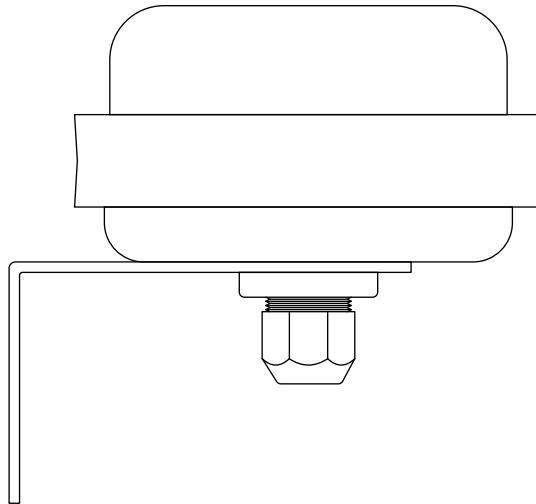




## User Manual

# GNSS 4500

## GPS Signal Receiver



Scan the QR code or enter following URL to get the latest version:  
<https://docs.mobatime.cloud/GNSS-4500>



# Regulations and Certification

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The device fulfils the requirements of the following standards:

**ETSI EN 301489-1 V2.1.1:2017 / ETSI EN 301489-19 V2.1.1:2019**

**ETSI EN 303413 V1.1.1:2017**

**EN 62368-1 ED.2:2014+A11:2017**

This product was developed and produced with the following EU directives:

<b>EMC :</b>	Electromagnetic compatibility directive <b>2014/30/EU</b>
<b>LVD :</b>	Low voltage directive <b>2014/35/EU</b>
<b>RED :</b>	Radio equipment directive <b>2014/53/EU</b>
<b>RoHS II :</b>	Restriction of the use of certain hazardous substances directive <b>2011/65/EU</b>
<b>WEEE :</b>	Waste electrical and electronic equipment directive <b>2012/19/EU</b>
<b>REACH :</b>	Chemical substance directive <b>ES 1907/2006</b>

See Conformity for the declaration of conformity of this specific product. This product may offer a CB test certificate on request.



## Important Notes

1. Please read and follow the safety information in this document before operating the product. We cannot guarantee that no accidents or damage will occur to improper use of this product. Please use this product with care and operate at your own risk.
2. We are not liable for any direct or indirect damage caused by the use of this document or the said product.
3. This product must be connected and installed by qualified electrician who is familiar with the relevant regulations (e.g. VDE).
4. The information in this document is subject to change without notice. The latest version of this document is available for download at <https://docs.mobatime.cloud/GNSS-4500/user-manual/pdf>.
5. This User Manual has been composed with the utmost care to explain all the details to ensure a safe and stable operation of this product. Nevertheless, if question arise or error appear, feel free to contact support.
6. Images shown are for illustrative purposes and may differ from the final product.
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# 1 Safety

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Read the safety instructions carefully and follow all the instructions. This ensures safe and reliable operation of this device.

## 1.1. Instructions and Symbols

Symbols used throughout this document and their meaning are as follows:



A note or important information.



Answer to a possible question. Contact information.



Keep away from children and people with limited physical, sensory, or mental capacities.



Action needs to be taken.



Connect device to earth ground.



More information included in the manual.



Disconnect mains power before doing anything.



An example or a hint.



Additional references or information.



Attention of electrical shocks.



Surface may be hot.



Item is flammable.



A warning, be cautious.



Recyclable materials.



Do not put in trash.

## 1.2. General



For safety and licensing reasons, unauthorized modifications and/or changes to the product is prohibited. Maintenance, adjustments or repairs may only be carried out by the factory (copyright holder).



This product is not a toy; it does not belong in the hands of children. Mount or place the product so that it cannot be reached by children. Children may try to insert objects into the product. The product will not only be damaged, but there is also a risk of injury, as well as danger to life through electric shock.



Never open the housing of this product, for it poses mortal danger from electric shock or may even cause a fire.

Keep packaging such as plastic films away from children. There is the risk of suffocation of misused.



Use caution with the product, knocks, blows, or even falls from a low height can damage it.



In industrial facilities, the accident prevention regulations of the trade associations for electrical systems and equipment must be observed.

Do not use the product if it is damaged. It can be assumed that safe operation is no longer possible, if:

- The product has visible damage.
- The product is not working properly (thick smoke or a burning smell, audible crackling noise, discoloration of the product or surrounding areas).
- The product was stored under adverse conditions.
- Tough conditions during transport.



