



PCD7.D457VT5E0

E-Monitor 5.7" Web Panel

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0.1 Document history

Version	Published	Changed	Comments
EN01	2014-08-22	Document published	New Document
ENG02	2015-12-02	Chapter 6.2 and A2	New energy meters have less different baud rates to select

0.2 Trademarks

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1 Quickstart

1.1 SBC Energymanagement

SBC S-Monitoring is a system made for the recording, visualisation, storage and transport. Through the transparency, consistency and simplicity of the web and IT technology of S-Monitoring, every user in a property becomes a manager for the consumption of water, electricity, gas, heat, etc.

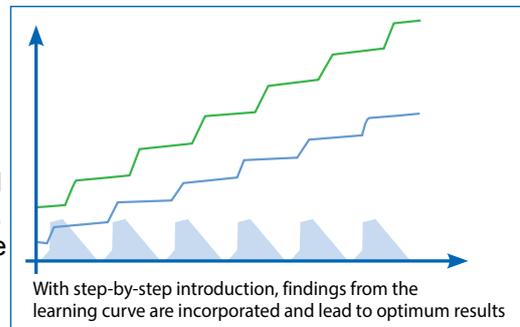


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Anyone can see all the data relevant to them and can influence it from anywhere and at any time. This means that substantial long-term improvements in efficiency are possible without any expensive and time-consuming investment projects. Increased awareness and responsibility eliminates energy wastage.

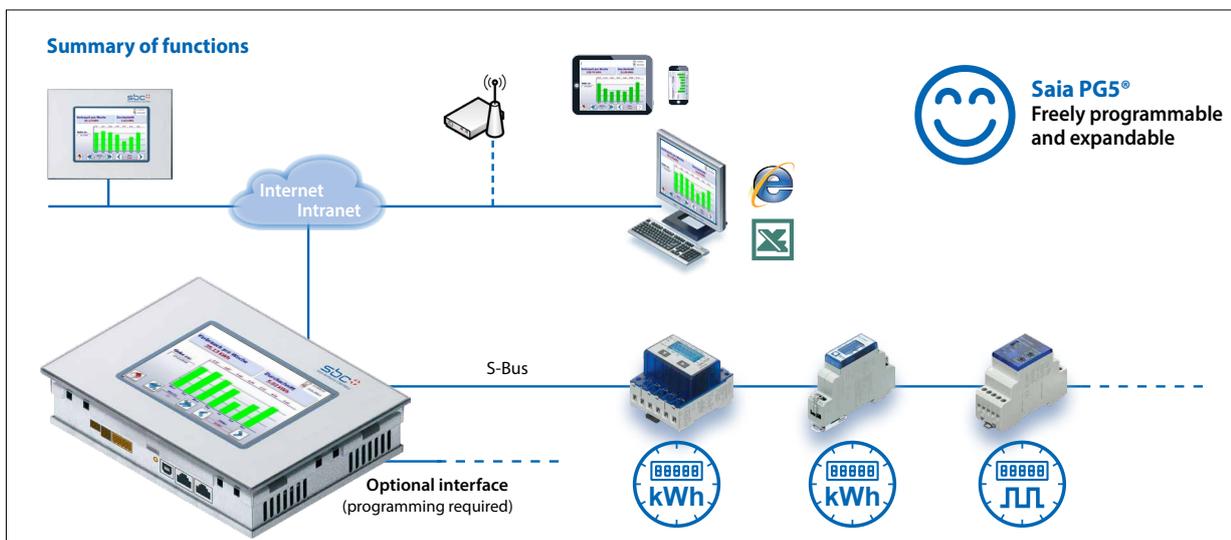
Continuous optimisation in calculable steps

Sustainable resource management means being able to continuously gain insight in a changing environment. The optimal solution is different for every business, and needs to be developed with careful consideration. S-Monitoring supports a cautious approach in small, controllable steps and begins at the very foundation. Using cost-efficient, easy to install components, the entry into resource management can be achieved without external help. First results can already be seen after just a few days and these lay the groundwork for the next stages of optimisation. The investment risk is negligible and is limited to each individual development stage.



Further information is available at <http://www.saia-pcd.com/en/energy-management/>

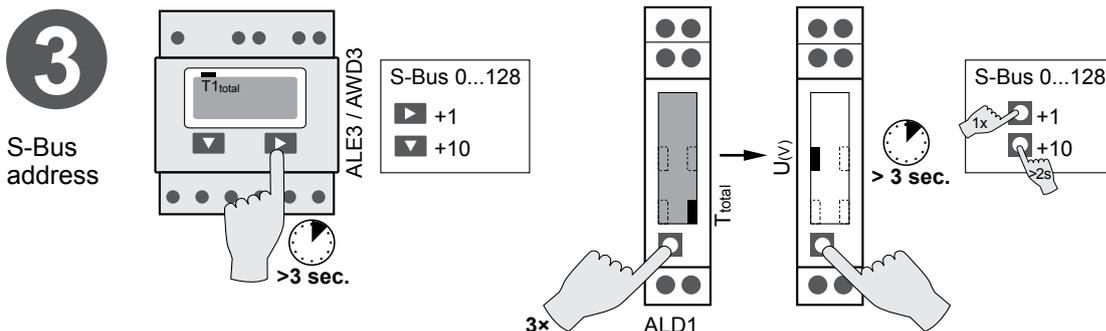
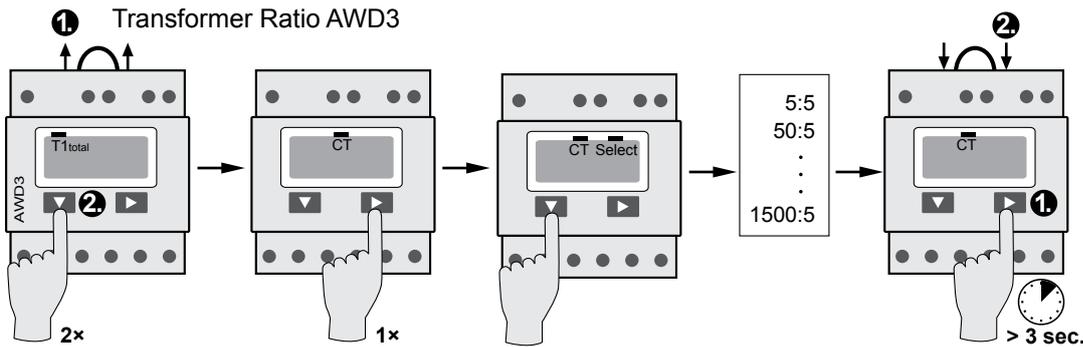
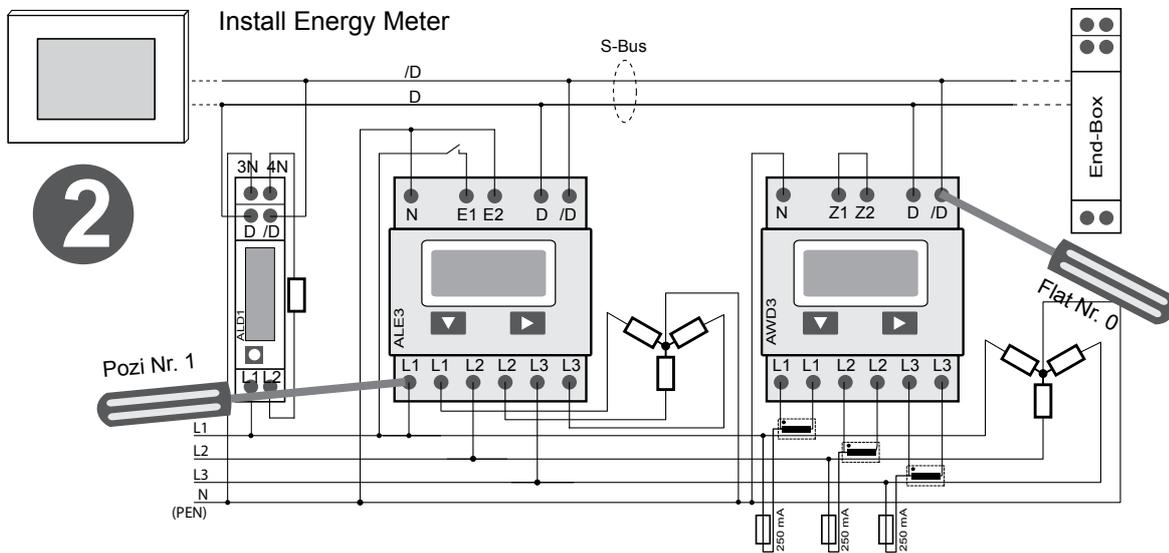
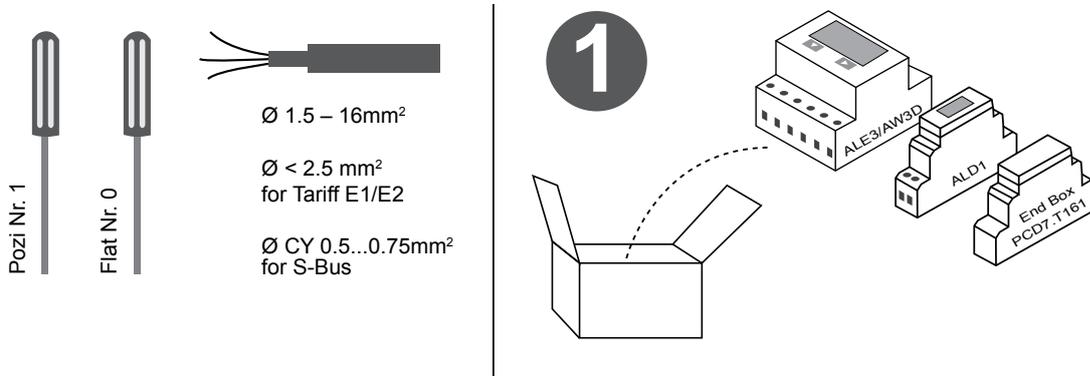
The PCD7.D457VT5E0 E-Monitor Web Panel allows a smooth start to collect and monitor energy consumption.



1.2 Installing the energy meter

Install the S-Bus energy meter as shown in the following diagrams.

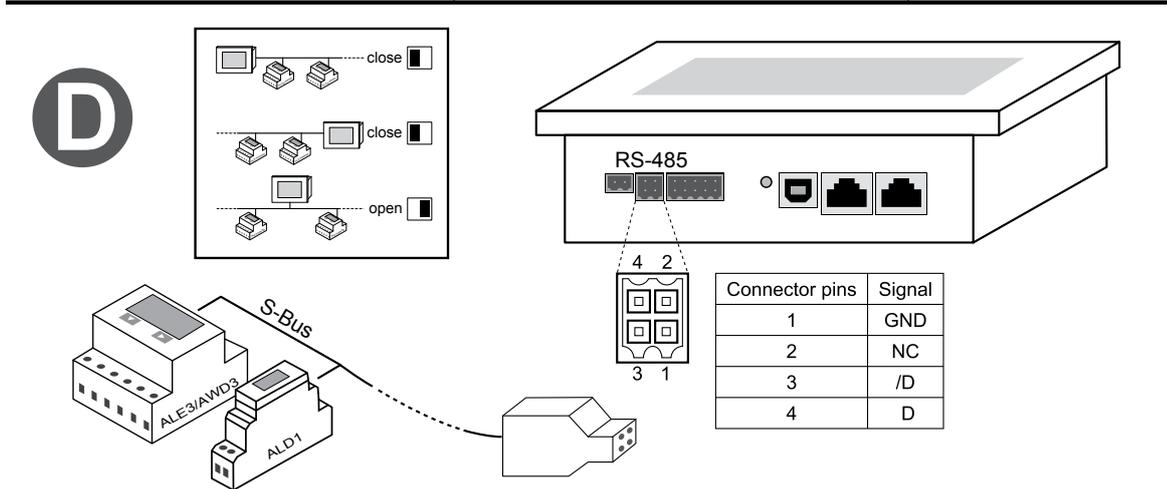
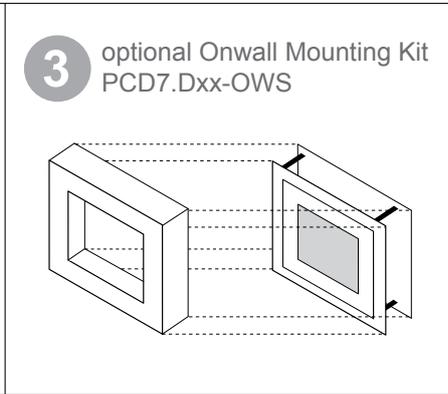
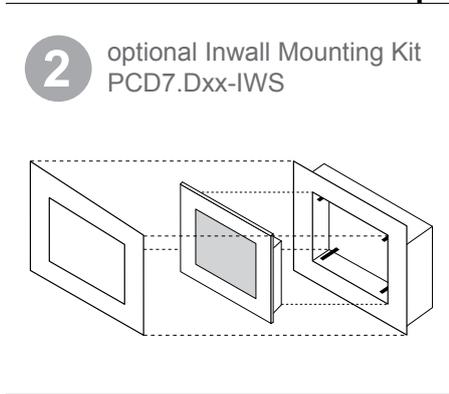
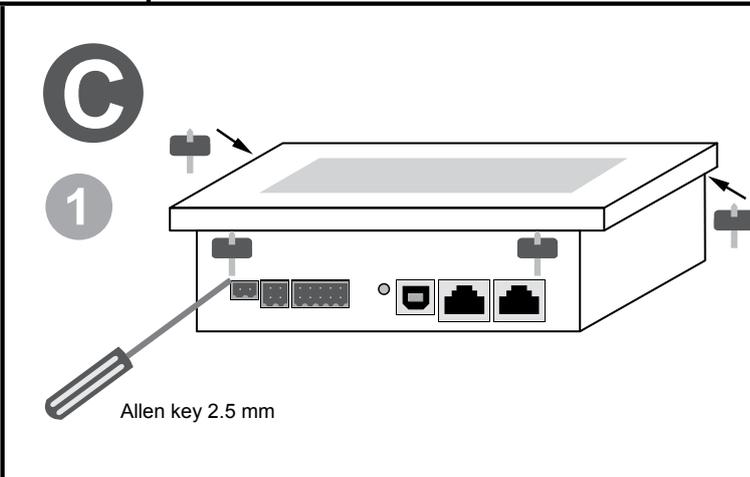
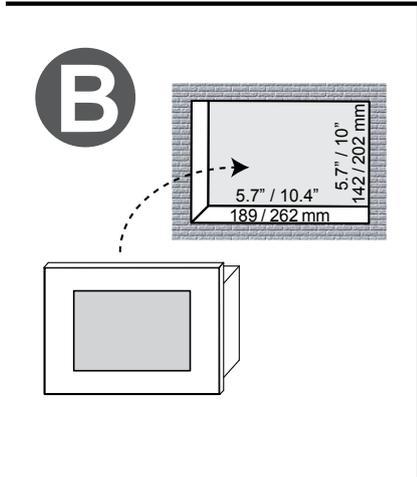
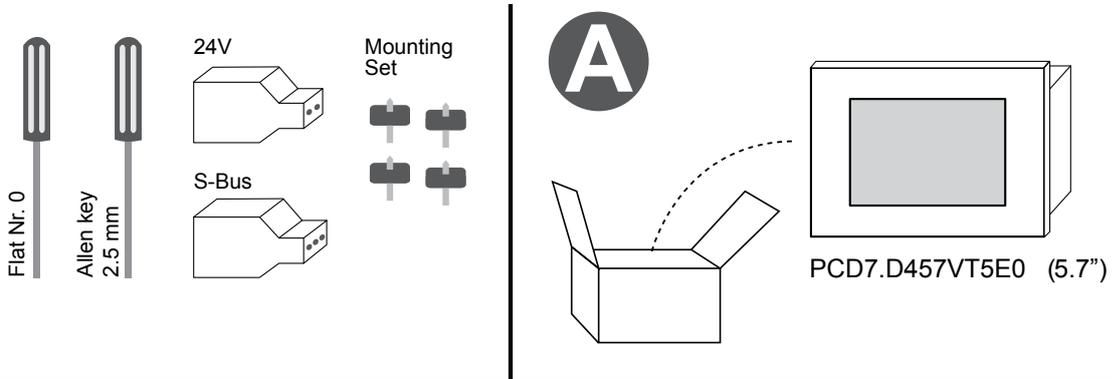
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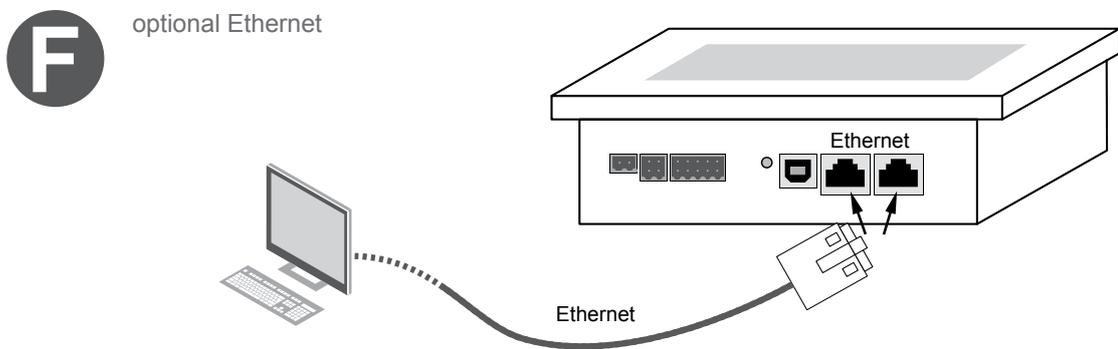
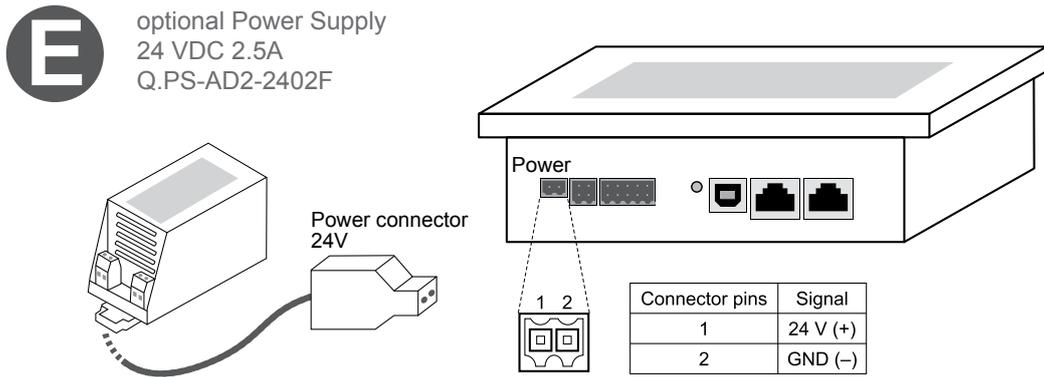
1.3 Installing E-Monitor Panel

Install the E-Monitor Panel as shown in the following diagrams.

1



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After connecting on power supply, an automatic search run (scan) of the connected S-Bus network is carried out immediately following a short initialization.

The E-Monitor panel enables up to 4 instances of web access (clients) simultaneously. If at least one session is available, the panel starts automatically. If no session is available, the panel waits until a session becomes available.

A wizard appears amending the FTP server password. As long as the default passwords have not been changed, the access to the data in the E-Monitor Filesystem will be protected!

