



# JOULIO-WEB

## ENERGY MANAGEMENT

### ISO 50001

General information

Energy management

Utility billing

Products & Solutions

Key features

System architecture

Ordering information



*EMU - energy meters, data loggers and energy management software straight from the manufacturer - everything from one source.*

## GENERAL INFORMATION

Use our ISO 50001 Energy Management System to monitor all usage data and bill utilities at the push of a button. EMS can quickly be integrated into an existing IT landscape and scaled to an unlimited number of meters or locations.

## CUSTOMER BENEFITS

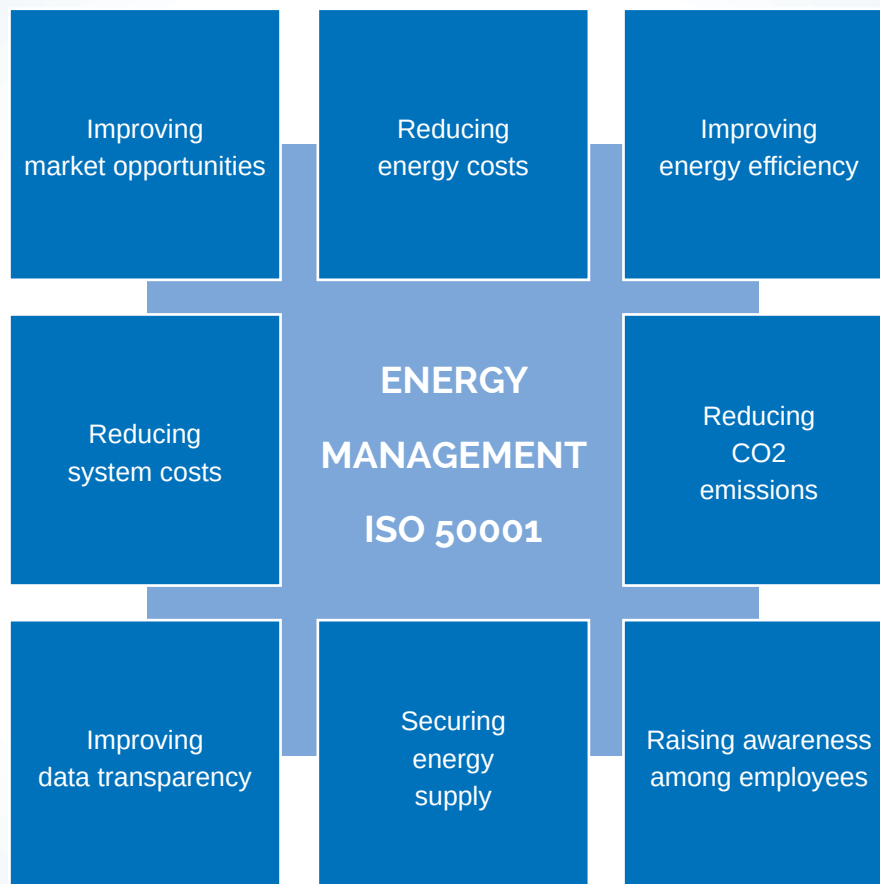
- Quickly ready to use and integrated into existing IT landscapes
- Supports popular multi-make meters
- Energy usage becomes transparent for targeted measures
- Visualisation and reporting for ISO 50001 certification
- Automatic monthly reports
- Scalable, unlimited number of meters and locations
- Software, energy meter, set-up straight from the manufacturer

## FEATURES AND REQUIREMENTS PER ISO 50001

- Continuous data evaluation
- Visualisation incl. individual charts
- Automated reporting
- Alerting
- Integration into existing systems
- Support & update service
- Cost centre & residential billing

## ENERGY MANAGEMENT: OPTIMISING RESOURCES AND COSTS

Our energy management is the basis for optimising available energy. The web-based software automatically records and analyses all relevant energy and process data. This data allows decisions to be made quickly or processes modified to prevent exceeding energy peaks.



## TRANSPARENCY WITHIN THE COMPANY

Transparency is the basis for any improvement in efficiency. The better you're able to keep an eye on energy fluxes, the more savings potentials you're able to tap. Large companies own several locations, use a variety of energy carriers and have a very diverse infrastructure of meters, networks and data sources. Centralising and processing all of this energy data requires an extremely flexible, effective platform and a specialist such as EMU.

## RECOMMENDED PRODUCTS COMPLETE SOLUTIONS

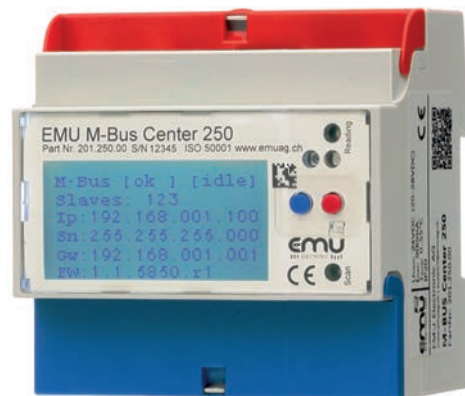
From energy meters, data loggers all the way to energy management software - we're your one stop for all your needs.

