |
| Startup | 1100 | 5.5 | 580 | 2.9 | 580 | 2.9 |
| Hot Swap | 880 | 4.4 | 590 | 3.0 | 590 | 3.0 |
| EraSure Clear | 1200 | 6.0 | 690 | 3.5 | 690 | 3.5 |
| EraSure Fast Clear and Initialize | 2200 | 11.0 | 780 | 3.9 | 830 | 4.2 |

# 3.0 RELIABILITY CHARACTERISTICS

**Table 11:** Reliability Parameters

| Parameter | Value |
|---|---|
| Bit Error Rate | < 1 non-recoverable in $10^{14}$ bits read |
| Data Retention | 10 years at 25°C |
| ECC/EDC (Reed-Solomon) | 6 bytes in a 512-byte sector |
| Write Endurance | > 260 years @ 200 GBytes/day for 64 GBytes [9] |

# 4.0 ENVIRONMENTAL SPECIFICATIONS

## 4.1 Temperature

**Table 12:** Reliability Temperatures

| Parameter | Min | Typ | Max |
|---|---|---|---|
| Commercial Operating Temperature ($T_a$) | 0°C | 25°C | 70°C |
| Industrial Operating Temperature ($T_a$) | -40°C | -- | 85°C |
| Storage Temperature | -55°C | --- | 95°C |

## 4.2 Operating Environment

**Table 13:** Operating Environment

| Parameter | Value |
|---|---|
| Relative Humidity [10] | 5% to 95% non-condensing |
| Operating Altitude [11] | 24,384 m [80,000 ft] |

[9] Based on 128 KByte block transfers and continuous, sequential writes to the drive. The number does not include file system overhead, which may vary depending on the file system. The total life span of the drive depends on both the write endurance numbers and MTBF. One kilobyte, or KByte, equals 1024 bytes.

[10] Based on MIL-STD-810F, Method 507.4.

[11] Based on MIL-STD-810F, Method 500.4 Procedure II.

## 4.3 Shock and Vibration

**Table 14:** Shock and Vibration

| Parameter | Value |
|---|---|
| Non-Operating Shock [12] | 1500 *g* half-sine, 0.5ms, 1 shock (+/- each) along the, X, Y, and Z axes |
| Operating Shock [13] | 50 *g* half-sine, 11 ms, 3 shocks (+/- each) along the X, Y, and Z axes |
| Operating Vibration - Random [13] | Drives are tested along 3-axes, X, Y, Z, in accordance with the following:<br>• Category 12 for jets modified to 16.4 *g* rms, 10-2000 Hz random<br>• Category 12 for jets, 10 *g* rms<br>• Category 13 for propeller aircraft<br>• Category 14 for helicopters<br>• Category 20 for ground vehicle |

## 4.4 Regulations

**Table 15:** Regulation Compliancies

| Regulation | Compliance |
|---|---|
| EMC/Emissions | EN 55022:1998+A1 & A2; CISPR 22:1997; FCC CFR 47 Part 15 Subpart B:2002 |
| EMC/Immunity | EN 61000-4-2:1995; EN 61000-4-3:1998; EN 55024:1998, CISPR 24:1997 |
| Safety | UL IEC 60950-1:2003; CSA C22.2 No. 60950-1 |
| RoHS | EU Directive 2002/95/EC |

[12] Based on MIL-STD-810F, Method 516.5-10 Procedure I (modified).

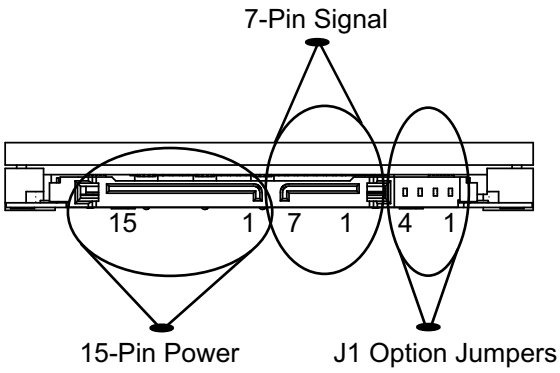
[13] Based on MIL-STD-810F, Method 514.5 Procedure I (modified for 16.4 *g* rms jet).

# 5.0 DRIVE CONFIGURATION

## 5.1 Pin Configuration

The XceedSecure2 2.5" SATA SSD interface connector pinout is shown in Figure 3. Connector pinout descriptions are detailed in Table 15 and Table 16.

