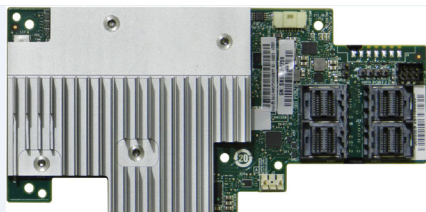


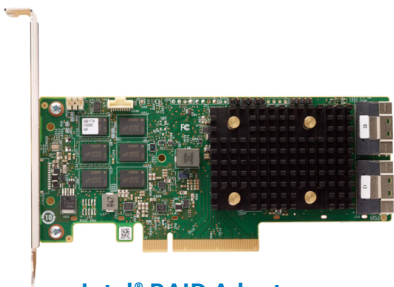
Content and Web Hosting Appliances, Security Appliances,
Financial Institutions, Cloud Service Providers, and Enterprise IT
Intel® Storage Controllers: Tri-mode Family

Tri-mode Intel® RAID Controllers bring PCIe NVMe to Hardware RAID



Intel® RAID Modules

Pictured: RMSP3AD160F
RMSP3CD080F
RMSP3HD080E



Intel® RAID Adapters

Pictured: RS3P4TF160F
RSP3MF088F
RSP3DD080F
RSP3MD088F
RSP3TD160F
RSP3WD080E

Intel® RAID Controllers for Select Intel® Xeon® Processor Based Server Solutions

As big data continues to get bigger, so does the need for high-performance RAID solutions. Content and Web Hosting Appliances, Security Appliances, Financial Institutions, Cloud Service Providers, and Enterprise IT Customers are seeking high-uptime RAID solutions for mass storage, with maximum reliability and data integrity. Minimizing downtime and eliminating data loss are major priorities for these high-intensity workloads. The tri-mode families of Intel® RAID Controllers include modules and adapters, all support NVMe.

Intel® RAID Controllers: Modules (RMSP3) vs. Adapters (RS3P4 & RSP3)

- Intel® RAID Modules are designed for select 1U and 2U Intel® Xeon® Processor-based server solutions, affording up to 16 ports of PCIe*/SAS/SATA, (4 ports NVMe) connectivity without taking up a standard add-in card PCIe slot, for a highly integrated configuration.
- Intel® RAID Adapters come in a low-profile MD2 standard PCIe form-factor, and are PCIe compliant for flexibility of configuration

Support for the NVMe Ecosystem

Tri-mode Intel RAID Controllers bring PCIe NVMe to hardware RAID. With tri-mode Intel RAID, datacenters can deploy high-performance NVMe storage solutions with the reliability of hardware RAID, as well as SAS and SATA storage solutions at high IOPS, high throughput, and low latency.

Key Features

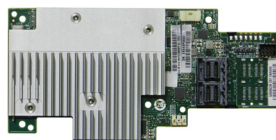
- Support for NVMe, SAS, and SATA
- RAID levels: 0/1/10/5, plus RAID levels 50/6/60 for cards ending in "F"
- 8GB DD4 Cache Backup (RS3P4) & 4GB DDR4 Cache Backup (RSP3) (for cards ending in "F")
- Maintenance Free Backup Unit enables Maintenance-Free Cache Backup, reducing maintenance costs due to regular battery replacement (for cards ending in "F")
- Optional Self-Encrypting Drive Support enables hardware disk encryption services on capable drives (for cards ending in "F")

Tri-mode Intel® RAID Modules RMSP3 Family



Intel® RAID Module RMSP3AD160F

- Full-Featured
- 16 Internal SAS/SATA or 4 NVMe ports



Intel® RAID Module RMSP3CD080F

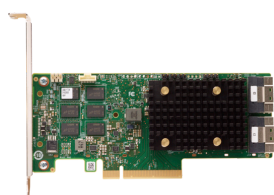
- Full-Featured
- 8 Internal SAS/SATA or 2 NVMe ports



