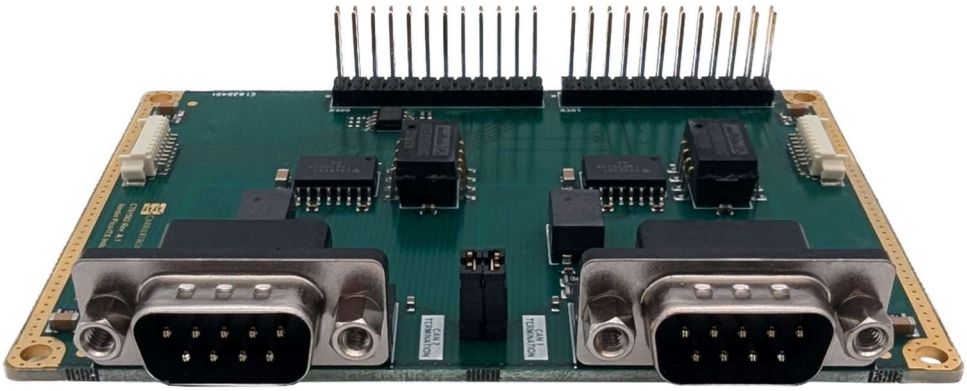
CARRIERTRONIC
Full Service Embedded Provider

Verdin Pico-ITX
Industrial CAN Extention

Datasheet



Part Nr.: CT01562

Status: October.2024, v1.0
Doc No.: P000000

Technical changes

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

Revision Historie

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

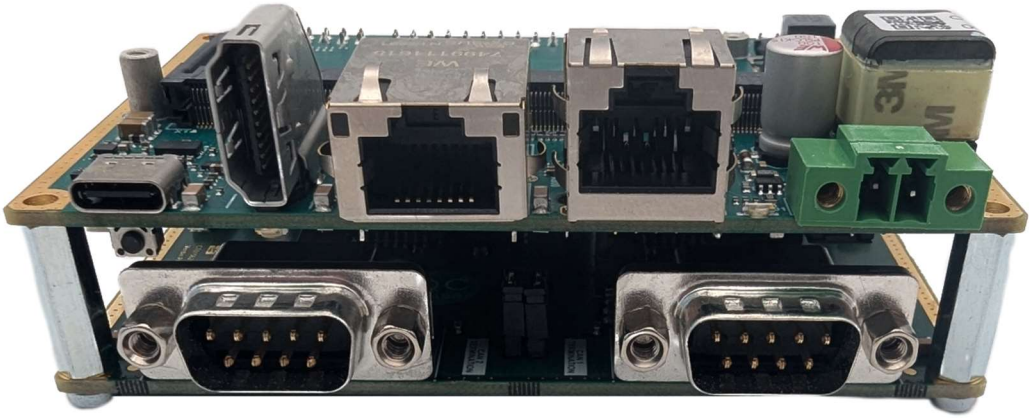
Date	HW-Version	Doc. Version	Changes
Oct.2024	A.1	V1.0	Initinal release

