Data Sheet
Solid State Disks for Fujitsu Desktop PC ESPRIMO, Workstation CELSIUS, Thin Clients FUTRO

Fujitsu offers a broad range of solid state disks with different capacities and functions for Desktop PC, Workstation and Thin Client portfolio. This data sheet can help you to decide what type of solid state disk fits best to your requirements.

ADVANTAGES OF STANDARD SOLID STATE DISKS / MODULES

- Fast boot time
- Reduced application load times
- Noiseless
- High mechanical robustness
- Outstanding shock and vibration resistance
- Low weight
- Low power consumption
- Wide operating temperature range
- No defragmentation tools needed
- Fast access times
- No mechanical latency
- No vibrations
- Optimized for enhanced power management

Please keep in mind, that we only source corporate products from Tier 1 vendors (e.g. Kioxia, Micron, Samsung and Western Digital), providing highest quality and state of the art performance.

Technical Details – Solid State Disks for Fujitsu Desktop PC ESPRIMO and FUJITSU Workstation CELSIUS

SSD SATA III 2.5”	512 GB [1]	1024 GB [1 3]
Physical Specifications		
Capacity (GB)	512	1024
Form factor	2.5”	2.5”
Interface	SATA 6.0 Gb/s	SATA 6.0 Gb/s
Performance Specification		
Buffer size (MB)	512	1024
Read transfer rate (max. MB/s)	560	530
Write transfer rate (max. MB/s)	530	520
Random read transfer rate (max. IOPs)	95K	90K
Random write transfer rate (max. IOPs)	81K	87K
Features		
Flash type	MLC	MLC
Encryption	no	no
TRIM support	yes	yes
NCQ support	yes	yes
Endurance		
TBW (Total Bytes Written) in TB [2]	200	400
MTBF/MTTF in hours [2]	1.752 million	2 million

[1]**Notes:** We are sourcing drives from different manufacturers, therefore the read/write performance figures reflect only the lowest performance figures of the different drives.
[2]**Notes:** According to vendor specification.
[3]**Notes:** Only for CELSIUS workstations.

SSD PCIe M.2 NVMe	256 GB [1 2]	512 GB [1 2]	1024 GB [1 2]	2048 GB [1 2 4]
Physical specifications				
Capacity (GB)	256	512	1024	2048
Form factor	M.2 (2280)	M.2 (2280)	M.2 (2280)	M.2 (2280)
Interface	PCIe Gen3 8GT/s x4	PCIe Gen3 8GT/s x4	PCIe Gen3 8GT/s x4	PCIe Gen3 8GT/s x4
Performance SPEC				
Buffer size (MB)	256	256	256	2048
Read transfer rate (max. MB/s)	3150	3300	3400	3300
Write transfer rate (max. MB/s)	2100	2700	3100	2700
Random read transfer rate (max. IOPs)	270K	225K	550K	430K
Random write transfer rate (max. IOPs)	280K	500K	550K	500K
Features				
Flash type	MLC	MLC	MLC	MLC
Encryption	no	no	no	no
TRIM support	yes	yes	yes	yes
NCQ support	no	no	no	no
Remarks	NVMe	NVMe	NVMe	NVMe
Endurance				
TBW (Total Bytes Written) in TB [3]	200	300	400	1200
MTBF/MTTF in hours [3]	1.5 million	1.75 million	1.75 million	2 million

[1]**Notes:** We are sourcing drives from different manufacturers, therefore the read/write performance figures reflect only the lowest performance figures of the different drives.
[2]**Notes**: Maximum SSD performance figures – depending on the system hardware, performance might be lower
[3]**Notes:** According to vendor specification.
[4]**Notes:** Only available for Workstation CELSIUS

