



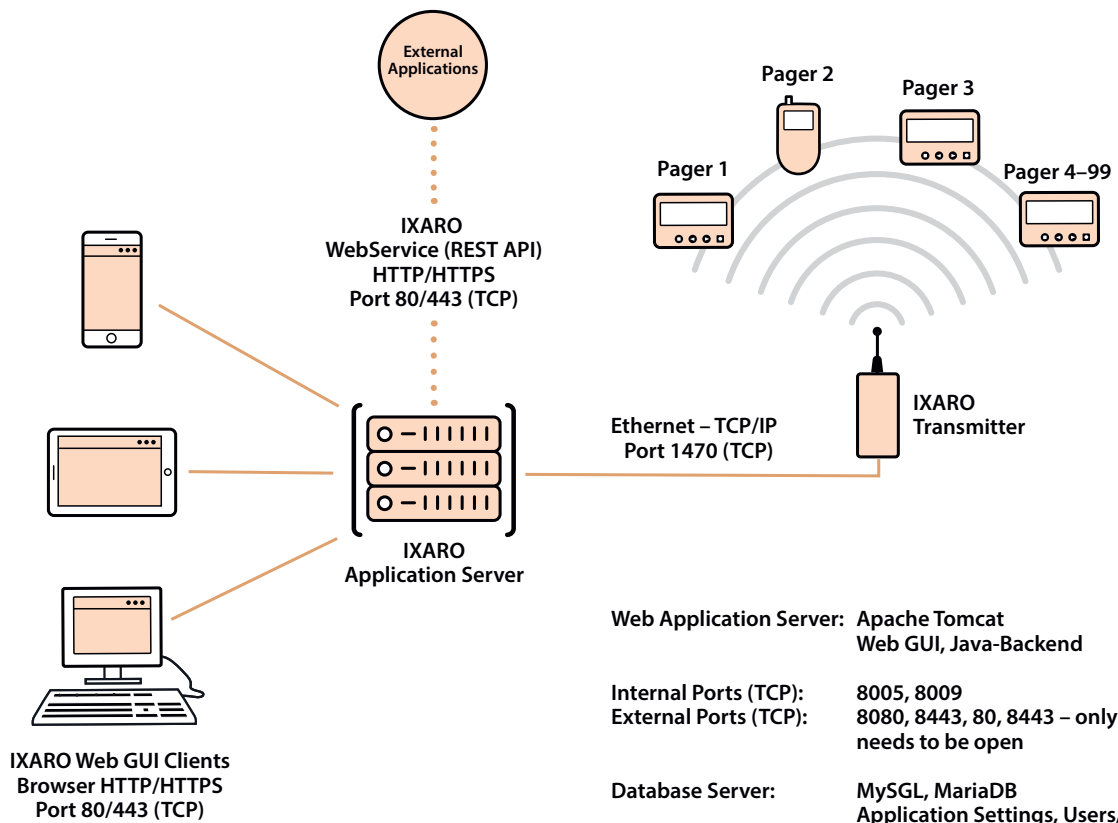
# **IXARO Paging System**

Installation and  
Operating Manual  
Version 1.2.3





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Web Application Server: Apache Tomcat  
Web GUI, Java-Backend

Internal Ports (TCP): 8005, 8009  
External Ports (TCP): 8080, 8443, 80, 8443 – only one these needs to be open

Database Server: MySQL, MariaDB  
Application Settings, Users/Passwords, Session IDs, Pagers, Gates, Truck Data, Transmitter Configurations, Logs

Internal Port (TCP): 3306

Both servers run as a Windows service

# Installation of IXARO Software

## System Requirements

### Server

The virtual machine must meet the following requirements to operate the IXARO Pager System:

- 1x virtual CPU core is sufficient
- At least: 2 GB RAM, Recommended: 4 GB RAM
- At least: 5 GB free disk space, Recommended: 10 GB
- Operating System: Windows 64 Bit
- Free TCP ports. internal (loopback/localhost): 3306, 8009, 8080, 8443

The following TCP ports must be accessible for the operation of the Ixaro system:

- Clients (Browser) to Web Application Server (VM): 80, 443
- Web Application Server (VM) to L10/P500-NET Transmitter: 1470
- Web Application Server (VM) to LR10-NET Receiver: 100

### Clients

The following browsers are supported:

- Google Chrome (Version 48 and above)
- Mozilla Firefox (Version 47 and above)
- Microsoft Edge (Version 15 and above)
- Opera (Version 35 and above)
- Vivaldi (Version 1 and above)
- Safari (Version 8 and above)

### Installation

The installation of the Ixaro Pager System is fully automatic through an installer provided by us. All required runtime components are included and are up to date at the time of installation.

Useful tools for setting up and maintaining the Ixaro Pager System server are delivered with the installer. All tasks can be completed on the server without the installation of third-party software. The system can operate unattended and without user login.

The setup and configuration of the required Windows services are performed by the fully automatic installation program. The entire Ixaro Pager System is delivered with all available components and interfaces and is installed automatically. The activation of the components is done via the

## Installation of Software

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individual license key. Components can be tested for a limited period of time and activated subsequently.

If the fully automatic installation is not used, Linux can also be used as the operating system.

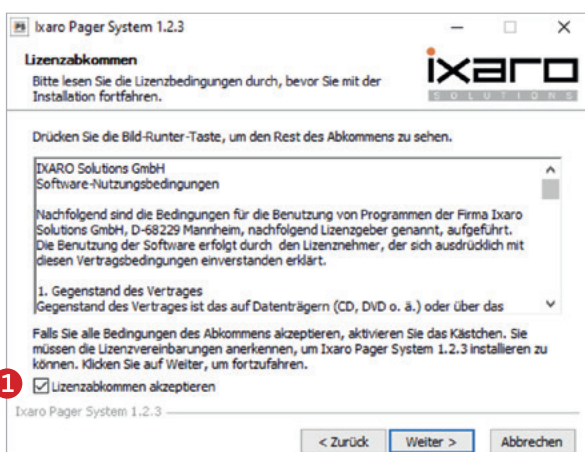
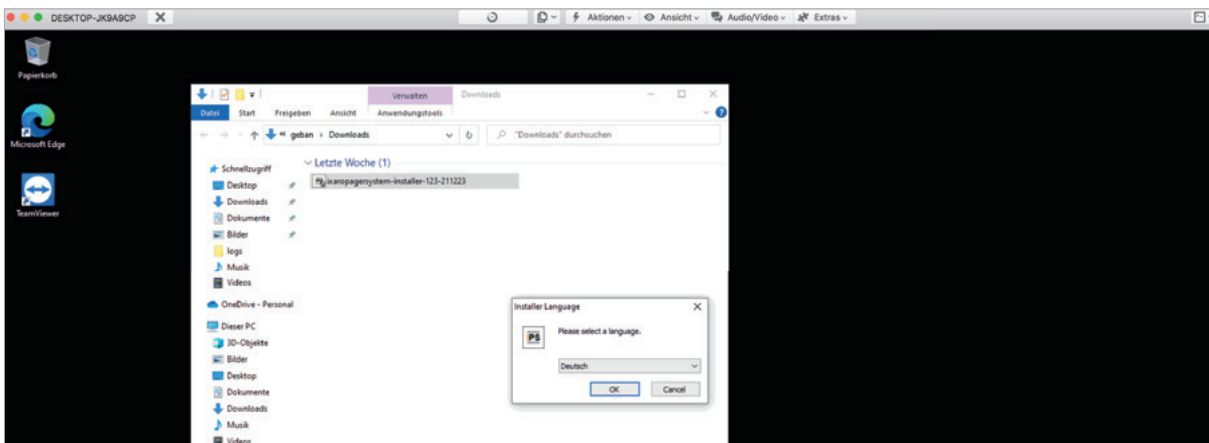
## Installation

After you have received the download link for the IXARO software from us, enter it in your browser, press Enter“ and then „Save“. This will download the installation program for the IXARO software.

**Important:** If your browser’s security check is activated, you must still execute the program!

The installer usually opens automatically. If this is not the case, you can find the installer in your download folder. From there, you can run it with a double click.

First, select the language:

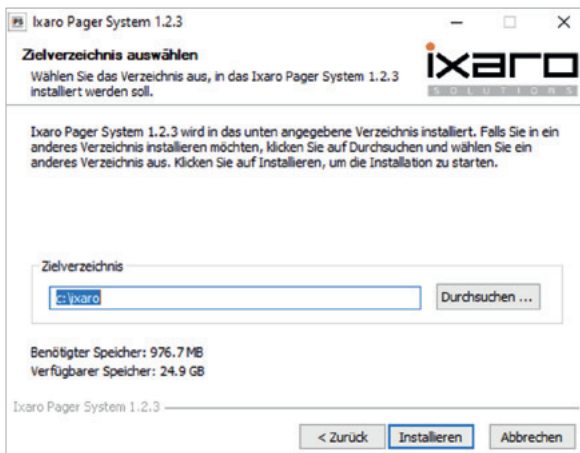


Next, you will need to agree to the license agreement. Carefully read the license agreement.

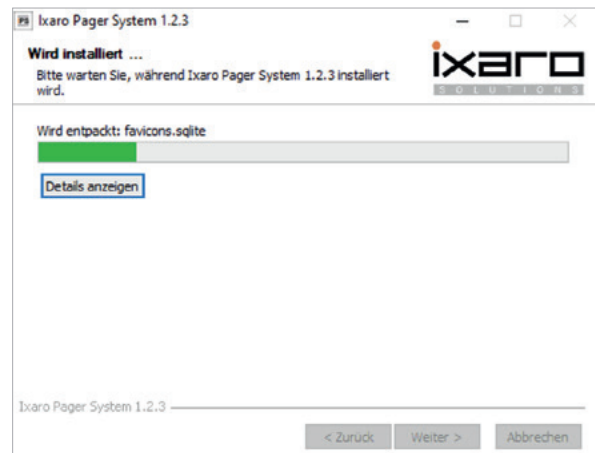
You give your consent by clicking on „Accept License Agreement“ **1** and „Next“ **2**.

## Installation of Software

Now, you must select the directory where the IXARO software will be installed. After that, click on “Install”.

