

Cervoz Industrial Embedded Module

SATA Disk 7pin Vertical Tall

Supreme Series (SLC)

S210 Family

Product Datasheet





Revision History

Date	Revision	Description
2015.01.05	1.0	First Released
2015.04.13	1.1	TeraByte Written (TBW) Information Added



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1. Product Overview

1.1 Introduction

Cervoz Industrial SATA Disk 7pin Vertical Tall Embedded Module S210 family is a Solid State Flash Disk product that is in compliance with the SATA II standards. The SATA Disk 7pin Vertical Tall Embedded Module S210 family is in low profile form factor and fits in any SATA sockets internally of a PC or on a motherboard; it can be used for both booting or storage purposes.

S210 family uses superior quality, preselected single-level cell (SLC) NAND flash memory from the industry leading manufacturer Toshiba. This product includes both standard temperature range and wide temperature range options with various capacities to choose from.

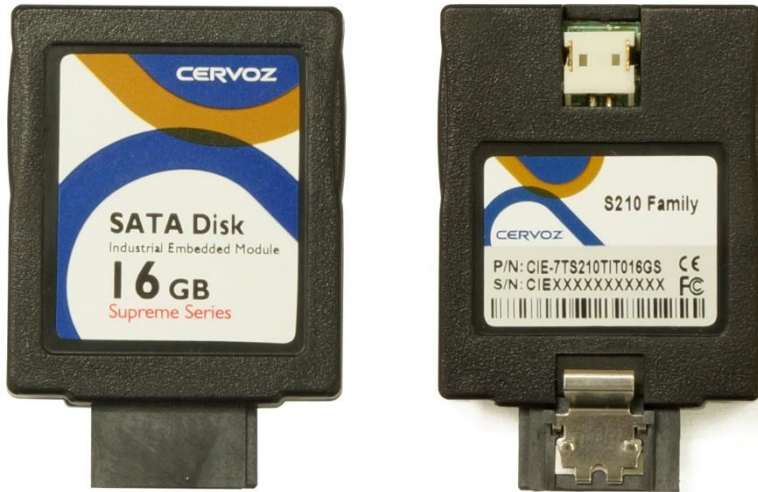
S210 family offers outstanding performance and reliability, ideal for extreme applications in mission critical environments. Factory Automation, Transportation, Networking and Video Surveillance all benefit from this superior read/write endurance and data retention.

1.2 Feature

- Compliant with SATA II 3.0Gb/s
- SLC NAND flash memory
- Capacity: 2GB ~ 16GB
- 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 & TRIM command

1.3 Product Appearance & Models

Cervoz Industrial SATA Disk 7pin Vertical Tall Module S210



S210 Family Standard Temp. (0°C ~ 70°C) Model No.	S210 Family Wide Temp. (-40°C ~ 85°C) Model No.	Capacity
CIE-7TS210TFT002GS	CIE-7TS210TFT002GW	2GB
CIE-7TS210TGT004GS	CIE-7TS210TGT004GW	4GB
CIE-7TS210THT008GS	CIE-7TS210THT008GW	8GB
CIE-7TS210TIT016GS	CIE-7TS210TIT016GW	16GB

