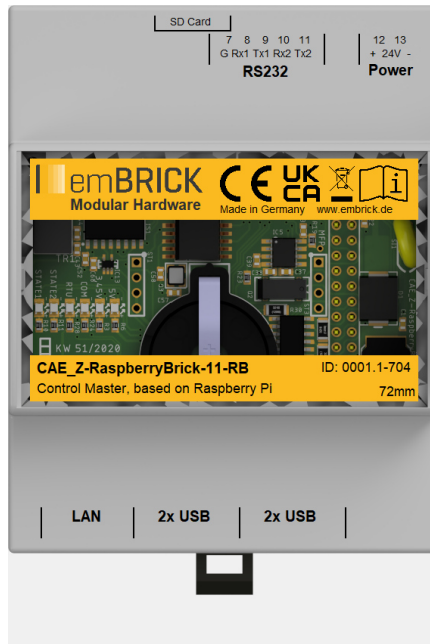


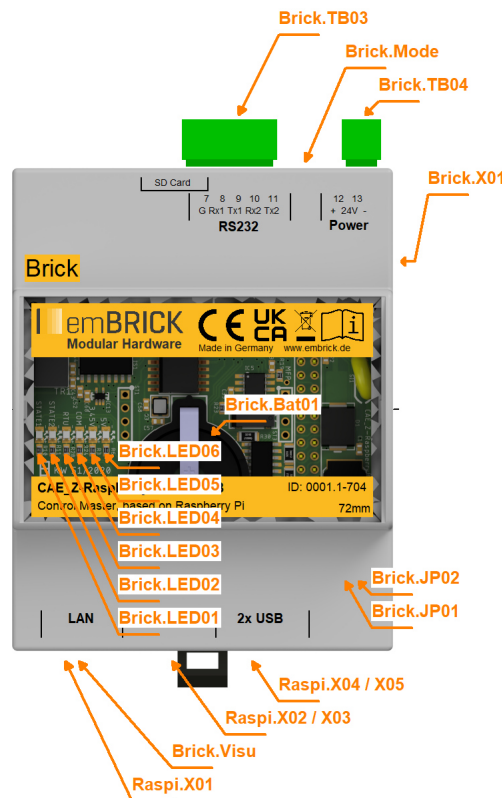
CAE_Z-RaspberryBrick-11-RB



1.1 Description

t.b.d.

1.2 Connectors and Indication-/Operation-Elements



1.2.1 Connectors (X)

Hereinafter the necessary connections, connectors and there specification for operation are listed. The location of a specific connector is documented with the ID (left coloumn) in the previous Illustrations.

ID	Model	Usage	Num. of term.	Model / Series	connection	elec. usage
Brick.Visu	Pin connector	PC visualisation	4	2,54mm	only for service	TTL-Level (3.3V) 38400 Baud
Brick.X01	Box connector	emBRICK I/O-Bus	10		-	brickBUS master
CPU.X01	Plug	LAN		RJ45	-	Ethernet IEEE 802.3
CPU.X02	Plug	Com. service	1	USB Typ A		USB 2.0
CPU.X03	Plug	Com. service	1	USB Typ A		USB 2.0
CPU.X04	Plug	Com. service	1	USB Typ A		USB 2.0
CPU.X05	Plug	Com. service	1	USB Typ A		USB 2.0

1.2.2 Terminal block (TB)

The following Illustration the technical details for Terminal blocks are listed. The location of a specific block is documented with the ID (left coloumn) in the preavious Illustrations.

ID	Model	Model / Series	Grid	Num. of	connection	elec. usage
----	-------	----------------	------	---------	------------	-------------

				term.		
Brick.TB01	Steckerwanne	PTR STL1550	3.5mm	3	up to 1.5mm ²	RS485 interface
Brick.TB02	Steckerwanne	PTR STL1550	3.5mm	3	up to 1.5mm ²	CAN interface
Brick.TB03	Steckerwanne	PTR STL1550	3.5mm	5	up to 1.5mm ²	RS232 interface
Brick.TB04	Steckerwanne	PTR STL1550	3.5mm	2	up to 1.5mm ²	power supply input 24V dc

1.2.3 Terminal assignment

Here the assignment of individual terminals and their affiliation to terminal blocks (Te block), terminal numbers (Te no.) and short description (T.desc.) as well as their electrical function and usage are explained.