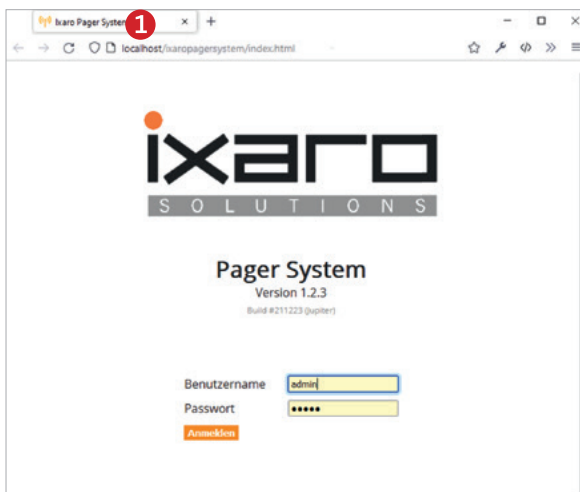


Selection of the destination directory



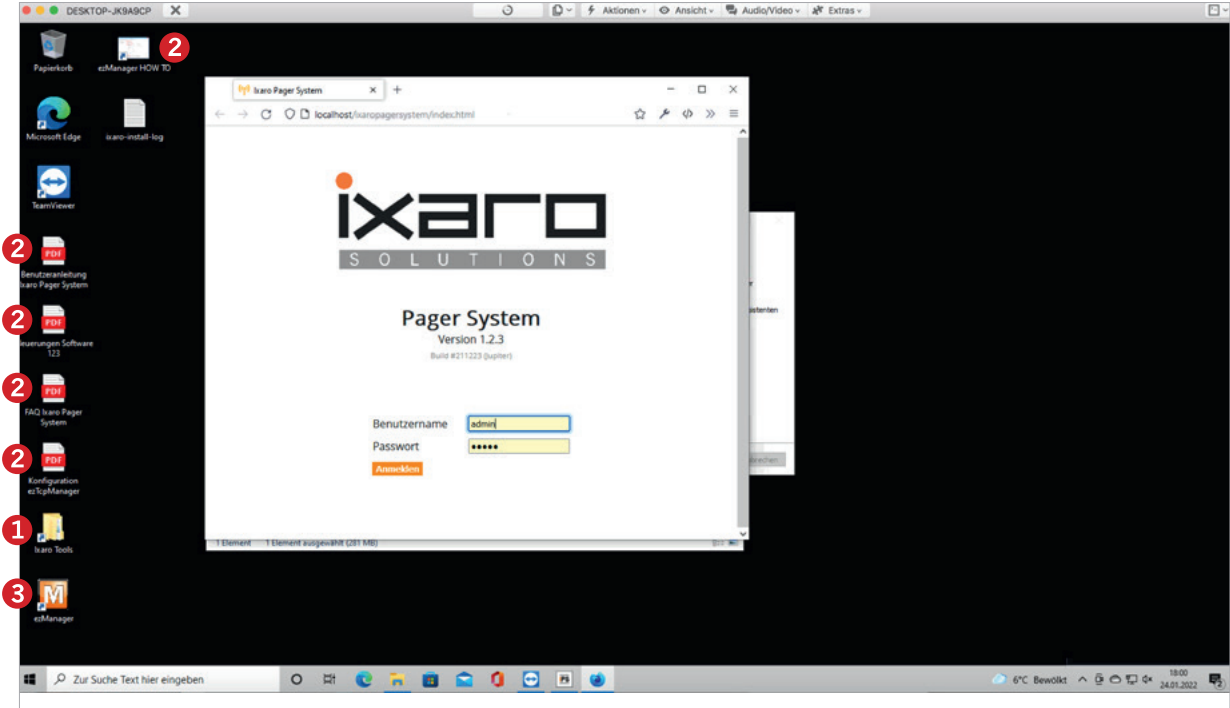
Installation process

Upon completion of the installation, a browser provided by us will automatically open with the IXARO web software. It can be found in the browser under “localhost” ①. The default access data are “admin” for the username and “ixaro” as the password. Please change this for your security after the first launch of the software.





During the installation, additional files were copied to the desktop. These include the IXARO Tools **1**, the IXARO Documentation **2** and the EZ-Manager **3**, which is required later to configure the transmitter.



## Description, Hardware Installation

### Description

Description The IXARO-NET POE transmitter is a paging transmitter with an Ethernet interface for direct connection to an in-house network. It is powered via the network cable (Power Over Ethernet = POE).

There are two power levels of the transmitter available: the IXARO NET 10L with a 10 mW transmission power and the IXARO-NET P500 with 500 mW transmission power for greater range. Here is an overview of the IXARO-NET models:

Model	IXARO-NET 10L	IXARO-NET P500
Output Power	10mW (SRD)	500mW (DMR 446)
Frequency Range	433.5 MHz	446,15625 MHz
Range in light construction	600m	2 km
Maximum open field range	2 km	5 km

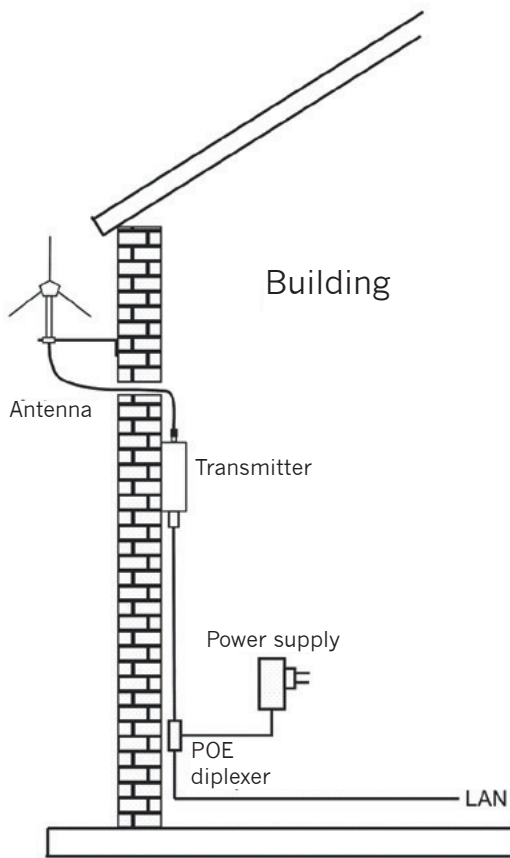
Massive buildings significantly reduce the range. Similarly, the range is reduced inside buildings. The propagation of radio waves in this UHF frequency range is quasi-optical. This means that reception is possible from any location from which the antenna can be seen. Furthermore, reception is possible even in the radio shadow (about 50 meters around a building corner for IXARO L10) due to reflections and bending of signals. If the areas to be covered by radio are spatially separated by a massive building, multiple IXARO transmitters, each serving their own area, can be mounted.

### Hardware-Installation

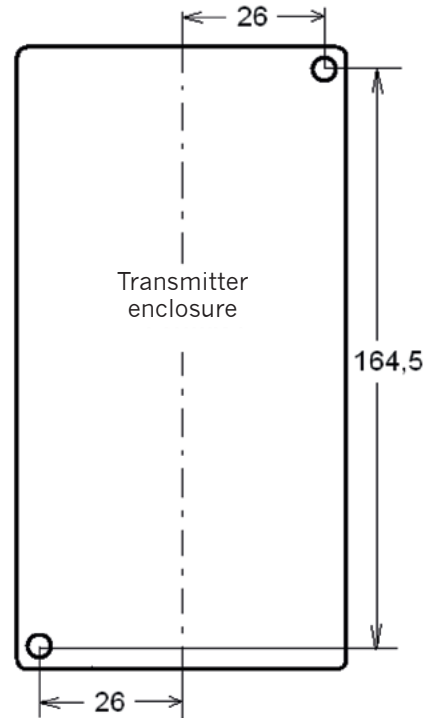
Hardware Installation The transmitter is intended for indoor mounting. The antenna must be mounted outdoors if outdoor areas are to be covered. This requires a passage of the antenna cable through the building wall. The antenna cable should be as short as possible to avoid power losses in the cable. The antenna is connected to the transmitter via a BNC connector. This requires a through-hole of at least 15 mm. The transmitter is screwed to the wall with two screws in the top left corner and the bottom right corner.

The IXARO-NET 10L transmitter with the standard antenna for 433.5 Hz is mounted on the exterior wall of the building. The antenna cable (1.5m) leads to the transmitter inside the building.





Installation of the system in the building



Position of the drill holes for mounting the transmitter  
(all specifications in mm)

The antenna should be mounted as high as possible but still below the roof edge. If mounted above the roof edge, a lightning protection element is required. The antenna must be mounted on a spacer that ensures a minimum distance of 17 cm from the wall. The wall should not be made of metal.

For connecting the transmitter to the network, there is an Ethernet socket on the lower edge of the housing.

## Hardware Installation

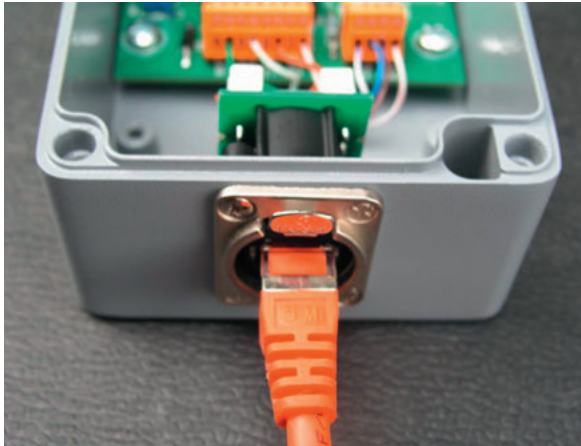


Fig. 3: Connection with standard RJ45 plug



Fig. 4: Connection with metal plug NE8MC

A standard RJ45 plug can be inserted into this socket (Fig. 3). Suitable for the socket, there is also a more robust metal plug designated as NE8MC from the ETHERCON series by the manufacturer NEUTRIK (Fig.4). The metal sleeve encases a normal RJ45 plug. See the appendix for mounting instructions. The metal plug externally resembles a so-called XLR connector. It is released by pressing the metal lever. This connector is largely dustproof but not waterproof.

The remote powering of the IXARO-NET transmitter via POE (Power Over Ethernet) has the advantage that no mains power socket needs to be present at the transmitter's mounting location. The power supply is provided according to the IEEE 802.3af standard via the spare pair of wires in the network cable. Deviating from this, however, only voltages up to a maximum of 32 volts are permitted. Therefore, the use of the supplied 18-volt power supply is recommended. The low voltage can be fed into the network cable where it passes near a mains power socket. A POE adapter is used for feeding in (see Fig. 5).

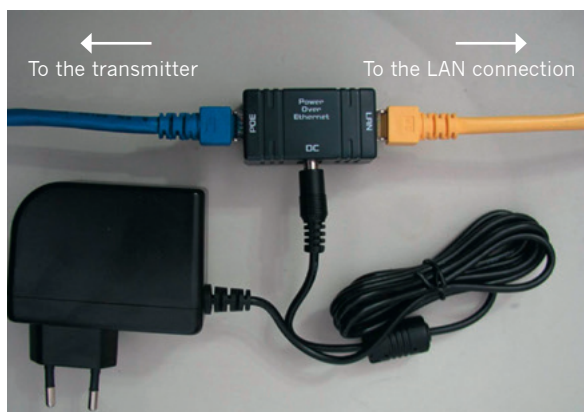


Fig. 5: Feeding the transmitter power supply via a POE adapter. This injection coupler is inserted into the cable from the network access point (e.g., LAN socket) to the transmitter. The operating voltage is supplied from a plug-in power supply. The transmitter is connected to the "POE" socket.

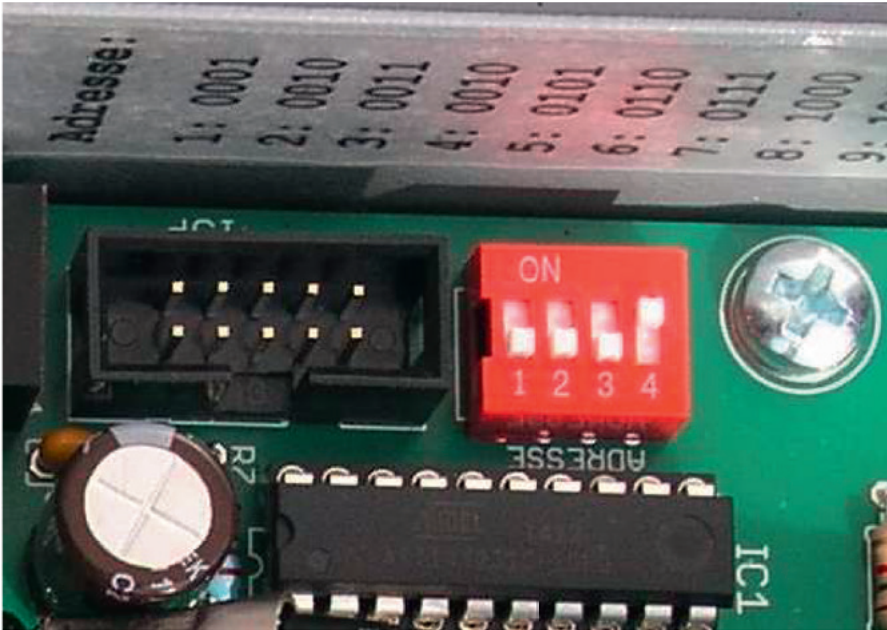


Fig. 6:  
The DIP switch for setting the device address and the table of binary numbers placed above it. A '1' corresponds to the switch position 'ON'

### Setting the Device Address

Inside the transmitter, there is a DIP switch for setting the device address (Fig.6). This is necessary for the identification of the transmitter when there are multiple transmitters in the system. The address is entered in binary code. The far right switch (No. 4) is the least significant bit. The 'ON' position of a switch corresponds to a logical 'one'. Thus, the address in the picture is '1'. This is the transmitter's default state upon delivery. If there is only one transmitter in the system, it should be given the address '1'. If there are two transmitters, the next one would have the address '2' = 0010 in binary system. A third transmitter would have the address '3' = 0011, etc. A table of binary numbers is printed on the inside of the housing. A maximum of 9 transmitters are supported.

