SIEMENS

SIMATIC

SIMATIC Energy Manager V7.2 - Acquisition

System Manual

12/2020
A5E38952756-AF

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.

⚠ DANGER

indicates that death or severe personal injury **will** result if proper precautions are not taken.

⚠ WARNING

indicates that death or severe personal injury **may** result if proper precautions are not taken.

⚠ CAUTION

indicates that minor personal injury can result if proper precautions are not taken.

NOTICE

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:

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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.

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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.

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A5E38952756-AF
Ⓟ 12/2020 Subject to change

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1.1 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://support.automation.siemens.com).

1.2 Use as intended

WARNING

Security note

The software may be used only for the applications described in the catalog or the technical description, and only in combination with the software products, components and devices of other manufacturers where recommended or permitted by Siemens. Before you run any sample programs included with your product package, or user programs, make sure that harm to the health of human beings or damage to machinery is safely excluded during plant operation.

1.3 Functionality of the acquisition component

Note

Energy Manager Basic/PRO

This manual is valid for both Energy Manager Basic and Energy Manager PRO. To make the manual easier to read, the term Energy Manager is used instead of Energy Manager Basic/PRO.

The Energy Manager Acquisition or acquisition component is installed as a separate application and provides the requirements for acquiring data from the field and / or process level.

In case of multiple locations, depending on the network configuration, one Energy Manager Acquisition component should be used for each location. Acquisition values are stored in the Energy Manager Acquisition component; compressed values are transferred via the Intranet / Internet to the Energy Manager Server into the database.

Compression functionality

The acquisition component automatically compresses the acquisition values of a datapoint that are smaller than or equal to one day. Acquisition values that are larger than one day are saved without compression directly at the Energy Manager Server in the database.

The compression levels 1 minute, 15 minutes, 1 hour as well as 1 day are selected automatically when a datapoint is created, but can be deselected, if necessary, via the "Compression" button. Entry values are compressed to the selected compression levels and saved in the database. This means that incoming 1-minute values, for example, are compressed to 15-minute values, 1-hour values and 1-day values and the compressed values are saved in the database. Further compression levels can be selected additionally.

Minimum, maximum, average, sum and power

The acquisition component automatically calculates for each compressed value the minimum, the maximum, the average, the sum and the power and stores these values in addition to each compressed value into the database. Important for the correct calculation of the statistical values is a corresponding definition in the "Type" field at the datapoint (Power, Energy, Counter Value, Process Value). The statistical values are visible in the measured value editor. The time stamp is also specified for each statistical value.

Details relating to the measured value editor can be found in the manual "SIMATIC Energy Manager PRO - Operation" in section "4.3.9.11 Measurements editor".

Storage and display of acquisition values

The acquisition component creates an adf file per day and datapoint in which the acquisition values are stored. The files are stored locally on the acquisition and are available for 2 months (62 days). Afterwards the files, and thus also the acquisition values, are deleted.

In order to ensure a rapid overview of the current values the acquisition values can be displayed in the Chart or Dashboard.

A review of the acquisition values by means of the Chart or Dashboard is limited to the set storage period (62 days). Matrix and measured value editor currently do not have any functionality for displaying the acquisition values of the acquisition component.

It is not possible to access the acquisition values, unless the compression level "Acquisition values" is selected at the "Compression" button in the datapoint. Then the acquisition values of the acquisition component are transferred to the database at the Energy Manager Server.

If compression levels are selected at the datapoint, the acquisition component compresses the acquisition values to the selected levels. The acquisition component synchronizes regularly with the Energy Manager Server and in the process transfers the compressed values to the server, where they are stored in the database.

Plausibility check and message list

The following plausibility checks are available for entry values directly on the acquisition component:

- High limit
- Upper limit warning
- Lower limit warning
- Low limit
- Gap

If a plausibility check is to take place and messages are to be generated, these have to be activated at the "Plausibility" button in the datapoint.

The acquisition component then checks the acquisition values for plausibility and sends a message per email or generates an entry in the message list, in as far as the message list is configured correctly.

The following plausibility checks in the "Compare With" area

- Another Time Period
- Reference Object
- Upper Limit
- Lower Limit

can only be checked if the entry values are available on the server. To this purpose the "Acquisition values" option has to be selected additionally in the "Compression" at the datapoint.

More information on the plausibility check can be found in the manual "SIMATIC Energy Manager PRO - Operation" in section "4.3.9.8 Configuring the plausibility".

Configuration of the datapoint

The compression levels are selected for the datapoint in the Energy Manager PRO Client.

Ensure that the correct "Type" is selected when creating the datapoint. This is necessary for the correct calculation of the statistical value.

Details relating to compression and the type of data point can be found in the manual "SIMATIC Energy Manager PRO - Operation" in section "4.3.9.9 Configuring compression".

If you want to receive warning messages, activate the messages at the "Plausibility" button and configure a message list.

System requirements

2

2.1 General requirements

Note

Keep all Microsoft components up-to-date.

Note

In the Energy Manager, time zone information is transmitted via the operating system. Therefore, always keep this up-to-date.

When you update the operating system, you also need to restart the Energy Manager system components (e.g. before removing or introducing standard/daylight-saving time switchovers in a country).

