

# SPECTRA POWERBOX 12C SERIES

MANUAL

REVISION 2.1 - APRIL 2022



## PUBLISHER

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**REVISION: 2.1**

**DATE OF EDITION: 21.04.2022**

**MANUAL ARTICLE NUMBER: 156330**

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## 1. INTRODUCTION

### 1.1 PACKING LIST

The device is delivered with the following components:

- user manual
- power supply, power cable
- driver-CD
- mounting brackets

### 1.2 OPTIONS & ACCESSORIES

- Up to 2 removable drive bays for 2,5" HDD or SSD (optional, instead of 2 x PCI/PCIe)
- Graphics card upon request max. 50 Watt
  - Art. 152146 PNY Nvidia Quadro P1000/4GB | PC card, Graphics, PCIe, SLP/HL, 4mDP/DP, 47W
- CPU instead of
  - 8th Generation Intel® Core™ i7-8850H (QM370) | Xeon® E-2176M (CM246)
  - 9th Generation Intel® Core™ i7-9850HE (QM370) | Xeon® E-2276EM (CM246)
    - upon request i5-9400H, i3-9100HL oder G4930E
- alternative SSD/Hard drives: (instead of NVMe M.2 SSD of basic systems) 2,5" SSD upon request
- Misc. options:
  - VESA 100 Display Montage-Kit
  - Operating system Microsoft® Windows® 10 64-bit
  - Operating system Linux Fedora 64-bit
  - Operating system Ubuntu 64-bit
  - More upon request
  - Extension of warranty to 36 months

### 1.3 PRODUCT DESCRIPTION

Performance characteristics:

Construction:

- extremely lightweight, robust aluminium chassis
- easy mounting

Cooling system:

- Processor cooling via heat pipe
- System cooling by an extremely quiet system fan with a high MTBF
- High system stability

### 1.4 FUNCTION

can differ depending on the selected options

- Integrated in chipset, ALC892 HD (mic-in, Line-out, AUX (rear))
- 2 x USB2.0 (front), 6 x USB 3.1 (rear)
- 4 x COM (2 x rear, 2 x front)
- 1 PCIe (x16) or optional 2 x PCIe(x8) (for cards max. 175 mm long / 49 W)
- 1 mPCIe (rear of Board), 1 x M.2 2280 M-Key, 1 x M.2 2230 E-Key
- 2 x Giga-LAN Interface, (10/100/1000Mbps)

### 1.5 APPLICATION

The device is suitable for the following application areas:

Multi-media, controlling, communication, data acquisition, measurement and testing technology, visualization.

### 1.6 ILLUSTRATIONS

Explanation of the pictograms



Warning !

Failure to comply may lead to health impairment, loss of appliance efficiency or data loss



Tip!

Tips und supplementary information for daily work

## 2. IMPORTANT INFORMATION

- The user manual should be read thoroughly before operating the appliance.
- Each individual that will be working with the device should adhere to this manual, and especially the safety instructions, at all times.
- The relevant rules and regulations for accident prevention at the place of installation, should be observed at all times.
- The device should only be used in accordance with this user manual.
- The compliance with legal requirements and device specifications must be observed if the appliance has been enhanced.
- Modifications and maintenance repairs should only be executed by authorised individuals from Spectra GmbH & Co. KG.
- Modifications and alterations of and to the device are not permitted. Spectra GmbH & Co. KG takes no responsibility for the resulting damages.
- The newest user-manuals and documents are valid.

The specified technical data supplied by us, was determined by us using our methods and facilities: characteristics will only be warranted based on this. The testing and suitability for the intended use of the end-user, or consequently the application environment/conditions, are incumbent on the user. Spectra GmbH & Co. KG. will not assume liability in this case. Always make a backup copy of the data on an external storage medium (CD-R, disks) after updating. Claiming compensation because of data loss and subsequent damage due to the loss is ruled out.

### 2.1 SAFETY INSTRUCTIONS



- Please check that the mains voltage conforms with the specifications of the device.
- Always observe the installation guidelines.
- Always observe the safety instructions in the section „Service and Support“
- Always observe the environment conditions.
- Attention: some components can be warm to the touch during and after operation.
- In order to power off completely, it is not sufficient to only switch off the device. Always plug out the mains supply.
- Some components can also be at risk of being electrostatic. Please observe the reference notes in the section „System Expansions“
- Please do not insert any objects into the interior of the device through the slits and openings. This could lead to short-circuiting or even result in fire.
- If the user disregards the safety instructions, Spectra GmbH & Co. KG. cannot be held liable for accidents due to the disregard.