Plug & Play energy monitoring optimised for manufacturing companies.

### M-Bus data logger

Automated meter readout guarantees error-free and continuous data collection for later analysis and billing as per ISO 50001. All energy meter (e.g. electricity, water, heat, gas) with M-Bus interface per EN 13757-2, -3 are read out via 2-wire line.

- Compatible with existing M-Bus energy meters / infrastructure
- Use-friendly, quick configuration
- Easy measuring concept upgrade
- IoT & Industry 4.0 ready
- M-Bus to BACnet IP gateway



	Article number	Designation
<b>M-Bus data logger</b>	201.250.00	M-Bus Center for 250 M-Bus meters
	201.120.00	M-Bus Center for 120 M-Bus meters
	201.060.00	M-Bus Center for 60 M-Bus meters
	201.020.00	M-Bus Center for 20 M-Bus meters

### Local service

- Record actual state, targets and proposed solutions
- Measuring concept proposal
- Set-up and configuration
- Training & online support



## 3-phase energy meters

Our EMU Professional and EMU Allrounder are excellent for use in manufacturing plants, cost centre billing, sub-metering, performance control and energy management as per ISO 50001.

- Direct connection 75A or for transformer /5A and /1A
- Accuracy class B (1%)
- MID B+D and CE certified
- Dual tariff (Peak/Off-Peak)
- M-Bus, Modbus, LON, KNX, TCP/IP interface



	Article number	Designation
<b>Energy meters with M-Bus interface and MID approval</b>	A020000M	EMU Allrounder 3/75 M-Bus, 3x230/400V, 75A
	A120000M	EMU Allrounder 3/5 M-Bus, 3x230/400V, transformer /5 and /1A
	950506	EMU 1/40 M-Bus, 230V, 40A

## Protection of investment

The open communication and Gateway functions allow our energy meters and data loggers to communicate with systems of different manufacturers. This protects your hardware and installation investments.

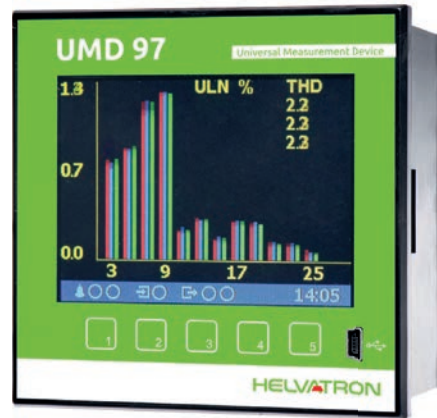


## RECOMMENDED PRODUCTS ACCESSORIES

Select the fitting accessories for smooth installation, upgrade, professional network analysis and voltage monitoring from our range of products.

### Universal meters

The Helvatron UMD 97 is a powerful meter for front-panel installation and replaces all analogue meters. It measures 3-phase electricity and voltage in 6-quadrant operation Class 0.2, thus the active energy for Class 0.5s along with all other system sizes.



- 5 key operation
- Graphic colour display
- Web server, Modbus RTU and Modbus TCP
- measures harmonic up to the 50th harmonic
- USB port

	Article number	Designation
<b>96x96 Universal Meter Helvatron</b>	11.06.1107H	UMD 97EL, Ethernet, Modbus TCP
	11.06.1110H	UMD 97E, Ethernet, Modbus TCP, Modbus Master
	11.06.1105H	UMD 97CBM, RS485 Modbus

### 96x96 panel mount meters

Universal meter for energy management all the way to analysing power quality as per EN 50160 in Class A. Open communication via Ethernet TCP-IP, Modbus over TCP, Modbus RTU as well as M-Bus installed.

## Current transformer

The compact and divisible TQ series transformers have been developed and adapted specifically for digital measurement systems. The TQ40 features colour coded cables. Class 1 (per IEC60044-1 standard) guarantees accurate measurements.

"Click"-in installation.



TQ40

- TQ40-B: Ø18mm
- TQ40-C: Ø28mm
- TQ50-E: Ø42mm

	Article number	Designation
<b>TQ Series Divisible Transformers</b>	942212	Transformer TQ40-B 100/1A, Ø18mm, Class 1%
	942214	Transformer TQ40-B 150/1A, Ø18mm, Class 1%
	942225	Transformer TQ40-C 200/1A, Ø28mm, Class 1%
	942227	Transformer TQ40-C 300/1A, Ø28mm, Class 1%
	942228	Transformer TQ40-C 400/1A, Ø28mm, Class 1%
	942312	VCT32, Terminal 64/1A incl. voltage tap

## Transformer selection

Choosing the correct primary rated current is crucial for the accuracy of measurements.

