theben

Manual for
TC 649 E
## Version 1

theben

Contents

1 Introduction

1.1 TC 649 E control box

The TC 649 E control box is operated using an administration and configuration tool (web interface). The control box can be used to send time switch and astro programs via the LAN. It is installed in the network via an integrated web server.
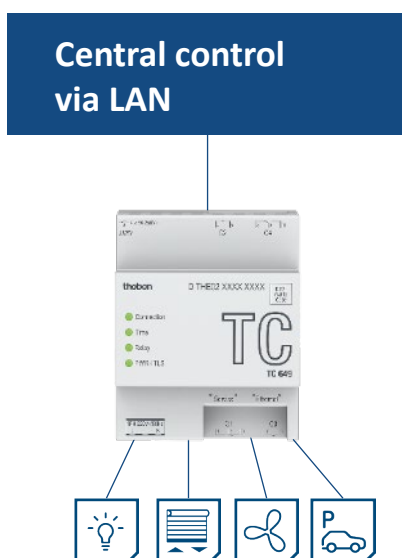

The control box is integrated into the company's own network via VPN — this means that you can operate your control boxes in a secure environment.
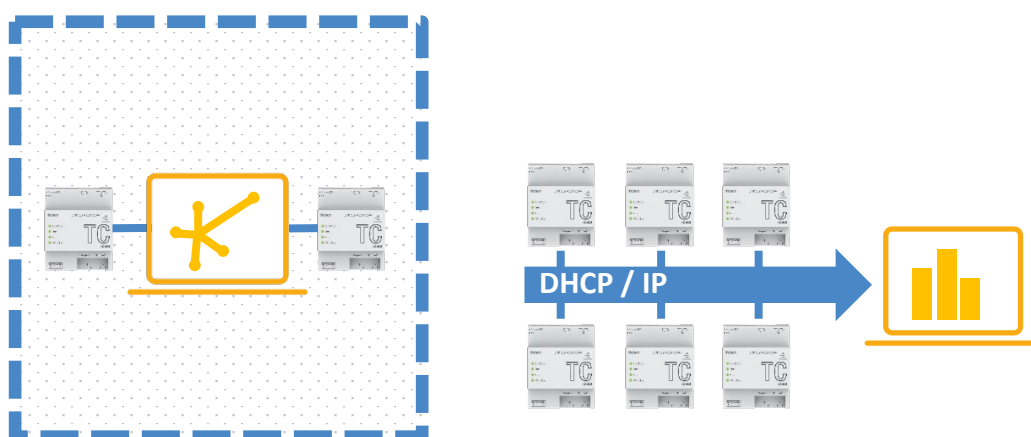
You can use simple functions with the control box, such as astronomically controlled lighting, time-controlled access points and temperature reduction for heating units during the day and at night.

1.2 Information about the web interface

The web interface for the TC 649 E control box can be called up on a desktop PC or a mobile end device such as a tablet or smartphone.
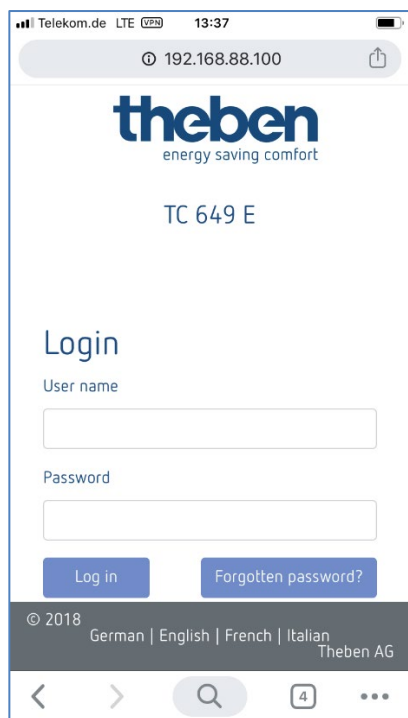
The following browsers / operating systems are supported:

- Browsers:
  - Google Chrome from version 69 onwards
- Operating systems:
  - Microsoft Windows
  - Apple iOS from version 10 onwards
  - Google Android from version 7 onwards

1.3   Main functions

Feature	Meaning
NTP server	Using the NTP server with the TC 649 E ensures switching accuracy to the second across the globe.
Standalone operation	The TC 649 E is operated as a single device without any external software.
Administration via web interface	The TC 649 E can be easily configured via the web.
Update firmware	Firmware can be easily updated via the web interface.

