# PUZZLE Series Technology

4-Speed Multi-Gigabit

The PUZZLE solution is equipped with a high-performance Multi-Gig Ethernet controller, Marvell AQtion AQC111C 5GbE, to offer a seamless Multi-Gig upgrade path for network applications. The industry proven Marvell AQrate PHY technology delivers 5GbE network connectivity speed through 100 meters of the Cat 5e cabling. Therefore, end-users can easily maximize the benefit of the existing Cat 5e cabling.

Standard Cat 5e at 5 Gbps, 2.5 Gbps, 1 Gbps, 100 Mbps
Require no change to the existing infrastructure or cabling

Cat 5e cables
5 Gbps

	1 Gbps	2.5 Gbps	5 Gbps	10 Gbps
CAT 5e	✔	✔	✔	✘
CAT 6	✔	✔	✔	55m
CAT 6A	✔	✔	✔	✔

Up to 5X faster transfer speeds

up to
5X
1 Gbps
FASTER
than Gigabit port
5 Gbps
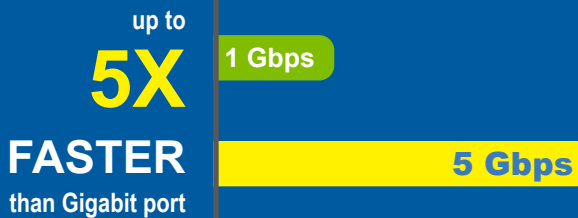
Backward compatible with 5GBASE-T / 2.5GBASE-T / 1000BASE-T / 100BASE-TX

| ✔ 5 Gbps | ✔ 1 Gbps |
| ✔ 2.5 Gbps | ✔ 100 Mbps |

PCI Express 4.0

- Higher performance storage (next generation NVME) with double the speed of PCIe 3.0

- Faster Ethernet capability to eliminate throughput bottlenecks for data intensive applications (100/200G NIC cards)

- FPGA/GPU accelerators to support emerging machine learning and deep learning workloads with uncompromised PCIe 4.0 bandwidth and lowest latency

PCI EXPRESS 4.0

PCIe 1.0
@ 2.5GT/s

PCIe 2.0
@ 5.0GT/s

PCIe 3.0
@ 8GT/s

PCIe 4.0
@ 16GT/s
Support up to 200G
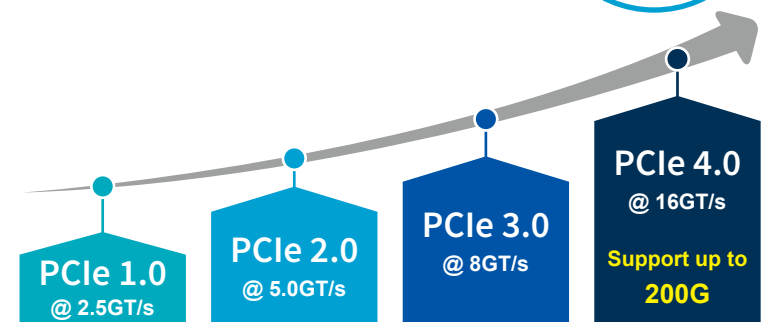
Intel® Select Solutions for uCPE for CentOS/ADVA

intel select solution

ADVA™

CentOS
- NFV-based edge computing
- Optimized software
- Virtualized and non- virtualized services

NFVI Solution
ADVA Ensemble Connector
- Manageability and Operability
- Reducing costs
- Accelerating service provision

» PUZZLE-IN004

To support uCPE platforms, Intel® Select Solutions for uCPE provide a foundation for the development of uCPE products with a solution reference design and verification of performance.

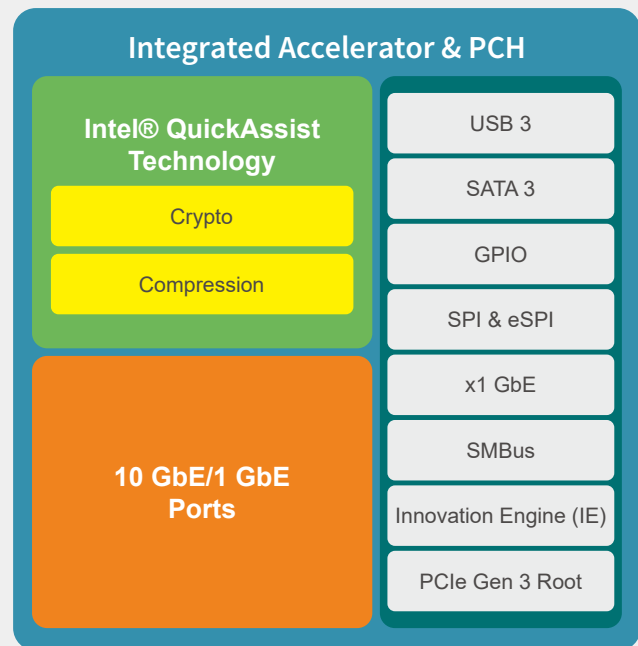**Faster Evaluation**

Fast and Easy Deployment

Workload-optimized Performance

Intel® QuickAssist Technology

Intel QuickAssist Technology (Intel® QAT) integrates hardware acceleration of compute intensive workloads, such as Bulk Cryptography, Public Key Exchange & Compression on Intel® Architecture Platforms.

- Intel's 3rd Generation Technology
- Sub Gb/s to 100 Gb/s Rates
- Networking, Storage, Big Data, Cloud, Datacenter, and HPC Applications Receive High Performance Execution of:
  - » Cryptographic Ciphers
  - » Authentication
  - » Public Key Exchange & Key Protection
  - » Compression/Decompression
- Enables Standard Server & Cloud Platforms to Offer Ubiquitous Security and Compression/Decompression
- Provides a Converged Platform Architecture for Cloud, Networking, Storage & Big Data

Integrated Accelerator & PCH

Intel® QuickAssist Technology

Crypto

Compression

10 GbE/1 GbE Ports

USB 3

SATA 3

GPIO

SPI & eSPI

x1 GbE

SMBus

Innovation Engine (IE)

PCIe Gen 3 Root

# Hot-swappable SSD & Redundant Power Supply

Hot-swappable SSD

High reliability design is a very important factor for network service. The hot-swap is desirable to change the configuration or repair a working system without interrupting its operation. The hot-swappable SSD and redundant power supply can provide infinitive service to avoid shutting down and restarting complex equipment, because it is essential for equipment to be continuously active.

Redundant Power Supply

The PUZZLE series contains two 300W power supply units for redundant power supply. Each power supply unit is capable of powering the entire computer so the computer runs with only one unit. If one fails, the other power supply starts running to maintain continuous operation.

Smart Fan Operation
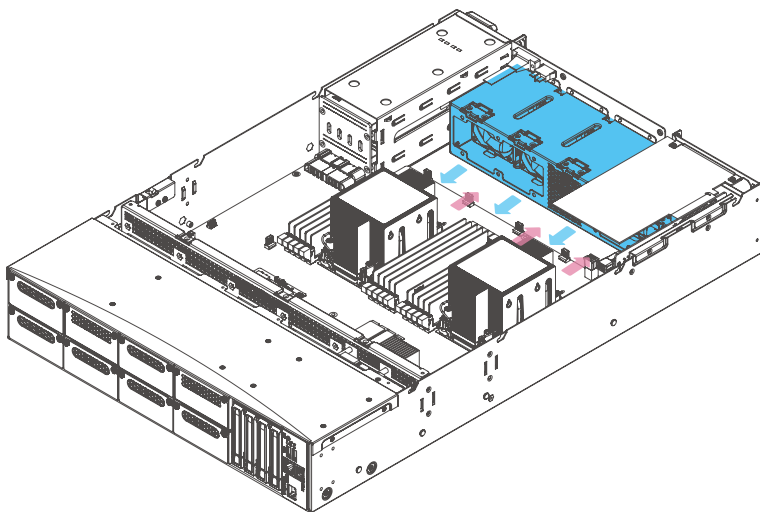
Users can define CPU fan and system fan speed and temperature profile in the BIOS menu. When the system is in idle or running less demanding tasks, smart fan is able to bring down the level of noise produced by rotating fans. The adjustable settings allow the PUZZLE series run with less noise while extending the fan's lifespan, enhancing system stability and durability.

PUZZLE Series

With fan speed and temperature trigger settings set, the fan speed can change seamlessly according to temperature readings.

Traditional System

Traditional system fan operation is detected by system's ON (fan at full speed) and OFF statuses.

Fan Speed (PWM%)

PUZZLE Series
Traditional System

T1°C   T2°C   Temperature
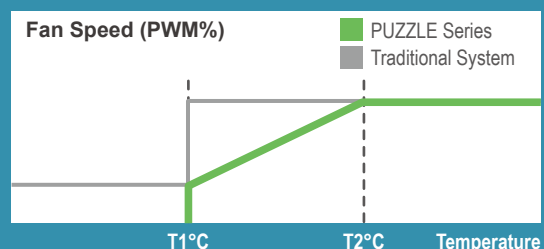
uCPE Solution (Universal Customer Premise Equipment)

uCPE consists of virtual network functions (VNFs) running on a standard operating system hosted on an open server with NFV technology. Now with NFV technology, we can create several virtual machines and install these VNFs in a x86 or ARM based uCPE. VNFs could include popular software services such as a virtual firewall, virtual load-balancing, or other software-defined wide area network (SD-WAN) service. Besides, with NFV orchestration, uCPE could serve as an edge computing system or an AI inference computing system.

Lower Power Consumption

uCPE can run several VNFs to build up a network enviroment instead of running several phycial network appliances. Running an uCPE can save engergy.

Various Solutions

The true value of openness comes from being able to combine a mix of open source and proprietary software components to deliver an innovative service.

Lower CapEx & OpEx

Reduce the Consumption of CapEx and OpEx including for management time and effort, maintenance and contracts or software licensing etc.

uCPE

Open Source Software

Open source software reduces time to market and the risk of vendor lock-in.

Standard Hardware

Service providers simplify customer site deployments by using a panoply of dedicated appliances with VNFs running on a single universal platform.
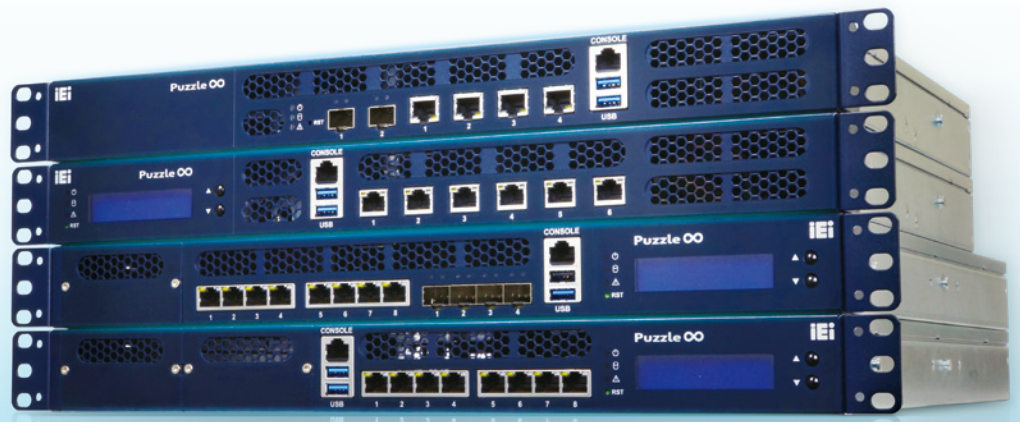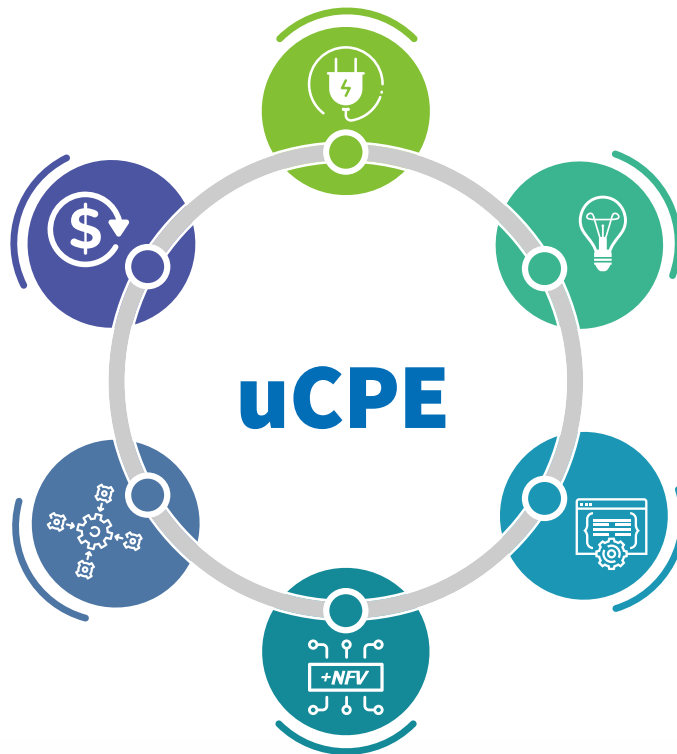
Flexible

The uCPE helps service providers and their customers from suffering hardware vendor lock-in. It creates the flexibility of manageability through NFV.

Unmanned Parking Management System
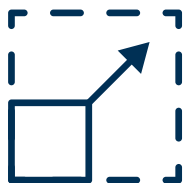
Flexible Design with Slim Form Factor

Multiple Upgrade Options

Highly Compatible with Major Operating Systems

As a smart integrated parking service provider, the optimal system should solve the challenges, such as space limitation, multiple tasks and hard compatibility of software and hardware.

The PUZZLE can be used as a central parking management server with all the components connected to it for feeding their data back to the central server. With the space limitation of modulized parking system, it is an ideal networking appliance for this application because it has a height of only 1.75 inches, supports 1U rack mount and is equipped with powerful Intel® processor. It has high flexibility, capable of integrating server functions in one device through add-on cards or VPU cards. Moreover, it supports Linux and Windows operating system, so no matter what operating system you decide to use, the software applications are fully compatible with the hardware. That means fewer headaches, quicker development times, and more options.

Security and Surveillance

Easily Upgrade with PuIM Module

High Flexibility of PCIe Expansion

Uninterrupted 24-7 Service

Current video surveillance systems are generally too slow, provide inadequate video quality, and have limited expansion capabilities, impeding future expansion and upgrades.

The PUZZLE series is a high-speed, high-definition, and highly scalable hardware-integrated product that provides NVR, VMS, IPWALL and intelligent CCTV. It offers several easy add-ons, expansion options, and PuIM networking module slots that allow for the simple addition of an LCM display, or other bandwidth from 1GbE to 100GbE. By adding a PCIe expansion card, it could feature a graphics card or VPU for powerful AI video analysis. It also supports Intel® vPro® to provide powerful centralized management of networked computers and this reduces the number of times a technician has to physically go to the hardware, resulting in a 27% reduction in TCO. Beside, designed with redundant power supply and automated backup functions, it gives users uninterrupted 24-7 surveillance service. Hence, based on its slim form factor, it can be deigned as an pocket surveillance station to increase mobility, and easily deployed in anywhere anytime.
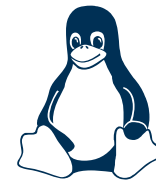
Next Generation Firewall

Easily Upgrade with PuIM Module

Higher Efficiency of Virtualization

Linux-tested Software Compatibility

The traditional route of a dedicated firewall hardware appliance is too bulky and costly. The PUZZLE series is built with powerful Off-The-Shelf (OTS) networking computer parts, and customizable with PuIM network modules to provide a powerful hardware base for network appliance design. It features eight GbE ports as standard, with expansion options that include 1 Gb/s, 10 Gb/s, and 25 Gb/s network connections. It is designed and tested to support applications for virtual machines, virtualization, and containers such as Docker. Multiple isolated applications can be installed on a single hardware appliance. In addition, all hardware in the PUZZLE is verified to work with Linux (specifically Ubuntu), so users can leverage all the goodness of open-source software to quickly deploy and install additional software.

Client — Internet/WAN — NGFW UTM — Internet/VPN — Operator
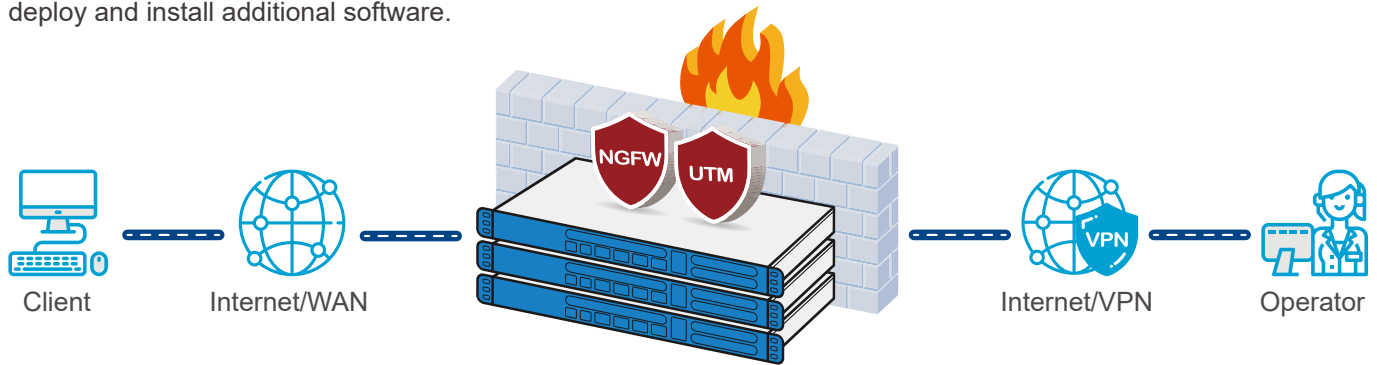
Network AI Solution - PUZZLE Dev. Kit

Puzzle Dev. Kit is an AI hardware ready system ideal for deep learning inference computing to enable faster, deeper insights for your customers and your business. It supports graphics cards, and Intel® FPGA and VPU acceleration cards to provide additional computational power and end-to-end solutions. Built-in with NVIDIA TensorRT, QNAP QuAI, or Intel® OpenVINO AI development toolkit, it is able to deploy your solutions faster than ever.

VPU

PuIM

Deep Learning Tool Kit

QNAP QuAI

Intel® OpenVINO™

IEI AI Ready Solution
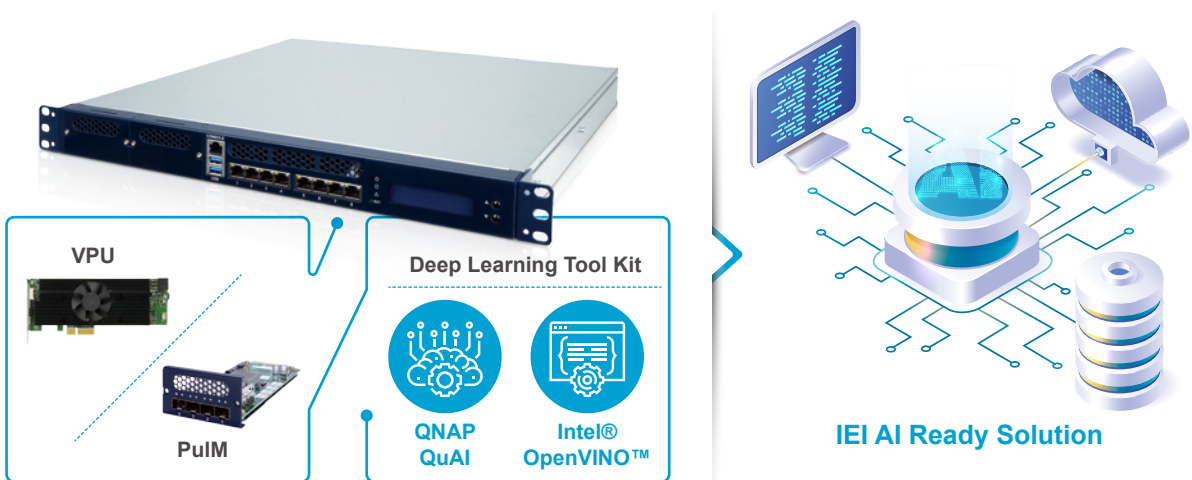
PUZZLE Series Selection Guide

		PUZZLE-IN005	PUZZLE-IN001	
			PUZZLE-IN001-XE	PUZZLE-IN001-i3T
Platform	Form Factor	2U	1U	
	CPU	Intel® Ice-Lake LGA-4189 Xeon® Scalable Processor	Intel® Xeon® E-2136 processor, 6C/12T, up to 4.50 GHz	8th Generation Intel® Core™ i3-8100T processor, 4C/4T, up to 3.10 GHz
	Chipset	Intel® C627A	Intel® C246	
Memory	Memory Technology	DDR4 3200 MHz ECC RDIMM / LRDIMM	2 x DDR4 2400 MHz ECC/Non-ECC UDIMM	
	Memory Capacity	Up to 1280GB (20 x 64GB)	Up to 32GB	
	Memory Socket	20 x 288-pin DIMM	2 x 288-pin DIMM	
Network and Security	Network Acceleration and Security Function	• Intel® AES New Instructions • Intel® QuickAssist Technology (Intel® QAT) • Intel® Virtualization Technology (Intel® VT) • Intel® Trusted Execution Technology (Intel® TXT)	• Intel® AES New Instructions • Intel® Software Guard Extensions (Intel® SGX) • Intel® Memory Protection Extensions (Intel® MPX) • Intel® Trusted Execution Technology	
	TPM	1 x TPM 2.0 Pin header	1 x TPM 2.0 Pin header	
IPMI	IPMI Solution	1 x iRIS-2400 module	N/A	
Networking	Ethernet IC	1 GbE NIC: Intel® i210-AT with NCSI support 1 GbE NIC: Intel® i219	1 GbE NIC: Intel® i211-AT	
	Ethernet Port	2 x 1GbE RJ-45 ports (1 x IPMI LAN)	8 x 1GbE RJ-45 LAN ports	
	Bypass	N/A	N/A	
	Network Module Slot	8 x Networking module slots	2 x PulM module slots	
Expansion Slot	PCIe Slot	1 x PCIe Gen 4 x8 (FHHL) slot (single width)	1 x PCIe 3.0 x8 (FHHL) slot, 1 x PCIe 3.0 x4 (FHHL) slots	
	PCIe Mini Card Slot	N/A	1 x PCIe Mini card (PCIe 3.0 & SATA 3.0, USB 2.0)	
	M.2	2 x M.2 M key 2280 Support PCIe Gen 3 x4 NVMe	1 x 3042/2260 M.2 B key (SATA 3.0 / USB 3.2 Gen 1) Support SATA SSD and 4G LTE module	
Storage	Storage	4 x U.2 SSD drive bay compatible to SATA	2 x 2.5" SATA HDD/SSD bay support SATA 3.0 (6 Gbps)	
	eMMC	N/A	N/A	
	SD Card	N/A	N/A	
External I/O	VGA	1 x VGA port	N/A	
	USB	2 x USB 3.2 Gen 1 (5Gb/s) Type-A ports	2 x USB 3.2 Gen 1	
	Console	1 x RJ-45 1 x USB Type-C	1 x RJ-45	
Internal I/O	HDMI	N/A	1 x HDMI connecter (optional)	
	USB	1 x USB 2.0 pin header	4 x USB 2.0 (pin header)	
Power and Mechanical	Power Switch	1 x Power Switch	1 x Power Switch	
	Reset Button	1 x Reset Button	1 x Reset Button	
	Power Input	100 V ~ 240 V	100 V ~ 240 V	
	Type/Watt	Redundant Power 1200W, 90V~264V AC	Redundant Power 300W, 90V~264V AC	
	Processor Cooling	2 x Active CPU Cooler	1 x Passive CPU Heatsink	
	System Cooling	5 x Cooling Fans with Smart Fan	4 x Cooling Fans with Smart Fan	
	Antenna Hole	N/A	1 x Antenna hole	
Physical and Environmental	Storage Temperature	-10°C ~ 50°C	-20°C ~ 75°C (-4°F ~ 167°F)	
	Operating Temperature	-20°C ~ 75°C (-4°F ~ 167°F)	0°C ~ 40°C (32°F ~ 104°F)	
	Operating Humidity	Relative humidity: 5% ~ 90% non-condensing	Relative humidity: 5% ~ 90% non-condensing	
	Dimensions (W x L x H) (mm)	438 x 650 x 88	430 x 426 x 44.2	
	Weight	23 kg	7 kg	
OS and Certifications	Certification	CE / FCC / RoHS	CE / FCC / RoHS	
	Operating System	Linux 18.04 (CentOS, Red Hat, Ubuntu, etc.) Windows Server 2019	Linux Ubuntu 18.04.04 CentOS 7 / Red Hat / Fedora EPEL Microsoft Windows 10	
Indicators	LCM	N/A	LCM, 2 buttons	
	LED	1 x Power LED, 1 x Storage LED, 1 x Alert LED	1 x Power LED, 1 x Storage LED, 1 x Alert LED	

PUZZLE Series Selection Guide

		PUZZLE-IN001A		PUZZLE-IN002	
		PUZZLE-IN001A-XE	PUZZLE-IN001A-i3T	PUZZLE-IN002-i3T	PUZZLE-IN002-PGT
Platform	Form Factor	1U			
	CPU	Intel® Xeon® E-2136 processor, 6C/12T, up to 4.50 GHz	8th Generation Intel® Core™ i3-8100T processor, 4C/4T, up to 3.10 GHz	8th Generation Intel® Core™ i3-8100T processor, 4C/4T, up to 3.10 GHz	Intel® Pentium® Gold G5400T processor, 2C/4T, up to 3.10 GHz
	Chipset	Intel® C246		Intel® H310	
Memory	Memory Technology	4 x DDR4 2400 MHz ECC/Non-ECC UDIMM		DDR4 2400 MHz Non-ECC UDIMM	
	Memory Capacity	Up to 64GB		Up to 32GB	
	Memory Socket	4 x 288-pin DIMM		2 x 288-pin DIMM	
Network and Security	Network Acceleration and Security Function	• Intel® AES New Instructions • Intel® Software Guard Extensions (Intel® SGX) • Intel® Memory Protection Extensions (Intel® MPX) • Intel® Trusted Execution Technology		• Intel® AES New Instructions • Intel® Software Guard Extensions (Intel® SGX) • Intel® Memory Protection Extensions (Intel® MPX) • Intel® Trusted Execution Technology	
	TPM	1 x TPM 2.0 Pin header		1 x TPM 2.0 pin header	
IPMI	IPMI Solution	N/A		N/A	
Networking	Ethernet IC	5GbE NIC: AQC 111C		1 GbE NIC: Intel® i211-AT	
	Ethernet Port	8 x 5GbE RJ-45 LAN ports		6 x 1GbE RJ-45 LAN ports	
	Bypass	N/A		N/A	
	Network Module Slot	2 x PulM module slots		N/A	
Expansion Slot	PCIe Slot	1 x PCIe 3.0 x8 (FHHL) slot 1 x PCIe 3.0 x4 (FHHL) slots		1 x PCIe 3.0 x16 (FHHL) slot (double width)	
	PCIe Mini Card Slot	1 x PCIe Mini card (PCIe 3.0 & SATA 3.0, USB 2.0)		1 x PCIe Mini card (SATA 3.0, USB 2.0) with SIM slot	
	M.2	1 x 3042/2260 M.2 B key (SATA 3.0 / USB 3.2 Gen 1) Support SATA SSD and 4G LTE module		1 x M.2 A key (PCIe 2.0 & USB 2.0)	
Storage	Storage	2 x 2.5" SATA HDD/SSD bay support SATA 3.0 (6 Gbps)		2 x 2.5" SATA HDD/SSD bay support SATA 3.0 (6 Gbps)	
	eMMC	N/A		N/A	
	SD Card	N/A		N/A	
External I/O	VGA	N/A		N/A	
	USB	2 x USB 3.2 Gen 1		2 x USB 3.2 Gen 1	
	Console	1 x RJ-45		1 x RJ-45	
Internal I/O	HDMI	1 x HDMI connecter (optional)		1 x HDMI connecter (optional)	
	USB	4 x USB 2.0 (pin header)		2 x USB 2.0 (pin header)	
Power and Mechanical	Power Switch	1 x Power Switch		1 x Power Switch	
	Reset Button	1 x Reset Button		1 x Reset Button	
	Power Input	100 V ~ 240 V		100 V ~ 240 V	
	Type/Watt	Redundant Power 300W, 90V ~ 264V AC		ATX Power 250W, 90V ~ 264V AC	
	Processor Cooling	1 x Passive CPU Heatsink		1 x Passive CPU heatsink	
	System Cooling	4 x Cooling Fans with Smart Fan		4 x Cooling Fans with Smart Fan	
	Antenna Hole	1 x Antenna hole		1 x Antenna hole	
Physical and Environmental	Storage Temperature	-20°C ~ 75°C (-4°F ~ 167°F)		-20°C ~ 75°C (-4°F ~ 167°F)	
	Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)		0°C ~ 40°C (32°F ~ 104°F)	
	Operating Humidity	Relative humidity: 5% ~ 90% non-condensing		Relative humidity: 5% ~ 90% non-condensing	
	Dimensions (W x L x H) (mm)	430 x 426 x 44.2		430 x 320 x 44.2	
	Weight	7 kg		5 kg	
OS and Certifications	Certification	CE / FCC / RoHS		CE / FCC / RoHS	
	Operating System	Linux Ubuntu 18.04.04 CentOS 7 / Red Hat / Fedora EPEL Microsoft Windows 10		Linux Ubuntu 18.04.04 CentOS 7 / Red Hat / Fedora EPEL Microsoft Windows 10	
Indicators	LCM	LCM, 2 buttons		LCM, 2 buttons	
	LED	1 x Power LED, 1 x Storage LED, 1 x Alert LED		1 x Power LED, 1 x Storage LED, 1 x Alert LED	

