goodram enterprise

ENTERPRISE UltraSpeed

Gen4 SSD Unrivaled Performance & Low Power Consumption

Sequential read

up to **7 400** MB/s

Sequential write

up to **6 900** MB/s

Random read

up to **1 750 000** IOPS

Random write

up to **470 000** IOPS

Interface

PCIe 4.0 1x4 (Single port), 2x2 (Dual port)

Capacity

up to 30,72 TB

Form factor

U.2

DWPD

1, 3

Product features

- NVMe 1.4
- AES-XTS 256-bit Encryption
- TCG Opal 2.0 Support
- End-to-End Data Path Protection
- NVMe-MI (Management Interface)
- SMBus
- Metadata Protection
- 64 Namespaces
- SECDED
- Power Loss Protection (PLP)
- Sanitize
- Data Integrity and Protection

Solutions - US10S

Form factor U.2						
Capacity[1]	800 GB	1.6 TB	3.2 TB	6.4 TB	12.8 TB	25.6 TB
Interface	PCIe 4.0 1x4, 2x2	PCIe 4.0 1x4, 2x2	PCIe 4.0 1x4, 2x2	PCIe 4.0 1x4, 2x2	PCIe 4.0 1x4, 2x2	PCIe 4.0 1x4, 2x2
NVMe	1.4	1.4	1.4	1.4	1.4	1.4
NAND Flash	3D TLC	3D TLC	3D TLC	3D TLC	3D TLC	3D TLC
Performance[2,3,4,5]						
Sequential read to (MB/s)	7 000	7 000	7 000	7 000	7 000	7 000
Sequential write to (MB/s)	1 800	3 500	6 700	6 800	6 800	6 000
4K random read to (IOPS)	1 000 000	1 600 000	1 600 000	1 600 000	1 600 000	1 600 000
4K random write to (IOPS)	130 000	280 000	450 000	450 000	480 000	450 000
Read latency (Typ.,µs)	90	110	100	100	100	90
Write latency (Typ.,µs)	15	15	15	15	15	15
Power consumption[6]						
Active (W)	9.5	13.3	18.3	19.9	20.8	20.4
Idle (W)	5	5.51	5.8	5.88	7.43	8.46
Endurance/Reliability						
DWPD[7]	3	3	3	3	3	3
TBW[8]	4.4 PB	8.8 PB	17.5 PB	35.0 PB	70.1 PB	140.2 PB
UBER[9]	< 1 sector per 10^{18} bits read	< 1 sector per 10^{18} bits read	< 1 sector per 10^{18} bits read	< 1 sector per 10^{18} bits read	< 1 sector per 10^{18} bits read	< 1 sector per 10^{18} bits read
MTBF (hours)[10]	2 500 000	2 500 000	2 500 000	2 500 000	2 500 000	2 500 000
Limited warranty (years)[11]	5	5	5	5	5	5
Temperature						
Operating temp. (°C)	0 – 70	0 – 70	0 – 70	0 – 70	0 – 70	0 – 70
Non-operating temp. (°C)	-40 – 85	-40 – 85	-40 – 85	-40 – 85	-40 – 85	-40 – 85
Physical dimension						
Length (mm)	100.10	100.10	100.10	100.10	100.10	100.10
Width (mm)	69.85	69.85	69.85	69.85	69.85	69.85
Height (mm)	15.00	15.00	15.00	15.00	15.00	15.00
Weight(g)	197.00	198.00	200.00	203.00	205.00	208.00

* A detailed explanation of symbols and markings is provided on the final page.

