

阅读申明

- 1.本站收集的数据手册和产品资料都来自互联网，版权归原作者所有。如读者和版权方有任何异议请及时告之，我们将妥善解决。
- 2.本站提供的中文数据手册是英文数据手册的中文翻译，其目的是协助用户阅读，该译文无法自动跟随原稿更新，同时也可能存在翻译上的不当。建议读者以英文原稿为参考以便获得更精准的信息。
- 3.本站提供的产品资料，来自厂商的技术支持或者使用者的心得体会等，其内容可能存在描述上的差异，建议读者做出适当判断。
- 4.如需与我们联系，请发邮件到marketing@iczoom.com，主题请标有“数据手册”字样。

Read Statement

1. The datasheets and other product information on the site are all from network reference or other public materials, and the copyright belongs to the original author and original published source. If readers and copyright owners have any objections, please contact us and we will deal with it in a timely manner.
2. The Chinese datasheets provided on the website is a Chinese translation of the English datasheets. Its purpose is for reader's learning exchange only and do not involve commercial purposes. The translation cannot be automatically updated with the original manuscript, and there may also be improper translations. Readers are advised to use the English manuscript as a reference for more accurate information.
3. All product information provided on the website refer to solutions from manufacturers' technical support or users the contents may have differences in description, and readers are advised to take the original article as the standard.
4. If you have any questions, please contact us at marketing@iczoom.com and mark the subject with "Datasheets" .

Wintec Slim SATA Drive

WxESxxxG1TA-J51xx

(J5) Series

INFORMATION IN THIS DOCUMENT IS PROVIDED IN RELATION TO WINTEC INDUSTRIES PRODUCTS, AND IS SUBJECT TO CHANGE WITHOUT NOTICE.

NOTHING IN THIS DOCUMENT SHALL BE CONSTRUED AS GRANTING ANY LICENSE, EXPRESS OR IMPLIED.

ALL INFORMATION IN THIS DOCUMENT IS PROVIDED ON AN “AS-IS” BASIS WITHOUT GUARANTEE OR WARRANTY OF ANY KIND.

- Please contact your nearest Wintec representative for the latest updates or additional product information.

Revision History

| Revision | Month | Year | History |
|----------|-----------|------|-------------------------------|
| 0.99 | September | 2011 | Preliminary Release |
| 1.0 | October | 2011 | Added 8GB and 16GB capacities |
| 1.1 | January | 2012 | Added 32GB SLC Configuration |
| | | | |
| | | | |

Table of Contents

| | | |
|-----|-------------------------------------|-----|
| 1.0 | General Product Specification | 5 |
| 2.0 | Electrical Specification..... | 7 |
| 3.0 | Software Interface | 8 |
| 4.0 | Physical Specifications | 11 |
| 5.0 | Ordering Information | 122 |

Wintec Slim SATA Drive

WxESxxxGITA-J51xx Series

Features:

GENERAL

- Density up to 128GB
- JMicron 605 controller
- SATA-II interface and backwards compatible
- High-Performance SLC or MLC NAND Flash memory

PERFORMANCE

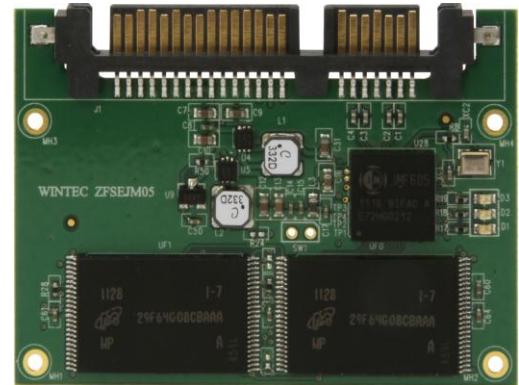
- High Performance 160MB/s Seq. Read (SATA-II)
- High Performance 100MB/s Seq. Write (SATA-II)
- Random Read: 6K IOPS at 4KB transfer (SATA-II)

