

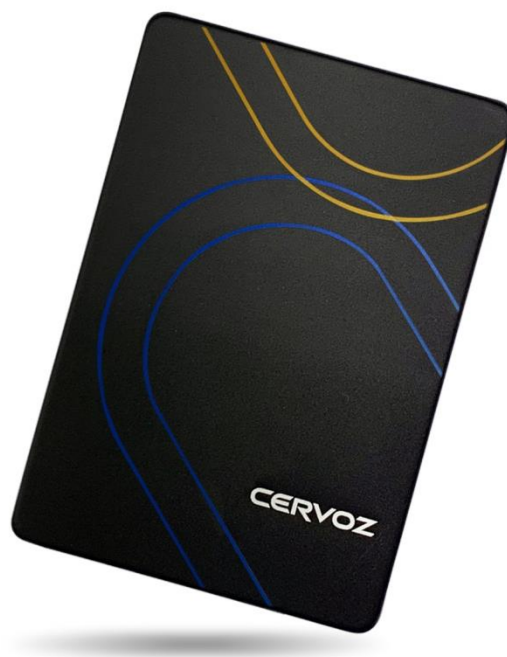
Cervoz Industrial SSD

2.5" SATA

Titan Series (3D TLC NAND)

T387 Family

Product Datasheet



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Revision History

Date	Revision	Description
2025.08.15	1.0	First Released

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1. Product Overview

1.1 Introduction

Cervoz Industrial 2.5" SATA SSD T387 family is a high capacity Solid State Disk product that is in compliance with the 2.5" form factor and SATA III standards. The device design is based on the 7pin for data segment and 15pin for power segment standards.

T387 family uses SSD grade quality 3D NAND flash memory from the industry leading manufacturer Micron. Cervoz's firmware builds in a powerful ECC algorithm call Low-Density Parity Check (LDPC) decoding to improve data reliability. This product includes various capacities to choose from.

T387 family offers outstanding performance and reliability; the product family is a good cost-effective solution for semi-industrial and high-capacity storage applications.

1.2 Features

- Compliant with SATA III 6.0Gb/s (backward compatible to 1.5Gb/s and 3Gb/s)
- 3D TLC NAND flash memory
- Capacity: 256GB ~ 2TB
- Support AES 256-bit Encryption
- With DRAM Buffer
- End-to-End data protection
- Operating as boot disk
- Product includes Standard Temperature range & Wide Temperature range
- Low power consumption
- Shock resistance and anti-vibration
- Static and dynamic wear leveling
- Bad block management
- S.M.A.R.T. & TRIM command
- Fully compatible with Windows 8.1/10/11, Mac OS, and Linux
- RoHS compliant

1.3 Product Appearance & Models

Cervoz Industrial 2.5" SATA SSD T387



T387 Family Standard Temp. (0°C ~ 70°C) Model No.	T387 Family Wide Temp. (-40°C ~ 85°C) Model No.	Capacity
CIS-2ST387MNH256GS	CIS-2ST387MNH256GW	256GB
CIS-2ST387MOH512GS	CIS-2ST387MOH512GW	512GB
CIS-2ST387MOH001TS	CIS-2ST387MOH001TW	1TB
CIS-2ST387MOH002TS	CIS-2ST387MOH002TW	2TB

Please Note:

Since certain storage capacity has to be reserved for firmware and controller management purposes; the physical capacity of the SATA flash module will be approximately 93.1% 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

Form Factor	2.5 inch
Interface	SATA III 6.0Gb/s (backward compatible to 3.0Gb/s, 1.5Gb/s)
Connector	SATA (7 + 15 pin)
NAND Flash Type	3D TLC NAND
Capacity	256GB/512GB/1TB/2TB
Sequential Read	up to 560MB/s
Sequential Write	up to 420MB/s
DRAM Buffer	Included
ECC Scheme	Applies the LDPC (Low Density Parity Check) of ECC algorithm
MTBF	>3,000,000 hours
Terabyte Written (TBW)	256GB : 469 512GB : 938 1TB : 1875 2TB : 3750
Low Power Management	DIPM / HIPM mode
Supply Voltage	+5V DC $\pm$ 5%
Power Consumption	Active mode: < 2405mW Idle mode: < 525mW
Dimension (L x W x H)	100.00*69.85*7.00mm

2.2 Performance

The performance was measured with below PC configuration:

- Platform: GIGABYTE GA-Z170-HD3P
- RAM: Cervoz CIR-S4DUSS2404G (DDR4 4G 2400MHz)
- Operation Systems: Windows 10
- Testing Utility: Crystal Disk Mark v8.0.5 x64
- SATAIII port (6.0 Gb/s) performance