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Solutions - US10M

Form factor U.2						
Capacity[1]	960 GB	1.92 TB	3.84 TB	7.68 TB	15.36 TB	30.72 TB
Interface	PCIe 4.0 1x4, 2x2	PCIe 4.0 1x4, 2x2	PCIe 4.0 1x4, 2x2	PCIe 4.0 1x4, 2x2	PCIe 4.0 1x4, 2x2	PCIe 4.0 1x4, 2x2
NVMe	1.4	1.4	1.4	1.4	1.4	1.4
NAND Flash	3D TLC	3D TLC	3D TLC	3D TLC	3D TLC	3D TLC
Performance[2,3,4,5]						
Sequential read to (MB/s)	7 000	7 000	7 000	7 000	7 000	7 000
Sequential write to (MB/s)	1 800	3 500	6 700	6 800	6 800	6 000
4K random read to (IOPS)	1 600 000	1 600 000	1 600 000	1 600 000	1 600 000	1 600 000
4K random write to (IOPS)	60 000	95 000	170 000	180 000	180 000	180 000
Read latency (Typ.,µs)	90	110	100	100	100	90
Write latency (Typ.,µs)	15	15	15	15	15	15
Power consumption[6]						
Active (W)	9.5	12.8	17.9	19.1	20.1	20.6
Idle (W)	5	5.5	5.8	5.75	7.3	8.16
Endurance/Reliability						
DWPD[7]	1	1	1	1	1	1
TBW[8]	1.8 PB	3.5 PB	7.0 PB	14.0 PB	28.0 PB	56.1 PB
UBER[9]	< 1 sector per 10^{18} bits read	< 1 sector per 10^{18} bits read	< 1 sector per 10^{18} bits read	< 1 sector per 10^{18} bits read	< 1 sector per 10^{18} bits read	< 1 sector per 10^{18} bits read
MTBF (hours)[10]	2 500 000	2 500 000	2 500 000	2 500 000	2 500 000	2 500 000
Limited warranty (years)[11]	5	5	5	5	5	5
Temperature						
Operating temp. (°C)	0 – 70	0 – 70	0 – 70	0 – 70	0 – 70	0 – 70
Non-operating temp. (°C)	-40 – 85	-40 – 85	-40 – 85	-40 – 85	-40 – 85	-40 – 85
Physical dimension						
Length (mm)	100.10	100.10	100.10	100.10	100.10	100.10
Width (mm)	69.85	69.85	69.85	69.85	69.85	69.85
Height (mm)	15.00	15.00	15.00	15.00	15.00	15.00
Weight(g)	197.00	198.00	200.00	203.00	205.00	208.00

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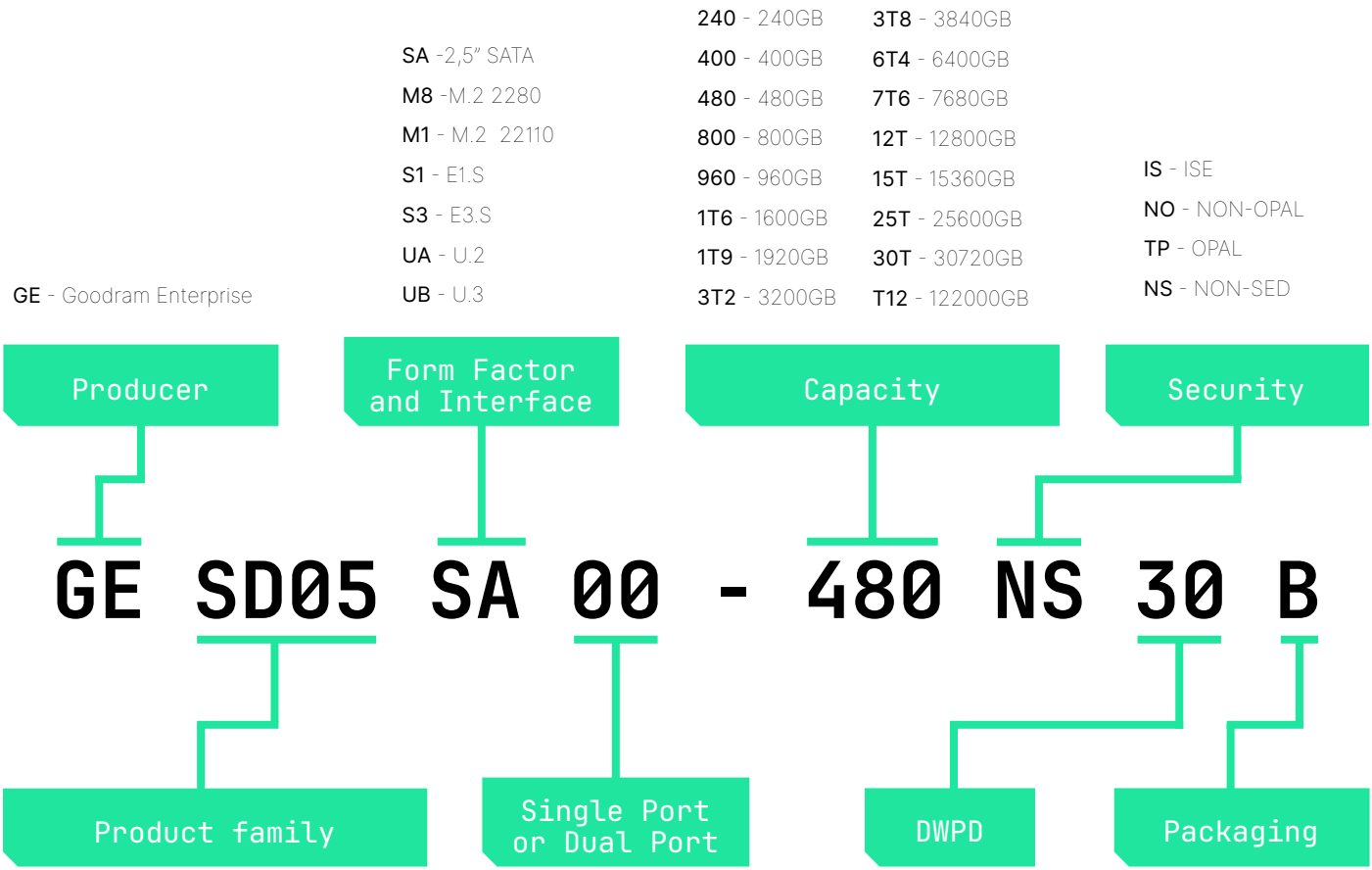
Decoder P/N



