Product Specification

USB 10xx

Racks for USB Modules
User Manual   Version 1.1

GOEPEL electronic

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1 Installation

1.1 Hardware Installation of USB Racks Type USB 10xx

Please make absolutely certain that all of the hardware installation procedures described below are carried out with your system switched off.

Open your **USB 10xx** Rack system according to its conditions. A free slot is to be selected in the system.
Now, the slot cover is to be taken away from the slot selected. To do this, unscrew both fixation screws and remove the cover from the slot.

(If it is necessary to exchange transceiver modules on a USB board, pay attention to the general rules to avoid electrostatic charging. Transceiver modules must never be removed or mounted with the power switched on! In addition, the right alignment is absolutely required).

During the installation procedure, touch the USB board to be installed at its edges only.

Never touch the surface of the board, because otherwise it may be destroyed by electrostatic discharge.

Insert the board carefully into the prepared slot. Use the lever at the front plate in order to push in the board finally.

When the board has been inserted properly, fix it by means of the two fixation screws at the slot cover.

Finally carry out all required steps allowing the system to operate properly.

Pay attention to touch also the **USB 10xx Rack** only at the areas intended for that.

Never touch the surface of the internal backplane, because otherwise it may be destroyed by electrostatic discharge.

Please use the delivered USB cables to connect a **USB 10xx** Rack to the PC's or Laptop's USB interface.
Other cables may be inapplicable.

1.2   Driver Installation

1.2.1 Windows Device Drivers

The driver installation is executed with the corresponding GOEPEL electronic USB board inserted before in the USB 10xx Rack.
To do that, proceed according to the following example.

Example of Driver Installation for a USB 3060 USB board:

To install the GOEPEL electronic USB drivers on your system, execute the GUSB driver setup.
For that, start the *GUSB-Setup-*.exe* setup program
(of the supplied CD, "*" stands for the version number) and follow the instructions.

> At present, the available device driver only supports Windows®
> 2000/ XP systems.

If you want to create your own software for USB 3060 boards, you need the files for user specific programming (*.DLL*, *.LLB*, *.H*).
These files are not automatically copied to the computer and have to be transferred individually from the supplied CD to your development directory.

> The USB interface uses the high-speed data rate according to the
> USB2.0 specification (if possible, otherwise USB1.1, full-speed).

After driver installation, you can check whether the boards are properly embedded by the system.

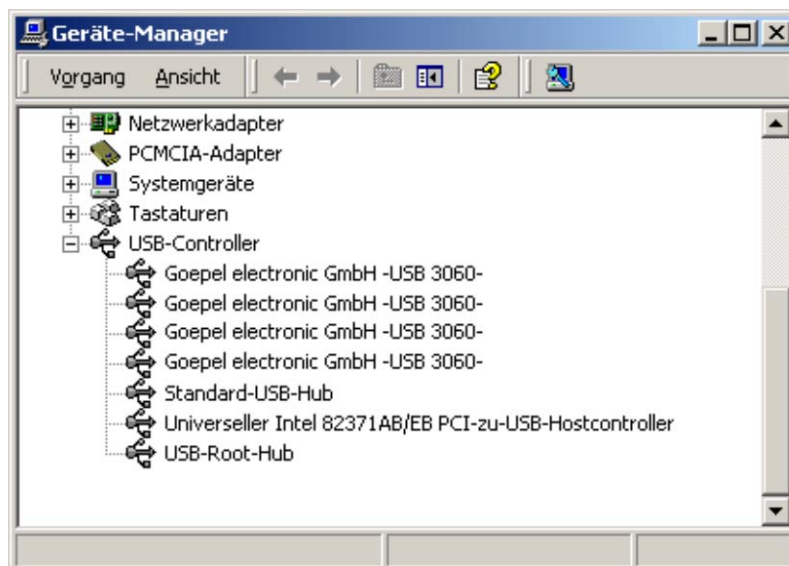Among others, the following figure shows the successful embedding of four USB 3060 boards:

**Figure 1-1:
Device Manager Display**

> Please note that the Device Manager shows ALL USB controllers.