- PC is switched on and the operating system has started.
- One of the following operating systems is installed:
  - Windows 7 Professional / Ultimate SP1 64-bit (English / German)
  - Windows 8.1 Pro / Enterprise 64-bit (German / English)
  - Windows 10 Pro / Enterprise 64-bit (German / English)

    Version 1903
  - Windows Server 2008 R2 SP1 64-bit (German / English)
  - Windows Server 2012 R2 64-bit (German / English)
  - Windows Server 2016 64-bit (German / English)
  - Windows Server 2019 (German / English)

    Min. version 10.0.17763

Note

The Energy Manager application server is not supported by Windows 7 or Windows Server 2008.

The multiuser interface is installed in English or in German.

- The Microsoft Internet Information Service (IIS) is installed.

  Note

  Installation of the Microsoft Internet Information Service (IIS) is necessary for the usage of Energy Manager Web as well as for the connection (pairing) of the acquisition component with the Energy Manager Server.

  Note

  The Microsoft Internet Information Service is automatically installed with the installation of SIMATIC Energy Manager. Which settings are activated can be found in the section "IIS settings" in the appendix of the installation manual. You can find out how to set up the IIS settings manually in the section "Setting up Energy Manager Web on Windows Server" in the appendix of the installation manual.

- Microsoft .NET Framework 4.5 or higher is installed.

  Note

  Microsoft .NET Framework 3.5 **and** 4.5 must be installed for the Windows 8.1, Windows Server 2008 R2, Windows Server 2012 and Windows Server 10 operating systems.

  To install Microsoft NET.Framework 3.5, read the corresponding Windows help.

  Note

  Microsoft SQL Server 2017

  A license is necessary to use the Microsoft SQL Server database. This license is readily available in a licensed and proper installation of Energy Manager.

  Use the licensed SQL Server installed with Energy Manager only in connection with Energy Manager.

  Its use for other purposes requires an additional license. These include, e.g.:

  - Use for internal databases
  - Use in third-party applications
  - Use of SQL access mechanisms that are not provided by Energy Manager

See also

http://support.automation.siemens.com/WW/view/en/78464533
(http://support.automation.siemens.com/WW/view/en/78464533)

http://www.microsoft.com/de-de/download/details.aspx?id=30653
(http://www.microsoft.com/en-US/download/details.aspx?id=30653)

2.2 Requirements for Energy Manager Acquisition

The following requirements apply to the Energy Manager Acquisition:

Type	Requirement	Comment
Port number	The port number "4444" is set as default. You can choose any available port number. A Web browser is also required for the connection configuration.	For communication with the Energy Manager Server.
PG/PC interface[1]	The Energy Manager kernel is assigned to the network interface that is used to acquire the data.	For data acquisition of S7 controllers
Software	One of the following approved Internet browsers is installed: • Microsoft Internet Explorer 11 • Microsoft Edge • Google Chrome 81 or higher • Mozilla Firefox 75 or higher • Apple Safari with iOS 13 or higher	For configuring the connection (Pairing) of the acquisition component (Acquisition) with the Energy Manager Server.
Hardware	Processor type: Multicore CPU with 2.5 GHz or higher	-
	Recommended work memory (RAM): 8 GB	-
	Free hard disk space: Depends on the customer requirements	-
	CD-ROM/DVD-ROM drive	For software installation

[1] Only relevant if data is to be acquired from an S7 controll.

Installing Energy Manager Acquisition 3

Introduction

Energy Manager Acquisition enables you to meet the PC requirements for acquiring data from the field and / or process level. The acquired data are forwarded to an Energy Manager Server server via the Intranet / Internet.

The installation of Energy Manager supports the following installation methods:

- Package installation

  Installs the following components:

  – Portal service

  – Energy Manager Acquisition component

- Custom installation

  Installs at least the Portal service.

Requirement

- You have administrator rights in Microsoft Windows.
- The SIMATIC Energy Manager Acquisition DVD has been inserted in the DVD drive.

Procedure

1. Double-click the "Setup.exe" file on the SIMATIC Energy Manager Acquisition DVD.

   If user account control is activated, you must allow the execution of the program.

   The language selection dialog opens.
2. Select the required language for the installation.

   The installation wizard opens.
3. Read and agree to the following information if necessary:

   – General information

   – Licensing agreements and safety information

   – Version information

   Note

   A message is displayed if Energy Manager is already installed. If you want to continue the setup, the components listed above are overwritten. Otherwise, setup is aborted.

   The "Installation type" dialog opens.

4. Select the desired installation type and the destination directory if needed.
5. If you have selected "Custom installation", select the desired components.

   A summary of the components to be installed is displayed.
6. Enter the Windows login data for the additional services and then click "Install".

   "Energy Manager Acquisition" is installed. When installation is complete, you are requested to reboot the PC.
7. Restart the computer.

Result

"Energy Manager Acquisition" is installed. If you have installed the Energy Manager Acquisition component, connect it subsequently with the Energy Manager Server (Pairing). Additional information is available in the section "Connecting acquisition components to Server (Page 13)".

