Saia PCD® Energy Manager
5.7"

Locally record, display and communicate consumption data

Capture energy data and electrical values from bus-capable electricity meters

- ▶ Can be connected to up to 128 electricity meters
- ▶ Automatic detection of meters on connection

Display and analysis of electrical energy values

- ▶ Current energy values: meter readings, electrical work, effective & idle power, power factor cosφ
- ▶ Electrical variables: voltage, current, min/max values
- ▶ Display of output in trend graph form
- ▶ Recording of historical data and representation in bar chart form (day/week/month/year)

Cost analysis

- ▶ Costs already incurred
- ▶ Display of costs in a trend graph form
- ▶ Recording of historical data and representation in bar chart form (day/week/month/year)
- ▶ Configurable for two tariffs, including recording the tariff changeover

Automatic report creation and printing function

- ▶ Network printing

Operation via network or internet

- ▶ Access the user interface on any PC with a standard browser – no need to install software
- ▶ Mobile access via mobile phone, iPhone, iPad and PDA

Logging and long-term recording

- ▶ Automatically generated log files in Excel-compatible CSV format
- ▶ Internal storage on integrated 1GB SD memory card
- ▶ Access to log files via FTP
- ▶ Log files sent automatically via e-mail
- ▶ Transfer data to an SQL server using S-Energy Logger

Integration into automation systems

- ▶ User interface can be modified and extended using S-Web Editor
- ▶ Add new functions with PLC programming
- ▶ Exchange data with Saia PCD® and third-party controllers

S Energy

S-Energy – Your easy start in energy management

With S-Energy, electric metering and monitoring of energy consumption becomes very easy. As well as being designed to be simple to install and operated S-Energy is also highly flexible and easily expanded. Simply Install the meters at the machine or appliance in the usual way and connect the meters to the Energy Manager with a simple two wire data cable:
The installation is up and running and energy data immediately appears on the operator panel in graphical format. The Energy Manager also easily connects to corporate networks via Ethernet – in this way remote energy analysis and operation can be carried out from your office PC using any web browser. S-Energy is scalable and can also be customized according to management requirements. S-Energy is therefore your tool to develop energy monitoring and control tailored to company needs.

▸ **Out of the box and it's up and running**
  ▸ Bespoke software installations or complex configurations are not necessary

▸ **S-Energy expands without limits in line with capacity and functional planning**
  ▸ Simply add meters where they are required
  ▸ Integrate S-Energy into the corporate network for remote access and additional data analysis
  ▸ Includes the network communication interfaces to the automation and control level

▸ **Capture energy consumption data with minimum up front investment**
  ▸ Developing energy management in small calculable steps
  ▸ Short decision making process
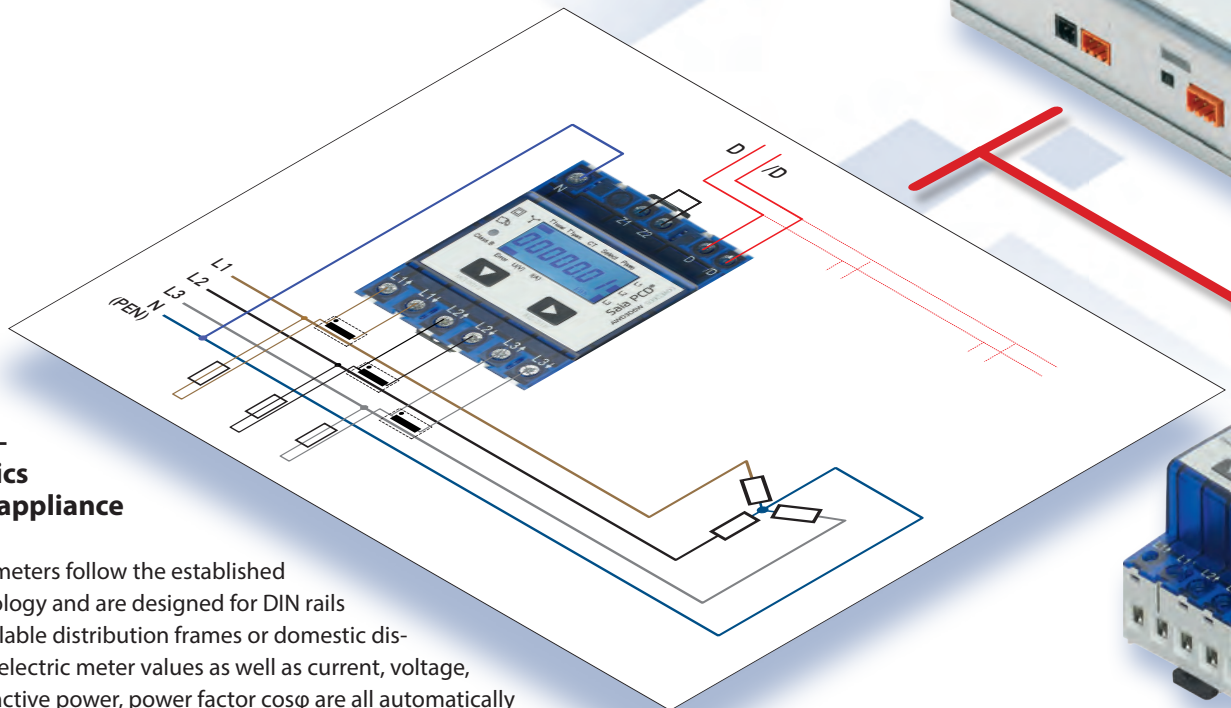
Bus-enabled electric meters – targeted statistics per machine or appliance

S-Energy electricity meters follow the established installation methodology and are designed for DIN rails of commercially available distribution frames or domestic distribution boxes. The electric meter values as well as current, voltage, active power and reactive power, power factor cosφ are all automatically recorded. The meter communication bus system works up to distance of 1 km, the values are transmitted to Energy Manager which logs, analyses and presents the data in graphical format.