The associated mechanical and electrical properties are stated with the specific terminal block in the previous chapter. The position of a terminal is dedicated through the "Te block" and the actual terminal number (Te no.) or the terminal description (T.desc.) in the previous illustration respectively.

In the column "usage" the technical-/ device-functional use is listed.

Te block	Te no.	T. descr.	Function	Usage
Brick.TB04	0	+24V	Supply	Supply
Brick.TB04	1	GND	Ground	Supply

1.2.4 Jumper overview (JP)

The individual jumpers, their combination to logical jumper groups and their usage are stated below. The location of individual jumpers is determined through the jumper ID (left column) in the previous illustrations.

ID	Jumper Block	Usage
Brick.JP01	Brick.JP-RemoteBUS	Choose a UART for the remoteBUS (ModBUS)
Brick.JP02	Brick.JP-RemoteBUS	Choose a UART for the remoteBUS (ModBUS)

1.2.5 Jumpergroups and configuration

Hereafter possible jumper group settings are described. They refer to jumper-ID of the previous listings. A "o" symbolises a disconnected jumper, a "x" symbolises a connected jumper.

Jumper Block	Selections	Effect
Brick.JP-RemoteBUS	A: JP1=1-2 JP2=1-2 B: JP1=2-3 JP2=2-3	The communication between the Raspberry Pi and the also mounted PIC32 (local master) works over ModBUS RTU (UART). This means that you must program your Raspberry Pi as a remote master to send query commands to the PIC32 (local master). The LWCS answers to these commands the same way like a normal coupling brick (uniBridge, patBridge) and regulate the communication with the BrickBUS.

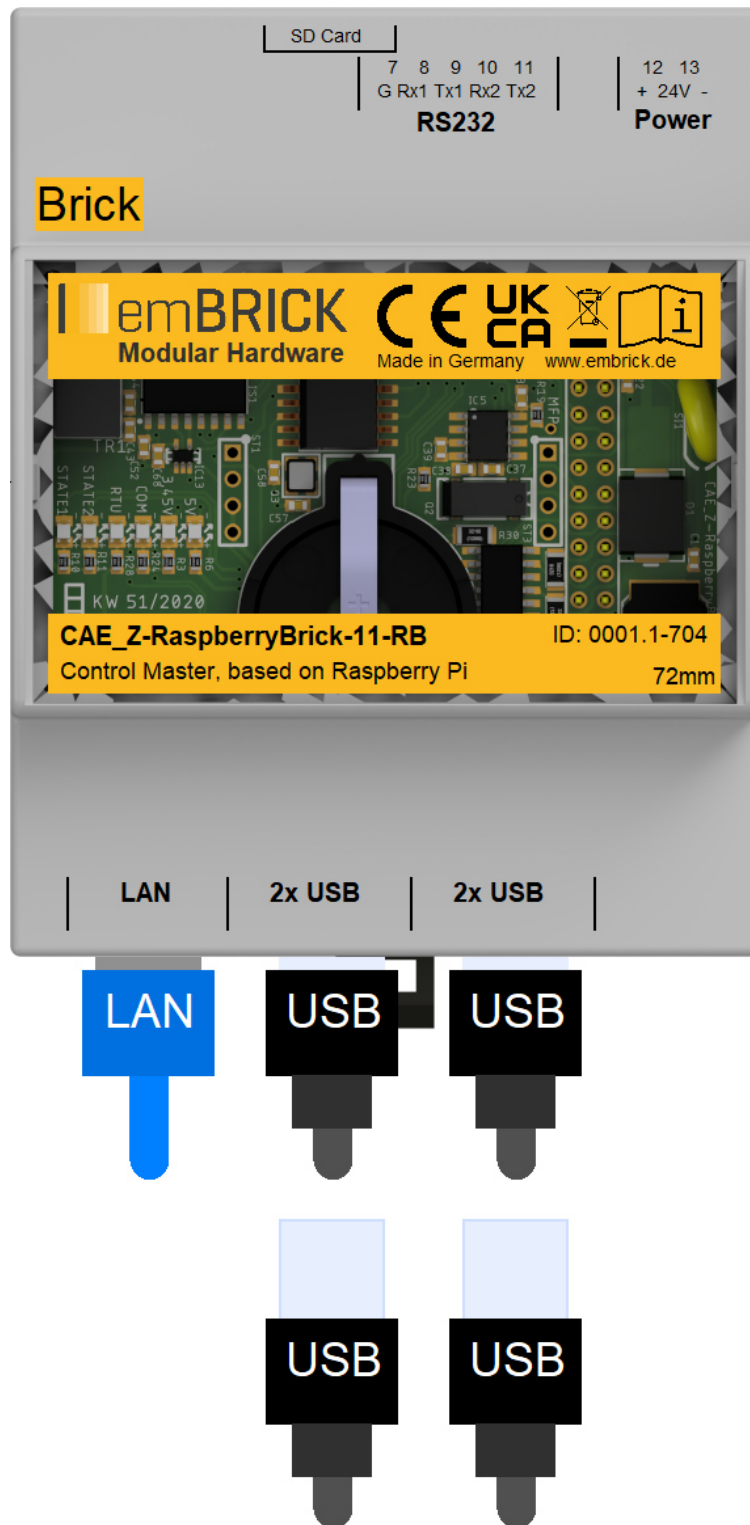
		<p>You have two different UARTs to communicate between the Raspberry Pi and the PIC32. One is over an SPI to UART converter (standard) and the other way is over the UART port of the Raspberry Pi. You can choose between these two options</p> <p>A: over SPItoUART converter B: UART 0 (GPIO14+15)</p>
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1.2.6 LED Indications

