

# SIEMENS

## SIMATIC

### SIMATIC Energy Manager V1.0

Operating Manual

#### Preface

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## Legal information

### Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

<b>⚠ DANGER</b>
indicates that death or severe personal injury <b>will</b> result if proper precautions are not taken.
<b>⚠ WARNING</b>
indicates that death or severe personal injury <b>may</b> result if proper precautions are not taken.
<b>⚠ CAUTION</b>
indicates that minor personal injury can result if proper precautions are not taken.
<b>NOTICE</b>
indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

### Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

### Proper use of Siemens products

Note the following:

<b>⚠ WARNING</b>
Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

### Trademarks

All names identified by ® are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

### Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

# Preface

## Purpose of the documentation

This documentation supports you in configuring and commissioning the energy management functions of the SIMATIC Energy Suite V1.0 app.

## Basic knowledge required

The following knowledge is required in order to understand the documentation:

- Experience with handling SIMATIC Energy Manager.

## Validity of the documentation

This documentation is valid for SIMATIC Energy Manager V1.0.

## Conventions

Read also the following highlighted information:

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### Note

The notes contain important information on the product described in the documentation, on the handling of the product or on the part of the documentation to which particular attention should be paid.

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## Additional assistance

- Information about the technical support available can be found in the appendix to this documentation.
- The range of technical documentation for the individual SIMATIC products and automation systems is available on the Internet (<http://www.siemens.com/simatic-tech-doku-portal>).
- The online catalog and the ordering system are available on the Internet (<https://mall.industry.siemens.com>).

## Security

The communication between app and Energy Manager PRO server is unencrypted. The communication can be easily intercepted and possibly manipulated. In order to ensure secure communication, measures such as WLAN encryption as well as VPN (Virtual Private Network) should be implemented to achieve a higher level of security (for details see Security notes).

An encrypted connection (configurable in the app) should be used to increase the level of security. Otherwise, the communication can be easily intercepted and possibly manipulated. In addition, measures such as WLAN encryption as well as VPN (Virtual Private Network) should be implemented to achieve a higher level of security (for details, see Security notes).

## Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions only form one element of such a concept.

Customer is responsible to prevent unauthorized access to its plants, systems, machines and networks. Systems, machines and components should only be connected to the enterprise network or the internet if and to the extent necessary and with appropriate security measures (e.g. use of firewalls and network segmentation) in place.

Additionally, Siemens' guidance on appropriate security measures should be taken into account. For more information about industrial security, please visit (<http://www.siemens.com/industrialsecurity>).

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends to apply product updates as soon as available and to always use the latest product versions. Use of product versions that are no longer supported, and failure to apply latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under (<http://www.siemens.com/industrialsecurity>).

## Note on the EU General Data Protection Regulation (GDPR)

Siemens adheres to the principles of data protection, in particular the principle of data minimization (privacy by design). For this product, SIMATIC Energy Manager, this means: The product processes/stores the following personal data:

User name, first name and surname, e-mail address, department, address, country, phone number and user role. In addition, relevant changes to the configuration, such as data points, MEVAs/KPIs, reports or changes to measured values are logged together with time stamps and user information.

The above data is required for login, internal user administration (the authorized user can see the role and status of other users) and audit trail.

The storage of data is appropriate and limited to what is necessary to identify the authorized operators and to meet basic audit trail requirements.

The above data will not be stored anonymously or pseudonymized, as the purpose (identification of the operating personnel) cannot be achieved otherwise. The data will be used only within the product and will not be automatically passed on to third parties or unauthorized persons.

Our product does not provide for automatic deletion of the above data.

Regarding cookies, please refer to the Siemens cookie guidelines (<http://www.siemens.com/cookie-policy-en>).

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# SIMATIC Energy Manager app

## 1.1 Function overview

SIMATIC Energy Manager enables manual collection of energy data to be transmitted to SIMATIC Energy Manager PRO for further analyses.

### Function principle

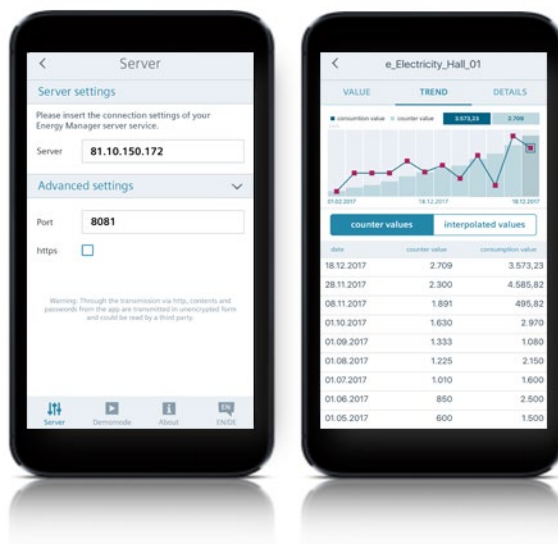
Once you log onto SIMATIC Energy Manager, the app loads the reading routes for which you have permission from SIMATIC Energy Manager PRO and displays them as reading routes.

