KeTop T135

Quick Start Guide

V2.2

Automation by innovation.

Welcome

To KeTop T135 from KEBA

Automation by innovation

Thank you for your interest in our innovative automation solutions. Founded in 1968, KEBA is today an internationally active company with more than 2,000 employees and enjoys a high reputation on the world market.

For more information, please visit our website:
www.keba.com/industrial-automation

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Used hardware

- KeTop T135 handheld terminal
  (KeTop T135-P16w-NQU-Lx was used for the examples)
- Development PC with Windows

Used software

- KeStudio installed from Kemro X on the development PC

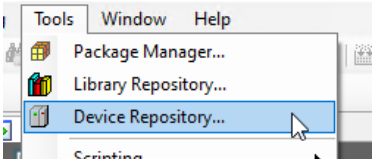
  For internal use: Kemro X can be found here: Sharepoint / Products&Services / Kemro X / PublicMedia / Downloads. Search for the version 4.9.0, open the document. In the document there are links to the download dataspace. Download Kemro X Engineering Environment and Server Setup to the PC and install it.
  (This document is based on preliminary version Kemro X 4.9.0-beta.19)

  For internal use: To run KeStudio as part of Kemro X there is a licence file necessary, this file can be found here:
  https://dataspace.keba.com/public/download-shares/xPPioggpt9j5NU0wn3ah6V9sYfTufvkU
  Download it and double click it after the installation of Kemro X.

Additional preparation steps for the software

Because KeTop T135 integration in Kemro X is still in beta stage, a few steps still need to be carried out for integration:

- Add device descriptions
  1. Start “KeStudio LX - FlexCore 4.9.0”
  2. Start Device Repository via menu item “Tools / Device Repository…”

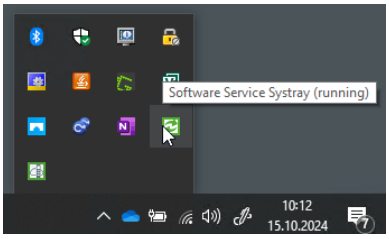
     

  3. Install all communication interfaces from directory “..\KemroX 4.9.0\Internal\BetaStatus\T135\Communication\” by choosing the corresponding *.devdesc.xml files.
     The available interfaces are:
     - AdsItfDevice
     - ModbusItfMasterDevice

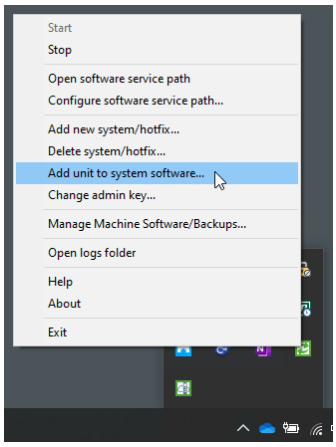
- ModbusItfSlaveDevice
- OpcuaITFDevice
- S7ITFDevice

4. Install all additional devices from directory "..\KemroX 4.9.0\Internal\BetaStatus\T135\Devices\" by choosing the corresponding *.devdesc.xml files.
   The available devices are:
   - T135-M000-AQ0-Lx-CT
   - T135-M9tq-AQ0-Lx-CT
   - T135-P16w-NQU-Lx-CT
   - T135-PA6w-AQU-Lx-CT
   - T135-RA0q-AQU-Lx-CT
   - T135e-M000-AE0-Lx-CT
   - T135e-RA07-AE0-Lx-CT

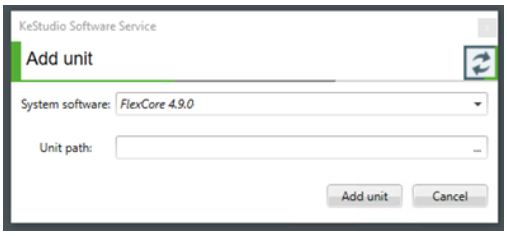
- Add additional SW units
  1. Add SW units via menu item of Software Service. Software Service can be found in the system tray.



  2. Install all SW units by using the menu item "Add unit to system software …" of the Software Service.



After choosing the menu item, a dialog appears. The first step is to select the right version of the Kemro X system, in this case, version 4.9.0. The second step is to choose the meta.xml file inside the SW unit directory.



The available SW units are:

- AdsItf
- dsarm64genhmi
- modbusitf
- OpcuaItf
- S7Itf
- secpkg-dsarm64genhmi
- VNCClient

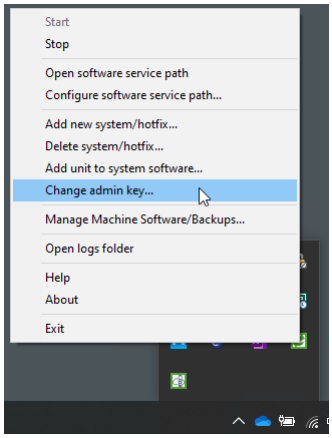
Please install all of these SW units because there are dependencies between them.

3. To be able to generate machine software later, it is necessary to assign an admin key. Access to the device is secured via SSH key. Because the device is still in the beta phase, this is not automatically set by Kemro X system and must be done manually.

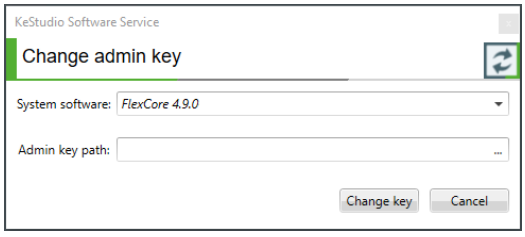
   Remark: If later access to the device via SSH is not required (common for use with WebVisualization, a VNC client and a PLC communication interface for the operator controls), a non-empty text file is sufficient to satisfy the generation system.

   To access the device later, an SSH key is required. The generation and handling of this key are explained in the Kemro X system manual and can be done later as described in the manual.

   The assignment is done via Software Service.



   After selecting the menu item, a dialog appears. The first step is to select the correct version of the Kemro X system, in this case, version 4.9.0. The second step is to choose the key file or the nonempty text file.



1. Introduction

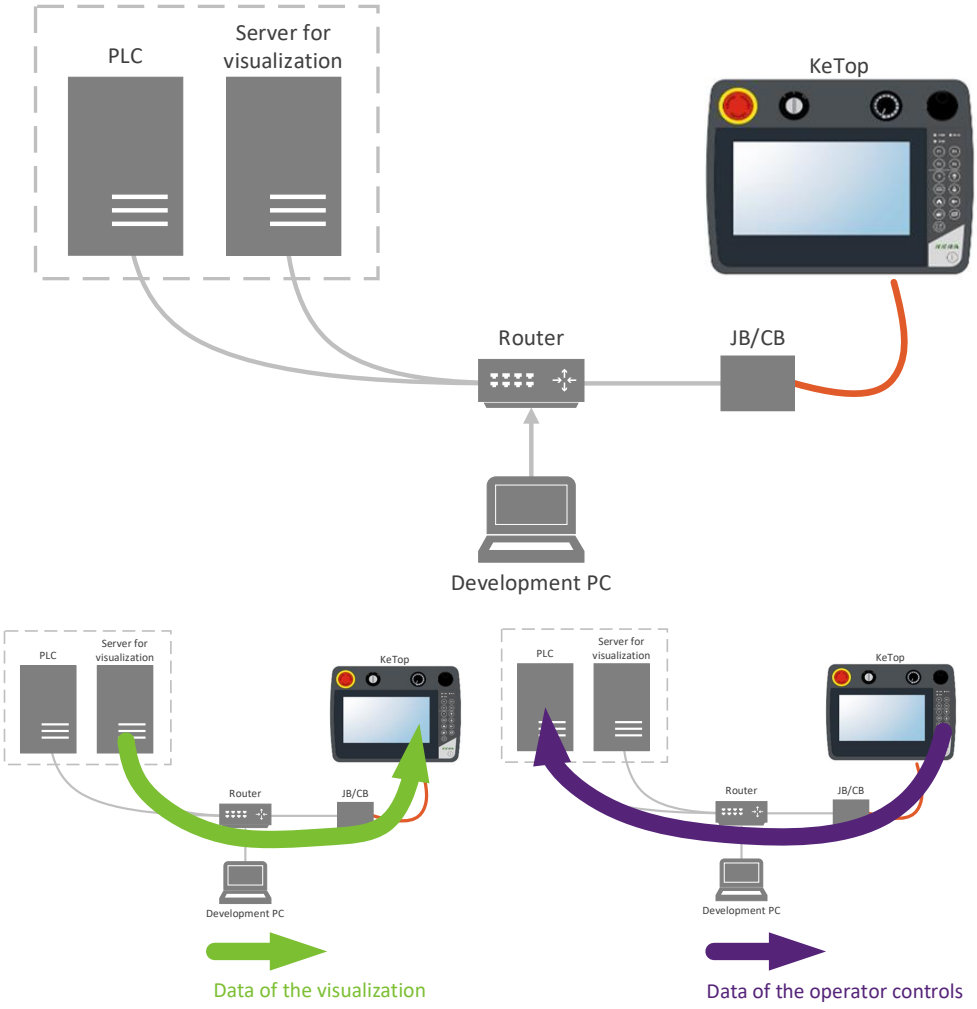
This document describes individual topics related to the use of the KeTop T135 in a simplified way. It does not replace studying the project engineering manual, where the individual topics are described and explained in detail. Information on sources of danger, hazardous situations and proper use must also be read there.

The documentation can be found here: https://support.keba.com/cds/online/#home.
Documents of interest for KeTop T135 are

- KeTop T135
- Modbus protocol
- OPC UA protocol
- S7 protocol
- ADS protocol
- Kemro X documentation delivered with the installation of KeStudio

2. System description

In the solutions considered here, the system consists of a handheld terminal for displaying the visualization, a PLC that supplies the data (variables) and a server that supplies the visualization images. PLC and server can also be a single device. All these devices are connected via a network.



As described later, the PLC can be a PLC supporting Modbus TCP Master, Modbus TCP Slave or OPC UA. However, the PLC can also be a Siemens SIMATIC S7 or a BECKHOFF.

3. Preconditions

- KeTop T135 with default image
- PLC with
    - Modbus feature
    - OPC UA feature
    - PLC from Siemens of type S7-300/400 or 1200/1500
    - PLC from Beckhoff
- Development PC with installed Kemro X Engineering Environment with KeStudio included
- An empty USB stick with >16GB

4. Power on

To power on the device, connect the power cable and the network cable as described in KeTop T135 project engineering manual.

5. Configuration in general

There are two ways to configure a device:
- Detailed configuration of all available options with the help of KeStudio on a development PC
- Setting the most important parameters for commissioning on the device itself

The KeTop T135 in this version is designed to show a browser or VNC-based visualization and transfer the operator controls to the PLC via Modbus, OPC UA or S7 protocol.

It is delivered in such a way that, even without KeStudio, the device provides browser-based visualization and communication between the operator controls and the PLC using the Modbus protocol. All parameters have default values and the most important parameters can be set on the device.

6. Configuration with the help of a development PC

6.1. Make a new project

First, start KeStudio and select "*File / New project …*" from the menu. Select "*Empty project*", give the project a meaningful name and exit the dialog with "*OK*". An empty project will be generated. The project tree only consists of the project node.

Add the device to the project tree with "*Add device…*". The KeTop T135 device is located in the subnode "*Visualisation / Mobile panels*". It is important to select the device with the exact designation, as the available operator controls are also derived from this selection.

After adding the device to the project, the project tree looks like this:

The name of the project "*MyFirstKeTopProject*" and a "*T135-P16w-***-Lx*" are added.

To explain the next steps:

- The type of visualization is added to the Visualization node
- The method by which the operator controls are transferred to the PLC is added to the Communication Adapter node.

