



**MBox-R/V/VH-E39
Embedded Box PC**



TQ MBox-R/V/VH-E39 Embedded Box PC User Guide

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TQ MBox-R/V/VH-E39 Embedded Box PC



Product Information

The MBox-R/V/VH-E39 is a versatile electronic device designed for various applications. It includes features to enhance safety and usability.

- **Product Model:** MBox-R/V/VH-E39
- **Revision:** 0101
- **Date:** 2024-10-01

Product Usage Instructions:

1. Important Information

1. General:

Follow the tips in the User's Guide to ensure safe and effective use of the MBox-R/V/VH-E39.

2. Symbols and Typographic Conventions:

Refer to Table 1 in the manual for an explanation of symbols used in the guide.

2. Before You Start

Read and understand the User's Guide thoroughly before operating the MBox-R/V/VH-E39. Adhere to general safety instructions and ensure only authorized personnel handle the device.

3. Intended Use

Use TQ products at your own risk. Take necessary precautions to minimize risks associated with your applications.

4. Duty Of Care

- Exercise caution and proper care when handling and using the MBox-R/V/VH-E39 to ensure safe operation.
- 5. Limited Warranty**
- Parts subject to natural wear are not covered by the warranty beyond legal requirements.
- 6. Liability and Warranty Obligation**
- TQ-Systems GmbH is exempt from liability if the user neglects information provided in the User's Guide or warnings on the device.

FAQ:





- Q: What should I do if I encounter an electrostatic-sensitive module?**
A: Handle electrostatic-sensitive modules with care to avoid damage. Refer to the symbol guide in the manual for more information.
- Q: Who is authorized to work with the MBox-R/V/VH-E39?**
A: Only trained and authorized personnel should operate the MBox-R/V/VH-E39 to ensure proper handling and safety.

REVISION HISTORY

| Rev. | Date | Name | Pos. | Modification |
|------|------------|---------|-------------------------------------|---|
| 0100 | 2021-05-25 | FP | | The first edition, based on MBox-R/V (Update for new embedded module family TQMxE39 M) |
| 0101 | 2024-10-01 | Kreuzer | 1.4, 4.4, 6.2, 6.3, 6.4, 6.5 | Chapter added |

IMPORTANT INFORMATION

- General**
- Be sure to follow the tips given in this User's Guide to make best use of the MBox-R/-V/-VH-E39. Failure to do so might lead to discomfort or injury, or cause the MBox-R/-V/-VH-E39 to fail.
- Symbols and Typographic Conventions**
- Table 1: Terms and Conventions

| Symbol | Meaning |
|---|---|
|  | This symbol represents the handling of electrostatic-sensitive modules and/or components. These components are often damaged/destroyed by the transmission of a voltage higher than about 50 V. A human body usually only experiences electrostatic discharges above approximately 3,000 V. |
|  | This symbol indicates the possible use of voltages higher than 24 V. Please note the relevant statutory regulations in this regard. Non-compliance with these regulations can lead to serious damage to your health and also cause damage/destruction of the component. |
|  | This symbol indicates a possible source of danger. Acting against the procedure described can lead to possible damage to your health and/or cause damage/destruction of the material used. |
|  | This symbol represents important details or aspects of working with TQ products. |

Before You Start

This User's Guide must be carefully read and completely understood before you start working with the MBox-R/-V/-VH-E39. This User's Guide provides information, that is essential for the proper operation of the MBox-R/-V/-VH-E39. General safety instructions must be adhered to and only trained and authorized personnel are permitted to work with the MBox-R/-V/-VH-E39.

Intended Use

TQ DEVICES, PRODUCTS, AND ASSOCIATED SOFTWARE ARE NOT DESIGNED, MANUFACTURED, OR INTENDED FOR USE OR RESALE FOR THE OPERATION IN NUCLEAR FACILITIES, AIRCRAFT OR OTHER TRANSPORTATION NAVIGATION OR COMMUNICATION SYSTEMS, AIR TRAFFIC CONTROL SYSTEMS, LIFE SUPPORT MACHINES, WEAPONS SYSTEMS, OR ANY OTHER EQUIPMENT OR APPLICATION REQUIRING FAIL-SAFE PERFORMANCE OR IN WHICH THE FAILURE OF TQ PRODUCTS COULD LEAD TO DEATH, PERSONAL INJURY, OR SEVERE PHYSICAL OR ENVIRONMENTAL DAMAGE. (COLLECTIVELY, "HIGH RISK APPLICATIONS")

You understand and agree that your use of TQ products or devices as a component in your applications is solely at your own risk. To minimize the risks associated with your products, devices, and applications, you should take appropriate operational and design-related protective measures.

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Duty Of Care

It must be ensured that the MBox-R/-V/-VH-E39 is only used in environments, which meet the specification of the MBox-R/-V/-VH-E39. The User's Guide has to be completely read and understood and the personnel is authorized and trained regarding standards, regulations, and instructions. It also has to be ensured, that the MBox-R/-V/-VH-E39 is mounted, operated, and maintained according to the instructions of this User's Guide. All applicable national and international regulations and standards have to be obeyed.

Limited Warranty

Parts that wear out naturally are excluded from the warranty beyond that provided by law. This applies to e.g., coin cell batteries.

Liability and Warranty Obligation

TQ-Systems GmbH shall be exempted from the statutory accident liability obligation in case the user does not observe the information provided in this User's Guide or the warnings on the device. In the event of damage caused by failure to observe the information provided in this User's Guide or the warnings on the device, TQ-Systems GmbH shall not be required to honor the warranty even during the warranty period and shall be exempted from the statutory accident liability obligation.

Safety Guidelines

Use the following safety guidelines to protect your MBox-R/-V/-VH-E39 from potential damage and ensure your personal safety. If the following safety guidelines are not observed, it could lead to injuries to the operator and/or damage to the MBox-R/-V/-VH-E39.

In cases of non-observance of the safety guidelines, TQ-Systems GmbH is exempt from accident liability, even if the MBox-R/-V/-VH-E39 is still under warranty. The MBox-R/-V/-VH-E39 must be used as specified in this User's Guide, which describes the safety guidelines for the MBox-R/-V/-VH-E39 as well as for the operator. The place where the MBox-R/-V/-VH-E39 is installed has to meet the requirements of the country's standards and regulations. If power cables are delivered with the MBox-R/-V/-VH-E39 only these may be used. Ensure that there is sufficient air circulation to cool the MBox-R/-V/-VH-E39. Do not cover the MBox-R/-V/-VH-E39 or mount it close to heat sources or damp places.

To completely disconnect the MBox-R/-V/-VH-E39 from the mains, the power cord has to be disconnected. Make sure the power cord is always easily accessible. Only open the MBox-R/-V/-VH-E39 after all cables are disconnected from the MBox-R/-V/-VH-E39 to insert or remove add-on cards.

This may only be done by qualified personnel. If add-on cards are installed in the MBox-R/-V/-VH-E39, all effective legal regulations and all technical data have to be adhered to. It has to be ensured, that the power consumption of add-on cards does not exceed the limitations and the current consumption specified on the label of the MBox-R/-V/-VH-E39. Very important! A safe operation is not possible when the MBox-R/-V/-VH-E39 is visibly damaged or is not functioning at all. In this case, the MBox-R/-V/-VH-E39 must be switched off and it must be ensured that the MBox-R/-V/-VH-E39 cannot be put back into operation. It is very important to ensure that the wires of power cords are sufficiently dimensioned, according to the maximum electrical specifications of the MBox-R/-V/-VH-E39. Standards and regulations like EN62368-1, VDE0100, EN60204, or UL508 have to be adhered to. This information helps you to safely use the MBox-R/-V/-VH-E39.

