



USB Switch

User Manual

Table of Revisions

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tdd.000.058			
Page	1	of	11



Table of Contents:

1	Introduction	3
1.1	Warning Symbols	3
1.2	Mandatory Action Symbols	3
2	Safety Guidelines	3
2.1	Intended Use	3
2.2	Customer Service	5
2.3	Hazards	5
3	Description	5
4	Specifications	5
4.1	Rules and Regulations	5
4.2	Nameplate	5
4.3	Connections and Interfaces	6
4.4	Input	6
4.5	Output	7
4.6	Terminals	7
4.7	Voltage Supply	8
4.8	Data Transmission	8
4.9	Housing	8
4.10	Environmental Conditions	8
4.11	Mass and Weight	8
4.12	USB 3.0 Cable Length	8
4.13	Cable Length of Terminals	9
5	Installation	9
5.1	Installation	9
5.2	Spacing	10
5.3	Power Supply	10
6	Package Contents	10
7	Disposal	11

Figure Legend:

Fig. 1: Warning Symbols
 Fig. 2: Mandatory Action Symbols
 Fig. 3: QR-Code
 Fig. 4: Image of Nameplate
 Fig. 5: Image of Connections
 Fig. 6: Image P1 Connections
 Fig. 7: Image P2 Connections
 Fig. 8: Image P2 Connections
 Fig. 9: Image maximum USB 3.0 Cable Length
 Fig. 10: Image maximum Terminal Cable Length
 Fig. 11: Image Installation on DIN Rail
 Fig. 12: Image Removal from DIN Rail
 Fig. 13: Image Spacing on DIN Rail upright mounting

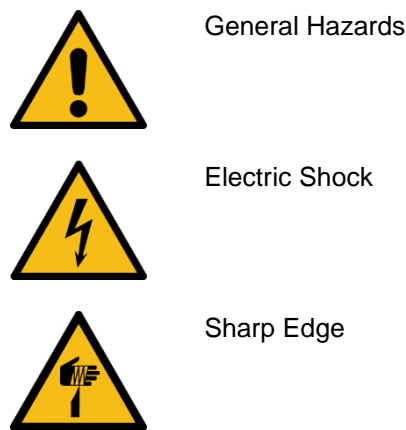
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1 Introduction

This manual concerns information regarding the handling and maintenance of the USB-Switch.

1.1 Warning Symbols



General Hazards

Electric Shock

Sharp Edge

Fig. 1: Warning Symbols

1.2 Mandatory Action Symbols



General Mandatory Action Symbol

Gloves Required

Review Instructions

Fig. 2: Mandatory Action Symbols

2 Saftey Guidelines

2.1 Intended Use

Please read the user manual carefully and completely before using the device for the first time. The device may only be operated by trained personnel. Any damage resulting from failure to observe the user manual instructions is exempt from any liability.



The device may only be used in the manner described in the operating instructions. Using the device in a manner other than that for which it was designed may result in danger and risks personal safety.



Only use the measuring device when environmental conditions (temperature, air humidity, etc.) are within the limit values specified in the instructions. Do not expose the device to extreme temperatures, direct sunlight, extreme humidity, or moisture.



Do not subject the device to shocks or strong vibrations.



The device housing may only be opened by qualified personnel and no technical changes may be made to the device.



Only use the device if it is attached to a DIN rail with the mounting device provided.



The device should only be cleaned with a cloth. Do not use abrasive or solvent-based cleaning agents.



Check the housing of the device for visible damage before use. If there is any visible damage, the device must not be used.



The device may not be used in an explosion-prone atmosphere.



The measuring range specified in the instructions must not be exceeded under any circumstances.



Only connect the device, and all its encompassing interfaces and connection ports, to a low-voltage system.



General knowledge in the field of automation technology and low-current-switching technology is necessary for understanding.



The housing of the device is not UV-resistant. The device must not be installed or used in an area where it will be exposed to sunlight.



If the safety instructions are not observed, the device may be damaged, and the operator may be injured.

We assume no liability for misprints or content errors in these instructions. We expressly refer to our general warranty conditions, which can be found in our General Terms and Conditions. For questions or concerns, please contact TECHDOCK GmbH. The contact details can be found in these instructions.

2.2 Customer Service

TECHDOCK GmbH
Paradiesstrasse 34
CH – 4102 Binningen
E-mail: info@techdock.ch



Fig. 3: QR-Code

2.3 Hazards



Use gloves when attaching the device to, or removing it from, the DIN rail, as cuts and injuries from sharp edges of adjacent parts can occur.



Only install the device when the system / control cabinet is switched off and/or disconnected from the power. An electric shock can be caused by adjacent live parts or devices.

3 Description

The USB Switch is an electronic circuit breaker. The available inputs and outputs can be used via pluggable terminals.



Always store this manual near the device.

4 Specifications

4.1 Rules and Regulations

The USB Switch is a device for audio/video, information, and communication technology in accordance with EN 62368. For a complete overview of the guidelines and standards applied, please consult the declaration of conformity, included in the packaging of every device supplied.