RELIABILITY

- Bad Block Management & Wear Leveling
- ECC Engine: Up to 24 bits correctable per 1KB sector
- Data Integrity under power-cycling
- MTTF: 2,000,000 operating hours

COMPATIBILITY

- Serial ATA Revision 2.6 Compliant
- ATA/ATAPI-7 Compliant
- Supports TRIM and S.M.A.R.T commands
- RoHS compliant



Wintec Slim SATA Drive

NOTE:

See Section 5.0 for Configuration & Ordering Guide



Description:

The Wintec Industries WxESxxxGITA-J51xx series of ROHS Compliant Slim SATA Drives are constructed with NAND-type flash memory devices paired to JMicron 605 SSD controller for virtual-to-physical address mapping and other sophisticated flash management functions. The Wintec Flash Solid State Disk (SSD) provides major advantages over the traditional magnetic hard disk drive (HDD). Faster access time and transfer rate, silent operation and low power consumption, better shock and vibration resistance, and lower total cost of ownership make the Wintec SSDs an attractive choice as the next generation mass storage device.

The Wintec J5 series Slim SATA provides high-speed data transfer and reliability utilizing SLC or MLC NAND-flash in storage capacities ranging from 8GB to 128GB, in JEDEC MO-297A form factor. Its robust design enables the SSD to achieve outstanding reliability and performance.

The JM605 controller implements bad block management and dynamic/static wear-leveling techniques to ensure that the NAND flash memory is not worn out prematurely. The controller utilizes 24 bits/1K byte sector BCH ECC algorithms for error correction. The drive supports basic SMART features to monitor the drive status and TRIM command to efficiently maintain the data.

The Wintec J5 series Slim SATA drives are ideal for portable and desktop computers, point of sale (POS), handheld device, gaming machine, network equipment, notebook, thin-client and set-top boxes (STB).

1.0 General Product Specification

For all the following specifications, values are defined at ambient temperature unless otherwise stated.

Table 1: User Capacity Specifications

| Model Number ¹ (typ) ^{2,3} | NAND Flash Type | Total Capacity | User Capacity | Over-provision |
|--|-----------------|----------------|---------------|----------------|
| W7ES008G1TA-J51xx-yyy.zz | SLC | 8GB | 8GB | 7% |
| W7ES016G1TA-J51xx-yyy.zz | SLC | 16GB | 15GB | 7% |
| W7ES032G1TA-J51xx-yyy.zz | SLC | 32GB | 30GB | 7% |
| W2ES032G1TA-J51xx-yyy.zz | MLC | 32GB | 30GB | 7% |
| W2ES064G1TA-J51xx-yyy.zz | MLC | 64GB | 60GB | 7% |
| W2ES128G1TA-J51xx-yyy.zz | MLC | 128GB | 120GB | 7% |

NOTE:

- See Section 4.0 for Configuration & Ordering Guide
- 1GB = 1,000,000,000 Bytes
- Capacity available to end-user is less than “Total Capacity” due to flash controller overhead, and may vary with flash configuration.

Table 2: Typical Performance Specifications

| Parameter | Typical Performance ⁴ |
|----------------------------|--|
| Sustained Sequential Read | up to 140MB/sec (MLC); 160MB/sec (SLC) |
| Sustained Sequential Write | up to 60MB/sec (MLC); 100MB/sec (SLC) |
| Sustained IOPS Random Read | up to 5000 IOPS (MLC); up to 6000 IOPS (SLC) |

NOTE:

- Bandwidth measured on high-performance desktop system. Note that performance may also vary depending on host system, drive capacity, and drive configuration. Measured at QD=32.

Table 3: Flash Endurance

| Parameter | Spec |
|----------------------|---|
| Program/Erase Cycles | up to 100,000 cycles for SLC* up to 10,000 cycles for MLC* |
| Data Retention | 5 Years (Min.) |
| MTTF | 2,000,000 Hours |

* P/E Cycles vary based on the NAND Flash Type/process.