- Rated fuse current = rated transformer current for the system component measured (NSHV, UV)
- Effective rated current x factor 1.2

## KEEP YOUR COMPANY AGILE AND EFFICIENT

- On-site support by professional EMS experts
- The EMS software can be accessed from the cloud or installed locally. Both options are easy to implement and greatly scalable to your company.
- Always keep an eye on usages and key figures

# 1.

### INSTALLATION

The energy management software is integrated into the existing IT infrastructure as a virtual machine (VMware or MS HyperV). Basic configuration is completed within minutes and the system is immediately ready to use.

Upon request we supply all server hardware, or host and manage your EMS at the computer centre.

# 2.

### PLUG & PLAY CONFIGURATION

Meter integration via M-Bus, EMU M-Bus Center, Modbus TCP or CSV import is highly automated with just a few clicks.

# 3.

### CONSULTING AND SERVICE

We provide full support, from designing the optimal meter infrastructure including accessories all the way to start-up and user training.

# 4.

### UPDATES

New functions and improvements are regulation incorporated in updates. The integrated update mechanism ensures smooth installation.





## Access any time, anywhere

Access your energy management software any time from virtually anywhere - via web browser, without local client installation, for an agile and scalable IT infrastructure.

# 5

## MAXIMUM AVAILABILITY AND SECURITY

You decide where your data is stored. Whether it's local, within your company, or at the computer centre in compliance with applicable Data Protection Acts. This guarantees maximum security and availability. An extra service bonus: The software automatically makes backups. So if you encounter a problem, all data is accessible and is restored.

# 6

## MEASUREMENTS - MEDIUMS

As an open and comprehensive energy management system, it integrates all measurable quantitative mediums, energy and process data. About electricity, water, heat, gas, fuels, steam, compressed air, and much more.

In addition to active and reactive energy, the energy meters (electricity) for EMU also provide a number of other measurements, e.g. current, voltage, power ratings, Cos-Phi, frequency, etc. Of course these measurements are archived and analysed. All measurements are available for use to compile individual key figures / conversions.

# 7

## MODULAR DESIGN | OEM SOLUTIONS

The lean system architecture and modular integration of functions / applications ensure flexibility. Individual functions along with OEM solutions are implemented in a short period of time.

## KEY FEATURES

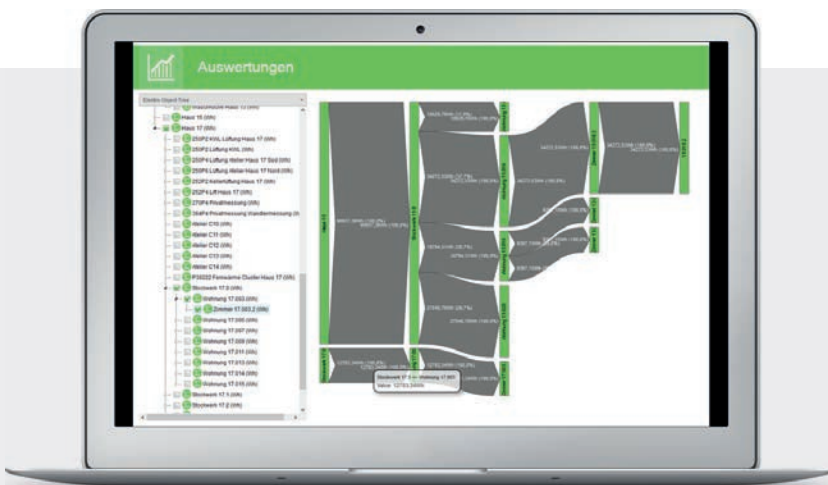
### GENERAL MENU NAVIGATION

- Home page with user-friendly grouping
- Overview of all meters
- Meter and data logger configuration
- Backup and data export



### INTEGRATION INTO EXISTING SYSTEMS

- Measurement data import (.csv and JSON)
- Measurement data import (.csv)
- Manual data collection, e.g. meters without communication



### VISUALISATION

- Line graph
- Bar graph
- Sankey graph
- Load profile analysis
- Graph customisation
- Each graph may be used for any measurement



## SUPPORT & SET-UP

- Training
- Software set-up and maintenance
- Support (hotline and E-Mail)
- Update service (service agreement)

## DATA EVALUATION

- Outputs totals, averages and extreme values
- Key figure generator
- Energy usage
- Specific energy usage
- Energy usage by reference value
- Conversions (CO<sub>2</sub>, costs, etc.)
- Closing at custom time intervals
- Free definition of key figures

# KEY FEATURES

## REPORTING

- Time-controlled reporting, e.g. daily, monthly
- Event-driven reports
- Custom report contents
- E-mail transmission in common formats, e.g. PDF