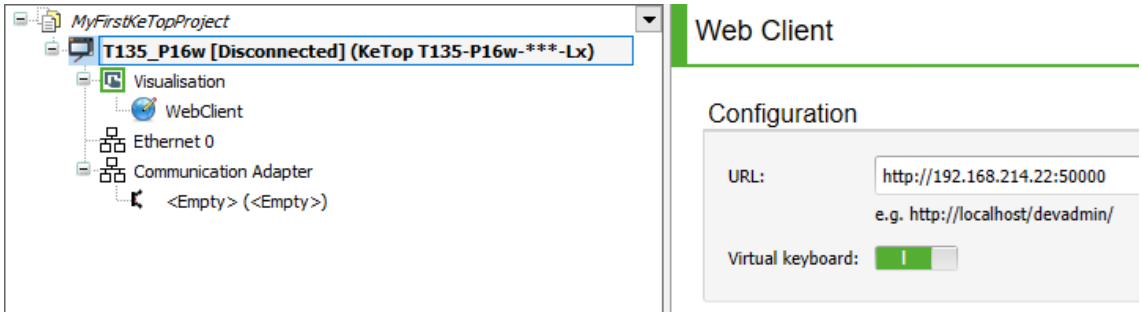
The visualization node can be added using the context menu "*Add object*" of the node. Selection options include "*VNC Client …*" and "*Web Client …*". Then the corresponding object is inserted.

The communication adapter node can be added using the context menu "*Plug Device …*" of the node. Selection options include "*AdsItf Device*", "*ModbusItf Master Device*", "*ModbusItf Slave Device*", "*OPCUAItf Device*" and "*S7Itf Device*". Then, the corresponding object is inserted.

6.2. Visualization system

Browser based

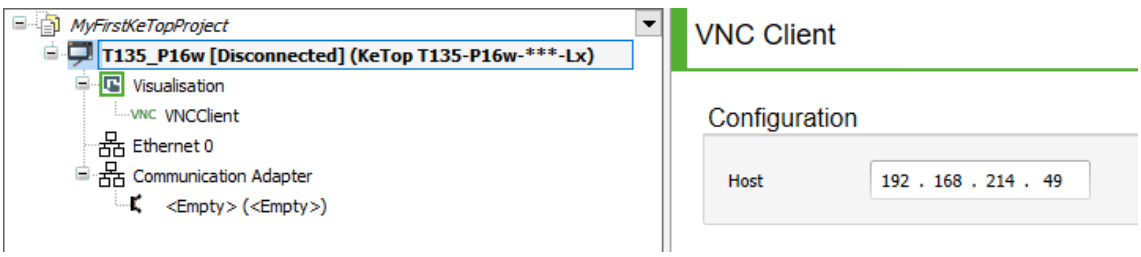
For a browser based visualization, a server must be available in the network to host the web pages. These pages are then displayed on the handheld terminal in a Chromium-based web browser. There are only a few parameters for the web browser, which can be opened and edited by double-clicking on the WebClient node in the project tree.



URL	Start address of the browser-based visualization
Virtual keyboard	Disable/enable the general virtual keyboard. Some applications/visualization systems come with their own keyboard.

VNC based

For a VNC-based visualization, a server must be available in the network to host the screen pages. These pages are then displayed on the handheld terminal in a VNC client.
There is only one parameter for the VNC client , which can be opened and edited by double-clicking on the VNCClient node in the project tree.



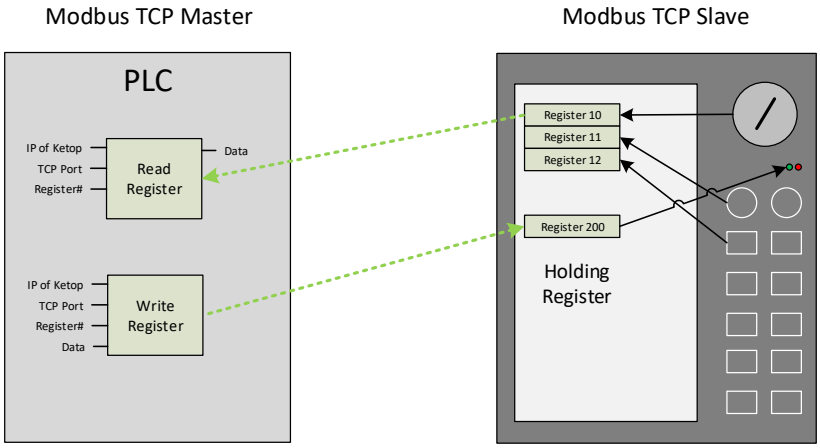
Host	IP address of the VNC server

6.3. Communication for operator controls

Modbus Slave protocol

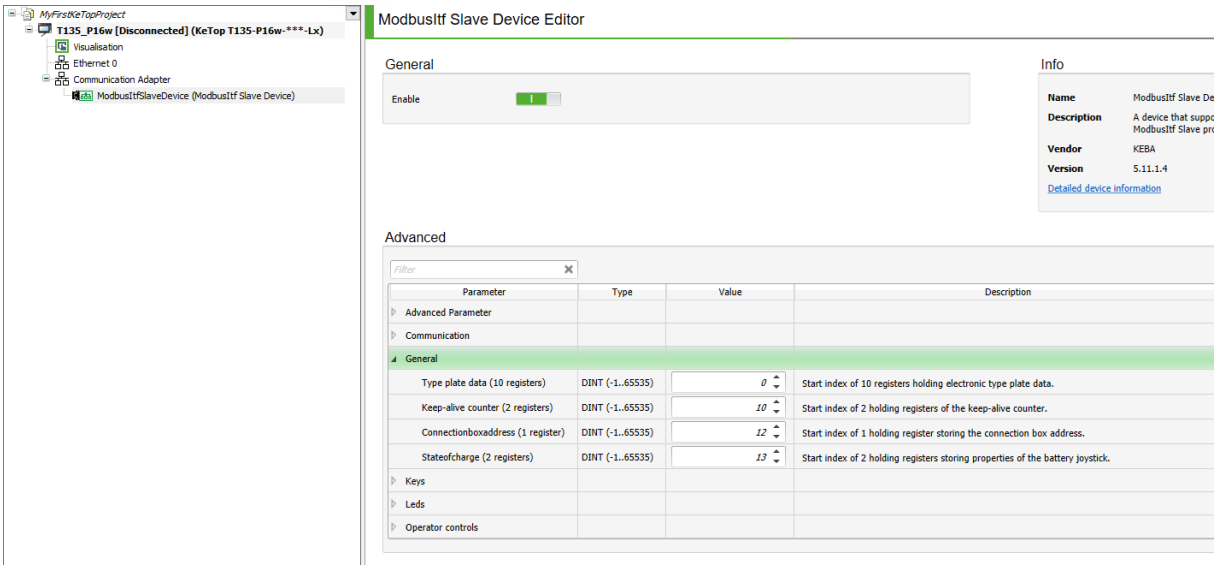
Modbus Slave here refers to the Modbus TCP protocol, with the handheld terminal acting as the Modbus Slave.

- The Slave holds values of the operator controls in registers (these are filled by the Modbus interface).
- The Slave provides registers for writing (if changed, the value is assigned to the operator control by the Modbus interface).
- The Master reads or writes these registers with the help of an IEC block.



NOTE: For Modbus TCP, the master side must be implemented in the PLC!

KeStudio can be used to set various parameters of the Modbus interface, particularly which elements are to be read or written in which holding register. This parameter page can be opened and edited by double-clicking on the ModbusItf Slave Device node in the project tree.



NOTE: The configuration is a superset of all available operator controls. Please note that registers are only used once.

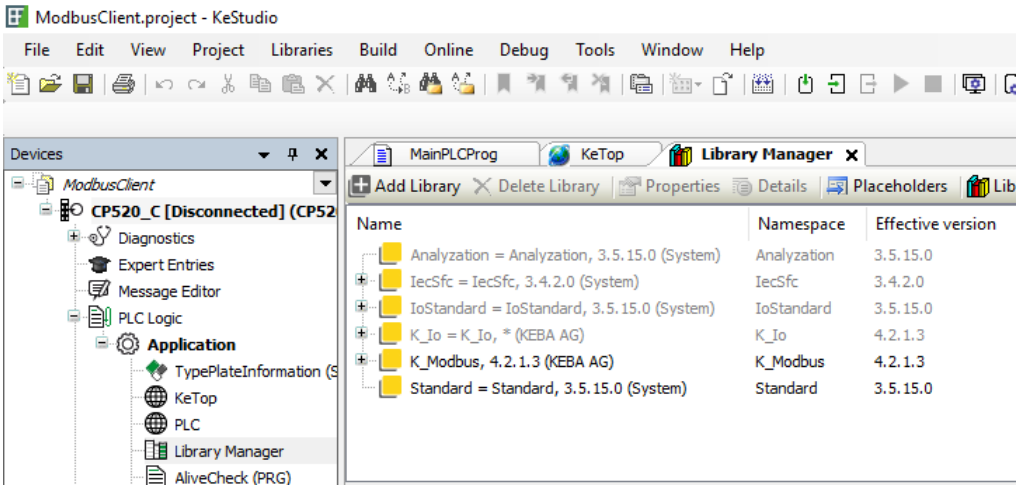
For the communication, only the port and address (which specifies the Modbus TCP unit identifier of the PLC) can be changed. The configurable operator controls can be found in KeStudio with a short description.

If more than one operator control is installed in a device, the first operator control is used in the first register of a register block, the second operator control in the second register of a register block and so on. The parameter then indicates the number of the first register of the register block.

Once everything has been configured and a machine software has been created and brought onto the device, the Modbus interface can be tested using either the PLC debugger or a free Modbus test tool. The operator control Keep-alive counter should be used for this purpose - its value is increased by 1 every second without any action being required.

Excursus for a Kemro X PLC (other PLCs will work in a similar way):
The following needs to be done in the PLC so that it can be used as a Modbus TCP master:

- To use Modbus TCP master, the Modbus Client Library must be added to the project. To do this, select *"Add Library"* in the Library Manager, choose the library K_Modbus in *"Application/Technology/Base"* and add it to the project."



- Write a program that establishes the connection to Modbus slave and cyclically reads data from the registers or writes data to the registers. For more detailed information, refer to the manual for the functions shown here.

Used blocks	`PROGRAM ModbusMasterMain`
	`VAR`
	`  mb_ReadRegs: ModbusReadRegisters;`
	`  mb_WriteRegs: ModbusWriteMultiRegisters;`
	`  mb_Connect: ModbusTCPConnection;`

Establishing the connection
• Slave IP of the handheld terminal with Port 502
• Cyclic call of the connection block necessary
• Connection established when mb_Connect.Connected becomes TRUE
	`mb_Connect(`
	`  Connect:=TRUE,`
	`  Host:='192.168.214.135',`
	`  Port:=502);`

Reading the registers
• Reading the registers 0 to 122 with the previously established connection
• Cyclic call of the reading block necessary
	`mb_ReadRegs(`
	`  Conn:=mb_Connect,`
	`  ReadData:=mb_DataRead,`
	`  Execute:=TRUE,`
	`  Addr:=0,`
	`  NbrReg:=99);`

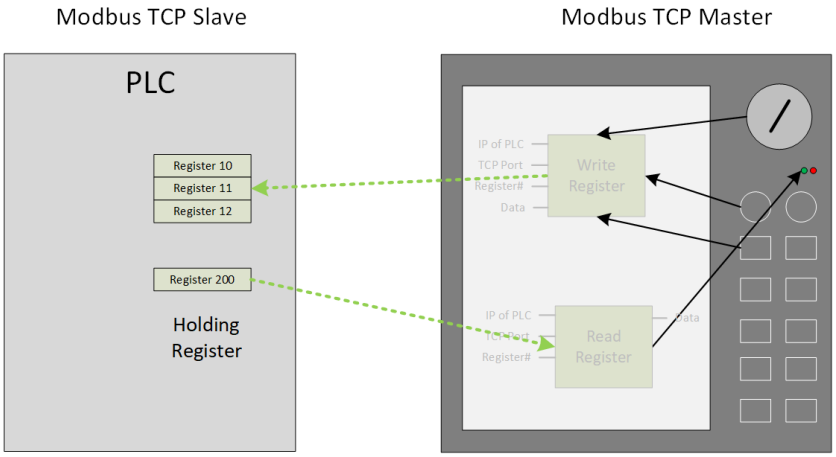
• Reading finished when mb_ReadRegs.Done becomes TRUE	

