TICRO 100

IEEE 1588/PTP Time Converter

PTP conversion to multiple time codes
Integrate non-PTP devices easily into
IEEE 1588/PTP infrastructures

Freely configurable trigger times
Trigger measurements at exactly the same point
of time at different locations

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

Secure web interface
Enjoy computer platform independent
control via fiber or copper Ethernet

High stability internal oscillator
Feel safe with guaranteed time accuracy in case
of PTP signal loss or network failures

Industry hardened design
Operate TICRO 100 in industrial
environments such as IEC 61850 substations

OMICRON LAB

Smart Measurement Solutions®

IEEE 1588/PTP Time Converter

Time Conversion

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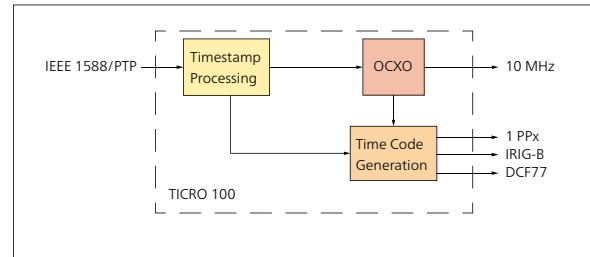
Simply assign the time code or time reference signal required by your device to an optical, coaxial or optocoupler output using TICRO 100's web interface.

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.

Depending on your hold over requirements you can either select the standard oscillator (OCXO-100) or the high precision oscillator option (OCXO-25).

Flexible Power Management

Depending on your operational environment 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 TICRO 100 to power other devices over Ethernet - this becomes especially handy if you operate TICRO 100 with OMICRON Lab's antenna-integrated PTP Grandmaster Clock OTMC 100.

Setup & Control

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 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 Browser to easily locate TICRO 100 and to configure network settings.
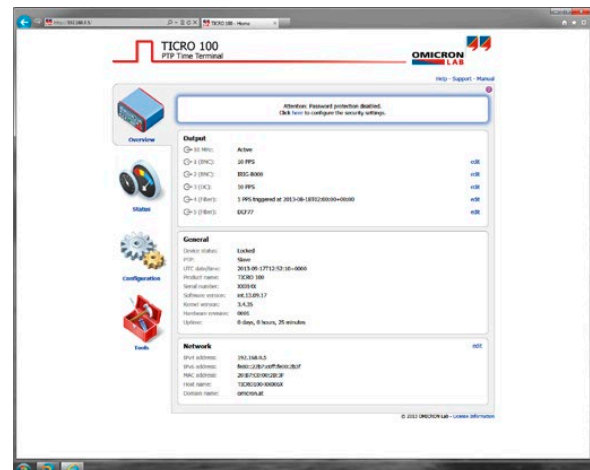
Your TICRO 100 can be secured against unauthorized access by using the encrypted HTTPS protocol with your own SSL certificate and password protection.

*Smart Measurement Solutions*®

Use Cases and Applications

Make Your Equipment PTP Capable

Forget about distributing time codes over separate networks. With 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.
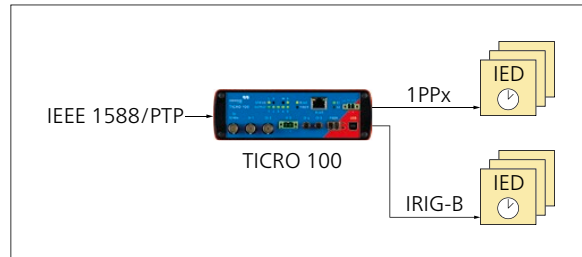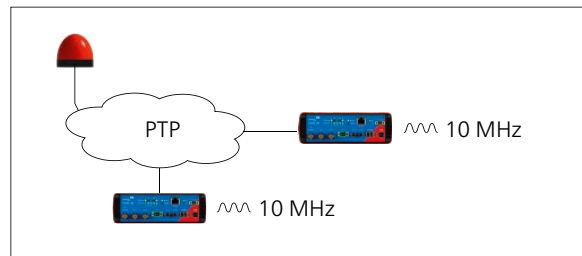
Synchronize Measurements

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.
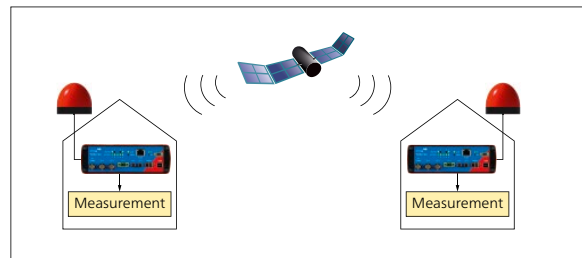
Distribute Reference Frequencies

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 TICRO 100.

Portable Time Code Generation

In combination with OMICRON Lab's antenna-integrated PTP Grandmaster Clock OTMC 100, 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.
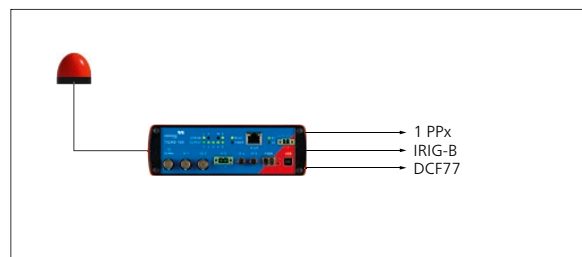
Flexible Mounting

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 Accuracy
- PTP time stamping resolution: 8 ns
- Holdover drift in 24 hours at constant temperature, after 48 hours of operation:
  Standard oscillator with OCXO-100: < 100 μs
  High precision oscillator with OCXO-25: < 25 μs

Timing Protocol
- PTP in accordance with IEEE 1588–2008

PTP Profiles
- IEEE 1588 default profiles
- IEEE C37.238-2011
  "IEEE standard profile for use of IEEE 1588 precision time protocol in power system applications"

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 ±2 dB)

Output Connectors
- Three BNC connectors (50 Ω)
- Two optical connectors (ST, 820nm)
- One optocoupler output (terminal block)

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

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 °C … + 50 °C / - 4 °F … + 122 °F
- Storage temperature range:
  - 40 °C … + 85 °C / - 40 °F … + 185 °F

Safety
- IEC 60950
- IEC 61010
- IEC 60255

Ordering Information

TICRO 100
IEEE 1588/PTP Time Converter
Order numbers:
OL000310 (with OCXO-100)
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