2   Hardware

2.1   Definition

USB 10xx devices are GOEPEL electronic GmbH USB racks with USB 2.0 Interface.

These racks are used as a platform for the mechanical and electrical integration of GOEPEL electronic USB boards.

USB 10xx racks can be operated as tabletop units or in 19" rack constructions.

The racks are used for a wide field of applications of the general measurement and control technology.
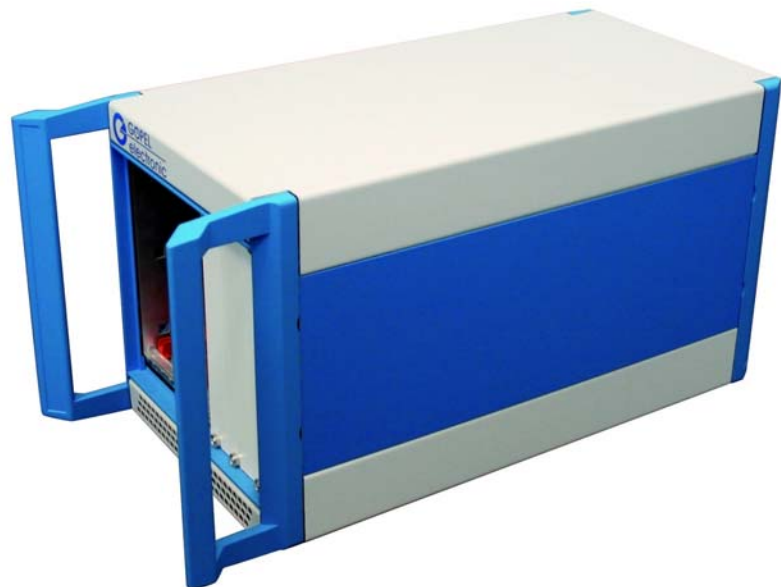
Figure 2-1:
USB 1004 4-slot USB rack

For operating a USB 10xx rack, you need GOEPEL electronic USB boards.

Up to 16 GOEPEL electronic USB boards can be integrated in such a rack.

Figure 2-2:
USB 1004 rear side

USB 10xx racks have characteristics as follows:

- ♦ 1 USB 2.0 interface for the connection to the superordinated USB bus system (rear connector)
- ♦ HUB principle structure: The HUBs are integrated on the backplane. The required number of HUBs is available corresponding to the rack's size.
- ♦ Provides the power supply for the integrated GOEPEL electronic USB boards
- ♦ Active cooling of the USB boards in the rack with filter system
- ♦ 230V power connection at the rear side

There are the following variants of USB 10xx racks:

- ♦ USB 1016   16 slot rack
        with frontal opening to insert the USB boards
- ♦ USB 1008   8 slot rack
        with frontal opening to insert the USB boards
- ♦ USB 1004   4 slot rack
        with frontal opening to insert the USB boards

2.2 Technical Data

2.2.1 Dimensions (width x height x depth):

- USB 1016: 448.9 mm x 177 mm x 315.5 mm
- USB 1008: 235.4 mm x 177 mm x 315.5 mm
- USB 1004: 164.5 mm x 177 mm x 315.5 mm

The given dimensions refer to the housing without frontal handles, assembling hood and mounting foots.

2.2.2 USB 10xx/ Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit	Remarks
V_{power}	Supply voltage	100		240	VAC	
F_{in}	Supply frequency	50		60	Hz	
P_{Slot}	Power consumption per slot			14	W	1A@12V 0.5A @5V
	USB Transmission rate			480	MBit/s	
	Number of slots		16			USB 1016
			8			USB 1008
			4			USB 1004

2.3 Construction

2.3.1 General

USB 10xx Racks have a USB 2.0 interface available for the connection to the PC's USB interface. In the basic versions (frontal opening to insert the USB boards) the USB interface is at the rack's rear side.

Figure 2-2 shows schematically the structure of a USB rack with 16 (4x4) slots in a bloc diagram.

