

# CARRIERTRONIC

Full Service Embedded Provider

## RACCOON-Serie IPC IP



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### Data sheet and instructions

**Part Nr.: CT00896**

Version: February.2025, v1.3  
Doc No.: P461303

# Table of contents

General information .....	3
Technical changes .....	3
History.....	3
Safety instructions: .....	4
<b>Manual .....</b>	<b>5</b>
Product description.....	5
Technical information.....	6
IPC properties.....	6
Power supply .....	7
<b>Design and function .....</b>	<b>8</b>
Carrier board .....	8
Battery .....	8
Aux Power Input.....	8
USB-OTG.....	8
Ethernet ETH1 with PoE .....	8
Ethernet ETH2.....	8
USB-Host .....	8
RS232 serial .....	9
CAN-FD .....	9
<b>Plug assignment .....</b>	<b>10</b>
Interfaces Description .....	10
X302 - Aux Power Input Connector.....	10
X700 - USB Host/Client Interface .....	11
X800 - ETH1 Connector with POE and TSN.....	11
PoE Classification.....	11
X801 - Ethernet 2 Connector .....	12
X701 - USB Host Interface .....	12
X1901 - RS232 Connector (M12-A) .....	12
X1900 - RS485 Connector (M12-B) .....	12
X1500 - CAN Connector (M12-A) .....	12
<b>Commissioning.....</b>	<b>13</b>
Mounting VESA .....	13
Mounting DINrail .....	13
Power supply .....	13
Earthing .....	13
<b>Operating System Setup and Integration .....</b>	<b>14</b>
Installing the operating system (OS) .....	14

**RACCOON SERIES - IPC IP**

Torizon OS Technical Overview.....	14
Yocto OS Technical Overview .....	14
Devicetree Overlay .....	15
EEPROM .....	15
Temperature Sensor .....	15
Backup/Restore.....	16
Enclosure variant VESA .....	17
Dimensions .....	17
Power Control .....	18
<b>Maintenance.....</b>	<b>19</b>
Instructions .....	19
Cleaning .....	19
Technical Support .....	20
Disposal.....	20
Environmental specifications .....	21
Storage.....	21
Disclaimer .....	21

## RACCOON SERIES - IPC IP

## General information

This document is intended for the end customer. The safety instructions must be passed on by the machine manufacturer or system provider.

## Technical changes





carriertronic GmbH reserves the right to change and adapt the information, designs and technical data contained in this documentation without prior notice.

## History

The following versions of these instructions for use have already been published:

<b>Version</b>	<b>Notice</b>
Aug. 2023, v1.0	Release
October 2024, v1.1	Edit Interfaces
November 2024, V1.2	Improved Interface Text and add DINrail Mount Picture
February 2025, V1.3	

Safety instructions:

<b>⚠ DANGER</b>	
	<p><b>Indicates an imminent danger</b> Failure to follow the instructions may result in serious injury or death.</p>
<b>⚠ WARNING</b>	
	<p><b>Indicates a dangerous situation</b> Failure to follow the instructions may result in serious injury.</p>
<b>⚠ CAUTION</b>	
	<p><b>Indicates a potentially dangerous situation</b> Failure to follow the instructions may result in injury.</p>
<b>NOTE</b>	
	<p><b>Indicates useful information</b> Important information to avoid malfunctions that could result in material damage.</p>

## Manual

### Product description

The Raccoon series is a versatile Industry PC system.

This system is characterized above all by its simple integration into existing or new projects.

Thanks to the different versions, which can be adapted to your project if necessary, both stand-alone use and integrated use with existing hardware is possible without further ado.

The Raccoon series is also ideally suited for use in demanding environmental conditions. Thanks to the high-quality workmanship and the possibility of integration in damp environments, our system offers protection up to IP65.

The Raccoon series can be ordered and supplied in different versions.