1

S Monitoring
 FTP - Server password
 [Protection of access from public network]

User name: User

Current password: ***** ❌

New password: ***** ❌

Repeat password: ***** ❌

User name: User
 Default password: 12345678

S Monitoring
 FTP - Server password
 [Protection of access from public network]

User name: User

Please wait

Repeat password: ***** ❌

S Monitoring
 FTP - Server password
 [Protection of access from public network]

User name: User

Password has been adopted and is actively

Repeat password: ***** ❌



The measures above improve the security of the device. However, these are protection functions which programmers with high-level IT knowledge may still be able to overcome. Therefore, PCD controllers and Web Panels should be connected to the Internet only behind a router or proxy server with a firewall and a protected Virtual Private Network (VPN).

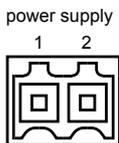
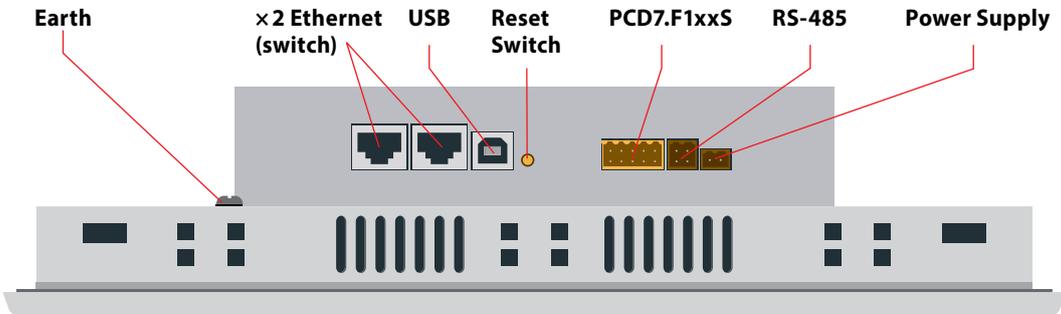


If user name or password is lost, the user configuration has to be downloaded from Saia PG5®!

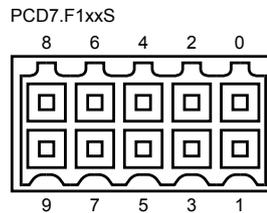
1.4 Definition of the connectors



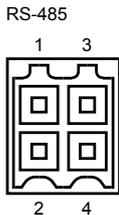
Protective earth must be connected!



Connector pins	Signal
1	24 V (+)
2	GND (-)



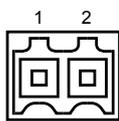
Connector pins	Signal RS-232	Signal RS-485
0	GND	GND
1	TXD	D
2	RXD	/D
3	RTS	
4	CTS	
5	GND	GND
6	DTR	
7	DSR	
8	COM	
9	DCD	



Connector pins	Signal
1	GND
2	NC
3	/D
4	D

- Power supply** Earth (-) / 24V (+) Connector, 2-pole
- Communications** 2x ethernet (switch!) 2x RJ 45 with LED indicator
- USB Standard USB slave
- Reset button** Pushbutton

1.5 Voltage supply of the panel



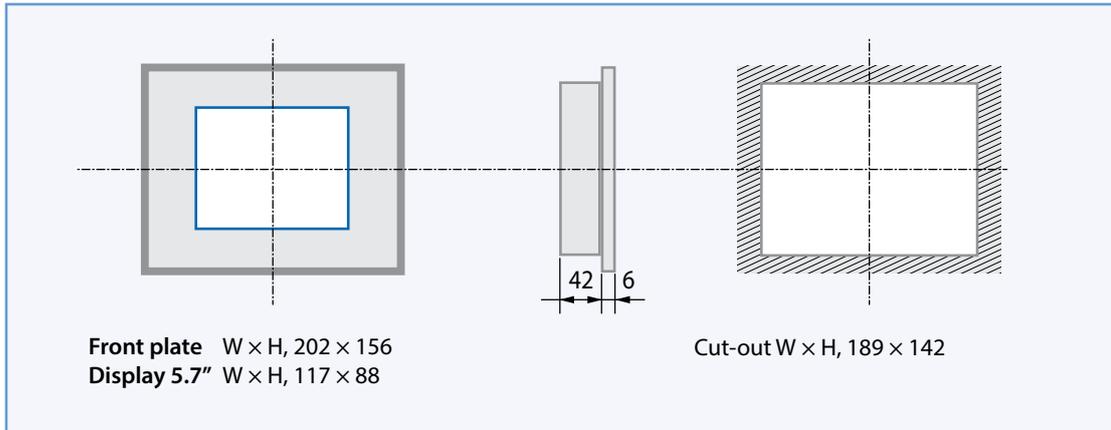
Pin	Signal
1	24 V (+)
2	Earth (-)

- Current supply:**
- ➔ 24 VDC +30% / -20%
- or
- ➔ 19 VAC ±15% current supply with full-wave rectifier

	Current consumption:	Power output without backlight
PCD7.D457VT5F	max 500 mA	5 W

Current supply with jack plug for cable of max. 1.5 mm².

1.6 Dimensions and cut-out (in mm)



1

1.7 Drywall mounting set for MB panels

The MicroBrowser panels are not just for mounting in the control cabinet; they also look very good in the office or living room, or mounted on a wall. This is why we provide wall mounting kits for solid and cavity wall mounting.

5.7 inch / 7 inch

In-wall mounting
PCD7.D457-IWS2

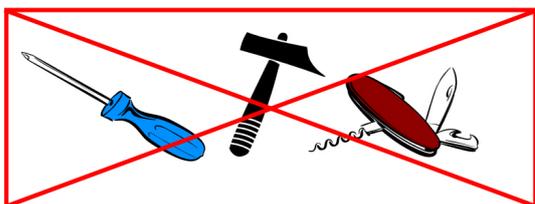
On-wall mounting
PCD7.D457-OWS2

Cut-out B × H, 270 × 211
 Minimum depth
 For solid walls 75 mm
 For cavity walls 65 mm

More information see SBC system catalogue.

1.8 Operation and handling of the touchscreen

To operate the touchscreen, use only your finger, the stylus or a soft finger stylus. Do not use sharp tools (e.g. sharp metallic objects, paperclips or a screwdriver, etc.)



2 S-Monitoring Application

2.1 Basic functions

The energy monitoring function features an intuitive user interface that provides consumption values such as electrical output, activity and costs in informative diagrams. The function also writes the captured values to a CSV file that can be read in Excel and which can be conveniently transmitted to a PC via FTP. Connected meters and gateway modules for pulse counters are detected automatically and displayed in the user interface.

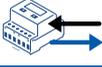
With the S-Monitoring function, one can thus get a better understanding of and gradually optimize consumption at company properties.

The S-Monitoring function can read three different types of meters:

- Connected S-Bus energy meters and pulse counters (PCD7.H104SE)
- Groups of meters
- Other incremental meter values (M-Bus, Modbus, etc. are referred as “custom counters” and needed to program with Saia PG5®)

2.1.1 Overview

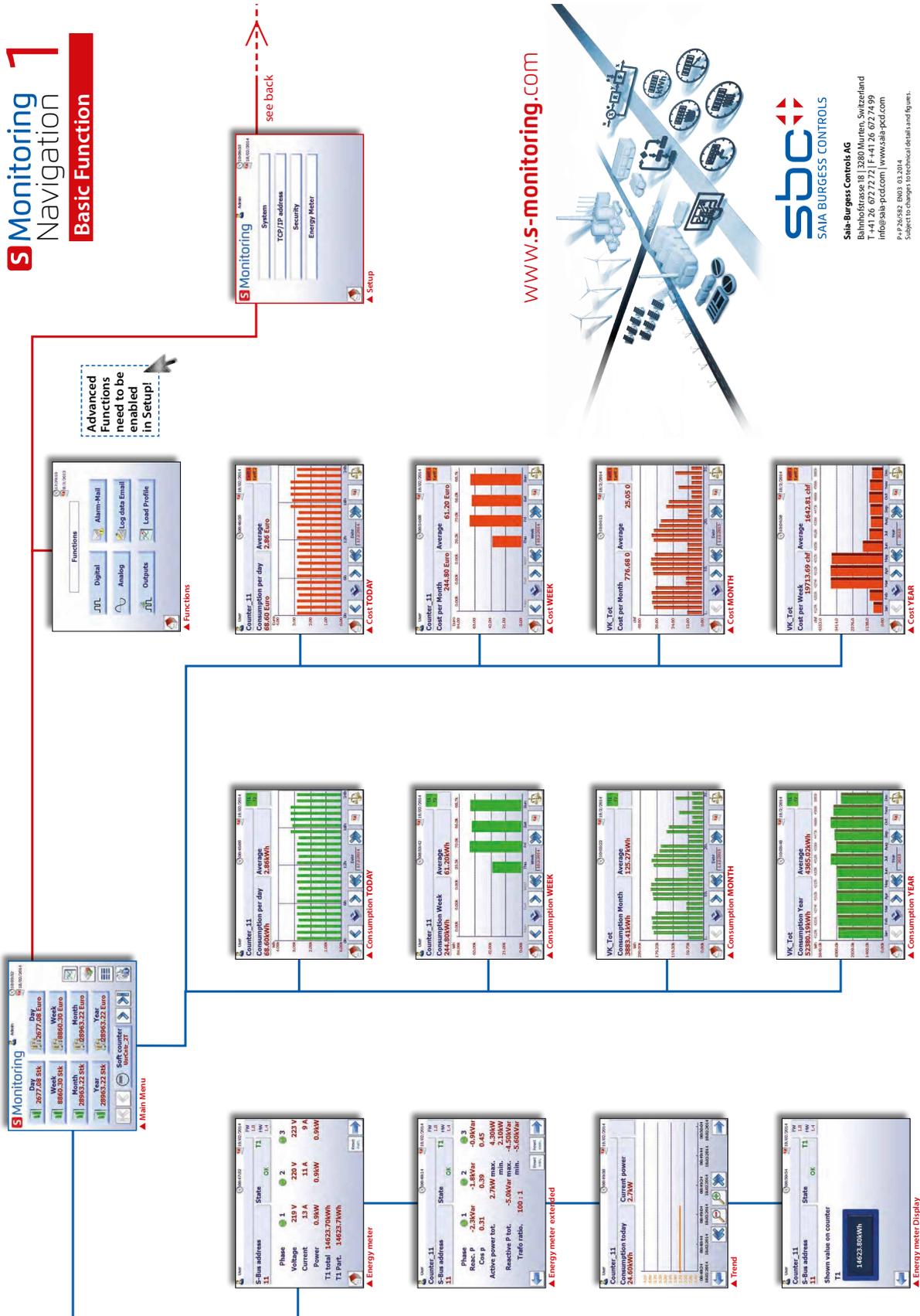
General overview of the S-Monitoring basic functions:

Capturing of energy values	
 Automatic detection of connected energy meters	 Display of the energy meter status
 Grouping of the energy meters	 Comparison between meters and periods
 Connection of bidirectional meters	 Connection of H104SE coupler modules (for S0 meters)
Presentation and evaluation of energy values	
 Current meter readings such as consumption, voltage, current, active and reactive output and cosφ	 Evaluation and presentation of the costs
 Visualisation in bar charts and trend diagrams	 Consumption and costs presentation per day/week/month/year ¹⁾
 Data storage in Excel-readable CSV files	
Remote access via network and Internet	
 Operation at the PC with standard browser (IE, Chrome, Firefox)	 Operation via smartphone and tablet
 Access to log data and web project with FTP	 Integrated USB port for update and maintenance
User support	
 User administration with up to 2 user levels	 User interface in several languages

¹⁾ Daily view only available if memory extension is plugged in

2.1.2 Web Application Basic Mode

More information in document 26-582

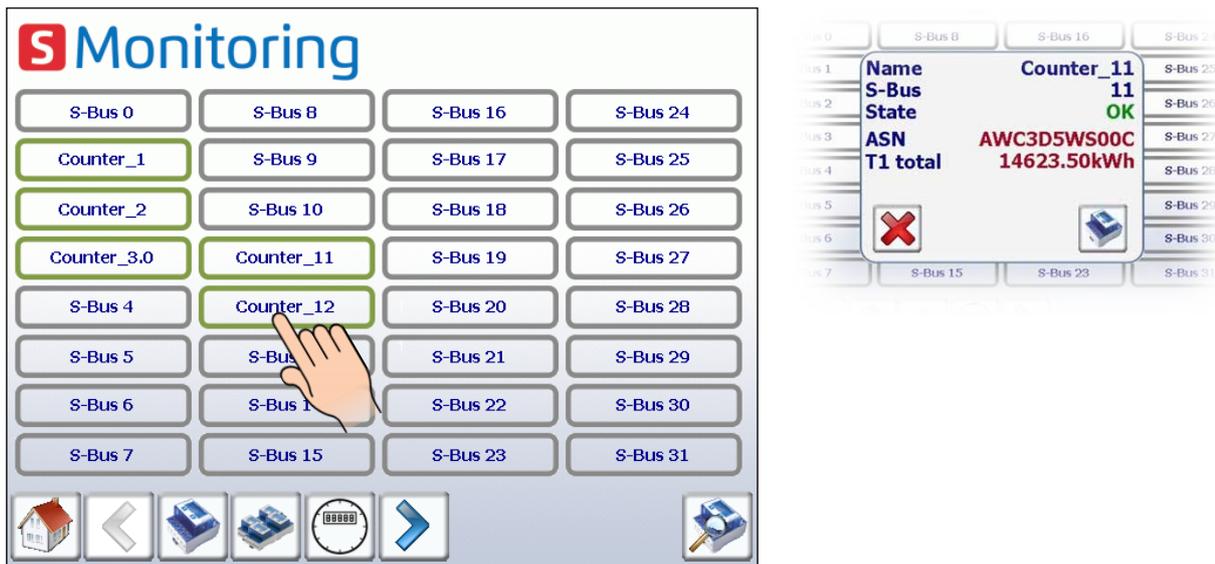


2.1.3 Easy navigate with counter summary list

The counter summary list provides an excellence overview and an easy navigation between connect-ed meters. Access the summary list direct from home page by pressing button below.



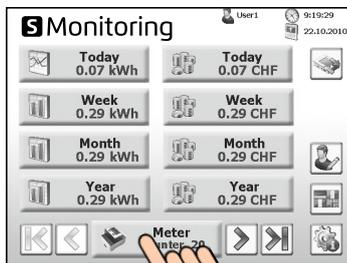
By clicking on a connected meter (green marked) a popup appears with major information of the respective counter. Red marked counter have a connection error or are no more available.



Pulse counter via H104 Module appear as one single counter. Navigation between different inputs is disposable in popup.

2.1.4 Live values provided by the energy meter

Navigation: Home menu → Meter



Counter name VK_HE_Tot **State** OK
S-Bus address 1 **FW** 1.3 **HW** 1.3 **T1**

	Phase 1	Phase 2	Phase 3
Voltage	221 V	243V	221 V
Current	25 A	18 A	21 A
Power	5.6 kW	3.9 kW	4.9 kW

T1 total 9356.4 kWh
T1 Part. 9356.4 kWh

Navigation buttons: Main menu, First meter, Previous meter, Current meter (VK_HE_Tot), Next meter, Last meter, Reset partial meters, Scan S-Bus.

Annotations: Energy meter status (OK), Next: More values (Scan S-Bus).

2

The status of the individual energy meters is checked continuously. The following operating modes are displayed:

- OK** Connection to energy meter OK
- Connection Error** The meter is recognised, but there is a connection problem
- Not Connected** No connection to the energy meter

More values like reactive power, active power and cos p:

Meter Name Kaffee L **State** OK
S-Bus address 0 **FW** 1.2 **HW** 1.1 **T1**

Phase 1

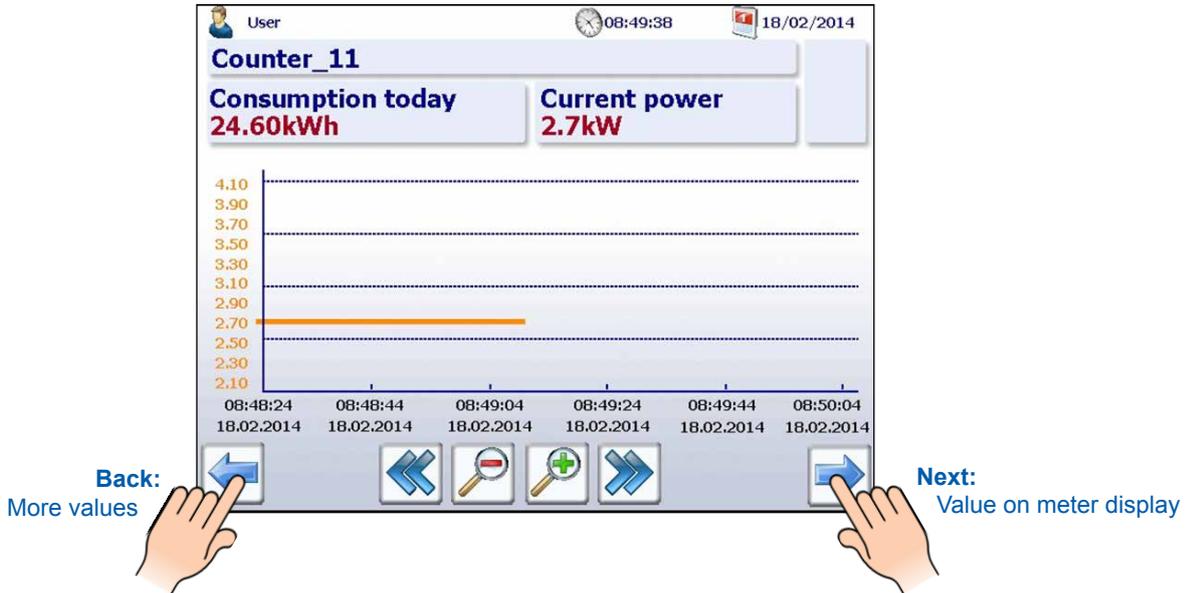
Reac. P 0.00kVar
Cos p 1.00

Active power tot. 0.00kW max. 1.10kW min. 0.00kW
Reactive P tot. 0.00kVar max. 0.72kVar min. -0.72kVar

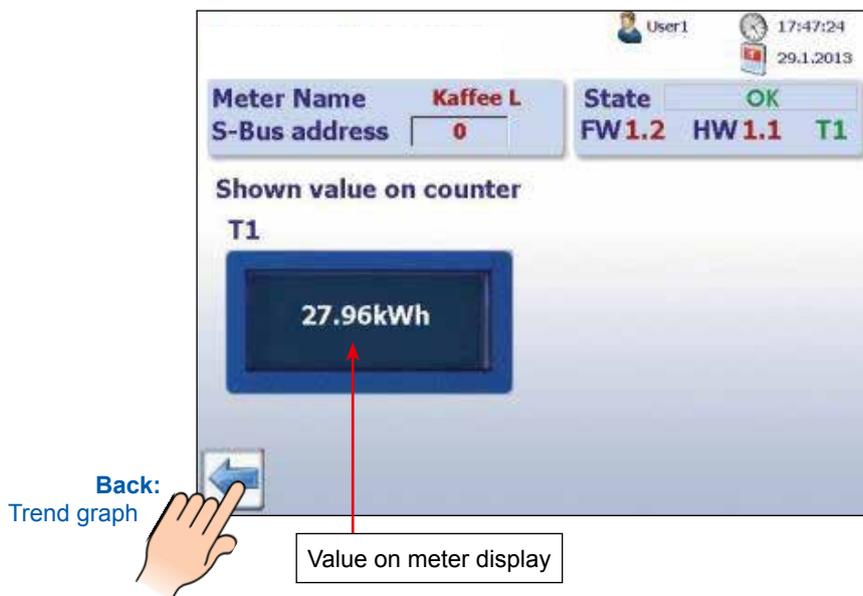
Navigation buttons: Back: Meter values, Meter (Kaffee L), Reset min., Reset max., Next: Trend graph of power consumption.

