MOBATIME QX-801147.02-NTS Network Time Server Installation Guide

Contents

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MOBATIME

SWISS TIME SYSTEMS

See Manual NTS

https://www.mobatime.com/support/resources

Safety

General

Read these instructions.

Keep this instruction manual.

We do not answer for direct or indirect damages which could occur when using this manual.

Operating safety

Do not open the housing of the device.

Do not modify the device.

The installation must only be carried out by skilled staff.

The device may only be used by trained personnel.

Keep the packaging away from children.

Installation site

Do not expose the device to moisture, dust, heat or direct sunlight.

Do not operate the device outdoors.

Make sure that you wait before using the device after any transport until the device has reached the ambient air temperature. Great fluctuations in temperature or humidity may lead to moisture within the device caused by condensation, which can cause a short.

Maintenance

Troubleshooting – Repairs

A detailed documentation on troubleshooting can be found in the instruction manual (see chapter 3).

Any repairs must be carried out at the manufacturer’s plant.

Disconnect the power supply immediately and contact your supplier, if …

- liquid has entered your device
- the device does not properly work and you cannot rectify this problem yourself.

Cleaning

Please make sure that the device remains clean especially in the area of the connections, the control elements, and the display elements.

Clean your device with a damp cloth only.

Do not use solvents, caustic, or gaseous cleaning substances.

Disposing

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

Packaging
Your device is packaged to protect it from damages during transport.
Packaging is made of materials that can be disposed of in an environmentally friendly manner and properly recycled.

General Information: Introduction

Document

This document is a shortened version of the NTS instruction manual (BE-800984).

The complete instruction manual, also for the GNSS 4500 (TE801333), is available at our website:

See QR Code and web link on the first page.

Scope of Delivery

Please check your delivery for completeness and notify your supplier within 14 days upon receipt of the shipment, if it is incomplete.

The package you received contains:

Network Time Server (NTS)

Connector set

- spring terminal 6-pole orange

wall power supply 230 VAC – 24 VDC

2 mounting tools for the spring terminals

Optional

Mounting set for rack mounting consisting of:

- 2 brackets
- 4 mounting screws for bracket to housing
- 4 nuts for 19″ housing
- 4 screws M6 for the nuts
- 4 plastic discs for screws M6

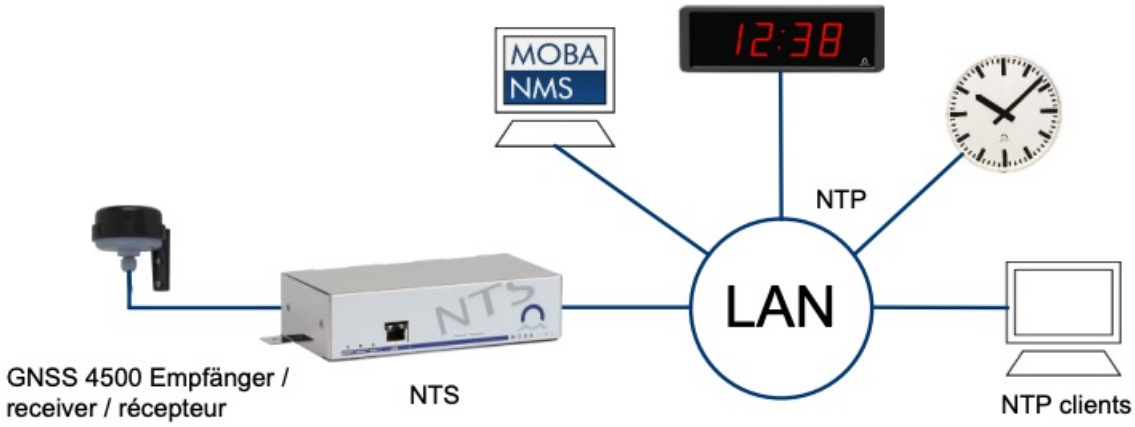
Technical data

See chapter 5.

