

Description Guide

The following copyright notice protects this book under Copyright laws which prohibit such actions as, but not limited to, copying, distributing, modifying, and making derivative works.

Copyright ©Bull SAS 2020

Printed in France

Trademarks and Acknowledgements

We acknowledge the right of proprietors of trademarks mentioned in this manual.

All brand names and software and hardware product names are subject to trademark and/or patent protection.

Quoting of brand and product names is for information purposes only and does not represent trademark and/or patent misuse.

Hardware

January 2021

**Bull Cedoc
357 avenue Patton
BP 20845
49008 Angers Cedex 01
FRANCE**

The information in this document is subject to change without notice. Bull will not be liable for errors contained herein, or for incidental or consequential damages in connection with the use of this material.

Table of Contents

Preface	p-1
Intended Readers	p-1
Regulatory Declarations and Disclaimers	p-2
Safety Compliance Statement	p-2
European Union (EU) Certification	p-2
International Certification	p-2
Electromagnetic Compatibility Statement	p-2
EU Certification	p-2
Safety Notices	p-3
Chapter 1. Related publications	1-1
Chapter 2. BullSequana Edge description	2-1
2.1. Overview	2-1
2.2. General description	2-2
2.3. Front components	2-3
2.4. Rear components	2-4
2.5. Internal components	2-5
2.5.1. First layer components	2-5
2.5.2. Base layer components	2-6
2.5.3. Motherboard	2-7
2.5.4. Fans	2-8
2.5.5. Memory modules	2-9
2.5.6. Disks	2-10
2.5.7. Accelerator slots	2-11
2.5.8. Mini PCIe slots	2-12
2.5.9. Antenna connections	2-13
Chapter 3. Buttons, LEDs and ports	3-1
3.1. Front buttons and LEDs	3-1
3.1.1. Buttons	3-1
3.1.2. LEDs	3-1
3.2. Rear buttons, LEDs and ports	3-2
3.2.1. Buttons	3-2
3.2.2. LEDs	3-3
3.2.3. Ports	3-4
Appendix A. Technical description	A-1
A.1. General technical specifications	A-1
A.2. Dimensions and weight	A-2
A.3. Module technical specifications	A-3
A.4. Server Technical Description	A-4

A.5.	Antenna specifications	A-5
A.5.1.	Dual-band WiFi	A-5
A.5.2.	LoRaWAN	A-6
A.5.3.	LTE 3G/4G GSM	A-7
Acronyms	a-1

Preface

This guide gives a general overview of the server.

See The Bull support web site for the most up-to-date product information, documentation, firmware updates, software fixes and service offers:
<http://support.bull.com>

Intended Readers

This guide is intended for administrators and operators.

Regulatory Declarations and Disclaimers

Safety Compliance Statement

This product is in compliance with the following directives:

European Union (EU) Certification

Low voltage directive 2014/35/EU: standard EN 60950-1

International Certification

Standard IEC 60950-1

Electromagnetic Compatibility Statement

This product is in compliance with the protection requirements of the following directives:

EU Certification

EMC directive 2014/30/EU : standards EN 55024, EN 55032, EN61000-3-2, EN 61000-3-3

Safety Notices

Important Read the safety notices before undertaking any procedures described in the documentation.

All safety notices used in the documentation are listed in the Multilingual Safety Notices Guide, 86 X1 12FL and are classified by severity:

D0xx  **DANGER**
D0xx
A *Danger* notice indicates the presence of a hazard that has the potential of causing death or serious personal injury.

C0xx  **CAUTION**
C0xx
A *Caution* notice indicates the presence of a hazard that has the potential of causing moderate or minor personal injury.

W0xx  **WARNING**
W0xx
A *Warning* notice indicates an action that could cause damage to a program, device, system, or data.

Each safety notices is prefixed with a unique identification number. This can be used to locate the corresponding translated version in the Multilingual Safety Notices Guide, 86 X1 12FL.

Chapter 1. Related publications

This list is not exhaustive. Useful documentation is supplied on the Resource & Documentation DVD(s) delivered with the system. You are strongly advised to refer carefully to this documentation before proceeding to configure, use, maintain, or update your system.

Documentation Sets

- BullSequana Edge Customer Documentation Set, 86 AP 63PA
contains all the customer documentation relative to the BullSequana Edge server.
- BullSequana Edge Field Documentation Set, 86 AP 64PA
contains all the field documentation relative to the BullSequana Edge server.

Read me First

- Resource and Documentation DVD
contains the tools and documentation required to configure, operate and maintain the system.
- Generic Site Preparation Guide, 86 A1 85FP
explains how to prepare a Data Processing Center for Bull Systems, in compliance with the standards in force. This guide is intended for use by all personnel and trade representatives involved in the site preparation process.
- Atos Servers Multilingual Safety Notices Guide, 86 X1 12FL
lists, in different languages, the notices referenced in the documentation procedures.
- BullSequana Edge Description Guide, 86 A1 65FR
gives a general overview of the server. This guide is intended for use by administrators and operators.

Installation

- BullSequana Edge Installation Guide, 86 A1 67FR
explains how to install the server. This guide is intended for use by qualified personnel in charge of installation.

Operation

- BullSequana Edge Server Hardware Console Reference Guide, 86 A1 05FS
explains how to use the BullSequana Edge hardware console. This guide is intended for use by system administrators and operators.
- BullSequana Edge Management Console User's Guide, 86 A1 99FR
explains how to use the BullSequana Edge management console. This guide is intended for use by system administrators and operators.
- BullSequana Edge Getting Started Guide, 86 A1 07FS
explains how to connect, configure, and boot the server. Some basic operations are also described.

Maintenance

- BullSequana Edge Customer Service Guide, 86 A1 93FR explains how to replace the Customer Replaceable Units (CRU). This guide is intended for use by system administrators and operators.
- BullSequana Edge Field Service Guide, 86 A7 94FR explains how to replace the Field Replaceable Units (FRU). This guide is intended for use by qualified personnel.

Chapter 2. BullSequana Edge description

2.1. Overview

BullSequana Edge servers are based upon the MI (Machine Intelligence) architecture. They exploit the Intel ® Xeon ® platform, Skylake-D processor.

BullSequana Edge servers are designed to be modular, easy to maintain, and to support video security and digital signage verticals developed with the machine intelligence program. They are compact devices that can be installed in a closet or in an overhead location.

Each BullSequana Edge module is 2U high and includes one processor that can support up to four memory modules. There are two PCIe slots (two x16 generation 3) and two mini PCIe slots.

