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Energy Analyzer: QA/S 1.16.1
Commissioning an Energy Actuator

GPG BUILDING AUTOMATION

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Department:	BA Engineering	Author:	Engineering Team BA/DESTO		
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Introduction

Measured values from the KNX bus can now be processed with the new device variant of the Energy Analyzer, the QA/S 1.16.1. This allows the Energy Actuator SE/S 3.16.1 to be conveniently integrated into this web-based system. This means that you can not only collect and save but also analyze and display the Energy Actuator's consumption and instantaneous values.

The SE/S is available for the Energy Analyzer exclusively as an overall metering point for the detailed recording of all consumption figures (**Analytics -> Historical Data**). That means that it is not possible to distinguish between Channels A, B and C for this type of evaluation.

However, the instantaneous values (e.g., current, voltage) from the individual channels can be visualized using the widget function in the dashboard. The Energy Actuator's Channel A is used in this document as an example of this.
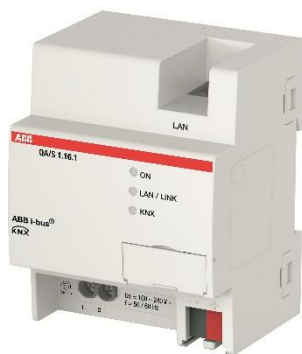
Fig. 1 Energy Analyzer QA/S 1.16.1   Fig. 2 Energy Actuator SE/S 3.16.1

Objectives of the document

This document is designed to help you correctly commission an Energy Actuator (SE/S 3.16.1) and the Energy Analyzer (QA/S 1.16.1). We explain the necessary parameterization for the two devices step by step.

Content

Before the Energy Analyzer QA/S can be prepared or parametrized to display the desired ABB meter (here: SE/S), the settings must first be made in the Energy Actuator SE/S itself. It is essential that these settings are made, as otherwise it is <u>not</u> possible to ensure that the measured values can be recorded and displayed in the QA/S.

Note:
The parameter settings displayed below are intended only as an example. They enable smooth communication between the SE/S and QA/S.

SE/S parameters

Fig. 3 SE/S ETS parameters

1: Recommendation (optional): Enabling the "In operation" object. This group object is used to monitor the presence of the Energy Actuator on the KNX bus. Cyclical monitoring ensures that the SE/S regularly sends the recorded meter data to the Energy Analyzer. We also recommend that you adjust this cycle time to the sending cycle time of the object of the same name in the QA/S (Fig. 9).

2: Recommendation (optional): The object "Request status values" provides valuable information, such as measurement circuit active.

3: Adjust the sending cycle time to the data capture of the QA/S (every 5 minutes).

SE/S parameters

Fig. 4 SE/S ETS parameters

4+5: The historical data in the QA/S is calculated and recorded on the basis of the object "Meter reading total". For that reason, the sending cycle time <u>must</u> also be adjusted to the data capture in the QA/S (every 5 minutes) in addition to enabling the object.

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SE/S parameters

Fig. 5 SE/S ETS parameters

6: For the sake of simplicity, the total meter should send its values cyclically so that the QA/S can always record and calculate up-to-date data.

As previously mentioned, we also want to display individual values from Channel A on the dashboard. To do so, the desired instrument and power values in the application of the SE/S must be enabled accordingly.

Tip: It is wise to send the values cyclically here, too.

Now let's take a look at the SE/S group objects.

The necessary objects for smooth operation with the QA/S and to ensure the data logging in **Analytics -> Historical Data** are marked in yellow.

Note: As soon as nominal voltage is applied to at least one SE/S output, the measurement circuit will be active.

The optional instrument and power values to later be displayed on the **dashboard** are marked in green.