1 Content

2 Main Features

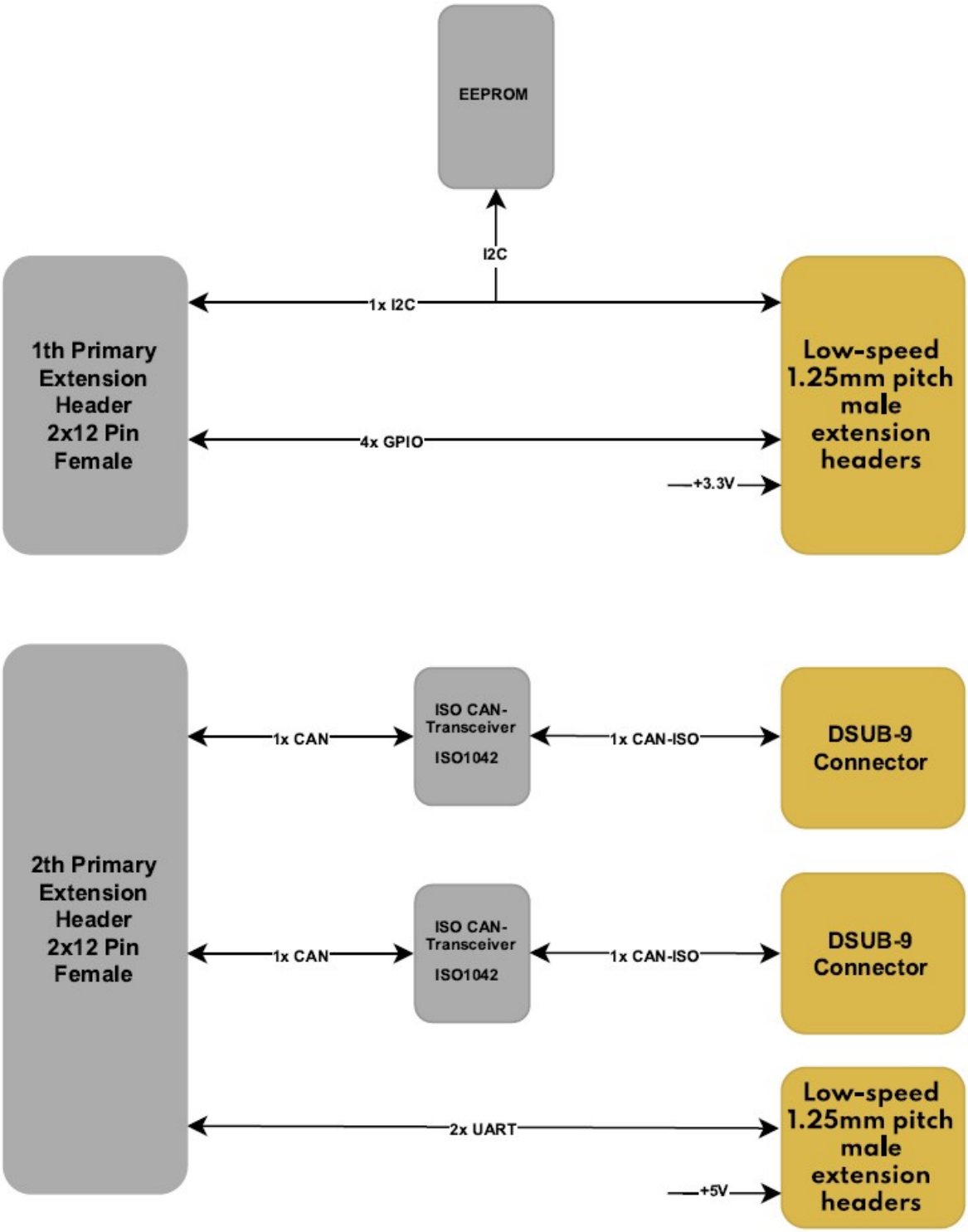
Form Factor	100 x 72mm (Pico ITX)
Usage with:	Verdin Familie – iMX8M Mini / iMX8M Plus /AM62
Operating system	Linux (Yocto) / Torizon
Assembly option	On Request

- 2x Low-speed 1.25mm pitch male extension headers
  Up to 12 GPIOs, 2x UART, 1x I2C
- 2x isolated CAN-FD transceivers (SUB-D)
- 1x I2C 2Kb EEPROM IC