Improper handling of this product operated on the mains voltage can cause mortal danger from electric shock!



Interconnection or combining equipment bearing a CE label does not inevitably result in a system that conforms with the safety regulations. Integrators will have to reassess the new product's compliance according to the locally valid directives. See section Conformity for more information on certifications of this product.

## 1.3. Installation

This product must be connected and installed by a qualified electrician who is familiar with the relevant regulations (e.g. VDE).



Never plug the product into voltage / power supply immediately after it has been moved from cold into warm environment (e.g. during / after transport / unboxing). The resultant condensed water may damage the product or may cause electric shock.



Allow the product reach the ambient temperature. Wait until the condensation has evaporated, this can take a few hours. Only then can the product be connected to the voltage / current supply and put into operation.



This product may have screw terminals with open electrical contacts. It is essential to ensure that the connection is made only when no voltage / current is applied. Secure the power supply to prevent accidental reconnection. Verify the absence of voltage using an appropriate meter.



Always connect earth ground to the device at the indicated protective earth terminal (PE or earth symbol indication).

## 1.4. Operation

Use the product in the specified environment. Use outside of the specifications can damage the product and/or stop any operation.

The product may not be exposed to extreme temperatures, direct sunlight or strong vibrations. Protect the product from moisture, dust and dirt.



Operation in environments with excessive dust, flammable gases, vapours or solvents is not permitted. It may cause explosion or fire.

- Do not overload the product. Note the input / output voltage and currents as well as output powers indicated on the product.
- Depending on the input currents and input voltages, suitable connecting cables with appropriate cable diameter must be used. Only use the plugs and connectors supplied in the original packaging with the product.

## 1.5. Maintenance and Cleaning

- If the product and/or the connecting cable is damaged, do not touch it: there is mortal danger from electric shock! First, turn off the power supply to all poles of the product. Verify the absence of voltage using an appropriate meter.
- For the end consumer, the product is maintenance-free. Leavy any maintenance to an expert. Repairs may only be done by the factory itself (copyright holder).
- For external cleaning one can use a clean, soft, dry cloth. Dust can be easily removed with a clean, soft brush and a vacuum cleaner.

## 1.6. Disposing



At the end of its lifecycle, do not dispose of this device in the regular household rubbish. Return it to the supplier who will dispose of it correctly.



The user is lawfully obligated to return unusable batteries. **Disposal of used batteries through household waste is prohibited!** Batteries which contain dangerous substances are labelled with a picture of crossed out trash bin. The symbol means that this product may not be disposed through household waste.

Unusable batteries can be returned free of charge at appropriate collection points of your waste disposal company or at shops that sell batteries. By doing so, you fulfil your legal responsibilities and help protect the environment.



This product was packed and stuffed with proper materials to protect it during transportation. Packaging materials can be recycled and should be disposed environmentally friendly.

## 1.7. Warranty

The device is intended for a normal operational environment according to the corresponding norm.

The following circumstances are excluded from the warranty:

- Inappropriate handling or interventions.
- Chemical influences.
- Mechanical defects.
- External environmental influences (natural catastrophes, etc.)



Repairs during and after warranty period are assured by the manufacturer.

## 2 Introduction

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The time signal receiver GNSS 4500 receives and processes the signals of up to three global navigation satellite systems (GNSS). With this precise time sources as reference, it is designed to synchronize master clocks and time servers. For this purpose, it sends out a serial time signal (DCF coded, UTC or CET) over a current loop interface.