Connecting acquisition components to Server 4

4.1 Configuring acquisition components per wizard

Overview

In the Energy Manager acquisition configuration you establish the logical connection between the acquisition component (Acquisition) and the Energy Manager Server (Pairing). The Energy Manager acquisition component is installed together with the "Energy Manager Acquisition" software component. The acquisition component supports communication via a proxy server.

You can configure the connection to the Energy Manager Server either by using the wizard or manually.

- Configuring the connection manually

  You can configure the connection to the Energy Manager Server with or without access to the Energy Manager Server. The connection is created when saving the configuration data. If the Energy Manager Server cannot be reached, the configuration is saved locally. Upon restarting the Energy Manager acquisition configuration, an attempt is made to establish the connection using the saved configuration.

- Setting up a connection using the wizard

  Configuration with the wizard requires a connection to the Energy Manager Server. The wizard performs a step by step check of the connection data that have been entered.

Configuring the connection using the wizard

You need the following data to log the acquisition component in to the Energy Manager Server:

- Address and port of the Energy Manager Server
- Energy Manager user name and password
- Name of the "Hardware" object in Energy Manager

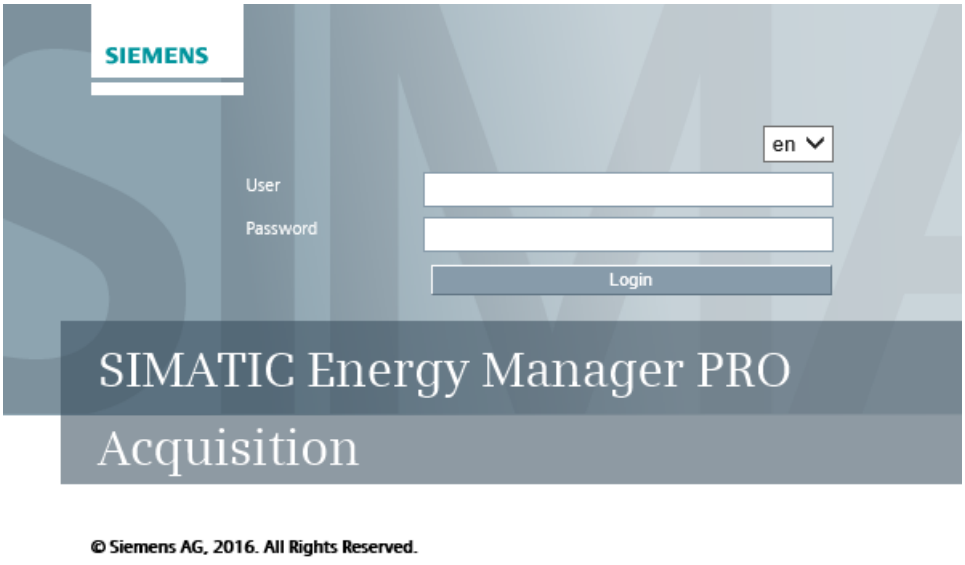
Requirement

- The "Energy Manager Acquisition" software component is installed on the PC.
- Microsoft Internet Information Service (IIS) is installed on the PC.
- The PC is connected to the Energy Manager Server.
- The "Hardware" object is set up on the Energy Manager Server.
- A user with the "Configure acquisition" authorization is set up on the Energy Manager Server.
- For communication via proxy:
  - A proxy server must be available in the network.
  - The URL and login data must be known.

Procedure

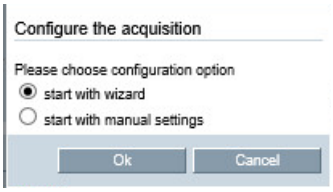
1. Start the web browser on the acquisition component and enter the following address:

   http://[COMPUTERNAME]/EnMPROAcquisition/Login.aspx



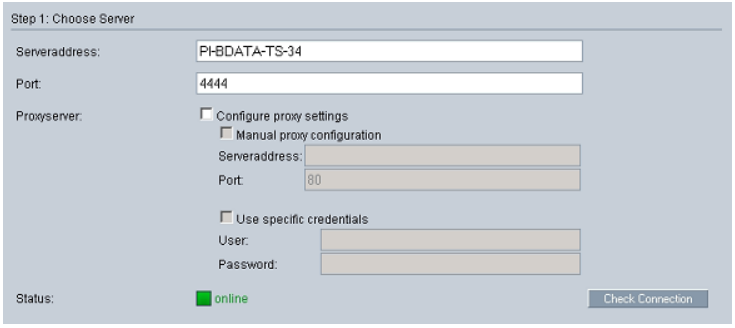
2. Log on with the operating system user under which Energy Manager was also installed.

   The "Status" page of the Energy Manager acquisition configuration is displayed. If the acquisition component is not yet logged in to a Energy Manager Server, the "Configure the acquisition" dialog is displayed.

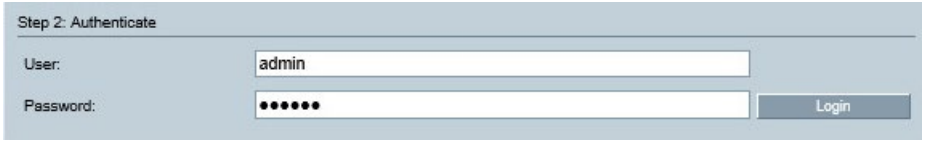


3. Select the "Start connection wizard" option in the "Configure the acquisition" dialog.

4. Enter the following connection data:
   – Address and port of the Energy Manager Server



5. As needed, select "Configure proxy settings", and enter the following connection data depending on the configuration of the proxy server:
   – Address and port of the proxy server
   – User name and password
   – Click on "Test connection".
6. Enter your Energy Manager user name and password and click "Login".