The illustration is only an assembly example

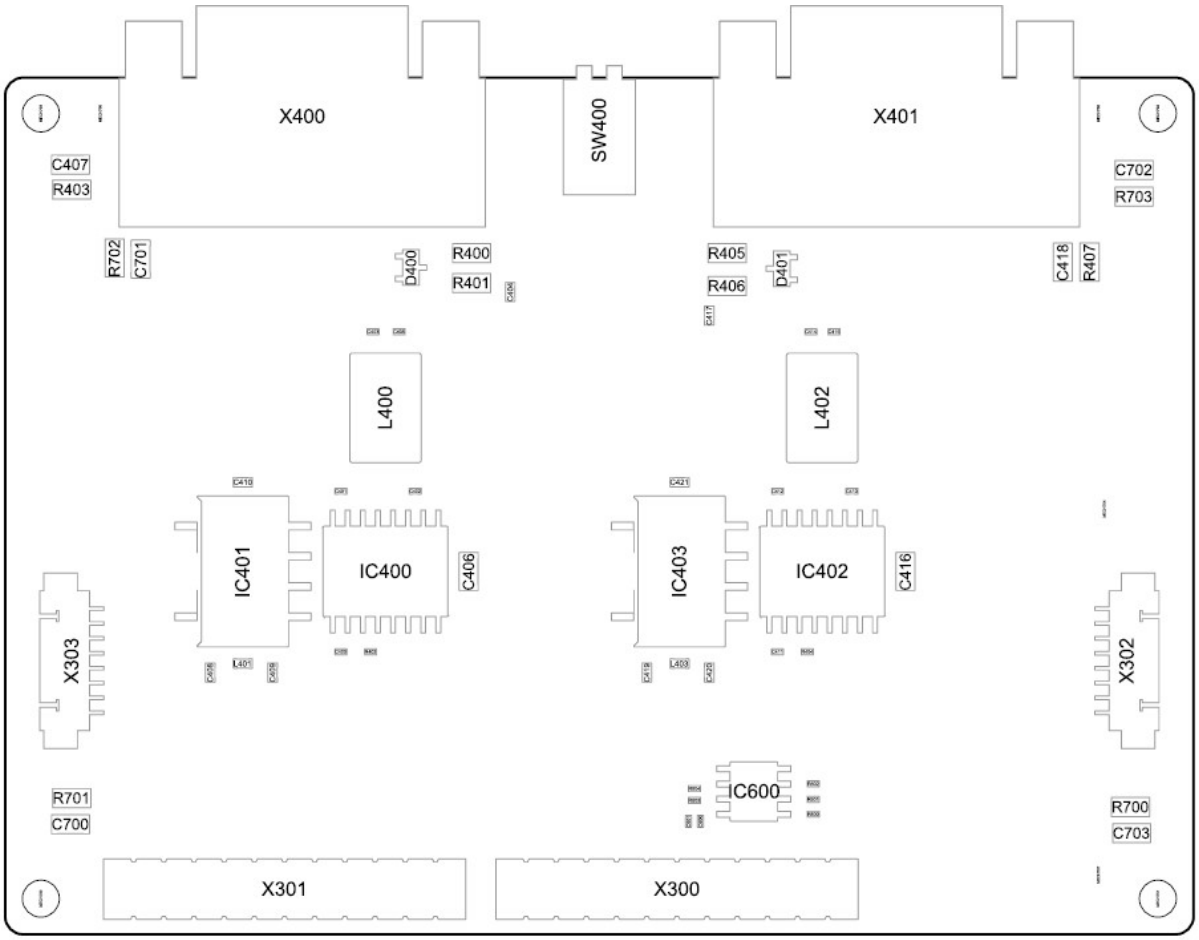
2.1 Hardware Architecture Block Diagram



3 Physical Drawing

3.1 Top Side Connectors

Ref.	Top Side Interfaces	CT01562
X400	CAN 1	✔
X401	CAN 2	✔
X302	Low-speed 1.25mm pitch male extension headers	✔
X303	Low-speed 1.25mm pitch male extension headers	✔
SW400	CAN Termination Switch	



4 Interface Description

4.1 CAN Connector (X400 & X401)

The extention board provides 2x 9pol DSUB Connector with CAN-Signals

Connector Typ: DSUB-9
Hersteller: Würth Elektronik
Hersteller Part Nr.: 618009231221

The pin assignments for the 9 pol Connector shown in the table below.

Pin	Connection	Type	Beschreibung
1			
2	CAN_L	IO	Low-level CAN bus line
3	GND_CAN_ISO	PWR	ISO Ground CAN
4			
5			
6			
7	CAN_H	IO	High-level CAN_bus line
8			
9			
SH1	Shield		Connected to GND_CHASSIS
SH2	Shield		Connected to GND_CHASSIS

4.2 Low-speed 1.25mm pitch male extension header X302

Connector Typ: 1x8 Pin Header Female, 1.25mm Pitch

Low-speed 1.25mm pitch male extension headers

The pin assignments for X302 shown in the table below.

Pin	Connection	Type	SODIMM	Voltage	Description
1	I2C_4_CSI_SDA	IO	95	+1.8V	MIPI CSI I²C Data
2	I2C_4_CSI_SCL	IO	93	+1.8V	MIPI CSI I²C Data
3	GPIO_1	O	206	+1.8V	General-purpose IO
4	GPIO_2	O	208	+1.8V	General-purpose IO
5	GPIO_3	IO	210	+1.8V	General-purpose IO
6	GPIO_4	IO	212	+1.8V	General-purpose IO
7	GND	PWR		0V	
8	+V3.3_SW	PWR		+3.3V	

4.3 Low-speed 1.25mm pitch male extension header X303

Connector Typ: 1x8 Pin Header Female, 1.25mm Pitch

Low-speed 1.25mm pitch male extension headers

The pin assignments for X302 shown in the table below.

Pin	Connection	Type	SODIMM	Voltage	Description
1	UART_1_RXD	I	129	+1.8V	UART1 Receive Data
2	UART_1_TXD	O	131	+1.8V	UART1 Transmit Data
3	UART_2_RXD	I	137	+1.8V	UART2 Receive Data
4	UART_2_TXD	O	139	+1.8V	UART2 Transmit Data
5	UART_2_RTS	I	141	+1.8V	UART2 Request to Send (RTS)
6	UART_2_CTS	O	143	+1.8V	UART2 Clear to Send (CTS)
7	GND	PWR		0V	
8	+V5_SW	PWR		+5V	

4.4 EEPROM

A 2-Kbit EEPROM (IC600) with I²C interface is placed on the extention 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-FMC6TG.

The EEPROM can be accessed via the address 0x50 on the generic serial bus I2C_1.

The EEPROM has no write protection.