Follow and keep all information included with the MBox-R/-V/-VH-E39. The information in this User's Guide does not alter the terms of your purchase agreement or the TQ-Systems GmbH Limited Warranty. Your safety is important to us. The MBox-R/-V/-VH-E39 is developed to be safe and effective. Power cords, power adapters, and other features can create potential safety risks that may result in physical injury or property damage, especially if misused. To reduce these risks, follow the instructions in this User's Guide, and observe all warnings on the MBox-R/-V/-VH-E39 and in the User's Guide. By carefully following the information contained in this User's Guide and provided with the MBox-R/-V/-VH-E39, you can help protect yourself from hazards and create a safer environment.

Do not attempt to service the MBox-R/-V/-VH-E39 yourself unless instructed to do so by TQ-Systems GmbH or this User's Guide.

Grounding Considerations


- Be aware, that the chassis of the MBox-R/-V/-VH-E39 is internally connected to Digital Ground (Power Supply Connector GND). Depending on the Power Supply Unit used it also might be connected or not to protective earth (PE).
This has to be considered when connecting other components to the MBox-R/-V/-VH-E39.
- The grounding of the MBox-R/-V/-VH-E39 might also influence the electromagnetic emission of the MBox-R/-V/-VH-E39.
- TQ-Systems GmbH recommends using the CINCON TRG70A power supply unit or equivalent, where PE is connected to GND.


ESD Considerations

To avoid damaging the MBox-R/-V/-VH-E39 caused by ESD make sure the following measures are adhered to:

Ground your workplace with e.g. anti-static mats and ground yourself with a wrist strap. Only use conductive tools when working on the MBox-R/-V/-VH-E39. Always handle electrostatic-sensitive components at their edges, preferably wearing conductive gloves. Remove the power cord from the MBox-R/-V/-VH-E39 before inserting or removing connectors or before inserting or removing add-on cards. Don't touch the contacts of connectors. Keep your work environment tidy and free of non-conductive materials.

Handling the MBox-R/-V/-VH-E39

| | |
|---|--|
| Attention: Handling the MBox-R/-V/-VH-E39 | |
|  | Improper or incorrect handling of the MBox-R/-V/-VH-E39 can substantially reduce its life span. TQ- Systems GmbH cannot be held responsible for unauthorized modifications made by the user and the consequences thereof, which may alter the conformity of the MBox-R/-V/-VH-E39. |

| | |
|---|--|
| Attention: Coin cell battery | |
|  | Danger of explosion if the coin cell battery is incorrectly replaced. Replace the coin cell battery only with a coin cell battery of the same type and size. Check for correct polarity before inserting the coin cell battery in its socket. Do not immerse in water, heat to more than + 100 °C, and repair or disassemble the coin cell battery. Dispose of the coin cell battery as required by local ordinances or regulations. |

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- Our FAE team can also support you with additional information, which is not provided on our website.
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INTRODUCTION

- The MBox-R/-V/-VH-E39 is a very compact Embedded PC based on Intel® Atom™ processor series E3900 (Apollo Lake) for embedded applications. The highly reliable hardware in combination with the rugged housing design enables the usage in industrial and harsh environmental conditions.
- The MBox-R/-V/-VH-E39 focuses on meeting individual configurations depending on customers' demands. Functionality and interfaces can easily be added by internal Mini PCIe cards. Typical applications are embedded server and gateway applications, entry-level PC systems for automation, visualization, and monitoring, and all applications, which place high demands on quality, durability, and long-term availability.
- The name "MBox-R-E39" refers to the MBox with a "robust" housing. The "MBox-R" comes in one height with or without serial ports.
- The name "MBox-V-E39" refers to the MBox with a "variable" housing. The "MBox-V" is available in two different heights, with serial ports (higher housing) or without serial ports (lower housing).

Functional Overview

The following key functions are implemented in the MBox-R/-V/-VH-E39:

External Interfaces (standard)

- 2 × Gigabit Ethernet
- 2 × USB 3.0
- 2 × Mini DisplayPort
- Power Button / Reset Button (rear)

Additional Interface according to the individual configuration

- 2 × D-Sub 9-pin (i.e. RS-232 or other extension interfaces like fieldbus interfaces)
- 2 × SMA connector for antenna

Internal Interfaces and connection possibilities

- Mini PCIe socket (full size, with micro-SIM card support)
- Mini PCIe socket (half-size)
- mSATA socket
- MicroSD card socket
- 2 × RS-232 (for internal use or available at the front)
- FAN connector
- Front panel connector

Power Supply

- **Input voltage range:** 9 to 30 V DC

MBox-R/-V/-VH-E39 Versions

Currently, the MBox-R/-V/-VH-E39 is available in different configurations. The following table shows the details:

Table 2: MBox-R/-V/-VH-E39 Chassis Options

| MBox-V | MBox-VH | MBox-R |
|---|---|---|
|  |  |  |

Table 3: MBox-R/-V/-VH-E39 Standard Versions

| MBox | TQMxE39M | DDR3L SDRAM | Mass Storage | Power Consumption | Temp. Range |
|-----------------|-------------|-------------|---------------|-------------------|------------------|
| MBox-V-E3950-AA | TQMxE39M-AA | 4 Gbyte | 32 Gbyte eMMC | 12 W (CPU) | −20 °C to +50 °C |
| MBox-R-E3950-AA | TQMxE39M-AA | 4 Gbyte | 32 Gbyte eMMC | 12 W (CPU) | −20 °C to +50 °C |

The MBox-R/-V/-VH-E39 focuses on individual/customer-specific configurations and individual branding. For this reason, several other TQMxE39M modules are available on request:

Table 4: TQMxE39M Module Versions

| Module | CPU / Graphics | TPM | DDR3L SDRAM | eMMC | Temperature Module/System |
|-----------------|--|-----|-------------|----------|--|
| TQMXE39M-A A | Intel Atom® x5-E3950 (4x 1.6/2.0GHz, 2MB Cache, 12 W TDP) Intel® HD Graphics 505 (18 EU, 500/650 MHz) | – | 4 Gbyte | 32 Gbyte | –40 °C to +85 °C / –20 °C to +50 °C |
| TQMXE39M-A C | Intel Atom® x5-E3930 (2x 1.3/1.8GHz, 2MB Cache, 6.5 W TDP) Intel® HD Graphics 500 (12 EU, 400/550 MHz) | – | 2 Gbyte | – | 0 °C to +60 °C / 0 °C to +50 °C |
| TQMXE39M-A H | Intel Atom® x5-E3950 (4x 1.6/2.0GHz, 2MB Cache, 12 W TDP) Intel® HD Graphics 505 (18 EU, 500/650 MHz) | – | 8 Gbyte | 32 Gbyte | –40 °C to +85 °C / –20 °C to +50 °C |
| TQMXE39M-A K | Intel Atom® x5-E3940 (4x 1.6/1.8GHz, 2MB Cache, 9 W TDP) Intel® HD Graphics 500 (12 EU, 400/600 MHz) | – | 4 Gbyte | – | –40 °C to +85 °C / –20 °C to +60 °C |

MBox-R/-V/-VH-E39 Versions (continued)

More configurations are possible:

Mass storage:

- 16 / 32 / 64 / 128 / 256 / 512 Gbyte mSATA (SATA III, MLC) (Standard-Temp. 0 °C to +70 °C)
- 32 / 64 / 128 / 256 / 512 Gbyte mSATA (SATA III, MLC) (Extended-Temp. –40 °C to +85 °C)
- Other mSATA flash drives on request

Add-ons:

- **On request, e.g.:**
 - WiFi (Extended-Temp: –40 °C to +85 °C), ZigBee, EnOcean
 - Fieldbus interfaces like CAN, ProfiNet, Profibus, DeviceNet, Modbus
 - Cellular connectivity (2G / 3G / LTE)

Note: Add-on cards



The device must be re-certified if add-on cards are installed.

FUNCTIONAL SPECIFICATION

Electrical Specification

Supply Voltage Characteristics

The MBox-R/-V/-VH-E39 supports a wide-range voltage input of 9 to 30 V DC.

Attention: Power requirement



Using a power adapter with Limited Power Source (LPS) certification IEC/EN62368-1 PS2 or IEC/EN60950-1 LPS (sub-clause 2.5) is compulsory.