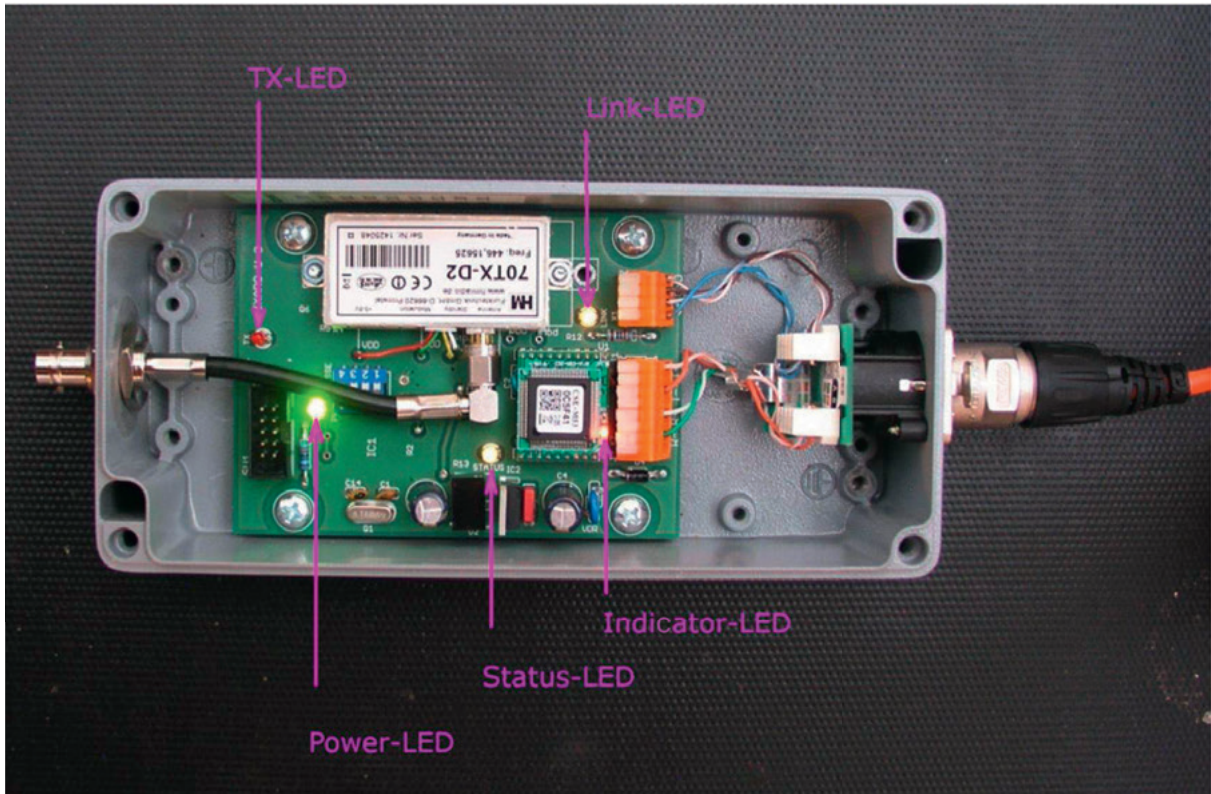


Fig: 7: Position of the diagnostic LEDs

### Location and meaning of the diagnostic LEDs:

On the circuit board of the IXARO-NET transmitter, there are a number of light-emitting diodes (LEDs) that indicate operational states and thus facilitate error diagnosis (Fig.7).

- Power-LED green: lights up when the transmitter's power supply is functioning properly
- TX-LED red: lights up when the transmitter is currently broadcasting a message
- Indicator-LED red: on the interface module, blinks slowly when the interface is ready for operation
- Link-LED yellow: lights up when the transmitter is correctly connected to an Ethernet cable
- Status-LED yellow: stays lit when an active network connection exists, blinks when there is no connection

For example, if the Link LED does not light up, the transmitter is not connected to the LAN or the connection is incorrect (swapped or interrupted signal wires).



Fig. 8:

Ethernet interface module CSE-M53 in the transmitter.

The last six digits of the physical device address (MAC address) are printed on the module (in this case, 0C1624).

The device is identified in the network by the MAC address.

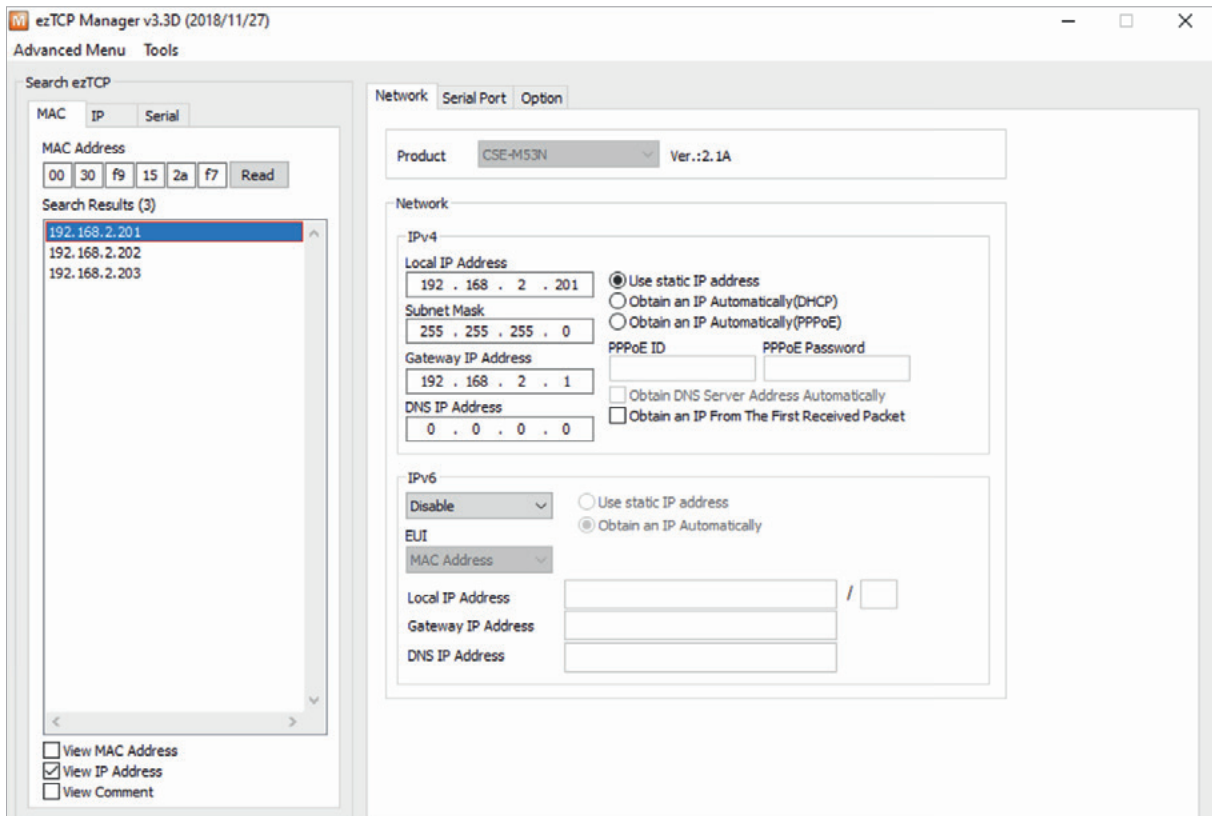
### Configuration of the Ethernet Interface

The IXARO-NET transmitter includes an Ethernet interface CSE – M53 by Sollae Systems. For this, precise knowledge of the network in your operation is necessary. The support of a network administrator is strongly recommended. The configuration of the converter is done through the software in the “CSE\_M53” directory on the IXARO software CD.

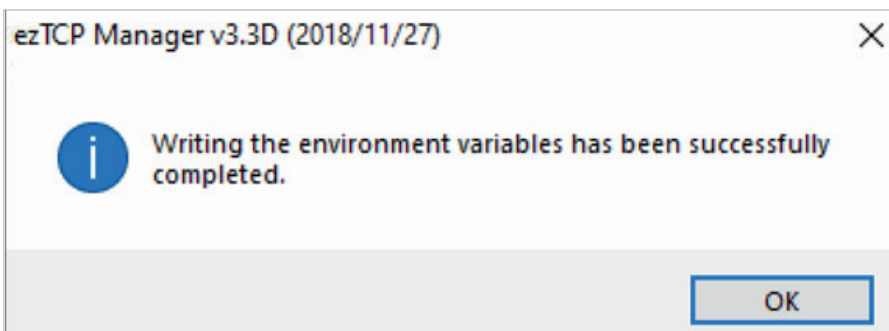
The program used for configuration is ezTCP Manager:



## Configuration of the Ethernet Interface



After launching this program, the following program window will appear. First, carry out a search for the interface by using “Search All”. All interfaces by Sollae Systems that are reachable within the network will be listed under “Search Results”. If more than one interface is present, you can identify the transmitter to be configured by its MAC address. Select this transmitter. Now, in the “Network” window, you can enter the IP address and subnet mask that the converter should receive. By pressing the “WRITE” button, the settings will be programmed into the interface. The following confirmation should appear:



This completes the configuration of the Ethernet interface in the transmitter.



## Assembly of the Neutrik Connector NE8MC

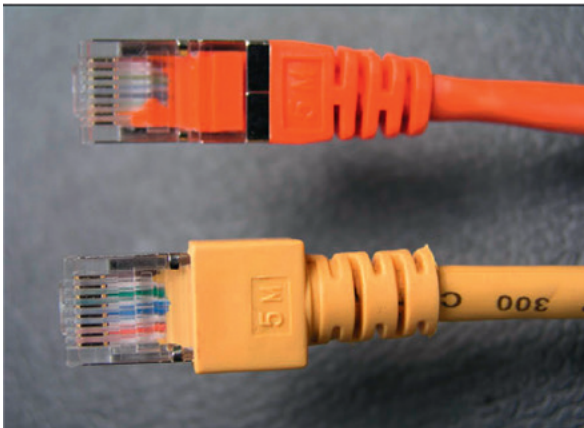


Fig. 10:  
For installation in the casing, plugs like the lower one in the picture are not suitable. The width of the plastic sheathing must not exceed the width of the contact block. The upper plug is suitable.



Fig. 11:  
This is how the Ethernet cable is inserted into the plug. The parts are pushed together and pressed into the metal part with the cap nut at the end.

## Technical specifications

	IXARO-NET 10L	IXARO-NET P500
Dimensions	177×81×57 mm (L×W×H)	177×81×57 mm (L×W×H)
Housing	Aluminum die-cast, gray painted	Aluminum die-cast, gray painted
Protection type	IP54	IP54
Temperature range	-10° to +40°C	-10° to +40°C
Frequency	433,5 MHz	446,1625 MHz
Power	10mW	500mW
Modulation	+/- 4 KHz FM	+/- 2 KHz FM
Protocol	POCSAG	POCSAG
Baud rate	512	512
Operating voltage	9 to 32 Volt	9 to 32 Volt

## Compliance with Standards

Both IXARO-NET variants can be operated without registration and free of charge. For the IXARO NET 10L, this applies to all countries of the European Community. It is a Short Range Device (SRD) in the 433 MHz ISM band. The IXARO-NET P500 operates within the framework of Digital Mobile Radio in the special variant DMR 446, which is approved in Germany. For other countries, the permissibility must be clarified with the local telecommunications authority. Both the IXARO-NET L10 and the IXARO-NET P500 comply with European standards for radio equipment in the respective frequency bands and modes of operation.

**EC - Declaration of Conformity  
R&TTE 1999/5/EC  
EMC 2004/108/EC**

For the 500mW UHF transmitter module

**70TX-D2**

it is hereby confirmed that it meets the essential protection requirements set out in the Council Directive on the approximation of the laws of the Member States relating to electromagnetic compatibility.