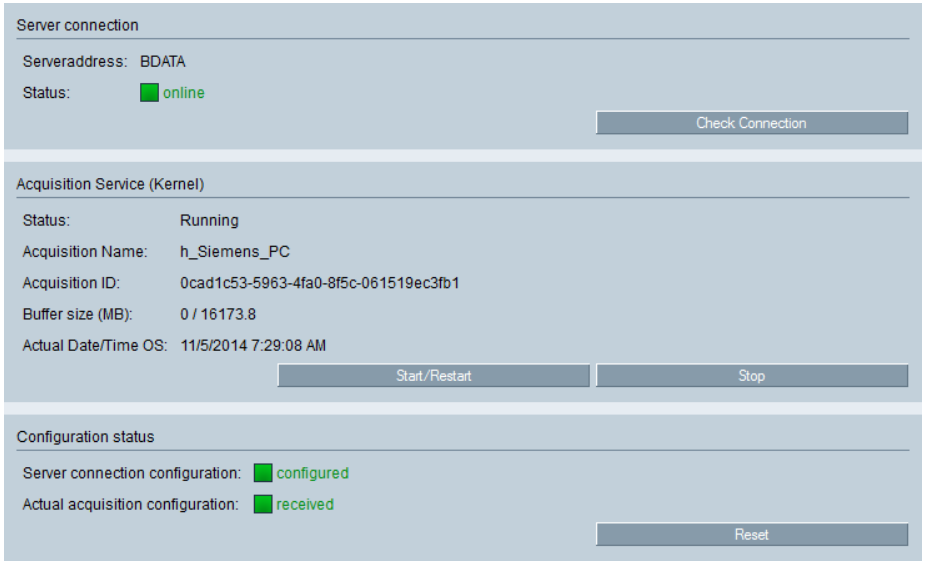
   An acquisition ID is allocated and the name of the acquisition computer is displayed.

7. Save your entries.

Result

The "Acquisition ID" is generated and entered for the connection between the acquisition component and the Energy Manager Server.

The figure below shows a correctly configured connection to the Energy Manager Server:



4.2 Configuring the acquisition component manually

Overview

The connection to the Energy Manager Server can be configured both with and without access to the Energy Manager Server . The connection to the Energy Manager Server is established when the configuration data are saved. If the Energy Manager Server cannot be reached, the configuration is saved locally. Upon restarting the Energy Manager acquisition configuration, the connection is restarted using the saved configuration.

Requirement

- The "Energy Manager Acquisition" software component is installed on the PC.
- Microsoft Internet Information Service (IIS) is installed on the PC.
- The PC is connected to the Energy Manager Server (optional).
- The "Hardware" object is set up on the Energy Manager Server.
- A user with the "Configure acquisition" authorization is set up on the Energy Manager Server.
- For communication via proxy:
  - A proxy server must be available in the network.
  - The URL and login data must be known.

Procedure

1. Start the web browser on the acquisition component and enter the following address:

   http://[COMPUTERNAME]/EnMPROAcquisition/Login.aspx
2. Log on with the operating system user under which Energy Manager was also installed.

   The "Status" page of the Energy Manager acquisition configuration is displayed.

   If the acquisition component is not yet logged in to a Energy Manager Server, select the "Manually configure connection" option in the "Configure the acquisition" dialog that is displayed.
3. Enter the following connection data in the "Settings" area:
   - Address and port of the Energy Manager Server
   - Energy Manager user name and password
   - Name of the "Hardware" object in Energy Manager

4. As needed, select "Configure proxy settings", and enter the following connection data depending on the configuration of the proxy server:
   - Address and port of the proxy server
   - User name and password
5. Save your entries.

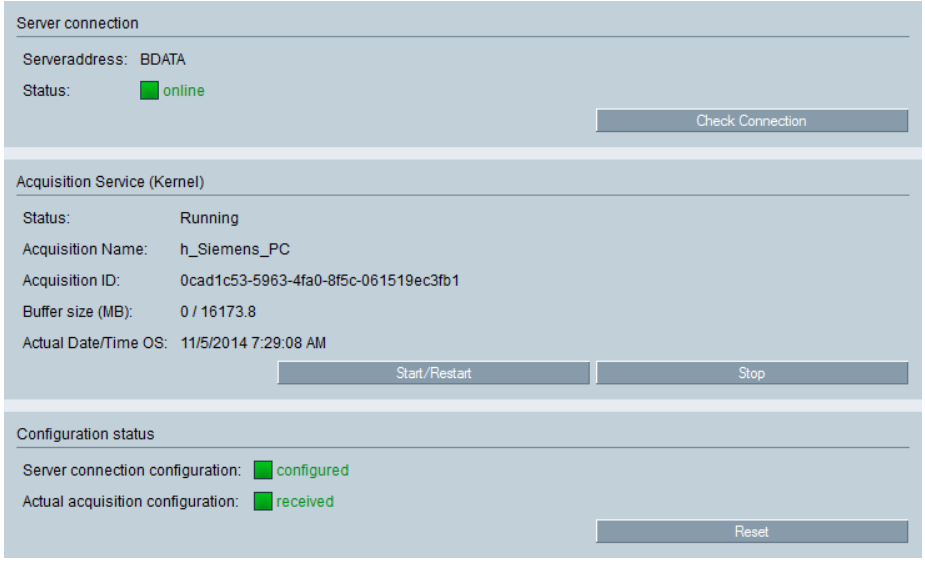
   Connection setup to the Energy Manager Server is started.