Please feel free to contact us!

carriertronic GmbH,  
Karlstraße 7,  
97990 Weikersheim

Telefon: +49(0)7033 708974-0  
E-Mail: [info@carriertronic.com](mailto:info@carriertronic.com)



Name: Datasheet_IPC_IP_Raccoon-Series EN	Contact: <a href="mailto:info@carriertronic.com">info@carriertronic.com</a>	Letzte Änderung: 24.02.2025
Company: carriertronic GmbH, Karlstraße 7, 97990 Weikersheim		Seite <b>5</b> von <b>21</b>

## Technical information

<b>SOM-Details</b>	Compatible with <a href="#">Verdin Family</a> (customer-configurable)
<b>RTC</b>	Battery protected
<b>EEPROM</b>	2kByte
<b>PCIe</b>	A Mini-PCIe Slot is available on carrier
<b>Temperature</b>	Digital Temperature Sensor with I2C Interface
<b>Mechanics</b>	VESA / DINrail / Mounting Plate
<b>Power supply</b>	+12V-48V VDC ±5%
<b>Ethernet</b>	1x PoE 100Mbit Ethernet, with TSN 1x RGMII 100Mbit Ethernet
<b>USB-OTG</b>	Dual role interface (host/client)
<b>USB</b>	USB host interface
<b>RS232</b>	Serial interface
<b>RS485</b>	Serial interface, electrically isolated
<b>CAN</b>	CANopen/Basic-CAN interface, electrically isolated

## IPC properties

<b>Cooling</b>	Passive (Natural air convection)
<b>Operating Temperature</b>	-20 ~ 55°C
<b>Humidity</b>	5 ~ 80% (non-condensing)
<b>Weight</b>	1500 g

### NOTE



#### Information

Interface description can be found in the overview

## Power supply

Parameter Name	Min	Typ	Max	Tol.	Unit
Input voltage	+12	-	+48	±10%	V
Overcurrent protection	-	-	2	-	A
Recommended input voltage	-	24	-	-	V

### NOTE



**The appliance may only be installed by a qualified electrician.**  
Observe the national and international regulations for the installation of electrical systems.

### ⚠ WARNING



**The output of the power supply unit must meet the criteria of a safety extra-low voltage (SELV) in accordance with IEC 60664-1.**  
If an unsuitable power supply unit is used, there is a risk of electric shock.



## Design and function

### Carrier board

The carrier board is equipped with a SoM from [Toradex AG](#). It contains all the interfaces available on the panel on board. The SoM can vary within the [Toradex Verdin Familie](#) depending on requirements.

### Battery

An internal 3V lithium battery CR2032 guarantees a constant power supply to the RTC when the main power supply is switched off.

### Aux Power Input

The carrier board features an AUX power input, designed to connect an external power supply ranging from +12V to +48V DC. This wide voltage range ensures compatibility with various industrial and commercial power sources.

The AUX power input is electrically isolated, providing robust protection against ground loops and electrical noise. This isolation enhances system reliability in environments with fluctuating or noisy power conditions, making it suitable for industrial applications.

The AUX input can serve as the primary power source or as a backup, ensuring operational flexibility and redundancy for critical systems.

### USB-OTG

The carrier board has a MI2-B (male) connector, which can be operated both as a client and as a host. The recovery image from Toradex can be flashed in the client configuration (USB-OTG).

### Ethernet ETH1 with PoE

The Ethernet interface ETH1 is operated via an Ethernet controller of the processor. The electrically isolated 10/100 Mbit Ethernet interface is available on an MI2-D connector.

### Ethernet ETH2

The Ethernet interface ETH2 is operated via an Ethernet controller on the RMI interface of the processor. The electrically isolated 10/100 Mbit Ethernet interface is available on an MI2-D connector.

### USB-Host

The Raccoon IPC integrates a 4 port USB Hub (Microchip USB5744T-1/2G) to provide 4x USB 3.1 Gen 1 / USB 2.0 host interfaces.

