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## **MUS-IND35XXSTXXX**

**3.5" SCSI 50/68/80PIN Industrial Solid State Drive**

**Data Sheet**

Version 1.1

Aug, 2013

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**Revision History**

Revision	Date	Description
1.1	Aug, 2013	Release

Confidential

## Table of Contents

1.	Overview .....	1
1.1	Product Description.....	1
1.2	Key Features .....	1
2.	Product Specifications .....	2
2.1	Capacity .....	2
2.2	Cache Size .....	2
2.3	Physical Specification .....	2
2.4	Environmental Specification.....	2
2.5	Performance.....	3
2.6	Reliability .....	4
2.7	Temperature Sensor.....	4
2.8	Product Ecological Compliance .....	4
2.9	Certifications .....	4
3.	Mechanical Information .....	5
3.1	Dimensions .....	5
3.2	Pin Locations.....	6
3.3	Signal Descriptions .....	6
4.	Model Name Rules.....	7
5.	Contact Information .....	8

## 1. Overview

### 1.1 Product Description

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This series of products are designed for advanced industrial applications, goes through three proofing tests and high reliability environmental tests. Maximus 3.5" SCSI with 50/68/80Pin interfaces for selection, supports Over Load Protect and Power Failure Protect, with a fully compliant with selected & tested standards. Maximus 3.5" SCSI products have high stability and reliability and can do perfectly well under lots of applications which involves severe environments. Maximus 3.5" SCSI has a capacity range from 1GB~256GB and can be adapted to applications such as Rugged Computer, Industrial Systems, Systems Integration, Embedded Systems, Surveillance, Server, RAID etc. All of this series are manufactured with best-class components under strict tests and technologies, and are 100% proven by series of complicated and complete and long term tests.

### 1.2 Key Features

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- Fully compatible with SCSI interface 50/68/80PIN standard
- Capacity 1GB~256GB
- Enhanced endurance by dynamic/static wear-leveling<sup>①</sup>
- Support dynamic power management
- Enhanced Power Failure Protect Function
- Built-in ECC (Error Correction Code) functionality
- Enhanced Over Load Protect Function
- Support S.M.A.R.T.
- Automatic Bad-block management<sup>②</sup>
- Support Trim and NCQ (Native Command Queuing) command
- Support BCH ECC 24-bits in 1024 bytes

**Notes:**

- ① The controller supports static/dynamic wear leveling. When the host writes data, the controller will find and use the block with the lowest erase count among the free blocks. When the free blocks' erase count is higher than the data blocks', it will activate the static wear leveling, replacing the not so frequently used user blocks with the high erase count free blocks.
- ② When the flash encounters ECC failed, program fail or erase fail, the controller will mark the block as bad block to prevent the used of this block and caused data lost later on.

## 2. Product Specifications

### 2.1 Capacity

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Model Name	Raw Capacity <sup>①</sup>
MUS-IND35XXST01X	01GB
MUS-IND35XXST02X	02GB
MUS-IND35XXST04X	04GB
MUS-IND35XXST08X	08GB
MUS-IND35XXST16X	16GB
MUS-IND35XXST32X	32GB
MUS-IND35XXST64X	64GB
MUS-IND35XXST128X	128GB
MUS-IND35XXST256X	256GB

**Notes:**

① 1 GB = 1,000,000,000 bytes; 1 sector = 512 bytes.

### 2.2 Cache Size

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Cache Size: Support 64MB Cache

### 2.3 Physical Specification

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Form Factor	3.5 inch
Connector	SCSI 50/68/80PIN
Dimensions (mm)	146.0mm±0.2×101.65mm±0.2×25.5mm±0.2
Weight	<210g
Input Voltage	5V±5%, 12V±5%

## 2.4 Environmental Specification

<b>Operating Temperature</b>		Standard Grade ( 0°C ~+70°C) Extended Grade Not Available
<b>Storage Temperature</b>		-55°C to 95°C
<b>Humidity</b>	<b>Operating</b>	95% (Non-condensing)
	<b>Non-Operating</b>	95% (Non-condensing)
<b>Vibration</b>		20G (40 to 2000Hz)
<b>Shock</b>		2000G at 0.3ms half sine wave
<b>Flash type</b>		Industrial level NAND MLC/SLC flash
<b>Burn-in Test</b>		72 Hours
<b>Average Access Time</b>		0.1ms

## 2.5 Performance<sup>①</sup>

Capacity	Flash type	Sequential Read <sup>②</sup>	Sequential Write <sup>②</sup>	IOPS Random Read (4KB QD32) <sup>③</sup>	IOPS Random Write (4KB QD32) <sup>③</sup>
01GB	MLC	/	/	/	/
	SLC	100	69	95000	8500
02GB	MLC	104	71	10000	8900
	SLC	115	75	10200	9200
04GB	MLC	117	78	10700	9500
	SLC	120	82	11000	9700
08GB	MLC	128	86	11700	10000
	SLC	132	90	12000	10200
16GB	MLC	136	92	12500	10800
	SLC	139	94	13000	11000
32GB	MLC	142	99	13300	11500
	SLC	145	102	15500	11200
64GB	MLC	147	105	14000	12000
	SLC	150	107	15800	12200
128GB	MLC	152	108	14500	13200
	SLC	155	109	16000	13400
256GB	MLC	160	112	15700	14000
	SLC	/	/	/	/

**Note:**

The performance above is upon 3.5" SCSI 68PIN products, Flash mode: Synchronous.

