MOUNTING AND INSTRUC-TION MANUAL

NPR – Network Programmable Relay

Please study these instructions carefully before installing the device.

Certification of the Producer

$C\epsilon$

STANDARDS

The Network Programmable Relay (NPR) was developed and produced in accordance with the EU Guidelines:

2004 / 108 / EG
96 / 48 / EG

References to the Instruction Manual

1. The information in this Instruction Manual can be changed at any time without notice. The current version is available for download on www.mobatime.com.
2. This Instruction Manual has been composed with the utmost care, in order to explain all details in respect of the operation of the product. Should you, nevertheless, have questions or discover errors in this Manual, please contact us.
3. We do not answer for direct or indirect damages, which could occur, when using this Manual.
4. Please read the instructions carefully and only start setting-up the product, after you have correctly understood all the information for the installation and operation.
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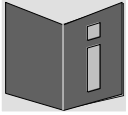
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1 Safety

1.1 Safety instructions

Read this chapter and the entire instruction manual carefully and follow all instructions listed. This is your assurance for dependable operations and a long life of the device. Keep this instruction manual in a safe place to have it handy every time you need it.

1.2 Symbols and Signal Words used in this Instruction Manual

⚠	**Danger!** Please observe this safety message to avoid electrical shock! There is danger to life!
⚠	**Warning!** Please observe this safety message to avoid bodily harm and injuries!
⚠	**Caution!** Please observe this safety message to avoid damages to property and devices!
ⓘ	**Notice!** Additional information for the use of the device.

1.3 Intended Use

The **Network Programmable Relay** is a relay that can be switched via network or controlled by a week program.

For a detailed function description, see chapter 3.3 Function description.

The technical data can be found in chapter 10 Technical data.

1.4   Observe operating safety!

Caution!

- Do not modify the device!

- The device is not intended for use by persons (including children) with limited physical, sensory, or mental capacities or a lack of experience and/or knowledge.

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

- The user is responsible for securing the signal connected to the relay.

1.5   Consider the installation site!

- To avoid any operating problems, keep the device away from moisture and avoid dust, heat, and direct sunlight. Do not use the device outdoors.

- The NPR is designed for mounting in a switchboard. When using it outside of a switchboard, measures must be taken to ensure that no unqualified persons can access it.

- Through operation, the device can warm up. Make sure to provide enough air circulation to divert the warmth.

Danger! 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.

1.6   Please observe the electromagnetic compatibility!

Caution!

This device complies with the requirements of the EMC 2004/108/EG und 96/48/EG.

2 Maintenance

2.1 Troubleshooting: Repairs

If you cannot rectify the problems, contact your supplier from whom you have purchased the device.

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.

2.2 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.

2.3 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.

3 General Information: Introduction

3.1 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:

- 1 x NPR – Network Programmable Relay

3.2 Device description in this manual

This manual is for the **Network Programmable Relay**. In the following chapters, the designation **NPR** is used for improved readability.

3.3 Function description

The NPR is a network relay with one relay (channel) synchronized via NTP. It can be configured over the network using the software MOBA-NMS. With this program, the NPR can also be switched over the network. Furthermore, a week program file can be loaded onto the NPR. The relay can also be manually controlled via toggle switch.

A week program file consists of two parts: a week program and exceptional cases (holidays etc.). The week program is active whenever no exception is active. The week program can be created either by hand, using a text editor, or via our software Switch Editor Basic.

The NPR possesses a safety mode (lock mode) which can be switched on/off via pushbutton (Lock). If the safety mode is active, the NPR only receives NTP packets and status requests. In this mode, it is not possible to send switch orders or to change settings on the NPR.

The power supply occurs via PoE (Power over Ethernet). The NPR reports to the switch as class 1 device.

4 Mounting and installation

To mount the NPR and initiate operation, follow the instructions below:

1. Mount NPR at desired location (on DIN rail).
2. Connect NPR to Ethernet Network / PoE
3. Connect relay
4. Manually test the wiring and function of the relay using the relay switch
5. Set relay switch to auto
6. Boot MOBA-NMS, find device and configure it
7. Make sure the NPR is in Unicast mode.
8. Create week program (see chapter 5.6)
9. Transfer week program onto the NPR
10. Depending on customer preferences, lock the NPR

5 Configuration, displays and connections

5.1 Relay switch

The NPR possesses a relay switch used to set the relay state. The states **On**, **Off** and **Auto** are available. In the **On** setting, the relay is switched on, on **Off**, it is switched off. If the switch is set to **Auto**, the state is controlled either by the week program or by direct commands which can be sent from the software MOBA-NMS or via SNMP.

5.2 Lock push-button – lock mode

The NPR can be put into lock mode using the lock push-button. This way, unwanted configuration changes can be prevented. If lock mode is active, the NPR is generally set to read-only mode (data can be read from the NPR, but not written onto it). The only exceptions are NTP packets. These are still allowed for the NPR to stay synchronized. Lock mode is activated by holding the lock push-button for more than 2 seconds.