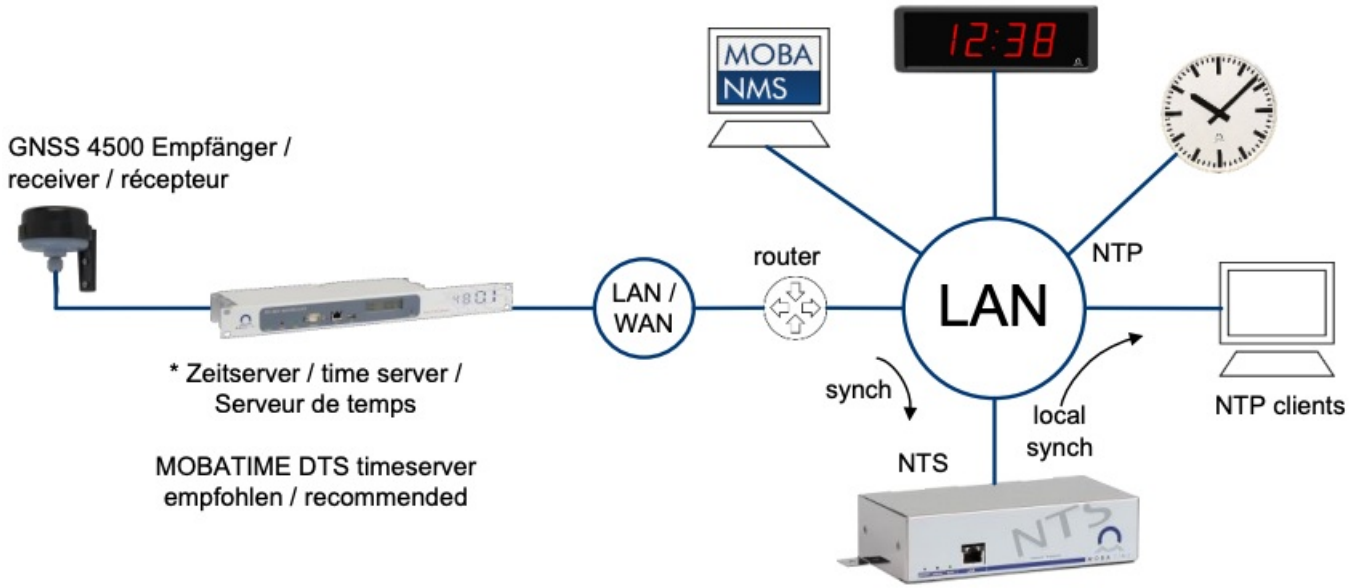
Installation

1. Select device configuration

A: Synchronisation from GNSS



B: Synchronisation from NTP server



2. Prepare network environment

Prior to the installation in the network, coordinate with the network administrator. Have the DHCP server (if available) prepared.

If no DHCP is present, the static IP can be used (see step 7).

Unlock port UDP 123 in the network.

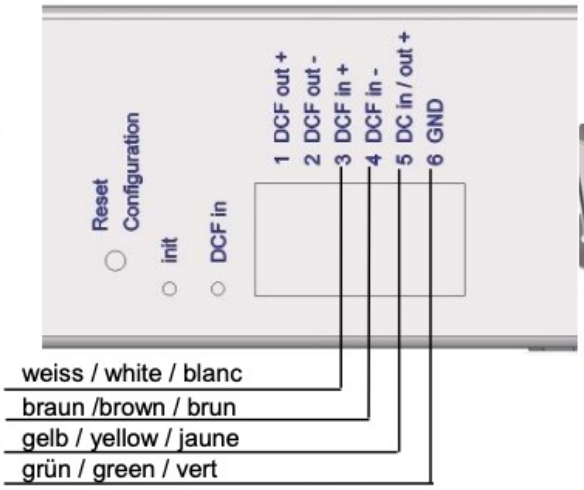
3. Install GNSS receiver

(configuration A only)

The GNSS receiver must have an unobstructed view of the sky and thus must be mounted on the outer building facade, ideally on the roof.

4. Connect GNSS receiver

(configuration A only)



5. Connect network cable

Connect the NTS with the network to be synchronized.

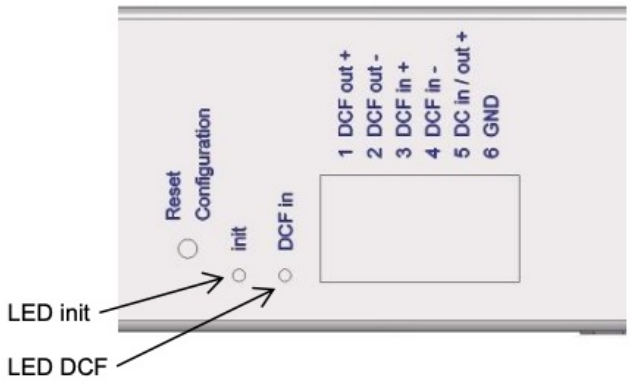
6. Connect mains power

Use the mains adapter included in the delivery.

Mains voltage: 100 -240 VAC / 50 – 60 Hz

The NTS boots in approx. 60 sec. The end of the booting procedure is indicated by the LED init (rear side, LED goes out).

Configuration A: The GNSS receiver needs up to 5 min after connecting mains power to receive the time from satellites. Upon successful synchronization, the LED DCF blinks once every second.