▸ Wide range of single and 3-phase energy meters up to a maximum of 1500 A
▸ Measuring Instruments Directive (MID) – approved for metering and billing purposes

Remote access –
meter reading via the internet using your PC

Energy Managers can be connected to any home or corporate network. Meter readings and operation can be carried out using any computer with a standard browser such as IE, Firefox and Opera. There is no need for any special software to be installed on your PCs.

Using S-Energy you have full control of your installations by using remote access – saving the electrician the periodic individual site visits.

Internet
Intranet
Netzwerk

E-Mail

SMS

Energy Manager – graphical display of consumption values on site

The Energy Manager displays the consumption reports using a high-quality colour TFT operator panel. Energy values such as electrical power and work (kWh) as well as costs can be presented as meaningful diagrams via an intuitive touch based user interface. In addition, the Energy Manager records captured values in an Excel-readable CSV file which can be easily transferred to a defined PC via FTP. The Energy Manager is ready for use out of the box without any additional configuration needed. Electricity meters are automatically detected and displayed in the user interface.

▸ High-quality 5.7" colour TFT display (VGA/640 × 480 pixels) with touch-screen

▸ **Out of the box data capture and storage**
  ▸ Up to date energy values
  ▸ Historical data recording (day/week/month/year)
  ▸ Costs (day/week/month/year)

▸ Recording in Excel-readable files on integrated 1 GB SD memory card

▸ Up to 128 electric meters can be connected to a single operator panel with automatic meter detection

Saia PCD® Energy Manager
Locally record and analyse energy values

The S-Energy Manager is designed for trouble-free installation in the vicinity of the consumer. This makes energy consumption on the spot visible. The S-Energy Manager has all the functionality required to analyse electrical operating data and consumption values out in the field.

Automatically create and print reports

At the push of a button, the S-Energy Manager can create reports and print them out. Report creation and printout are designed to be remarkably easy; simply navigate to the desired week, month or year view and press the button for the print function – before you know it, your costs and consumption values are already on paper.

▶ Weekly/monthly/annual report for consumption and costs
▶ Bar chart and detailed list of individual values
▶ Printing to PCL-compatible network printers

Group electricity meters

The connected energy meters can be combined into groups. Consumption, output and costs are combined and can be called up in the form of an additional, virtual meter.

▶ A convenient method of combining areas of buildings, production units, groups of machines, etc. without the need for additional meters
▶ Can be adapted flexibly to suit changing consumer installations
▶ Up to 4 groups can be configured
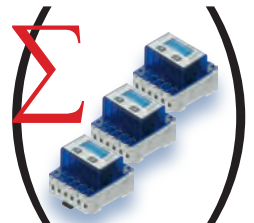
Manage users

The S-Energy Manager differentiates between normal users and administrators. Users have read-only access to the S-Energy Manager, i.e. they cannot change any settings. Configuring the system is a right reserved to administrators. You can switch to administrator mode by entering a freely-definable password.

▶ No accidental changes can be made to settings by operators who lack the proper knowledge

Monitor voltage and output

The S-Energy Manager continuously monitors the output values of each individual energy meter, and records both the maximum and minimum values over days, weeks or even years. For electricians, these values offer a solid basis of making decisions on whether to load circuits with additional consumers. In addition, the voltage and output can be compared with configurable limit values. If these values are exceeded or not met, the integrated relay outputs are activated which, for instance, could be used to control an indicator light or even to initiate a peak-load shutdown.

▶ Continuous recording of min/max values for the output of individual circuits
▶ Configurable voltage and output monitoring with relay contact output
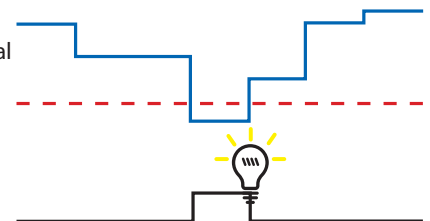
Networked analysis and logging

Thanks to web technology and its LAN interface, you can access all the functionality of the S-Energy Manager over your corporate network. Access to energy values and log files from the office or IT system is designed to be impressively simple – even over the internet.

Online viewing

An integrated web server and ethernet interface allow for integration into existing networks and communication over the internet. This makes it possible to call up the user interface from your office PC or even from a mobile phone; you can query consumption values using a standard web browser from any location.

