

# OTMC 100

Antenna-integrated PTP Grandmaster Clock



## GPS Antenna, GPS Receiver and Grandmaster Clock combined in a compact weatherproof outdoor unit

No in-house rack space required  
No RF cabling required

## Multi-protocol support

One solution for PTP and NTP timing networks

## Secure web interface

Easy setup & control  
Computer platform independent

## Connection via one single Ethernet cable

Automatic cable length compensation  
Up to 100 m cable length between nodes supported

## Extremely low power consumption

Low cost of operation

## Powered over Ethernet

No additional power supply needed  
Easy installation



# OTMC 100 Antenna-integrated PTP Grandmaster Clock

## System Architecture

The OTMC 100 Antenna-integrated PTP Grandmaster Clock offers you a simple and effective solution to time-synchronize measurement equipment, computers and other intelligent devices in Ethernet based networks. It enables you to utilize the IEEE 1588 Precision Time Protocol (PTP), which is the most accurate and flexible network-based time synchronization method on the market, for your measurement, monitoring or protection application. Since the OTMC 100 can additionally work as a Network Time Protocol (NTP) Server, non-PTP compliant devices in your network can also be synchronized.

The OTMC 100's unique design, which combines the GPS Antenna, the GPS Receiver and the Grandmaster Clock itself in one compact weatherproof housing, allows you to connect it directly to your network without the need of any coaxial RF cabling. Since all time reference functionalities are combined in the outdoor mounted device, you do not need any additional in-house rack space in your server room.

Due to its active GPS Antenna and the super-sensitive 12-channel GPS receiver, the OTMC series clocks provide you with reliable time synchronization data even under difficult reception conditions. The integrated PTP Grandmaster Clock runs a fully embedded PTP protocol stack - so all you need to do, is to setup the clock via its platform-independent web interface and you are ready to synchronize all PTP capable devices in your network.

The OTMC 100 is powered over Ethernet (PoE). Due to its extremely low power consumption, your cost of operation is significantly lower than it would be for a standard rack mounted device.

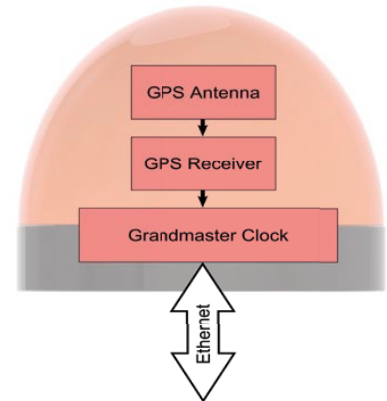
## Setup & Control

The OTMC 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 access the OTMC 100 via all kinds of computers including TabletPCs with touchscreen control.

As soon as the OTMC 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 Windows® environment, you can use the OMICRON Device Browser to easily locate and configure the network settings of the OTMC 100.

You can secure your OTMC 100 against unauthorized access by using the encrypted HTTPS protocol with your own SSL certificate and password protection.

For setting up more than one OTMC 100, you easily can store the configuration of an OTMC 100 into an XML file and deploy it to other OTMC 100s.



OTMC 100 - Block Diagram



OTMC 100 - Web Interface

## Mounting & Installation

The OTMC 100 comes with a mast mounting kit that allows you to mount it to any mast with a diameter from 25 mm to 70 mm.

Since all signals to control and power the OTMC 100, as well as the time synchronization packets, share the same Ethernet cable, you have to install only one cable.

The cable length to your closest network node can be up to 100 m for standard Ethernet infrastructures. By using additional optical Ethernet equipment, you can even extend this distance to several kilometers.

The OTMC 100 series was designed for outdoor mounting in lightning protected areas, so that, if you obey all lightning protection standards, only a suitable surge protection device will be required in most cases to protect your network installation.