Writing the registers
• Writing the registers 200 to 219 with the previously established connection
• Cyclic call of the writing block necessary
• Writing finished when mb_WriteRegs.Done becomes TRUE
	`mb_WriteRegs(`
	`  Conn:=mb_Connect,`
	`  WriteData:=mb_DataWrite_prev,`
	`  Execute:=TRUE,`
	`  Addr:=300,`
	`  NbrReg:=40);`

Modbus Master protocol

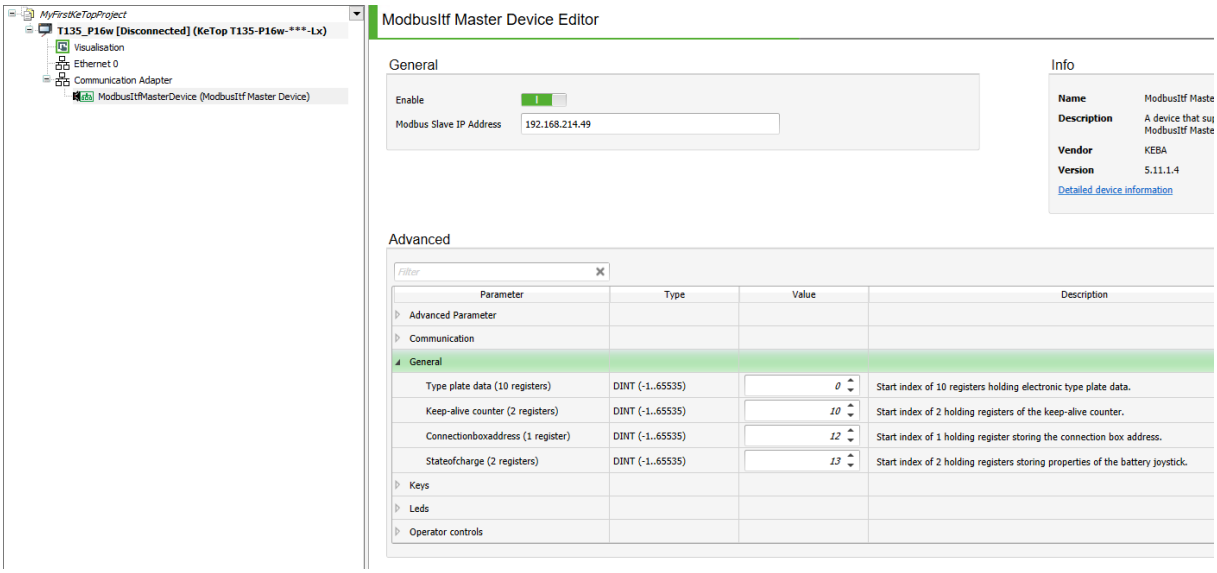
Modbus Master here refers to the Modbus TCP protocol, with the handheld terminal acting as the Modbus Master.

- The slave on the PLC holds values of the operator controls in registers (these are filled by the Modbus interface if the value of the operator control changes).
- The slave on the PLC provides registers for reading (if a register value changes, the new value is assigned to the operator control by the Modbus interface).



NOTE: For Modbus TCP, the slave side must be configured or implemented in the PLC!

KeStudio must be used to set various parameters of the Modbus interface, in particularly which elements are to be read or written in which holding register. This parameter page can be opened and edited by double-clicking on the ModbusItf Master Device node in the project tree.



NOTE: The configuration is a superset of all available operator controls. Please note that registers are only used once.

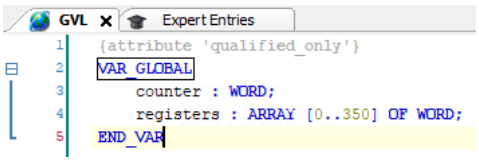
For the communication, only the IP address of Modbus Slave, port and address (which specifies the Modbus TCP unit identifier of the PLC) can be changed. The configurable operator controls can be found in KeStudio with a short description.

If more than one operator control is installed in a device, the first operator control is used in the first register of a register block, the second operator control in the second register of a register block and so on. The parameter then indicates the number of the first register of the register block.

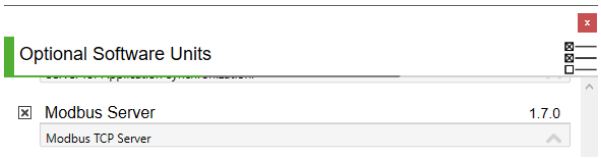
Once everything has been configured and the machine software has been created and brouhgt onto the device, the Modbus interface can be tested using either the PLC debugger or with a free Modbus test tool. The operator control Keep-alive counter should be used for this purpose - its value increases by 1 every second without any action being required.

Excursus for a Kemro X PLC (other PLCs will may work in a similar way):
The following needs to be done in the PLC so that it can be used as a Modbus TCP slave:

1) Declare a set of variables that represent the Modbus slave registers
   e.g. in a Global Variable List (GVL):



2) Add the SW Unit Modbus Server (Modbus Slave) to the PLC:



NOTE: Modbus Slave is the original name of this part of software, Modbus Server is the name from the perspective of a modern technical designation of the type of technology used.

3) Configure the Modbus Server and map the declared variable to the registers.

Expert Entries

```
[ModBus]
    enableRTU = 0
    [ModBus.TCP]
    IP = "0"
    PORT = 502

[ModBusReg]
    [ModBusReg.Adr:0:0:350]
        Factor = 1.0
        Variablenname = "APPL.Application.GVL.registers"
        WritePermission = 1
```

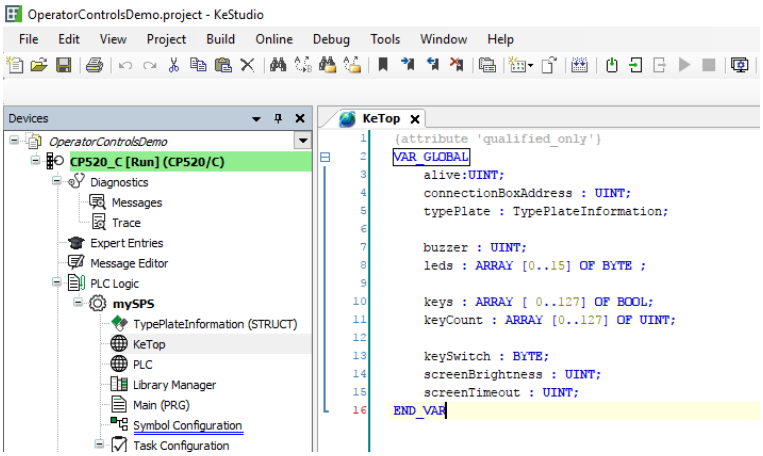
OPC UA protocol

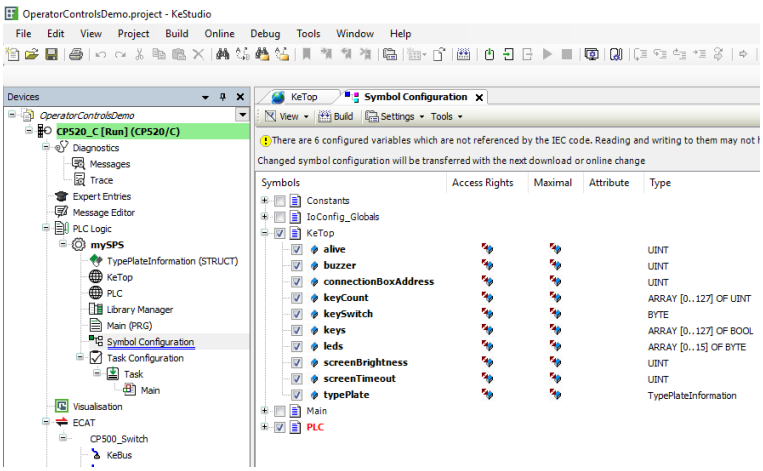
The OPC UA interface supports the transfer of operator controls from the handheld terminal to an OPC UA server. Preferably, the OPC UA server runs on a PLC and the variables created there are available as nodes in the namespace of the OPC UA server - this is not necessarily the case.

The following steps are necessary to get the mechanism up and running:

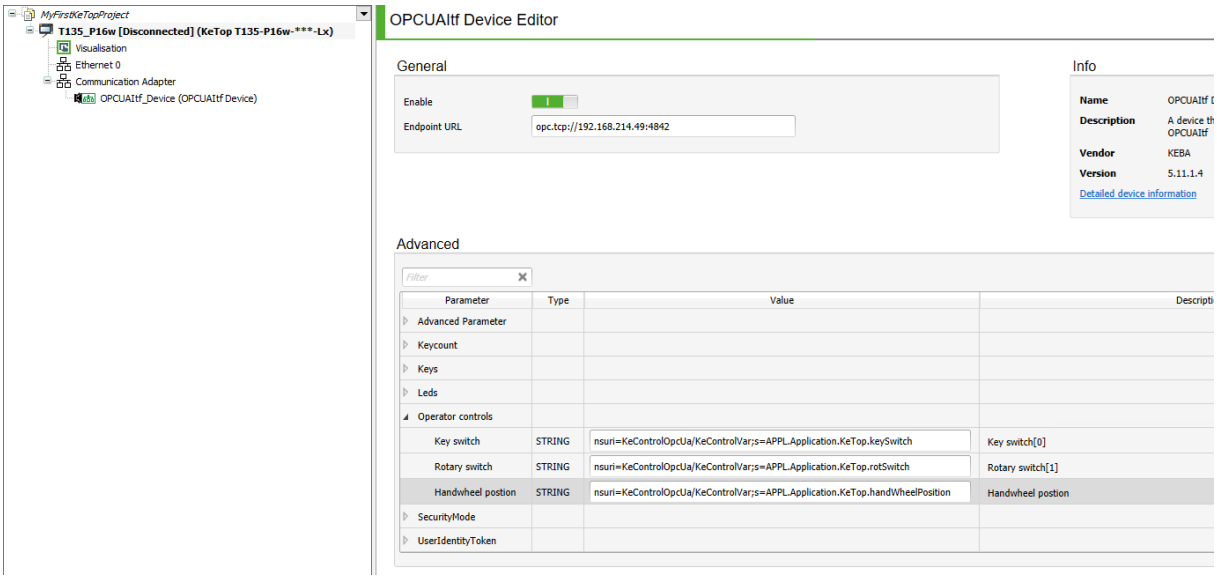
1) Declare variables in the project and bring them to OPC UA server as nodes.
2) Configure the OPC UA interface of the handheld terminal.

For step 1: Here is an example using Kemro X: Open the PLC project in KeStudio.
Create variables in a new or existing GVL (other PLCs behave similarly) and publish them as symbols. They will then automatically appear as nodes in the OPC UA server.





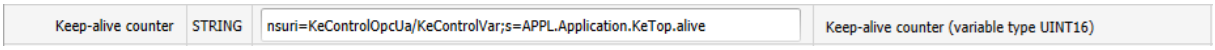
For Step 2: Open the project for the handheld terminal in KeStudio. KeStudio must be used to set various parameters of the OPC UA interface, particularly which elements are mapped to which variable.



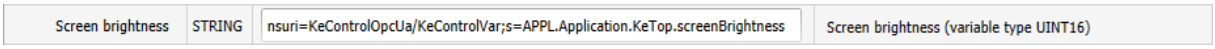
*NOTE: The configuration shows exactly the set of available operator controls for this type of handheld terminal - in this example for a T135-P16w-***-Lx.*

For the communication, first configure the IP address and port of the OPC UA server, then set the parameters for the SecurityMode and the UserIdentityToken. For initial experiments, use SecurityMode "`Invalid`" and UserIdentityToken "`Anonymous`". This is, of course, insecure from a cyber security perspective, but simplifies the first attempts.