▶ Locally: web panel
▶ Company/office: LAN/WLAN
▶ Globally: internet, telecommunications
▶ Mobile: PDA, iPad, iPhone, mobile phone

Logging of consumption data

The S-Energy Manager logs all values from the connected energy meters in log files. These files can be analysed and processed further in Microsoft Excel. Log files are stored in the file system of the S-Energy Manager and can be transferred to higher-level systems or PCs via the integrated FTP server.

▶ Data logging in the Excel-compatible CSV format
▶ Report generation and printing in Excel
▶ Access to log files via FTP

Send log files automatically via e-mail

Log files can be sent automatically once a day or weekly via e-mail. To do this, all that is required is to specify a mail server and a recipient address, and then the desired log files will arrive promptly and reliably in your inbox.

▶ Simple file transfer to Office programs (e.g. Outlook)
▶ Files sent daily or weekly via e-mail
▶ Files sent manually via e-mail as a one-off, at the push of a button

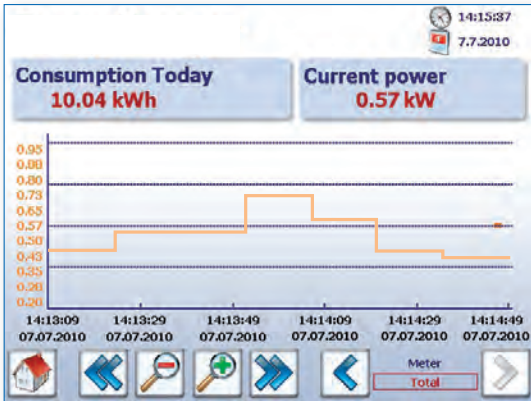### Database connection – provision of consumption values for other computing applications

Energy values registered by the Energy Manager can be forwarded to SQL databases.

