

# Cervoz Industrial Embedded Module

PATA Disk 44pin Vertical

Supreme Series (SLC)

S131 Family

*Product Datasheet*



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Revision: 1.0

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## Revision History

Date	Revision	Description
2023.08.11	1.0	First Released



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## 1. Product Overview

### 1.1 Introduction

Cervoz Industrial PATA Disk 44pin Vertical Embedded Module S131 family is a Solid State Disk product that is in compliance with the PATA standards. The PATA Disk 44pin Vertical Embedded Module S131 family is in low profile form factor and fits in any 44pin PATA sockets internally of a PC or on a motherboard; it can be used for both booting or storage purposes.

S131 family uses superior quality, preselected single-level cell (SLC) NAND flash memory from the industry leading manufacturer Kioxia(Toshiba). This product includes both standard temperature range and wide temperature range options with various capacities to choose from.

S131 family offers outstanding performance and reliability, ideal for extreme applications in mission critical environments. Factory Automation, Transportation, Networking and Video Surveillance all benefit from this superior read/write endurance and data retention.

### 1.2 Feature

- Compliant with ATA command set
- SLC NAND flash memory
- Capacity: 128MB ~ 4GB
- Operating as boot disk
- Product includes Standard Temperature range & Wide Temperature range
- Static and dynamic wear leveling
- Bad block management
- S.M.A.R.T.

### 1.3 Product Appearance & Models

#### Cervoz Industrial PATA Disk 44pin Vertical Module S131



S131 Family Standard Temp. (0°C ~ 70°C) Model No.	S131 Family Wide Temp. (-40°C ~ 85°C) Model No.	Capacity
CIE-4VS131TCT128MS	CIE-4VS131TCT128MW	128MB
CIE-4VS131TDT256MS	CIE-4VS131TDT256MW	256MB
CIE-4VS131TET512MS	CIE-4VS131TET512MW	512MB
CIE-4VS131TFT001GS	CIE-4VS131TFT001GW	1GB
CIE-4VS131TGT002GS	CIE-4VS131TGT002GW	2GB
CIE-4VS131TGT004GS	CIE-4VS131TGT004GW	4GB

**Please Note:**

Since certain storage capacity has to be reserved for firmware and controller management purposes; the physical capacity of the PATA flash module will be approximately 90% of the indicated capacity. If you need to install an image that has the exact (or close to) the indicated size of the flash module, please choose your flash module with a greater capacity.