US10 - UltraSpeed Series PCIe Gen4×4
US20 - UltraSpeed Series PCIe Gen5×4
DC10 - DataCore Series PCIe Gen4×4
DC20 - DataCore Series PCIe Gen5×4
DC25 - DataCore Series PCIe Gen5×4
BS10 - BootSystem Series PCIe Gen4×4
BS05 - BootSystem Series SATA III
SD05 - SATADrive Series SATA III

SP - Single Port
DP - Dual Port
00 - None

03 - 0,3
04 - 0,4
05 - 0,5
10 - 1
30 - 3

B - GOODRAM BULK

Legend

(1) 1 TB = 10^{12}bytes

(2) Sequential Performance is based on FIO on Linux, 128 K, with QD=32, 1 worker.

(3) Random Performance is based on FIO on Linux, 4 K data size, QD=64, 8 workers.

(4) Latency is measured with random workloads based on FIO on Linux, 4 KB data size, QD=1, 1 worker.

(5) Sequential performance is based on FIO (Flexible I/O Tester - an open source tool used to measure the performance of input/output (I/O) operations for disk drives and storage systems under various test scenarios) on Linux, 128 K, with QD=32, 1 worker.

(6) Power consumption (Average RMS) is measured during the sequential read/write and random read/write operations performed by iometer with the conditions described in (2)(3).

(7) The results of DWPD are obtained in compliance with JESD219A Standards.

(8) 1 PB = 1000 TB, 1 TB = 10^{12} bytes.

(9) UBER (Uncorrectable Bit Error Rate) – a measure of data storage reliability, indicating the number of uncorrectable bit errors per amount of data read. This value shows how often errors may occur that cannot be corrected using internal ECC (Error Correction Code) mechanisms.

(10) Please note that a lower MTBF should be expected for higher capacity drives, and we apply the lowest MTBF for all capacities.

(11) We warrant that each Product manufactured and delivered by Wilk Elektronik SA will comply with the specifications for five (5) years from the date of delivery or until the total number of stored terabytes specified in the S.M.A.R.T. attribute is exceeded, whichever occurs first.

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