**Figure 3:** XceedSecure2 2.5" SATA Connection View




## 5.2 Power Pinout Descriptions

**Table 16:** Power Pinout Descriptions

| Pin | Signal | Description | Cable Use | Backplane Use |
|---|---|---|---|---|
| P1 | Not Used (3.3 V) | N/A | | |
| P2 | ERASE (3.3 V) | 10 mA at +3.0 V to +40 V for secure erase operation | | |
| P3 | Reserved (3.3 V) | Reserved | | |
| P4 | ERASE_RTN (GND) | Return for external trigger | 1st mate | 1st mate |
| P5 | GND | Ground | 1st mate | 2nd mate |
| P6 | | | | |
| P7 | 5 V | 5 V power, pre-charged, 2nd mate | 1st mate | 2nd mate |
| P8 | 5 V | 5 V power | 2nd mate | 3rd mate |
| P9 | | | | |
| P10 | GND | Ground | 1st mate | 2nd mate |
| P11 | EXTERNAL_LED | Reserved | | |
| P12 | GND | Ground | 1st mate | 1st mate |
| P13 | Not Used (12 V) | N/A | | |
| P14 | | | | |
| P15 | | | | |

Values in parentheses indicate the SATA specification signal name.

## 5.3 Signal Pinout Descriptions

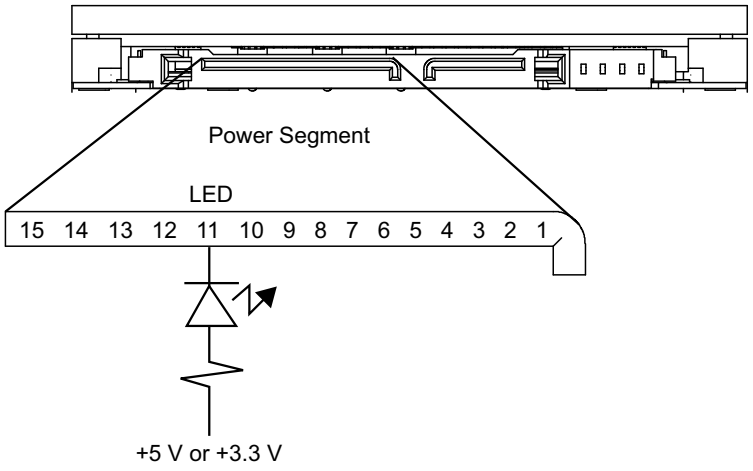
**Table 17:** Signal Pinout Descriptions

| Pin(s) | Signal | Description | Cable Use | Backplane Use |
|---|---|---|---|---|
| S2 | Dev Rx+ | Differential signal pair A from Phy | 2nd mate | 3rd mate |
| S3 | Dev Rx- | | | |
| S5 | Dev Tx- | Differential signal pair B from Phy | 2nd mate | 3rd mate |
| S6 | Dev Tx+ | | | |
| S1, S4, S7 | GND | Ground | 1st mate | 2nd mate |

## 5.4 Remote LED

In compliance with the SATA specification, Pin 11 on the SATA 15-pin power connector supports a remote LED to a 3.3 V or 5 V power source. If connecting a remote LED, select a series resistor to limit current to 10 mA or less. When connected, the remote LED indicates activity. Refer to the SATA specification for more details.

**Figure 4:** Remote LED Configuration



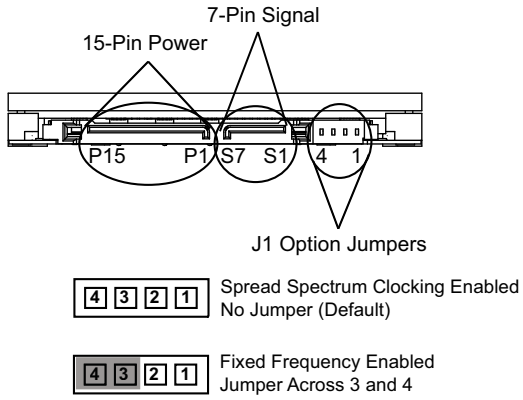
## 5.5 J1 Jumper Options

**Table 18:** J1 Jumper Options

| Pin | Signal |
|---|---|
| 1 | Reserved |
| 2 | Reserved |
| 3 | SSC Disable |
| 4 | GND |

Spread spectrum clocking (SSC) is enabled by default. To enable fixed frequency clocking, install a jumper across pins 3 - 4 on J1.

