DENKOVI MCP2200 USB 8 Digital Inputs Module User Manual

Contents

DENKOVI MCP2200 USB 8 Digital Inputs Module

Trademark Notices
Microsoft and Windows are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. Apple, Mac, Mac OS, Mac OS logo are either trademarks or registered trademarks of Apple Computer Inc. in the United States and/or other countries. Other product names and company names described in this document are trademarks or registered trademarks

Features

- USB port: type B
- Chipset: MCP2200
- Communication: USB HID
- 8 optoisolated digital inputs:
- Dry contacts:
  - Logic level 0: Close to GND
  - Logic level 1: Open
- Wet contacts:
  - Logic level 0: 0~3 VDC
  - Logic level 1: 10~30 VDC
- Power supply: 5V (from USB port)
- Maximum current consumption from USB port: 250 mA
- Leds: power, digital inputs
- Selectable digital inputs leds mode: light up on high or low input level;
- DIN Rail box IP20
- Wall mounting
- Size: 94mm x 86mm x 31.5mm
- Working temperature range: -40 to +80 °C

Applications

- Kiosks
- DAQ
- Home automation
- Hobby projects

Figure 2.1. Connecting sensors

Overview

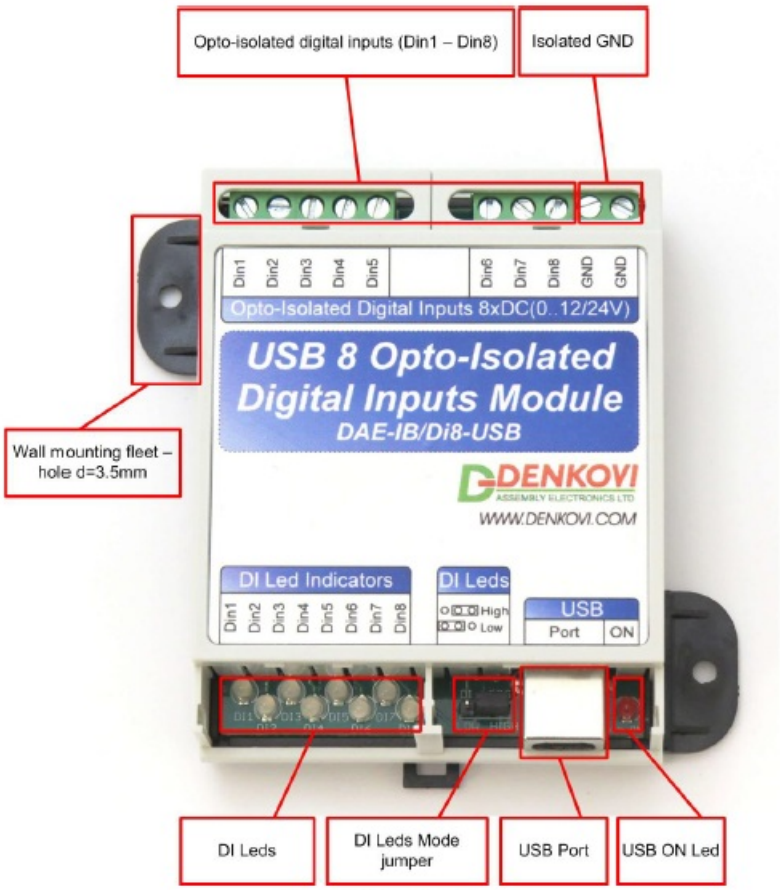


Figure 3.1. Device overview

Technical parameters

Table 4.1. Physical parameters

Parameter	Value
Size (L / W / H), mm	94 x 86 x 31.5
Weight, g	85
Operating temperature, °C	-40 to +80
IP protection level	IP20

Table 4.2. System parameters

Parameter	Value
Power supply voltage, V DC	5 (from USB port)
Maximum current consumption, mA	250

Table 4.3. Digital inputs

Parameter	Value
Digital inputs number	8
Digital inputs voltage range, V DC	0 up to 30
Pull-up resistors	Yes
Dry contact	
Logic level 0	Close to GND
Logic level 1	Open
Wet contact	
Logic level 0	0 up to 3
Logic level 1	10 up to 30
Protection against reverse polarity	Yes

Device working principle

Block diagram

The figure below represents the principle of the USB 8 digital inputs module.