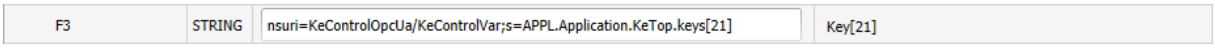
The configurable operator controls can be found in the KeStudio with a short description. In the input field of the operator controls, insert the address of the mapped variable:

- 

"nsuri=KeControlOpcUa/KeControlVar;s=APPL.Application.KeTop.alive": Connection of the operator control „alive" to the variable „`KeTop.alive`" on the OPC UA server, namespace is "KeControlOpcUa/KeControlVars", address of the variable inside this namespace is APPL.Application.KeTop.alive"). „Keep-alive counter" is an operator control that counts up its value every second and is used to check the communication

- 

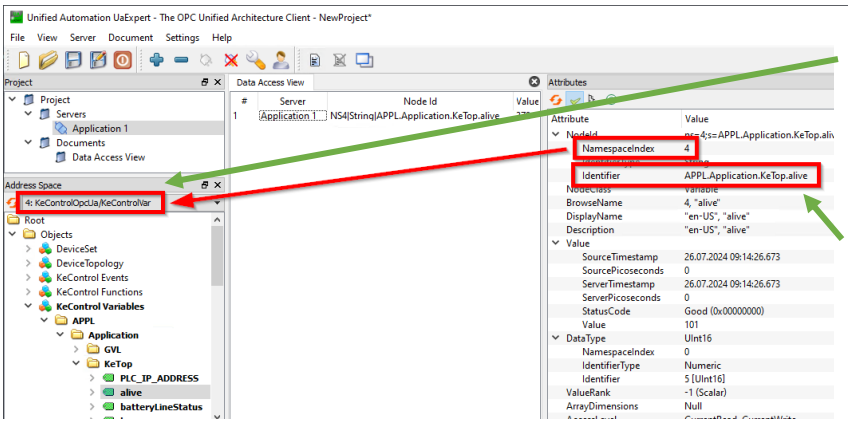
"nsuri=KeControlOpcUa/KeControlVar;s=APPL.Application.KeTop.screenBrightness": Connection of the operator control „Screen brightness" to the variable „`KeTop.screenBrightness`" on the OPC UA server, namespace is "KeControlOpcUa/KeControlVars", address of the variable inside this namespace is APPL.Application.KeTop.screenBrightness").

- 

"nsuri=KeControlOpcUa/KeControlVar;s=APPL.Application.KeTop.keys[21]": Connection of the operator control „key" with scancode 21 (this is the "F3" key on the keyboard) to the variable „`KeTop.keys[21]`" on the OPC UA server, namespace is "KeControlOpcUa/KeControlVars", address of the variable inside the namespace is APPL.Application.KeTop.keys[21]"). This could of course also be another variable, it just has to be of type BOOL, e.q. "`KeTop.F3`".

- And so on …

To find the information for the nsuri and the address, refer to the documentation/configuration of the OPC UA server or use an OPC UA client tool (e.g. UaExpert).



Namespace list
(typically defined by the server)
The namespace index, indicates the number of entries to use in the namespace list.

NodeId
(Path of the variable in the project, here APPL from the server and then name of the application, name of the GVL and name of the variable)

Once everything has been configured and the machine software has been created and brought onto the device, the OPC UA interface can be tested either using the debugger/diagnostic of the OPC UA server or the PLC running the OPC UA server. The operator control Keep-alive counter should be used for this purpose - its value is increased by 1 every second without any action being required.

In case of problems, the values of the nodes can also be checked with the help of an OPC UA client tool (e.g. UaExpert) to verify whether the OPC UA Server is available and provides the correct nodes in its node tree.
HINT: A very often made mistake is the address of the nodes in the configuration. Please note that the names are case-sensitive.

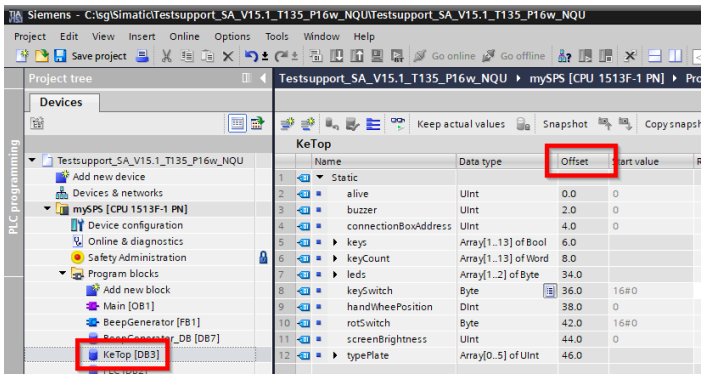
S7 protocol

The S7 interface supports the transfer of operating elements of the handheld terminal to a Simatic S7-300/400 or S7-1200/1500. A development PC with an installed TIA Portal IDE is required to declare variables on the PLC, which are later needed for the configuration of the mapping of the operator controls.

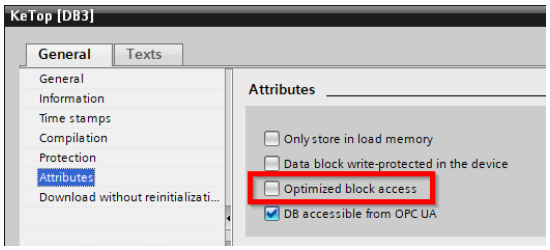
The following steps are necessary to get the mechanism up and running:

1) Declare variables in the project.
2) Configure or check the properties of the variables.
3) Configure the S7 interface of the handheld terminal.

For step 1: Open the PLC project in the TIA Portal IDE.
Create variables in a new or in an existing data block. The DB number and the offset inside the DB are used later to address the variables in the mapping. Keys and LEDs can also be used as single variables or as part of an array.



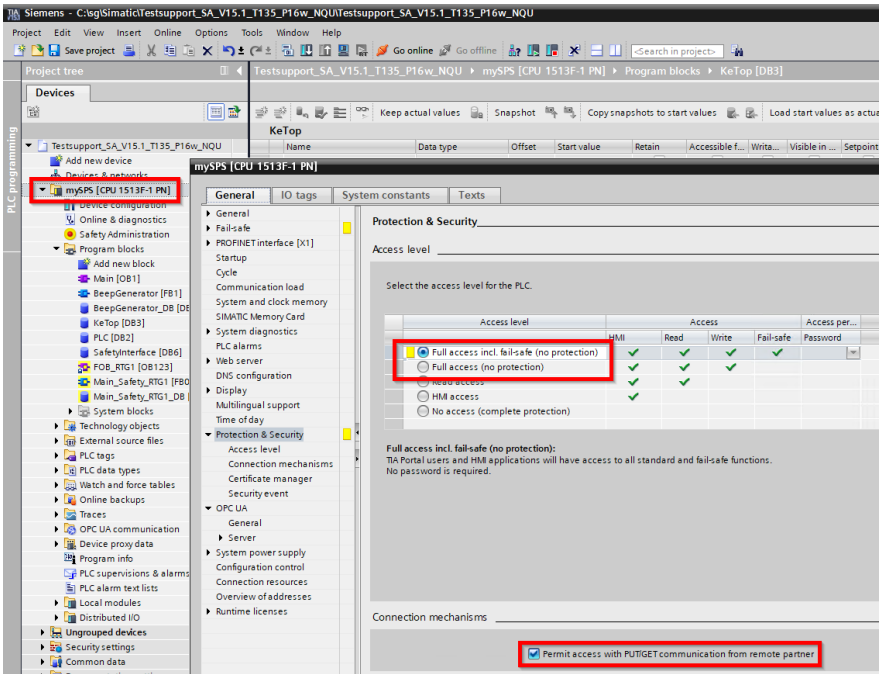
For step 2: Open the properties of the DB.
Deactivate the “Optimized block access” feature.



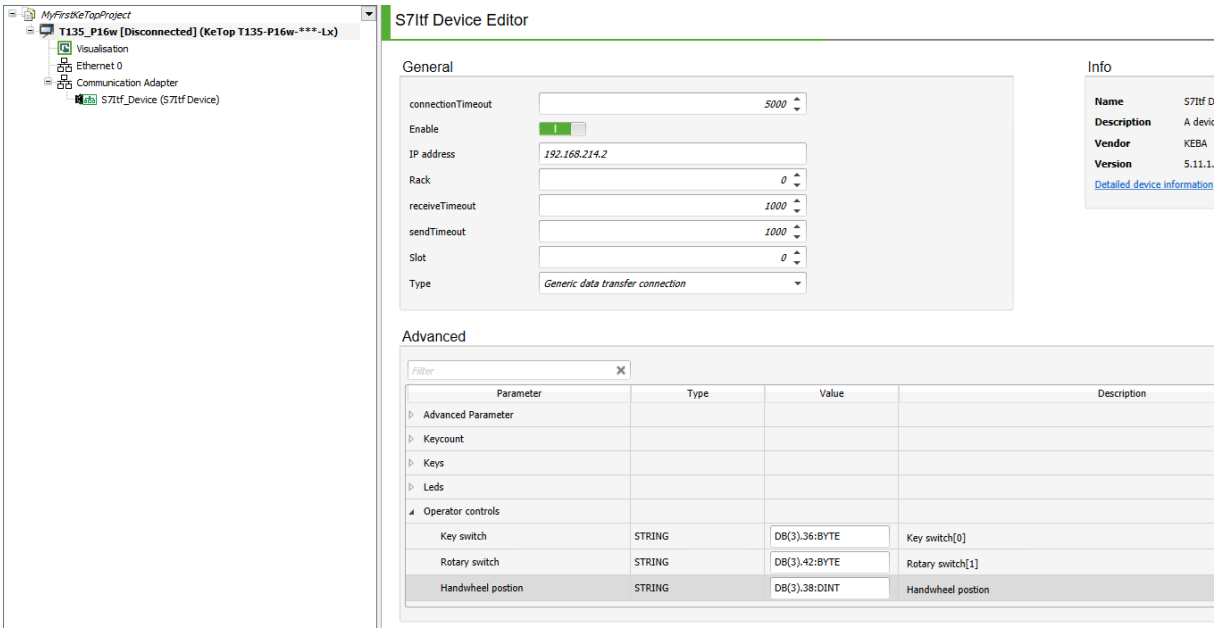
HINT: If no offsets are displayed in the data block, either the column is switched to invisible or the optimized block access is activated. The column is filled with valid values only after successful compilation.

Check two more things:

- Access to the PLC must be allowed, since the variables must be written to from outside.
- In addition, access via so-called PUT/GET communication must be allowed from outside, since the interface uses exactly this mechanism.



For Step 3: Open the project for the handheld terminal in KeStudio. Use KeStudio to set various parameters of the S7 interface, particularly which elements are mapped to which variables.



*NOTE: The configuration shows exactly the set of available operator controls for this type of handheld terminal - in this example for a T135-P16w-***-Lx.*

For the communication, first configure the IP address of the PLC, then some Siemens-specific parameters.

- Rack, Slot and Type are S7 hardware-specific parameters:

	Rack	**Slot**	
S7 300 CPU	0	2	Always
S7 400 CPU	Not fixed	Not fixed	Follow the HW configuration
WinAC CPU	Not fixed	Not fixed	Follow the HW configuration
S7 1200 CPU	0	0	Or 0,1
S7 1500 CPU	0	0	Or 0,1
CP 343	0	0	Or follow the HW configuration
CP 443	Not fixed	Not fixed	Follow the HW configuration

Connection type:

- 0-PG (programming console)
- 1-OP (Siemens HMI panel)
- 2-BASIC (a generic data transfer connection)

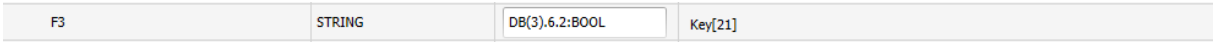
The configurable operator controls can be found in the KeStudio with a short description. In the input field of the operator controls, insert the address of the mapped variable and the type:

-

"DB(3).0:WORD": Connection of the operator control „alive" to the variable „`KeTop.alive`" on the PLC (KeTop is DB3, offset of alive is 0, datatyp is a two byte type = WORD).
„Keep-alive counter" is an operator control that counts up its value every second and is used to check the communication

-

Connection of the operator control „Screen brightness" to the variable „`KeTop.screenBrightness`" on the PLC (KeTop is DB3, offset of screenBrightness is 44, datatype is a two byte type = WORD)

- 

Connection of the operator control „Keys F3" to the variable „`KeTop.keys[3]`" on the PLC

(KeTop is DB3, offset of keys is 6, element [3] has the offset 6.2, datatype is a two byte type = BOOL) – keys is a variable of type Array[1..13] of Bool.