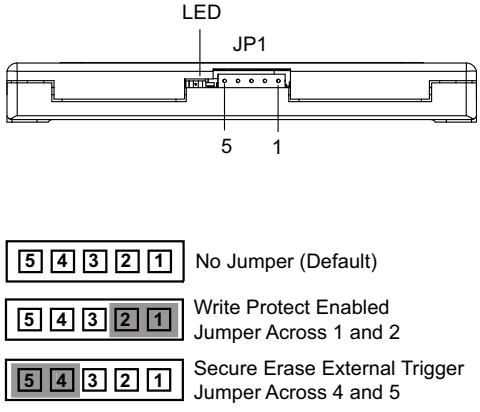
**Figure 5:** J1 Configuration




## 5.6 JP1 Jumper Options

The jumper on the XceedSecure2 2.5" SATA SSD is shown in Figure 6. Pins 4 and 5 are used to connect a remote trigger for use in secure erase options. Pins 1 and 2 enable the Write Protect feature. By default, these pins are open.

**Figure 6:** JP1 Configurations




All other pins are reserved.

# 6.0 SUPPORTED ATA COMMANDS

The XceedSecure2 2.5" SATA SSD supports the commands listed in the following table. For a complete description of these commands, see the ATA-7 Standard Specification. Commands listed with an asterisk (*) are blocked if write protect is enabled on the drive.

**Table 19:** Supported ATA Commands

| Command Name | Op Code (Hex) | Command Set (Category) |
|---|---|---|
| CFA Write Sectors w/o Erase* | 38 | CFA |
| Check Power Mode | E5 | PwrMgmt |
| | 98 | PwrMgmt |
| Door Lock | DE | *See Media Lock* |
| Door Unlock | DF | *See Media Unlock* |
| Execute Device Diagnostic | 90 | General |
| Flush Cache | E7 | General |
| Flush Cache Extended | EA | ExtLBA |
| Identify Device | EC | General |
| Idle | E3 | PwrMgmt |
| | 97 | PwrMgmt |
| Idle Immediate | E1 | PwrMgmt |
| | 95 | PwrMgmt |
| Initialize Device Parameters | 91 | General |
| Media Lock | DE | Removable Media |
| Media Unlock | DF | Removable Media |
| Read Buffer | E4 | General |
| Read DMA | C8 | General |
| Read DMA Ext | 25 | ExtLBA |
| Read DMA w/o Retries | C9 | General |
| Read Log Ext | 29 | ExtLBA |
| Read Multiple | C4 | General |
| Read Multiple Ext | 29 | ExtLBA |
| Read Native Max Address | F8 | Protected |
| Read Native Max Address Ext | 27 | ExtLBA |
| Read Sectors | 20 | General |
| Read Sectors Ext | 24 | ExtLBA |
| Read Sectors w/o Retries | 21 | General |
| Read Verify Sectors | 40 | General |
| Read Verify Ext | 42 | ExtLBA |
| Read Verify w/o Retries | 41 | General |

**Table 19:** Supported ATA Commands *(Continued)*

| Command Name | Op Code (Hex) | Command Set (Category) |
|---|---|---|
| Recalibrate | 10 | General |
| | 11-1F | General |
| Security Disable Password* | F6 | Security |
| Security Erase Prepare | F3 | Security |
| Security Erase Unit [14] | F4 | Security |
| Security Freeze Lock | F5 | Security |
| Security Set Password* | F1 | Security |
| Security Unlock | F2 | Security |
| Seek | 70 | General |
| | 71-7F | General |
| Set Features | EF | General |
| Set Max Address | F9 | Protected |
| Set Max Address Ext | 37 | ExtLBA |
| Set Multiple Mode | C6 | General |
| Sleep | E6 | PwrMgmt |
| | 99 | PwrMgmt |
| S.M.A.R.T. Operations | B0 | S.M.A.R.T. |
| Standby | E2 | PwrMgmt |
| | 96 | PwrMgmt |
| Standby Immediate | E0 | PwrMgmt |
| | 94 | PwrMgmt |
| Write Buffer* | E8 | General |
| Write DMA* | CA | General |
| Write DMA Ext* | 35 | ExtLBA |
| Write DMA w/o Retries* | CB | General |
| Write Log Ext* | 3F | ExtLBA |
| Write Multiple* | C5 | General |
| Write Multiple Ext* | 39 | ExtLBA |
| Write Sectors* | 30 | General |
| Write Sectors Ext* | 34 | ExtLBA |
| Write Sectors w/o Retries* | 31 | General |
| Write Verify* | 3C | General |

[14] This command uses a non-standard format which allows the user to select from a different and more comprehensive list of erase sequences than the ATA-7 specification defines.