Port	Signal	IO-Type
1	CTP (Internal USB for Touch-Controller)	USB 2.0
2	MI2-A	USB 2.0
3	Not Used	
4	Mini PCIe Express	USB 2.0

## RACCOON SERIES - IPC IP

### RS232 serial

The RS232 interface provides a standard serial communication port for connecting external devices. The interface is available on an M12-A connector.

### RS485 serial

The serial interface provides signals A and B in RS485 level. This interface is electrically isolated. The interface has no internal termination and is available on an M12-B Connector.

### CAN-FD

The carrier board uses the Texas Instruments isolated ISO1042BDWR CAN transceiver and thus implements CAN FD. The interface provides the CANL and CANH signals in accordance with ISO 11898. The Interface is available on an M12-A Connector. The Pin-Assignment is according to the DR303-1-CAN-Open Standard. This interface has no internal termination.

Name: Datasheet_IPC_IP_Raccoon-Series EN		Letzte Änderung: 24.02.2025
Company: carriertronic GmbH, Karlstraße 7, 97990 Weikersheim	Contact: info@carriertronic.com	Seite 9 von 21

## Plug assignment

### Interfaces Description

Ref.	Interface (IO-Shield)	Application
<b>X302</b>	Aux Power Input	PWR
<b>X700</b>	USB-OTG - Dual Role (Recovery)	USB-OTG
<b>X800</b>	Ethernet 100 Mbit with TSN and PoE	ETH1
<b>X801</b>	Ethernet 100Mbit	ETH2
<b>X701</b>	USB 2.0 - Host	USB
<b>X1901</b>	Serial - RS232	RS232
<b>X1900</b>	Serial - RS485	RS485
<b>X1500</b>	CAN-FD	CAN(open)

<b>X302</b>	<b>X700</b>	<b>X800</b>	<b>X801</b>	<b>X701</b>	<b>X1901</b>	<b>X1900</b>	<b>X1500</b>
PWR	USB-OTG	PoE	ETH2	USB	RS232	RS485	CAN



### X302 - Aux Power Input Connector

Pin	Signal	Typ	Description
1	+VDC	PWR	Supply +12V - 48VDC ±5%
2	+VDC	PWR	Supply +12V - 48VDC ±5%
3	GND_IN	PWR	Power supply 0Volt DC
4	GND_IN	PWR	Power supply 0Volt DC

Connection cable: Smaller 3m, unshielded

- Socket type: Phoenix Contact SACC-CI-M12MS-4CON - 1436660
- Plug type: Phoenix Contact SACC-M12MS-5PL M - 1424649 (not included in the scope of delivery)

### Note



**Information**  
**A slow-blow SMD fuse is installed as overcurrent protection**

## RACCOON SERIES - IPC IP

### X700 - USB Host/Client Interface

This interface connects to the Verdin USB\_1 port, offering native USB 2.0 functionality. The USB port operates as both a Host and Client interface, depending on the configuration:

- When the ID pin is tied to Ground, the port functions as a Host

The USB port can be used in recovery mode to enable software loading onto the module.

The port supports a maximum output current of 1A, ensuring compatibility with power-demanding USB peripherals.

The pin assignments for 5 pin M12-B Connector are shown in the table below.

Pin	Signal	IO-Type	SODIMM Pin
1	USB_1_VBUS	PWR	
2	USB_1_D_CON_N		163
3	USB_1_D_CON_P		165
4	GND	PWR	
5	USB_1_ID	I	161
SH	GND_CHASSIS	PWR	

Cable: (M12-B - ifm E12689 USB/M12 CABLE)

### X800 - ETH1 Connector with POE and TSN

The pin assignments for 4 pin M12-D Connector are shown in the table below.

Pin	Connection	SODIMM Pin
1	ETH_1_MDIO_C_P	225
2	ETH_1_MDII_C_P	233
3	ETH_1_MDIO_C_N	227
4	ETH_1_MDII_C_N	231

Cable: min. Cat 5e (M12-D)


### PoE Classification

As soon as the PoE voltage is detected, the IC classifies the voltage supplied via the PoE power supply unit (PSE).

Once the classification has been successfully completed. The PoE voltage is switched through to the system.

