

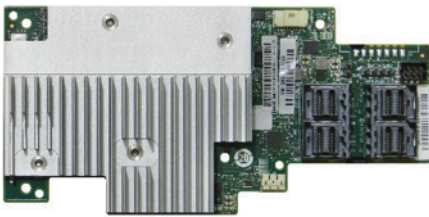
# PRODUCT BRIEF

Content and Web Hosting Appliances, Security Appliances,  
Financial Institutions, Cloud Service Providers, and Enterprise IT

**Intel® RAID Controllers: Tri-mode Family**

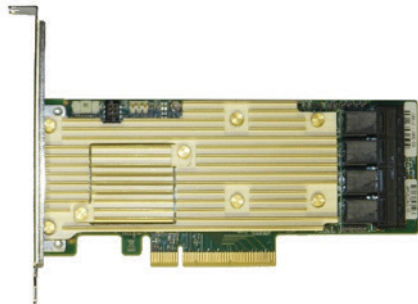


# Tri-mode Intel® RAID Controllers bring PCIe\* NVMe\* to Hardware RAID



## Intel® RAID Modules

**Pictured: RMSP3AD160F**  
RMSP3CD080F  
RMSP3HD080E



## Intel® RAID Adapters

RSP3DD080F  
RSP3MD088F  
**Pictured: 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 family of Intel® RAID Controllers includes modules and adapters, all of which support NVMe\*.

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

- Intel® RAID Modules are designed for select 2U Intel® Xeon® processor-based server solutions, affording up to 16 ports of PCIe\*/SAS/SATA 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 and use in any system.

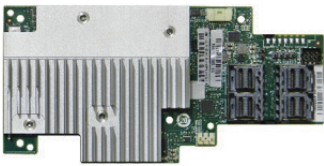
## Support for the NVMe\* Ecosystem

Tri-mode Intel RAID Controllers bring PCIe NVMe to hardware RAID. With tri-mode Intel RAID, data centers 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

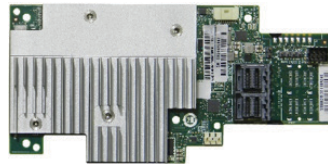
- Support for NVMe, SAS, and SATA
- RAID levels: 0/1/10/5, plus RAID levels 50/6/60 for cards ending in "F"
- 4GB DDR4 Cache Backup (for cards ending in "F")
- SuperCapacitor Kit enables Maintenance-Free Cache Backup, reducing maintenance costs due to regular battery replacement (for cards ending in "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



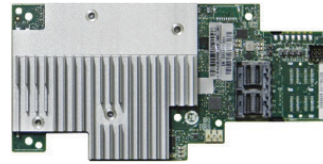
Intel® RAID Module  
RMSP3AD160F

- Full-Featured
- 16 Internal Ports



Intel® RAID Module  
RMSP3CD080F

- Full-Featured
- 8 Internal Ports



Intel® RAID Module  
RMSP3HD080E

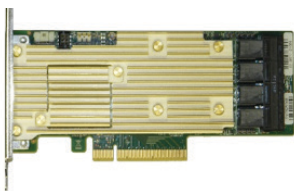
- Entry-Level
- 8 Internal Ports

### 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.

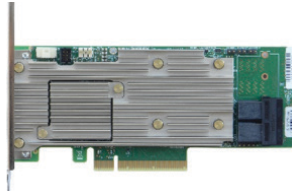
Entry-level RAID supports RAID levels 0/1/10/5.