7. Connect to NTS

To configure the NTS, a PC must be connected to the NTS directly or via a switch (LAN / Ethernet cable RJ45). The PC must be set to the same address range (e.g. 192.168.46.2). Afterwards, connection with the NTS can be established using Telnet, SSH or MOBA-NMS.

Telnet/SSH:

Telnet/SSH (e.g. with PuTTY): Start → Run → telnet [IP address] (telnet 192.168.46.46).

MOBA-NMS:

Install software (see BE-800790 Instruction manual MOBA-NMS). Automatic device search:

- Select “Broadcast”
- Check box “NTS”
- Select “NTS”
- Select “Finish” auswählen

Add device manually (alternative):

- Select “NTS”
- Enter password
- Enter network parameters

IPv4 address of the NTS

(for IPv6 configuration, consult the instruction manual)

Per default, the NTS has the static IP address **192.168.46.46**.

Login data:

Telnet/SSH
User name: nts
Password: nts

MOBA-NMS
Password: mobatime

8. Configuration

Set IP address:

Telnet/SSH:
See instruction manual

MOBA-NMS:
In the configuration menu first during the initial configuration, later in the tab “Network”.

Zeitquelle definieren:

Configuration A:
DCF/GPS is the default synchronization source. Attention: the time zone must not be modified!

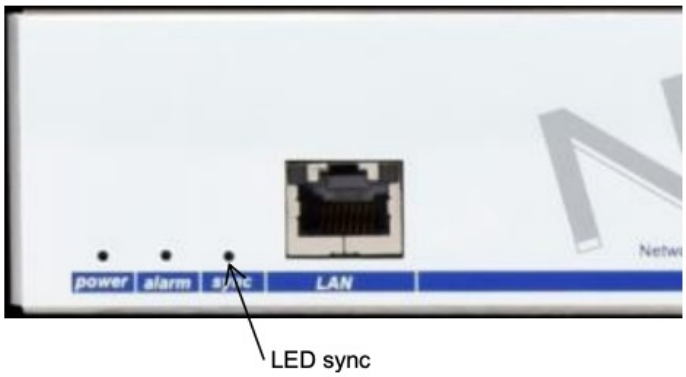
Configuration B:
Up to four public NTP servers or servers in the network can be configured (tab “Time-handling”)

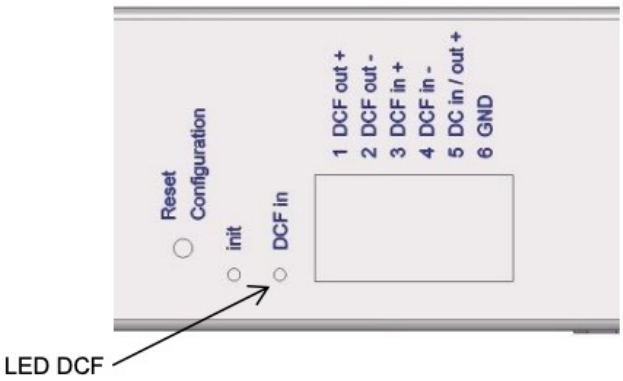
9. Check synchronization and status

On the NTS with the LED sync:
Flashes constantly: synchronization OK
Blinks: NTS runs on internal time, synchronization has not occurred yet

Additionally for configuration A:
LED DCF blinks once per second: GPS reception OK

The status can be checked via MOBA-NMS or SSH.





Technical Data

Dimensions	44 x 170 x 85 (H x W x D [mm] without plug) optionally with mounting brackets: 19" rack, 1HU x 28DU = 44 x 483 x 85 (H x W x D [mm] without plug)
Weight	approx. 1.35 kg
Ambient temperature	-5 to 50ºC, 10-90% relative humidity, without condensation
Operation	Telnet or SSH as well as MOBA-NMS (via LAN) In addition, operation is also possible with SNMP.
Accuracy	GNSS (DCF input) to NTP server: typical < +/- 0.5 ms DCF 77 radio receiver to NTP server: typical < +/- 5 ms [1)] NTP client to NTP server: typical < +/- 0.5 ms GNSS (DCF input) or NTP client to clock lines typical < +/- 0.5 ms + accuracy of the clock line [1)] If necessary, the DCF source must be corrected with an offset (see menu: local time source ➔ 3 DCF/GPS source correcture)

Notice:

NTP reception (NTS as client or as server to external clients) can be influenced by the network traffic load and network devices (Hub, Switch, Router, Firewall…). If many clients request simultaneously, the typical accuracy may not be reached. Condition for NTp accuracy: poll interval: minimum 3, maximum 6.