In addition to the reading route, the app also takes the relevant data points as well as their essential plausibility settings from SIMATIC Energy Manager PRO.

The app guides you through the reading route so you can enter the counter value for each data point. Alternatively, you can also select the data point by scanning a bar code or QR code attached to the counter. Immediately after entering the measured value, the app checks the value for correctness using the plausibility settings. If the values differ, a message appears.

Usually, the data are not read at 00:00 on the first of the month, but a few hours or days before or after. In order to make the energy data comparable for months, the app converts the counter value to a consumption value. Then the app calculates this consumption value backwards or forwards to the respective change of the month. This results in constant consumption between the readings.

If there is no server connection, you can cache the data locally. The app synchronizes the data with SIMATIC Energy Manager PRO at the next server connection.



## Functions

SIMATIC Energy Manager offers the following important functions:

- Synchronization of the reading route and the associated data point configurations as well as plausibility settings
- Selection of the counter with the bar code or QR code scanner
- Plausibility check during data entry
- Conversion of the counter value to a consumption value and calculation back to the first of the month
- Graphical trend representation of the read and interpolated measured values
- Offline function for acquiring the data without an Internet connection
- Synchronization of the measured values with SIMATIC Energy Manager PRO
- Support for encrypted communication (https)
- Multilingualism (German and English)
- Demo mode for verification of the functionality offline

## Compatibility

The following operating systems of the mobile devices are compatible with SIMATIC Energy Manager:

- iOS 10 or higher
- Android ARM, x86, 4.4.2 or higher

## 1.2 Download of the app

### Installation of the app in iOS

To use the app, you need at least iOS version 10.

Open the following link:

Download link - SIMATIC Energy Manager iOS

(<https://itunes.apple.com/WebObjects/MZStore.woa/wa/viewSoftware?id=1396392043&mt=8>)

### Installation of the app in Android

You need at least Android version 4.4.2 to use the app.

Open the following link:

Download Link - SIMATIC Energy Manager Android

(<https://play.google.com/store/apps/details?id=com.siemens.bdata2>)




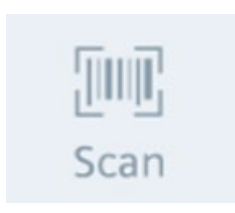

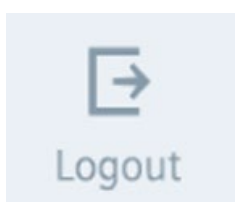
## 1.3 Icons in the main menu

### Main menu

After successful logon, the main area of SIMATIC Energy Manager is displayed.

The taskbar of the main area is located at the bottom of the page.

The following table shows the functions of the icons in the taskbar:

Symbol	Function
	<p>Information about the software version used, etc.</p> <p>The following information is available:</p> <ul style="list-style-type: none"> <li>• Publisher details</li> <li>• End User License Agreement</li> <li>• Privacy Policy</li> <li>• Documentation</li> </ul> <p>Link to the latest app description in Siemens Industry Online Support</p> <ul style="list-style-type: none"> <li>• Security</li> <li>• App version</li> </ul>
	<p>Enabling the scan functionality (Page 30)</p> <p>Scanning is provided by the following functions:</p> <ul style="list-style-type: none"> <li>• Identification of the counter using the bar code or QR code</li> <li>• If the counter is present in the database, it is loaded into the app</li> <li>• If the counter does not exist in the database, a message appears</li> </ul>
	<p>Language selection in the app</p> <p>You can select the following languages:</p> <ul style="list-style-type: none"> <li>• German</li> <li>• English</li> </ul> <p>The display of date and number formats depends on the device settings of your mobile device.</p>
	<p>Logon of the user of SIMATIC Energy Manager</p>

# Establish connection to SIMATIC Energy Manager PRO

# 2

## 2.1 Startup and login

### Introduction

When starting SIMATIC Energy Manager for the first time, you are prompted to enter your user name and the password. This allows the app to access the approved reading routes from SIMATIC Energy Manager PRO.

### Requirements

- SIMATIC Energy Manager is installed.
- Executable system with SIMATIC Energy Manager PRO **V7.0 Update 3** or higher is installed.  
You can find additional information in the installation manual "SIMATIC Energy Manager PRO - Installation".
- A valid user for logging into the app has been created in SIMATIC Energy Manager PRO.  
You can find additional information in the operating manual "SIMATIC Energy Manager PRO - Operation" under the keyword "Creating users".
- The user is assigned to a user group that has the following functional rights through the functional group:
  - Matrix
  - Measurement
- The reading route (Page 13) is configured.