PUZZLE Series Selection Guide

		PUZZLE-IN003A		PUZZLE-IN003B	
		PUZZLE-IN003A-C1	**PUZZLE-IN003A-C3**	**PUZZLE-IN003B-C0**	**PUZZLE-IN003B-C1**
Platform	Form Factor	Desktop			
	CPU	Intel® Atom® processor C3558 8M cache, up to 2.20 GHz	Intel® Atom® Processor C3336 4M Cache, 1.50 GHz	Intel® Atom® processor C3758 16M cache, up to 2.20 GHz	Intel® Atom® processor C3558 8M cache, up to 2.20 GHz
	Chipset	Integrated in CPU		Integrated in CPU	
Memory	Memory Technology	DDR4 2133 MHz ECC (By CPU) or non-ECC UDIMM, Support DDR4 RDIMM		DDR4 2133 MHz ECC (By CPU) or non-ECC UDIMM, Support DDR4 RDIMM	
	Memory Capacity	UDIMM up to 64GB RDIMM up to 128GB		UDIMM up to 64GB RDIMM up to 128GB	
	Memory Socket	2 x 288-pin DIMM	1 x 288-pin DIMM	4 x 288-pin DIMM	
Network and Security	Network Acceleration and Security Function	• Intel® AES New Instructions • Intel® Software Guard Extensions (Intel® SGX) • Intel® Virtualization Technology for Directed I/O (VT-d) • Intel® QuickAssist Technology (Intel® QAT)	• Intel® Virtualization Technology for Directed I/O (VT-d) • Intel® Virtualization Technology (VT-x) • Intel® QuickAssist Technology (Intel® QAT)	• Intel® AES New Instructions • Intel® Software Guard Extensions (Intel® SGX) • Intel® Memory Protection Extensions (Intel® MPX) • Intel® Virtualization Technology for Directed I/O (VT-d) • Intel® QuickAssist Technology (Intel® QAT)	• Intel® AES New Instructions • Intel® Software Guard Extensions (Intel SGX) • Intel® Virtualization Technology for Directed I/O (VT-d) • Intel® QuickAssist Technology (Intel® QAT)
	TPM	1 x TPM 2.0 pin header		1 x TPM 2.0 pin header	
IPMI	IPMI Solution	N/A		N/A	
Networking	Ethernet IC	1 GbE NIC: Intel® i211-AT 1 GbE PHY: Marvell 88E1543		1 GbE NIC: Intel® i211-AT 1 GbE PHY: Marvell 88E1512 10 GbE: Intel® X553 integrated in CPU	
	Ethernet Port	4 x GbE from Intel® i211-AT 4 x GbE from Marvell 88E1543	4 x GbE from Intel® i211-AT 2 x GbE from Marvell 88E1543	4 x 1GbE from Intel® i211-AT 2 x 1GbE from Marvell 88E1512 2 x 10 GbE SFP+	
	Bypass	Yes, 2 bypass segments	Yes, 1 bypass segments	N/A	
	Network Module Slot	N/A		N/A	
Expansion Slot	PCIe Slot	N/A		N/A	
	PCIe Mini Card Slot	1 x PCIe Mini card (PCIe 3.0, USB 2.0) with SIM slot		1 x PCIe Mini card (PCIe 3.0, USB 2.0) with SIM slot	
	M.2	1 x M.2 A key (PCIe 3.0 & USB 2.0)		1 x M.2 A key (PCIe 3.0 & USB 2.0)	
Storage	Storage	1 x SATA 3.0 + 1 x 5V power connector (for SATA DOM) 1 x M.2 M key 2260/2280 Support PCIe 3.0 x4 nVME		1 x SATA 3.0 + 1 x 5V power connector (for SATA DOM) 1 x M.2 M key 2260/2280 Support PCIe 3.0 x4 nVME	
	eMMC	1 x eMMC 32GB		1 x eMMC 32GB	
	SD Card	N/A		N/A	
External I/O	VGA	N/A		N/A	
	USB	1 x USB 2.0 1 x USB 3.2 Gen 1		1 x USB 2.0 1 x USB 3.2 Gen 1	
	Console	1 x RJ-45		1 x RJ-45	
Internal I/O	HDMI	N/A		N/A	
	USB	N/A		N/A	
Power and Mechanical	Power Switch	1 x Power Switch		1 x Power Switch	
	Reset Button	1 x Reset Button		1 x Reset Button	
	Power Input	1 x DC jack		1 x DC jack	
	Type/Watt	12 V DC-in, 60W		12 V DC-in, 60W	
	Processor Cooling	Passive CPU heatsink		Passive CPU heatsink	
	System Cooling	Fanless		Two system fans Fanless	
	Antenna Hole	2 x Antenna hole		2 x Antenna hole	
Physical and Environmental	Storage Temperature	-20°C ~ 75°C (-4°F ~ 167°F)		-20°C ~ 75°C (-4°F ~ 167°F)	
	Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)		0°C ~ 40°C (32°F ~ 104°F)	
	Operating Humidity	Relative humidity: 5%~90% non-condensing		Relative humidity: 5%~90% non-condensing	
	Dimensions (W x L x H) (mm)	225 x 206 x 44.2		225 x 206 x 44.2	
	Weight	2 kg		2 kg	
OS and Certifications	Certification	CE / FCC / RoHS		CE / FCC / RoHS	
	Operating System	Linux Ubuntu 18.04.04 CentOS 7 / Red Hat / Fedora EPEL Microsoft Windows 10		Linux Ubuntu 18.04.04 CentOS 7 / Red Hat / Fedora EPEL Microsoft Windows 10	
Indicators	LCM	N/A		N/A	
	LED	1 x Power LED, 1 x Storage LED, 1 x Alert LED		1 x Power LED, 1 x Storage LED, 1 x Alert LED	

PUZZLE Series Selection Guide

		PUZZLE-IN004				
		PUZZLE-IN004-XD1	PUZZLE-IN004-XD2	PUZZLE-IN004-XD3	PUZZLE-IN004-XD4	PUZZLE-IN004-XD5
Platform	Form Factor	1U				
	CPU	Intel® Xeon® D-2145NT processor 8-core, 11M cache 1.90 GHz	Intel® Xeon® D-2146NT processor 8-core, 11M cache, 2.30 GHz	Intel® Xeon® D-2166NT processor 12-core, 16.5M Cache, 2.00 GHz	Intel® Xeon® D-2177NT Processor 14-core, 19.25M Cache, 1.90 GHz	Intel® Xeon® D-2187NT processor 16-core, 22M cache, 2.00 GHz
	Chipset	Integrated in CPU				
Memory	Memory Technology	DDR4 2133/2400 MHz ECC DDR4 RDIMM/LRDIMM				
	Memory Capacity	RDIMM up to 256 GB LRDIMM up to 512 GB				
	Memory Socket	8 x 288-pin DIMM				
Network and Security	Network Acceleration and Security Function	• Intel® AES New Instructions • Intel® QuickAssist Technology (Intel® QAT) • Intel® Virtualization Technology (Intel® VT) • Intel® Trusted Execution Technology (Intel® TXT)				
	TPM	1 x TPM 2.0 pin header				
IPMI	IPMI Solution	N/A				
Networking	Ethernet IC	1 GbE NIC: Intel® i211-AT 10 GbE: Intel® X722 integrated in CPU				
	Ethernet Port	8 x 1GbE RJ-45 LAN ports 4 x 10 GbE SFP+				
	Bypass	N/A				
	Network Module Slot	1 x PulM module slot				
Expansion Slot	PCIe Slot	1 x PCIe 3.0 x8 (FHHL) slot (double width)				
	PCIe Mini Card Slot	1 x PCIe Mini (PCIe +USB 2.0) with SIM card				
	M.2	1 x M.2 M key 2260/2280 Support PCIe 3.0 x4 nVME				
Storage	Storage	2 x 2.5" SATA HDD/SSD bay support SATA 3.0 (6 Gbps)				
	eMMC	N/A				
	SD Card	N/A				
External I/O	VGA	N/A				
	USB	1 x USB 2.0 1 x USB 3.2 Gen 1				
	Console	1 x RJ-45				
Internal I/O	HDMI	N/A				
	USB	N/A				
Power and Mechanical	Power Switch	1 x Power Switch				
	Reset Button	1 x Reset Button				
	Power Input	100 V ~ 240 V				
	Type/Watt	Redundant Power 300W, 90V ~ 264V AC				
	Processor Cooling	1 x Passive CPU Heatsink				
	System Cooling	4 x Cooling Fans with Smart fan				
	Antenna Hole	1 x Antenna hole				
Physical and Environmental	Storage Temperature	-20°C ~ 75°C (-4°F ~ 167°F)				
	Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)				
	Operating Humidity	Relative humidity: 5% ~ 90% non-condensing				
	Dimensions (W x L x H) (mm)	430 x 426 x 44.2				
	Weight	7 kg				
OS and Certifications	Certification	CE / FCC / RoHS				
	Operating System	Linux Ubuntu 18.04.04 CentOS 7 / Red Hat / Fedora EPEL Microsoft Windows 10				
Indicators	LCM	LCM, 2 buttons				
	LED	1 x Power LED, 1 x Storage LED, 1 x Alert LED				

PUZZLE Series Selection Guide

		PUZZLE-M801	PUZZLE-M901	PUZZLE-M902
Platform	Form Factor	1U	N/A	N/A
	CPU	Marvell® ARMADA® 88F8040 High-Performance CPU System on Chip, 4C, 2.0GHz	Marvell® CN9130 quad-core ARMv8 Cortex-A72 @ up to 2200 MHz	
	Chipset	Integrated in CPU	Integrated in CPU	Integrated in CPU
Memory	Memory Technology	DDR4 2400 MHz ECC/Non-ECC/RDIMM	N/A	N/A
	Memory Capacity	Up to 16 GB	4GB	4GB
	Memory Socket	1 x 288-pin DIMM	N/A	N/A
Network and Security	Network Acceleration and Security Function	• Configurable packet processor • HW offload for networking • Acceleration engines for storage, networking and security • Public Key Processor (RSA/DH/ECC) • Secure Storage • Secure boot	N/A	N/A
	TPM	N/A	N/A	N/A
IPMI	IPMI Solution	N/A	N/A	N/A
Networking	Ethernet IC	10 GbE PHY: SoC Marvell 88F8040 1 GbE PHY: Marvell 88E1512P	Aquantia AQR112R Aquantia AQR112C Aquantia AQR112	Aquantia AQR112R Aquantia AQR113
	Ethernet Port	4 x 1GbE RJ-45 LAN ports 2 x 10 GbE SFP+	1 x 2.5GbE LAN integrated in CPU via PHY Aquantia AQR112R 1 x 2.5GbE LAN integrated in CPU via PHY Aquantia AQR112C 1 x 2.5GbE LAN integrated in CPU via PHY Aquantia AQR112 1 x 2.5GbE LAN via Marvell 88F8215 (PHY: Aquantia AQR112R) 1 x 2.5GbE LAN via Marvell 88F8215 (PHY: Aquantia AQR112C) 1 x 2.5GbE LAN via Marvell 88F8215 (PHY: Aquantia AQR112)	2 x 2.5GbE LAN integrated in CPU via PHY Aquantia AQR112R 4 x 2.5GbE LAN via Marvell 88F8215 (PHY: Aquantia AQR112R) 1 x 10GbE LAN integrated in CPU via PHY Aquantia AQR113 2 x 10GbE LAN via Marvell 88F8215 (PHY: Aquantia AQR113)
	Bypass	N/A	N/A	N/A
	Network Module Slot	N/A	N/A	N/A
Expansion Slot	PCIe Slot	1 x PCIe x16 (FHHL) slot PCIe 3.0 x2 signal	N/A	N/A
	PCIe Mini Card Slot	N/A	N/A	N/A
	M.2	1 x M.2 B Key (3042/2260) (SATA 3.0 and USB 3.2 Gen 1) Support SATA SSD or 4G LTE module (USB signal)	1 x 2242 M key M.2 PCIe Gen. 3 x2	1 x 2242/2280 M Key M.2 PCIe Gen. 3 x1
Storage	Storage	1 x 2.5" SATA HDD/SSD bay support SATA 3.0 (6 Gbps)	N/A	N/A
	eMMC	32GB	1 x 4GB eMMC	1 x 4GB eMMC
	SD Card	N/A	N/A	N/A
External I/O	VGA	N/A	N/A	N/A
	USB	2 x USB 3.2 Gen 1	N/A	N/A
	Console	1 x RJ-45	N/A	N/A
Internal I/O	HDMI	N/A	N/A	N/A
	USB	1 x USB 2.0	USB 3.2 Gen 1 (5Gb/s)	USB 3.2 Gen 1 (5Gb/s)
Power and Mechanical	Power Switch	1 x Power Switch	N/A	N/A
	Reset Button	1 x Reset Button	1 x Reset Factory Button	1 x Reset Factory Button
	Power Input	100 V ~ 240 V	1 x DC jack	1 x DC jack
	Type/Watt	ATX Power 250W, 90V ~ 264V AC	12 V DC-in, 36W	12 V DC-in, 36W
	Processor Cooling	1 x Active CPU Heatsink with fan	Passive CPU Heatsink	Passive CPU Heatsink
	System Cooling	2 x Cooling Fans with Smart Fan	Active Fan	1 system fan
	Antenna Hole	1 x Antenna hole	N/A	N/A
Physical and Environmental	Storage Temperature	-20°C ~ 75°C (-4°F ~ 167°F)	-20°C ~ 75°C (-4°F ~ 167°F)	
	Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)	
	Operating Humidity	Relative humidity: 5% ~ 90% non-condensing	Relative humidity: 5% ~ 90% noncondensing	
	Dimensions (W x L x H) (mm)	430 x 320 x 44.2	166.4 x 145.7 x 34	226 x 140 x 50.5
	Weight	5 kg		
OS and Certifications	Certification	CE / FCC / RoHS	CE/FCC/BSMI (BSMI safety)/VCCI, LVD	
	Operating System	Linux Ubuntu 16.04.04	OpenWrt	
Indicators	LCM	N/A	N/A	N/A
	LED	1 x Power LED, 1 x Storage LED, 1 x Alert LED	Status/Power, WAN/LAN interface indicator	

PUZZLE Series Selection Guide

		PUZZLE-9030	PUZZLE-3034	PUZZLE-3032
Platform	Form Factor	1U	Desktop	Desktop
	CPU	2 x AMD® EPYC™ Milan 7543	Intel® Atom® C3758R 8C/8T (16M Cache, 2.4 GHz)	Intel® Atom® C3558R 4C/4T (8M Cache, 2.4 GHz)
	Chipset	Integrated in CPU	Intel® Denverton-R	Intel® Denverton-R
Memory	Memory Technology	ECC & Register DDR4 3200 MHz memory, up to 256GB per DIMM	2 x DDR4 2400 MHz Non-ECC UDIMM Default: 2 x UDIMM 8GB	2 x DDR4 2400 MHz Non-ECC UDIMM Default: 1 x UDIMM 8GB
	Memory Capacity	RDIMM/LRDIMM: up to 4TB	Up to 64GB (based on DIMM capacity)	Up to 64GB (based on DIMM capacity)
	Memory Socket	16 x 288-pin DIMM (8 DIMM/CPU) (eight channel)	2 x 288-pin DIMM	2 x 288-pin DIMM
IPMI	IPMI Solution	1 x AST2620 (RTL8211E)	N/A	N/A
Network and Security	Network Acceleration and Security Function	N/A	• Intel® AES New Instructions • Intel® Software Guard Extensions (Intel® SGX) • Intel® Memory Protection Extensions (Intel® MPX) • Intel® Trusted Execution Technology	• Intel® AES New Instructions • Intel® Software Guard Extensions (Intel® SGX) • Intel® Memory Protection Extensions (Intel® MPX) • Intel® Trusted Execution Technology
Networking	Ethernet IC	Intel i211	Intel 2.5GbE KTI225V SLNMH	Intel 2.5GbE KTI225V SLNMH
	Ethernet Port	1 x GbE RJ-45	8 x 2.5 GbE RJ-45 LAN ports 4 x 10 GbE, SFP+	8 x 2.5GbE RJ-45 LAN ports 2 x 10 GbE, SFP+
Expansion Slot	PCIe Slot	2 x PCIe x16 FHHL		
	M.2	2 x M.2 M key 2280 (PCIe 4.0 x4)	• 1 x 2242 B-Key M2 slot for M2 SATA • 1 x 3052 B-Key M2 slot + SIM Card Socket for 5G/LTE Card • 2 x 2280 M-Key M2 slot for NVME	• 1 x 2242 B-Key M2 slot for M2 SATA • 1 x 3052 B-Key M2 slot + SIM Card Socket for 5G/LTE Card • 2 x 2280 M-Key M2 slot for NVME
Storage	eMMC	N/A	64GB eMMC	64GB eMMC
	U.2/SATA	2 x U.2 (PCIe 4.0 x4) or 2 x SATA 6Gb/s - (colay design)	N/A	N/A
External I/O	USB	2 x USB 3.1	2 x USB 3.0 (support UPS equipment only)	2 x USB 3.0 (support UPS equipment only)
	Console	1 x RJ-45	1 x RJ-45	1 x RJ-45
Power and Mechanical	Power Switch	N/A	1 x Power Button	1 x Power Button
	Reset Button	1 x Reset Button	1 x Reset Button	1 x Reset Button
	Power Input	AC Power Inlet on PSU AC 100V ~ 240V @47~63Hz	101 V ~ 240 V	100 V ~ 240 V
	Type/Watt	YM-2132EAR 90 ~ 132VAC @900W 100 ~ 132VAC @1000W 110 ~ 132VAC @1100W 180 ~ 264VAC @1300W	Open Frame DPS-60AP-5 D; Vin: 90 ~ 264VAC;71W	Open Frame DPS-60AP-5 D; Vin:90 ~ 264VAC;70W
	Processor Cooling	2 x CPU Heatsink	2 x Passive CPU Heatsink	1 x Passive CPU Heatsink
	System Cooling	6 x Individual Hot-swappable Cooling Fans	2 x Cooling Fans	2 x Cooling Fans
	Antenna Port	N/A	4 x Antenna port	3 x Antenna hole (reserved)
Physical and Environmental	Storage Temperature	-10°C ~ 50°C	-10°C ~ 50°C	-10°C ~ 50°C
	Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)
	Operating Humidity	5% ~ 90% non-condensing	5% ~ 90% non-condensing	5% ~ 90% non-condensing
	Dimensions (W x H x D) (mm)	670 x 438 x 44.2	46.65 x 285 x 236.7	46.65 x 285 x 236.6
Supported OS and Certifications	Certification	RoHS, CE/FCC, UL	CE, FCC, VCCI, RCM	CE, FCC, VCCI, RCM
	Supported OS	Linux (CentOS, Red Hat, Ubuntu, etc.)	Linux Ubuntu 18.04.05	Linux Ubuntu 18.04.05
Indicators	LCM	N/A	16 x 3 character with control keys	16 x 2 character with control keys
	LED	1 x Power / 1 x Status / 1 x Alert	1 x Power LED, 1 x Storage LED, 1 x Alert LED	1 x Power LED, 1 x Storage LED, 1 x Alert LED

PUZZLE–IN005

2U Rackmount Network Appliance support dual Intel® Ice Lake CPU

Features

- Dual Intel® Ice Lake Xeon® scalable processors (up to 185W)
- 20 x DDR4 R-DIMM / LR-DIMM memory
- 8 network modules with PCIe Gen 4 x8 signal
- Intel® QuickAssist Technology
- 4 x 2.5" U.2 (PCIe x4) SSD compatible with SATA
- 1+1 1200W CRPS redundant power supply
- 4+1 hot-swappable system fans

Specifications

		PUZZLE-IN005
Platform	Form Factor	2U
	CPU	Intel® Ice-Lake LGA-4189 Xeon® Scalable Processor
	Chipset	C627A
Memory	Memory Technology	DDR4 3200 MHz ECC RDIMM / LRDIMM
	Memory Capacity	Memory up to:1280GB (20 x 64GB)
	Memory Socket	20 x 288-pin DIMM
Network and Security	Network Acceleration and Security Function	• Intel® AES New Instructions • Intel® QuickAssist Technology (Intel® QAT) • Intel® Virtualization Technology (Intel® VT) • Intel® Trusted Execution Technology (Intel® TXT)
	TPM	1 x TPM 2.0 pin header
IPMI	IPMI Sulotion	1 x iRIS-2400 module
Networking	Ethernet IC	1 GbE NIC: Intel® i210-AT with NCSI support 1 GbE NIC: Intel® i219
	Ethernet Port	2 x 1GbE RJ-45 ports (1 x IPMI LAN)
	Network Module Slot	8 x Networking Module Slot
Expansion Slot	PCIe Slot	1 x PCIe Gen 4 x8 (FHHL) slot (single width)
	PCIe Mini Card Slot	N/A
	M.2	2 x M.2 2280 M key supporting PCIe Gen 3 x4 NVMe
Storage	Storage	4 x U.2 SSD drive bay compatible with SATA
	eMMC	N/A
	SD Card	N/A
External I/O	VGA	1 x VGA port
	USB	2 x USB 3.2 Gen 1 (5Gb/s) Type-A ports
	Console	1 x RJ-45 1 x USB Type-C
Internal I/O	HDMI	N/A
	USB	1 x USB 2.0 pin header
Power and Mechanical	Power Switch	1 x Power Switch
	Reset Button	1 x Reset Button
	Power Input	100 V ~ 240 V
	Type/Watt	Redundant power 1200W, 90V ~ 264V AC
	Processor Cooling	2 x Active CPU cooler
	System Cooling	5 x Cooling fans with smart fan
	Antenna Hole	N/A
Physical and Environmental	Storage Temperature	-20°C ~ 75°C (-4°F ~ 167°F)
	Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)
	Operating Humidity	Relative humidity: 5% ~ 90% non-condensing
	Dimensions (W x L x H) (mm)	438 x 650 x 88
	Weight	23 kg
OS and Certifications	Certification	CE / FCC / RoHS
	Operating System	Linux 18.04 (CentOS, Red Hat, Ubuntu, etc.) Windows server 2019
Indicators	LCM	N/A
	LED	1 x Power LED, 1 x Storage LED, 1 x Alert LED

Ordering Information

Part No.	Description
PUZZLE-IN005-R-R10*	2U Rackmount Network Appliance supports dual Intel® Ice-Lake-SP CPU, twenty DDR4 R-DIMM/LR-DIMM slots, two 1GbE (one supports BMC control), eight PulM, one PCIe expansion, redundant power, without cooler, RoHS

***** A CPU heatsink must be purchased separately

Packing List

1 x USB to RJ-45 console cable	Rack mounting ears
2 x Power cord	Screws for rack mounting ears
Flat head screws (for 2.5" HDD)	

Options

Item	Part No.	Description
Slide rail	45009-0018C0-00-RS	Sliding track, sliding track, AA68-5080PZZ1CV, Raw Material, 45009-0018XX, VER:00, RoHS
USB to console cable	32013-004000-100-RS	Round cable; LAN CABLE; FTDI console cable; 2; 1800MM; (A)USB A TYPE 4P MALE+PCB:FTDI_ FT232RL; (B)RJ-45 8P8C; RoHS
CPU cooler	19100-000287-00-RS	Cooler module/Heat Pipe; HEATSINK:113*78*64mm, FAN:60*60*15mm; Standard; 00; TSM-002007-HS3; Aluminum plate+FIN Buckle+Heat Pipe*5; +Grease:TC5888+6025FAN+FAN cover+LGA4189*4; Nidec; H60T12BHA7-57T07; CCL; RoHS

IO Interface
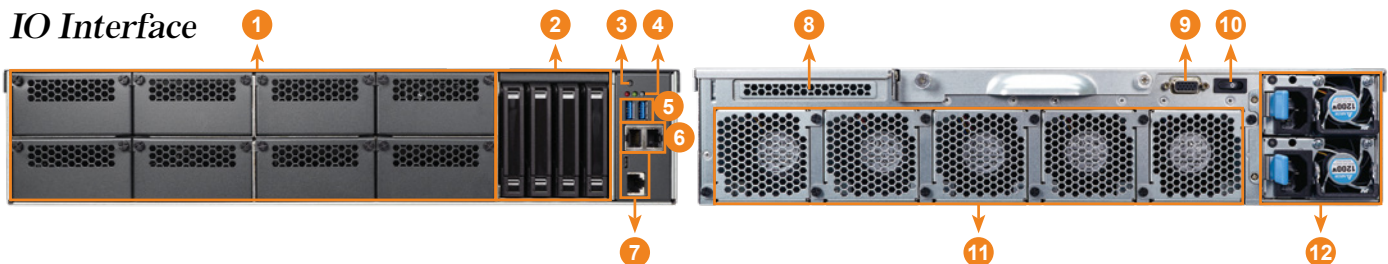
1	8 x IEI Networking Module slot	**5**	2 x USB 3.2 Gen 1	**8**	PCIe expansion slot
2	4 x 2.5" drive bay	**6**	1 x MGMT LAN 1 x IPMI LAN	**9**	VGA port
3	Reset button	**7**	Console port 1 x USB type C 1 x RJ-45	**10**	Power switch
4	Power status HDD status Alert LED			**11**	5 x hot-swappable fan
				12	Power inlet

Dimensions *(Unit: mm)*

650.80
368
92
92
67.50
22.20
442
88.50
438
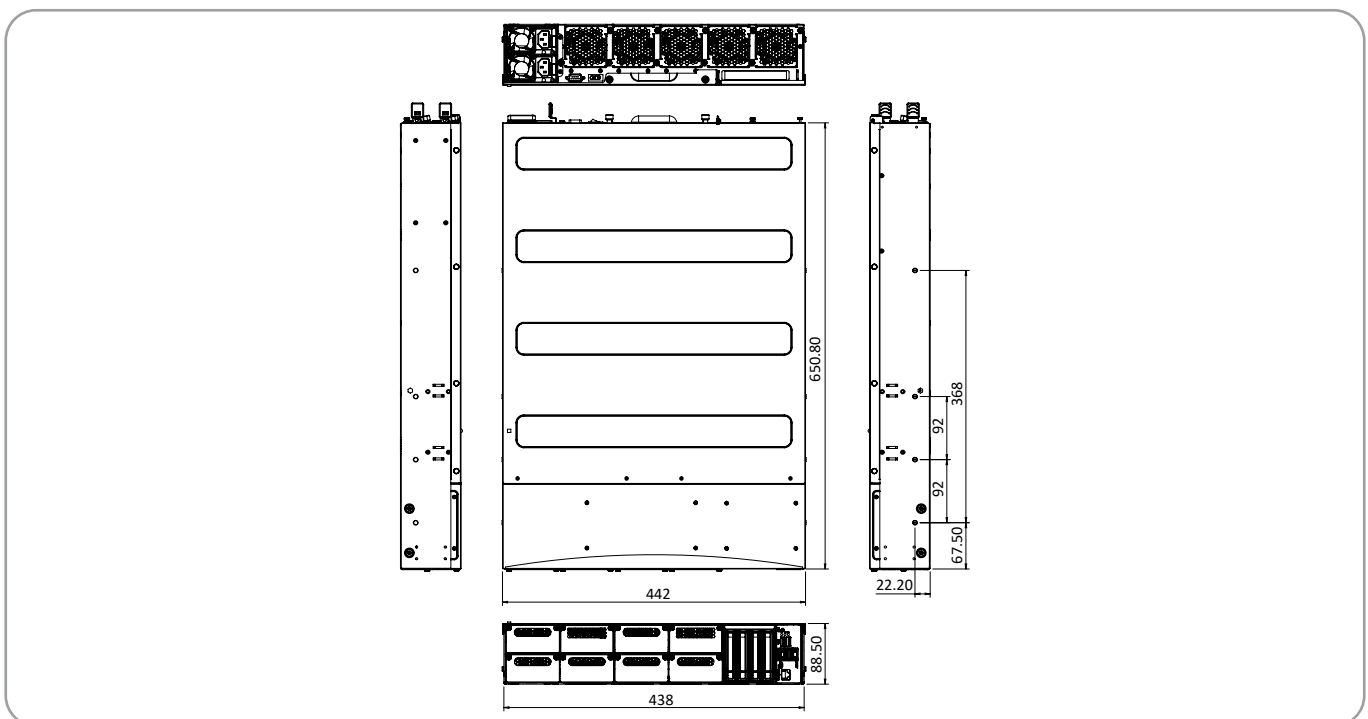
PUZZLE–IN004

1U Rackmount Network Appliance with Intel® Xeon® D Processor support 8 x GbE, 4 x 10GbE SFP+ and 1 PCIe x8 slot

Features

- Intel® Xeon D-2100 series processor (Skylake-D) with optional Intel®QAT
- Support eight GbE RJ-45 via Intel® I211-AT, four 10 GbE SFP+ and IEI networking module
- 8 x 288-pin RDIMM, 2 x DDR4 2666 MHz, RDIMM up to 256GB / LRDIMM up to 512GB
- 1 x RJ-45 Console, 1 x USB 3.2 Gen 1 (5Gb/s), 1 x USB 2.0, LCM
- 2 x 2.5" SATA drive bay, 2 x M.2 M key 2280 (PCIe x4), 1 x PCIe Mini (PCIe + USB 2.0) with SIM card
- Support one PCIe x8 slot, one PulM module slot
- Redundant PSUs