In Switzerland, the device is considered a "special low-voltage product" according to NEV 734.26, Section 2, Article 13, Paragraph 1.

4.2 Nameplate

tdd.000.058			
Page	5	of	11



The following information can be found on the nameplate:



Fig. 4: Image of Nameplate

4.3 Connections and Interfaces

USB 3.0 B	Input
USB 3.0 A	Output
P1.1	5V DC for Input
P1.2	Input
P2.1	5V DC LED-Connector
P2.2	No Function (*)
P2.3	GND LED-Connector

(*) No function for swapping the plugs.

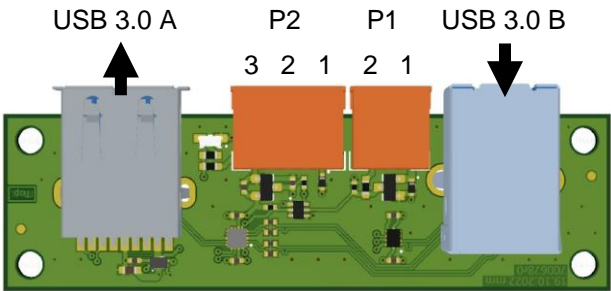


Fig. 5: Image of Connections

4.4 Input

The USB Switch can be turned on or off at Terminal P1 between connections 1 and 2 using a potential-free switch contact.

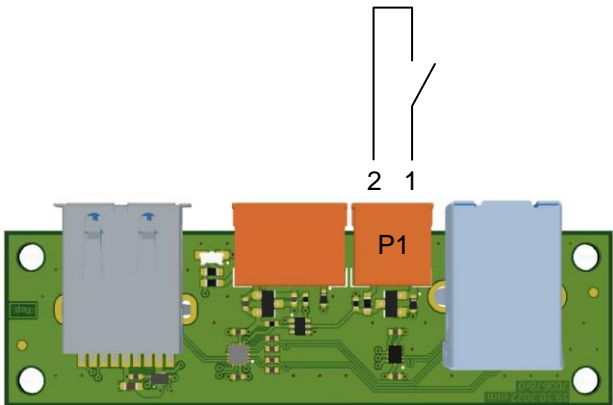


Fig. 6: Image P1 Connections

In the "on" state, USB communication can be established via the USB Switch; in the "off" state, the communication is disconnected.

4.5 Output

An LED can be operated on Terminal P2 between connection 1 and 3, as shown in the following figure. The +5V DC are taken from the USB interface, and the current is limited using a 150 ohm resistor.

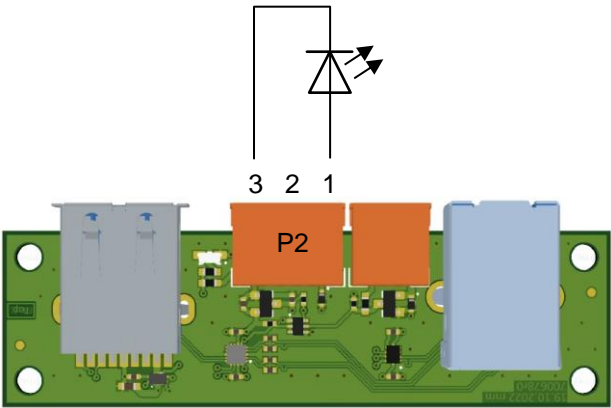


Fig. 7: Image P2 Connections

The 5V DC is always present when the USB Switch is on and USB communication is working.

At Terminal P2, connections 1 and 3, the USB Switch status "on" 0V DC or "off" 5V DC can be connected to a digital input as according to the following figure.

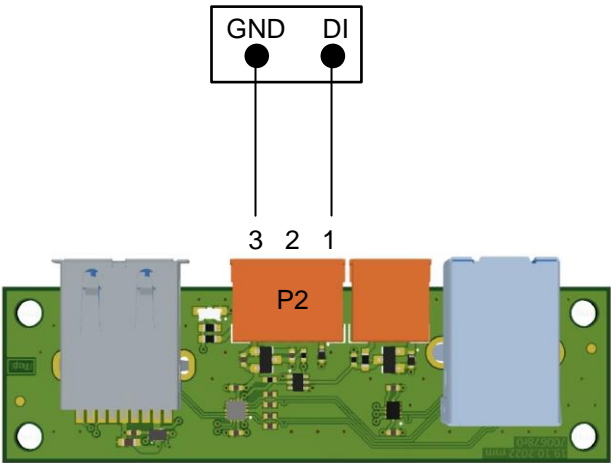


Fig. 8: Image P2 Connections

The connection can be used, for example, to evaluate the digital input of a controller.

4.6 Terminals

The connectors are equipped with spring-loaded terminals, which means that ferrules are not necessary. Fine-wire and unifilar conductors from 0.14mm2 to 1.5mm2 can be used.