If an external voltage (AUX) is added which is in the classified voltage window (+12V DC bis 48V DC), the LT4275A switches to the AUX voltage with priority.

Only PoE power supply units (PSU) that do not exceed the permissible voltage range according to 802.3af may be used.

<b>⚠ CAUTION</b>	
	The PoE PSU used must be short-circuit proof.

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### X801 - Ethernet 2 Connector

The Ethernet interface is based on the KSZ9131RNXI 10/100 Mbps Ethernet transceiver. For more information refer to the KSZ9131RNXI IC datasheet.

The pin assignments for 4 pin M12-D Connector are shown in the table below.

Pin	Connection
1	ETH_2_MDIO_C_P
2	ETH_2_MDII_C_P
3	ETH_2_MDIO_C_N
4	ETH_2_MDII_C_N

Cable: min. Cat 5e (M12-D)

### X701 - USB Host Interface

This interface connects to port 2 from the 4 port USB Hub Microchip USB5744T-1/2G offering nativ USB 2.0 functionality.

The USB port operates as Host interface.

The port supports a maximum output current of 1A, ensuring compatibility with power-demanding USB peripherals.

The pin assignments for 5 pin M12-B Connector are shown in the table below.

Pin	Signal	IO-Type
1	+V5_VBUS_USBH2	PWR
2	USBH2_D_CON_N	
3	USBH2_D_CON_P	
4	GND	PWR
5	n.c.	
SH	GND_CHASSIS	PWR

Cable: (M12-B - ifm EC2099 R360/Cable/PDM\_NG-USB)

### X1901 - RS232 Connector (M12-A)

Pin	Signal Name	IO-Type	Description
1	RS232_CTS	I	Clear to Send
2	RS232_TXD	O	Transmit Data
3	RS232_RTS	O	Request to Send
4	RS232_RXD	I	Receive Data
5	GND		PWR
8	SH		Shield

Cable: M12-A (shielded)

### X1900 - RS485 Connector (M12-B)

Pin	Signal Name	I/O Type
1	n.c.	RESERVE
2	Data Differential Pair A	DATA+
3	n.c.	RESERVE
4	Data Differential Pair B	DATA-
5	n.c.	RESERVE
SH	GND_CHASSIS	SHLD

Cable: M12-B shielded (ModBus Standard)

### X1500 - CAN Connector (M12-A)

Pin	Signal	IO-Type	Description
1	CAN_SHIELD	SHLD	Shield
2	n.c.		
3	GND_CAN_ISO	PWR	
4	CAN_H	IO	High-level CAN_1 bus line
5	CAN_L	IO	Low-level CAN_1 bus line
6	n.c.		
7	n.c.		
SH		SHLD	Shield

Cable: M12-A (CANopen - Standard)

