



E-Disk® Fibre Channel 3.5" Series



Ideal for storage applications in:

- Military Systems
- Aerospace and Avionics
- Energy and Utilities
- Medical, Laboratory and Scientific Research
- Enterprise Systems
- Industrial Automation
- Real-Time Data Acquisition
- Control and Instrumentation
- Transportation Infrastructures

Inject Speed Into Your Network

Today's data explosion has created the need for a faster and higher performance storage solution for high-speed networking, broadband communications, mobile computing, military, aerospace, medical and industrial applications. BitMICRO® Networks has responded with a storage solution designed specifically for these emerging high performance applications — solid state, flash-based E-Disk®. Incorporate this new storage product as a stand-alone solution or as an embedded plug and play component in the system. E-Disk® provides increased performance by eliminating seek time and latency for faster I/O rates, and provides the advantages of exceptional performance, superior reliability, and unprecedented durability.

Reliable & Secure Solid-State, Flash-Based Storage

BitMICRO® Networks utilizes proven solid-state, flash-based E-Disk® technology, a non-volatile storage solution in an industry standard 3.5-inch form factor. Ideal as a direct drop-in replacement for conventional rotating media such as hard disks and tape drives that are not only prone to short production life, but often fail in mobile computing and industrial environments where temperature fluctuations, shock, vibration, dust, moisture, or magnetic fields are present.

Given today's critical national security and defense requirements, the powerful and user-customizable securErase® data security feature guarantees that device sanitization of sensitive data is performed beyond retrieval. Patented PowerGuard® also ensures that up to 6 hours of losing power to the disk, securErase® can still be activated to resume and complete the erase process.

E-Disk® Fibre Channel 3.5-inch Series

BitMICRO® Networks E-Disk® Fibre Channel products deliver a solid solution for data storage and protection while providing the powerful performance and speed today's data-intensive applications demand. They feature patented FlashBus™ storage technology to speed performance, eliminate system bottlenecks, and offer durable storage for easy installation and start-up. E-Disk® requires no device drivers for installation and operation, and boasts random I/O rates of up to 9,500/sec, duplex burst rates of up to 400 MB/sec, sustained transfer rates of up to 68 MB/sec, and capacities of up to 155.6 GB.

Product Highlights

Increased High Speed Networking

- Operating System Independent
- Up to 9,500 IOPS
- Up to 0.63 msec access time

Facilitate Quick Data Transfers

- 400 MB/s Duplex Burst Rate
- Up to 68 MB/sec Sustained Transfer Rate (Dual-Ported)

Highest Storage Capacities

- 3.5-inch: 2048 MB to 155.6 GB

Unparalleled Operating Performance

- Pure Solid State/Non-Volatile
- 1,500 Gs Operating Shock*
- - 60 to + 95 °C**
- 2 Million Hours MTBF
- 120,000 feet Altitude

Industry Standard FC Interface

- No Device Driver Required
- 2 Gbit Dual Port
- Completely bootable

Data Security Features

- DataSentinel
- PowerGuard®
- securErase®

* Projected

** Not available for units with PowerGuard®

SPECIFICATIONS FOR E-DISK® FIBRE CHANNEL 3.5" SERIES
Flash Disk and Solid State Disk Storage Solutions

Physical Specifications:

Form Factor	3.5"		
Storage Capacity	2048 MB to 155648 MB		
Dimensions	Width	101.6 mm (4.0 in)	
	Length	146.1 mm (5.75 in)	
	Height	13.49 mm (0.531 in) to 51.21 mm (2.016 in)	
Weight*	319.31 gm (11.263 oz) to 1367.81 gm (48.248 oz)		
Mounting Considerations	HDD Industry Standard, All Orientations		
Connector	40-pin SCA-2 (Level 4 Hot Swap) Fibre Channel ANSI Standards		

*Weights are approximate

Power Requirements:

Input Voltage	5 VDC (±5%)			
Power Consumption	E-Disk® Capacity	12,288 MB	28,672 MB	61,440 MB
	Write	14.00 watts	16.00 watts	18.70 watts
	Read	13.00 watts	14.95 watts	17.50 watts
	Idle	9.10 watts	9.70 watts	9.05 watts

Performance Specifications:

Access Time	Up to 0.63 msec
Duplex Burst Rate	400 MB/sec
Sustained Read Rate*	Up to 68 MB/sec
Sustained Write Rate*	Up to 50 MB/sec
I/O Operations per Second	Up to 9,500 IOPS
Read Bit Error Rate	< 10 ⁻²⁰
Fully Associative Cache	Standard: up to 256 MB per drive

*Dual-ported 2 Gbit Fibre Channel

Environmental Specifications:

Operating Temperature	Commercial	0 to 70 °C
	Extended	-25 to 75 °C
	Industrial	-40 to 85 °C
	Military	-60 to 95 °C*
Storage Temperature	-55 to 125 °C	
Humidity	5 to 95% (non-condensing)	
Shock (Operating)	1,500 G**	
Vibration (Operating)	16.4 G rms**	
Altitude	-1,200 to 120,000 feet	
Airflow	None Required	

* Not available for units with PowerGuard®

** Projected

Reliability:

MTBF	> 1.9 Million Hours @ Bellcore Issue 6, Method I, Case 3	
Undetected Data Errors	< 10 ⁻³⁰	
Data Reliability	Built-in EDC/Interleaved Reed-Solomon ECC Corrects up to Six Random Byte Error per 528-Byte Block; Detects Burst Errors up to 9 Bytes Long	
Data Integrity	10 years	
Write Endurance (Typical)	1 GB E-Disk®	4.6 GB E-Disk®
	27 years @ 100GB/day erase/write cycles	123 years @ 100GB/day erase/write cycles
Read Endurance	Unlimited	
Security Erase Compliance	NISPOM DoD 5220.22-M, NSA 130-2, Air Force AFSSI 5020, Army 380-19, IRIG-106	
Diagnostics	Built-in Power-up Self Test	
	Self-Monitoring Diagnostics Database	

SPECIFICATIONS FOR E-DISK® FIBRE CHANNEL 3.5" SERIES
Flash Disk and Solid State Disk Storage Solutions

 **User Interface:**

LEDs (Remote Capability)	Idle, Busy, Cache Busy, Fault
Jumper Settings	Save Settings
Drivers	None Required
Firmware	Field Upgradeable
Fibre Channel Compatibility	FC-AL-2, FC-PH, FC-PLDA, FC-FCP, FC-FLA, FCA-IP, IETF-IPFC
EMI Compliance	CE, FCC, VCCI and AS/NZS Regulations
Safety Compliance	TÜV and UL

 **Performance Matrix:**

MODEL NAME	FORM FACTOR	PORTS	SUSTAINED RATE	FULL DUPLEX DATA RATE	IOPS	STORAGE CAPACITY
E-Disk® 3F2	3.5"	Dual: 2Gbit / Port	68 MB/sec	400 MB/sec	9,500	2048 MB – 155648 MB

 **Capacity, Height And Weight Matrix:**

E-DISK® CAPACITY (MB)	E-DISK® HEIGHT* (in)	E-DISK® HEIGHT (mm)	E-DISK® WEIGHT** (oz)	E-DISK® WEIGHT** (gm)
2048, 4096, 8192	0.531	13.49	11.263	319.31
6144, 12288, 24576	0.696	17.68	15.373	435.81
10240, 20480, 40960	0.861	21.87	19.482	552.31
14336, 28672, 57344	1.026	26.06	23.592	668.81
36864, 73728	1.191	30.25	27.701	785.31
45056, 90112	1.356	34.44	31.811	901.81
53248, 106496	1.521	38.63	35.920	1018.31
61440, 122880	1.686	42.82	40.029	1134.81
69632, 139264	1.851	47.02	44.139	1251.31
77824, 155648	2.016	51.21	48.248	1367.81

* PowerGuard height not included
 ** Weights are approximate

 **Security Erase:**

E-DISK® CAPACITY (MB)	ERASE TIME*	E-DISK® CAPACITY (MB)	ERASE TIME*	E-DISK® CAPACITY (MB)	ERASE TIME*
2048, 6144	8 secs	4096, 12288	16 secs	8192, 24576	33 secs
10240, 14336	16 secs	20480, 28762	33 secs	40960, 57344	66 secs
		36864, 45056	49 secs	73728, 90112	98 secs
		53248, 61440	66 secs	106496, 122880	131 secs
		69632, 77824	82 secs	139264, 155648	164 secs

* Estimated full erase times using default pattern of 1111s or FFFFs.

 **PowerGuard® Height and Weight Matrix:**

3.5" PowerGuard®	PG1 (embedded)	PG1	PG2	PG3
Height (mm)	0	7.87	7.87	11.33
Weight (gm)*	29.74	230.51	230.51	258.26

*Weights are approximate



SPECIFICATIONS FOR E-DISK® FIBRE CHANNEL 3.5" SERIES
Flash Disk and Solid State Disk Storage Solutions

 **Product Part Number:**

Part Number	Model Number + Capacity + Options + Sub-Part Number
	PFISSSC + XXXXXX + TGV + (C)
Example	D3F002F 077824 C1N (A) *Note: (A) Sub-Part Number
Model Number	PFISSSC
P: Product Type	D: E-Disk®
F: Form Factor	3: 3.5-inch
I: Interface	F: Fibre Channel
S: Burst (Sustained) Read/Write Rate	002: 200 MB/sec (68 MB/sec)
C: Connector Type/Channel	F: 40-pin SCA-2 Dual Port Fibre Channel Hot Swappable Level 4
Capacity	XXXXXX
	2048, 6144, 10240, 14336
X: Capacity (MB)	4096, 12288, 20480, 28672, 36864, 45056, 53248, 61440, 69632, 77824 8192, 24576, 40960, 57344, 73728, 90112, 106496, 122880, 139264, 155648
Options	TGV
	C: Commercial (0 to +70 °C)
T: Temperature (Operating)	E: Extended (-25 to +75 °C)
	I: Industrial (-40 to +85 °C)
	M: Military (-60 to +95 °C)**
	N: No PowerGuard® Option
G: PowerGuard®	1: Auto-Save Cache to Flash on Power Down (default) 2: Erase Mode on Power Down 3: Standby Erase Mode on Power Down
V: Input Voltage	N: 5V
Sub-Part Number*	(C)
	A: Acrylic Conformal Coating
C: PCB Coating	S: Silicone Conformal Coating

* [Consult E-Disk® Part Numbering Guide](#)

** Not available for units with PowerGuard®

Note: Please contact sales for further details on any of the E-Disk features.



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6,970,890; 6,981,070. Other Patents
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