## Procedure

To log into the app, follow these steps:

1. Enter your user name.

---

### Note

When the **Remember me next time** check box is selected, the app saves the user name for future logins.

---

2. Enter the password.

SIMATIC Energy Manager



Username

User1

Password

••••••••

Remember me next time

Login



Server



Demomode



About



EN/DE

## *2.1 Startup and login*

3. To log into the app, tap on the **Login** button.
  - If there is a server connection, the **Mobile acquisition** interface appears after login.
  - If there is no server connection, check or set the Server settings (Page 19) using the **Server** icon in the taskbar.
4. To switch over to demo mode (Page 21), press the **Demomode** icon in the toolbar (icon changes from gray to blue) and then press the **Logon** button.

The interface with the three pre-configured reading routes opens.

## **Result**

You are logged into the app and can work with the app.

## 2.2 Configuring the reading route

To acquire counter values in the app, you need a reading route configured in SIMATIC Energy Manager PRO .

### Requirement

- Executable system with SIMATIC Energy Manager PRO **V7.0 Update 3** or higher is installed.

### Procedure

---

#### Note

The references to further information in this section point to the operating manual "SIMATIC Energy Manager PRO - Operation".

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To configure a reading route for acquisition of the counter values with the app, follow these steps:

1. Create a Matrix object with the following configured parameters:
  - **Name**  
You can find additional information under the keyword "Manual acquisition with matrix" and in the section Overview of working with data points (Page 31).
2. Create a data point of the **Counter** type, which has the following configuration under the matrix object:
  - Valid counter has been created.  
You can find additional information under the keyword "Configuring counters".
  - Upper limit and lower limit are set under **plausibility**.  
You can find additional information under the keyword "Configuring plausibility".
3. Configure the reading route as follows:
  - The Matrix object is added as a quick link in SIMATIC Energy Manager PRO Web.  
You can find additional information under the keyword "Quick links for web".

### Result

The reading route for manually entering the counter values in the app is configured.

## 2.3 Generating self-signed server certificates

If you wish to establish an encrypted connection between the Energy Manager PRO Server and the app via the **https** transfer protocol, you need server certificates. There are two options to obtain the relevant server certificates:

- Use a provided certificate
- Create your own certificate

The provided certificates can create problems and are not secure, even if the certificates come from the manufacturer of the mobile device itself. It makes more sense to create your own certificates via which you connect to the Energy Manager PRO Server. Server certificates that you generate with the **Internet Information Service (IIS)** are not accepted by iOS and Android due to the name resolution. For this reason, you generate self-signed certificates via the command line of an OpenSSL software.

### Requirement

- The OpenSSL software is installed.

### Procedure

To generate self-signed certificates, proceed as follows:

1. Create the text file **android\_options.txt** with the following line content:

```
basicConstraints=CA:true
```

2. To generate a private key, enter the following command in the command line of the OpenSSL software:

```
openssl genrsa -out priv_and_pub.key 2048
```

The **priv\_and\_pub.key** file is created.

3. To generate the server certificate, enter the following commands in the command line of the OpenSSL software:

```
openssl req -new -days 3650 -key priv_and_pub.key -out CA.pem
```

```
openssl x509 -req -days 3650 -in CA.pem -signkey priv_and_pub.key -extfile  
./android_options.txt -out CA.crt
```

The **CA.pem** and **CA.crt** files are created.

4. To generate a PFX file, enter the following command in the command line of the OpenSSL software:

```
openssl pkcs12 -export -out myselfsigned.pfx -inkey priv_and_pub.key-in CA.crt
```

The **myselfsigned.pfx** file is created.

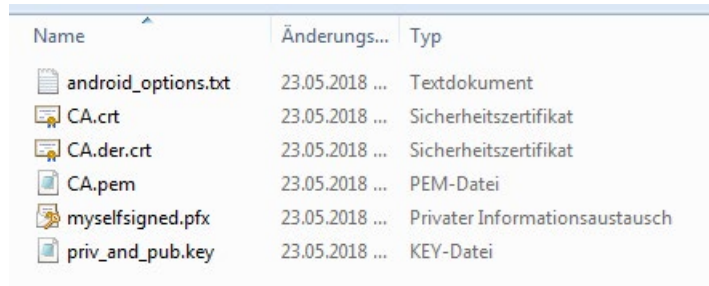
5. To convert the server certificate into DER format, enter the following command in the command line of the OpenSSL software:

```
openssl x509 -inform PEM -outform DER -in CA.crt -out CA.der.crt
```

The **CA.der.crt** file is created.

## Result

The required files and certificates are created.