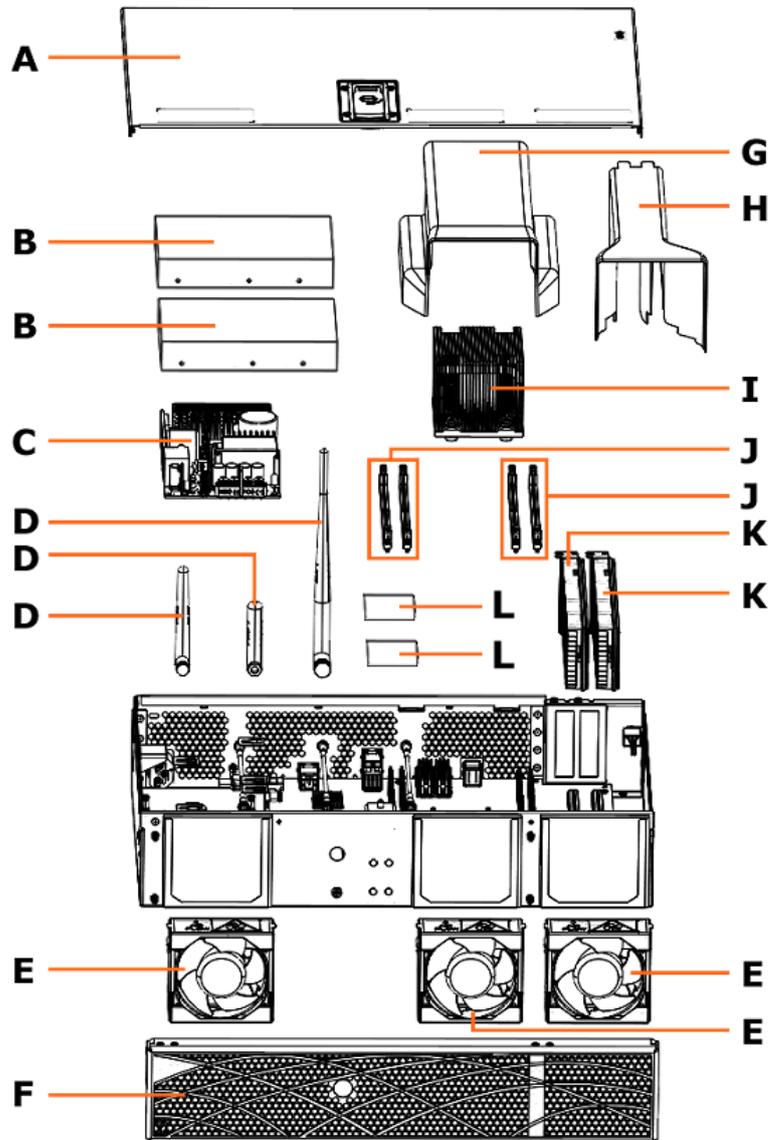
Three wireless technologies are supported:

- 2.4 GHz - 5 GHz dual-band WiFi (Dual-band WiFi)
- Long Range Wireless Area Network (LoRaWAN)
- Long Term Evolution 3G/4G Global System for Mobile Communications (LTE 3G/4G GSM)

BullSequana Edge servers are air-cooled and managed by a single Baseboard Management Controller BMC).

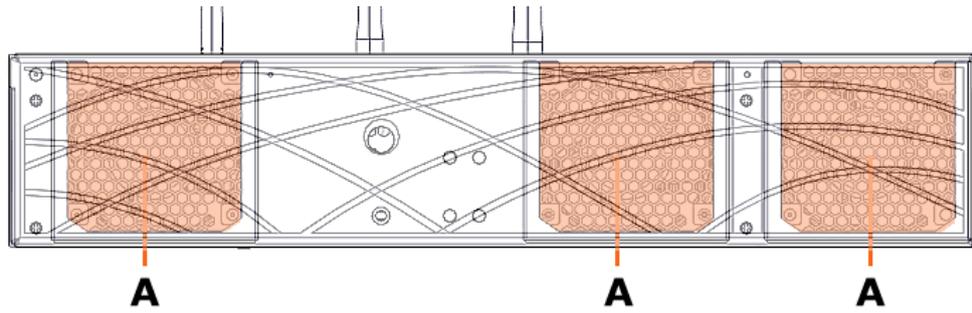
2.2. General description

 Exploded view



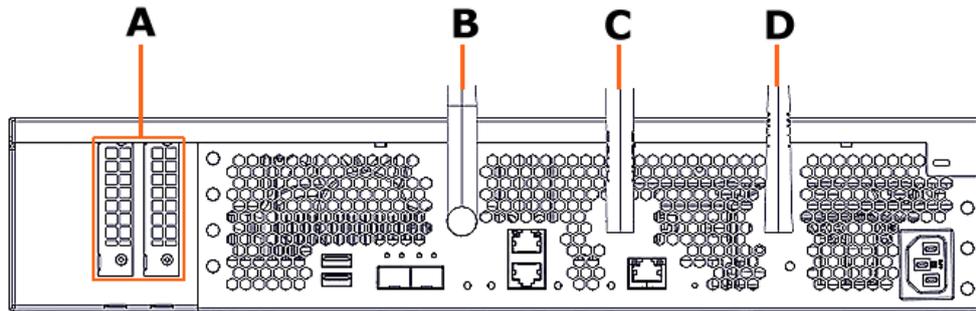
Mark	Description	Quantity
A	Top cover	1
B	Disk SATA or SDD	2
C	Power Supply Unit (PSU)	1
D	External antenna	3
E	Fan module	3
F	Bezel	1
G	Processor air duct	1
H	Accelerator air duct	1
I	Processor	1
J	Memory module	4
K	Accelerator	Up to 2
L	Mini PCIe cards	Up to 2

2.3. Front components



Mark	Description	Quantity
A	Fan module	3

2.4. Rear components

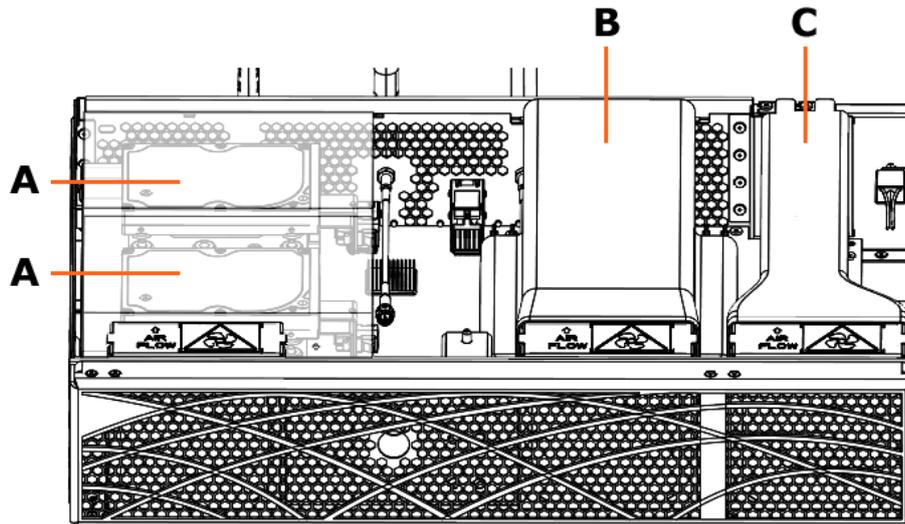


Mark	Description	Quantity
A	PCIe x16 board	2
B	External antenna 2 (Dual-band WiFi or LoRaWAN or LTE 3G/4G GSM)	1
C	External antenna 1 (Dual-band WiFi or LoRaWAN or LTE 3G/4G GSM)	1
D	External antenna 0 (BMC WiFi)	1