### 2.2 CE QUALIFICATION

This device complies with the EMC Requirements and the EN 60950 Safety Norm.

## 2.3 TRANSPORT



The device should only be transported in the original packaging or in alternative packaging which offers enough protection against impact, blows and humidity.

Please observe the following when transporting: Major temperature and humidity fluctuations can cause condensation of the interior of the device, that can lead to short-circuiting. Please wait until the device has adopted its' surrounding temperature before switching on.

## 2.4 CLEANING



Turn off the device and pull out the plug.

- Clean the casing with a dry cloth or alternatively a damp cloth if the soiling is too intense.
- Do not use abrasive power or synthetic thinner for cleaning.
- Please always pay attention that no liquids infiltrate the chassis.
- Only trained personnel are permitted to clean the interior.

## 2.5 DISPOSAL & RECYCLING

Always observe the applicable regulations for the correct disposal. Batteries and accumulators do not belong in the household waste, these will be taken back free of charge by the manufacturer, dealer or his commissionaires. The battery regulation obligates the end-user of used batteries, to bring these back to the dealer or to the returns locations set up by the public waste disposal authorities.

### 3. INSTALLATION

#### 3.1 POWER SUPPLY



Only use the approved power supplies for this device!  
 Each cable connection must be tested before starting the system.  
 One has to ensure that all voltages and signals have the appropriate value.

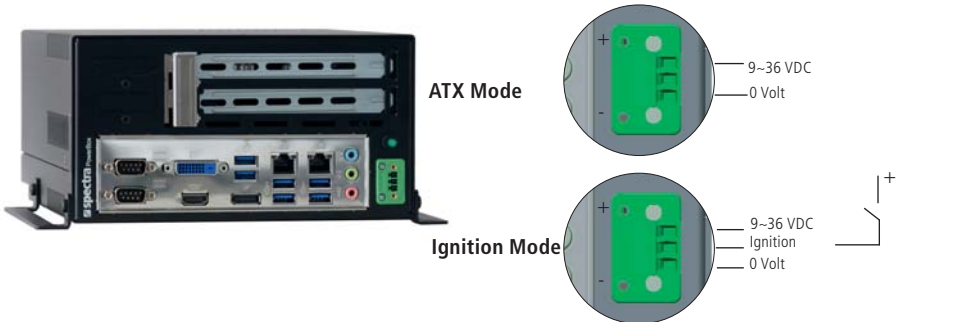


Illustration can vary depending on the configuration

ATX Mode: 9~36 V / Ground  
 Ignition Mode: 9~36V / Ground with Power Ignition Signal

#### 3.2 DISPLAY CONNECTION



Always observe the EMC Regulations.  
 Only use high quality feed cables that have high shielding effectiveness.

#### 3.3 SYSTEM EXPANSIONS

##### 3.3.1 ACCESSING THE DEVICE



Pull out the plug before opening.  
 Appropriate safety measures should be taken to avoid electrostatic discharges.

1. The screws (1) on the side of the rear panel must be released in order to open the device.
2. The top cover of the casing can subsequently be lifted off.



Zum Öffnen Schrauben (1) lösen

Illustration can vary depending on the configuration



### 3.3.2 INSTALLATION OF A PLUG-IN CARD

1. Turn off the Spectra PowerBox and pull out the plug
2. Remove the top cover of the casing as described in section 3.3.1



3. Please remove the slot-shield of the desired plug-in slot.
4. Insert the PCI-Card in the plug-in slot.



Do not tilt the PCI-Card while inserting!

### 3.4 INSTALLATION GUIDELINES



It is absolutely necessary to pay attention to the correct positional arrangement, due to the usage of the heat-pipe cooling system. Incorrect installation will lead to the overheating of the CPU!