SSD PCIe M.2 NVMe SED	256 GB [1] [2]	512 GB [1] [2]	1024 GB [1] [2]
Physical specifications			
Capacity (GB)	256	512	1024
Form factor	M.2 (2280)	M.2 (2280)	M.2 (2280)
Interface	PCIe Gen3 8GT/s x4	PCIe Gen3 8GT/s x4	PCIe Gen3 8GT/s x4
Performance SPEC			
Buffer size (MB)	256	256	1024
Read transfer rate (max. MB/s)	3150	3400	3300
Write transfer rate (max. MB/s)	1400	2700	2700
Random read transfer rate (max. IOPs)	210K	460K	400K
Random write transfer rate (max. IOPs)	280K	400K	500K
Features			
Flash type	MLC	MLC	MLC
Encryption	yes	yes	yes
TRIM support	yes	yes	yes
NCQ support	no	yes	yes
Remarks	NVMe	NVMe	NVMe
Endurance			
TBW (Total Bytes Written) in TB [3]	200	300	600
MTBF/MTTF in hours [3]	1.75 million	1.75 million	2 million

[1]**Notes:** We are sourcing drives from different manufacturers, therefore the read/write performance figures reflect only the lowest performance figures of the different drives.
[2]**Notes**: Maximum SSD performance figures – depending on the system hardware, performance might be lower
[3]**Notes:** According to vendor specification.
Notes: SED, 256 bit AES encrypted, TCG OPAL support v1.0/v2.0 (offers enhanced manageability with 3rd party software).

SSD PCIe M.2 NVMe Value	128 GB [1 2 4]	256 GB [1 2]	512 GB [1 2]
Physical specifications			
Capacity (GB)	128	256	512
Form factor	M.2 (2280)	M.2 (2280)	M.2 (2280)
Interface	PCIe Gen3 8GT/s x4	PCIe Gen3 8GT/s x4	PCIe Gen3 8GT/s x4
Performance SPEC			
Buffer size (MB)	0	0	0
Read transfer rate (max. MB/s)	3100	2400	2400
Write transfer rate (max. MB/s)	1200	950	1750
Random read transfer rate (max. IOPs)	200K	170K	310K
Random write transfer rate (max. IOPs)	280K	120K	230K
Features			
Flash type	MLC	MLC	MLC
Encryption	no	no	no
TRIM support	yes	yes	yes
NCQ support	yes	yes	yes
Remarks	NVMe	NVMe	NVMe
Endurance			
TBW (Total Bytes Written) in TB [3]	75	150	300
MTBF/MTTF in hours [3]	1.5 million	1.5 million	1.5 million

[1]**Notes:** We are sourcing drives from different manufacturers, therefore the read/write performance figures reflect only the lowest performance figures of the different drives.
[2]**Notes**: Maximum SSD performance figures – depending on the system hardware, performance might be lower
[3]**Notes:** According to vendor specification.
[4]**Notes:** Only available for ESPRIMO PC.

SSD PCIe M.2 NVMe SED (Gen4/Gen3) Value	128 GB	256 GB [1 2 4]	512 GB [1 2]
Physical specifications			
Capacity (GB)	128	256	512
Form factor	M.2(2280)	M.2 (2280)	M.2 (2280)
Interface	PCIe Gen3 8GT/s x4	PCIe Gen4 16GT/s x4	PCIe Gen4 16GT/s x4
Performance SPEC			
Buffer size (MB)	DRAMless	DRAMless	DRAMless
Read transfer rate (max. MB/s)	3100	3300	3500
Write transfer rate (max. MB/s)	1200	1250	2500
Random read transfer rate (max. IOPs)	200K	190K	360K
Random write transfer rate (max. IOPs)	280K	300K	400K
Features			
Flash type	MLC	MLC	MLC
Encryption	no	yes	yes
TRIM support	yes	yes	yes
NCQ support	yes	yes	yes
Remarks	NVMe	NVMe	NVMe
Endurance			
TBW (Total Bytes Written) in TB [3]	75	85	85
MTBF/MTTF in hours [3]	1.5 million	1.5 million	1.5 million

[1]**Notes:** We are sourcing drives from different manufacturers, therefore the read/write performance figures reflect only the lowest performance figures of the different drives.
[2]**Notes**: Maximum SSD performance figures – depending on the system hardware, performance might be lower
[3]**Notes:** According to vendor specification.
[4]**Notes:** Only available for ESPRIMO PC.
Notes: SED, 256 bit AES encrypted, TCG OPAL support v1.0/v2.0 (offers enhanced manageability with 3rd party software).