1.4   Housing

### 1.4.1   Top
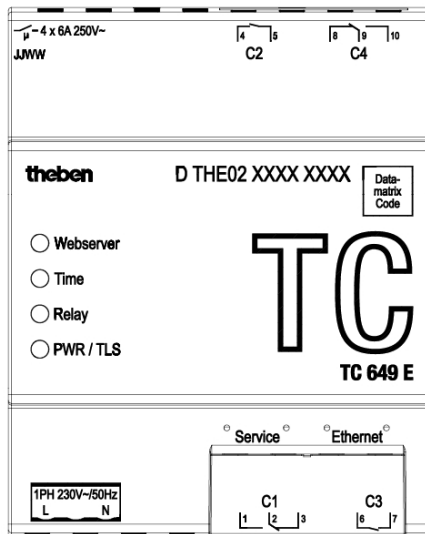
Name	Status	Meaning
Web server	Off	The web server for the web interface is switched off.
	On	The web server for the web interface is switched on.
	Flashing	The web server for the web interface is starting up.
Time	Off	The NTP service is deactivated.

|	On	The NTP service is activated and a connection has been established to an NTP server.
	Flashing	The NTP service is activated and the device is searching for a connection to the NTP server.
Relay	Off	All relays are switched off.
	On	One **or** more relays are switched on.
PWR/TLS	Off	The TC 649 E is switched off.
	Flashing	The TC 649 E is switched on.

1.4.2   Front

The socket for the power supply, both network interfaces (service, Ethernet) and the socket for relays C1 and C3 are located on the front of the device.

Power supply
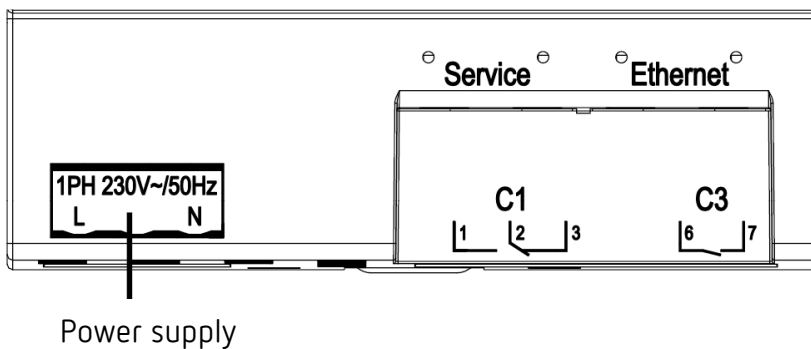
1.4.3   Back

The socket for relays C2 and C4 is located on the back of the device.
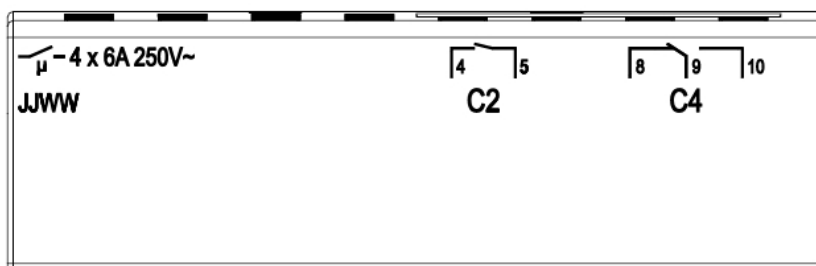
2 Start-up

Please refer to the enclosed installation and operating instructions for information on how to connect the device and carry out initial operation.

3 Connecting TC 649 E to the network

You will need a network cable (RJ45) to connect the TC 649 E control box to the network.

⚠️ Make sure the cabling is correct.

➢ Connect the cables in accordance with the following sections.

3.1 Connecting TC 649 E to the router

➢ Plug the network cable (RJ45 connector) into the router.
➢ Plug the other end of the network cable (RJ45 connector) into the (right-hand) **Ethernet** socket on the TC 649 E.
➢ Open the web browser (Google Chrome) and load the
page http://serial-number for the TC 649 E.
Example: http://DTHE0200001111 or http://192.168.138.3
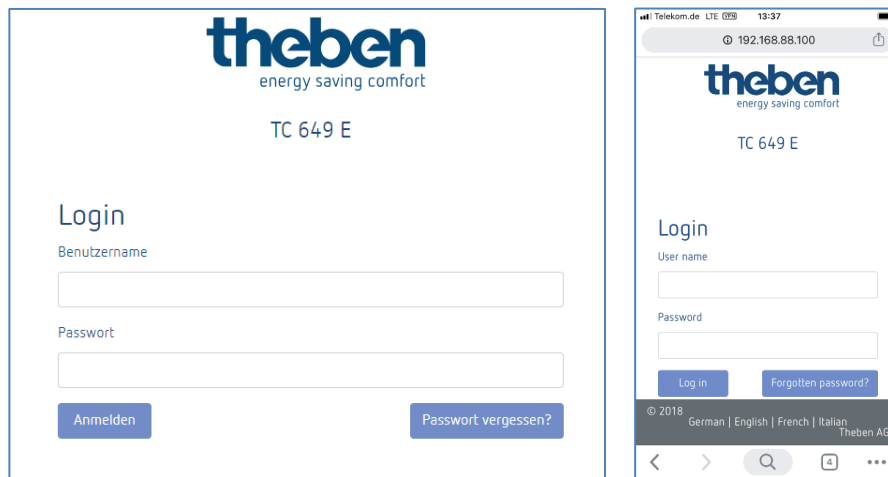http://DTHE0200001111 or http://192.168.137.3

ⓘ If you cannot reach the device via the hostname, it is probably because your router is unable to resolve the hostname. You can use the user interface of your router to display all devices and the IP addresses that are connected to your router. Please refer to your router manual to see exactly how to do this.
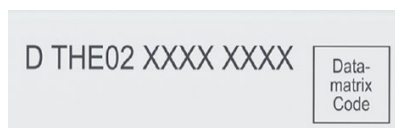
D THE02 XXXX XXXX | Data-matrix Code

→ The TC 649 E login screen appears.

