3-phase Energy and Power Meter • Impulse-Logger • M-Bus Logger

Quality that counts.

Made in Switzerland

emu ELECTRONIC

emu
ELECTRONIC

EMU Electronic AG

The Australian ratite bird emu has one specific feature. On account of its special anatomy of its legs it can never go backwards. EMU Electronic AG can't do that either. Instead, we take giant steps, like an emu, towards a new era where energy efficiency is the key to the survival of our culture.

A 2'000 Watt society in no utopia for us. The first step in any power optimisation is measurement. For over 23 years we have been developing the world's first digital energy meter. At a glance it shows the energy used by your company, your house or your holiday home in Spain, and reveals where you could save energy and costs.

Incidentally, just like the grounded emu, who cannot fly away from its habitat, we too are anchored in our homeland. That is why we develop and produce our energy and power meters, data loggers and software in Switzerland.

EMU Electronic Ltd was established in 1989 as a spin-off of Landis & Gyr. The founders **E**berli and **Mu**ntwyler developed the world's first digital energy and power meters.

Our strengths

- Our motivated teams are efficiently organised, which makes us fast and flexible.
- EMU Professional and EMU Allrounder are Swiss made. Thanks to highquality components you stand to benefit from the long service life of our high-quality energy power meters and data loggers.
- We have a large storeage of parts and products and guarantee a very short delivery time.

Our aim: Orders received by 3.00 p.m. will be dispatched the same day.

EMU Professional
EMU Allrounder
EMU Professional
EMU Allrounder
S0 Impulse-Logger
M-Bus Logger
TCP/IP-Module
EMU Bill & Report
smart-me
Services

EMU Professional and EMU Allrounder

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With the EMU Professional and the EMU Allrounder we are setting new benchmarks in the DIN-rail energy meter sector. Via a wide variety of read-out interfaces different measurement readings can be communicated. Via your Internet browser and IP address you can conveniently analyse the load profile and up to 245'000 stored measurement readings.

The EMU Professional and the EMU Allrounder are excellently suited for use in industrial facilities, for cost centre billing and sub-measurements, as well as performance monitoring and energy management.

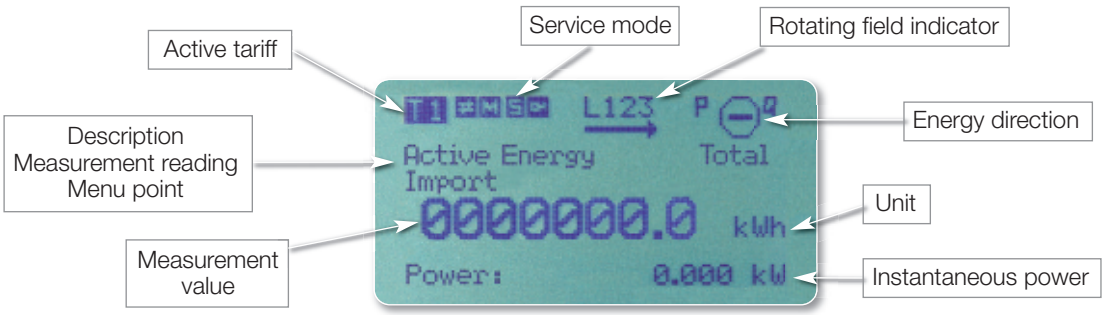
As with all EMU products this latest generation of energy meters has been designed for maximum performance, longevity, functionality and sophisticated measurement tasks. «Quality that counts – Made in Switzerland».

Read-out interfaces

The EMU Professional can be equipped with a variety of read-out modules. All read-out modules are integrated in the EMU Professional where they are protected from contamination and manipulation.
A variety of measurement readings are transferred via the Bus system, for instance active and reactive power, current, voltage, active, reactive and apparent power, power factor, power frequency, minimum and maximum values.

Operation and Display

A 60x30 mm graphic LC-display with LED background lighting makes it possible for parameters and settings to be read, and the figures are very visible. The desired menu language can be selected via the keys.
The clear and intuitive operation makes start-up and daily use of the energy meters easier.



MiD approval B + D and ISO9001

EMU Professional and EMU Allrounder have been checked and approved in accordance with MiD modules B + D (Measurement Instrument Directive).
With additional certification according to module D, QM system for manufacture and final inspection, all EMU Professional and EMU Allrounder can be utilised ex factory for billing purposes within the European Union. EMU Electronic AG is ISO9001 certified and external audits are carried out annually. An official ISO audit takes place every 3 years.