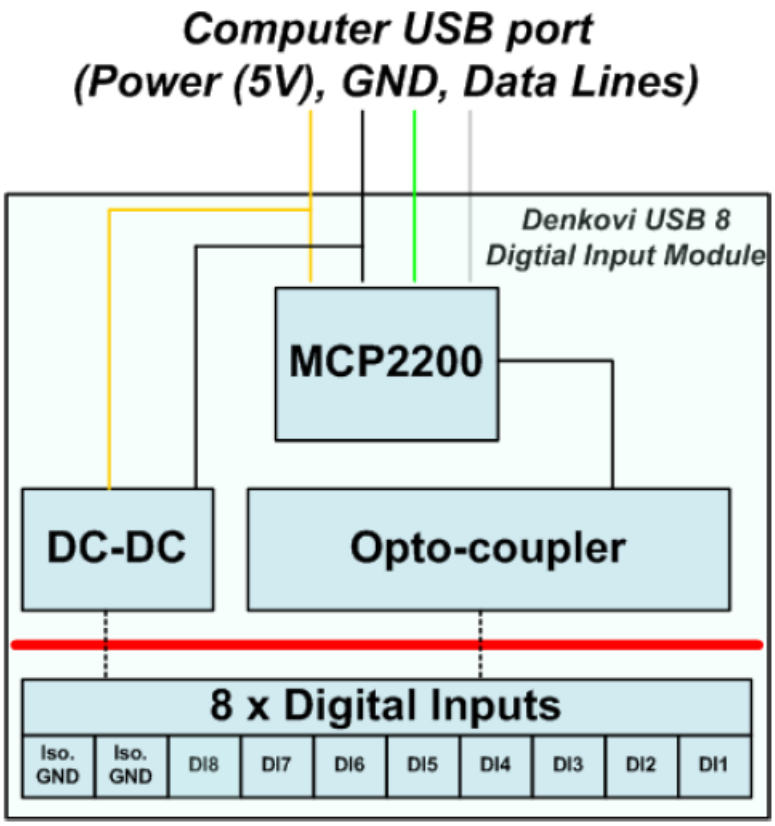


Figure 5.1. Device block diagram

Isolation of the inputs
As shown on Figure 5.1. the digital inputs are isolated from the host computer (the red line) via:

- Opto-coupler for the inputs
- DC-DC converter for the isolated GND (Iso. GND

IO Map

- MCP2200.GP0 -> DI1
- MCP2200.GP1 -> DI2
- MCP2200.GP2 -> DI3
- MCP2200.GP3 -> DI4
- MCP2200.GP4 -> DI5
- MCP2200.GP5 -> DI6
- MCP2200.GP6 -> DI7
- MCP2200.GP7 -> DI8

Installation

- This device must be installed by qualified personnel;
- This device must not be installed directly outdoors;
- Installation consists of mounting the device, connecting USB and connecting sensors.

