



CPCI-HD/2

**HD-Drive, CF-Card Slot
and 2 SATA-Interfaces**



Hardware Manual

to Product I.2318.04, I.2318.02

NOTE

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| | |
|--------------------------|-------------------|
| Hardware version: | CPCI-HD/2 Rev.1.0 |
|--------------------------|-------------------|

Document History

The changes in the document listed below affect changes in the hardware as well as changes in the description of the facts, only.

| Revision | Chapter | Changes versus previous version | Date |
|----------|---------|--|------------|
| 1.1 | - | Editorial revision | 2013-08-22 |
| | - | Safety Information inserted | |
| | 2.6 | Software driver support revised | |
| | 3. | Safety notes inserted, chapter revised | |
| | 7. | Declaration of Conformity inserted | |
| | 8. | Chapter "Order Information" removed from chapter 2.7 | |

Technical details are subject to change without further notice.



Safety Instructions

- When working with CPCI-HD/2 follow the instructions below and read the manual carefully to protect yourself from injury and the CPCI-HD/2 from damage.
- The device is a built-in component. It is essential to ensure that the device is mounted in a way that cannot lead to endangering or injury of persons or damage to objects.
- The device has to be securely installed in the control cabinet before commissioning.
- Protect the CPCI-HD/2 from dust, moisture and steam.
- Protect the CPCI-HD/2 from shocks and vibrations.
- The CPCI-HD/2 may become warm during normal use. Always allow adequate ventilation around the CPCI-HD/2 and use care when handling.
- Do not operate the CPCI-HD/2 adjacent to heat sources and do not expose it to unnecessary thermal radiation. Ensure an ambient temperature as specified in the technical data.
- Do not use damaged or defective cables to connect the CPCI-HD/2.
- In case of damages to the device, which might affect safety, appropriate and immediate measures must be taken, that exclude an endangerment of persons and objects.
- Current circuits which are connected to the device have to be sufficiently protected against hazardous voltage (SELV according to EN 60950-1).
- The CPCI-HD/2 may only be driven by power supply current circuits, that are contact protected.
A power supply, that provides a safety extra-low voltage (SELV or PELV) according to EN 60950-1, complies with this conditions.



Attention !

Electrostatic discharges may cause damage to electronic components.

To avoid this, please perform the steps described on page 10 *before* you touch the CPCI-HD/2, in order to discharge the static electricity from your body.

Qualified Personal

This documentation is directed exclusively towards personal qualified in control and automation engineering. The installation and commissioning of the product may only be carried out by qualified personal, which is authorized to put devices, systems and electric circuits into operation according to the applicable national standards of safety engineering.

Conformity

The CPCI-HD/2 is an industrial product and meets the demands of the EU regulations and EMC standards printed in the conformity declaration at the end of this manual.

Warning: In a residential, commercial or light industrial environment the CPCI-HD/2 may cause radio interferences in which case the user may be required to take adequate measures.

Intended Use

The intended use of the CPCI-HD/2 is the operation as CompactPCI mass memory board. The guarantee given by esd does not cover damages which result from improper use, usage not in accordance with regulations or disregard of safety instructions and warnings.

- The CPCI-HD/2 is intended for installation in a CompactPCI system only.
- The operation of the CPCI-HD/2 in hazardous areas, or areas exposed to potentially explosive materials is not permitted.
- The operation of the CPCI-HD/2 for medical purposes is prohibited.

Service Note

The CPCI-HD/2 does not contain any parts that require maintenance by the user. The CPCI-HD/2 does not require any manual configuration of the hardware.

Disposal

Devices which have become defective in the long run have to be disposed in an appropriate way or have to be returned to the manufacturer for proper disposal. Please, make a contribution to environmental protection.