   If connection to the Energy Manager Server is not possible, your configuration is saved locally. Upon the next restart of the acquisition component, a connection will be attempted using the saved configuration. You can start the acquisition component once more by using "Start / Restart".

Result

The acquisition ID is generated and entered as soon as the Energy Manager Server can be reached. Connection setup is started again upon each restart of the acquisition component with the specified data. Provision of the acquisition configuration depends on the configured start delay time of the acquisition service.

The figure below shows a correctly configured connection to the Energy Manager Server:

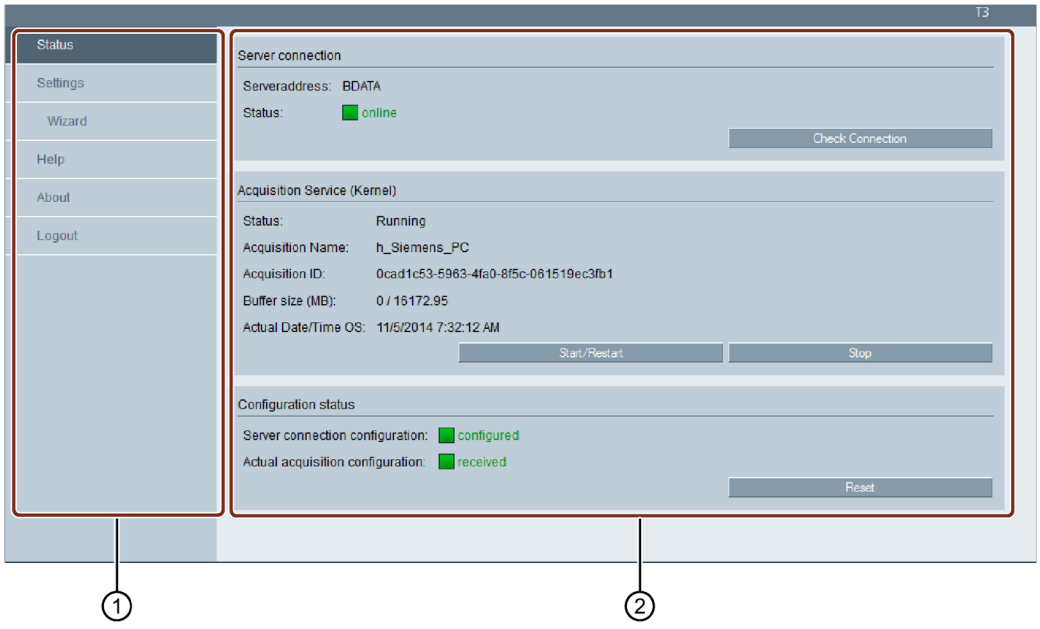


4.3 Managing the acquisition component

Overview

You use the web page of the acquisition component for the following tasks:

- Start or stop acquisition service
- Modify or reset the connection data
- Configuring a proxy server for the communication
- Execute the software update for the acquisition component



① Navigation area

② Display and configuration area. The content depends on the selection in the navigation area.

Requirement

- The Energy Manager configuration is displayed in the Web browser.
- The acquisition component is connected to the Energy Manager Server.

Start or stop acquisition service

1. Click "Status" in the navigation area.
2. Click the appropriate button.

If the acquisition service is stopped, data is not acquired.

Changing configuration settings

1. Click "Status" in the navigation area.
2. If you want to assign the acquisition component to another "Hardware" object, reset the acquisition service.
3. If you want to change the user data, stop the acquisition service.
4. Click on "Settings" or "Wizard" in the navigation area.
5. Enter the connection data.

Reset configuration settings

1. Click "Status" in the navigation area.
2. Click the appropriate button.

   The configuration settings of the acquisition component are deleted after confirmation. The acquisition component is not acquiring data any longer.
3. Log the acquisition component in to a Energy Manager Server again afterward.

