



HORUS420-R1

2U RUGGED RACK MOUNT SERVER

User's Manual



User's Manual

Revision Date: Jul. 25. 2023

Safety Information

Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area.
- If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your local distributor.

Operation safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter any technical problems with the product, contact your local distributor

Statement

- All rights reserved. No part of this publication may be reproduced in any form or by any means, without prior written permission from the publisher.
- All trademarks are the properties of the respective owners.
- All product specifications are subject to change without prior notice

HORUS420-R1 User's Manual

Revision Date: Feb.02. 2024

Specifications

SYSTEM

CPU	6th Gen Intel® Xeon E3-1268L v5, i7-6700TE, 4C, 2.4/3.4GHz, 8MB cache, TDP 35W
Memory type	4x DDR4 XR-DIMM up to 64GB
Chipset	Intel® Q170 Chipset
GPU	NVIDIA GTX 1050Ti
Storage Device	Internal: 2x 2TB 3D TLC SSD
	External: 2x 2TB 3D TLC SSD
Ethernet Controller	2x Intel® 82599ES (10Gbe) 3x Intel® i210IT & 1x Intel® i219LM GbE

FRONT I/O

USB	4x USB 3.0
SSD Tray	2x external SSD 2TB 3D TLC
Power button/LED	1x
HDD LED	1x

REAR I/O

USB	4x USB3.0
10 Gigabit Ethernet	2x SFP
1 Gigabit Ethernet	4x RJ45
Display	4 x Display Port and 1 x HDMI from CPU Display Port from MXM Graphic card up to 6

MECHANICAL

Power Requirement	2x 200W AC-DC PSU with redundant support 90V to 260V AC input
Dimension	430 x 380 x 88 mm (W x D x H)
Weight	9.7 kg (21.8lbs)
Operating Temperature	-20°C to 60°C (ambient with air flow)
Storage Temperature	-40°C to 85°C
Relative Humidity	5% to 95%, non-condensing

ENVIRONMENTAL

MIL-STD-810 Test	Method 507.5, Procedure II (Temperature & Humidity)
------------------	---

HORUS420-R1 User's Manual

Revision Date: Feb.02. 2024

	Method 509.7 Salt Spray (50±5)g/L
	Method 514.6 Vibration Category 24/Non-Operating (Category 20 & 24, Vibration)
	Method 514.6 Vibration Category 20/Operating (Category 20 & 24, Vibration)
	Method 516.6 Shock-Procedure V Non-Operating (Mechanical Shock)
	Method 516.6 Shock-Procedure I Operating (Mechanical Shock)
	Method 500.5, Procedures I and II (Altitude, Operation): 12,192M, (40,000 ft) for the initial cabin altitude (18.8Kpa or 2.73 Psia)
	Method 500.5, Procedures III and IV (Altitude, Non-Operation): 15,240, (50,000 ft) for the initial cabin altitude (14.9Kpa or 2.16 Psia)
	Method 501.5, Procedure I (Storage/High Temperature)
	Method 501.5, Procedure II (Operation/High Temperature)
	Method 502.5, Procedure I (Storage/Low Temperature)
	Method 502.5, Procedure II (Operation/Low Temperature)
	Method 503.5, Procedure I (Temperature shock)
EMC	CE, FCC compliance
Green Product	RoHS compliant

Revision History

Revision	Date (yyyy/mm/dd)	Changes
Version 1.0	2024/02/02	Initial release
Version 2.0	2026/1/19	Update Picture & Ordering information description

Packing list

- ☐ HORUS420-R1 Rugged Rack Mount Server
- ☐ CD (Driver + usermanual)



If any of the above items is damaged or missing, please contact your local distributor.

Ordering Information

Model Number	Description
HORUS420-R1	2U Fanless Redundant Storage Server, Intel® Core i7-6700TE Processor, 2x USB2.0, 4x GLAN, 4x USB3.0, 2x 10GbE SFP, AC-DC redundant support 100V~240V AC-IN, 4x SATA3.0 SSD, extended temp -20°C to 60°C degree supports NVIDIA® Graphic Card MD1050TI, 1x HDMI, 4 x DP.