0	System	In operation	SE/S in operation	8/3/0	1 bit	K	- -	Ü	-
4	General	Request status values	Request status	8/3/1	1 bit	K	- S	-	-
8	General	Receive time			3 bytes	K	- S	-	-
9	Diagnose	Measurement circuit active	Measurement circuit active	8/3/2	1 bit	K	L -	Ü	-
31	Meter total	Meter reading	Meter total	8/3/3	4 bytes	K	L -	Ü	-
32	Intermediate meter total	Meter reading			4 bytes	K	L -	Ü	-
33	Intermediate meter total	Status			1 byte	K	L -	Ü	-
34	Intermediate meter total	Receive trigger 1			1 bit	K	- S	-	-
35	Intermediate meter total	Receive trigger 2			1 bit	K	- S	-	-
37	Active power total	Active power	Active power total	8/3/4	4 bytes	K	L -	Ü	-
44	Frequenz	Frequency	Frequency	8/3/5	4 bytes	K	L -	Ü	-
51	Diagnostics	Frequency error			1 bit	K	L -	Ü	-
60	A: Schalten	Switch	Channel A: Switch	8/3/6	1 bit	K	- S	-	-
62	A: Diagnostics	Status byte			1 byte	K	L -	Ü	-
71	A: Contact	Contact monitoring			1 bit	K	L -	Ü	-
74	A: Meter	Meter reading	Channel A: Meter reading	8/3/7	4 bytes	K	L -	Ü	-
75	A: Intermediate meter	Meter reading			4 bytes	K	L -	Ü	-
76	A: Intermediate meter	Status			1 byte	K	L -	Ü	-
77	A: Intermediate meter	Receive trigger 1			1 bit	K	- S	-	-
78	A: Intermediate meter	Receive trigger 2			1 bit	K	- S	-	-
82	A: Active power	Active power	Channel A: Active Power	8/3/8	4 bytes	K	L -	Ü	-
89	A: Current	Current value	Channel A: Current	8/3/9	4 bytes	K	L -	Ü	-
96	A: Voltage	Voltage	Channel A: Voltage	8/3/10	4 bytes	K	L -	Ü	-

Fig. 6 SE/S group objects view

After successful commissioning of the SE/S, the QA/S 1.16.1 now needs to be adjusted.

QA/S parameters

Fig. 7 Overview of parameters

1: Selecting the desired meter/actuator-> SE/S.

2 – 4: In order to clearly identify the meter, we recommend that you directly enter the meter name, place of installation and the serial number or meter number in these fields. This information will then appear in the WebUI, which will simplify the subsequent commissioning and the evaluation of the recorded meter data.

5: If you decide on cyclical monitoring (Fig. 3), the "In operation" group object must be enabled in the QA/S as well as in the SE/S. We also recommend that you adjust this cycle time to the sending cycle time of the object of the same name in the SE/S.

Fig. 8 SE/S group object "In operation"

Note: As the QA/S calculates and records data every 5 minutes, a shorter cycle time should be selected for the "In operation" object so that the data recorded are also always up to date.

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Let's take a look at the compatible group objects of the QA/S that are now activated.

131	Meter 2: SE/S	In operation	SE/S in operation	8/3/0	1 bit	K	L	S	Ü	A
135	Zähler 2: SE/S	Request status values	Request status	8/3/1	1 bit	K	L	-	Ü	-
136	Zähler 2: SE/S	Measurement circuit active	Measurement circuit active	8/3/2	1 bit	K	-	S	Ü	A
141	Zähler 2: SE/S	Meter reading	Meter total	8/3/3	4 bytes	K	-	S	Ü	A
142	Zähler 2: SE/S	Active power	Active power total	8/3/4	4 bytes	K	-	S	Ü	A
143	Zähler 2: SE/S	Frequency	Frequency	8/3/5	4 bytes	K	-	S	Ü	A
151	Zähler 2: SE/S	A: Meter reading	Channel A: Meter reading	8/3/7	4 bytes	K	-	S	Ü	A
152	Zähler 2: SE/S	A: Active power	Channel A: Active Power	8/3/8	4 bytes	K	-	S	Ü	A
153	Zähler 2: SE/S	A: Current	Channel A: Current	8/3/9	4 bytes	K	-	S	Ü	A
154	Zähler 2: SE/S	A: Voltage	Channel A: Voltage	8/3/10	4 bytes	K	-	S	Ü	A
155	Zähler 2: SE/S	A: Apparent power	Kanal A: Scheinleistung	8/3/11	4 bytes	K	-	S	Ü	A
156	Zähler 2: SE/S	A: Power factor	Kanal A: Leistungsfaktor	8/3/12	4 bytes	K	-	S	Ü	A

Fig. 9 QA/S group objects view

In addition to the aforementioned object "In operation", two other objects also play an important role.

1. "*Measurement circuit active*": Must be connected to the SE/S object "Measurement circuit active"; it is **imperative** that it is <u>active</u>.

9	Diagnose	Measurement circuit active	Measurement circuit active	8/3/2	1 bit	K	L	-	Ü	-

Fig. 10 SE/S group object "Measurement circuit active"

➔ The object "Request status values" mentioned in Fig. 1 can be used to manually request the status of the SE/S measurement circuit.

2. "*Meter reading*": In order to record the historical data, it is essential that this object is also linked to the SE/S remote terminal.

All other objects are optional. Values such as current, voltage and frequency are examples of what are known as instantaneous values and are displayed by the widgets on the dashboard (taken from Channel A in this example).