Specifications

		PUZZLE-IN004-XD1	PUZZLE-IN004-XD2	PUZZLE-IN004-XD3	PUZZLE-IN004-XD4	PUZZLE-IN004-XD5
Platform	Form Factor	1U				
	CPU	Intel® Xeon® D-2145NT processor 8C16T, 1.90 GHz	Intel® Xeon® D-2146NT processor 8C16T, 2.30 GHz	Intel® Xeon® D-2166NT processor 12C24T, 2.00 GHz	Intel® Xeon® D-2177NT processor 14C28T, 1.90 GHz	Intel® Xeon® D-2187NT processor 16C32T, 2.00 GHz
	Chipset	Integrated in CPU				
Memory	Memory Technology	DDR4 2133/2400 MHz ECC DDR4 RDIMM/LRDIMM				
	Memory Capacity	RDIMM up to 256GB / LRDIMM up to 512GB				
	Memory Socket	8 x 288-pin DIMM				
Network and Security	Network Acceleration and Security Function	• Intel® AES New Instructions • Intel® Software Guard Extensions (Intel® SGX) • Intel® Memory Protection Extensions (Intel® MPX) • Intel® Trusted Execution Technology				
	TPM	1 x TPM 2.0 pin header				
Networking	Ethernet IC	1 GbE NIC: Intel® i211-AT 10 GbE: Intel® X722 integrated in CPU				
	Ethernet Port	4 x 10 GbE SFP+ / 8 x 1GbE RJ-45 LAN ports				
	Network Module Slot	1 x PulM module slot				
Expansion Slot	PCIe Slot	1 x PCIe 3.0 x8 (FHHL) slot (double width)				
	PCIe Mini Card Slot	1 x PCIe Mini (PCIe + USB 2.0) with SIM card				
	M.2	1 x M.2 M key 2260/2280 Support PCIe 3.0 x4 nVME				
Storage	Storage	2 x 2.5" SATA HDD/SSD bay support SATA 3.0 (6 Gbps)				
	eMMC	N/A				
	SD Card	N/A				
External I/O	USB	1 x USB 2.0 / 1 x USB 3.2 Gen 1				
	Console	1 x RJ-45				
Internal I/O	HDMI	N/A				
	USB	N/A				
Power and Mechanical	Power Switch	1 x Power switch				
	Reset Button	1 x Reset button				
	Power Input	100 V ~ 240 V				
	Type/Watt	Redundant power 300W, 90V ~ 264V AC				
	Processor Cooling	1 x Passive CPU heatsink				
	System Cooling	3 x Cooling fans with smart fan				
	Antenna Hole	1 x Antenna hole				
Physical and Environmental	Storage Temperature	-20°C ~ 75°C (-4°F ~ 167°F)				
	Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)				
	Operating Humidity	5% ~ 90% non-condensing				
	Dimensions (W x L x H) (mm)	430 x 426 x 44.2				
	Weight	7 kg				
OS and Certifications	Certification	CE / FCC / RoHS				
	Operating System	Linux Ubuntu 18.04.04 CentOS 7 / Red Hat / Fedora EPEL Microsoft Windows 10				
Indicators	LCM	LCM, 2 buttons				
	LED	Power status, Storage status, Alert LED				

Ordering Information

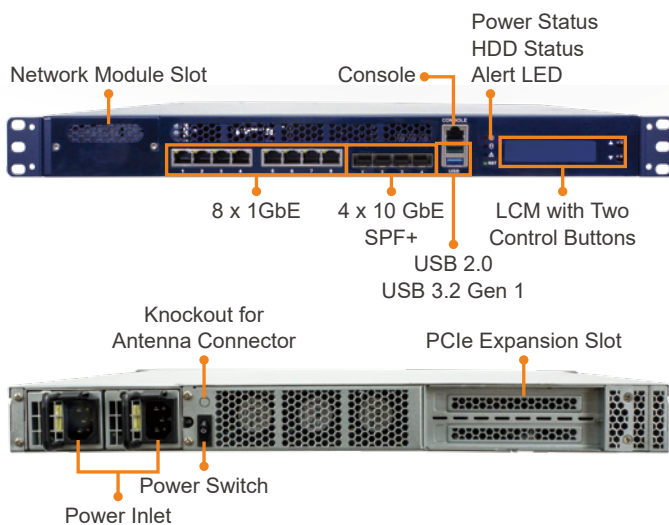| Part No.	Description
PUZZLE-IN004-XD1/R-R10	1U rackmount network appliance with Intel® Xeon® D-2145NT processor, eight 1GbE, four 10 GbE, one PulM module slot and one PCIe expansion, RoHS
PUZZLE-IN004-XD1/32G/R-R10	1U rackmount network appliancee with Intel® Xeon® D-2145NT processor, four 8GB DDR4, two 240GB SSD, eight 1GbE, four 10 GbE, one PulM module slot and one PCIe expansion, RoHS
PUZZLE-IN004-XD2/R-R10	1U rackmount network appliance with Intel® Xeon® Intel Xeon D-2146NT processor, eight 1GbE, four 10 GbE, one PulM module slot and one PCIe expansion, RoHS
PUZZLE-IN004-XD2/32G/R-R10	1U rackmount network appliance with Intel® Xeon® D-2146NT processor, four 8GB DDR4, two 240GB SSD, eight 1GbE, four 10 GbE, one PulM module slot and one PCIe expansion, RoHS
PUZZLE-IN004-XD3/R-R10	1U rackmount network appliancee with Intel® Xeon® D-2166NT processor, eight 1GbE, four 10 GbE, one PulM module slot and one PCIe expansion, RoHS
PUZZLE-IN004-XD3/32G/R-R10	1U rackmount network appliance with Intel® Xeon® D-2166NT processor, four 8GB DDR4, two 240GB SSD, eight 1GbE, four 10 GbE, one PulM module slot and one PCIe expansion, RoHS
PUZZLE-IN004-XD4/R-R10	1U rackmount network appliance with Intel® Xeon® D-2177NT processor, eight 1GbE, four 10 GbE, one PulM module slot and one PCIe expansion, RoHS
PUZZLE-IN004-XD4/64G/R-R10	1U rackmount network appliance with Intel® Xeon® D-2177NT processor, four 16GB DDR4, two 480GB SSD, eight 1GbE, four 10 GbE, one PulM module slot and one PCIe expansion, RoHS
PUZZLE-IN004-XD5/R-R10**	1U rackmount network appliance with Intel® Xeon® D-2187NT processor, eight 1GbE, four 10 GbE, one PulM module slot and one PCIe expansion, RoHS
PUZZLE-IN004-XD5/64G/R-R10**	1U rackmount network appliance with Intel® Xeon® D-2187NT processor, four 16GB DDR4, two 480GB SSD, eight 1GbE, four 10 GbE, one PulM module slot and one PCIe expansion, RoHS

** By order production

Packing List

	PUZZLE-IN004									
	XD1/R	**XD2/R**	**XD3/R**	**XD4/R**	**XD5/R**	**XD1/32G/R**	**XD2/32G/R**	**XD3/32G/R**	**XD4/64G/R**	**XD5/64G/R**
Power cord	2	2	2	2	2	2	2	2	2	2
Rack mounting ears	2	2	2	2	2	2	2	2	2	2
Screws for rack mounting ears	6	6	6	6	6	6	6	6	6	6
USB to console cable	option	option	option	option	option	1	1	1	1	1
RS-232 to console cable	1	1	1	1	1	option	option	option	option	option
Slide rail	option	option	option	option	option	option	option	option	option	option

Options

Item	Part No.	Description
Slide rail	RAIL-B02	New rail kit for new 1U & 2U NAS: TVS-471U, 1253U, etc
USB to console cable	32013-004000-100-RS	ROUND CABLE; LAN CABLE; FTDI Console Cable; 2; 1800MM; (A)USB A TYPE 4P MALE+PCB:FTDI_FT232RL; (B)RJ-45 8P8C; RoHS
RS-232 to console cable	32005-005100-100-RS	ROUND CABLE; RS-232/422/485; PUZZLE RS-232 Cable; 2; 500MM; 24AWG; (A) D-SUB 9P MALE+#4-40 Screw; (B)RJ-45 PLUG 8P8C; ONE PCS PKG; TC&C; RoHS

IO Interface

Network Module Slot
Console
Power Status
HDD Status
Alert LED

8 x 1GbE
4 x 10 GbE SPF+
USB 2.0
USB 3.2 Gen 1
LCM with Two Control Buttons

Knockout for Antenna Connector
PCIe Expansion Slot
Power Switch
Power Inlet

Dimensions *(Unit: mm)*

PUZZLE−IN001

1U Rackmount Network Appliance with Intel® Xeon® E and 8th & 9th Generation Intel® Core™ i3/Pentium®/Celeron® Processor, two PulM module slots and two PCIe slots

Features

- Intel® Xeon® E, 8th & 9th Generation Intel® Core™/Pentium®/Celeron® processor
- 8 x GbE RJ-45 via Intel® I211
- 2 x 288-pin DIMM, DDR4 2400 MHz ECC & non ECC, up to 32GB
- 1 x RJ-45 Console, 2 x USB 3.2 Gen 1 (5Gb/s), LCM
- 2 x 2.5" SATA drive bay, 1 x M.2 B-Key (SATA, USB 3.2 Gen 1 (5Gb/s)), 1 x PCIe Mini
- Support PCIe x4, PCIe x8 slot and two PulM module slots
- Redundant PSUs

Specifications

		PUZZLE-IN001-XE	PUZZLE-IN001-i3T
Platform	Form Factor	1U	
	CPU	Intel® Xeon® E-2136 processor, 6C/12T, up to 4.50 GHz	8th Generation Intel® Core™ i3-8100T processor, 4C/4T, up to 3.10 GHz
	Chipset	Intel® C246	
Memory	Memory Technology	2 x DDR4 2400 MHz ECC/Non-ECC/RDIMM	
	Memory Capacity	Up to 32GB	
	Memory Socket	2 x 288-pin DIMM	
Network and Security	Network Acceleration and Security Function	• Intel® AES New Instructions • Intel® Software Guard Extensions (Intel® SGX) • Intel® Memory Protection Extensions (Intel® MPX) • Intel® Trusted Execution Technology	
	TPM	1 x TPM 2.0 pin header	
Networking	Ethernet IC	1 GbE NIC: Intel® I211-AT	
	Ethernet Port	8 x 1GbE RJ-45 LAN ports	
	Network Module Slot	2 x PulM module slots	
Expansion Slot	PCIe Slot	1 x PCIe 3.0 x8 (FHHL) slot, 1 x PCIe 3.0 x4 (FHHL) slots	
	PCIe Mini Card Slot	1 x PCIe Mini card (PCIe 3.0 & SATA 3.0, USB 2.0)	
	M.2	1 x 3042/2260 M.2 B key (SATA 3.0 / USB 3.2 Gen 1) Support SATA SSD and 4G LTE module	
Storage	Storage	2 x 2.5" SATA HDD/SSD bay support SATA 3.0 (6 Gbps) (RAID 0/1 support)	
	eMMC	N/A	
	SD Card	N/A	
External I/O	USB	2 x USB 3.2 Gen 1 (5Gb/s)	
	Console	1 x RJ-45	
Internal I/O	HDMI	N/A	1 x HDMI connecter (optional)
	USB	4 x USB 2.0 (pin header)	
Power and Mechanical	Power Switch	1 x Power switch	
	Reset Button	1 x Reset button	
	Power Input	100 V ~ 240 V	
	Type/Watt	Redundant power 300W	
		90V ~ 264V AC	
	Processor Cooling	1 x Passive CPU heatsink	
	System Cooling	4 x Cooling fans with smart fan	
	Antenna Hole	1 x Antenna hole	
Physical and Environmental	Storage Temperature	-20°C ~ 75°C (-4°F ~ 167°F)	
	Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)	
	Operating Humidity	5% ~ 90% non-condensing	
	Dimensions (W x L x H) (mm)	430 x 426 x 44.2	
	Weight	7 kg	
OS and Certifications	Certification	CE / FCC / RoHS	
	Operating System	Linux Ubuntu 18.04.04 CentOS 7 / Red Hat / Fedora EPEL Microsoft Windows 10	
Indicators	LCM	LCM, 2 buttons	
	LED	1 x Power LED, 1 x Storage LED, 1 x Alert LED	

Ordering Information

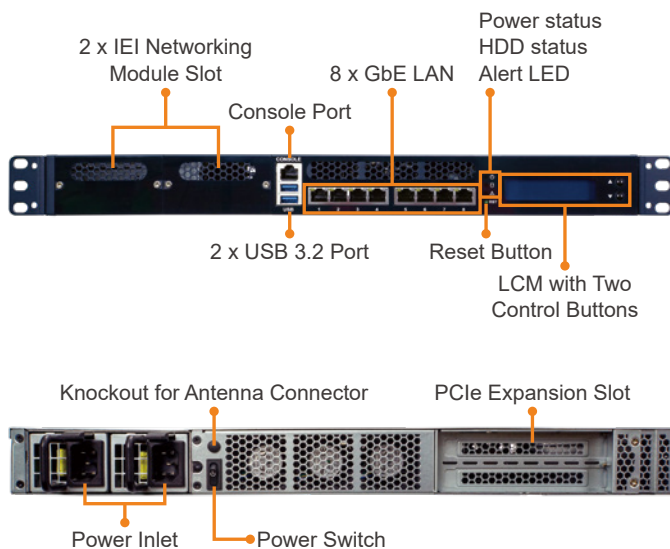| Part No.	Description
PUZZLE-IN001-R-R11*	1U Rackmount Network Appliance support Intel® Gen 8 Xeon®E3, Core™ i3, Pentium® or Celeron® processor, two DDR4 slots, two SSD slots and eight 1GbE, two PulM, two PCIe expansion without heatsink, Redundant Power, RoHS
PUZZLE-IN001-XE/R-R11	1U Rackmount Network Appliance with Intel® Gen 8 Xeon® E-2136 processor, two DDR4 slots, and eight 1GbE, two PulM module slots, two PCIe expansion, Redundant Power, RoHS
PUZZLE-IN001-i3T/R-R11	1U Rackmount Network Appliance with Intel® Gen 8 Core™ i3-8100T processor, two DDR4 slots, and eight 1GbE, two PulM module slots, two PCIe expansion, Redundant Power, RoHS
PUZZLE-IN001-XE/16G/R-R11	1U Rackmount Network Appliance with Intel® Gen 8 Xeon® E-2136 processor, two 8GB DDR4, two 256GB SSD, and eight 1GbE, two PulM module slots, two PCIe expansion, Redundant Power, RoHS
PUZZLE-IN001-i3T/16G/R-R11	1U Rackmount Network Appliance with Intel® Gen 8 Core™ i3-8100T processor, two 8GB DDR4, two 256GB SSD, and eight 1GbE, two PulM module slots, two PCIe expansion, Redundant Power, RoHS

* A CPU heatsink must be purchased separately

Packing List

	PUZZLE-IN001-R	PUZZLE-IN001-XE/R	PUZZLE-IN001-i3T/R	PUZZLE-IN001-XE/16G/R	PUZZLE-IN001-i3T/16G/R
Power cord	2	2	2	2	2
Rack mounting ears	2	2	2	2	2
Screws for rack mounting ears	6	6	6	6	6
USB to console cable	Option	Option	Option	1	1
RS-232 to console cable	1	1	1	Option	Option
Slide rail	Option	Option	Option	Option	Option

Options

Item	Part No.	Description
Slide rail	RAIL-B02	New rail kit for new 1U & 2U NAS: TVS-471U, 1253U, etc
USB to console cable	32013-004000-100-RS	Round cable; LAN CABLE; FTDI console cable; 2; 1800MM; (A)USB A TYPE 4P MALE+PCB:FTDI_ FT232RL; (B)RJ-45 8P8C; RoHS
RS-232 to console cable	32005-005100-100-RS	Round cable; RS-232/422/485; PUZZLE RS-232 cable; 2; 500MM; 24AWG; (A)D-SUB 9P MALE+#4-40 Screw; (B)RJ-45 PLUG 8P8C; ONE PCS PKG; TC&C; RoHS
HDMI cable	19B00-000403-00-RS	Z532; Accessory module; PUZZLE series HDMI cable assembly (only processor support graphics model); standard; 00, RoHS
Heatsink (TDP: 35W)	34000-000731-RS	HEATSINK; 90*90*27MM, GREASE:35*35mm_K=6.5; Washer*4+SPING SCREW Set*4, for CPU TDP 35W; RoHS
Heatsink (TDP: 80W)	34000-000722-RS	HEATSINK/Heat Pipe; FIN:89.5X88.4X20MM+Ø6 Heat Pipe*1, Copper Block:40*36*3MM + Aluminum Block:90*90*4.0MM; SCREW+SPRING+E-RING+WASHER*4, GREASE:X23-7762for CPU TDP 80W; RoHS

IO Interface

- 2 x IEI Networking Module Slot
- Console Port
- 8 x GbE LAN
- Power status HDD status Alert LED
- 2 x USB 3.2 Port
- Reset Button
- LCM with Two Control Buttons
- Knockout for Antenna Connector
- PCIe Expansion Slot
- Power Inlet
- Power Switch

Dimensions (Unit: mm)

PUZZLE-IN001A

1U Rackmount Network Appliance with Intel® Xeon® E and 8th & 9th Generation Intel® Core™ i3/Pentium®/Celeron® Processor, two PulM module slots and two PCIe slots

Features

- Intel® Xeon® E, 8th & 9th Generation Intel® Core™/Pentium®/Celeron® processor
- 8 x 5 GbE RJ-45 via AQC 111C, support 100 meters over Cat 5e or better at 5 Gbps, 2.5 Gbps, 1 Gbps, 100 Mbps (require no change to existing infrastructure or cabling)
- 4 x 288-pin DIMM, DDR4 2400 MHz ECC & non ECC, up to 64 GB
- 1 x RJ-45 Console, 2 x USB 3.2 Gen 1, LCM
- 2 x 2.5" SATA drive bay, 1 x M.2 B-Key, 1 x PCIe Mini

Specifications

		PUZZLE-IN001A-XE	PUZZLE-IN001A-i3T
Platform	Form Factor	1U	
	CPU	Intel® Xeon® E-2136 processor, 6C/12T, up to 4.50 GHz	8th Generation Intel® Core™ i3-8100T processor, 4C/4T, up to 3.10 GHz
	Chipset	Intel® C246	
Memory	Memory Technology	4 x DDR4 2400 MHz ECC/Non-ECC UDIMM	
	Memory Capacity	Up to 64GB	
	Memory Socket	4 x 288-pin DIMM	
Network and Security	Network Acceleration and Security Function	• Intel® AES New Instructions • Intel® Software Guard Extensions (Intel® SGX) • Intel® Memory Protection Extensions (Intel® MPX) • Intel® Trusted Execution Technology	
	TPM	1 x TPM 2.0 pin header	
Networking	Ethernet IC	8 x 5GbE NIC: AQC 111C	
	Ethernet Port	8 x 5 GbE RJ-45 LAN ports	
	Network Module Slot	2 x PulM module slots	
Expansion Slot	PCIe Slot	1 x PCIe 3.0 x8 (FHHL) slot, 1 x PCIe 3.0 x4 (FHHL) slots	
	PCIe Mini Card Slot	1 x PCIe Mini card (PCIe 3.0 & SATA 3.0, USB 2.0)	
	M.2	1 x 3042/2260 M.2 B key (SATA 3.0 / USB 3.2 Gen 1) Support SATA SSD and 4G LTE module	
Storage	Storage	2 x 2.5" SATA HDD/SSD bay support SATA 3.0 (6 Gbps)	
	eMMC	N/A	
	SD Card	N/A	
External I/O	USB	2 x USB 3.2 Gen 1 (5Gb/s)	
	Console	1 x RJ-45	
Internal I/O	HDMI	N/A	1 x HDMI connecter (optional)
	USB	4 x USB 2.0 (pin header)	
Power and Mechanical	Power Switch	1 x Power switch	
	Reset Button	1 x Reset button	
	Power Input	100 V ~ 240 V	
	Type/Watt	Redundant power 300W	
		90V ~ 264V AC	
	Processor Cooling	1 x Passive CPU heatsink	
	System Cooling	4 x Cooling fans with smart fan	
	Antenna Hole	1 x Antenna hole	
Physical and Environmental	Storage Temperature	-20°C ~ 75°C (-4°F ~ 167°F)	
	Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)	
	Operating Humidity	5% ~ 90% non-condensing	
	Dimensions (W x L x H) (mm)	430 x 426 x 44.2	
	Weight	7 kg	
OS and Certifications	Certification	CE / FCC / RoHS	
	Operating System	Linux Ubuntu 18.04.04 CentOS 7 / Red Hat / Fedora EPEL Microsoft Windows 10	
Indicators	LCM	LCM, 2 buttons	
	LED	1 x Power LED, 1 x Storage LED, 1 x Alert LED	

Ordering Information

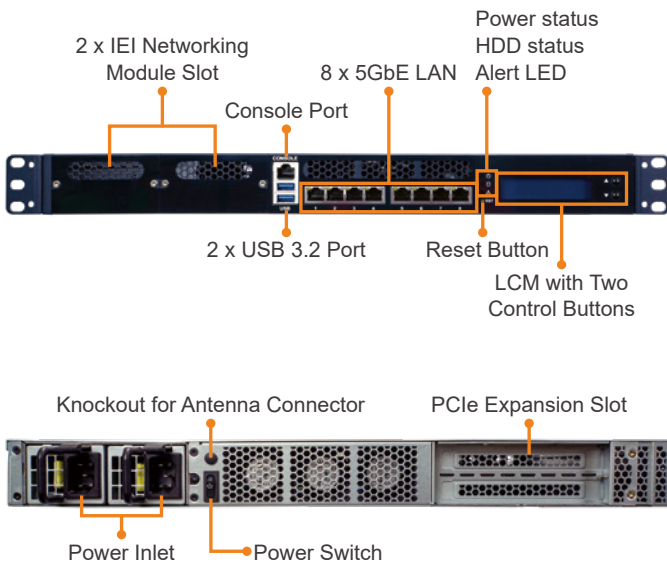| Part No.	Description
PUZZLE-IN001A-i3T/16G/R-R10	1U Rackmount Network Appliance with Intel® Gen 8 Core™ i3-8100T processor, two 8GB DDR4, two 256GB SSD, eight 5GbE, two PulM, two PCIe expansion, Redundant Power, RoHS
PUZZLE-IN001A-XE/16G/R-R10	1U Rackmount Network Appliance with Intel® Gen 8 Xeon® E-2136 processor, two 8GB DDR4, two 256GB SSD, eight 5GbE, two PulM, two PCIe expansion, Redundant Power, RoHS

Packing List

	PUZZLE-IN001A-XE/16G/R	PUZZLE-IN001A-i3T/16G/R
Power cord	2	2
Rack mounting ears	2	2
Screws for rack mounting ears	6	6
USB to console cable	1	1
RS-232 to console cable	Option	Option
Slide rail	Option	Option

Options

Item	Part No.	Description
Slide rail	RAIL-B02	New rail kit for new 1U & 2U NAS: TVS-471U, 1253U, etc
USB to console cable	32013-004000-100-RS	ROUND CABLE; LAN CABLE; FTDI Console Cable; 2; 1800MM; (A)USB A TYPE 4P MALE+PCB:FTDI_FT232RL; (B)RJ-45 8P8C; RoHS
RS-232 to console cable	32005-005100-100-RS	ROUND CABLE; RS-232/422/485; PUZZLE RS-232 Cable; 2; 500MM; 24AWG; (A)D-SUB 9P MALE+#4-40 Screw; (B)RJ-45 PLUG 8P8C; ONE PCS PKG; TC&C; RoHS

IO Interface

2 x IEI Networking Module Slot
Console Port
8 x 5GbE LAN
Power status
HDD status
Alert LED
2 x USB 3.2 Port
Reset Button
LCM with Two Control Buttons

Knockout for Antenna Connector
PCIe Expansion Slot
Power Inlet
Power Switch

Dimensions *(Unit: mm)*

PUZZLE-IN002

1U Rackmount Network Appliance with 8th & 9th Generation Intel® Core™ i7/i5/i3, Pentium® or Celeron® Processor, 1 PCIe slots

Features

- 8th & 9th Generation Intel® Core™ i7/i5/i3, Pentium® or Celeron® processor
- 6 x GbE RJ-45 via Intel® I211
- 2 x DDR4 2400 MHz Non-ECC UDIMM, up to 32GB
- 1 x RJ-45 Console, 2 x USB 3.2 Gen 1 (5Gb/s), LCM
- 2 x 2.5" SATA drive bay, 1 x M.2 A key (PCIe & USB 2.0), 1 x PCIe Mini card (SATA, USB 2.0) with SIM slot
- Support PCIe x16

Specifications

		PUZZLE-IN002-i3T	PUZZLE-IN002-PGT
Platform	Form Factor	1U	
	CPU	8th Generation Intel® Core™ i3-8100T processor, 4C/4T, up to 3.10 GHz	Intel® Pentium® Gold G5400T processor, 2C/4T, up to 3.10 GHz
	Chipset	Intel® H310	
Memory	Memory Technology	2 x DDR4 2400 MHz Non-ECC UDIMM	
	Memory Capacity	Up to 32GB	
	Memory Socket	2 x 288-pin DIMM	
Network and Security	Network Acceleration and Security Function	• Intel® AES New Instructions • Intel® Software Guard Extensions (Intel® SGX) • Intel® Memory Protection Extensions (Intel® MPX) • Intel® Trusted Execution Technology	
	TPM	1 x TPM 2.0 pin header	
Networking	Ethernet IC	1 GbE NIC: Intel® I211-AT	
	Ethernet Port	6 x 1GbE RJ-45 LAN ports	
	Network Module Slot	N/A	
Expansion Slot	PCIe Slot	1 x PCIe 3.0 x16 (FHHL) slot (double width)	
	PCIe Mini Card Slot	1 x PCIe Mini card (SATA 3.0, USB 2.0) with SIM slot	
	M.2	1 x M.2 A key (PCIe 2.0 & USB 2.0)	
Storage	Storage	2 x 2.5" SATA HDD/SSD bay support SATA 3.0 (6 Gbps)	
	eMMC	N/A	
	SD Card	N/A	
External I/O	USB	2 x USB 3.2 Gen 1 (5Gb/s)	
	Console	1 x RJ-45	
Internal I/O	HDMI	1 x HDMI connecter (optional)	
	USB	2 x USB 2.0 (pin header)	
Power and Mechanical	Power Switch	1 x Power switch	
	Reset Button	1 x Reset button	
	Power Input	100 V ~ 240 V	
	Type/Watt	ATX power 250W	
		90V~264V AC	
	Processor Cooling	1 x Passive CPU heatsink	
	System Cooling	4 x Cooling fans with smart fan	
	Antenna Hole	1 x Antenna hole	
Physical and Environmental	Storage Temperature	-20°C ~ 75°C (-4°F ~ 167°F)	
	Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)	
	Operating Humidity	5% ~ 90% non-condensing	
	Dimensions (W x L x H) (mm)	430 x 320 x 44.2	
	Weight	5 kg	
OS and Certifications	Certification	CE / FCC / RoHS	
	Operating System	Linux Ubuntu 18.04.04 CentOS 7 / Red Hat / Fedora EPEL Microsoft Windows 10	
Indicators	LCM	LCM, 2 buttons	
	LED	1 x Power LED, 1 x Storage LED, 1 x Alert LED	

Ordering Information

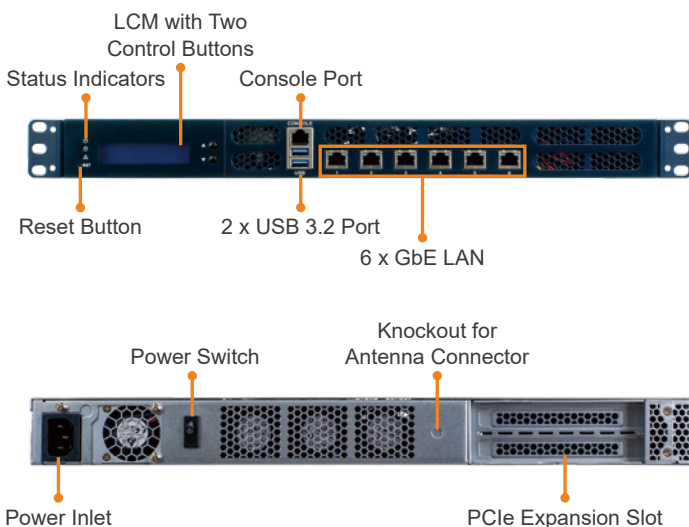| Part No.	Description
PUZZLE-IN002-R11*	1U Rackmount Network Appliance support Intel® Gen 8 Core™ i7, i5, i3, Pentium® or Celeron® processor, two DDR4 slots, and six 1GbE, one PCIe x16 expansion, RoHS
PUZZLE-IN002-i3T-R11	1U Rackmount Network Appliance with Intel® Gen 8 Core™ i3-8100T processor, two DDR4 slots, and six 1GbE, one PCIe x16 expansion, RoHS
PUZZLE-IN002-PGT-R11	1U Rackmount Network Appliance with Intel® Gen 8 Pentium® Gold G5400T processor, two DDR4 slots, and six 1GbE, one PCIe x16 expansion, RoHS
PUZZLE-IN002-i3T/8G-R11	1U Rackmount Network Appliance with Intel® Gen 8 Core™ i3-8100T processor, two 4GB DDR4, one 256GB SSD, six 1GbE, one PCIe x16 expansion, RoHS
PUZZLE-IN002-PGT/8G-R11	1U Rackmount Network Appliance with Intel® Gen 8 Pentium® Gold G5400T processor, two 4GB DDR4, one 256GB SSD, and six 1GbE, one PCIe x16 expansion, RoHS