Name	Änderungs...	Typ
android_options.txt	23.05.2018 ...	Textdokument
CA.crt	23.05.2018 ...	Sicherheitszertifikat
CA.der.crt	23.05.2018 ...	Sicherheitszertifikat
CA.pem	23.05.2018 ...	PEM-Datei
myselfsigned.pfx	23.05.2018 ...	Privater Informationsaustausch
priv_and_pub.key	23.05.2018 ...	KEY-Datei

After you have generated your own certificate, you need to import the certificate into the **Internet Information Service**. Then you import the certificate onto the relevant mobile devices (iOS or Android).

## 2.4 Importing server certificates into IIS

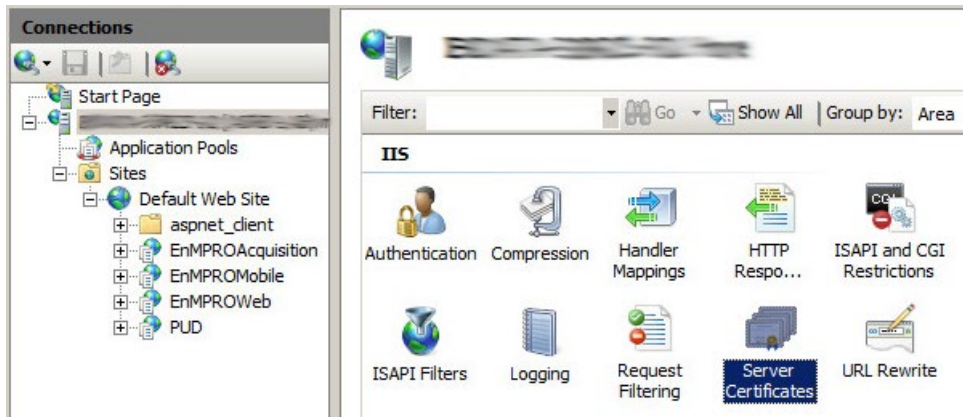
### Requirement

- The self-signed server certificates and files are generated.

### Procedure

To import the self-signed server certificate into the **Internet Information Service (IIS)** and select it, follow these steps:

1. Open the **IIS**.
2. In the navigation, click on your computer name.
3. Double-click on **Server Certificates**.



A list of all server certificates is opened.

4. Right-click in the display field.
5. Select the menu command **Import...**
6. In the **Certificate file (.pfx)** text field, search for the created PFX file **myselfsigned.pfx**.
7. Enter the following password in the **Password** input box: **password**.
8. Click **OK**.

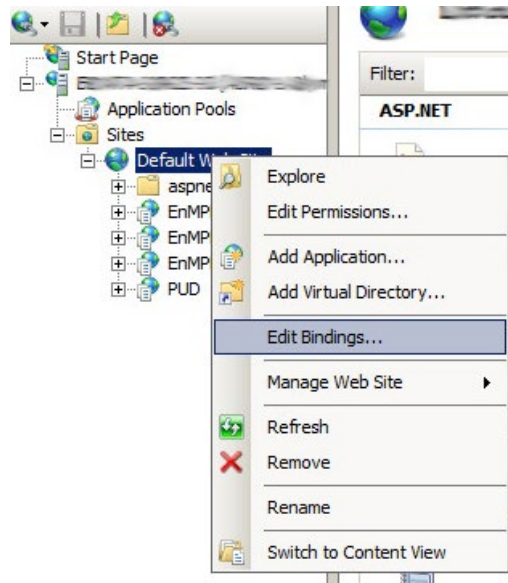
The self-signed certificate appears in the list of server certificates.

9. In the navigation, right-click on **Default Web Site** under **Sites**.

The shortcut menu opens.



10. Select the menu command **Edit Bindings....**



11. Click on the **Add....** button.

12. Select the entry **https** from the **Type** drop-down list.

13. Select the self-signed certificate from the **SSL certificate** drop-down list.

14. Click **OK**.

## Result

The server certificate has been imported into **IIS** and selected. Restart the Web server. Then you need to import the certificate to your mobile iOS or Android device.

## 2.5 Importing server certificates to iOS and Android

### Requirement

- The self-signed server certificates and files are generated.

### Importing server certificate to iOS

To import the server certificate to iOS devices, follow these steps:

1. Import the **CA.crt** file to your iOS device and install the certificate.
2. Open the following setting on your iOS device: **Settings > General > About**.
3. Tap on **Certificate Trust Settings**.
4. Activate the imported certificate.

### Importing server certificate to Android

To import the server certificate to Android devices, follow these steps:

1. Import the file **CA.der.crt** onto your Android device.
2. Move the **CA.der.crt** file into the root directory of the SD card.
3. Open the following setting on your Android device: **Settings > Security > Other security settings**.
4. Tap **Install from device storage**.

