BullSequana Edge

Description Guide

86 A1 65FR 09 - July 2022

Atos

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Hardware

July 2022

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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 62368-1

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

International Certifications

USA: FCC Part 15 Class B
Canada: ICES-003 Class B
Japan: VCCI Class B
Australia and New Zealand: AS/NZS CISPR 32 Class B

Waste Management

This product has been built to comply with the following directives:

REACH

Regulation (EC) N°1907/2006 of the European Parliament and the 18/12/2006 REACH Council

ROHS

2011/65/EU, 2015/863/EU

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 Atos servers, 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.

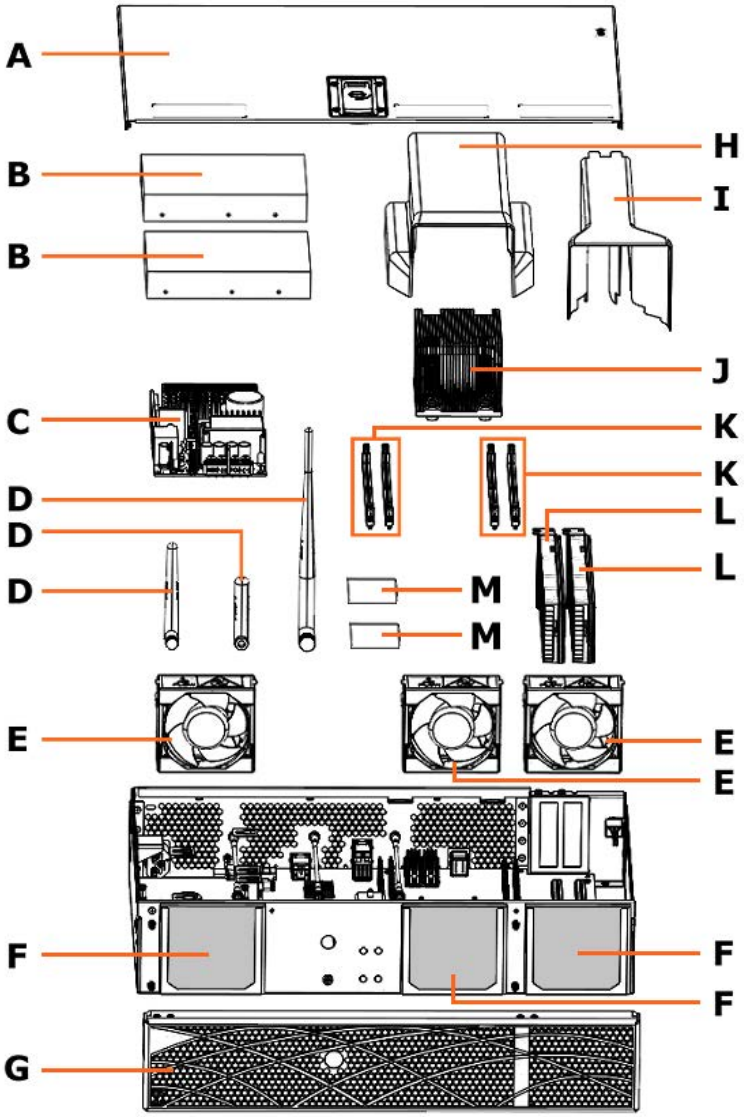
Three wireless technologies are supported:

- 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).

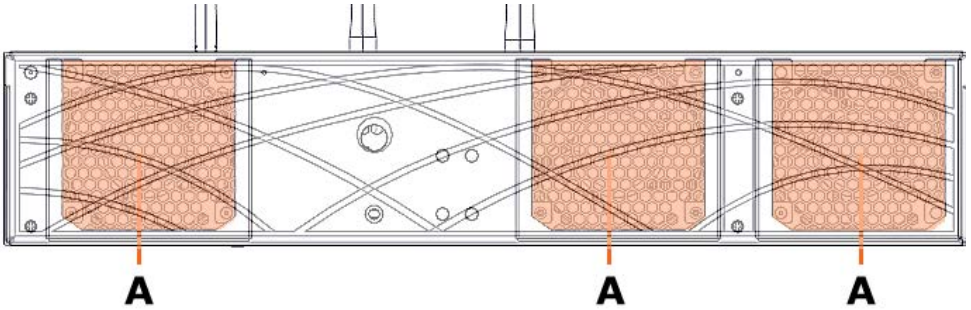
2.2. General description

Exploded view



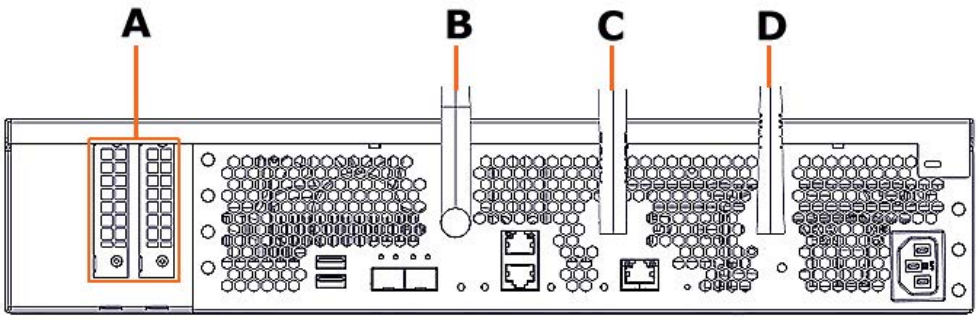
Mark	Description	Quantity
A	Top cover	1
B	Disk SATA or SDD	2
C	Power Supply Unit (PSU)	1
D	External antenna	3
E	Fan module	3
F	Fan filter	3
G	Bezel	1
H	Processor air duct	1
I	Accelerator air duct	1
J	Processor	1
K	Memory module	4
L	Accelerator	Up to 2
M	Mini PCIe cards	Up to 2