ID	Type	Specification	Type / Usage
Brick.LED01	SMD-LED	yellow	Shows state of 5V
Brick.LED02	SMD-LED	yellow	Shows state of 3,45V
Brick.LED03	SMD-LED	green	Shows state of PIC32 brickBUS
Brick.LED04	SMD-LED	yellow	Shows state of PIC32 ModBUS RTU Slave
Brick.LED05	SMD-LED	yellow	Shows state of RasPi State 2 (GPIO12)
Brick.LED06	SMD-LED	yellow	Shows state of RasPi State 1 (GPIO5)

1.3 Input-/Output Scheme

The following diagram shows the adaption of the control unit. To avoid overlapping, some wires are displayed interrupted and dashed.



1.4 Technical Data

1.4.1 User Notes

- Blinking behavior StateLED:
Each Morse code is 3 seconds long!
not initialized = flashing continuously at approx. 5Hz
no communication = short-long-short
too little communication = short-short-short
disturbed communication = short-long-long
OK = continuous flashing at approx. 1Hz (0.6-1.5Hz)

1.4.2 Developer Notes

Raspberry Pi GPIO assignment to the functions

On **TB01** is the RS485 interface with this connections to the RaspberryPI pin:

MOSI = 19; MISO = 21; CLK = 23; SEL = 26; INT = 11

Onboard is the SC16IS740 a SPI to UART transfer Chip - on the same SPI with RS232 & remoteBUS.

On **TB02** is the CAN interface with this connections to the RaspberryPI pin:

MOSI = 19; MISO = 21; CLK = 23; SEL = 24; INT = 11

Onboard is the MCP2515 a SPI to CAN transfer Chip.

On **TB03** are two RS232 Interfaces one only for debug and one for common use.

common use

MOSI = 19; MISO = 21; CLK = 23; SEL = 24; INT = 11

Onboard is the SC16IS740 a SPI to UART transfer Chip - on the same SPI with RS485 & remoteBUS.

only debug

TX = 8; RX = 10

internal interfaces

RemoteBUS

MOSI = 19; MISO = 21; CLK = 23; SEL = 24; INT = 11

Onboard is the SC16IS740 a SPI to UART transfer Chip - on the same SPI with RS485 & RS232.

I²C

SDA = 2; SCL = 5

EEProm (24C256) with I²C Adress = 50h

RTC (MCP7940N) with I²C Adress = 6Fh

State LEDs pin low = LED on

State 1 = 29; State 2 = 32

1.5 History

On the following page you will find a list of changes that have been made to the product.

1.5.1 History

Date	Entry scope (HW, SWappl, SWapi, Release)	Entry type (enhancement, improvement, bugfix, release)	Version	Status (development, implemented, tested)	Responsible	Reason for the modification	Items of modification	Impact for (end-)customer	Comment	Location in model/source
xxxx-xx-xx		Release	0.99	Tested	NSt					

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