▶ Save energy data to SQL databases with S-Energy Logger
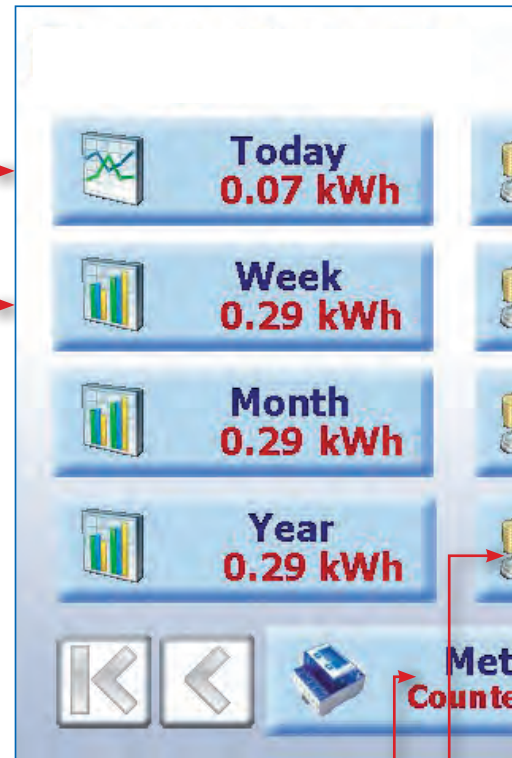▶ Supported databases: MySQL, Microsoft SQL Server
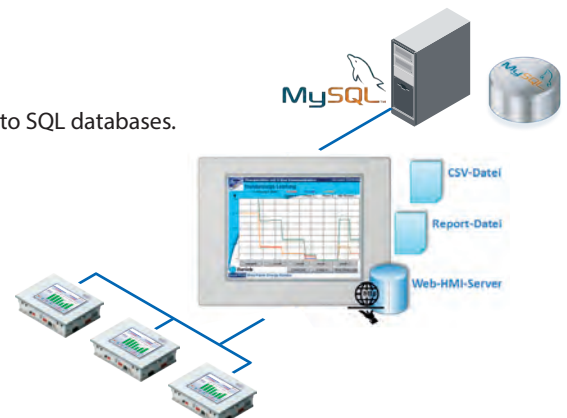
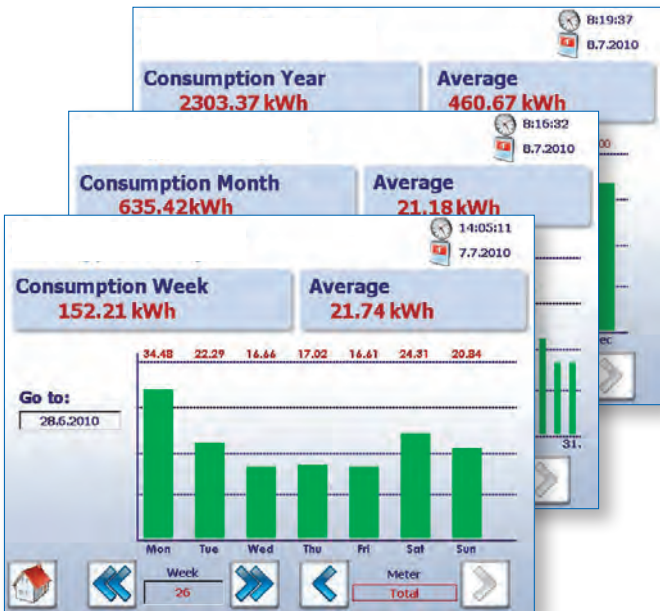# Saia PCD® Energy Manager
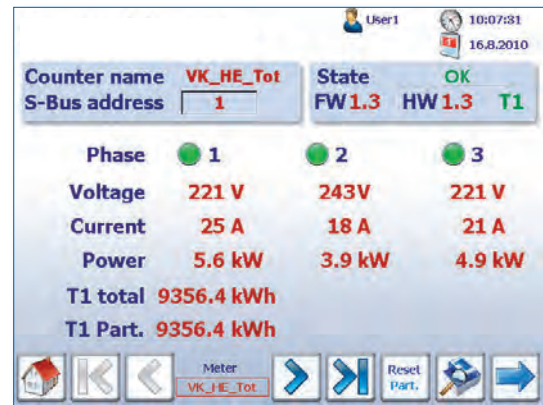## Operation and navigation
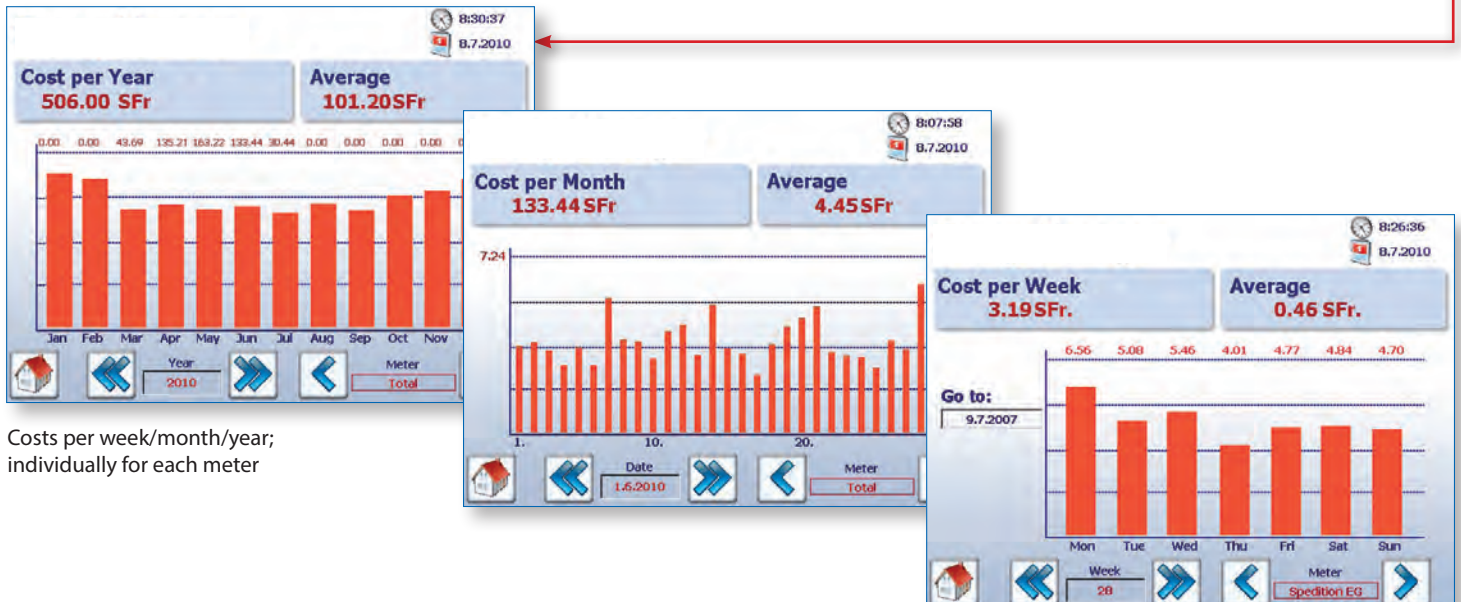

Present consumption in a trend graph form

The main menu –
all consumption values at a glance

Consumption per week/month/year;
individually for each meter

Meter status – can be called up separately for each
meter connected

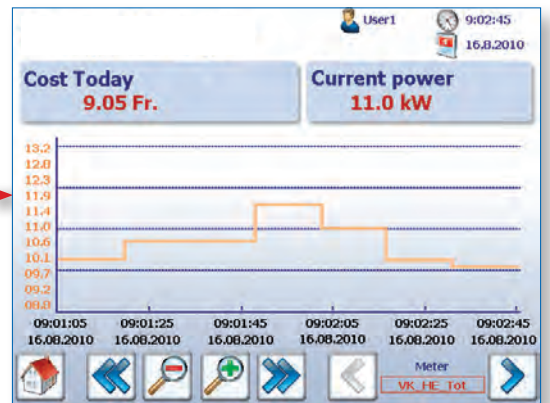
Costs per week/month/year;
individually for each meter

Present costs in a trend graph form

User interface – up to 4 user levels

Energy Manager functions

Switching languages (German, English, French, Italian, and Dutch)

Settings

Saia PCD® Energy Manager
Adapt and integrate

With its flexible user interface, programmability and an array of communications interfaces, the S-Energy Manager builds a bridge between energy monitoring and automation technologies. From a measuring technology standpoint, this makes it a foundation for automation projects aimed at saving energy and increasing efficiency.

Freely configurable user interface

The user interface included in the scope of delivery was created with the standard tool SBC S-Web Editor. It is stored as a project file on every S-Energy Manager, and can be adapted or extended to suit your particular needs.