Configuring a proxy server for the communication

1. Click "Status" in the navigation area.
2. Click "Configure proxy settings"
3. Depending on the configuration of the proxy server, enter the following connection data:
   - Address and port of the proxy server
   - User name and password

Updating acquisition software

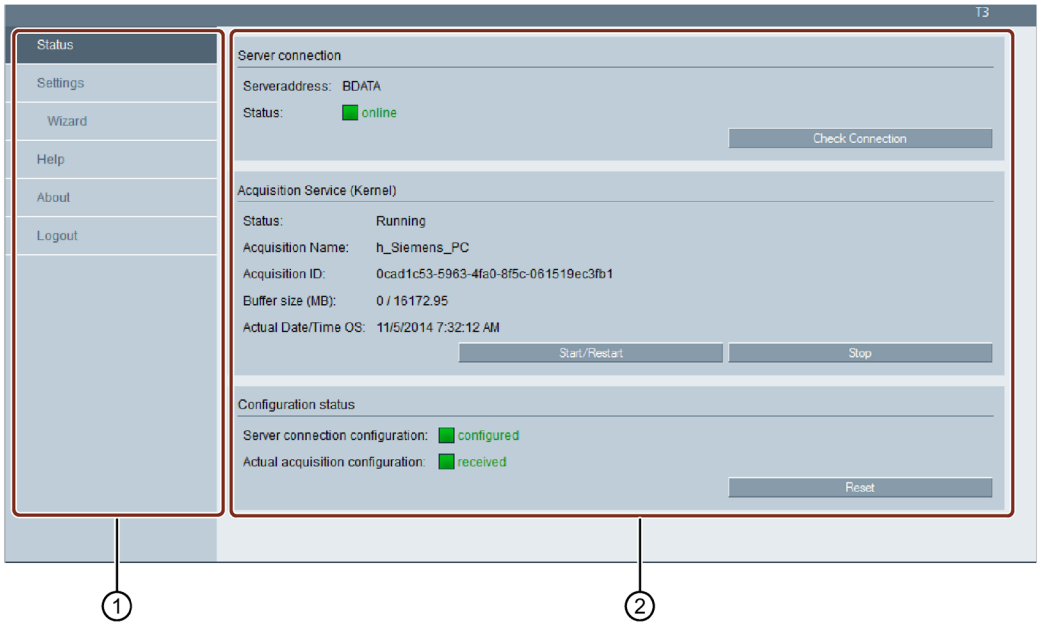
1. Click "About" in the navigation area.
2. Enter the path and file name of the setup file under "Software update", for example, "C:\Installation\Setup.exe".
3. Click "Update".

The acquisition service is stopped and the acquisition software is updated. The acquisition service is started once again when the installation is complete.

4.4 Areas in the Energy Manager acquisition configuration

Layout of the Energy Manager acquisition configuration

The figure below shows the layout of the Energy Manager acquisition configuration after login:

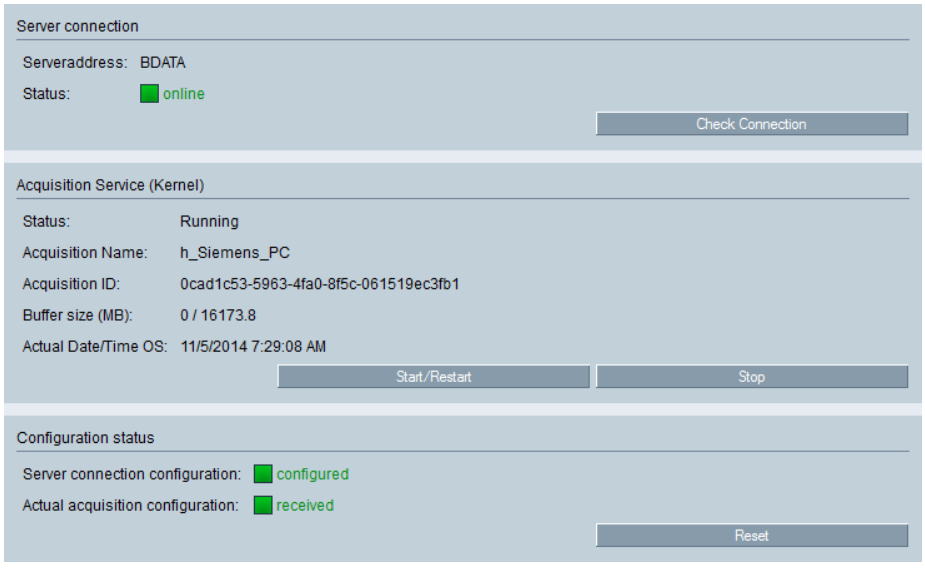


① Navigation area

- Status: Indicates the connection status of the acquisition component.
- Settings: Displays the current configuration settings.
- Wizard: Starts the wizard for input of the configuration settings.
- Help: Opens the documentation on the Energy Manager acquisition component in PDF format.
- About: Displays the installed software version. You can update the software version.
- Logout: Displays the login window of the Energy Manager acquisition configuration again.

② Display and configuration area. The content depends on the selection in the navigation area.

