

OMICRON



CMGPS 588

User Manual



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Preface

This user manual provides information about the *CMGPS 588* synchronization unit, its possible fields of application and how to install and operate it.

Following the instructions given in this user manual will help you avoid danger, repair costs and down time, and help maintain the reliability and life of the *CMGPS 588*.

In addition to the user manual, the applicable safety regulations in the country and at the site of operation as well as the usual technical procedures for safe and competent work should be observed.

This user manual should always be available at the site where the *CMGPS 588* synchronization unit is used. It should be read by all personnel operating the synchronization unit.



This user manual describes the *CMGPS 588* synchronization unit hardware. In order to get familiar with the OMICRON software used to control and configure the time synchronization with the *CMGPS 588*, please refer to the corresponding software manual and/or help system.

Safety Requirements

Before operating the *CMGPS 588*, carefully read the following general safety instructions.

Only operate the *CMGPS 588* after you have read this manual and fully understood the instructions herein. The *CMGPS 588* and the CMC test sets may only be operated by trained personnel. Any maloperation can result in damage to property or persons.

Rules for Use

- The *CMGPS 588* may only be used in a safe technical condition taking into account its defined purpose, safety requirements and possible risks as well as the operating instructions given in this user manual!
- The *CMGPS 588* is exclusively intended for the application areas specified in chapter [Introduction and Designated Use](#) on page 11. The manufacturer or the distributors are not liable for damage resulting from unintended usage. The user alone assumes all responsibility and risks.
- The instructions provided in this user manual are considered part of the rules governing proper usage.
- Do not open the *CMGPS 588*! Opening the device invalidates all warranty claims!
- Only use the original Ethernet cables supplied on delivery or available as accessory from OMICRON (see chapter [Scope Of Delivery, Ordering Information, Accessories](#) on page 13 for more information).
- Make sure that the RJ45 Ethernet socket of the *CMGPS 588* is sealed with the protective cap if no Ethernet cable is connected.

Orderly Practices and Procedures

- This user manual (or the PDF manual installed to your computer with the controlling OMICRON software) should always be available on the site where the *CMGPS 588* is used.

- Personnel assigned to using the *CMGPS 588* must have read this user manual and fully understood the instructions herein.
- Do not carry out any modifications at the *CMGPS 588*.

Operator Qualifications

- Testing with the *CMGPS 588* and CMC test sets should only be carried out by authorized and qualified personnel.
- Personnel receiving training, instruction, direction, or education on testing with the *CMGPS 588* and CMC test sets should remain under the constant supervision of an experienced operator while working with the equipment.

Safe Operation Procedures

- The *CMGPS 588* is to be set into operation in accordance with the information provided in chapter [Installation](#) on page 17.
- Do not position the *CMGPS 588* in the vicinity of flashover-endangered spots.
- Do not use the *CMGPS 588* in case of upcoming thunderstorms! In case of an imminent thunderstorm, immediately disconnect the *CMGPS 588* and the Ethernet cables and remove them to indoors.
- The *CMGPS 588* is a SELV device (Safety Extra Low Voltage) which is supplied with power by Power over Ethernet (PoE according to IEEE 802.3af). It may only be connected to the Ethernet network ports of OMICRON CMC test sets, PoE power supplies or network switches providing PoE.

1 Introduction & Designated Use

The *CMGPS 588* synchronization unit is an antenna-integrated GPS controlled time reference (PTP grandmaster clock according to IEEE 1588-2008 and IEEE C37.238-2011) to either

- control **one** OMICRON CMC test set at a predetermined point in time (triggering the starting point of a test process) or
- to synchronize the starting point of a test process of **two or more** OMICRON CMC test sets.

The *CMGPS 588* is intended for temporary installation and outdoor use. For fixed installation you should instead use its sister model *OTMC 100*, which is available from OMICRON Lab (www.omicron-lab.com).

The *CMGPS 588* is intended for operation with OMICRON CMC test sets and can be connected directly to a CMC test set, to a network containing a CMC test set or to a computer (using the delivered PoE power supply unit). Power supply is provided via the Ethernet cable (Power over Ethernet, PoE).

The *CMGPS 588* does not require any configuration work and is automatically ready for operation within a very short time after providing power supply by inserting the Ethernet cable. Control and configuration of the time synchronization for CMC test sets is performed in the controlling OMICRON software (e.g., OMICRON *Test Universe*). For more detailed information, please refer to the corresponding software manual and/or help system.

The *CMGPS 588* is exclusively intended for the applications stated here. Any other use is considered improper.





The *CMGPS 588* can only be used with OMICRON CMC test sets that are equipped with the Net-1B or Net-1C option. If necessary, a corresponding upgrade has to be performed for the CMC test set. The *CMGPS 588* cannot be used with *CMC 156* test sets.



When using the *CMGPS 588* with the *OMICRON Test Universe* software, version 3.0 or higher of the *Test Universe* software is required.

2 Scope of Delivery, Ordering Information, Accessories

| Description | Part No. | Figure |
|---|----------|---|
| <p>CMGPS 588 synchronization unit. GPS receiver with integrated antenna incl. accessories for synchronization of CMC tet sets.</p> <p>Scope of delivery:</p> <ul style="list-style-type: none"> • 1 CMGPS 588 synchronization unit • 1 transport case • 1 Ethernet connection cable with waterproof RJ45 connector (15 m) • 1 tripod with cable bracket • 1 PoE power supply unit with power cord • 1 Ethernet patch cable (1.5 m) • 1 printed CMGPS 588 user manual | VEHZ3004 |  |
| <p>Cable reel with 40 m reinforced Ethernet cable for CMGPS 588 (max. two extension cable reels possible)</p> | VEHK0303 |  |

| | | |
|--|-----------------|---|
| <p>CMGPS 588 Ethernet cable, 15 m</p> | <p>VEHK0304</p> |  |
| <p>Tripod with 1/4" thread</p> | <p>VEHZ0071</p> |  |
| <p>Cable bracket for tripod, 15 mm</p> | <p>VEHZ0072</p> |  |
| <p>PoE power supply unit with power cord and 1.5 m Ethernet patch cable (VEHK0022)</p> | <p>VEHZ0082</p> |  |
| <p>Case for CMGPS 588</p> | <p>VEHP0024</p> |  |

3 Device Overview

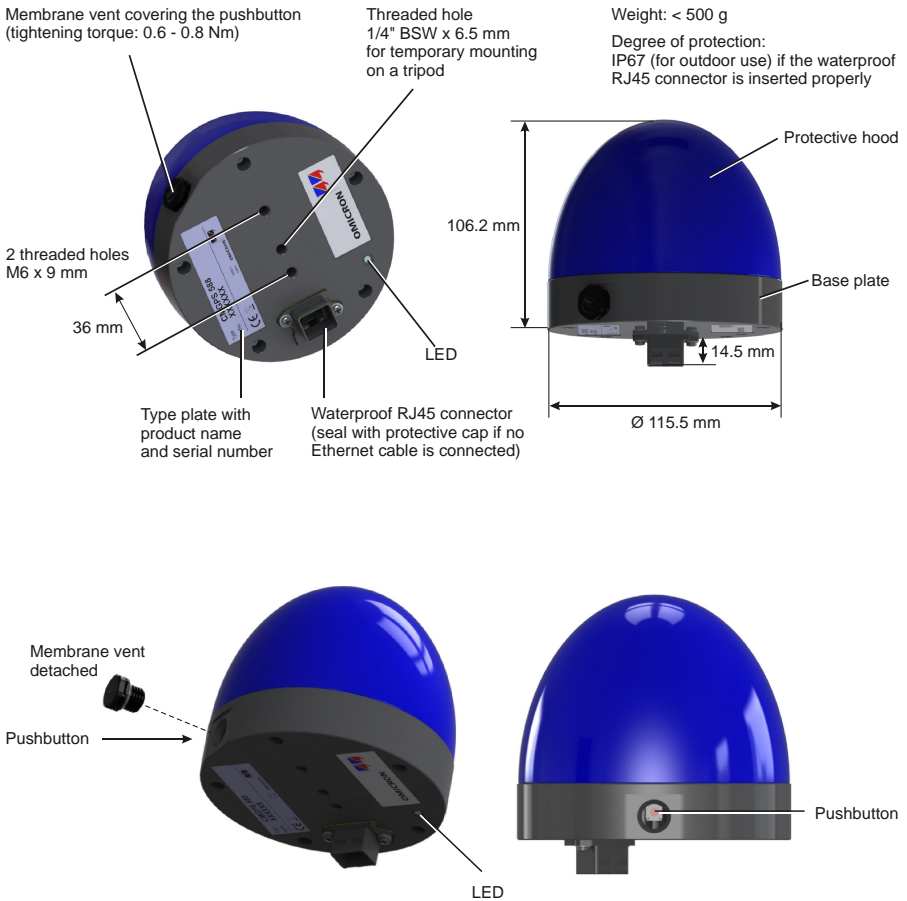


Figure 3-1: CMGPS 588 device overview

The *CMGPS 588* does not provide an ON/OFF switch! The device automatically powers up after supply voltage is provided via Ethernet (PoE).

The LED indicates the device status:

| | |
|----------------------|---|
| LED continuously off | The <i>CMGPS 588</i> is not supplied with power via the RJ45 Ethernet connector. |
| LED lights green | The <i>CMGPS 588</i> is ready for operation. The green LED does not provide information about the number of satellites received or the actual time accuracy provided by the <i>CMGPS 588</i> . |
| LED lights red | Boot process is in progress. This state is indicated for approx. 15 s while the device powers up or if the user initiated a device reboot (see chapter Operation on page 31). |
| LED flashes red | Software update is in progress. ATTENTION: Do not disconnect the device during a software update! |
| LED lights orange | Intermediate state when initiating a factory reset or when entering the recovery mode. |
| LED flashes green | The <i>CMGPS 588</i> is in the recovery mode, waiting for new software. |

4 Installation

Only use the original Ethernet cables supplied on delivery or available as accessories from OMICRON. The original 15 m long Ethernet cable supplied on delivery may be extended by a maximum of two 40 m extension cable reels. The overall Ethernet cable length connected to the *CMGPS 588* must not exceed 95 m! Please refer to chapter [Scope Of Delivery, Ordering Information, Accessories](#) on page 13 for ordering information.

The *CMGPS 588* is intended for temporary installation and outdoor use.

Do not move the *CMGPS 588* during operation. Changing the position of the *CMGPS 588* during operation causes time errors.



CAUTION: Observe the following safety instructions when installing and using the *CMGPS 588* synchronization unit.

- Do not position the *CMGPS 588* in the vicinity of flashover-endangered spots.
- Do not use the *CMGPS 588* in case of upcoming thunderstorms! In case of an imminent thunderstorm, immediately disconnect the *CMGPS 588* and the Ethernet cables and remove them to indoors.