The **CA.der.crt** file is detected by your device.

5. Enter a name for the certificate.

After you have installed the certificate, you will find it under the following path: **Settings > Security > Other security settings > View security certificates > User**.

---

#### Note

Because the user interface is not the same for all Android devices, the specified paths can vary with different Android devices.

---

### Result

The self-signed certificate is imported onto your iOS or Android device and activated. You now have access to the Energy Manager PRO Server via your mobile device.

## 2.6 Establishing a connection to server

After successful logon, the app establishes the connection to the Energy Manager PRO Server with the Webservice interface. You set the required parameters in the **Server** interface.

### Requirements

- Energy Manager PRO Server is available.
- Your mobile device is connected to a TCP/IP-enabled network, such as LAN or Internet.
- Knowledge of the IP address and port number of the SIMATIC Energy Manager PRO Web Service interface.

For more information, contact your system administrator.

- The self-signed certificate is imported into **Internet Information Service (IIS)** on your mobile device and is activated.

## Procedure

To establish a connection to the server, follow these steps:

1. Tap on **Server** in toolbar.

The interface with server settings and extended settings opens.

2. In the **Server** text box, enter the IP address of the Energy Manager PRO Server.
3. In the **Port** text box, enter the corresponding port number.
4. Tap on **Server** again in the taskbar to return to the login dialog.

## **2.7 Demo mode**

To become familiar with the product and to test it without a connection to the Energy Manager PRO Server, SIMATIC Energy Manager offers a demo mode.

Demo mode includes three pre-configured data points that you use in the app.

### **See also**

Overview of working with data points (Page 31)

Overview of mobile data acquisition (Page 22)

## Mobile data acquisition

### 3.1 Overview of mobile data acquisition

Quick links of the "Route" data type are available in the **Mobile acquisition** interface.

The figure below shows the four quick links:



A reading route contains several counters or data points. The following functions are available for these counters:

- Value display
- Value processing
- Reacquisition of the values

When selecting a quick link of the "Route" data type, the list with the corresponding data points appears. If no quick links have been created in SIMATIC Energy Manager PRO , a message appears.

### 3.2 Overview of reading routes

The route icon on the right side of the menu bar provides an overview of the data points or counters of a reading route.

The figure below shows the reading route overview with three data points:

The screenshot displays a mobile application interface for 'Production hall 1'. At the top, there is a navigation bar with a back arrow, the title 'Production hall 1', and a route icon. Below the navigation bar, there are two dropdown menus for 'Status' and 'Datapoint', and a refresh button. The main content area lists three data points, each with a status icon and a cloud icon. The data points are: 'e\_Electricity\_Hall\_01' (kWh) with current value 2.709 and past value 2.300; 'e\_Gas\_Hall\_01' (kWh) with current value 6.147 and past value 5.885; and 'e\_Water\_Hall\_01' (kWh) with current value 5.874 and past value 5.555. At the bottom, there is a footer bar with four icons: 'About', 'Scan', 'EN/DE', and 'Logout'.

Data Point	Unit	Current	Past
e_Electricity_Hall_01	kWh	2.709	2.300
e_Gas_Hall_01	kWh	6.147	5.885
e_Water_Hall_01	kWh	5.874	5.555



This overview of reading routes contains the following information of the data point or counter:

- Name
- Unit
- Most current value
- Second-most-current value

In the overview of the reading routes, the data points or counters can be sorted according to synchronization status (symbolized by a cloud) or name.

---

**Note**

There may be limitations in the display of the data point name on certain mobile devices, depending on the length of the data point name.

---

### 3.3 Temporal overview of reading routes

The clock icon on the right side of the menu bar shows the overview of the data points or counters sorted by time.

The following figure shows the interface with the temporal reading routes:



Each date entry has a value that represents the number already acquired from the total number of values to be acquired.

**Example:** The value 1/2 indicates that a value has been acquired from only one of the two data points from this time period. One data point has no value for this time period.

If, for example, you select a date entry, a daily overview appears with all available data points of the reading route and the associated values.

The figure below shows the date entry for 01.12.2017 with the value 2/2:



## 3.4 Acquiring the values in offline mode

SIMATIC Energy Manager performs mobile acquisition of values even in offline mode, for example, without server connection.

To do this, select the respective reading route with the server connection still present and then enter the values manually in offline mode.

### Synchronizing the values

When there is a server connection, the app synchronizes the values continuously. When there is no server connection, the app caches the values.

When the server can be reached again, the app sends the locally cached values to the server.

- In the reading route overview, you can determine by the cloud icon whether data is available in the respective reading route that has not been sent to the Energy Manager PRO Server yet.
- In the chronological reading route overview, you can also use the cloud icon to determine the counter for which there is still data that needs to be synchronized.