2.3. Front components



Mark	Description	Quantity
A	Fan Filters	3

2.4. Rear components

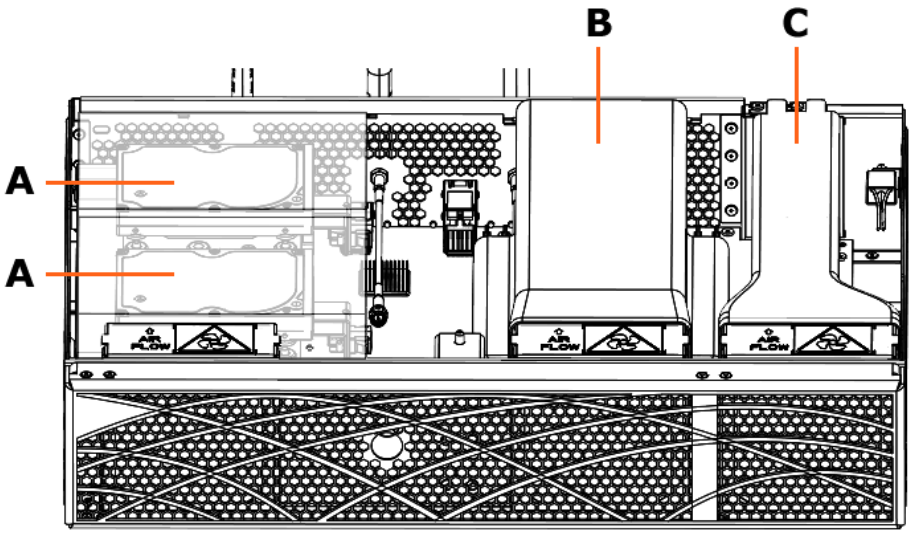


Mark	Description	Quantity
A	PCIe x16 board	2
B	External antenna 2 (Dual-band WiFi or LoRaWAN or LTE 3G/4G GSM)	1
C	External antenna 1 (Dual-band WiFi or LoRaWAN or LTE 3G/4G GSM)	1
D	External antenna 0 (BMC WiFi)	1

2.5. Internal components

2.5.1. First layer components

Front view

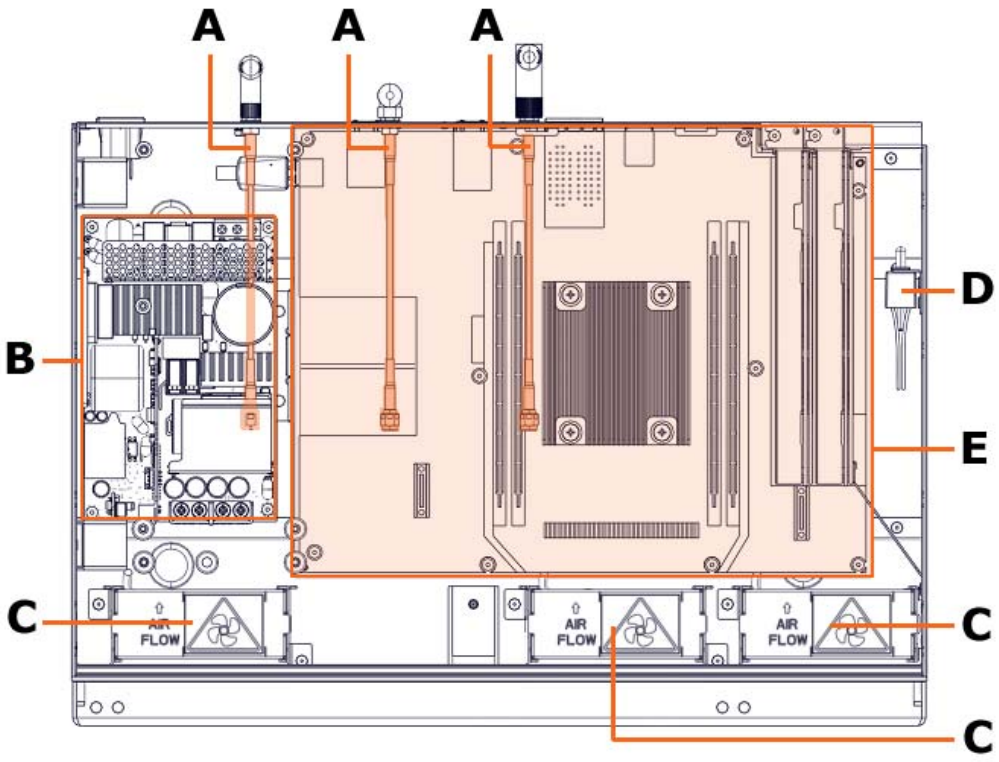


Mark	Description	Quantity
A	Disk	2
B	Processor air duct	1
C	Accelerator air duct	1