If the NPR is locked, the MOBA-NMS display reads "You have read-only access to the device configuration". Also, an active lock mode is displayed by the lock LED (orange) on the NPR.

5.3 Reset push-button

The NPR possesses a reset push-button. To reboot the NPR (software reset), hold down the push-button for more than 2 seconds.

By holding down the push-button for more than 15 seconds, the factory settings are loaded (factory reset, see chapter 7 Factory settings).

5.4 Switch commands – direct commands

Direct commands can be sent to the NPR via MOBA-NMS or SNMP. These can be either permanent (e.g. **ON / locked** or **OFF / locked**) or only temporarily (e.g. **ON / not locked** or **OFF / not locked**).
With permanent commands (locked), the relay switches to the sent state and keeps it permanently.
A temporary command (not locked) is only valid until the end of the current minute. Afterwards, the week program regains control. However, direct commands are only carried out if the relay switch is set to **AUTO** and the NPR is not in the **LOCK mode**.

5.5 Connections and displays

The NPR possesses the following connections and displays:
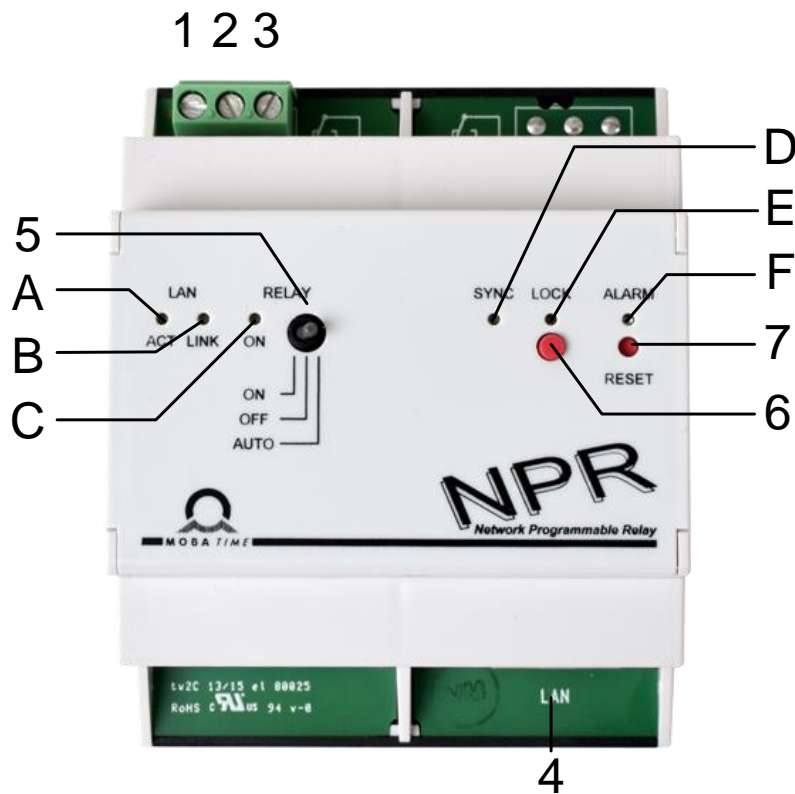
No.	Group	Meaning and function
1		NO = Normal open: open in normal state
2	Relay out	NC = Normal closed: closed in normal state
3		C = Common: common connection
4	LAN connector (RJ45)	Connection Ethernet with PoE
5	Relay switch	With the relay switch, the NPR switch mode can be set. See chapter 5.1 Relay switch
6	LOCK push-button	Using the LOCK push-button, the NPR can be locked. For more information, see chapter 5.2 Lock push-button – lock mode
7	RESET push-button	held for > 2 seconds, device reboots held for > 15 seconds, device is reset to factory settings
A	LAN activity LED (orange)	Blinks: active network traffic
B	LAN link LED (green)	ON: Ethernet link OK
C	Relay state LED (green)	ON: Relay on OFF: Relay off
D	Synchronization LED (green)	ON: NPR is synchronized OFF: NPR is not synchronized
E	Lock LED (orange)	ON: NPR locked / network communication restricted OFF: NPR unlocked / network communication unrestricted
F	Error LED (red)	ON: NPR has an active error OFF: NPR has no error

5.6 Week program

5.6.1 Description

The main function of the NPR is the autonomous execution of switch commands as defined in a week program. This week program can be created/edited using a text editor or the software Switch Editor Basic. The week program can then be loaded onto the NPR using the software MOBA-NMS.

A week program can contain up to 50 entries (switch commands: ON, OFF, signal) and 50 exceptions (vacation and holiday phases).