Time keeping (internal)	After at least 24 hours of synchronization from the time source: < +/- 0.1 sec. / day (< 1 ppm), measured during 24 h, at 20°C +/- 5°C. In case of a loss of feed (based on internal RTC): < 5 ppm, but with jitter of +/- 15 ms, measured over 24 h, at 20°C +/- 5°C. (After 24 h, the deviation may increase further due to quartz aging) The RTC time is available for at least 5 days after the loss of feed (RTC supported by SuperCap).		
Time server	NTP V4	(fully V3 compatible), RFC 1305 (Port 123) NTP authentication with MD5 key / autokey	
	SNTP	(UDP), RFC 2030 (Port 123)	
	TIME	(TCP/UDP), RFC 868 (Port 37)	
	DAYTIME	(TCP/UDP), RFC 867 (Port 13)	
	Max. number of NTP and SNTP client requests: > 250 requests / sec. (e.g. client requests every 60 seconds ➔ 15000 clients)		
NTP Mode	Server, Peer, Broadcast, Multicast		
NTP slave clock lines:	1 line with up to 15 different time zone entries. Communication through multicast: -RFC 3376: Internet Group Management Protocol, Version 3 -RFC 1112: Host extensions for IP multicasting -RFC 4601: Protocol Independent Multicast - Sparse Mode (PIM-SM) -RFC 3973: Protocol Independent Multicast - Dense Mode (PIM-DM)		
Time zones	Up to 80 predefined, 20 programmable entries (MOBA-NMS)		
Network interface	10BaseT / 100BaseTX (IEEE 802.3) Data transmission rate: Auto-negotiation / manual Connection: RJ-45 Only shielded cables permitted.		
IP Configuration	DHCP, Static IP, IPv4, IPv6		
Network services	NTP	UDP, Port 123	see timeserver
	SNTP	UDP, Port 123	see timeserver
	TIME	TCP/UDP, Port 37	see timeserver
	DAYTIME	TCP/UDP, Port 13	see timeserver
	Telnet	TCP, Port 23	operation
	SSH	TCP, Port 22	operation
	SCP	via SSH	update
	SFTP	via SSH	update
	FTP	TCP, Port 21	update
	SNMP	UDP, Port 161	operation
		UDP, Port selectable (162)	alarm notification, see SNMP
	SMTP	TCP, Port selectable (25)	alarm mail see E-Mail
	DHCP	UDP, Port 68	dyn. address allocation (client)
	DNS	TCP/UDP, Port 53	address resolution (client)
	DHCPv6	only IPV6	
	ECHO	ICMP	“Ping“
SNMP	V1, V2c, V3 with MD5 for authentication and DES for encryption (privacy).		
E-mail	Alarm reporting via SMTP. Authentication at the mail server: - with sender address - with username/password SMTP-Auth with LOGIN, PLAIN (RFC 4954) or CRAM-MD5 (RFC 2195) no “POP before SMTP“ possible		
DCF Input	DCF77 or DCF from GPS, current loop active (nominal 24VDC) max. 32mA, response threshold 8mA, time zone selectable		

DCF / pulse output	DCF time code or Synch-Pulse output selectable. Passive power interface Umax = 30 VDC, I_{on} = 10..15 mA, I_{off} < 1 mA @20VDC Cable length max. 30 m (not in the 3-m area of a contact line (rail)). DCF output: Time zone selectable Pulse modi: Second, minute, hour, user-defined interval: 1-3600 sec. Pulse length: 20 – 500 ms, jitter pulse length: +/- 2 ms Max. deviation from internal time: +/- 1 ms, jitter pulse start < 0.5 ms	
Alarm reporting / Error reporting	E-Mail SNMP-Notification Alarm LED	see E-Mail see SNMP-Trap -
DC power supply	24 – 28 VDC / 200 mA typical: < 75 mA @ 28 VDC with GPS4500 < 60 mA @ 28 VDC without external load	
Mains power supply	external power pack (Lieferumfang) 100 – 240 VAC / 50 - 60 Hz / max. 12 W typical: < 7.5 VA @ 230 VAC with GPS4500 < 6.5 VA @ 230 VAC without external load	
Power supply output	nominal 24 VDC, max. 200 mA (for GPS receivers)	

Certification of the Producer

STANDARDS

The Network Time Server (NTS) was developed and produced in accordance with the EU Guidelines:

2014 / 35 / EU (LVD)
2014 / 30 / EU (EMC)
2011 / 65 / EU (RoHS)

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QX-801147.02

Documents / Resources

 INSTALLATIONS-KURZANLEITUNG QUICK INSTALLATION GUIDE INSTRUCTIONS D'INSTALLATION RAPIDE NTS	MOBATIME QX-801147.02-NTS Network Time Server [pdf] Installation Guide QX-801147.02-NTS Network Time Server, QX-801147.02-NTS, Network Time Server, Time Server, Server

References

- Product Resources – MOBATIME – Global Website