Do not connect conventional RJ45 connectors that are equipped with a locking tab to the *CMGPS 588* or the Ethernet extension cable reel. The locking tab of such connectors cannot be accessed directly anymore after inserting the plug to the socket. In this case, a small screwdriver must be used to carefully unlock the RJ45 connector in the socket.

4.1 Suitable Places of Installation

The *CMGPS 588* synchronization unit receives the time information from the satellites of the GPS system. However, GPS reception generally requires a plain line of sight between the antenna and the satellites.

For proper function, the *CMGPS 588* requires signal reception from at least four GPS satellites. The more satellites it can receive, the more reliable the time information the *CMGPS 588* can deliver.

The *CMGPS 588* should generally be positioned outdoors at a location that provides free view in a range of 180° vertically to the sky and 360° horizontally around the device. The view to the sky must not be blocked by any objects.

You should furthermore consider that GPS signals may be reflected by large buildings and structures around the *CMGPS 588*, which may deteriorate the timing accuracy of the *CMGPS 588*. Therefore, you should also avoid to position the *CMGPS 588* under metal structures of substations.

Always use the *CMGPS 588* in an upright position with the protective hood to the top, as shown below. The RJ45 connector on the base plate of the *CMGPS 588* must point vertically downwards. Do not use the *CMGPS 588* inclined to any side or with the base plate to the top!





Figure 4-1: Suitable places of installation for the *CMGPS 588*



Best place of installation with best possible reception of GPS signals.

This place of installation provides direct view to the sky. The view is not hindered by any objects and the GPS signals are not influenced by any reflections.



Good place of installation providing sufficient reception of GPS signals under most conditions. This mounting position provides direct view to the sky in a range of nearly 180°. The view is only partly hindered by the building and there is negligible danger of reflections that could influence the GPS signals.

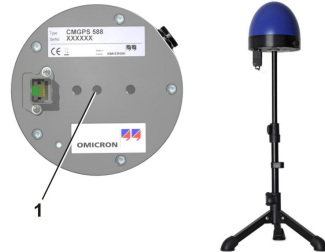


Bad place of installation. Do not use!

This place of installation provides direct view to the sky for a range of only 90°. Half the sky is blocked by the building and the reception of GPS signals will be considerably influenced by reflections. The *CMGPS 588* might not work properly!

4.2 Mounting

Screw the grub screw of the tripod into the 1/4" BSW thread (1) on the base plate of the *CMGPS 588* and tighten it sufficiently.



Remove the protective cap from the RJ45 socket of the *CMGPS 588*. Insert the watertight RJ45 connector (2) of the 15 m Ethernet cable to the RJ45 socket until it locks with an audible click.

Exclusively insert the watertight connector labeled **CMGPS 588** of the 15 m Ethernet cable or the 40 m Ethernet cable reel to the *CMGPS 588*. Do not insert the other side of the 15 m Ethernet cable or conventional RJ45 connectors to the *CMGPS 588*!



Fasten the Ethernet cable to the lower part of the tripod using the cable bracket (3). This will prevent falling over of the tripod due to dragging forces applied by the Ethernet cable.



4.3 Connection

The *CMGPS 588* automatically powers up as soon as supply voltage is applied to it via the Ethernet cable. After the device is supplied with voltage, the LED first lights up red for approx. 15 s during the boot process and then changes to green to indicate operational readiness.



The *CMGPS 588* can only be used with OMICRON CMC test sets that are equipped with the Net-1B or Net-1C option. If necessary, a corresponding upgrade has to be performed for the CMC test set. The *CMGPS 588* cannot be used with *CMC 156* test sets.



When using the *CMGPS 588* with the OMICRON *Test Universe* software, version 3.0 or higher of the *Test Universe* software is required.

4.3.1 Connecting the *CMGPS 588* to a CMC Test Set

Connect the *CMGPS 588* as shown in the figure below to synchronize a CMC test set using the *CMGPS 588* synchronization unit.

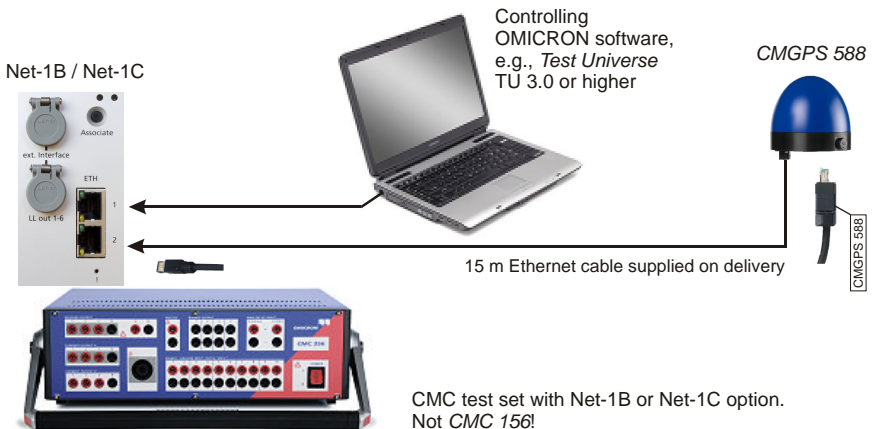


Figure 4-2: Connecting the *CMGPS 588* to a CMC test set

4.3.2 Extending the Ethernet Cable

The original 15 m long Ethernet cable supplied on delivery can be extended by up to two 40 m extension cable reels (see chapter [Scope Of Delivery, Ordering Information, Accessories](#) on page 13). The overall length of all Ethernet cables connected to the *CMGPS 588* must not exceed 95 m!

Connect the *CMGPS 588* and the Ethernet cables as shown in the figure below to extend the Ethernet cable to a maximum length of 95 m.



Exclusively insert the watertight connector labeled **CMGPS 588** of the 15 m Ethernet cable or the 40 m Ethernet cable reel to the RJ45 socket of the cable reel. Do not insert the other side of the 15 m Ethernet cable or conventional RJ45 connectors to the cable reel!

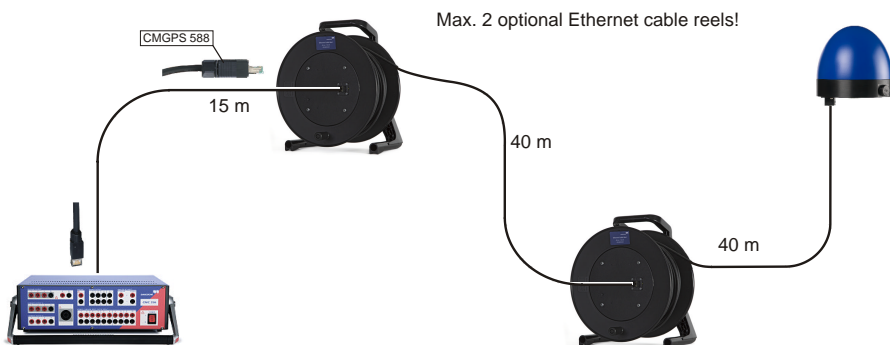


Figure 4-3: Extending the Ethernet cable to a maximum length of 95 m

4.3.3 Connecting the CMGPS 588 to a Network

The following figure shows a typical network with one *CMGPS 588*, a network switch providing transparent clock and PoE functionality, and a CMC test set.

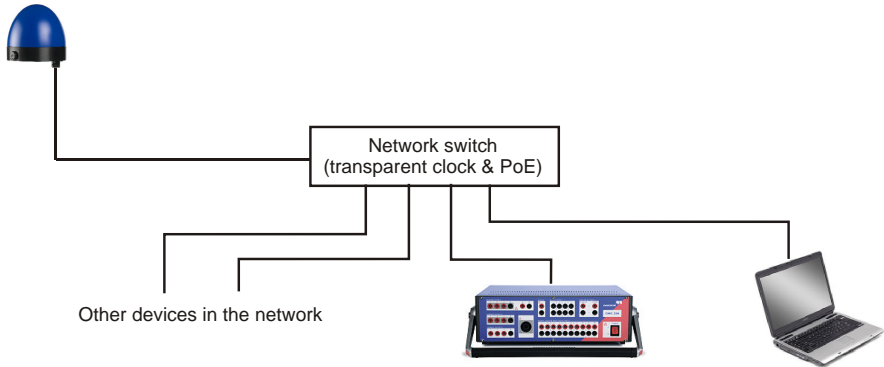


Figure 4-4: *CMGPS 588* in a network

Note regarding network switches:

The time synchronization of the *CMGPS 588* is based on the peer delay mechanism of the Precision Time Protocol specified in IEEE 1588-2008 and the power profile according to IEEE C37.238-2011. Therefore, the *CMGPS 588* will only be able to provide time to test sets in networks that are equipped with network switches providing transparent clock functionality as specified in IEEE 1588-2008. If the network is equipped with such a network switch, the network switch must additionally be configured for the power profile according to IEEE C37.238-2011.

4.3.4 Accessing the CMGPS 588 from a Computer

The *CMGPS 588* automatically powers up after supply voltage is provided via Ethernet (PoE). The LED lights up green when the device is ready for operation.

After that, a network IP address is assigned automatically in order to connect the device to the network. If a DHCP server is available in the network, the IP address is assigned by the DHCP server. If not, the *CMGPS 588* automatically selects and assigns a link-local IPv4 and IPv6 address by itself.

The *CMGPS 588* can be accessed via the Web Interface using a computer. This way, no manual intervention at the device itself will be required under normal circumstances.

4.3.4.1 System Requirements

Your computer must fulfill the following requirements to access the *CMGPS 588* Web Interface:

- Network port configured for operation in the network the *CMGPS 588* is connected to.
- OMICRON *Device Browser* installed (see chapter [The OMICRON Device Browser](#) on page 65).
- Web browser installed (Windows Internet Explorer 8 or higher or Mozilla Firefox 3 or higher).



If you are accessing the *CMGPS 588* from a Mac or Linux operating system supporting zeroconf, you can access the web interface of the *CMGPS 588* by entering **http://<hostname>.local** to the address bar of your web browser. The default hostname is the device serial number. The serial number is available on the type plate on the bottom side of the *CMGPS 588* (labeled "SerNo").

4.3.4.2 Connecting the CMGPS 588 to a Computer

If the *CMGPS 588* is not connected to a network providing PoE as described in section [Connecting the CMGPS 588 to a Network](#) on page 23, you have to use the PoE power supply unit supplied on delivery in order to provide power supply for the *CMGPS 588* when accessing it with a computer.

Connect the devices as shown in the following figure.

