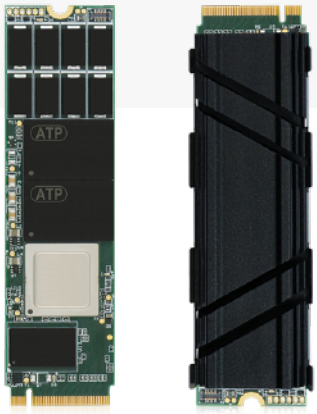
# PCIe® Gen 4 NVMe M.2 2280 SSD

The Global Leader in Specialized Storage and Memory Solutions



## KEY FEATURES

- Endurance: 1 DWPD (5 years Enterprise workload)
- Sustained Write Performance: Up to 3,000 MB/s
- Data Retention: Up to 10 years at 55°C (pSLC)*
- Power Loss Protection: MCU-based* data-at-rest and in-flight protection, or firmware-based data-at-rest protection
- AceTT* (Ace Thermal Throttling Technology)
- PLP Diag* (Self-Diagnosing Capacitor Check)
- Security: Self-Encrypting Drive (SED with AES 256-bit Encryption, TCG Opal 2.0*
- Hardware Secure Erase / Write Protect*
- End-to-End Data Path Protection
- Thermal heatsink solutions**
- AcuCurrent* (Signal Optimization Technology)

* May vary by product and project support
** Customization available on a project basis

Featuring PCI Express® (PCIe®) interfaces and supporting Generation 4, ATP NVMe™ M.2 SSD modules deliver versatile high-performance storage solutions across multiple form factors including 2280, 2242, and 2230, catering to diverse system configurations and write-intensive mission-critical application requirements.

Select M.2 SSDs boast the highest endurance with unmatched 100,000 P/E cycles for pSLC mode and 11,000 P/E cycles for native TLC.

ATP SSDs are also thermally engineered for robust cross-temperature operating range for excellent error handling. They offer reliable operation with I-Temp (-40°C to 85°C), Extended-commercial Temp (–20°C to 75°C) and C-Temp (0°C to 70°C) support options. Thermal management options for optimal heat dissipation include a nickel-coated copper heat spreader on the controller and 4 mm or 8 mm fin-type heatsink designs.

To ensure that data is protected from malicious access, selected M.2 SSDs support optional Self-Encrypting Drive (SED) features with AES 256-bit encryption and TCG Opal 2.0, as well as HW Write Protect and HW Secure Erase.

| Technologies | | S.M.A.R.T/ Life Monitor | PLP Diag | Ace Thermal Throttling | AcuCurrent | Industrial Temperature | Firmware-Based Data-At-Rest Power Loss Protection | Hardware-Based In-Flight-Data Power Loss Protection | Advanced Wear Leveling | AutoRefresh | Dynamic Data Refresh | Auto-Read Calibration | ETEDP | SED | Software Secure Erase | Hardware Secure Erase | Hardware Write Protect |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Premium | N751Pi | ○ | ○ | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Superior | N651Si / N651Sc | ○ | ○ | | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | N601Sw / N601Sc | ○ | | ○ | ○ | | ○ | | ○ | ○ | ○ | | ○ | ▲ | ○ | ○ | ○ |
| Value | N601Vi / N601Vc | ○ | | | | ○ | ○ | | ○ | ○ | ○ | | ○ | | ○ | | |
| Momentum | N601Mi / N601Mw | ○ | | | | ○ | ○ | | ○ | ○ | ○ | | ○ | ▲ | ○ | | |
| | N601Mw | ○ | | | | | ○ | | ○ | ○ | ○ | ○ | ○ | ▲ | ○ | | |

▲: Customization option available on a project basis.

