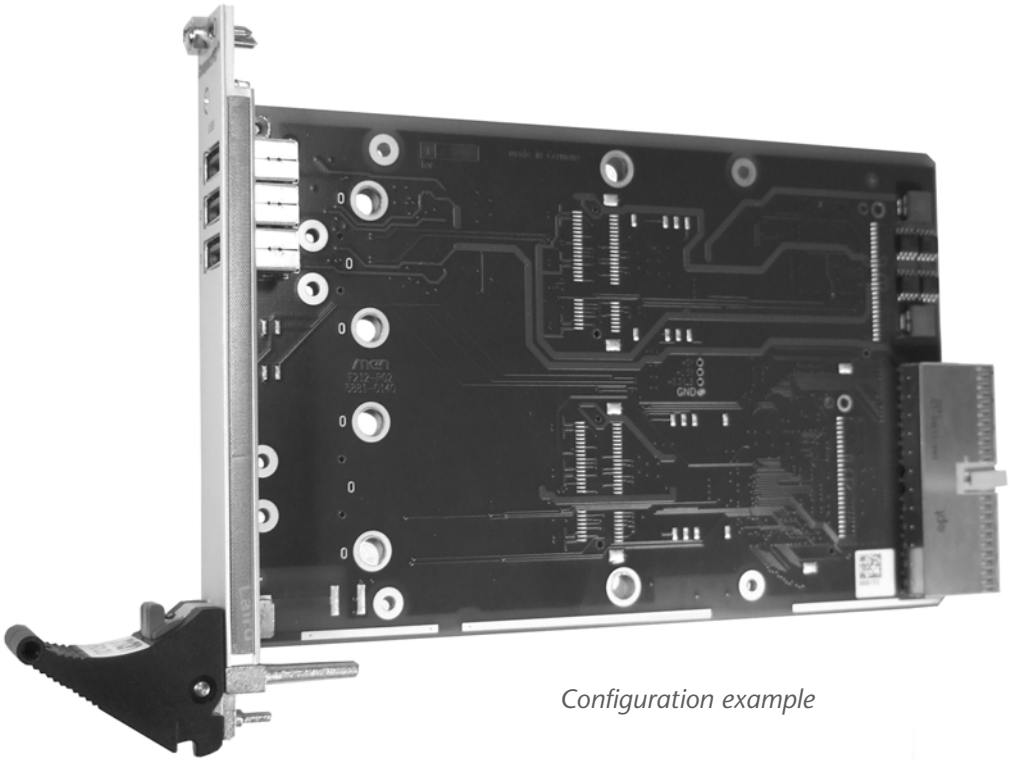
Embedded Solutions

F212U – 3U CompactPCI Triple USB Interface



Configuration example

User Manual

mikro elektronik
gmbh · nürnberg

F212U – 3U CompactPCI Triple USB Interface

The F212U is a rugged single Eurocard CompactPCI® board with three USB 2.0 interfaces at the front. The interfaces support OHCI and EHCI.

The F212U is designed for -40 to +85°C operation temperature (screened) and prepared for conformal coating in order to be used also in harsh and mobile environments.

It is an ideal extension of a CompactPCI® Intel® or Power PC system if the USB interfaces provided by the CPU board or the side card are not sufficient.

Technical Data

USB

- Three USB 2.0 host ports
- Series A connectors at front panel
- OHCI implementation
- Data rates up to 480Mbits/s
- No booting support

CompactPCI® Bus

- Compliance with CompactPCI® Core Specification PICMG 2.0 R3.0
- Peripheral slot
- 32-bit/33-MHz PCI-to-USB bridge
- V(I/O): +3.3V (+5V tolerant)

Electrical Specifications

- Supply voltage/power consumption:
  - +5V (-3%/+5%), depending on plugged USB devices, max. current without USB devices: 25mA
  - +3.3V supply voltage for board is generated onboard

Mechanical Specifications

- Dimensions: conforming to CompactPCI® specification for 3U boards
- Front panel: 4HP with ejector
- Weight: 110g