5.6.2 Structure

Instruction set

<ST>	Start of the area saved in the NPR
</ST>	End of the area saved in the NPR
<ID>	Start of the identification number of the file
</ID>	End of the identification number
<WP1>	Start of the week program part
</WP1>	End of the week program part
<EX1>	Start of the exception part
</EX1>	End of the exception part

Identification

<ID>xxxxxxxx</ID>   The file identification consists of up to 8 ASCII characters.

Week program entry

A week program always consists of at least two entries.

An entry is constructed as follows:

<w>DDDDDDDHHMMSSZZ</w>
D: week day, HH: hours, MM: minutes, SS: seconds, ZZ: state/signal>

Week days are defined:	Sunday, Monday, Tuesday..., Saturday
	1 = activated on this day, 0 = deactivated
	Example: 0111110 (program runs Monday-Friday)
The hours are defined:	00 – 23, 99 every hour
The minutes are defined:	00 – 59
The seconds are defined:	00 – 59

The state is defined: 00 = switch off and 99 = switch on, 01-90 signal length in seconds (switch on for 1-90 sec., then switch off again)

A switch on command must always be followed by a switch off command.
A signal command does not require a switch off command.

Exception entry

Unlike a week program entry, an exception entry always requires a starting point and an end point.

Thus, an exception entry looks as follows:

<e>DDMMYYYY-DDMMYYYY</e>
(DD: day, MM: month, YYYY: year)

The date in front of the "–" marks the starting point, the date after it the end point.

The days are defined: 1-31
The months are defined: 1-12
The years are defined: 2000-3000 or **** (every year)

Template / Example

```
<?xml version="1.0" encoding="ASCII"?>
<ST>
 <ID>Bei_prog</ID>              Identification
 <WP1>
   <w>0111110093005</w> Mo-Fr at 09:30, switch on for 05 sec.
   <w>0111110153005</w> Mo-Fr at 15:30, switch on for 05 sec.
   <w>0111110073010</w> Mo-Fr at 07:30, switch on for 10 sec.
   <w>0111110170010</w> Mo-Fr at 17:00, switch on for 10 sec.
 </WP1>
 <EX1>
   <e>22122015-02012015</e>   Exception from 22.12.2015 - 02.01.2015
 </EX1>
</ST>
```

This example corresponds to week program example 1.

5.6.3 Switch Editor Basic

Switch Editor Basic is a Java-based software for creating and editing week programs. In connection with relays, it can be used for the automation of building processes (e.g. illumination, electronic locks).

Caution: The NPR allows for up to 50 week program entries and 50 exceptions. Bigger programs can be created with the Switch Editor, but not saved on the NPR

Caution: The NPR possesses only one channel and ignores entries on other channels.

When a week program created in Switch Editor is saved, the software creates three files:

.swprog   Raw data for further editing in Switch Editor Basic
.prg   File for MOBATIME master clocks, supports multiple channels
.sprg   File for NPR, supports one channel.

Switch Editor doesn't allow for entering an ID. Thus, the first 8 digits of the week program name are saved in the file. The name must not contain any spaces. The ID can be edited via a text editor.

The special command "each hour" is not supported by the Switch Editor either and can only be set manually in the week program.
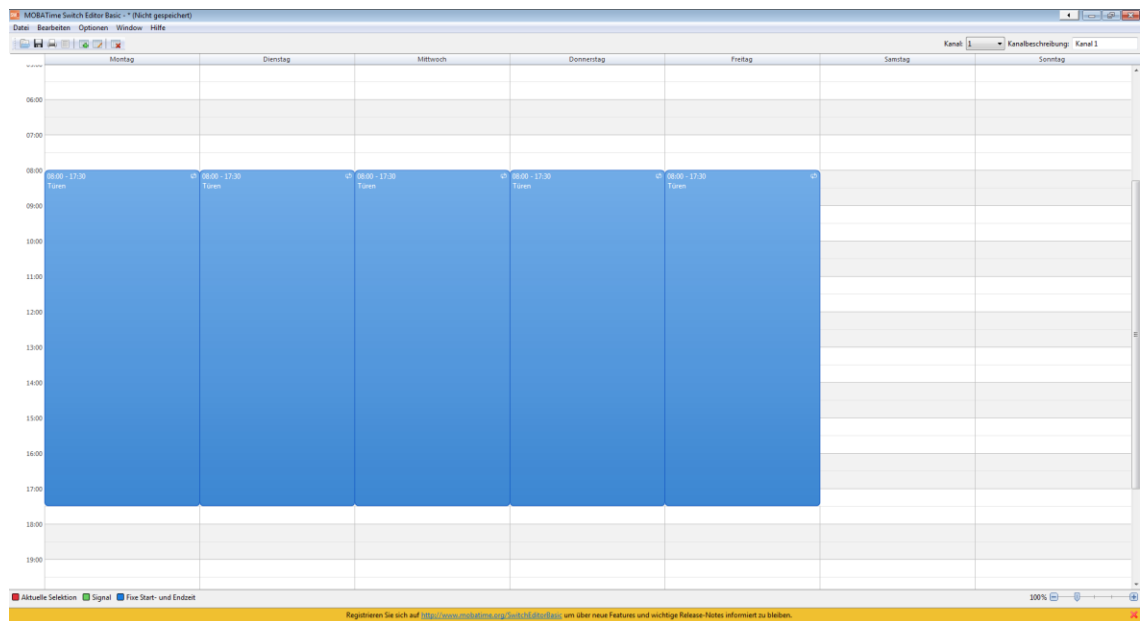
5.6.4 Data transfer from/to NPR