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

2.5.2. Base layer components

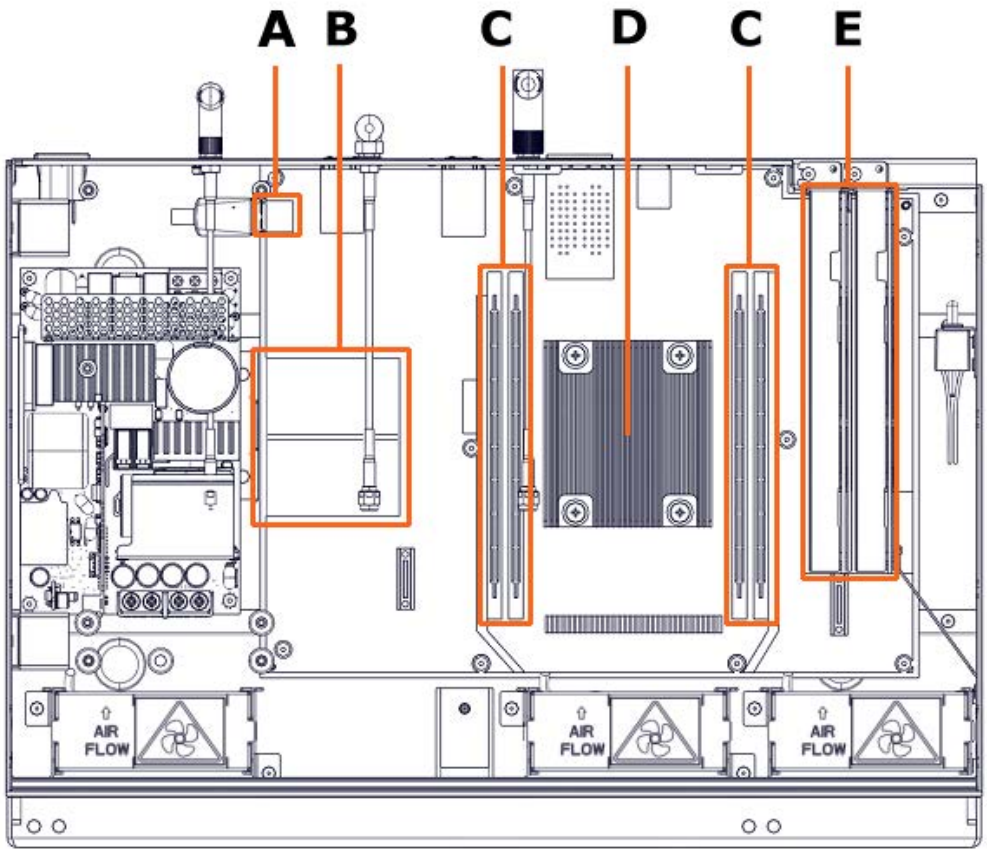
Top view



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

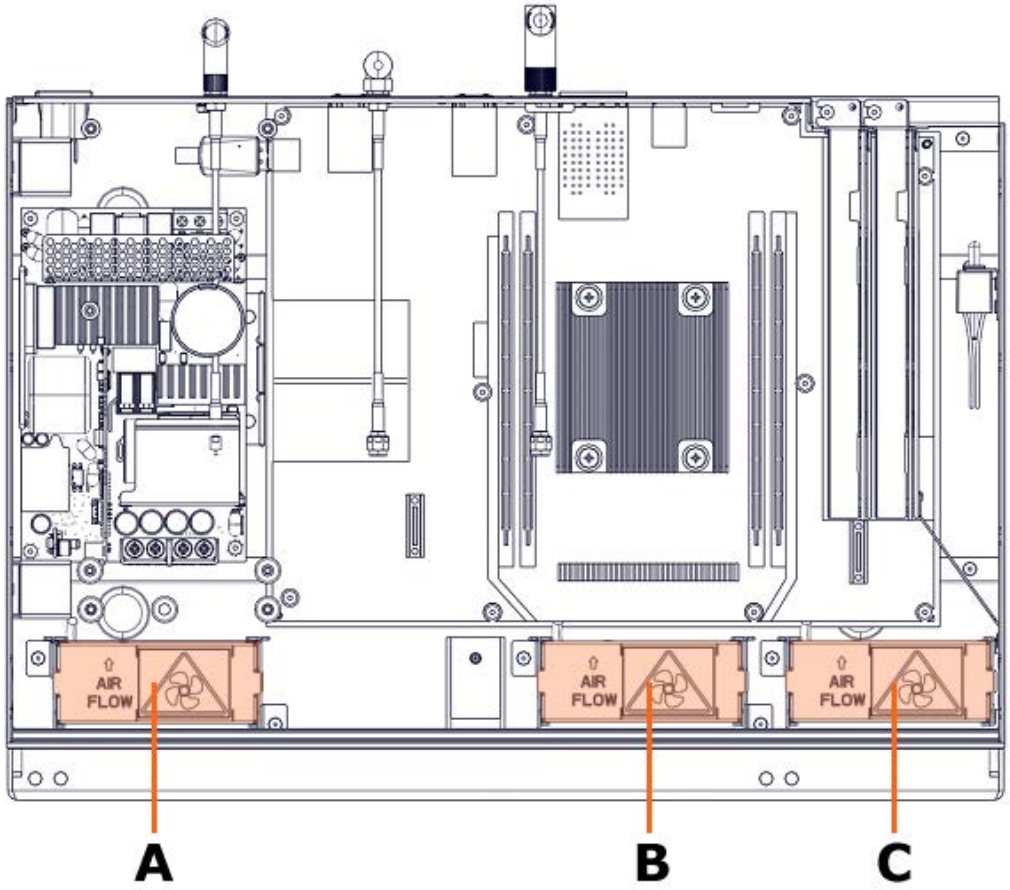
Top view