# 7.0 SUPPORTED S.M.A.R.T. OPERATIONS

Self-monitoring analysis and reporting technology (S.M.A.R.T.) commands provide diagnostic information regarding drive operation and, in certain cases, can assist in predicting drive degradation. Because S.M.A.R.T. alerts the host of possible drive problems, you can assess the situation and back up data prior to an operational failure.

Each S.M.A.R.T. attribute monitors a specific drive condition, with threshold levels configured for select attributes. When the drive exceeds these thresholds, the S.M.A.R.T. attribute reports the condition. In many cases, exceeding the threshold simply indicates you should monitor the drive more closely. Host systems initiate commands, generated manually or with a third-party diagnostic tool, to monitor S.M.A.R.T. attributes.

Although XceedSecure2 SATA drives support several S.M.A.R.T. operations, which are subcommands of the S.M.A.R.T. Operations command (see Table 19), the S.M.A.R.T. Return Status and S.M.A.R.T. Read Data subcommands are used for monitoring the drive.

Initiating a S.M.A.R.T. Return Status command returns the current state of the drive, specifying whether or not an attribute exceeded the assigned threshold. If an attribute has exceeded a threshold level, SMART Modular Technologies recommends issuing the S.M.A.R.T. Read Data command to identify the specific attribute.

The S.M.A.R.T. Read Data command reads the following data from the S.M.A.R.T. attribute table (see Table 20 for a description of the raw data returned for each attribute):

- Power-On Time
- Secure Erase Progress
- Minimum Spares
- Temperature

| | |
|---|---|
| **NOTE:** | For more details about S.M.A.R.T. operations, ask your representative for the *S.M.A.R.T. Attributes Technical Reference* for XceedSecure2 drives. |

**Table 20:** Supported S.M.A.R.T. Subcommands

| Subcommand Name | Feature Code (Hex) |
|---|---|
| S.M.A.R.T. Read Data | D0 |
| S.M.A.R.T. Read Attribute Thresholds | D1 |
| S.M.A.R.T. Read Log | D5 |
| S.M.A.R.T. Write Log | D6 |
| S.M.A.R.T. Enable Operations | D8 |
| S.M.A.R.T. Disable Operations | D9 |
| S.M.A.R.T. Return Status | DA |
| Read Configuration Page | E0 |
| Write Configuration Page | E1 |
| Set Passthrough | E2 |

**Table 21:** Supported S.M.A.R.T. Attributes

| Attribute ID | Name | Description |
|---|---|---|
| 9 | Power-On Time | Indicates the total number of seconds the drive has had power applied to it. |
| 113 | Secure Erase Progress | Displays the progress of the secure erase operation if the drive is currently executing a sequence. |
| 130 | Minimum Spares | Specifies the number of spare blocks remaining as a percentage of the spare blocks in the wear-leveling zone with the least number of spares. |
| 194 | Temperature | Returns the drive temperature in degrees Celsius. |

# 8.0 SUPPORTED SECURE ERASE STANDARDS

The EraSure technology supports the secure erase standards listed in the following table. In addition, XceedSecure2 2.5" SATA drives support Fast Clear and Initialize, Clear, and custom secure erase sequences. These sequences can be initiated through either software commands or the external hardware trigger. For more information, see the *EraSure Programmer's Guide*.

**Table 22:** EraSure Secure Erase Specifications

| Agency | Specification |
|---|---|
| DoD (U.S. Department of Defense, National Security Program Operating Manual) | DoD NISPOM 5220.22-M |
| DoD (U.S. Department of Defense, National Security Program Operating Manual) | DoD NISPOM 5220.22-M-Sup 1 |
| NSA (U.S. National Security Agency) | NSA/CSS Manual 130-2 |
| NSA (U.S. National Security Agency) | NSA/CSS Manual 9-12 |
| U.S. Army | AR 380-19 [15] |
| U.S. Navy | NAVSO P-5239-26 |
| U.S. Air Force | AFSSI-5020 |
| RCC-TG (Range Commanders Council Telemetry Group) | IRIG 106-07 |

[15] AR25-2 superseded USA Army 380-19 in 2003. AR25-2 was updated in October 2007, but does not specify a procedure for sanitizing or purging a drive.