Intel® RAID Module RMSP3HD080E

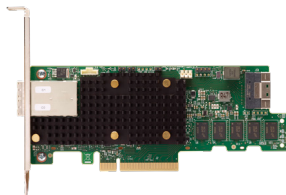
- Entry-Level
- 8 Internal SAS/SATA or 2 NVMe ports

Tri-mode Intel® RAID Adapters RS3P4 Family



Intel® RAID Adapter RS3P4TF160F

- Full-Featured
- 16 Internal SAS/SATA or 4 NVMe ports



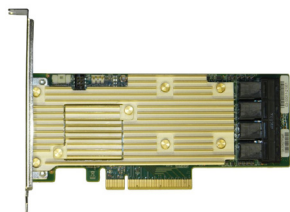
Intel® RAID Adapter RS3P4MF088F

- Full-Featured
- 8 Internal SAS/SATA or 2 NVMe ports
- 8 External SAS/SATA Ports

Full-featured vs. Entry-level RAID

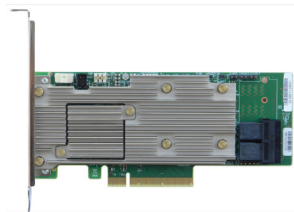
- Full-featured RAID supports RAID levels 0/1/10/5/50/6/60, maintenance-free cache backup and optional premium features.
- Entry-level RAID supports RAID levels 0/1/10/5

Tri-mode Intel® RAID Adapters RSP3 Family



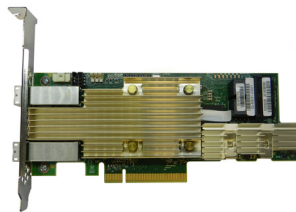
Intel® RAID Adapter RSP3TD160F

- Full-Featured
- 16 Internal SAS/SATA or 4 NVMe ports



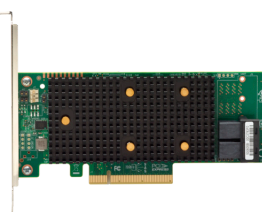
Intel® RAID Adapter RSP3DD080F

- Full-Featured
- 8 Internal SAS/SATA or 2 NVMe ports



Intel® RAID Adapter RSP3MD088F

- Full-Featured
- 8 Internal SAS/SATA or 2 NVMe ports
- 8 External SAS/SATA Ports



Intel® RAID Adapter RSP3WD080E

- Entry-Level
- 8 Internal SAS/SATA or 2 NVMe ports

Intel® Raid Module Specifications (RMSP3 family)

	RMSP3AD160F	RMSP3CD080F	RMSP3HD080E
I/O Processor	Broadcom, SAS3516 ROC	Broadcom, SAS3508 ROC	Broadcom, SAS3408 IOC
RAID Levels	0/1/10/5/50/6/60		0/1/10/5
JBOD Mode	Yes		Yes
Cache Memory	4GB DDR4		N/A
Mini-SAS-HD (SFF8643) connectors	4 internal	2 internal	2 internal
Operating Temperature	Maximum ambient: 55C		Maximum ambient: 55C
Maximum Physical Devices (SAS/SATA)	64 or 240 (Profile Dependent)		63
Maximum Direct-Attach NVMe Devices	4		2
Maximum Array Volumes (SAS/SATA)	64 or 240 (Profile Dependent)		32
Maximum Array Volumes (NVMe)	4		2
Maintenance Free Backup Unit	AXXRMFBU7 (backup unit sold separately)		N/A
Self-Encrypting Drive Support (enables hardware disk encryption services on capable drives)	AXXRPFKDE2 (upgrade key sold separately)		N/A

Tri-mode Intel® RAID Modules	
Form Factor	Mezzanine
PCIe Interface	x8 PCI Express 3.0
Drive Types	PCIe NVMe, SAS 12Gb/s and lower, SATA 6Gb/s and lower
Operating System/Driver Support	Microsoft Windows, VMware, Linux (SLES, RHEL)
Warranty	3 years standard (AWR optional)

