Product Description

EB Hardware

Overview

EB hardware can be used with different EB software tools (e.g. EB tresos Busmirror).
Software compatibility can be found in the corresponding software product description.
EB offers a variety of different hardware platforms for different use cases.

Certification

Necessary certifications for delivery in specific countries might not be available for all countries.
Please contact EB product sales to get latest information in terms of available certifications.

EB hardware quick overview:

EB HW	Intended use	CPU	Temp. range[1]	Interfaces			
				CAN	FlexRay	Lin	Digital in/out
EB 2200	Desktop	2x1GHz	-40…60°C	Ext: max 8 (6 in Rev.A.[2])	Ext: 1 (2 ch.)	Ext: max 4	Ext
EB 5200	Slot-card	2x1GHz	-40…70°C	Ext: max 8 (4 in Rev.A.[2])	Ext: 1 (2 ch.)	Ext: max 4	Ext
EB 5200 + EB 0206(x/s) + EB 0205	Slot-card	2x1GHz	-40…70°C	Ext: max 8 (6 in Rev.A.[2])	Ext: 1 (2 ch)	Ext: max 4	Ext
EB 5200 + EB 0204x + EB 0203	Slot-card	2x1GHz	-40…70°C	Ext: max 8 (6 in Rev.A.[2])	Ext: 1 (2 ch)	Ext: max 4	Ext

EB HW	Interfaces							Power-supply	Power consump-tion (max)	FPGA
	Ext. slots	GPS	Ethernet	BroadR-Reach	USB	USB Host	RS232			
EB 2200	9	Ext: max 1	2 × 1000BASE-T	-	1	1	Ext: 1	6,5…30V	15W	Y (v.large)
EB 5200	4	Ext: max 1	-	-	-	-	1 (int.)	-	10W	Y (v.large)
EB 5200 + EB 0206(x/s) + EB 0205	8	Ext: max 1	1 x 1000BASE-T	-	-	-	1 (int.)	-	12W	Y (v.large)
EB 5200 + EB 0204x + EB 0203	8	Ext: max 1	-	2	-	-	1 (int.)	-	12W	Y (v.large)

All devices operate within a humidity range of 5 to 95 percent *in a non-condensing environment*.

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[1] The temperature range applies to the direct environment of the device, e.g. to the PC, if the card is mounted.

[2] There has been a former version of the EB2200 and EB 5200 hardware (referred to as Rev. A) which has been replaced by the current Revision B.

EB x2xx hardware series:

- Extendable interface hardware
- User can select which extension slots are plugged into the hardware to scale up the functionality
- Note: there has been a former version of the EB2200 and EB 5200 hardware (referred to as Rev. A) which has been replaced by the current Revision B. For details how to distinguish these revisions see the Hardware Manuals.
- Note: CAN-FD is not supported on Rev. A hardware.
- Note: Every board has to be run with the current Firmware or later. See Hardware Manual for details.
- Dual-Core µC with 2 × 1GHz
- 2 × FlexRay controllers in FPGA
- 8 × CAN controllers in FPGA (6 in Rev. A)
- 4 × LIN controllers in FPGA

EB 2200 (desktop use)	EB 5200 (modular slot card)

Modular system with 9 extension slots[4]. Modules available for:
- FlexRay (max. 2 ch)
- CAN (max. 6 in Rev. A; 8 in Rev. B) each either:
   o CAN low speed or
   o CAN FD (starting with Rev. B)
- LIN (max. 4)
- Digital I/O
- GPS
	Modular system with 4 extension slots.
	Modules available for:
	- FlexRay (max. 2 ch)
	- CAN (max. 4 in Rev. A; 8 in Rev. B) each either:
	   o CAN low speed or
	   o CAN FD (starting with Rev. B) or
	   o Dual CAN FD (starting with Rev. B; max. 4 modules)
	- LIN (max. 4)
	- Digital I/O
	- GPS

- Robust housing with DSUB9 connectors
- Temp. Range:
  -40 to +60°C
	- XMC standard board with adaptor boards for PCIe, cPCI, …
	- Temp. Range:
	  -40 to +70°C

[3] Depicted physical layer modules are not included

[4] Only 8 extension slots are usable for bus-modules like FlexRay, CAN, or LIN.
Slot number 8 must not be equipped with a bus-module.