MOBA-NMS

Using the command **Week program transfer**, a week program can be transferred to or from the NPR. The command can be found as follows:

Right click on NPR entry in device list ➔ Commands ➔ Weekprogram transfer

Manually via IPv4

The week program data can be transferred via command line.

To transfer the week program from the NPR to the PC, use a "**get**" command:

```
tftp <IP address> get <file name>
```

Example:

```
tftp 10.241.0.90 get Week_program.txt
```

With the above command, the week program is written into the file Week_program.txt and saved in the Windows user directory.

To transfer a week program from the PC to the NPR, use a "**put**" command:

```
tftp <IP address> put <file name>
```

Example:

```
tftp 10.241.0.90 put Week_program.txt
```

For this command, the document Week_program.txt must be saved in the Windows user directory.

Manually via IPv6

Transferring data via IPv6 functions almost identically to IPv4, but the IPv6 address "**link local**" is used in place of the IP address:

```
tftp <IPv6 link local> <get/put> <file name>
```

Example:

```
tftp fe80::216:91ff:fe12:3456 put Week_program.txt
```

Caution: The data transfer to/from the NPR can not be accessed via "Auto conf", DHCP or "fix address". For the data transfer, the NPR must be in unicast mode (see chapter 5.7).

5.7 Operating mode / Synchronization

For time synchronization, two operating modes are available: unicast and multicast.

5.7.1 Unicast

The NPR is synchronized to UTC from an NTP server.

The unicast operating mode supports the monitoring and configuration of the NPR via network connection. The configuration can be carried out automatically via DHCP server or manually with the software MOBA-NMS.

For monitoring and configuration with MOBA-NMS, one of the group addresses (multicast IP) 239.192.54.0 or 239.251.34.0 for IPv4 resp. FF38::EFC0:3600 or FF38::EFFB:2200 for IPv6 or the IP address is used.

IPv4 network:
In unicast operating mode, the NPR will try to get the following network parameters frmo a DHCP server (see also chapter 6.2):

- IP address
- Gateway address
- Subnet mask
- NTP server address(es) / time zone server address
- SNMP manager address

IPv6 network:
In multicast operating mode, the NPR will try to get the following network parameters from a DHCPv6 server (see also chapter 6.4):
- IP address
- NTP server address(es) / time zone server address
- SNMP manager address

The NTP server addresses must be configured as DHCP option on the server by the network administrator. If an address is sent to the NPR, it will request NTP and time zone packets from that address. The request interval can be configured using the software MOBA-NMS (default value is 10s).

5.7.2 Multicast

The NPR can also by synchronized via multicast by an NTP server on UTC (Coordinated Universal Time). Furthermore, multiple devices can be configured simultaneously.

Unlike unicast mode, the NPR receives multicast-addressed NTP and time zone packets from an NTP server on a fixed group address (multicast IP) 239.192.54.0 or 239.251.34.0 for IPv4 resp. FF38::EFC0:3600 or FF38::EFFB:2200 for IPv6. The standard port numbers are 123 (NTP) and 65534 (time zone).

Caution: Transferring a weekprogram is only possible in unicast mode!

6 Operating behavior

6.1 Power supply

The NPR can be powered via PoE class 1 (Power over Ethernet) from a switch.
As an alternative to a PoE switch, a PoE injector or midspan can be used.
Both PoE power supply variants, phantom power and spare-pair power, are supported.

6.2 DHCP

In unicast operating mode, the NPR tries to get the network configuration from a DHCP server in the IPv4 network. The DHCP options are automatically evaluated.

A detailed description can be found in the manual BE-800793 Description MOBATIME network clocks.

The network administrator is responsible for configuring the DHCP options accordingly.

6.3 IPv6

IPv6 allows for up to 4 parallel IP addresses, prioritized in descending order:

- Address given by DHCPv6
- Fix address
- Address calculated via auto-config (SLAAC / RA)
- Link Local address

DHCPv6 and/or autoconfig can be deactivated.