## 2.6 Reliability

<b>Data Retention</b>	15 years at 25°C		
<b>MTBF</b>	2,000,000 hours		
<b>Write Endurance</b>	<b>Capacity</b>	<b>MLC</b>	<b>SLC</b>
	<b>01GB</b>	/	41TB
	<b>02GB</b>	2.5TB	82TB
	<b>04GB</b>	5TB	165TB
	<b>08GB</b>	10TB	330TB
	<b>16GB</b>	20TB	650TB
	<b>32GB</b>	40TB	1300TB
	<b>64GB</b>	80TB	2600TB
	<b>128GB</b>	160TB	5200TB
	<b>256GB</b>	320TB	/

**Notes:** Endurance=Capacity\*P/E cycle/WAI  
The capacity refers to raw capacity

## 2.7 Temperature Sensor

<b>Temperature sensor</b>	<b>Yes</b>	<b>No</b>
	Support	/

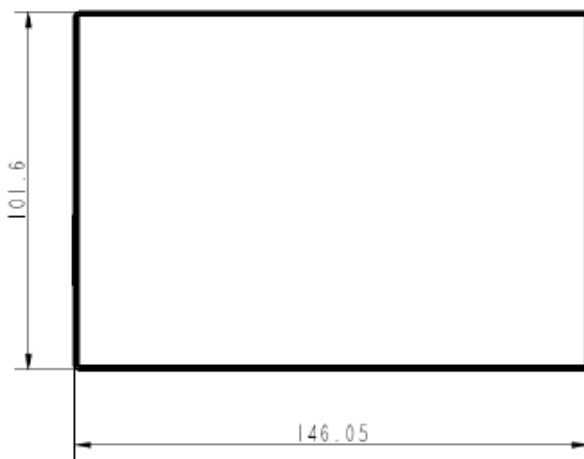
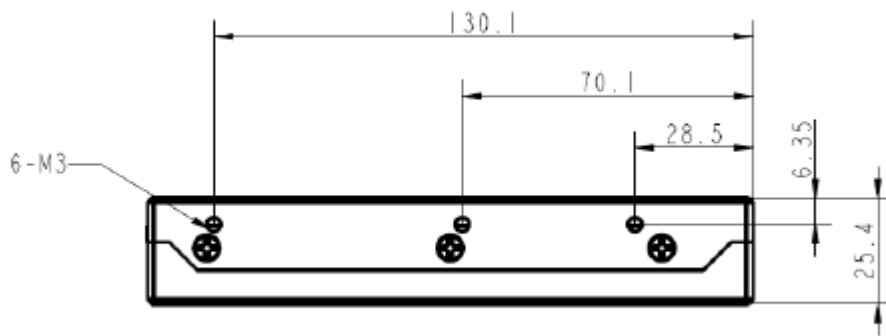
## 2.8 /2.9 Product Ecological Compliance & Certificate



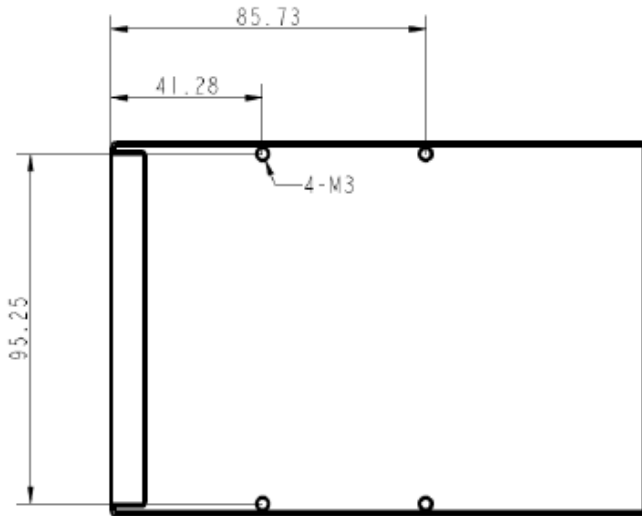
### 3. Mechanical Information

#### 3.1 Dimensions

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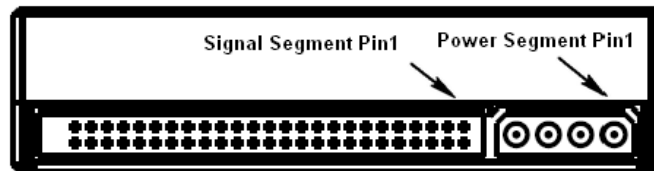






### 3.2 Pin Locations

50PIN SCSI



### 3.3 Signal Descriptions

Pin	Function	Definition
Signal Segment Pin1-50	Signal	50Pin SCSI Connector
Power Segment Pin1	Power	12V Power
Power Segment Pin2-3	GND	Ground
Power Segment Pin4	Power	5V Power

## 4. Model Name Rules

### MUS-IND 35 XX ST XX X

Abbreviation	Referring to
MUS	Maximus Brand Name
IND	Advanced Industrial Series
35	3.5 inch
XX	50/68/80PIN
ST	Temperature Range. "ST" for Standard Grade,
XX	Capacity
X	NAND Flash Type. "M" for MLC, "S" for SLC

Note: The Abbreviations in the form are corresponded under an order of "from left to the right" in the Model Name above.

The capacity refers to raw capacity not practical capacity.

## 5. Contact Information



### Headquarter:

Maximus Technology(Shenzhen) Co., Ltd

Address: A1403, #1086 East Shennan Rd, Dongmen Block, Luohu District Shenzhen City, People's Republic of China

Telephone: +86.13699784622 Fax: +86 (0755) 82579281

Sales support: sales@maximustek.com

Technical support: support@maximustek.com

For more information please visit our website: [www.maximustek.com/en](http://www.maximustek.com/en)