* A CPU heatsink must be purchased separately

Packing List

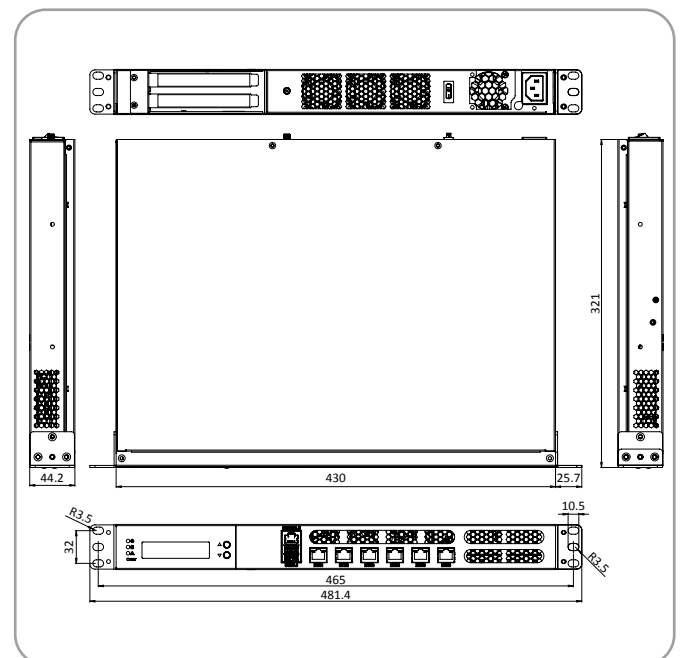|	PUZZLE-IN002	PUZZLE-IN002-i3T	PUZZLE-IN002-PGT	PUZZLE-IN002-i3T/8G	PUZZLE-IN002-PGT/8G
Power cord	1	1	1	1	1
Rack mounting ears	2	2	2	2	2
Screws for rack mounting ears	6	6	6	6	6
USB to console cable	Option	Option	Option	1	1
RS-232 to console cable	1	1	1	Option	Option
Slide rail	Option	Option	Option	Option	Option

Options

Item	Part No.	Description
USB to console cable	32013-004000-100-RS	ROUND CABLE; LAN CABLE; FTDI Console Cable; 2; 1800MM; (A)USB A TYPE 4P MALE+PCB:FTDI_FT232RL; (B)RJ-45 8P8C; RoHS
RS-232 to console cable	32005-005100-100-RS	ROUND CABLE; RS-232/422/485; PUZZLE RS-232 Cable; 2; 500MM; 24AWG; (A)D-SUB 9P MALE+#4-40 Screw; (B)RJ-45 PLUG 8P8C; ONE PCS PKG; TC&C; RoHS
HDMI cable	19B00-000403-00-RS	Z532; Accessory module; PUZZLE series HDMI cable assembly (only processor support graphics model); standard; 00, RoHS
Heatsink (TDP: 35W)	34000-000731-RS	HEATSINK; 90*90*27MM, GREASE:35*35mm_K=6.5; Washer*4+SPING SCREW Set*4, for CPU TDP 35W; RoHS
Heatsink (TDP: 80W)	34000-000722-RS	HEATSINK/Heat Pipe; FIN:89.5X88.4X20MM+Ø6 Heat Pipe*1, Copper Block:40*36*3MM + Aluminum Block:90*90*4.0MM; SCREW+SPRING+E-RING+WASHER*4, GREASE:X23-7762for CPU TDP 80W; RoHS

IO Interface

LCM with Two Control Buttons
Status Indicators
Console Port
Reset Button
2 x USB 3.2 Port
6 x GbE LAN

Power Switch
Knockout for Antenna Connector
Power Inlet
PCIe Expansion Slot

Dimensions (Unit: mm)

PUZZLE-9030

Features

- AMD 3rd Gen EPYC™ 7003 Processor Family (Codename: Milan)
- 8-channel DDR4 3200 MHz memory, support ECC RDIMM/ LRDIMM up to 4TB
- 2 x 2.5" U.2 (PCIe 4.0 x4) NVMe SSD or 2 x 3.5" SATA 6Gb/s HDD
- Support 2 SFP+, 4 NIC modules (PulM)
- 1 x Riser card for PCIe x16 expansion slot to rear
- 2 x M.2 2280/22110 & 1 x mSATA

Specifications

		PUZZLE-9030
Platform	**Form Factor**	1U
	CPU	2 x AMD® EPYC™ Milan 7543
	Chipset	Integrated in CPU
Memory	**Memory Technology**	ECC & Register DDR4 3200 MHz memory, up to 256GB per DIMM
	Memory Capacity	RDIMM/LRDIMM: up to 4TB
	Memory Socket	16 x 288-pin DIMM (8 DIMM/CPU) eight channels
IPMI	**IPMI Solution**	1 x AST2620 (RTL8211E)
Networking	**Ethernet Port**	1 x GbE RJ-45 Intel I211
	Network Module Slot	4 x PulM-100G2SF-CX6 (GenZ 4C+, PCIe Gen 4 x16)
Expansion Slot	**PCIe slot**	2 x PCIe x16 FHHL
Storage	**Storage**	2 x M.2 M key 2280 (PCIe 4.0 x4)
	U.2/SATA	2 x U.2 (PCIe 4.0 x4) or 2 x SATA 6Gb/s - (colay design)
External I/O	**USB**	2 x USB 3.1
	Console	1 x RJ-45
Power and Mechanical	**Reset Button**	1 x Reset button
	Power Input	AC power inlet on PSU AC 100V ~ 240V @47~63Hz
	Type/Watt	YM-2132EAR 90 ~ 132VAC @900W 100 ~ 132VAC @1000W 110 ~ 132VAC @1100W 180 ~ 264VAC @1300W
	Processor Cooling	2 x CPU heatsink
	System Cooling	6 x Individual hot-swappable cooling fans
Physical and Environmental	**Storage Temperature**	-10°C ~ 50°C
	Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)
	Operating Humidity	5% ~ 90% non-condensing
Supported OS and Certifications	**Certification**	RoHS, CE/FCC, UL
	Supported OS	Linux (CentOS, Red Hat, Ubuntu, etc.)
Indicators	**LED**	1 x Power / 1 x Status / 1 x Alert

Ordering Information

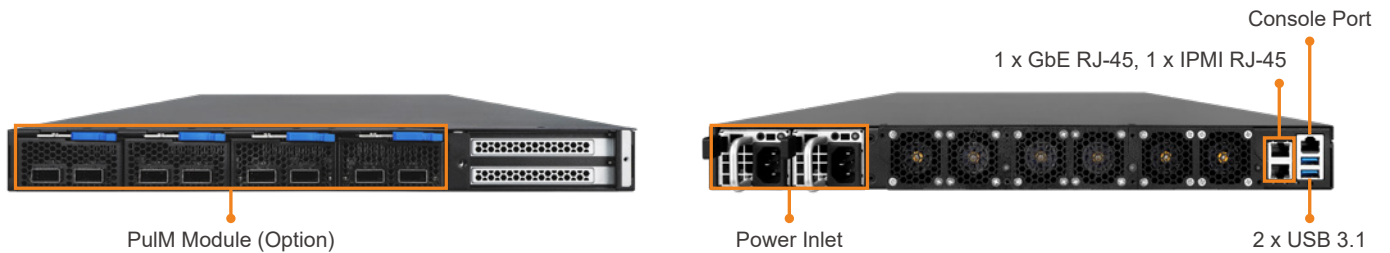| Part No.	Description
PUZZLE-9030	1U rackmount network appliance supporting AMD 3rd Gen EPYC™ 7003 Processor Family (codenamed Milan), 8-channel 3200 MHz DDR4 ECC RDIMM/LRDIMM up to 4TB, two 2.5" U.2 (PCIe 4.0 x4) NVMe SSD or two 3.5" SATA 6Gb/s HDD, two SFP+, four NIC modules (PulM), one riser card for PCIe x16 expansion slot to rear, two M.2 2280/22110 & one mSATA, support IPMI (optional)

Packing List

	PUZZLE-9030
Power cord	2
Rack mounting ears	2
Screw for rack mounting ears	6
USB to console cable	1
RS-232 to console cable	Optional
Slide rail	Optional

Options

Item	Part No.	Description
Slide rail		Slide rail kit for PUZZLE-9030
USB to console cable	32013-004000-100-RS	ROUND Cable; LAN Cable; FTDI Console Cable; 2; 1800MM; (A)USB A TYPE 4P MALE+PCB:FTDI_FT232RL; (B)RJ-45 8P8C; RoHS
RS-232 to console cable	32005-005100-100-RS	ROUND Cable; RS-232/422/485; PUZZLE RS-232 Cable; 2; 500MM; 24AWG; (A)D-SUB 9P MALE+#4-40 Screw; (B)RJ-45 8P8C; ONE PCS PKG; TC&C; RoHS

IO Interface

PulM Module (Option)

Console Port

1 x GbE RJ-45, 1 x IPMI RJ-45

Power Inlet

2 x USB 3.1

Dimensions *(Unit: mm)*

438.00

670.00

24.30   M4 NUT   24.30

44.20   22.20

61   92   92   184   92
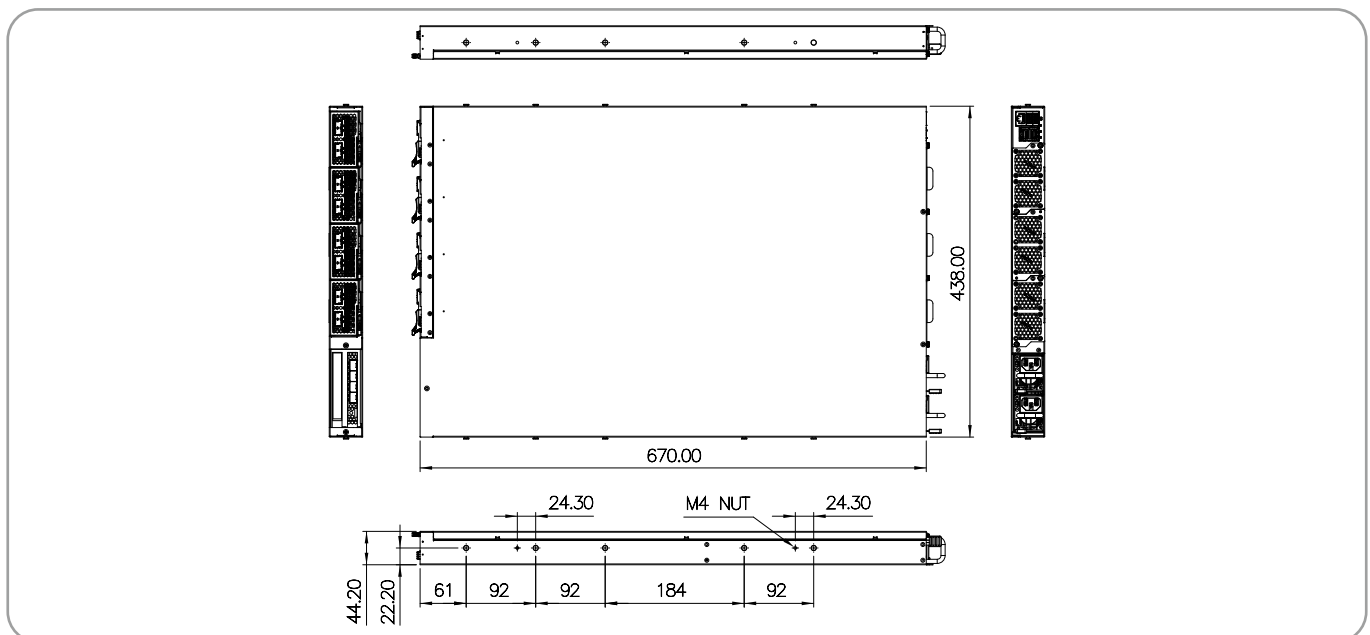
PUZZLE–3034

Features

- Intel® Atom® C3758R 8C/8T (16M Cache, 2.4 GHz)
- 2 x DDR4 2400 MHz non-ECC UDIMM
- 8 x 2.5GbE RJ-45 LAN ports, 4 x 10 GbE SFP+
- 1 x RJ-45 console, 2 x USB 3.0
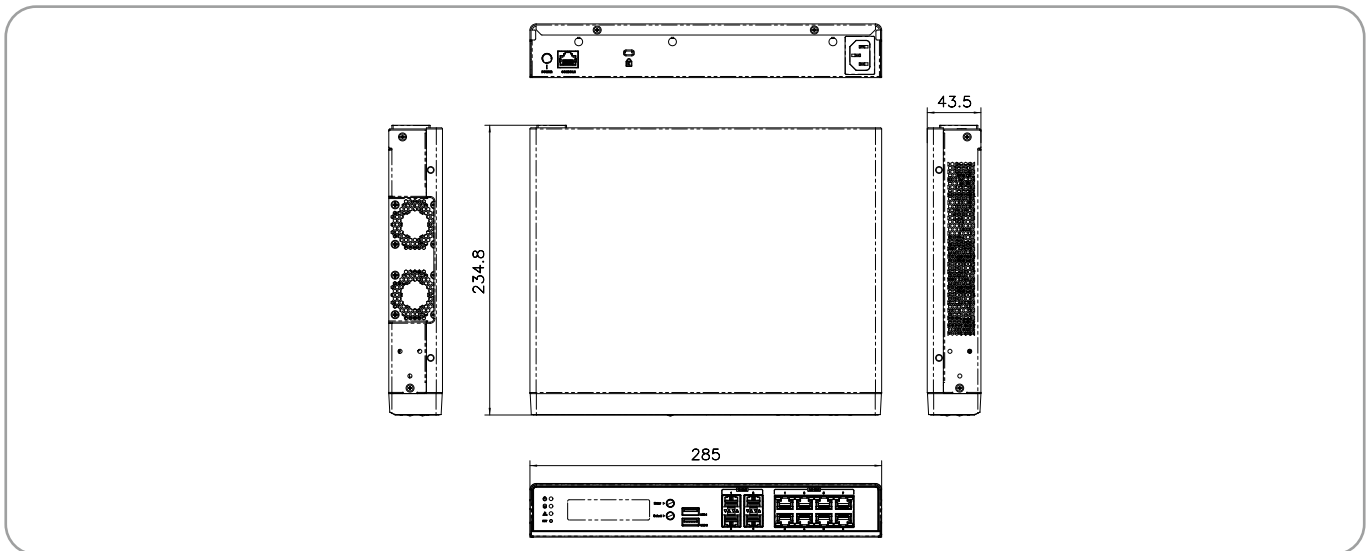 (support UPS equipment only)
- SATA DOM, 64GB eMMC

Specifications

		PUZZLE-3034
Platform	**Form Factor**	Desktop
	CPU	Intel® Atom® C3758R 8C/8T (16M Cache, 2.4 GHz)
	Chipset	Intel® Denverton-R
Memory	**Memory Technology**	2 x DDR4 2400 MHz Non-ECC UDIMM Default: 2 x UDIMM 8G
	Memory Capacity	Up to 64GB (based on DIMM capacity)
	Memory Socket	2 x 288-pin DIMM
Network and Security	**Network acceleration and Security function**	Intel® AES New Instructions Intel® Software Guard Extensions (Intel® SGX) Intel® Memory Protection Extensions (Intel® MPX) Intel® Trusted Execution Technology
Networking	**Ethernet IC**	Intel 2.5GbE KTI225V SLNMH
	Ethernet Port	8 x 2.5 GbE RJ-45 LAN ports 4 x 10 GbE, SFP+
Expansion Slot	**M.2**	1 x 2242 B key slot for M.2 SATA 1 x 3052 B key slot + SIM card socket for 5G/LTE card 2 x 2280 M key slot for NVME
Storage	**eMMC**	64GB eMMC
External I/O	**USB**	2 x USB 3.0 (support UPS equipment only)
	Console	1 x RJ-45
Power and Mechanical	**Power Switch**	1 x Power button
	Reset Button	1 x Reset button
	Power Input	101 V ~ 240 V
	Type/Watt	Open-frame DPS-60AP-5 D; Vin: 90 ~ 264VAC; 71W
	Processor Cooling	2 x Passive CPU heatsink
	System Cooling	2 x Cooling fans
	Antenna Port	4 x Antenna port
Physical and Environmental	**Storage Temperature**	-10°C ~ 50°C
	Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)
	Operating Humidity	5% ~ 90% non-condensing
	Dimensions (W x H x D) (mm)	46.65 x 285 x 236.7
Supported OS and Certifications	**Certification**	CE, FCC, VCCI, RCM
	Supported OS	Linux Ubuntu 18.04.05
Indicators	**LCM**	16 x 3 character with control keys
	LED	1 x Power LED, 1 x Storage LED, 1 x Alert LED

IO Interface

4 x 10 GbE, SFP+   8 x 2.5GbE RJ-45

Power LED
Storagr LED
Alert LED

Enter ▶
Select ▶

USB 1
USB 2

2 x USB 3.0
(support UPS equipment only)

Power Button

Power Inlet

Console

Dimensions *(Unit: mm)*

43.5

234.8

285

Ordering Information

Part No.	
PUZZLE-3034	Desktop network appliance with Intel® Atom® C3758R 8C/8T (16M cache, 2.4 GHz), two DDR4 2400 MHz non-ECC UDIMM, eight 2.5GbE RJ-45 LAN ports, four 10 GbE SFP+, one RJ-45 console, two USB 3.0 (support UPS equipment only), SATA DOM, 64GB eMMC

Packing List

	PUZZLE-3034
Power cord	1
Rack mounting ears	2
Screw for rack mounting ears	6

Options

	Part No.	Description
USB to console cable	32013-004000-100-RS	ROUND Cable; LAN Cable; FTDI Console Cable; 2; 1800MM; (A)USB A TYPE 4P MALE+PCB:FTDI_FT232RL; (B)RJ-45 8P8C; RoHS
RS-232 to console cable	32005-005100-100-RS	ROUND Cable; RS-232/422/485; PUZZLE RS-232 Cable; 2; 500MM; 24AWG; (A)D-SUB 9P MALE+#4-40 Screw; (B)RJ-45 8P8C; ONE PCS PKG; TC&C; RoHS

PUZZLE–3032

Features

- Intel® Atom® C3558R 4C/4T (8M cache, 2.4 GHz)
- 2 x DDR4 2400 MHz non-ECC UDIMM
- 8 x 2.5GbE RJ-45 LAN ports, 2 x 10 GbE SFP+
- 1 x RJ-45 console, 2 x USB 3.0
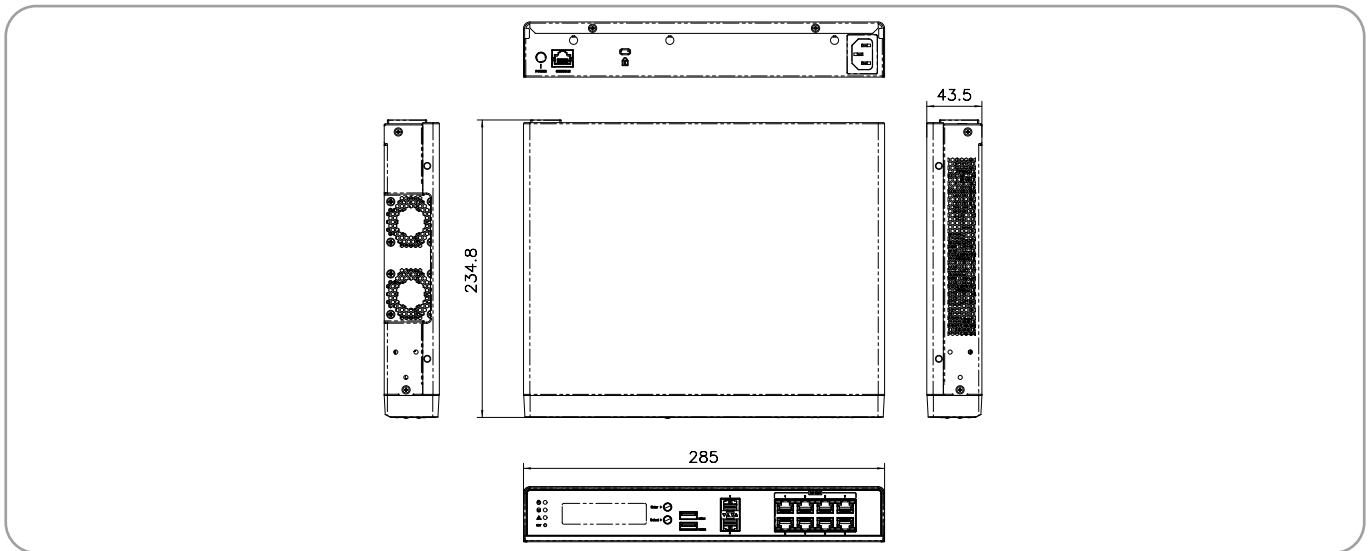 (support UPS equipment only)
- SATA DOM, 64GB eMMC

Specifications

		PUZZLE-3032
Platform	**Form Factor**	Desktop
	CPU	Intel® Atom® C3558R 4C/4T (8M cache, 2.4 GHz)
	Chipset	Intel® Denverton-R
Memory	**Memory Technology**	2 x DDR4 2400 MHz non-ECC UDIMM Default: 1 x UDIMM 8G
	Memory Capacity	Up to 64GB (based on DIMM capacity)
	Memory Socket	2 x 288-pin DIMM
Network and Security	**Network Acceleration and Security Function**	Intel® AES New Instructions Intel® Software Guard Extensions (Intel® SGX) Intel® Memory Protection Extensions (Intel® MPX) Intel® Trusted Execution Technology
Networking	**Ethernet IC**	Intel 2.5GbE KTI225V SLNMH
	Ethernet Port	8 x 2.5GbE RJ-45 LAN ports 2 x 10 GbE, SFP+
Expansion Slot	**M.2**	1 x 2242 B key slot for M.2 SATA 1 x 3052 B key slot + SIM card socket for 5G/LTE card 2 x 2280 M key slot for NVME
Storage	**eMMC**	64GB eMMC
External I/O	**USB**	2 x USB 3.0 (support UPS equipment only)
	Console	1 x RJ-45
Power and Mechanical	**Power Switch**	1 x Power button
	Reset Button	1 x Reset button
	Power Input	100 V ~ 240 V
	Type/Watt	Open-frame DPS-60AP-5 D; Vin: 90 ~ 264VAC; 70W
	Processor Cooling	1 x Passive CPU heatsink
	System Cooling	2 x Cooling fans
	Antenna Port	3 x Antenna hole (reserved)
Physical and Environmental	**Storage Temperature**	-10°C ~ 50°C
	Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)
	Operating Humidity	5% ~ 90% non-condensing
	Dimensions (W x H x D) (mm)	46.65 x 285 x 236.6
Supported OS and Certifications	**Certification**	CE, FCC, VCCI, RCM
	Supported OS	Linux Ubuntu 18.04.05
Indicators	**LCM**	16 x 2 character with control keys
	LED	1 x Power LED, 1 x Storage LED, 1 x Alert LED

IO Interface

2 x 10 GbE, SFP+

8 x 2.5 GbE RJ-45

Power LED
Storagr LED
Alert LED

2 x USB 3.0
(support UPS equipment only)

Power Button

Power Inlet

Console

Dimensions *(Unit: mm)*

43.5

234.8

285

Ordering Information

Part No.	Description
PUZZLE-3032	Desktop network appliance with Intel® Atom® C3558R processor, two DDR4 2400 MHz non-ECC UDIMM, eight 2.5GbE RJ-45 LAN ports, two 10 GbE SFP+, one RJ-45 console, two USB 3.0 (support UPS equipment only), SATA DOM, 64GB eMMC

Packing List

	PUZZLE-3032
Power cord	1
Rack mounting ears	2
Screw for rack mounting ears	6

Options

	Part No.	Description
USB to console cable	32013-004000-100-RS	ROUND Cable; LAN Cable; FTDI Console Cable; 2; 1800MM; (A)USB A TYPE 4P MALE+PCB:FTDI_FT232RL; (B)RJ-45 8P8C; RoHS
RS-232 to console cable	32005-005100-100-RS	ROUND Cable; RS-232/422/485; PUZZLE RS-232 Cable; 2; 500MM; 24AWG; (A)D-SUB 9P MALE+#4-40 Screw; (B)RJ-45 8P8C; ONE PCS PKG; TC&C; RoHS

PUZZLE–IN003A

Desktop Network Appliance with Intel® Atom® Processor C3000 Processor, up to 8 x 1 GbE on Board with 2 (by sku) bypass segments, 1 x eMMC 32GB

Features

- Intel® Atom® processor C3558 8M Cache, up to 2.20 GHz
- Support 4 x 1 GbE NIC via Intel® I211, 4 x 1 GbE PHY via Marvell 88E1543
- Support bypass function (by sku)
- DDR4 2133 MHz ECC (by CPU) or non-ECC UDIMM/R-DIMM Up to 128GB
- 1 x M.2 A key (USB 2.0, PCIe x1), 1 x miniPCIe (USB 2.0, PCIe x1) with SIM card slot, 1 x eMMC 32GB

Specifications

		PUZZLE-IN003A-C1	PUZZLE-IN003A-C3
Platform	Form Factor	Desktop	
	CPU	Intel® Atom® processor C3558 8M cache, up to 2.20 GHz	Intel® Atom® Processor C3336 4M Cache, 1.50 GHz
	Chipset	Integrated in CPU	
Memory	Memory Technology	DDR4 2133 MHz ECC (By CPU) or non-ECC UDIMM, Support DDR4 RDIMM	
	Memory Capacity	UDIMM up to 64GB / RDIMM up to 128GB	
	Memory Socket	2 x 288-pin DIMM	1 x 288-pin DIMM
Network and Security	Network Acceleration and Security Function	• Intel® AES New Instructions • Intel® Software Guard Extensions (Intel® SGX) • Intel® Virtualization Technology for Directed I/O (VT-d) • Intel® QuickAssist Technology (Intel® QAT)	• Intel® Virtualization Technology for Directed I/O (VT-d) • Intel® Virtualization Technology (VT-x) • Intel® QuickAssist Technology (Intel® QAT)
	TPM	1 x TPM 2.0 pin header	
Networking	Ethernet IC	1 GbE NIC: Intel® i211-AT 1 GbE PHY: Marvell 88E1543	
	Ethernet Port	4 x GbE from Intel® i211-AT 4 x GbE from Marvell 88E1543	4 x GbE from Intel® i211-AT 2 x GbE from Marvell 88E1543
	Bypass	Yes, 2 bypass segments	Yes, 1 bypass segments
	Network Module Slot	N/A	
Expansion Slot	PCIe Slot	N/A	
	PCIe Mini Card Slot	1 x PCIe Mini card (PCIe 3.0, USB 2.0) with SIM slot	
	M.2	1 x M.2 A key (PCIe 3.0 & USB 2.0)	
Storage	Storage	1 x SATA 3.0 + 1 x 5V power connector (for SATA DOM) 1 x M.2 M key 2260/2280 Support PCIe 3.0 x4 nVME	
	eMMC	1 x eMMC 32GB	
	SD Card	N/A	
External I/O	USB	1 x USB 2.0 1 x USB 3.2 Gen 1	
	Console	1 x RJ-45	
Internal I/O	HDMI	N/A	
	USB	N/A	
Power and Mechanical	Power Switch	1 x Power switch	
	Reset Button	1 x Reset button	
	Power Input	1 x DC jack	
	Type/Watt	12 V DC-in, 60W	
	Processor Cooling	Passive CPU heatsink	
	System Cooling	Fanless	
	Antenna Hole	2 x Antenna hole	
Physical and Environmental	Storage Temperature	-20°C ~ 75°C (-4°F ~ 167°F)	
	Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)	
	Operating Humidity	5% ~ 90% non-condensing	
	Dimensions (W x L x H) (mm)	225 x 206 x 44.2	
	Weight	2 kg	
OS and Certifications	Certification	CE / FCC / RoHS	
	Operating System	Linux Ubuntu 18.04.04 CentOS 7 / Red Hat / Fedora EPEL Microsoft Windows 10	
Indicators	LCM	N/A	
	LED	1 x Power LED, 1 x Storage LED, 1 x Alert LED	

Ordering Information

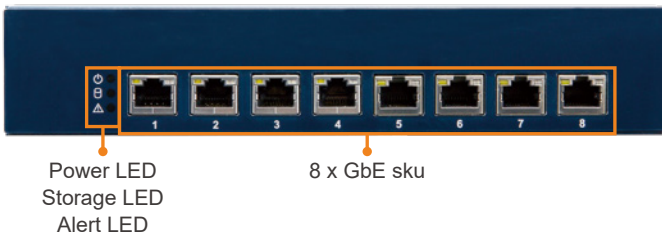| Part No.	Description
PUZZLE-IN003A-C1-R10	Desktop network appliance with Intel® ATOM® C3558 processor, 8 x 1GbE on Board with up to 2 bypass segments, eMMC 32GB & 2 x M.2 slot, RoHS
PUZZLE-IN003A-C1/8G-R10	Desktop network appliance with Intel® ATOM® C3558 processor, 8 x 1GbE on Board with up to 2 bypass segments, 8GB DDR4, eMMC 32GB & 2 x M.2 slot, RoHS
PUZZLE-IN003A-C3-R10	Desktop network appliance with Intel® ATOM® C3336 processor, 6 x 1GbE on Board with up to 1 bypass segments, eMMC 32GB & 2 x M.2 slot, RoHS
PUZZLE-IN003A-C3/8G-R10	Desktop network appliance with Intel® ATOM® C3336 processor, 6 x 1GbE on Board with up to 1 bypass segments, 8GB DDR4, eMMC 32GB & 2 x M.2 slot, RoHS

Packing List

	PUZZLE-IN003A-C1-R10	PUZZLE-IN003A-C1/8G-R10	PUZZLE-IN003A-C3-R10	PUZZLE-IN003A-C3/8G-R10
Power cord	1	1	1	1
Power adapter	1	1	1	1
Rack mounting ears	Option	2	Option	2
Screws for rack mounting ears	Option	6	Option	6
USB to console cable	Option	1	option	1
RS-232 to console cable	1	Option	1	Option