The following standards have been referred to in assessing the product regarding electromagnetic compatibility:

**EN 300113-2 1.5.1 (2011-11)  
EN 301489-1 1.9.2 (2011-09)  
EN 301489-3 1.4.1 (2002-08)  
EN 60950-1:2005 (2nd edition) or EN 60950-1:2006  
EN 62311:2007**

This declaration is issued under the sole responsibility of the manufacturer

**HM Funktechnik GmbH  
Zum Handenberg 3  
D-66620 Primstal**

issued by

Thomas Stöhr, Zum Handenberg 3, 66620 Primstal

Primstal, dated 05.08.2013



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HM-Funktechnik GmbH, Thomas Stöhr

EC Declaration of Conformity for the radio module in the transmitter IXARO NET P500

## EC - Declaration of Conformity

For the UHF transmitter and receiver modules

**70TX-M1**

and

**70RX-M1**

it is hereby confirmed that they meet the essential protection requirements, which are set out in the Council Directive on the approximation of the laws of the Member States regarding electromagnetic compatibility.

This declaration is valid for all specimens manufactured according to the attached specifications and production drawings, which are part of this declaration.

The following standard was referred to in assessing the product regarding electromagnetic compatibility:

**EN 300 220-1, Edition November 1997**

This declaration is issued under the sole responsibility of the manufacturer

**HM Funktechnik GmbH  
Zum Handenberg 3  
D-66620 Primstal**

issued by

Thomas Stöhr, Zum Handenberg 3, 66620 Primstal

Primstal, dated 05.08.2013



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**HM-Funktechnik GmbH, Thomas Stöhr**

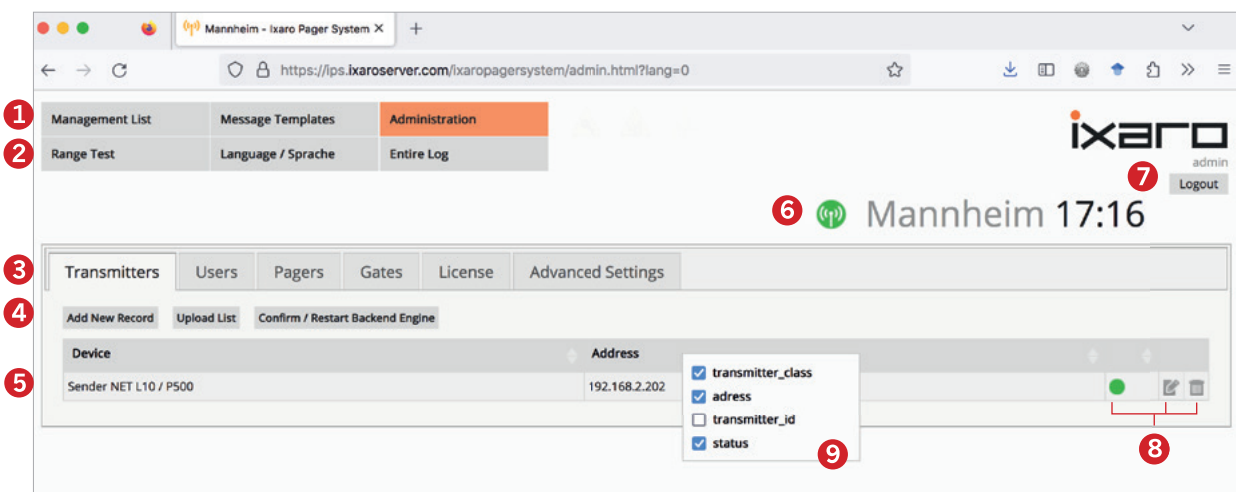
EC Declaration of Conformity for the radio module in the transmitter IXARO NET 10L



## Software Overview

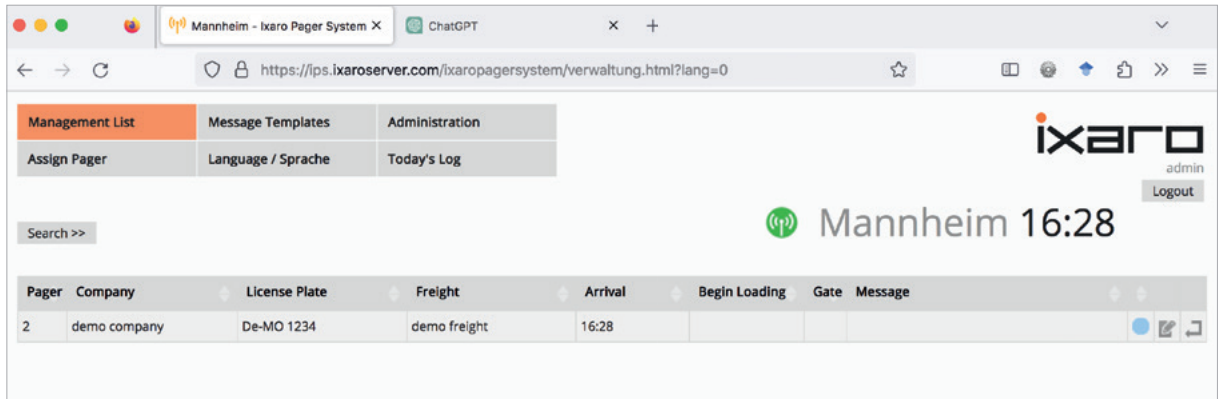
Below is the start screen for the main menu item **“Administration”** after logging in, featuring the key elements for operating the IXARO software.

### Example: **“Administration”** > **“Transmitter”**

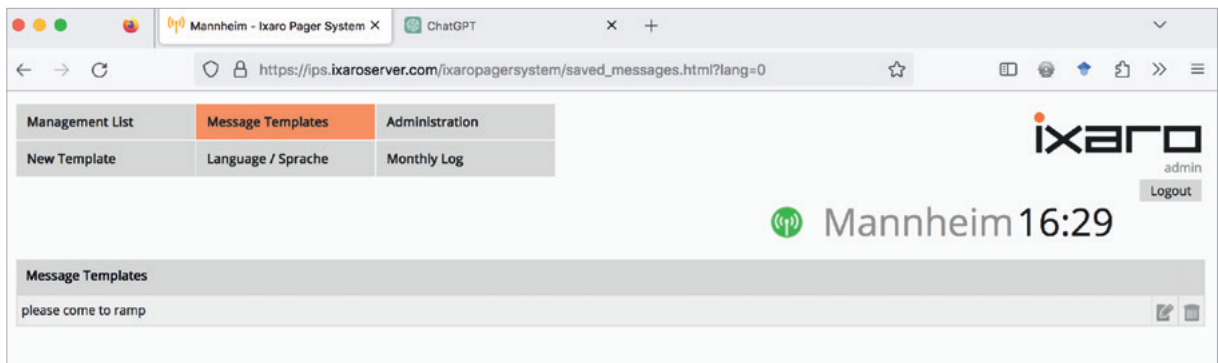


- 1 Main navigation
- 2 Subnavigation or available functions for the selected main navigation point
- 3 Third-level navigation with available functions for the selected subnavigation
- 4 Available functions for the selected point of the third navigation level
- 5 List for the selected navigation point
- 6 Status display
- 7 Log out
- 8 Depending on the list, various elements for the status of the entry or additional functions such as delete, edit, etc.
- 9 Every list can be configured according to your needs via a right-click menu that appears subsequently.

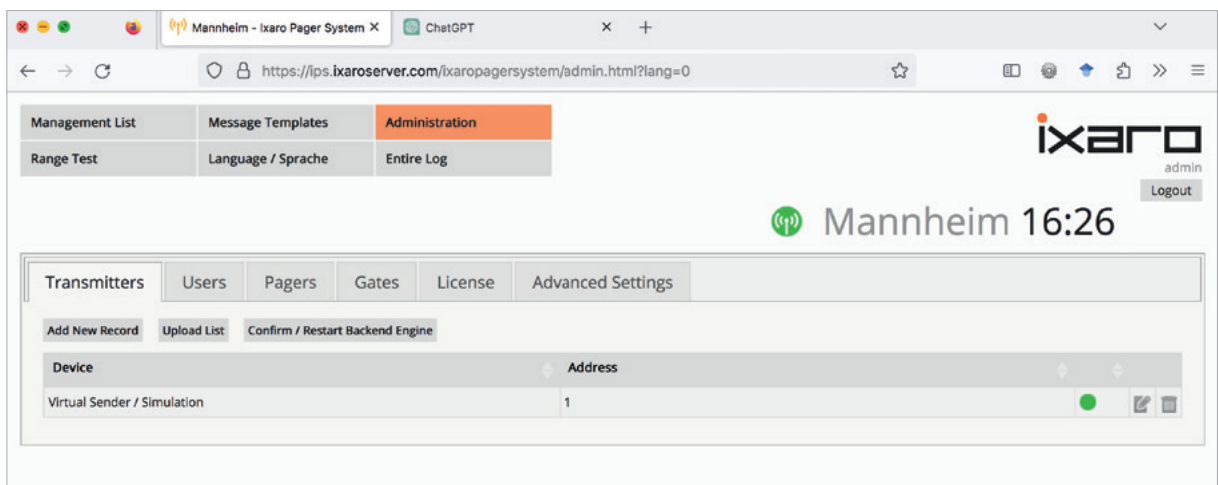
# Software Overview



Home Screen "Management List"



Home Screen "Message Templates"



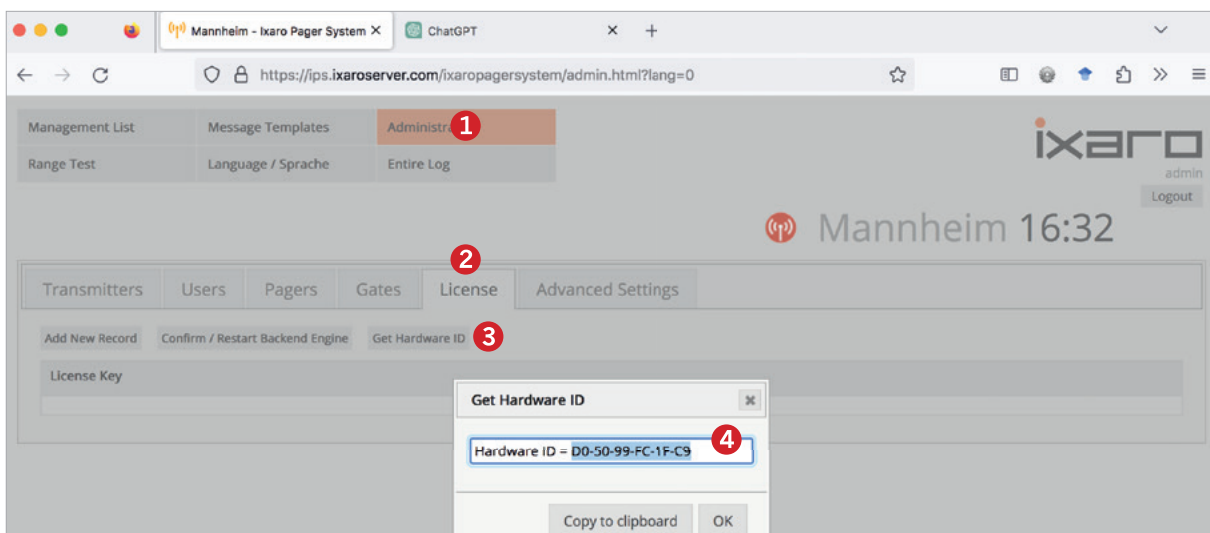
Home Screen "Administration"