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1. Overview

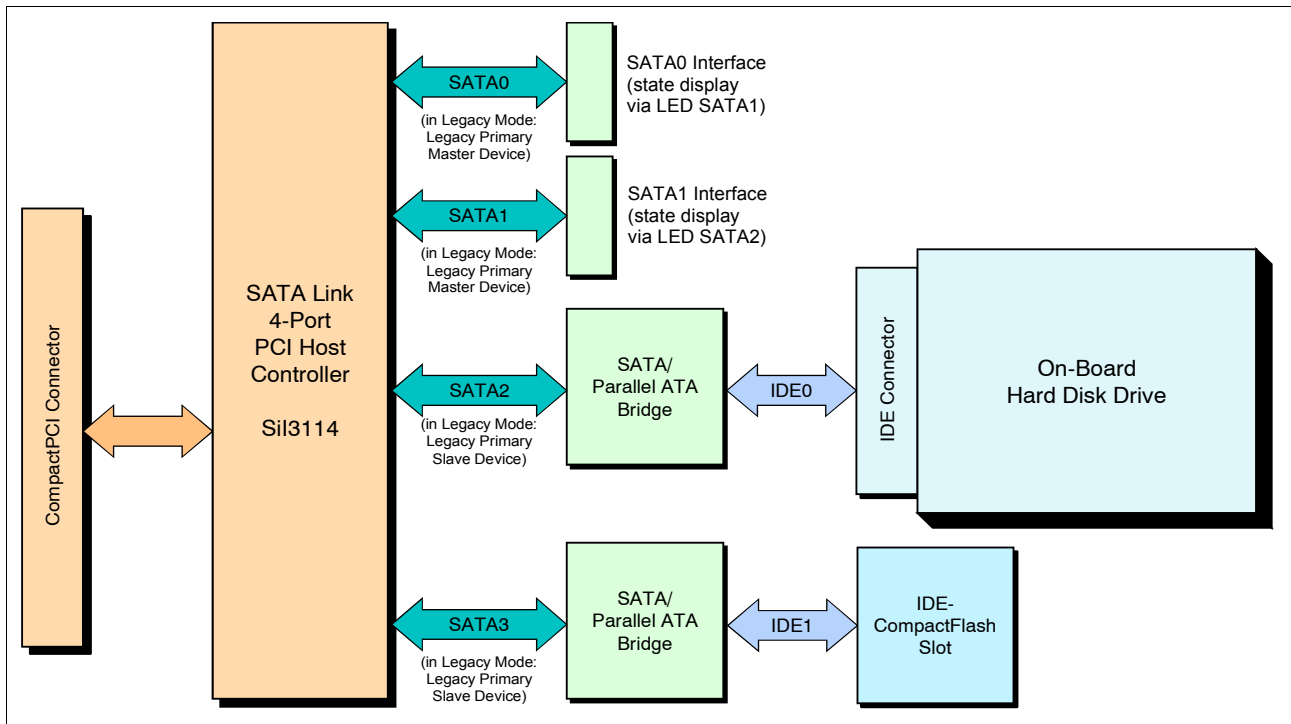


Figure 1: Block circuit diagram

The module CPCI-HD/2 is a CompactPCI® board in 3 U form factor (4 HP). It is equipped with the SATA-Controller SIL3114 that supports four SATA-channels. Two channels are used as Serial ATA interfaces, one channel is used to control a CompactFlash® slot and one channel to control the local 2.5" HD drive. In the CPCI-HD/2 standard version (order No.: I.2318.04) the hard disk is included in the scope of delivery. The factory installed HD capacity may change upwards with the improvement of drive technology.

The board is equipped with a type I CompactFlash card holder. The CF-card slot is located in the front panel. The interface is 'hot-pluggable'. Data access is executed in 'True IDE mode'.

Two external devices can be attached via two on-board SATA plugs. Modification to rear I/O-connection is possible on request.

LEDs in the front panel indicate the status of the interfaces.