2.5. Internal components

2.5.1. First layer components

 Front view

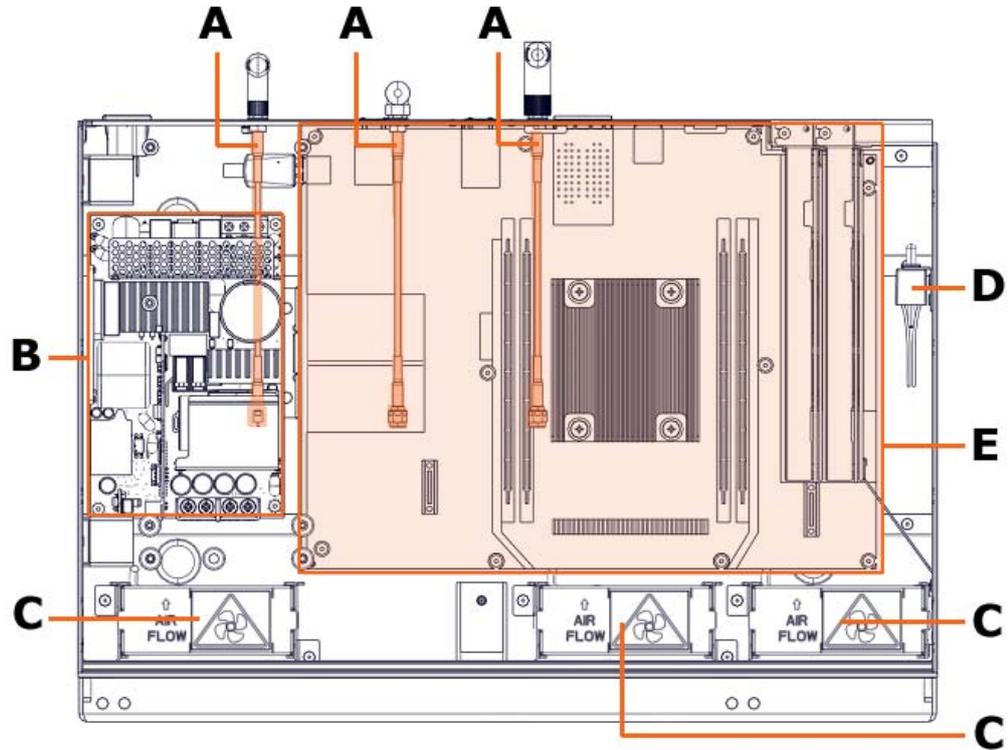


Mark	Description	Quantity
A	Disk	2
B	Processor air duct	1
C	Accelerator air duct	1

Note Disks assemblies and air ducts must be removed to access to the base layer components.

2.5.2. Base layer components

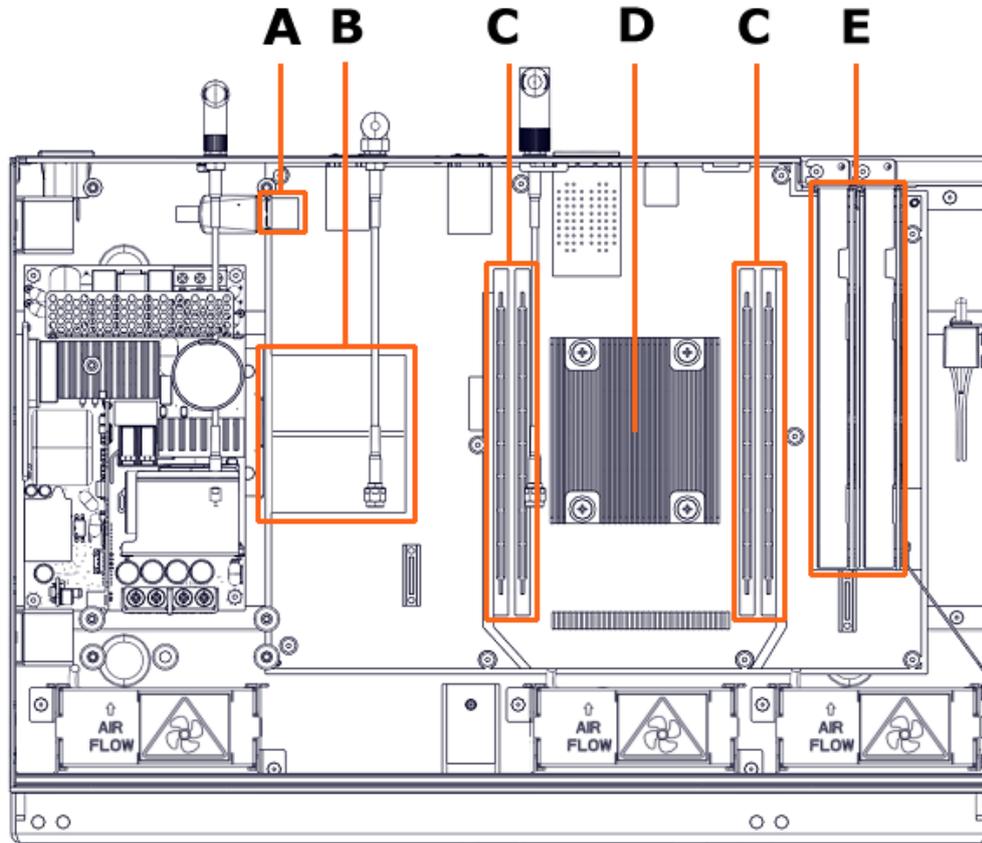
 Top view



Mark	Description	Quantity
A	Antenna connection	3
B	Power Supply Unit (PSU)	1
C	Fan	3
D	Intrusion detection switch	1
E	Motherboard	1