Once the application has been successfully downloaded, this configured meter can then be set up in the metering structure.

To do so, you must be logged in as an admin.

When you are logged into the WebUI of the Energy Analyzer, we recommend that you carry out the metering structure manually. This will allow you to individually arrange buildings and stories, etc. We recommend that you adjust the meters' place of installation to this structure.

A node (virtual meter) must then be set up; in this example it is My Building.

Once this step is complete, up to 16 meters (metering points) can belong to the node.
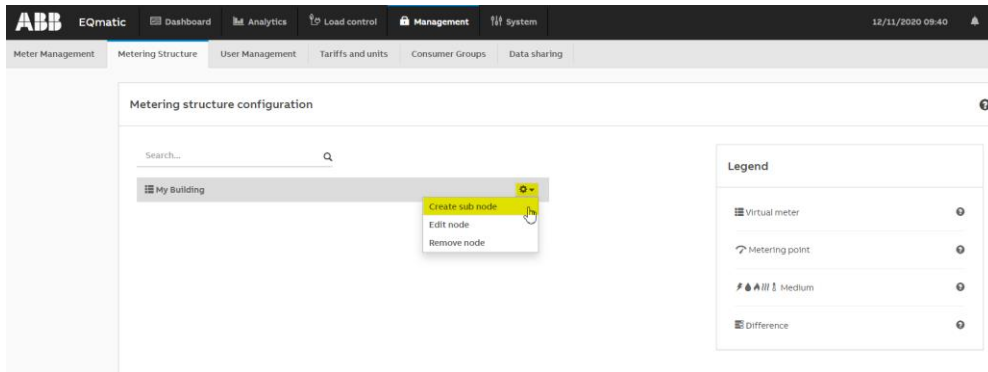
1. Creating a metering point

Fig. 11 WebUI: Setting up metering structure

2. Assigning desired meters from the device list
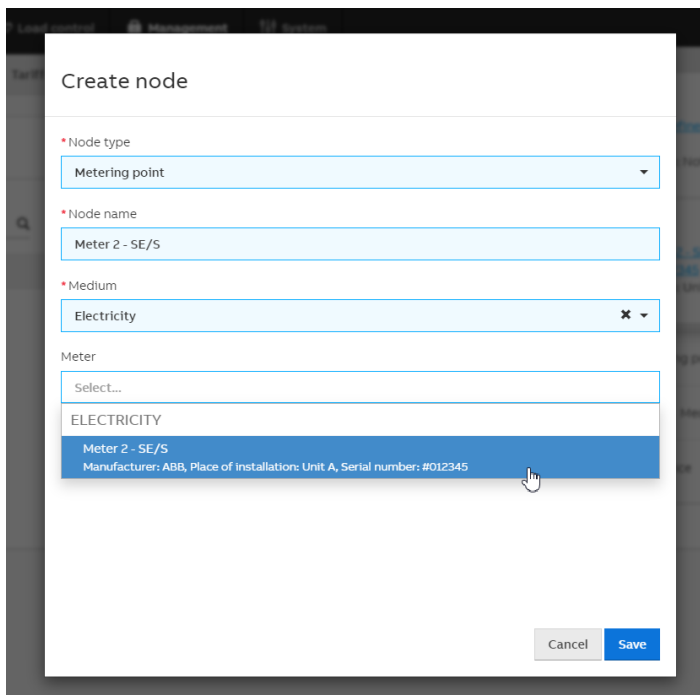
Fig. 12 WebUI: Setting up metering point

Note: The selection of the meters from the device list is dependent on the relevant medium. In this example (where electricity has been selected), it is the previously configured meter (SE/S) with all the information that was pre-stored in the ETS.

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Caution:

Only when communication is present between the QA/S and SE/S (Status = Normal) can the meter be selected from the device list.
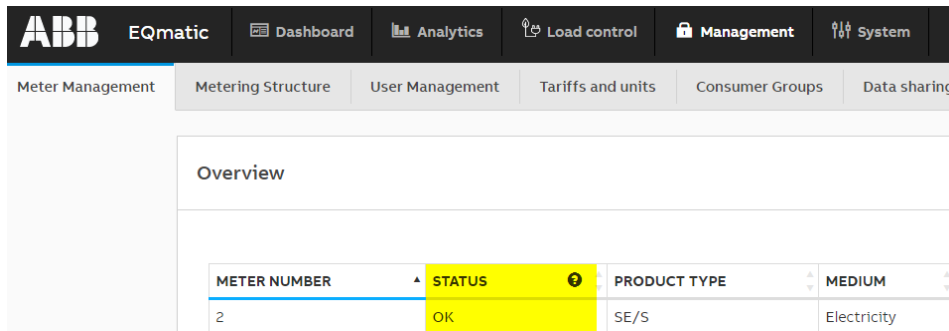

Fig. 13 Device overview / status

If this is not the case, please check the previous steps once again. Depending on the source of the error, the status will then be displayed as follows:

- NOT CONFIGURED
- ERROR
- DISCONNECTED

Assistance in fixing the cause of the fault will be supplied directly in the WebUI. To view it, move the pointer over the ❷ button.