- TQ-Systems GmbH recommends the AC Adapter TRH70A120 from CINCON (Input 90 to 264 V AC) for applications up to +45 °C. A Power kit is available on request.
- At higher ambient temperatures or other environmental conditions, a suitable power supply has to be chosen.

Power Consumption Specification

The power consumption of the system significantly depends on the configuration and the connected devices (COM Express™ module, mass storage devices, USB devices, etc.). The maximum input current of the MBox-R/-V/-VH-E39 is limited to 5 A by a fuse. All USB devices connected to the MBox-R/-V/-VH-E39 should not exceed 5 W in total.

Note: Power requirement



The power supply for the MBox-R/-V/-VH-E39 must be configured with enough reserve. When selecting the power supply, the maximum power consumption of all components must be taken into account.

Environmental Specification

The following temperature parameters were determined by qualification tests (standard configurations without add-on cards, but with I-Temp mass storage):

- **Storage temperature:** –40 °C to +85 °C
- **Operating temperature:**
 - **Depending on the module and integrated add-on cards**
 - –20 °C to +50 °C for high-performance variants with extended temp.
 - –20 °C to +60 °C for low/mid-performance variants with extended temp.
 - 0 °C to +60 °C for low/mid-performance variants with standard temp.

- **Relative humidity (operating/storage):** 10 % to 90 % (not condensing)

When I/O extension modules or SSDs are selected, attention has to be paid to their storage and operating temperature limits. The temperature inside the MBox-R/-V/-VH-E39 differs from the ambient temperature. The modules should be specified for up to +85 °C. If modules with high power dissipation are used, the maximum operating temperature range for the device has to be verified.

Note: Environmental conditions



When powering the MBox-R/-V/-VH-E39, make sure the chassis is not covered by any objects.

Otherwise, the heat dissipation will be restricted by physical effects and the maximum operating temperature will be reduced.

