



ATP Industrial Grade eUSB SSD Specification

AF4GSSGH-AACXP

Version 1.2

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Revision History

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Date	Version	Changes Compared to Previous Issue
Feb. 26 th , 2016	1.0	New BOM Release
Feb. 21 st , 2017	1.1	Update pin definition
Jul. 20 th , 2017	1.2	Update Reliability information.

1.0 ATP eUSB SSD Overview

1.1 Product Image



Figure 1-1 ATP Product Image

Note: Component placement is for reference only.

1.2 Capacity

ATP Part Number	Capacity
AF4GSSGH-AACXP	4GB

1.3 Introduction

The ATP Industrial Grade eUSB SSD is a solid state drive based on high performance NAND flash memory. This 10-pin embedded Disk-On-Module product utilizes the standard USB 2.0 interface which provides a true plug & play feature. This low power and compact size product is suitable for embedded storage applications. ATP Industrial Grade eUSB SSD offers an extended operating temperature range of -40°C to 85°C, provides outstanding performance and proven reliability for products operating outside the standard temperature range. The ATP Industrial Grade eUSB SSD is designed for demanding industrial applications, such as military, aerospace, automotive, marine navigation, embedded, communication equipment or networking, medical equipment, and manufacturing, where mission-critical data requires the highest level of reliability, durability, and data integrity.

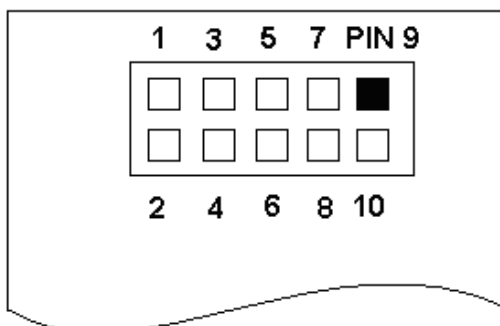


1.4 Main Features

- Complies with USB specification ver.2.0 and backward compatible with ver.1.1
- Supports High Speed (480 Mbits/sec), Full Speed (12 Mbits/sec) and Low Speed (1.5 Mbits/sec) data transfer
- Operating temperature range -40°C to 85°C
- True “Plug and play” connection, supports hot swap
- Highest endurance with SLC based NAND Flash memory
- Up to 24bit/1KB error correction capability with built-in ECC NAND
- Enhanced endurance with Global Wear-Leveling algorithm
- High reliability with 5,000,000 hours of MTBF (Mean Time Between Failures)
- Patented Power Protector Technology ensures data integrity during a sudden power down in all conditions
- CE and FCC certified

2.0 Specification

2.1 Pin Definition



Pin	Signal	Type	Pin	Signal	Type
1	VCC	Power	2	NC	-
3	USBD-	I/O	4	NC	-
5	USBD+	I/O	6	NC	-
7	GND	Power	8	NC	-
9	NC	-	10	Reserved	-

2.2 Signal Description

Signal Name	Type	Description
VCC	Power	Bus Power Supply
USBD-	I/O	USB Data Negative Pin
USBD+	I/O	USB Data Positive Pin
GND	Power	Ground
NC	-	No Connection
Reserved	-	Reserved

2.3 Electrical Specification

Symbol	Parameter	Min.	Typ.	Max.	Unit
V _{CC}	Recommend Supply Voltage	4.5	5.0	5.5	V
V _{peak}	Peak Voltage on any Pin (Except USBD-, USBD+)	-0.3	-	5.5	V
I _{CC}	Operating Current (read)	-	112.0	180.0	mA
I _{CC}	Operating Current (write)	-	112.0	190.0	mA
I _{SB}	Standby Current	-	66.0	92.0	mA



2.4 Environment Specification

Parameter		Value
Temperature	Operating	-40°C to 85°C
	Storage	-40°C to 85°C
Humidity	Operating	25°C, 8% to 95%, noncondensing
	Storage	40°C, 8% to 93%, noncondensing

2.5 Reliability

Type	Measurement
TBW (Total Bytes Written)	80 terabytes random write
MTBF (@ 25°C)	> 5,000,000 hours (Telcordia/Bellcore SR-332)
Data Retention	10 years @40°C (<10% pre-cycle)

Note: Endurance for the eUSB can be predicted based on the usage conditions applied to the device, the internal NAND component cycles, the write amplification factor, and the wear leveling efficiency of the drive. TBW may vary depending on different applications, please contact ATP for TCO evaluation if specific usage type applies. Data retention value may vary across different temperature range and is experimental result to be used for reference.