## 9.0 ORDERING INFORMATION

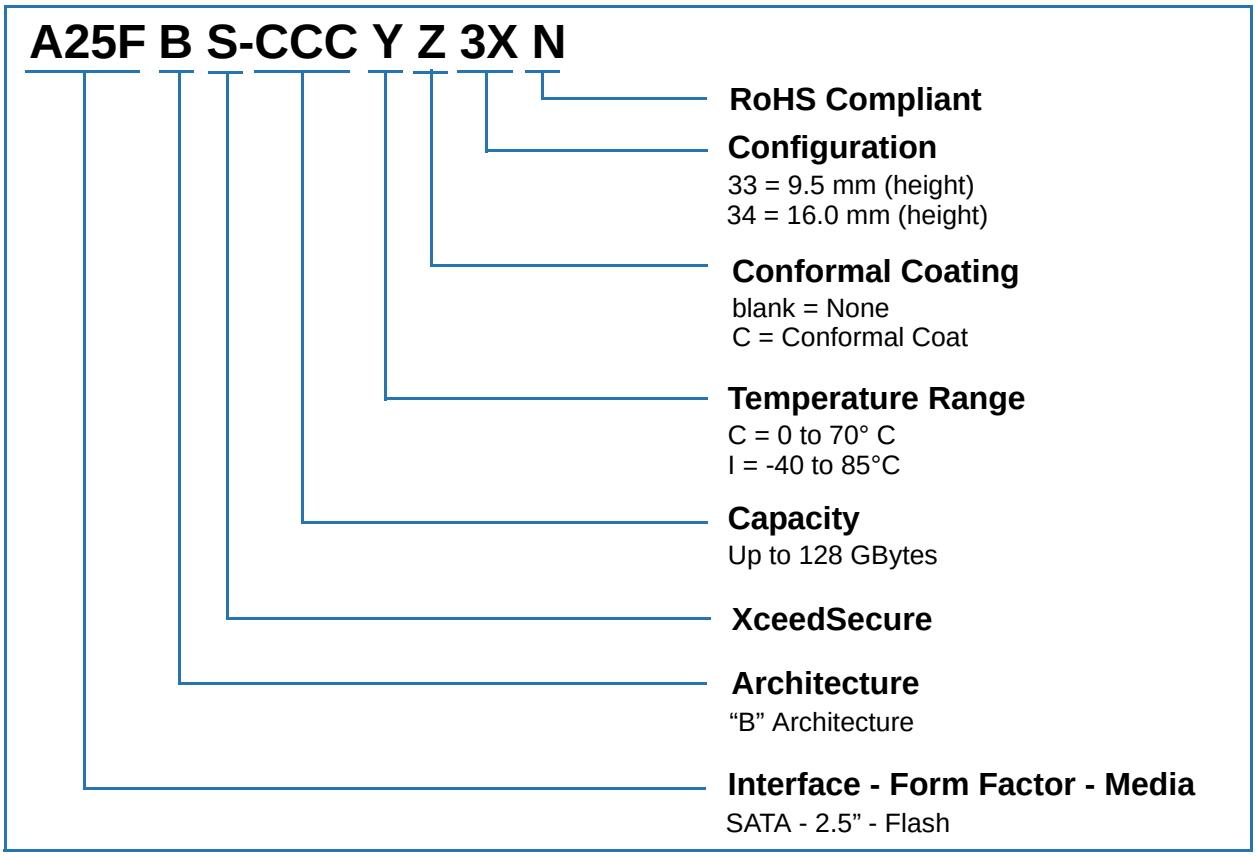



**Table 23:** Available Model Numbers and Capacities

| Model [16] | Capacity (GBytes) | Height (mm) |
|---|---|---|
| A25FBS-32GYZ33N | 32 | 9.5 |
| A25FBS-64GYZ33N | 64 | 9.5 |
| A25FBS-128GYZ33N | 128 | 9.5 |
| A25FBS-256GYZ34N | 256 | 16.0 |

## 10.0 RELATED DOCUMENTS

- ATA/ATAPI-7 Standard Specification
- XceedSecure2 2.5" SATA Product Summary
- XceedSecure2 2.5" SATA Installation Manual
- S.M.A.R.T. Attributes Technical Reference (for XceedSecure2 drives)
- EraSure Programmer’s Guide

[16] In the model number, “Y” identifies the temperature range of the media (C = Commercial; I = Industrial), and “Z” indicates the conformal coating option (blank = None; C = Conformal Coated).

# 11.0 CONTACT INFORMATION

## 11.1 SMART Modular Technologies Headquarters

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## 11.3 International Sales

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## 11.4 Worldwide Technical Support

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