## Software Functions and Applications

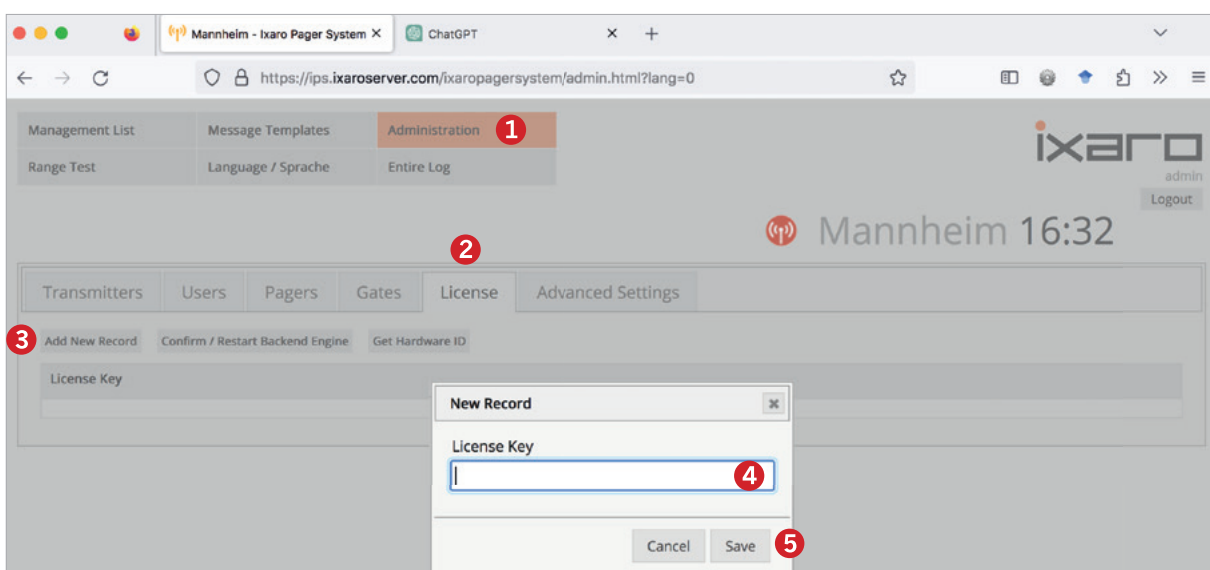
### Unlocking the Software

To unlock your software, you need a license key, which we generate after receiving your hardware ID from you. To read your hardware ID directly from the software, please select **“Administration”** > **“License”** > **“Determine Hardware-ID”**.

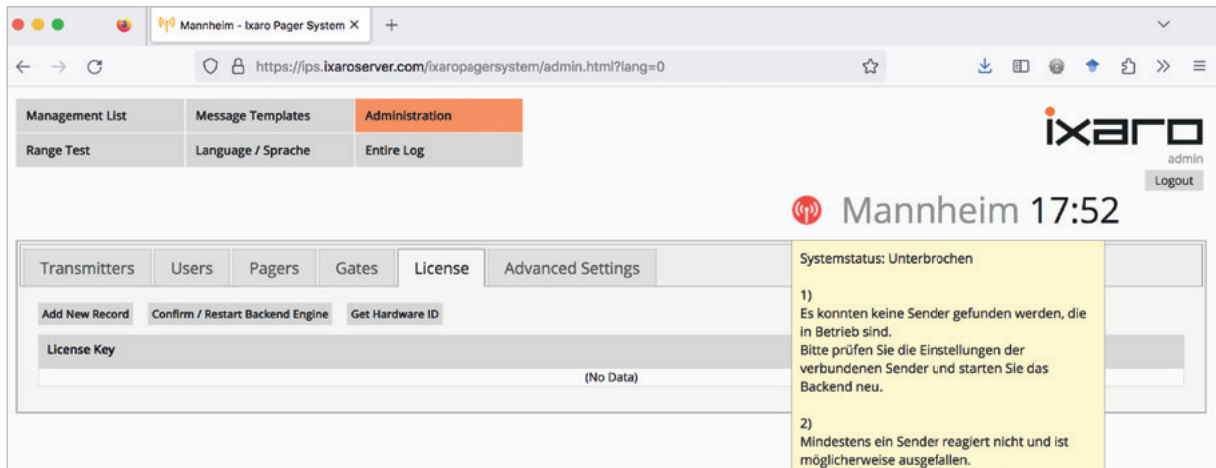
After clicking on **“Determine Hardware-ID”**, your hardware ID will appear in this pop-up. Send us the hardware ID **4** via email..




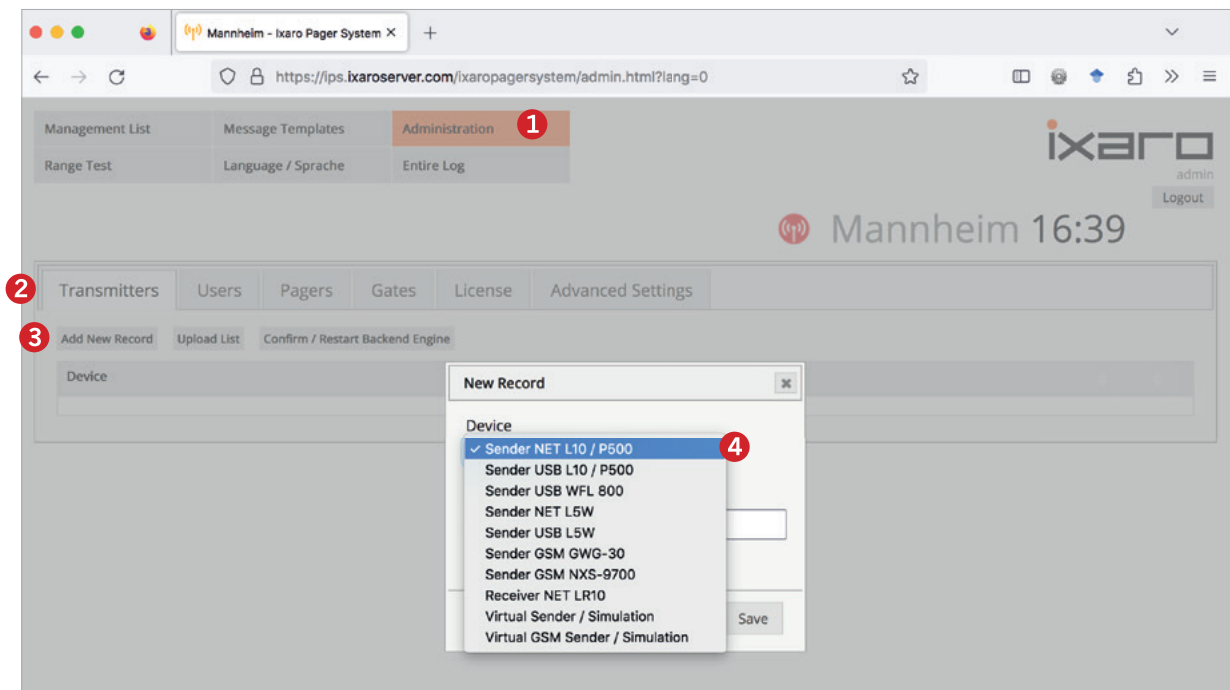
Subsequently, you will receive a license key for your software from us. Enter this key under **“Administration”** > **“License”** > **“New Entry”** and save.




## Unlocking the Software

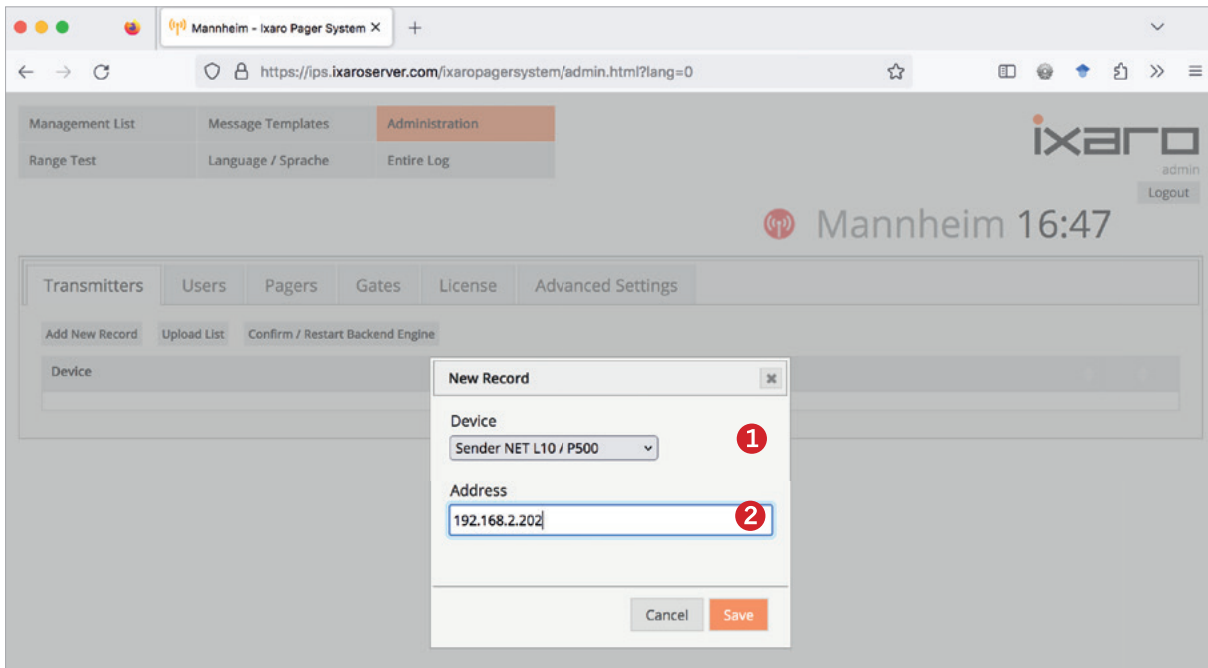


Now the software is unlocked. The status indicator still appearing in red  indicates that no transmitter has been found yet.

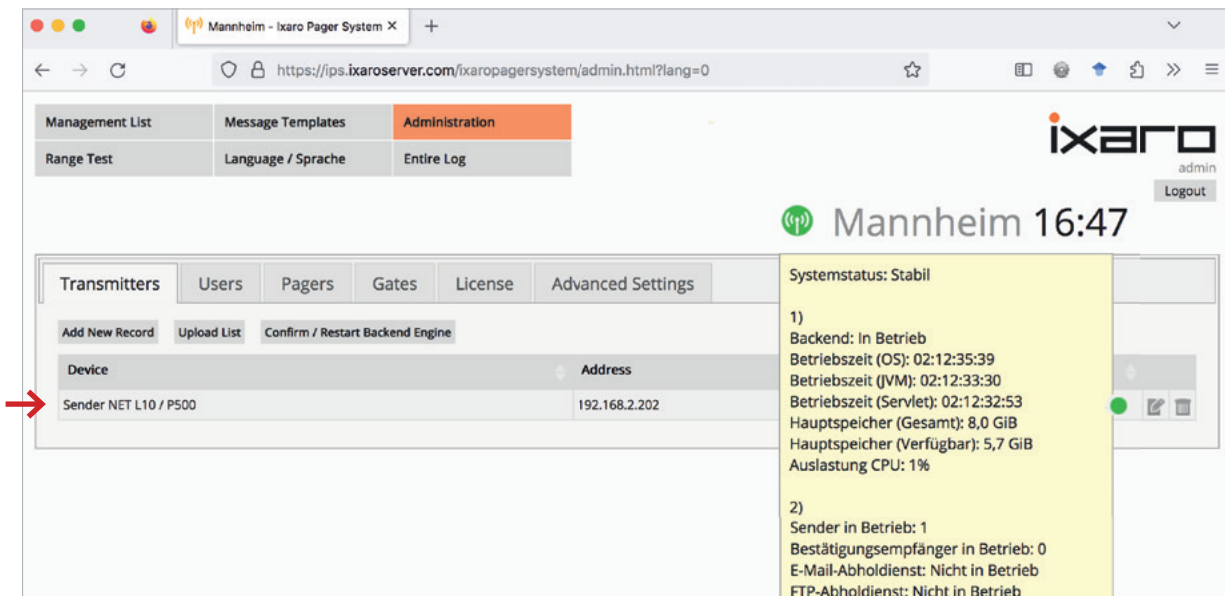



This transmitter must now be entered into the software. To do this, select **“Administration”** > **“Transmitter”** > **“New Entry”**. In the pop-up that then appears, you must first select the device class from the drop-down menu. 





Next, please enter the IP number you noted in the EZ-Manager under Address and save your entries.