Environmental Specifications

- Temperature range (operation):
  - -40..+85°C (screened)
  - Airflow: min. 1.0m/s
- Temperature range (storage): -40..+85°C
- Relative humidity (operation): max. 95% non-condensing
- Relative humidity (storage): max. 95% non-condensing
- Altitude: -300m to + 3,000m
- Shock: 15g/11ms
- Bump: 10g/16ms
- Vibration (sinusoidal): 1g/10..150Hz
- Conformal coating on request

MTBF

- tbd @ 40°C according to IEC/TR 62380 (RDF 2000)

Safety

- PCB manufactured with a flammability rating of 94V-0 by UL recognized manufacturers

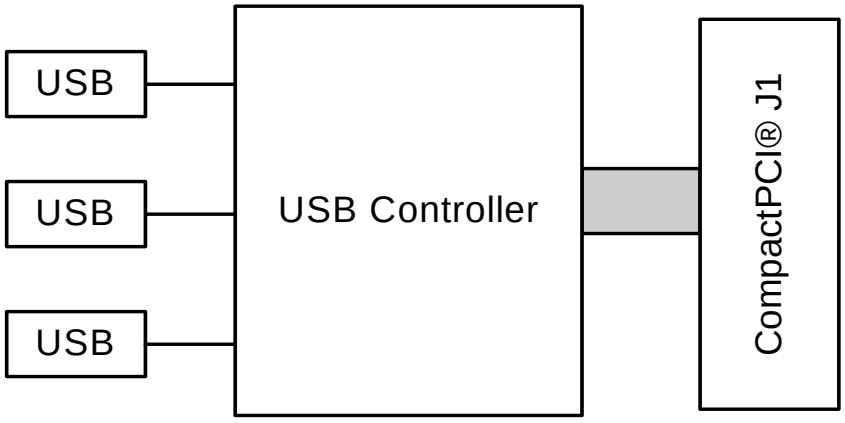
EMC

- Conforming to EN 55022 (radio disturbance), IEC1000-4-2 (ESD) and IEC1000-4-4 (burst)

Software Support

- Support of standard USB devices under Windows®, VxWorks®

Block Diagram



Product Safety

Electrostatic Discharge (ESD)

Computer boards and components contain electrostatic sensitive devices. Electrostatic discharge (ESD) can damage components. To protect the board and other components against damage from static electricity, you should follow some precautions whenever you work on your computer.

- Power down and unplug your computer system when working on the inside.
- Hold components by the edges and try not to touch the IC chips, leads, or circuitry.
- Use a grounded wrist strap before handling computer components.
- Place components on a grounded antistatic pad or on the bag that came with the component whenever the components are separated from the system.
- Store the board only in its original ESD-protected packaging. Retain the original packaging in case you need to return the board to MEN for repair.

About this Document

This user manual describes the hardware functions of the board, connection of peripheral devices and integration into a system. It also provides additional information for special applications and configurations of the board.

The manual does not include detailed information on individual components (data sheets etc.). A list of literature is given in the appendix.

History

Edition	Comments	Technical Content	Date of Issue
E1	First edition	W.Kraekel, R.Küffner	2008-08-21

Conventions

This sign marks important notes or warnings concerning proper functionality of the product described in this document. You should read them in any case.

italics — Folder, file and function names are printed in *italics*.

bold — **Bold** type is used for emphasis.

`monospace` — A `monospaced` font type is used for hexadecimal numbers, listings, C function descriptions or wherever appropriate. Hexadecimal numbers are preceded by "0x".

hyperlink — Hyperlinks are printed in blue color.

The globe will show you where hyperlinks lead directly to the Internet, so you can look for the latest information online.

IRQ# /IRQ — Signal names followed by "#" or preceded by a slash ("/") indicate that this signal is either active low or that it becomes active at a falling edge.

in/out — Signal directions in signal mnemonics tables generally refer to the corresponding board or component, "in" meaning "to the board or component", "out" meaning "coming from it".