- And so on ...

NOTE: The used addresses of variables (DB numbers and offset) of the PLC must match between the project and the configuration.

Once everything has been configured and the machine software has been created and brought onto the device, the S7 interface can be tested using the PLC debugger inside TIA portal IDE. The operator control Keep-alive counter should be used for this purpose - its value is increased by 1 every second without any action being required.

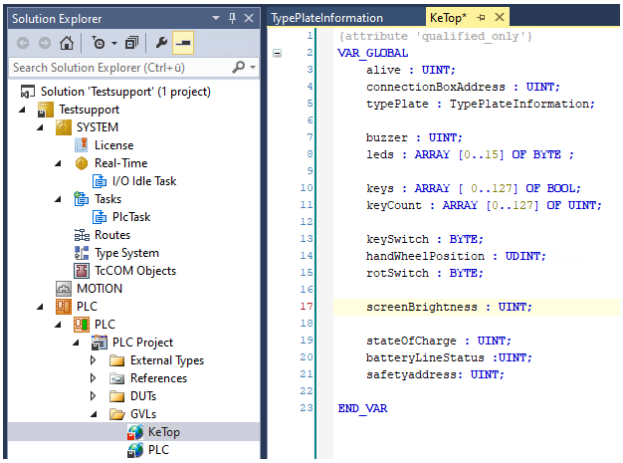
ADS protocol

The ADS interface supports the transfer of operating elements of the handheld terminal to a BECKHOFF PLC. A development PC with an installed TWINCAT IDE is required to declare variables on the PLC, which are later needed for the configuration of the mapping of the operator controls.

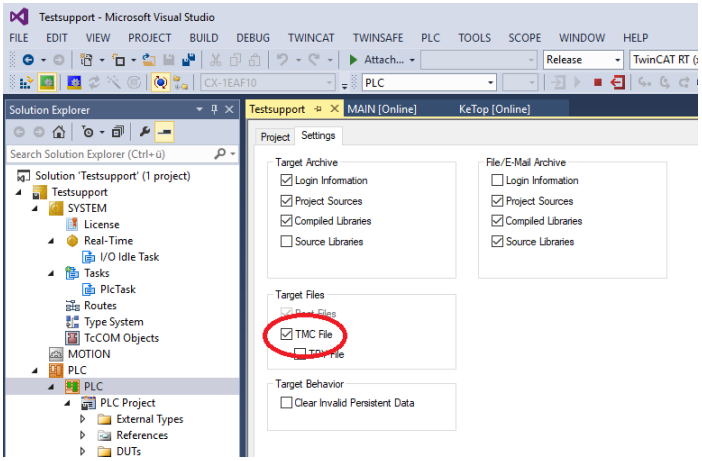
The following steps are necessary to get the mechanism up and running:

1) Declare variables in the project.
2) Configure or check the properties of the variables.
3) Configure the ADS interface of the handheld terminal.
4) Set the routes for ADS.

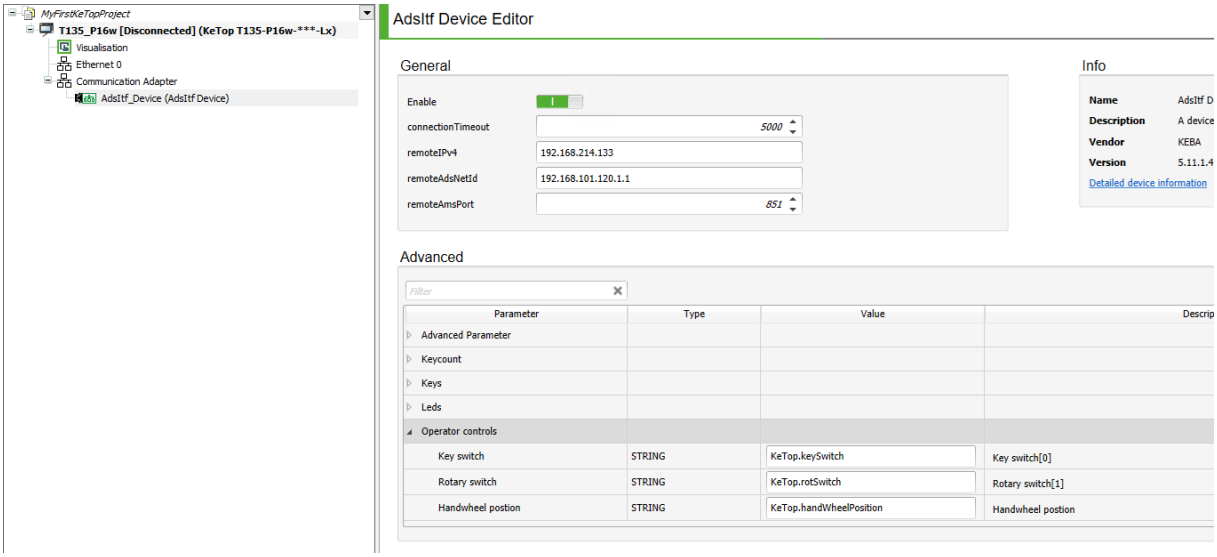
For step 1: Open the PLC project in the TWINCAT IDE.
Create variables in a new or existing GVL. The name of the GVL and the name of the variable itself will be used later to address the variables in the mapping. Keys and LEDs can also be used as single variables or as part of an array.



For step 2: The link between PLC and handheld terminal is done via named variables. Therefore, the symbolic names must be published and stored on the controller. This is activated by checking the "TMC File" option in the settings of the PLC project.



For Step 3: Open the project for the handheld terminal in KeStudio. Use KeStudio to set various parameters of the ADS interface, particularly which elements are mapped to which variables.



*NOTE: The configuration shows exactly the set of available operator controls for this type of handheld terminal - in this example for a T135-P16w-***-Lx.*

For step 4: For ADS or Beckhoff PLCs are not only addressed in the network using an IP address, but also via AdsNetId. This must be set on PLCs or is often generated from the IP address. With KeTop T135, AdsNetId is generated from the IP address by adding '.1.1' to the end (i.e. 192.168.214.140 becomes 192.168.214.140.1.1).
The route or the handheld terminal communication parameters must then be specified in the PLC. There are different options for this, depending on the Beckhoff PLC.

Routes can be configured in several ways:

- TwinCAT Engineering: Go to the tree item SYSTEM/Routes and add a static route.
- TwinCAT Systray: Open the context menu by right-clicking the TwinCAT systray icon (not available on Windows CE devices).
- TC2: Go to Properties/AMS Router/Remote Computers. This requires a TwinCAT restart.
- TC3: Go to Router/Edit routes.
- TcAmsRemoteMgr: Windows CE devices can be configured locally (TC2/TC3). Tool location: /Hard Disk/System/TcAmsRemoteMgr.exe

For the communication, first configure the IP address and AdsNetId of the PLC. Normally 851 is used as AmsPort for Twincat3 and 801 for Twincat2.

The configurable operator controls can be found in the KeStudio with a short description. In the input field of the operator controls, insert the address of the mapped variable and the type:

-

“KeTop.alive”: Connection of the operator control ”alive“ to the variable ”`KeTop.alive`“ on the PLC. ”Keep-alive counter“ is an operator control that counts up its value every second and is used to check the communication

-

Connection of the operator control ”Screen brightness“ to the variable ”`KeTop.screenBrightness`“ on the PLC

-

Connection of the operator control ”Keys F3“ to the variable ”`KeTop.keys[2]`“ on the PLC - keys is a variable of type Array[0..127] of Bool. The scan code of the key “F3” is 21.

- And so on ...

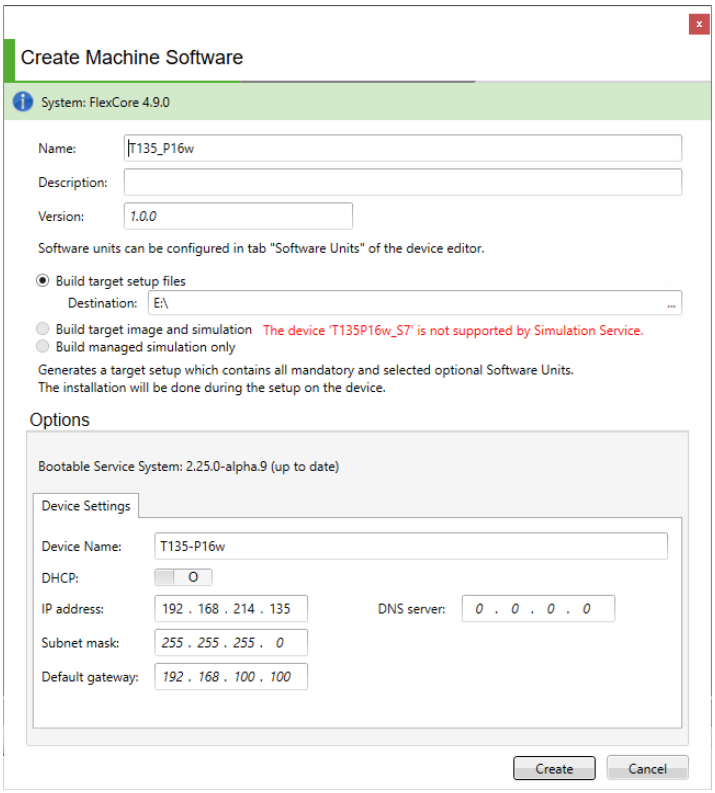
NOTE: Used addresses of variables of the PLC must match between project and configuration.

Once everything has been configured and the machine software has been created and brought onto the device, the ADS interface can be tested using the PLC debugger inside Twincat IDE. The operator control Keep-alive counter should be used for this purpose - its value is increased by 1 every second without any action being required.

6.4. Creating Machine Software

The machine software enables the applications to run correctly on the handheld terminal. It contains the operating system, all required programs and all necessary configurations. This must first be configured in a project in KeStudio, then created with the help of KeStudio and stored on a USB stick and then transferred to the handheld terminal.
KeStudio assembles all the needed parts and saves them on a USB stick. The USB stick must first be plugged into the development PC.

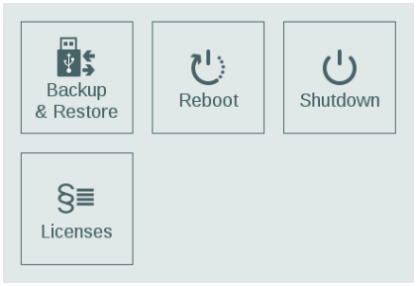
Access the function for creating the machine software via the context menu of the handheld terminal device by selecting *"Create Machine Software"*.



The name of the device in the project is used as the name for the machine software and the network name of the device. This can be changed. For the network identification, either DHCP (as the provider for the network information) or a custom address can be specified directly.
Please enter the plugged-in USB stick as the destination.
Press *"Create"* and everything will be done and stored on the USB stick.

6.5. Bringing Machine Software to the handheld terminal

To install the machine software on the device, plug the USB stick into the USB port of the device and restart the device. The easiest way to do this is to briefly disconnect the device from the power supply. After booting the device shows this dialog.



Select *"Backup & Restore"* and then select the *"Restore"* function in the next dialog. A list of all generated machine software images found on the USB stick will be shown. Select the image to install and press *"Restore"*. Follow the instructions on the screen.

Note: If not all images are displayed immediately, please click on the *"Select all"* checkbox.

Once the installation is completed, remove the USB stick from the USB port and select the *"Reboot"* function in the main menu.