Adjustable current transformer factor

The current transformer ratio can be set on the EMU Professional and the EMU Allrounder with MiD-approval via buttons, from 5/5 to 20'000/5 A or 1/1 to 4'000/1 A. The set-up button is sealed, preventing manipulation.

Accuracy in photovoltaic installations

SOLAR

EMU Professional and EMU Allrounder have been specifically tested for use with inverters in photovoltaic installations.
An additional inspection ensures that EMU energy meters in the not officially regulated frequency range between 2 kHz and 150 kHz provide a precise measurement. With regard to this problem, renowned specialist journals have reported that measurement errors of up to 18 % may occur.

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EMU Professional is a multifunctional energy and power meter, just 90 mm (5TE) width, with outstanding flexibility and accuracy. Via direct or current transformer connection it helps to analyse and monitor a variety of parameters in the most exacting applications in the residential, business and industrial sectors. It combines the functions of a multi-meter, a power and energy meter and a data logger.

With the TCP/IP module you can see all the parameters via a password-protected website. Or, even simpler – when defined measurement readings are exceeded or fall below thresholds, the module sends an e-mail or SMS.

- Peak demand optimisation
- Maximum-Alert
- Contact for energy direction (Import / Export)
- MiD B + D approval for billing purposes ex-factory
- 1 or 5 A current transformer connection for up to 20’000/5 or 4’000/1 A
- Direct connection up to 75 A
- Control input for high and low tariff, double tariff
- High-performance Opto Power MOSFET S0 Impulse output, 5–400V AC or V DC, max. 90 mA
- Graphic LC display (60x30 mm) with background lighting
- 8-digit display with one decimal place 0000000.0 kWh
- Own consumption just 0.6W/phase
- Accuracy class B (+/-1 %) for active energy EN50470-1, -3

Examples of use

- Cost centre billing
- Load optimisation
- Power monitoring with alerting
- Ventilation and heating facilities
- Central building control system
- Energy management

Display data

	Sum total 3 phases	Per phase	Min. measured value	Max. measured value	Per Tariff
Active energy import (kWh)	•	•			•
Active energy export (kWh)	•				•
Reactive energy inductive (kvarh)	•	•			•
Reactive energy capacitive (kvarh)	•				•
Active power (kW)	•	•	•	•	
Reactive power (kvar)	•	•			
Apparent power (kVA)	•	•			
Current (A)	•	•	•	•	
Voltage (V) L-N		•	•	•	
Voltage (V) L-L		•			
Performance factor (Cos Phi)		•			
Power frequency (Hz)	•				
Number of power outages	•				
Instantaneous x Min. Maximum *					•
x Min. effective power maximum					•
Date/Time	•				

Optional read-out interfaces:

LAN TCP/IP · Web browser · MODBUS TCP · SMTP · BACnet · M-Bus · KNX · LON · MODBUS RTU-ASCII

MiD-approval

MiD B+D approval

As per MiD modules B + D for billing purposes ex-factory.

Peak Control and energy direction contact

An energy provider desires plannable and consistent energy consumption. In order to meet short-term peak demand, power tariffs have been introduced. These are based on the highest monthly quarter-hour active power peak. Peak values cause massively increased energy costs in hotels, hospitals and in industry. This is where EMU Professional steps in and reduces the power of the selected consumer. Peak values are immediately optimised and energy costs are lowered.

Applications

- Lowers energy costs by avoiding active power peaks
- Alerts upon impending exceedance, maximum-alert
- Energy direction contact
- Prevents overloads and interruption in production process
- Photovoltaic facilities, industry, food sector, energy intensive consumer

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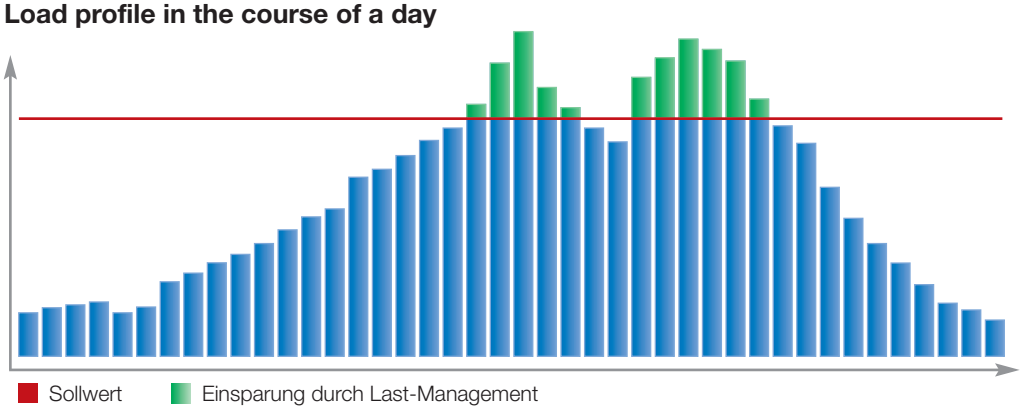
Functionality

