

# TICRO 100

IEEE 1588/PTP Time Converter



## PTP conversion to multiple time codes

Integrate non-PTP devices easily into IEEE 1588/PTP infrastructures

## Programmable time code outputs

Freely assign different time codes to coaxial, optocoupler and optical outputs

## High stability internal oscillator

Feel safe with guaranteed time accuracy in case of PTP signal loss or network failures

## Freely configurable trigger times

Trigger measurements at exactly the same point of time at different locations

## Secure web interface

Enjoy computer platform independent control via fiber or copper Ethernet

## Industry hardened design

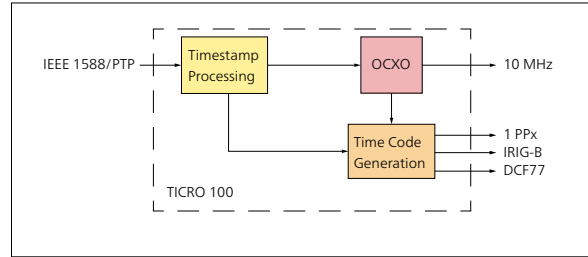
Operate TICRO 100 in industrial environments such as IEC 61850 substations



# IEEE 1588/PTP Time Converter

## Time Conversion

The TICRO 100 is a Precision Time Protocol (PTP) time converter that allows you to derive a high variety of time codes from IEEE 1588/PTP packages received by Ethernet. This enables you to easily synchronize non-PTP equipment to the PTP Grandmaster of an IEEE 1588/PTP infrastructure.



Simply assign the time code or time reference signal required by your device to an optical, coaxial or optocoupler output using TICRO 100's web interface.

## Hold Over Functionality

Due to its internal high stability oven controlled oscillator (OCXO), TICRO 100 will continue to provide your equipment with accurate time synchronization signals in case of PTP signal loss or when the Ethernet connection to the PTP grandmaster clock should be interrupted.

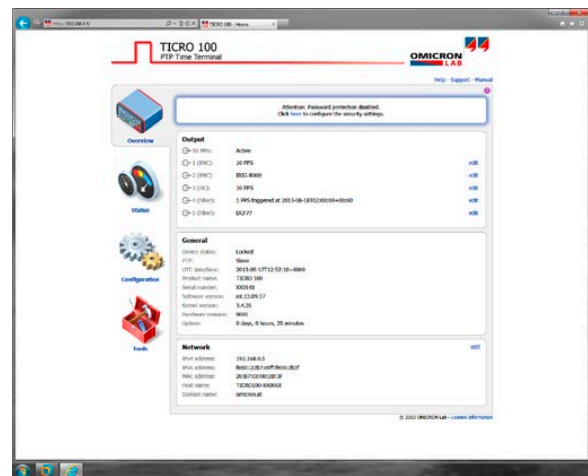
## Flexible Power Management

Depending on your operational environment, the TICRO 100 can either be powered over Ethernet (PoE) or supplied by any DC voltage in the range from 18 to 57 V. If you are using an external DC voltage you can use the TICRO 100 to power other devices over Ethernet - this becomes especially handy if you operate the TICRO 100 with OMICRON Lab's antenna-integrated PTP Grandmaster Clock OTMC 100p.

## Setup & Control

The TICRO 100 is equipped with an integrated web server which gives you access to all functions and settings via a web browser. The intuitive navigation concept allows you to control TICRO 100 via all kinds of computers including tablets.

As soon as the TICRO 100 is connected to your network, it either acquires its IP address from your network's DHCP server or selects an Auto IP address. In a Microsoft Windows® environment, you can use the OMICRON Device Link to easily locate the TICRO 100 and to configure network settings.

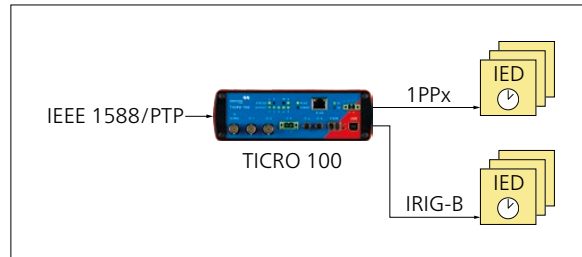


Your TICRO 100 can be secured against unauthorized access by using the encrypted HTTPS protocol with your own SSL certificate and password protection.

# Use Cases and Applications

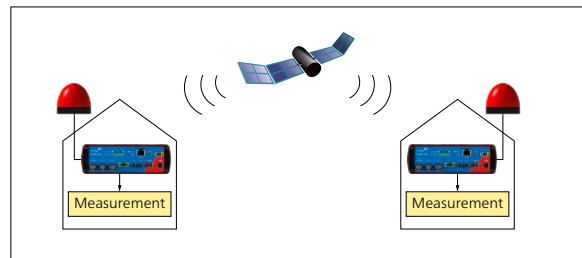
## Make Your Equipment PTP Capable

Forget about distributing time codes over separate networks. With the TICRO 100, you can generate the required time codes right where you need them – directly at your equipment. Several IRIG-B time codes, DCF 77 and various pulse per second signals ensure the time synchronization of your measurement equipment.