SSD PCIe M.2 NVMe SED (Gen4)	256 GB [1 2]	512 GB [1 2]	1024 GB [1 2]	2048 GB [1 2]
Physical specifications				
Capacity (GB)	256	512	1024	2048
Form factor	M.2 (2280)	M.2 (2280)	M.2 (2280)	M.2 (2280)
Interface	PCIe Gen4 16GT/s x4	PCIe Gen4 16GT/s x4	PCIe Gen4 16GT/s x4	PCIe Gen4 16GT/s x4
Performance SPEC				
Buffer size (MB)	512	512	1024	2048
Read transfer rate (max. MB/s)	6400	6600	6600	7000
Write transfer rate (max. MB/s)	2700	3600	5000	5200
Random read transfer rate (max. IOPs)	500K	360K	630K	1000K
Random write transfer rate (max. IOPs)	600K	700K	700K	850K
Features				
Flash type	MLC	MLC	MLC	MLC
Encryption	yes	yes	yes	yes
TRIM support	yes	yes	yes	yes
NCQ support	yes	yes	yes	yes
Remarks	NVMe	NVMe	NVMe	NVMe
Endurance				
TBW (Total Bytes Written) in TB [3]	150	300	600	1200
MTBF/MTTF in hours [3]	1.5 million	1.5 million	1.5 million	1.5 million

	4096 GB [1 2]
Physical specifications	
Capacity (GB)	4096
Form factor	M.2 (2280)
Interface	PCIe Gen4 16GT/s x4
Performance SPEC	
Buffer size (MB)	2048
Read transfer rate (max. MB/s)	7000
Write transfer rate (max. MB/s)	5800
Random read transfer rate (max. IOPs)	900K
Random write transfer rate (max. IOPs)	620K
Features	
Flash type	MLC
Encryption	yes
TRIM support	yes
NCQ support	yes
Remarks	NVMe
Endurance	
TBW (Total Bytes Written) in TB [3]	2400
MTBF/MTTF in hours [3]	1.5 million

[1]**Notes:** We are sourcing drives from different manufacturers, therefore the read/write performance figures reflect only the lowest performance figures of the different drives.

[2]**Notes**: Maximum SSD performance figures – depending on the system hardware, performance might be lower

Notes: SED, 256 bit AES encrypted, TCG OPAL support v1.0/v2.0 (offers enhanced manageability with 3rd party software).

Technical Details – Solid State Disks only for Fujitsu Workstation CELSIUS

Options for CELSIUS M, R, C:

SSD PCIe M.2 NVMe Highend card	1x or 2x 512GB M.2 NVMe SSD [1] on carrier card	1x or 2x 1024GB M.2 NVMe SSD [1] on carrier card	1x or 2x 2048GB M.2 NVMe SSD [1] on carrier card
Physical specifications			
Capacity (GB)	1x or 2x 512	1x or 2x 1024	1x or 2x 2048
Form factor	M.2	M.2	M.2
Interface / Protocol	PCIe 3.0 / NVMe card	PCIe 3.0 / NVMe card	PCIe 3.0 / NVMe card
Performance SPEC			
Buffer size (MB)	256	256	2048
Read transfer rate (max. MB/s)	3300	3400	3300
Write transfer rate (max. MB/s)	2700	3100	2700
Random read transfer rate (max. IOPs)	225K	550K	430K
Random write transfer rate (max. IOPs)	500K	550K	500K
Features			
Flash type	MLC	MLC	MLC
Encryption	no	no	no
TRIM support	yes	yes	yes
NCQ support	no	no	no
Endurance			
TBW (Total Bytes Written) in TB [2]	300	400	1200
MTBF/MTTF in hours [2]	1.75 million	1.75 million	2 million

[1]**Notes:** We are sourcing drives from different manufacturers, therefore the read/write performance figures reflect only the lowest performance figures of the different drives.
[2]**Notes**: According to vendor specification.