Table 4: SSD Data Reliability

| Parameter | Spec |
|------------------------|------------------------------------|
| Non-Recoverable Errors | < 1 in 10 ¹⁶ Bytes Read |
| Raw ECC Correctability | Up to 24 bits / 1024 Bytes data |

Table 5: Environmental Specifications

| Parameters | | Operating | Non-Operating |
|---------------------------|------------------|----------------|---------------|
| Temperature | Commercial Temp. | 0°C to 70°C | -55°C to 95°C |
| Humidity (Non-Condensing) | | 5% to 85% | 5% to 95% |
| Vibration | | 20 G RMS | N/A |
| Shock (Operating) | | 1,500 G (Max.) | N/A |
| Noise | | 0 dB | 0 dB |

1.1 Block Diagram

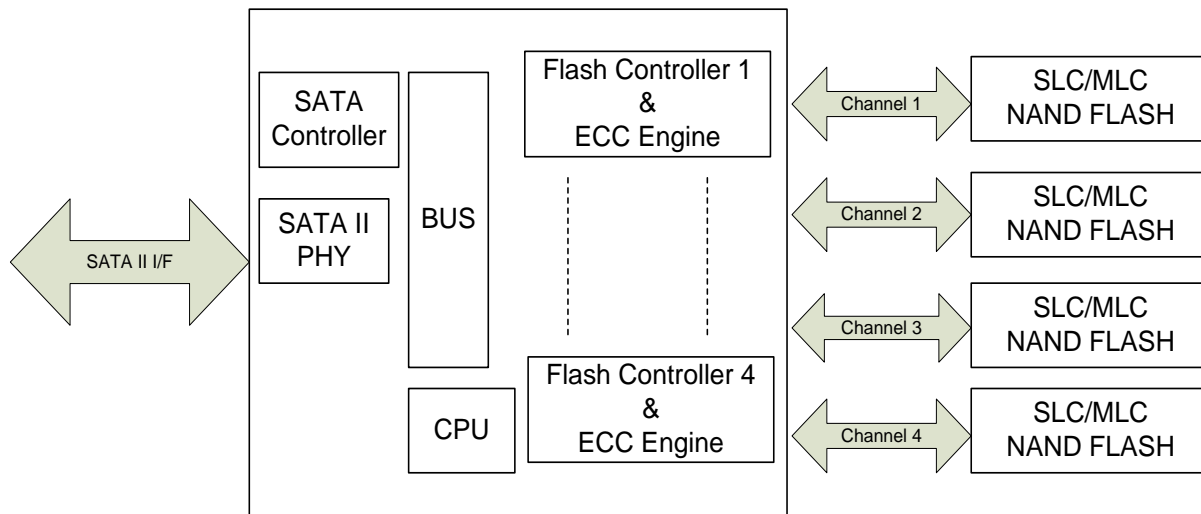


Figure 1. Block Diagram

1.2 Architecture

The Wintec J5 series SSD utilizes a single flash controller chip with 4 parallel channels of flash memory interface. The flash controller also simultaneously manages the file read and write interface with the host system via a single SATA-II interface. By utilizing 4 parallel channels of SLC or MLC flash memory, Slim SATA SSD can provide both high performance and reliability, while maintaining a minimal unit cost.