3. Selecting the consumer group and tariff

If the user has already set up their own consumer groups or tariffs in advance, these can also be selected here straight from the relevant drop-down menu.
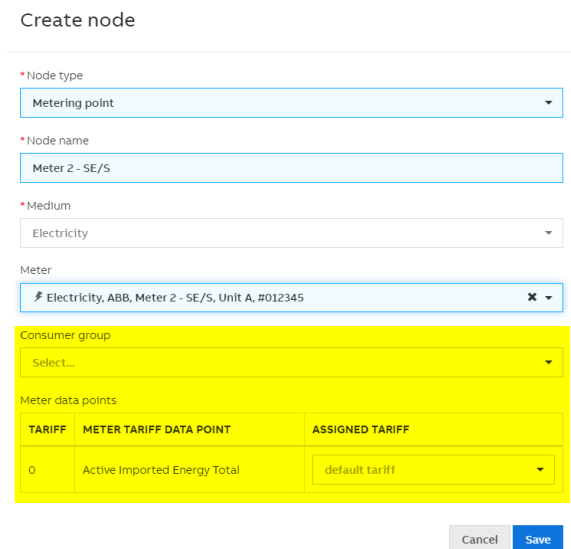

Fig. 14 WebUI: Selecting the consumer group and tariff

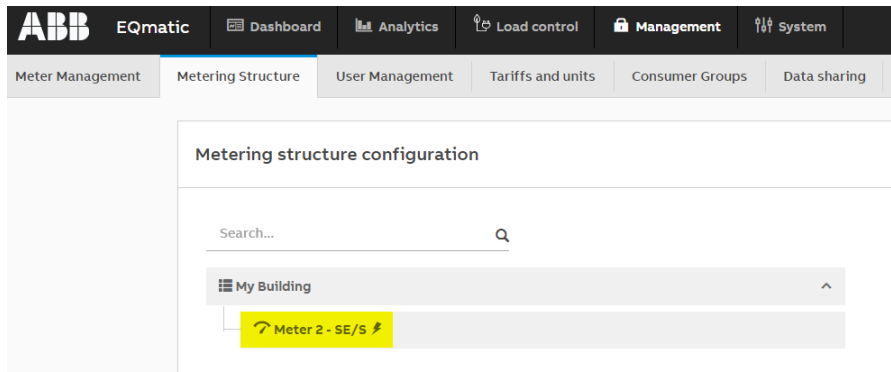|	
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4. Metering structure view

Fig. 15 WebUI: Metering structure view

As soon as the structure has been set up and the meter is correctly stored, the Energy Analyzer collects the desired data, which can be displayed and processed further in the analysis and/or the dashboard.

As previously mentioned in the introduction, the QA/S can display only the combined SE/S metered values. The instantaneous values such as voltage, current, etc. from the various channels can be displayed by the widgets on the dashboard.

How to set up widgets on the dashboard

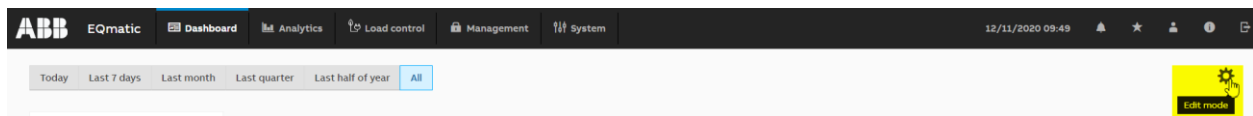1. Activate "Edit" mode in the top right of the "Dashboard" page in the WebUI.
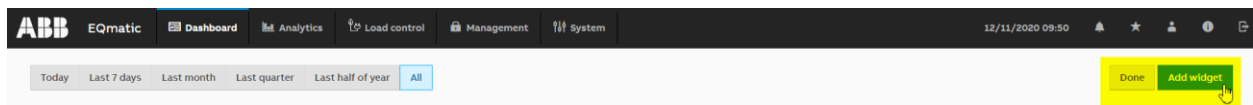