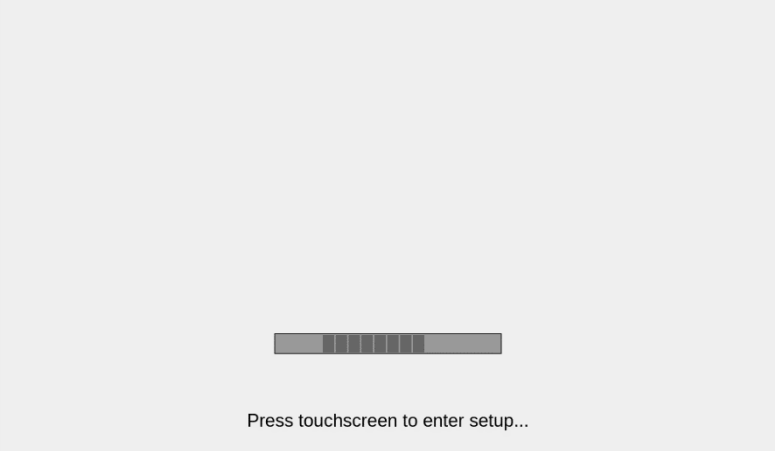
7. Configuration on the device

To configure the handheld terminal, open the Device Administration tool (DevAdmin). Start this tool by pressing the touch screen while booting the device.

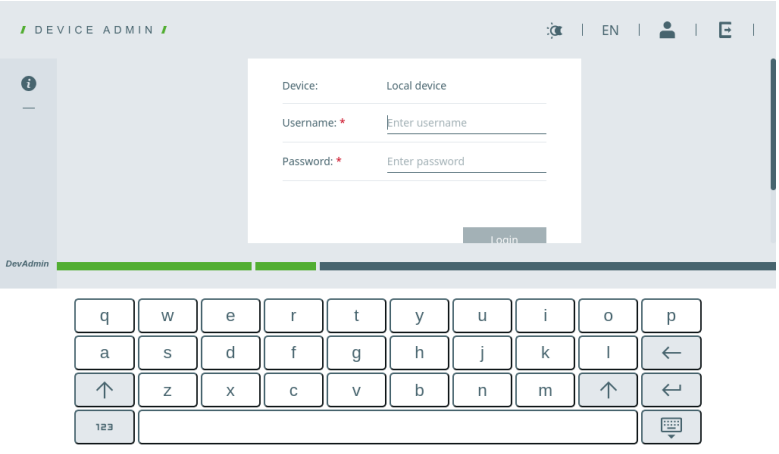
DevAdmin can also be started from another device (e.g. a PC). This device must be on the same network and have access to the handheld terminal. To do this, enter the IP address of the KeTop in a browser and DevAdmin will appear in the browser. There is no difference between the configuration on the device and via another device, except that the exit button is missing in the browser.

NOTE: After restoring machine software, all changes made within DevAdmin will be lost.

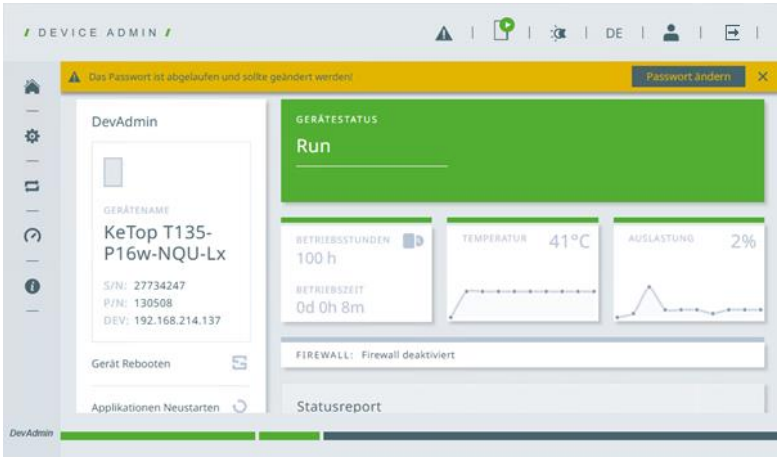
NOTE: After changing values in DevAdmin, do not forget to press the Apply button at the end. If the Apply button is not pressed, the values will not be saved. If the button is not visible, scroll up the page.



After pressing the touch screen, DevAdmin starts and the user and password must be entered. The default user on a newly delivered device is “Administrator” and the password “tobechanged”.



The main screen of DevAdmin shows some diagnosis data of the device.

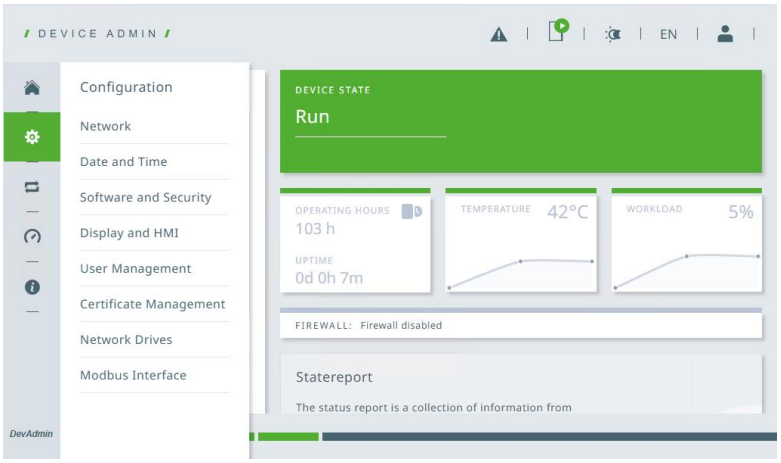


Leave DevAdmin by pressing the exit button in the upper right corner. DevAdmin will then exit and the device will reboot.

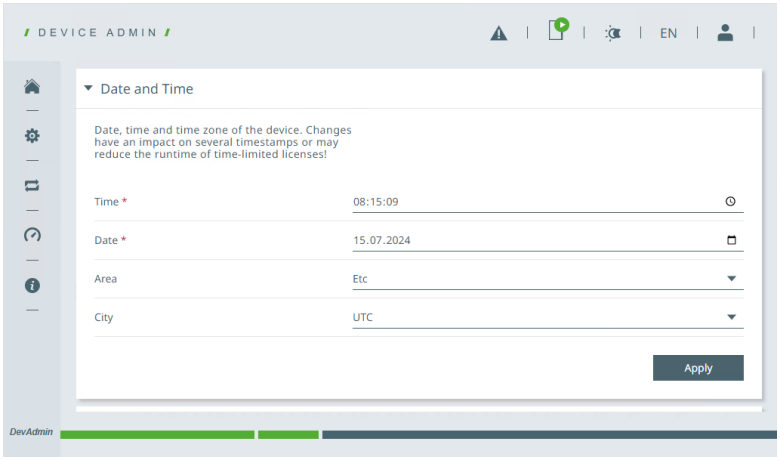
7.1. Setting general data

Date and Time

To change date and time, please use the Date and Time menu in the settings menu.

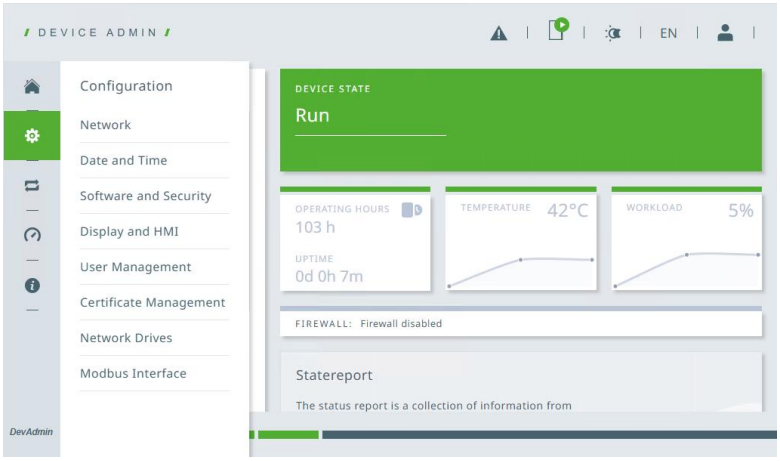


After selecting the menu item, a screen with Date and Time settings appears.

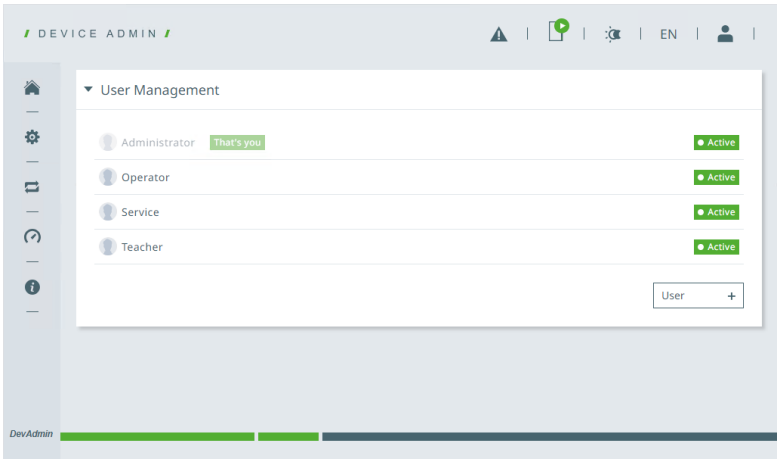


User management

To make changes in the users management, please use the User Management menu item in the settings menu.

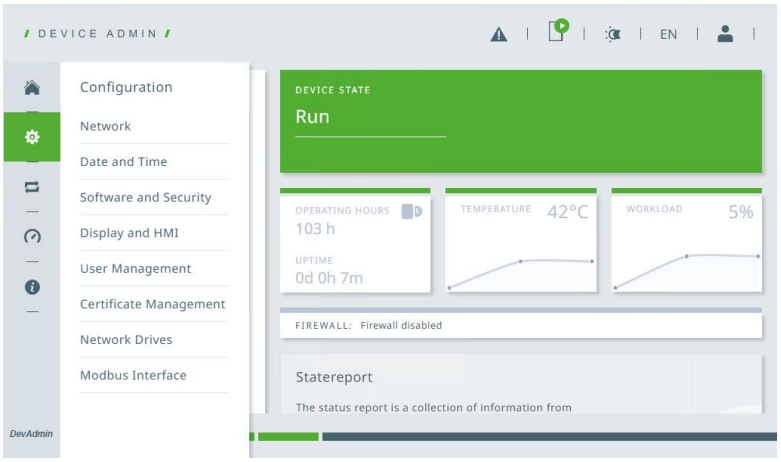


After selecting the menu item, a screen with the User management appears. There, new users can be created, existing users can be changed and deleted.

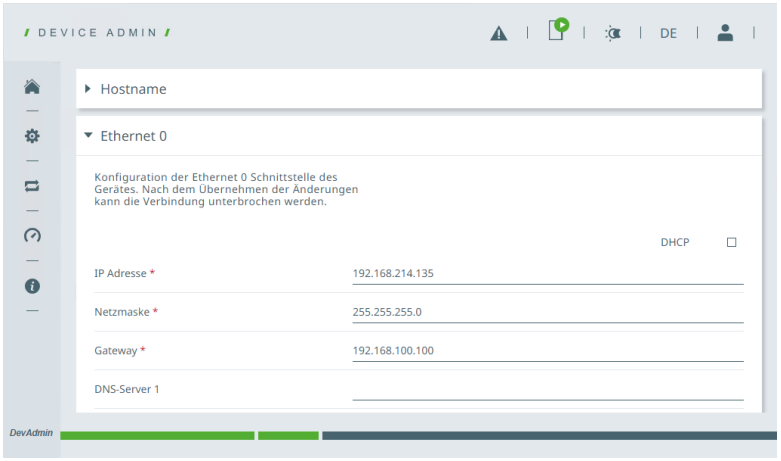


7.2. Setting the IP address

The IP address of KeTop T135 is set in DevAdmin. To access the input fields, open the network settings through the settings menu.
If DHCP gets selected, the entries for IP address and gateway are not possible (they are provided by the DHCP server). To read the assigned IP address, restart the device and check the assigned values in the IP address and gateway fields.