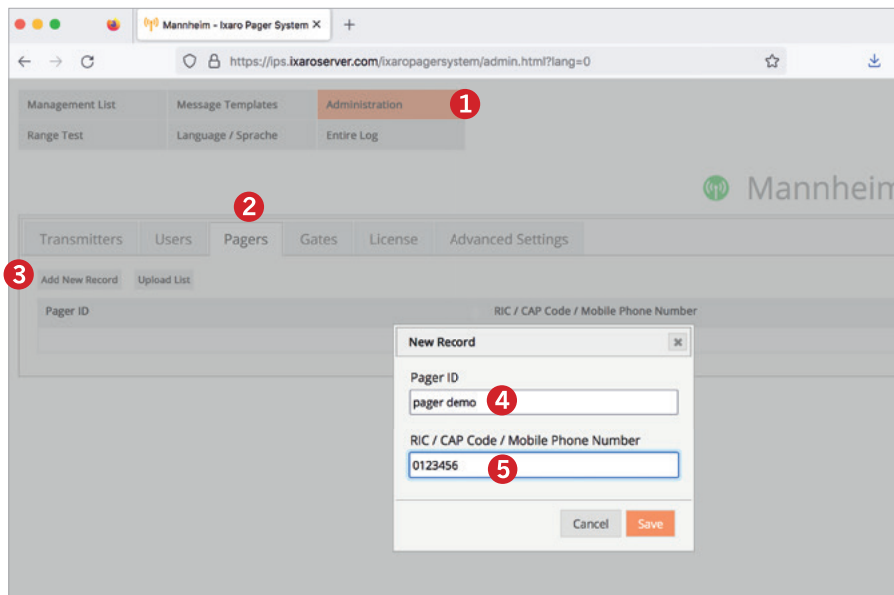


Now, the status indicator will turn green  and you will see the entry in the device list of the “**Transmitter**” tab. This means that the transmitter has been successfully added.

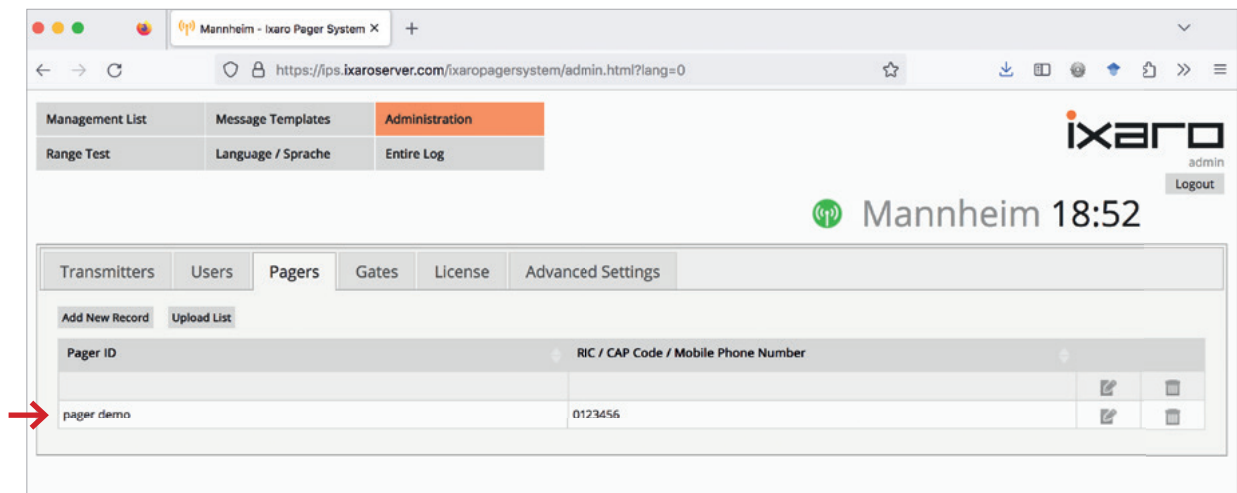
## Adding a Pager

### Administration: Adding a Pager

Before pagers can be issued and receive messages, they must first be added in the software. To add a new pager, please select **“Administration”** > **“Pager”** > **“New Entry”** and enter the corresponding number or designation under **“ID”** and the 7-digit number found on the back of the pager under **“CAP-Code”**.

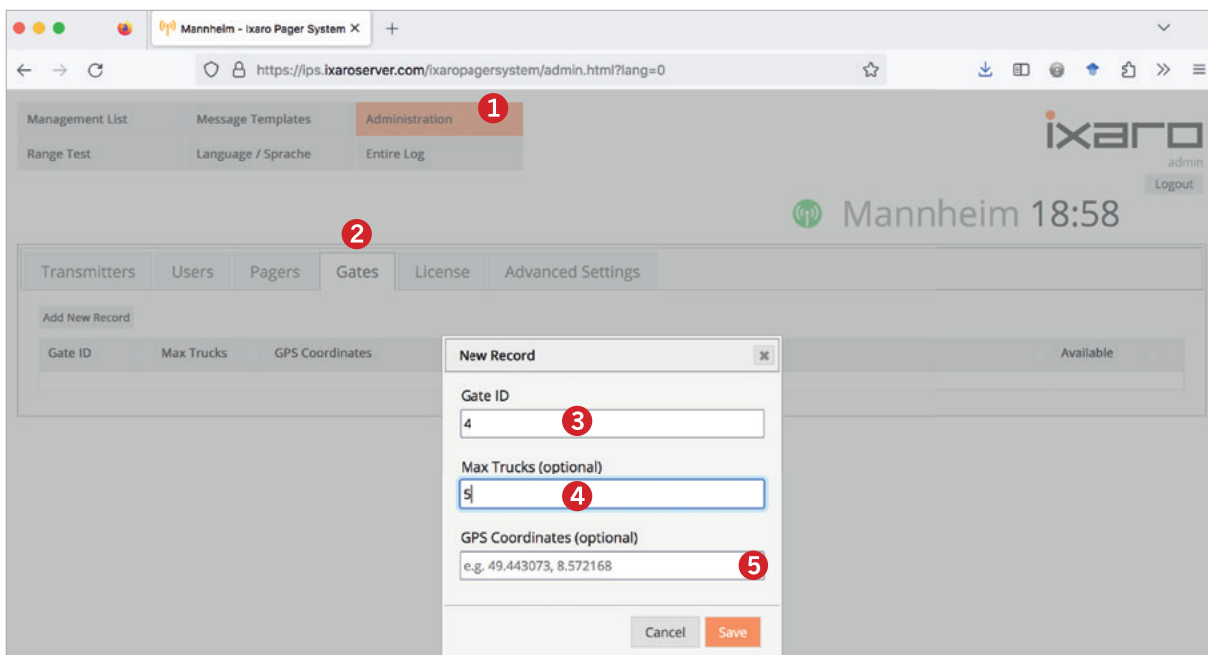


After saving, you will see in the list that the pager has been successfully added. You can later address and issue this pager in the **“Management List”**.

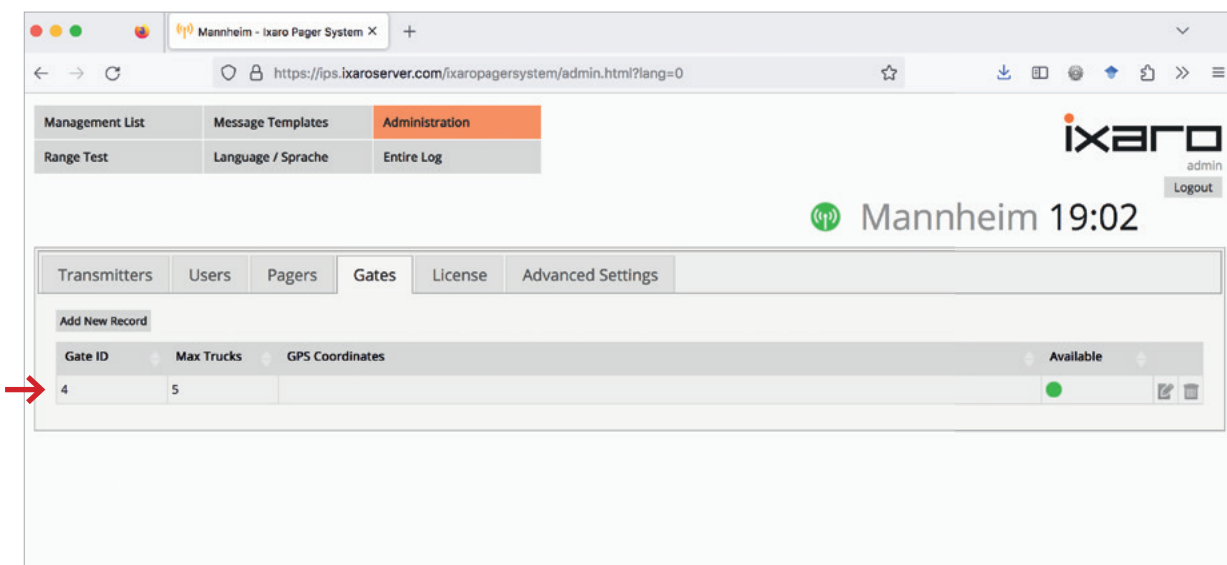


### Administration: Adding Ramps

Similarly, the software allows for the predefinition of ramps or loading docks. To do this, select “**Administration**” > “**Ramps**” > “**New Entry**” and enter the corresponding ramp ID here. You can also enter the maximum number of trucks that are allowed to occupy this ramp.



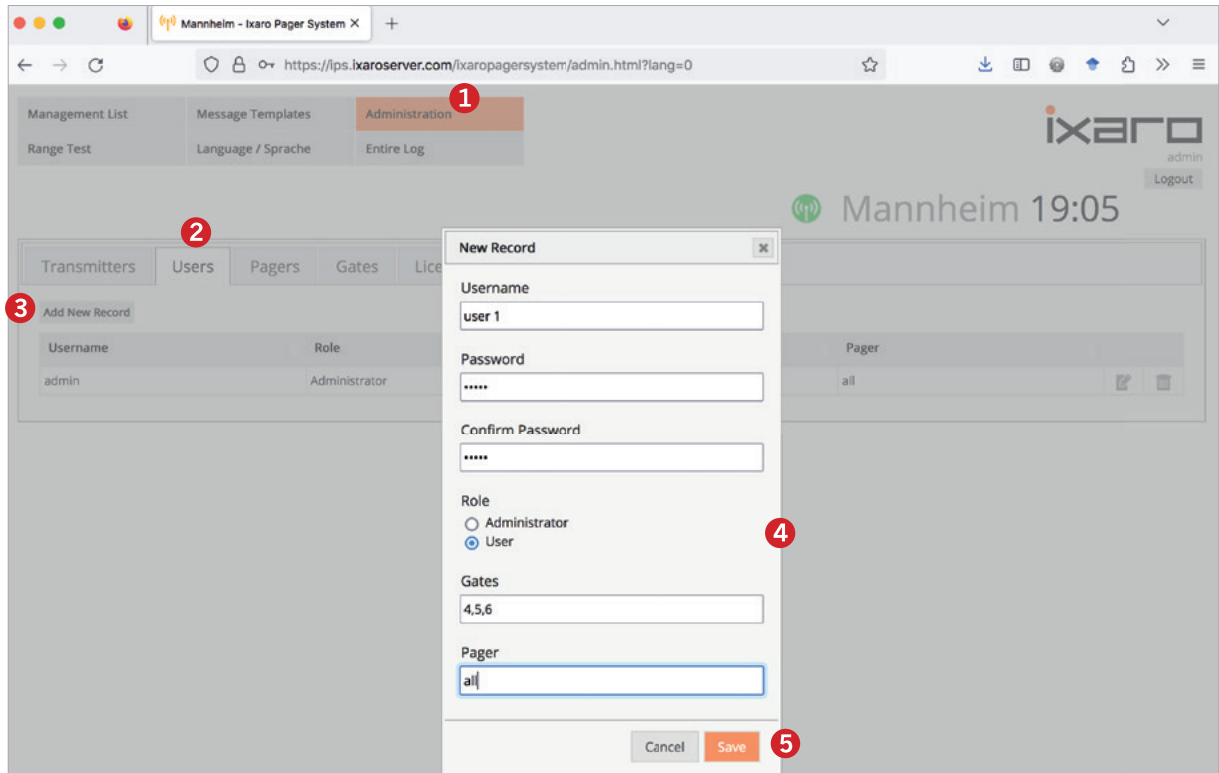
Once you save, the entry is also included in the software and can be accessed later in various menus.