4.7 Voltage Supply

USB 3.0 Voltage: 5V DC
USB 3.0 Max. Energy Consumption: 7.5 W

4.8 DataTransmission

Theoretical Data Transfer
Reading: 400 MB/s

Data Transfer achieved in the laboratory
Reading: 384 MB/s



The data rate is always dependent on both terminal devices. The quality and length of the USB cable used can also have a major influence on the data rate, which can vary greatly.

4.9 Housing

The housing fulfills the intrusion protection IP 2XB according to EN 60529.

The housing is manufactured with a 3D printer and has the following material properties:

Color: Black RAL 9005
Material: PLA Pro

4.10 Environmental Conditions

In operation: 0°C to 40 °C, without condensation
In storage: -40 °C to 70 °C, without condensation
In operation altitude: Up to 2000 m above sea level

4.11 Mass and Weight

Length: 75 mm
Width: 26 mm
Height: 22 mm
Weight: 35 gr.

4.12 USB 3.0 Cable Length

The maximum cable length of 1m from terminal device to terminal device applies, as shown in the figure below.

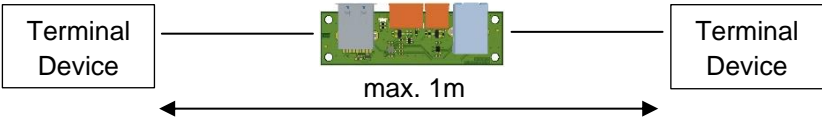


Fig. 7: Image maximum USB 3.0 Cable Length

If the maximum cable length is exceeded, the communication function can be impaired by the voltage drop. In order to ensure the function of the USB Switch, it is mandatory to use USB 3.0 type cables.

4.13 Cable Length of Terminals

The maximum cable length of 1m from the USB Switch to the Terminal device applies, as shown in the figure below.

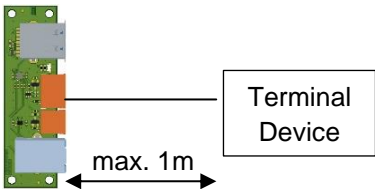


Fig. 8: Image maximum Terminal Cable Length

If the maximum cable length is exceeded, the function of the connections can be impaired by the voltage drop.

5 Installation

5.1 Installation

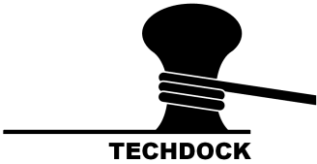
The device is equipped with a mounting device for 35mm DIN rails according to DIN EN 50022. The metal housing is equipped with the appropriate threads so that the DIN rail mounting device can be attached on three sides.



Only install the device when the system / control cabinet is switched off and/or disconnected from the power supply. An electric shock can be caused by live adjacent parts or devices.



Use gloves when attaching the device to the DIN rail and when removing it. Cuts and injuries from sharp edges of adjacent parts can occur.



Installation:

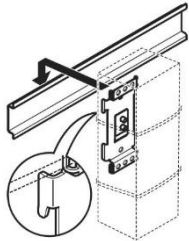


Fig. 11: Image Installation on DIN Rail

Removal:

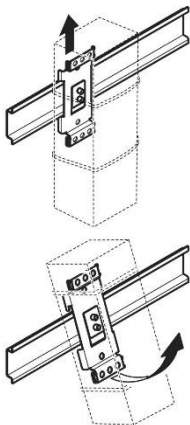


Fig. 12: Image Removal from DIN Rail

5.2 Spacing

The distances $a = 10\text{ mm}$ / $b = 50\text{ mm}$ must be observed when installing neighboring parts on the DIN rail.

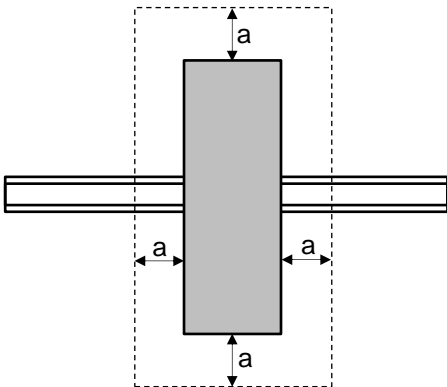


Fig. 9: Image Spacing on DIN Rail upright mounting

5.3 Power Supply

The power supply from the USB Switch is taken from the Terminal device connected to the USB 3.0 B socket.



CH: The limit values for low-voltage systems are $\leq 2\text{ A}$ **and** $<120\text{V DC}$

6 Package Contents

1 pc. USB Switch

tdd.000.058			
Page	10	of	11



- 1 pc. DIN Rail Adapter
- 1 pc. 2-Pin Plug
- 1 pc. 3-Pin Plug

7 Disposal

We accept the return of our devices. They are either recycled by us or disposed of by a recycling company in accordance with legal requirements. Alternatively, old devices may also be disposed of at designated collection points.