"Status" area

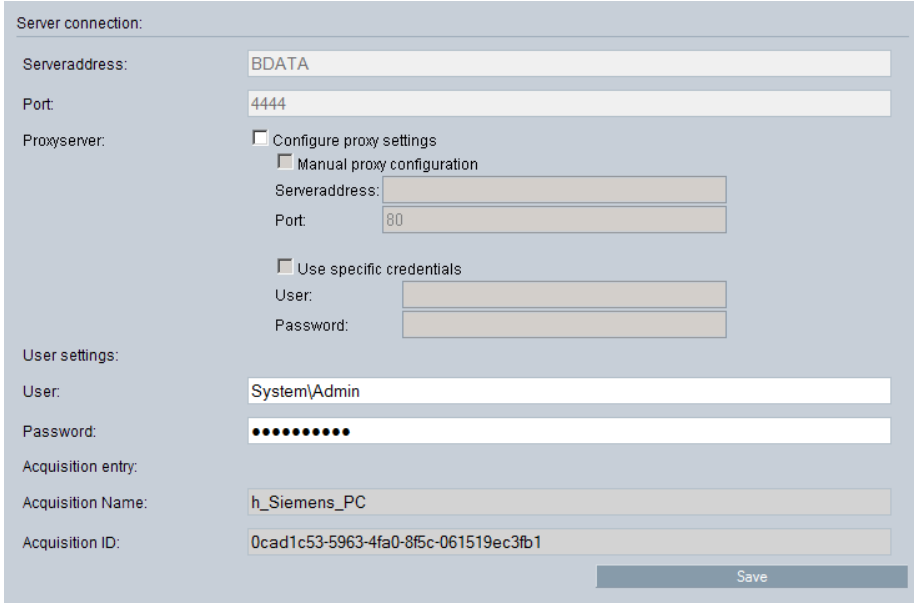


The "Status" area of the Energy Manager acquisition configuration consists of the following areas:

Area	Entry	Description
Server connection	-	-
	Server Address	Shows the name of the Energy Manager server.
	Status	Displays the status of the connection to the Energy Manager Server. The following statuses are possible: • Green/online: The acquisition component is connected to the Energy Manager Server. • Gray/offline: The acquisition component is not connected to the Energy Manager Server.
Acquisition Service (Kernel)	-	-
	Status	Indicates the acquisition state. The following statuses are possible: • Started: The acquisition has started and is running. • Stopped: The acquisition is stopped.
	Acquisition Name	Displays the name of the hardware object.
	Acquisition ID	Displays the acquisition ID which uniquely identifies the connection between the Energy Manager Server and the acquisition component.
	Current Date/Time OS	Shows the current date and time of the PC on which the acquisition is running.

Area	Entry	Description
Configuration Status	-	-
	Connection Configuration	Shows whether the connection to the Energy Manager Server has already been configured.
	Current Acquisition Configuration	Displays the status of the current acquisition configuration. The following statuses are possible: • Received: The acquisition configuration has been successfully synchronized with the Energy Manager Server. • Not Received: The acquisition configuration has not been successfully synchronized with the Energy Manager Server.

"Settings" area

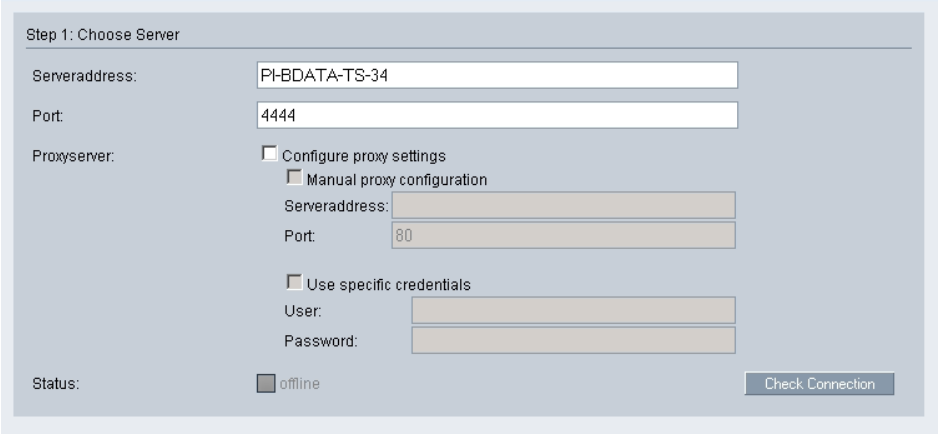


The "Settings" area of the Energy Manager acquisition configuration consists of the following areas:

Area	Entry	Description
Server	-	-
	Server Address	Shows the name of the Energy Manager server.
	Port	Shows the port of the Energy Manager server.
		Displays the status of the connection to the Energy Manager Server. The following statuses are possible: • Green/online: The acquisition component is connected to the Energy Manager Server. • Gray/offline: The acquisition component is not connected to the Energy Manager Server.
Proxy server	Configure proxy settings	Indicates whether a proxy server will be used for the communication. The following statuses are possible: • Use system proxy settings: The proxy server that is configured in the operating system will be used. • Manual proxy configuration: Proxy server is manually configured: The server address and port are required. The type of authorization depends on the proxy server that is used.
User settings	-	-
	Energy Manager PRO user name	Energy Manager user name
	Password	Password of the Energy Manager user (encrypted)
Acquisition entry	-	-
	Acquisition Name	Name of the "Hardware" object
	Acquisition ID	Uniquely identifies the connection between the Energy Manager Server and the acquisition component.