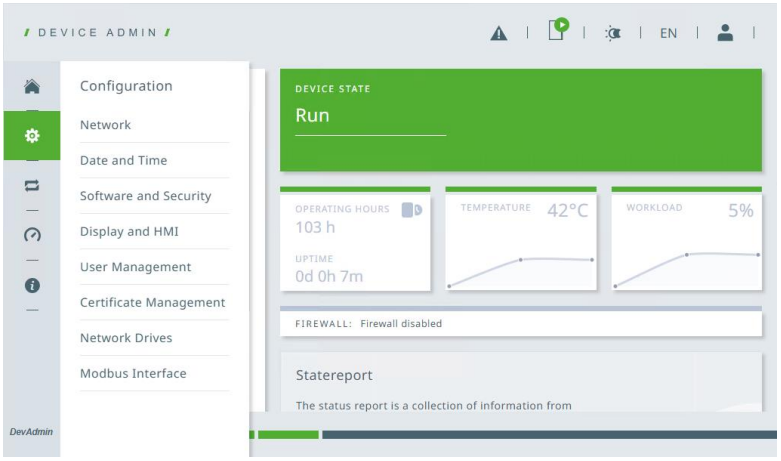
In the network settings, enter the hostname for the device, IP address, netmask and IP address of the gateway.



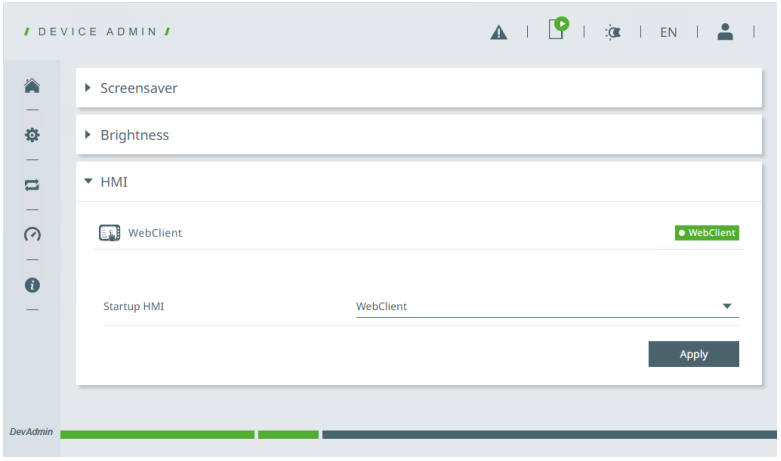
7.3. Setting the start URL of a web-based visualization

The default configuration of the device after delivery is to display a web-based visualization in a browser. To set the start URL for the visualization, enter the desired URL in DevAdmin.

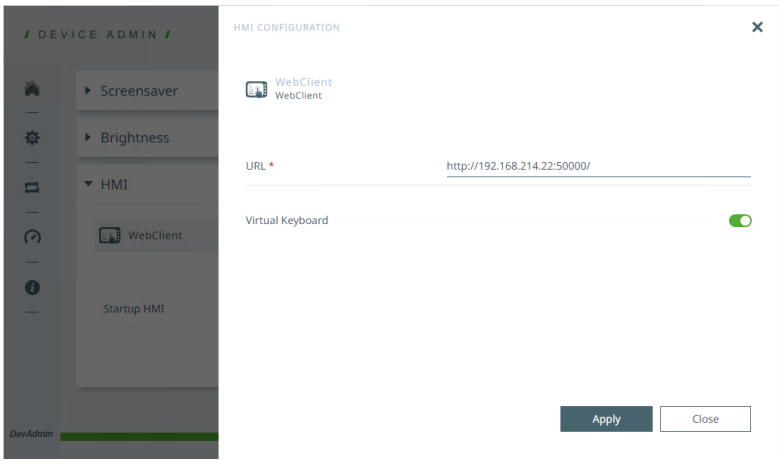
First, open the setting menu and select the Display and HMI menu item.



Open the WebClient settings by selecting WebClient.



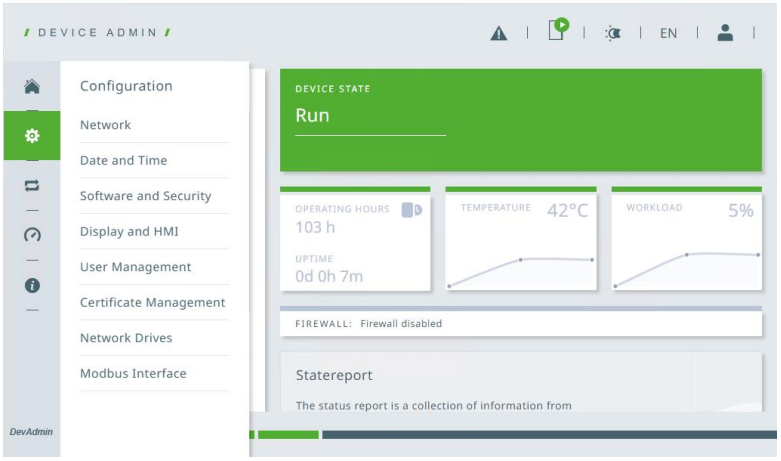
Enter start URL, including the protocol and port if necessary.



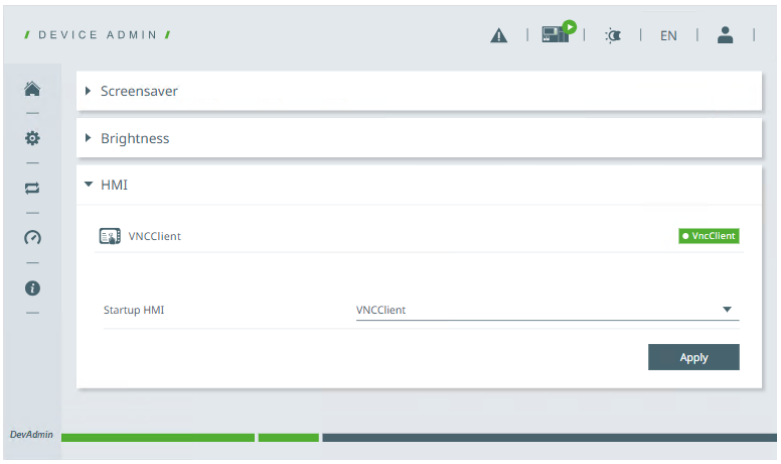
7.4. Setting the start IP address of the VNC server

If VNCClient has been selected as the visualization in a project, the IP address of the VNC server can be modified. To set the start IP address of the visualization, enter the IP address in DevAdmin.

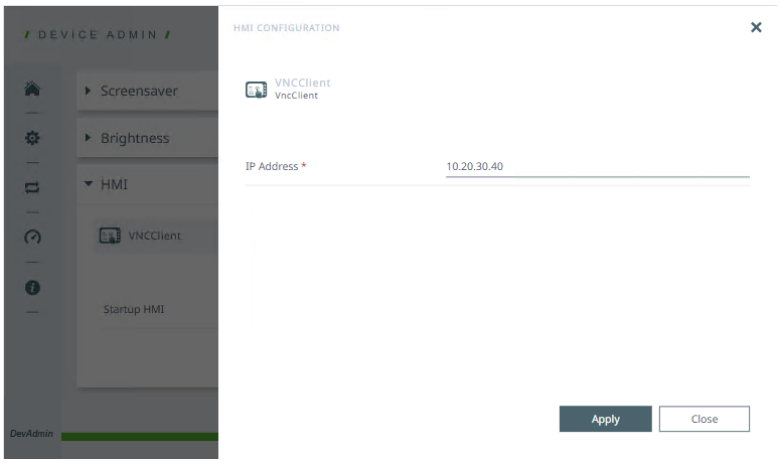
First, open the setting menu and select the Display and HMI menu item.



Open the VncClient settings by selecting VncClient.



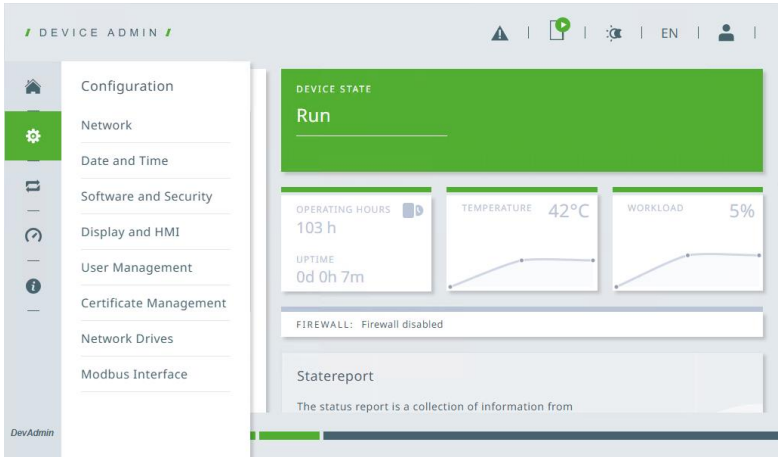
Enter the IP address.



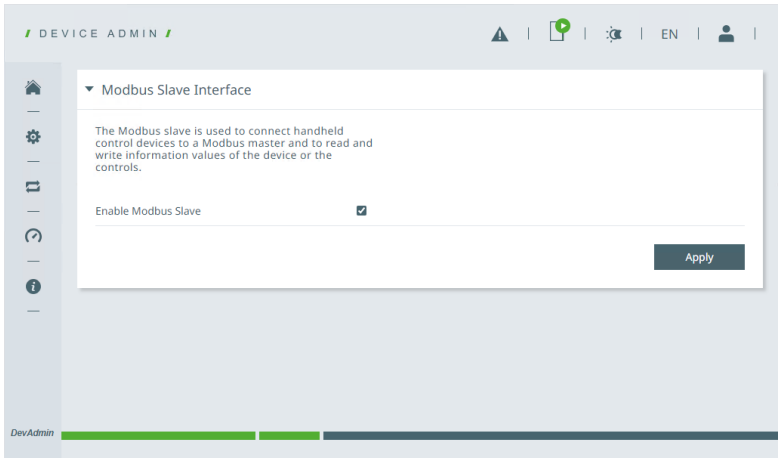
7.5. Using the Modbus slave protocol

The default configuration of the device after delivery enables the provision of operator controls via the Modbus slave protocol. No configuration is required for Modbus slave communication; it can only be enabled.

To check this, select Modbus in the settings menu.



Whether Modbus slave is enabled can be seen by the active check mark.



Default register settings of Modbus slave:

Name of operator control		Startregister	Number of registers
TypePlate	r	0	10
Alive	r	10	2
ConnectionBoxAdr	r	12	1
StateOfCharge	r	13	2
Keys	r	15	10
KeyCounts	r	25	130
EnableSwitch	r	155	1
KeySwitch	r	156	5
PushButton	r	161	10
PushSwitch	r	171	5
SelectorSwitch	r	176	5
RotarySwitch	r	181	5
Potentiometer	r	186	5
Joystick	r	191	6
AnalogJoystick	r	197	2
AnalogJoystickPressed	r	199	1
HandwheelPressed	r	200	1
HandwheelPosition	r	201	2
Buzzer	r/w	300	1

Screen	r/w	301	10
PushButtonLed	r/w	311	5
PushSwitchLed	r/w	316	5
Leds	r/w	321	20

To check if the communication is functioning, please use the alive register, which is automatically incremented every second.

