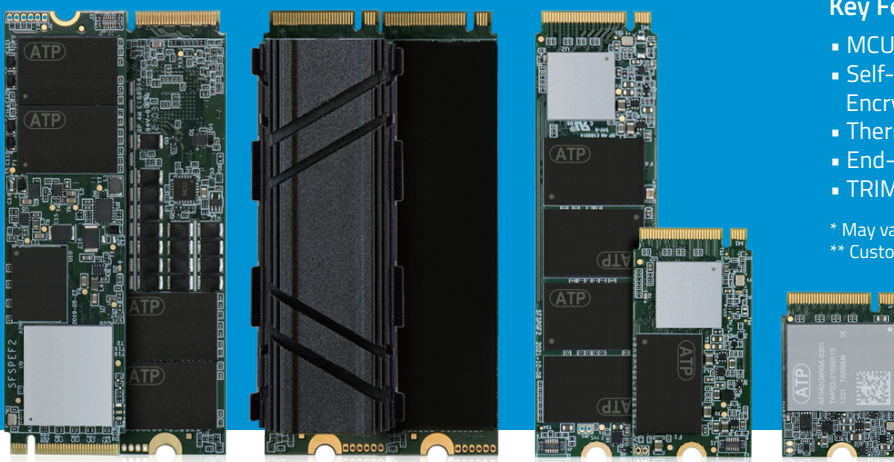# M.2 NVMe

Targeted Product Portfolio, Engineered Specifically for Your Mission Critical Applications

Key Features

- MCU-based Power Loss Protection Design *
- Self-Encrypting Drive (SED) with AES 256-bit Encryption, TCG OPAL 2.0*
- Thermal Management Solutions**
- End-to-End Data protection
- TRIM function support

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

M.2 solid state modules based on the NVMe™protocol leverage the blazing-fast PCI Express® (PCIe®) interface to deliver dramatic improvements in speed and performance to fulfill the increasing demand for responsiveness in enterprise storage systems and to support the growing data-hungry needs of today's enterprise. Delivering 32 Gb/s bandwidth on a PCIe 3.1 x4 slot (8 Gb/s per lane), ATP NVMe SSDs outperform Serial ATA 6 Gb/s SSDs with 4-6X faster access, over 3X lower latency, and higher Input/Output per Second (IOPS). ATP NVMe SSDs with industrial operating temperature rating deliver stable performance even in extreme temperatures ranging from -40°C to 85°C, while Dynamic Thermal Throttling automatically adjusts the speed to maintain cooler operation under intense and heavy workloads.

Adopting NVMe 1.3 specifications and integrating 3D NAND TLC technology, ATP's M.2 2280 NVMe modules offer up to 1.92TB of storage capacity and deliver boosted performance with sequential read up to 3,420 MB/s, sequential write up to 3,050 MB/s, and random read/write IOPS up to 225,200/179,200.

Designed to move past the limitations of mechanical drives, NVMe was specifically built from the ground up for faster, more efficient access to storage devices with non-volatile memory such as current NAND flash solutions and future non-volatile memory technologies. These SSDs can deliver fast, reliable and durable performance for any demanding application.