The screenshot displays the 'Production hall 2' interface. At the top, there is a navigation bar with a back arrow, the title 'Production hall 2', and a refresh icon. Below this are two dropdown menus for 'Status' and 'Datapoint', and a toggle switch for connectivity (currently off) and a clock icon. The main content area lists two data points:

Icon	Label	Unit
	<b>e_Electricity_Hall_02</b>	<b>kWh</b>
	current	4.883
	past	4.526
<hr/>		
	<b>e_Gas_Hall_02</b>	<b>kWh</b>
	current	2.574
	past	2.649

At the bottom, there is a navigation bar with four icons and labels: 'About' (info icon), 'Scan' (barcode icon), 'EN/DE' (language icon), and 'Logout' (exit icon).

## 3.5 Identification of counter with bar code

SIMATIC Energy Manager provides you with the scan functionality to identify the counter based on the barcode or QR code.

If the respective counter is present in the database, the app identifies this counter using the barcode.

Once the counter has been identified, the app displays the interface (Page 32) for manual input of the values. If the counter cannot be identified, a message appears.

### Scanning functionality

The scanning functionality can be called from the following two interfaces of the app:


- Main area (Page 9)
- Overview of reading routes (Page 24)

### Requirement

- A counter has been created and pre-configured in SIMATIC Energy Manager PRO.
- Barcode or QR code has been created in one of the following formats:
  - Code 128
  - Code 39

### Procedure

To identify a counter using the barcode or QR code, follow these steps:

1. Press the scan icon  in the main area or in the reading route overview of the app.  
The app switches to camera mode.
2. Hold your mobile device so that the bar code or QR code is displayed full screen.
  - If there is a counter in SIMATIC Energy Manager PRO, the interface (Page 32) appears for manual enter of counter values.
  - If there is no counter in SIMATIC Energy Manager PRO, a message appears.

### Result

The counter has been identified and you can enter the counter value manually.

## Working with data points

### 4.1 Overview of working with data points

When a data point is selected, the interface for entering the counter value appears.

The app calculates the consumption values that result from the difference in the counter values.

#### Conventions of the counter value

The following conventions apply to the counter value:

- 1 - 16 characters
- The following characters are allowed:
  - 0 ... 9
  - , .

#### Cycle times

The app supports the following cycle times for the matrix and data point:

- Day
- Week
- Month

#### Calculation logic

The difference is calculated with even time stamps, for example, daily values with the time stamp 00:00:00 or monthly values on the first of the month with the time stamp 00:00:00, the app interpolates the entered values and time stamps.

##### Linear interpolation

The app calculates the consumption value with the linear interpolation using the following formula:

$$y_2 = \frac{(x_2 - x_1)}{(x_3 - x_1)} (y_3 - y_1) + y_1$$

- x<sub>1</sub> Time stamp of the first value
- y<sub>1</sub> Amount of the first value
- x<sub>2</sub> Time stamp of the interpolated value
- y<sub>2</sub> Amount of the interpolated value
- x<sub>3</sub> Time stamp of the third value
- y<sub>3</sub> Amount of the third value

## 4.2 Entering values manually

If the value is entered before the middle of the cycle, the app interpolates the value to the cycle time point that precedes the value input.

If the value is entered after the middle of the cycle, the app interpolates the value to the cycle time point after the value input.

If the counter value has already been entered, only the amount can be changed - the time stamp cannot be later changed.

### Example

If you enter a counter value for a monthly cycle on 10/08/2017 12:00:00, the counter value is interpolated to the cycle time point 01/08/2017 00:00:00.

If you enter a counter value for a monthly cycle on 25/08/2017 12:00:00, the counter value is interpolated to the cycle time point 01/09/2017 00:00:00.

### Menu bar

The following entries are available in the menu bar:

- Value (Page 32)
- Trend (Page 36)
- Details (Page 38)

## 4.2 Entering values manually

SIMATIC Energy Manager provides the interface for manual input of the values.

### Requirement

- The app has started and you are logged in (Page 10).



## Procedure

To enter the values manually in the app, follow these steps:

1. Tap on the quick link of the reading route in the **Mobile acquisition** interface.

The reading route with the created data points opens.