2.5.3. Motherboard

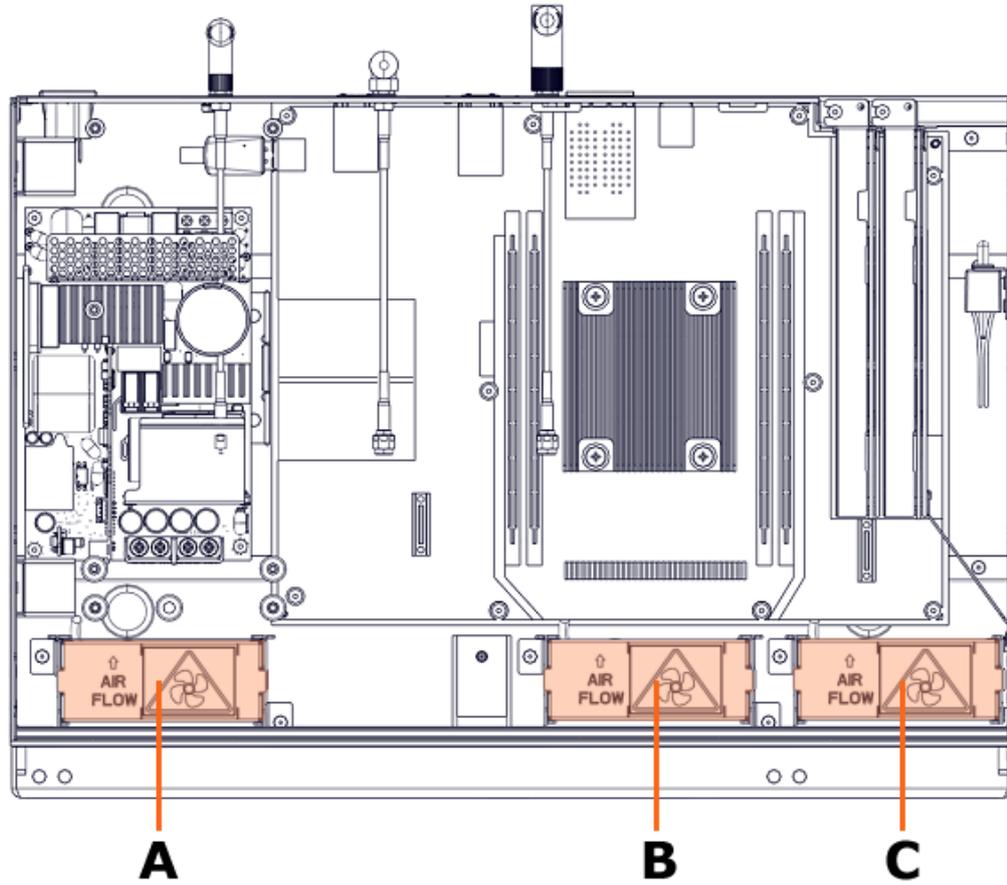
 Top view



Mark	Description	Quantity
A	USB connector (BMC WiFi dongle)	1
B	Mini PCIe slot	2
C	Memory module slot	4
D	Processor assembly	1
E	Accelerator slot	2

2.5.4. Fans

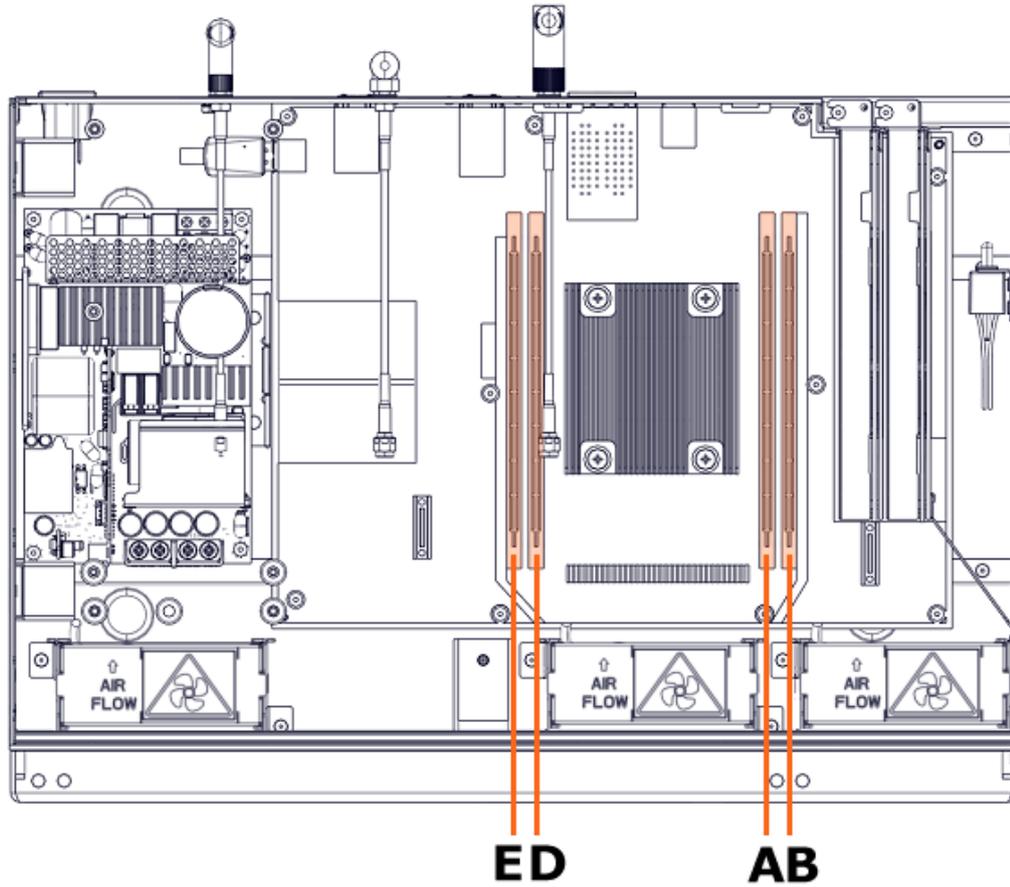
 Top view



Mark	Description
A	FAN 0_GPU
B	FAN 1_CPU
C	FAN 2_PSU

2.5.5. Memory modules

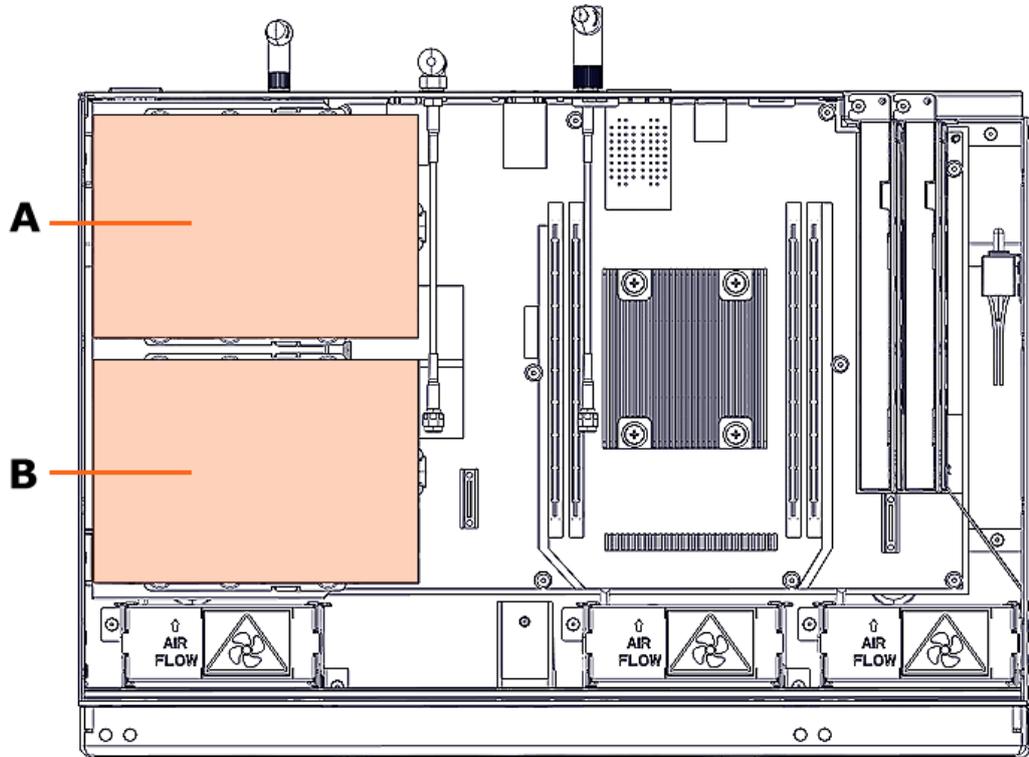
 Top view



Mark	Memory module	Channel	Board slot
A	0	0	CH-A
B	0	1	CH-B
D	0	2	CH-D
E	0	3	CH-E