Capacity	256GB	512GB	1TB	2TB
Sequential Read (Q32T1)	560MB/s	555MB/s	560MB/s	560MB/s
Sequential Write (Q32T1)	260MB/s	250MB/s	410MB/s	420MB/s
4KB Random Read (Q32T1)	185MB/s	190MB/s	310MB/s	355MB/s
4KB Random Write (Q32T1)	235MB/s	235MB/s	290MB/s	245MB/s

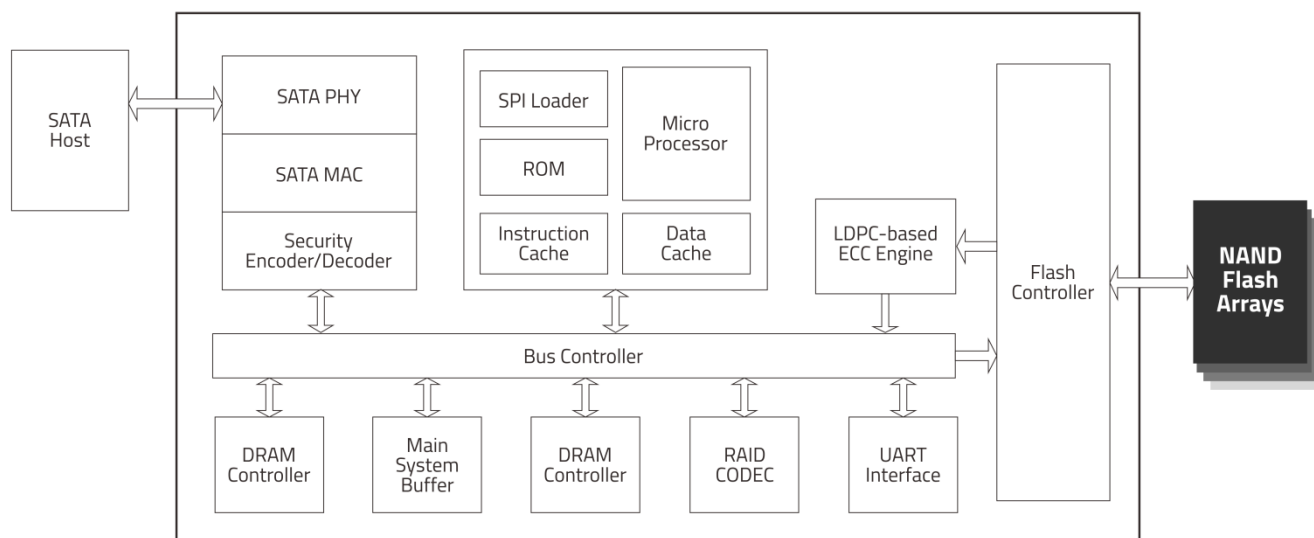
Actual performance may vary depending on use conditions and environment

2.3 Drive Capacity

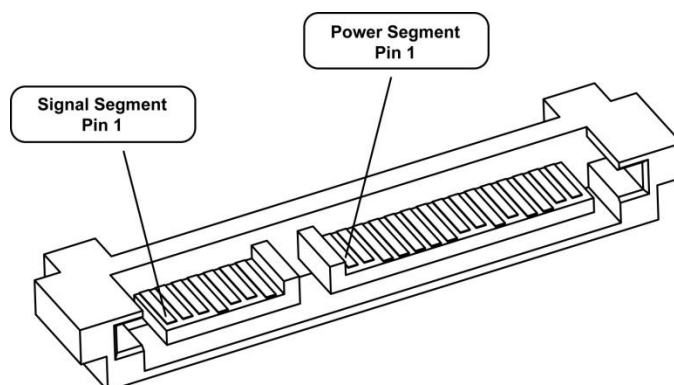
Capacity	Cylinders	Heads	Sectors	Max LBA
256GB	16,383	15	63	500,118,192
512GB	16,383	15	63	1,000,215,216
1TB	16,383	15	63	2,000,409,264
2TB	16,383	15	63	4,000,797,360