Generally four USB slots each are operated with one HUB on a backplane module. At most up to four backplane modules can be operated via a 5th HUB (on backplane 1).

The USB interface for the corresponding USB boards is provided via the backplane's connector. This connector also provides the power supply for the boards.

The backplane is designed to be used in the GOEPEL electronic USB Rack. There are additional signal lines (GPIO) on the backplane which can be interconnected with each other, for example for the communication of several boards.
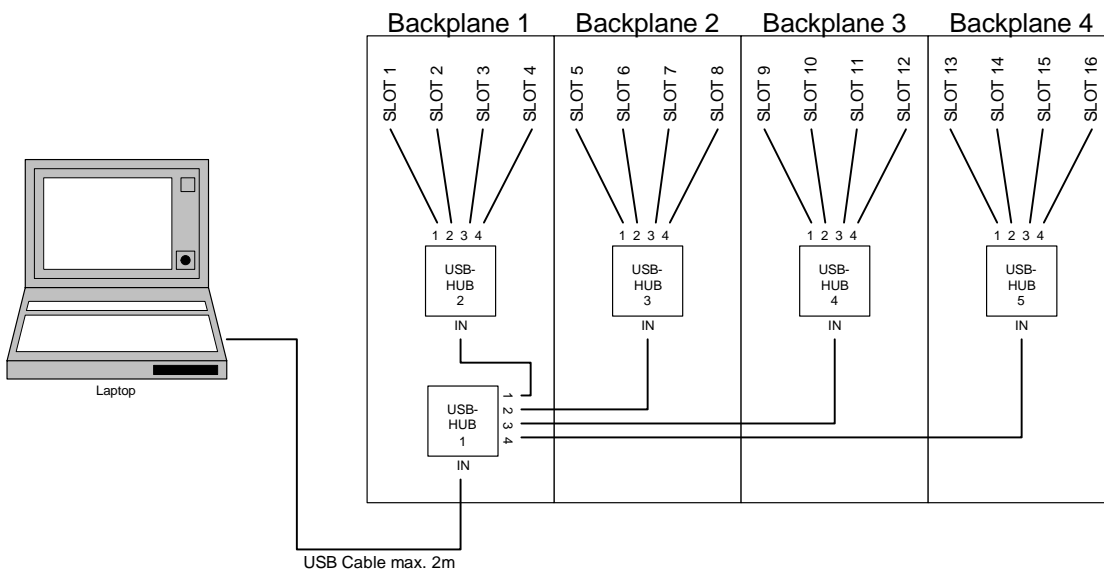

Figure 2-2: Block diagram of a USB 1016 Rack

2.3.2 Addressing

Individual USB boards in the GOEPEL electronic USB Rack are exclusively addressed according to their serial numbers (see chapter Control Software of the corresponding User Manual).

The board with the LEAST serial number is always the device with the number 1.

To improve clarity, we recommend to arrange several GOEPEL electronic USB boards of the same type in the order of ascending serial numbers in the GOEPEL electronic USB Rack.

2.3.3 Communi- cation Interface

There is a USB interface available for the communication with the PC or Laptop.

A transmission rate up to 480 MBit/s can be achieved by this interface.

3 Control Software

3.1 Programming via DLL Functions

There is no further control software required for USB 10xx Racks.
Programming via DLL functions is exclusively carried out by the
function calls for the USB boards used.

Please refer to the User Manuals of the GOEPEL electronic USB boards
integrated in your system.

3.2 Programming with LabVIEW

There is no further control software required for USB 10xx Racks.
Programming with LabVIEW functions is exclusively carried out by the
function calls for the USB boards used.

Please refer to the User Manuals of the GOEPEL electronic USB boards
integrated in your system.

4   Supply Notes

USB 10xx racks are delivered in the following variants with a retral USB interface in each case:

- ◆ USB 1016   16 slots, frontal USB board mounting
- ◆ USB 1008   8 slots, frontal USB board mounting
- ◆ USB 1004   4 slots, frontal USB board mounting