- The device can be positioned as a stand-alone device or mounted using the optional mounting brackets.
- The device must not be exposed to direct solar radiation or be operated near heat sources.
- The device must not be mounted outdoors.
- The device must not be used in an explosion-risk area.
- The device is not designed for mobile applications.
- The device should only be operated in a low-dust environment. The air ventilation vents cannot be additionally safeguarded (e.g. filter) against the infiltration of dust.
- Vents and slots serve to provide air ventilation for the device. Do not cover these vents at any time as it could result in overheating.
- When positioning the device, please take heed that the air vents are not obstructed.

## 4. IMPLEMENTING

### 4.1 OPERATING ELEMENTS & PORTS

Start-up possibilities: There are diverse start-up possibilities other than via the on-switch. E.g. Switching-on after a power-failure. These can be regulated in BIOS. (see board manual)

### 4.2 CONFIGURATION

In order to install an operating system, drives need to be assigned and booting sequences need to be defined in the BIOS settings. (see board manual)

### 4.3 BIOS SETTINGS

Set the BIOS values (based on the board manual) according to your needs. When an operating system has been pre-installed, particular basic settings have already been distinguished. If any problems occur, please go to "Problem Solving and Tips" or respectively the board manual.

A BIOS update isn't usually necessary.

All requests for required BIOS-Updates should be placed with our support team.

### 4.4 OPERATING SYSTEM INSTALLATION

Please observe that various operating systems may have varied hardware support. Therefore e.g. the maximum supported primary storage and the maximum HDD size may be deviant, depending on the operating system in use.

#### Software Installation by the Manufacturer

Spectra GmbH & Co. KG. normally provides the device with a pre-installed operating system and drivers. In this case, the user only has to install his applications and configure the operating system based on his needs.

#### Self-Implementation of the Software

Standard software is usually supplied on a CD-ROM. Software can be installed by implementing the USB port with an external drive. In order to boot, one usually has to change the boot sequence in the BIOS settings. Please see section BIOS Settings for detailed information.

### 4.5 DRIVER INSTALLATION

The drivers for the integrated board periphery are to be found on the website of the board manufacturer.

#### Manufacturer: iBASE

##### By Spectra PowerBox 12C0 / 12C5 (Coffee Lake 8th Generation)

Board: MI995 <https://www.ibase.com.tw/english/ProductDetail/EmbeddedComputing/MI995>

##### By Spectra PowerBox 12C1 / 12C6 (Coffee Lake 9th Generation)

Board: MI996 <https://www.ibase.com.tw/english/ProductDetail/EmbeddedComputing/MI996>

## 5. OWNERSHIP & DATA PROTECTION

### 5.1 BIOS-SETUP

The BIOS settings can be protected against unauthorised access by a password.

## 6. PROBLEM SOLVING & TIPS

### 6.1 OPERATING DISPLAY IS DARK

Please check if the feeder is plugged in properly.



Turn off the device completely again and wait a few seconds.  
Then plug the device back in and turn it back on.

### 6.2 DEVICE TURNS ITSELF OFF

- Check and see if the device has been installed in the correct position. (see Installation Guidelines)
- It's possible that other components have been installed that cause an unacceptably high switch-on current.



Remove these components and try again. Always observe the boot-dialogue on the display.

- The CPU cooler may not be positioned accurately.(transport damage) The internal protective circuit causes the shutting-down



Plug-out the device from the supply voltage and check if the CPU cooler is in the correct position

### 6.3 DISPLAY BECOMES DARK

- The display is dark (screen saver or suspend mode is activated)



Press any keyboard key. Respectively, the screen saver mode or the energy saving mode need to be switched off. Please check in the "Help" of you OS for further information.

- The input-port has been chosen incorrectly.



Check the settings in the OSD Menu of your display.

### 6.4 DISPLAY IS FAULTY



Please check the plug and sockets. When the picture content is correct but the colours are illustrated incorrectly, this is an indication that the DVI connector is tilted or respectively bent/distorted contacts

## 6.5 USB-DEVICE CANNOT BE RECOGNISED

- Some USB devices need a high switch-on current.



Re-boot the computer while the USB-device is plugged-in. Alternatively, use a USB hub with an external electrical supply

## 6.6 TIME AND DATE ARE FAULTY

When the time and date are being shown incorrectly, you can either change the data in BIOS or in your OS. If the time and date are continuously shown incorrectly then the battery needs to be changed by the service department

## 6.7 BIOS BASIC SETTINGS

If there is an interference in the BIOS while booting or if the wrong BIOS has been chosen, this can lead to the default BIOS parameters being loaded in order to protect the hardware.