## ALARMS

- Custom thresholds
- Custom tolerance bands
- E-mailed alarms

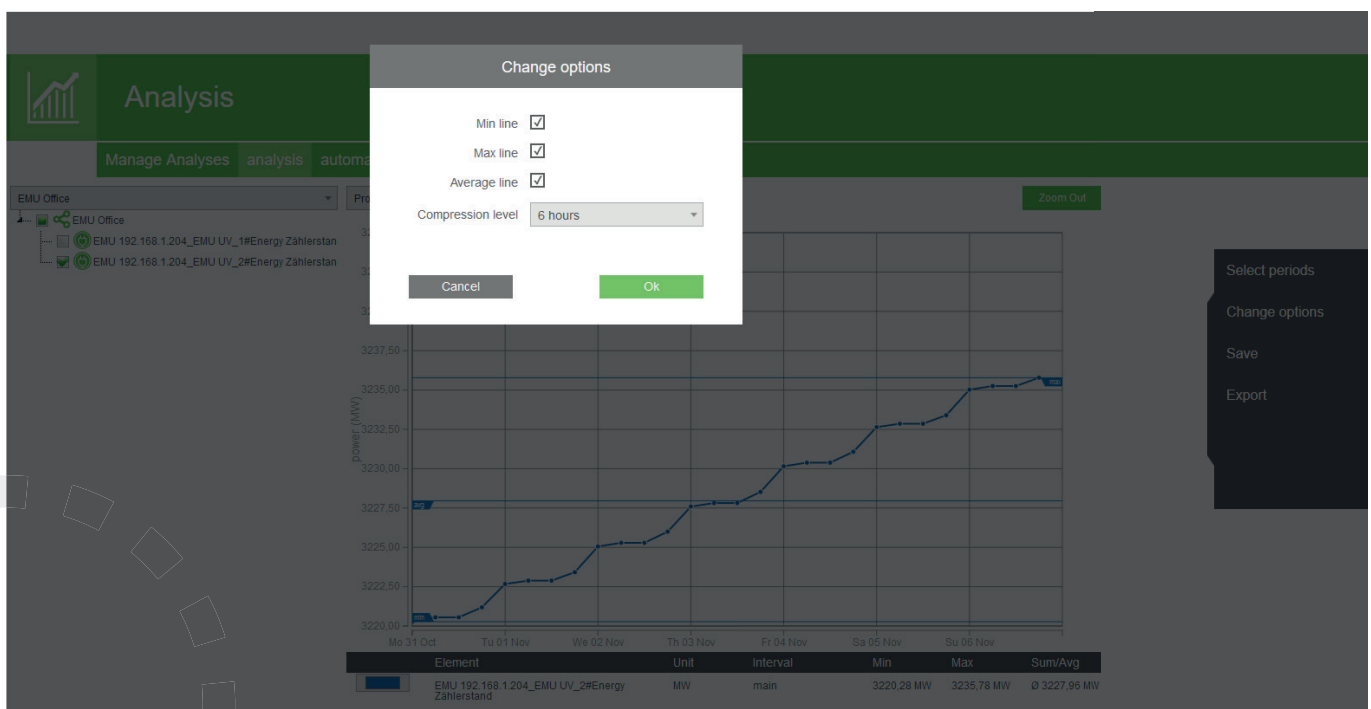
## REPORTING

### AUTOMATED AND STANDARDISED

Customise your reporting with EMU. The system is compatible with all common report types required for modern energy management. Use the simple, intuitive interface to generate analyses and generate meaningful reports from complex energy and process data.

The integration of reference periods immediately show the effects of implemented improvements.

Reports are automatically e-mailed to user (groups) and can always be manually generated and exported with the software.