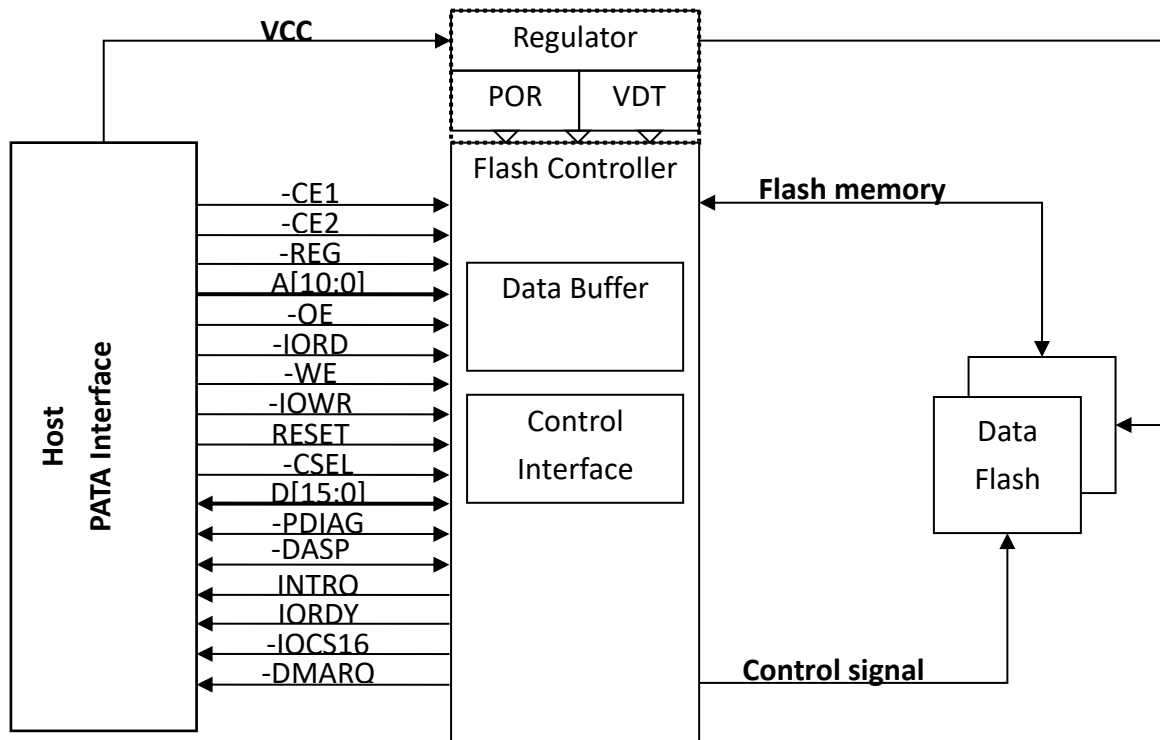
## 2. Product Specifications

### 2.1 General Specifications

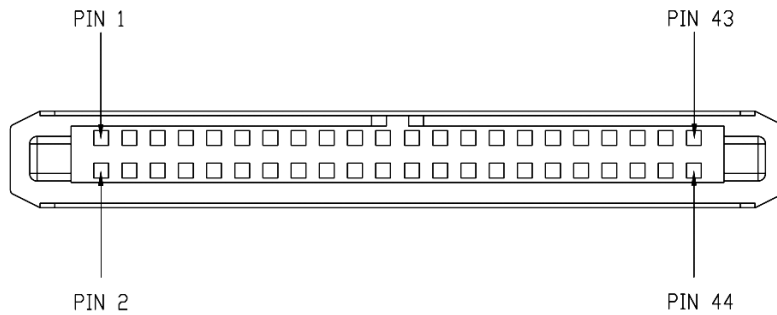
<b>Form Factor</b>	PATA Disk 44pin Vertical
<b>Interface</b>	PATA
<b>Connector</b>	PATA (44pin)
<b>NAND Flash Type</b>	SLC
<b>Capacity</b>	128MB/256MB/512MB/1GB/2GB/4GB
<b>Sequential Read</b>	up to 40MB/s
<b>Sequential Write</b>	up to 30MB/s
<b>ECC Scheme</b>	up to 24bits / 1K Byte
<b>MTBF</b>	>3,000,000 hours
<b>TeraByte Written (TBW)</b>	128MB : 2 256MB : 5 512MB : 10 1GB : 20 2GB : 39 4GB : 78
<b>Low Power Management</b>	DIPM/HIPM mode
<b>Supply Voltage</b>	5V DC +/-5%
<b>Power Consumption</b>	Active mode: <300mW Idle mode: < 11.5mW
<b>Dimension (LxWxH)</b>	52.2*23.80*6.50mm

## 2.2 Electronic Specifications

### 2.2.1 Block Diagram



## 2.2.2 Pin Assignment



Pin	Pin Name	Pin	Pin Name
1	RESET-	2	Ground
3	DD7	4	DD8
5	DD6	6	DD9
7	DD5	8	DD10
9	DD4	10	DD11
11	DD3	12	DD12
13	DD2	14	DD13
15	DD1	16	DD14
17	DD0	18	DD15
19	Ground	20	Vcc
21	DMARQ	22	Ground
23	DIOW-	24	Ground
25	DIOR-	26	Ground
27	IORDY	28	CSEL
29	DMACK-	30	Ground
31	INTRQ	32	Ground
33	DA1	34	PDIAG-
35	DA0	36	DA2
37	CS0-	38	CS1-
39	DASP-	40	Ground
41	Vcc	42	Vcc
43	Ground	44	reserved

### Notes:

1. Signals marked with an asterisk are required for 16-bit access, not required when installed in 8-bit systems.
2. Should be grounded by the host.