HORUS420-R1 User's Manual

Revision Date: Feb.02. 2024

Table of contents

Safety Information1

 Electrical safety 1

 Operation safety..... 1

 Statement..... 1

Specifications2

Revision History.....3

Packing list.....3

Ordering Information.....3

Chapter 1: Product Introduction5

 1.1 Key Features..... 5

 1.2 Mechanical Dimensions..... 6

 1.3 Front Panel Component 7

 1.4 Rear Panel Component 7

Chapter 2: Jumpers and Connectors Locations8

 2.1 Connector & LED Pin Definitions..... 8

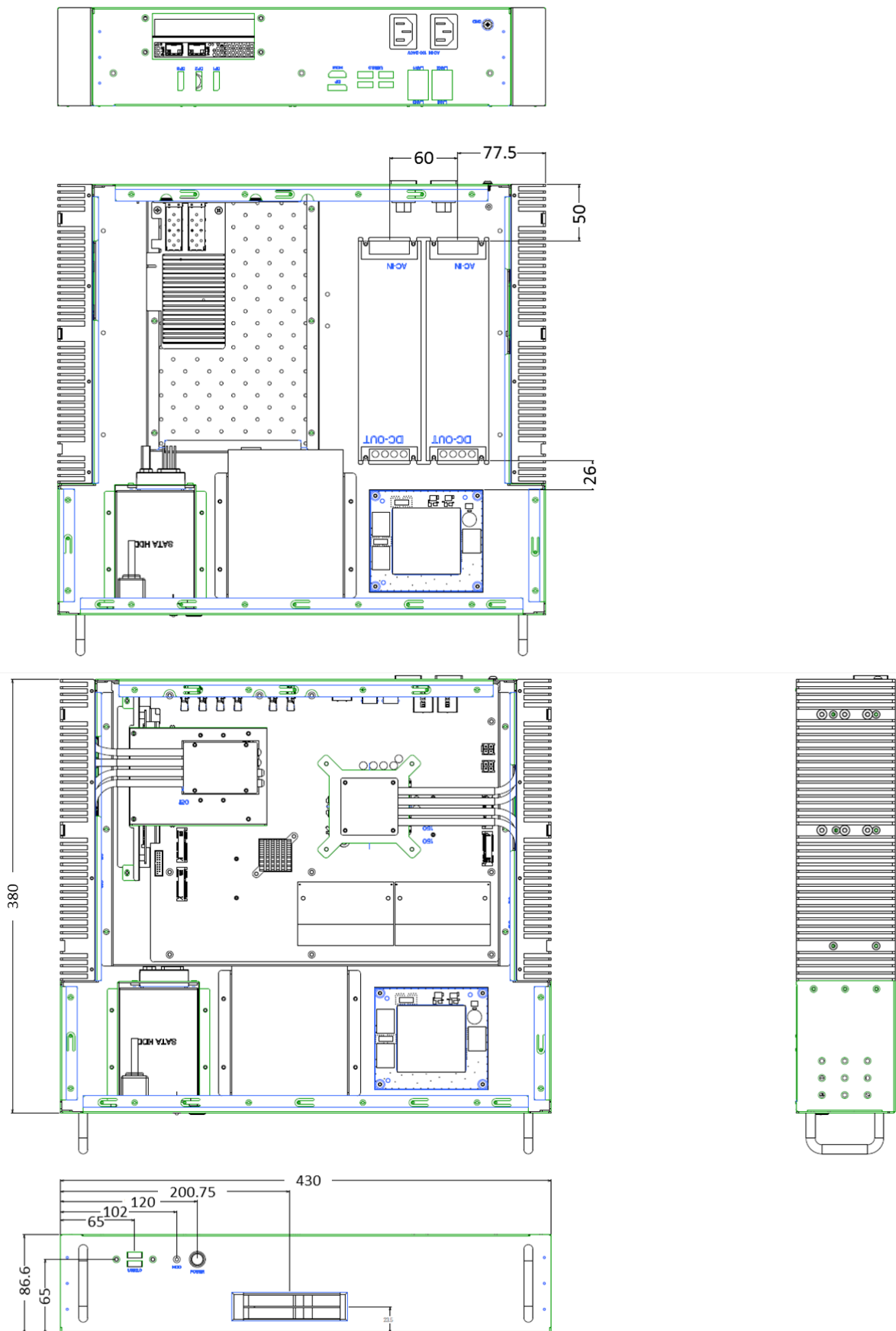
Chapter 1: Product Introduction

1.1 Key Features

System	
CPU	Intel® 14 nm Skylake-S Intel® Core™ i7-6700TE Processor (8M Cache, 2.40/3.40 GHz)
Chipset	Intel® Q170
Memory Type	4x XR-DIMM DDR4 up to 64GB
BIOS	AMI® UEFI BIOS
Expansion Slot	1x PCIe x16 Golden finger
	4x mPCIe (2 with mSATA supported)
	1x MXM slot support MXM3.0/3.1
Storage	Internal: 2x 2TB 3D TLC 2.5" SSD
	External: 2 x 2TB 3D TLC 2.5" SSD
Front I/O	
Power Switch/LED	1x
HDD LED	1x
USB2.0	2x
SSD Tray	2x 2.5" Easy Swap HDD/SSD Trays
Handle	2x
Rear I/O	
USB3.0	4x
10GbE Ethernet	2x SFP
1GbE Ethernet	4x RJ45
Display Port	4x
HDMI	1x
Power input	2x IEC AC inlet, 100V-240V AC
Ground Screw	1x
Mechanical & Environment	
Construction	Aluminum chassis with fanless design
Power Requirement	2x 200W AC-DC PSU with Redundant support 90V to 260V AS input
Dimension	430 x 380 x 88 mm(W x L x H)
Weight	9.7kg(21.8lbs)
Operating Temp.	-20°C to 60°C
Storage Temp.	-40°C to 85°C
Relative Humidity	5% to 95%, non-condensing