Calculating the Link Local address from the MAC address:
fe80::2[2nd part MAC]:[3rd part MAC]ff:fe[4th part MAC]:[5th part MAC][6th part MAC]

Example: MAC: 00:16:91:12:34:56

IPV6: fe80::2*16*:*91*ff:fe*12*:*3456*

6.4 DHCPv6

In unicast operating mode, the NPR tries to get the network configuration from a DHCPv6 server in the IPv6 network. The DHCP options are automatically evaluated.

A detailed description can be found in the manual BE-800793 Description MOBATIME network clocks.

The network administrator is responsible for configuring the DHCP options accordingly.

6.5 Autconfiguration / SLAAC

In the unicast operating mode, the NPR tries to calculate the network configuration from the information of a router (RA) in the IPv6 network: IPv6 address.
A detailed description can be found in the manual BE-800793 Description MOBATIME network clocks.

6.6 SNMP

For the integration in a surveillance system, the NPR supports SNMP notifications (traps) (SNMP version 2c). As SNMP agent, the NPR can send alarm and alive traps to an SNMP manager (e.g. network management tool HP OpenView) in the network. For this, the IP address of the SNMP manager must be configured (via DHCP or MOBA-NMS). The trap structures are defined in an MIB file (for details see document BE-800793 Description MOBATIME network clocks). Alarm traps serve to inform the SNMP manager about errors. Alive traps are sent out periodically and signal the availability and status of the device to the SNMP manager. The interval of the alive traps can be set using MOBA-NMS.

6.7 Local time calculation

The NPR is synchronized to UTC. To calculate local time, the NPR needs additional information by way of a time zone entry. The NPR can save one time zone entry that can be edited over the network via MOBA-NMS.

The local time setting can only be configured using MOBA-NMS.

Alternatively, the calculation of the local time based on the time zone entry of a time zone server is supported. In unicast mode, the NPR requests the entry from the configured NTP server. In multicast mode, it receives the corresponding entry on the configured group address.

6.8 Accuracy / synchronization outage

The deviation while synchronized is typically <+/-50 ms.

The NPR signals a synchronization outage after one hour by putting out an error and switching off the synchronization LED. After **24 hours** in the non-synchronized state, the execution of the week program is terminated. The deviation after 24h without synchronization is typically <+/-2 s (quartz accuracy: 20 ppm at room temperature).

Notice: The deviations mentioned above depend on the accuracy and power of the time source (NTP server). The NTP reception can be inflienced by network load and devices (hub, switch, router, firewall etc.).

6.9 Redundant time source

The availability of NTP servers as time source can be improved through redundancy. Depending on the operating mode of the NPR, the following strategy can be used (also valid for time zone servers):

6.9.1 NTP Client Unicast

As a DHCP option or through manual configuration (MOBA-NMS), up to four different NTP server addresses can be sent to the NPR. If three time request in a row are left unanswered by the current server, the NPR will switch to the next server (if available). The time until switch-over is controlled by the set request interval (default: 3 x 10 seconds). One hour after the switch-over, the NPR will switch back to the primary NTP server. The same happens after a reboot of the NPR.

6.9.2 NTP Client Multicast

Two servers that send out NTP packets on the same group address (multicast IP) are required for this method. The sending intervals of the two servers are to be set so that during normal operation, synchronization comes from the primary server. Synchroniza-

tion from the secondary server only takes place if the primary server shows an error. The ratio of packets sent between primary and secondary server should be set to at least 4:1:

- Sending interval primary server: 1 packet / 1 minute
- Sending interval secondary server: 1 packet / 4 minutes

The server choice is based on the dominance of the server which sends out more NTP packets per time unit. Thus, if the primary server fail, the secondary server dominates.

6.10 Firmware update

The firmware of the NPR can be updated using MOBA-NMS thanks to an implemented ethernet bootloader. A working network connection is required for this.

Notice: The ethernet bootloader takes the network parameters for the update from a DHCP server, independent of whether the relay is operating in unicast or multicast mode.
➔ **Without DHCP server, a remote update is not possible.**

6.11 MOBA-NMS (MOBATIME Network Management System)

MOBA-NMS is a Java-based PC program used for configuring and requesting the status of NTP clocks. This software allows for central configuring of one or several devices.