2. Product Specifications

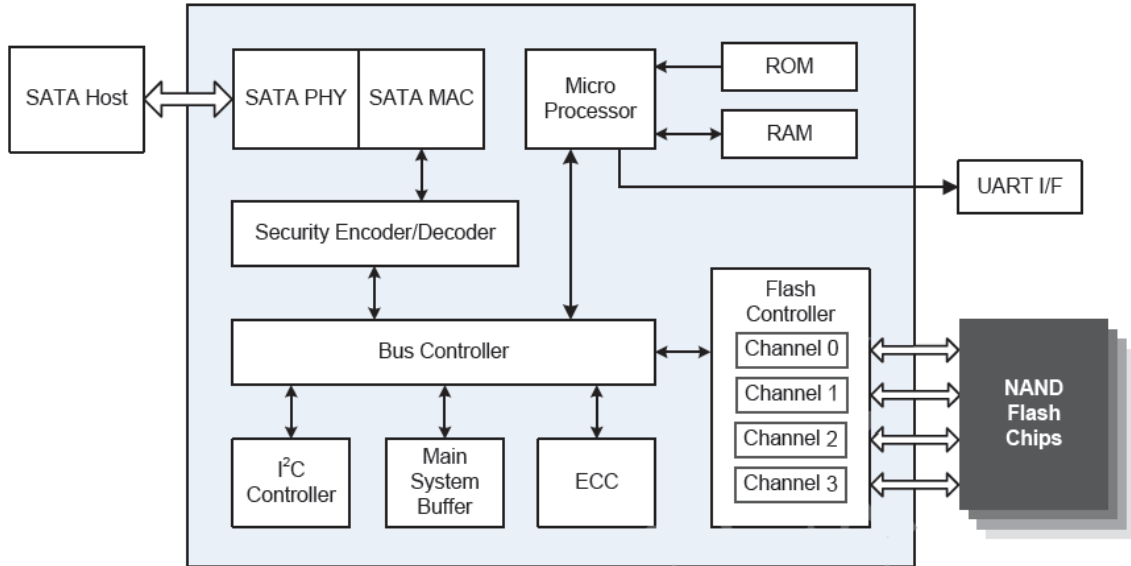
2.1 General Specifications

Form Factor	SATA Disk 7pin Vertical Tall
Interface	SATA II 3.0Gb/s (backward compatible to 1.5Gb/s)
Connector	SATA (7pin)
NAND Flash Type	SLC
Capacity	2GB/4GB/8GB/16GB
Sequential Read	up to 85MB/s
Sequential Write	up to 65MB/s
ECC Scheme	up to 72bits / 1K Byte
MTBF	2,000,000 hours
TeraByte Written (TBW)	2GB : 39 4GB : 78 8GB : 156 16GB : 313
Low Power Management	DEVSLP mode DIPM/HIPM mode
Supply Voltage	+5.0V DC +/-5%
Power Consumption	Active mode: < 640mW Idle mode: < 280mW DEVSLP mode: < 2mW
Dimension (LxWxH)	40.60*28.60*7.00mm

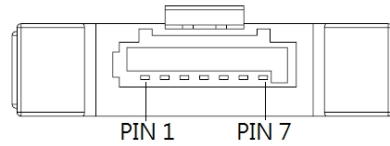


2.2 Electronic Specifications

2.2.1 Block Diagram



2.2.2 Pin Assignment



Pin No.	Function	Description
S1	GND	Ground
S2	RX+	Differential signal pair A
S3	RX-	
S4	GND	Ground
S5	TX-	Differential signal pair B
S6	TX+	
S7	GND	Ground