## Specifications

| Product Line | Premium | Superior | | Value | Momentum |
|---|---|---|---|---|---|
| | N751Pi | N651Si / N651Sc | N601Sw / N601Sc [1] | N601Vi / N601Vc | N601Mw |
| Interface | PCIe G4 x4 | | | | |
| Flash Type | 3D TLC (pSLC mode) [3] | 3D TLC | | | |
| Form Factor | M.2 2280-D6-M / M.2 2280-D2-M [4] | | M.2 2280-D2-M | M.2 2280-S3-M | M.2 2280 S3-M |
| Operating Temperature | -40°C to 85°C | -40°C to 85°C / 0°C to 70°C | -20°C to 75°C / 0°C to 70°C | -40°C to 85°C / 0°C to 70°C | -20°C to 75°C |
| Power Loss Protection Options | Hardware + Firmware Based / Firmware Based | | Firmware Based | | |
| Optional SED Features | AES 256-bit Encryption, TCG Opal 2.0 | | | | AES 256-bit Encryption |
| Capacity | 80 GB to 1.28 TB | 240 GB to 7.68 TB [5] | 480 GB to 3.84 TB | 240 GB to 1.92 TB | 256 GB to 4 TB |
| Performance | | | | | |
| Sequential Read (MB/s) up to | 6,450 | | 6,550 | 5,000 | 7,200 |
| Sequential Write (MB/s) up to | 6,100 | 6,050 | 6,200 | 4,300 | 6,500 |
| Random Reads IOPS up to | 1,090,000 | 1,091,000 | 840,000 | 800,000 | 1,000,000 |
| Random Writes IOPS up to | 1,200,000 | 1,245,000 | 1,085,000 | 1,100,000 | 1,200,000 |
| Endurance and Reliability | | | | | |
| Endurance (TBW) [5] up to | 120,000 TB | 76,000 TB | 11,270 TB | 4,170 TB | 6,000 TB |
| Reliability MTBF @ 25°C | >3,000,000 hours | | | | |
| Others | | | | | |
| Dimensions (mm) | 80 × 22 × 3.85<br>80 × 22 × 3.6<br>Optional 8 mm heatsink | | 80.0 x 22.0 x 3.6 | 80.0 x 22.0 x 2.4 | 80.0 x 22.0 x 2.2 |
| Certifications | CE, FCC, BSMI, UKCA, RoHS, REACH | CE, FCC, BSMI, UKCA, RoHS, REACH, UL | CE, FCC, BSMI, UKCA, RoHS, REACH | CE, FCC, BSMI, UKCA, RoHS, REACH, UL | CE, FCC, BSMI, UKCA, RoHS, REACH |
| Warranty | 5 years | 3 years | | | 2 years |

| Product Line | Momentum | Superior | Premium | Superior |
|---|---|---|---|---|
| | N401Mw [1] | N601Sw / N601Sc [1] | N701Pi / N701Pc | N601Si / N601Sc |
| Interface | PCIe G4 x4 | | PCIe G4 x2 [2] | |
| Flash Type | 3D TLC | | 3D TLC (pSLC mode) | 3D TLC |
| Form Factor | M.2 2280 S3-M | M.2 2242-D2-M | M.2 2230-S4-M | M.2 2230-S4-M |
| Operating Temperature | -20°C to 75°C | -20°C to 75°C / 0°C to 70°C | -40°C to 85°C / 0°C to 70°C | |
| Power Loss Protection Options | Firmware Based | | | |
| Optional SED Features | AES 256-bit Encryption | AES 256-bit Encryption, TCG Opal 2.0 | | |
| Capacity | 256 GB to 4 TB | 480 GB to 1.92 TB | 80 GB to 320 GB | 240 GB to 960 GB |
| Performance | | | | |
| Sequential Read (MB/s) up to | 7,200 | 6,430 | 3,565 | 3,560 |
| Sequential Write (MB/s) up to | 6,500 | 6,100 | 3,280 | 3,280 |
| Random Reads IOPS up to | 900,000 | 260,000 | 630,000 | 630,000 |
| Random Writes IOPS up to | 1,000,000 | 760,000 | 755,000 | 755,000 |
| Endurance and Reliability | | | | |
| Endurance (TBW) [5] up to | 3,200 TB | 5,100 TB | 9,480 TB | 2,810 TB |
| Reliability MTBF @ 25°C | >3,000,000 hours | | | |
| Others | | | | |
| Dimensions (mm) | 80.0 x 22.0 x 2.2 | 42.0 x 22.0 x 3.6 | 30.0 x 22.0 x 2.75 | |
| Certifications | CE, FCC, BSMI, UKCA, RoHS, REACH | | | |
| Warranty | 2 years | 3 years | 5 years | 3 years |

1 Product specifications may be subject to change.
2 150K P/E cycle configuration drive available on a project basis.
3 M.2 2280-D6-M (max height: 3.85mm) offers hardware-based power loss protection, while M.2 2280-D2-M (max height: 3.6mm) provides firmware-based power loss protection.
4 The 7,680 GB capacity is rated for commercial temperature operation only (0°C to 70°C)
5 Under highest Sequential write value. May vary by density, configuration and applications.
6 Gen4 x4 configuration available on a project basis

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**WE BUILD WITH YOU**

Product spec and its related information are subject to change without advance notice.
Please refer to www.atpinc.com for latest information

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