Mounting
DIN rail:

Figure 6.1. Mounting the device to a DIN rail

Wall mounting

Figure 6.2. Mounting the device to a DIN rail

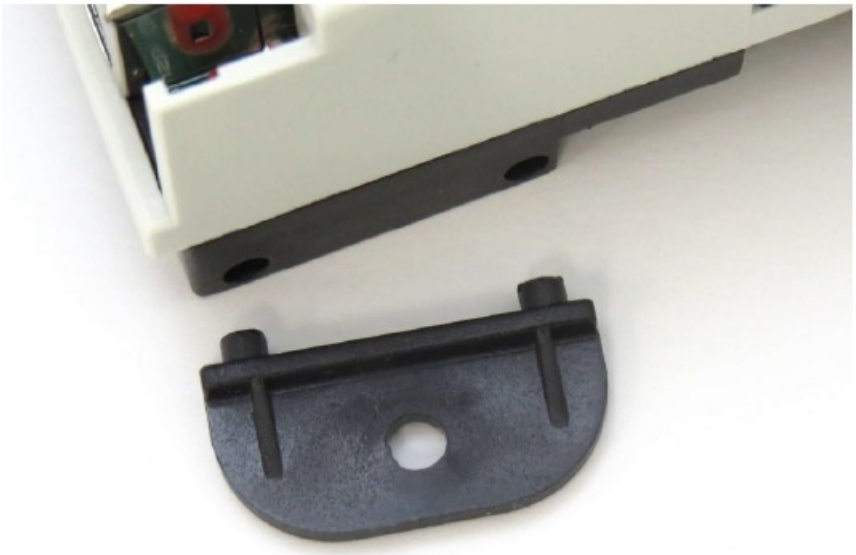


Figure 6.3. The mounting feets for wall mounting can be removed if necessary

Connecting inputs

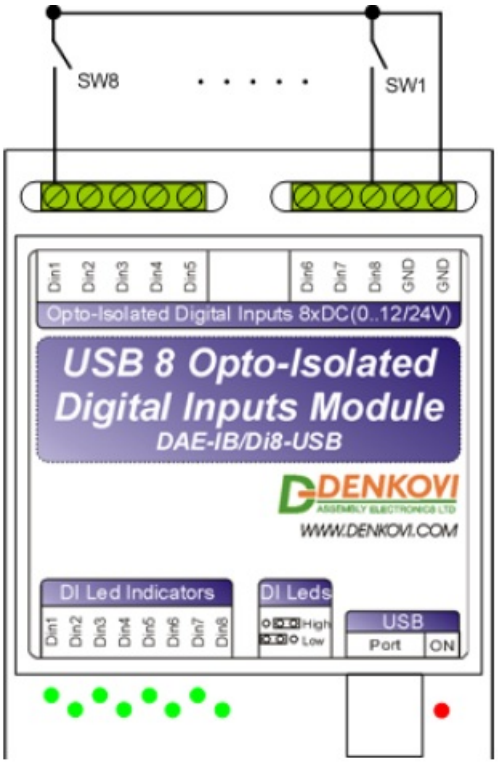


Figure 6.4. Connecting SPST NO output (dry contact) sensors, switches, buttons, door sensors etc. to the Digital Inputs