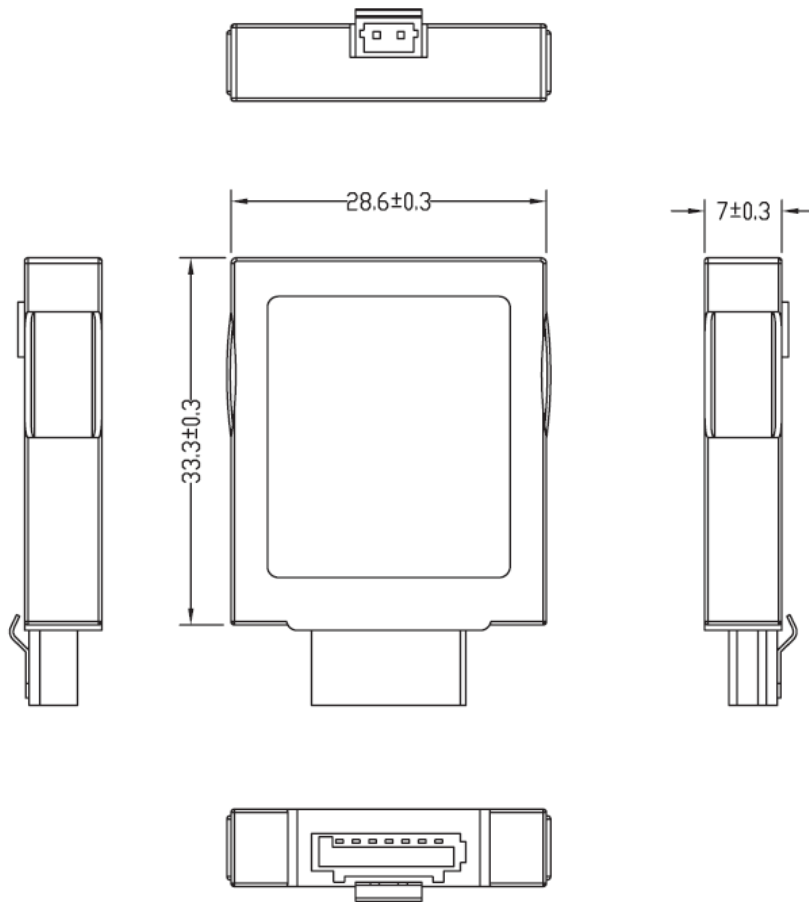
2.1 Environmental Specifications

Type		Value
Temperature	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
Humidity	Operating & Storage	10~95%, Non-Condensing
Vibration	Operating	20G, 10Hz~2000Hz
Shock	Operating	1500G, 0.5ms



2.2 Mechanical Specifications

Type	Value
Form Factor	SATA Disk
Length	40.60mm +/-0.30mm
Width	28.60mm +/-0.30mm
Thickness	7.00mm +/-0.30mm



1. Supported Command

3.1 List of Command Sets

Code	Description	Code	Description
00h	NOP	B0h	SMART Return Status
20h or 21h	Read Sector(s)	B0h	SMART Execute Off-Line Immediate
30h or 31h	Write Sector(s)	B0h	SMART Read Data
40h or 41h	Read Verify Sector(s)	B0h	SMART Read Threshold
90h	Execute Drive Diagnostic	B0h	SMART Save Attribute Values
91h	Initialize Drive Parameters	F8h	Read Native Max Address
C4h	Read Multiple	F9h	Set Max Address
C5h	Write Multiple	F9h	Set Max Set Password
C6h	Set Multiple Mode	F9h	Set Max Lock
C8h	Read DMA	F9h	Set Max Freeze Lock
CAh	Write DMA	F9h	Set Max Unlock
E0h or 94h	Standby Immediate	EAh	Flush Cache Ext
E1h or 95h	Idle Immediate	24h	Read Sector(s) Ext
E2h or 96h	Standby	25h	Read DMA Ext
E3h or 97h	Idle	29h	Read Multiple Ext
E4h	Read Buffer	27h	Read Native Max Address Ext
E5h or 98h	Check Power Mode	42h	Read Verify Sector(s) Ext
E6h or 99h	Sleep	37h	Set Max Address Ext
E7h	Flush Cache	35h	Write DMA Ext
E8h	Write Buffer	3Dh	Write DMA FUA Ext
ECh	Identify Device	39h	Write Multiple Ext
EFh	Set Feature	CEh	Write Multiple FUA Ext
F1h	Security Set Password	34h	Write Sector(s) Ext
F2h	Security Unlock	03h	Request Sense
F3h	Security Erase Prepare	38h	Write Sectors Without Erase
F4h	Security Erase Unit	C0h	Erase Sectors
F5h	Security Freeze Lock	CDh	Write Multiple Without Erase
F6h	Security Disable Password	87h	Translate Sector
B0h	SMART Disable Operations	EFh	Set Features Enable/Disable 8-bit Transfer
B0h	SMART Enable/Disable Autosave	70h	Seek
B0h	SMART Enable Operations	F5h	Wear Level

2. 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	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)