5 Technical specifications

5.1 Environmental specifications

5.1.1 Temperatures

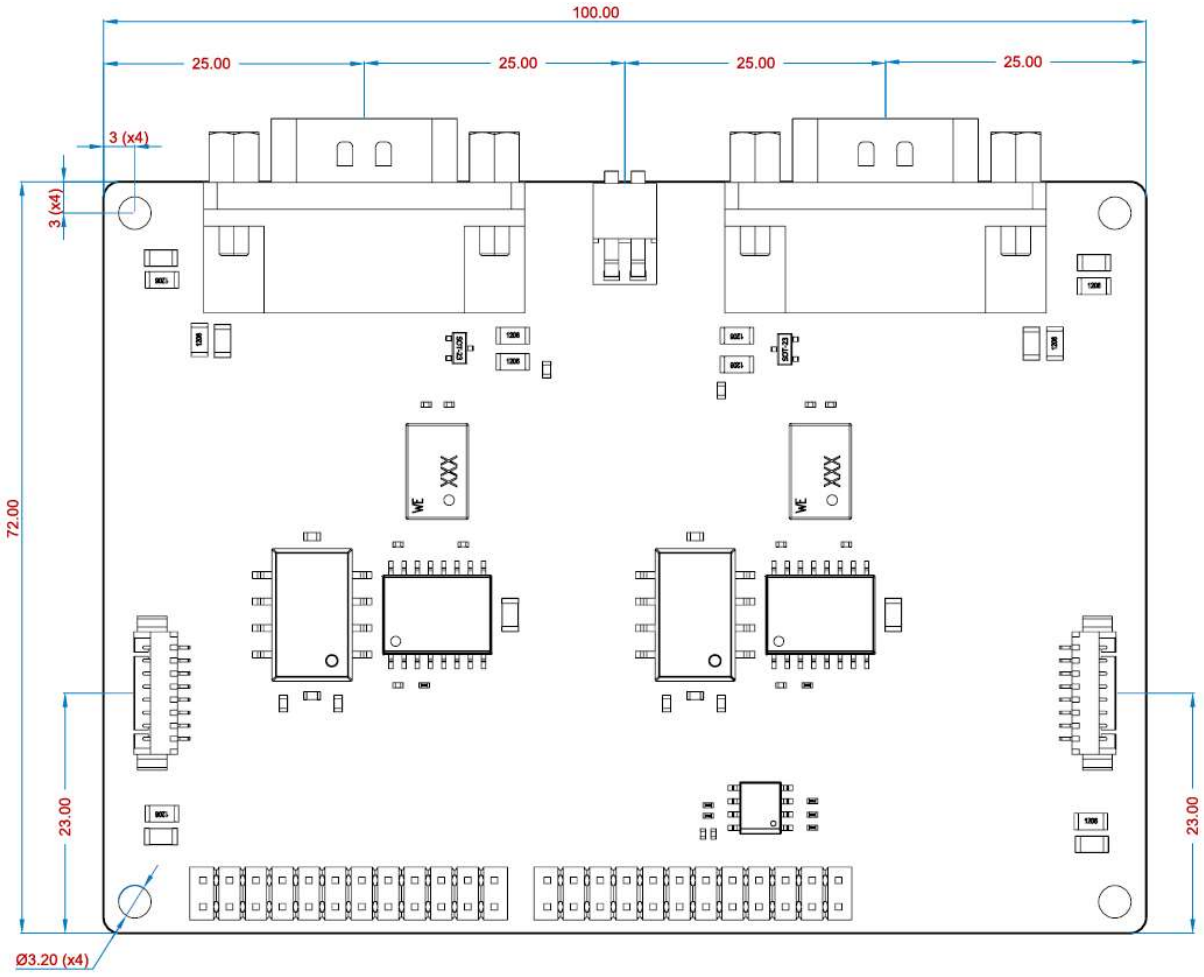
Operating temperature: -20°C bis +85°C
Storage temperature: -25 to +85°C

5.2 Mechanical dimensions

100x72mm (Pico-ITX)

5.3 Top Side Connectos

Carrier Board dimesions (in millimeters) – top view



6 Reference documents

Description	Link
Verdin Family Specification	https://docs.toradex.com/109262-verdin-family-specification.pdf
Verdin Computer on Module Family Overview	https://www.toradex.com/de/computer-on-modules/Verdin-arm-family
D-SUB Connector	https://www.we-online.com/components/products/datasheet/618009231221.pdf
Low Speed Signal Con. (Primary Extension)	https://www.samtec.com/products/mtsw-112-22-l-d-430
EEPROM	https://www.st.com/resource/en/datasheet/m24c01-w.pdf
CAN Termination Switch	https://www.we-online.com/components/products/datasheet/418217270902A.pdf

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