The BIOS settings then need to be changed according to the application requirements.

## 6.8 DEVICE REBOOTS

- In the case that the device reboots when booting the operating system, please check the BIOS-settings.
- The system also reboots in the set time interval if Watchdog has been activated in the Bios, until an application triggers the Watchdog.

# 7. KEY COMBINATIONS

## 7.1 BIOS REQUEST

One can request the BIOS by pressing the DELETE key.

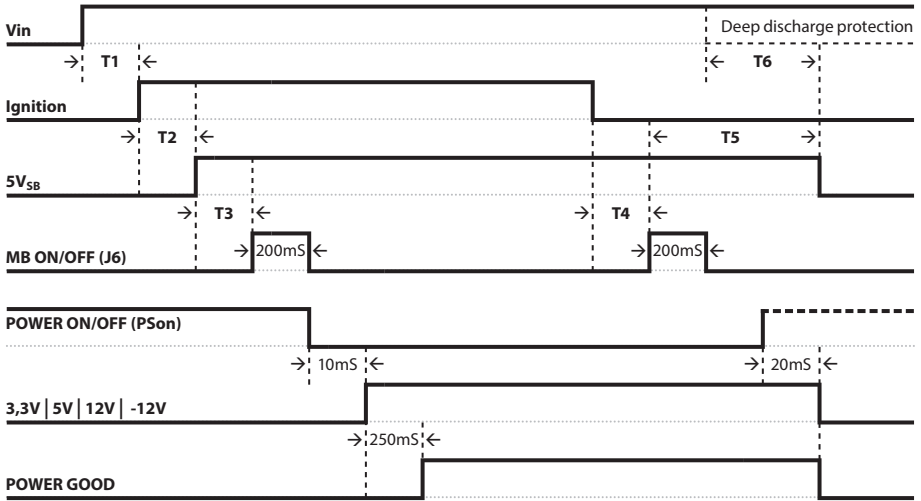
Press the DELETE key accurately timed, before Windows has loaded.

## 7.2 HOTKEY

(optional: depending on model configuration)



**TIMING DIAGRAM**



The following modes are selectable by jumper J4 (Jumper attached=On)

Mode	T1	T2	T3	T4 MB ON/OFF OFF-DELAY	T5 5V <sub>SB</sub> HARD-OFF	T6 DEEP DISCHARGE PROTECTION
P1	1 sec	5 sec	1 sec	5 sec + 1 min auto-latch	1 min	1 min
P2	1 sec	5 sec	1 sec	5 sec + 1 min auto-latch	2 hour	1 min
P3	1 sec	5 sec	1 sec	5 sec + 1 min auto-latch	Never	1 min
P4	1 sec	5 sec	1 sec	30 sec + 1 min auto-latch	2 hour	1 min
P5	1 sec	5 sec	1 sec	30 sec + 1 min auto-latch	Never	1 min
P6	1 sec	5 sec	1 sec	30 min	Never	1 min
P7	1 sec	5 sec	1 sec	3 hour	Never	1 min
P8	1 sec	5 sec	1 sec	10 min	1 hour	1 min
P9	1 sec	5 sec	1 sec	15 min	2 hour	1 min
P10	1 sec	5 sec	1 sec	1 hour	75 min	1 min
P11	1 sec	5 sec	1 sec	5 sec + 1 min auto-latch	1 min	1 min
P12	1 sec	5 sec	1 sec	5 sec + 1 min auto-latch	10 min	1 min
P13	1 sec	5 sec	1 sec	5 sec + 1 min auto-latch	1 min	1 min
P14	1 sec	5 sec	1 sec	5 sec + 1 min auto-latch	10 min	1 min