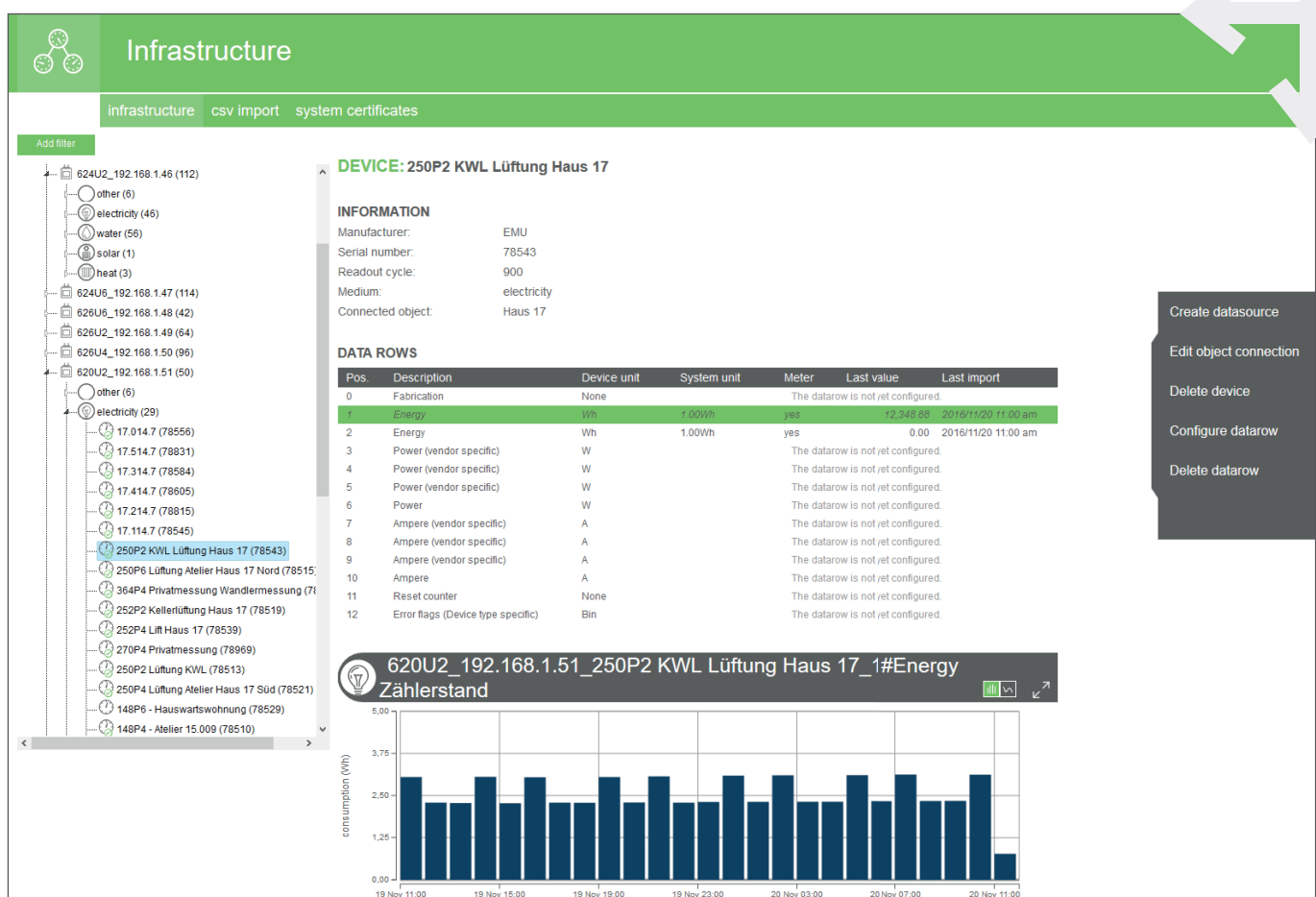


# FLEXIBLE INFRASTRUCTURE MANAGEMENT

The built-in metering point and infrastructure manager allows individual metering points to be combined into hierarchical groups (metering point structures). The structures contain individual metering points, entire hierarchy or summary nodes, complex formulas or existing metering point structures along with data import from e.g. ERP and production systems.

Complex data acquisition becomes clear and comprehensible.

Conversion factors (e.g. currency per kWh) along with company-specific key performance indicators (KPI) make reports comprehensible for all users and internal stakeholders.



## GRAPHIC ANALYSIS

### SANKEY GRAPH FOR ISO 50001

A Sankey graph visualises quantity flows. Usage or quantities are represented by arrows in thicknesses proportional to the amounts. Inefficiencies and opportunities for optimisation are immediately evident.

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### HEAT MAP

A heat map is suitable for visualising large data volumes (e.g. readout by the minute). Prominent measurements (e.g. power ratings, currents, usages) are immediately evident.