> ➢ Enter **admin** as the user name.
> ➢ Enter the default password (**admin**) or your own password as applicable.
> ➢ Click on **Log in** or press the Enter key.

3.2 Connecting TC 649 E using a point-to-point connection

You can connect your PC directly to the TC 649 E control box (P2P) using a point-to-point connection.


ⓘ Your PC must have a static IP address.

As the default configuration for the TC 649 E control box is for it to be connected to a router, the device must be reconfigured first.

> ➢ Change the PC network interface from **DHCP** to **static**.
> ➢ Open the network connection.
> ➢ Press the Windows key + R.
> ➢ Enter **ncpa.cpl**.
> ➢ Double-click on the **network connection** under Network Connections.
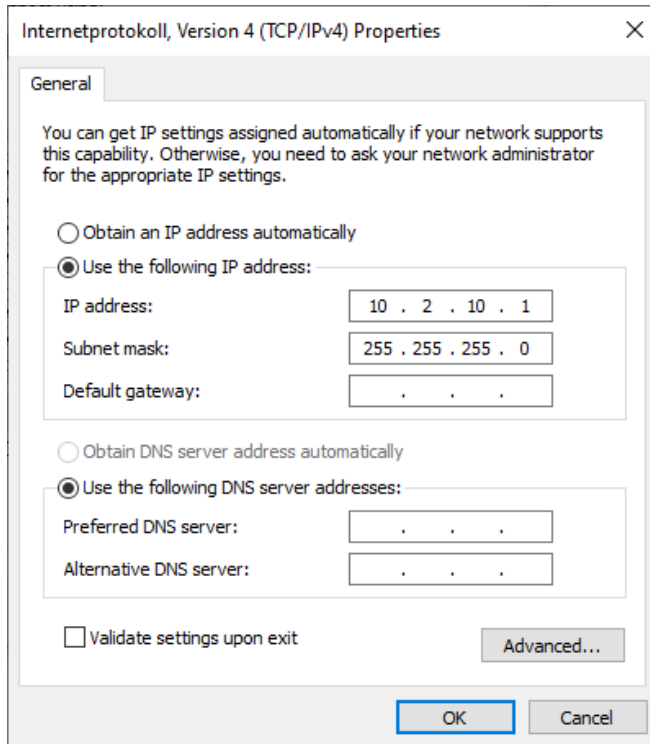> → The following window will open:
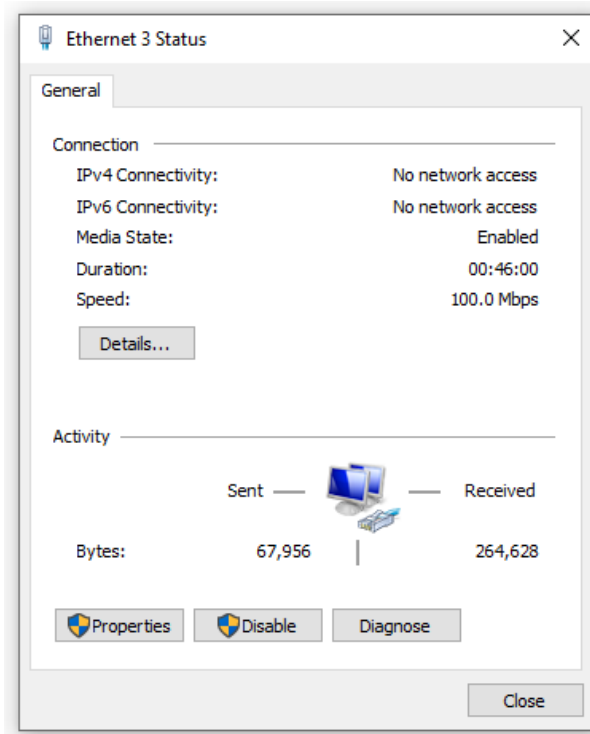
➢ Click on **Properties**.
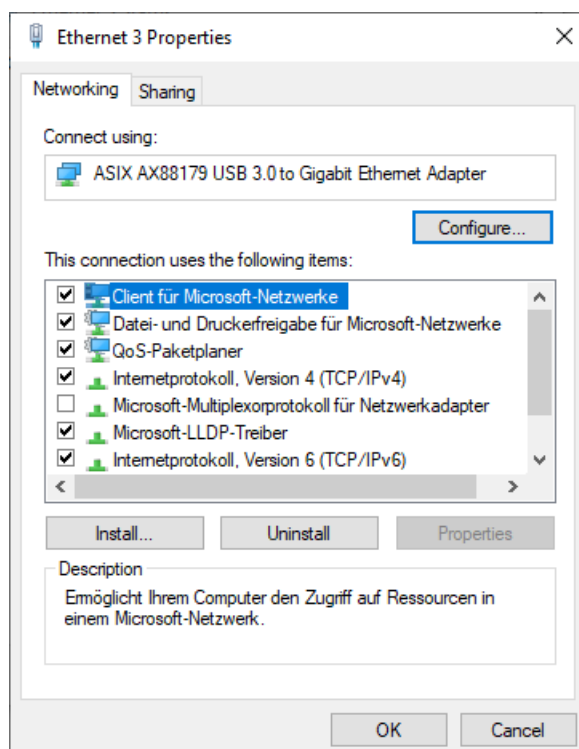
➢ Double-click on Internet Protocol Version 4 (TCP/IPv4).