2.6 Performance

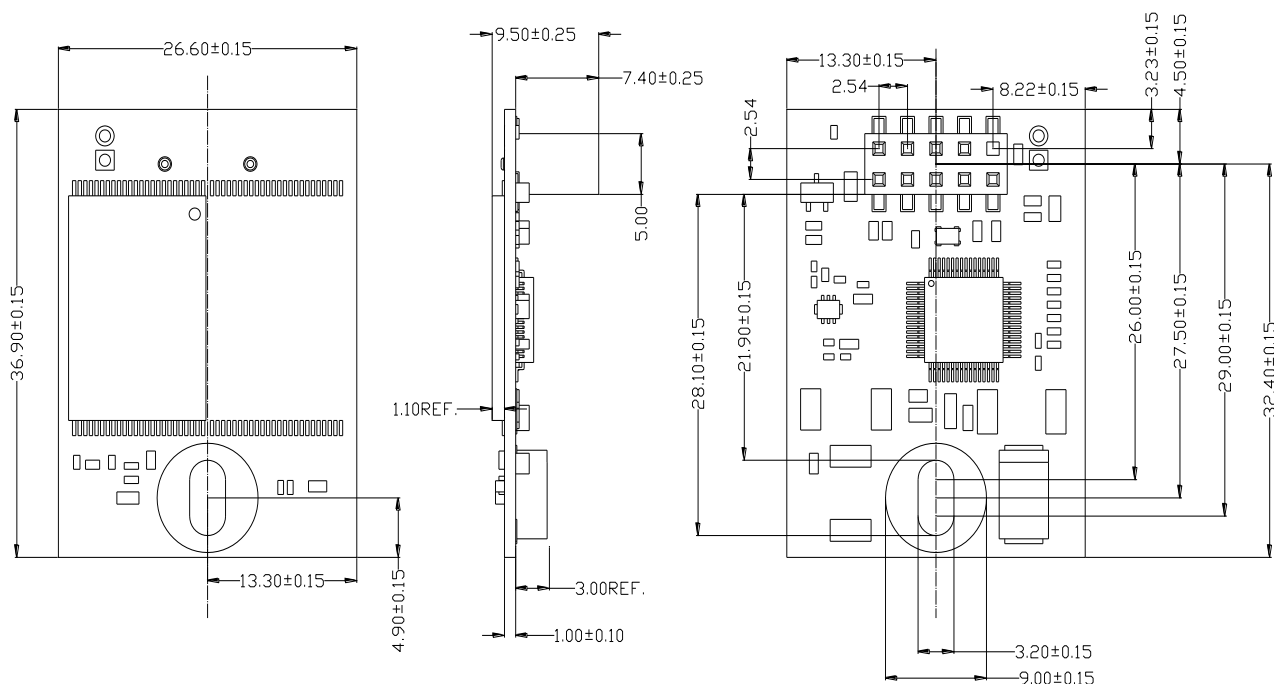
Density	Sequential Read	Sequential Write
4GB	30.3 MB/s	18.3 MB/s

Note: Tested by CrystalDiskMark 3.0.2 with 1000MB file size. The performance may vary based on different testing environments.

2.7 Physical Dimension

Parameter	Dimension
Length	36.90 +/- 0.15mm
Width	26.60 +/- 0.15mm
Thickness	9.50 +/- 0.25mm

Unit: mm



Note: Component placement is for reference only

Mark	Documentation	Certification
	The CE marking (also known as CE mark) is a mandatory <u>conformance mark</u> on many products placed on the single market in the <u>European Economic Area</u> (EEA). The CE marking certifies that a product has met EU consumer safety, health or environmental requirements. CE stands for Conformité Européenne, "European conformity" in French.	Yes
	FCC Part 15 Class B was used for Evolution of United States (US) Emission Standards for Commercial Electronic Products, The United States (US) covers all types of unintentional radiators under Subparts A and B (Sections 15.1 through 15.199) of FCC 47 CFR Part 15, usually called just <u>FCC Part 15</u>	Yes

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