Specifications

M.2 NVMe

Product Line	Premium		Superior			
	N750Pi	N700Pi	N700Si	N700Sc	N650Si	N650Sc
Interface	PCIe G3 x4					
Flash Type	3D TLC (pSLC mode)		3D TLC (pSLC mode)		3D TLC	
Form Factor	M.2 2280-D2-M		M.2 2230-S4-M		M.2 2280-D2-M	
Operating Temperature (Tcase)[1]	-40°C to 85°C		-40°C to 85°C	0°C to 70°C	-40°C to 85°C	0°C to 70°C
Power Loss Protection Options	Hardware + Firmware Based		Firmware Based		Hardware + Firmware Based or Firmware Based	
Optional SED Features	AES 256-bit Encryption, TCG Opal 2.0					
Capacity	40 GB to 320 GB	40 GB to 640 GB	40 GB / 80 GB / 160 GB		120 GB to 960 GB	
Performance						
Sequential Read (MB/s) up to	3,150		2,000		3,420	
Sequential Write (MB/s) up to	2,670	2,820	1,600		3,050	
Random Reads IOPS up to	147,789 (4K, QD32)		135,600 (4K, QD32)		222,700 (4K, QD32)	
Random Writes IOPS up to	114,227 (4K, QD32)		112,000 (4K, QD32)		176,600 (4K, QD32)	
Endurance and Reliability						
Endurance (TBW)[2] up to	16,000 TB	21,300 TB	4,280 TB		4,640 TB	
Reliability MTBF @ 25°C	>2,000,000 hours		>1,500,000 hours		>2,000,000 hours	
Others						
Dimensions: L x W x H (mm)	80.0 x 22.0 x 3.5 (M.2 2280 Bare PCBA) / 80.0 x 24.4 x 12.5 (M.2 2280 with 8 mm heatsink)		30.0 x 22.0 x 2.5		80.0 x 22.0 x 3.5 (M.2 2280 Bare PCBA) / 80.0 x 24.4 x 12.5 (M.2 2280 with 8 mm heatsink)	
Certifications	CE, FCC, BSMI, UKCA, RoHS, REACH					
Warranty	5 years		2 years			

M.2 NVMe

Product Line	Superior		Value			
	N600Si	N600Sc	N600Vc	N600Vc	N600Vi	N600Vc
Interface	PCIe G3 x4					
Flash Type	3D TLC		3D TLC		3D TLC (TLC Mode)	
Form Factor	M.2 2280-D2-M		M.2 2280 S2-M	M.2 2242 D5-M	M.2 2230-S4-M	
Operating Temperature (Tcase)[1]	-40°C to 85°C	0°C to 70°C	0°C to 70°C		-40°C to 85°C	0°C to 70°C
Power Loss Protection Options	Hardware + Firmware Based or Firmware Based		Firmware Based			
Optional SED Features	AES 256-bit Encryption, TCG Opal 2.0		-			
Capacity	120 GB to 1,920 GB		120 GB to 960 GB		120GB / 240GB / 480GB	
Performance						
Sequential Read (MB/s) up to	3,420		2,600		2,000	
Sequential Write (MB/s) up to	3,050		1,870		1,570	
Random Reads IOPS up to	225,200 (4K, QD32)		184,300 (4K, QD32)		135,600 (4K, QD32)	
Random Writes IOPS up to	179,200 (4K, QD32)		145,900 (4K, QD32)		112,000 (4K, QD32)	
Endurance and Reliability						
Endurance (TBW)[2] up to	5,585 TB		1,536 TB		768 TB	
Reliability MTBF @ 25°C	>2,000,000 hours		>2,000,000 hours		>1,500,000 hours	
Others						
Dimensions: L x W x H (mm)	80.0 x 22.0 x 3.5 (M.2 2280 Bare PCBA) / 80.0 x 24.4 x 12.5 (M.2 2280 with 8 mm heatsink)		80.0 x 22.0 x 2.2	42.0 x 22.0 x 3.6	30.0 x 22.0 x 2.5	
Certifications	CE, FCC, BSMI, UKCA, RoHS, REACH					
Warranty	2 years					

1 Case Temperature, the composite temperature as indicated by SMART temperature attributes.
2 Under highest Sequential write value. May vary by density, configuration and applications.

Technologies & Add-On Services	S.M.A.R.T.	Hardware-based Power Loss Protection	AutoRefresh	Advanced Wear Leveling	Dynamic Data Refresh	End-to End Data Protection	Secure Erase	TCG Opal 2.0	Industrial Temperature	Anti-Sulfur Resistors	Conformal Coating
Premium	○	○	○	○	○	○	▲	○	○	▲	▲
Superior	○	○	○	○	○	○	▲	○	▲	▲	▲
Value	○	○	○	○	○	○	-	-	-	▲	▲

▲: Customization option available on a project basis.