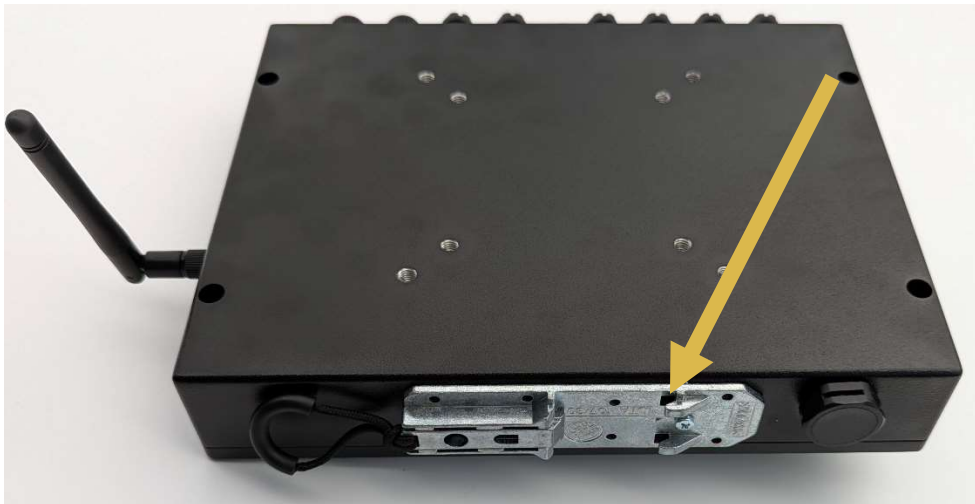
## Commissioning

### Mounting VESA

1. Prepare 4x M6x10 screws with pad and place within reach
2. Slowly guide the device to the VESA mount with one hand and tighten all screws with the other.
3. Tighten the screws crosswise

### Mounting DINrail

1. Preparation:  
Ensure that the mounting area is clean and well-ventilated. Check if there is enough space for the industrial PC and all required connections.  
Tools Required: Screwdriver (if necessary for securing), DIN-rail.
2. Mounting the Industrial PC onto the DIN-Rail  
Locate the DIN-rail clip on the back of the industrial PC.  
Hook the lower part of the clip onto the bottom edge of the DIN-rail.  
Push the upper part of the device inward until the clip fully snaps onto the DIN-rail.
3. Ensure the device is securely and stably mounted on the rail.



### Power supply

The device is operated with +12-48VDC. Connect the plug connector to X302.

### Earthing

The device's earthing dissipates interference transmitted via external signal cables or cables from external modules. The device must therefore be earthed with a low resistance via the functional earth connection. The recommended cable cross-section is 1.5 mm<sup>2</sup>.

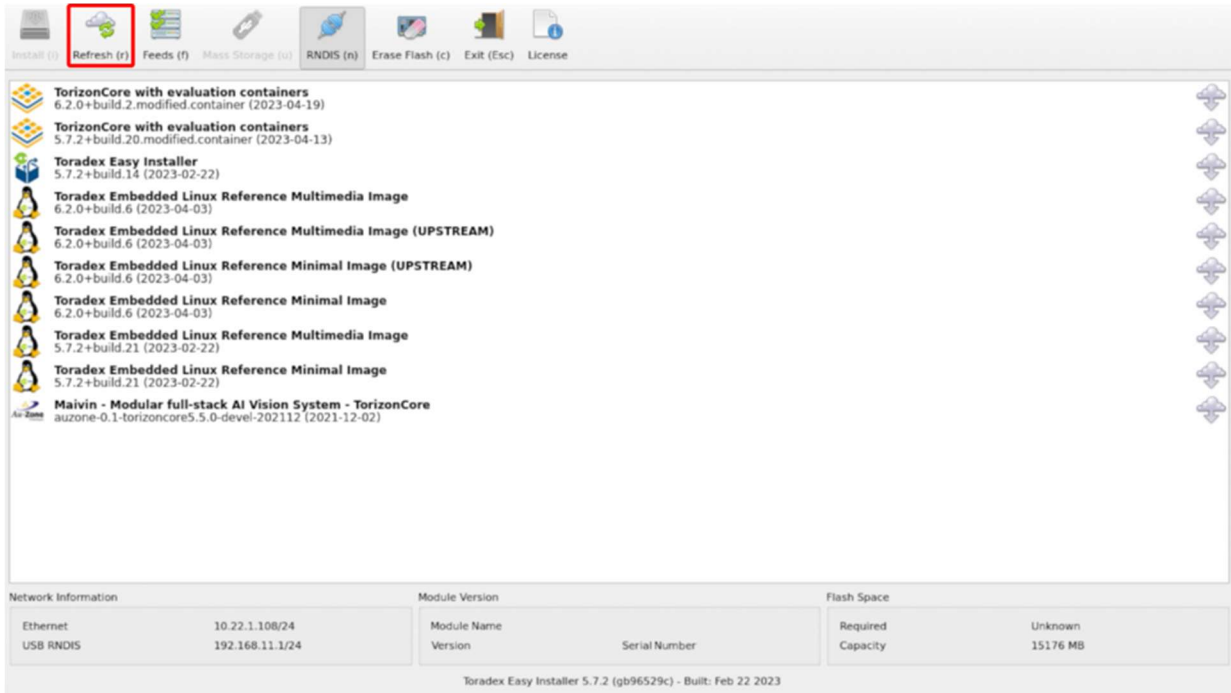
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Company: carriertronic GmbH, Karlstraße 7, 97990 Weikersheim		Seite <b>13</b> von <b>21</b>

## Operating System Setup and Integration

### Installing the operating system (OS)

After switching on, the device boots the Toradex Easy Installer OS.