Options

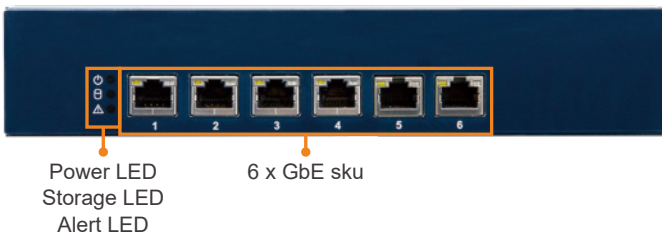| Item	Part No.	Description
USB to console cable	32013-004000-100-RS	Round cable, LAN cable, FTDI console cable, 2, 1800MM, (A) USB A TYPE 4P MALE+PCB:FTDI_FT232RL, (B) RJ-45 8P8C, RoHS
RS-232 to console cable	32005-005100-100-RS	Round cable, RS-232/422/485, PUZZLE RS-232 cable, 2, 500MM, 24AWG, (A) D-SUB 9P MALE+#4-40 screw, (B) RJ-45 PLUG 8P8C, ONE PCS PKG, TC&C, RoHS
Rack ear mounting kit	19B00-000417-00-RS	Accessory module: PUZZLE-IN003 series rack ear mounting kit

IO Interface

PUZZLE-IN003A-C1

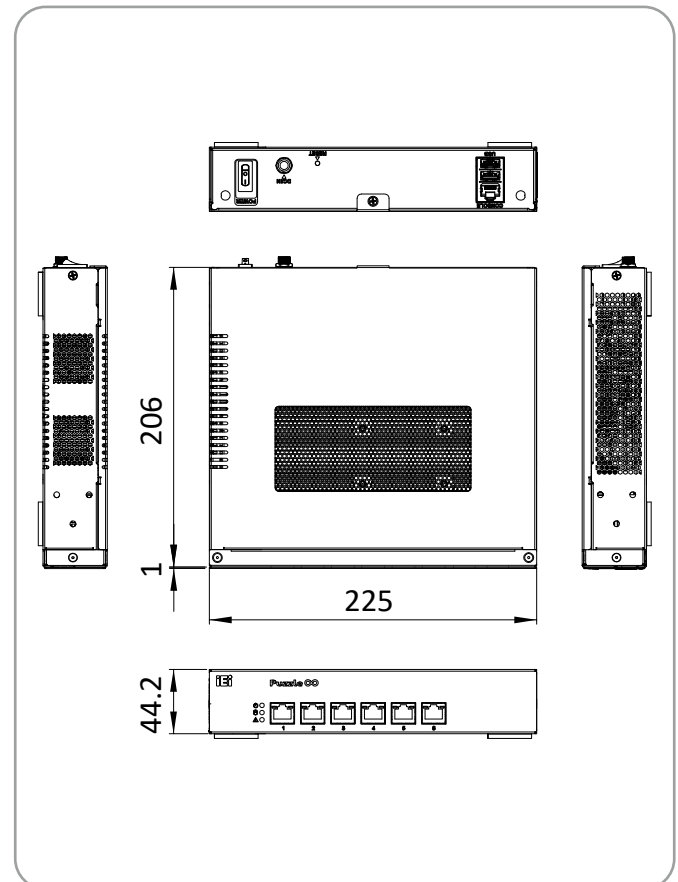Power LED
Storage LED
Alert LED

8 x GbE sku

PUZZLE-IN003A-C3

Power LED
Storage LED
Alert LED

6 x GbE sku

Rear view

Antenna Port

CONSOLE
USB 2.0
USB 3.0

Reset   DC/IN   Power

Dimensions *(Unit: mm)*

206

1

225

44.2

PUZZLE−IN003B

Desktop Network Appliance with Intel® Atom® Processor C3000 Processor support up to 6 x 1 GbE, 2 x 10 GbE & 2 x M.2 slots, 1 x PCIe Mini, 1 x eMMC 32GB

Features

- Intel® Atom® processor C3558 8M Cache, up to 2.20 GHz
- Support 4 x 1 GbE NIC via Intel® C3558, 2 x 1 GbE PHY via Marvell 88E1512, 2 x 10 GbE SFP+ via intel C3558
- DDR4 2133 MHz ECC (by CPU) or non-ECC UDIMM/R-DIMM Up to 128GB
- 1 x M.2 A key (USB 2.0, PCIe x1), 1 x miniPCIe (USB 2.0, PCIe x1) with SIM card slot, 1 x eMMC 32GB

Specifications

		PUZZLE-IN003B-C0	PUZZLE-IN003B-C1
Platform	Form Factor	Desktop	
	CPU	Intel® Atom® processor C3758 16M cache, up to 2.20 GHz	Intel® Atom® processor C3558 8M cache, up to 2.20 GHz
	Chipset	Integrated in CPU	
Memory	Memory Technology	DDR4 2133 MHz ECC (By CPU) or non-ECC UDIMM, Support DDR4 RDIMM	
	Memory Capacity	UDIMM up to 64GB / RDIMM up to 128GB	
	Memory Socket	4 x 288-pin DIMM	
Network and Security	Network Acceleration and Security Function	• Intel® AES New Instructions • Intel® Software Guard Extensions (Intel® SGX) • Intel® Memory Protection Extensions (Intel® MPX) • Intel® Virtualization Technology for Directed I/O (VT-d) • Intel® QuickAssist Technology (Intel® QAT)	• Intel® AES New Instructions • Intel® Software Guard Extensions (Intel® SGX) • Intel® Virtualization Technology for Directed I/O (VT-d) • Intel® QuickAssist Technology (Intel® QAT)
	TPM	1 x TPM 2.0 pin header	
Networking	Ethernet IC	1 GbE NIC: Intel® i211-AT 1 GbE PHY: Marvell 88E1512 10 GbE: Intel® X553 integrated in CPU	
	Ethernet Port	4 x 1GbE from Intel® i211-AT 2 x 1GbE from Marvell 88E1512 2 x 10 GbE SFP+	
	Network Module Slot	N/A	
Expansion Slot	PCIe Slot	N/A	
	PCIe Mini Card Slot	1 x PCIe Mini card (PCIe 3.0, USB 2.0) with SIM slot	
	M.2	1 x M.2 A key (PCIe 3.0& USB 2.0)	
Storage	Storage	1 x SATA 3.0 + 1 x 5V power connector (for SATA DOM) 1 x M.2 M key 2260/2280 Support PCIe 3.0 x4 nVME	
	eMMC	1 x eMMC 32GB	
	SD Card	N/A	
External I/O	USB	1 x USB 2.0 1 x USB 3.2 Gen 1	
	Console	1 x RJ-45	
Internal I/O	HDMI	N/A	
	USB	N/A	
Power and Mechanical	Power Switch	1 x Power switch	
	Reset Button	1 x Reset button	
	Power Input	1 x DC jack	
	Type/Watt	12 V DC-in, 60W	
	Processor Cooling	Passive CPU heatsink	
	System Cooling	Two system fans	Fanless
	Antenna Hole	2 x Antenna hole	
Physical and Environmental	Storage Temperature	-20°C ~ 75°C (-4°F ~ 167°F)	
	Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)	
	Operating Humidity	5% ~ 90% non-condensing	
	Dimensions (W x L x H) (mm)	225 x 206 x 44.2	
	Weight	2 kg	
OS and Certifications	Certification	CE / FCC / RoHS	
	Operating System	Linux Ubuntu 18.04.04 CentOS 7 / Red Hat / Fedora EPEL Microsoft Windows 10	
Indicators	LCM	N/A	
	LED	1 x Power LED, 1 x Storage LED, 1 x Alert LED	

Ordering Information

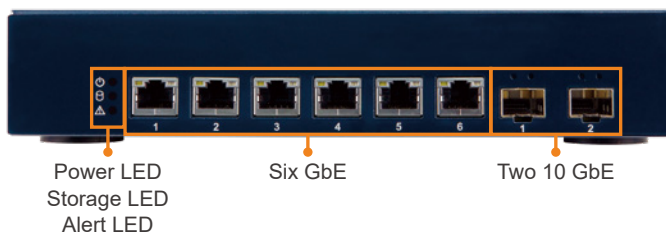| Part No.	Description
PUZZLE-IN003B-C0-R10	Desktop network appliance with Intel® ATOM® C3758 processor, 4 x DDR4 slots, 6 x 1GbE, 2 x 10 GbE & 2 x M.2 slots, 1 x PCIe Mini slot, 1 x eMMC 32GB, RoHS
PUZZLE-IN003B-C0/8G-R10	Desktop network appliance with Intel® ATOM® C3758 processor, one 8GB DDR4, 6 x 1GbE, 2 x 10 GbE & 2 x M.2 slots, 1 x PCIe Mini slot, 1 x eMMC 32GB, RoHS
PUZZLE-IN003B-C1-R10	Desktop network appliance with Intel® ATOM® C3558 processor, 4 x DDR4 slots, 6 x 1GbE, 2 x 10 GbE & 2 x M.2 slots, 1 x PCIe Mini slot, 1 x eMMC 32GB, RoHS
PUZZLE-IN003B-C1/8G-R10	Desktop network appliance with Intel® ATOM® C3558 processor, one 8GB DDR4, 6 x 1GbE, 2 x 10 GbE & 2 x M.2 slots, 1 x PCIe Mini slot, 1 x eMMC 32GB, RoHS

Packing List

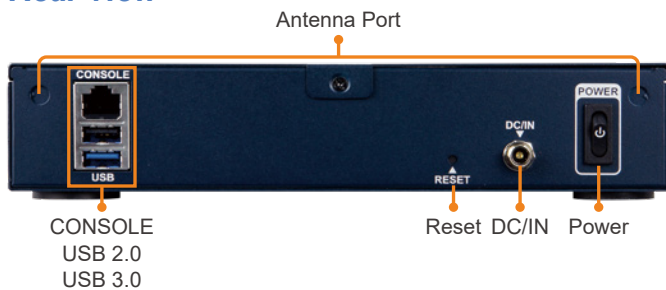|	PUZZLE-IN003B-C0-R10	PUZZLE-IN003B-C0/8G-R10	PUZZLE-IN003B-C1-R10	PUZZLE-IN003B-C1/8G-R10
Power cord	1	1	1	1
Power adapter	1	1	1	1
Rack mounting ears	Option	2	Option	2
Screws for rack mounting ears	Option	6	Option	6
USB to console cable	Option	1	Option	1
RS-232 to console cable	1	Option	1	Option

Options

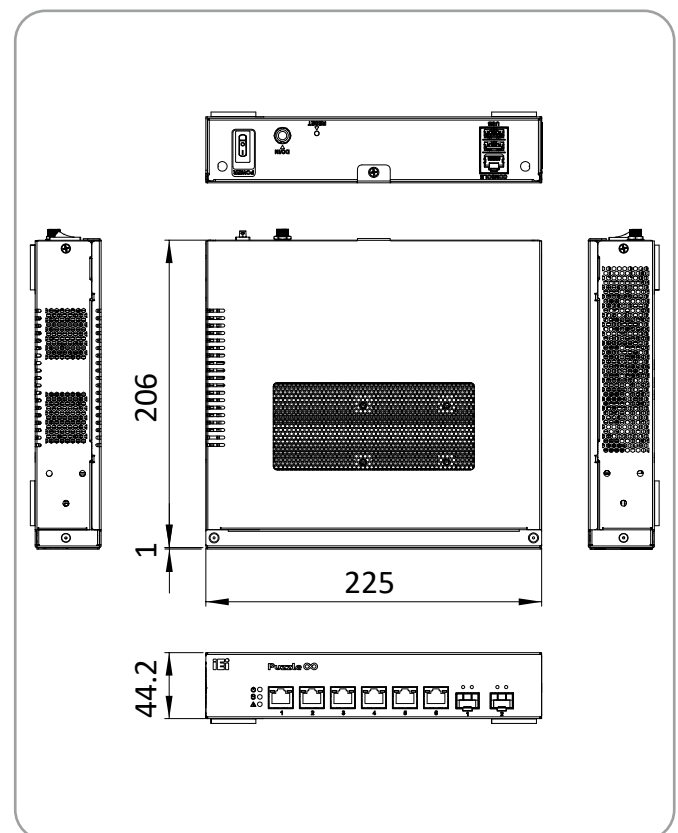| Item	Part No.	Description
USB to console cable	32013-004000-100-RS	Round cable, LAN cable, FTDI console cable, 2, 1800MM, (A) USB A TYPE 4P MALE+PCB:FTDI_FT232RL, (B) RJ-45 8P8C, RoHS
RS-232 to console cable	32005-005100-100-RS	Round cable, RS-232/422/485, PUZZLE RS-232 cable, 2, 500MM, 24AWG, (A) D-SUB 9P MALE+#4-40 screw, (B) RJ-45 PLUG 8P8C, ONE PCS PKG, TC&C, RoHS
Rack ear mounting kit	19B00-000417-00-RS	Accessory module: PUZZLE-IN003 series rack ear mounting kit

IO Interface

Power LED / Storage LED / Alert LED — Six GbE — Two 10 GbE

Rear view

Antenna Port
CONSOLE USB 2.0 USB 3.0 — Reset — DC/IN — Power

Dimensions (Unit: mm)

206, 1, 225, 44.2

PUZZLE-M901

Features

- Marvell CN9130 quad-core ARMv8 cortex-A72 @ up to 2200 MHz
- Six 2.5 GbE RJ-45 ports
- Onboard 4 GB eMMC, one console port (pin-header)
- LED indicators: Status/Power & WAN/LAN interface indicator
- Pre-installed OpenWrt
- Support M.2 2242 M key (PCIe Gen 3 x2)

Specifications

		PUZZLE-M901
Form Factor	Desktop	Desktop
	CPU	Marvell® CN9130 quad-core ARMv8 Cortex-A72 @ up to 2200 MHz
Memory	System Memory	4GB
	Flash Memory	64GB
Networking	Ethernet IC	Aquantia AQR112R
		Aquantia AQR112C
		Aquantia AQR112
	Ethernet Port	1 x 2.5GbE LAN integrated in CPU via PHY Aquantia AQR112R
		1 x 2.5GbE LAN integrated in CPU via PHY Aquantia AQR112C
		1 x 2.5GbE LAN integrated in CPU via PHY Aquantia AQR112
		1 x 2.5GbE LAN via Marvell 88F8215 (PHY: Aquantia AQR112R)
		1 x 2.5GbE LAN via Marvell 88F8215 (PHY: Aquantia AQR112C)
		1 x 2.5GbE LAN via Marvell 88F8215 (PHY: Aquantia AQR112)
Expansion slot	M.2	M.2 2242 M key (PCIe Gen 3 x2)
Storage	eMMC	1 x 4GB eMMC
External I/O	USB	USB 3.2 Gen 1 (5Gb/s)
Power and Mechanical	Reset Button	1 x Reset to factory default
	System Cooling	Active fan
Physical and Environmental	Storage Temperature	-20°C ~ 75°C (-4°F ~ 167°F)
	Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)
	Relative Humidity	5% ~ 95% non-condensing, wet bulb: 27°C
	Dimensions (W x L x H) (mm)	166.4 x 145.7 x 34
OS and Certifications	Certification	CE/FCC/BSMI (BSMI safety)/VCCI, LVD
	Operating System	OpenWrt
	Forum	OpenWrt forum
	FAQ	OpenWr FAQ
Indicators	LED Indicators	Status/Power, WAN/LAN interface indicator
	System Warning	Beep

Ordering Information

Part No.	Description
PUZZLE-M901-CN1-R10	Desktop network appliance with Marvell CN9130 processor, six 2.5GbE, on-board 4GB eMMC, one M.2 slot, RoHS

Packing List

	PUZZLE-M901-CN1-R10
Power cord	1
Power adapter	1

IO Interface

Reset Buttom

WAN

2.5GbE (RJ-45)

DC IN

M.2 Slot

Dimensions (Unit: mm)

145.7

166.4

34

29.85

PUZZLE-M901 System Block Diagram

2.5 GbE — AQR112R

2.5 GbE — AQR112C

2.5 GbE — AQR112

2.5 GbE — AQR112R

2.5 GbE — AQR112C

2.5 GbE — AQR112

Marvell 88F8215

Marvell CN9130

eMMC — eMMC 4GB

M.2 — M.2 2242 M key (PCIe Gen3 x2)
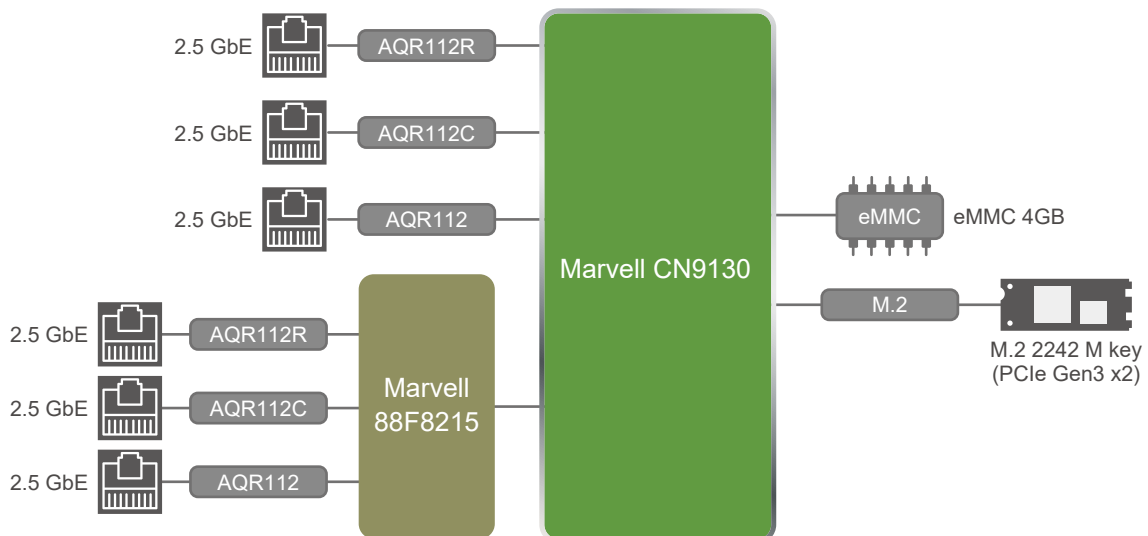
PUZZLE-M902

Desktop network appliance with Marvell CN9130 processor, six 2.5GbE and three 10 GbE, on-board 4GB eMMC, one M.2 slot

Features

- Marvell CN9130 quad-core ARMv8 cortex-A72 @ up to 2200 MHz
- Six 2.5 GbE RJ-45 ports & Three 10 GbE RJ-45 ports
- Onboard 4 GB eMMC, one console port (pin-header)
- LED indicators : Status/Power & WAN/LAN interface indicator
- Pre-installed OpenWrt
- Support M.2 2242/2280 M key (PCIe Gen 3 x1)

Specifications

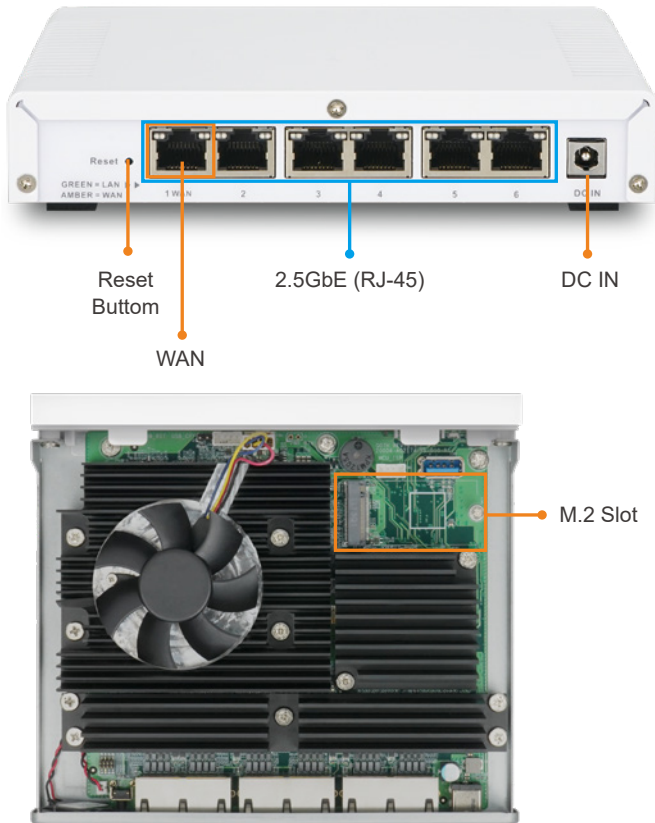|		PUZZLE-M902
Form Factor	Desktop	Desktop
	CPU	Marvell® CN9130 quad-core ARMv8 Cortex-A72 @ up to 2200 MHz
Memory	System Memory	4GB
	Flash Memory	64GB
Networking	Ethernet IC	Aquantia AQR112R
		Aquantia AQR113
	Ethernet Port	2 x 2.5GbE LAN integrated in CPU via PHY Aquantia AQR112R
		4 x 2.5GbE LAN via Marvell 88F8215 (PHY: Aquantia AQR112R)
		1 x 10GbE LAN integrated in CPU via PHY Aquantia AQR113
		2 x 10GbE LAN via Marvell 88F8215 (PHY: Aquantia AQR113)
Expansion slot	M.2	M.2 2242/2280 M key (PCIe Gen 3 x1)
Storage	eMMC	1 x 4GB eMMC
External I/O	USB	USB 3.2 Gen 1 (5Gb/s)
Power and Mechanical	Reset Button	to factory default
	System Cooling	1 system fan
Physical and Environmental	Storage Temperature	-20°C ~ 75°C (-4°F ~ 167°F)
	Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)
	Relative Humidity	5% ~ 95% non-condensing, wet bulb: 27˚C
	Dimensions (W x L x H) (mm)	226 x140 x 50.5
OS and Certifications	Certification	CE/FCC/BSMI (BSMI safety)/VCCI, LVD
	Operating System	OpenWrt
	Forum	OpenWrt forum
	FAQ	OpenWr FAQ
Indicators	LED Indicators	Status/Power, WAN/LAN interface indicator
	System Warning	Beep

Ordering Information

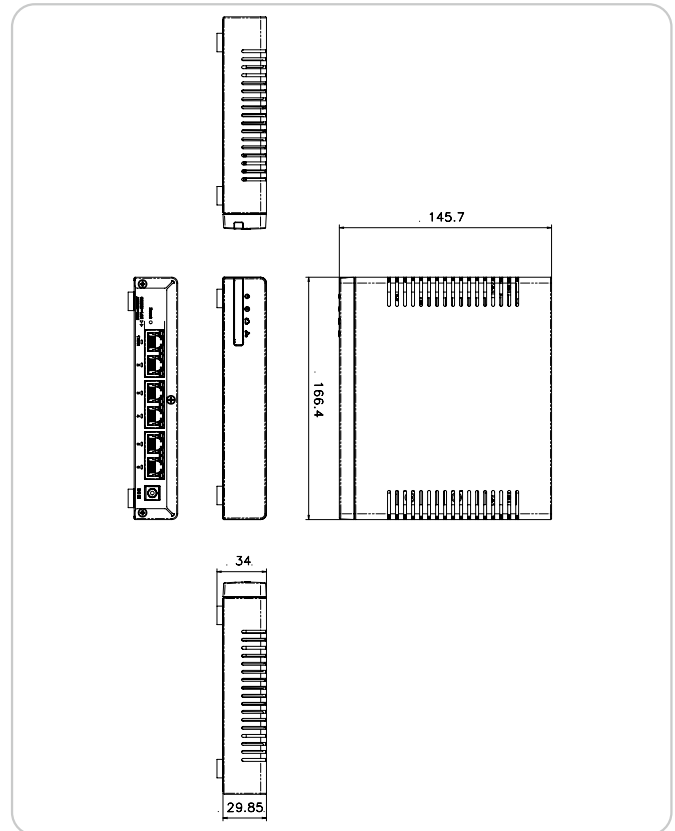| Part No.	Description
PUZZLE-M902-CN1-R10	Desktop network appliance with Marvell CN9130 processor, six 2.5GbE and three 10 GbE, on-board 4GB eMMC, one M.2 slot, RoHS

Packing List

	PUZZLE-M902-CN1-R10
Power cord	1
Power adapter	1

IO Interface

DC IN   WAN   2.5GbE (RJ-45)   10GbE (RJ-45)   Reset Buttom

USB 3.2 Gen 1 (5Gb/s)

M.2 Slot

Dimensions *(Unit: mm)*

44.4
140
226
50.5
138
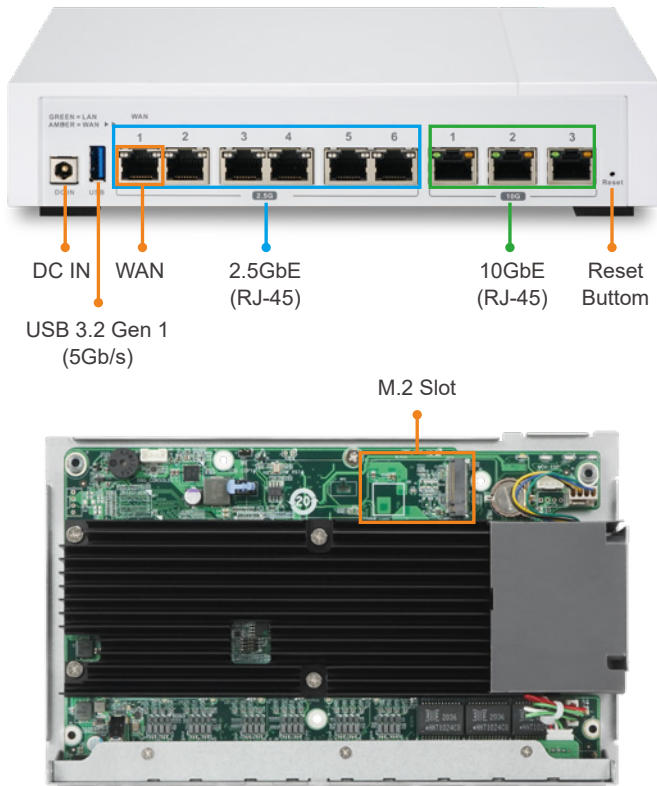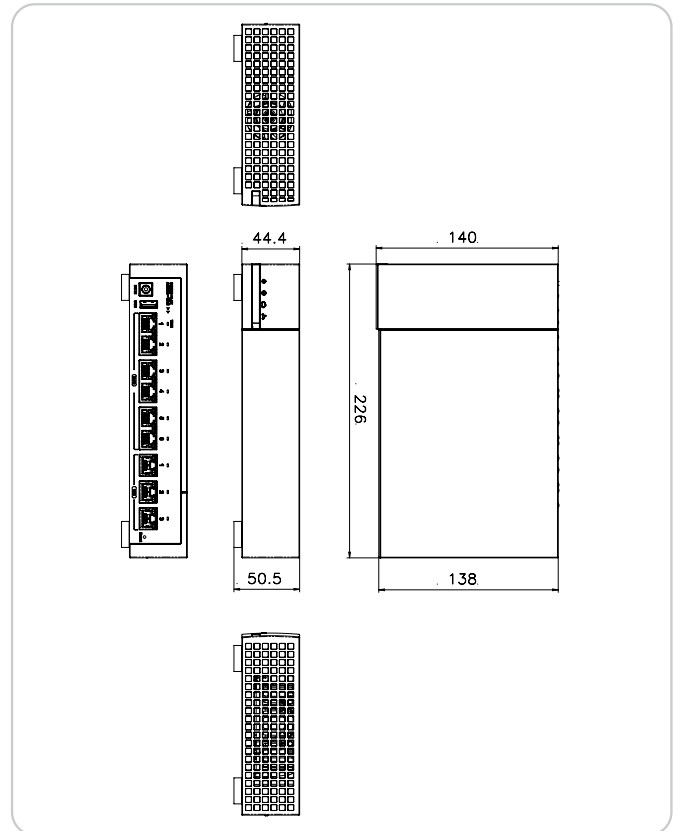
PUZZLE-M902 System Block Diagram

2 x 2.5 GbE — 2 x AQR112R

10 GbE — AQR113

4 x 2.5 GbE — 4 x AQR112R — Marvell 88F8215

2 x 10 GbE — 2 x AQR113

USB 3.2 Gen 1 — Marvell 88F8215

Marvell CN9130

eMMC — eMMC 4GB

M.2 — M.2 2242/2280 M Key (PCIe Gen3 x1)
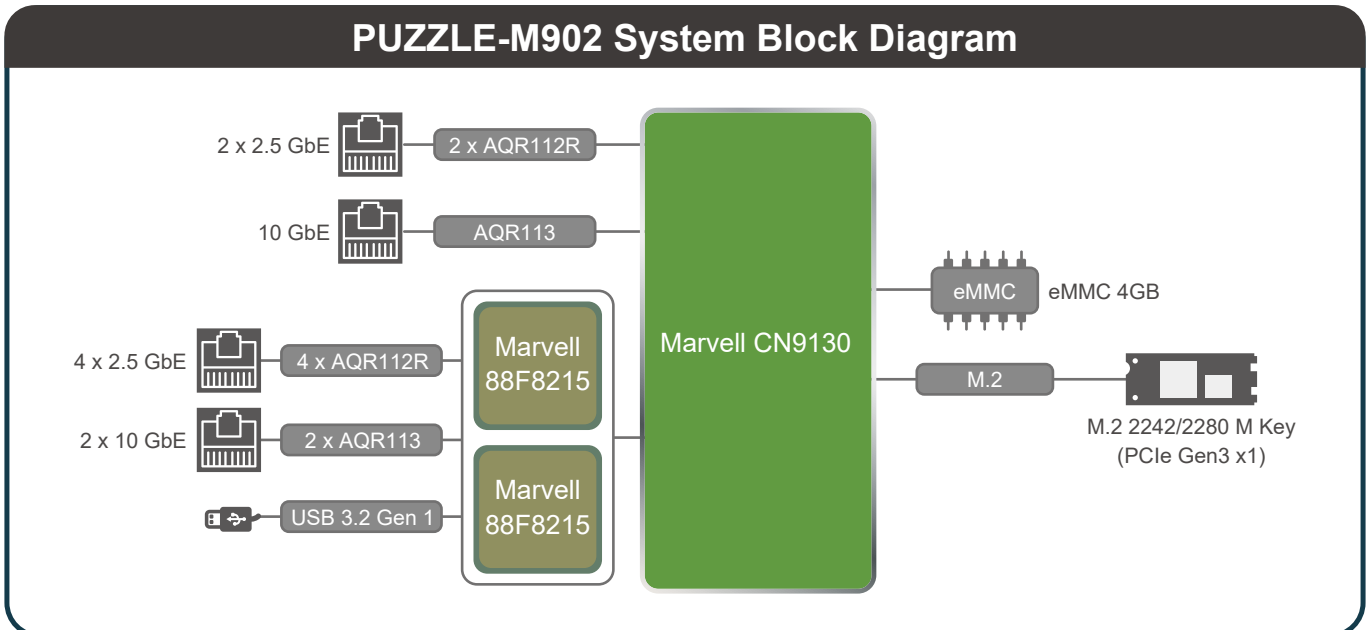
PUZZLE–M801