Data Protection Features	RMSP3AD160F	RMSP3CD080F	RMSP3HD080E
Background Consistency Checking	■	■	■
Distributed Sparring	■	■	■
Enclosure Management	■	■	■
Expander Support	■	■	■
Hot-Spare Support, Global & Dedicated	■	■	■
Intel® RAID Management Software	■	■	■
Online Capacity Extension	■	■	
Patrol Read for Media Functionality	■	■	
Pre-boot RAID Support	■	■	■
S.M.A.R.T Support	■	■	■
Write Back Cache with optional Protection	■	■	

Intel® Raid Adapter Specifications (RS3P4 family)

	RS3P5TF160F	RS3P4MF088F
I/O Processor	Broadcom, SAS3916 ROC	Broadcom, SAS3916 ROC
RAID Levels	0/1/10/5/50/6/60	
JBOD Mode	Yes	
Cache Memory	8GB	
Connectors	Two x8 SFF-8654 (Slimline) internal	One x8 SFF-8654 (Slimline) internal, Two x4 SFF-8644 external
Operating Temperature	Maximum ambient: 55C	
Maximum Physical Devices (SAS/SATA)	64 or 240 (Profile Dependent)	
Maximum Direct-Attach NVMe Devices	4	
PCIe Switch Support	CYPSWITCHMP	
Maximum Array Volumes (SAS/SATA)	64 or 240 (Profile Dependent)	
Maximum Array Volumes (NVMe)	64	
Maintenance Free Backup Unit	AXXRMFBU7 (backup unit sold separately)	
Self-Encrypting Drive Support (enables hardware disk encryption services on capable drives)	Yes, no key required	

Tri-mode Intel® RAID Adapters	
Form Factor	Low-Profile MD2 PCIe Add-In Card
PCIe Interface	x8 PCI Express 4.0
Drive Types	PCIe NVMe, SAS 12Gb/s and lower, SATA 6Gb/s and lower
Operating System/Driver Support	Microsoft Windows, VMware, Linux (SLES, RHEL)
Warranty	3 years standard (AWR optional)

Data Protection Features	RS3P4TF160F	RS3P4MF088F
Background Consistency Checking	■	■
Distributed Sparing	■	■
Enclosure Management	■	■
Expander Support	■	■
Hot-Spare Support, Global & Dedicated	■	■
Intel® RAID Management Software	■	■
Online Capacity Extension	■	■
Patrol Read for Media Functionality	■	■
Pre-boot RAID Support	■	■
S.M.A.R.T Support	■	■
Write Back Cache with optional Protection	■	■

Intel® Raid Adapter Specifications (RSP3 family)

	RSP3TD160F	RSP3DD080F	RSP3MD088F	RSP3WD080E
I/O Processor	Broadcom SAS3516 ROC	Broadcom SAS3508 ROC	Broadcom SAS3516 ROC	Broadcom SAS3408 IOC
RAID Levels	0/1/10/5/50/6/60			0/1/10/5
JBOD Mode	Firmware Dependent			Yes
Cache Memory	4GB 2133 MT/s DDR4			N/A
Connectors	Four SFF-8643 internal	Two SFF-8643 internal	Two SFF-8643 internal, two SFF-8644 external	Two SFF-8643 internal
Operating Temperature	Maximum ambient: 55C			Maximum ambient: 55C
Maximum Physical Devices (SAS/SATA)	64 or 240 (Profile Dependent)			63
Maximum Direct-Attach NVMe Devices	4			2
Maximum Array Volumes (SAS/SATA)	64 or 240 (Profile Dependent)			32
Maximum Array Volumes (NVMe)	64			32
Maintenance Free Backup Unit	AXXRMFBU7 (backup unit sold separately)			N/A
Self-Encrypting Drive Support (enables hardware disk encryption services on capable drives)	AXXRPFKDE2 (upgrade key sold separately)			N/A