2.4 Electronic Specifications

2.4.1 Block Diagram



2.4.2 Pin Assignment



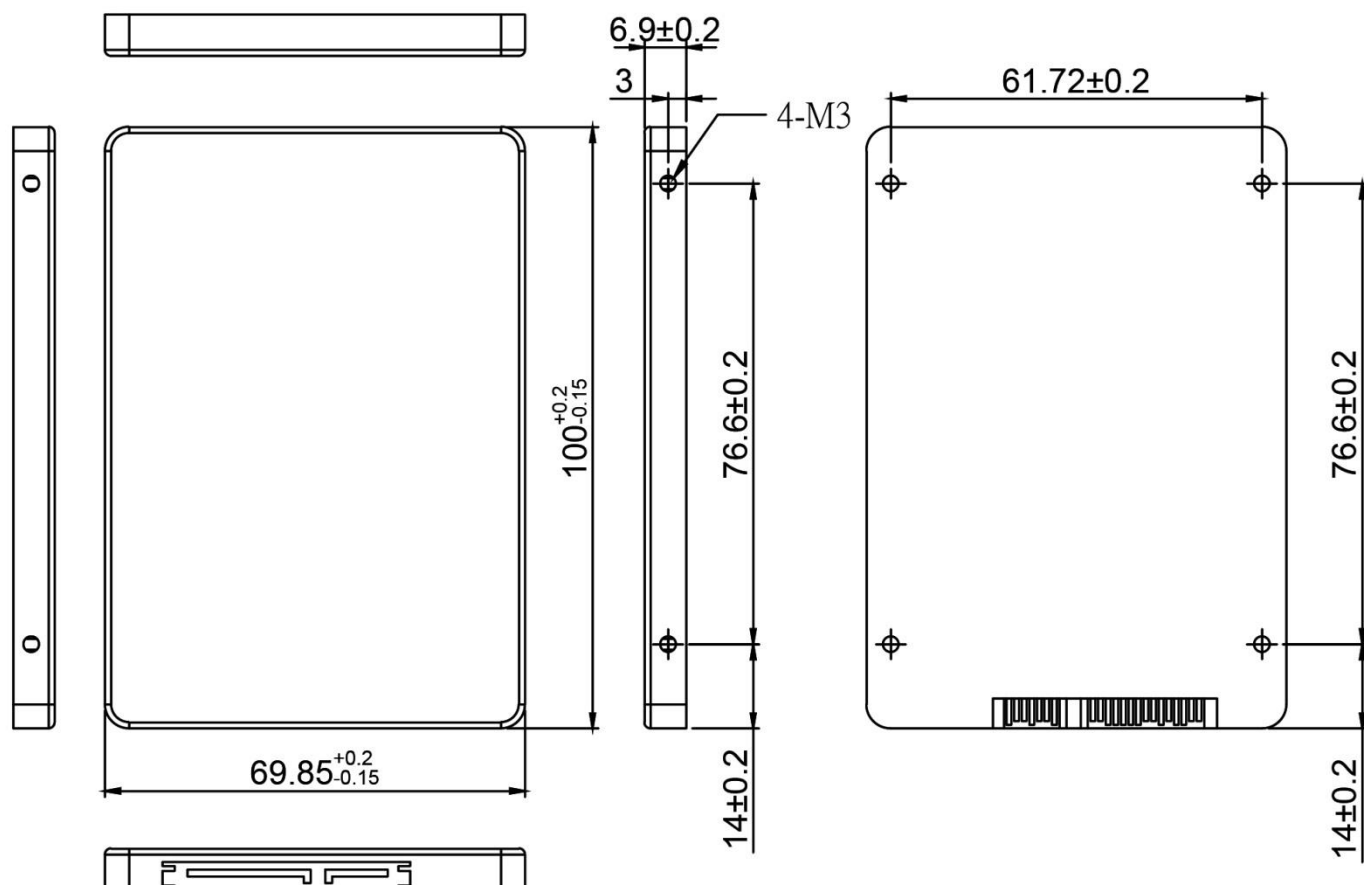
Group	Pin No.	Function	Description
Signal Segment	S1	GND	Ground
	S2	Rx+	Differential Signals Pair Receive
	S3	Rx-	
	S4	GND	Ground
	S5	Tx-	Differential Signals Pair Transmit
	S6	Tx+	
	S7	GND	Ground
Key & Spacing			
Power Segment	P1	NC	NA
	P2	NC	NA
	P3	NC	NA
	P4	GND	Ground
	P5	GND	Ground
	P6	GND	Ground
	P7	V5/PC	+5V Power supply, Pre-charge
	P8	V5	+5V Power supply
	P9	V5	+5V Power supply
	P10	GND	Ground
	P11	NC	NA
	P12	GND	Ground
	P13	NC	NA
	P14	NC	NA
	P15	NC	NA

2.5 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	5~95%, Non-Condensing
Vibration	Non-Operating	20G, 10Hz~2000Hz
Shock	Non-Operating	1500G, 0.5ms

2.6 Mechanical Specifications

Type	Value
Form Factor	2.5" SATA
Length	100.00 mm +0.2 / -0.15 mm
Width	69.85 mm +0.2 / -0.15 mm
Thickness	6.90 mm ± 0.2 mm