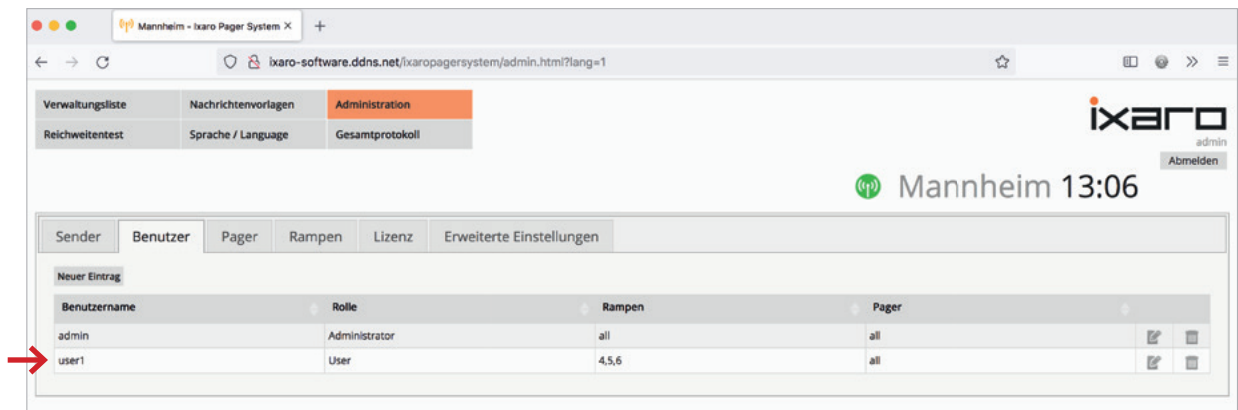
# Adding New Users

## Administration: Adding New Users

Under “Administration” > “Users” > “New Entry”, the software allows users with administrative rights to create new users.



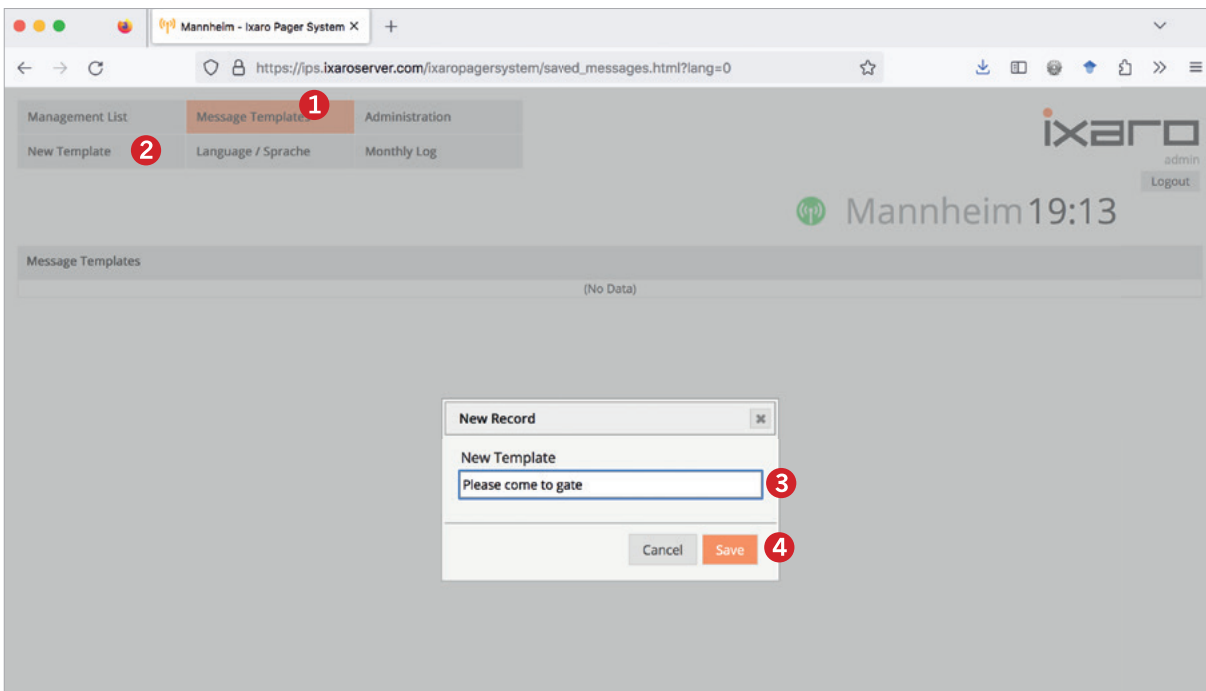
Here, you can set the access rights and the role of the new user. In the fields for ramps and pagers, you specify which ramps and which pagers the new user is allowed to access. “all” indicates unrestricted access.



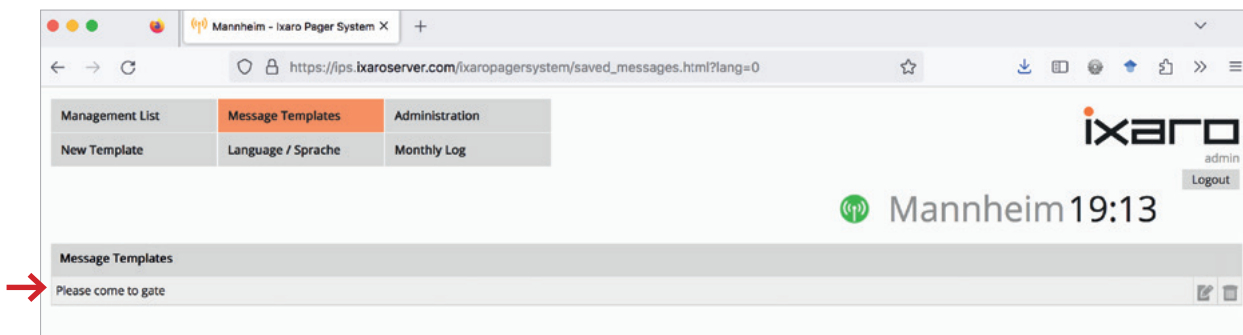
After saving, you will see the newly created user with all associated data.

### Message Template

Under **“Message Template”**, predefined texts for messages can be created. To do this, select **“Message Template”** > **“New Template”**.



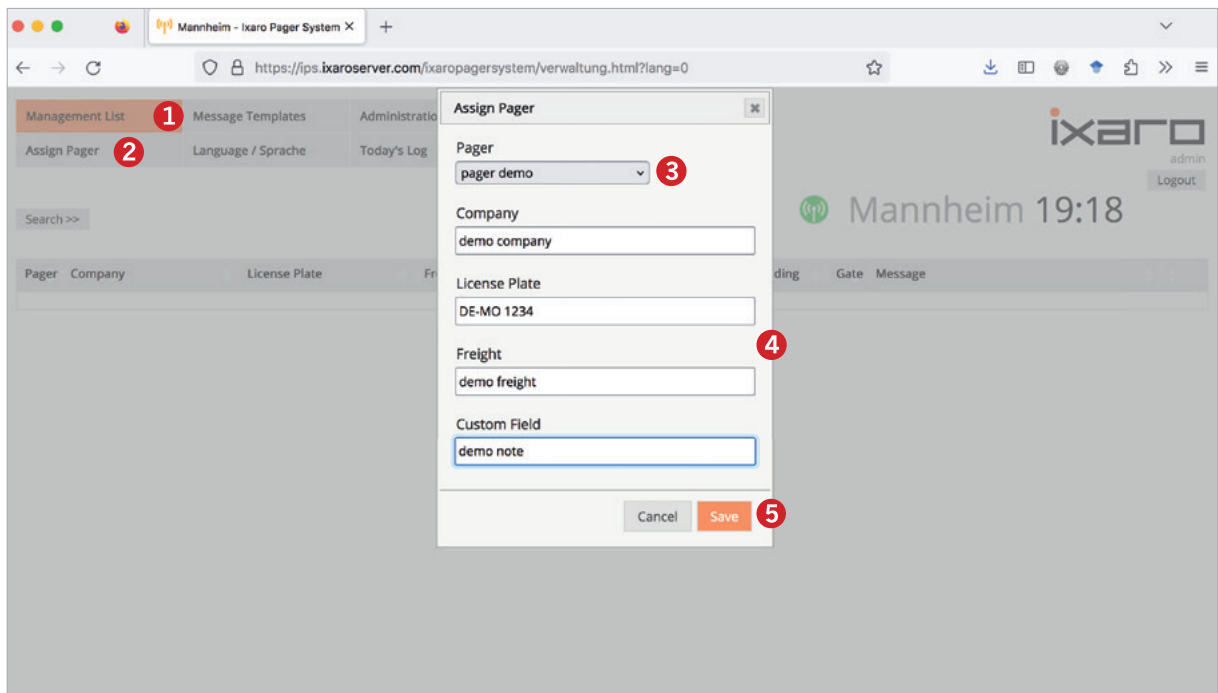
After you have saved the message, the entry will appear in the message template list and can be accessed later when sending messages.



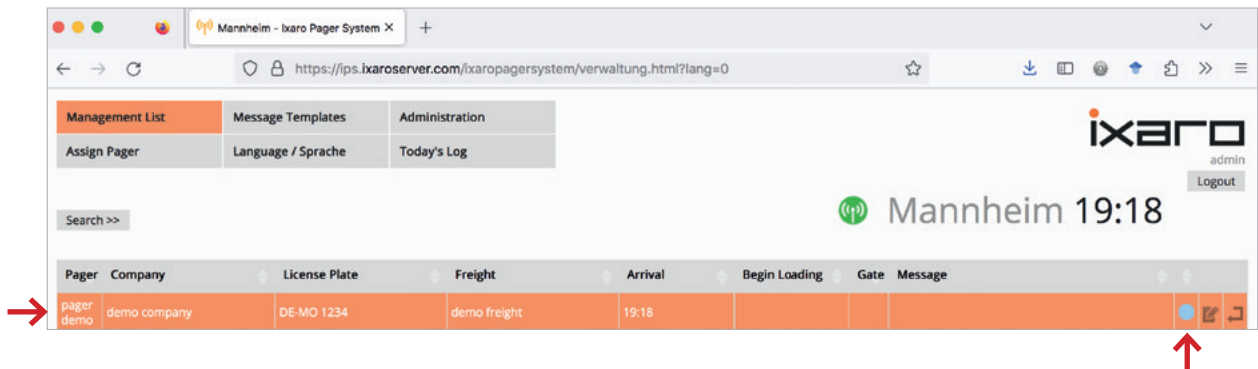
## Sending messages

### Management List

From here, messages are sent to pagers after they have been issued. For example, if a truck driver has arrived and the gatekeeper has issued a pager to him, this is recorded here in the management list. To do this, select **“Management List”** > **“Issue Pager”**.