You can now set the IP configuration to **static**.

➢ To do this, select **Use the following IP address**.

➢ Enter the required information (see screenshot).

➢ Close all windows by pressing **OK**.

➢ Plug the network cable (RJ45 connector) into the computer.

➢ Plug the other end of the network cable (RJ45 connector) into the (left-hand) **Service** socket on the TC 649 E.

➢ Open the web browser and load the following page

   Example: http://192.168.138.3
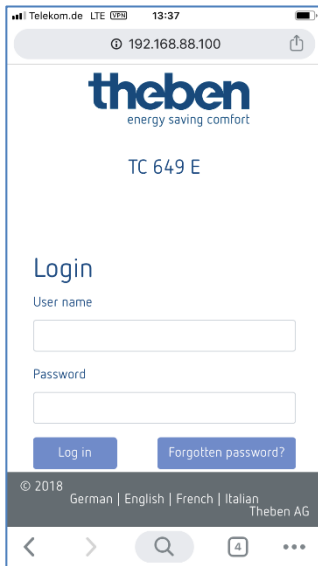
→ The TC 649 E login screen appears.

➤ Enter **admin** as the user name.

➤ Enter the default password (**admin**) or your own password as applicable.

➤ Click on **Log in** or press the Enter key.

➤ Set the IP address to the static address you require via Settings → Network settings − for more information, see **Network settings 5.2.1.1. DHCP → static**

➤ If you still cannot access the TC 649 E device, check the proxy settings and contact the system administrator if necessary.

Once you have changed the TC 649 E's IP address to a static address:

➤ Move the network cable from the Service interface to the Ethernet interface.

Change your computer's network adapter to the required address.

➤ To do this, see the steps mentioned above.

➤ Restart the device by disconnecting it briefly from the power supply.

4   Navigation

The main way to navigate around the user interface is via the menu bar at the top of the screen. You can access all the TC 649 E settings via this navigation bar.
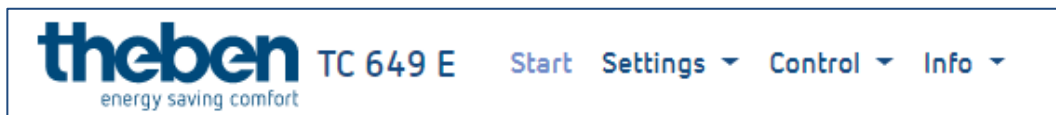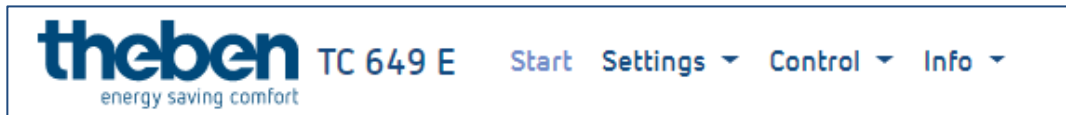

Menu items marked with a ⏷ contain sub-menu items which can be called up with a single click.
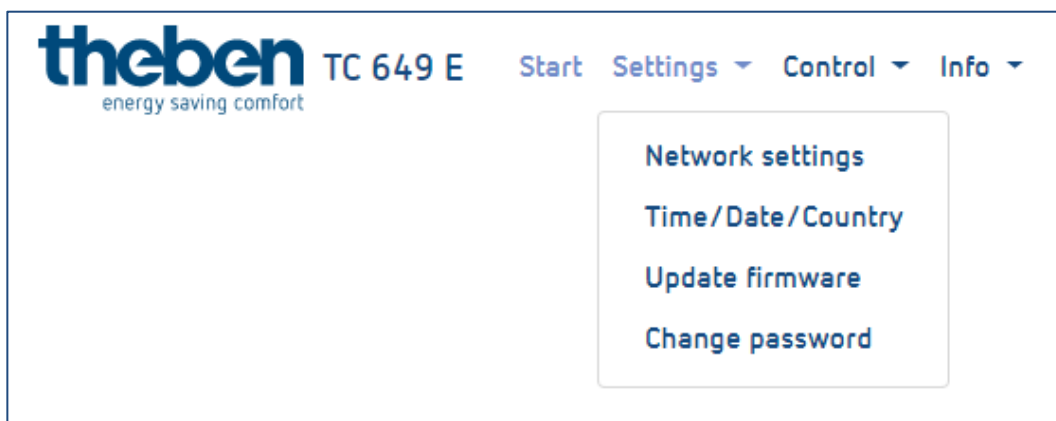
5 Controls and menu

To navigate around the main menu, click on the required main menu item.