Annotation: Manually reset the maximum and minimum output values (Reset min./max.).

Trend graph of current power consumption in kW:



Real value shown on meter display of all SBC S-Bus energy meters:

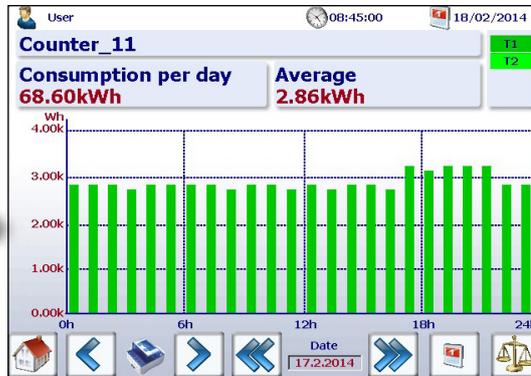
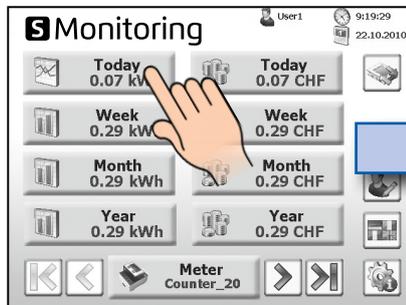


2.1.5 Visualisation of consumption in bar charts

The web application provides historical visualization in bar graphs per day, week, month and year.

Navigation:

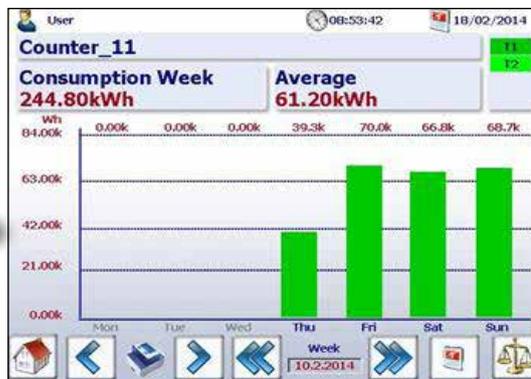
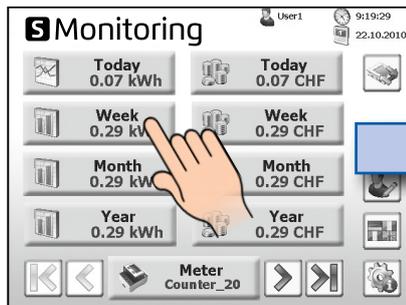
Home menu → Day



2

Navigation:

Home menu → Week



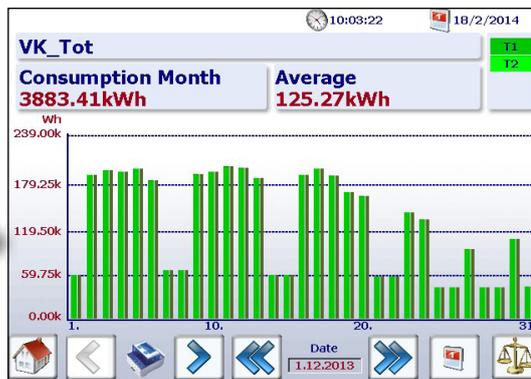
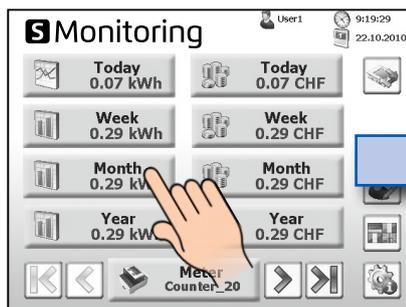
Flash card has to be plugged in for daily consumption.



For more information refer to SBC System Catalogue 26-215

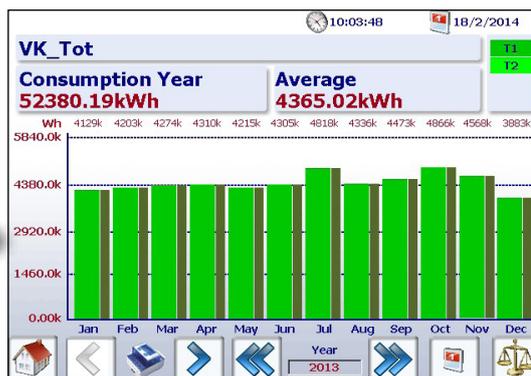
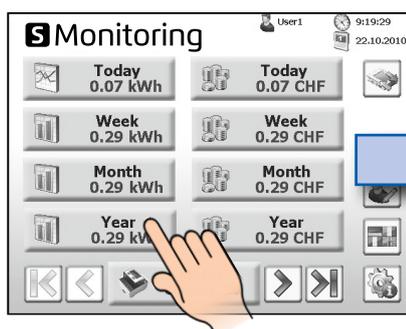
Navigation:

Home menu → Month

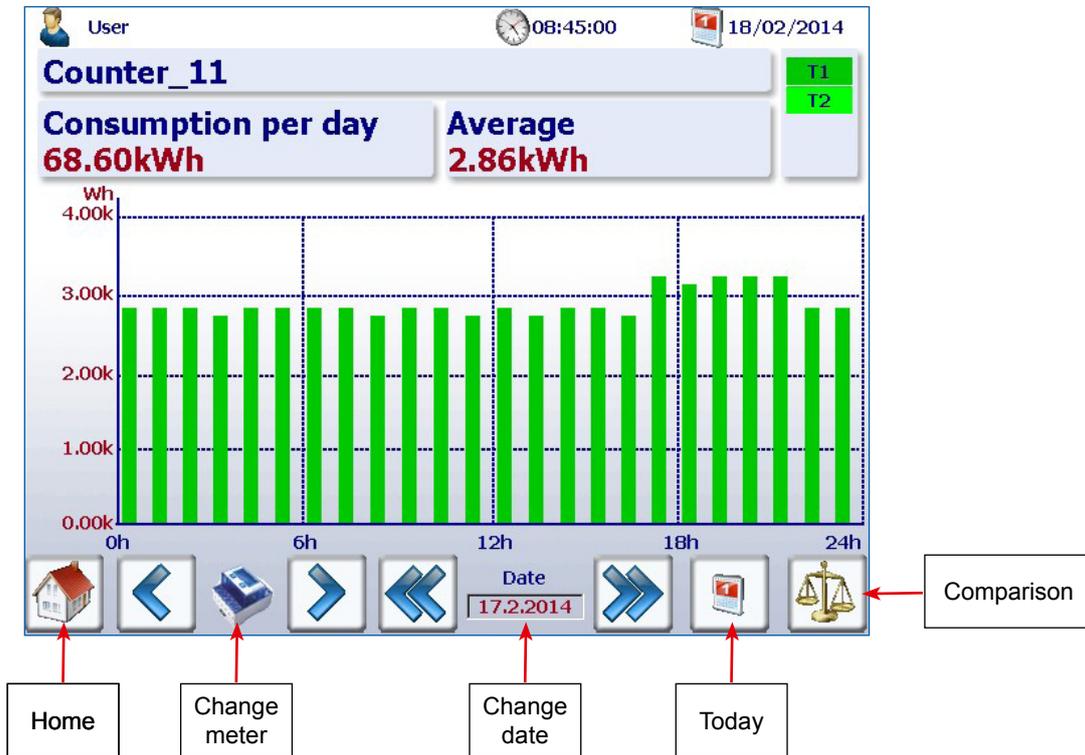


Navigation:

Home menu → Year



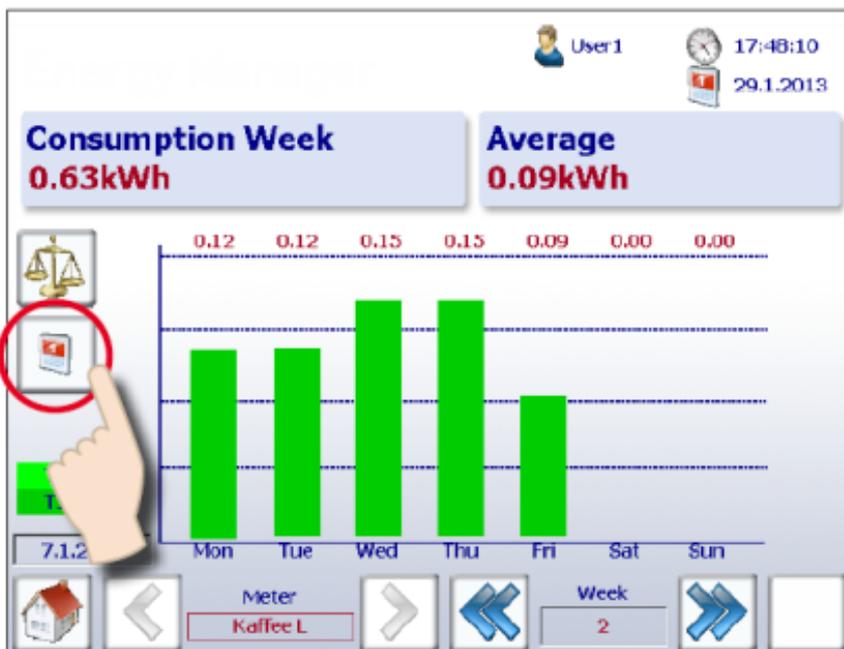
Description of navigation in bar graph websites:



2

2.1.6 Today button

An additional button has been added. Pressing the appropriate button on the websites for consumption per week, month and year and for costs per week, month and year, the screen immediately switches to the current date (week, month, year). This function is useful if you want to navigate through time periods and quickly go back to the current date.

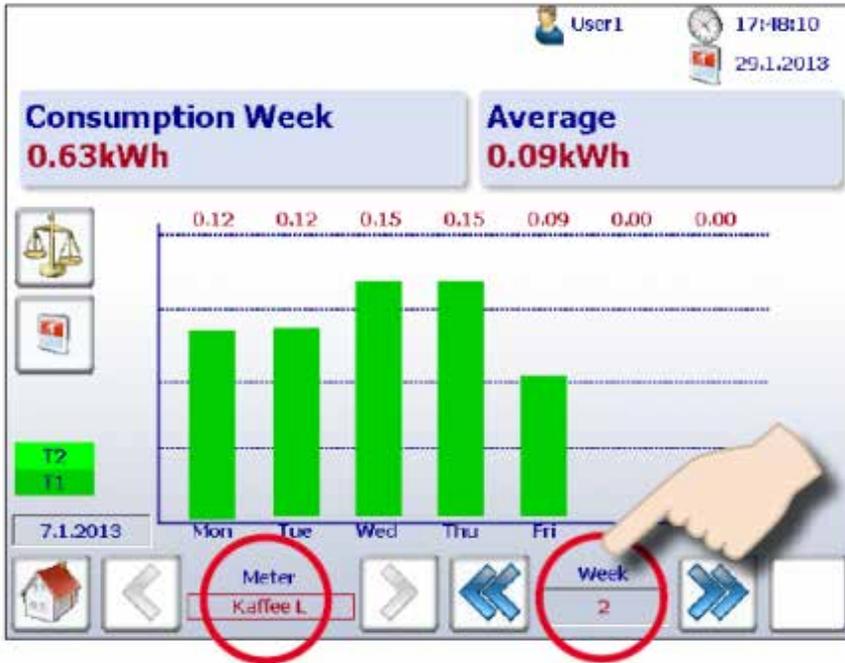


2.1.7 Comparison between meters and periods

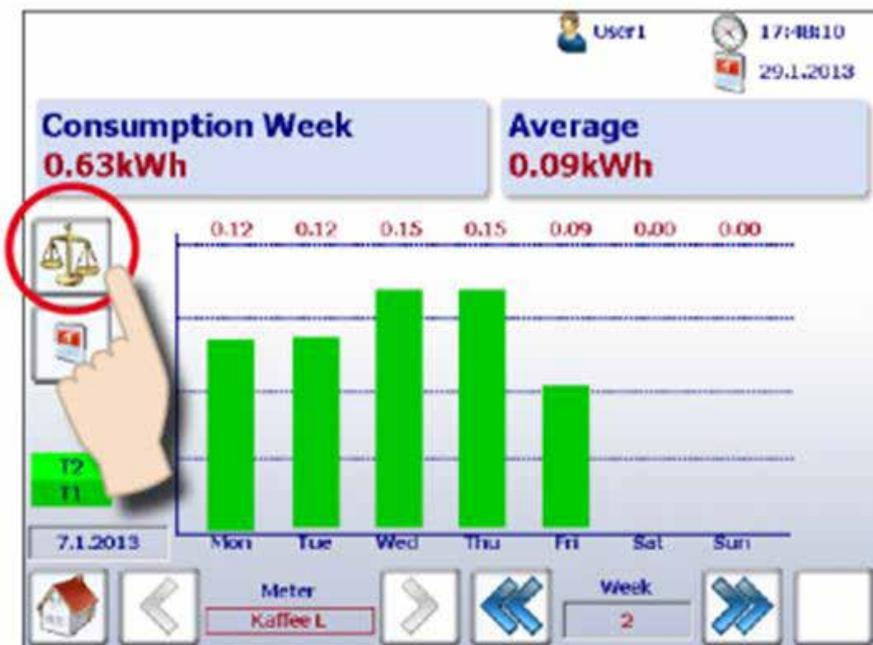
Visual comparisons can be made between meters and periods.
A comparison is made as follows:

1. Navigate to select reference meters and periods.
In the following example, the meter "Coffee L" and week "2".

2



2. Start the comparison by pressing the comparison button.



- The reference bars are shown along with the name of the reference meter and the period at the top right of the screen.



2

- You can now compare the reference and another meter or period by navigation as normal.



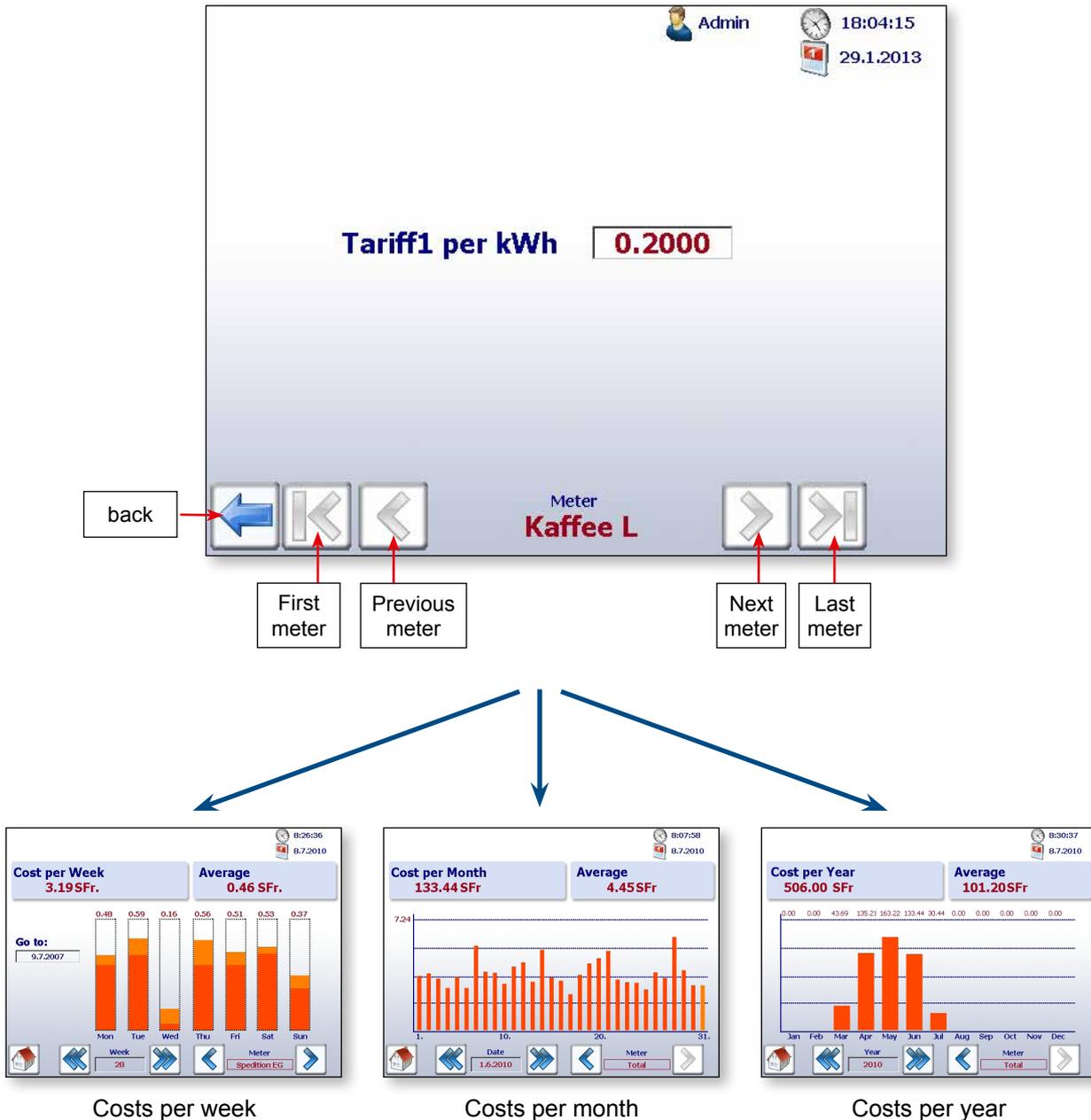
- To deactivate the comparison screen, simply press the deactivate button.



2.1.8 Costs

The costs per day, per week, per month and per year shown in the graph correspond to the power consumption. Tariff 1 and Tariff 2 can be input for each energy meter. Global currency such as the euro, the Swiss franc or the US dollar can be input under Setup (only when logged in as admin). See chapter "Login as Admin".

Setup → Energy meter → Tariff



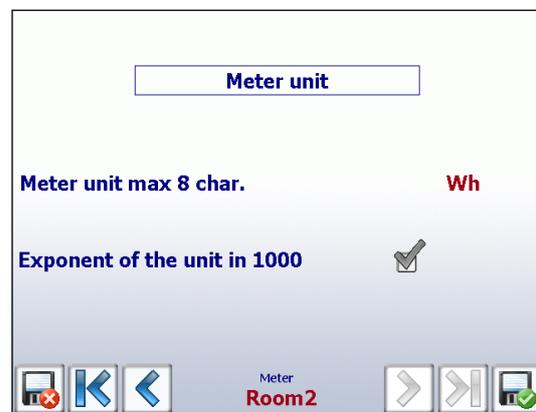
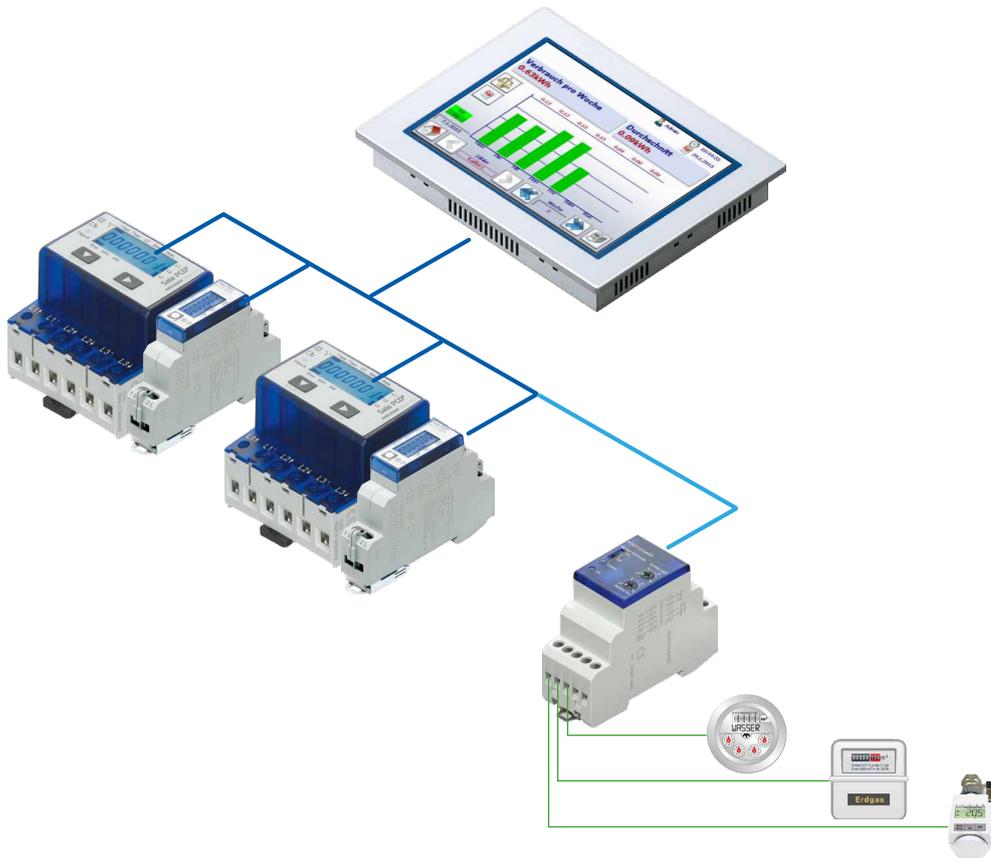
Ø: If this symbol appears, a midnight log was not prepared for the previous night. The energy consumption is averaged.