Options for CELSIUS W:

PCIe card SSD PCIe M.2 NVMe	1x 256GB M.2 NVMe SSD [1] on carrier card	1x 512GB M.2 NVMe SSD [1] on carrier card	1x 1024GB M.2 NVMe SSD [1] on carrier card	1x 2048GB M.2 NVMe SSD [1] on carrier card
Physical specifications				
Capacity (GB)	1x 256	1x 512	1x 1024	1x 2048
Form factor	M.2	M.2	M.2	M.2
Interface / Protocol	PCIe 3.0 / NVMe card	PCIe 3.0 / NVMe card	PCIe 3.0 / NVMe card	PCIe 3.0 / NVMe card
Performance SPEC				
Buffer size (MB)	256	256	256	2048
Read transfer rate (max. MB/s)	3150	3300	3400	3300
Write transfer rate (max. MB/s)	2100	2700	3100	2700
Random read transfer rate (max. IOPs)	270K	225K	550K	430K
Random write transfer rate (max. IOPs)	280K	500K	550K	500K
Features				
Flash type	MLC	MLC	MLC	MLC
Encryption	no	no	no	no
TRIM support	yes	yes	yes	yes
NCQ support	no	no	no	no
Endurance				
TBW (Total Bytes Written) in TB [2]	200	300	400	1200
MTBF/MTTF in hours [2]	1.75 million	1.75 million	1.75 million	2 million

[1]**Notes:** We are sourcing drives from different manufacturers, therefore the read/write performance figures reflect only the lowest performance figures of the different drives.

[2]**Notes**: According to vendor specification.

Options for CELSIUS W:

PCIe card SSD PCIe M.2 NVMe SED (Gen4)	1x 512GB M.2 NVMe SSD [1] on carrier card	1x 1024GB M.2 NVMe SSD [1] on carrier card	1x 2048GB M.2 NVMe SSD [1] on carrier card	1x 4096GB M.2 NVMe SSD [1] on carrier card (in progress)
Physical specifications				
Capacity (GB)	1x 512	1x 1024	1x 2048	1x 4096
Form factor	M.2	M.2	M.2	M.2
Interface / Protocol	PCIe Gen4 16GT/s x4	PCIe Gen4 16GT/s x4	PCIe Gen4 16GT/s x4	PCIe Gen4 16GT/s x4
Performance SPEC				
Buffer size (MB)	512	1024	2048	2048
Read transfer rate (max. MB/s)	6600	6600	7000	7000
Write transfer rate (max. MB/s)	3600	5000	5200	5800
Random read transfer rate (max. IOPs)	360K	630K	900K	900K
Random write transfer rate (max. IOPs)	700K	700K	620K	620K
Features				
Flash type	MLC	MLC	MLC	MLC
Encryption	yes	yes	yes	yes
TRIM support	yes	yes	yes	yes
NCQ support	yes	yes	yes	yes
Endurance				
TBW (Total Bytes Written) in TB [2]	300	600	1200	2400
MTBF/MTTF in hours [2]	1.5 million	2 million	1.5 million	1.5 million

[1]**Notes:** We are sourcing drives from different manufacturers, therefore the read/write performance figures reflect only the lowest performance figures of the different drives.
[2]**Notes**: According to vendor specification.