2.0 Electrical Specification

2.1 General

Table 6: Absolute Maximum Ratings

| Symbol | Parameter | Min | Max | Units |
|-----------------|-------------------------------------|------|-----|-------|
| V _{CC} | V _{CC} With Respect to GND | -0.5 | 6.0 | V |

Table 7: Typical Operating Conditions (V_{CC}=5V ± 10%)

| Symbol | Parameter | Min | Max | Units |
|-----------------|--|-----|-----|-------|
| V _{CC} | V _{CC} With Respect to GND | 4.5 | 5.5 | V |
| T _A | Operating Temperature (Commercial Temp) | 0 | 70 | °C |
| H | Humidity | 5 | 85 | % |

Table 8: Power consumption

| Symbol | Parameter | Value | Units |
|------------------|-------------------------------------|-------|-------|
| P _i | Idle Power consumption | 0.35 | Watts |
| P _T | Typical operating power consumption | 0.7 | Watts |
| P _{max} | Maximum operating power consumption | 1.25 | Watts |

2.2 SATA Pin Assignment and Description

The SATA connectors are compliant with standard SATA power specifications. As is standard, power may be supplied to all of the power pins. However, only the 5V power pins are utilized to provide power to the SSD. Therefore, where non-standard power supplies and connections are utilized, the power supply does not need to supply the SSD with power to the 3.3V or 12V power pins.

Table 9: SATA connector specification compliant

| | No. | Plug Connector pin definition | |
|---|-----|-------------------------------|-----------------------------------|
| Signal | S1 | GND | Ground |
| | S2 | A+ | Differential signal A |
| | S3 | A- | |
| | S4 | GND | Ground |
| | S5 | B- | Differential signal B |
| | S6 | B+ | |
| | S7 | GND | Ground |
| Key and spacing separate signal and power segments | | | |
| Power | P1 | V33 | 3.3V power (Not Used) |
| | P2 | V33 | 3.3V power (Not Used) |
| | P3 | V33 | 3.3V power, pre-charge (Not Used) |
| | P4 | GND | Ground |

| | | |
|------------|----------------|----------------------------------|
| P5 | GND | Ground |
| P6 | GND | Ground |
| P7 | V5 | 5V power, pre-charge |
| P8 | V5 | 5V power |
| P9 | V5 | 5V power |
| P10 | GND | Ground |
| P11 | DAS/DSS | Device Activity Signal |
| P12 | GND | Ground |
| P13 | V12 | 12V power, pre-charge (Not Used) |
| P14 | V12 | 12V power (Not Used) |
| P15 | V12 | 12V power (Not Used) |

3.0 Software Interface

3.1 ATA Command Set

All mandatory, and many optional commands and features are supported. The following tables summarize the ATA feature set and commands.

Table 11: ATA Command

| Command Name | Code | Parameters Used | | | | | |
|------------------------------|------------|-----------------|----|----|----|----|----|
| | | SC | SN | CY | DR | HD | FT |
| CHECK POWER MODE | E5h | O | X | X | O | X | X |
| DEVICE CONFIGURATION OVERLAY | B1h | X | X | X | O | X | O |
| EXECUTE DIAGNOSTICS | 90h | X | X | X | O | X | X |
| FLUSH CACHE | E7h | X | X | X | O | X | X |
| FLUSH CACHE EXT | EAh | X | X | X | O | X | X |
| IDENTIFY DEVICE | ECh | X | X | X | O | X | X |
| IDLE | E3h | O | X | X | O | X | X |
| IDLE IMMEDIATE | E1h | X | X | X | O | X | X |
| NOP | 00h | F | F | F | O | X | O |
| INITIALIZE DEVICE PARAMETERS | 91h | O | X | X | O | O | X |
| READ BUFFER | E4h | X | X | X | O | X | X |
| READ DMA | C8h or C9h | O | O | O | O | O | X |
| READ DMA EXT | 25h | O | O | O | O | O | X |
| READ FPDMA QUEUED | 60h | O | O | O | O | O | O |
| READ LOG EXT | 2Fh | O | O | O | O | O | O |
| READ MULTIPLE | C4h | O | O | O | O | O | X |
| READ MULTIPLE EXT | 29h | O | O | O | O | O | X |
| READ NATIVE MAX ADDRESS | F8h | X | X | X | O | X | X |
| READ NATIVE MAX ADDRESS EXT | 27h | X | X | X | O | X | X |
| READ SECTOR(S) | 20h or 21h | O | O | O | O | O | X |
| READ SECTOR(S) EXT | 24h | O | O | O | O | O | X |