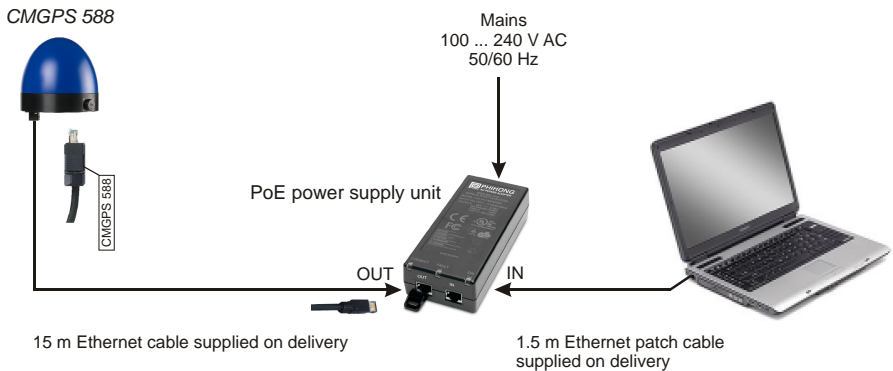
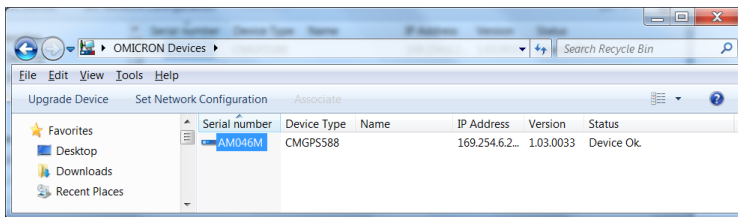


Figure 4-5: Connecting the *CMGPS 588* to a computer using the PoE power supply unit

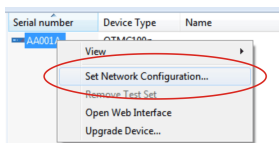
4.3.4.3 Accessing the CMGPS 588 Web Interface

Proceed as follows to access the *CMGPS 588* Web Interface:

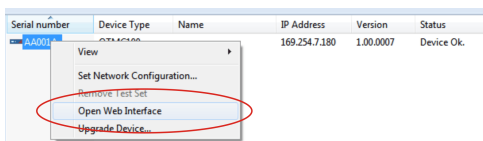
1. Connect your computer to the network or the *CMGPS 588* (via the PoE power supply unit).
2. If necessary, install the *OMICRON Device Browser* on your computer. See chapter [The OMICRON Device Browser](#) on page 65.
3. Launch the *OMICRON Device Browser*.
4. The *Device Browser* will automatically find and display the *CMGPS 588*.



If the IP address configurations of the *CMGPS 588* and the computer are not compatible, the respective status is displayed in the Status column. In this case, right-click the *CMGPS 588* serial number and select **Set Network Configuration** to assign a suitable IP address.



5. Right-click the *CMGPS 588* serial number and select **Open Web Interface** from the context menu.



6. The start page of the *CMGPS 588* Web Interface is displayed in the web browser.

CMGPS 588
Synchronization Unit

OMICRON

Help - Support - Manual

Overview

Status

Tools

Status

| | |
|---------------|---------------------------|
| GPS | Locked |
| PTP | Master |
| NTP | Nonsynchronous |
| UTC date/time | 2013-09-19T00:03:13-00:00 |

Information

| | |
|-------------------|-------------|
| Product name | CMGPS 588 |
| Serial number | AM046M |
| Software version | 1.03.0033 |
| Kernel version | Linux 3.1.8 |
| Hardware revision | 2 |
| Uptime | 3 minutes |

Network

| | |
|--------------|-------------------|
| IPv4 address | 169.254.6.233 |
| IPv6 address | Not set |
| MAC address | 20:B7:C0:00:28:9D |
| Host name | AM046M |
| Domain name | omicron.at |

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7. Refer to chapter [The CMGPS 588 Web Interface](#) on page 39 for detailed information about the *CMGPS 588* Web Interface.

4.4 Disconnection

Proceed as follows to disconnect the *CMGPS 588*:

1. Disconnect the Ethernet cable from the *CMGPS 588*:
 - Pull the connector housing of the watertight Ethernet connector back to unlock the locking mechanism, and disconnect the connector. **Pull the plug, not the cable!**
 - Seal the watertight connector of the Ethernet cable and the RJ45 Ethernet socket of the *CMGPS 588* with their protective caps to maintain watertightness.
 - Disconnect the other side of the Ethernet cable from the CMC test set (or the PoE power supply unit or the network, if applicable) and wind up the Ethernet cable to a ring that fits into its intended recess in the case.
2. Unscrew the *CMGPS 588* from the tripod and stow the tripod and the *CMGPS 588* in the case.
3. If you used a 40 m Ethernet extension cable reel, seal the watertight Ethernet connector on the cable end with the protective cap before winding up the cable onto the cable reel.

5 Synchronizing CMC Test Sets

5.1 Synchronizing One CMC Test Set

Proceed as follows to synchronize a CMC test set using the *CMGPS 588*:

1. Install the *CMGPS 588* at a suitable place as described in sections [Suitable places of Installation](#) on page 18 and [Mounting](#) on page 20.
2. Connect the *CMGPS 588* and the computer to the CMC test set as described in section [Connection](#) on page 21. The *CMGPS 588* automatically powers up as soon as supply voltage is applied to it via the Ethernet cable.
3. Configure the time synchronization in the controlling OMICRON software. For more detailed information, please refer to the corresponding software manual and/or help system.

5.2 Synchronizing Two or More CMC Test Sets

For information on synchronizing two or more CMC test sets, please refer to the corresponding software manual and/or help system. A general example for this field of application is shown in the following section.

5.2.1 Application Example

You can synchronize two or more CMC test sets by connecting a *CMGPS 588* synchronization unit to each test set. Since the GPS signal is available worldwide, the physical distance between these test sets is thereby of no relevance ("end-to-end" testing).

The figure below shows a typical field application of the *CMGPS 588*: The synchronization of two CMC test sets for testing a transmission line's protection system.

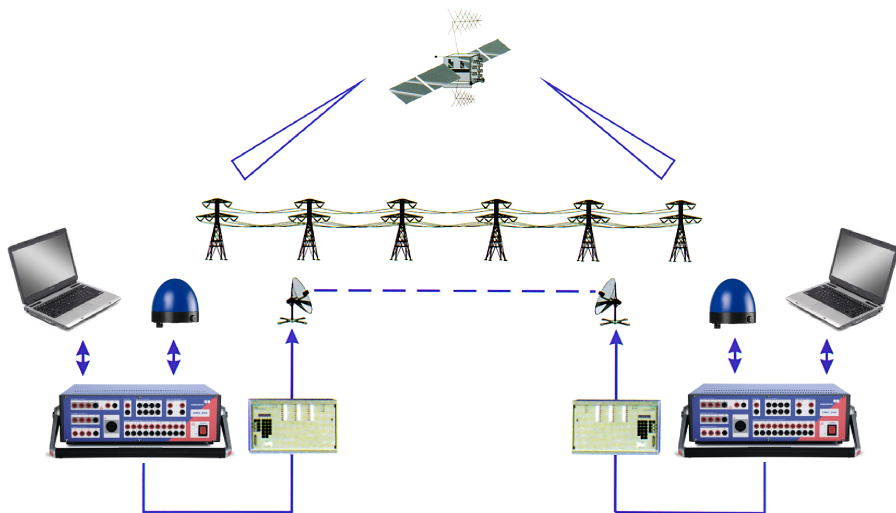


Figure 5-1: Synchronization of two CMC test sets using the *CMGPS 588*

5.2.2 Mixed Usage of *CMGPS 588* and *CMGPS* Synchronization Units

Mixed usage of *CMGPS 588* and OMICRON *CMGPS* synchronization units within one application is **not recommended**. In contrast to the *CMGPS 588* (which works without any delay), the *CMGPS* synchronization unit introduces a delay resulting in a time offset of 425 μ s (which corresponds to a phase offset of 7.6° at 50 Hz).

Therefore, mixed usage of *CMGPS 588* and *CMGPS* synchronization units should only be taken into account for applications where the phase shift is not of importance.



If mixed usage of *CMGPS 588* and *CMGPS* synchronization units is unavoidable, you should compensate the time offset caused by the *CMGPS* in the controlling OMICRON software, for example, using the *State Sequencer* test module of the *Test Universe* software.

6 Operation

Configuration and control of the time synchronization for CMC test sets is performed in the controlling OMICRON software. Therefore, no additional operation on the *CMGPS 588* itself is necessary under normal circumstances, except the installation and connection described earlier in this manual.

In order to get familiar with the controlling OMICRON software, please refer to the corresponding software manual and/or help system.

This chapter describes the most important operating procedures for the *CMGPS 588*. Please refer to chapter [The CMGPS 588 Web Interface](#) on page 39 or the Web Interface help for a detailed description of the Web Interface.

6.1 Operating Procedures Performed via the Web Interface

This section describes the most important operating procedures that can be performed via the Web Interface using a computer. Refer to section [Accessing and Configuring the CMGPS 588 from a Computer](#) on page 24 for information on how to connect the *CMGPS 588* to your computer and how to access the *CMGPS 588* Web Interface.

6.1.1 Running a Software Update for the CMGPS 588



Download the up-to-date software image file for the *CMGPS 588* free of charge from the customer area at www.omicron.at or www.omicronusa.com.

Please note that the *CMGPS 588* will not deliver time information during a software update.

1. Click the **Tools** icon in the navigation bar of the Web Interface.
2. Click the **Software Upgrade** icon.

3. Click the **Browse...** button to navigate to the software image file and select it.
4. Deselect the **Keep settings** check box if you want to reset the device configuration to the factory defaults after the software update. If the check box is selected, the user specific configuration settings are kept during the software update.
5. Click the **Update** button to start the software update.
6. The update process may take up to ten minutes. Do not disconnect the *CMGPS 588* or the computer during this process.
7. The *CMGPS 588* automatically restarts after the software update has completed.



If the software update process fails due to any reason, the *CMGPS 588* enters a recovery mode on the next power-up. In this mode, the device provides only a rudimentary Web Interface (similar to the **Software Upgrade** page) just allowing for the upload of a software image (see [Uploading New Software to the Device in Recovery Mode](#) on page 34).

6.1.2 Performing a Reboot of the CMGPS 588



A device reboot can also be performed directly on the device (see [Operating Procedures Performed Directly on the Device](#) on page 36).

1. Click the **Tools** icon in the navigation bar of the Web Interface.
2. Click the **Device Control** icon.
3. Click the **Reboot** button next to **Reboot device**.
4. The *CMGPS 588* performs a reboot. The device will be ready for operation again after approx. 15 s.

6.1.3 Performing a Factory Reset (Reset to Factory Defaults)



A factory reset can also be performed directly on the device (see [Operating Procedures Performed Directly on the Device](#) on page 36).

1. Click the **Tools** icon in the navigation bar of the Web Interface.
2. Click the **Device Control** icon.
3. Click the **Reset** button next to **Factory reset**.
4. The *CMGPS 588* performs a reboot and resets all configuration settings to the factory defaults. The device will be ready for operation again after approx. 15 s.