Hot Items Ordering Information					
Product Line	Capacity$_1$	Operating Temperature$_2$	Power Loss Protection$_3$	SED$_4$	P/N
N650Si	120GB	-40°C to 85°C	Hardware + Firmware Based	-	AF120GSTJA-8BCIP
N650Si	240GB	-40°C to 85°C	Hardware + Firmware Based	-	AF240GSTJA-8BCIP
N650Si	480GB	-40°C to 85°C	Hardware + Firmware Based	-	AF480GSTJA-8BCIP
N650Si	960GB	-40°C to 85°C	Hardware + Firmware Based	-	AF960GSTJA-8BCIP
N650Sc	120GB	0°C to 70°C	Hardware + Firmware Based	-	AF120GSTJA-8BCXP
N650Sc	240GB	0°C to 70°C	Hardware + Firmware Based	-	AF240GSTJA-8BCXP
N650Sc	480GB	0°C to 70°C	Hardware + Firmware Based	-	AF480GSTJA-8BCXP
N650Sc	960GB	0°C to 70°C	Hardware + Firmware Based	-	AF960GSTJA-8BCXP
N600Sc	120GB	0°C to 70°C	Hardware + Firmware Based	-	AF120GSTJA-8BAXP
N600Sc	240GB	0°C to 70°C	Hardware + Firmware Based	-	AF240GSTJA-8BAXP
N600Sc	480GB	0°C to 70°C	Hardware + Firmware Based	-	AF480GSTJA-8BAXP
N600Sc	960GB	0°C to 70°C	Hardware + Firmware Based	-	AF960GSTJA-8BAXP
N600Sc	1920GB	0°C to 70°C	Hardware + Firmware Based	-	AF1T92STJA-8BAXP
N600Sc	120GB	0°C to 70°C	Firmware Based	-	AF120GSTJA-8BAXX
N600Sc	240GB	0°C to 70°C	Firmware Based	-	AF240GSTJA-8BAXX
N600Sc	480GB	0°C to 70°C	Firmware Based	-	AF480GSTJA-8BAXX
N600Sc	960GB	0°C to 70°C	Firmware Based	-	AF960GSTJA-8BAXX
N600Sc	1920GB	0°C to 70°C	Firmware Based	-	AF1T92STJA-8BAXX
N600Vc (M.2 NVMe 2280)	120GB	0°C to 70°C	Firmware Based	-	AF120GSTJA-DBCXX
N600Vc (M.2 NVMe 2280)	240GB	0°C to 70°C	Firmware Based	-	AF240GSTJA-DBCXX
N600Vc (M.2 NVMe 2280)	480GB	0°C to 70°C	Firmware Based	-	AF480GSTJA-DBCXX
N600Vc (M.2 NVMe 2242)	120GB	0°C to 70°C	Firmware Based	-	AF120GSTJC-DBBXX
N600Vc (M.2 NVMe 2242)	240GB	0°C to 70°C	Firmware Based	-	AF240GSTJC-DBBXX
N600Vc (M.2 NVMe 2242)	480GB	0°C to 70°C	Firmware Based	-	AF480GSTJC-DBBXX
N600Vc (M.2 NVMe 2242)	960GB	0°C to 70°C	Firmware Based	-	AF960GSTJC-DBBXX

1 Amount of actual usable storage that can be utilized.
2 Refers to Case Temperature range during device operation, as indicated by SMART temperature attributes.
3 Hardware + Firmware-based power loss protection design with Level 4 (data-in-flight) protection; Firmware-based power loss protection design with Level 1 (data-at-rest) protection.
4 Allows data written to and read from the SSD to be constantly and automatically encrypted and decrypted. Conforms to TCG Opal 2.0 and uses AES 256-bit HW encryption.

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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ATP 100+ Layer Prime Die 3D NAND SSD
Built for Industrial Applications

Value Line with 3D TLC NAND Offers Prime Quality, Reliability and Endurance at Lower Cost per GB

N600Vc Series M.2 2242/2280 NVMe Gen3 and A600Vc Series SATA 2.5", M.2 2242/2280, and mSATA Value Line solid state drives (SSDs) are built with prime die triple-level cell (TLC) NAND on leading 100-layer plus 3D architecture. The new line is geared toward industrial/embedded applications requiring reliable performance, wide range of capacity options, and long-term supply commitment at friendly price points.