2.1.9 Visualisation of S0 pulse meter PCD7.H104SE

The S-Monitoring application automatically creates four virtual meters per PCD7.H104SE module. Each of these four meters is shown on the screen as an individual standard S-Bus meter. The meter values are logged in the CSV file. Every S0 meter is displayed with the standard navigation.

Example with S-Bus-address:

Meter 1.0 S01 → Meter 1.1 S02 → Meter 1.2 S03 → Meter 1.3 S04



The visualisation corresponds to the display of the standard S-Bus meter. The unit and factor can be adjusted under Setup → Energy meter → Meter unit (only when logged in as admin). See chapter “Login as Admin”.

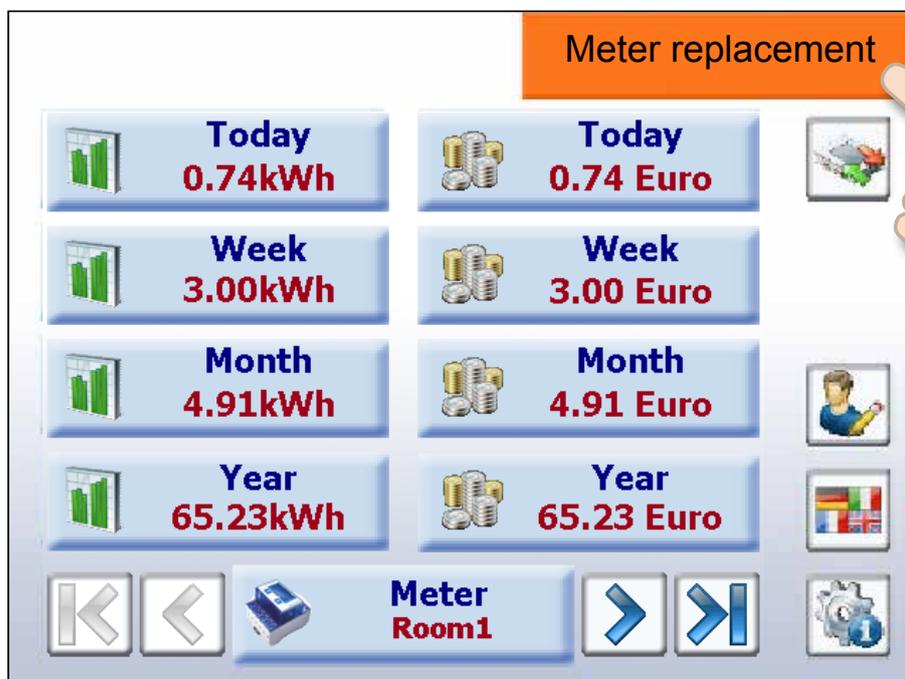
2.1.10 Replacing Saia PCD® energy meters

The E-Monitor Panel automatically detects that a meter has been replaced if one of the following conditions is met on the same S-Bus address:

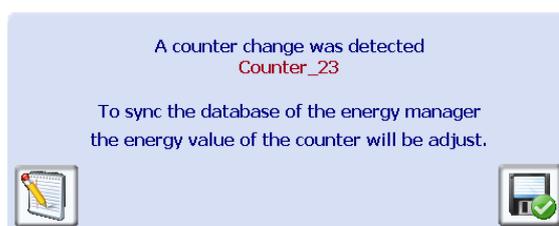
- ASN of the new energy meter is not the same as the old one (e.g. a different type of bidirectional meter or PCD7.H104SE module)
- Serial number is not the same
- Meter value is not plausible (new value is lower than the value of the exchanged meter)

Process for replacing a meter

1. The E-Monitor continually saves the last known value of an energy meter during operation.
2. An energy meter is replaced and the new meter is configured to the same S-Bus address.
3. The E-Monitor detects the meter has been replaced and reports this on the user interface with a warning.

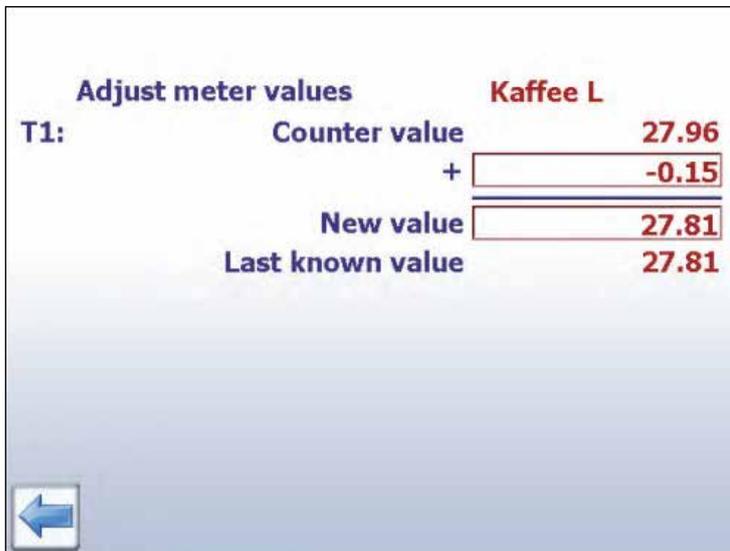


4. If the user presses the orange warning message, he is automatically taken to the Setup screen, where the E-Monitor automatically adjusts the new value or the user can change it manually.



5. The new meter value can be specified on the following website.

Navigation: Setup → Energy meters → Meter comparison



The screenshot shows a web interface for adjusting meter values. The title is 'Adjust meter values' and the meter is identified as 'Kaffee L'. The interface displays the current counter value, a change value, and the resulting new value. A blue arrow icon is visible in the bottom left corner.

Adjust meter values		Kaffee L
T1:	Counter value	27.96
	+ [input field]	-0.15
	New value	27.81
	Last known value	27.81

2

Replacing PCD7.H104SE with an energy meter:

The E-Monitor automatically creates a new log file (CSV file) when a PCD7.H104SE is replaced with an energy meter. However, the old files are not deleted.

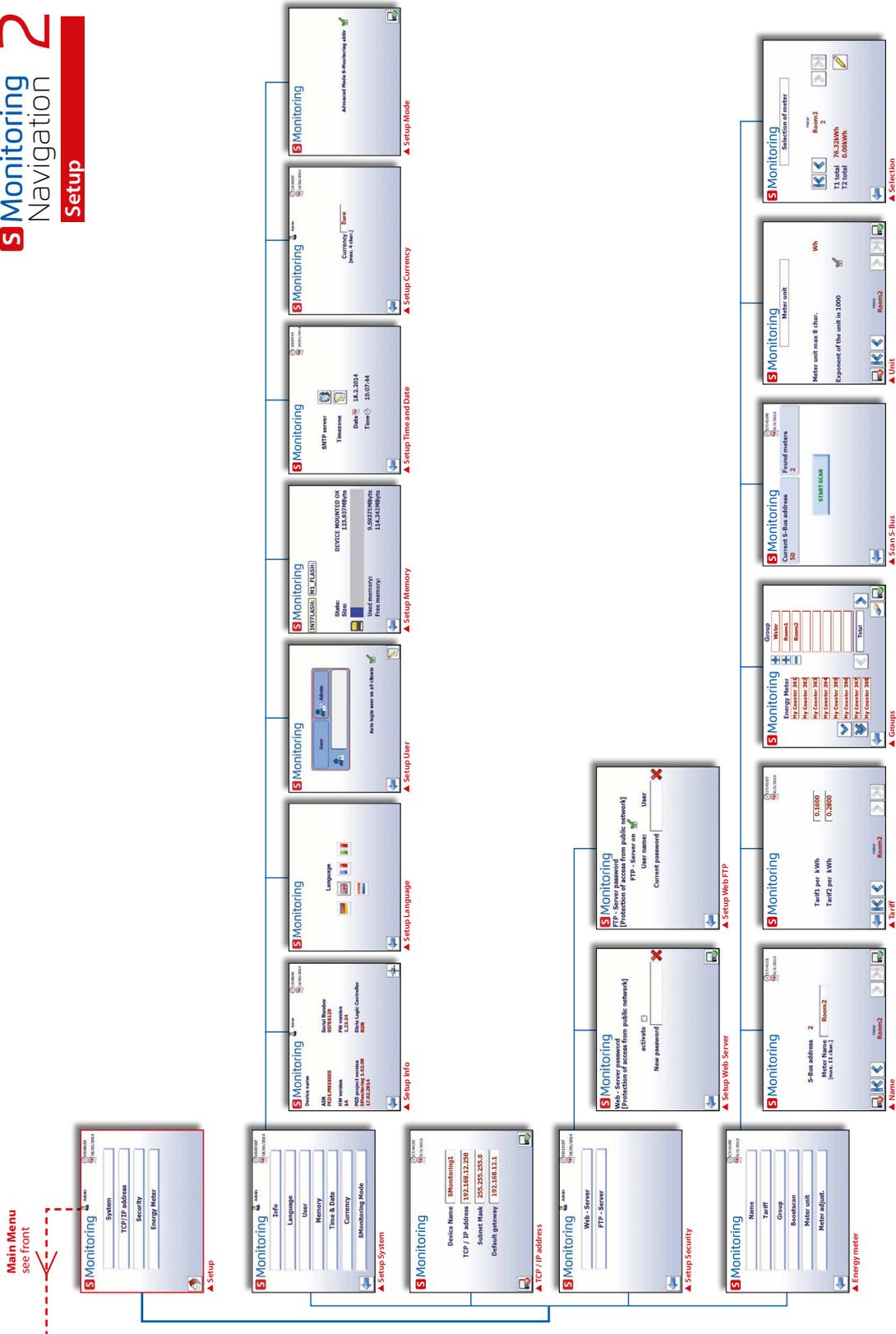
Replacing PCD7.H104SE with PCD7.H104SE:

The same as for standard energy meters, but up to 4 values can be set (one for each S0 meter). This also applies, logically, to bidirectional meters. These can be replaced with any bidirectional meters, but information will subsequently be lost.

2.2 Setup configurations

2.2.1 Web Application Setup

To configure settings in the setup menu, you need to be logged in as administrator. See chapter “Login as Admin”.



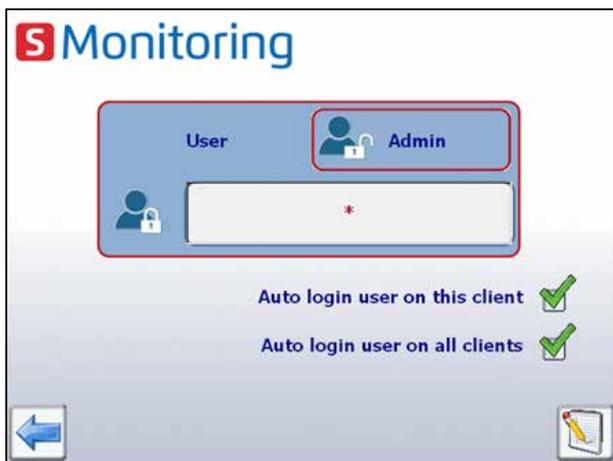
2.2.2 Login as Admin

S-Monitoring is based on 2 user levels. As a standard user, you only have read-only access with the exception of the ability to set the language and to change your own password and user name. When logged in as an administrator, your privileges are unrestricted, and you can configure and change all settings under Setup or directly by clicking on user icon at the upper edge of each site.



User level	Default name	Default password
1	Admin	12345678
2	User	- no password -

By activating checkbox auto login, a user authentication is not required when reboot the application.



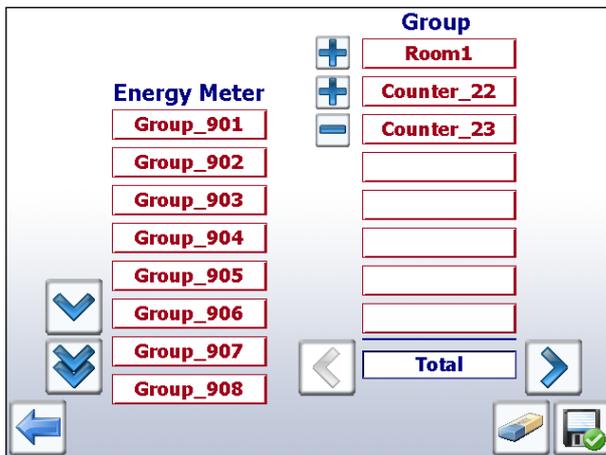
If user name or password is lost, the user configuration has to be downloaded from Saia PG5®!

2.2.3 Group of energy meters

Up to 32 independent groups of energy meters can be created. To add a meter, simply click on it in the configuration screen; this adds the selected energy meter to the group. To remove the meter from the group, simply click on it in the group. A group can also contain a group. This function is only accessible when logged in as administrator.

The function can be used mainly to calculate the energy supplied and consumed as well as to display “Net energy”.

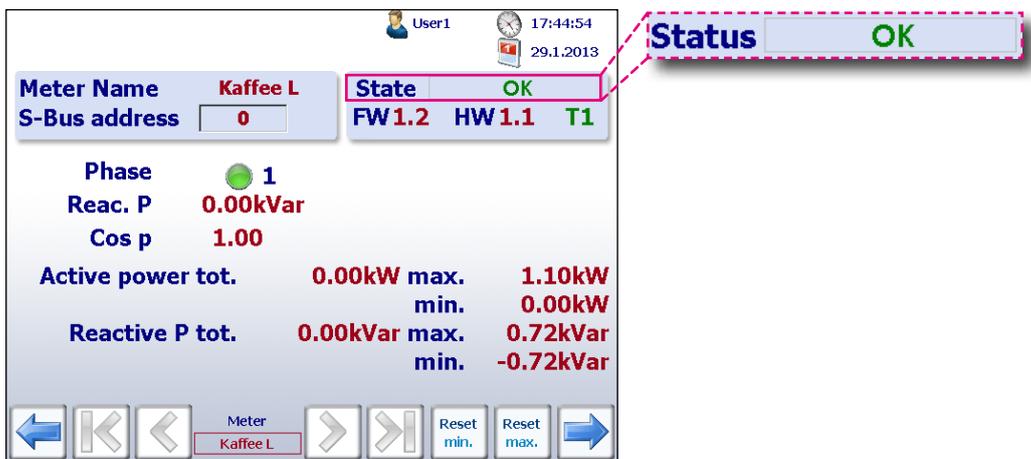
Navigation: Setup → Energy meters → Groups



In the example, the “Total” group corresponds to the energy from ALE3 – AWD3 + ALD1

A plausibility check for the unit is not carried out when grouping. The E-Monitor does therefore not provide notification of whether, for example, the user is billing electrical energy using heat energy.

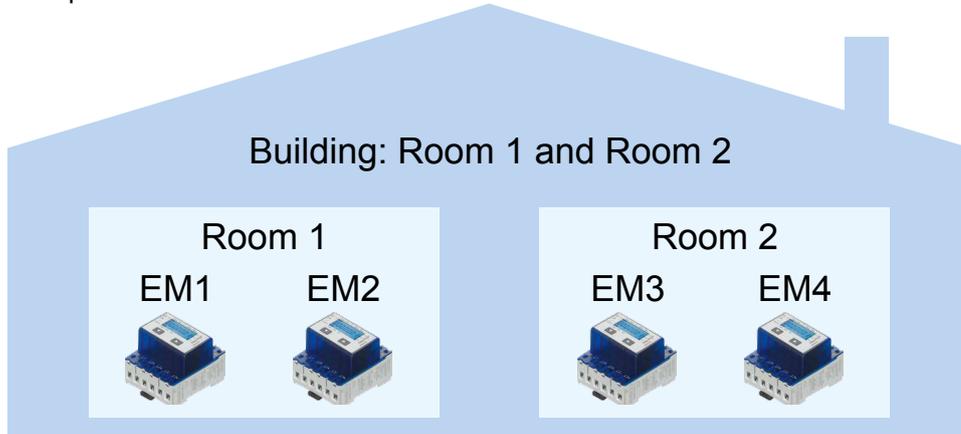
Note: A group is only displayed if each of the configured meters in it is configured (OK status).



Values displayed for each group:

- Current phases 1, 2 and 3 • PRMS total
- PMRS phases 1, 2 and 3 • QRMS total
- QRMS phases 1, 2 and 3 • T1/T2 total
- T1/T2 partial

Example:



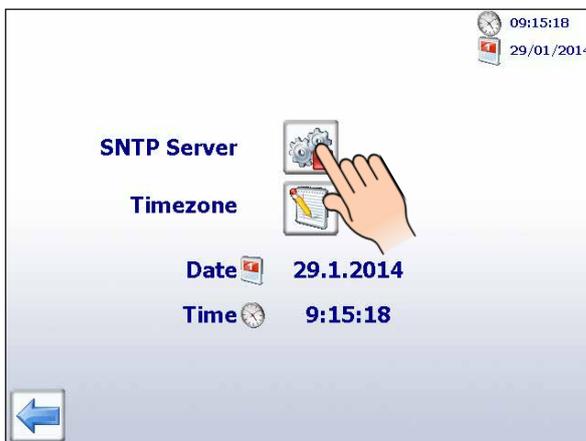
Room 1 group = Energy meter 1 + Energy meter 2
Room 2 group = Energy meter 3 + Energy meter 4
Group formation = Room 1 group + Room 2
Group Building = Room 1 group + Room 2 group = EM1 + EM2 + EM3 + EM4

2.2.4 Date and Time settings

SNTP technology is intended to synchronize the internal clock with the Coordinated Universal Time (UTC). SNTP can usually maintain time to within tens of milliseconds over the public internet, and can achieve better than one millisecond accuracy in local area networks under ideal conditions. Asymmetric routes and network congestion can cause errors of 100ms or more.

Configuration can be done only when logged in as admin. See chapter “Login as Admin”.