6.1.4 Creating a System Snapshot for Troubleshooting

A system snapshot contains the configuration settings and the log file. It thus provides important information for the technical support in case of problems.

1. Click the **Tools** icon in the navigation bar of the Web Interface.
2. Click the **Device Control** icon.
3. Click the **Download** button next to **System snapshot** to download a system snapshot file.

6.1.5 Uploading New Software to the Device in Recovery Mode



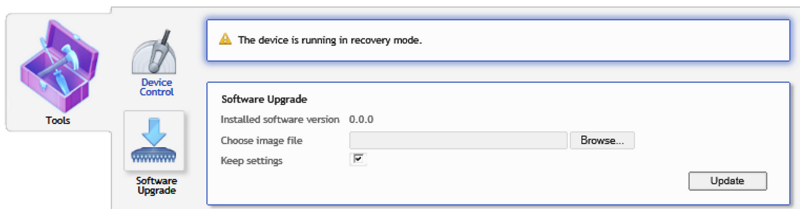
Entering the recovery mode manually is only possible using the pushbutton on the device (see [Operating Procedures Performed Directly on the Device](#) on page 36).



Download the up-to-date software image file for the *CMGPS 588* free of charge from the customer area at www.omicron.at or www.omicronusa.com.

The recovery mode is entered automatically if a software update performed via the Web Interface failed.

1. In recovery mode the device provides a rudimentary Web Interface solely allowing for the upload of a software image.



2. Click the **Browse...** button to navigate to a suitable software image file.
3. Click the **Update** button to start the software update.
4. The update process may take up to ten minutes. Do not disconnect the *CMGPS 588* or the computer during this process.
5. The *CMGPS 588* automatically restarts after the software has installed completely.

6.1.6 Viewing and/or Exporting the System Log File

The log file contains all events logged by the system. Therefore, it may be helpful for the technical support of OMICRON in case of problems.

1. Click the **Status** icon in the navigation bar of the Web Interface.
2. Click the **Log Viewer** icon to display the log file.
3. View the messages logged in the file. Error messages are displayed in red, warning messages are displayed in orange, notice messages are displayed in black. All other messages are displayed in gray.
4. By clicking **Clear View** you can clear the display of the **Log Viewer** page. This does not clear the log file. Re-opening the **Log Viewer** page will again display all messages logged in the log file.
5. By clicking **Export Log** you can export the log file content to a text file (file extension .log).



The log file is cleared with each reboot of the *CMGPS 588* (see [Performing a reboot of the CMGPS 588](#) on page 32 or [Performing a reboot of the CMGPS 588](#) on page 37). If the maximum size of the log file is reached, the system automatically deletes old log file entries in order to release memory space for new entries.

6.2 Operating Procedures Performed Directly on the Device

This section provides operating procedures that can be performed directly on the *CMGPS 588* using the pushbutton. For these operating procedures it is necessary to uncover the pushbutton by unscrewing the membrane vent from the *CMGPS 588* as shown in the following figure.



Do not forget to reinsert the membrane vent in order to restore watertightness of the device. Tighten the membrane vent with a tightening torque of 0.6 to 0.8 Nm.

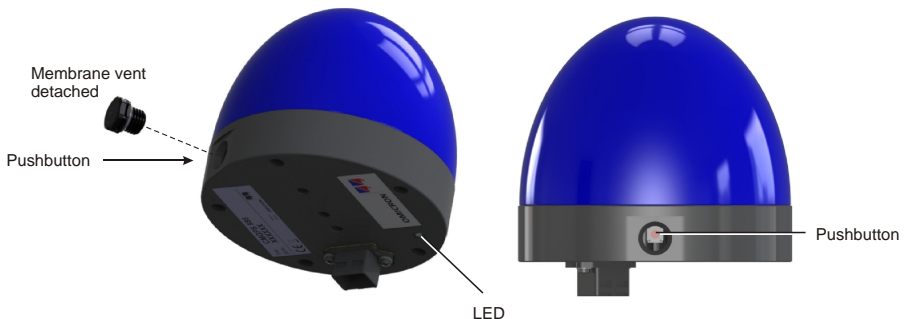


Figure 6-1: Accessing the pushbutton on the *CMGPS 588*

6.2.1 Performing a Reboot of the CMGPS 588



A device reboot can also be performed via the Web Interface (see [Performing a reboot of the CMGPS 588](#) on page 32).

1. Press the pushbutton using a pointed tool such as a ball-pen, and release it immediately.
2. The LED goes off for approx. 1 s.
3. The LED lights up red during the boot process.
4. After approx. 15 s the LED changes to green to indicate operational readiness.

6.2.2 Performing a Factory Reset of the CMGPS 588



A factory reset can also be performed via the Web Interface (see [Performing a factory reset](#) on page 33).

1. Press the pushbutton using a pointed tool such as a ball-pen, and keep it pressed.
2. The LED goes off.
3. After approx. 5 s, the LED lights up orange. Keep the button pressed and wait until the LED lights up red.
4. Release the pushbutton.
5. After approx. 15 s the LED changes to green to indicate operational readiness.

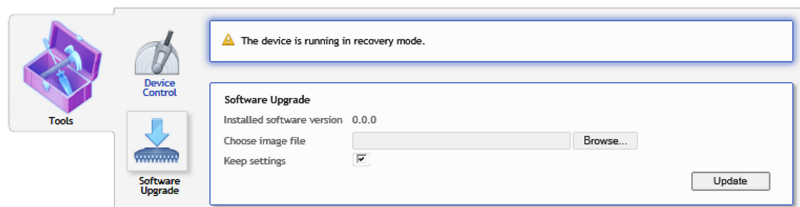
6.2.3 Entering the Recovery Mode Manually (and Uploading New Software to the CMGPS 588)



Download the up-to-date software image file for the *CMGPS 588* free of charge from the customer area at www.omicron.at or www.omicronusa.com.

Entering the recovery mode manually is not necessary under normal circumstances since the recovery mode is entered automatically if a software update performed via the Web Interface failed.

1. Press the pushbutton and keep it pressed.
2. The LED goes off for approx. 5 s.
3. Release the pushbutton as soon as the LED lights up orange.
4. After approx. 20 s the LED flashes green to indicate the recovery mode.
5. Open the *OMICRON Device Browser* and right-click the *CMGPS 588* (see [Accessing the CMGPS 588 from a Computer](#) on page 24). Select the **Upgrade Device** option from the context menu. The device provides a rudimentary Web Interface allowing for an upload of a software image.



6. Click the **Browse...** button to navigate to a suitable software image file. The path and file name is displayed in the field after selecting it in the file open dialog.
7. Click the **Update** button to start the software update. The update process may take up to ten minutes. Do not disconnect the *CMGPS 588* or the computer during this process. The *CMGPS 588* automatically restarts after the software installed completely.

7 The CMGPS 588 Web Interface

The Web Interface is used to access the *CMGPS 588* using a computer.



[Help](#) - [Support](#) - [Manual](#)

The screenshot displays the web interface with a sidebar on the left containing three icons: a globe for 'Overview', a speedometer for 'Status', and a toolbox for 'Tools'. The main content area is divided into three panels:


- Status**

| | |
|---------------|---------------------------|
| GPS | Locked |
| PTP | Master |
| NTP | Nonsynchronous |
| UTC date/time | 2013-09-19T00:03:13+00:00 |
- Information**

| | |
|-------------------|-------------|
| Product name | CMGPS 588 |
| Serial number | AM046M |
| Software version | 1.03.0033 |
| Kernel version | Linux 3.1.8 |
| Hardware revision | 2 |
| Uptime | 3 minutes |
- Network**

| | |
|--------------|-------------------|
| IPv4 address | 169.254.6.233 |
| IPv6 address | Not set |
| MAC address | 20:B7:C0:00:28:9D |
| Host name | AM046M |
| Domain name | omicron.at |

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Click the help icon  in the top right corner of a page to display the specific help topic for this particular page. Click **Help** in the top right corner of the Web Interface to open the start page of the help system for the Web Interface.

Click **Manual** in the top right corner to open this manual in PDF format.

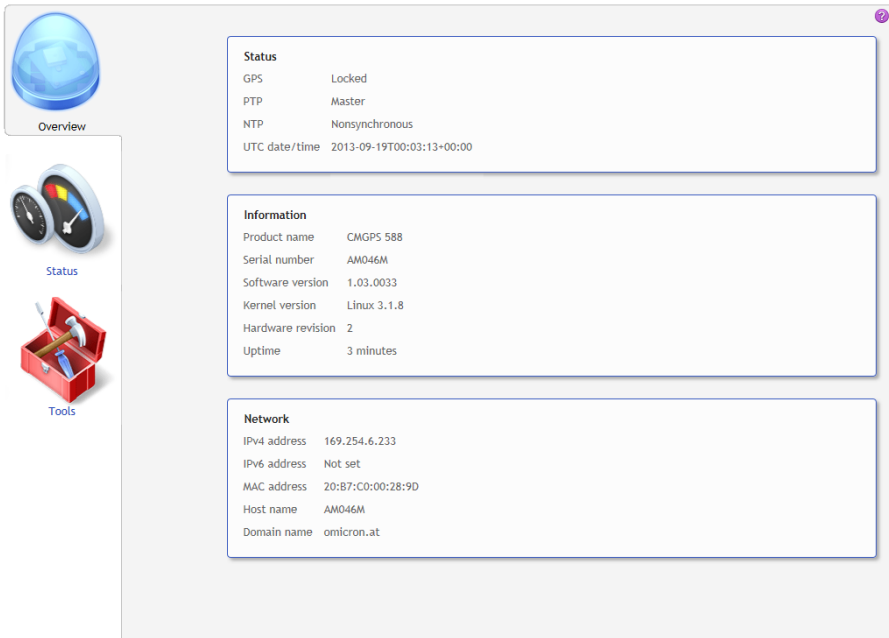
Click **Support** in the top right corner to open the contact information page providing OMICRON contact addresses and information how to contact the technical support of OMICRON in case of problems.

Click **License Information** in the bottom right corner to view copyright and license information regarding open source products used in the *CMGPS 588* software.