If the main menu item contains sub-menu items, a drop-down menu will open. You can then click on the sub-menu item you want.

theben energy saving comfort **TC 649 E**   Start   Settings ▾   Control ▾   Info ▾

5.1 Start

Detailed device information is displayed on the start page.

ⓘ This information cannot be changed here. To change the settings, use the corresponding menu items under Settings or Control.
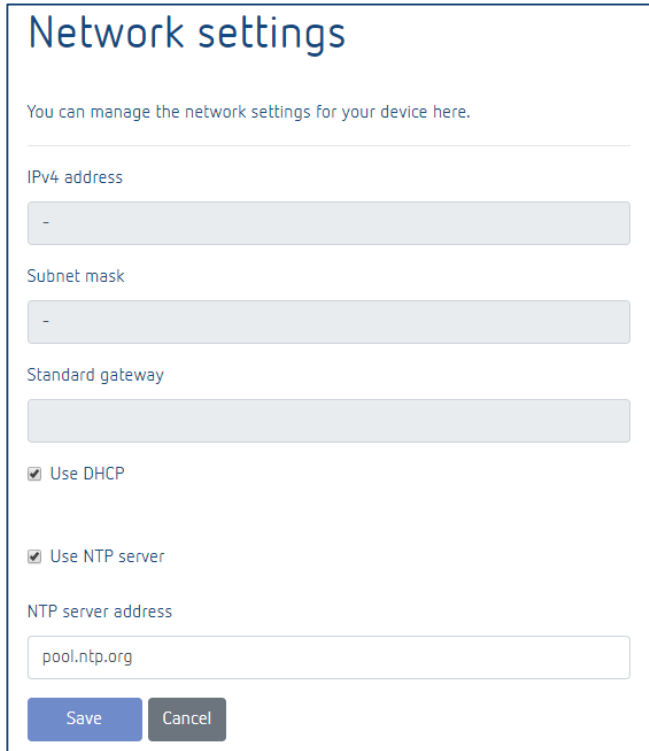
Device information

Serial number:	DTHE0200000460
Date/Time (local):	08.10.2019 01:44:21
Current ot2 file:	TC649E2.OT2
Interface type:	STATIC
IP address:	10.2.10.2
Subnet mask:	255.255.255.0
Gateway:	No gateway entered
NTP active	Yes

5.2   Settings

5.2.1   Network settings

You can change the network settings for the TC 649 E in this menu.

ⓘ Please note that all changes only affect the right network interface (Ethernet).

5.2.1.1 DHCP → static

To change the network interface from DHCP to **static** …

➢ Untick the Use DHCP field.

➢ Enter a valid IPv4 address, the corresponding subnet mask and a standard gateway if applicable.

➢ Click on **Save** to confirm changes.

To configure and use the NTP server, proceed as follows …

➢ Tick the box next to **Use NTP server**.

➢ Enter the relevant NTP server address.

➢ Click on **Save** to confirm changes.

ⓘ If you have ticked the box next to **Use NTP server**, you cannot change the time. If you untick the box, you can change the time again.

ⓘ The control box is briefly unavailable after settings have been saved.

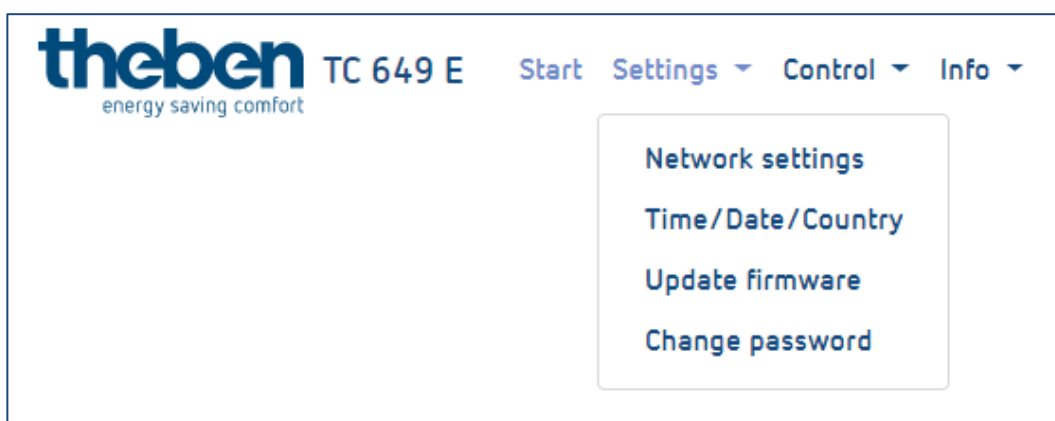ⓘ Changes to the network settings may result in loss of contact with the control box.