▶ Make your own customisations to the standard user interface
▶ Create and edit interfaces with ease using the SBC S-Web Editor tool

Consumption-dependent control functions

The S-Energy Manager is equipped with a freely programmable logic controller. The application program has access to all the consumption values from the connected energy meters. In addition, the S-Energy Manager offers a limited number of digital inputs and outputs on-board. This allows you to create control functions tailored to your own individual application.

▶ STEP7 programmable logic controller
▶ Peak-load shutdown, alerting via e-mail, SMS, etc.
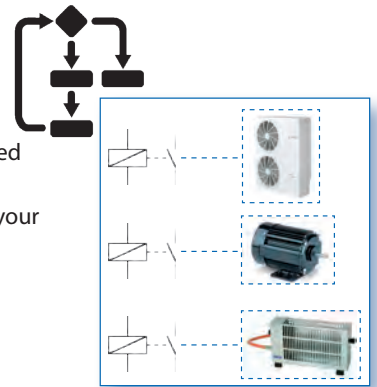
Exchange of data with control systems

Thanks to its communications interfaces, the S-Energy Manager can be inserted seamlessly into any automation environment. Controllers and PLCs have the ability to read the captured measurements via established field bus systems and to incorporate them into the process control system. From a measuring technology standpoint, this makes energy meters and managers a basis of automation solutions.

▶ Saia PCD® via S-bus
▶ SIMATIC S7 over MPI
▶ Modbus
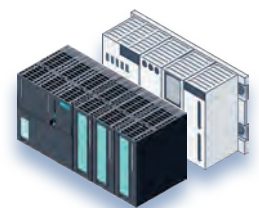
Connect energy monitoring functions to a control system

Together with its connected energy meters, the S-Energy Manager forms a solid basis for capturing energy values. These can easily be integrated into a higher-level interface or control system.

▶ Factor energy values into building management systems with Visi+
▶ Energy monitoring and display exploiting the possibilities of a control system
▶ Ready-made Visi+ templates for efficient engineering
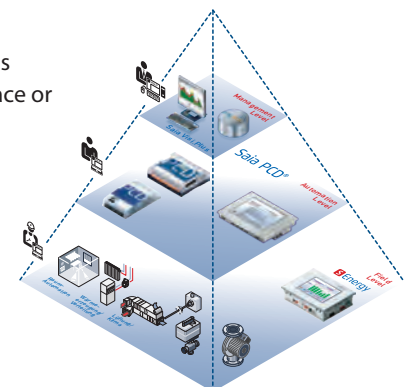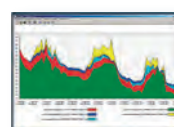
Typical cases

Sub-division of shopping malls for billing purposes

A shopping mall will contain several shops, sublet by the operator. The electricity costs incurred must be passed on to the shop-owners. For this, every individual store is fitted with at least one energy meter. As a special service ‹on request›, separate meters can be installed for e.g. lighting, cooler cabinets etc., to improve cost-transparency. The MID-compliant meters allow the consumption values to be used for billing purposes. All meters are connected to an S-Energy Manager installed in the main distribution frame for the premises. The readings can be taken locally by the caretaker on site or by the operator himself via LAN/Internet on the PC in his office.
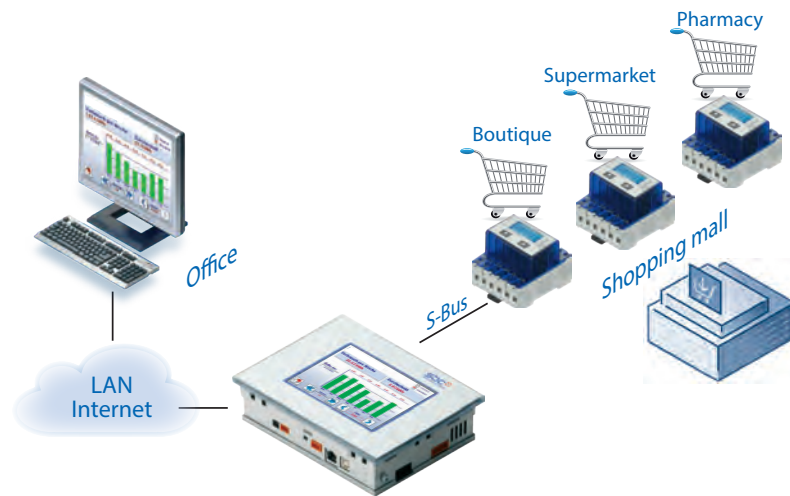
Greater transparency of energy costs in live operation