The Web Interface is divided into three sections. Click an icon in the navigation bar on the left to access the corresponding pages.

| | |
|--|---|
|  | <p>Overview (see page 41) This section provides an overview of the current settings and states of the <i>CMGPS 588</i>.</p> |
|  | <p>Status (see page 44) The Status pages provide detailed information about the GPS status (e.g. number of satellites, time and position) and the PTP status. An additional Log Viewer page shows all events logged in the internal log file.</p> |
|  | <p>Tools (see page 61) Use this section to perform a reboot for the device. You can furthermore download a system snapshot containing important information for the technical support in case of problems, or perform a factory reset or a software upgrade for the <i>CMGPS 588</i>.</p> |

7.1 Overview Section



The screenshot displays the 'Overview' section of the CMGPS 588 web interface. On the left sidebar, there are three navigation icons: a blue globe labeled 'Overview', a speedometer labeled 'Status', and a red toolbox labeled 'Tools'. The main content area is organized into three distinct sections, each with a title and a list of system parameters:

- Status**
 - GPS: Locked
 - PTP: Master
 - NTP: Nonsynchronous
 - UTC date/time: 2013-09-19T00:03:13+00:00
- Information**
 - Product name: CMGPS 588
 - Serial number: AM046M
 - Software version: 1.03.0033
 - Kernel version: Linux 3.1.8
 - Hardware revision: 2
 - Uptime: 3 minutes
- Network**
 - IPv4 address: 169.254.6.233
 - IPv6 address: Not set
 - MAC address: 20:B7:C0:00:28:9D
 - Host name: AM046M
 - Domain name: omicron.at

The **Overview** section provides an overview of the current settings and states of the *CMGPS 588*. The following information is displayed.

7.1.1 Status Group

| | |
|---------------|---|
| GPS | <p>Displays the current GPS status of the <i>CMGPS 588</i>. Possible states are: Locked, holdover, unlocked.</p> <p>See GPS Status Page on page 45 for more information.</p> |
| PTP | <p>Displays the current PTP status of the <i>CMGPS 588</i>. Possible states are: Master, passive, listening, disabled and faulty.</p> <p>See PTP Status Page on page 48 for more information.</p> |
| NTP | <p>Disabled. The NTP protocol is not available with the <i>CMGPS 588</i>.</p> |
| UTC date/time | <p>Displays the UTC date and time. The local time can be derived from the UTC time (Universal Time Coordinated) by adding or subtracting hours according to the specific time zone. For example, UTC plus one hour delivers the Central European Time CET (plus two hours during daylight saving time).</p> |

7.1.2 Information Group

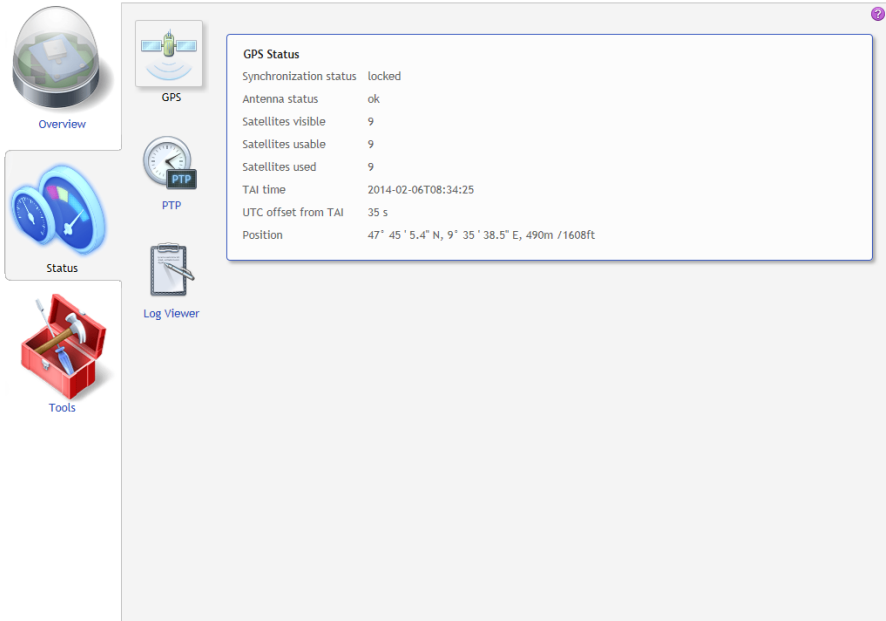
| | |
|------------------|---|
| Product name | Displays the exact product name. |
| Serial number | Displays the serial number of the <i>CMGPS 588</i> . |
| Software version | Displays the software version installed on the <i>CMGPS 588</i> . |
| Kernel version | Displays the kernel version used in the installed operating software. |

| | |
|-------------------|---|
| Hardware revision | Displays the hardware version of the <i>CMGPS 588</i> . |
| Uptime | Displays the time the <i>CMGPS 588</i> is in operation since the last power-up. |

7.1.3 Network Group

| | |
|--------------|--|
| IPv4 address | <p>Displays the currently assigned IPv4 address of the <i>CMGPS 588</i>.</p> <p>The IP address is assigned automatically by a IPv4 DHCP server (if available in the network) or the <i>CMGPS 588</i> itself. If a static IP address has been assigned using the <i>OMICRON Device Browser</i>, this static IP address is used.</p> |
| IPv6 address | Displays the currently assigned IPv6 address of the <i>CMGPS 588</i> . |
| MAC address | Displays the unique MAC address (Media Access Control Address) of the <i>CMGPS 588</i> . |
| Host name | Displays the host name (serial number) of the <i>CMGPS 588</i> . The serial number is available on the type plate on the bottom side of the <i>CMGPS 588</i> . |
| Domain name | Displays the domain name set for the <i>CMGPS 588</i> (omicron.at). |

7.2 Status Section



Overview

Status

Tools

GPS

PTP

Log Viewer

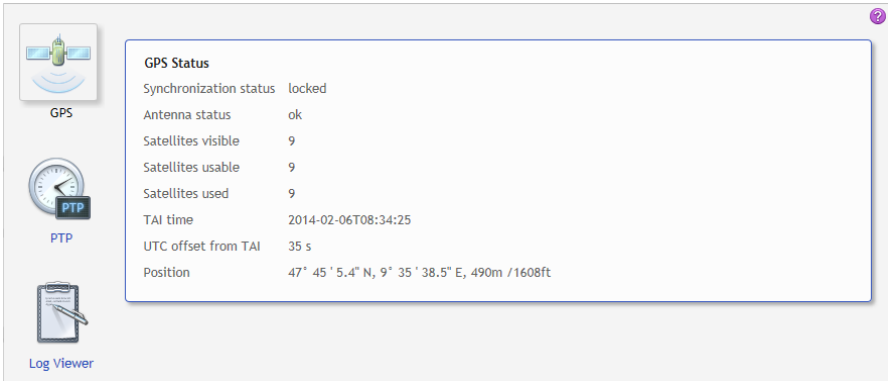
GPS Status

| | |
|------------------------|---|
| Synchronization status | locked |
| Antenna status | ok |
| Satellites visible | 9 |
| Satellites usable | 9 |
| Satellites used | 9 |
| TAI time | 2014-02-06T08:34:25 |
| UTC offset from TAI | 35 s |
| Position | 47° 45 ' 5.4" N, 9° 35 ' 38.5" E, 490m / 1608ft |

The status information is presented in three pages:

- **GPS** (see page 45)
- **PTP** (see page 48)
- **Log Viewer** (see page 59)

7.2.1 GPS Status Page



| GPS Status | |
|------------------------|---|
| Synchronization status | locked |
| Antenna status | ok |
| Satellites visible | 9 |
| Satellites usable | 9 |
| Satellites used | 9 |
| TAI time | 2014-02-06T08:34:25 |
| UTC offset from TAI | 35 s |
| Position | 47° 45' 5.4" N, 9° 35' 38.5" E, 490m / 1608ft |

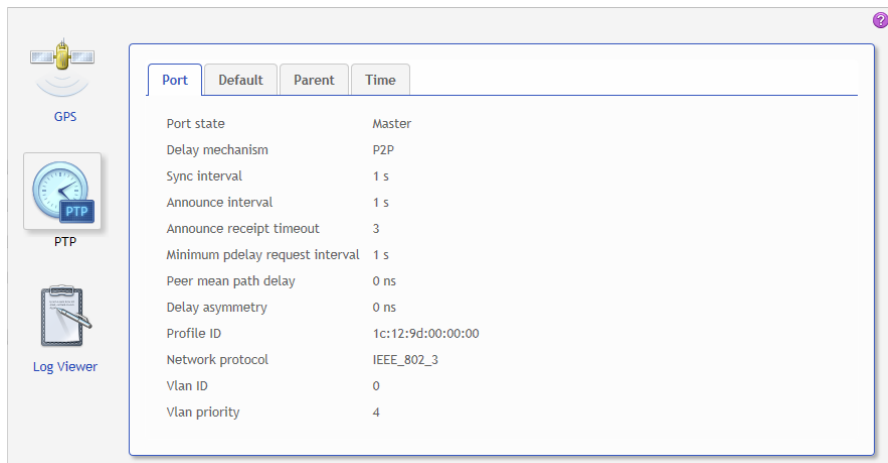
The **GPS** status page displays the following information:

| | |
|------------------------|---|
| Synchronization status | <p>Displays the current GPS status of the <i>CMGPS 588</i>:</p> <p>Locked: The internal clock is synchronized and controlled by GPS satellites. The <i>CMGPS 588</i> is able to provide GPS synchronized time.</p> <p>Holdover: The <i>CMGPS 588</i> will enter this state if it was in the locked state before and then temporarily loses time synchronization with GPS satellites. In the holdover state, the device is still able to provide time information with possibly reduced accuracy for a certain time.</p> <p>Unlocked: The internal clock is not synchronized with GPS satellites. The <i>CMGPS 588</i> is not able to provide time information.</p> |
|------------------------|---|

| | |
|---------------------------|--|
| <p>Antenna status</p> | <p>Displays the current GPS antenna status of the <i>CMGPS 588</i>.</p> <p>Ok: No antenna problem detected. Note that this status does not deliver any information about GPS reception. It is also possible that the antenna is defective but the defect could not be detected by the GPS receiver.</p> <p>Open circuit or Overcurrent: Hardware error. The internal GPS antenna is defective. Contact the technical support of OMICRON and send the <i>CMGPS 588</i> to OMICRON to be repaired.</p> <p>Unknown: The antenna status cannot be determined. Please check the log file (see Log Viewer Page on page 59) and try to reboot the device (see Tools Section on page 61). If this does not help, contact the OMICRON support.</p> <p>See chapter Support on page 75 for information how to contact the OMICRON technical support</p> |
| <p>Satellites visible</p> | <p>Displays the number of satellites the <i>CMGPS 588</i> can "see" in the sky.</p> |
| <p>Satellites usable</p> | <p>Displays the number of satellites from which the <i>CMGPS 588</i> can receive signals with sufficient quality.</p> <p>The <i>CMGPS 588</i> requires at least 4 "useable" satellites.</p> |
| <p>Satellites used</p> | <p>Displays the number of satellites actually used by the <i>CMGPS 588</i> for time synchronization and position determination.</p> |

| | |
|---------------------|---|
| TAI time | Displays the date and time according to the International Atomic Time (TAI). TAI is the basis for UTC with the difference that UTC is occasionally adjusted by adding a leap second (in order to keep the difference between UTC and UT1 lower than 0.9 seconds). |
| UTC offset from TAI | Displays the difference of UTC with regard to TAI. |
| Position | Displays the position coordinates (latitude and longitude) in degrees, minutes and seconds, and the height in meters and feet. |

7.2.2 PTP Status Page



The information in the **PTP** status page is presented in four tabs.