5.2.2   Setting time/date/country

You can use the following menu to set the time and date and to store a location for the astro functionality.
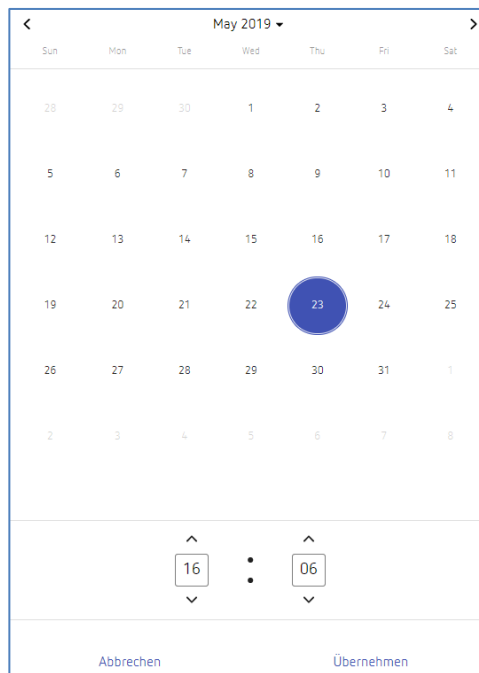

Changing the time

ⓘ The date and time can only be changed if the NTP server is deactivated.

➤ Click the following field.

→ A pop-up window appears.

➢ Set the desired time.

➢ Click on **Apply**.

➢ Then click **Save**.

Changing the country and city

➢ Select a country from the (country) drop-down menu.

➢ Then select a city from the (city) drop-down menu.

➢ Click **Save**.

5.2.3 Updating firmware

You can run a device update in this menu. You can run the device update either online **(Internet connection required)** or offline **(not on mobile devices)**.

ⓘ A firmware update can only be carried out via the desktop application.

Online update

➢ Click on the **Check for updates** button.

→ A message appears if an update is available.

➢ Then click on **Start firmware update**.

➢ Press **Yes** to confirm and carry out the update.

→ The update is downloaded and installed automatically. Once the update has completed successfully, you will be redirected automatically to the login page.

ⓘ The update will take 3 to 5 minutes. The web interface will not be available during this time.

⚠ Do not disconnect the control box from the power supply during the firmware update, as this may cause irreparable damage to the device.

Offline update

➢ Drag and drop the firmware package provided by Theben AG into the dashed field.

➢ Then click on **Start firmware update**.
➢ Press **Yes** to confirm and carry out the update.
➢ The update is downloaded and installed automatically. Once the update has completed successfully, you will be redirected automatically to the login page.
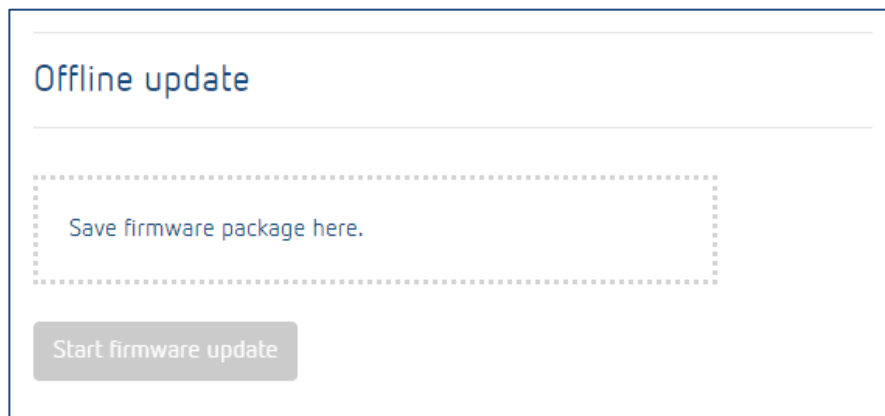

ⓘ The update will take 3 to 5 minutes. The web interface will not be available during this time.

⚠ Do not disconnect the control box from the power supply during the firmware update, as this may cause irreparable damage to the device.

5.2.4 Change password

In this menu, you can change the password.

ⓘ The new password must be between 5 and 20 characters in length.

➢ Enter your old password.

➢ Then enter the new password.

➢ Confirm the new password.

➢ Click on **Save**.

→ Once you have saved your password, you will be automatically logged out and redirected to the login page.

➢ Log in using your new password.