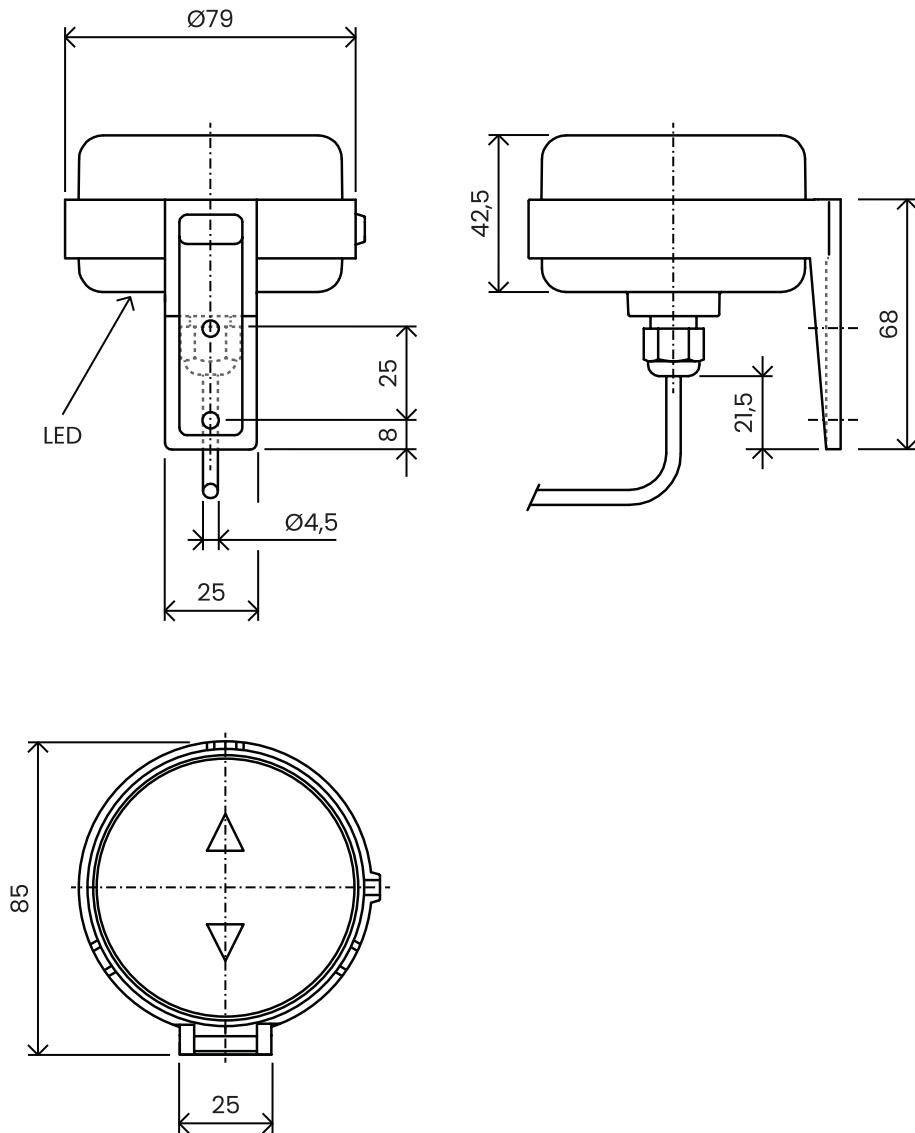


# 3 Technical Data

## 3.1. Basic Data

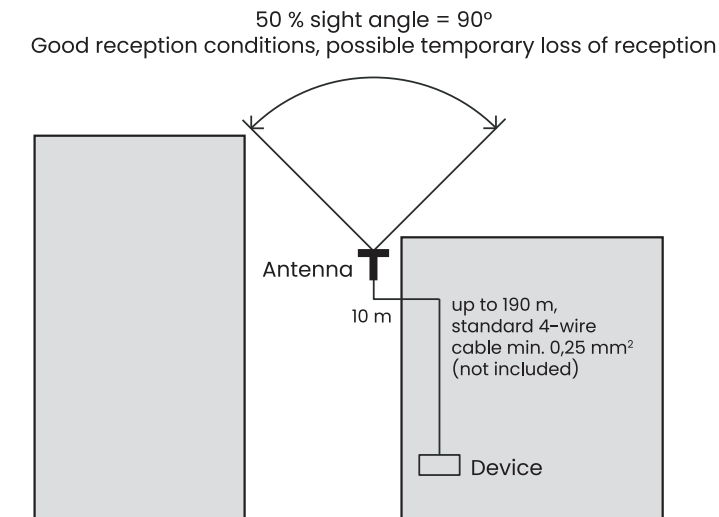
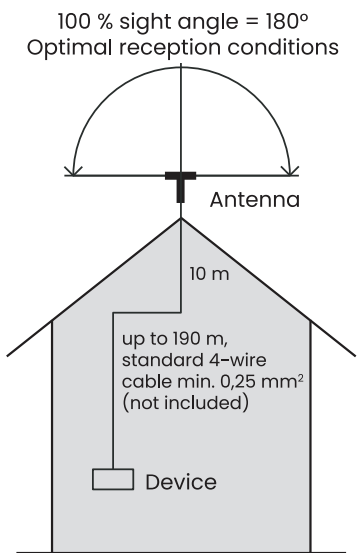
Parameter	Value	
Input Voltage	10–40 VDC	
Power Consumption	< 0.5 W (< 50 mA & 10 V)	
Operating Temperature	-30 to +70 °C	
Protection Degree	IP 65	
Dimensions (Without Bracket)	L-86 × ø80 × D-86 (L: distance from wall)	
Weight	Approx. 200 g	
Cable	10 m, UV resistant, 4-wire, 0.25 mm <sup>2</sup> (AWG 23), max. length 200 m	
Output	Time Code UTC or CET Impulse duration: logic 0 – 100 ms; logic 1 – 200 ms Leading edge of the time code is synchronized with the second pulse GPS (PPS)	
Satellites	Possibility of signal reception from 12 satellites, reception from min. 3 satellites required	
Accuracy of Leading Edge	±5 µs	
Synchronization Time	< 25 min	
Status Display (LED visible from below)	Without Synchronization	LED blinks once every 5 seconds, power OK
	Synchronization OK	LED blinks once per second (signal output)
	Power Failure	LED is off