EB 2200 detailed hardware specifications:
- High-performance Dual-Core μC NXP P1022 with 2 × 1GHz
- PC connections via Gigabit Ethernet or USB 2.0 (or RS232 via extension module)
- FPGA (Cyclone V E – 5CEFA9F23I7N; 301k logic elements) on-board to enable future updates
- Supply voltage: 6,5 V to 30 V
- Robust housing
  - Measurements[5] 215 mm (L) × 129 mm (W) × 49 mm (H)[6]
  - Temperature range: -40° C to +60° C
  - Relative humidity range (non-condensing): 5% to 95%
- DSUB9 connectors on extension modules
- 2 × Gb Ethernet 10/100/1000BASE-T (Host-PC link and automotive bus)
- 2 × USB 2.0 (1 × Host-PC link and 1 × USB host for connection with USB devices)
- Power consumption: max. 15W
- RAM: 512 MB, Flash: 128MB

Delivery content:
- EB 2200 hardware
- Power supply
- USB cable

EB 5200 detailed hardware specifications:
- High-performance Dual-Core μC NXP P1022 with 2 × 1GHz
- XMC-PCIe Gen 1, x4 (ANSI/VITA 42.3) standard based board
- FPGA (Cyclone V E – 5CEFA9F23I7N; 301k logic elements) on-board to enable future updates
- Temperature range: -40° C to +70° C
- RAM: 512 MB, Flash: 128MB

Delivery content:
- EB 5200 hardware

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[5] With installed modules, the length increases by 4 mm for each side on which modules are installed
[6] For delivery dates before 4th October 2017 the size is 216 mm (L) × 140 mm (W) × 50 mm (H)

EB 2200 extensions modules

EB 2200 extension module

Extension Module	*Interface*
EB 2200 AddOn EB 0284: Extension_Module_Digital_Input/Output	Digital I/O extension module - I/O interface module (2 × in, 2 × out) - Standard DSUB9 connector - 2 × in (3…24) V (galvanically isolated) - 2 × out (3,3 V, 50 mA for both channels in sum; galvanically isolated) Delivery Content: - 1 extension module
EB 2200 AddOn EB 0264: Extension_Module_8x_DIO	Digital I/O extension module - I/O interface module (8 × user configurable in or out) - Standard DSUB9 connector - 3,3V LVTTL - max. 4mA for each output - not galvanically isolated Delivery Content: - 1 extension module
EB 2200 AddOn EB 0260[7]: Extension_Module_FlexRay	FlexRay single channel extension module - NXP TJA1081TS or AS8221/AS8222[8] based FlexRay V2.1 rev. A module - Standard DSUB9 connector - Software controllable termination resistors Delivery Content: - 1 extension module
EB 2200 AddOn EB 0262[7]: Extension_Module_LIN	LIN extension module - TJA1020/TJA1021 based LIN module - Standard DSUB9 connector - Software configurable to master/slave operation Delivery Content: - 1 extension module
EB 2200 AddOn EB 0266[7]: Extension_Module_CAN_Low_Speed	CAN low-speed extension module - AMIS41683 based low-speed CAN module - Standard DSUB9 connector Delivery Content: - 1 extension module