Fig. 16 QA/S Dashboard

2. Click on "Add widget".

Fig. 17 QA/S Dashboard
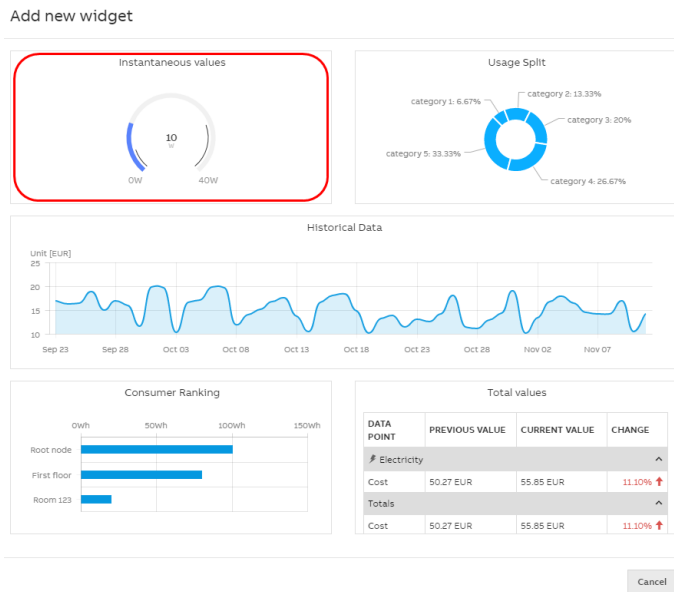
3. Select desired widget.

Fig. 18 QA/S Dashboard

Note: In addition to the mandatory "Instantaneous values" widget, there are another four display options available. However, these relate to the metering point or node, meaning they consider the entire SE/S rather than the individual Channel A that is desired.

4. Configure the "Instantaneous values" widget and then click "Save".

Fig. 19 Configuring the "Instantaneous values" widget

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…after successful configuration of two widgets (here: Active energy and Voltage L1/Channel A).
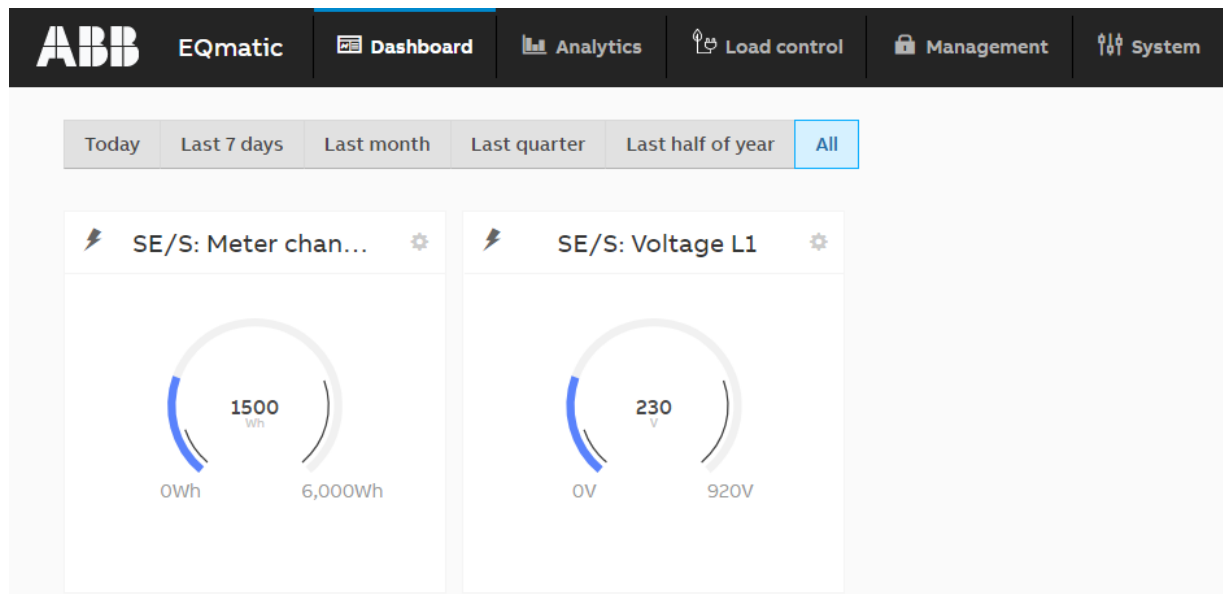

Fig. 20 Dashboard view

With these step-by-step instructions, smooth operation between QA/S and SE/S can be established. You can find more valuable tips & tricks about the energy analyzer but also about other ABB KNX products at …

References to other documents

- FAQ Home and Building Automation

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