## 9. TECHNICAL DATA

### 9.1 PORTS

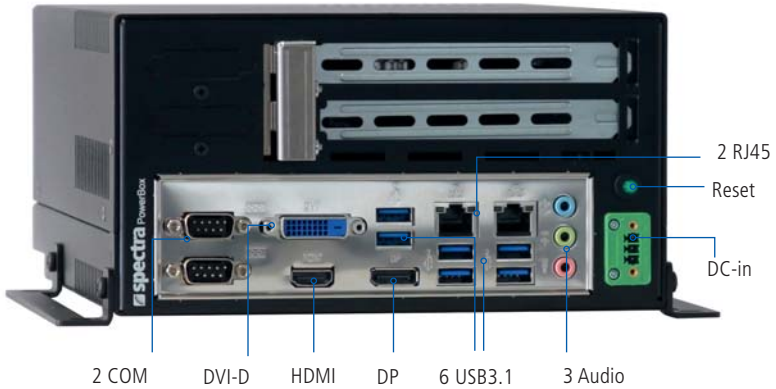


Illustration can vary depending on the configuration

## 9.2 MECHANICAL DATA

External Dimensions (without mounting rail):

width 200 mm

height 110 mm

depth 250 mm

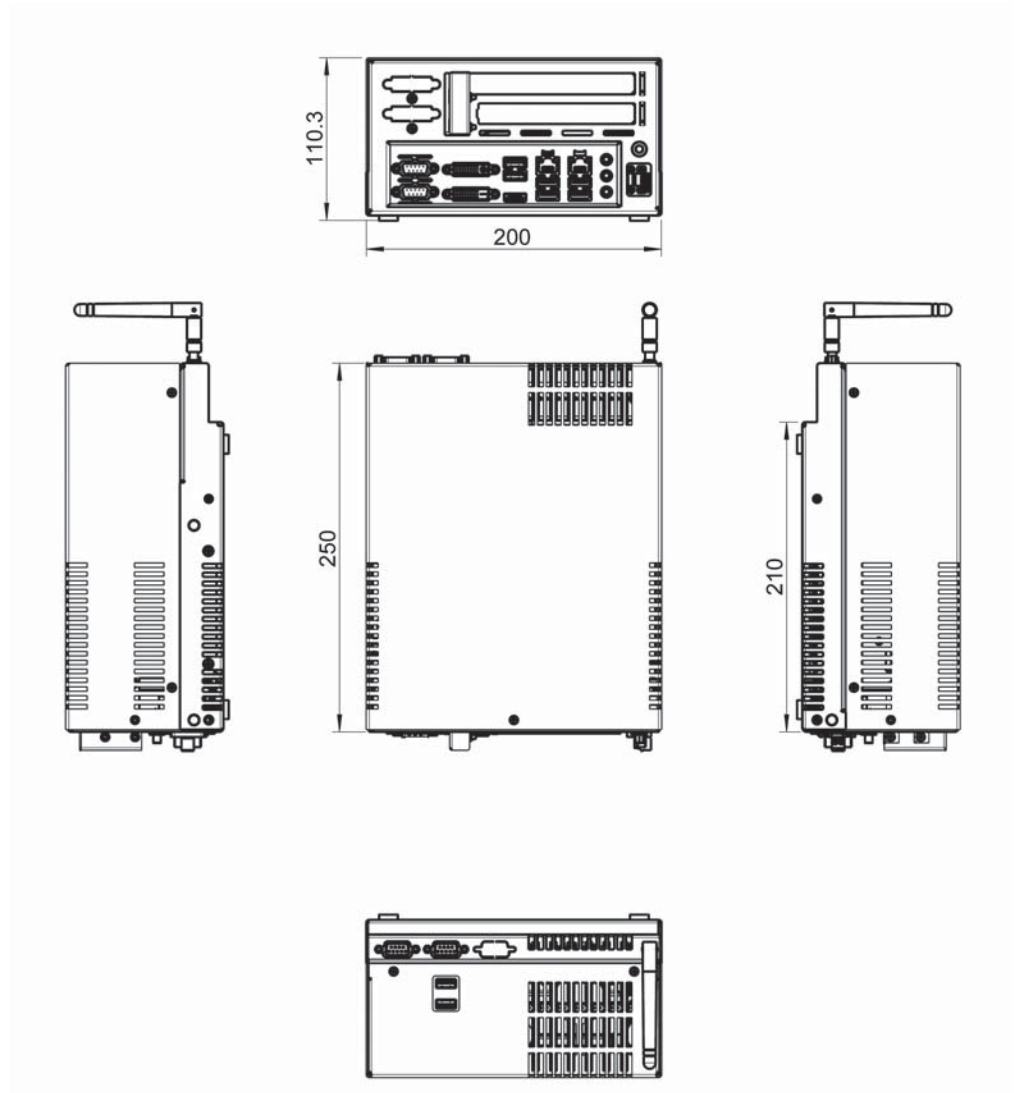


Illustration can vary depending on the configuration



External Dimensions (with table mounting rail):