SSD SATA III HighEndurance	480 GB 1.5DWPD	960 GB 1.5DWPD	1920 GB 1.5DWPD	3840 GB 1.2DWPD
Physical specifications				
Capacity (GB)	480	960	1920	3840
Form factor	2,5" 7mm	2,5" 7mm	2,5" 7mm	2,5" 7mm
Interface	SATA 6.0 Gb/s	SATA 6.0 Gb/s	SATA (6,0 Gb/s)	SATA (6,0 Gb/s)
Performance Specification				
Buffer size (MB)	1024	2048	2048	2048
Read transfer rate (max. MB/s)	540	540	540	540
Write transfer rate (max. MB/s)	410	520	520	520
Random read transfer rate (max. IOPs)	85K	95K	95K	95K
Random write transfer rate (max. IOPs)	36K	33K	33K	30K
Features				
Flash type	eTLC	eTLC	eTLC	eTLC
Encryption	no	no	no	no
TRIM support	yes	yes	yes	yes
NCQ support	yes	yes	yes	yes
Endurance				
DWPD (Drive writes per day) over years [1]	1.5 over 5 years	1.5 over 5 years	1.5 DWPD over 5 years	1.2 DWPD over 5 years
MTBF/MTTF in hours [1]	3 million	3 million	3 million	3 million

[1]**Notes**: According to vendor specification.

Please find the comparison table of mass storage devices and the latest benchmarks in the data sheet
Hard Disk Drive for FUJITSU Desktop ESPRIMO and FUJITSU Workstation CELSIUS

Technical Details – Solid State Disks for Fujitsu Thin Clients FUTRO

	M.2 SSD 32 GB	M.2 SSD 64 GB	M.2 SSD 128 GB
Physical Specifications			
Capacity (GB)	32	64	128
Form factor	M.2 (2242)	M.2 (2242)	M.2 (2242)
Interface	SATA 6.0 Gb/s	SATA 6.0 Gb/s	SATA 6.0 Gb/s
Performance Specification			
Buffer size (MB)	512	128	256
Read transfer rate (max. MB/s)	450	400	560
Write transfer rate (max. MB/s)	50	200	410
Random read transfer rate (max. IOPs)	17K	35K	55K
Random write transfer rate (max. IOPs)	12K	60K	55K
Features			
Flash type	MLC	3D TLC	3D TLC
Encryption	no	no	no
TRIM support	yes	yes	yes
NCQ support	yes	yes	yes
Endurance			
TBW (Total Bytes Written) in TB [1]	62.4	55	110
MTBF/MTTF in hours [1]	3 million	2 million	2 million

	SSD (M.2 NVMe) 64 GB	SSD (M.2 NVMe) 128 GB (SED)
Physical Specifications		
Capacity (GB)	64	128
Form factor	M.2	M.2
Interface	PCIe Gen3 8GT/s x4	PCIe Gen3 8GT/s x4
Performance Specification		
Buffer size (MB)	0.4	DRAMless
Read transfer rate (max. MB/s)	675	3100
Write transfer rate (max. MB/s)	145	1200
Random read transfer rate (max. IOPs)	33K	200K
Random write transfer rate (max. IOPs)	25K	280K
Features		
Flash type	3D TLC	VNAND V6
Encryption	no	yes
TRIM support	yes	yes
NCQ support	yes	yes
Remarks	NVMe	NVMe
Endurance		
TBW (Total Bytes Written) in TB [1]	39	75
MTBF/MTTF in hours [1]	3 million	1.5 million

[1]**Notes:** According to vendor specification.

Notes: SED, 256 bit AES encrypted, TCG OPAL support v1.0/v2.0 (offers enhanced manageability with 3rd party software).

More information

Fujitsu platform solutions

In addition to Solid State Drives, Fujitsu provides a range of platform solutions. They combine reliable Fujitsu products with the best in services, know-how and worldwide partnerships.

Dynamic Infrastructures
With the Fujitsu Dynamic Infrastructures approach, Fujitsu offers a full portfolio of IT products, solutions and services, ranging from clients to datacenter solutions, Managed Infrastructure and Infrastructure-as-a-Service. How much you benefit from Fujitsu technologies and services depends on the level of cooperation you choose. This takes IT flexibility and efficiency to the next level.

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More information

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