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

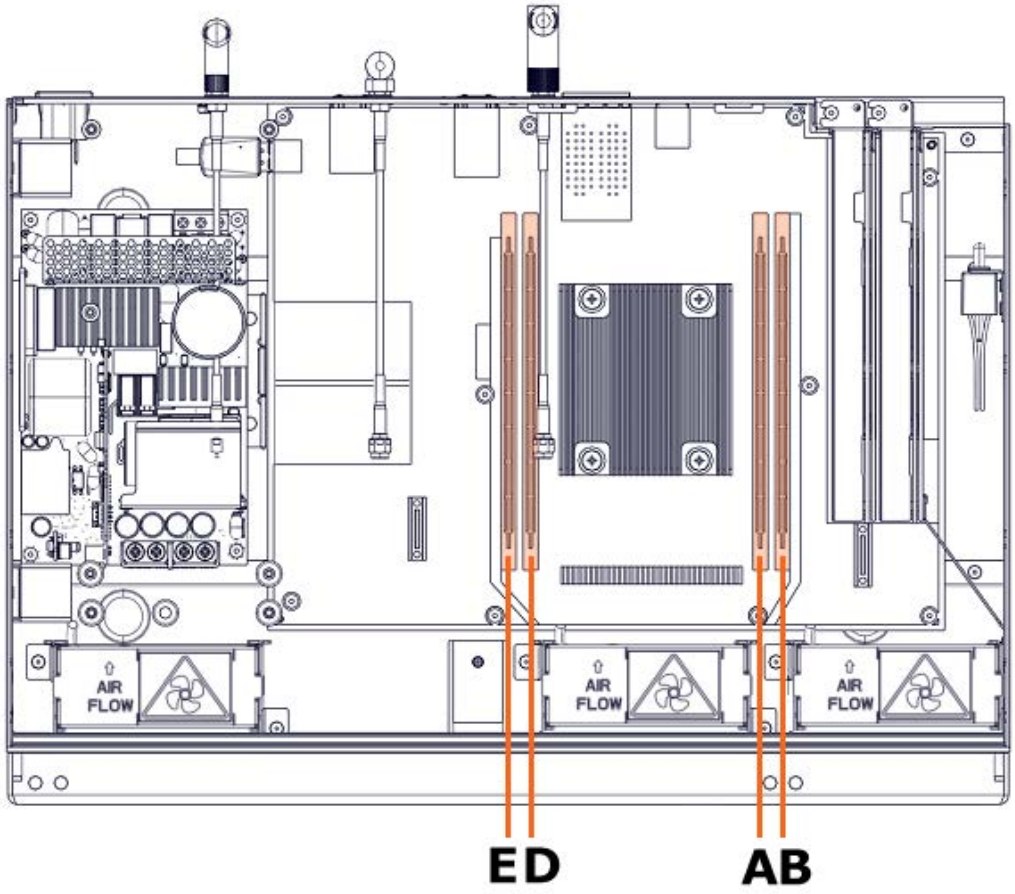
Top view



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

2.5.5. Memory modules

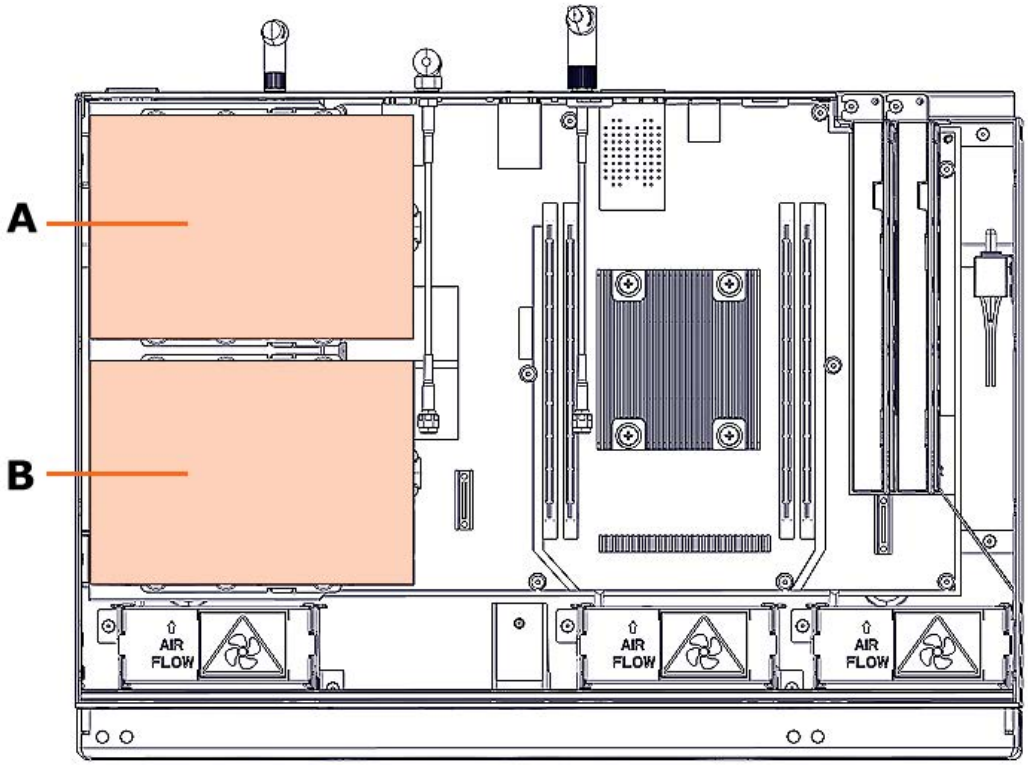
Top view



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