7.2.2.1 Port tab in the PTP status page

The **Port** tab displays information on the current state and configuration of the PTP port of the *CMGPS 588*. The data listed here correspond to the Port Dataset specified in IEEE 1588-2008, clause 8.2.5.

| | |
|------------|---|
| Port state | <p>Displays the current PTP state of the network port of the <i>CMGPS 588</i>. Possible states are: Master, passive, listening, disabled, faulty and waiting for CMC.</p> <p>Master: The <i>CMGPS 588</i> is the best master clock in the network (according to the BMCA) and is thus used as time reference (PTP grandmaster clock).</p> <p>...</p> |
|------------|---|

| | |
|-----------------------|--|
| | <p>Passive: Another PTP clock in the network is the best master clock according to the BMCA (e.g., has a higher priority or provides more accurate time). Therefore, the other clock is used as time reference in the network.</p> <p>Listening: After initialization the <i>CMGPS 588</i> is listening for messages from other PTP master clocks in the network before it becomes either master or passive.</p> <p>Disabled: The PTP state machine of the <i>CMGPS 588</i> has been disabled via the management interface.</p> <p>Faulty: The <i>CMGPS 588</i> detected a fault condition. Further details about the error can be found in the log file.</p> <p>See IEEE 1588-2008, clause 9.2.5 for more detailed information.</p> |
| Delay mechanism | Displays the PTP delay mechanism used by the <i>CMGPS 588</i> . |
| Sync interval [s] | <p>Displays the mean synchronization interval for multicast messages (interval between successive Sync messages).</p> <p>Sync Interval = $2^{\text{Log sync interval}}$ seconds, see IEEE 1588-2008, clause 8.2.5.4.3.</p> |
| Announce interval [s] | <p>Displays the mean time interval between successive Announce messages. See IEEE 1588-2008, clause 8.2.5.4.1.</p> <p>Announce interval = $2^{\text{Log announce interval}}$ seconds.</p> |

| | |
|--|---|
| <p>Announce receipt timeout</p> | <p>Displays the number of "Announce Interval" intervals that have to pass without the receipt of an Announce message before an ANNOUNCE_RECEIPT_TIMEOUT_EXPIRES event occurs. See IEEE 1588-2008, clause 8.2.5.4.2.</p> |
| <p>Minimum pdelay request interval [s]</p> | <p>Displays the minimum permitted mean time interval between successive Pdelay_Req messages. See "logMinPdelayReqInterval" in IEEE 1588-2008.</p> <p>Minimum pdelay request interval = $2^{\text{Log min pdelay request interval}}$ seconds, see IEEE 1588-2008, clause 8.2.5.4.5.</p> |
| <p>Peer mean path delay [ns]</p> | <p>Displays the estimate of the current one-way propagation delay on the link computed using the peer delay mechanism. See IEEE 1588-2008, clause 8.2.5.3.3.</p> |
| <p>Delay asymmetry [ns]</p> | <p>Displays the asymmetry delay. The asymmetry delay is defined to be positive when the master-to-slave or responder-to-requestor propagation time is longer than the slave-to-master or requestor-to-responder propagation time. See IEEE 1588-2008, clause 7.4.2.</p> <p>Time (master -> slave) = meanPathDelay + delayAsymmetry Time (slave -> master) = meanPathDelay - delayAsymmetry</p> |
| <p>Profile ID</p> | <p>Displays the profile identity. The profile identity identifies the PTP profile implemented by the port indicated by the targetPortIdentity.portNumber member of the field.</p> <p>See IEEE 1588-2008, clause 15.5.3.1.2.10.</p> |

| | |
|------------------|---|
| Network protocol | Displays the network protocol selected for the Transport parameter. |
| Vlan ID | Displays the Vlan ID. The Power Profile according to IEEE C37.238-2011 requires an IEEE 802.1Q VLAN tag. This value represents the VID (VLAN Identifier) field (12 bits) within the TCI (Tag Control Identifier). See IEEE C37.238-2011, clause 5.6. |
| Vlan priority | Displays the Vlan priority. The Power Profile according to IEEE C37.238-2011 requires an IEEE 802.1Q VLAN tag. This value represents the PCP (Priority Code Point) field (3 bits) within the TCI (Tag Control Identifier). See IEEE C37.238-2011, clause 5.6. |

7.2.2.2 Default tab in the PTP status page

The **Default** tab displays the configuration or current state of the internal PTP clock of the *CMGPS 588*. When the *CMGPS 588* is in the master state, the slave clocks in the network/domain in which the *CMGPS 588* participates are synchronized to this clock. The data listed here correspond to the Default Dataset specified in IEEE 1588-2008, clause 8.2.1.

| | |
|----------|---|
| Two step | Indicates whether the <i>CMGPS 588</i> is operating as a two step clock (true) or as a one step clock (false), see IEEE 1588-2008, clauses 7.3.8.3, 8.2.1.2.1 and 13.3.2.6. |
|----------|---|

| | |
|-----------------------|---|
| <p>Clock identity</p> | <p>Displays the clock identity. IEEE 1588-2008, clause 7.5.2.2, requires that each clock in a PTP network has a unique clock identifier. This identifier is an 8-octet array. The <i>CMGPS 588</i> automatically sets the clock identity to a unique value based on the device's MAC address according to IEEE 1588-2008, clause 7.5.2.2.2.</p> |
| <p>Clock class</p> | <p>Displays the clock class of the <i>CMGPS 588</i> (see IEEE 1588-2008, clause 7.6.2.4). The clock class is broadcast in the corresponding PTP data packets. The value of the clock class parameter is automatically set by the <i>CMGPS 588</i> depending on the source of time that is currently available:</p> <p>PRIMARY_REF_PTP (6) The clock of the <i>CMGPS 588</i> is locked to a primary reference time source, i.e., to the GPS system.</p> <p>PRIMARY_REF_PTP_HOLDOVER (7) The clock was previously locked to GPS time but has lost GPS reception. The internal oscillator of the <i>CMGPS 588</i> is used as the source of time and provides time with the accuracy given by the Clock accuracy parameter.</p> <p>NOT_IN_SPEC_PTP_A (52) The clock is not locked to GPS time and is not within its holdover specification.</p> |
| <p>Clock accuracy</p> | <p>Displays the current accuracy of the <i>CMGPS 588</i>'s internal clock with regard to TAI. See IEEE 1588-2008, clause 7.6.2.5 for details. This parameter is determined automatically by the <i>CMGPS 588</i>, considering the quality of the current GPS reception.</p> |

| | |
|--------------------------|--|
| Clock variance | <p>Displays the clock variance. The clock variance parameter is set to the PTP variance value specified by IEEE 1588-2008, clause 7.6.3. This parameter gives a measure for the stability of the internal oscillator of the <i>CMGPS 588</i> and is used in the Best Master Clock Algorithm (BMCA) of the PTP protocol. The Clock variance of the <i>CMGPS 588</i> is set to a constant value that was determined from laboratory observations.</p> |
| Priority 1 Priority 2 | <p>Displays the priority values of the <i>CMGPS 588</i>. To each PTP master clock, two priority values (Priority 1 and Priority 2) may be assigned. If more than one PTP grandmaster clock is available in the network, a clock with a lower Priority 1 value will always be the preferred master clock over a clock with a higher Priority 1 value (see IEEE 1588-2008, clause 6.6.2.3). A value in the range from 0 to 255 may be assigned to the Priority 1 parameter (see IEEE 1588-2008, clause 7.6.2.2).</p> <p>The Priority 2 parameter (see IEEE 1588-2008, clause 7.6.2.3) is used if several devices have the same Priority 1 parameter value and the same clock quality (class, accuracy and variance). The Priority 2 parameter thus allows a finer grained ordering among otherwise equivalent clocks (see IEEE 1588-2008, clause 6.6.2.3). Lower values take precedence.</p> |
| Domain number | <p>Displays the domain number of the <i>CMGPS 588</i>. The domain number specifies the PTP domain (see IEEE 1588-2008, clause 7.1) in which the <i>CMGPS 588</i> participates. All clocks in a network that shall be synchronized to each other must participate in the same PTP domain, i.e., have the Domain number parameter set to the same value.</p> |

| | |
|------------------------------|---|
| Slave only | Displays whether the clock is a slave-only clock (true) or not (false). See IEEE 1588-2008, clause 8.2.1.4.4. |
| IEEE C37.238 grandmaster ID | Displays the grandmaster identity of the <i>CMGPS 588</i> to be transmitted in IEEE C37.238 TLV. By sending this ID, the <i>CMGPS 588</i> identifies itself as a valid power profile grandmaster. A power profile slave will ignore all masters that do not provide a setting for this field. |
| Local time inaccuracy [ns] | Displays the maximum time inaccuracy in ns that the device contributes to the network time inaccuracy. See IEEE C37.238-2011, clause 5.13. |
| Network time inaccuracy [ns] | Displays the network time inaccuracy in ns to be transmitted in IEEE C37.238 TLV. See IEEE C37.238-2011, clause 5.13. |

7.2.2.3 Parent tab in the PTP status page

The **Parent** tab displays information about the current grandmaster clock of the network/domain in which the *CMGPS 588* operates. If the *CMGPS 588* is currently the master of the network or domain, the values given here are identical to the values in the **Default tab** (see page 51) . Otherwise, information about the respective grandmaster clock is given here. The data corresponds to the Parent Dataset specified by IEEE 1588-2008, clause 8.2.3.