Available images for download are listed. If not, check the Ethernet cable and press the "Refresh" button.



In addition to the feeds via the Internet, you can also provide images (e.g. your own) via USB stick.

You can also find Toradex images adapted to our products on our [website](#) under 4Devs. Our recommendation is [Torzion](#).

### Torizon OS Technical Overview

[Torizon](#) is an easy-to-use industrial Linux platform that simplifies the development and maintenance of our devices. One of Torizon's main components is the [Torizon OS](#) (formally TorizonCore): An [open source](#) minimal embedded Linux image which, among other essential services, provides an optimized [container](#) runtime and components for secure offline and remote over-the-air (OTA) updates, [device monitoring](#) and [remote access](#).

### Yocto OS Technical Overview

[Yocto-Project](#) is one of the most popular frameworks for creating a customized embedded Linux distribution.

Toradex maintains its own [product-ready BSP layers and reference images](#), that are compatible with the Yocto project.

As we have adhered to Toradex's standard PinOut, our devices are compatible with Toradex's reference images.

This provides an ideal starting point for your embedded Linux project.

Name: Datasheet_IPC_IP_Raccoon-Series EN		Letzte Änderung: 24.02.2025
Company: carriertronic GmbH, Karlstraße 7, 97990 Weikersheim	Contact: info@carriertronic.com	Seite <b>14</b> von <b>21</b>

## Devicetree Overlay

To ensure all drivers load correctly and the Ethernet functionality operates as expected it is essential to use the specific Device Tree overlay.

### devicetree-overlay-verdin-imx8mp-raccoon.dtbo

This overlay is fully compatible with the Toradex standard images, ensuring seamless integration with our hardware.

For detailed instructions and additional resources, visit our website: [4Devs](#)

## EEPROM

A 2-Kbit EEPROM (IC1000) with I<sup>2</sup>C interface is installed on the carrier board. The EEPROM can be used to store important data or for board identification. Technical details on the EEPROM can be found in data sheet M24C02-FMN6TP. The EEPROM can be accessed via the address 0x57 on the generic serial bus I2C\_1. GPIO3\_IO20 can be used to deactivate the EEPROM write protection.

Signal-Name	IO-Type	SODIMM	Voltage	Pull-up/Pull-down	Description
WC#	O	19	1.8V	100k to 1.8V_SW	Set GPIO to logical "0" to deactivate write protection.

## Temperature Sensor

The carrier board provides a digital temperature sensor, with an I<sup>2</sup>C interface. This is a useful feature for remote equipment monitoring. For detailed information check the [TMP1075 datasheet](#).

Sensor	Sensor Location	Adress
1	Carrier Board	I2c_1 0x44



## RACCOON SERIES - IPC IP

### Backup/Restore

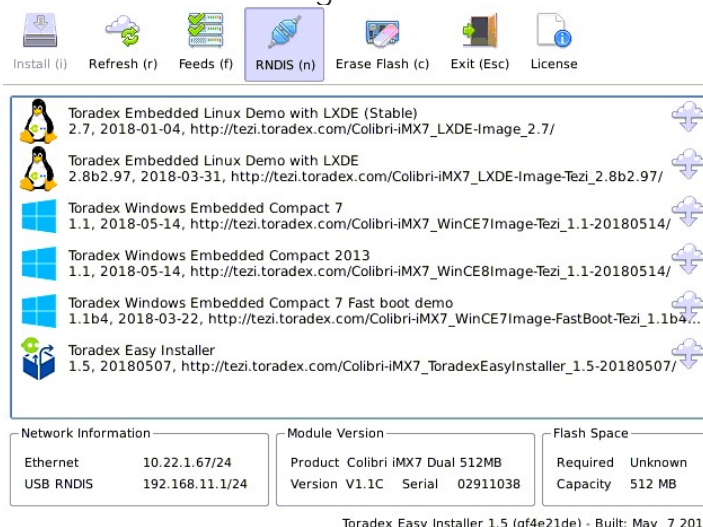
1. Switch off the device
2. Remove the pressure equalization membrane