1U Rackmount Network Appliance with Marvell® ARMADA® 88F8040 High-Performance Quad-Core CPU

Features

- Marvell® ARMADA® 88F8040 high-performance quad-core System-on-Chip processor
- 1 x 288-pin DIMM, DDR4 2400 MHz, 16GB (ECC)
- 2 x 10GbE SFP+ via Marvell® ARMADA® 88F8040, 4 x GbE RJ-45 via Marvell 88E1512P
- 2 x USB 3.2 Gen 1 (5Gb/s), 1 x RJ-45 console, 1 x M.2 B key (SATA & USB 3.2 Gen 1 (5Gb/s)) with SIM holder
- 1 x PCIe x16 slot (PCIe x2 signal)

Specifications

		PUZZLE-M801
Platform	Form Factor	1U
	CPU	Marvell® ARMADA® 88F8040 high-performance quad-core System-on-Chip processor, 2.0GHz
	Chipset	Integrated in CPU
Memory	Memory Technology	DDR4 2400 MHz ECC/Non-ECC/RDIMM
	Memory Capacity	Up to 16GB
	Memory Socket	1 x 288-pin DIMM
Network and Security	Network Acceleration and Security Function	• Configurable packet processor • HW offload for networking • Acceleration engines for storage, networking and security • Public Key Processor (RSA/DH/ECC) • Secure Storage • Secure boot
	TPM	N/A
Networking	Ethernet IC	1 GbE PHY: Marvell 88E1512P 10GbE PHY: SoC Marvell 88F8040
	Ethernet Port	2 x 10 GbE SFP+, 4 x 1GbE RJ-45 LAN ports
	Network Module Slot	N/A
Expansion Slot	PCIe Slot	1 x PCIe x16 (FHHL) slot PCIe 3.0 x2 signal
	PCIe Mini Card Slot	N/A
	M.2	1 x M.2 B Key (3042/2260) (SATA 3.0 and USB 3.2 Gen 1) Support SATA SSD or 4G LTE module (USB signal)
Storage	Storage	1 x 2.5" SATA HDD/SSD bay support SATA 3.0 (6 Gbps)
	eMMC	32GB
	SD Card	N/A
External I/O	USB	2 x USB 3.2 Gen 1 (5Gb/s)
	Console	1 x RJ-45
Internal I/O	HDMI	N/A
	USB	2 x USB 2.0
Power and Mechanical	Power Switch	1 x Power switch
	Reset Button	1 x Reset button
	Power Input	100 V ~ 240 V
	Type/Watt	ATX Power 250W
		90V~264V AC
	Processor Cooling	1 x Active CPU heatsink with fan
	System Cooling	2 x Cooling fans with smart fan
	Antenna Hole	1 x Antenna hole
Physical and Environmental	Storage Temperature	-20°C ~ 75°C (-4°F ~ 167°F)
	Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)
	Operating Humidity	5% ~ 90% non-condensing
	Dimensions (W x L x H) (mm)	430 x 320 x 44.2
	Weight	5 kg
OS and Certifications	Certification	CE / FCC / RoHS
	Operating System	Linux Ubuntu 16.04.04
Indicators	LCM	N/A
	LED	1 x Power LED, 1 x Storage LED, 1 x Alert LED

Ordering Information

Part No.	Description
PUZZLE-M801-A1-R10	1U Rackmount Network Appliance with Marvell Armada 8040 processor, one DDR4 slot, four 1GbE, two 10GbE via SFP+, one PCIe expansion, RoHS
PUZZLE-M801-A1/8G-R10	1U Rackmount Network Appliance with Marvell Armada 8040 processor, 8GB DDR4, one 256GB SSD, four 1GbE, two 10GbE via SFP+, one PCIe expansion, RoHS

Packing List

	PUZZLE-M801-A1	PUZZLE-M801-A1/8G
Power cord	1	1
Rack mounting ears	2	2
Screws for rack mounting ears	6	6
USB to console cable	Option	1
RS-232 to console cable	1	Option

Options

Item	Part No.	Description
USB to console cable	32013-004000-100-RS	ROUND CABLE; LAN CABLE; FTDI Console Cable; 2; 1800MM; (A)USB A TYPE 4P MALE+PCB:FTDI_FT232RL; (B)RJ-45 8P8C; RoHS
RS-232 to console cable	32005-005100-100-RS	ROUND CABLE; RS-232/422/485; PUZZLE RS-232 Cable; 2; 500MM; 24AWG; (A) D-SUB 9P MALE+#4-40 Screw; (B)RJ-45 PLUG 8P8C; ONE PCS PKG; TC&C; RoHS

IO Interface

Dimensions (Unit: mm)
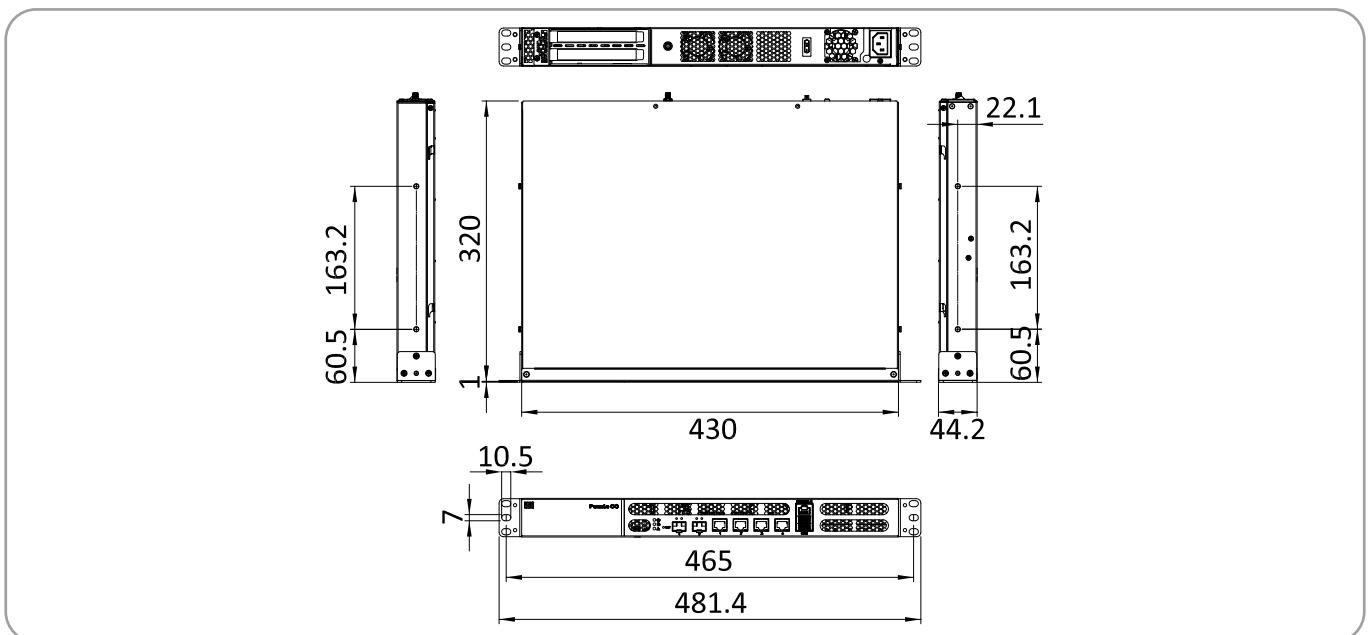
Diverse PulM Network Modules

Dual BIOS

Install the IEI PulM networking module into the slot of the PUZZLE series. The Slot A supports 8 lanes from CPU (one PCIe x8 or two PCIe x4); the Slot B supports two PCIe x4 or four PCIe x2 from PCH.

A19	A32	PCIe Config.	Slot
0	0	4x2	B
0	1	2x4	A & B
1	0	1x8	A
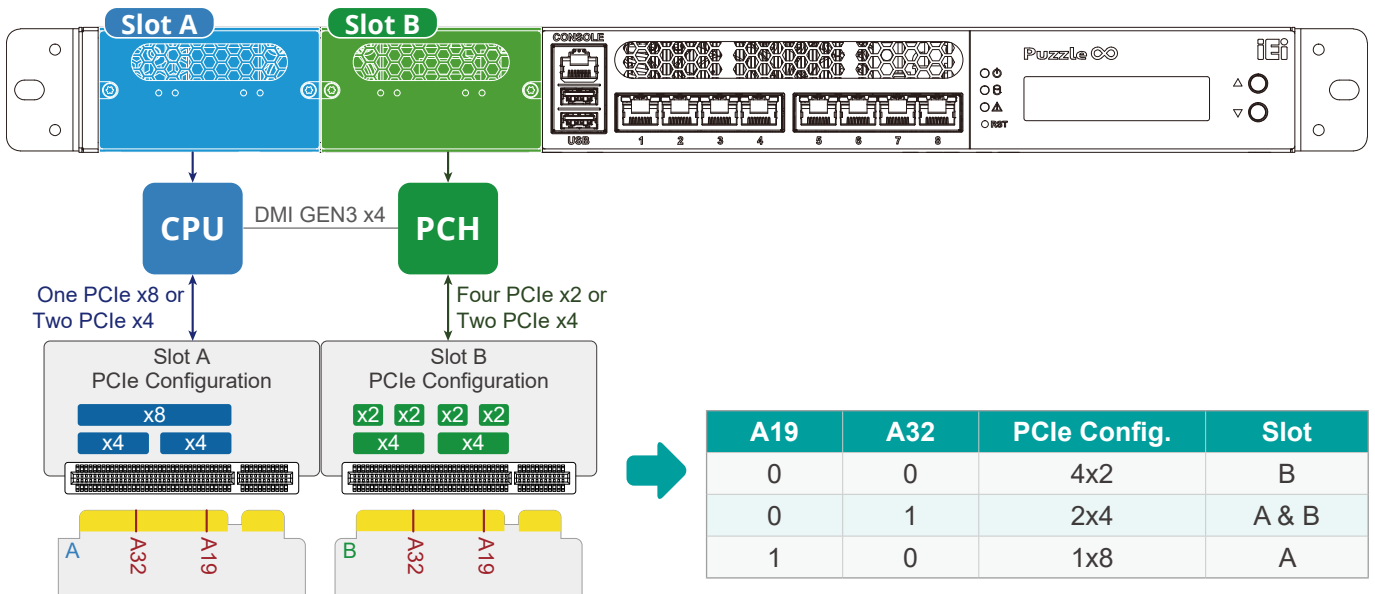
Uninterrupted Data Transmission - Bypass Function

With bypass function, the network connected to this device can be connected to each other when the network security device fails.

General State
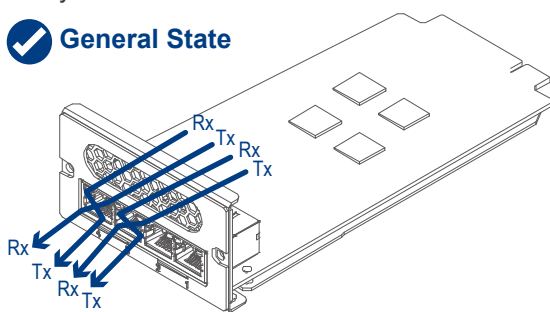
Power Failure or Shutdown
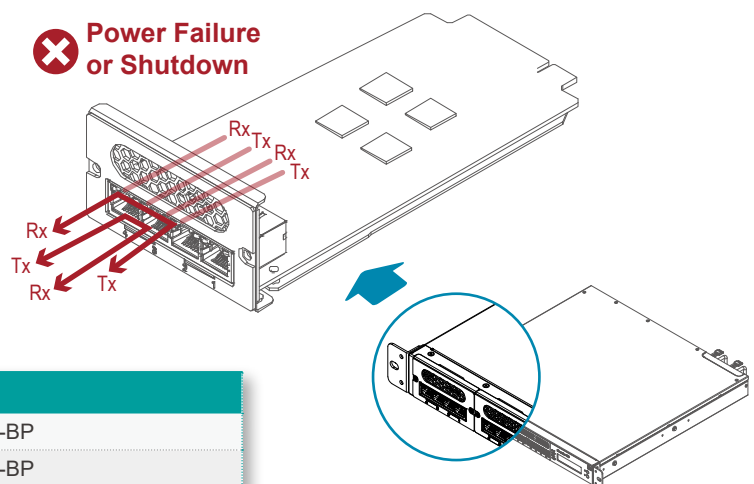
Product
PulM-1G4T-I350-BP
PulM-1G8T-I350-BP
PulM-10G4SF-XL710-BP

Bypass Configuration in BIOS

Some PulM modules support bypass. To enable/disable bypass function, configure the BIOS menu of the PUZZLE series as described below.

Step 1

Go to Chipset ➔ PCH - IO Configuration ➔ NETWORK Configuration (Bypass Setting)

```
              Aptio Setup Utility – Copyright (C) 2018 American Megatrends, Inc.
                               Chipset

  PCH-IO Configuration                                    Select AC power state
                                                          when power is re-
  Auto Power Button Status          [Disable (ATX)]       applied after a power
  Status                                                  failure.
  Restore AC Power Loss             [Last State]
                                                          --------------------
  > PCI Express Configuration                             ➔←: Select Screen
  > SATA And RST Configuration                            ↑↓: Select Item
  > NETWORK Configuration (ByPass Setting)                Enter: Select
                                                          +/-:  Change Opt.
  M.2 B Key (M2_1)                  [SATA]                F1:   General Help
  Device selection                                        F2:   Previous Values
                                                          F3:   Optimized
  Module B Configuration            [PCIEx4 x 2]          Defaults
                                                          F4:   Save & Exit
                                                          ESC: Exit

               Version 2.20.1271. Copyright (C) 2018 American Megatrends, Inc.
```
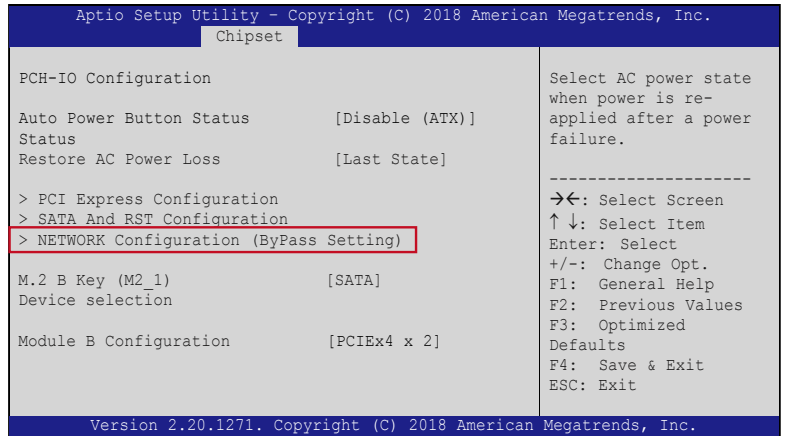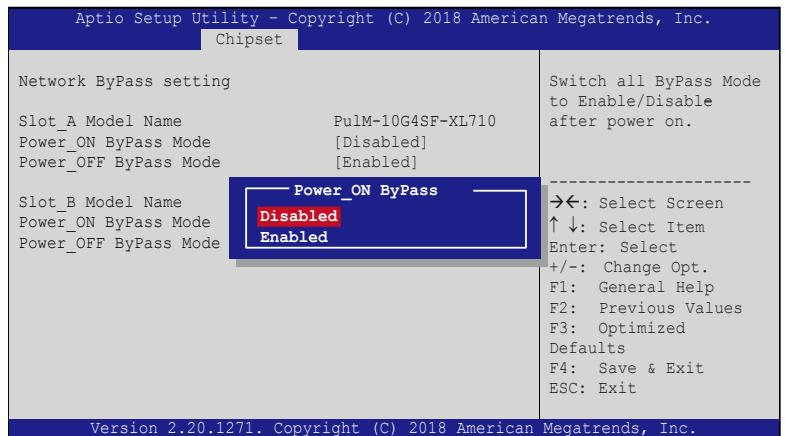
```
         Aptio Setup Utility – Copyright (C) 2018 American Megatrends, Inc.
                          Chipset

  Network ByPass setting                          Switch all ByPass Mode
                                                  to Enable/Disable
  Slot_A Model Name          Not Installed        after power on.
  Power_ON ByPass Mode       [Disabled]
  Power_OFF ByPass Mode      [Enabled]
                                                  --------------------
  Slot_B Model Name          PulM-1G4T-I211-BP    ➔←: Select Screen
  Power_ON ByPass Mode       [Disabled]           ↑↓: Select Item
  Power_OFF ByPass Mode      [Enabled]            Enter: Select
                                                  +/-:  Change Opt.
                                                  F1:   General Help
                                                  F2:   Previous Values
                                                  F3:   Optimized
                                                  Defaults
                                                  F4:   Save & Exit
                                                  ESC: Exit

          Version 2.20.1271. Copyright (C) 2018 American Megatrends, Inc.
```

Step 2

The **Network ByPass Setting** menu appears. The model names of the PulM module installed in the PUZZLE series are shown.
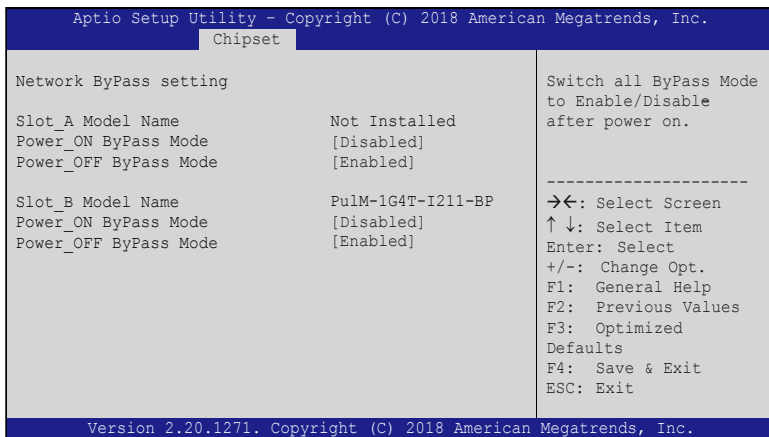
Step 3

Configure the Power_ON ByPass Mode and the Power_OFF ByPass Mode BIOS options to enable/disable bypass function of the installed PulM modules.

```
              Aptio Setup Utility – Copyright (C) 2018 American Megatrends, Inc.
                               Chipset

  Network ByPass setting                                  Switch all ByPass Mode
                                                          to Enable/Disable
  Slot_A Model Name              PulM-10G4SF-XL710        after power on.
  Power_ON ByPass Mode           [Disabled]
  Power_OFF ByPass Mode          [Enabled]
                                                          --------------------
  Slot_B Model Name          ┌── Power_ON ByPass ──┐      ➔←: Select Screen
  Power_ON ByPass Mode       │ Disabled            │      ↑↓: Select Item
  Power_OFF ByPass Mode      │ Enabled             │      Enter: Select
                             └─────────────────────┘      +/-:  Change Opt.
                                                          F1:   General Help
                                                          F2:   Previous Values
                                                          F3:   Optimized
                                                          Defaults
                                                          F4:   Save & Exit
                                                          ESC: Exit

               Version 2.20.1271. Copyright (C) 2018 American Megatrends, Inc.
```

PUZZLE System	Power_ON Bypass Mode		Power_OFF Bypass Mode	
BIOS Setting	Disabled	Enabled	Disabled	Enabled
PulM Bypass Modules	Close	Open	Close	Open

Step 4

Press F4 to save and exit the BIOS menu. The PUZZLE series will reboot with the new settings.

2U PulM Series Selection Guide

	PulM-100G2SF-E810	PulM-100G2SF-CX6	PulM-10G4SF/T-XL710
Chipset	Intel® E810	Mellanox ConnectX-6 Dx	Intel® XL710
Bypass	No	No	No
Host Interface	PCIe 4.0 x8	PCIe 4.0 x16	PCIe 3.0 x8
LAN Interface	QSFP28	2 x QSFP28	SFP+
Speed	1GbE / 10GbE / 25GbE / 50GbE / 100GbE	1/10/25/40/50/100 Gb/s	1GbE/10GbE
LAN Port Number	2	2	4
Storage Temp.	-20°C ~ 75°C (-4°F ~ 167°F)	-20°C ~ 75°C (-4°F ~ 167°F)	-20°C ~ 75°C (-4°F ~ 167°F)
Operating Temp.	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C	0°C ~ 40°C (32°F ~ 104°F)
Humidity	5% ~ 90% RH, non-condensing	5% ~ 90% RH, non-condensing	5% ~ 90% RH, non-condensing
Dimensions (mm)	165.50 (L) x 77.8 (W) x 44.2 (H)	162.2 (L) x 74 (W) x 41.85 (H)	165.50 (L) x 77.8 (W) x 44.2 (H)
Certification	RoHS	CE / FCC / RoHS	CE / FCC / RoHS

	PulM-10G4SF/T-XL710-BP	PulM-10G4SF/T-MLX	PulM-1G4SF/T-I350	PulM-1G8SF/T-I350
Chipset	Intel® XL710	Mellanox ConnectX-4	Intel® I350-AM4	Intel® I350-AM4
Bypass	Yes, two pairs	No	No	No
Host Interface	PCIe 3.0 x8	2 PCIe 3.0 x4	2 PCIe 2.0 x4	2 PCIe 2.0 x4
LAN Interface	SFP+	SFP+	SFP	SFP
Speed	1GbE/10GbE	1GbE/10GbE	GbE	GbE
LAN Port Number	4	4	4	8
Storage Temp.	-20°C ~ 75°C (-4°F ~ 167°F)			
Operating Temp.	0°C ~ 40°C (32°F ~ 104°F)			
Humidity	5% ~ 90% RH, non-condensing			
Dimensions (mm)	165.50 (L) x 77.8 (W) x 44.2 (H)			
Certification	RoHS	CE / FCC / RoHS	RoHS	RoHS

	PulM-1G4T/T-I350	PulM-1G4T/T-I350-BP	PulM-1G8T/T-I350	PulM-1G8T/T-I350-BP
Chipset	Intel® I350-AM4	Intel® I350-AM4	Intel® I350-AM4	Intel® I350-AM4
Bypass	No	Yes, two pairs	No	Yes, four pairs
Host Interface	2 PCIe 2.0 x4	2 PCIe 2.0 x4	2 PCIe 2.0 x4	2 PCIe 2.0 x4
LAN Interface	RJ-45	RJ-45	RJ-45	RJ-45
Speed	GbE	GbE	GbE	GbE
LAN Port Number	4	4	8	8
Storage Temp.	-20°C ~ 75°C (-4°F ~ 167°F)			
Operating Temp.	0°C ~ 40°C (32°F ~ 104°F)			
Humidity	5% ~ 90% RH, non-condensing			
Dimensions (mm)	165.50 (L) x 77.8 (W) x 44.2 (H)			
Certification	CE / FCC / RoHS	CE / FCC / RoHS	CE / FCC / RoHS	CE / FCC / RoHS

1U PulM Series Selection Guide

	PulM-10G4SF-XL710	PulM-10G4SF-XL710-BP
Chipset	Intel® XL710	Intel® XL710
Bypass	No	Yes, two pairs
Host Interface	PCIe 3.0 x8	PCIe 3.0 x8
LAN Interface	SFP+	SFP+
Speed	1GbE/10GbE	1GbE/10GbE
LAN Port Number	4	4
Storage Temp.	-20°C ~ 75°C (-4°F ~ 167°F)	
Operating Temp.	0°C ~ 40°C (32°F ~ 104°F)	
Humidity	5% ~ 90% RH, non-condensing	
Dimensions (mm)	165.50 (L) x 77.8 (W) x 44.2 (H)	
Certification	CE / FCC / RoHS	RoHS

	PulM-10G4T-AQC107	PulM-1G4SF-I350	PulM-1G8SF-I350
Chipset	Aquantia AQC107	Intel® I350-AM4	Intel® I350-AM4
Bypass	No	No	No
Host Interface	4 PCIe 3.0 x2	2 PCIe 2.0 x4	2 PCIe 2.0 x4
LAN Interface	RJ-45	SFP	SFP
Speed	10GBASE-T/ 5GBASE-T/ 2.5GBASE-T/ 1000BASE-T/ 100BASE-TX	GbE	GbE
LAN Port Number	2	4	8
Storage Temp.	-20°C ~ 75°C (-4°F ~ 167°F)		
Operating Temp.	0°C ~ 40°C (32°F ~ 104°F)		
Humidity	5% ~ 90% RH, non-condensing		
Dimensions (mm)	165.50 (L) x 77.8 (W) x 44.2 (H)		
Certification	RoHS	RoHS	RoHS

	PulM-1G4T-I350	PulM-1G4T-I350-BP	PulM-1G8T-I350	PulM-1G8T-I350-BP	PulM-1G8T-BCM5720
Chipset	Intel® I350-AM4	Intel® I350-AM4	Intel® I350-AM4	Intel® I350-AM4	Broadcom BCM5720
Bypass	No	Yes, two pairs	No	Yes, four pairs	No
Host Interface	2 PCIe 2.0 x4	2 PCIe 2.0 x4	2 PCIe 2.0 x4	2 PCIe 2.0 x4	4 PCIe 2.0 x2
LAN Interface	RJ-45	RJ-45	RJ-45	RJ-45	RJ-45
Speed	GbE	GbE	GbE	GbE	GbE
LAN Port Number	4	4	8	8	8
Storage Temp.	-20°C ~ 75°C (-4°F ~ 167°F)				
Operating Temp.	0°C ~ 40°C (32°F ~ 104°F)				
Humidity	5% ~ 90% RH, non-condensing				
Dimensions (mm)	165.50 (L) x 77.8 (W) x 44.2 (H)				
Certification	CE / FCC / RoHS	CE / FCC / RoHS	CE / FCC / RoHS	CE / FCC / RoHS	RoHS

	PulM-2P1M	PulM-M2-2S
Interface	1 PCIe 3.0 x4	2 PCIe 3.0 x4
Onboard IC	ASM1812 (PCIe Gen 2 x4) FL1100EX (PCI-E To USB 3.0 (4 Port))	N/A
M.2	1 x 2230/2242 M.2 B key (PCIe 2.0, USB 3.2 Gen 1) with SIM card slot	2 x M key 2260/2280/22110 (PCIe 3.0 x4/NVMe)
PCIe	2 x PCIe Mini (PCIe 2.0, USB 2.0) with SIM card slot	N/A
Storage Temp.	-20°C ~ 75°C (-4°F ~ 167°F)	
Operating Temp.	0°C ~ 40°C (32°F ~ 104°F)	
Humidity	5% ~ 90% RH, non-condensing	
Dimensions (mm)	165.50 (L) x 77.8 (W) x 44.2 (H)	
Certification	RoHS	RoHS

PuIM-100G2SF-E810

Intel® Ethernet Controller EZE810CAM2 based Network Interface Card with 2 x QSFP28 by PCIe 4.0 x8 interface

Features

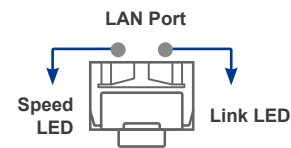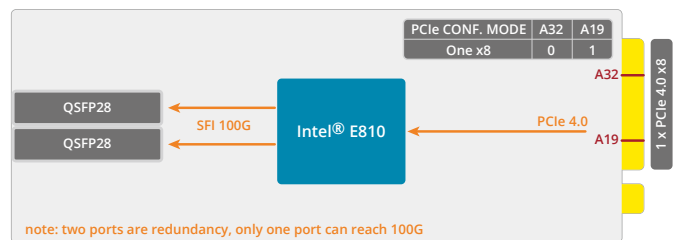- 1 x Intel® E810 Ethernet controller
- 2 ports 100GbE QSFP28 connector
- PCIe 4.0 x8 interface
- RoHS compliant

Specifications

	PuIM-100G2SF-E810
Form Factor	IEI Networking Module - PuIM
NIC	Intel® E810
LAN Bypass	N/A
LAN Interface	QSFP28
Speed	100GbE
Ports	2
Host Interface	PCIe 4.0 x8
Storage Temp.	-20°C ~ 75°C (-4°F ~ 167°F)
Operating Temp.	0°C ~ 40°C (32°F ~ 104°F)
Humidity	5% ~ 90% RH, Non-condensing
Dimensions (mm)	165.50 (L) x 77.8 (W) x 44.2 (H)
Compliance	RoHS

Dimensions (Unit: mm)
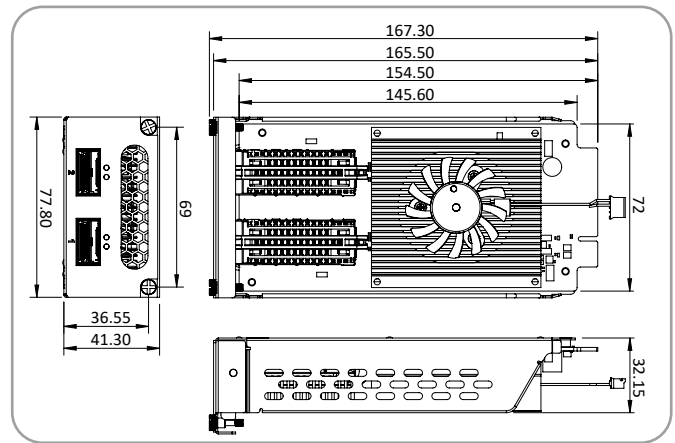
Ordering Information

Part No.	Description
PuIM-100G2SF-E810-R10	Intel® Ethernet Controller EZE810CAM2 based Network Interface Card with 2 x QSFP28 by PCIe 4.0 x8 interface

Packing List

1 x PuIM-100G2SF-E810 module	1 x QIG
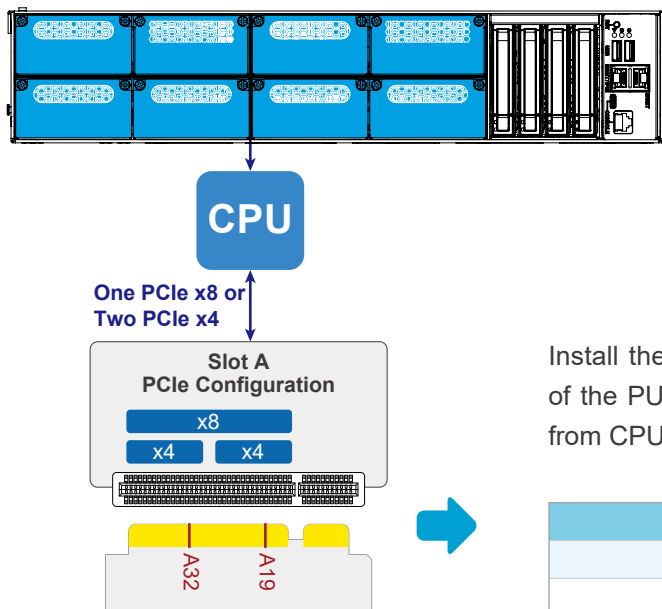
Block Diagram

PCIe CONF. MODE	A32	A19
One x8	0	1

note: two ports are redundancy, only one port can reach 100G

LAN Port

Speed LED — Link LED

LED	State		Description
Link (Right)	Yellow		Active
Speed (Left)	Green		100Gbps data rate
	Orange		other data rate

Hardware Installation

CPU

One PCIe x8 or Two PCIe x4

Slot A PCIe Configuration

x8
x4 | x4

Install the IEI PuIM-100G2SF-E810 networking module into the slot of the PUZZLE-IN005. All slots support 8 lanes of PCIe gen4 signal from CPU (one PCIe x8 or two PCIe x4).