### 3.1.1. Dimensions



### 3.2. Placement of the GNSS 4500 Receiver

Pressuming the good position of the GPS receiver (GNSS 4500), the synchronization takes place in approx. 10–20 minutes. The LED diode (either green on red – depending on time code signal) visible from below lights up.



# 4 Connection to Digital Clock

Reversing the polarity of the **YELLOW** and **GREEN** power supply cables allows you to switch between UTC and CET time code signals.

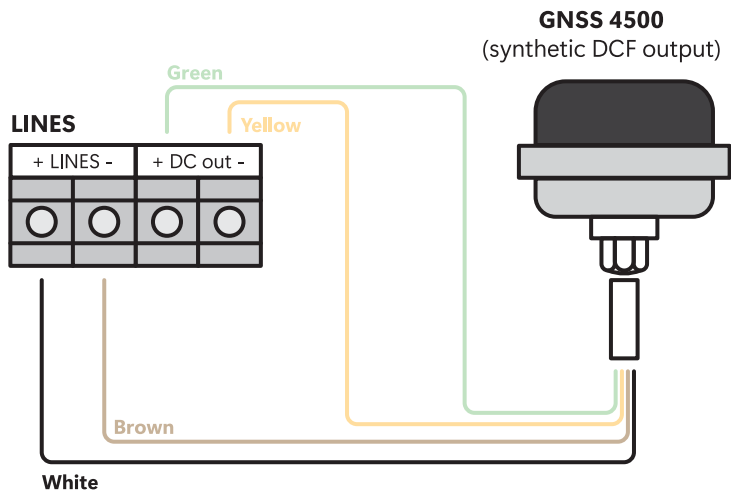


It is important to configure DIP switch position to DCF.

## 4.1. Standard Connection

Connect the GPS receiver (GNSS 4500) to the clock terminal board placed on the anchoring plate ( **LINES** and **DC out** terminals) using 4-wire cable.

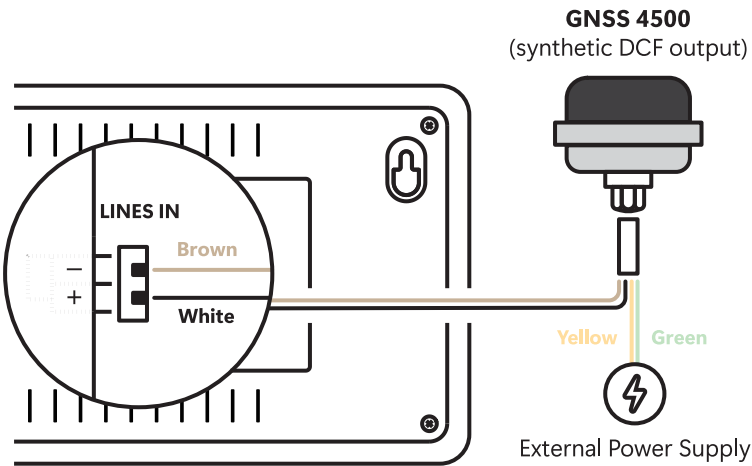
Wire Color	Connector
White	LINES +
Brown	LINES -
Green	DC out +
Yellow	DC out -



## 4.2. ECO-DC Connection

Connect the GPS receiver (GNSS 4500) to the **LINES IN** connector on the back side of the recess. Connect the **YELLOW** and **GREEN** cable to external power supply.

Wire Color	Connector
White	LINES IN +
Brown	LINES IN -
Green	External Power Supply
Yellow	





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