| | | | | | | | |
|---------------------------|------------|---|---|---|---|---|---|
| READ VERIFY SECTOR(S) | 40h or 41h | O | O | O | O | O | X |
| READ VERIFY SECTOR(S) EXT | 42h | O | O | O | O | O | X |
| RECALIBRATE | 10h | X | X | X | O | X | X |
| SECURITY DISABLE PASSWORD | F6h | X | X | X | O | X | X |
| SECURITY ERASE PREPARE | F3h | X | X | X | O | X | X |
| SECURITY ERASE UNIT | F4h | X | X | X | O | X | X |
| SECURITY FREEZE LOCK | F5h | X | X | X | O | X | X |
| SECURITY SET PASSWORD | F1h | X | X | X | O | X | X |
| SECURITY UNLOCK | F2h | X | X | X | O | X | X |
| SEEK | 7xh | X | X | O | O | O | X |
| SET FEATURES | EFh | O | X | X | O | X | O |
| SET MAX | F9h | O | O | O | O | O | O |
| SET MAX ADDRESS EXT | 37h | O | O | O | O | O | X |
| SET MULTIPLE MODE | C6h | O | X | X | O | X | X |
| SLEEP | E6h | X | X | X | O | X | X |
| SMART | B0h | X | X | O | O | X | O |
| STANDBY | E2h | X | X | X | O | X | X |
| STANDBY IMMEDIATE | E0h | X | X | X | O | X | X |
| WRITE BUFFER | E8h | X | X | X | O | X | X |
| WRITE DMA | CAh or CBh | O | O | O | O | O | X |
| WRITE DMA EXT | 35h | O | O | O | O | O | X |
| WRITE DMA FUA EXT | 3Dh | O | O | O | O | O | X |
| WRITE FPDMA QUEUED | 61h | O | O | O | O | O | O |
| WRITE LOG EXT | 3Fh | O | O | O | O | O | X |
| WRITE MULTIPLE | C5h | O | O | O | O | O | X |
| WRITE MULTIPLE EXT | 39h | O | O | O | O | O | X |
| WRITE MULTIPLE FUA EXT | CEh | O | O | O | O | O | X |
| WRITE SECTOR(S) | 30h or 31h | O | O | O | O | O | X |
| WRITE SECTOR(S) EXT | 34h | O | O | O | O | O | X |
| WRITE VERIFY | 3Ch | O | O | O | O | O | O |

Note:

O = Valid, X = Don't care
SC = Sector Count Register
SN = Sector Number Register
CY = Cylinder Low/High Register
DR = Device Select Bit (Device/Head Register Bit 4)
HD = Head Select bit (Device/Head Register Bit 3-0)
FT = Features Register

3.2 SMART Command Support

The J5 series SSD drive supports basic SMART command Set used to define some vendor-specific data to report spare/bad block numbers in each memory management unit.

Table 12: SMART Command Set

| Value | Command | Value | Command |
|------------|-----------------------------------|------------|--------------------------|
| D0h | Read Data attributes | D1h | Read attribute Threshold |
| D2h | Enable/Disable attribute autosave | D3h | Save attribute Values |
| D8h | Enable SMART operation | D9h | Disable SMART operation |
| DAh | Smart Return Status | | |

3.2.1 SMART Attribute Sector

The following 512 bytes defines the SMART format. Users can obtain the data using the “Read Data” command.