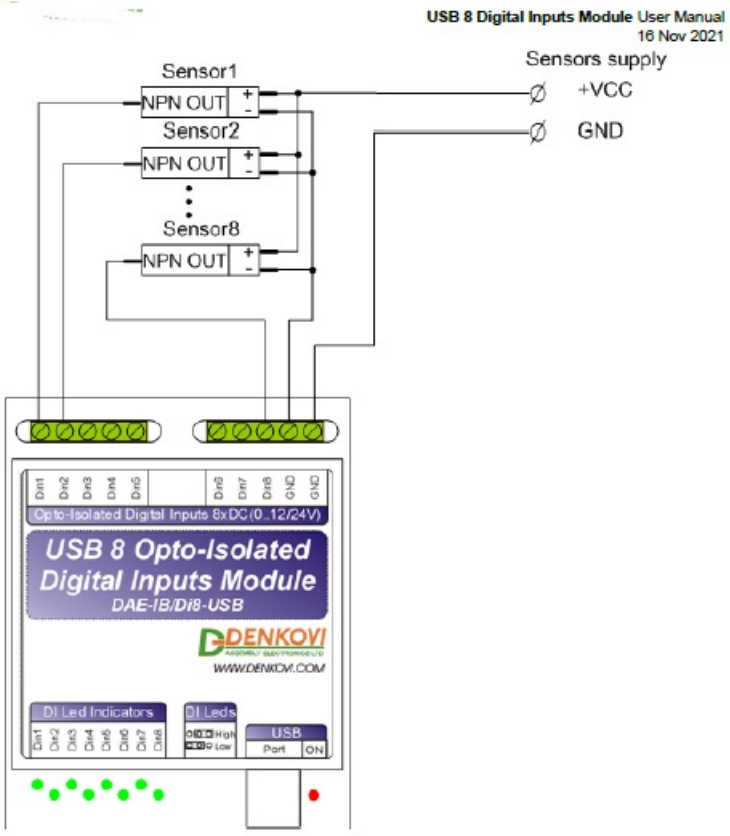


Figure 6.5. Connecting to NPN sensors

- The module is compatible only with NPN sensors!
- All digital inputs are designed to work with maximum 30 V DC input voltage! Applying voltages higher than 30 V DC may damage the device!

DI Leds mode selection
The digital inputs leds working mode is selected via the jumper “DI Leds” shown below

Figure 6.6. DI Leds jumper

- Low mode – the input led is on when the input level is low (0);
- High mode – the input led is on when the input level is high (1).

  It is mandatory to select the DI Leds mode with the jumper. Without selecting (leaving the jumper unconnected), the module leds will not work properly!

USB connection
It is necessary to be used USB-A to USB-B type quality cable like this one: **http://denkovi.com/usb-printer-cable-gold-plated-1.8m**

Figure 6.7. USB cable connection

Drivers installation

The device is based on MCP2200 chipset. The drivers are usually built in the operating system. However if the device is still not recognized, they must be installed from the bellow link:
http://www.microchip.com/wwwproducts/en/MCP2200

Windows
After successful installation, the relay board will be shown as shown below.

Figure 7.1. The module in Windows

Linux

In Linux usually the drivers are installed by default

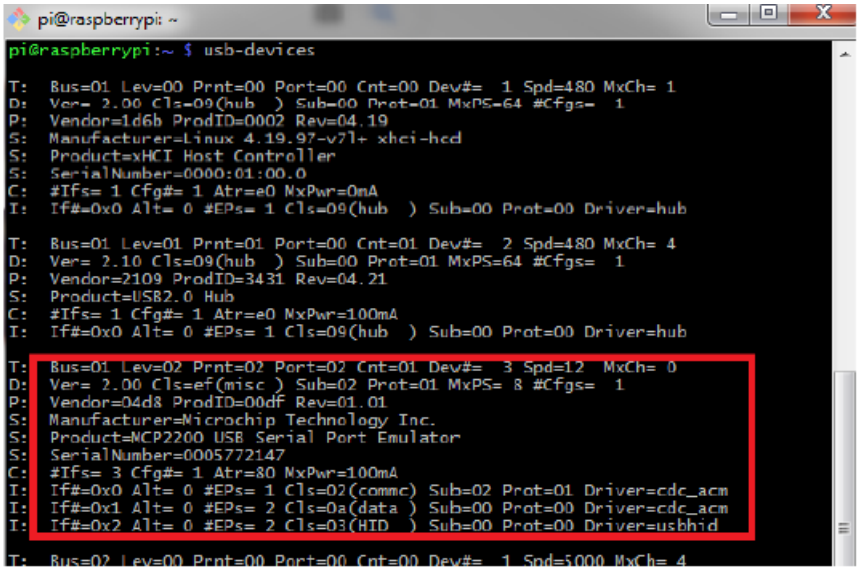


Figure 7.2. The module in Linux

Software

DRMv3

DRMv3 software downloads, documentation and hints can be found on this link: http://denkovi.com/drm-software-v3