Connectors and Interfaces

External Connectors and Interfaces Arrangement

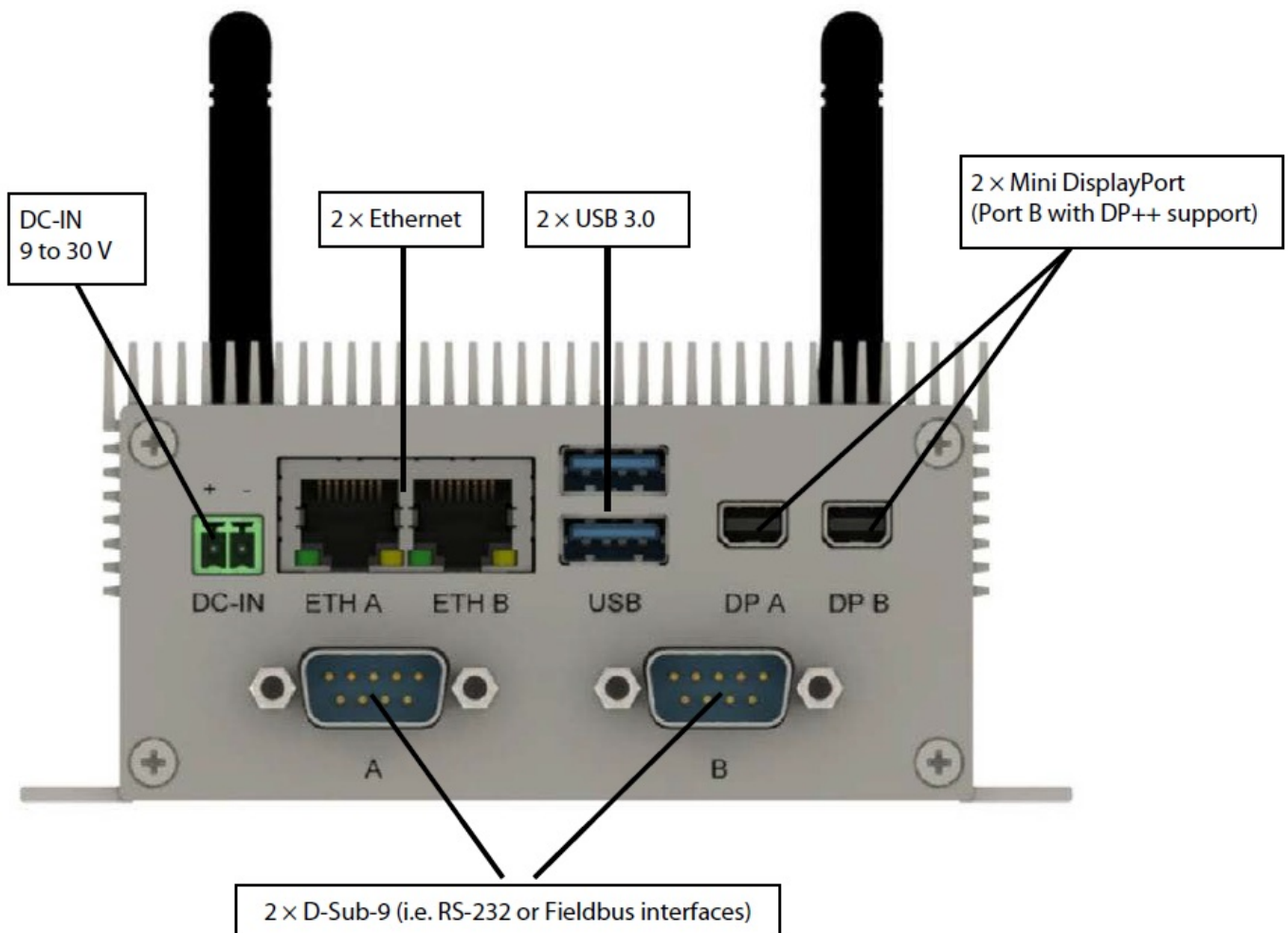


Figure 1: MBox-R-E39, Front with D-Sub-9 Connectors

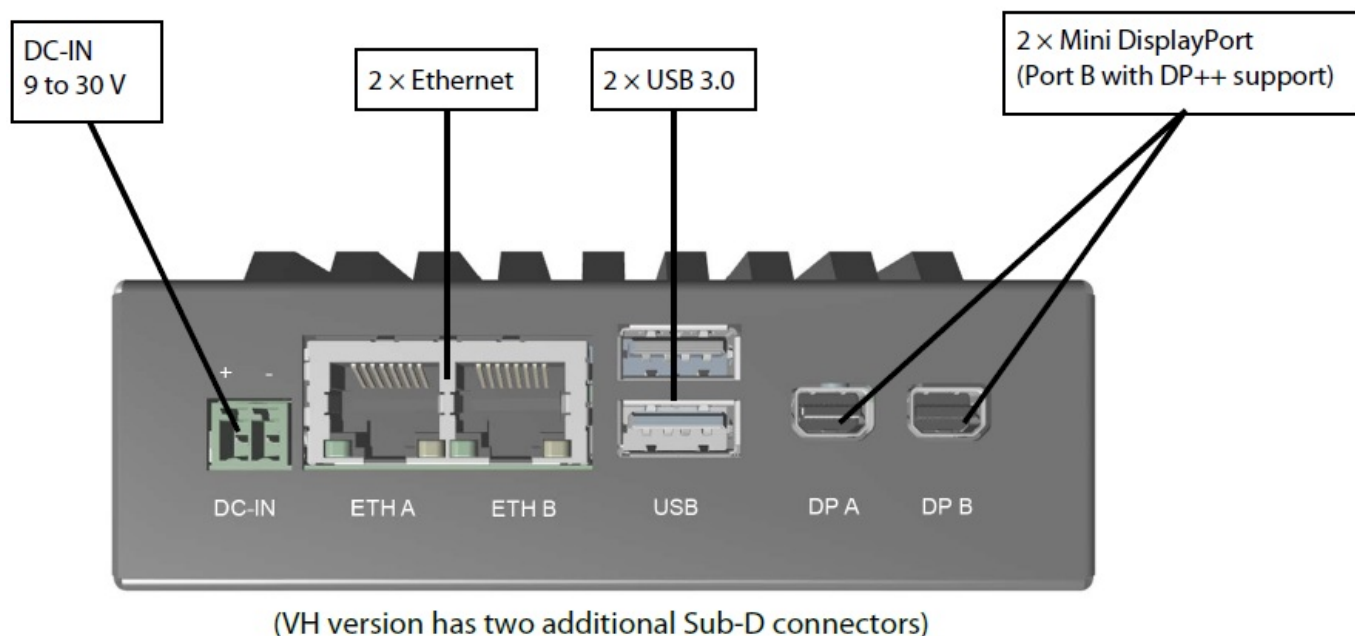
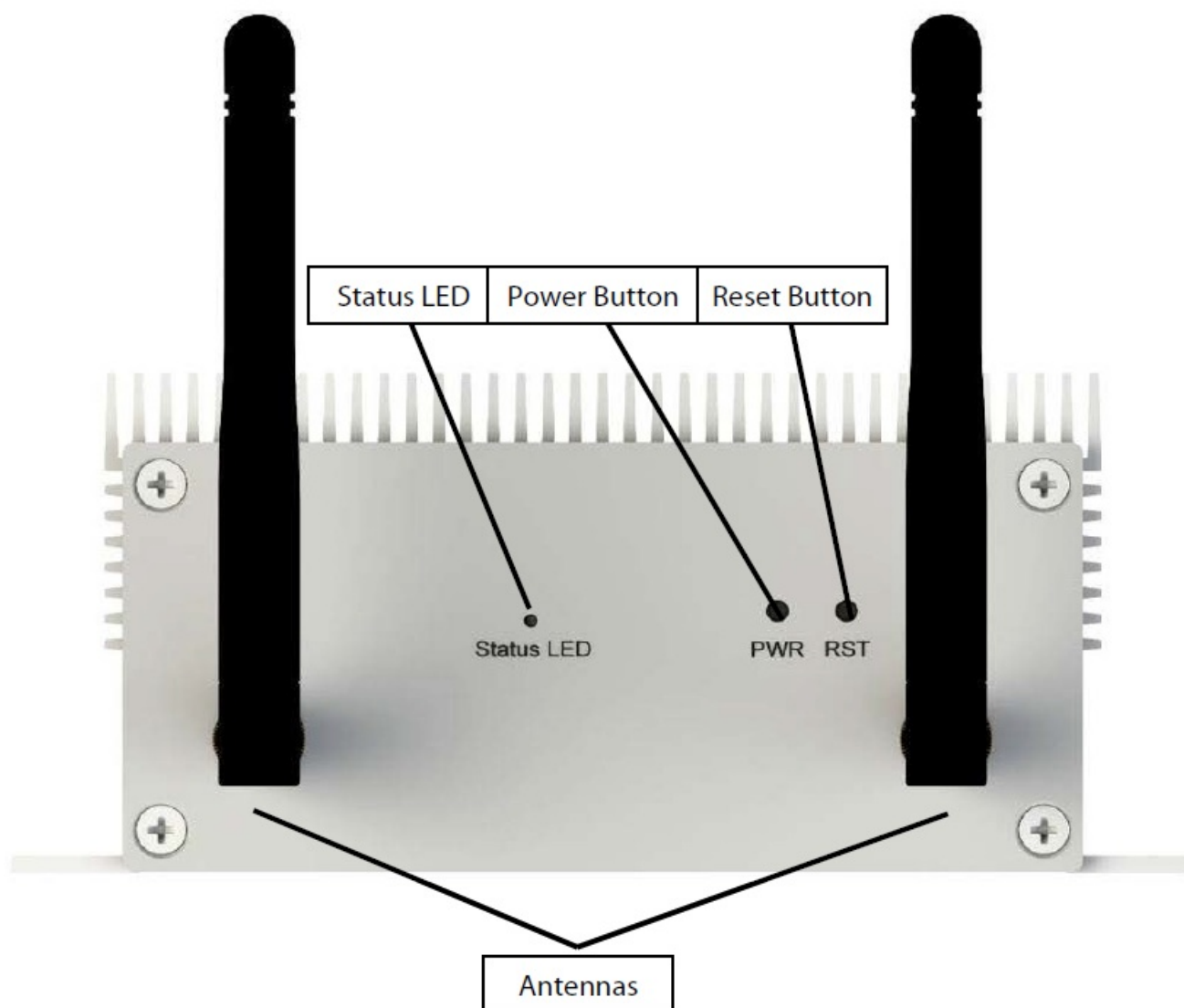


Figure 2: MBox-V-E39, Front without D-Sub-9 Connectors / MBox-VH-E39



Holes for SMA-connectors are not supported in standard versions unless otherwise specified.

Figure 3: MBox-R-E39, Rear

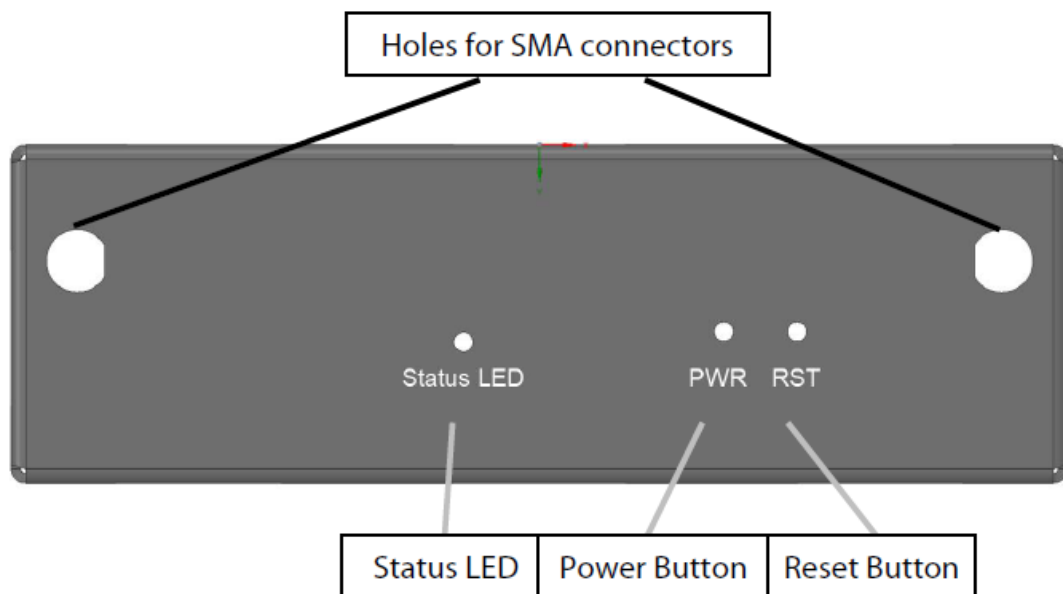


Figure 4: MBox-V-E39, Rear (also valid for MBox-VH-E39)

Power Supply Connector

The MBox-R/-V/-VH-E39 supports a wide-range voltage input from 9 to 30 V DC.

Power-In connector:

- **Connector type:** Phoenix MC1,5/2-G-3,5
- **Mating connector:** e.g. Phoenix FMC1,5/2-ST-3,5

Table 5: Pinout Power-In Connector

| Pin | Signal | Remark |
|-------|---------------|-------------|
| 1 (+) | 9 to 30 V | Fused @ 5 A |
| 2 (-) | GND / chassis | – |

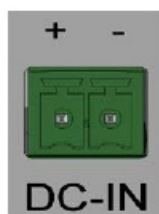


Figure 5: DC Power Supply Connector

Note: Power requirement



Do not connect or disconnect the Power Supply to the MBox-R/-V/-VH-E39 under voltage. Switch off the voltage before plugging.