Table 13: SMART Attribute Data Structure

| Byte | Description |
|----------------|--|
| 0-1 | Data Structure revision number |
| 2-13 | 1st attribute data |
| 14-361 | 2 nd -30 th Individual attribute data |
| 362 | Off-line data collection status |
| 363 | Self-test execution status |
| 364-365 | Total time in seconds to complete off-line data collection |
| 366 | Reserved |
| 367 | Off-line data collection capability |
| 368-369 | SMART capability |
| 370 | Error logging capability |
| 371 | Self-test failure checkpoint |
| 372 | Short self-test routine recommended polling time (in minutes) |
| 373 | Extended self-test routine recommended polling time (in minutes) |
| 374-510 | Reserved |
| 511 | Data structure checksum |

3.2.2 Supported SMART Attributes

The following table summarizes the SMART attribute Menu.

Table 14: SMART Attribute Menu Summary

| ID | Hex | Attribute Name |
|----|-----|--------------------------|
| 1 | 01h | Read Error Rate |
| 2 | 02h | Throughput Performance |
| 3 | 03h | Spin up time |
| 5 | 05h | Reallocated Sector Count |
| 7 | 07h | Seek Error Rate |
| 8 | 08h | Seek Time Performance |
| 9 | 09h | Power-On hours Count |
| 10 | 0Ah | Spin Retry Count |

| | | |
|-----|-----|------------------------------|
| 12 | 0Ch | Device Power Cycle Count |
| 168 | A8h | SATA PHY Error Count |
| 170 | AAh | Bad Block Count |
| 173 | ADh | Erase Count |
| 175 | AFh | Bad Cluster Table Count |
| 192 | C0h | Unexpected power Loss Count |
| 194 | C2h | Temperature |
| 197 | C5h | Current Pending Sector Count |
| 240 | F0h | Write Head |