2. Technical Data

2.1 General Technical Data

| | |
|----------------------|---|
| Power supply voltage | via CompactPCI-Bus, nominal supply voltages: 3,3 V / 80 mA 5 V / 1,5 A (starting current, typ. with 40 GB HDD), 5 V / 0,6 A (quiescent current) |
| Connectors | SATA0 (7-pin Serial ATA-connector, angled, X0) - SATA0 interface for external drive SATA1 (7-pin Serial ATA-connector, angled, X1) - SATA1 interface for external drive IDE (44-pin IDE-connector, male, X2) - interface for local HDD, 2 mm grid CompactFlash (50-pin AMP-C-FLASH male connector X3) - CompactFlash slot CPCI (132-pin male connector, X100) - CompactPCI-board connector test- and programming only: JTAG, Debug (8-pin micro plug X4) |
| Temperature range | 0 °C ... 50 °C ambient temperature |
| Humidity | max. 90%, non-condensing |
| Dimensions | 3 U, 4 HP |
| Weight | approx. 150 g without HDD |

Table 1: General data of the module

2.2 CompactPCI Bus

| | |
|-----------------------|--|
| Host bus | PCI bus according to PCI Local Bus Specification, Rev. 2.0 |
| PCI-data/address bus | 32 bit, 33/66 MHz |
| PCI + SATA controller | SIL3114 |
| Board Dimension | according to CompactPCI Specification, Rev. 2.0 |
| Connectors | |
| Connector coding | no colour coding universal board (3.3 V or 5 V signal voltage tolerant) |

Table 2: CompactPCI Bus

2.3 HDD Interface

| | |
|------------------------|---|
| Number of local drives | 1 |
| Data transfer mode | Ultra DMA 6 |
| ATA-device bridge | SIL 3811 |
| HDD type | 2.5"-HD drive, capacity ≥ 40 Gbyte (article I.2318.04 only) |
| HDD connector | 44-pin IDE, 2 mm grid |

Table 3: HDD interface

2.4 CompactFlash Interface

| | |
|-------------------------|--|
| Number of CF-interfaces | 1 CompactFlash slot |
| Data transfer mode | Ultra DMA 6 |
| ATA-device bridge | SIL 3811 |
| CompactFlash | according to CompactFlash Specification, Type I CF-card slot, 'True IDE Mode', 3.3 V supply voltage, 'hot-pluggable' |

Table 4: CompactFlash interface

2.5 Interfaces for External Drives


| | |
|----------------------|--|
| Number of interfaces | 2 |
| Data transfer mode | SATA 1 (1,5 Gb/s) |
| Controller | SIL 3811 |
| Connector | 7-pin Serial ATA-connector, angled modification to Rear-I/O connection available on request |


Table 5: CompactFlash interface


2.6 Software Driver Support

| Operating System | Supported Versions |
|------------------|--|
| Linux® | from Kernel 2.6.19 (requires 'Silicon Image SATA Support' in Kernel), driver contained in standard Kernel Note: 'hot-plug' supported |
| Windows® | The hardware is supported by standard Silicon Image Sil3114 controller device drivers for Windows. They can be downloaded via the Silicon Image Support Library (http://www.siliconimage.com/support). As Silicon Image does not support end users directly please contact our esd support-team (support@esd.eu) in case of problems. Note: 'hot-plug' supported |
| QNX® | from version 6.x, driver contained in standard Kernel |
| VxWorks® | I.2318.31: VxWorks driver in source code + documentation in source code |

3. Hardware Installation


 **Read the safety instructions at the beginning of this document carefully, before you start with the hardware installation!**

 **Danger!**
Electric shock risk. Never carry out work while power supply voltage is switched on!

 **Attention !**
Electrostatic discharges may cause damage to electronic components. To avoid this, please discharge the static electricity from your body by touching the metal case of the CompactPCI system *before* you touch the CPCI-HD/2.