A19	A32	PCIe Config.
0	1	2x4
1	0	1x8

PulM-100G2SF-CX6

Specifications

	PulM-100G2SF-CX6
Form Factor	IEI Networking Module - PulM
NIC	ConnectX-6 Dx
LAN Bypass	N/A
LAN Interface	2 x QSFP28
LAN Speed	1/10/25/40/50/100 Gb/s
Host Interface	PCIe 4.0 x16
Operating Temp	0°C ~ 40°C
Humidity	5% ~ 90% RH, Non-condensing
Compliance	CE, FCC, RoHS
Support Device	PUZZLE-9030

Ordering Information

Part No.	Description
PulM-100G2SF-CX6	ConnectX-6 Dx dual 100GbE network IC support 1/10/25/40/50/100 Gb/s, Ethernet with Host Interface > PCIe Gen 3.0/4.0 x16 Cyber Security, Inline hardware IPsec encryption & decryption, Inline hardware TLS encryption & decryption, Data-at-rest AES-XTS encryption & decryption, Platform security : 1. Hardware root-of-trust, 2.Secure firmware update, Stateless Offloads, TCP/UDP/IP stateless offload > LSO, LRO, checksum offload, Advanced Timing & Synchronization, Storage Acceleration, RDMA over Converged Ethernet (RoCE)

Packing List

PulM-100G2SF-CX6	2

Hardware Installation
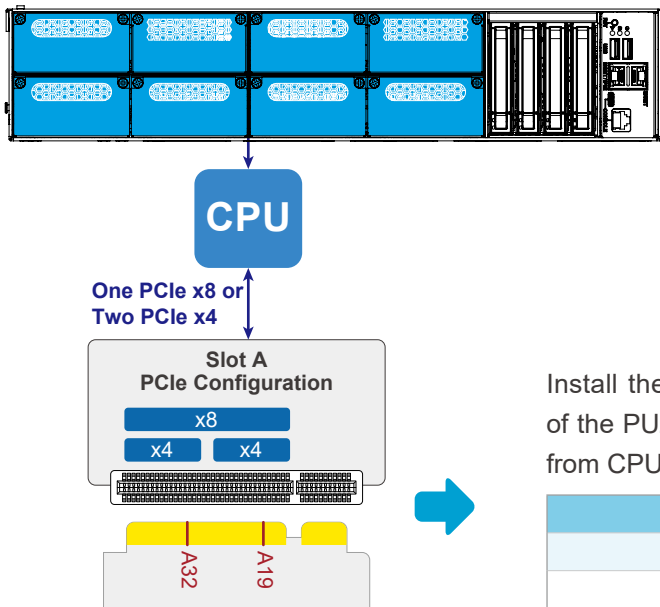
Features

- ConnectX-6 Dx dual 100GbE network IC supports 1/10/25/40/50/100 Gb/s
- Ethernet with host interface: PCIe Gen 3.0/4.0 x16 cyber security
- Inline hardware IPsec encryption & decryption
- Inline hardware TLS encryption & decryption
- Data-at-rest AES-XTS encryption & decryption
- Platform security: 1. Hardware root-of-trust, 2. Secure firmware update
- Stateless offloads
- TCP/UDP/IP stateless offload: LSO, LRO, checksum offload
- Advanced timing & synchronization
- Storage accelerations
- RDMA over Converged Ethernet (RoCE)

Dimensions *(Unit: mm)*
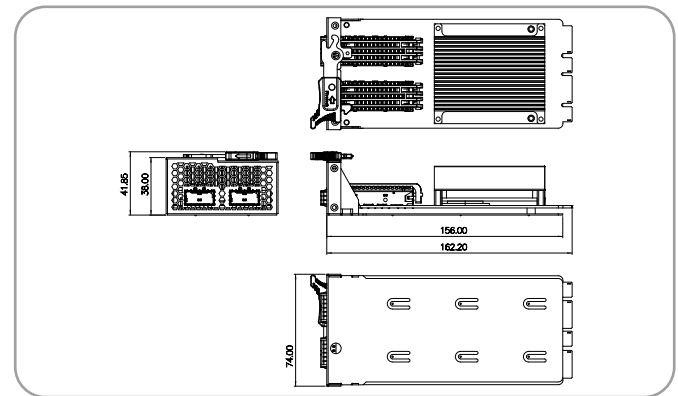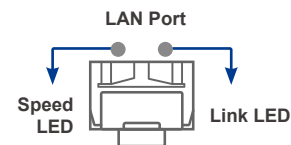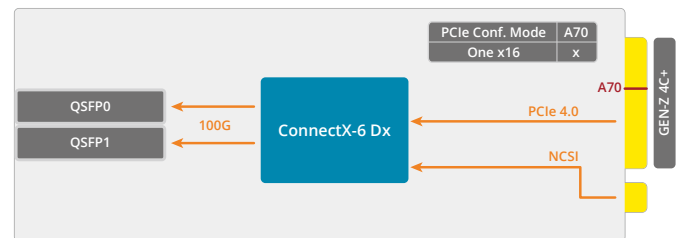
Block Diagram

LED	State		Description
Link (Right)	Yellow		Active
Speed (Left)	Green		100Gbps data rate
	Orange		Other data rate

Install the IEI PulM-100G2SF-CX6 networking module into the slot of the PUZZLE-IN005. All slots support 8 lanes of PCIe Gen 4 signal from CPU (one PCIe x8 or two PCIe x4).

A19	A32	PCIe Config.
0	1	2x4
1	0	1x8

PuIM-10G4SF-XL710

Intel® Ethernet Controller XL710-BM1 based Network Interface Card with 4 x SFP+ by PCIe 3.0 x8 interface

Features

- 1 x Intel® Ethernet Controller XL710-BM1
- 4 x 10 GbE SFP+ connectors
- PCIe 3.0 x8
- RoHS / CE / FCC compliant

Specifications

Model Name	PuIM-10G4SF-XL710	PuIM-10G4SF/T-XL710
Form Factor	IEI Networking Module	
NIC	Intel® XL710-BM1 Ethernet Controller	
LAN Interface	SFP+	
Speed	1GbE/ 10GbE	
Ports	4	
Host Interface	PCIe 3.0 x8	
Storage Temp.	-20°C ~ 75°C (-4°F ~ 167°F)	
Operating Temp.	0°C ~ 40°C (32°F ~ 104°F)	
Humidity	5% ~ 90% RH, Non-condensing	
Dimensions (mm)	165.50 (L) x 77.8 (W) x 44.2 (H)	
Compliance	CE / FCC / RoHS	
Support Device	PUZZLE-IN001 PUZZLE-IN001A PUZZLE-IN004	PUZZLE-IN005

Ordering Information

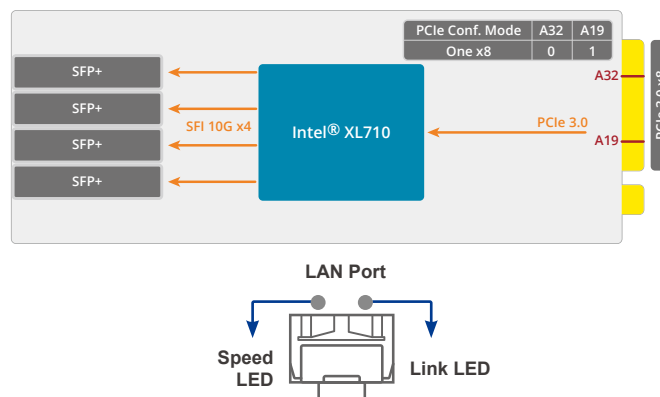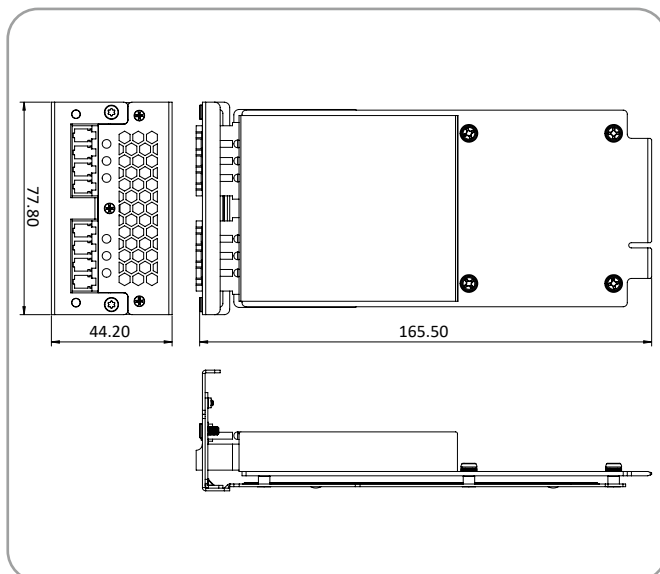| Part No.	Description
PuIM-10G4SF-XL710-R10	Intel® Ethernet Controller XL710-BM1 based Network Interface Card with 4 x SFP+ by 1 PCIe 3.0 x 8 interface, RoHS
PuIM-10G4SF/T-XL710-R10	Intel® Ethernet Controller XL710-BM1 based Network Interface Card with 4 x SFP+ by 1 PCIe 3.0 x 8 interface, RoHS

Packing List

Part No.	L-shaped T10 PuIM Wrench	Torx Screws	QIG
PuIM-10G4SF-XL710-R10	1	2	1
PuIM-10G4SF/T-XL710-R10	N/A	N/A	1

Dimensions (Unit: mm)

165.60

77.80

44.20

Block Diagram

PCIe Conf. Mode	A32	A19
One x8	0	1

SFP+ | SFP+ | SFP+ | SFP+

SFI 10G x4

Intel® XL710

PCIe 3.0

A32

A19

PCIe 3.0 x8

LAN Port

Speed LED | Link LED

LED	State	Description
Link (Right)	Yellow	Active
Speed (Left)	Green	10 Gbps data rate

PulM-10G4SF-XL710-BP

Intel® Ethernet Controller XL710-BM1 based Network Interface Card with four 10GbE Fiber ports, two pair Bypass

Features

- 1 x Intel® Ethernet Controller XL710-BM1
- 4 x Fiber LC (SR or LR) interface
- PCIe 3.0 x8
- Two LAN bypass model available

Specifications

Model Name	PulM-10G4SF-XL710-BP	PulM-10G4SF/T-XL710-BP
Form Factor	IEI Networking Module	
NIC	Intel® XL710-BM1 Ethernet Controller	
Bypass	Yes, two pairs	
LAN Interface	10 GbE fiber LC (SR & LR)	
Speed	10GbE	
Ports	4	
Host Interface	PCIe 3.0 x8	
Storage Temp.	-20°C ~ 75°C (-4°F ~ 167°F)	
Operating Temp.	0°C ~ 40°C (32°F ~ 104°F)	
Humidity	5% ~ 90% RH, Non-condensing	
Dimensions (mm)	165.50 (L) x 77.8 (W) x 44.2 (H)	
Compliance	CE / FCC / RoHS	
Support Device	PUZZLE-IN001 PUZZLE-IN001A PUZZLE-IN004	PUZZLE-IN005

Ordering Information

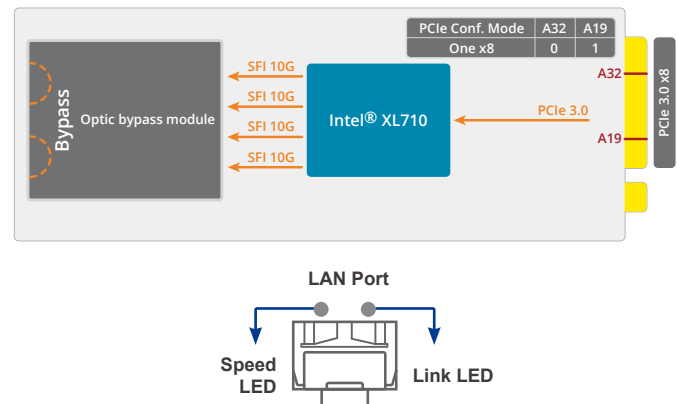| Part No.	Description
PulM-10G4SF-XL710-BP-R10	Intel® Ethernet Controller XL710-BM1 based Network Interface Card with four 10GbE Fiber ports, two pair Bypass, RoHS.
PulM-10G4SF/T-XL710-BP-R10	Intel® Ethernet Controller XL710-BM1 based Network Interface Card with four 10GbE Fiber ports, two pair Bypass, RoHS.

Packing List

Part No.	L-shaped T10 PulM Wrench	Torx Screws	QIG
PulM-10G4SF-XL710-BP-R10	1	2	1
PulM-10G4SF/T-XL710-BP-R10	N/A	N/A	1

Dimensions *(Unit: mm)*

77.80
44.20
165.50

Block Diagram

PCIe Conf. Mode	A32	A19
One x8	0	1

Bypass — Optic bypass module
SFI 10G
Intel® XL710
PCIe 3.0
A32
A19
PCIe 3.0 x8

LAN Port

Speed LED — Link LED

LED	State	Description
Link (Right)	Yellow	Active
Speed (Left)	Green	10 Gbps data rate

PuIM-10G4T-AQC107

Aquantia AQC107 based Network Interface Card with 4 x 10GBASE-T by 4 PCIe 3.0 x2 Interface

Features

- 4 x Aquantia AQC107
- 4 x 10GBASE-T connectors
- 4 PCIe 3.0 x2
- RoHS compliant

Specifications

Model Name	PuIM-10G4T-AQC107	PuIM-10G4T/T-AQC107
Form Factor	IEI Networking Module	
NIC	Aquantia AQC107	
LAN Interface	10GBASE-T (RJ-45)	
Speed	10GBASE-T/ 5GBASE-T/ 2.5GBASE-T/ 1000BASE-T/ 100BASE-TX	
Ports	4	
Host Interface	4 PCIe 3.0 x2	
Storage Temp.	-20°C ~ 75°C (-4°F ~ 167°F)	
Operating Temp.	0°C ~ 40°C (32°F ~ 104°F)	
Humidity	5% ~ 90% RH, Non-condensing	
Dimensions (mm)	165.50 (L) x 77.8 (W) x 44.2 (H)	
Compliance	RoHS	
Support Device	PUZZLE-IN001 PUZZLE-IN001A PUZZLE-IN004	PUZZLE-IN005

Ordering Information

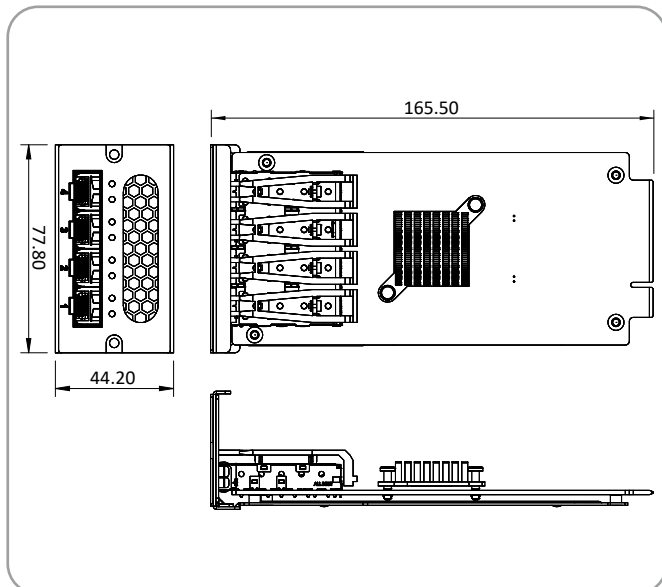| Part No.	Description
PuIM-10G4T-AQC107-R10	Aquantia AQC107 based Network Interface Card with 4 x 10GBASE-T by 4 PCIe 3.0 x2 Interface, RoHS
PuIM-10G4T/T-AQC107-R10	Aquantia AQC107 based Network Interface Card with 4 x 10GBASE-T by 4 PCIe 3.0 x2 Interface, RoHS

Packing List

Part No.	L-shaped T10 PuIM Wrench	Torx Screws	QIG
PuIM-10G4T-AQC107-R10	1	2	1
PuIM-10G4T/T-AQC107-R10	N/A	N/A	1

Dimensions *(Unit: mm)*
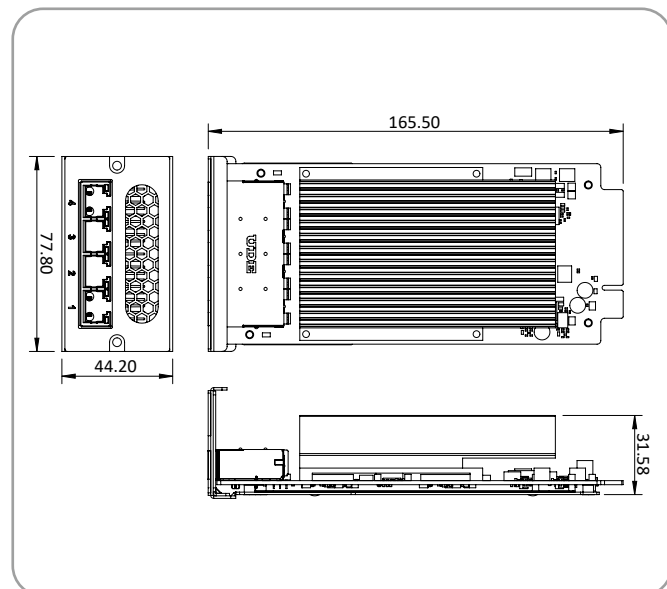
Block Diagram

PCIe Conf. Mode	A32	A19
Four x2	0	0

LAN Port

Link LED   Speed LED
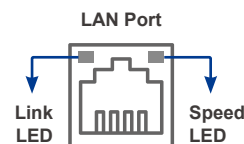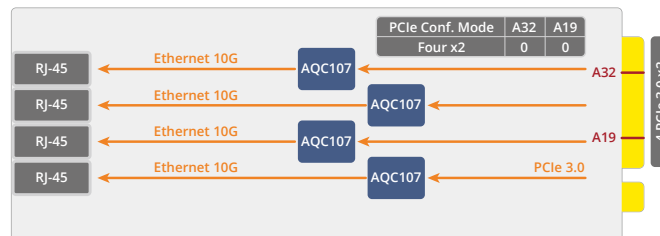
LED	State		Description
Link (Left)	Yellow	🟨	Active
Speed (Right)	Green	🟩	10 Gbps date rate
	Orange	🟧	5 Gbps/1 Gbps/ 100 Mbps data rate

PuIM–1G4SF–I350

Intel® Ethernet Controller I350-AM4 based Network Interface Card with 4 x SFP by 2 PCIe 2.0 x4 interface

Features

- 1 x Intel® Ethernet Controller I350-AM4
- 4 x GbE SFP connectors
- 2 PCIe2.0 x4
- RoHS compliant

Specifications

Model Name	PuIM-1G4SF-I350	PuIM-1G4SF/T-I350
Form Factor	IEI Networking Module	
NIC	Intel® Ethernet Controller I350-AM4	
LAN Interface	SFP	
Speed	1GbE	
Ports	4	
Host Interface	2 PCIe 2.0 x4	
Storage Temp.	-20°C ~ 75°C (-4°F ~ 167°F)	
Operating Temp.	0°C ~ 40°C (32°F ~ 104°F)	
Humidity	5% ~ 90% RH, Non-condensing	
Dimensions (mm)	165.50 (L) x 77.8 (W) x 44.2 (H)	
Compliance	RoHS	
Support Device	PUZZLE-IN001 PUZZLE-IN001A PUZZLE-IN004	PUZZLE-IN005

Ordering Information

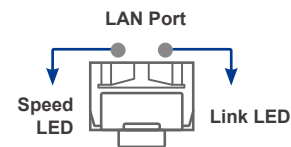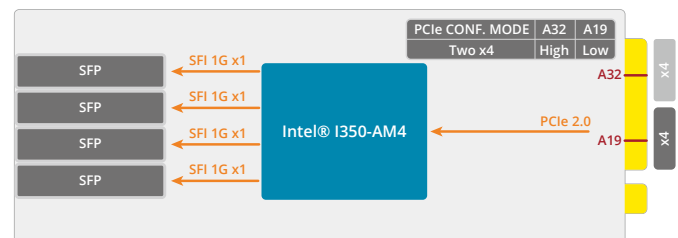| Part No.	Description
PuIM-1G4SF-I350-R10	Intel® Ethernet Controller I350-AM4 based Network Interface Card with 4 x SFP by 2 PCIe 2.0 x4 interface, RoHS
PuIM-1G4SF/T-I350-R10	Intel® Ethernet Controller I350-AM4 based Network Interface Card with 4 x SFP by 2 PCIe 2.0 x4 interface, RoHS

Packing List

Part No.	L-shaped T10 PuIM Wrench	Torx Screws	QIG
PuIM-1G4SF-I350-R10	1	2	1
PuIM-1G4SF/T-I350-R10	N/A	N/A	1

Dimensions *(Unit: mm)*

165.50

77.80

44.20

Block Diagram

PCIe CONF. MODE	A32	A19
Two x4	High	Low

SFP — SFI 1G x1
SFP — SFI 1G x1
SFP — SFI 1G x1
SFP — SFI 1G x1

Intel® I350-AM4

A32 — x4
PCIe 2.0
A19 — x4

LAN Port

Speed LED — Link LED

LED	State	Description
Link (Right)	Yellow	Active
Speed (Left)	Green	1 Gbps data rate

PuIM–1G8SF–I350

Intel® Ethernet Controller I350-AM4 based Network Interface Card with 8 x SFP by 2 PCIe 2.0 x4 interface

Features

- 2 x Intel® Ethernet Controller I350-AM4
- 8 x GbE SFP connectors
- 2 PCIe2.0 x4
- RoHS compliant

Specifications

| Model Name	PuIM-1G8SF-I350	PuIM-1G8SF/T-I350
Form Factor	IEI Networking Module	
NIC	Intel® Ethernet Controller I350-AM4	
LAN Interface	SFP	
Speed	1GbE	
Ports	8	
Host Interface	2 PCIe 2.0 x4	
Storage Temp.	-20°C ~ 75°C (-4°F ~ 167°F)	
Operating Temp.	0°C ~ 40°C (32°F ~ 104°F)	
Humidity	5% ~ 90% RH, Non-condensing	
Dimensions (mm)	165.50 (L) x 77.8 (W) x 44.2 (H)	
Compliance	RoHS	
Support Device	PUZZLE-IN001 PUZZLE-IN001A PUZZLE-IN004	PUZZLE-IN005

Ordering Information

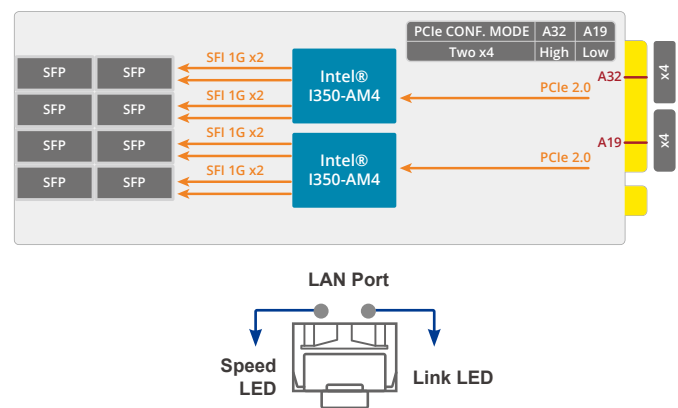| Part No.	Description
PuIM-1G8SF-I350-R10	Intel® Ethernet Controller I350-AM4 based Network Interface Card with 8 x SFP by 2 PCIe 2.0 x4 interface.
PuIM-1G8SF/T-I350-R10	Intel® Ethernet Controller I350-AM4 based Network Interface Card with 8 x SFP by 2 PCIe 2.0 x4 interface.

Packing List

Part No.	L-shaped T10 PuIM Wrench	Torx Screws	QIG
PuIM-1G8SF-I350-R10	1	2	1
PuIM-1G8SF/T-I350-R10	N/A	N/A	1
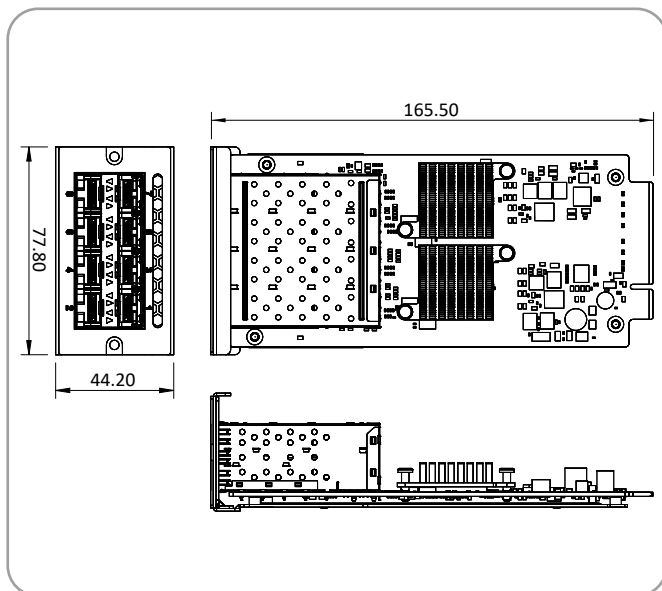
Dimensions (Unit: mm)

165.50

77.80

44.20

Block Diagram

PCIe CONF. MODE	A32	A19
Two x4	High	Low

LED	State	Description
Link (Right)	Yellow	Active
Speed (Left)	Green	1 Gbps data rate

PuIM-1G4T-I350

Intel® Ethernet Controller I350-AM4 based Network Interface Card with 4 x RJ-45 by 2 PCIe 2.0 x4 interface, RoHS

Features

- 1 x Intel® Ethernet Controller I350-AM4
- 4 x GbE RJ-45 connectors
- 2 PCIe2.0 x4
- CE / FCC / RoHS compliant

Specifications

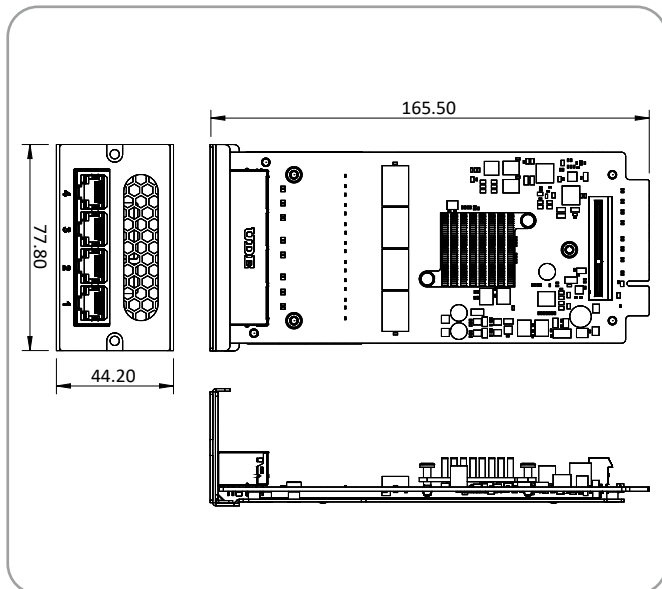| Model Name	PuIM-1G4T-I350	PuIM-1G4T/T-I350
Form Factor	IEI Networking Module	
NIC	Intel® Ethernet Controller I350-AM4	
LAN Interface	RJ-45	
Speed	1GbE	
Ports	4	
Host Interface	2 PCIe 2.0 x4	
Storage Temp.	-20°C ~ 75°C (-4°F ~ 167°F)	
Operating Temp.	0°C ~ 40°C (32°F ~ 104°F)	
Humidity	5% ~ 90% RH, Non-condensing	
Dimensions (mm)	165.50 (L) x 77.8 (W) x 44.2 (H)	
Compliance	CE / FCC / RoHS	
Support Device	PUZZLE-IN001 PUZZLE-IN001A PUZZLE-IN004	PUZZLE-IN005

Ordering Information

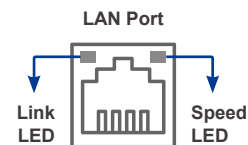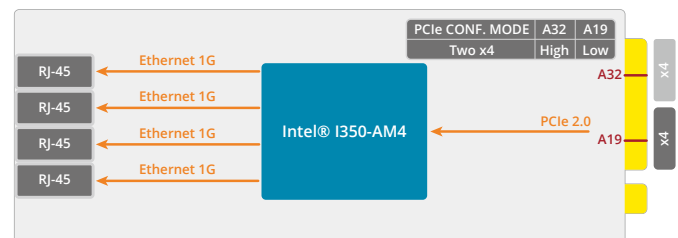| Part No.	Description
PuIM-1G4T-I350-R10	Intel® Ethernet Controller I350-AM4 based Network Interface Card with 4 x RJ-45 by 2 PCIe 2.0 x4 interface, RoHS.
PuIM-1G4T/T-I350-R10	Intel® Ethernet Controller I350-AM4 based Network Interface Card with 4 x RJ-45 by 2 PCIe 2.0 x4 interface, RoHS.