5.3 Control
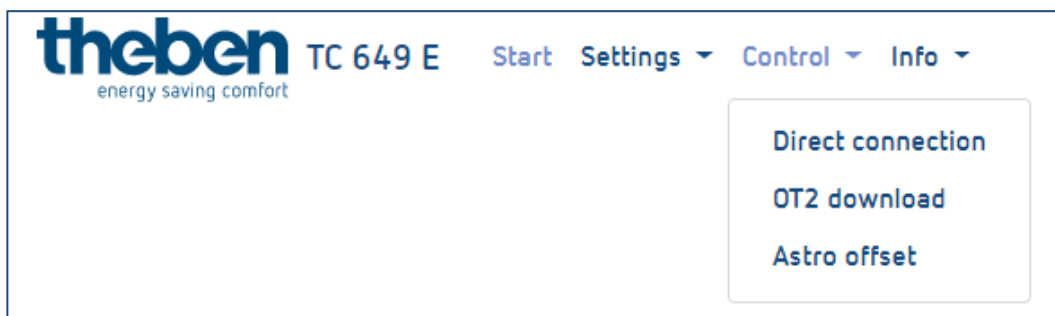
5.3.1 Direct connection

Direct connection is only possible with an active switching profile. Each channel can be switched individually.

Status	Function
PERM OFF	The channel is switched off and cannot be changed via the programmed switching times.
PERM ON	The channel is switched on and cannot be changed via the programmed switching times.
AUTO	The channel is switched according to the programmed switching times.

Changing the switching status

➢ Select the desired mode in the drop-down menu (PERM OFF, PERM ON, AUTO).

→ The channel switches to the desired status.

→ The current relay status is displayed.
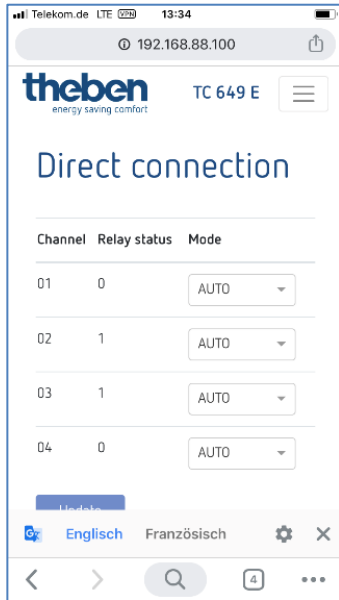
5.3.2   ot2 download

You can transfer the ot2 file (from the OBELISK software) to the control box here.

ⓘ You can only download the ot2 file via the desktop browser.

You need the Theben OBELISK top2/3 software to create an Obelisk file. You can download the software via this link:

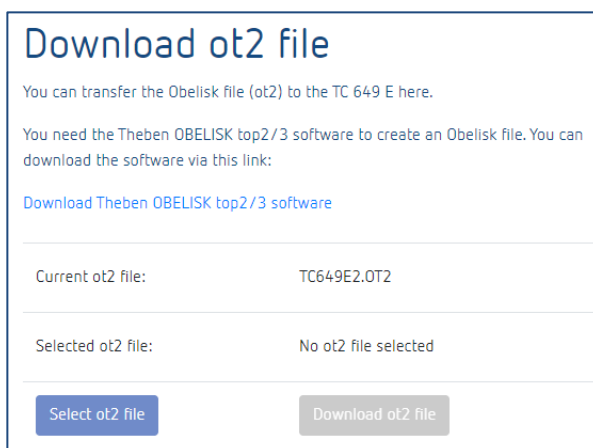https://www.theben.de/ocsmedia/optimized/full/o4515v48%20OBELISK_top 2_3_V3.8.3.8%20-%20Software.ZIP

Loading ot2 file (switching times) on to device

➢ Create an ot2 file using the OBELISK software (see above).

➢ Go to **Select ot2 file** in the TC 649 E user interface.

➢ Click on **Download ot2 file** in order to transfer the ot2 file to the TC 649 E.

ⓘ The ot2 file download can take a while. The time required for the download depends on the number of switching times.

5.3.3 Astro offset

The offset for astro switching times can only be set for channels which use the astro functionality. The astro functionality for the individual channels must be stored in the OBELISK software.

The astro offset can be changed to values within the range -120 minutes to +120 minutes.

Changing the astro offset

➢ Set the desired offset value for the relevant channel using the slider or the input field.

➢ Click **Save** to transfer the offset settings to the TC 649 E.

5.4 Info
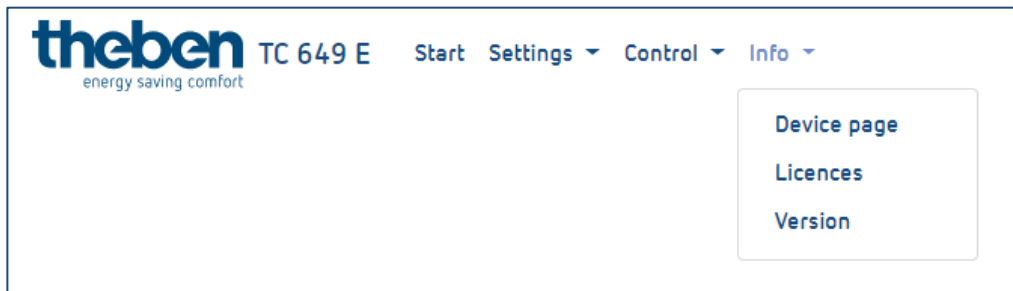
5.4.1 Home page

This menu takes you to our website. If you need assistance or have any questions, do not hesitate to contact us via the home page.