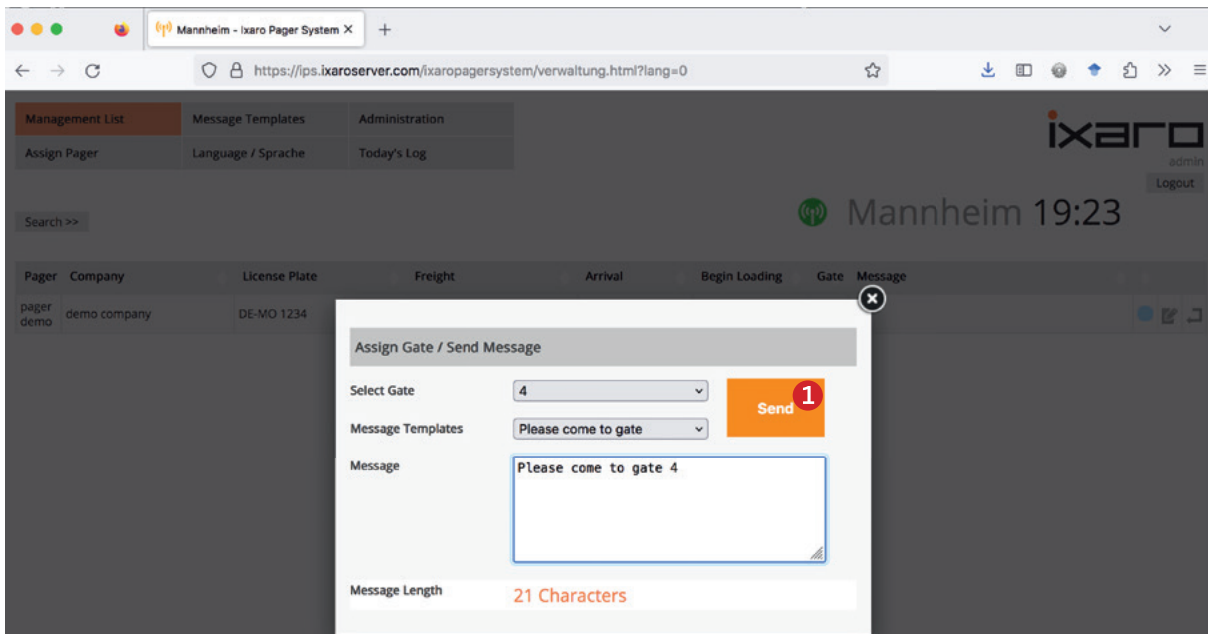


Here, in the drop-down menu, you can see all the pagers that were previously set up under “Administration”. Select the pager that was handed over to the truck driver. Furthermore, you can capture data on the company, license plate, cargo, and an additional arbitrary note regarding the process.



After saving, the pager issue and all related information are visible in the **“Management List”**.

Messages are sent to pagers by clicking on any part of the row in the management list. Afterward, a pop-up appears where you can either select a predefined ramp or message, or enter a free message.



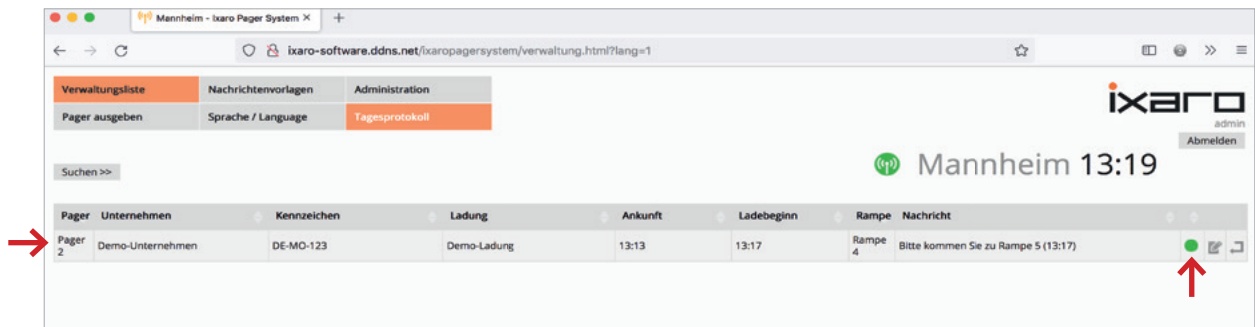
After clicking "Send," **1** the selected pager receives the message **2**. The pager beeps, vibrates, and blinks in the process **3**.



To acknowledge the message, please press the button **4** on the right outer side of the pager. A reset of the message on the pager is done by briefly placing the pager in the charging station **5**.

## Sending messages, Protocols

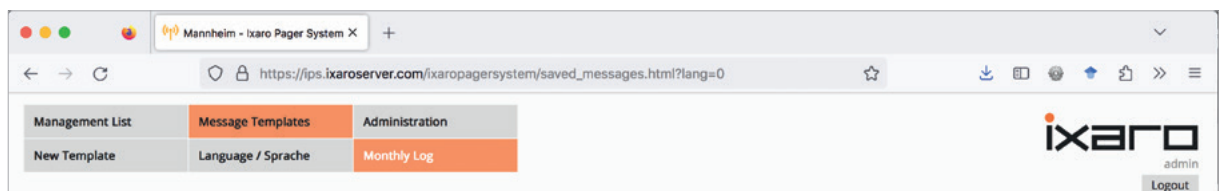
Although the message is reset on the pager, it remains in the software with a timestamp. The status indicator of the entry changes from blue to green after sending.



Even if later messages to the same pager overwrite previous messages, all message transfers are still logged. Under **“Management List” > “Daily Log,”** you can find the logs for the entire day **1**.




Under **“Message Templates” > “Monthly Log,”** you can access all logs for the month.

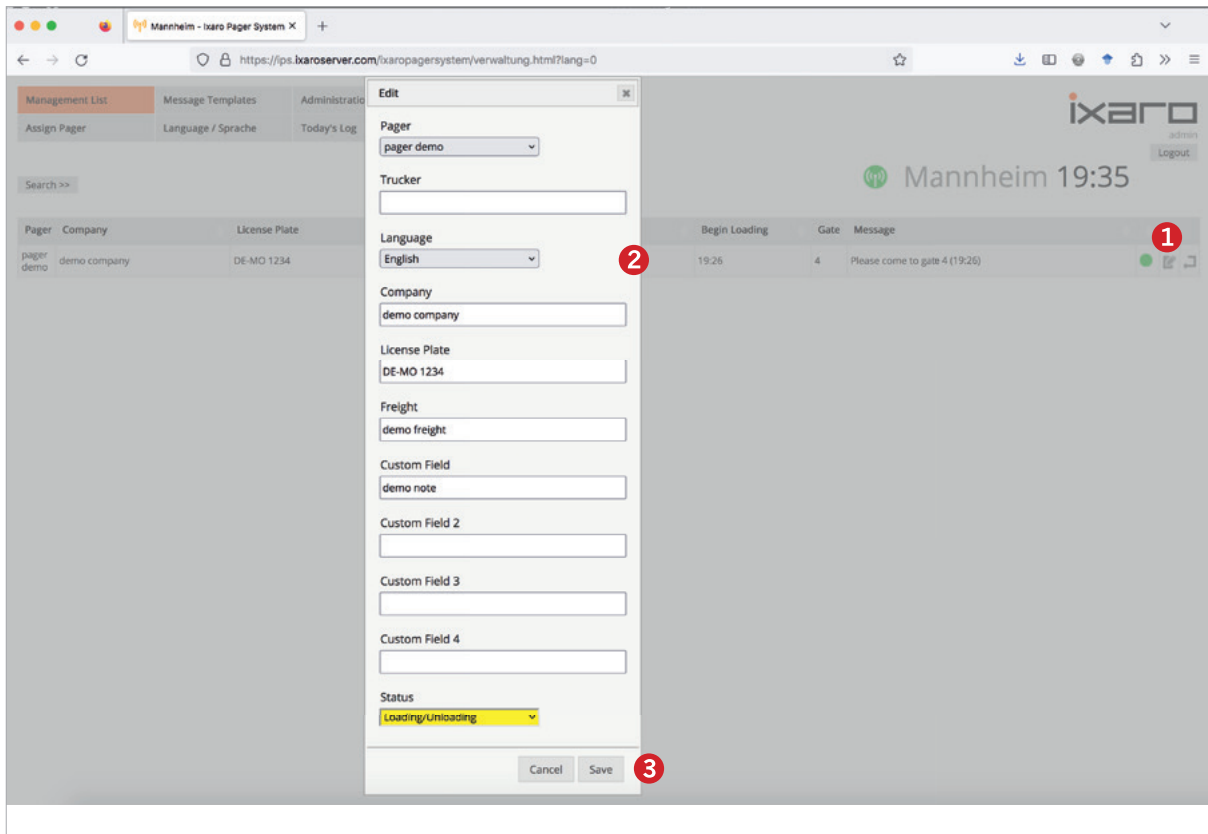


Under **“Administration” > “Complete Log,”** you can retrieve and save all logs.






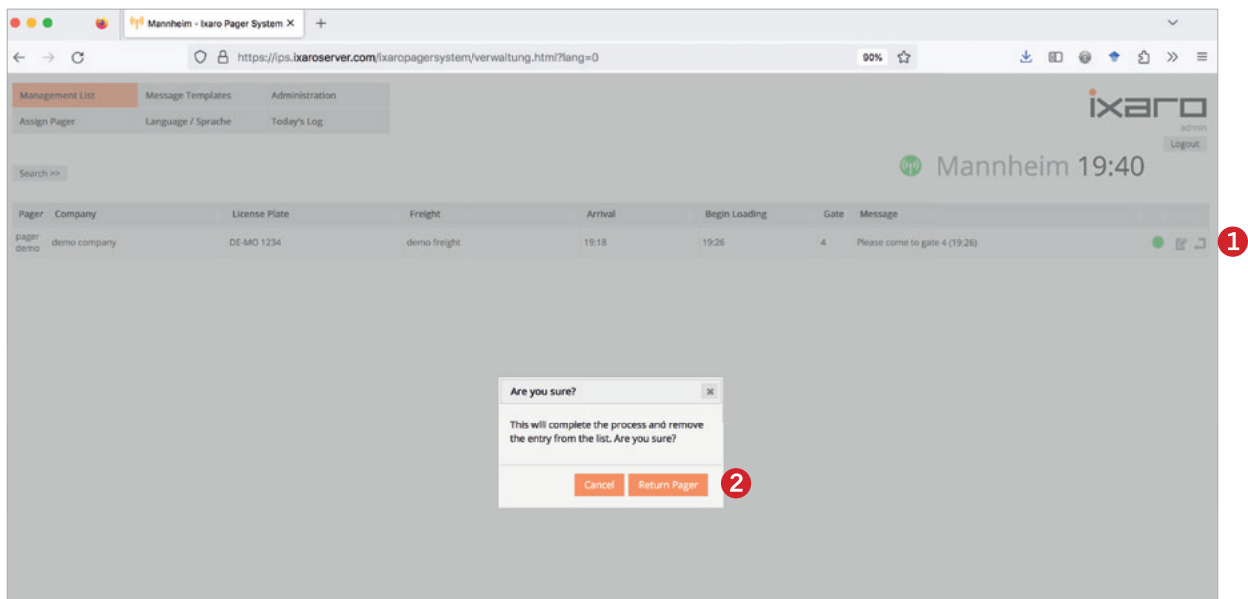
If you want to retrospectively change information about the transfer of a particular pager, you can do so using the **edit icon** . Clicking on the icon opens a pop-up where you can make the desired changes.



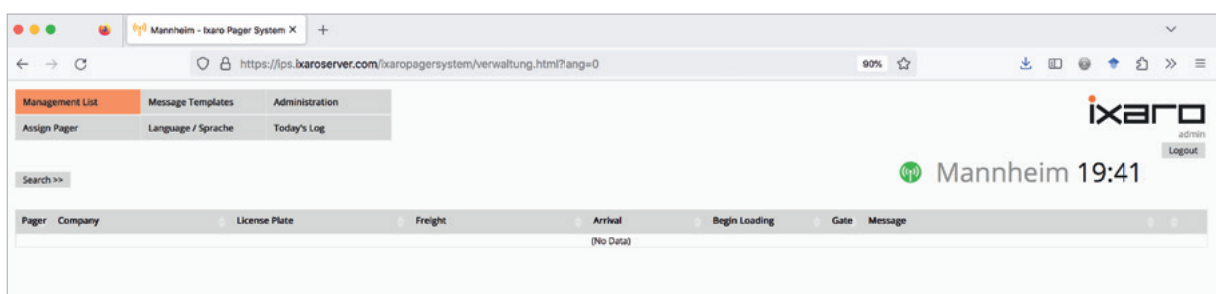
After saving the change, it will be incorporated into the log.

## Protocols and pager return

As soon as the truck driver is finished and has returned the pager, you can delete the entry from the management list, which will then transfer the entry into the log. To delete the entry, please click on the **return or pager return icon**  and then confirm with **“Return Pager”**.



As you can see, the pager has been successfully returned. This means the entry was deleted and transferred to the log.







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