Navigation: Home → Setup → System → Time & Date

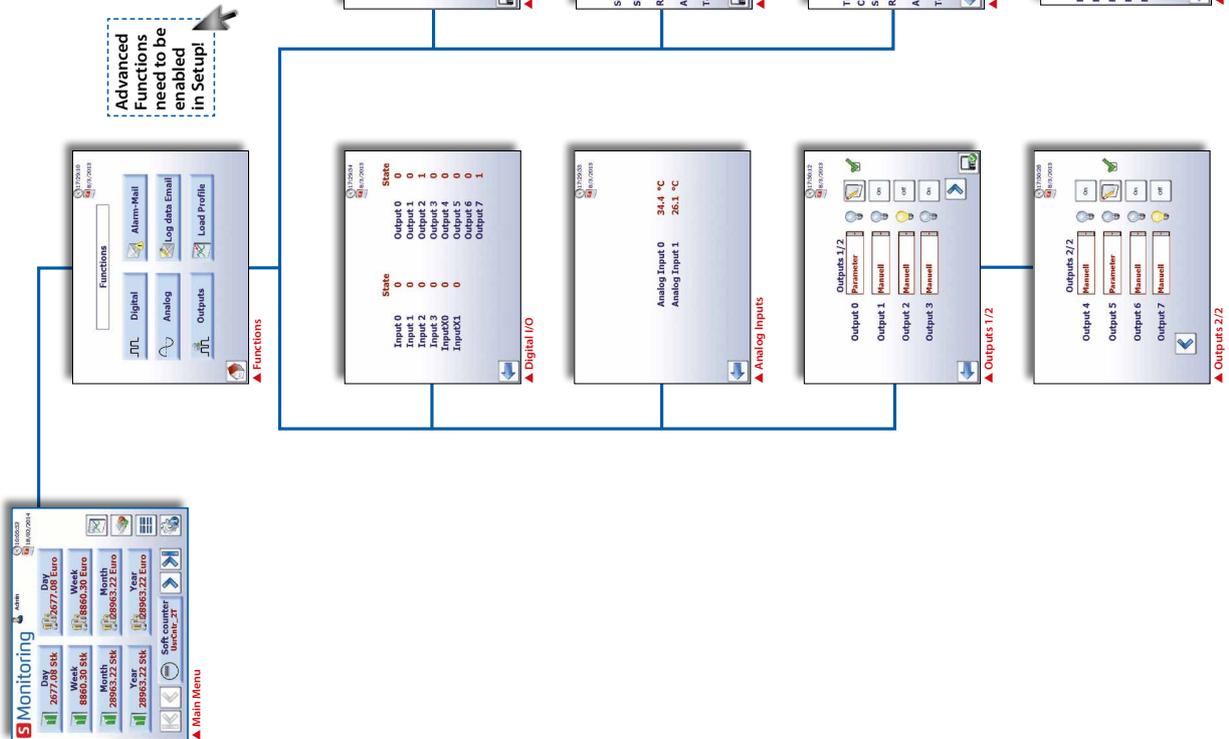


When clock synchronisation via SNTP is enabled, specific timezone has to be chosen.

2.3 Advanced Functions

In the application for the E-Monitor provided ready for use delivery from the factory, additional "Advanced" functions are programmed. These functions require special IT and programming skills and can be enabled in Setup.

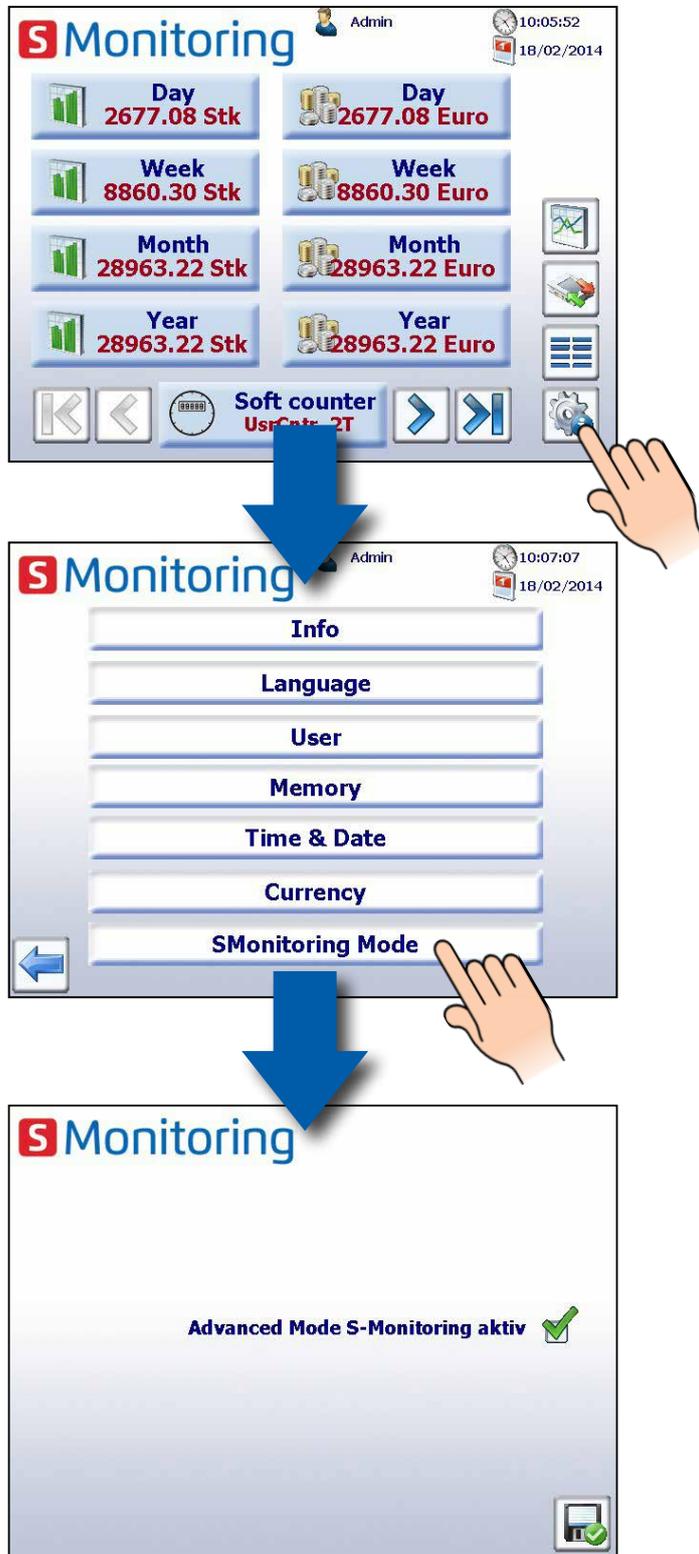
We recommend an additional training to use these functions. For more information, please contact SBC support.



More information see document 26-582.

Enable advanced functions:

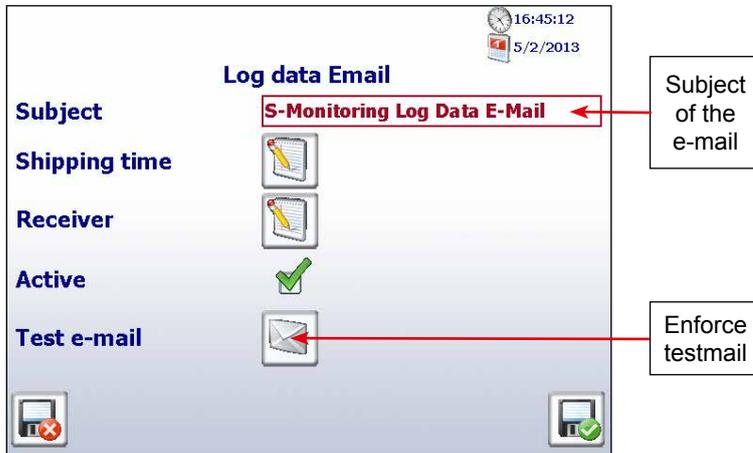
To enable the advanced functions, navigate from Home → Setup → S-Monitoring Mode and activate the checkbox below. To configure enter the setup menu, you need to be logged in as administrator. See chapter “Login as Admin”.



2.3.1 Data E-Mail

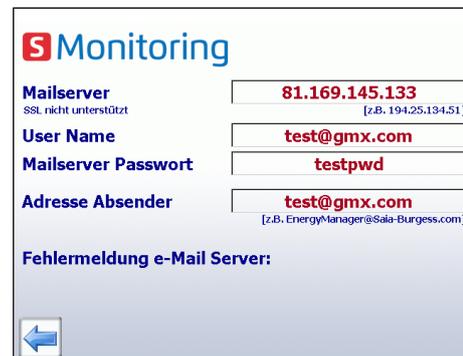
Data mails can be sent for the selected meter in the load profile

Home → Functions → Log data e-mail



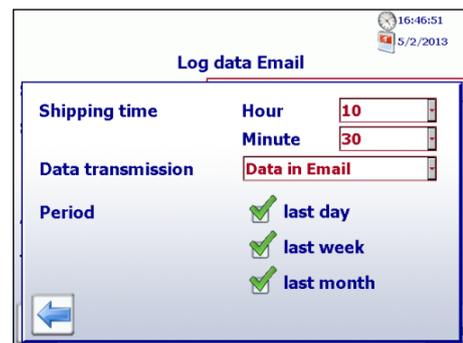
Configuration Data E-Mail

1. Open Email Settings
2. Enter recipient address.
Up to 5 receivers can be addressed.
3. Enable Mail server
4. Open Mail Server Settings



Settings

1. Enter the mail server's IP address
2. User name, password and Enter Return Address
3. Back and Save



Enable Data E-Mail

1. Configure dispatch time
2. Configure data type
3. Exit and save



**You must enter the IP address of the SMTP mail server.
DNS (mailto@gmx.net) and SSL authentication is not supported**

Example: Determining the SMTP server address

1. GMX SMTP server has mail.gmx.net address? → The F-Box requires the IP of the SMTP server
2. Open the Command window in Windows (Enter cmd.exe in the Start bar)
3. Entering << ping mail.gmx.net >>
4. The answer is the IP address of the SMTP server 213.165.64.20

```

Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. Alle Rechte vorbehalten.
C:\Users\ch2erda0>ping mail.gmx.net

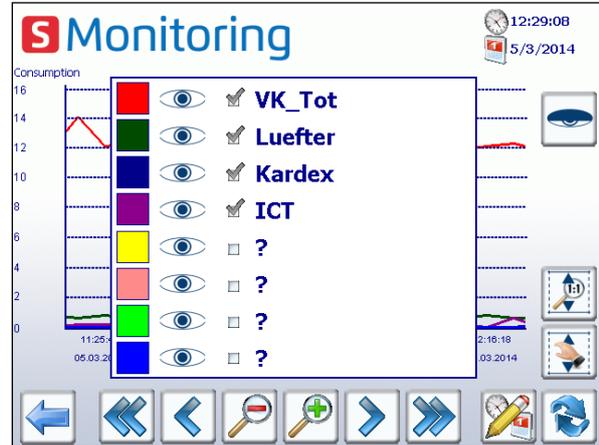
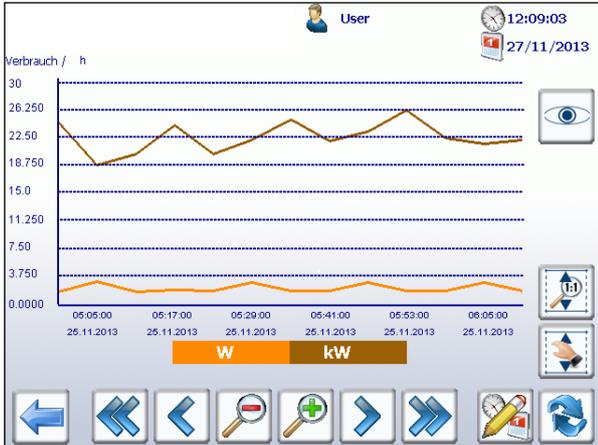
Ping wird ausgeführt für mail.gmx.net [213.165.64.20] mit 32 Bytes Daten:
Antwort von 213.165.64.20: Bytes=32 Zeit=40ms TTL=47
Antwort von 213.165.64.20: Bytes=32 Zeit=40ms TTL=47
Antwort von 213.165.64.20: Bytes=32 Zeit=142ms TTL=47
Antwort von 213.165.64.20: Bytes=32 Zeit=44ms TTL=47

Ping-Statistik für 213.165.64.20:
Paket: Gesendet = 4, Empfangen = 4, Verloren = 0
(0% Verlust)
Ca. Zeitangaben in Millisek.:
Minimum = 40ms, Maximum = 142ms, Mittelwert = 66ms
C:\Users\ch2erda0>
    
```

2.3.2 Load profile

Up to 8 meters can be recorded and displayed load trend

Navigation: Home → Functions → Load profile



Trend curve energy consumption (max. 8 connected meters)

Configuration of the interval:

- Within a selected interval, the average load is calculated and displayed
- The period can be selected between 3 and 60 min.
- Enable synchronization pulse when interval is triggered by an input of the controller.

Log interval

Synch. pulse Period **15 min.**

Data logging [Mth]

3 6 12

Selection of meter

Setting the peak detection

- Selection of 3, 6 or 12 months
- The maximum value within the selected period is displayed

Selection of counters

- Select counters, for which the mean load to be recorded
- S-Bus Input address of the counter and Activate
- PCD7.H104SE pulse counters have 4 inputs per unit and therefore a sub address

Active	Name	Address	Sub-Addr
<input checked="" type="checkbox"/>	VK_Tot	1	x
<input checked="" type="checkbox"/>	Luefter	2	x
<input checked="" type="checkbox"/>	Kardex	3	x
<input checked="" type="checkbox"/>	ICT	4	x

3 Technical data

The hardware of the E-Monitor MicroBrowser Web panel is based on the standard SBC pWeb panel.

3.1 Overview of the technical data

Logic controller	
User program, ROM /DB/text	1 MByte
RAM/DB/text	1 MByte
Media	14,336 flags / 16,384 registers
Backup for user	User program is saved to the integrated micro SD card
File system for user	128 MBytes, on-board
Program cycle time	10 cycles / sec maximum
Protocols on field level	Serial-S-bus, Ether-S-bus, Ether-S-I/O, Modbus RTU or TCP, M-bus
Internet services	SBC Micro-Browser, Automation Server
Interfaces	
Ethernet 10 / 100 M	2× RJ45 (switch)
USB (1.1 / 2.0)	1× client
Serial interfaces	RS-485 & socket for PCD7.F1xxS communications module
Temperature range	Operation: 0...50 °C Storage: -25...+70 °C
Relative humidity	Operation: 10...80% Storage: 10...98% (non-condensing)
Processor	Coldfire CF5373L, 240 MHz
Real Time Clock (RTC)	Yes, with battery back-up

3

Technical data	PCD7.D457VT5E0
Display size	5.7 TFT
Resolution/Pixels	VGA 640 × 480
Touchscreen	Resistive four-wire
Contrast adjustment	yes
Backlight	LED
Voltage supply	18...32 V
Current consumption	Max. 500 mA
Protection class (front)	IP 65
Front status LED	No

See more information under www.saia-support.com

3.2 Battery

The hardware components are maintenance-free, with the exception of battery, who requires occasional replacement.

The components do not contain any user-replaceable parts. If hardware problems occur, please return the components to SBC.

The resources (register, flags, timer, counters, etc.) and the character strings/DBs are stored in the RAM. In order to prevent these from being lost, and to enable the hardware clock to carry on running during a power failure, the devices are equipped with a back-up battery:

3

CPU model	Buffer	Buffer time
PCD7.D457VT5E0	Renata CR 2032 lithium battery	1...3 years ¹⁾

¹⁾ Depending on the ambient temperature: the higher the temperature, the shorter the buffer time

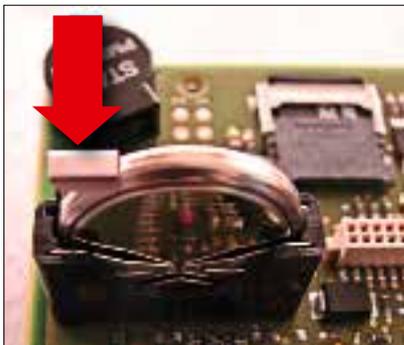


New controllers include batteries in the scope of delivery, and these must be inserted during commissioning. Pay attention to the polarity of the batteries.

CPUs with lithium batteries are not maintenance-free. The battery voltage is monitored by the CPU. The XOB 2 is called if:

- the battery voltage is lower than 2.4 V
- the battery is missing

We recommend changing the batteries while the panel is connected to the power supply, in order to avoid data loss.



- Disconnect from the voltage supply
- Remove the cover of the Web panel
- Reconnect to the voltage supply, in order to prevent data loss while changing the battery
- Push the terminal holder back slightly (see arrow in figure)
- Remove the battery
- Insert a Renata CR 2032 button battery, so that the positive terminal is in contact with the terminal holder.
- Disconnect from the voltage supply and reattach the back wall of the panel



The period for which the backlight remains on can be set manually. This function helps to save energy. If the backlight is deactivated, you will save approx. 3/4 watts, which is no negligible value. This will also extend the [service life](#) of the backlight.

The **normal** service life of the backlight (at 25 °C) is defined as approx. 50 Kh. This corresponds to 5 years of continuous use. However, this value is **quickly reduced** (to half or less), if the operating temperature is 10 °C or less. It makes sense for the user to take this into account and to adapt the standby period of the backlight accordingly.

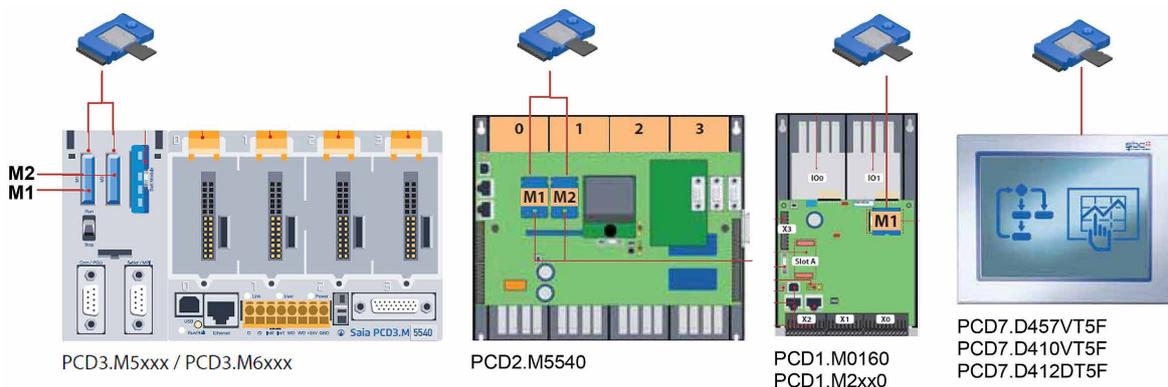
3.3 External Flash Module PCD7.R610

The module PCD7.R610 has a card holder for receiving the PCD7.R-MSD1024 Micro SD flash memory cards. The module PCD7.R610 is supplied without the Micro SD flash card. The flash card PCD7.R-MSD1024 must be ordered separately.

Technical data	
COMPATIBILITY	Usable on slot M1 and/or M2 supported with PCD1.M0160, PCD1.M2xx0, PCD2.M5540, PCD3.M5/6xxx, PCD7.D457VT5F, PCD7.D410VT5F und PCD7.D412DT5F
PG5	From version 2.1.300
COSinus version PLC controller	From version 1.23.32
COSinus version MB panel	From version 1.23.32
POWER	
Module power supply voltage	
Current consumption	
Hot pluggable	Yes, write/read access must be disabled first
LED display	
● Red LED	Function as with a hard disk drive, flashes during data processing
● Green LED	Do not remove the module while this LED is on. LED is turned off when the module can be removed safely. If the module is removed while the LED is on, data may be lost.