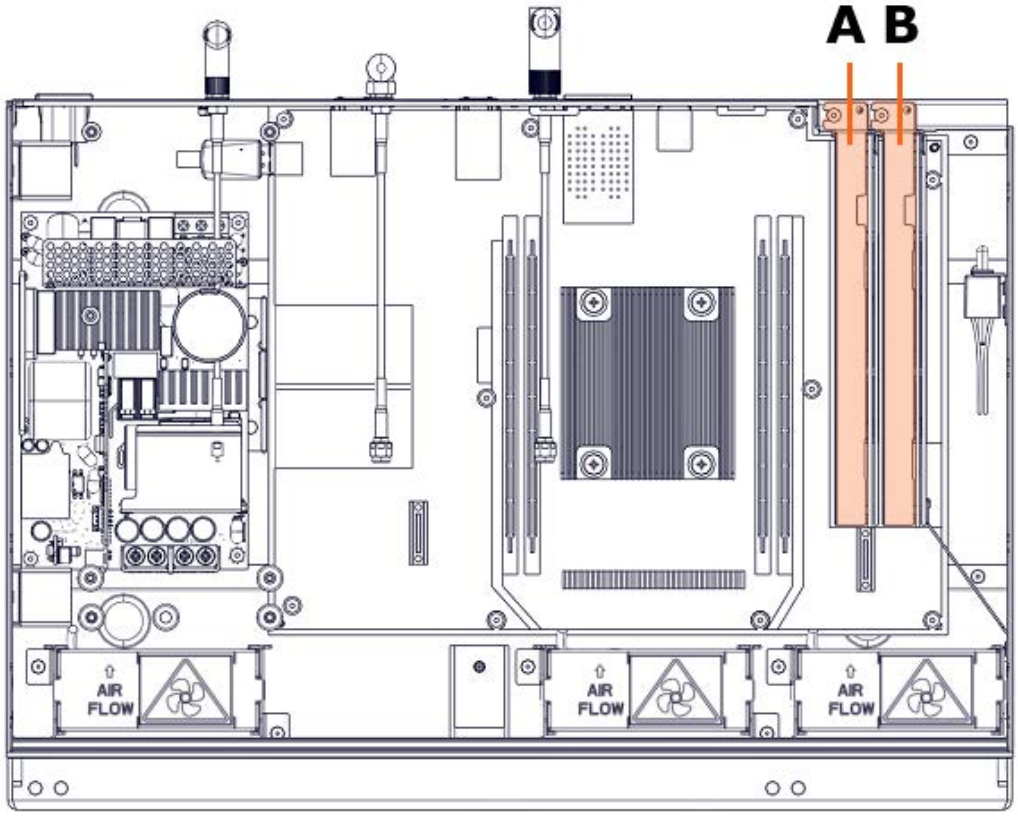


Mark	Description
A	Disk 0
B	Disk 1

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

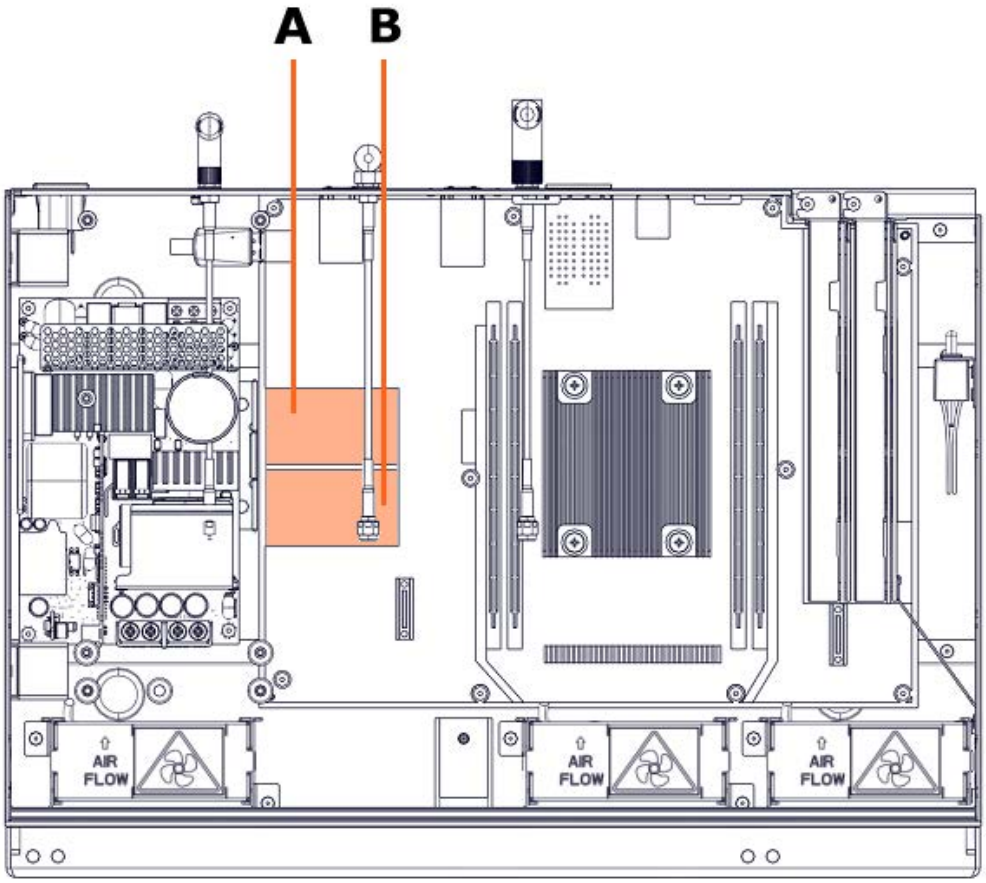
Various accelerator options are available for the PCIe slots:

- The slots are left empty
- Up to two Graphics 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



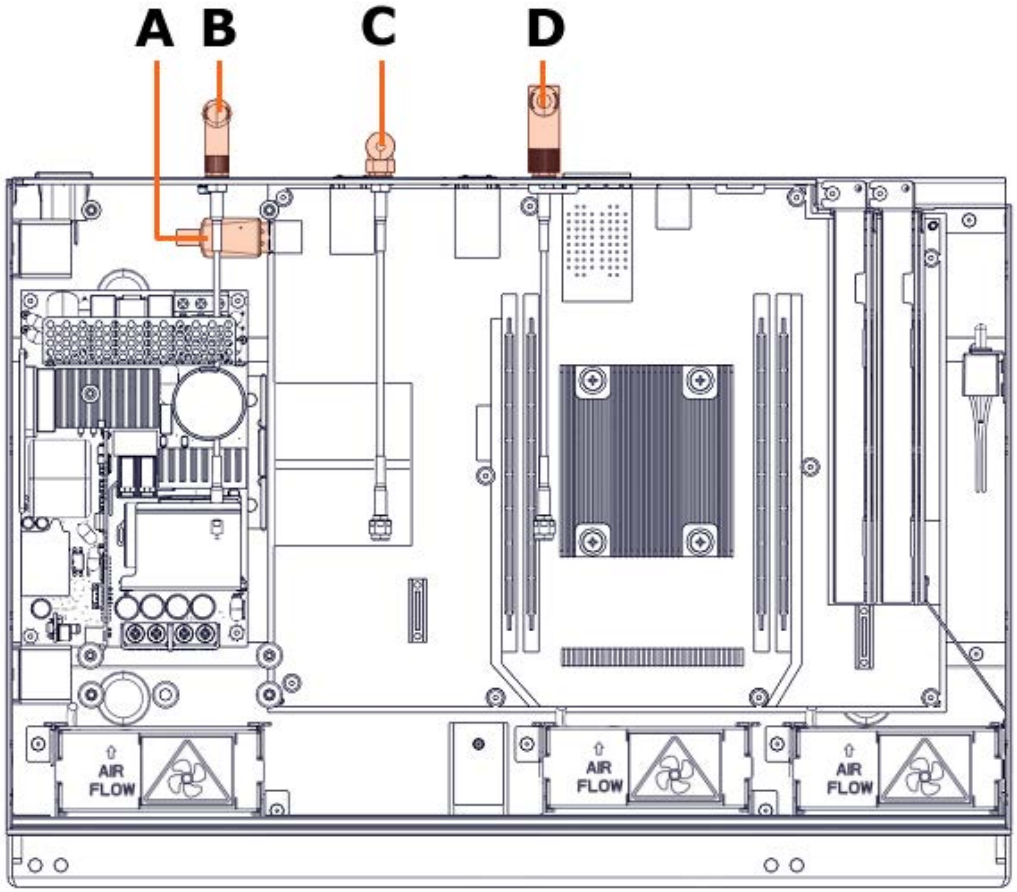
Mark	Description
A	Mini PCIe slot 0
B	Mini PCIe slot 1

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



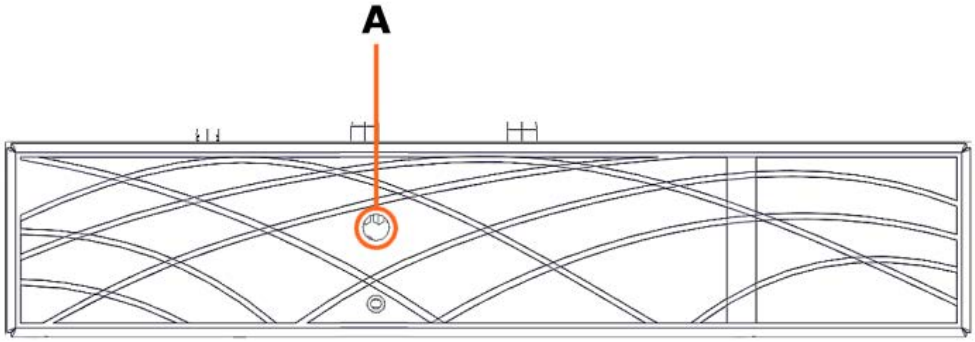
Mark	Description
A	BMC WIFI dongle
B	External antenna 0 : BMC WiFi
C	External antenna 1 : Dual-band WiFi or LoRaWAN or LTE 3G/4G GSM
D	External antenna 2 : Dual-band WiFi or LoRaWAN or LTE 3G/4G GSM