| | |
|---------------|---|
| Port identity | Displays the port identity. This parameter states the port identity of the <i>CMGPS 588</i> as defined by IEEE 1588-2008, clause 7.5.2, in the format <code>portNumber@clockIdentity</code> . |
|---------------|---|

| | |
|--------------------------------|---|
| GM identity | Displays the grandmaster identity. This is the unique identifier of the clock that is currently the grandmaster clock of the network or domain in which the <i>CMGPS 588</i> participates. |
| GM clock class | Displays the grandmaster clock class. This parameter specifies the current clock class of the current grandmaster clock in the network or domain (see IEEE 1588-2008, clause 7.6.2.4). The value of the GM clock class parameter is automatically set by the current grandmaster clock depending on the source of time that is currently available. |
| GM clock accuracy | Displays the current accuracy of the internal clock of the current grandmaster clock with regard to TAI. See IEEE 1588-2008, clause 7.6.2.5 for details. |
| GM clock variance | Displays the grandmaster clock variance. The GM clock variance parameter is set to the PTP variance value specified by IEEE 1588-2008, clause 7.6.3. This parameter gives a measure for the stability of the internal oscillator of the current grandmaster clock and is used in the Best Master Clock Algorithm (BMCA) of the PTP protocol. |
| GM priority 1 GM priority 2 | Displays the priority 1 and 2 of the current grandmaster clock. If more than one PTP grandmaster clock is available in the network, a clock with a lower Priority 1 value will always be the preferred master clock over a clock with a higher Priority 1 value (see IEEE 1588-2008, clause 6.6.2.3). A value in the range from 0 to 255 may be assigned to the Priority 1 parameter (see IEEE 1588-2008, clause 7.6.2.2). ... |

| | |
|-------------------------------------|---|
| | <p>The Priority 2 parameter (see IEEE 1588-2008, clause 7.6.2.3) is used if several devices have the same Priority 1 parameter value and the same clock quality (class, accuracy and variance). The Priority 2 parameter thus allows a finer grained ordering among otherwise equivalent clocks (see IEEE 1588-2008, clause 6.6.2.3). Lower values take precedence.</p> |
| <p>IEEE C37.238 grandmaster ID</p> | <p>Displays the grandmaster identity announced in IEEE C37.238 TLV. By sending this ID, the current grandmaster clock identifies itself as a valid power profile grandmaster. A power profile slave will ignore all masters that do not provide a setting for this field.</p> |
| <p>GM time inaccuracy [ns]</p> | <p>Displays the maximum time inaccuracy in ns that the current grandmaster clock contributes to the network time inaccuracy. See IEEE C37.238-2011, clause 5.13.</p> |
| <p>Network time inaccuracy [ns]</p> | <p>Displays the network time inaccuracy of the current grandmaster clock in ns announced in IEEE C37.238 TLV. See IEEE C37.238-2011, clause 5.13.</p> |

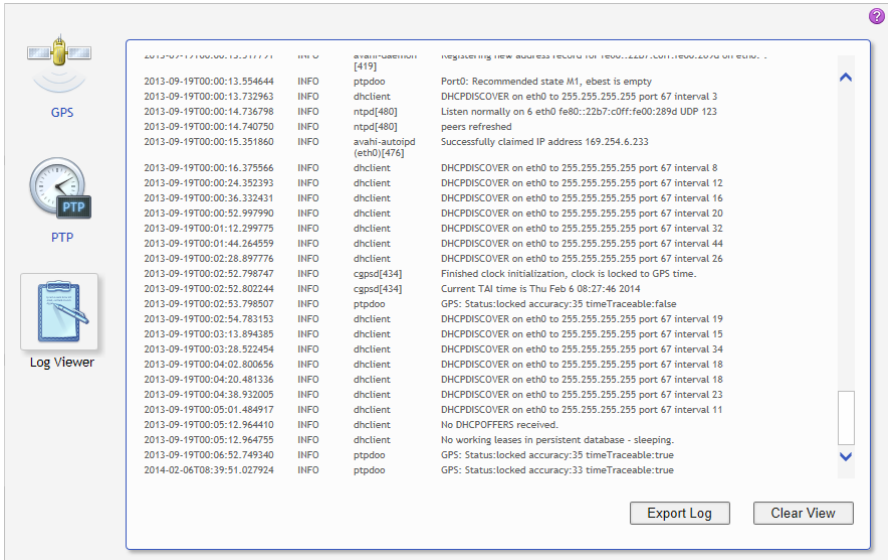
7.2.2.4 Time tab in the PTP status page

The **Time** tab displays parameters for the time that is currently distributed in the PTP network or domain in which the *CMGPS 588* participates (e.g., epoch related parameters like UTC offset or leap second information), and parameters of the time source currently used. If the *CMGPS 588* is the current grandmaster of the network, the data in this tab represent its own time source. If the *CMGPS 588* is in passive state, this tab lists the parameter values of the current grandmaster clock in the network or domain. The data listed here represents the Time Properties Data set specified in IEEE 1588-2008, clause 8.2.4.

| | |
|--------------------|---|
| UTC offset | Displays the UTC offset. In PTP systems whose epoch is the PTP epoch, the value is the offset between TAI and UTC in seconds; otherwise the value has no meaning. See IEEE 1588-2008, clause 8.2.4.2. |
| UTC offset valid | True indicates that the value of the UTC offset parameter is valid. Otherwise false. See IEEE 1588-2008, clause 8.2.4.3. |
| Leap 59 Leap 61 | Displays the boolean values that are used to notify the clocks in the network or domain that a UTC leap second is pending. Leap 59 = True means that the last minute of the current UTC day contains only 59 seconds (see IEEE 1588-2008, clause 8.2.4.4). Leap 61 = True means that the last minute of the current UTC day contains 61 seconds (see IEEE 1588-2008, clause 8.2.4.5). |
| Time traceable | True indicates that the time currently distributed in the network or domain is traceable to a primary reference, e.g., to GPS (see IEEE 1588-2008, clause 8.2.4.6) |

| | |
|----------------------------|--|
| <p>Frequency traceable</p> | <p>True indicates that the frequency determining the timescale currently distributed in the network or domain is traceable to a primary reference, e.g., to GPS (see IEEE 1588-2008, clause 8.2.4.7).</p> |
| <p>PTP time scale</p> | <p>True indicates that the timescale distributed in the network or domain is the PTP timescale, i.e., TAI time. False if an arbitrary timescale is used. See IEEE 1588-2008, clause 8.2.4.8.</p> <p>Example: GPS (0x20) means that the current grandmaster clock is synchronized to a satellite system like GPS.</p> |
| <p>Time source</p> | <p>Displays the source of time that is used by the current grandmaster clock (see IEEE 1588-2008, clause 8.2.4.9). Possible values for this parameter are listed in IEEE 1588-2008, clause 7.6.2.6.</p> |

7.2.3 Log Viewer Page



| Timestamp | Severity | Message |
|----------------------------|----------|---------------------------|
| 2013-09-19T00:00:13.554644 | INFO | ptpdoo |
| 2013-09-19T00:00:13.732963 | INFO | dhclient |
| 2013-09-19T00:00:14.736798 | INFO | ntpd[480] |
| 2013-09-19T00:00:14.740750 | INFO | ntpd[480] |
| 2013-09-19T00:00:15.351860 | INFO | avahi-autoipd (eth0)[476] |
| 2013-09-19T00:00:16.379566 | INFO | dhclient |
| 2013-09-19T00:00:24.352393 | INFO | dhclient |
| 2013-09-19T00:00:36.332431 | INFO | dhclient |
| 2013-09-19T00:00:52.997990 | INFO | dhclient |
| 2013-09-19T00:01:12.299775 | INFO | dhclient |
| 2013-09-19T00:01:44.264959 | INFO | dhclient |
| 2013-09-19T00:02:28.897776 | INFO | dhclient |
| 2013-09-19T00:02:52.798747 | INFO | cgpsd[434] |
| 2013-09-19T00:02:52.802244 | INFO | cgpsd[434] |
| 2013-09-19T00:02:53.798507 | INFO | ptpdoo |
| 2013-09-19T00:02:54.783153 | INFO | dhclient |
| 2013-09-19T00:03:13.894385 | INFO | dhclient |
| 2013-09-19T00:03:28.522454 | INFO | dhclient |
| 2013-09-19T00:04:02.800656 | INFO | dhclient |
| 2013-09-19T00:04:20.481336 | INFO | dhclient |
| 2013-09-19T00:04:38.932005 | INFO | dhclient |
| 2013-09-19T00:05:01.484917 | INFO | dhclient |
| 2013-09-19T00:05:12.964410 | INFO | dhclient |
| 2013-09-19T00:05:12.964755 | INFO | dhclient |
| 2013-09-19T00:06:52.749340 | INFO | ptpdoo |
| 2014-02-06T08:39:51.027924 | INFO | ptpdoo |

Port0: Recommended state M1, ebtest is empty
 DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 3
 Listen normally on 6 eth0 fe80::22b7:c0ff:fe00:289d UDP 123
 peers refreshed
 Successfully claimed IP address 169.254.6.233

DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 8
 DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 12
 DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 16
 DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 20
 DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 32
 DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 44
 DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 26
 Finished clock initialization, clock is locked to GPS time.
 Current TAI time is Thu Feb 6 08:37:46 2014
 GPS: Status:locked accuracy:35 timeTraceable:false
 DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 19
 DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 15
 DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 34
 DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 18
 DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 18
 DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 23
 DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 11
 No DHCP OFFERS received.
 No working leases in persistent database - sleeping.
 GPS: Status:locked accuracy:35 timeTraceable:true
 GPS: Status:locked accuracy:33 timeTraceable:true

Export Log Clear View

The **Log Viewer** page shows all events logged in the internal log file.

ERR Error messages are displayed in red.

WARNING Warning messages are displayed in orange.

NOTICE Notice messages are displayed in black.

INFO All other messages (debug messages, information, etc.) are displayed in gray.

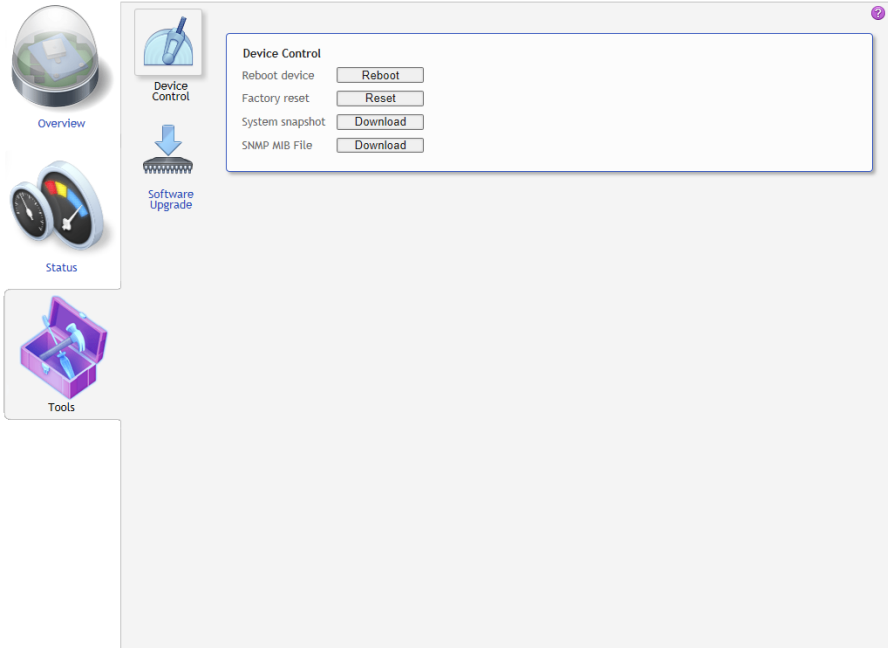
Click **Clear View** to delete the messages displayed in the **Log Viewer** window. This does not clear the log file. Re-opening the **Log Viewer** will again display all messages logged in the log file.

Click **Export Log** to export the log file content to a text file (file extension .log).



