
**Meinberg Radio Clocks**
Lange Wand 9
31812 Bad Pyrmont, Germany
Phone: +49 (5281) 9309-0
Fax: +49 (5281) 9309-30
https://www.meinbergglobal.com
info@meinberg.de

# SyncBox/PTP: PTP/IEEE 1588 Ordinary Clock

The Meinberg SyncBox/PTP simplifies a migration towards PTP/IEEE 1588 by providing a wide range of legacy time synchronization outputs. It is synchronized by a PTP Grandmaster and can be used as a time source for equipment that requires IRIG, PPS, serial time string or (S)NTP time synchroization.

## Important Note

This product is no longer available and may have been replaced by a newer product. We will, of course, continue to provide support for units that have already been purchased and are still in use. Please contact our [1]Sales Department for further details.

## Key Features

- IEEE 1588 (V1) Compatible Ordinary Clock
- Synchronization of NTP and SNTP compatible clients
- Web-based status and configuration interface and console-based graphical configuration utility
- Supported net protocols: IPv4, IPv6, PTP/IEEE 1588-2002, NTP, SNTP, DAYTIME, DHCP, HTTP, HTTPS, FTP, SAMBA, SFTP, SSH, SCP, SYSLOG, SNMP, TIME, TELNET, W32TIME
- Alert-Notification system of status change by Email, WinMail, SNMP or an external connected display
- Full support for SNMP v1, v2c und v3 with dedicated SNMP daemon for configuring/status monitoring of system using SNMP traps
- USB Port for installing firmware updates, locking frontpanel menu access and backup/restore of configuration and log files
- PPS, PPM and 10MHz output
- Generates a variety of amplitude-modulated (AM) and pulse-width modulated (DCLS) IRIG time code signal formats

## Description

The GNU/Linux operating system of the SyncBox/PTP SBC (Single Board Computer) has been optimized to ensure a high level of security and reliability.The configuration of the system can be done by using a standard web browser to access the extensive but straightforward html interface. Alternatively a text based and menu driven setup utility can be started from the shell prompt after logging into the unit via Telnet or SSH.

The security-related features of  the SyncBox satisfy highest demands. The time synchronization data can be reliably signed and secured by symmetric keys (MD5) and the NTP autokey procedures. This protects the clients against manipulated time and man-in-the-middle attacks and allows them to verify that the NTP packets they received were send by the Syncbox.

Additionally the whole Syncbox configuration can be done by using encrypted channels (e.g. SSH, HTTPS or SNMPv3). Every unused/unneeded protocol can be disabled in order to reduce possible points of attack.

In order to support network management systems the SyncBox/PTP offers an extensive SNMP interface, which can be accessed by SNMP V1, V2.c and V3. It allows the monitoring of all relevant system parameters (including operating system parameters, network interface statistics, detailed NTP status information as well as the complete system configuration) and can be used to alter the SyncBox configuration via SNMP set commands, too.

The PTP/IEEE 1588 implementation of the SyncBox is fully compliant to the IEEE 1588 V1 standard and therefore provides PTP management messages as well.

The SyncBox can be deployed in IPv6 networks, the NTP time synchronization as well as the configuration interfaces (Web-based, SSH and SNMP) comes with IPv6 support. You can assign several IPv6 addresses and the system supports automatic configuration by IPv6 autoconf.

The SyncBox/PTP is equipped with a high precision oscillator "OCXO HQ" (look at oscillator options for details).

## Characteristics

| | |
|---|---|
| **Status Indicators** | 7 Status LEDs:<br>* Power<br>* System State (Ready)<br>* Outputs enabled<br>* PTP packet sent<br>* PTP packet received<br>* Link 100Mbit/s<br>* Link 10MBit/s |
| **Control Elements** | Serial Terminal Interface (RS232) for initial configuration, Status LEDs |
| **Frequency Outputs** | 10 MHz via BNC-Connector TTL 50 Ohm Accuracy is depending on oscillator (standard: OCXO HQ), see [2]oscillator list |
| **Pulse Outputs** | Pulse per second (PPS) and pulse per minute (PPM) via female BNC connectors, TTL into 50 Ohm, pulse width: 200 msec, active high |
| **Accuracy of Pulse Outputs** | +/- 100 ns (relative to the used IEEE 1588 Grandmaster Clock, after initial synchronization phase) |
| **Interface** | Single serial RS-232 interface |
| **PWM Time Code Output** | DCLS, TTL into 50 Ohm via female BNC connector, active high |
| **AM Time Code Output** | IRIG AM sine wave signal via female BNC connector:<br>3Vpp (MARK), 1Vpp (SPACE) into 50 Ohm |
| **Supported Timecode Formats** | **IRIG B002:** 100pps, DCLS signal, no carrier, BCD time of year<br>**IRIG B122:** 100pps, AM sine wave signal, 1 kHz carrier, BCD time of year<br>**IRIG B003:** 100pps, DCLS signal, no carrier, BCD time of year, SBS time of day<br>**IRIG B123:** 100pps, AM sine wave signal, 1kHz carrier, BCD time of year, SBS time of day<br>**IEEE1344:** Code according to IEEE1344-1995, 100pps, AM sine wave signal, 1kHz carrier, BCD time of year, SBS time of day, IEEE1344 expansion for date, time zone, daylight saving and leap second in Control Funktions Segment<br>**AFNOR:** Code according to NFS-87500, 100pps, AM sine wave signal, 1kHz carrier, BCD time of year, complete date, SBS time of day |
| **Network Interface** | 2x 10/100base-T Ethernet (one with PTP/IEEE 1588 support) |
| **Universal Serial Bus (USB) Ports** | 1x USB port on front panel for:<br>- installing firmware upgrades<br>- performing backups and restoration of configuration files<br>- copying security keys<br>- locking & unlocking front buttons |