Mini DisplayPort

- The MBox-R/-V/-VH-E39 supports two mini DisplayPort interfaces. The interfaces support DP++ signaling. Therefore it is possible to connect monitors with DP, DVI, HDMI, and VGA input by using dedicated cables and adapters.
- The actual configuration with the Intel Atom E3900 series has extended monitor support with resolutions up to 2 × 4K UHD.
- Port B supports DP++ with auto-detect of DP/HDMI.

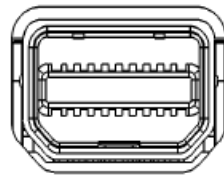


Figure 6: Mini DP Connector

USB Host Interfaces

The MBox-R/-V/-VH-E39 supports two USB Host interfaces. Double A-type USB connector for direct usage of USB host ports

- 2x USB 3.0

The maximum cable length of the USB interface is 3 m.

Gigabit Ethernet

- The MBox-R/-V/-VH-E39 supports two standard Gigabit Ethernet ports.
- An Intel® i210IT Ethernet controller with 10/100/1000 Mbps speed is implemented on both ports.

Table 6: Ethernet LEDs

| LED | Color/Status | Remark |
|-------------|--------------|------------------|
| Left (Link) | Off | No link |
| Left (Link) | Green | Link established |
| Right (ACT) | Off | No activity |
| Right (ACT) | Yellow | Activity |



Figure 7: RJ45 Connectors

Status LED

The MBox-R/-V/-VH-E39 is equipped with a Status LED (on the rear side).

Table 7: Status LED Conditions

| Status LED | LED Colour | Description |
|------------|------------|---|
| Off | – | S5 State (System is shut down or not powered) |
| On | Green | S0 State (System is running) |
| On | Orange | S3 State (System is in Sleep mode) |

Power Button and Reset Button

The Power Button and the Reset Button on the rear side of the MBox-R/-V/-VH-E39 provide the following functions.

Table 8: Power Button and Reset Button Functions

| Status | Event | System response |
|---|------------------------------|--|
| No power supply connected | Supply with power | The system starts automatically (S0) |
| The system is shut down or in sleep mode (S3, S4, S5) | Push the power button <5 sec | System starts (S0) |
| The system is running (S0) | Push the power button <5 sec | System shuts down or turns to sleep mode (S3, S4, S5), depending on Windows settings |
| The system is running (S0) | Push the power button >5 sec | Forced shutdown (S5) |
| The system is running (S0) | Push reset button | Reset is generated |

Optional External Connectors and Interfaces Arrangement

Serial Interfaces RS-232

The MBox-R/-V/-VH-E39 provides up to two serial ports:

- 2 × D-Sub-9 RS-232 port (4-wire)
- Legacy compatible (IO addresses and IRQs)
- Up to 115 kbaud

The interfaces are only supported in versions where they are explicitly specified in the configuration list. To connect the internal RS-232 connectors to the front panel, the following adapters is used.

- Adapter cable 150 mm from internal connector to a 9-pin D-Sub connector, order code: 278622.0100



Figure 8: D-Sub-9 Adapter Cable

Table 9: RS-232 D-Sub-9 Connector

| Pin | D-Sub-9 Connector |
|-----|-------------------|
| 1 | – |
| 2 | RXD |
| 3 | TXD |
| 4 | – |
| 5 | GND |
| 6 | – |
| 7 | RTS |
| 8 | CTS |
| 9 | – |
| 10 | – |

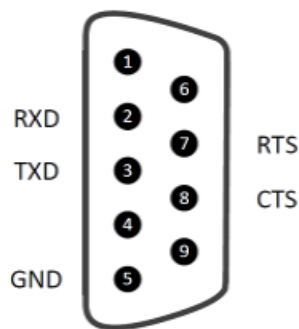


Figure 9: RS-232 D-Sub-9 Connector

If the D-Sub-9 connectors at the front are used for other interfaces (like Fieldbus), the RS-232 interfaces are not available.

SMA Antenna Connectors

- In combination with a Wireless Mini PCI Express card, it is possible to add SMA antenna connectors for

external antennas.

- For options and more information refer to chapter 3.2 and 4.3.2.5.
- MBox-V-E39 and MBox-VH-E39 housings have holes for SMA connectors as standard.

Other Optional Connectors

For individual solutions more optional connectors are available.

mSATA Interface for Mass Storage

- An SSD can be plugged into the mSATA socket on the carrier board of the MBox-R/-V/-VH-E39.
- The size can be chosen according to the requirements. See “mass storage” in chapter 3.2.

Mini PCIe Extension Sockets

The MBox-R/-V/-VH-E39 provides up to two Mini PCIe card slots to extend the IOs or other system functionality. One Mini PCIe slot also provides a micro-SIM card socket. The socket is accessible when the back panel is removed.

- One full-size socket (for 50.95 mm × 30 mm Mini PCIe cards)
 - Supports PCIe ×1 and USB 2.0
 - Micro-SIM card socket on carrier board in the MBox-R/-V/-VH-E39 (SIM/USIM card for 2G/3G/LTE modem support)
- One half-size socket (for 26.8 mm × 30 mm Mini PCIe cards)
 - Supports PCIe ×1 and USB 2.0

MicroSD Card Socket

The carrier board in the MBox-R/-V/-VH-E39 provides a microSD card socket. The socket is accessible when the back panel is removed.

Reliability and service life

The calculated MTBF of the MBox-R/-V/-VH-E39 is approximately 389.862h @ +40 °C ambient temperature, Ground, Benign.