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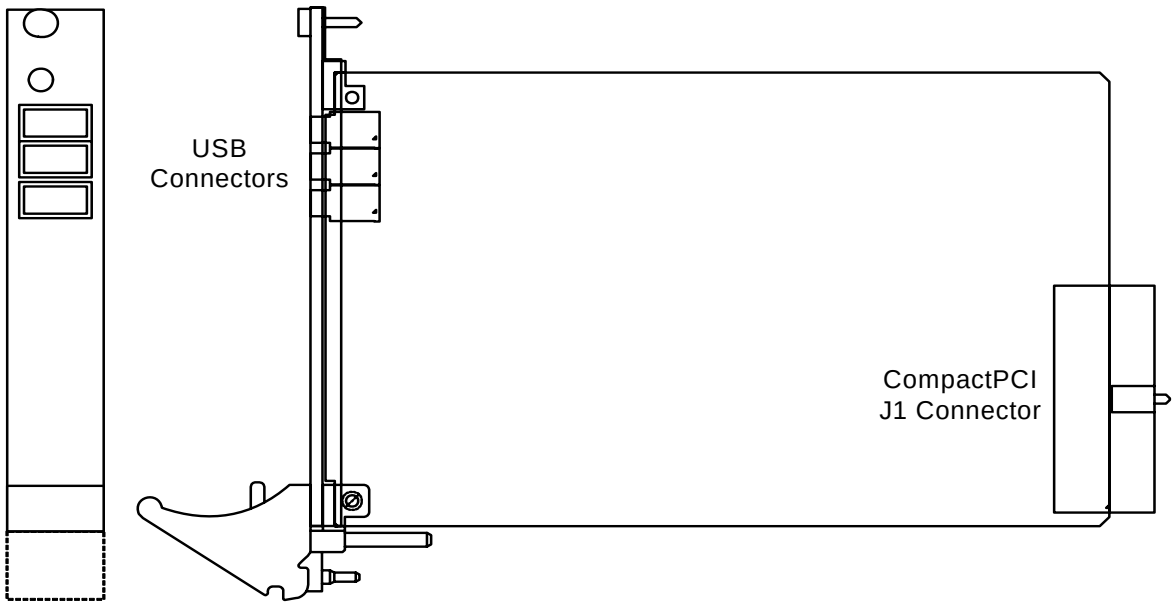
1 Getting Started

This chapter gives an overview of the board and some hints for first installation in a system.

1.1 Map of the Board

Figure 1. *Map of the board – front panel and top view*



1.2 Integrating the Board into a System

You can use the following "check list" when installing the F212U in a CompactPCI/ Express system for the first time.

Note: The F212U **must not** be inserted into the system slot! The peripheral slots of every CompactPCI system are marked by a ○ circle on the backplane and/or at the front panel.

- ☑ Power-down the system.
- ☑ Insert the F212U into your CompactPCI Express system, making sure that the CompactPCI Express connectors are properly aligned.
- ☑ Power-up the system.
- ☑ You can now install driver software.

1.3 Installing Driver Software

For a detailed description on how to install driver software please refer to the respective documentation.

You can find any driver software available for download on MEN's website.

2 Functional Description

2.1 Power Supply

The board is supplied with +5V via CompactPCI connector J1.

2.2 USB Interface

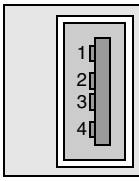
The F212U provides three USB 2.0 host interfaces at the front panel. They are accessible via three Series A connectors.

Note: The interfaces cannot be used for booting.