A business with 40 plastic injection units no longer wants to allocate its energy costs at a fixed rate across all the products that it makes but to map them to individual product lines. The individual plastic injection units are each fitted with an energy meter and the readings are captured by an S-Energy Manager, which stores them in a log file. The log file (in CSV format) is read each week by the financial controlling group via LAN and FTP and reconciled against machine utilisation or production plans using Microsoft Excel.
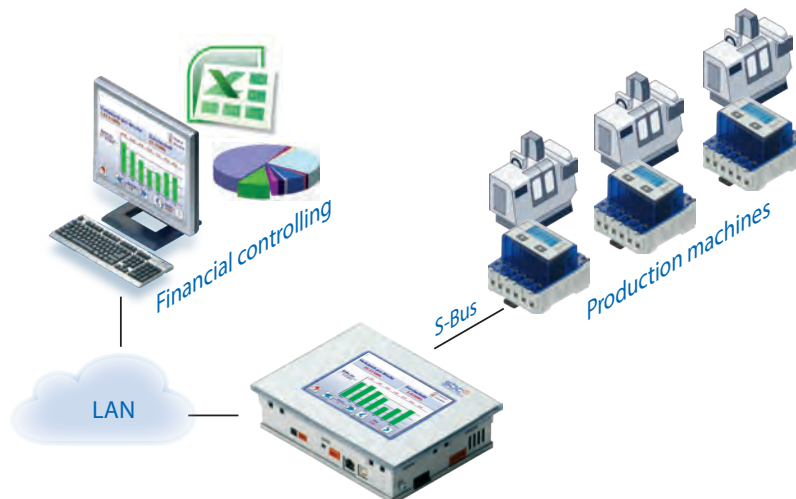
Functionality
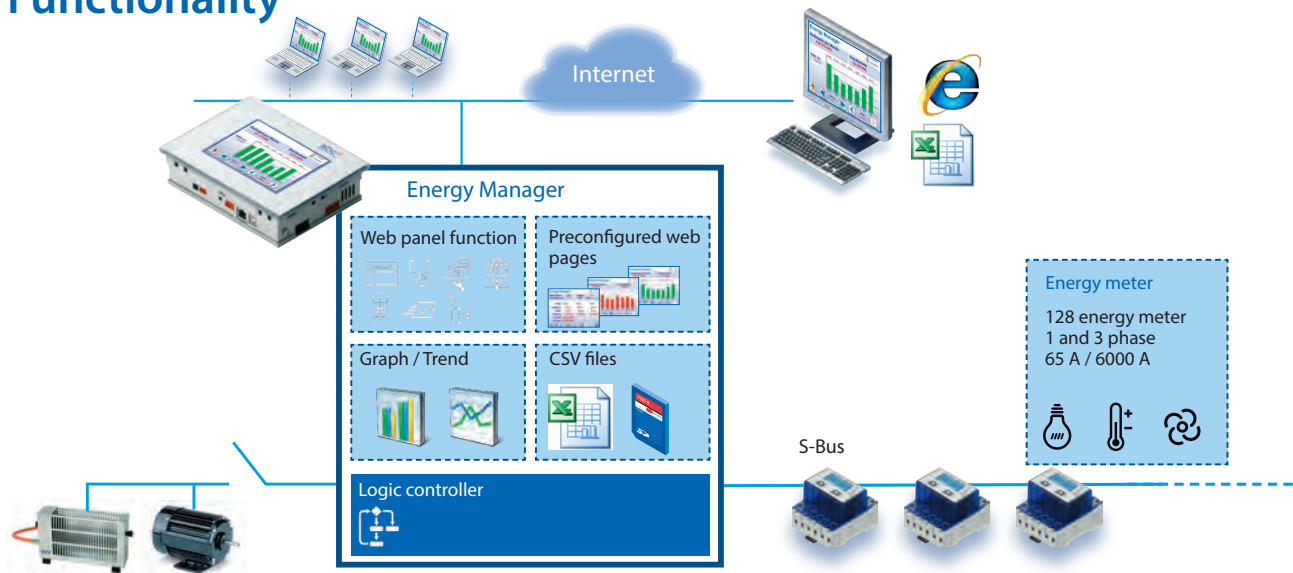
Technical data

Control panel

Display	5.7" colour TFT / 65,536 colours
Resolution (pixels)	VGA / 640 × 480
Operation	Resistive touch screen
Contrast adjustment	yes
Background lighting	LED

Interfaces and integrated servers

Ethernet 10/100M	1 × RJ-45
USB 12M	1 × client
Serial 1	1 × RS-485 MPI
Serial 2	1 × RS-485 S-Bus
Server	Web server (HTTP D) FTP server

User interface

Technology	Predefined web pages, produced with SBC S-Web-Editor
Display consumption values	– Current energy meter readings – Current and historical data recording of daily, weekly, monthly and annual values – Cost display by day, week, month or year
Remote access	LAN and Internet
Web-Server memory (for control pages)	4 MB Flash, internal

Energy data capture

S-Bus	Up to 128 energy meters
S-Bus configuration	Automatic; connected energy meters detected automatically
S0 counter signal	Up to 3 energy meters