Packing List

Part No.	L-shaped T10 PuIM Wrench	Torx Screws	QIG
PuIM-1G4T-I350-R10	1	2	1
PuIM-1G4T/T-I350-R10	N/A	N/A	1

Dimensions *(Unit: mm)*

165.50

77.80

44.20

Block Diagram

PCIe CONF. MODE	A32	A19
Two x4	High	Low

RJ-45 ← Ethernet 1G
RJ-45 ← Ethernet 1G
RJ-45 ← Ethernet 1G
RJ-45 ← Ethernet 1G

Intel® I350-AM4

A32 — x4
PCIe 2.0
A19 — x4

LAN Port

Link LED — Speed LED

LED	State	Description
Link (Left)	Yellow	Active
Speed (Right)	Green	1 Gbps data rate
	Orange	100 Mbps data rate

PulM-1G4T-I350-BP

Intel® Ethernet Controller I350-AM4 based Network Interface Card with 4 x RJ-45 by 2 PCIe 2.0 x4 interface, RoHS

Features

- 1 x Intel® Ethernet Controller I350-AM4
- 4 x GbE RJ-45 connectors
- 2 PCIe2.0 x4
- LAN Bypass
- CE / FCC / RoHS compliant

Specifications

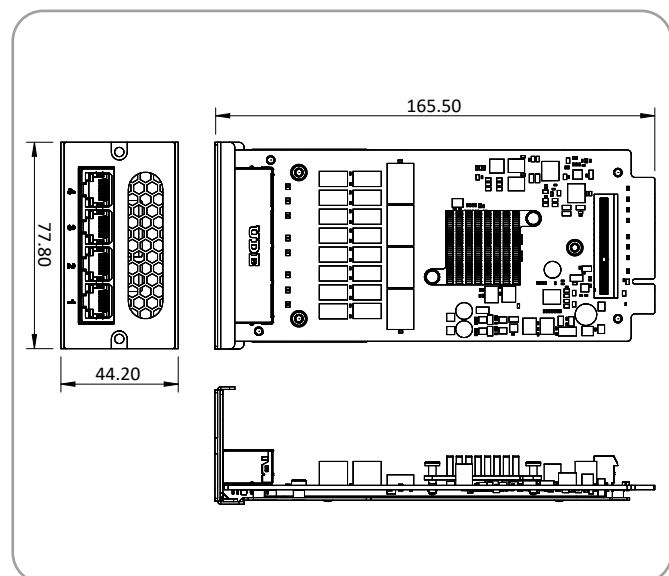| Model Name	PulM-1G4T-I350-BP	PulM-1G4T/T-I350-BP
Form Factor	IEI Networking Module	
NIC	Intel® Ethernet Controller I350-AM4	
Bypass	Yes, two pairs	
LAN Interface	RJ-45	
Speed	1GbE	
Ports	4	
Host Interface	2 PCIe 2.0 x4	
Storage Temp.	-20°C ~ 75°C (-4°F ~ 167°F)	
Operating Temp.	0°C ~ 40°C (32°F ~ 104°F)	
Humidity	5% ~ 90% RH, Non-condensing	
Dimensions (mm)	165.50 (L) x 77.8 (W) x 44.2 (H)	
Compliance	CE / FCC / RoHS	
Support Device	PUZZLE-IN001 PUZZLE-IN001A PUZZLE-IN004	PUZZLE-IN005

Ordering Information

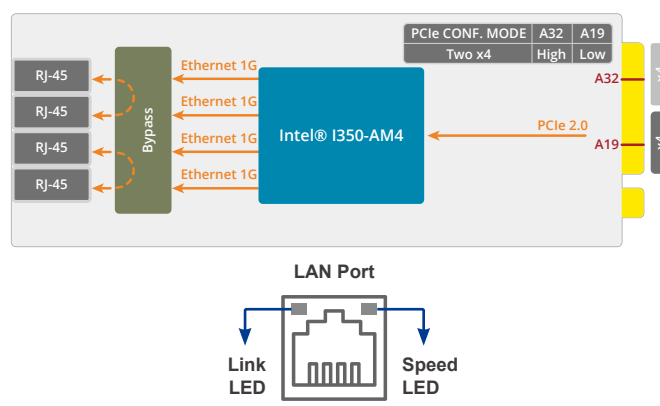| Part No.	Description
PulM-1G4T-I350-BP-R10	Intel® Ethernet Controller I350-AM4 based Network Interface Card with 4 x RJ-45 by 2 PCIe 2.0 x4 interface, RoHS.
PulM-1G4T/T-I350-BP-R10	Intel® Ethernet Controller I350-AM4 based Network Interface Card with 4 x RJ-45 by 2 PCIe 2.0 x4 interface, RoHS.

Packing List

Part No.	L-shaped T10 PulM Wrench	Torx Screws	QIG
PulM-1G4T-I350-BP-R10	1	2	1
PulM-1G4T/T-I350-BP-R10	N/A	N/A	1

Dimensions *(Unit: mm)*

165.50
77.80
44.20

Block Diagram

PCIe CONF. MODE	A32	A19
Two x4	High	Low

RJ-45 — Ethernet 1G
RJ-45 — Ethernet 1G
RJ-45 — Ethernet 1G
RJ-45 — Ethernet 1G
Bypass
Intel® I350-AM4
A32 — x4
PCIe 2.0
A19 — x4

LAN Port

Link LED
Speed LED

LED	State		Description
Link (Left)	Yellow		Active
Speed (Right)	Green		1 Gbps data rate
	Orange		100 Mbps data rate
Off	Off		Bypass functio

PuIM-1G8T-I350

2 x Intel® Ethernet Controller I350-AM4 based Network Interface Card with 8 x RJ-45 by 2 PCIe 2.0 x4 interface, RoHS

Features

- 2 x Intel® Ethernet Controller I350-AM4
- 8 x GbE RJ-45 connectors
- 2 PCIe2.0 x4
- CE / FCC / RoHS compliant

Specifications

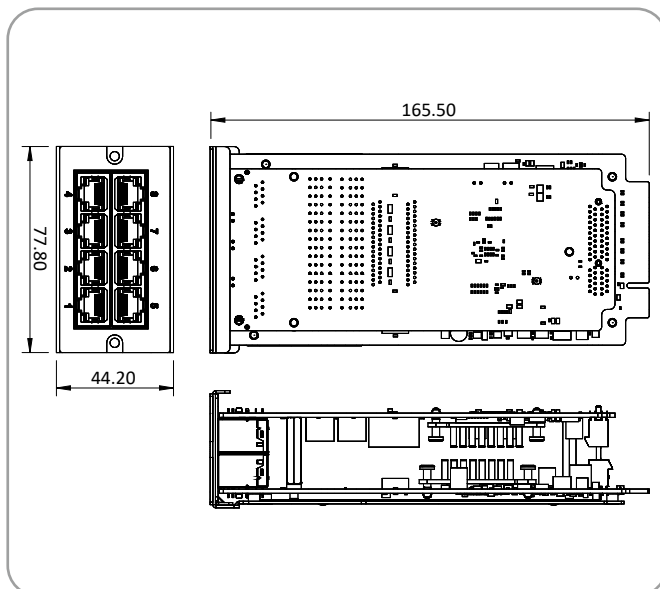| Model Name	PuIM-1G8T-I350	PuIM-1G8T/T-I350
Form Factor	IEI Networking Module	
NIC	Intel® Ethernet Controller I350-AM4	
LAN Interface	RJ-45	
Speed	1GbE	
Ports	8	
Host Interface	2 PCIe 2.0 x4	
Storage Temp.	-20°C ~ 75°C (-4°F ~ 167°F)	
Operating Temp.	0°C ~ 40°C (32°F ~ 104°F)	
Humidity	5% ~ 90% RH, Non-condensing	
Dimensions (mm)	165.50 (L) x 77.8 (W) x 44.2 (H)	
Compliance	CE / FCC / RoHS	
Support Device	PUZZLE-IN001 PUZZLE-IN001A PUZZLE-IN004	PUZZLE-IN005

Ordering Information

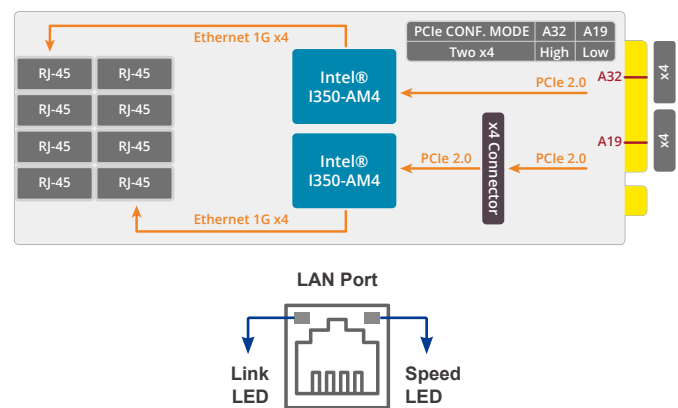| Part No.	Description
PuIM-1G8T-I350-R10	Intel® Ethernet Controller I350-AM4 based Network Interface Card with 8 x RJ-45 by 2 PCIe 2.0 x4 interface, RoHS.
PuIM-1G8T/T-I350-R10	Intel® Ethernet Controller I350-AM4 based Network Interface Card with 8 x RJ-45 by 2 PCIe 2.0 x4 interface, RoHS.

Packing List

Part No.	L-shaped T10 PuIM Wrench	Torx Screws	QIG
PuIM-1G8T-I350-R10	1	2	1
PuIM-1G8T/T-I350-R10	N/A	N/A	1

Dimensions *(Unit: mm)*

165.50

77.80

44.20

Block Diagram

PCIe CONF. MODE	A32	A19
Two x4	High	Low

Ethernet 1G x4

Ethernet 1G x4

RJ-45 / Intel® I350-AM4 / PCIe 2.0 / A32 / x4

Intel® I350-AM4 / PCIe 2.0 / x4 Connector / PCIe 2.0 / A19 / x4

LAN Port

Link LED   Speed LED

LED	State		Description
Link (Left)	Yellow		Active
Speed (Right)	Green		1 Gbps data rate
	Orange		100 Mbps data rate

PuIM–1G8T–I350–BP

Intel® Ethernet Controller I350-AM4 based Network Interface Card with 4 x RJ-45 by 2 PCIe 2.0 x4 interface, RoHS

Features

- 2 x Intel® Ethernet Controller I350-AM4
- 8 x GbE RJ-45 connectors
- 2 PCIe2.0 x4
- LAN Bypass (by sku)
- CE / FCC / RoHS compliant

Specifications

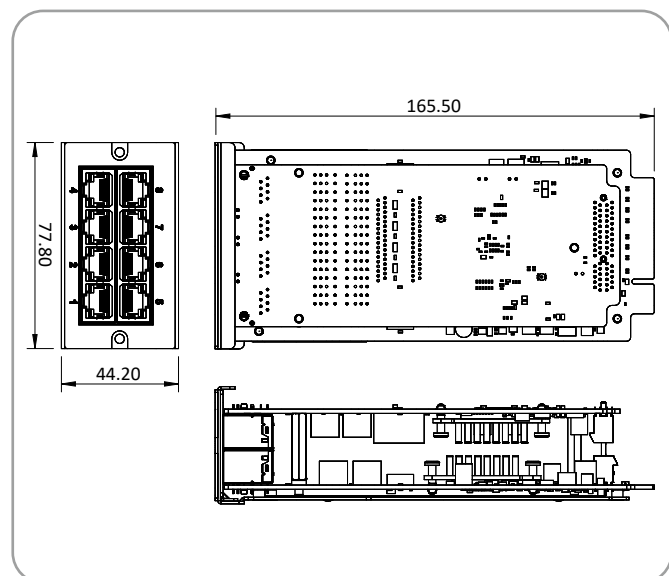| Model Name	PuIM-1G8T-I350-BP	PuIM-1G8T/T-I350-BP
Form Factor	IEI Networking Module	
NIC	Intel® Ethernet Controller I350-AM4	
Bypass	Yes, four pairs	
LAN Interface	RJ-45	
Speed	1GbE	
Ports	8	
Host Interface	2 PCIe 2.0 x4	
Storage Temp.	-20°C ~ 75°C (-4°F ~ 167°F)	
Operating Temp.	0°C ~ 40°C (32°F ~ 104°F)	
Humidity	5% ~ 90% RH, Non-condensing	
Dimensions (mm)	165.50 (L) x 77.8 (W) x 44.2 (H)	
Compliance	CE / FCC / RoHS	
Support Device	PUZZLE-IN001 PUZZLE-IN001A PUZZLE-IN004	PUZZLE-IN005

Ordering Information

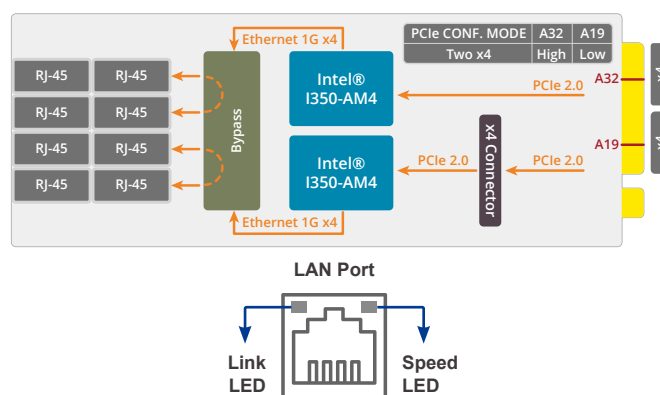| Part No.	Description
PuIM-1G8T-I350-BP-R10	Intel® Ethernet Controller I350-AM4 based Network Interface Card with 8 x RJ-45 by 2 PCIe 2.0 x4 with bypass interface, RoHS
PuIM-1G8T/T-I350-BP-R10	Intel® Ethernet Controller I350-AM4 based Network Interface Card with 8 x RJ-45 by 2 PCIe 2.0 x4 with bypass interface, RoHS

Packing List

Part No.	L-shaped T10 PuIM Wrench	Torx Screws	QIG
PuIM-1G8T-I350-BP-R10	1	2	1
PuIM-1G8T/T-I350-BP-R10	N/A	N/A	1

Dimensions *(Unit: mm)*

165.50

77.80

44.20

Block Diagram

PCIe CONF. MODE	A32	A19
Two x4	High	Low

Ethernet 1G x4
RJ-45
Bypass
Intel® I350-AM4
PCIe 2.0
A32
x4
PCIe 2.0
x4 Connector
A19
x4
Intel® I350-AM4
PCIe 2.0
Ethernet 1G x4

LAN Port

Link LED — Speed LED

LED	State		Description
Link (Left)	Yellow		Active
Speed (Right)	Green		1 Gbps data rate
	Orange		100 Mbps data rate
Off	Off		Bypass function

PuIM–1G8T–BCM5720

Broadcom BCM5720 based Network Interface Card with 8 x RJ-45 by 4 PCIe 2.0 x 2 Interface

Features

- 2 x Intel® Ethernet Controller I350-AM4
- 8 x GbE RJ-45 connectors
- 2 PCIe2.0 x4
- CE / FCC / RoHS compliant

Specifications

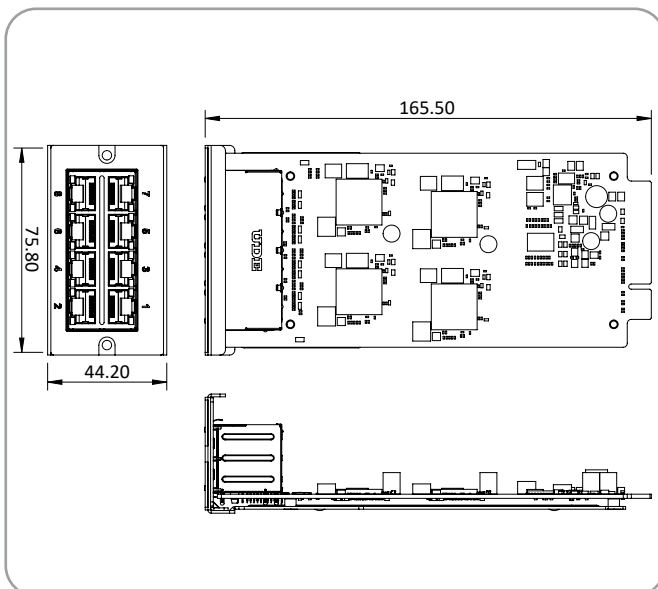| Model Name	PuIM-1G8T-BCM5720
Form Factor	IEI Networking Module - PuIM
NIC	Broadcom BCM5720
LAN Bypass	N/A
LAN Interface	RJ-45
Speed	GbE
Ports	8
Host Interface	4 PCIe 2.0 x2
Storage Temp.	-20°C ~ 75°C (-4°F ~ 167°F)
Operating Temp.	0°C ~ 40°C (32°F ~ 104°F)
Humidity	5% ~ 90% RH, Non-condensing
Dimensions (mm)	165.50 (L) x 77.8 (W) x 44.2 (H)
Compliance	RoHS

Ordering Information

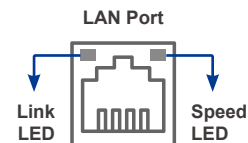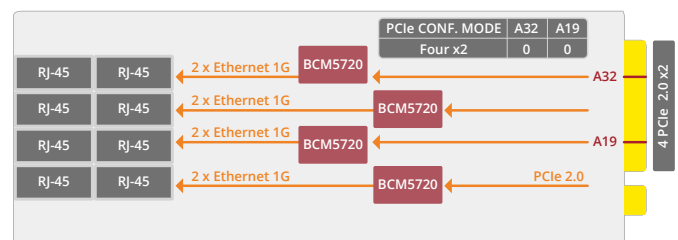| Part No.	Description
PuIM-1G8T-BCM5720-R10	Broadcom BCM5720 based network interface card with eight RJ-45 by 4 PCIe 2.0 x2 interface, RoHS

Packing List

Part No.	L-shaped T10 PuIM Wrench	Torx Screws	QIG
PuIM-1G8T-BCM5720	1	2	1

Dimensions *(Unit: mm)*

165.50

75.80

44.20

Block Diagram

PCIe CONF. MODE	A32	A19
Four x2	0	0

RJ-45 | RJ-45 — 2 x Ethernet 1G — BCM5720 ← A32

RJ-45 | RJ-45 — 2 x Ethernet 1G — BCM5720

RJ-45 | RJ-45 — 2 x Ethernet 1G — BCM5720 ← A19

RJ-45 | RJ-45 — 2 x Ethernet 1G — BCM5720 ← PCIe 2.0

4 PCIe 2.0 x2

LAN Port

Link LED   Speed LED

LED	State		Description
Link (Left)	Yellow		Active
Speed (Right)	Green		1 Gbps date rate
	Orange		100 Mbps data rate

PulM–2P1M

Two Mini-PCIe and One M.2 Expansion Card Support the Wi-Fi or LTE Module, RoHS

Features

- Supports 2 x PCIe mini and 1 x 2230/2242 M.2 B key
- Mini PCIe and M.2 with SIM card slots
- 2 PCIe 3.0 x4
- RoHS compliant

Specifications

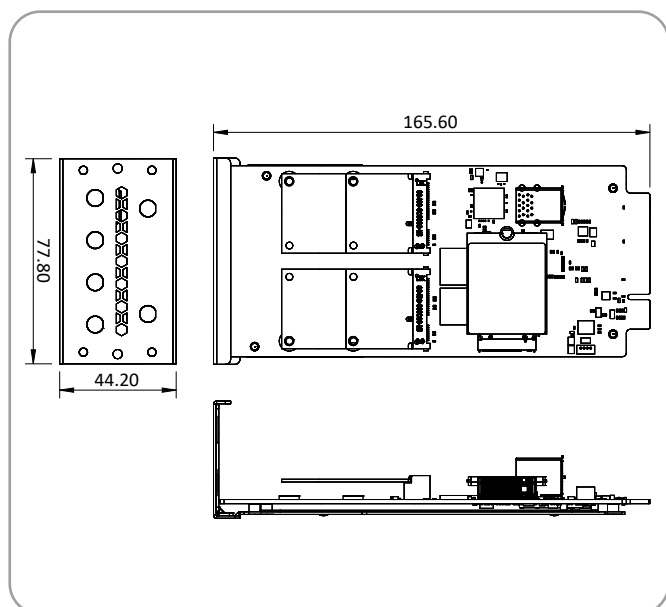| Model Name	PulM-2P1M
Interface	IEI Networking Module - PulM
Onboard IC	ASM1812 (PCIe Gen 2 x4) FL1100EX (PCI-E To USB 3.0 (4 Port))
M.2	1 x 2230/2242 M.2 B key (PCIe 2.0, USB 3.2 Gen 1) with SIM card slot
PCIe	2 x PCIe Mini (PCIe, USB 2.0) with SIM card slots
Storage Temp.	-20°C ~ 75°C (-4°F ~ 167°F)
Operating Temp.	0°C ~ 40°C (32°F ~ 104°F)
Humidity	5% ~ 90% RH, Non-condensing
Dimensions (mm)	165.50 (L) x 77.8 (W) x 44.2 (H)
Compliance	RoHS
Support Device	PUZZLE-IN001 PUZZLE-IN001A PUZZLE-IN004

Ordering Information

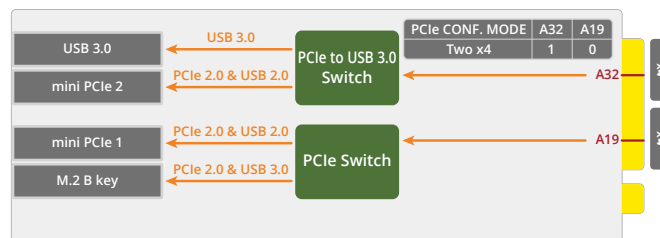| Part No.	Description
PulM-2P1M-R10	Two Mini-PCIe and One M.2 Expansion Card Support the Wi-Fi or LTE Module, RoHS

Packing List

Part No.	L-shaped T10 PulM Wrench	Torx Screws	QIG
PulM-2P1M-R10	1	2	1

Dimensions *(Unit: mm)*

165.60

77.80

44.20

Block Diagram

USB 3.0

USB 3.0

mini PCIe 2

PCIe 2.0 & USB 2.0

PCIe to USB 3.0 Switch

PCIe CONF. MODE	A32	A19
Two x4	1	0

A32

x4

mini PCIe 1

PCIe 2.0 & USB 2.0

PCIe 2.0 & USB 2.0

A19

x4

M.2 B key

PCIe 2.0 & USB 3.0

PCIe Switch

PulM-M2-2S

M.2 PCIe SSD expansion card supports two M.2 2280 PCIe NVMe (3.0 x4) SSDs, two PCIe 3.0 x4 host interface

Features

- Supports two M.2 2280 PCIe NVMe (3.0 x4) SSDs
- M.2 SSD temperature is monitored in real time by sensor IC
- 2 PCIe 3.0 x4
- LED indicator shows the M.2 status
- RoHS compliant

Specifications

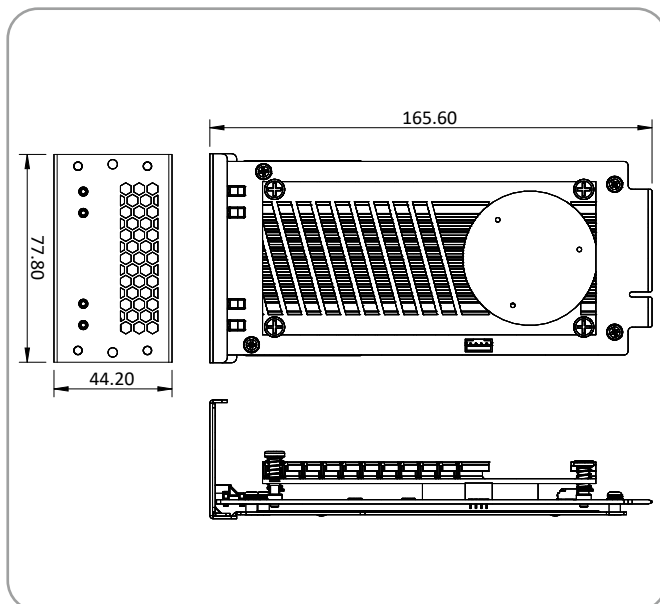| Model Name	PulM-M2-2S
Interface	IEI Networking Module - PulM
Onboard IC	N/A
M.2	2 x M key 2260/2280/22110 (PCIe 3.0 x4/NVMe)
PCIe	N/A
Storage Temp.	-20°C ~ 75°C (-4°F ~ 167°F)
Operating Temp.	0°C ~ 40°C (32°F ~ 104°F)
Humidity	5% ~ 90% RH, Non-condensing
Dimensions (mm)	165.50 (L) x 77.8 (W) x 44.2 (H)
Compliance	RoHS
Support Device	PUZZLE-IN001 PUZZLE-IN001A PUZZLE-IN004

Ordering Information

Part No.	Description
PulM-M2-2S-R10	M.2 PCIe SSD expansion card supports two M.2 2280 PCIe NVMe (3.0 x4) SSDs; two PCIe 3.0 x4 host interface, RoHS

Packing List
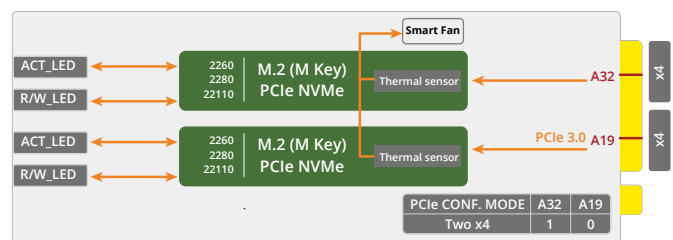
Part No.	L-shaped T10 PulM Wrench	Thermal Pad kit	Torx Screws	M.2 SSD Screw	QIG
PulM-M2-2S-R10	1	2	2	4	1

Dimensions *(Unit: mm)*

165.60

77.80

44.20

Block Diagram

Smart Fan

ACT_LED		2260 2280 22110	M.2 (M Key) PCIe NVMe	Thermal sensor	A32	x4
R/W_LED						
ACT_LED		2260 2280 22110	M.2 (M Key) PCIe NVMe	Thermal sensor	PCIe 3.0 A19	x4
R/W_LED						

PCIe CONF. MODE	A32	A19
Two x4	1	0

LED	State		Description
Left	Red	🟥	Active
Right	Green	🟩	Read/Write

Mustang-QA100-C627

Intel® QAT accelerator for Crypto and Compression with lewisburg chipset, PCIe Gen 3 x16, RoHS
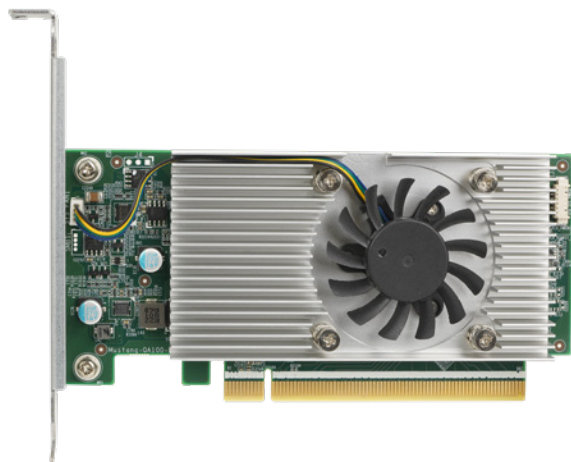
Features

• 1 x Intel® Lewisburg chipset C627
• Asymmetric and Symmetric encryption and authentication
• Digital signatures
• RSA, DH, and ECC
• Lossless data compression

Specifications

Throughput	
SSL/IPSec	100Gbps
Compression Deflate	100Gbps
Decompression Deflate	100Gbps
RSA Decrypt 1k-bit	550K Ops/sec
RSA Decrypt 2k-bit	100 Ops/Sec

Specifications	
Main Chip	Intel® C627 Chipset
Cooling	Active cooling
Interface	PCIe Gen 3 x16
Operating Humidity	0% ~ 90%, non-condensing
Operating Temperature	0°C ~ 40°C
Storage Temperature	-40°C ~ 75°C (-40°F ~ 167°F)
Dimension	144.27 x 68.9 x 15.43 (L x W x H mm)
Regulation	RoHS
Operating system support	Linux

Ordering Information

Part No.	Description
Mustang-QA100-C627-R10	Intel® QAT accelerator for Crypto and Compression with lewisburg chipset, PCIe Gen 3 x16, RoHS

Packing List

Mustang-QA100-C627-R10	1 x QIG

Dimensions *(Unit: mm)*