Further information, manuals and the software itself can be found at our website http://www.mobatime.com. It is also available on a USB stick (must be ordered separately).
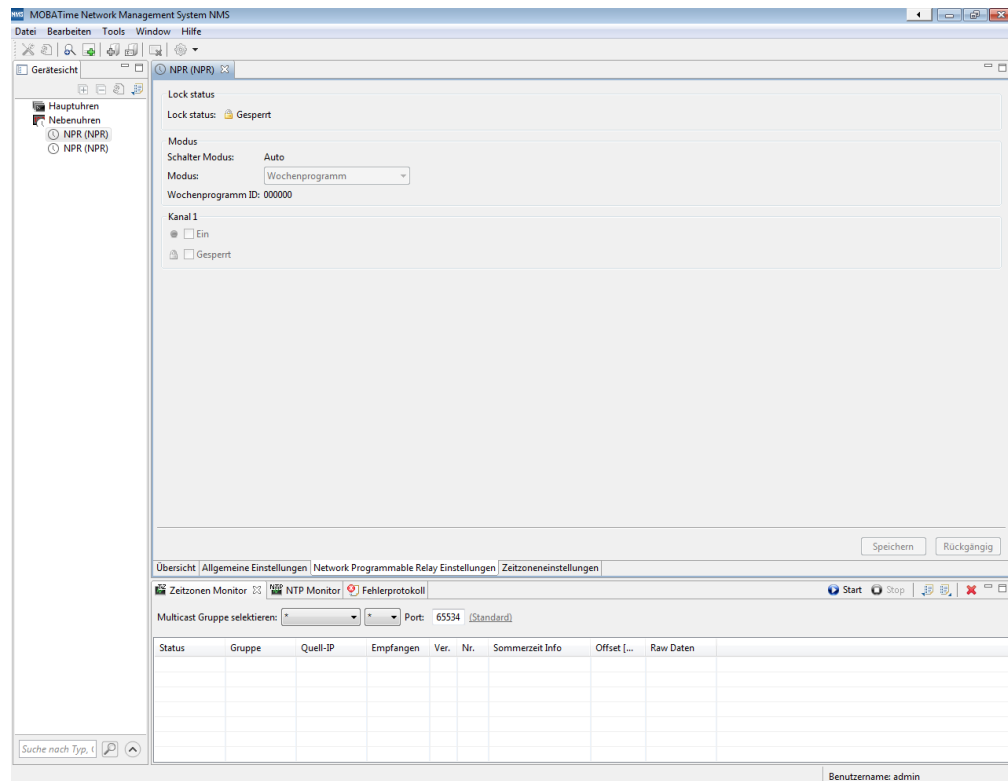
The various NPR parameters can be edited in the tab „NPR setting".

---

7 Factory settings

The NPR is delivered with the following pre-defined standard settings. These can be restored on the device (see chapter 5.3).

Factory settings:

Name (20 characters)	NPR
IP mode	IPv4 and IPv6 on
DHCP on/off	on
IPv4 address	1.255.255.253
IPv4 subnet mask	255.255.255.0
IPv4 gateway address	1.255.255.252
IPv6 fix address/prefix	0::0/64
IPv6 link local address	See calculation in chapter 6.3
DHCPv6	on
IPv6 autoconfiguration (RA, SLAAC)	on
Host name	MOBATIMExxxxxx, the last 6 characters being the last 6 digits of the MAC address. E.g. MAC 00:16:91:12:34:56 → MOBATIME123456
DNS server (for NTP server only)	0.0.0.0 / 0::0
NTP server address 1	0.0.0.0 / 0::0
NTP server address 2	0.0.0.0 / 0::0
NTP server address 3	0.0.0.0 / 0::0
NTP server address 4	0.0.0.0 / 0::0
Request interval NTP [s] (10...999s)	10
Time zone entry	UTC
Port number for configuration	65532
Port number for time zone client	65534
SNMP manager address 1	0.0.0.0 / 0::0
SNMP manager address 2	0.0.0.0 / 0::0
Interval SNMP alive traps [min] (1…1440)	30
NPR lock status	Not locked
Relay channel status	Off
Relay channel lock status	Not locked
Week program ID	„00000000"
NPR Mode	Week program

The relay can also be reset using MOBA-NMS.

8 Time zone table

Time zone entries in the standard season table (version 10.1).