Energy data recording

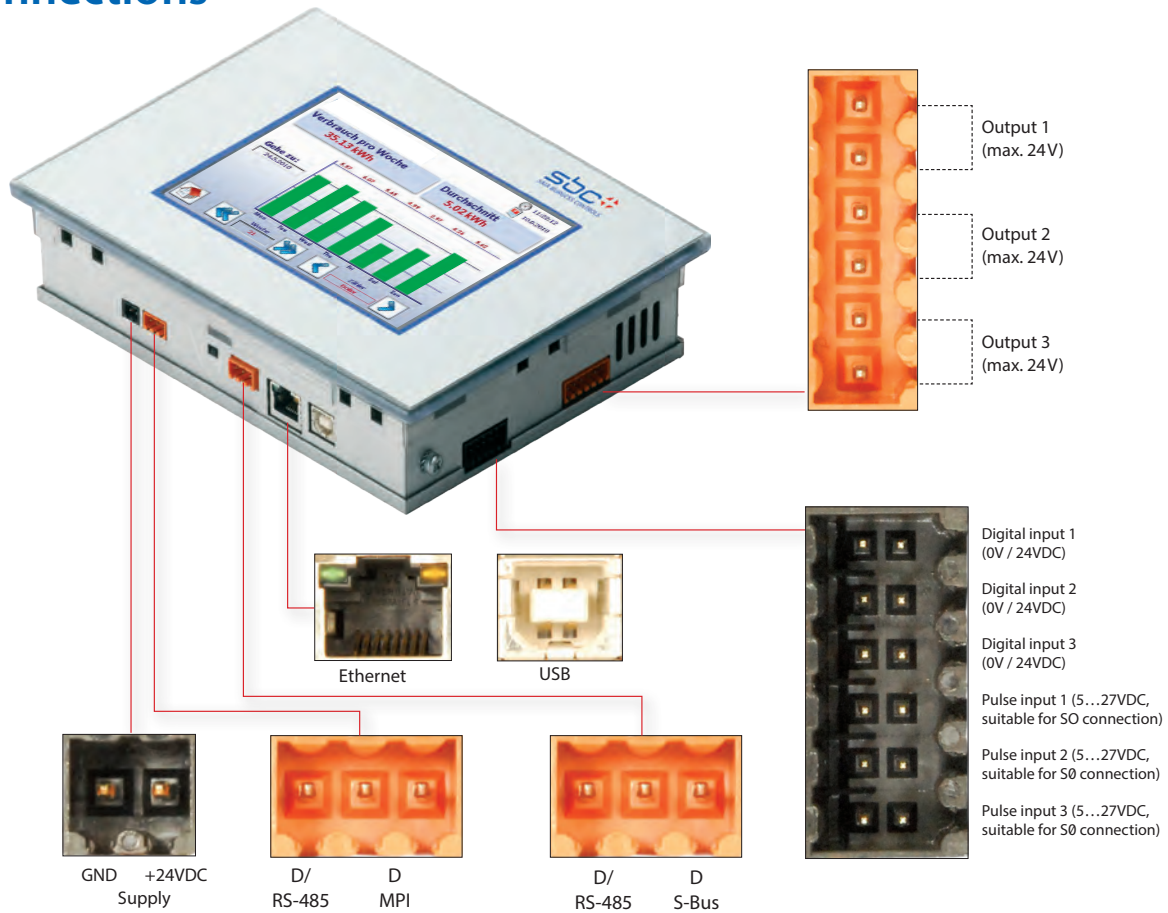|	
Logging	All values recorded in files retrievable externally via FTP
File format	Excel-readable CSV file
Memory	1 GB flash, SD card

Logic controller

Programming	STEP7 from Siemens
Energy meter data	Stored in data blocks (DBs)
Digital inputs	3× 24 VDC
Digital counter inputs	3× 24 VDC (suitable for S0 counter
Digital outputs	3× relays 24 VAC / 1 A pulses)

General details

Supply voltage	18…32 VDC
Power consumption	max. 500 mA at 24 VDC
Protection type	IP65 (front)
Dimensions (W × H × D) mm	281 × 221 × 69
Front aperture (W × H) mm	260 × 200
Temperature range	Operation: typ. 0…50 °C Storage: −20…+70 °C
Humidity	Operation: 10…80 %, non-condensing Storage: 10…98 %, non-condensing
Real-time clock	Battery-buffered
Battery for data buffering and real-time clock	Lithium Renata CR2032 (data retention 1…3 years)

Software tools

Graphical editor	SBC S-Web Editor
SPS software	STEP7 programming tool from Siemens