The Value Line is tailored for read-intensive applications, such as web server, box pc, kiosk/point-of-sale systems (POS), and other industrial/embedded boot drive requiring speed and reliability.
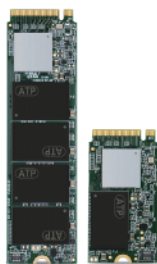
Key Features

A600Vc

- SATA III 6 Gb/s
- Available in M.2 2280/2242, 2.5" & mSATA form factors
- 32 GB to 1 TB capacity offering*
- Firmware-based Power Loss Protection with Level 3 data-at-rest protection
- Power-efficient DRAM-less design

*Different NAND die may be utilized for lower-capacity drives

N600Vc

- PCIe Gen3x4, NVMe 1.3
- Available in M.2 2280/2242 form factors
- 120 GB to 960 GB capacity offering
- Firmware-based Power Loss Protection with Level 3 data-at-rest protection
- Host Memory Buffer (HMB) support
- End-to-end data path protection

PRODUCT FAMILY FLYER | A600Vc and N600Vc Series

Why ATP A600Vc and N600Vc Value Line SSDs?

EXTREME RELIABILITY
with Prime NAND Die + ATP IC Sorting test

DRAM-less design
POWER EFFICIENT

SUPPLY LONGEVITY
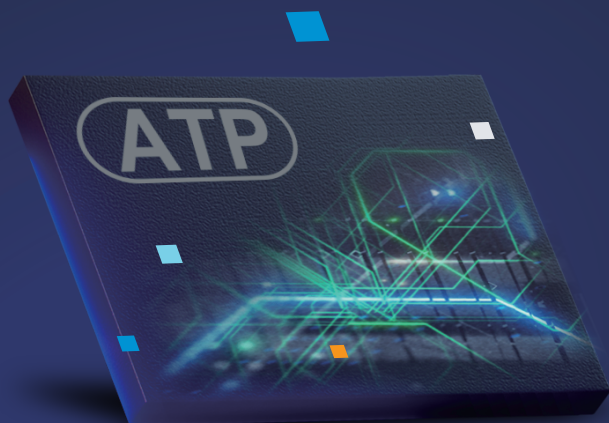with multi-year support

Up to
-20%
Lower cost per GB
than previous gen. NAND die

Built for
READ-INTENSIVE APPLICATIONS
Server/Networking, IPC, kiosk/POS, booting

Product Specifications

Product Line	Value					
	N600Vc		A600Vc			
Interface	PCIe G3 x4		SATA III 6 Gb/s			
Flash Type	3D TLC					
Form Factor	M.2 2280 S2-M	M.2 2242 D5-M	2.5"	2280 S2-B-M	2242 D2-B-M	MO-300A
Operating Temperature (Tcase)[1]	0°C to 70°C					
Power Loss Protection Options	Firmware Based					
Capacity	120 GB to 960 GB		32 GB to 1 TB	32 GB to 1 TB		32 GB to 1 TB
Performance						
Sequential Read (MB/s) up to	2,600		560	560		560
Sequential Write (MB/s) up to	1,870		525	525		525
Random Reads IOPS (4K, QD32) up to	184,300		72,000	72,000	70,500	72,000
Random Writes IOPS (4K, QD32) up to	145,900		85,000	85,000	81,000	85,000
Endurance and Reliability						
Endurance (TBW)[2] up to	1,536 TB		2,792 TB	2,792 TB		2,792 TB
Reliability MTBF @ 25°C	2,000,000 hours		>2,000,000 hours			
Others						
Dimensions: L x W x H (mm)	80.0 x 22.0 x 2.2	42.0 x 22.0 x 3.6	100 x 69.9 x 7	80 x 22 x 2.2	42 x 22 x 3.5	50.8 x 29.85 x 3.5
Certifications	CE, FCC, BSMI, UKCA, RoHS, REACH					
Warranty	2 years					

[1] Case Temperature, the composite temperature as indicated by SMART temperature attributes.
[2] Under highest Sequential write value. May vary by density, configuration and applications.