Time zone	City / State	UTC Offset	DST Change	Standard → DST	DST → Standard
00	UTC (GMT), Monrovia, Casablanca	0	No		
01	London, Dublin, Edinburgh, Lisbon	0	Yes	Last Sun. Mar. (01:00)	Last Sun. Oct. (02:00)
02	Brussels, Amsterdam, Berlin, Bern, Copenhagen, Madrid, Oslo, Paris, Rome, Stockholm, Vienna, Belgrade, Bratislava, Budapest, Ljubljana, Prague, Sarajevo, Warsaw, Zagreb	+1	Yes	Last Sun. Mar. (02:00)	Last Sun. Oct. (03:00)
03	Athens, Istanbul, Helsinki, Riga, Tallinn, Sofia, Vilnius	+2	Yes	Last Sun. Mar. (03:00)	Last Sun. Oct. (04:00)
04	Bucharest, Romania	+2	Yes	Last Sun. Mar. (03:00)	Last Sun. Oct. (04:00)
05	Pretoria, Harare, Kaliningrad	+2	No		
06	Amman	+2	Yes	Last Thu. Mar. (23:59)	Last Fri. Oct. (01:00)
07	UTC (GMT)	0	No		
08	Kuwait City, Minsk, Moscow, St. Petersburg, Volgograd	+3	No		
09	Praia, Cape Verde	-1	No		
10	UTC (GMT)	0	No		
11	Abu Dhabi, Muscat, Tbilisi, Samara	+4	No		
12	Kabul	+4.5	No		
13	Adamstown (Pitcairn Is.)	-8	No		
14	Tashkent, Islamabad, Karachi, Yekaterinburg	+5	No		
15	Mumbai, Calcutta, Madras, New Delhi, Colombo	+5.5	No		
16	Astana, Thimphu, Dhaka, Novosibirsk	+6	No		
17	Bangkok, Hanoi, Jakarta, Krasnoyarsk	+7	No		
18	Beijing, Chongqing, Hong kong, Singapore, Taipei, Urumqi, Irkutsk	+8	No		
19	Tokyo, Osaka, Sapporo, Seoul, Yakutsk	+9	No		
20	Gambier Island	-9	No		
21	South Australia: Adelaide	+9.5	Yes	1st Sun. Oct (02:00)	1st Sun. Apr. (03:00)
22	Northern Territory: Darwin	+9.5	No		
23	Brisbane, Guam, Port Moresby, Magadan, Vladivostok	+10	No		
24	Sydney, Canberra, Melbourne, Tasmania: Hobart	+10	Yes	1st Sun. Oct. (02.00)	1st Sun. Apr. (03:00)
25	UTC (GMT)	0	No		
26	UTC (GMT)	0	No		
27	Honiara (Solomon Is.), Noumea (New Caledonia),	+11	No		
28	Auckland, Wellington	+12	Yes	Last Sun. Sep. (02:00)	1st Sun. Apr. (03:00)
29	Majuro (Marshall Is.), , Anadyr	+12	No		

30	Azores	-1	Yes	Last Sun. Mar. (00:00)	Last Sun. Oct. (01:00)
31	Middle Atlantic	-2	No		
32	Brasilia	-3	Yes	3rd Sun. Oct. (00:00)	3rd Sun. Feb. (00:00)
33	Buenos Aires, Santiago	-3	No		
34	Newfoundland, Labrador	-3.5	Yes	2nd Sun. Mar. (02:00)	1st Sun. Nov. (02:00)
35	Atlantic Time (Canada)	-4	Yes	2nd Sun. Mar. (02:00)	1st Sun. Nov. (02:00)
36	La Paz	-4	No		
37	Bogota, Lima, Quito, Easter Island, Chile	-5	No		
38	New York, Eastern Time (US & Canada)	-5	Yes	2nd Sun. Mar. (02:00)	1st Sun. Nov. (02:00)
39	Chicago, Central Time (US & Canada)	-6	Yes	2nd Sun. Mar. (02:00)	1st Sun. Nov. (02:00)
40	Tegucigalpa, Honduras	-6	No		
41	Phoenix, Arizona	-7	No		
42	Denver, Mountain Time	-7	Yes	2nd Sun. Mar. (02:00)	1st Sun. Nov. (02:00)
43	Los Angeles, Pacific Time	-8	Yes	2nd Sun. Mar. (02:00)	1st Sun. Nov. (02:00)
44	Anchorage, Alaska (US)	-9	Yes	2nd Sun. Mar. (02:00)	1st Sun. Nov. (02:00)
45	Honolulu, Hawaii (US)	-10	No		
46	Midway Islands (US)	-11	No		
47	Mexico City, Mexico	-6	Yes	1st Sun. Apr. (02:00)	Last Sun. Oct. (02:00)
48	Adak (Aleutian Is.)	-10	Yes	2nd Sun. Mar. (02:00)	1st Sun. Nov. (02:00)
49	UTC (GMT)	0	No		
50	UTC (GMT)	0	No		
51	UTC (GMT)	0	No		
52	UTC (GMT)	0	No		
53	UTC (GMT)	0	No		
54	Scoresbysund, Greenland	-1	Yes	Last Sun. Mar. (00:00)	Last Sun. Oct. (01:00)
55	Nuuk, Qaanaaq,Greenland	-3	Yes	Last Sat. Mar. (22:00)	Last Sat. Oct. (23:00)
56	Qaanaaq, Greenland (old)	-4	Yes	2nd Sun. Mar. (02:00)	1st Sun. Nov. (02:00)
57	Western Australia: Perth	+8	No		
58	Caracas	-4.5	No		
59	CET standard time	+1	No		
60	Santiago, Chile (old)	-4	Yes	2nd Sun. Oct. (00:00)	2nd Sun. Mar. (00:00)
61	Chile, Easter Island (old)	-6	Yes	2nd Sat. Oct. (22:00)	2nd Sat. Mar. (22:00)
62	Baku	+4	Yes	Last Sun. Mar. (04:00)	Last Sun. Oct. (05:00)
63	UTC (GMT)	0	No		
64	UTC (GMT)	0	No		

In countries where the DST switch date changes annually (e.g. Iran, Israel), the time zone has to be defined manually in the user time zone table (entries 80 – 99).