3. Press the recovery button and switch the device back on at the same time



4. connect your laptop to the USB-OTG (MI2-B) port using a suitable USB cable
5. Download Toradex Easy Installer (TEZI):  
<https://developer.toradex.com/easy-installer/toradex-easy-installer/download-tezi/>
6. Unzip the Toradex Easy Installer package, change to this directory, and use one of the scripts on the host machine to load and execute the tool through USB OTG interface.  
Detailed information can be found under the following link:  
<https://developer.toradex.com/easy-installer/toradex-easy-installer/loading-toradex-easy-installer/#312-run-the-recovery-mode-script>
7. Select the desired image.



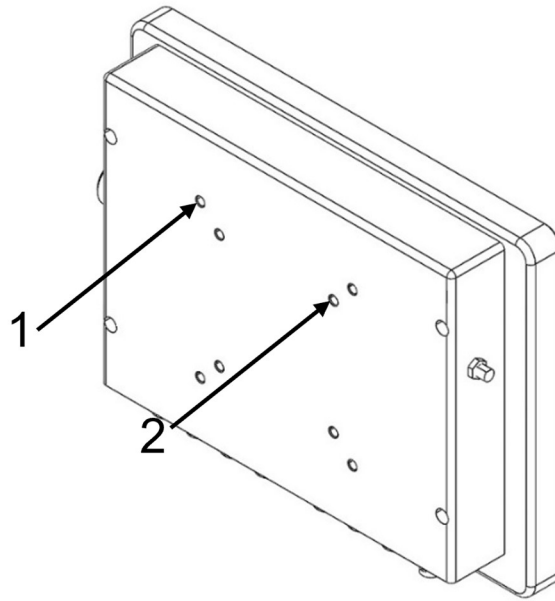
Network Information		Module Version		Flash Space	
Ethernet	10.22.1.67/24	Product	Colibri iMX7 Dual 512MB	Required	Unknown
USB RNDIS	192.168.11.1/24	Version	V1.1C Serial 02911038	Capacity	512 MB

Toradex Easy Installer 1.5 (gf4e21de) - Built: May 7 2018

Name: Datasheet_IPC_IP_Raccoon-Series EN		Letzte Änderung: 24.02.2025
Company: carriertronic GmbH, Karlstraße 7, 97990 Weikersheim	Contact: info@carriertronic.com	Seite <b>16</b> von <b>21</b>

RACCOON SERIES - IPC IP

Enclosure variant VESA



Number	VESA
1	VESA 75
2	VESA 100

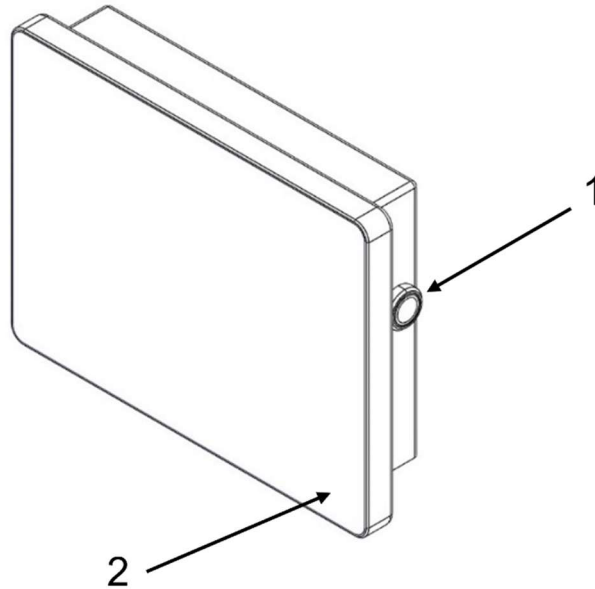
Dimensions

A [mm]	B [mm]	C [mm]	Comment
230	185	44	

## RACCOON SERIES - IPC IP

### Power Control



Several options are available for switching the touch panel on/off.