Procedure:

1. Switch off your CompactPCI system and all connected peripheral devices (monitor, printer, etc.).
2. Discharge your body as described above.
3. Disconnect the computer from the mains.
If the computer does not have a flexible mains cable, but is directly connected to mains, disconnect the power supply via the safety fuse and make sure that the fuse cannot switch on again unintentionally (i.e. with caution label).

 **Danger!**
Never carry out work while power supply voltage is switched on!

4. Select an open 3U-CompactPCI bus slot. The CPCI-HD/2 can be inserted into any 3U-slot.
5. Insert the CPCI-HD/2 module into the selected CompactPCI slot.
Carefully push the board until it snaps into place.
6. Fix the CPCI-HD/2.
7. Connect the CompactPCI system to mains again (mains connector or safety fuse).
8. Switch on the CompactPCI system and the peripheral devices.
9. Now you can configure the HDD and the CompactFlash. Please read the documentation of your operating system for more information.

4. LEDs

4.1 Position of the LEDs

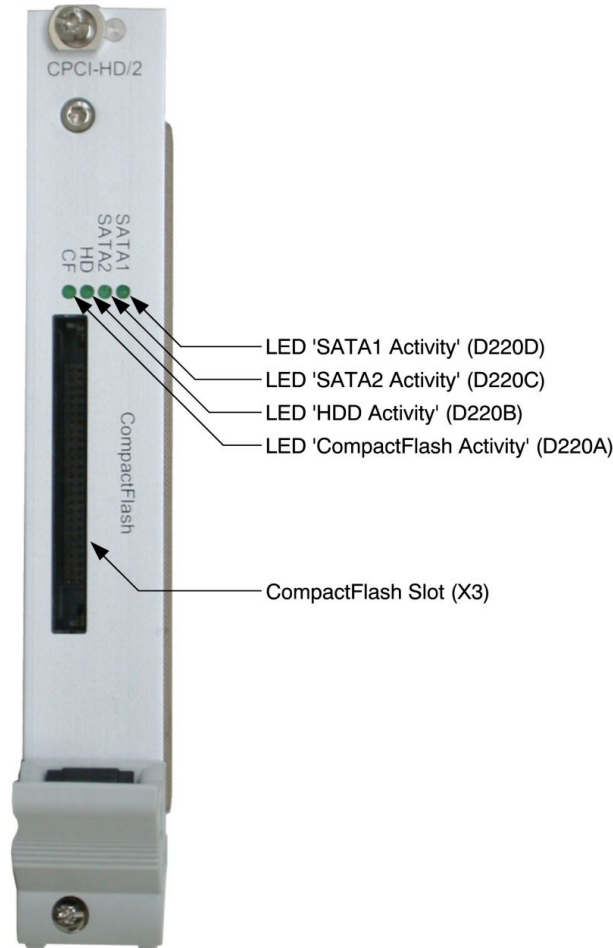


Figure 2: Connectors and LEDs

4.2 LED Indication

| LED | Colour | Meaning | LED name in PCB |
|--------------|--------|--|-----------------|
| SATA1 | green | Activity - data transfer at interface SATA0 | LED220D |
| SATA2 | green | Activity - data transfer at interface SATA1 | LED220C |
| HD | green | Activity - data transfer at HDD interface | LED220B |
| CF | green | Activity - data transfer at CompactFlash interface | LED220A |

Table 6: Description of LEDs

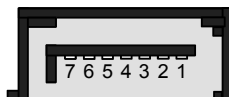
5. Connector Assignment

5.1 SATA Interface for external Drives

Device connector: 7-pin Serial ATA connector, angled

The connectors SATA0 (X0) and SATA1 (X1) have similar connector pin assignments according to the SATA interface.

Pin Position:



Pin Assignment:

| Pin | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|--------|-----|-----|-----|-----|-----|-----|-----|
| Signal | GND | DT+ | DT- | GND | DR- | DR+ | GND |

Signal description:

DT+, DT-, DR+, DR- ... Receive and transmit signal lines of the respective interface. The data direction reference is the external drive (device).