Specifications are subject to change without notice

1.2 Mechanical Dimensions

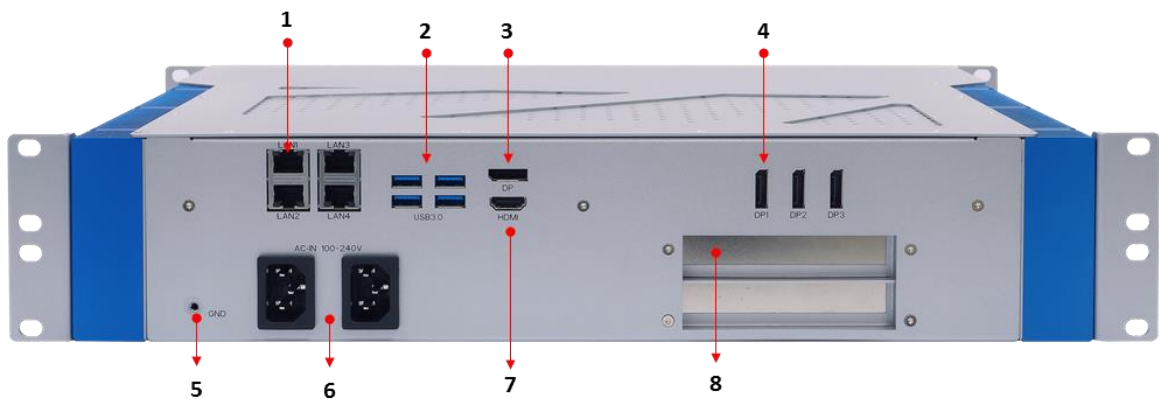


1.3 Front Panel Component



1	2x USB2.0
2	HDD/SSD LED
3	Power ON/Off Switch with LED
4	2x 2.5" Easy Swap trays

1.4 Rear Panel Component



1	4x RJ45
2	4x USB3.0
3	1x Display Port
4	3x Display Ports
5	1x GND screw
6	2x IEC AC-input
7	1x HDMI
8	2x SFP

Caution:



Caution

Disconnect all power sources

Chapter 2: Jumpers and Connectors Locations

2.1 Connector & LED Pin Definitions

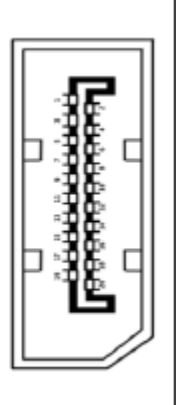
LAN: LAN1-LAN4 and LAN LED

LAN Port LED Indications

Activity/Link LED		SPEED LED	
Status	Description	Status	Description
Off	No Link	Off	10 Mbps connection
Blinking	Data Activity	Yellow	100 Mbps connection
On	Link	Green	1Gbps connection

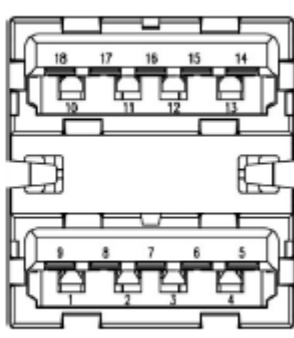
DP: DISPLAY PORT

PIN	DEFINITION	PIN	DEFINITION
1	DPC_LANEP0	2	GND
3	DPC_LANEN0	4	DPC_LANEP1
5	GND	6	DPC_LANEN1
7	DPC_LANEP2	8	GND
9	DPC_LANEN2	10	DPC_LANEP3
11	GND	12	DPC_LANEN3
13	DDIC_DDC_AUX_SEL	14	GND
15	DPC_AUXP	16	GND
17	DPC_AUXN	18	DPC_DET
19	GND	20	DPC_PWR



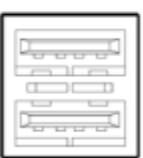
USB3.0: 1-4

LOWER USB		UPPER USB	
PIN	DEFINITION	PIN	DEFINITION
1	USB_VCC2	10	USB_VCC3
2	USB_D0-	11	USB_D1-
3	USB_D0+	12	USB_D1+
4	GND	13	GND
5	USB_SSRX3N_C	14	USB_SSRX4N_C
6	USB_SSRX3P_C	15	USB_SSRX4P_C
7	GND	16	GND
8	USB3TN3	17	USB3TN4
9	USB3TP3	18	USB3TP4



USB2.0: 1-2

Pin	Definition	Pin	Definition
1	+5V	5	+5V
2	USB_D-	6	USB_D-
3	USB_D+	7	USB_D+
4	GND	8	GND



HDMI:

PIN	DEFINITION	PIN	DEFINITION
1	HDMI_2P	11	GND
2	GND	12	HDMI_CLKN
3	HDMI_2N	13	NC
4	HDMI_1P	14	NC
5	GND	15	DDC CLOCK
6	HDMI_1N	16	DDC DATA
7	HDMI_0P	17	GND
8	GND	18	+5V
9	HDMI_0N	19	HOTPLUG_DETECT
10	HDMI_CLKP		