Number	Designation	Comment
1	Side power button	Standard
2	Always On	The device starts after the external power supply is switched on



## Maintenance

### Instructions

NOTE	
	<p><b>Information</b>            The Industrie PC are maintenance-free!            Opening the device voids the manufacturer's warranty!</p>
⚠ WARNING	
	<p>Only qualified specialist personnel may carry out maintenance on the device.            Improper repairs can lead to danger for the user.</p>

### Cleaning

Use a fresh, soft cloth to clean the appliance e.g. microfiber cloth carriertronic Art. No.: CT00927, moistened with a mild glass cleaner (e.g. carriertronic Screen care; Art. No.: CT00989).

NOTE	
	<p><b>Information</b>            Do not use aggressive solvents, chemicals or abrasive cleaners.</p>
⚠ WARNING	
	<p>Disconnect the device from the power supply before cleaning</p>

## Technical Support

Although we adhere to the highest quality standards and carry out comprehensive functional tests, electronic components and devices can be damaged through daily use.

A machine failure in production causes considerable costs. For this reason, carriertronic GmbH processes complaints as quickly as possible.

Please fill in the enclosed repair accompanying letter and enclose it together with the touch panel or IPC. This will ensure that the repair can begin immediately and that it is processed quickly.

Technical support can be contacted as follows:

### Service, repair and technical support

Phone: +49(0)7033 708974-0  
E-mail: support@carriertronic.com

## Device seal

A seal is affixed to all carriertronic GmbH devices. This serves as proof that the device has not been opened by a third party. In the event of a defect, please do not open the device. Contact our service department, who will discuss the next steps with you.

## NOTE



### Information

Opening the appliance voids the manufacturer's warranty.

## Disposal



A crossed-out dustbin symbol indicates that both the product and the accessories must not be disposed of with household waste at the end of their life cycle. Instead, you should return old appliances to designated free collection and collection points in your area. Please observe the local regulations for proper and environmentally friendly disposal.

If the old electrical or electronic device contains personal data, you are responsible for deleting this data before returning or disposing of it.

By following the appropriate disposal instructions and safely removing personal data, you will help to protect the environment and prevent unwanted data disclosure.

Name: Datasheet_IPC_IP_Raccoon-Series EN	Contact: info@carriertronic.com	Letzte Änderung: 24.02.2025
Company: carriertronic GmbH, Karlstraße 7, 97990 Weikersheim		Seite <b>20</b> von <b>21</b>

## Environmental specifications

Operating temperature:	-20°C bis +55°C
Storage temperature:	-20°C bis +85°C

## Storage

To ensure optimum conditions for the product, please observe the following recommendations:

- Store the product in the boxes provided by us or in comparable packaging.
- Observe the recommended storage conditions that we have specified.

By following these guidelines, you will ensure that the product is stored under optimal conditions and that its longevity is guaranteed.

## Disclaimer

All data is provided for information purposes only and is not guaranteed for legal purposes. The information has been carefully checked and is believed to be accurate;

However, no liability is accepted for inaccuracies.

Brand and product names are trademarks or registered trademarks of their respective owners.

Specifications are subject to change without notice.

Name: Datasheet_IPC_IP_Raccoon-Series EN		Letzte Änderung: 24.02.2025
Company: carriertronic GmbH, Karlstraße 7, 97990 Weikersheim	Contact: info@carriertronic.com	Seite <b>21</b> von <b>21</b>