[7] Not usable in slot 8

[8] Mounted on older revisions

EB 2200 AddOn EB 0263[9]: Extension_Module_CAN_FD (starting with Revision B)	CAN FD extension module - MCP2562FD based CAN FD module - Standard DSUB9 connector - Software controllable termination resistors Delivery Content: - 1 extension module
EB 2200 AddOn EB 0215: Extension_Module_RS232	RS232 extension module - Standard DSUB9 connector - No hardware flow-control Delivery Content: - 1 extension module
EB 2200 AddOn EB 0270: Extension_Module_GPS_Receiver	GPS extension module - Extension module with GPS receiver (based on SiRFstarIV™) - SMA antenna connector - Antenna not included - NMEA-0183 compatible - Provides 1PPS pulse Delivery Content: - 1 × GPS receiver extension module without antenna

EB 2200 AddOn EB 0207:Extension module EtherCAT

- May be ordered as factory-option for EB 2200
- Provides EtherCAT slave-device IN- and OUT- connectors
- Provides separate RS-232 connector
- Occupies 3 extension slots on the front-side of the EB 2200
- Comes with EtherCAT specific front-panel

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[9] Not usable in slot 8

EB 5200 extensions modules
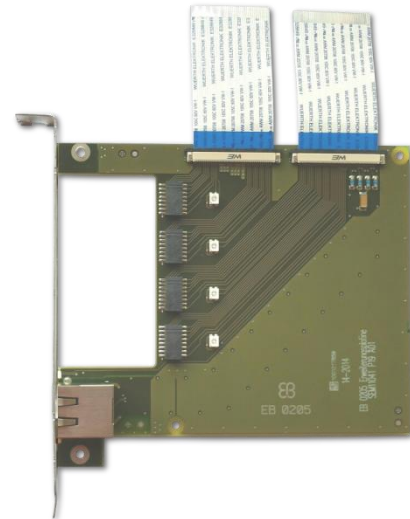

EB 5200 extension module

EB 5200 AddOn EB 0226: Extension_Module_CAN_Low_Speed	CAN low-speed extension module - AMIS41683 based low-speed CAN module - Push-pull 5-pin ODU connector Delivery Content: - 1 extension module - Please order connector and cabling separately
EB 5200 AddOn EB 0223: Extension_Module_CAN_FD (starting with Revision B)	CAN FD extension module - MCP2562FD based CAN FD module - Software controllable termination resistor - Push-pull 5-pin ODU connector Delivery Content: - 1 extension module - Please order connector and cabling separately.
EB 5200 AddOn EB 0227: Extension_Module_Dual_CAN_FD (starting with Revision B)	Dual CAN FD extension module - MCP2562FD based CAN FD module - Software controllable termination resistors (independent for each channel) - Push-pull 5-pin ODU connector Delivery Content: - 1 extension module - Please order connector and cabling separately.
EB 5200 AddOn EB 0230: Extension_Module_GPS_Receiver	GPS extension module - Extension module with GPS receiver (based on SiRFstarIVTM) - SMA antenna connector - Antenna not included - NMEA-0183 compatible - Provides 1PPS pulse Delivery Content: - 1 × GPS receiver extension module without antenna
EB 5200 AddOn EB 0244: Extension_Module_Digital_Input/Output	I/O extension module - I/O interface module - Push-pull 7-pin ODU connector - 2 × in (3 .... 24) V (galvanically isolated) - 2 × out (3,3 V, 50 mA for both channels in sum; galvanically isolated) Delivery Content: - 1 extension module - Please order connector and cabling separately.
EB 5200 AddOn EB 0224: Extension_Module_6x_DIO	Digital I/O extension module

	- I/O interface module (6 × user configurable in or out) - Push-pull 7-pin ODU connector - 3,3V LVTTL - max. 4mA for each output - not galvanically isolated Delivery Content: - 1 extension module - Please order connector and cabling separately.
EB 5200 AddOn EB 0220: Extension_Module_FlexRay	FlexRay single channel extension module - NXP TJA1081TS or AS8221/AS8222 based FlexRay V2.1 module - Software controllable termination resistor - Push-pull 5-pin ODU connector Delivery Content: - 1 extension module - Please order connector and cabling separately.
EB 5200 AddOn EB 0222: Extension_Module_LIN	LIN extension module - TJA1020/TJA1021 based LIN module - Software configurable to master/slave operation - Push-pull 5-pin ODU connector Delivery Content: - 1 extension module - Please order connector and cabling separately.