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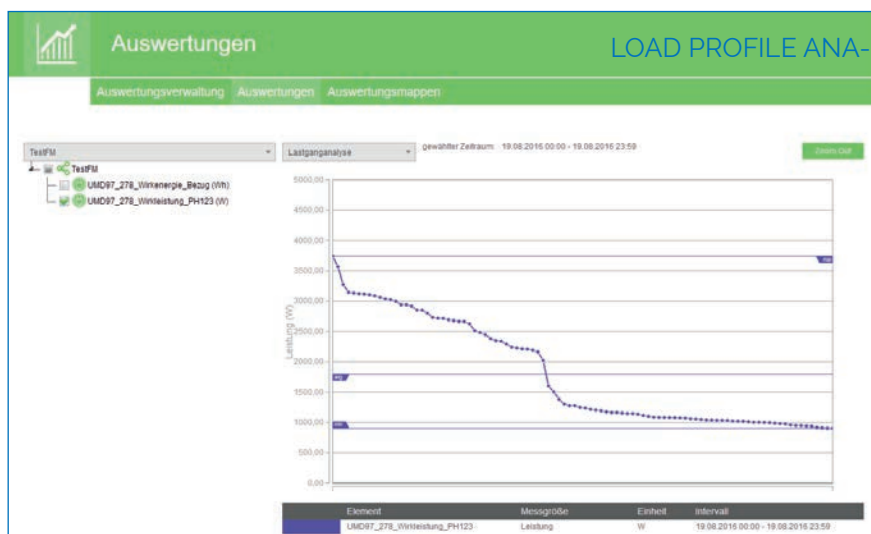
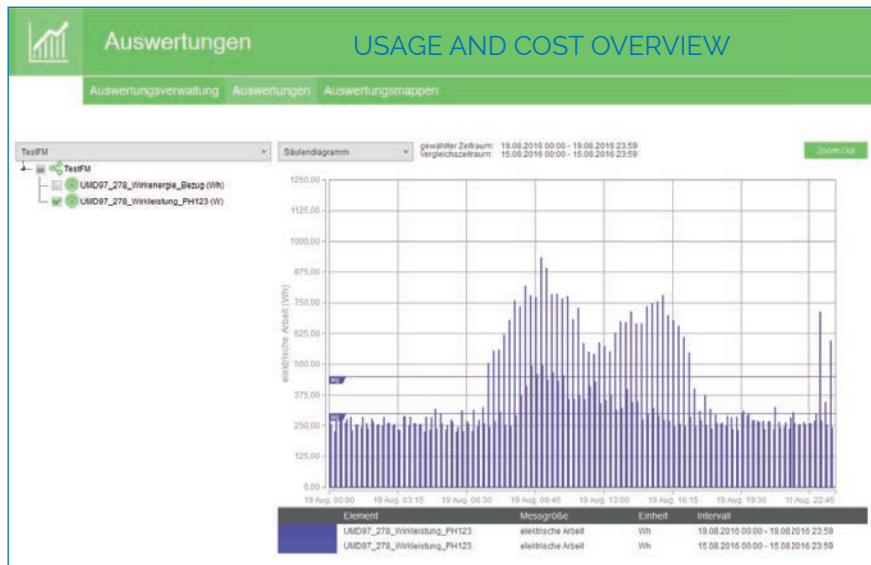
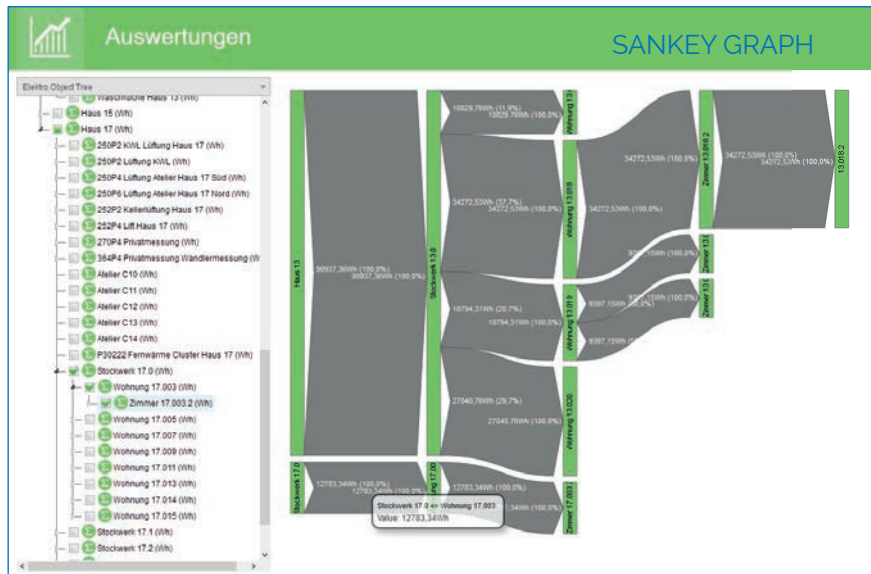
### USAGE AND COST OVERVIEW

Energy usage (e.g. kWh or m<sup>3</sup>) is conveniently plotted in bar graphs in relation to costs or CO<sub>2</sub>.

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### LOAD PROFILE ANALYSIS AND 15 MINUTE PEAK LOAD

- The load profile analysis visualises a duration curve for your measured data. This shows the demand for specific power capacity in a proportional period within the overall time period.
- This allows for revealing opportunities to reduce power peaks, thus reduce energy costs, e.g. by shifting the time of process operations. The load profile analysis further shows which cost-saving opportunities are achievable by permanently reducing the base load.



## KEY PERFORMANCE INDICATORS (KPI)

DIN EN ISO 50001 and efficient energy management requires conclusive key figures to fit the company. This allows comparisons within the industry or the company. The formula editor provides key figures for all types of data sources, e.g. meter readouts and import from ERP.

### Formel

Name	<input type="text" value="Kennzahl 1"/>
Messeinheit	<input type="text" value="Leistung"/>
Messfaktor	<input type="text" value="kW"/>
Formel	<input type="text" value="if (TA &lt; TB) {TA + 10}{TB + 10}"/>

✓ Die eingegebene Formel ist gültig.

## CONVERSIONS

### CONCLUSIVE FOR ALL USERS

Conversion factors provide a suitable illustration for all users and stakeholders. Changes in the conversion factors (e.g. cost per kWh) are applied to reports and analyses.

