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# xTDC4-PCIe

## xTDC4-PCIe
## User Guide

www.cronologic.de

# Contents

The PCIe-to-USB4 adapter offers the ability to connect our time-to-digital converters (TDCs), that is,

- TimeTagger
- xTDC4-PCIe
- xHPTDC8-PCIe

to any USB4/Thunderbolt port.

This user guide provides an overview of the adapter. The APIs and interfaces of the respective TDC-card are unchanged, information of which can be found online at www.cronologic.de/support/downloads.

This user guide is available at readthedoc and at www.docs.cronologic.de as HTML and as PDF download.

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**Note:** This user guide is under active development.

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# 1 Hardware

The PCIe-to-USB4 adapter enables direct connection of our time-to-digital converters via USB4/Thunderbolt while keeping the same Driver Programming API for a connection via PCIe.

Figure 1 gives an overview of the adapter and Tab. 1 gives an overview of the interface.

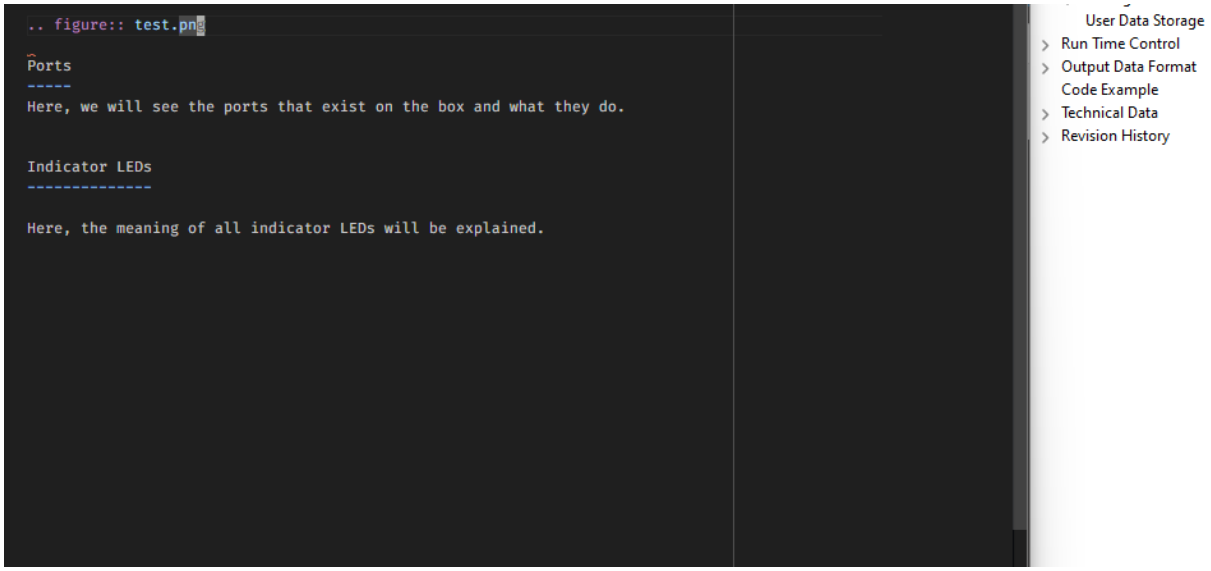


Fig. 1:: Dummy picture. For a description of the labels, see Tab. 1.

Tab. 1:: Interface of the Thunderbolt2PCIe adapter.

| Label | Description |
|---|---|
| (1) | Input for external power supply |
| (2) | USB-C / Thunderbolt connector |
| (3) | Status LED external power supply |
| (4) | Status LED for power supply over USB-C |

## 1.1 Section

### 1.1.1 Subsection

#### *Subsubsection*

**Paragraph**

# 2 Requirements

What is necessary to operate the device?

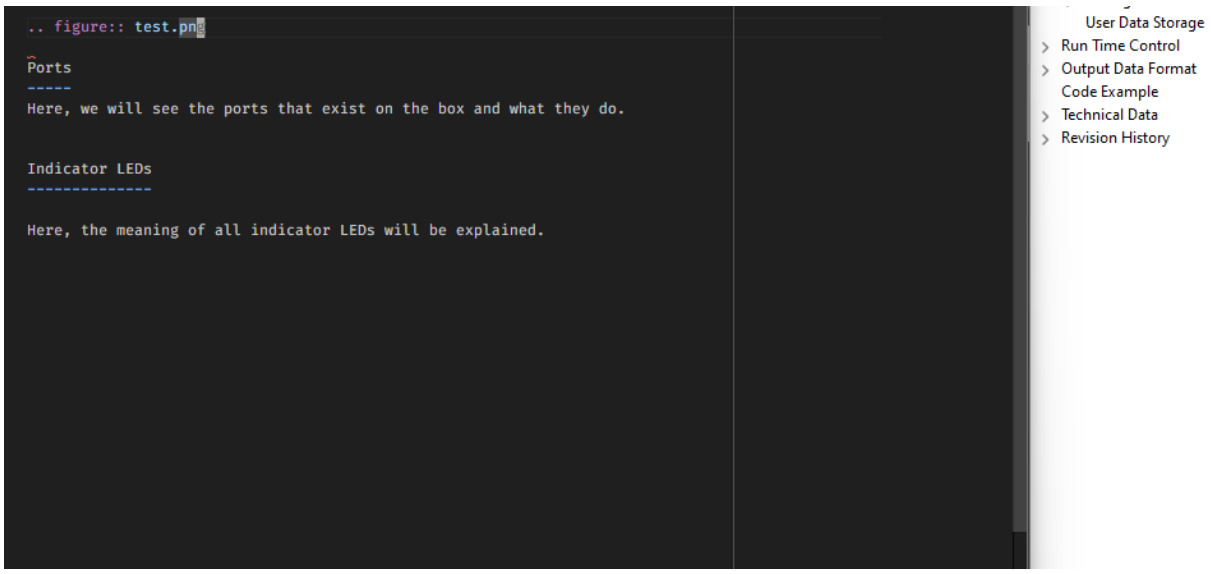


Fig. 2:: Here is my captions.

# 3 Installation

Connect the TDC card to the PCIe bus on the Thunderbolt2PCIe-Crate. Secure the card via the supplied screws at **Position (5)**. Connect the Thunderbolt2PCIe adapter using an appropriate Thunderbolt cable.

The Thunderbolt2PCIe-Crate may be directly supplied with power by the USB-C port it is connected to. If the power output of the connected board is sufficient, the **LED (4)** will light up green.

# 4 Status LEDs

**LEDs (3)** and **(4)** indicate the voltage supplied by an external power supply and via the USB-C port itself, respectively, as is described in Tabs. 2 and 3.

Tab. 2:: LED (3)

| Color | Voltage supplied by external power supply |
|---|---|
| red | $>$ 11.3 V |
| green | $<$ 11.3 V |

Tab. 3:: LED (4)

| Color | Voltage supplied by USB-C port |
|---|---|
| gree | $>$ 8 V |
| red | $<$ 8 V (insufficient) |