2.5.6. Disks

 Top view

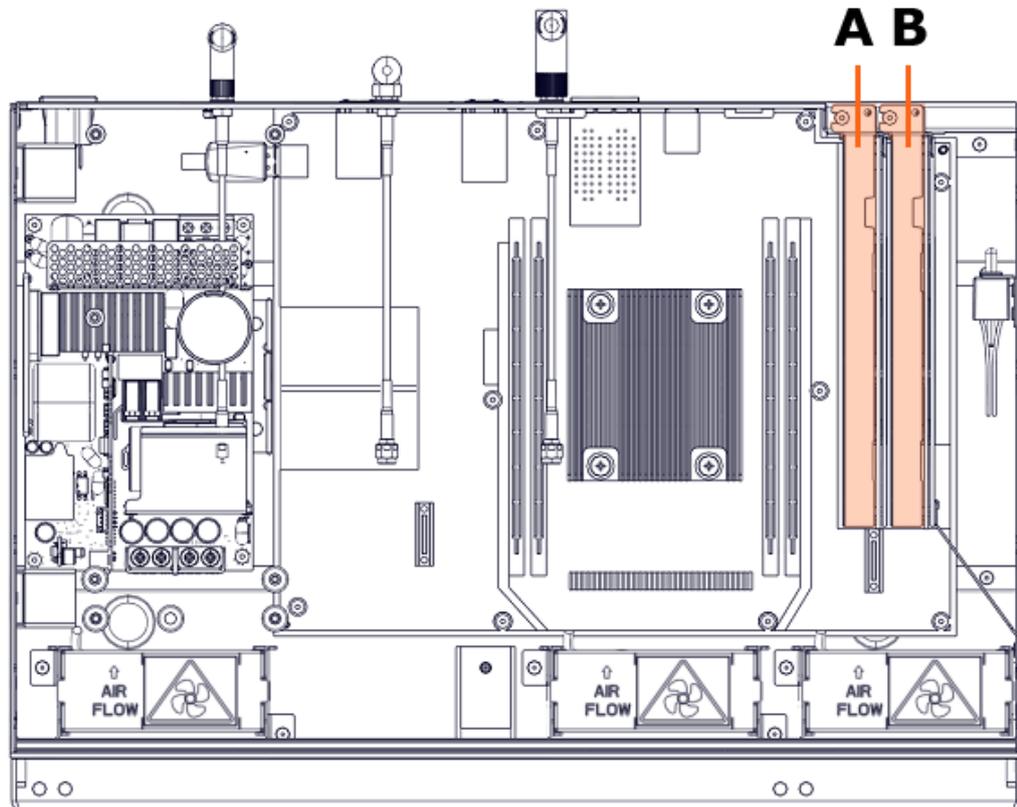


Mark	Description
A	Disk 0
B	Disk 1

2.5.7. Accelerator slots

Slot numbering

 Top view



Mark	Description
A	PCIe generation 3 x16 slot 0
B	PCIe generation 3 x16 slot 1

Options

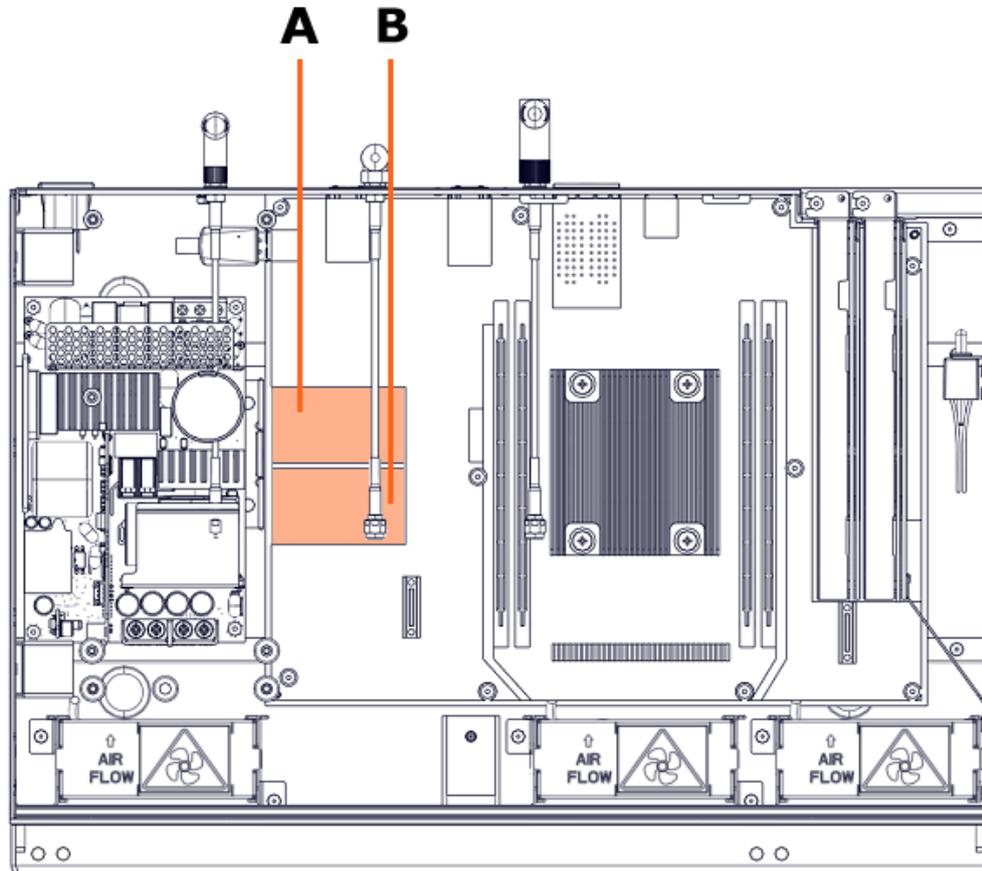
Various accelerator options are available for the PCIe slots:

- The slots are left empty
- Up to two Graphic Processing Unit (GPU) cards
- Up to one 150 watt Field Programmable Gate Array (FPGA) card
- Up to two 75 watt Field Programmable Gate Array (FPGA) cards