Chapter 3. Buttons, LEDs and ports

3.1. Front buttons and LEDs

3.1.1. Buttons

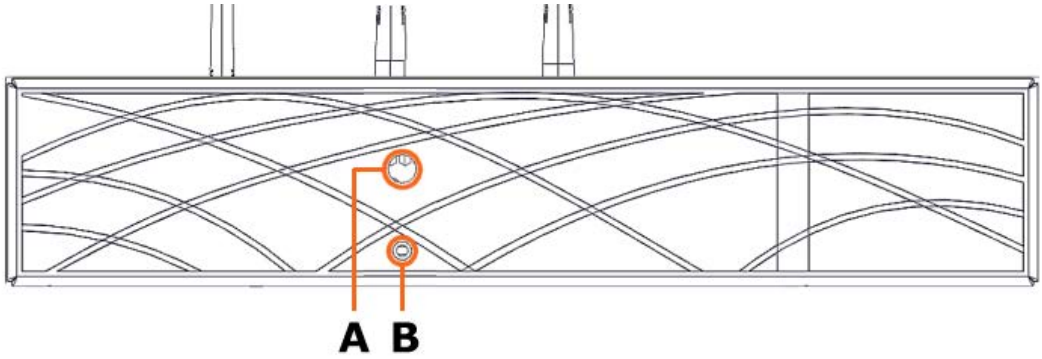
Front view



Mark	Description
A	Power On/Off

3.1.2. LEDs

Front view



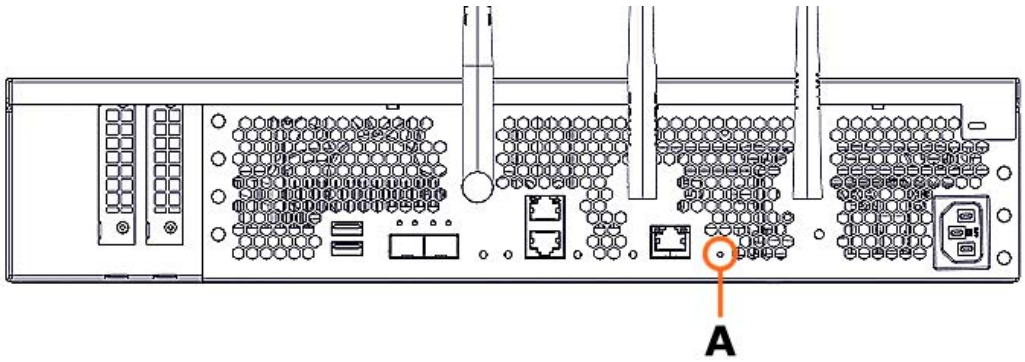
Mark	Color	Description
A	Solid green	Power status: Running / OS boot
	Blinking green	Power status: Off / BMC boot
B	Solid blue	Module Identification

3.2. Rear buttons, LEDs and ports

3.2.1. Buttons

The recovery (REC) button (A) has two separate functions and must be used with extreme caution.

Rear view

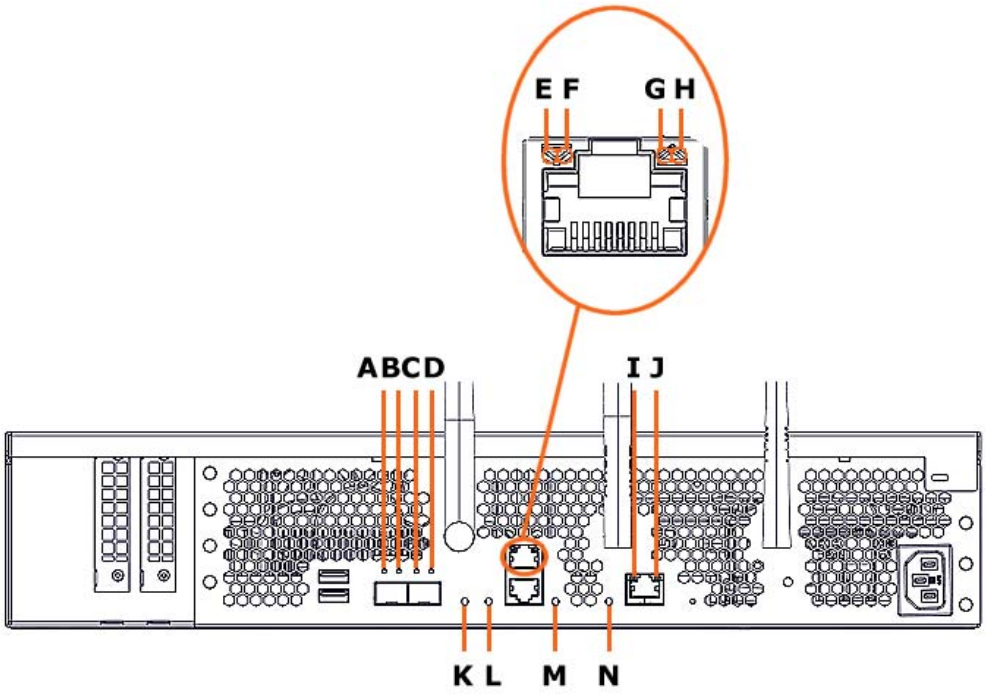


Mark	Function	Operation
A	BMC firmware recovery	Push the button in using a pointed object and release.
	Factory reset	Push the button in using a pointed object and hold it in for more than 10 seconds before releasing.