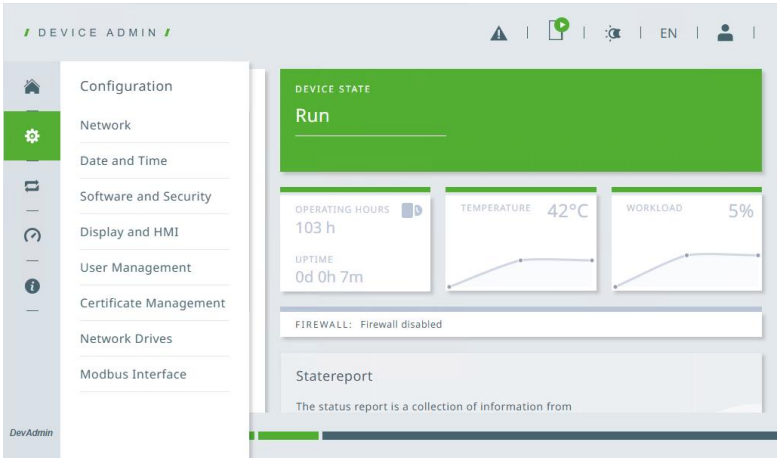
Additional information:

All operator controls	If there is a bunch of registers, use the first one
Typeplate	Register 0: Order number (low word) Register 1: Order number (high word) Register 2: Revision Register 3: Variant Register 4: Serial number (low word) Register 5: Serial number (high word)
Keys	Bitarray indexed with the scan code of the key. 0: Released 1: Pressed
Screen	Register 0: Brightness
All operator controls of type led	Value 0: Off Value 1: On Value 2: Blink

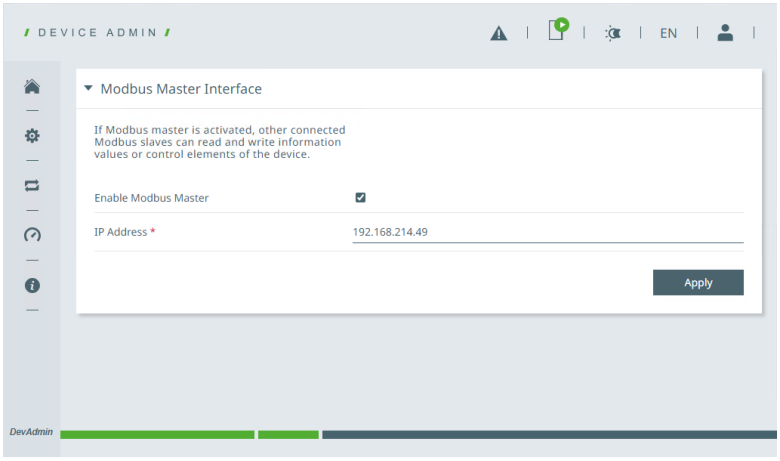
7.6. Using the Modbus master protocol

The configuration of the device after delivery is similar to the configuration done within KeStudio. There is less to configure for the Modbus master communication; only check if it is activated and change the IP address of the Modbus slave.

To check this, select Modbus in the settings menu.



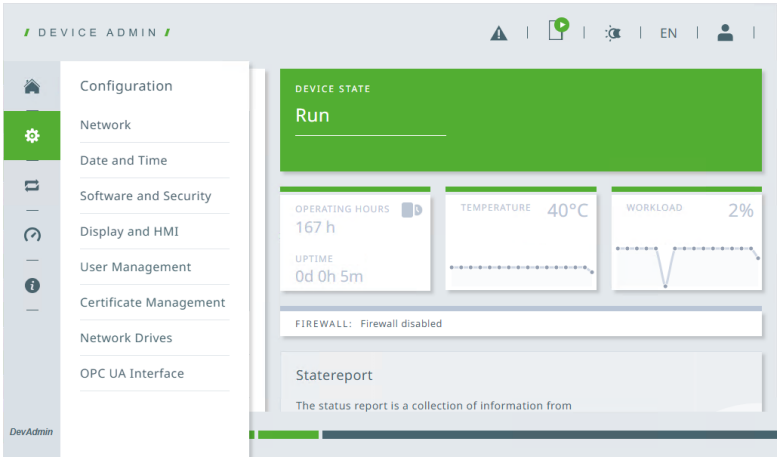
Whether Modbus master is enabled can be determined by the active check mark. The IP address of the Modbus Slave can be changed.



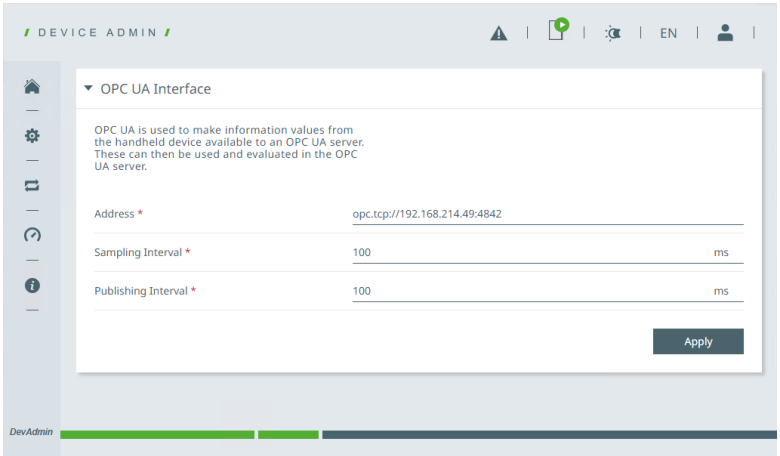
7.7. Using the OPC UA protocol

The configuration of the device after delivery is similar to the configuration done within KeStudio. There is less to configure for the OPC UA communication; only check if it is activated and change the IP address and some other parameters of the OPC UA server connection.

To check this, select OPC UA Interface in the settings menu.



The IP address, sampling and publishing interval of OPC UA Interface can be changed.



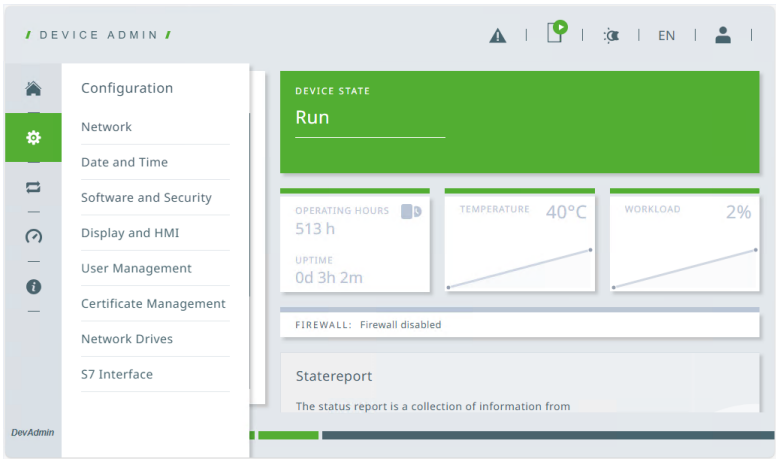
Sampling Interval	Sampling interval of the monitored item in ms - monitored items are the variables in the handheld terminal

Publishing Interval	Publishing interval of the subscription in ms - time the server publishes the changes to the OPC UA client

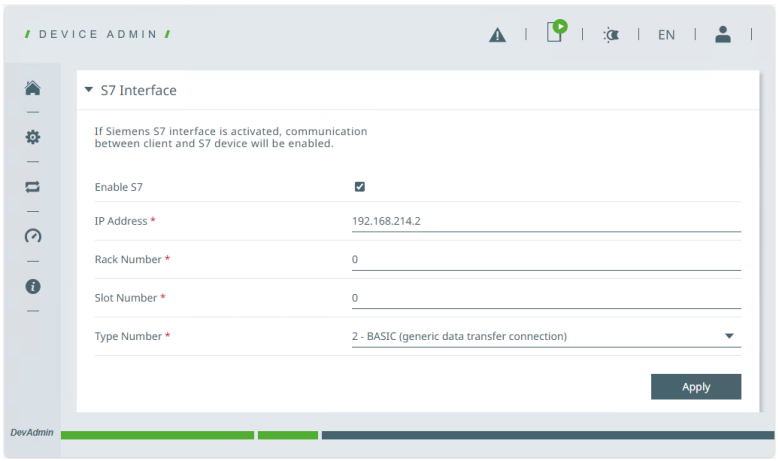
7.8. Using the S7 protocol

The configuration of the device after delivery is similar to the configuration done within KeStudio. There is less to configure for the S7 communication; only check if it is activated and change the IP address and some other communication parameters of the S7 connection.

To check this, select S7 Interface in the settings menu.



The IP address, rack and slot number and type of communication of S7 Interface can be changed.



Rack Number	PLC rack number (see below)
Slot Number	PLC slot number (see below)
Type Number	Type of the communication (see below)

Parameters rack and slot
The parameters rack and slot are used to address the S7 hardware. These can be found in the hardware configuration of the PLC or in the Station Configuration manager.
There are some special cases for which those values are fixed or can work with default values.
Example cases:

Controller	rack	slot	Usage
CP 343	0	0	0 or follow the hardware configura-tion
CP 443	Not fixed	Not fixed	Follow the hardware configuration
S7 1200 CPU	0	0	0 or 1
S7 1500 CPU	0	0	0 or 1
S7 300 CPU	0	2	Always
S7 400 CPU	Not fixed	Not fixed	Follow the hardware configuration
WinAC CPU	Not fixed	Not fixed	Follow the hardware configuration

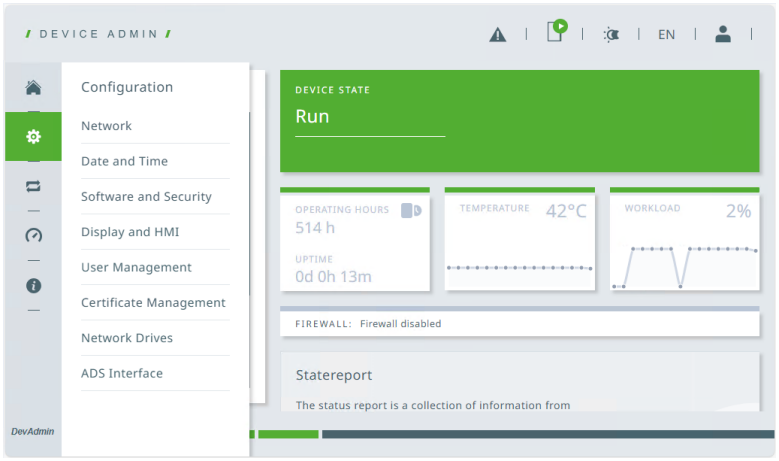
Parameter connection type
In the hardware configuration (Simatic Manager) of the CPU, the following parameters are available and could be changed under the tab "Communication". These parameters are not mandatory so the default parameter and value S7 Basic is fine.

Name	Default value	Description
OP	1	Siemens HMI panel
PG	0	Programming console
S7 Basic	2	Generic data transfer

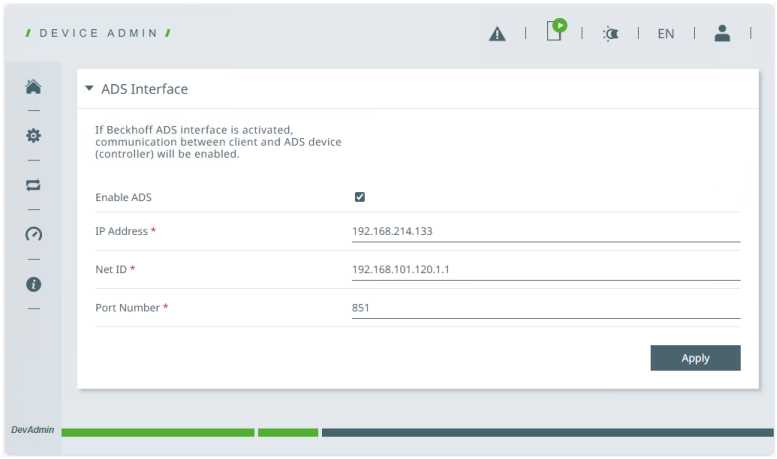
7.9. Using the ADS protocol

The configuration of the device after delivery is similar to the configuration done within KeStudio. There is less to configure for ADS communication; only check if it is activated and change the IP address and some other communication parameters of the ADS connection.

To check this, select ADS Interface in the settings menu.



The IP address, ADSNetID and port of the ADS Interface can be changed.



Net ID	AdsNetId of controller, further information can be found on the beckhoff website.
Port Number	AMS port of ADS server. The default value 851 is for TC3. Different port number options can be found on the beckhoff website.

8. Known issues

- The brightness of the screen can be set to 0 by using the PLC interfaces – not using DevAdmin. At 0, however, the screen is switched off and it is no longer possible to change the brightness on the device.
  There are two solutions to adjust the brightness:
  - using the PLC interface configured for this purpose
  - using DevAdmin started on another device

- The potentiometers have the value 0 in the PLC interfaces immediately after the device is started, although they are not in the zero position. The correct value is only accepted after a small movement of the potentiometer.