5.4.2 Licences

The licences for the programs and features used can be downloaded here as a ZIP package.

5.4.3 Version

This displays the software version currently installed on the TC 649 E.

5.5 Log out

To log out of the user interface, click on the **Log out** button in the top right-hand corner of the screen. You will then be redirected to the login page.
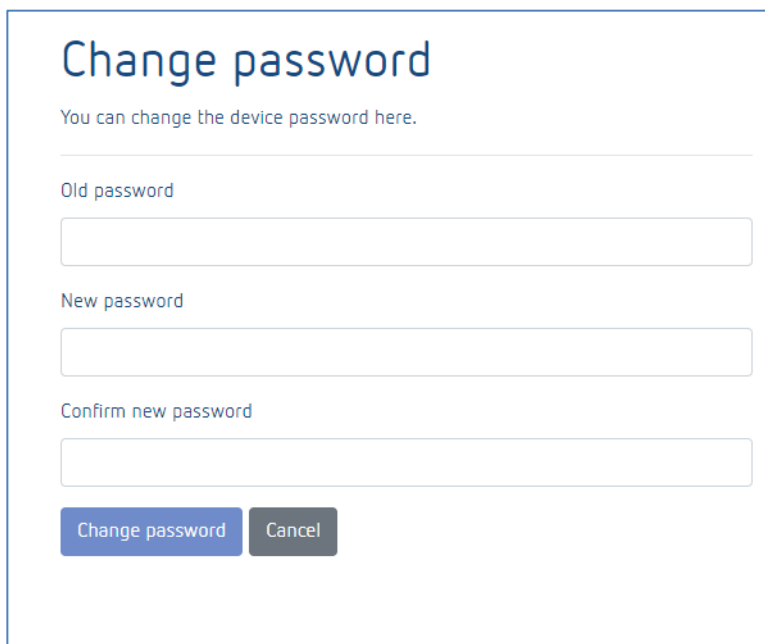
5.6 Password forgotten

If you have forgotten your password, click on **Forgotten password?** on the login page. This will redirect you to the page where you can reset your password.

To reset your password, proceed as follows:

➢ Enter your device's serial number in the serial number field.

➢ Contact Theben Support at **+49 7474 692-369**.

➢ Enter the Theben code you are given in the Theben code field.

➢ Then click on **Reset password**.

→ Once your password has been reset, you will be redirected to the login page.

→ You can now log in again using the user name **admin** and the password **admin**.

Change password

You can change the device password here.

Old password

[   ]

New password

[   ]

Confirm new password

[   ]

[Change password] [Cancel]

5.7 Switching language

You have the option of setting a different interface language on the TC 649 E.

➢ To do this, click on the language in the middle of the screen at the bottom and select your chosen language.

→ The interface language changes to the desired language.

6   Appendix

6.1   Default settings

Parameter	Default value
User name	admin
Password	admin
IP address	DHCP (assigned automatically)
NTP address	pool.ntp.org
NTP active?	Yes

6.2   Troubleshooting

6.2.1   I cannot reach my TC 649 E via the browser.

➢ Check whether the TC 649 E is connected to the supply voltage.
➢ Check the network connection between the TC 649 E and the PC or router.
➢ Check the network configuration of your TC 649 E and/or your PC or router.

6.2.2   How can I tell if my TC 649 E is working properly?

Your TC 649 E is ready for operation if the PWR/TLS LED is flashing and the LED for the web server is lit up permanently.

6.2.3   What can I do if I forget my password?

Reset your password with the help of Theben Support (see the Password forgotten section for how to do this).

6.3 Specifications

General	
Standards and protocols	TCP/IP, DHCP, NTP
Safety and emissions	CE
Ports	2x 10/100M-RJ45-LAN connection
Physical and environmental	
Operating voltage	Extended operating range 230 V~, -20% +15%
Switching capacity	6 A/250 V AC, cos φ = 1
Minimum load	5 V / 1 mA
Switch contact	µ-contact
Frequency	50 Hz
Power consumption	3 W
Set operating range	-10 °C to +45 °C
Threshold for operation	-25 °C to +55 °C
Threshold for storage and transport	-25 °C to +70 °C
Air humidity	95 %, non-condensing
Protection class	II subject to designated installation
Protection rating	IP 30

6.4 Glossary

DNS (Domain Name System) – A service which converts the domain name into IP addresses

Domain name – The "descriptive" name for an Internet or network address

Gateway – Component which establishes a connection between two network systems

IP address – Addresses a device in the network so that it can be reached

DHCP (Dynamic Host Configuration Protocol) – Makes it possible to assign a network configuration to clients via a server

6.5 Use of open source software

This product uses open source software (OSS). A
list of the OSS components used and their licence type and
version can be found at
https://www.theben.de/tc-649/

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