| | |
|---|---|
| **Power Consumption** | 25W |
| **Operating Voltage** | 85-264VAC (50/60Hz) |
| **Form Factor** | Fischer aluminium housing for DIN mounting rail (Height: 120mm, Width:135mm, Depth: 200mm) |
| **CPU** | * AMD Geode |
| **Operating System of the SBC** | Linux with nano kernel (incl. PPSkit) |
| **Network Protocols OSI Layer 4 (Transport Layer)** | TCP, UDP |
| **Network Protocols OSI Layer 7 (Application Layer)** | Telnet, FTP, SSH (including SFTP, SCP), HTTP, HTTPS, syslog, SNMP |
| **Internet Protocol (IP)** | IPv4, IPv6 |
| **Network Autoconfiguration Support** | IPv4: Dynamic Host Configuration Protocol - DHCP (RFC 2131)<br>IPv6: Dynamic Host Configuration Protocol - DHCPv6 (RFC 3315) and Autoconfiguration Networking - AUTOCONF (RFC 2462) |
| **Network Time Protocol (NTP)** | NTP v2 (RFC 1119), NTP v3 (RFC 1305), NTP v4 (RFC 5905)<br>SNTP v3 (RFC 1769), SNTP v4 (RFC 4330)<br>MD5 Authentication and Autokey Key Management |
| **Precision Time Protocol (IEEE 1588)** | PTP/ IEEE 1588-2002 including PTP Management Messages for monitoring and configuration |
| **Time Protocol (TIME)** | Time Protocol (RFC 868) |
| **IEC 61850** | Synchronization of IEC 61850-compliant devices using SNTP |
| **Hypertext Transfer Protocol (HTTP)** | HTTP/HTTPS (RC 2616) |
| **Secure Shell (SSH)** | SSH v1.3, SSH v1.5, SSH v2 (OpenSSH) |
| **Telnet** | Telnet (RFC 854-RFC 861) |
| **Simple Network Management Protocol (SNMP)** | SNMPv1 (RFC 1157), SNMPv2c (RFC 1901-1908), SNMP v3 (RFC 3411-3418) |
| **Supported Temperature** | Operational: 0 - 50 °C (32 - 122 °F)<br>Storage: -20 - 70 °C (-4 - 158 °F) |

| | |
|---|---|
| **Supported Humidity** | Max. 85 % (non-condensing) at 40 °C |
| **Contents of Shipment** | Time Server, power cable and a USB storage device with Quick-Start Guide and a detailed reference manual as PDF file in the "Manual" folder. |
| **Technical Support** | Meinberg offers free lifetime technical support via telephone or e-mail. |
| **Warranty** | Three-year warranty |
| **Firmware Updates** | Firmware is field-upgradeable, updates can be installed directly from the unit or via a remote network connection. Software updates are provided free of charge for the lifetime of your Meinberg product. |
| **RoHS Status of Product** | This product is fully RoHS-compliant. |
| **WEEE Status of Product** | This product is handled as a B2B (Business to Business) category product. To ensure that the product is disposed of in a WEEE-compliant fashion, it can be returned to the manufacturer. Any transportation expenses for returning this product (at end-of-life) must be covered by the end user, while Meinberg will bear the costs for the waste disposal itself. |

**Manual**

There is no online manual available for this product.: [3]Contact us

**Links:**

[1] mailto:sales@meinberg.de
[2] https://www.meinbergglobal.com/english/specs/gpsopt.htm
[3] mailto:info@meinberg.de