Important **See the Customer Service Guide for more information about the BMC firmware recovery and factory reset functions**.

3.2.2. LEDs

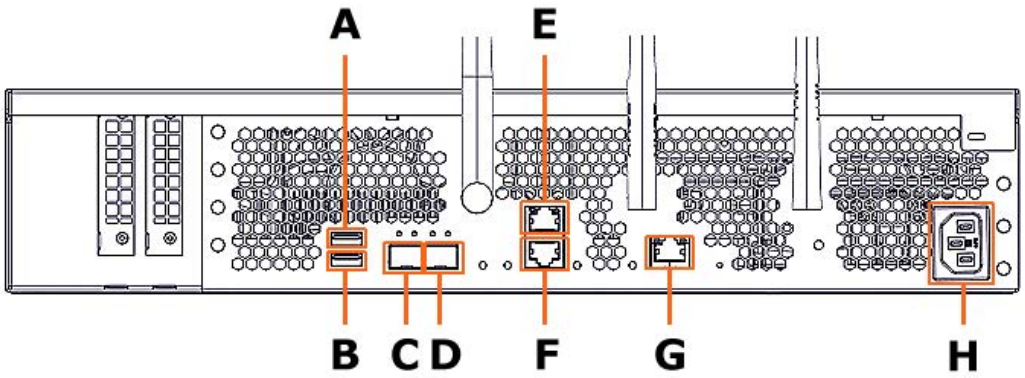
Rear view



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/m3
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

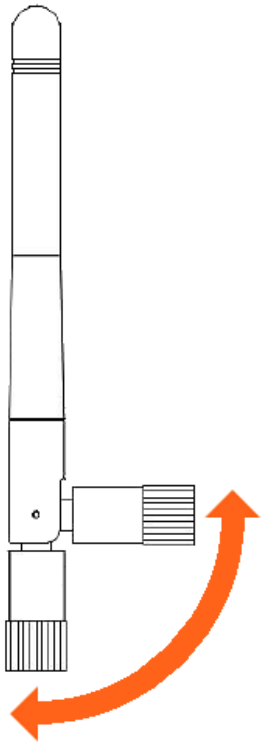
Electrical Specifications	
Each BullSequana Edge module is equipped with 1 PSU	
Rated Current	6 - 3 A
Power consumption	Typical: < 500 W
Thermal dissipation	Maximum: 600 W
Rated Voltage Range	100 - 240 V
Rated Frequency Range	50/60 Hz
Environmental Specifications	
Noise	If the temperature value at the 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

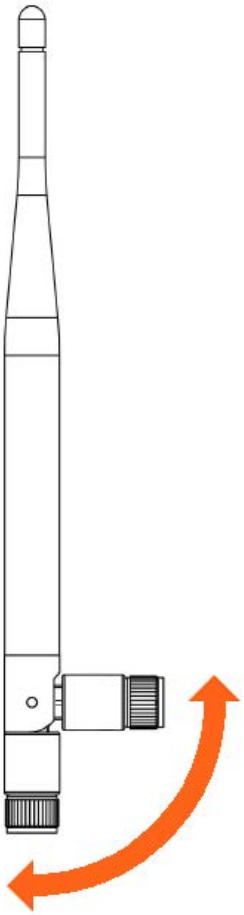
A.5. Antenna specifications

A.5.1. Dual-band WiFi



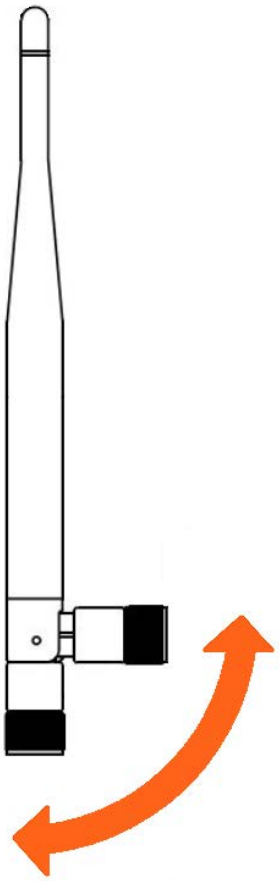
Dimensions	
Unfolded height	108 mm
Attached height	78 mm
Maximum width	10 mm
Minimum width	8 mm
Attached depth	31 mm
Technical specifications	
Frequency	2.4 - 5.8 GHz
Voltage Standing Wave Ratio	≤ 1.8 : 1
Gain	2.5 dB
Polarization	Vertical
Impedance	50 Ω
Max Power	20W

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 Date 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 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.

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