The log file is cleared with each reboot of the *CMGPS 588* (see [Performing a reboot of the CMGPS 588](#) on page 32 or [Performing a reboot of the CMGPS 588](#) on page 37). If the maximum size of the log file is reached, the system automatically deletes old log file entries in order to release memory space for new entries.

7.3 Tools Section



The following pages are available:

- **Device Control** (see page [62](#))
- **Software Upgrade** (see page [63](#))

7.3.1 Device Control Page

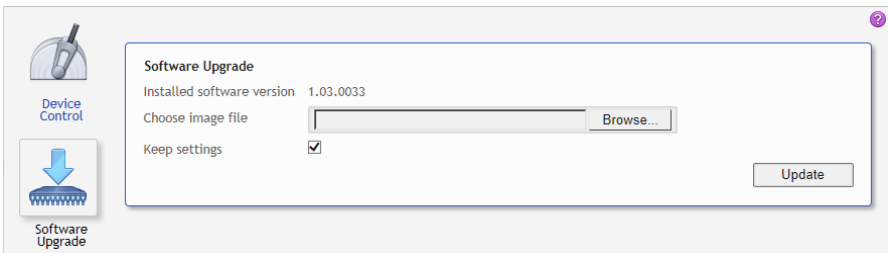


The **Device Control** page provides the following options:

| | |
|------------------------|---|
| <p>Reboot device</p> | <p>Click the Reboot button to initiate a device reboot.</p> <p>The <i>CMGPS 588</i> performs a reboot. The device reboot will take approx. 1 minute.</p> <p>A reboot can also be performed using the pushbutton on the device.</p> |
| <p>Factory reset</p> | <p>Click the Reset button to initiate a factory reset.</p> <p>A factory reset can be used to delete specific information stored in the internal GPS module.</p> <p>A factory reset can also be performed using the pushbutton on the device.</p> |
| <p>System snapshot</p> | <p>Click the Download button to download a system snapshot containing all configuration settings and the log file. The system snapshot contains important information for the technical support in case of problems.</p> |

| | |
|---------------|---|
| SNMP MIB File | A MIB (Management Information Base) file is required for proper representation of the power profile settings of the <i>CMGPS 588</i> in SNMP clients. Click the Download button to download the MIB file from the <i>CMGPS 588</i> . |
|---------------|---|

7.3.2 Software Upgrade Page




Download the up-to-date software image file for the *CMGPS 588* free of charge from the customer area at www.omicron.at or www.omicronusa.com.

Use the **Software Upgrade** page to perform an update of the internal software of the *CMGPS 588*.

| | |
|----------------------------|--|
| Installed software version | Displays the version number of the software currently installed on the <i>CMGPS 588</i> . |
| Choose image file | Click the Browse... button to navigate to the new software image file to be used for the update. The path and file name is displayed in the field after selecting it in the file open dialog. |

| | |
|-----------------------------|--|
| <p>Keep settings</p> | <p>If this check box is selected, the user specific configuration settings are kept during a software update. Deselect the check box to automatically reset the device configuration to the factory defaults after a software update.</p> |
| <p>Update button</p> | <p>Click the Update button to start the software update. The update process may take up to ten minutes. Do not disconnect the <i>CMGPS 588</i> or the computer during this process.</p> <p>The <i>CMGPS 588</i> automatically restarts after the software update completed.</p> |



If the software update process fails due to any reason, the *CMGPS 588* will enter a recovery mode on the next power-up. In this mode, the device provides only a rudimentary Web Interface (similar to the **Software Upgrade** page) just allowing for the upload of a software image.

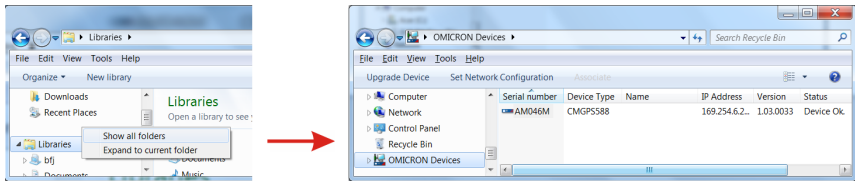
8 The OMICRON Device Browser

By means of the OMICRON *Device Browser* you can access network compatible OMICRON devices. The *Device Browser* automatically finds all OMICRON devices available in the computer network.

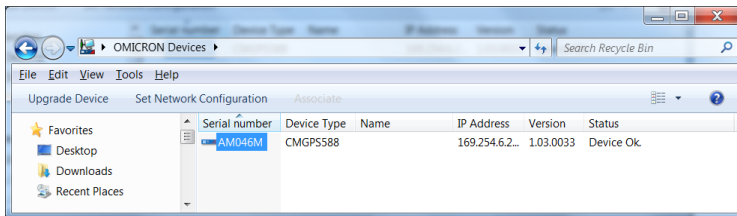
Having the *Device Browser* installed on your computer, the OMICRON devices may be displayed in one of two ways:

1. When using the regular Windows Explorer, the OMICRON devices appear in the Windows Explorer's folder tree in a section called OMICRON Devices, their serial numbers presented like regular first-level folders.


If necessary, right-click on a free area of the Windows Explorer's folder tree and select the **Show all folders** option to display the OMICRON Devices section in the Windows Explorer.



2. Alternatively, double click the OMICRON Devices desktop icon. This launches a Windows Explorer window listing the OMICRON devices detected in the computer network with their serial number, device type/ name and IP address.



There is no functional difference; use whatever method is more convenient for you. Even though the *Device Browser* help system focuses on accessing devices via the "regular" Windows Explorer, when working from the *OMICRON Devices Explorer* window, the handling is basically identical.

Click the help button  in the top right corner of the *Device Browser Explorer* window to view the *Device Browser* help providing detailed information about the *Device Browser*.

8.1 Installing the OMICRON Device Browser

The *OMICRON Device Browser* is installed automatically together with your *OMICRON* software used to control the time synchronization with the *CMGPS 588* (e.g., *OMICRON Test Universe*).

Proceed as follows if the *OMICRON Device Browser* is not already installed on your computer:

1. Download the *OMICRON Device Browser* software (ODBSetup32bit.exe or ODBSetup64bit.exe, depending on your Windows operating system) from the customer area of the *OMICRON* web site (www.omicron.at or www.omicronusa.com).
2. Exit all other major programs running on your computer.
3. Double-click the file ODBSetupxxbit.exe in the Windows Explorer.
4. Follow the instructions displayed on the screen to install the software.



Note regarding firewall requirements: The OMFind service sends and receives network packets on UDP port 4987 and 4988. The *OMICRON Device Browser* installer will configure the Windows firewall appropriately during installation on supported systems. If you have a separate "personal" firewall enabled, ensure that UDP ports 4987 and 4988 are open for the OMFind service.

8.2 Finding OMICRON Devices in the Device Browser Manually (OMFind)


Normally the *Device Browser* automatically finds all OMICRON devices connected to the network. If not, it is also possible to manually search the network for available OMICRON devices.

Proceed as follows:

1. Right-click the **OMICRON Devices** desktop icon.
2. On the context menu, select **OMFind** and then click **Find Devices**.
3. This will start the *Device Discovery* tool. This tool is intended to diagnose network/firewall problems when the *Device Browser* lists no or not all expected test sets.
4. Click the **Start Discovery** button to manually search for OMICRON devices connected to the network. Once the search is finished, the discovered devices section lists network parameters of all found OMICRON devices.



Some of the available firewall/tunneling products are capable of stopping even the **Start Discovery** feature of the *Device Discovery* tool. So you will not find any OMICRON devices on the network this way. In this case, the network parameters list stays empty once a search is finished. If you experience such a behavior, this may indicate a firewall/tunneling software blocking the network communication.

Click the help button  in the top right corner of the *Device Browser Explorer* window to view the *Device Browser* help providing detailed information about the OMFind service.

8.3 Accessing the CMGPS 588 Web Interface

Accessing the *CMGPS 588 Web Interface* is described in detail in section [Accessing the CMGPS 588 Web Interface](#) on page 26.

9 Technical Data

9.1 General Specifications


| | |
|----------------------------|---|
| Dimensions | Overall height (without connector and mounting kit): 106.2 mm / 4.17" Diameter: 115.5 mm / 4.55" |
| Weight | < 500 g / 1.1 lbs |
| Degree of protection | IP67 according to EN 60529 |
| Timing accuracy | +/- 100 ns to reference time (TAI/UTC) |
| Supported timing protocols | PTP Power Profile according to IEEE 1588-2008 and IEEE C37.238-2011. |
| Ethernet port | Waterproof Ethernet connector according to IEC 61076-3-106 (variant 4), 10Base-T/100 Base-TX |
| Power supply | Power over Ethernet (PoE), class 1 powered device according to IEEE 802.3af |
| Power consumption | < 2 W |
| GPS performance | 12 channel GPS receiver Frequency: 1575.42 MHz, L1 band |

9.2 Environmental Conditions

| | |
|-------------------|--|
| Temperature range | Operation: -40 °C to +70 °C (-40 °F to +158 °F) Storage: -40 °C to +85 °C (-40 °F to +185 °F) |
|-------------------|--|

| | |
|-----------------------|--|
| Weathering resistance | For outdoor use (IP67) |
| Climate | IEC 60068-2-30, Test Db, damp heat, cyclic (6 cycles, 55 °C). |
| Vibration | IEC 60068-2-6, Test Fc, sinusoidal vibration, 6 mm at 5 - 9 Hz, 2 g at 9 - 200 Hz. |
| Shock | IEC 60068-2-27, Test Ea, 15 g/11 ms half sine. |

9.3 CE Conformity, Electromagnetic Compatibility (EMC), Certificates

| | | |
|---------------|---|---|
| CE conformity | The product adheres to the specifications of the guidelines of the council of the European Community for meeting the requirements of the member states regarding the electromagnetic compatibility (EMC) Directive 2004/108/EC. | |
| EMC emission | EN 55022:2010 class B, EN 61326-1:2013 | |
| EMC immunity | EN 55024:2010, EN 61326-1:2013, EN 62305-4:2010 | |
| Safety | IEC 60950-1:2005 2 Ed. +A1:2009, IEC 60950-22:2005 | |
| Certificates | Manufactured under an ISO 9001 registered system. |  |

10 Open Source Software License Information

Parts of the *CMGPS 588* software are under OMICRON license, other parts are under open source software licenses. For the complete licensing information on the open source software, please display the *CMGPS 588* Web Interface and click the License Information hyperlink in the bottom right corner.

The open source code is available on the Internet under www.omicron.at/opensource.

11 Glossary

| | |
|------|---|
| BSW | British Standard Whitworth |
| GPS | Global Positioning System |
| PoE | Power over Ethernet (according to IEEE 802.3af) |
| PTP | Precision Time Protocol |
| SELV | Safety Extra Low Voltage |
| TAI | International Atomic Time |
| UTC | Universal Time Coordinated |

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