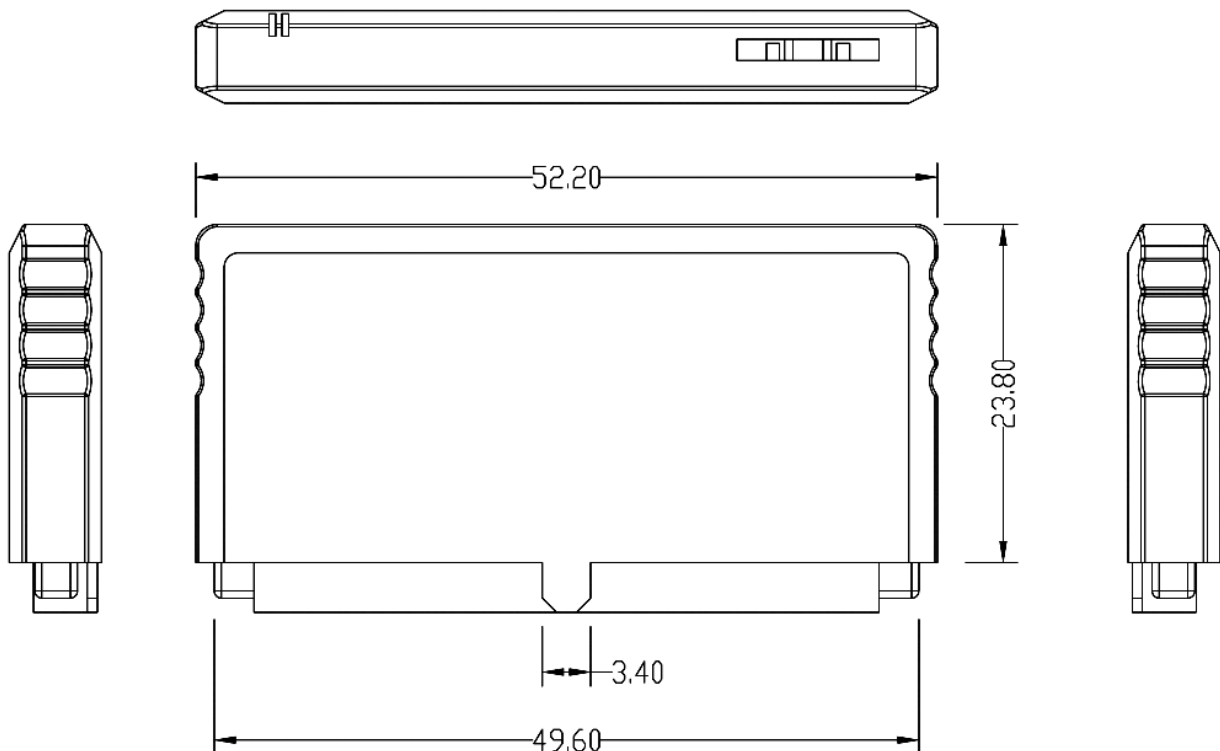


### 2.3 Environmental Specifications

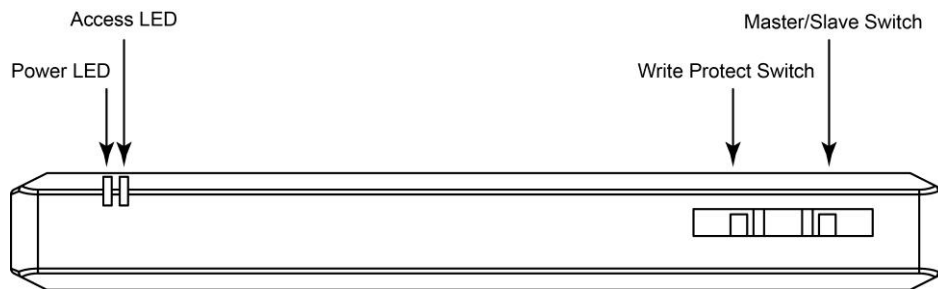
Type		Value
<b>Temperature</b>	Standard Temperature Operating:	0°C~70°C
	Standard Temperature Storage:	-40°C~85°C
	Wide Temperature Operating:	-40°C~85°C
	Wide Temperature Storage:	-50°C~95°C
<b>Humidity</b>	Operating & Storage	10~95%, Non-Condensing
<b>Vibration</b>	Non-Operating	20G, 10Hz~2000Hz
<b>Shock</b>	Non-Operating	1500G, 0.5ms