Tri-mode Intel® RAID Adapters	
Form Factor	Low-Profile MD2 PCIe Add-In Card
PCIe Interface	x8 PCI Express 3.0
Drive Types	PCIe NVMe, SAS 12Gb/s and lower, SATA 6Gb/s and lower
Operating System/Driver Support	Microsoft Windows, VMware, Linux (SLES, RHEL)
Warranty	3 years standard (AWR optional)

Data Protection Features	RSP3TD160F	RSP3DD080F	RSP3MD088F	RSP3WD080E
Background Consistency Checking	■	■	■	■
Distributed Sparing	■	■	■	■
Enclosure Management	■	■	■	■
Expander Support	■	■	■	■
Hot-Spare Support, Global & Dedicated	■	■	■	■
Intel® RAID Management Software	■	■	■	■
Online Capacity Extension	■	■	■	
Patrol Read for Media Functionality	■	■	■	
Pre-boot RAID Support	■	■	■	■
S.M.A.R.T Support	■	■	■	■
Write Back Cache with optional Protection	■	■	■	

Order Codes

INTEL SKU	INTEL MM#	DESCRIPTION
RS3P4TF160F	999TJ4	Tri-mode SAS/SATA/PCIe 4.0 Full-Featured RAID Adapter (PCIe AIC) with 16 Internal Ports
RS3P4MF088F	99ADDX	Tri-mode SAS/SATA/PCIe 4.0 Full-Featured RAID Adapter (PCIe AIC) with 8 Internal Ports / 8 External Ports
RMSP3AD160F	954552	Tri-mode SAS/SATA/PCIe 3.0 Full-Featured RAID Mezzanine Module with 16 Internal Ports
RMSP3CD080F	954489	Tri-mode SAS/SATA/PCIe 3.0 Full-Featured RAID Mezzanine Module with 8 Internal Ports
RMSP3HD080E	954553	Tri-mode SAS/SATA/PCIe 3.0 Entry-Level RAID Mezzanine Module with 8 Internal Ports
RSP3TD160F	954555	Tri-mode SAS/SATA/PCIe 3.0 Full-Featured RAID Adapter (PCIe AIC) with 16 Internal Ports
RSP3DD080F	954562	Tri-mode SAS/SATA/PCIe 3.0 Full-Featured RAID Adapter (PCIe AIC) with 8 Internal Ports
RSP3MD088F	954563	Tri-mode SAS/SATA/PCIe 3.0 Full-Featured RAID Adapter (PCIe AIC) with 8 Internal Ports / 8 External Ports
RSP3WD080E	954557	Tri-mode SAS/SATA/PCIe 3.0 Entry-Level RAID Adapter (PCIe AIC) with 8 Internal Ports

For additional RAID modules and add-in-cards, visit [intel.com/RAID](https://www.intel.com/RAID)

For more information on Intel® Server Products and Solutions, visit [intel.com/serverproducts](https://www.intel.com/serverproducts)

For product specifications, visit ark.intel.com

For compatibility information, visit www.intel.com/support

For Marketing Assets, visit ServerMarketingLibrary.intel.com

Reduce Risk of Counterfeit Parts with Intel® Transparent Supply Chain

Counterfeit electronic parts are a growing security concern across all organizations. These concerns have grown as supply chains have become increasingly complex, multi-layered and global.

Current supply chain practices start with trusting the source, but processes are limited for screening out counterfeit components, particularly for products containing many subsystems.

Intel® Transparent Supply Chain helps partners and customers verify the authenticity and firmware version of servers and their components, through a set of tools, policies, and procedures implemented on the factory floor at server manufacturers enabling enterprises to verify the authenticity and firmware version of systems and their components when systems arrive at their site.

This industry-leading approach helps:

- Provide component-level traceability and visibility
- Detect tampering of components and configuration state between stops
- Deliver fleet-level insights across suppliers

These and other safeguards combine to increase assurance and trust that the Intel servers you're purchasing and deploying are free of counterfeit components that could compromise your business or customers.



Intel technologies may require enabled hardware, software or service activation.

No product or component can be absolutely secure.

Your costs and results may vary.

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