width	240 mm
height	110 mm
depth	250 mm

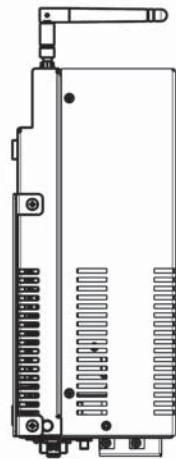
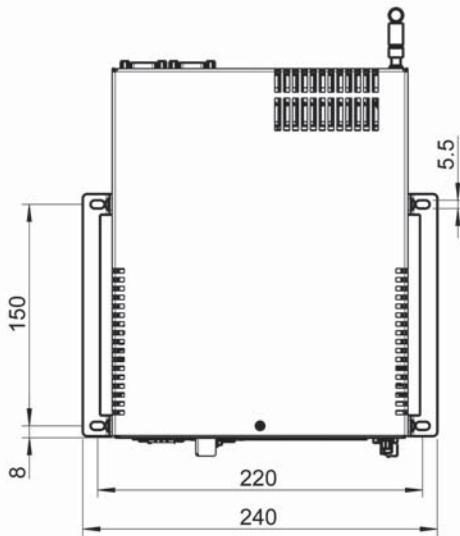
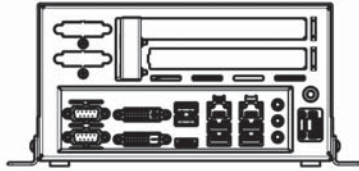


Illustration can vary depending on the configuration

## 9.3 ENVIRONMENT CONDITIONS

### 9.3.1 OPERATING CONDITIONS

Temperature : 0°C - 45°C Environment in Hybridmode (Add-on cards max. <50 W)

Temperature change : max. 10°C / 30 min

Relative humidity : 10 - 90 %

relative humidity : 700 - 1100 hPa

Condensation Generation : non condensing

### 9.3.2 STORAGE CONDITIONS

Temperaturbereich : -20°C - 60 °C Environment

Relative humidity : 0 - 90 %

Relative humidity : 280 - 1100 hPa

Kondensat-Bildung : nicht kondensierend

## 10. QUALITY & SUPPORT

Quality is our most important objective. Our Quality Assurance tests each component from the electronic parts to the completed system, competently and comprehensively.

Our products are distinguished not only because of their maximum profitability and dependability, but because of our comprehensive all-round service.

- Spectra GmbH & Co. KG. wants you to be satisfied and will support you in every detailed question of your product development.
- We offer qualified and expert user consultation by capable sales and distribution engineers.
- If you have any questions about the utilisation of the device or if any difficulties arise during usage, do not hesitate to contact our support team, who will help in every way they can.

You will need to have the following readily available for inquiries:

- The product number of your device
- The serial number of your device

## 11. WARRANTY & SERVICE

Spectra systems are service-friendly und easily maintainable.

### Terms and Conditions of Warranty:

Failure to comply with the safety regulations and important notes leads to Spectra Computersysteme being absolved from its warranty obligation. Components that because of their limited lifespan due to being exposed to exceptional wear and tear, are not included in the extended warranty (above and beyond the statutory warranty). No warranty claim can be made if the device is used beyond the given specifications or not according to the given regulations. If maintenance checks have been designated at particular intervals, these must be kept to.

### 11.1 RETURNS PROCESS (RMA)

It is possible that the components or modules of the devices can be damaged or destructed due to considerable impacts that arise during transport.

Our original packaging was especially designed for the device and therefore guarantees the compliance with the general transport regulations for a safe device delivery.

Hence please only utilise the original packaging for any further transport or for returns. This packaging can be requested if required.

We cannot accept liability for transport damage in any other event.

Before sending any malfunctioning device back to Spectra GmbH & Co. KG., please follow the steps below:

Contact our customer services department and request an RMA number or alternatively go to our homepage [www.spectra.de](http://www.spectra.de) and you can request a number there.

- Write the RMA number clearly legible on the package you will be sending us.
- Specify a contact person in case of further inquiries
- Pack the device in the original cardboard box and packaging.

### 11.2 SERVICE ADDRESS

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