MECHANICS

Dimensions

The following illustrations show the MBox-R-E39

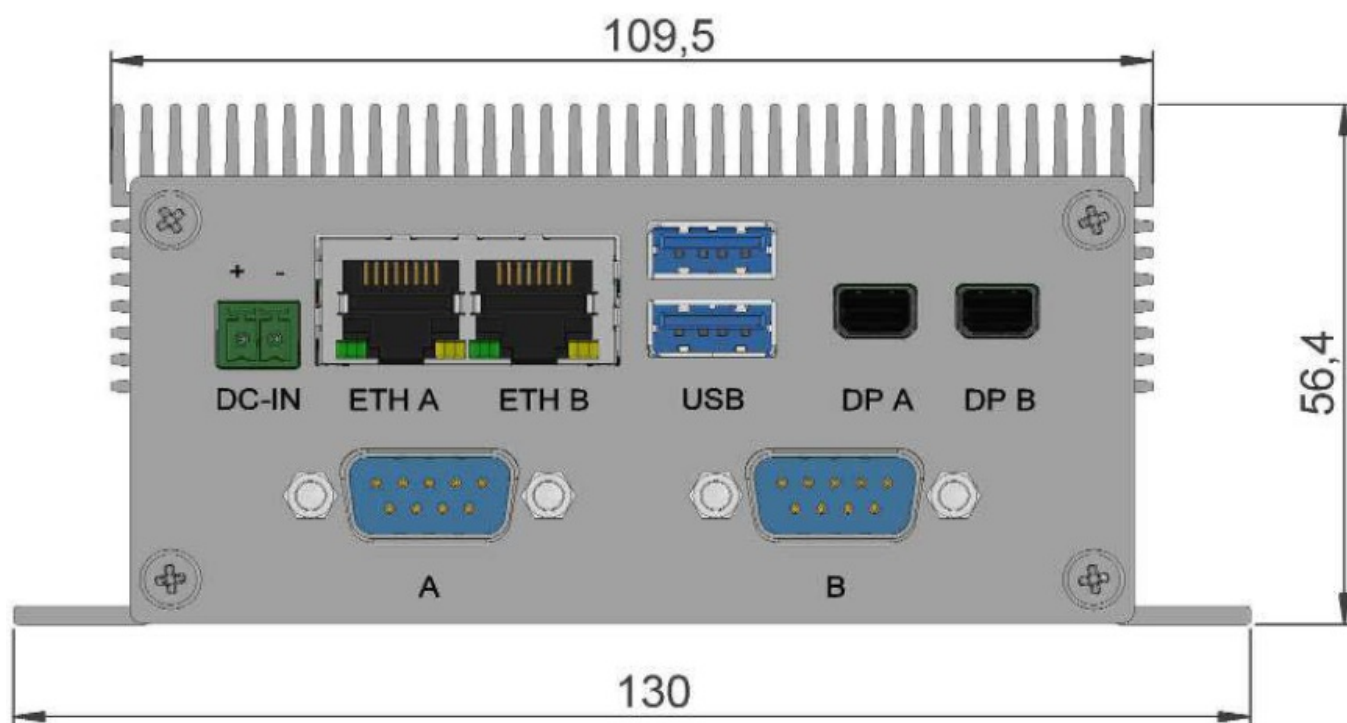


Figure 10: MBox-R-E39, Dimensions (mm), Front View

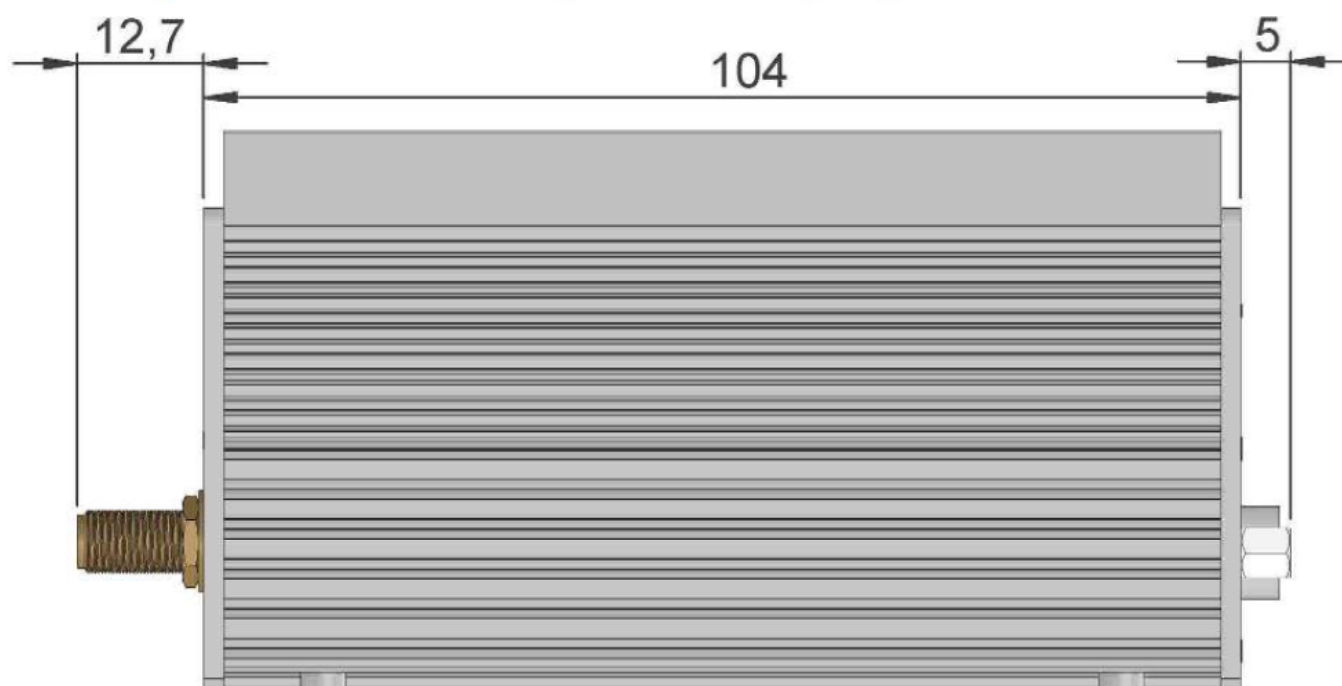


Figure 11: MBox-R-E39, Dimensions (mm), Side View

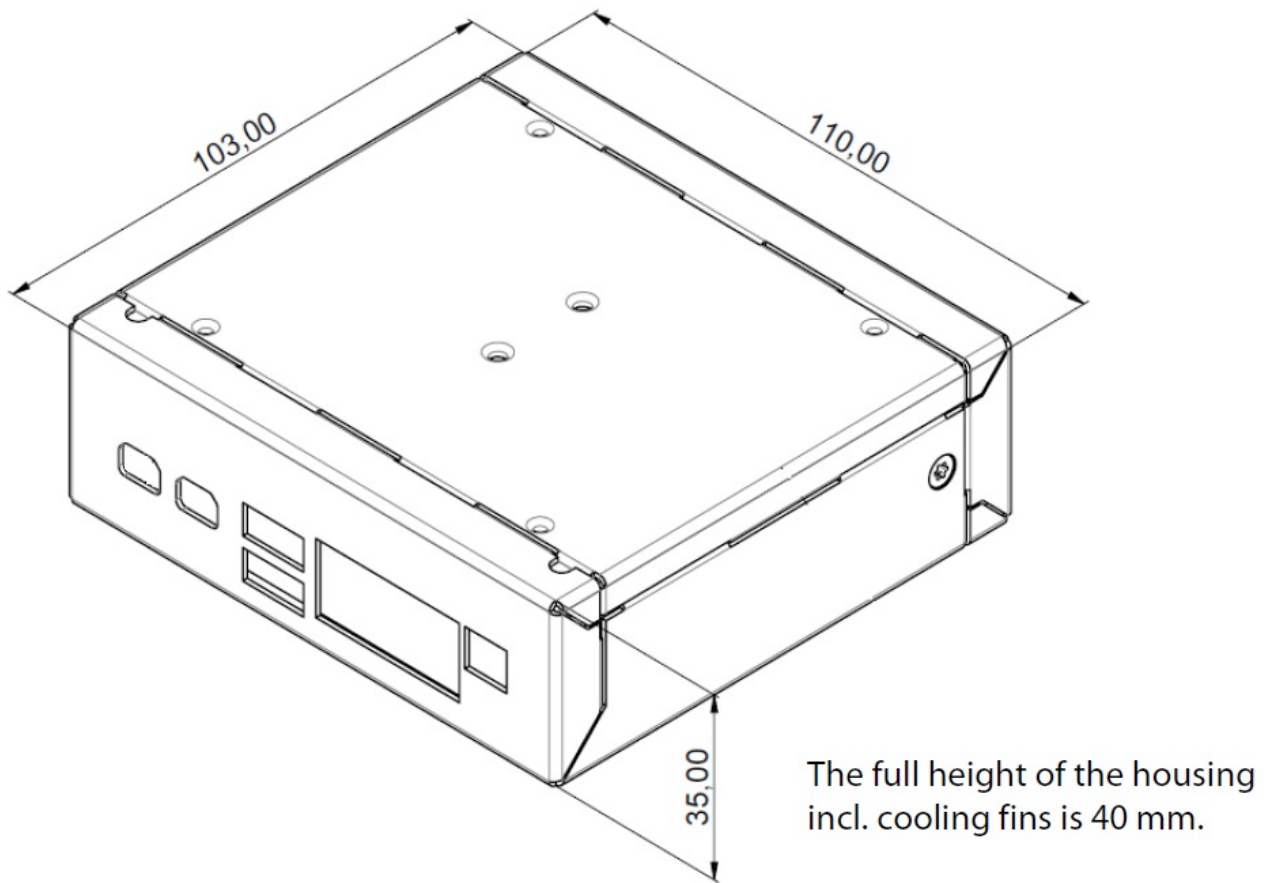


Figure 12: MBox-V-E39 (without D-Sub-9 Connectors), Dimensions (mm), Bottom View

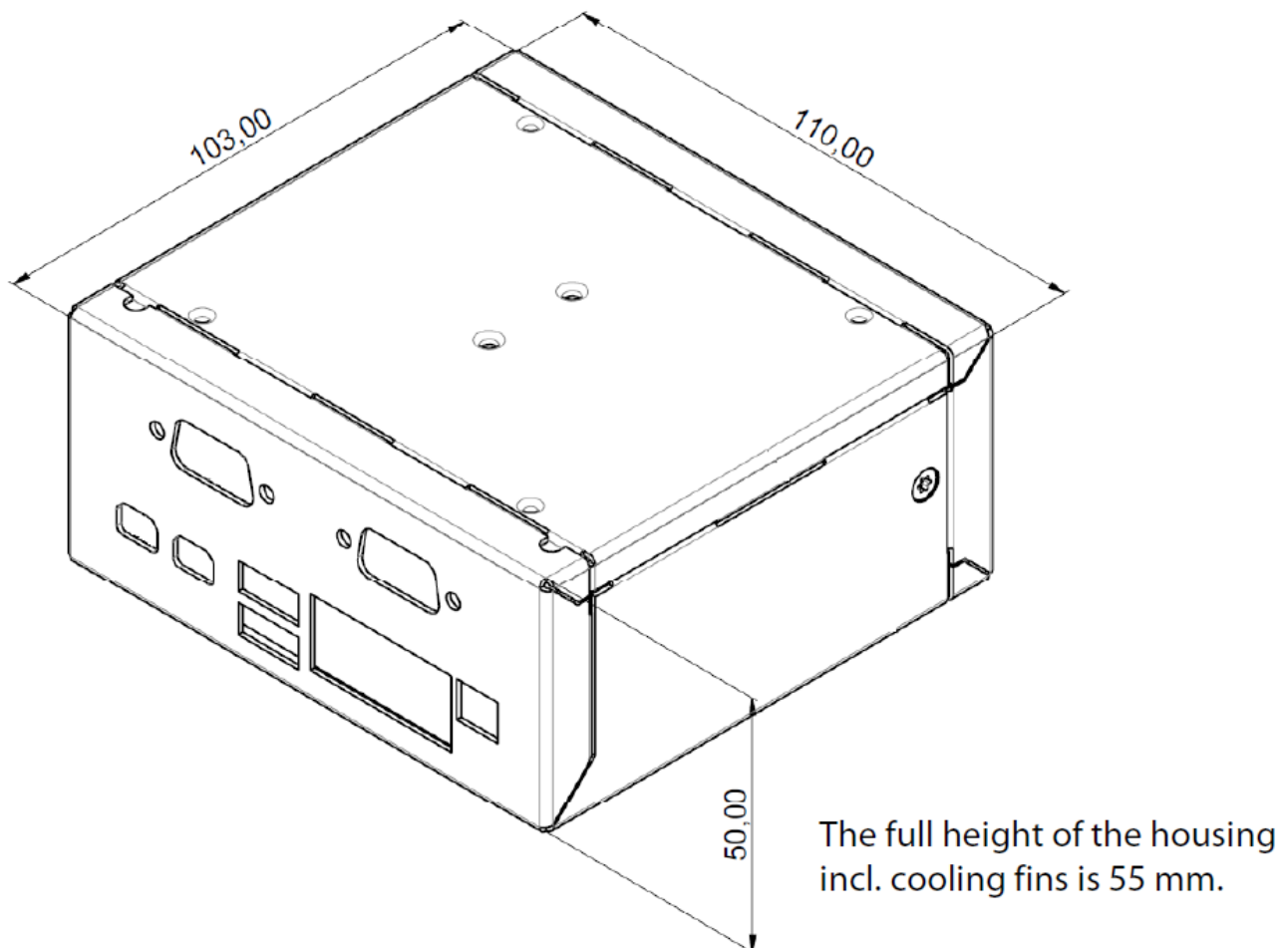


Figure 13: MBox-VH-E39 (with D-Sub-9 Connectors), Dimensions (mm), Bottom View

Mounting

There are several possibilities to mount the MBox-R/-V/-VH-E39:

- With an adapter plate
- To a DIN rail with an optional clamp (for MBox-V-E39 and MBox-VH-E39)
- Directly with screws

Please contact support@tq-group.com for more details or ideas suitable for your application.

The mounting slots
are 4.5 mm wide.

