INNODISK®
Beyond your imagination

Industrial USB Drive

USB Series

Customer: _____

Customer Part Number: _____

InnoDisk Part Number: _____

InnoDisk Model Name: _____

Date: _____

InnoDisk Approver	Customer Approver

the total solution for industrial flash storage

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REVISION HISTORY

Revision	Description	Date
Preliminary	First Release	January, 2012
1.0	Modify Description	March, 2012

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1. Introduction

The InnoDisk Industrial USB Drive products provide high capacity USB flash memory storage that electrically complies with High-speed USB 2.0 interface & backward compatible with USB 1.1. The device features attractive small form factor and the connectivity over USB2.0 and the SLC NAND flash architecture delivers a faster data transmission and quality reliability.

Figure 1: Appearance of Industrial USB Drive

2. Specification

The Industrial USB Drive products provide the following system features:

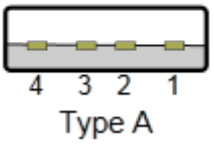
- Capacities: 1GB, 2GB, 4GB, 8GB
- High-speed USB 2.0 interface; backward compatible with USB 1.1
- ECC: 15 bits/528 Bytes
- Performance:
    - Read: 19MB/s (max.)
    - Write: 17MB/s (max.)
- Wear-leveling supported
- Dimension (W x L x H): 16.58 x 45.88 x 7.48 mm
- Low power consumption
    - Power supply: 5V
    - Read/Write: 100mA (max.)
- Removable mode

- Insertion cycles: 5,000 cycles
- Golden Finger: 30µ
- Temperature range:
  - Operating:

    0°C ~ +70°C (Standard grade)

    -40°C ~ +80°C (Industrial grade)
  - Storage: -55°C ~ +95°C

3. Pin Assignment

Please refer to Table 1 for 

Industrial USB Drive pin assignments.

Pin No.	Name	Description
1	VBUS	+5V
2	D-	Data -
3	D+	Data +
4	GND	Ground

Table 1: Industrial USB Drive Pin Assignments

4. Certification

4.1 CE and FCC Compatibility

The InnoDisk Industrial USB Drive conforms to CE requirements and FCC standards.

4.2 RoHS Compliance

The InnoDisk Industrial USB Drive is fully compliant with RoHS directive.

5. Environmental Specifications

5.1 Temperature Ranges

- Operating Temperature Range:
  - 0°C ~ +70°C (Standard grade)
  - -40°C ~ +85°C (Standard grade)
- Storage Temperature Range: -55°C to +95°C

5.2 Humidity

Relative Humidity: 10-95%, non-condensing.

5.3 Shock and Vibration

Reliability	Test Conditions	Reference Standards
Vibration	10 Hz to 500 Hz, 5 g, 3 axes, 1hour	IEC 68-2-6
Mechanical Shock	Duration: 10ms, 50 g, 3 axes, 20times	IEC 68-2-27

Table 2: Shock/Vibration Testing for Industrial USB Drive

5.4 Mean Time between Failures (MTBF)

Table 3 summarizes the MTBF prediction results for various Industrial USB Drive configurations. The analysis was performed using a RAM Commander™ failure rate prediction.

- **Failure Rate**: The total number of failures within an item population, divided by the total number of life units expended by that population, during a particular measurement interval under stated condition.
- **Mean Time between Failures (MTBF)**: A basic measure of reliability for repairable items: The mean number of life units during which all parts of the item perform within their specified limits, during a particular measurement interval under stated conditions.