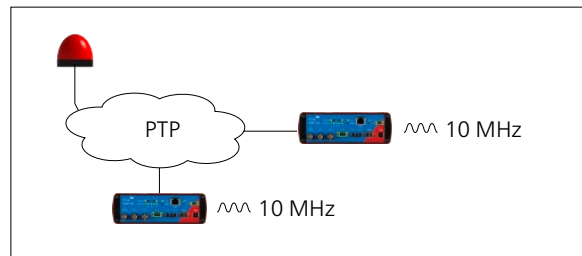
## Synchronize Measurements

With the programmable trigger functionality, you can start measurements at different locations at exactly the same time. Simply program the absolute time of the first trigger pulse, define the period of the succeeding pulses and you are ready to go.



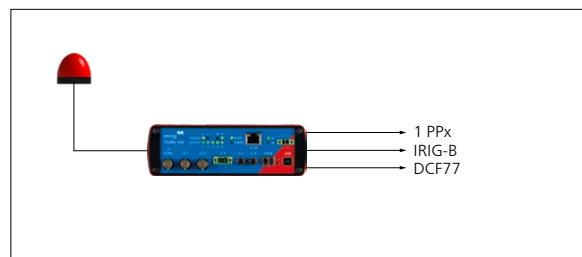
## Distribute Reference Frequencies

Wherever you have access to an IEEE 1588 compliant Ethernet connection, TICRO 100 provides you with a precise 10 MHz reference frequency signal. Simply lock your frequency counters, spectrum analyzers, or any other measurement equipment to the TICRO 100.



## Portable Time Code Generation

In combination with OMICRON Lab's antenna-integrated PTP Grandmaster Clock OTMC 100p, the TICRO 100 becomes a fully portable time synchronization device. This allows you to perform time synchronized measurements in the field quickly, with a very low setup time.



## Flexible Mounting

You can either use TICRO 100 as a tabletop device or mount it on any DIN Rail by simply adding the provided mounting bracket. Redundant power connectors at the front and back panel ensure full accessibility independent from the chosen use case.

# Technical Data

## Timing Performance

- PTP time stamping resolution: 8 ns
- Typical locked after approximately 30 seconds (overall accuracy better than 200 ns)
- Holdover drift in 24 hours at constant temperature, after 48 hours of operation: With high precision oscillator OCXO-25: < 25  $\mu$ s (measured value < 4 $\mu$ s)

## Timing Protocol

- PTP in accordance with IEEE 1588–2008

## PTP Profiles

- IEEE 1588 default profiles
- Power profile according to IEEE C37.238-2011 (IEEE profile for use of IEEE 1588-2008 Precision Time Protocol in power systems applications)
- Power profile IEEE C37.238-2017 (IEEE profile for use of IEEE 1588-2008 Precision Time Protocol in power systems applications)
- IEC/IEEE 61850-9-3:2016

## Network Interfaces

- 10 Base-T / 100 Base-TX Ethernet (RJ45)
- 100 Base-FX (LC connector, multimode fiber, full duplex)
- USB 2.0 (Type B)

## Output Signals

- PPS: 1, 10, 100 or 1000 PPS (TTL)
- PPX: 1 PPS ... 1 Pulse per day (TTL)
- Trigger (trigger pulse at a defined absolute time, configurable succeeding PPX pulses)
- IRIG-B (TTL and modulated, 1 kHz carrier)
- DCF77 (unmodulated)
- 10 MHz (sine wave, 4 dBm  $\pm$ 2 dB)

## Power Supply

- Power over Ethernet Class 3 powered device in accordance with IEEE 802.3af
- DC power supply: +18 ... +57 VDC (Front panel: terminal block, back panel: barrel connector)
- Max. power consumption < 13 W

## Output Connectors

- Three BNC connectors (50  $\Omega$ )
- Two optical connectors (ST, 820nm)
- One optocoupler output (terminal block)

## Dimensions

- (without connectors and DIN-Rail clip)
- H x W x D: 54.6 x 171.6 x 121 mm / 2.15" x 6.75" x 4.76"

## Weight

- < 750 g / < 1.65 lbs

## Temperature Ranges

- Operating temperature range: - 20  $^{\circ}$ C ... + 50  $^{\circ}$ C / - 4  $^{\circ}$ F ... + 122  $^{\circ}$ F
- Storage temperature range: - 40  $^{\circ}$ C ... + 85  $^{\circ}$ C / - 40  $^{\circ}$ F ... + 185  $^{\circ}$ F

## Safety

- IEC 60950
- IEC 61010
- IEC 60255

# Order Information

## TICRO 100

IEEE 1588/PTP Time Converter

Order number:

OL000311 (with OCXO-25)



## Accessories delivered with TICRO 100

- DC power supply
- DIN-Rail clip, mounting brackets
- Connectors for terminal blocks
- Quick Start Guide
- User manual & software on CD-ROM