2.5.8. Mini PCIe slots

Slot numbering

 Top view



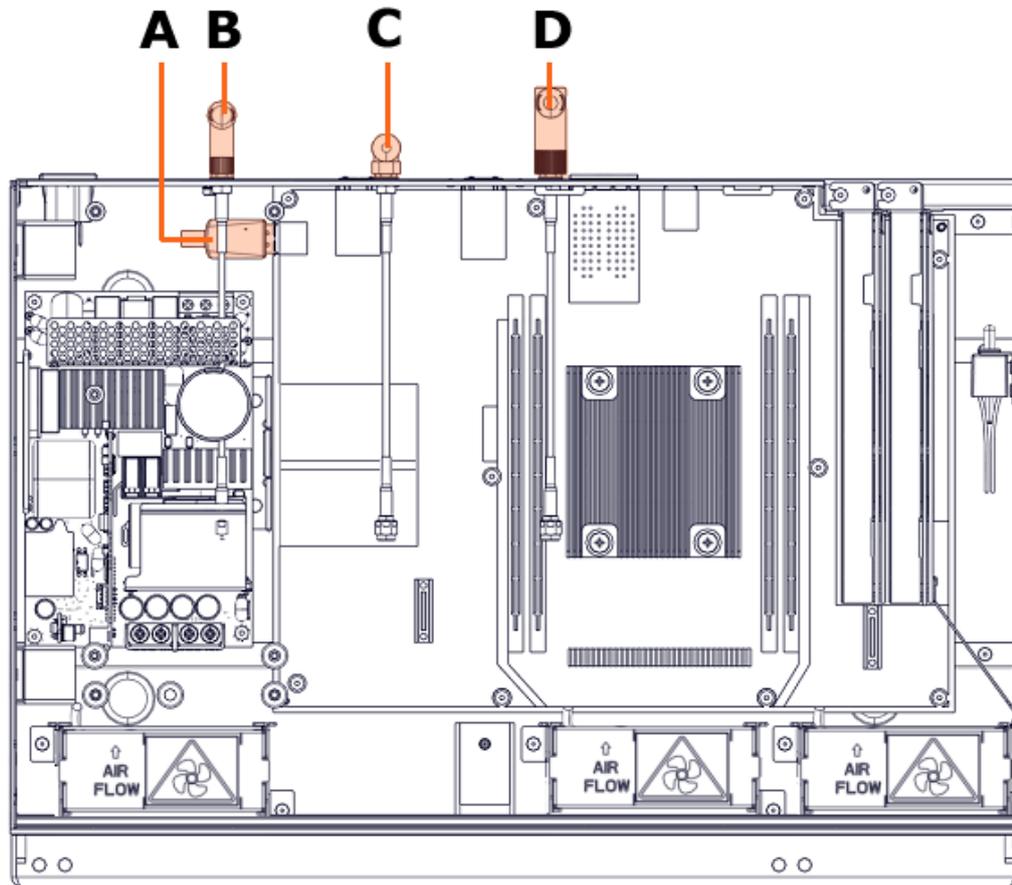
Mark	Description
A	Mini PCIe slot 0
B	Mini PCIe slot 1

Options

The mini PCIe slots can house either dual-band WiFi or LoRaWAN or LTE 3G/4G GSM cards.

2.5.9. Antenna connections

 Top view



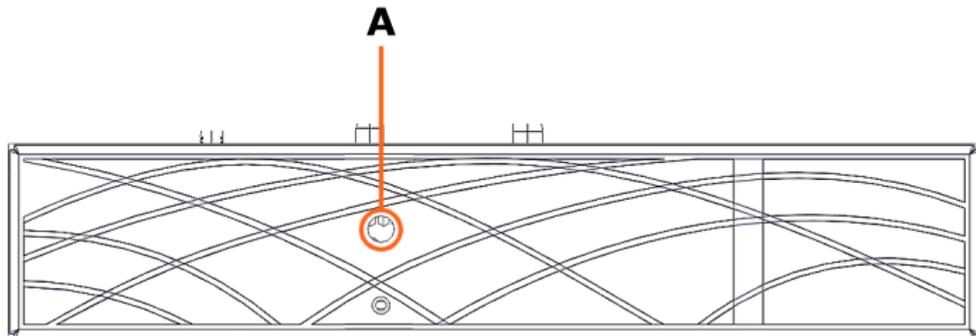
Mark	Description
A	BMC WIFI dongle
B	External antenna 0 : BMC WiFi
C	External antenna 1 : Dual-band WiFi or LoRaWAN or LTE 3G/4G GSM
D	External antenna 2 : Dual-band WiFi or LoRaWAN or LTE 3G/4G GSM

Chapter 3. Buttons, LEDs and ports

3.1. Front buttons and LEDs

3.1.1. Buttons

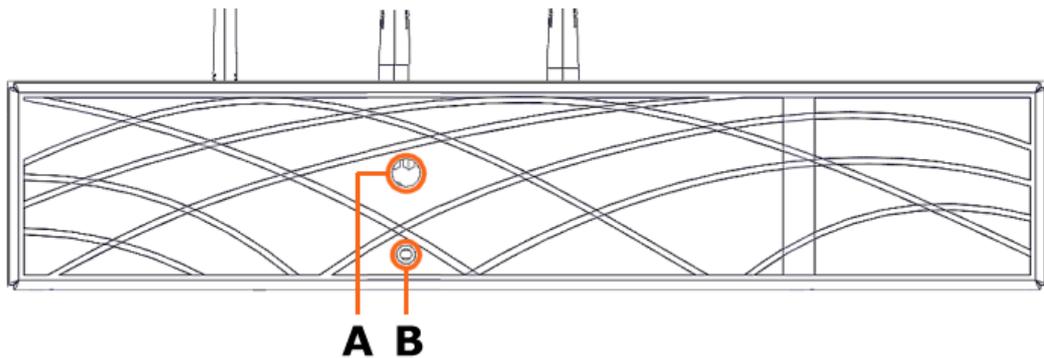
 Front view



Mark	Description
A	Power On/Off

3.1.2. LEDs

 Front view

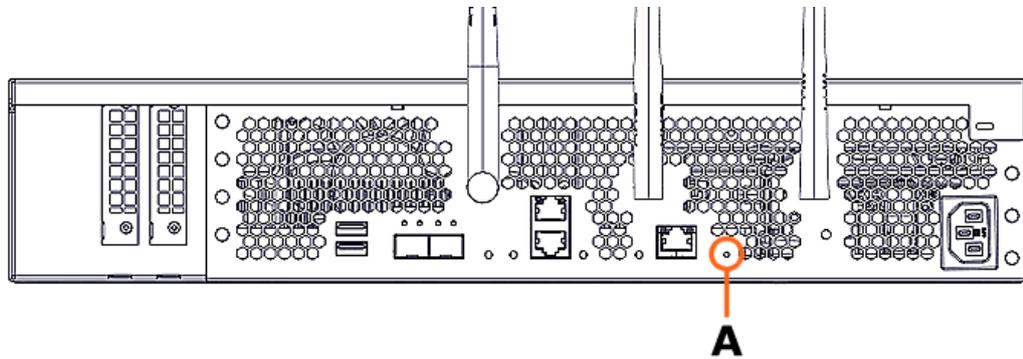


Mark	Color	Description
A	Solid green	Module power on status / OS boot
	Blinking green	Module standby status / BMC boot
B	Solid blue	Module Identification