### 2.4 Mechanical Specifications

Type	Value
Form Factor	PATA Disk 44pin
Length	52.20mm +/-0.15mm
Width	23.80mm +/-0.10mm
Thickness	6.50mm +/-0.10mm



## Write Protect and Master/Slave Instructions



### 3. Supported Command

#### 3.1 List of Command Sets

Code	Description	Code	Description
00h	NOP	CDh	Write Multiple w/o Erase
03h	Request Sense	E0 or 94h	Standby Immediate
1Xh	Recalibrate	E1h or 95h	Idle Immediate
20h or 21h	Read Sector(s)	E2 or 96h	Standby
30h or 31h	Write Sector(s)	E3h or 97h	Idle
38h	Write Sector(s) w/o Erase	E4h	Read Buffer
3Ch	Write Verify	E5 or 98h	Check Power Mode
40h or 41h	Read Verify Sector(s)	E6h or 99h	Set Sleep Mode
50h	Format Track	E8h	Write Buffer
7Xh	Seek	Ech	Identify Device
87h	Translate Sector	EFh	Set Feature
90h	Execute Drive Diagnostic	F1h	Security Set Password
91h	Initialize Drive Parameters	F2h	Security Unlock
C0h	Erase Sector	F3h	Security Erase Prepare
C4h	Read Multiple	F4h	Security Erase Unit
C5h	Write Multiple	F5h	Security Freeze Lock
C6h	Set Multiple Mode	F5h	Wear Level
C8h	Read DMA	F6h	Security Disable Password
CAh	Write DMA		

#### 4. Part No. Decoder

##### 4.1 Part No. Decoder

1	-	2	3	4	5	6	7	8	9
Product Line	-	Form Factor	Product Series	Cervoz Family Code (Bus / Internal Control)	Flash Brand	Flash Capacity	Die Package	Module Capacity	Operating Temp.
XXX	-	XX	X	XXX	X	X	X	XXXX	X

##### 1. Product Line

CIS	Cervoz Industrial SSD
CIM	Cervoz Industrial Memory Card
CIE	Cervoz Industrial Embedded Module

##### 2. Form Factor

2S	2.5" SATA
2P	2.5" PATA
CF	CompactFlash
CA	CFast
MS	mSATA
HS	Half Slim
0V	PATA Disk 40pin Vertical
4V	PATA Disk 44pin Vertical
7T	SATA Disk 7pin Vertical Tall

##### 3. Product Series

S	Supreme Series (SLC)
R	Reliance Series (RO-MLC)
M	Momentum Series (MLC)

##### 4. Cervoz Family Code

Bus and Internal Control for Cervoz Product Families

##### 5. Flash Brand

M	Micron
T	Kioxia(Toshiba)

##### 6. Flash Capacity

A	256Mb
B	512Mb
C	1Gb
D	2Gb
E	4Gb
F	8Gb
G	16Gb
H	32Gb
I	64Gb

J	128Gb
K	256Gb
L	512Gb
M	1Tb

### 7. Die Package

T	TSOP
B	BGA

### 8. Module Capacity

128M	128MB
256M	256MB
512M	512MB
001G	1GB
002G	2GB
004G	4GB
008G	8GB
016G	16GB
032G	32GB
064G	64GB
128G	128GB
256G	256GB
512G	512GB

### 9. Operating Temperature

S	Standard Grade (0~ +70°C)
W	Wide Temperature Grade (-40 ~ +85°C)