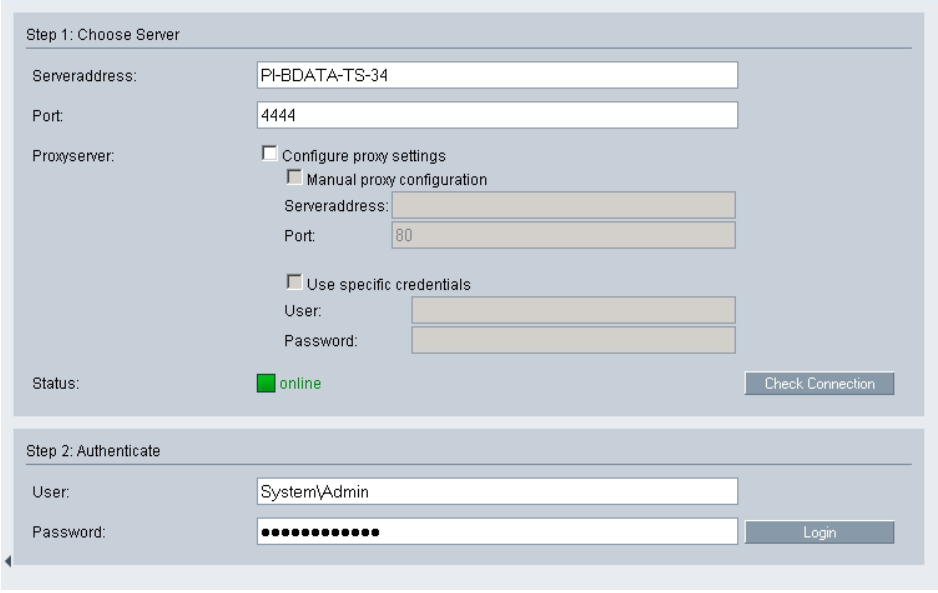
"Wizard" area

The "Wizard" guides you through three steps for logging the acquisition component in to the Energy Manager Server. To run the wizard, the acquisition component must be connected to the Energy Manager Server.



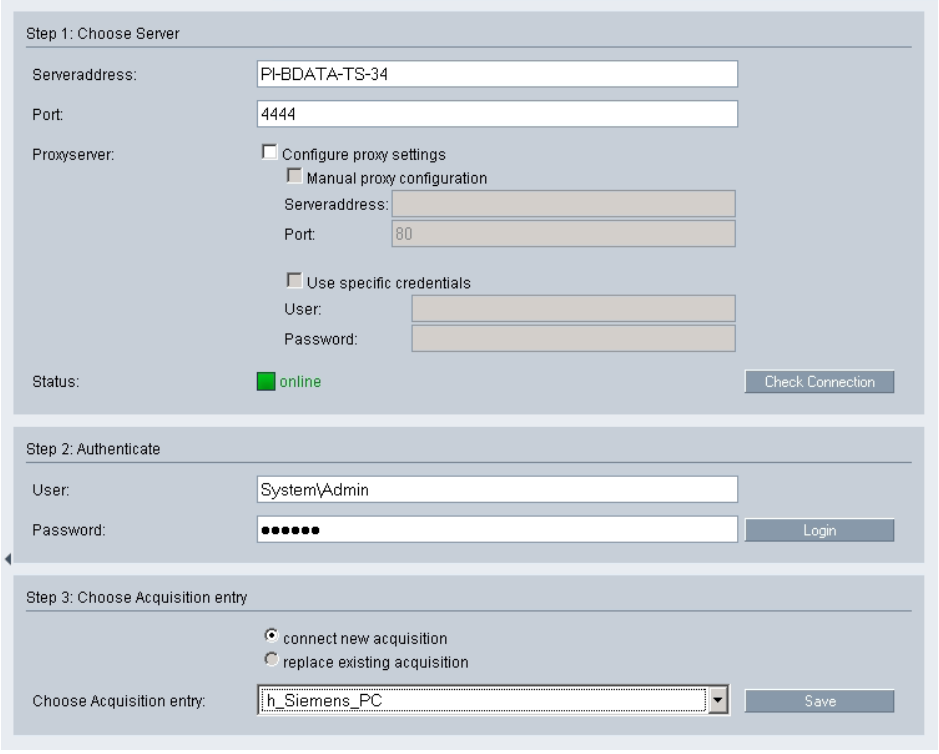
The area of the wizard in "Step 1" contains the following entries:

Entry	Description
Server Address	Energy Manager Server name
Port	Port number of the Energy Manager server
Proxy server	Activates configuration of a proxy server.
Status	Displays the status of the connection to the Energy Manager Server.
Test connection	Checks the connection between the Energy Manager Server and the acquisition component. The next step is only displayed when the check is successfully completed.



The area of the wizard in "Step 2" contains the following entries:

Entry	Description
User	Energy Manager user name
Password	Password of the Energy Manager user (encrypted)
Login	Registers the user in Energy Manager. The next step is only displayed when the login is successfully completed.



The area of the wizard in "Step 3" contains the following entries:

Entry	Description
Connecting new acquisition	Shows only the "Hardware" type objects configured in Energy Manager under "Select acquisition" that have not yet been connected to an acquisition component.
Replace existing acquisition	Shows all the "Hardware" type objects configured in Energy Manager under "Select acquisition".
Select acquisition	Assigns the acquisition component to the "Hardware" type object configured in Energy Manager. If you have enabled the "Replace existing acquisition" option, the existing assignment to this object is deleted.
Save	Generates the acquisition ID, which uniquely identifies the connection between the Energy Manager Server and the acquisition component.

"About" area

The "About" section of the Energy Manager acquisition configuration displays the software version installed on the acquisition component.

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