3.2. Rear buttons, LEDs and ports

3.2.1. Buttons

 Rear view

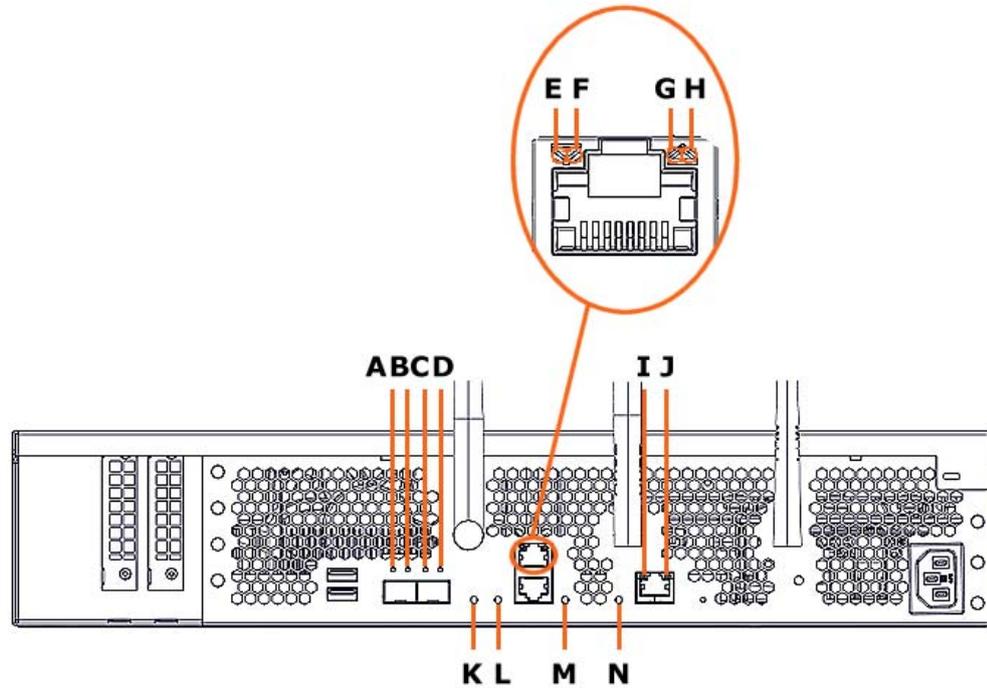


Mark	Description
A	<ul style="list-style-type: none">• Firmware recovery button• Factory reset button

See Customer Service Guide for more information.

3.2.2. LEDs

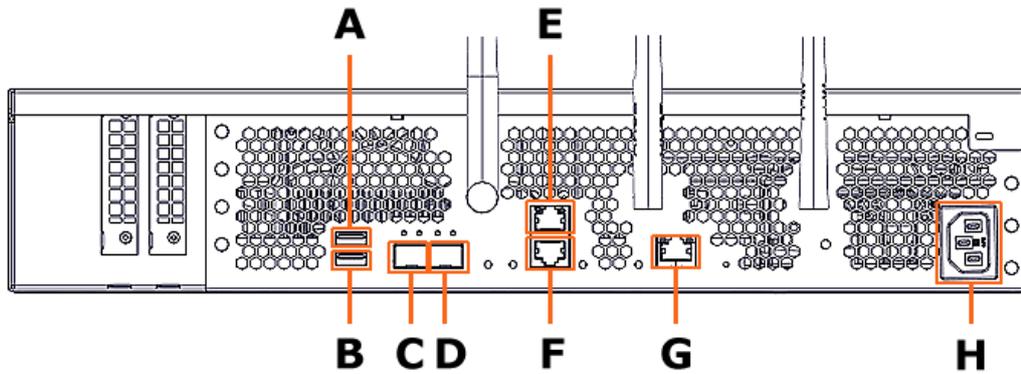
 Rear view



Mark	Color	Description	Component
A	Amber	Link 1 Gb/s Ethernet up	SFP+ port 1
	Green	Link 10 Gb/s Ethernet up	SFP+ port 1
B	Blinking amber	Ethernet link activity	SFP+ port 1
C	Amber	Link 1 Gb/s Ethernet up	SFP+ port 0
	Green	Link 10 Gb/s Ethernet up	SFP+ port 0
D	Blinking amber	Ethernet link activity	SFP+ port 0
E	Green	Link 1 Gb/s Ethernet up	RJ45 port 0
F	Blinking amber	Ethernet link activity	RJ45 port 0
G	Blinking amber	Ethernet link activity	RJ45 port 1
H	Green	Link 1 Gb/s Ethernet up	RJ45 port 1
I	Green	Link 1 Gb/s Ethernet up	RJ45 BMC
J	Blinking amber	Ethernet link activity	RJ45 BMC
K	Red	Error	N/A
L	Red	Intrusion	N/A
M	Blinking green	SATA activity	SATA 1
N	Blinking green	SATA activity	SATA 0

3.2.3. Ports

 Rear view



Mark	Port type	Port name
A	USB 3.0	Port 1
B	USB 3.0	Port 0
C	SFP+ - 10 Gb/s Ethernet	Port 1
D	SFP+ - 10 Gb/s Ethernet	Port 0
E	RJ45 - 1 Gb/s Ethernet	Port 1 - host
F	RJ45 - 1 Gb/s Ethernet	Port 0 - host/BMC
G	RJ45 - 1 Gb/s Ethernet	BMC
H	220V power supply	N/A

Appendix A. Technical description

A.1. General technical specifications

Operating Limits	
Ambient air temperature	+5°C to + 45°C Gradient 20°C / hour
Relative humidity (non condensing)	5% to 90% Gradient 5%/hour
Pressure	70 to 106 kPa
Elevation	Sea level < 3000 m
Non-Operating Limits	
Ambient air temperature	<-20°C and >60°C
Relative humidity (non condensing)	<5% and >95% (Gradient 30%/h)
Moisture content	1 to 29 g/m ³
Shipping Limits	
Operating air temperature	-20°C to + 60°C Gradient 25°C/hour
Relative humidity (non condensing)	5% to 95% Gradient 30%/hour