Product	Condition	MTBF (Hours)
Industrial USB Drive	Telcordia SR-332 GB, 25°C	TBD

Table 3: Industrial USB Drive MTBF

5.5 Mechanical Dimensions

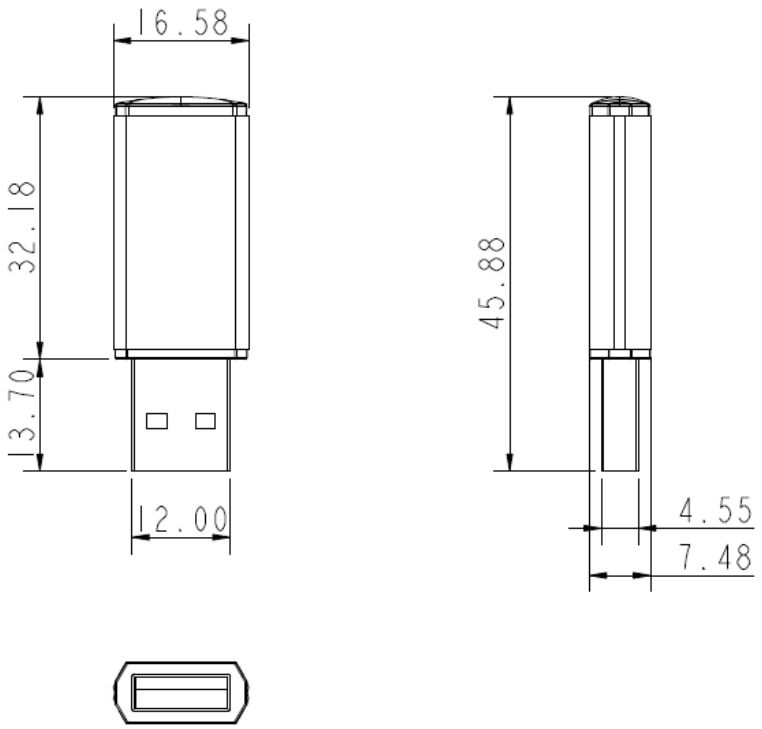


Figure 2: Mechanical Dimension of Industrial USB Drive

5.6 Electrical Specifications

5.6.1 Absolute Maximum Ratings

Item	Symbol	Rating	Unit
Storage Temperature	TStorage	-55 ~ +95	°C
Ambient Operating Temperature	Ta	0 ~ +70	°C
3.3V supply voltage	VCC33	-0.3 ~ 3.6	V
1.8V supply voltage	VCC18	-0.3 ~ 2	V
3.3V buffer input voltage	Vin33	-0.3 ~ 3.6	V
3.3V/5V buffer input voltage	Vin335	-0.3 ~ 5	V
1.8V buffer input voltage	Vin18	-0.3 ~ 2	V

Table 4: Industrial USB Drive Absolute Maximum Ratings

5.6.2 Operating Conditions

Item	Symbol	Rating	Unit
USB 5V supply voltage	USBVin	3.2 ~ 5.5	V
3.3V supply voltage	VDD33	3.0 ~ 3.6	V
1.8V supply voltage	VDD18	1.6 ~ 2	V

Table 5: Industrial USB Drive Operating Conditions

6. Part Number Rule

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	D	**E**	**U**	**A**	**-**	**0**	**8**	**G**	**I**	**2**	**1**	**A**	**C**	**1**	**S**	**T** **S**	**-**			
Description	Disk	Industrial USB Drive			-	Capacity			Category			Internal control	Operation Temp.	PCB Version	Channel	Flash		Customized Code		

Definition	
Code 1st (Disk)	**Code 12th (Internal control)**
D: Disk	**Code 13th (Operation Temperature)**
Code 2nd ~ 4th (Form Factor)	C: Standard Grade (0℃~ +70℃)
EUA: Industrial USB Drive	W: Industry Grade (-40℃~ +85℃)
Code 6th ~8th (Capacity)	**Code 14th (PCB Version)**
01G: 1GB	1: First Version
02G: 2GB	**Code 15th (Channel)**
04G: 4GB	S: Single
08G: 8GB	**Code 16th (Flash)**
Code 9th ~11th (Category)	S: Samsung SLC
I21: Industrial USB Drive	T: Micron SLC