GND... Reference potential

6. Declaration of Conformity

EG-KONFORMITÄTSERKLÄRUNG EC DECLARATION OF CONFORMITY



Adresse **esd electronic system design gmbh**
Address **Vahrenwalder Str. 207**
30165 Hannover
Germany

esd erklärt, dass das Produkt
esd declares, that the product

CPCI-HD/2-SATA/IDE-Interface
CPCI-HD/2

Typ, Modell, Artikel-Nr.
Type, Model, Article No.

I.2318.02
I.2318.04

die Anforderungen der Normen
fulfills the requirements of the standards

EN 61000-6-2:2005,
EN 61000-6-4:2007+A1:2011

gemäß folgendem Prüfbericht erfüllt.
according to test certificate.

H-K00-0359-09

Das Produkt entspricht damit der EG-Richtlinie „EMV“
Therefore the product corresponds to the EC-Directive 'EMC'

2004/108/EG

Das Produkt entspricht der EG-Richtlinie „RoHS“
The product corresponds to the EC-Directive 'RoHS'

2011/65/EU

Diese Erklärung verliert ihre Gültigkeit, wenn das Produkt nicht den Herstellerunterlagen entsprechend eingesetzt und betrieben wird, oder das Produkt abweichend modifiziert wird.
This declaration loses its validity if the product is not used or run according to the manufacturer's documentation or if non-compliant modifications are made.

Name / Name T. Ramm
Funktion / Title CE-Koordinator / CE Coordinator
Datum / Date Hannover, 2013-03-19

Rechtsgültige Unterschrift / authorized signature

7. Order Information

| Type | Properties | Order No. |
|---|--|-----------|
| CPCI-HD/2 | CompactPCI MassMemoryBoard (3U/4HP) - 2 interfaces for external SATA drives - 1 interface for on-board 2.5" IDE-HDD - 2.5" HDD installed, capacity ≥ 40 Gbyte - 1 CF-card slot (type I) in front panel | I.2318.04 |
| CPCI-HD/2-SATA/IDE-Interface | CompactPCI memory board (3U/4HP) - 2 interfaces for external SATA drives - 1 interface for on-board 2.5" IDE-HDD (HDD not included in delivery) - 1 CF-card slot (type I) in front panel | I.2318.02 |
| Accessories | | |
| CPCI-HD/2-IDE-Kit | Mounting kit for 2.5" IDE-HDD with screws and pre-assembled cable, for use with product I.2318.02 | I.2318.03 |
| Software | | |
| CPCI-HD/2-VxW | VxWorks driver source, documentation within source code. Has to be ordered only once per customer. Requirements: existing hardware and valid Wind River VxWorks runtime licence. | I.2318.31 |
| For detailed information about the driver availability of your special operating system, please contact our sales team. | | |

Table 7: Order information

PDF Manuals

For availability of manuals see table below.

Please download the manuals as PDF documents from our esd website www.esd.eu for free.

| Manuals | | Order No. |
|--------------|-------------------------|-----------|
| CPCI-HD/2-EN | Hardware Manual English | I.2318.21 |

Table 8: Available manuals

Printed Manuals

If you need a printout of the manual additionally, please contact our sales team: sales@esd.eu for a quotation. Printed manuals may be ordered for a fee.



Information about Usage of CompactFlash® Cards!

A correct functionality of the CompactFlash interface can only be ensured by usage of CompactFlash cards with guaranteed SSD-properties.
esd therefore recommends to use one of the listed SLC-cards:

- Western Digital SiliconDrive II (e.g. 4GB: SSDC04G-4600)
- Cactus CompactFlash 303 Series (e.g. 4GB: KC4GR-303)
- Swissbit C-320 (e.g. 4GB: SFCF4096H1BO2TO-C-D1-523-SMA)

Only with this CF-cards the correct function of the CF-card interface is ensured and support for the devices is provided.

esd will evaluate more CF-cards and release them on success.