3. Supported Command

3.1 List of Command Sets

Command	Code	Protocol
General Feature Set		
Execute Device Diagnostic	90h	Execute device diagnostic
Download Microcode	92h	PIO data-out
Download Microcode DMA	93h	DMA
Flush Cache	E7h	Non-data
Identify Device	ECh	PIO data-in
Initialize Drive Parameters	91h	Non-data
NOP	00h	Non-data
Read Buffer	E4h	PIO data-in
Read Buffer DMA	E9h	DMA
Read DMA	C8h or C9h	DMA
Read Log Ext	2Fh	PIO data-in
Read Log DMA Ext	47h	DMA
Read Multiple	C4h	PIO data-in
Read Sector(s)	20h or 21h	PIO data-in
Read Verify Sector(s)	40h or 41h	Non-data
Set Feature	EFh	Non-data
Set Multiple Mode	C6h	Non-data
Write Buffer	E8h	PIO data-out
Write Buffer DMA	EBh	DMA
Write DMA	CAh or CBh	DMA
Write Log Ext	3Fh	PIO data-out
Write Log DMA Ext	57h	DMA
Write Multiple	C5h	PIO data-out
Write Sector(s)	30h	PIO data-out
Power Management Feature Set		
Check Power Mode	E5h or 98h	Non-data
Idle	E3h or 97h	Non-data
Idle Immediate	E1h or 95h	Non-data
Sleep	E6h or 99h	Non-data
Standby	E2h or 96h	Non-data
Standby Immediate	E0h or 94h	Non-data
Security Mode Feature Set		
Security Set Password	F1h	PIO data-out
Security Unlock	F2h	PIO data-out
Security Erase Prepare	F3h	Non-data

Security Erase Unit	F4h	PIO data-out
Security Freeze Lock	F5h	Non-data
Security Disable Password	F6h	PIO data-out
SMART Feature Set		
SMART Disable Operations	B0h	Non-data
SMART Enable/Disable Autosave	B0h	Non-data
SMART Enable Operations	B0h	Non-data
SMART Execute OFF-LINE Immediate	B0h	Non-data
SMART Read Log	B0h	PIO data-in
SMART Read Data	B0h	PIO data-in
SMART Read Threshold	B0h	PIO data-in
SMART Return Status	B0h	Non-data
SMART Save Attribute Values	B0h	Non-data
SMART Write Log	B0h	PIO data-out
Host Protected Area Feature Set		
Read Native Max Address	F8h	Non-data
Set Max Address	F9h	Non-data
Set Max Set Password	F9h	PIO data-out
Set Max Lock	F9h	Non-data
Set Max Freeze Lock	F9h	Non-data
Set Max Unlock	F9h	PIO data-out
48-bit Address Feature Set		
Flush Cache Ext	EAh	Non-data
Read Sector(s) Ext	24h	PIO data-in
Read DMA Ext	25h	DMA
Read Multiple Ext	29h	PIO data-in
Read Native Max Address Ext	27h	Non-data
Read Verify Sector(s) Ext	42h	Non-data
Set Max Address Ext	37h	Non-data
Write DMA Ext	35h	DMA
Write DMA FUA Ext	3Dh	DMA
Write Multiple Ext	39h	PIO data-out
Write Multiple FUA Ext	CEh	PIO data-out
Write Sector(s) Ext	34h	PIO data-out
NCQ Feature Set		
Read FPDMA Queued	60h	DMA Queued
Write FPDMA Queued	61h	DMA Queued
DCO Feature Set		
Device Configuration	B1h	/

Sanitize Device Feature Set		
Sanitize Device	B4h	/
Miscellaneous and Historical Commands		
Data Set Management	06h	DMA
Seek	70h	Non-data
Recalibrate	10h	Non-data
Write Verify	3Ch	PIO data-out
Write Uncorrectable Ext	45h	Non-data

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)	NAND Flash	Flash Capacity	Flash Mode	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
HM	Half Size mSATA
HS	Half Slim
M4	M.2 2242
M6	M.2 2260
M8	M.2 2280
0V	PATA Disk 40pin Vertical
4V	PATA Disk 44pin Vertical
4L	PATA Disk 44pin Horizontal Left
7T	SATA Disk 7pin Vertical Tall
7L	SATA Disk 7pin Horizontal Left
7R	SATA Disk 7pin Horizontal Right

3. Product Series

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

4. Cervoz Family Code

Bus and Internal Control for Cervoz Product Families

5. NAND Flash

M	Micron
K	Kioxia

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
N	2Tb
O	4Tb

7. Flash Mode

Internal Control for Flash Mode

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
001T	1TB
002T	2TB

9. Operating Temperature

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