OTMC 100 - Mounting Example

## Models & Application

Depending on your application's requirements, you can choose from the following OTMC 100 models:

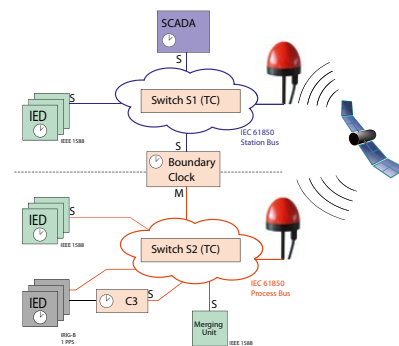
### OTMC 100p

The OTMC 100p is especially designed for use in the electric power industry. Besides the IEEE 1588 default profile, the OTMC 100p fully supports the Power Profile according to IEEE C37.238-2011 and the profile for power utility automation IEC/IEEE 61850-9-3:2016. Therefore it's possible to securely operate the OTMC 100p in IEC 61850 network infrastructures. Further on you can trust in the interoperability with all PTP compliant IEDs in your power utility.



### OTMC 100i

With the OTMC 100i, you are all-set for industrial applications such as the synchronization of automated test equipment or the time stamping of measurement data. The IEEE 1588 default profile ensures that you can quickly integrate your OTMC 100 with all PTP capable measurement equipment.



OTMC 100p - Application Example in a IEC 61850 Substation

## Why IEEE 1588 - PTP?

The IEEE 1588-2008 Precision Time Protocol defines a comprehensive time synchronization concept, which allows you to build tailored solutions for your application. Automatic methods ensure that all propagation delays in your network are automatically compensated. Further on, the "Best Master Clock Algorithm" ensures that always the best clock in the network is used as the reference for all other devices in the network.

Thus, the IEEE 1588 Precision Time Protocol is the perfect choice for computer network based time synchronization.

# Technical Data

## Timing Accuracy

- $\pm 100$  ns to reference time (UTC)

## Supported Timing Protocols

- PTP according to IEEE 1588–2008
- NTP V4 according to RFC 5905

## Supported PTP Profiles

- IEEE 1588 default profile (OTMC 100*i* & OTMC 100*p*)
- IEEE C37.238-2011 IEEE standard profile for use of IEEE 1588 precision time protocol in power system applications (OTMC 100*p*)
- IEC/IEEE 61850-9-3:2016 (OTMC 100*p*)

## GPS Performance

- 12 channel GPS receiver
- Frequency: 1575.42 MHz, L1 Band

## Interface

- 10 Base-T / 100 Base-TX Ethernet
- Waterproof connector according to IEC 61076-3-106 (Variant 4)

## Power Supply

- Power over Ethernet Class 1 powered device according to IEEE 802.3af
- Power consumption < 2W

## Temperature Ranges

- Operating temperature range:  
- 40°C ... + 70°C / - 40°F ... + 158°F
- Storage temperature range:  
- 40°C ... + 85°C / - 40°F ... + 185°F

## Dimensions

(without connector and mounting kit)

- Diameter: 115.5 mm / 4.55"
- Height: 106.2 mm / 4.17"

## Weight

- < 500 g / < 1.1 lbs (OTMC 100 without mounting kit)
- < 2100 g / < 4.6 lbs (complete set)

## Safety

- IEC 60950-1:2005 2 Ed. +A1:2009
- IEC 60950-22:2005

# Order Information



## OTMC 100*p*

Antenna-integrated PTP Grandmaster Clock for power systems  
Order Number: OL000300



## OTMC 100*i*

Antenna-integrated PTP Grandmaster Clock for industrial applications  
Order Number: OL000301

## Delivery includes

- OTMC 100*p* or OTMC 100*i* Antenna-integrated PTP Grandmaster Clock
- Mast Mounting Kit for mast diameters from 25 mm to 70 mm
- Waterproof Ethernet Connector according to IEC 61076-3-106 (Variant 4)
- Patch Cable
- Quick Start Guide
- User Manual & Software on CD-ROM



OTMC 100 Series with Tablet PC (PC not included)

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