Ordering information:		
Order Type	Description	Weight
PCD7.R610	Basic module for uSD flash memory card, plug-in onto slot M1 or M2 (uSD card not included)	20 g

The module can be used in the systems PCD1.M2/M0, PCD2.M5, PCD3.M and on the programmable MB panel PCD7.D457VT5F, PCD7.D410VT5F and PCD7.D412DT5F.



3.4 Micro SD Flash Memory Card PCD7.R-MSD1024

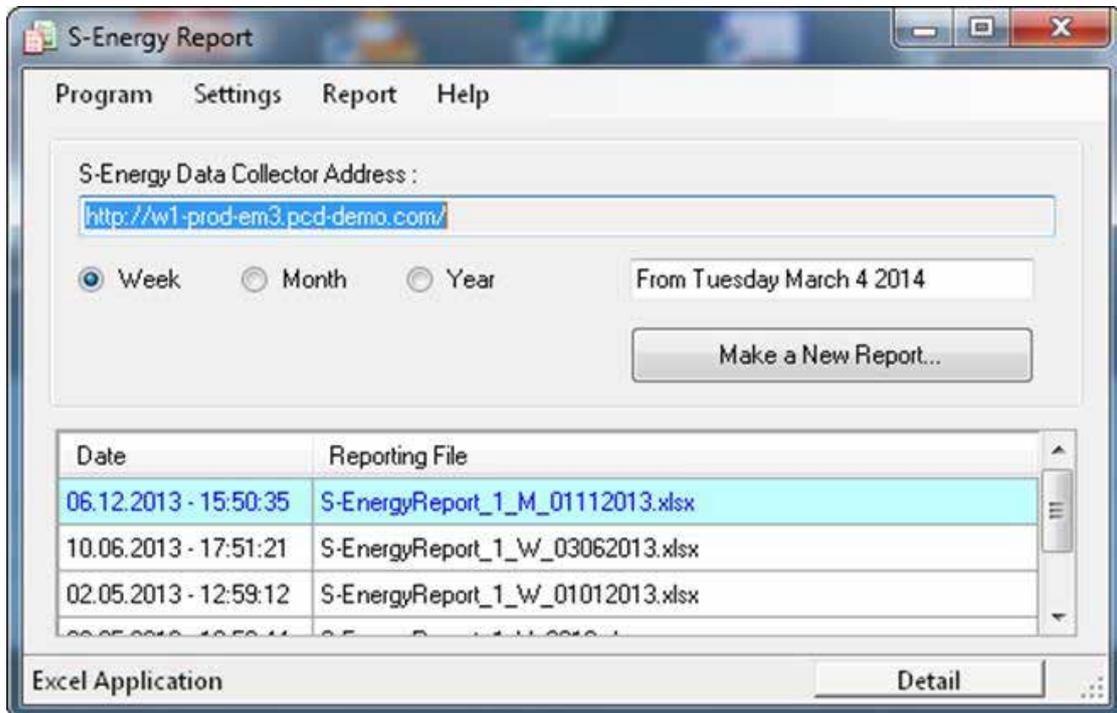
The Micro SD flash cards are specially selected industrial flash cards which meet with the high requirements. "Consumer" flash cards may not be used. The industrial Micro SD flash cards PCD7.R-MSD1024 are available separately and can be easily plugged-in and replaced respectively in the basic module PCD7.R610.

Technical data	
Industrial, high reliable	Designed for embedded industrial market. Voltage detector and power-loss management to prevent data corruption after power-down.
Wear Leveling	Write accesses are uniformly distributed to all cells so that they are used uniformly. Thus the life of the card is increased.
Single layer Flash memory technology (SLC)	for up to 100 000 write cycles
Data retention	10 years
MTBF	> 3'000'000 hours
Number of insertions	>10'000
Extended Temperature range	-25...85 °C

Ordering information:		
Order Type	Description	Weight
PCD7.R-MSD1024	Micro SD flash memory card 1024 MByte (incl. SD flash adapter)	2 g

4 Historical data

4.1 Import data and create report in Excel



4

Supported operating systems:

Windows XP, Windows Vista and Windows 7.

Supported SBC S-Energy and S-Monitoring devices:

- PCD7.D457VT5E0
E-Monitor Web Panel supporting S-Monitoring
- PCD1.M0160E0
E-Controller supporting S-Monitoring
- PCD1.M2160
CPU with Ethernet supporting S-Monitoring
- PCD3.Mxx60
CPU with Ethernet supporting S-Monitoring
- PCD7.D4xxVT5F
Programmable Web Panel 5.7", 10.4"
VGA TFT or 12.1" SVGA TFT supporting S-Monitoring
- PCD7.D4xxET7F
Energy Manager Web Panel

Excel requirements:

S-Energy Report requires Excel 2003 or above to be installed on the PC.

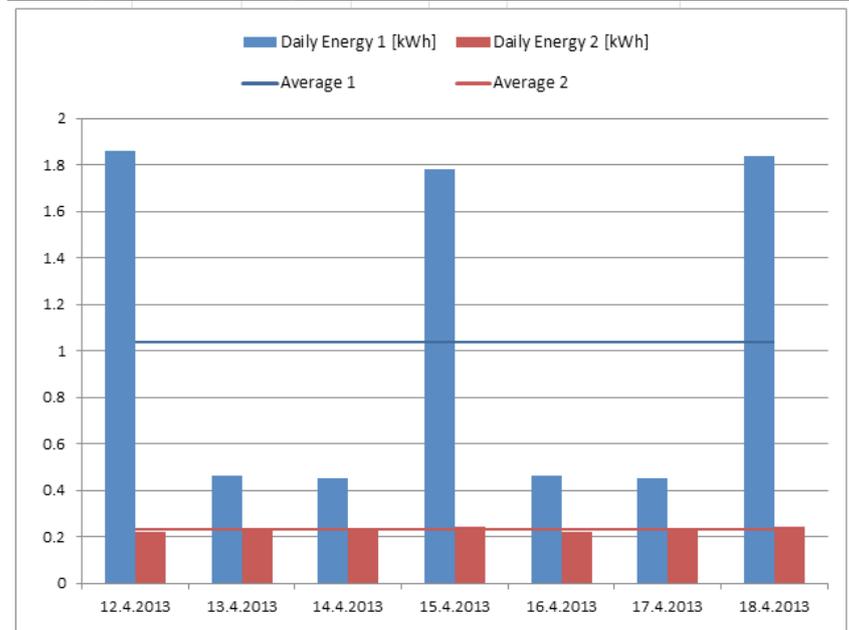
Report samples:

Below you can find some screenshots of sample reports. The reports are generated based on templates which can be adapted in order to fit your requirements.

Week report

Desk Engiby Report from: **12.04.2013**

Summary					
Total energy:	8.91				
Total energy 1:	7.3	Average 1:	1.04	Max 1:	1.86
Total energy 2:	1.61	Average 2:	0.23	Max 2:	0.24
					12.4.2013
					18.4.2013

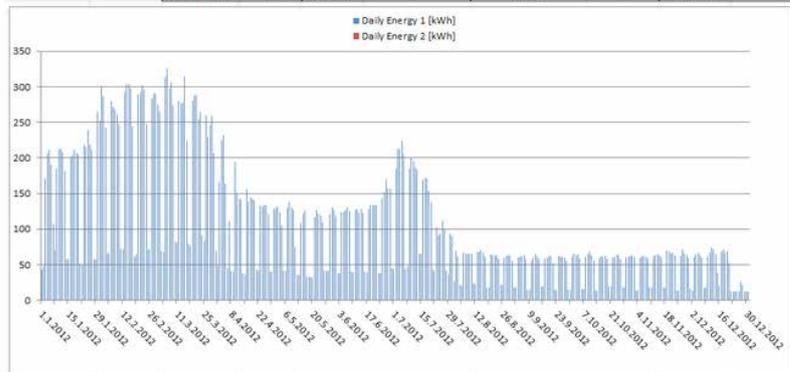


Daily data						
Date	Energy1	Energy2	Tariff1	Tariff2	Daily Energy 1 [kWh]	Daily Energy 2 [kWh]
12.4.2013	261.46	59.84	0.24	1	1.86	0.22
13.4.2013	263.32	60.06	0.24	1	0.46	0.23
14.4.2013	263.78	60.29	0.24	1	0.45	0.23

Year report

VK Schr. 1013 Report from year: **2012**

Summary					
Total energy:	38811.5	Total energy 1:	38811.5	Average 1:	106.04
		Total energy 2:	0	Average 2:	-
				Max 1:	325.5
				Max 2:	0
				Date Max 1:	6.3.2012
				Date Max 2:	



Daily data						
Date	Energy1	Energy2	Tariff1	Tariff2	Daily Energy 1 [kWh]	Daily Energy 2 [kWh]
1.1.2012	85370.7	0	0.23	0	42.2	
2.1.2012	85412.9	0	0.23	0	46.9	
3.1.2012	85459.8	0	0.23	0	171.4	

Contact:

Engiby sàrl, Route des Noyers 25, 1782 Formangueries, Switzerland, www.engiby.ch

4.2 Day logfile

The midnight record day logfile is used primarily for the visualisation of energy consumption and costs (including tariffs) on the S-Monitoring application.

Storage

Day logfile is stored on internal flash

Logfile

- 1 logfile per year for every meter with information of 4 count values, tariffs and timestamp.
- Values are saved once a day (during midnight)
- Per default 4 years are stored

	A	B	C	D	E	F
1	Date	Energy1	Energy2	Tariff1	Tariff2	
2	06.02.2010	1.43	0	1.5	0.5	
3	07.02.2010	1.43	0	1.5	0.5	
4	08.02.2010	1.43	0	1.5	0.5	
5	09.02.2010	1.43	0	1.5	0.5	
6	10.02.2010	1.43	0	1.5	0.5	
7	12.02.2010	2.12	0	1.5	0.5	
8						

4.3 5 minute logfile

Storage

When the flash card (1GB) is plugged in, a logfile is automatically created for each meter.



PCD7.R610
Holder module
for microSD card



PCD7.R-MSD1024
MicroSD memory card 1 GB,
PCD formatted

For more information please refer to SBC system catalogue 26-215

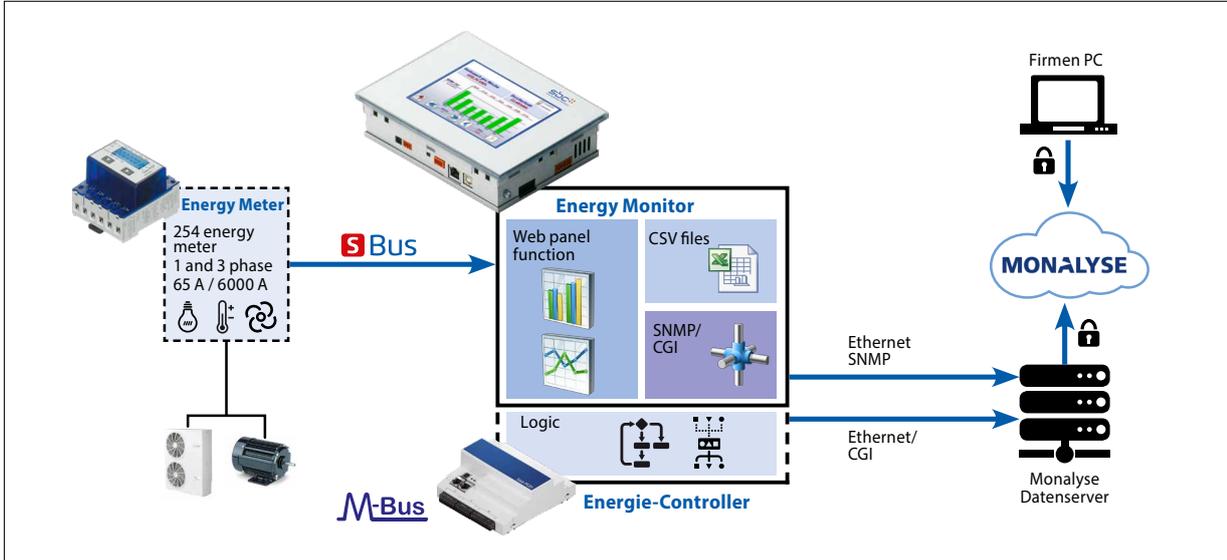
Logfile

- 1 logfile for every meter with information of 4 count values, tariffs, 9 auxiliary values and timestamp.
- Per default the month preceding and the current month are stored
- Values are saved at interval of 5min
- The function can be deactivated in the Saia PG5® Device Configurator

	A	B	C	D	E	F	
1	DateTime	Energy1	Tariff1	Energy2	Tariff2	Energy3	Tari
2	10.01.2014 08:50	254.25	0.23	0	1	0	
3	10.01.2014 08:55	254.87	0.23	0	1	0	
4	10.01.2014 09:00	256.48	0.23	0	1	0	
5	10.01.2014 09:05	257.43	0.23	0	1	0	
6	10.01.2014 09:10	258.545	0.23	0	1	0	

4.4 Different value types

The SBC S-Monitoring devices automatically convert the data of connected S-Bus meters and save the data on the internal file system. In addition the actual values of all meters are provided in a standard CGI interface.



Each meter gives different values. The values are divided in two types:

1. Count values

Each meter can have up to 4 count values.

The SBC energy meters usually have one or two (two tariffs or bidirectional).

The count values are

- stored in csv files one time per day
- have a specific unit which can be called with the CGI command

2. Auxiliary values

The auxiliary values are not logged in csv files, so there's no historical data. These are for example voltage, current, cosPhi etc.

The auxiliary values are

- not stored in csv files
- have no unit which can be called with the CGI command

4.5 Get data with CGI calls

The CGI interface makes it very easy to read the meter data out of the devices. Therefore different commands can be used.



Attention: All CGI commands are case sensitive!

4

4.5.1 getValues.exe command

This CGI command allows reading multiple Web Tags from the PLC. The request is **limited to a total length of 1400 bytes**; including the HTTP headers and query. The response content-type is plain text.



We do not recommend getting more than 20 values with one call!

Request

http://<Controller IP>/cgi-bin/getValues.exe?CGI_tag0&CGI_tag1&CGI_tag2...

Response

Value0&Value1&Value2&Value3....

4.5.2 CGI_tags to get instantaneous values

The S-Monitoring tags you can use with the getValues.exe command have always the same syntax. They begin with NT-EM (Energy Monitoring Tags) followed by the address of the meter and the value you want to get from the meter.

NT-EM,<Addr>,<valueTag>:unit:8

↑
Energy
meter tags

↑
Address
of meter

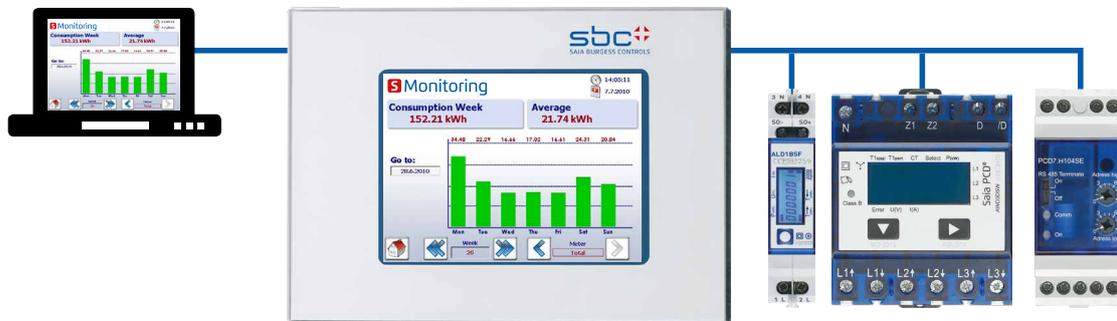
↑
Value you want
to get

↑
Unit of meter and maxi-
mum of characters
(only for count values)

To get the instantaneous values of the different SBC S-Bus meter you can refer to tags in chapter 5. Energy Monitoring Tags.

4.5.3 Example

We have the following configuration of devices and want to read instantaneous values of the connected meters. Therefore we connect the device with a computer. Both devices have to be in the same subnet. By writing the command in the address window of your web browser you'll get the data.



The values we want to read are:

Address 1 (ALD1B):

- Total counter value (used) with unit
- Total counter value (produced) with unit

Address 2 (ALE3):

- Voltage phase 1
- Voltage phase 2
- Voltage phase 3
- Total counter value of Tarif 1 with unit

Address 3 (PCD7.H104SE):

The PCD7.H104 has 4 meters in one device.

Therefore it has sub addresses. In this case they are 3.0 3.1 3.2 3.3

- Total counter value (counter0) with unit
- Total counter value (counter2) with unit

CGI command (all values at a glance)

With the following CGI command you get all values we want to read

```
http://192.168.12.250/cgi-bin/getValues.exe?NT-EM,1,WT1total:unit:20&NT-EM,1,WT3total:unit:20&NT-EM,2,UrmsL1&NT-EM,2,UrmsL2&NT-EM,2,UrmsL3&NT-EM,2,WT1total:unit:20&NT-EM,3.0,WT1total:unit:20&NT-EM,3.2,WT1total:unit:20
```


File syntax

DAY <address>_<year>_<index>.csv

- DAY** File type (one log per day). Is always the same type in this folder
- <address>** Address of meter has three characters + sub address.
For example 003 without sub address or 003_1 if meter has a sub address.
- <year>** Year where data was saved. For example 2013.
- <index>** If an error occurs (date has changed, meter has changed) the firmware creates a new file and counts the index up.
This mechanism prevents that existing data can be overwritten.

4.6.2 File system structure

The internal structure can only be accessed via FTP: SBC file system.

Nom	Ext.	Taille
[.]		<RÉP>
[FILECACHE]		<RÉP>
[INTFLASH]		<RÉP>
[PLC_SYS]		<RÉP>
[UBT_FS]		<RÉP>
[WEB]		<RÉP>

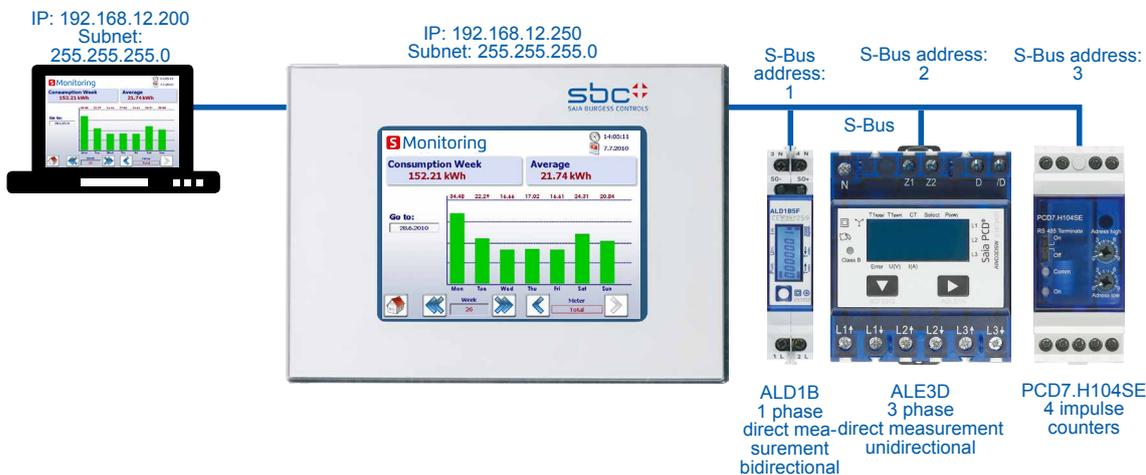
FILE CACHE : Contains the cache memory

INTFLASH : Contains:

- **INTFLASH/CONFIG/**
KEYMAP.DAT → Configure keyboard - only MB with buttons (F-keys).
Does not apply to this MB panel.
PASSWD.DAT → Only displayed if a password has been created
(Forgot your password? → Delete this file.)
TSPOINTS.DAT → For internal use
- **INTFLASH/WEBPAGES** → Directory for all project files which you want to save
"LOCAL-LY" (teq, gif files, etc.)
- **INTFLASH/FONT** → FONT directory must be created by the user.
It contains all the special or additional .bft files containing typefaces.
- **INTFLASH/TRENDLOGS** → TRENDLOGS directory is created automatically
when logs are stored. The .CSV files with the logs are saved to this location automatically
(this uses Web Editor MB Macro S2F).
- **PLC_SYS** → Internal use, no access (configuration sett., uBT_containers, etc.)
- **UBT_FS** → UBT_FS/LOG.TXT List of the startup process + Error info (read only)
- **WEB** → For internal use
- **SL0FLASH** → Created automatically when an SD memory card is use with the SD card
interface.