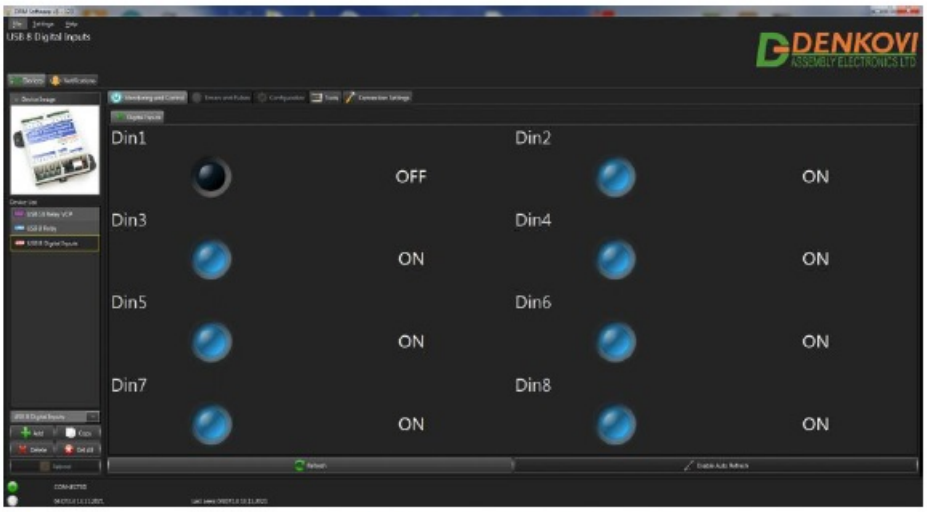


Figure 8.1. DRMv3 software

Command line tool

The tool downloads, documentation and hints can be found on this link: http://denkovi.com/denkovi-relay-command-line-tool

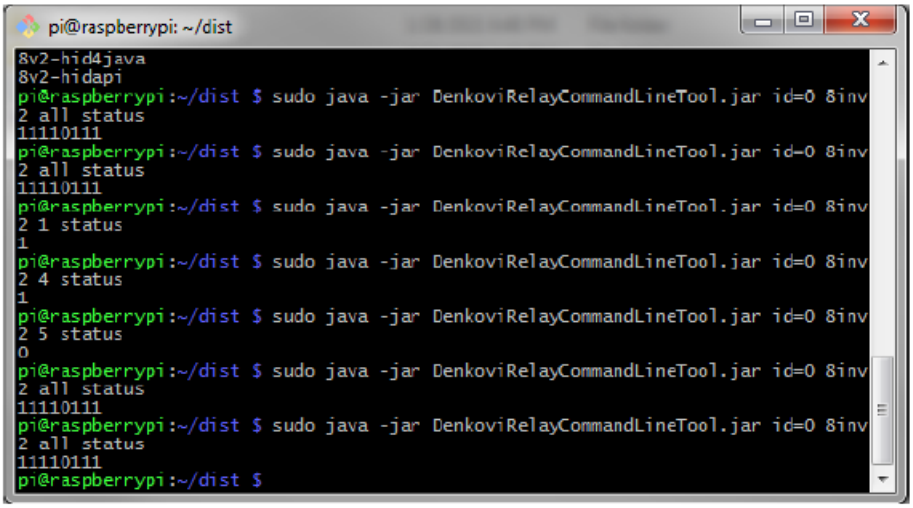


Figure 8.2. Denkovi Relay Command Line Tool

Software examples

Many software examples in different language platforms can be found on this link. Please note since the MCP2200 is with 8 input/output lines, it is very important all the 8 lines to be configured as inputs only!

Please note the device is not controlled via Virtual COM Port (Virtual Serial Port) although it may appear in the OS in such way! It is controlled via USB HID API or USB HID raw protocol!