*STEP is a registered trade mark of Siemens AG

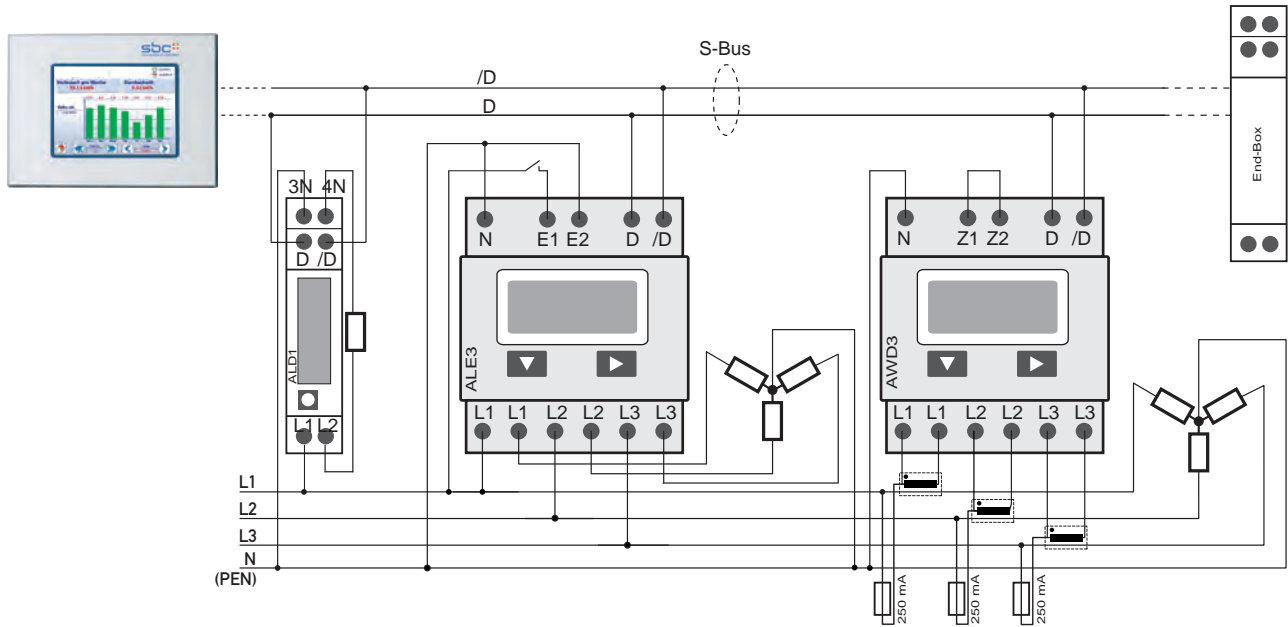## Order information

Type	Description	Weight
PCD7.D457ET7F	Energy Manager baseline version with S7 LC	1100 g

Connections

- Output 1 (max. 24V)
- Output 2 (max. 24V)
- Output 3 (max. 24V)

Ethernet

USB

- Digital input 1 (0V / 24VDC)
- Digital input 2 (0V / 24VDC)
- Digital input 3 (0V / 24VDC)
- Pulse input 1 (5…27VDC, suitable for S0 connection)
- Pulse input 2 (5…27VDC, suitable for S0 connection)
- Pulse input 3 (5…27VDC, suitable for S0 connection)

GND   +24VDC
Supply

D/   D
RS-485 MPI

D/   D
RS-485 S-Bus

Installation

Supported energy meter

Type	Order reference	Description
ALD1	ALD1D5FS00A2A00	Energy meter 230 VAC, 50 Hz, 5(32)A class B, LCD display, polling of U, I and P values, S-Bus interface
ALD1	ALD1D5FS00A3A00	Energy meter 230 VAC, 50 Hz, 5(32)A class B, LCD display, polling of U, I and P values, MID-compliant, S-Bus interface
ALE3	ALE3D5FS10C2A00	Energy meter 3P+N 230/400 VAC, 50 Hz, 10(65)A class B, dual tariff, LCD display with backup and polling of U, I and P values, S-Bus interface
ALE3	ALE3D5FS10C3A00	Energy meter 3P+N 230/400 VAC, 50 Hz, 10(65)A class B, dual tariff, LCD display with backup and polling of U, I and P values, MID-compliant, S-Bus interface
AWD3	D5WS00C2A00	Energy meter 3P+N 230/400 VAC, 50 Hz, 5 A current converter class B, LCD display with backup and polling of U, I and P values, S-Bus interface
AWD3	D5WS00C3A00	Energy meter 3P+N 230/400 VAC, 50 Hz, 5 A current converter class B, LCD display with backup and polling of U, I and P values, MID-compliant, S-Bus interface

Our proposal/ordering information

Description	Order number	Weight
Energy meter PN 32A, LCD with S-Bus	ALD1D5FS00A2A00	80 g
▸ Single-phase energy meter, 230 VAC, 50 Hz		
▸ LCD display		
▸ S-Bus communication		
▸ MID certification	ALD1D5FS00A3A00	80 g
Energy meter 3P+N 65A 2T LCD with S-Bus	ALE3D5FS10C2A00	190 g
▸ 3-phase energy meter, 3 × 230/400 VAC, 50 Hz		
▸ LCD display		
▸ 2 tariffs		
▸ S-Bus communication		
▸ MID certification	ALE3D5FS10C3A00	190 g
Energy meter 3P+N, 5A, converter, LCD, S-Bus	AWD3D5WS00C2A00	190 g
▸ 3-phase energy meter, 3 × 230/400 VAC, 50 Hz		
▸ LCD display		
▸ 1 tariff		
▸ Converter measurement up to 1500 A (1500:5)		
▸ S-Bus communication		
▸ MID certification	AWD3D5WS00C3A00	190 g
Energy Manager Web Panel	PCD7.D457ET7F	1100 g
▸ 5.7" colour TFT display/VGA resolution		
▸ Integrated user interface with preconfigured web pages		
▸ Recording of energy data		
▸ 1 GB memory card for the recording of data		
▸ Supports up to 128 bus-coupled energy meters		
▸ Also programmable with STEP7 from Siemens		
▸ Integrated inputs/outputs		
▸ USB / Ethernet / RS-485		
▸ Current requirements: 600 mA at 24 VDC		
Power supply SMPS 24 VDC 2.5 A	Q.PS-AD2-2402F	450 g
▸ Input: 115…230 VAC		
▸ Output: 24 VDC, 2.5 A		

Ready to use out of the box