4.6.3 Example

We have the following configuration of devices and want to read the historical data of the connected meters. Therefore we connect the device with a computer. Both devices have to be in the same subnet. By writing the command in the address window of your web browser you'll get the data.



4

The files we want to get are:

S-Bus address 1 (ALD1B):

- Year 2013

S-Bus address 3.2 (PCD7.H104SE):

- Year 2013

The current file index of all files is 000!

Command

With the following command you can read the file from the file system

```
http://192.168.12.250/INTFLASH:/ENERGYLOG/SBUS_P0/2013/DAY001_2013_000.csv
http://192.168.12.250/INTFLASH:/ENERGYLOG/SBUS_P0/2013/DAY003_2_2013_000.csv
```

Output in web browser:

The command will download the specified file from the file system. Save the file on your computer.

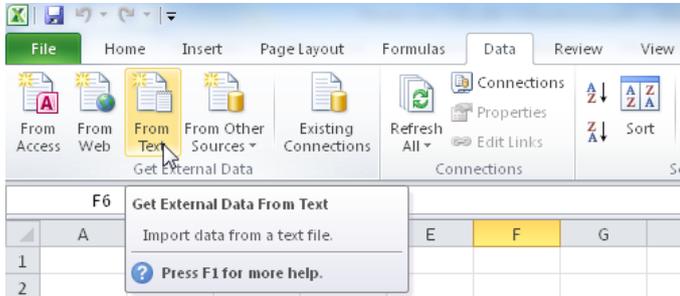
Do not open the files directly with MS Excel! Excel will interpret some energy values as date!



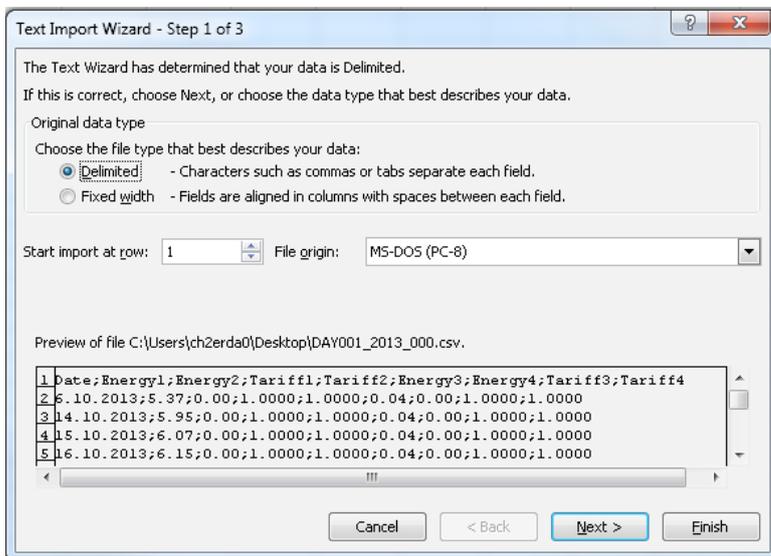
4.7 Import csv files in MS Excel

Open a new document in Excel and select

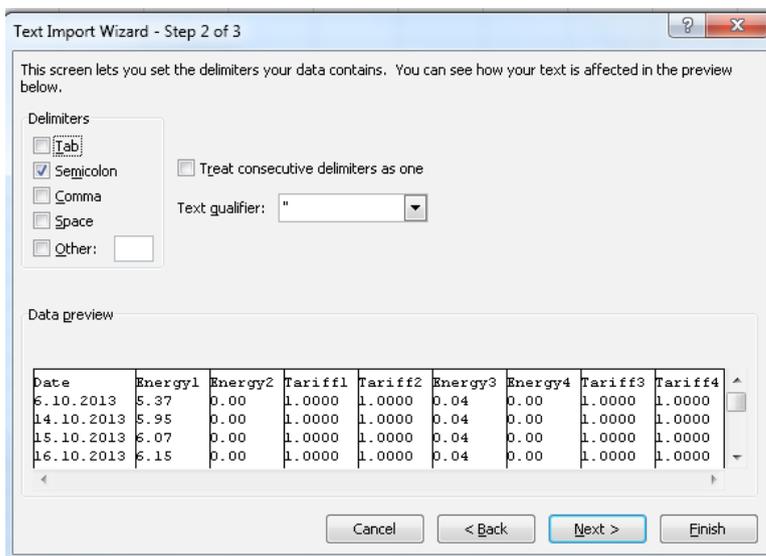
Data / Get External Data / From Text



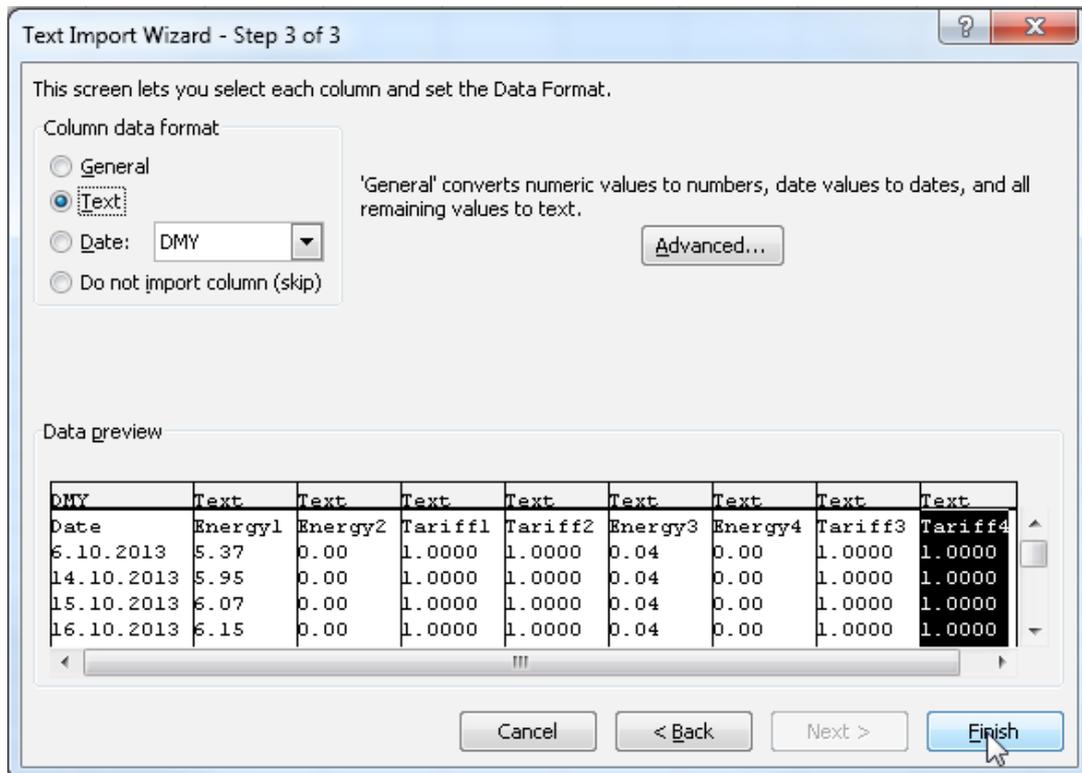
Choose Delimited as option and press next.



The csv file has a semicolon as delimiters. Select semicolon and press next.



To prevent that the data is interpreted as date select text for all data columns.
 Select date DMY for the first column. Finish the import



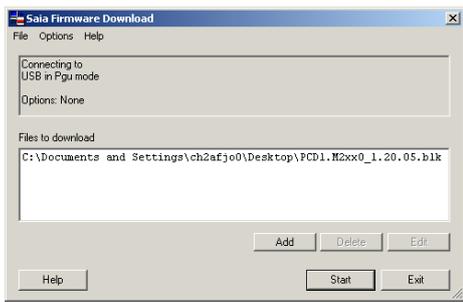
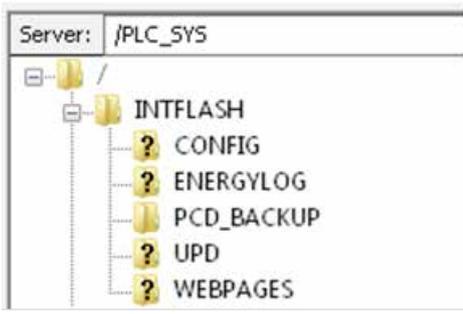
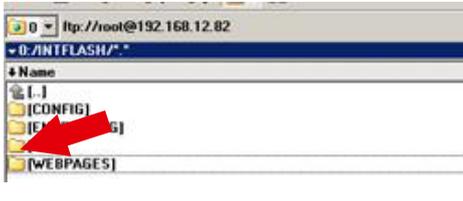
4

Now you have all data for the meter in your Excel spreadsheet.
 The data has always the same structure.

	A	B	C	D	E	F	G	H	I	J
1	Date	Energy1	Energy2	Tariff1	Tariff2	Energy3	Energy4	Tariff3	Tariff4	
2	06.10.2013	5.37	0.00	1.0000	1.0000	0.04	0.00	1.0000	1.0000	
3	14.10.2013	5.95	0.00	1.0000	1.0000	0.04	0.00	1.0000	1.0000	
4	15.10.2013	6.07	0.00	1.0000	1.0000	0.04	0.00	1.0000	1.0000	
5	16.10.2013	6.15	0.00	1.0000	1.0000	0.04	0.00	1.0000	1.0000	
6	17.10.2013	6.24	0.00	1.0000	1.0000	0.04	0.00	1.0000	1.0000	
7	18.10.2013	6.32	0.00	1.0000	1.0000	0.04	0.00	1.0000	1.0000	
8	19.10.2013	6.40	0.00	1.0000	1.0000	0.04	0.00	1.0000	1.0000	

5 Updating and special settings

5.1 Application update

<p>1. PCD/Panel Power ON</p>	
<p>2. Update firmware with Saia FW Downloader</p> <p>Over USB or TCP/IP</p> <p> Caution: According to the previous firmware version, the INTFLASH will be formatted!</p>	
<p>3. Unzip Backup Image</p>	
<p>4. Connect via FTP to Filesystem</p>	
<p>5. Copy folder „PCD_Backup“ in INTFLASH</p>	
<p>6. Press (more than 5 sec.) the reset button to load the backup</p>	
<p>7. Copy webpages over FTP in folder INTFLASH/WEBPAGES of the PCD</p> <p> Caution: Do not copy the tcr-file into PCD!</p>	

5.1.1 Additional information on downloading FW

If problems occur while downloading via a USB connection, try the following solution:

Restart the MB panel with the USB cable REMOVED. Press the Download button and the MB panel's Download mode is activated. Next, connect the USB cable to the MB panel and press Start in the FW Download Service Program

If problems occur while downloading via a USB or ethernet connection, try the following solution:

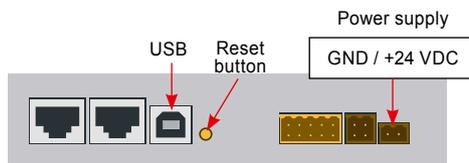
If communications are interrupted during the download process, no notification appears on screen. This is because the FW flash memory is erased at the start of the process.

5.1.2 Safe Firmware Download via USB

5

The safe method for downloading firmware is always via USB.

- Switch off the MB panel
- At the top of the back cover as a hole of 3 mm in diameter. It contains a button. Take a narrow-tipped pen or a small screwdriver (any cylindrical object with a diameter of 3 mm is suitable) and use it to hold down the button for short while. You can see the location of the Reset button in the figure:



- Switch on the MB panel with ON at the same time. Wait 3–4 sec. until the LED starts to flash.
Then download the FW using the SBC FW Service Program.

CAUTION: The *.blk file type is used for a complete FW file. Only use files intended for the PCD7.D457VT5E0 panel, which were supplied by Saia-Burgess Controls AG.

5.2 Reset / Resetting the device to factory settings

In a number of particular cases, the Reset button can be used to fully reset the MB panel and restore the factory default settings.

When could this function be of use?

If, for example, you have copied the local file required for an FTP connection with the local server into the wrong directory or have unintentionally deleted data which is necessary for displaying the Setup menu. The most common error is the appearance of the message **“uB-Terminal not found”**, while the content on screen remains unchanged. In such a case, proceed as follows:

- Switch off the MB panel with OFF
- Activate the Reset button (see 14.2.1), at the top of the device's rear cover, by holding down the button.
- Switch on the MB panel at the same time. After approx. 5 sec., the buzzer is activated with increasing frequency.
- Once the pitch (or the frequency) of the buzzer has stabilised (after approx. 10 sec.), re-lease the Reset button and wait.
- You may have to wait to 1 to 2 minutes. During this time, the FW is reconstructing the whole organisation of the memory and recreating all the files which are required for the default settings. Finally, the MB panel reboots automatically, and you will be asked to recalibrate the touchscreen. Once you have calibrated it, the system has been fully restored.

5.3 Backlight

The period for which the backlight remains on can be set manually. This function helps to save energy. If the backlight is deactivated, you will save approx. 3/4 watts, which is no negligible value. This will also extend the service life of the backlight.

Service life of the backlight

The normal service life of the backlight (at 25 °C) is defined as approx. 50 Kh. This corresponds to 5 years of continuous use. However, this value is quickly reduced (to half or less), if the operating temperature is 10 °C or less. It makes sense for the user to take this into account and to adapt the standby period of the backlight accordingly.

6 Energy Monitoring Tags

This document describes the tag interface provided by the Energy monitoring part in the PLC. It is accessible via its Web interface. All tags are accessed via NT-EM,<tag> syntax.

6.1 General

Syntax: NT-EM,<tag>

Tag	Access	Save	Remark
Date	RW	Y (RTC)	syntax → dd.mm.yyyy
Time	RW	Y (RTC)	syntax → hh:mm:ss
Year	R	N	Returns current year
UserTrimm	RW	Y (RTC)	[sec per 24h] The RTC can be adjusted in a range from -5.53...9.504 sec per day. Note: The default RTC factory trimming is set to +7.43 sec per day, therefore the user can adjust it from -12.96...2.074 sec per day. The value is limited to this range.
DeviceName	RW	Y	max size of device name is 32 chars, default is "EnergyManager"
Language	RW	Y	max size for language definition file name is 16, default is "german.csv"
Currency	RW	Y	max size for currency is 16, default is "Euro"
PeriodicLogTime	RW	Y	defines the time interval in minutes, in which the periodic log file is written (min = 3, default = 15, max = 60 minutes)
KeepTimeIndex	RW	Y	defines after how many years the log files are automatically deleted (min = 0 → never deleted, default = 4, max = 5)
User<n>	RW	Y	user name 1...4
Password<n>	RW	Y	password 1...4 → corresponds to user 1...4
HasDuplicatedUser	R	N	if tag "User<n>" is written with a name that already exists for an other user, it is ignored and this tag returns "1" for 5 seconds
Lock.<n>	RW	N	Lock PPO, <n>: 1...4. This can be used to realize a pseudo single access in the WebApp. The App has to trigger the tag. If the timeout elapses, the PPO is unlocked read: -1 → invalid <n> 0 → not locked, 1 → locked write: 0 → unlock, 1...59 sec timeout
LogFileMerge	R	N	0 → automatic log file merge inactive 1 → active
Save	RW	N	read: 0 → not changed, 1 → changed write: 0 → cancel (do not save), 1 → save

6.2 S-Bus

Syntax: NT-EM,<tag>

Tag	Access	Save	Remark
SBus0MaxAddr	RW	Y	defines highest address, that is scanned. min = 0, default = 32, max = 127
SBus0Baudrate	RW	Y	Baudrate on S-Bus*. Valid baudrates are: 4800, 9600, 19200, 38400, 57600 and 115200. Default baudrate is 57600
SBus0Baudrate Index	RW	(Y)	→ baudrate* can also be set via its index (→ drop down list) 2 → 4800, 3 → 9600, etc
SBus0Retries	RW	Y	(re)tries on S-Bus. min = 1 (→ no retries), default = 2, max = 5
SBus0Timeout	RW	Y	the minimal timeout [ms] depends on configured baudrate and is automatically set to minimal value if baudrate is changed min = default = f (baudrate), max = 1000
SBus0Tolerance	RW	Y	defines the time in minutes, where the counter has to be unreachable, till it is marked as lost. 0 → immediately (→ like now), default 1min, max 15 min (NOTE: changeable in config file only!)
BoostScan	RW	N	read: 0 → boost scan not active, 1 → boost scan active write: 1 → start boost scan. S-Bus is initialized with its configured parameters but 1 retry (to get a faster scan), after scanning the bus it reinitialized with configured retries
CurrentCounter	R	N	return current used S-Bus address
FoundCounter	R	N	return count of found counters on bus
SBus0Save	RW	N	read: 0 → not changed, 1 → changed write: 0 → cancel (do not save), 1 → save

*See chapter A2

6.3 Counter

Syntax: NT-EM,<Addr>,<tag>

- <Addr> → direct addressing e.g. “5” counter with address 5
- direct addressing sub counter “6.1” sub counter “1” at address “6”
- “Addr” → current session address is used
- “Ref” → reference counter (→ compare)
- “Chg” → first counter in counter change list (see counter change)

Session			
Tag	Access	Save	Remark
HasSession	R	N	read: 0 → no free session for this client 1 → session for client available
SessionTimeout	RW	N	read: returns current session timeout [sec] write: set clients session timeout in a range of 1...600 sec (written value is limited to this bounds)
Navigation			
Tag	Access	Save	Remark
Addr	RW	N	read: returns current session address write: set current session address
First	RW	N	read: 0 → no previous counter, 1 → has previous counter write: 1 → set addr to first counter
Next	RW	N	read: 0 → no next counter, 1 → has next counter write: 1 → set addr to next counter
Prev	RW	N	read: 0 → no previous counter, 1 → has previous counter write: 1 → set addr to previous counter
Last	RW	N	read: 0 → no next counter, 1 → has next counter write: 1 → set addr to last counter
Navigation List			
It is possible to choose current counter from a scroll list instead of up / down move (→ “First”, “Next”, “Prev”, “Last”)			
Tag	Access	Remark	
NaviFirst	RW	read: 0 → can't move list up, 1 → can't move list up write: scroll list to top	
NaviUp	RW	read: 0 → can't move list up, 1 → can't move list up write: scroll list up	
NaviDown	RW	read: 0 → can't move list down, 1 → can't move list down write: scroll list down	
NaviBottom	RW	read: 0 → can't move list down, 1 → can't move list down write: scroll list to bottom	
NaviElement_<n>	RW	0 ≤ n ≤ 7 read: returns name of counter at list position <n> write: set counter at list position <n> as current counter	