### NEUEN UMRECHNUNGSFAKTOR ANLEGEN

Name:	<input type="text" value="kWh in €"/>
Start-Messgröße:	<input type="text" value="kWh"/>
Ziel-Messgröße:	<input type="text" value="€"/>

## MULTILINGUAL

As an energy management and billing software used internationally, more translations are continuously being added. Each user can choose the desired language under the account settings.



## USER MANAGEMENT

Each user is assigned a separate password-protected login. Any number of users and groups can be added and the respective access authorisations assigned (e.g. cost centres, meters or analyses). Notification groups are suitable for auto-generated reports as well as notifications / alarms.

**E-MAILADRESSE ÄNDERN**

Neue E-Mailadresse

Aktuelles Passwort

Änderungen übernehmen

**SPRACHE ÄNDERN**

Sprache

Änderungen übernehmen

**BENACHRICHTIGUNGEN ALS EMAIL ERHALTEN**

E-Mails erhalten
☒

Änderungen übernehmen

## INTERNAL MESSAGING SYSTEM

All reports, alarm and system messages can be sent and archived using the internal messaging system.

## UTILITY BILLING

Define your bills for cost centres or utility bills for offices and residential buildings with just a few clicks. Invoices are automatically or manually generated e.g. monthly or quarterly. We will gladly handle billing for you - so you focus on your core business.



*Upon request, all residents will be assigned a separate login to always stay informed of energy usage.*

## FEATURES

- Invoices generated at the push of a button
- Virtual meters and percentages
- History for all invoices
- Suitable for electricity, water, heat and gas
- Billing for centres & residences in form of PDF

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## APP FOR RESIDENTS

All residents are provided a separate login to monitor their usage via smartphone, tablet or PC.

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## ON-SITE SERVICES

- Set-up and configuration
- Generating invoices per specifications
- Monitoring the system
- Generating invoices for residential and commercial properties

## REFERENCE PROJECT: ETH HWW/LIVINGSCIENCE

- Over 1300 meters (electricity, water and heat)
- Readout via EMU M-Bus Center
- Web-based access for over 400 users, multilingual
- Individual software expansion

Management always has an overview of energy usage and variances. Just shortly after being set up the energy management software detected a variance (increased water usage), preventing undesirable additional costs.

## MANAGEMENT

Conveniently manage several properties and residences from a central location using the web-based software. Additional invoice issuers and owners are created instantly. Contacts, terms of payment and banking information is customised.

Rechnungsaussteller erstellen	
<b>Adressinformationen</b>	
Name	Wohnung AG
Namenszusatz	c/o Verwaltung AG
Straße	Via Maistra
Hausnummer	20
Postleitzahl	7500
Stadt	St. Moritz
Bundesland	GR
Land	Schweiz

## TARIFFS

Tariffs and conversion factors allow all energy usages to be billed individually. Separate tariffs and tariff groups can be defined for billing 15-minute peak loads.

Tarif erstellen	
Tarifname	Hochtarif
Standart Faktor Datenpunkt	Hochtarif 16,2 Rp (kWh ...)
Abbrechen	Ok

## EXPORT

All analyses and invoices exported into common formats, e.g. PDF and CSV, and archived with just a few clicks.