Order Information

Hot Items Ordering Information					
Product Line	Capacity$_1$	Operating Temperature$_2$	Power Loss Protection$_3$	SED$_4$	P/N
N600Vc (M.2 NVMe 2280)	120GB	0°C to 70°C	Firmware Based	-	AF120GSTJA-DBCXX
	240GB	0°C to 70°C	Firmware Based	-	AF240GSTJA-DBCXX
	480GB	0°C to 70°C	Firmware Based	-	AF480GSTJA-DBCXX
N600Vc (M.2 NVMe 2242)	120GB	0°C to 70°C	Firmware Based	-	AF120GSTJC-DBBXX
	240GB	0°C to 70°C	Firmware Based	-	AF240GSTJC-DBBXX
	480GB	0°C to 70°C	Firmware Based	-	AF480GSTJC-DBBXX
	960GB	0°C to 70°C	Firmware Based	-	AF960GSTJC-DBBXX
A600Vc (M.2 SATA 2280)	32GB	0°C to 70°C	Firmware Based	-	AF32GSTIC-2BAXX
	64GB	0°C to 70°C	Firmware Based	-	AF64GSTIC-2BAXX
	128GB	0°C to 70°C	Firmware Based	-	AF128GSTIC-2BAXX
	256GB	0°C to 70°C	Firmware Based	-	AF256GSTIC-2BAXX
	512GB	0°C to 70°C	Firmware Based	-	AF512GSTIC-2BAXX
	128GB	0°C to 70°C	Firmware Based	-	AF128GSTIC-2BBXX
	256GB	0°C to 70°C	Firmware Based	-	AF256GSTIC-2BBXX
	512GB	0°C to 70°C	Firmware Based	-	AF512GSTIC-2BBXX
	1TB	0°C to 70°C	Firmware Based	-	AF1TSTIC-2BBXX
A600Vc (M.2 SATA 2242)	128GB	0°C to 70°C	Firmware Based	-	AF128GSTIA-2BBXX
	256GB	0°C to 70°C	Firmware Based	-	AF256GSTIA-2BBXX
	512GB	0°C to 70°C	Firmware Based	-	AF512GSTIA-2BBXX
	1TB	0°C to 70°C	Firmware Based	-	AF1TSTIA-2BBXX
A600Vc (mSATA)	32GB	0°C to 70°C	Firmware Based	-	AF32GSTHI-2BAXX
	64GB	0°C to 70°C	Firmware Based	-	AF64GSTHI-2BAXX
	128GB	0°C to 70°C	Firmware Based	-	AF128GSTHI-2BAXX
	256GB	0°C to 70°C	Firmware Based	-	AF256GSTHI-2BAXX
	512GB	0°C to 70°C	Firmware Based	-	AF512GSTHI-2BAXX
	128GB	0°C to 70°C	Firmware Based	-	AF128GSTHI-2BBXX
	256GB	0°C to 70°C	Firmware Based	-	AF256GSTHI-2BBXX
	512GB	0°C to 70°C	Firmware Based	-	AF512GSTHI-2BBXX
	1TB	0°C to 70°C	Firmware Based	-	AF1TSTHI-2BBXX
A600Vc (2.5")	32GB	0°C to 70°C	Firmware Based	-	AF32GSTCJ-2BAXX
	64GB	0°C to 70°C	Firmware Based	-	AF64GSTCJ-2BAXX
	128GB	0°C to 70°C	Firmware Based	-	AF128GSTCJ-2BAXX
	256GB	0°C to 70°C	Firmware Based	-	AF256GSTCJ-2BAXX
	512GB	0°C to 70°C	Firmware Based	-	AF512GSTCJ-2BAXX
	128GB	0°C to 70°C	Firmware Based	-	AF128GSTCJ-2BBXX
	256GB	0°C to 70°C	Firmware Based	-	AF256GSTCJ-2BBXX
	512GB	0°C to 70°C	Firmware Based	-	AF512GSTCJ-2BBXX
	1TB	0°C to 70°C	Firmware Based	-	AF1TSTCJ-2BBXX

^{1} Amount of actual usable storage that can be utilized.

^{2} Refers to Case Temperature range during device operation, as indicated by SMART temperature attributes.

^{3} Hardware + Firmware-based power loss protection design with Level 4 (data-in-flight) protection; Firmware-based power loss protection design with Level 1 (data-at-rest) protection.

^{4} Allows data written to and read from the SSD to be constantly and automatically encrypted and decrypted. Conforms to TCG Opal 2.0 and uses AES 256-bit HW encryption.

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Please refer to www.atpinc.com for latest information

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