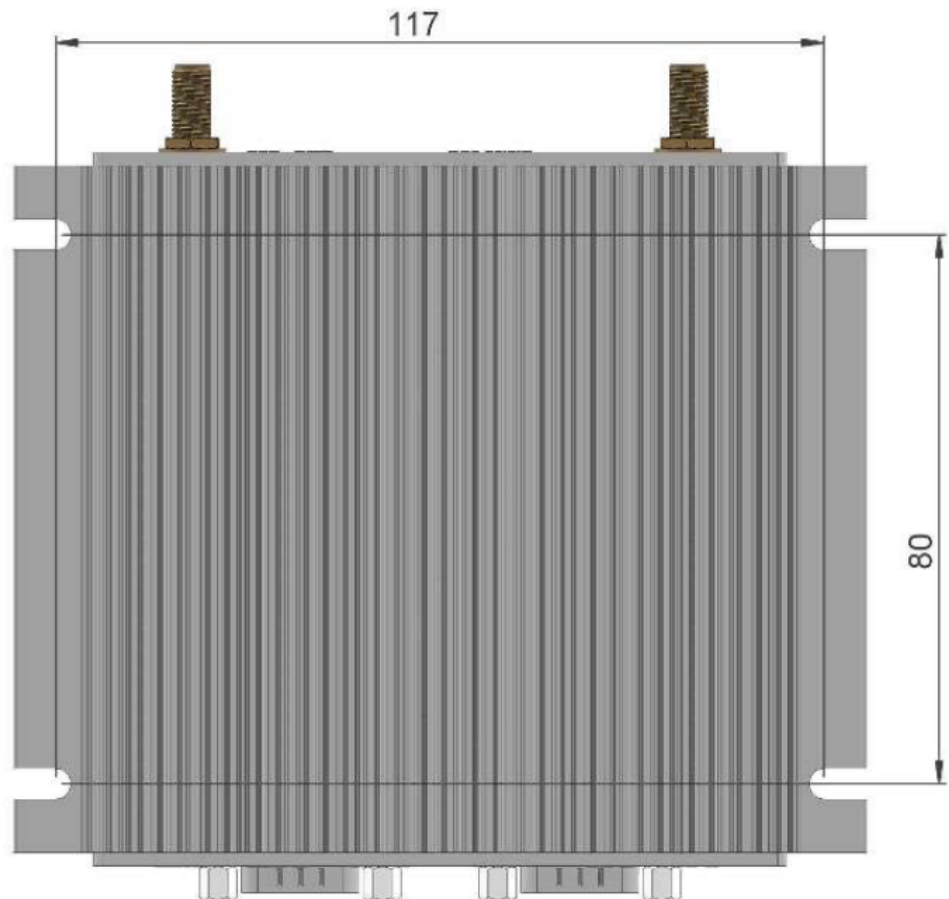


Figure 14: MBox-R-E39, Mounting Dimensions (mm), Top View

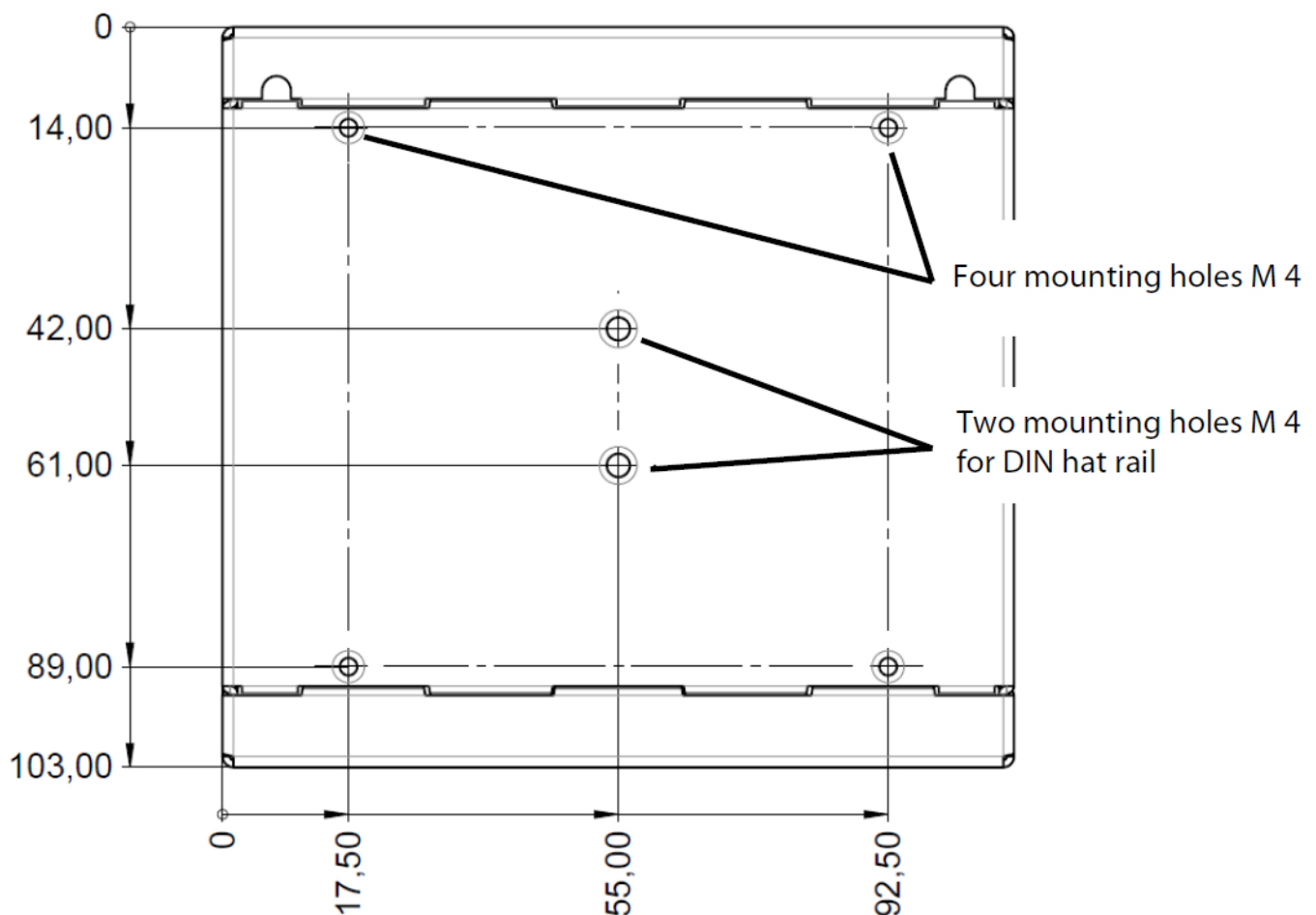


Figure 15: MBox-V-E39 / MBox-VH-E39, Dimensions of Mounting Holes (mm), Bottom View

REGULATORY INFORMATION

EU Compliance with Electromagnetic Compatibility Directive EC-Declaration of Conformity

We declare under our sole responsibility that the MBox-R/-V/-VH-E39 complies with the essential requirements which are laid down in the referred harmonization measures below:

- Directive 2011/65/EU combined with 2015/863/EU of the European Parliament on the restriction of the use of certain hazardous substances in electrical and electronic equipment
- Directive 2014/30/EU of the European Parliament on the harmonization of the laws of the Member States relating to electromagnetic compatibility.
- Directive 2012/19/EU of the European Parliament on waste electrical and electronic equipment (WEEE) and complies with the appropriate harmonized standards or specifications:
- EN IEC 63000:2019, Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances
- EN 55032:2015, Electromagnetic compatibility of multimedia equipment – Emission Requirements class B.
- EN IEC 61000-6-2:2019, Electromagnetic compatibility – immunity for industrial environments
- IEC 62368-1:2018, Audio/video, information and communication technology equipment – Part 1: Safety requirements

Cyber Security

A Threat Analysis and Risk Assessment (TARA) must always be performed by the customer for their end

application, as the MBox-R/-V/-VH-E39 is only a sub-component of an overall system.

Export Control and Sanctions Compliance

- The customer is responsible for ensuring that the product purchased from TQ is not subject to any national or international export/import restrictions. If any part of the purchased product or the product itself is subject to said restrictions, the customer must procure the required export/import licenses at its own expense. In the case of breaches of export or import limitations, the customer indemnifies TQ against all liability and accountability in the external relationship, irrespective of the legal grounds. If there is a transgression or violation, the customer will also be held accountable for any losses, damages or fines sustained by TQ. TQ is not liable for any delivery delays due to national or international export restrictions or for the inability to make a delivery as a result of those restrictions. Any compensation or damages will not be provided by TQ in such instances.
- The classification according to the European Foreign Trade Regulations (export list number of Reg. No. 2021/821 for dual-use goods) as well as the classification according to the U.S. Export Administration Regulations in case of US products (ECCN according to the U.S. Commerce Control List) are stated on TQ's invoices or can be requested at any time. Also listed is the Commodity code (HS) by the current commodity classification for foreign trade statistics as well as the country of origin of the goods requested/ordered.

Warranty

TQ-Systems GmbH warrants that the product, when used in accordance with the contract, fulfills the respective contractually agreed specifications and functionalities and corresponds to the recognized state of the art.

The warranty is limited to material, manufacturing, and processing defects. The manufacturer's liability is void in the following cases:

- Original parts have been replaced by non-original parts.
- Improper installation, commissioning, or repairs.
- Improper installation, commissioning, or repair due to lack of special equipment.
- Incorrect operation
- Improper handling
- Use of force
- Normal wear and tear

Statement on California Proposition 65

California Proposition 65, formerly known as the Safe Drinking Water and Toxic Enforcement Act of 1986, was enacted as a ballot initiative in November 1986. The proposition helps protect the state's drinking water sources from contamination by approximately 1,000 chemicals known to cause cancer, birth defects, or other reproductive harm ("Proposition 65 Substances") and requires businesses to inform Californians about exposure to Proposition 65 Substances.

The TQ device or product is not designed manufactured or distributed as a consumer product or for any contact with end-consumers. Consumer products are defined as products intended for a consumer's personal use, consumption, or enjoyment. Therefore, our products or devices are not subject to this regulation and no warning label is required on the assembly. Individual components of the assembly may contain substances that may require a warning under California Proposition 65. However, it should be noted that the Intended Use of our products will not result in the release of these substances or direct human contact with these substances. Therefore you must take care through your product design that consumers cannot touch the product at all and specify that issue in your product-related documentation.

TQ reserves the right to update and modify this notice as it deems necessary or appropriate.

WEEE AND RECYCLING

WEEE

- TQ-Systems GmbH encourages owners to recycle their MBox-R/-V/-VH-E39 when it is not used anymore.
- The Waste Electrical and Electronic Equipment (WEEE) mark only applies to countries within the European Union (EU) and Norway. Appliances are labeled by European Directive 2012/19/EU concerning waste electrical and electronic equipment (WEEE). The Directive determines the framework for the return and recycling of used appliances as applicable throughout the European Union.

Recycling

Users of the MBox-R/-V/-VH-E39 must not dispose of the MBox-R/-V/-VH-E39 as unsorted municipal waste, but use the collection framework available in their country for the return, recycle, or recovery of WEEE and minimize any potential effects on the environment and human health due to the presence of hazardous substances.



APPENDIX

Driver Download

- The MBox-R/-V/-VH-E39 is well supported by Standard Operating Systems, which already include most of the drivers required. Use the latest Intel® drivers to optimize performance and make use of the full MBox-R/-V/-VH-E39 feature set.
- Please visit the TQ product webpage for detailed information, where drivers can be downloaded.
<https://www.tq-group.com/en/products/tq-embedded/x86-architecture/tqmxe39m/>.

TQ-Systems GmbH

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Documents / Resources



[TQ MBox-R/V/VH-E39 Embedded Box PC](#) [pdf] User Guide

TQ, 0101, MBox-RVVH-E39 Embedded Box PC, MBox-RVVH-E39, Embedded Box PC, Box P C, PC

References

- [G Group Publishing](#)
- [TQ Electronic products & electronic services | TQ](#)
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