## SYSTEM REQUIREMENTS

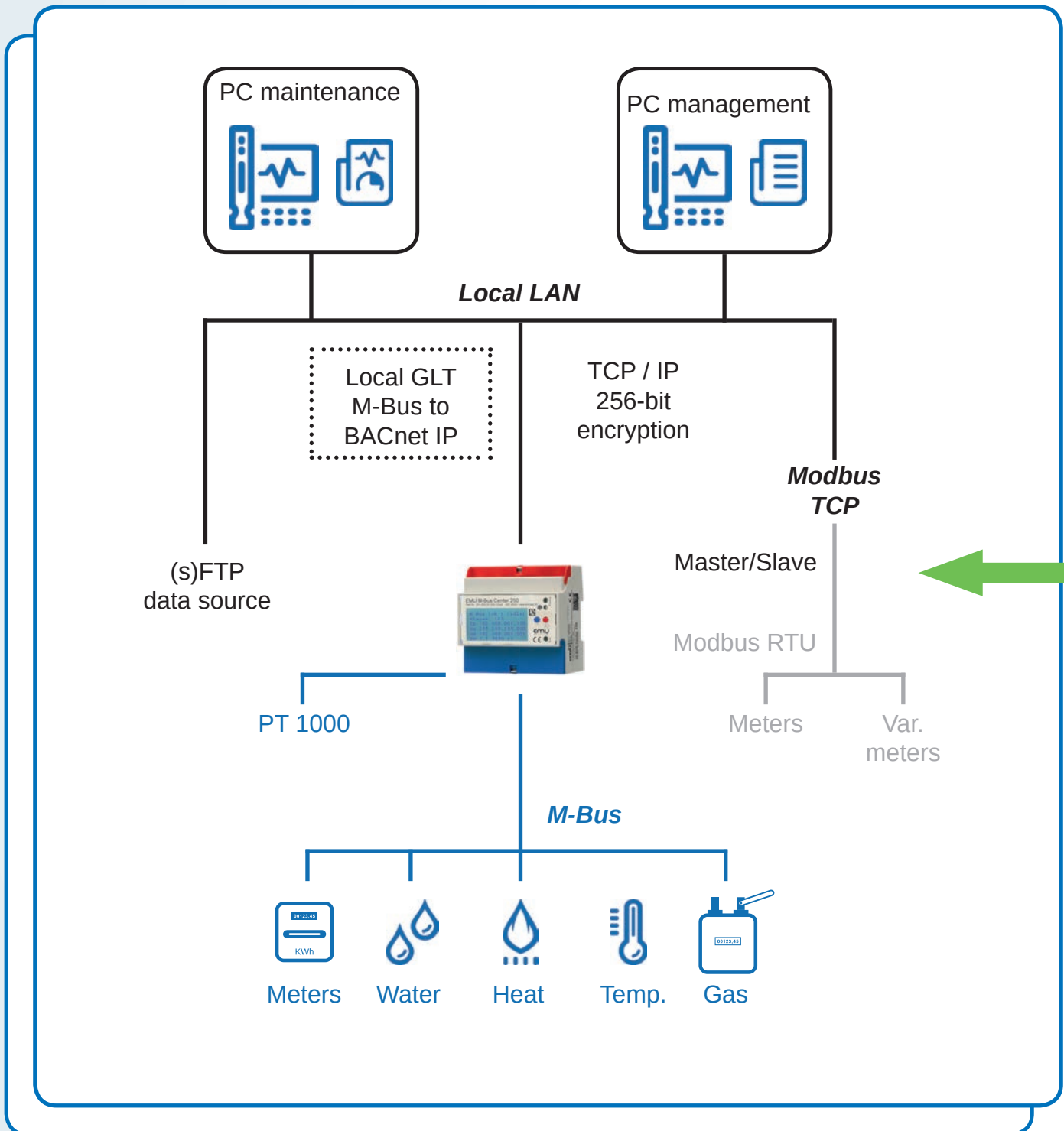
<b>Operating system</b>	VMware ESXi 5.5, recommended ESXi 6.0
<b>RAM / processor cores</b>	6GB RAM and 4 processor cores minimum Additional 1GB and 1 core recommended per 100 measuring points.
<b>Hard disc</b>	System: 30 GB Data: min. 300 GB recommended Backup: min. 300 GB recommended
<b>Memory</b>	100 measuring points require approx. 3GB per year for 15 minute values, which should be taken into account in the data and backup hard disc.
<b>Database</b>	The database used is MySQL, installed 'locally', and included in backups. Data storage is split across several databases which can also run on different servers.
<b>Local installation</b>	The software comes as a preconfigured, virtual machine for VMware-Hypervisors ESXi 5.5 and up and Workstation/Player Version 10 and up.

Data specified in the product catalogue has been compiled to the best of our knowledge and belief. Changes and errors expressly reserved. "Images similar" does not constitute a term of contract. This is a notice without autonomous scope which merely states the information in the catalogue is preliminary and non-binding in that it may be corrected before or on conclusion of contract. These notices do not provide any contractual scope, particularly any limitation in the rights of the contracting party with respect to liability or warranty.

We compile and update our compatibility lists with utmost care. Please contact our support service to verify compatibility with existing meters.

# SYSTEM ARCHI-

## Locations

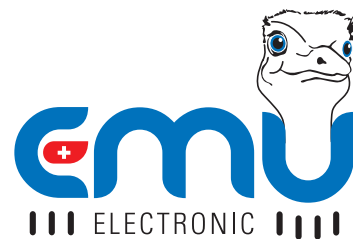




# ORDERING INFORMATION

## EVERYTHING YOU NEED FOR ENERGY MANAGEMENT

	Article number	Designation
Joulio-Web Software Licence	EMS0EL000	Energy Management ISO 50001   Joulio <b>Basic</b> Incl. Licence for 30 devices
	LIC0EL010	Licence for 10 devices
	LIC0EL050	Licence for 50 devices
	LIC0EL100	Licence for 100 devices
	LIC0EL250	Licence for 250 devices
	LIC0EL500	Licence for 500 devices
Joulio-Web Update	UP0EL000	Update Joulio-Web Basic Incl. 30 devices
	UP0ELL00	Update Joulio-Web   additional devices
M-Bus data logger	201.250.00	M-Bus Center for 250 M-Bus meters
	201.120.00	M-Bus Center for 120 M-Bus meters
	201.060.00	M-Bus Center for 60 M-Bus meters
	201.020.00	M-Bus Center for 20 M-Bus meters
Energy meters with M-Bus interface and MID approval	A020000M	EMU Allrounder 3/75 M-Bus, 3x230/400V, 75A
	A120000M	EMU Allrounder 3/5 M-Bus, 3x230/400V, CT /5 and /1A
	950506	EMU 1/40 M-Bus, 230V, 40A



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