Common			
Tag	Access	Save	Remark
CounterState	R	N	0 → never detected 1 → detected, but not updated 2 → updated
Type	R	N	0 → counter on S-Bus 1 → group 2 → Soft counter
UserType	RW	Y	Allows the user to set a free type for a counter (e.g. to handle it differently in the GUI). UserType is default presetted with: - ASN number → S-BusCounter - "Group" → groups - "UserCounter" → SoftCounter
Direction	R	N	"UC" → unidirectional consumption "BI" → bidirectional a "P" is added if it is a pulse counter (H104)
Name	RW	Y	Name of the counter (max 23 chars)
Unit	RW	Y	Unit of the counter (max 8 char) Default for counters on S-Bus is „Wh“, for all others „“
UnitExp	RW	Y	Exponent of „Unit“ 0 → base Unit, 3 → Kilo (k) Default for counters on S-Bus is 3 (→ kWh), for all others 0
LiveSign	R	N	incremented on every update
DeleteLogData	W	N	-1 → delete all log files 0 → delete log files of this counter
PresetTariff	W	N	S-Bus counter only: Set all WT<x>Tariff like in this counter
ChangeOffset	RW	N	read: 0 → counter can not be added to change offset list, 1 → counter can be added write: 1 → add counter to counter change list
CounterWT<n>IsUsed	R	N	0 → WT<n> not used, 1 → WT<n> used
CounterWT<n>Divisor	RW	Y	With this divisor the native value is divided to get a physical unit from impulse count. (NOTE: use it for pulse counter only)
SaveCounter			read: 0 → not changed, 1 → changed write: 0 → cancel (do not save), 1 → save

Tag	Access	MinMax	ALD1D	ALD1B	ALE3D	ALE3B	AWD3D	AWD3B	H 104SE	SoftCounter	Group	Remark
FW	R	N	•	•	•	•	•	•	•			Firmware version
Asn1	R	N	•	•	•	•	•	•	•			ASN reg 1
Asn2	R	N	•	•	•	•	•	•	•			ASN reg 2
Asn3	R	N	•	•	•	•	•	•	•			ASN reg 3
HW	R	N	•	•	•	•	•	•	•			Hardware version
SerNum	R	N	•	•	•	•	•	•	•			Serial number
Error	R	N	•	•	•	•	•	•	•		•	0 → no error, 1 → at least an error on one phase
Error.1	R	N	•	•	•	•	•	•	•		•	0 → no error, 1 → error on phase 1
Error.2	R	N			•	•	•	•			•	0 → no error, 1 → error on phase 2
Error.3	R	N			•	•	•	•			•	0 → no error, 1 → error on phase 3
TransRatio	R	N	•	•	•	•	•	•				
Tariff	R	N			•							
WT1total	R	N	•	•	•	•	•	•	•	•	•	Counter 1 (used 1)
WT2total	R	N			•					•	•	Counter 2 (used 2)
WT3total	R	N		•		•		•			•	Counter 3 (produced 1)
WT4total	R	N									•	Counter 4 (produced 2)
WT1part	RW	N	•		•	•	•					Partial counter 1 (write → 0 only)
WT2part	RW	N			•							Partial counter 2 (write → 0 only)
WT3part	RW	N				•						Partial counter 3 (write → 0 only)
WT4part	RW	N										Partial counter 4 (write → 0 only)
UrmsL1	R	Y	•	•	•	•	•	•		•	•	
IrmsL1	R	Y	•	•	•	•	•	•		•	•	
PrmsL1	R	Y	•	•	•	•	•	•		•	•	
QrmsL1	R	Y	•	•	•	•	•	•		•	•	
CosPL1	R	Y	•	•	•	•	•	•		•	•	
UrmsL2	R	Y			•	•	•	•		•	•	
IrmsL2	R	Y			•	•	•	•		•	•	
PrmsL2	R	Y			•	•	•	•		•	•	
QrmsL2	R	Y			•	•	•	•		•	•	
CosPL2	R	Y			•	•	•	•		•	•	
UrmsL3	R	Y			•	•	•	•		•	•	
IrmsL3	R	Y			•	•	•	•		•	•	
PrmsL3	R	Y			•	•	•	•		•	•	
QrmsL3	R	Y			•	•	•	•		•	•	
CosPL3	R	Y			•	•	•	•		•	•	
Prmstotal	R	Y			•	•	•	•		•	•	
Qrmstotal	R	Y			•	•	•	•		•	•	

WT[<x>]total.<subTag>

Tag	Access	Remark
WT<x>total.Native	R	counter value divided by divisor (but without offset added)
WT<x>total.Day	R	energy per day
WT<x>total.Week	R	energy per week
WT<x>total.Month	R	energy per month
WT<x>total.Year	R	energy per year
WT<x>total.Day10	R	energy in current 10 min interval
WT<x>total.Day15	R	energy in current 15 min interval
WT<x>total.Day60	R	energy in current 60 min interval
WT<x>total.Day10Last	R	energy in last 10 min interval
WT<x>total.Day15Last	R	energy in last 15 min interval
WT<x>total.Day60Last	R	energy in last 60 min interval
WT<x>total.TariffWriteEnabled	R	<1> → tariff can be written <0> → tariff can't be written
WT<x>total.Tariff	RW	factor to calculate cost from energy
WT<x>total.CostDay	R	cost per day
WT<x>total.CostWeek	R	cost per week
WT<x>total.CostMonth	R	cost per month
WT<x>total.CostYear	R	cost per year
WT<x>total.CostDay10	R	cost in current 10 min interval
WT<x>total.CostDay15	R	cost in current 15 min interval
WT<x>total.CostDay60	R	cost in current 60 min interval
WT<x>total.CostDay10Last	R	cost in last 10 min interval
WT<x>total.CostDay15Last	R	cost in last 15 min interval
WT<x>total.CostDay60Last	R	cost in last 60 min interval
WTtotal.Day	R	sum WT1total and WT2total
WTtotal.Week	R	sum WT1total and WT2total
WTtotal.Month	R	sum WT1total and WT2total
WTtotal.Year	R	sum WT1total and WT2total
WTtotal.Day[10 15 60]	R	sum WT1 and WT2 energy in current 10 15 60 min interval
WTtotal.Day[10 15 60]Last	R	sum WT1 and WT2 energy in last 10 15 60 min interval
WTtotal.CostDay	R	sum WT1total and WT2total
WTtotal.CostWeek	R	sum WT1total and WT2total
WTtotal.CostMonth	R	sum WT1total and WT2total
WTtotal.CostYear	R	sum WT1total and WT2total
WTtotal.CostDay[10 15 60]	R	sum WT1 and WT2 cost in current 10 15 60 min interval
WTtotal.CostDay[10 15 60]Last	R	sum WT1 and WT2 cost in last 10 15 60 min interval

Min/Max tracker → <REG>.<MinMaxTag>

Tag	Access	Remark
ScaleVal	RW	scale factor [%]
ScaledMin	R	scaled min, rounded (scale factor less than min, recalculated if min gets less than it)
ScaledMax	R	scaled max, rounded (scale factor more than max, recalculated if max reaches it)
Max	RW	read: max value write: max value reset
Min	RW	read: min value write: min value reset

CalcWTx.<cmd>

<cmd> → <select> <period> <calc> [<unit>] [<width>]

	Description
select	selects WT _x data: “W” → WTtotal.<tag> “C” → WTtotal.Cost<tag>
period	period selects WT _x time «D» → day «W» → week «M» → month «Y» → year NOTE: do not define <period> field for Bar.CalcWT _x !
calc	calculates sums and differences of addressed values. «add<X>» → plus <X> «sub<X>» → minus <X> <X>: 1...4
unit	optional, prints unit. The unit is taken from the addressed counter. [] → not present. The native value is printed (e.g: if the calculated value is 3.62 kWh, the returned value is “3.62” “U” → value is printed with unit (e.g: if the calculated value is 3.62 kWh, the returned value is “3.62 kWh”
width	max. chars to use in string (without unit) “W<x>” → <x> chars

Example (energy meter):

CalcWTx.WDadd1add2sub3sub4U	returns today's energy WT ₁ + WT ₂ – WT ₃ – WT ₄ with its unit
CalcWTx.CWadd1	returns (+)WT ₁ .Cost of week. It is the same, as tag “WT ₁ total.CostWeek” would return
CalcWTx.CWadd1sub3W5	returns string that fits in 5 chars WT ₁ – WT ₃ with modifier “k” (kilo), “M” (mega) or “G” giga. e.g: “345.2 k”
CalcWTx.CWadd1sub3UW5	same as above but with unit. e.g: “345.2 kWh”

6.4 Group configuration

Navigation			
Tag	Access	Save	Remark
GCActiveGroupIndex	RW	N	read: active group index write: valid group index (0 >= index < max) → active group set, -1 → clear group configuration
GCGroupSelect	RW	N	read: -1 no previous group, 0 previous and next group, 1 no next group write: if group configuration is unchanged -1 move to previous, 1 to next group if possible
GCGroupSelectDown	R	N	read: 0 → no previous group, 1 → has previous group
GCGroupSelectUp	R	N	read: 0 → no next group, 1 → has next group
GCActiveGroupName	RW	Y	read / write: name of active group
GCGroupSave	RW	N	read: 0 → not changed, 1 → changed write: 0 → cancel (do not save), 1 → save
Configuration			
Tag	Access	Save	Remark
GCPoolFirst	RW	N	read: 0 → no previous counter, 1 → has previous counter write: 1 → move to top of list
GCPoolUp	RW	N	read: 0 → no previous counter, 1 → has previous counter write: 1 → move up
GCPoolDown	RW	N	read: 0 → no next counter, 1 → has next counter write: 1 → move down
GCPoolLast	RW	N	read: 0 → no next counter, 1 → has next counter write: 1 → move to bottom of list
GCGroupFirst	RW	N	→ GCPoolFirst, but for group list
GCGroupUp	RW	N	→ GCPoolUp, but for group list
GCGroupDown	RW	N	→ GCPoolDown, but for group list
GCGroupLast	RW	N	→ GCPoolLast, but for group list
GCPoolElm_<n>	RW	N	<n> = 0 ... 7 read: name of list element <n> → counter name write: 1 move element <n> into group list
GCGroupElm_<n>	RW	Y	→ GCPoolElm_<n>, but for group list write: 1 move element <n> into pool list save: → GCGroupSave
GCGroupElmSign_<n>	RW	Y	<n> = 0 ... 7 read: -1 member <n> counts negative, 1 member <n> counts positive write: change sign save: → GCGroupSave

6.5 Counter change

A S-Bus counter can be added to counter change list:

- The System detects a change ASN or SN is changed or a stored counter state is not plausible
- The counter is added via tag "ChangeOffset" to the list

If a counter is added to the change list, its offset is preset in a way to get the last known value.

Tag	Access	Remark
CounterChgCount	RW	read: count of counters in change list write: -1 rotate list backward, 1 → rotate list forward
CounterChgAddr	R	return actual counter address
CounterChgCmd	W	0 → everything is ok, continue with current log files if possible 1 → reset offset and start with new logfiles
CounterChgCurrVal<n>	R	return current counter value
CounterChgOffset<n>	RW	read: current offset write: new offset → recalculate new val
CounterChgLastKnownVal<n>	R	return last known value
CounterChgNewVal<n>	RW	read: new value write: new value → recalculation offset

6.6 Bardata

The device can hold bar data for one counter for one year in its memory. Therefore the data has to be reloaded if year or counter changes. Bardata are calculated for three periods (Week, Month and Year). There is the possibility to navigate through the periods, get statistical data over it and bar data for each bar in period.

Week				
Tag		Access	Remark	
Bar.Week.	GoToday	W	go to today date	
	Num	RW	week number in actual displayed year	
	Date	RW	read: monday date of displayed week write: date	
	NumInc	W	increment week number	
	NumDec	W	decrement week number	
	Energy.	→ StatFields	R	see StatFields
	Cost.			
	Mon.	→ BarFields	R	see BarFields
	Tue.			
	Wed.			
	Thu.			
	Fri.			
	Sat.			
	Sun.			
Month				
Tag		Access	Remark	
	GoToday	W	go to today date	
	Num	RW	read: month number write: navigate to month	
	Date	RW	read: 1st of displayed month write: date	
	MonthInc	W	increment month	
	MonthDec	W	decrement month	
	Days	R	count of days in this month	
	Energy.	→ StatFields	R	see StatFields
	Cost.			
	Day.<DayNum>	→ BarFields	R	see BarFields

Year				
Tag		Access	Remark	
Bar.Week.	GoToday	W	go to today date	
	Year	RW	displayed year	
	Energy.	→ StatFields	R	see StatFields
	Jan.			
	Feb.	→ BarFields	R	see BarFields
	Mar.			
	Apr.			
	May.			
	June.			
	July.			
	Aug.			
	Sept.			
	Oct.			
	Nov.			
Dec.				
DayXX → XX = [10 15 60]				
Tag		Access	Remark	
Bar.DayXX	GoToday	W	go to today date	
	Date	RW	read: date of loaded day write: date	
	DayInc	W	increment day	
	DayDec	W	decrement day	
	Energy.	→ StatFields	R	see StatFields
	Cost.			
	Day10			
	Hour.<Hour>.<Min>	→ BarFields	R	see BarFields <Hour> → 0...23 <Min> → 0, 10, 20, 30, 40, 50
	Day15			
	Hour.<Hour>.<Min>		R	see BarFields <Hour> → 0...23 <Min> → 0, 15, 30, 45
	Day60			
	Hour.<Hour>		R	see BarFields <Hour> → 0...23

6.7 StatFields

Get statistical information

Tag	Access	Remark
ScaledMin	R	0
ScaledMinPart.<Part>	R	returns (ScaledMin / 20.0) * <Part> (→ 0 ≤ Part ≤ 20)
Min[.0 1]	R	0
Max[.0 1]	R	Max value
ScaledMax	R	120% max value
ScaledMaxPart.<Part>	R	returns (ScaledMax / 20.0) * <Part> (→ 0 ≤ Part ≤ 20)
Sum[.0 1]	R	Sum over values
Average[.0 1]	R	Average of values

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For bidirectional counters there is the need to have the statistical information for consumed and produced direction. The statistical tag can be expanded with .1 to get produced information.

<Tag> or <Tag>.0 → consumed direction
 <Tag>.1 → produced direction

6.8 BarFields

Get bar data information

Tag	Access	Remark
CalcWTx.<cmd>	R	see "CalcWTx.<cmd>" for counters. NOTE: because the period information is already defined in the tag, it is not valid for Bar.CalcWTx!
IsValid	R	0 → not valid, 1 valid
IsAverage	R	0 → no average, 1 → average
Energy1	R	energy counter 1
Energy2	R	energy counter 2
Energy	R	sum of energy 1 and 2
Cost1	R	cost counter 1
Cost2	R	cost counter 2
Cost	R	sum of cost 1 and cost 2

6.9 Counter compare

The displayed bar data can be stored and accessed through "NT-EM,Ref,Bar.<...>". It is possible to compare then 2 periods of two counters. NOTE: the reference is fixed and can not be modified or changed. The variable part is accessed via "NT-EM,Addr,Bar.<...>"

Tag	Access	Save	Remark
SetRefYear	RW	N	read: 0 → ref data are not valid, 1 → ref data is valid write: 0 → discharge ref data, 1 → set current data as ref
SetRefDay	RW	N	read: 0 → ref data are not valid, 1 → ref data is valid write: 0 → discharge ref data, 1 → set current data as ref

A Appendix

A.1 Symbols

	In operating manuals, this symbol refers the reader to other information in the manual or to information in other manuals or technical documentation. Direct links to other documentation are not provided.
	Instructions with this symbol must always be observed.

A.2 Baud rates of the energy meters



Single-phase energy meters up and including to the HW-version 1.2 and three-phase energy meters up to the and including HW-version 1.4 support the following baud rates:

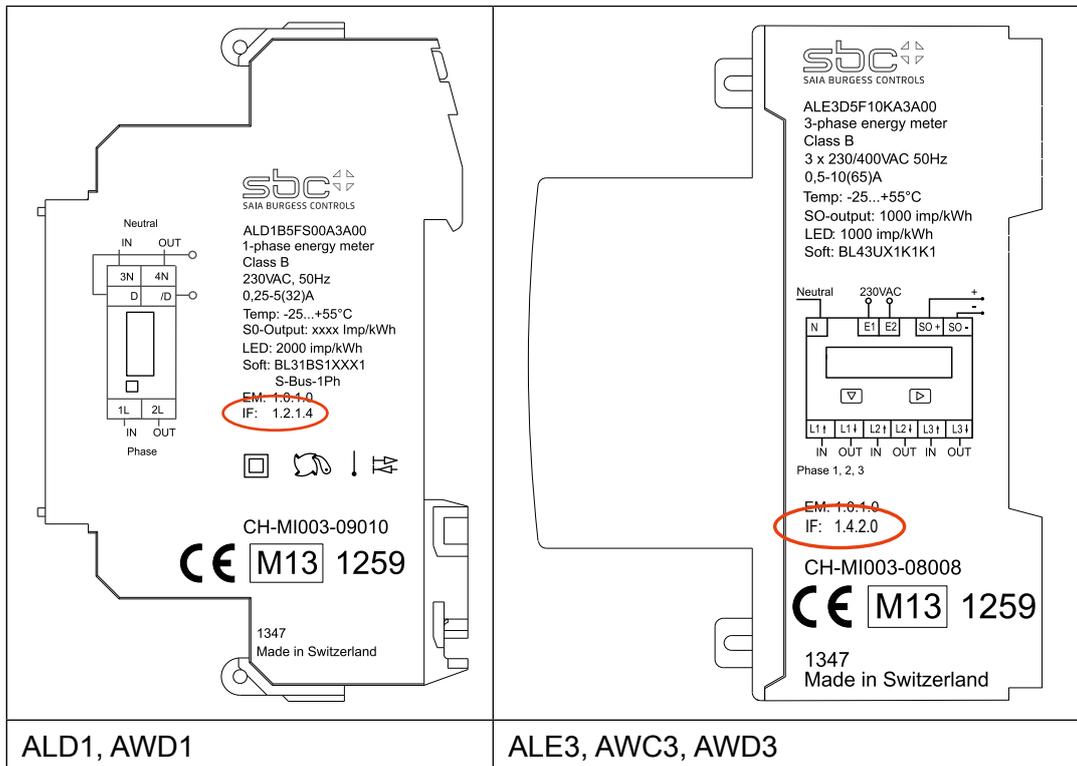
1200, 2400, 4800, 9600, 19 200, 38 400, 57 600 and 115 200



Single-phase energy meter from the HW-version 1.3 and three-phase energy meter the HW version 1.5 support only the following baud rates:

4800, 9600, 19 200, 38 400, 57 600 and 115 200

The hardware version is lasered on the energy meter:



Printing keys:

IF HW.HW.FW.FW

Example ALE3 with old hardware: IF 1.4.2.9

Example ALE3 with new hardware: IF 1.5.2.3

A.2.1 Drop-down lists for the baud rates of energy meters

List entry	Baud rate with old HW	Baud rate with new HW
0	1200	---
1	2400	---
2	4800	4800
3	9600	9600
4	19200	19200
5	38400	38400
6 (default)	57600	57600
7	115200	115200

A.5 Mailing address for Saia-Burgess Controls AG

Saia-Burgess Controls AG

Bahnhofstrasse 18
3280 Murten, Switzerland

Phone +41 26 580 30 00

Fax +41 26 580 34 99

E-Mail: info@saia-pcd.com

Homepage: www.saia-pcd.com

Support: www.sbc-support.com

Mailing address for return shipments from customers of the Swiss office:

Only for products with a Saia-Burgess Controls AG order number.

Saia-Burgess Controls AG

Service Après-Vente
Bahnhofstrasse 18
3280 Murten, Switzerland

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