Connector types:

- 4-pin USB Series A receptacle according to Universal Serial Bus Specification Revision 1.0
- Mating connector:
  4-pin USB Series A plug according to Universal Serial Bus Specification Revision 1.0

Table 1. *Pin assignment of USB front-panel connectors*



1	+5V
2	USB_D-
3	USB_D+
4	GND

Table 2. *Signal mnemonics of USB front-panel connectors*

Signal	Direction	Function
+5V	out	+5 V power supply
GND	-	Digital ground
USB_D+, USB_D-	in/out	USB lines, differential pair

2.3 CompactPCI Interface

The F212U supports a 32-bit 33-MHz CompactPCI interface fully compatible with CompactPCI specification PICMG 2.0 Rev. 3.0. The board works with 3.3V and tolerates 5V V I/O.

For full CompactPCI functionality only the J1 connector is needed, therefore the board only has a J1 connector to the bus.

Connector type of J1:

- 110-pin shielded, 2mm-pitch, 5-row receptacle according to IEC 917 and IEC 1076-4-101

The pin assignment of connector J1 as defined in the CompactPCI specification will not be repeated here.

3 Appendix

3.1 PCI Configuration

The F212U has the following IDs on the PCI bus:

- PCI Device ID: 0x0035
- PCI Vendor ID: 0x1033
- Subsystem Device ID: 0x0035
- Subsystem Vendor ID: 0x1033

3.2 Literature and Web Resources

- F212U data sheet with up-to-date information and documentation:
  www.men.de

3.2.1 CompactPCI

- CompactPCI Specification Revision 2.0 R3.0:
  1997; PCI Industrial Computers Manufacturers Group (PICMG)
  www.picmg.org
- PCI Local Bus Specification Revision 2.2:
  1995; PCI Special Interest Group
  P.O. Box 14070
  Portland, OR 97214, USA
  www.pcisig.com

3.2.2 USB

- USB:
  Universal Serial Bus Specification Revision 1.0; 1996; Compaq, Digital Equipment Corporation, IBM PC Company, Intel, Microsoft, NEC, Northern Telecom
  www.usb.org

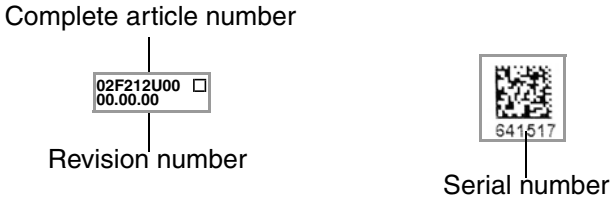
3.3 Finding out the Board's Article Number, Revision and Serial Number

MEN user documentation may describe several different models and/or hardware revisions of the F212U. You can find information on the article number, the board revision and the serial number on two labels attached to the board.

- **Article number:** Gives the board's family and model. This is also MEN's ordering number. To be complete it must have 9 characters.
- **Revision number:** Gives the hardware revision of the board.
- **Serial number:** Unique identification assigned during production.

If you need support, you should communicate these numbers to MEN.

Figure 2. *Labels giving the board's article number, revision and serial number*



You can request the circuit diagrams for the current revision of the product described in this manual by completely filling out and signing the following non-disclosure agreement.

Please send the agreement to MEN by mail. We will send you the circuit diagrams along with a copy of the completely signed agreement by return mail.

MEN reserves the right to refuse sending of confidential information for any reason that MEN may consider substantial.

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for Circuit Diagrams provided by MEN Mikro Elektronik GmbH

between

MEN Mikro Elektronik GmbH
Neuwieder Straße 5-7
D-90411 Nürnberg

("**MEN**")

and

_____
_____
_____
_____

("**Recipient**")

We confirm the following Agreement:

MEN		**Recipient**	
Date:	_____	Date:	_____
Name:	_____	Name:	_____
Function:	_____	Function:	_____

Signature: _____

Signature: _____

The following Agreement is valid as of the date of the MEN signature.

MEN Mikro Elektronik GmbH

Neuwieder Straße 5-7
90411 Nürnberg
Deutschland

Tel. +49-911-99 33 5-0
Fax +49-911-99 33 5-901

E-Mail info@men.de
www.men.de

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This Agreement shall be governed by German Law.

The court of jurisdiction shall be Nuremberg.

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