2. Tap the data point for which you want to enter the values.

The interface for manually entering the values opens.

e_Electricity_Hall_01		
VALUE	TREND	DETAILS
counter value	2.709	
consumption value	4.090	
acquisition time	18.12.2017 16:40:00	>

Save

3. Tap on the **Counter value** button and enter the value of the counter.

*4.2 Entering values manually*

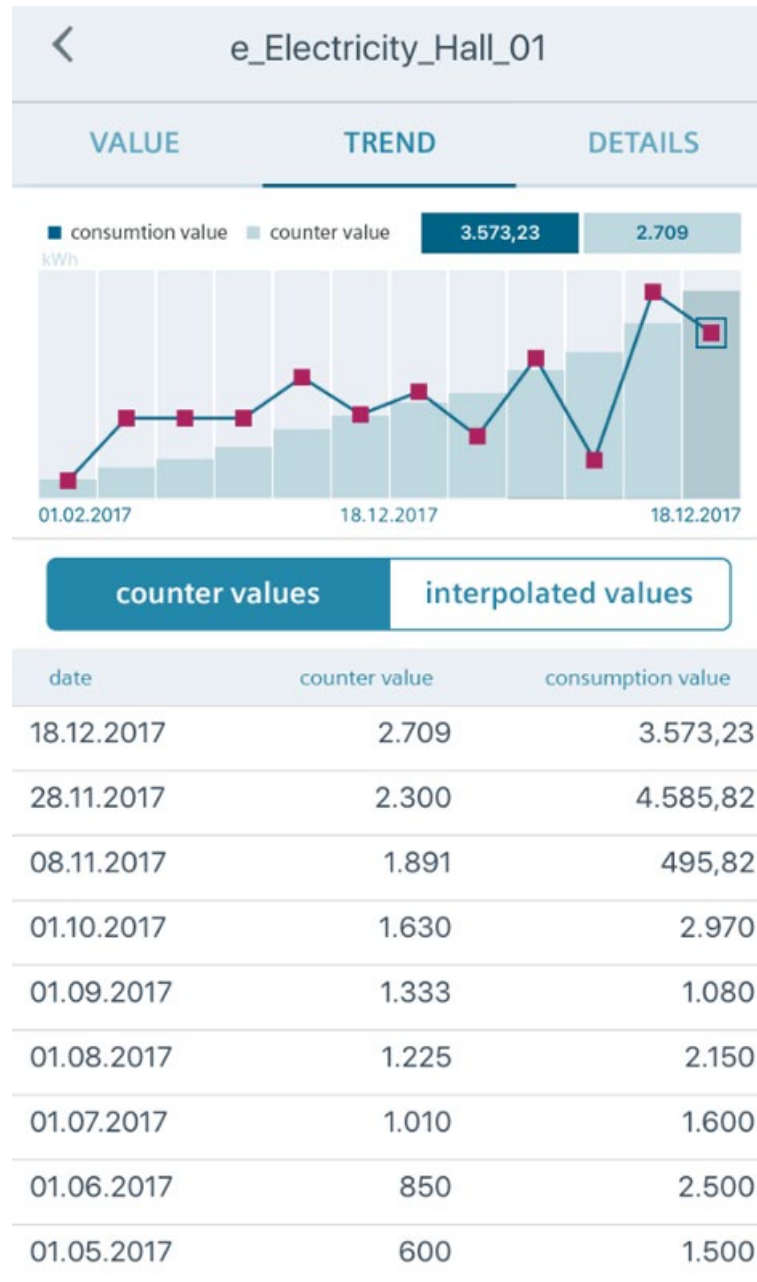
4. If necessary, tap the **Acquisition time** button to change the time of the value input.
5. Click **Save**.

The data entered are transmitted when the server connection to SIMATIC Energy Manager PRO is established. If there is no server connection, the data is cached on the mobile device.

## Result

The app sets the counter value in the menu bar and automatically determines the corresponding consumption value.

The value list below the **Trend** interface is also displayed graphically in the chart.