## Tri-mode Intel® RAID Adapters RSP3 Family



Intel® RAID Adapter  
RSP3TD160F

- Full-Featured
- 16 Internal Ports



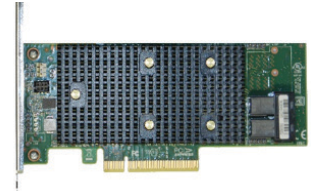
Intel® RAID Adapter  
RSP3DD080F

- Full-Featured
- 8 Internal Ports



Intel® RAID Adapter  
RSP3MD088F

- Full-Featured
- 8 Internal Ports, 8 External Ports



Intel® RAID Adapter  
RSP3WD080E

- Entry-Level
- 8 Internal Ports

## INTEL® RAID MODULE SPECIFICATIONS

	RMSP3AD160F	RMSP3CD080F	RMSP3HD080E
I/O Processor	Avago* SAS3516 ROC	Avago SAS3508† ROC	Avago 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
Mini-SAS-HD (SFF8643) connectors	4 internal	2 internal	2 internal
Operating Temperature	Maximum ambient: 65C (55C with MFBU option)		Maximum ambient: 65C
Maximum Physical Devices (SAS/SATA)	64 or 255 (Firmware Dependent)		63
Maximum Direct-Attach NVMe* Devices	4	2	2
PCIe Switch Support	Future		Future
Maximum Array Volumes (SAS/SATA)	64 or 255 (Firmware 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

†May use Avago\* 3516 series ROC

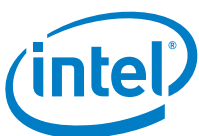


TRI-MODE INTEL® RAID MODULES	
Form Factor	Mezzanine
PCIe* Interface	x8 PCI Express* 3.0
Drive Types	PCIe* NVMe*, SAS 12Gb/s and lower, SATA 6Gb/s and lower
Operating System/Driver Support	Microsoft Windows*, VMWare*, Linux* (SLES*, RHEL*), Solaris*, FreeBSD*
Warranty	3 years standard (AWR optional)

DATA PROTECTION FEATURES	RMSP3AD160F	RMSP3CD080F	RMSP3HD080E
Background Consistency Checking	✓	✓	✓
Distributed Sparing	✓	✓	✓
Enclosure Management	✓	✓	✓
Expander Support	✓	✓	✓
Hot-Spare Support, Global & Dedicated	✓	✓	✓
Intel® RAID management software	✓	✓	✓
On-line 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

	RSP3TD160F	RSP3DD080F	RSP3MD088F	RSP3WD080E
I/O Processor	Avago* SAS3516 ROC	Avago SAS3508 ROC	Avago SAS3516 ROC	Avago 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
Mini-SAS-HD (SFF8643) connectors	4 internal	2 internal	2 internal/ 2 external	2 external
Operating Temperature	Maximum ambient: 65C (55C with MFBU option)			Maximum ambient: 65C
Maximum Physical Devices (SAS/SATA)	64 or 255 (Firmware Dependent)			63
Maximum Direct-Attach NVMe* Devices	4	2	4	2
PCIe Switch Support	Future			Future
Maximum Array Volumes (SAS/SATA)	64 or 255 (Firmware 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*), Solaris*, FreeBSD*
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	✓	✓	✓	✓
On-line 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	DESCRIPTION
RMSP3AD160F	Tri-mode SAS/SATA/PCIe* Full-Featured RAID Mezzanine Module with 16 Internal Ports
RMSP3CD080F	Tri-mode SAS/SATA/PCIe Full-Featured RAID Mezzanine Module with 8 Internal Ports
RMSP3HD080E	Tri-mode SAS/SATA/PCIe Entry-Level RAID Mezzanine Module with 8 Internal Ports
RSP3TD160F	Tri-mode SAS/SATA/PCIe Full-Featured RAID Adapter (PCIe AIC) with 16 Internal Ports
RSP3DD080F	Tri-mode SAS/SATA/PCIe Full-Featured RAID Adapter (PCIe AIC) with 8 Internal Ports
RSP3MD088F	Tri-mode SAS/SATA/PCIe Full-Featured RAID Adapter (PCIe AIC) with 8 Internal Ports / 8 External Ports
RSP3WD080E	Tri-mode SAS/SATA/PCIe Entry-Level RAID Adapter (PCIe AIC) with 8 Internal Ports

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

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

For product specifications visit: [ark.intel.com](http://ark.intel.com)

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