A.2. Dimensions and weight

BullSequana Edge	
Height	2U - 86 mm
Width	430 mm
Depth	290 mm
Weight	10 Kg

A.3. Module technical specifications

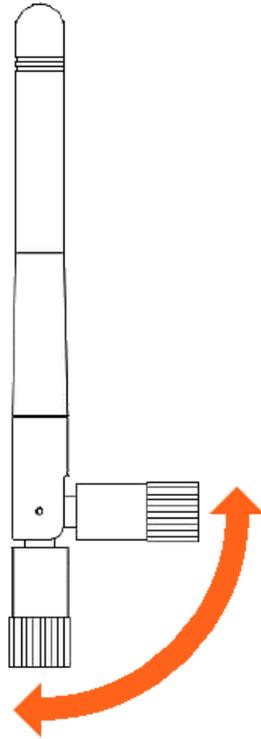
Electrical Specifications	
Each BullSequana Edge module is equipped with 1 PSU	
Rated Current	6 - 3 A
Power consumption	Typical: < 500 W
Thermal dissipation	Maximum: 600 W
Rated Voltage Range	100 - 240 V
Rated Frequency Range	50/60 Hz
Environmental Specifications	
Noise	If the temperature value at the entry of the module is 25°C, if the generated power is 75% of the TDP maximal value and without fan filter: 40dB

A.4. Server Technical Description

Processor	
Number	BullSequana Edge: 1 processor
Type	Intel® Xeon® family: Skylake-D
Architecture	
Platform	Based on Intel Yuba City Platform
Memory	
Minimum / Maximum	BullSequana Edge: up to 256 GB
Type	DDR4 RDIMM, LR-DIMM Up to 2667 MT/s
Slots	4x slots per module
I/O slots per module	
Bus slots	2x16 Gen3 PCIe slots
I/O ports per module	
USB port	2 USB 3.0
Ethernet port	2x 10 GbE and 3x 1 GbE ports
Disk bays per module	
Disk	2x 2.5" SSD\HDD or 3.5" HDD
GPUs per module	
GPU	2x NVIDIA GPU cards

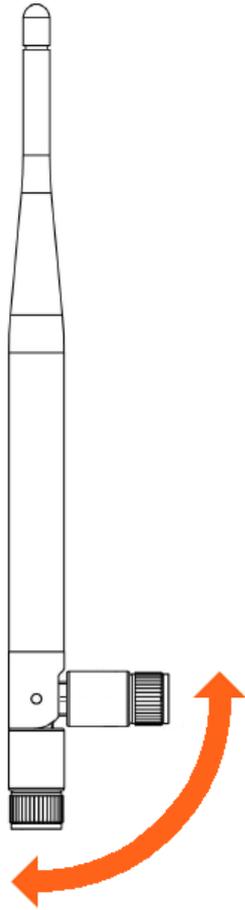
A.5. Antenna specifications

A.5.1. Dual-band WiFi



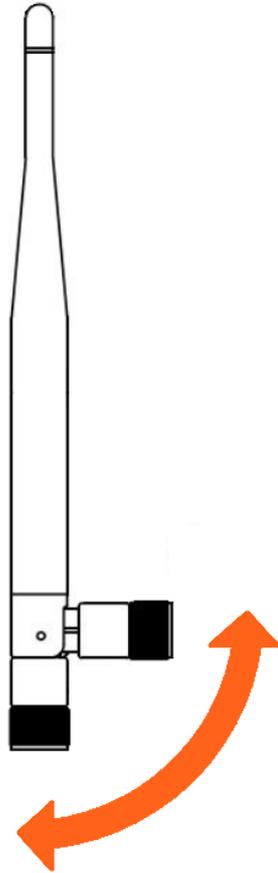
Dimensions	
Unfolded height	108 mm
Attached height	78 mm
Maximum width	10 mm
Minimum width	8 mm
Attached depth	31 mm
Technical specifications	
Frequency	2.4 - 5.8 GHz
Voltage Standing Wave Ratio	$\leq 1.8 : 1$
Gain	2.5 dB
Polarization	Vertical
Impedance	50 Ω
Max Power	20W

A.5.2. LoRaWAN



Dimensions	
Unfolded height	195 mm
Attached height	172 mm
Maximum width	13 mm
Minimum width	6 mm
Attached depth	38 mm
Technical specifications	
Frequency	868 MHz
Voltage Standing Wave Ratio	<2.0
Gain	3 dBi
Polarization	Linear
Impedance	50 Ω

A.5.3. LTE 3G/4G GSM



Dimensions	
Unfolded height	195 mm
Attached height	172 mm
Maximum width	13 mm
Minimum width	6 mm
Attached depth	38 mm
Technical specifications	
Frequency	700 - 2700 MHz
Voltage Standing Wave Ratio	≤ 2.5
Gain	5 dB
Polarization	Vertical
Impedance	50 Ω
Max Power	50W

Acronyms

A

APIPA

Automatic Private IP Addressing

B

BIOS

Basic Input / Output System

BMC

Baseboard Management Controller

BSM

Bull System Management software

C

CPLD

Complex Programmable Logic Device

CPU

Central Processing Unit

CRU

Customer Replaceable Unit

D

DDR4

Double Data Rate fourth generation

DHCP

Dynamic Host Configuration Protocol

DIMM

Dual In-line Memory Module

DIN

Deutsches Institut für Normung

DNS

Domain Name Server

E

ESD

Electrostatic Discharge

F

FPGA

Field Programmable Gate Array

FRU

Field Replaceable Unit

G

GPU

Graphical Processing Unit

GSM

Global System for Mobile Communications

H

HDD

Hard Disk Drive

HTTPS

HyperText Transfer Protocol Secure

I

IP

Internet Protocol

IPMI

Intelligent Platform Management Interface

J

No entries.

K

KVM

Keyboard Video Mouse

L

LAN

Local Area Network

LED

Light Emitting Diode

LLD

Low Level Discovery

LoRa

Long Range wireless communications

LoRaWAN

Long Range Wide Area Network

LR-DIMM

Load Reduced Dual In-line Memory Module

LTE

Long Term Evolution

M

MAC

Media Access Control

MI
Machine Intelligence

MISM
Machine Intelligence System Management

MIPSE
Machine Intelligence Pocket Server

N

NTP
Network Time Protocol

O

OOB
Out of Band

P

PCI
Peripheral Component Interconnect

PCIe
PCI Express

PDU
Power Distribution Unit

PSK
Pre-shared Key

PSU
Power Supply Unit

PXE
Preboot execution Environment (PXE)

Q

No entries.

R

RDIMM
Registered Dual In-line Memory Module

REST
Representational State Transfer

S

SATA
Serial ATA

SEL
System Event Log

SFP
Small Form-factor Pluggable

SHC

Server Hardware Console

SOL

Serial Over LAN

SSD

Solid State Drive

SMTP

Simple Mail Transfer Protocol

SMS

Short Message Service

SSH

Secured Shell

SSL

Secure Socket Layer

T**TDP**

Thermal Design Point

TFTP

Trivial File Transfer Protocol

TPM

Trusted Platform Module

TSL

Transport Layer Security

U**USB**

Universal Serial Bus

UTC

Universel Temps Coordonné

V**VESA**

Video Electronics Standard Association

W**WIFI**

Wireless Fidelity

X

No entries.

Y

No entries.

Z

No entries.

Bull Cedoc
357 avenue Patton
BP 20845
49008 Angers Cedex 01
FRANCE