4.0 Physical Specifications

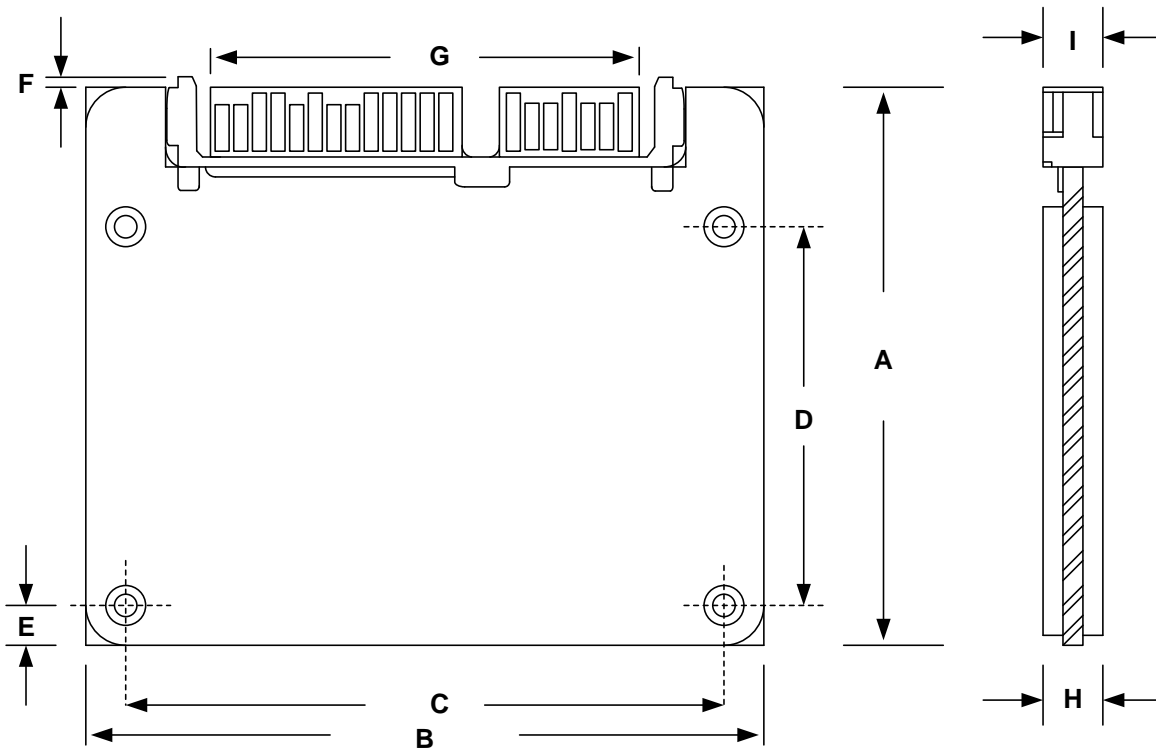


Figure 2: Physical Dimensions

Table 15: Physical Specifications

| Symbol | Common Dimensions (mm) | | |
|--------|------------------------|-------|-------|
| | Min | Nom | Max |
| A | - | 39.00 | - |
| B | 53.85 | 54.00 | 54.15 |
| C | - | 49.40 | - |
| D | - | 25.00 | - |
| E | 2.15 | 2.30 | 2.45 |
| F | - | 0.80 | - |
| G | - | 33.39 | - |
| H | - | - | 4.00 |
| I | 3.85 | 4.00 | 4.15 |

5.0 Ordering Information

Table 16: Product Availability List & Naming

| Model Number | NAND Flash Type | User Capacity |
|----------------------------|-----------------|---------------|
| WxES008G1TA-J51yyy-zzz.aa | SLC/MLC | 7.5GB |
| WxES016G1TA-J51yyy-zzz.aa | SLC/MLC | 15GB |
| WxES032G1TA-J51yyy-zzz.aa | SLC/MLC | 30 GB |
| WxES064G1TA- J51yyy-zzz.aa | SLC/MLC | 60 GB |
| WxES128G1TA- J51yyy-zzz.aa | SLC/MLC | 120 GB |

(x) **Flash Type**

7: SLC Flash
2: MLC Flash

(zzz) **Component Flash Configuration**

002: 2-Nand, Single Die Package, 1-CE
02D: 2-Nand, Dual Die Package, 1-CE
2D2: 2-Nand, Dual Die Package, 2-CE
2Q2: 2-Nand, Quad Die Package, 2-CE
004: 4-Nand, Single Die Package, 1-CE
4D2: 2-Nand, Dual Die Package, 2-CE
4Q2: 4-Nand, Quad Die Package, 2-CE

(yyy) **Flash IC Manufacturer, Die Revision, Process**

P: Samsung M: M-die 3:3x nm
I: Intel A: A-die 2:2x nm
M: Micron B: B-die
T: Toshiba C: C-die

(aa) **Firmware Revision/Options**

Please contact the factory for the latest firmware revisions and/or custom labeling and programming identification.

Contact Us (US & Int'l):

Wintec Industries OEM Sales
675 Sycamore Drive
Milpitas, CA 95035
Ph: 408-856-0500
Fax: 408-856-0501
oemsales@wintecind.com
<http://www.wintecind.com/oem>

About Wintec Industries, Inc.:

Wintec Industries, founded in 1988, is headquartered in Milpitas, California. Wintec, an ODM/OEM solution provider, specializes in product designs and manufacturing, including Flash modules (CF, SD, USB, embedded Flash, SSD, etc), DRAM modules (RDIMM, SODIMM, UDIMM), wireless products, modem products (embedded and USB), Advanced Digital Display products (ADD2 DVI, HDMI, digital signage), and so on. With experienced engineering team in Silicon Valley, Wintec provides a wide range of services and solutions for customers. Wintec is ISO9001-2000 certified.

Important Notice:

Wintec Industries makes no representations or warranties with respect to the contents of this datasheet and specifically disclaims any implied warranties of any product design for any particular purpose. Wintec Industries reserves the rights to revise this publication and to make changes from time to time in the content hereof without obligation of Wintec Industries to notify any person or organization of such revisions or changes.