EB 5200 PCIe carrier board
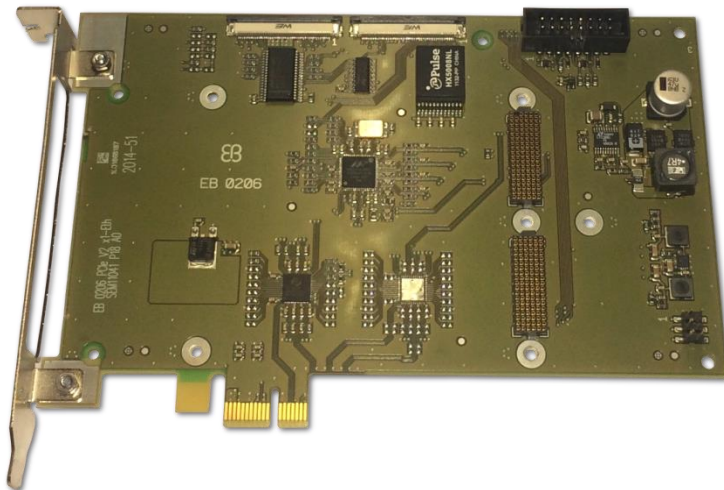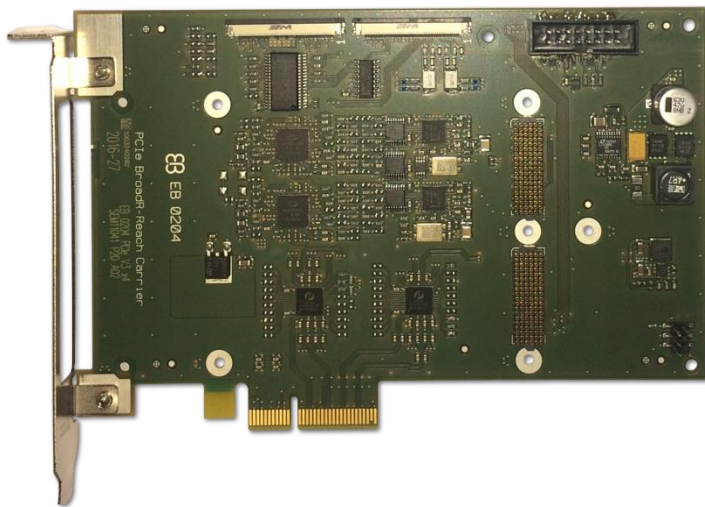

EB 0206x Carrier Board   EB 0205 Carrier Extension Board

- The **EB 0206s** as standard PCIe x 1 carrier for the EB 5200:
  - without additional connectors
  - max. achievable Bandwidth: 200 Mbit/s

- The **EB 0206x** as extended PCIe x 1 carrier for the EB 5200:
  - with JTAG/COP connector for debugging
  - max. achievable Bandwidth: 200 Mbit/s

- The **EB 0205** as 1000BASE-TX Ethernet extension-board:
  - may be connected to the EB 0206x (over two FFC-cables)
  - no additional PCIe-slot required
  - with RJ45-Ethernet connector
  - provides four expansion slots for additional modules

BroadR-Reach PCIe carrier board

EB 0204x Carrier Board

EB 0203 Carrier Extension Board

- The **EB 0204x** as PCIe x 4 adapter for the EB 5200:
    - with JTAG/COP connector for debugging
    - max. achievable Bandwidth: 200 Mbit/s

- The **EB 0203** as BroadR-Reach extension-board:
    - may be connected to the EB 0204x (over two FFC-cables)
    - no additional PCIe-slot required
    - with two BroadR-Reach connectors
    - provides four expansion slots for additional modules