Mechanical drawing

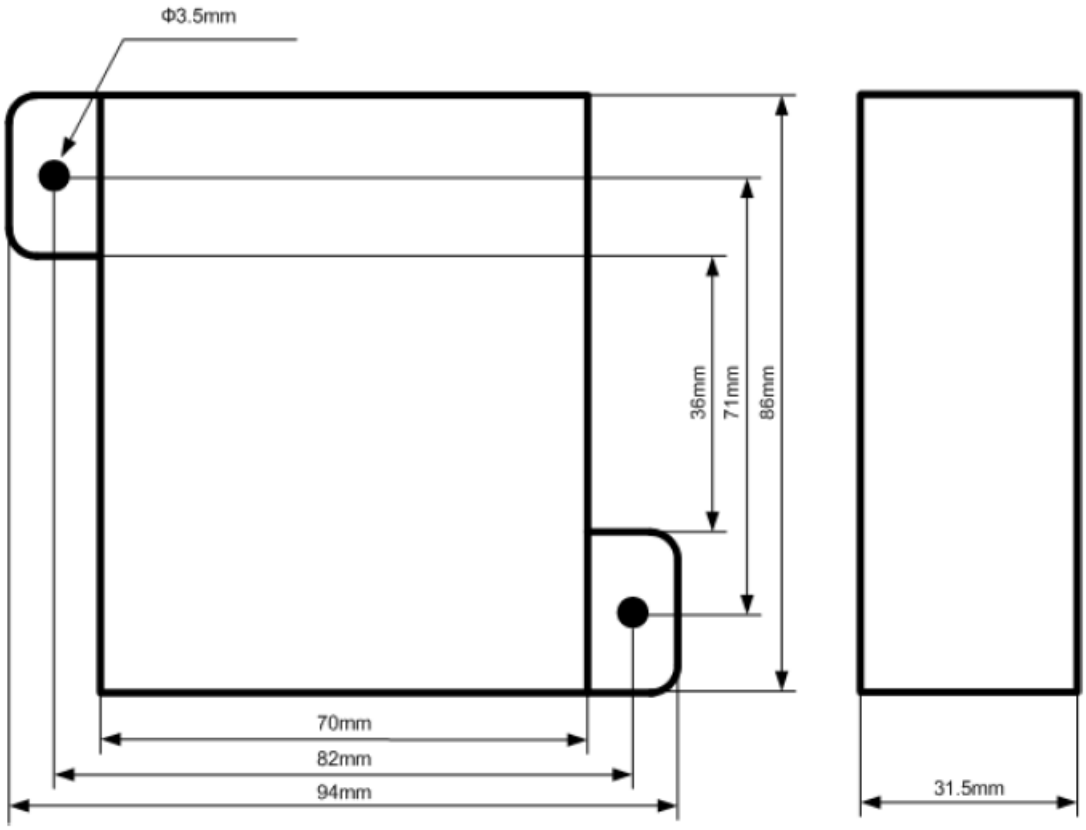
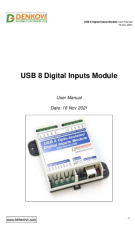


Figure 9.1. Device dimensions

Disclaimer

Denkovi Assembly Electronics LTD products are not designed, authorized or warranted to be suitable for use in space, nautical, military, medical, life-critical or safety-critical devices or equipment. Denkovi Assembly Electronics LTD products are not designed, authorized or warranted to be suitable for use in applications where failure or malfunction of an Denkovi Assembly Electronics LTD product can result in personal injury, death, property damage or environmental damage. Denkovi Assembly Electronics LTD accepts no liability for inclusion or use of Denkovi Assembly Electronics LTD products in such applications and such inclusion or use is at the customer's own risk. Should the customer use Denkovi Assembly Electronics LTD products for such application, the customer shall indemnify and hold Denkovi Assembly Electronics LTD harmless against all claims and damages.

Documents / Resources

	DENKOVI MCP2200 USB 8 Digital Inputs Module [pdf] User Manual MCP2200, USB 8 Digital Inputs Module