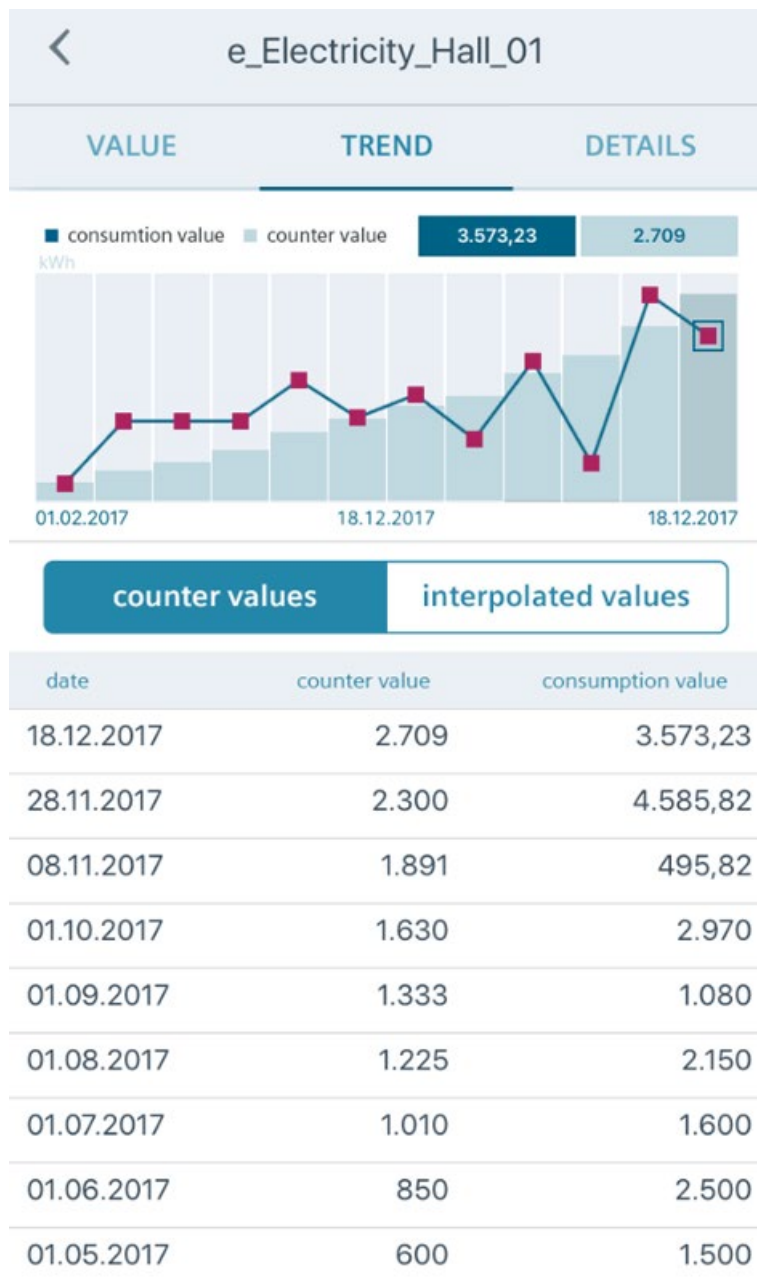
## See also

Configuring the reading route (Page 13)

### 4.3 Visualization of the values

SIMATIC Energy Manager displays the chronological trend of the consumption values in form of a table and chart in the **Trend** interface.

The following figure shows the interface for visualization of the values:



If the upper and lower limits of the consumption values are stored in the metadata of the counter, the app represents these limits in the chart. The curve trend of the limits differs in color from the curve trend for the counter or consumption values.

---

**Note**

Keep your mobile device in a horizontal position to display the chart full-screen.

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## Interpolation of values

When you switch from the "Counter values" button to "Interpolated values", the app displays the interpolated values in both the toolbar and the chart.

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**Note**

The interpolated values cannot be edited in the app.

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If you select a value in the menu bar, the interface for the manual entry of the values appears.

When you enter a new value, the app interpolates or extrapolates the value for the configured cycle, for example, day, month.

By default, the app retrieves the actually acquired values for the calculation. If there are gaps in the data series, the app fills these gaps with calculated values.

## 4.4 Metadata of the data point

In the **Details** interface, SIMATIC Energy Manager provides the metadata that are stored at the respective data point on the Energy Manager PRO Server.

The metadata are divided into the following areas:

- **Plausibility configuration**
- **Counter configuration**

The following figure shows the **Details** interface:

e_Electricity_Hall_01		
VALUE	TREND	DETAILS
Plausibility		^
Counter		v
Number	ELECTRICITY-HALL-01	
Description	Electricity_Hall_01	
Install date	22.12.2016	
Install value	0	
Constant	10	
Range start	0	
Range end	9.999.999	
Replace date	01.02.2100	
Replace value	0	
Kks	NO_KKS	

## Plausibility configuration

The plausibility configuration area contains the following data point information:

- Upper limit
- Lower limit
- Comparison with data point

The upper and lower limits represent the app graphically in the chart.

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### Note

The settings in the plausibility checkup area cannot be edited in the app. The app applies these settings from the Energy Manager PRO Server with the Webservice interface.

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## Counter configuration

To calculate the consumption values, the app uses the metadata, for example the counter constant. In doing so, the app multiplies the counter constant by the difference of the counter values according to the MEVA functions, which you pre-configure in SIMATIC Energy Manager PRO.

You can find additional information on this in the operating manual "SIMATIC Energy Manager PRO - Operation" under the keyword "Configuring counters".

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### Note

When the reading route is opened, SIMATIC Energy Manager loads the relevant data point information and thus also the current counter configuration which is used to calculate the consumption values.

If you change a counter configuration or create a new counter including new counter configuration in Energy Manager PRO, the new counter configuration is loaded into the app. The values visible in the app (last 12 values) are calculated again with the new counter configuration and transferred to Energy Manager PRO once again.

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