Legend:
UTC: Universal Time Coordinate, equivalent to GMT
DST: Daylight Saving Time
DST Change: Daylight Saving Time changeover
Standard → DST: Time change from Standard time (Winter time) to Summer time
DST → Standard: Time change from Summer time to Standard time (Winter time)

Example:
2nd last Sun. Mar. (02:00)   Switch over on the penultimate Sunday in March at 02.00 hours local time.
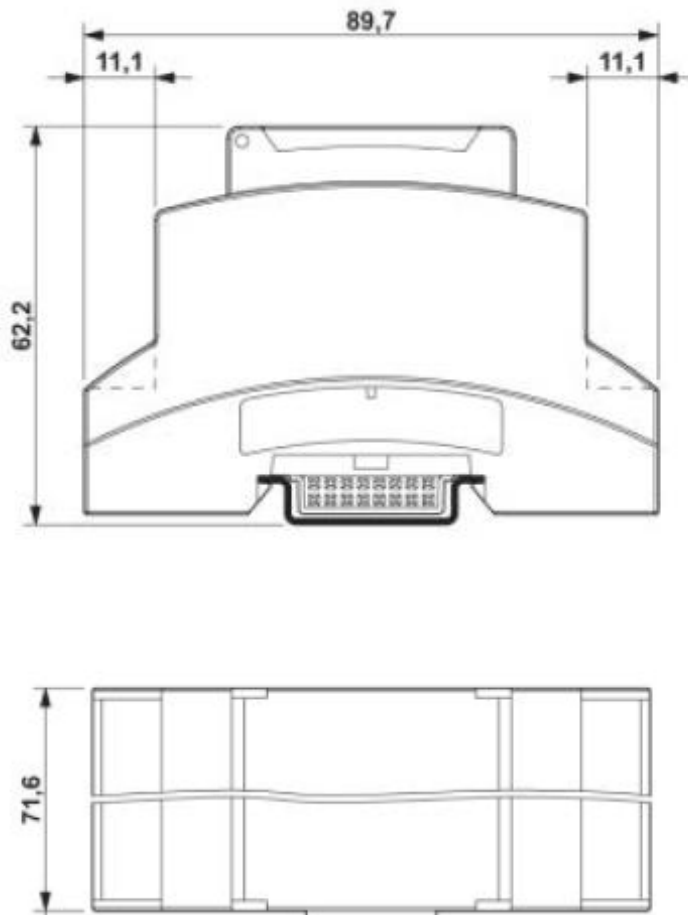
Notice: As usual, the time table is adapted each year. You can download the newest time table from our homepage: *www.mobatime.com* ➔ *Downloads* ➔ *Moba-Software* ➔ *Time Zone Table*. If the delivered device contains a newer version as showed in this manual, it's recommended to check the time zone entries.

9   Dimensions

All measurements in mm

10   Technical data

Switch Contact:	Connector: Screw terminal Switch load AC (resistive): Max. 250VAC, 1250VA, 5A Switch load DC (resistive): Max. 125VDC (0.2A), 150W, 5A **(30V, 5A, 150W; 60V, 1A, 60W; 125V, 0.2A, 25W)**
Network Interface:	10/100 Mbit/s Ethernet controller, RJ45 connector
Network:	IPv4 and / or IPv6 with: IPv4: static or DHCP IPv6: static, SLAAC and / or DHCPv6
Power supply	Power over Ethernet (PoE), 802.3af, class 1, < 4 watt Phantom or Spare-Pair power
Synchronization	Network Time Protocol (NTP), UTC
Accuracy	Deviation typically <+/- 50 ms in synchronized state
Loss of synchronization	Error display after 1 h Termination of wek program after 24 h Deviation typically <+/- 2 s after 24 h
Operation	MOBA-NMS
Supervision	Status request of NPR via PC software MOBA-NMS. SNMPv2 alarm and alive traps for integration into a network management system.
Week Programm	Creation: Text editor / Switch-Editor-Basic (plugin) Download: FTP / MOBA-NMS Commands: On, off, Signal (1-90s), Exception Number of on/off commands: Max. 50 Number of exceptions: Max. 50 Blocking time between 2 commands: Min. 1 minute
Local Operation	Relay mode (toggle switch): Auto / on / off Remote access lock (push button): Lock / Unlock Reset button: software reset / factory reset
Status LEDs	Synchronization (green), Lock (orange), Relay state (green), LAN link (green), LAN activity (orange), Error (red)
Operating Temperature	-5 °C ... +50 °C
Housing	Dimensions (L x W x H): 90 x 75 x 65 mm Mounting on DIN rail
Weight	120 g

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