S0 Impulse outputs (Opto Power MOSFET, 5–400V AC or V DC, 90 mA) can be used as switch contacts. If a specific threshold value is exceeded for a set time, the switch contact is activated for a specific time.

Load profile in the course of a day



S0 Impulse outputs

On the EMU Professional there are 4 S0 Impulse outputs (Opto Power MOSFET, 5–400V AC or V DC, 90 mA) available.

Part No.	Description		
	Direct connection		
P0200000	EMU Professional 3/75	3x230 / 400 V AC	MiD B+D
P020000K	EMU Professional 3/75 KNX	3x230 / 400 V AC	MiD B+D
P020000M	EMU Professional 3/75 M-Bus	3x230 / 400 V AC	MiD B+D
P020000T	EMU Professional 3/75 TCP/IP	3x230 / 400 V AC	MiD B+D
P020000L	EMU Professional 3/75 LON	3x230 / 400 V AC	MiD B+D
P020000MO	EMU Professional 3/75 Modbus	3x230 / 400 V AC	MiD B+D
	Current transformer connection		
P1200000	EMU Professional 3/5	3x230 / 400 V AC	MiD B+D
P120000K	EMU Professional 3/5 KNX	3x230 / 400 V AC	MiD B+D
P120000M	EMU Professional 3/5 M-Bus	3x230 / 400 V AC	MiD B+D
P120000T	EMU Professional 3/5 TCP/IP	3x230 / 400 V AC	MiD B+D
P120000L	EMU Professional 3/5 LON	3x230 / 400 V AC	MiD B+D
P120000MO	EMU Professional 3/5 Modbus	3x230 / 400 V AC	MiD B+D

Energy meters with 0.5 % accuracy, for deviating operating voltages or with other display data, for instance apparent energy, can be supplied on request.

EMU Allrounder

The multifunctional 5 module (90 mm) width, 3-phase energy and power meter, EMU Allrounder for direct connection up to 75 A, or current transformer /1 or /5 A with S0 Impulse output for active energy. The key measurement values can be read on the display.

- MiD B + D approval for billing purposes ex-factory
- 1 or 5 A current transformer connection for up to 20'000/5 or 4'000/1 A
- Direct connection up to 75 A
- Control input for high and low tariff, double tariff
- High performance Opto Power MOSFET S0 Impulse output, 5–400V AC or V DC, max. 90 mA
- Graphic LC-display (60x30 mm) with background lighting
- 8-digit display with one decimal place 0000000.0 kWh
- Accuracy class B (+/-1 %) for active energy EN50470-1, -3

75 A

.../5 A

.../1 A

MiD B+D geprüft

kWh

DT

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Standard configuration S0 Impulse output

- Active energy import

Adjustable pulse rate and length

Pulse rate per kWh: 0.001, 0.01, 0.1, 1, 10, 100, 1'000 or 10'000
Pulse duration in milliseconds: 4 to 250 ms, adjustable in 2 ms-stages

Factory set configuration in energy meters for:
Direct connection: 1'000 Impulses/40 ms
Transformer connection: 10 Impulses/120 ms

Optional read-out interface

M-Bus

MiD-approval

MiD B+D approval

As per MiD modules B + D or billing purposes ex-factory.

Display data

	Total 3 phases	Per phase	Per tariff
Active energy import (kWh)	•		•
Active energy import (kWh) resettable	•		•
Active power (kW)	•	•	
Current (A)	•	•	
Voltage (V) L-N		•	
Number of power failures	•		

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Art. Nr.	Description	
	Direct connection	
A0200000	EMU Allrounder 3/75	3x230 / 400 V ACMiD B+D
A020000M	EMU Allrounder 3/75 M-Bus	3x230 / 400 V ACMiD B+D
	Current transformer connection	
A1200000	EMU Allrounder 3/5	3x230 / 400 V ACMiD B+D
A120000M	EMU Allrounder 3/5 M-Bus	3x230 / 400 V ACMiD B+D

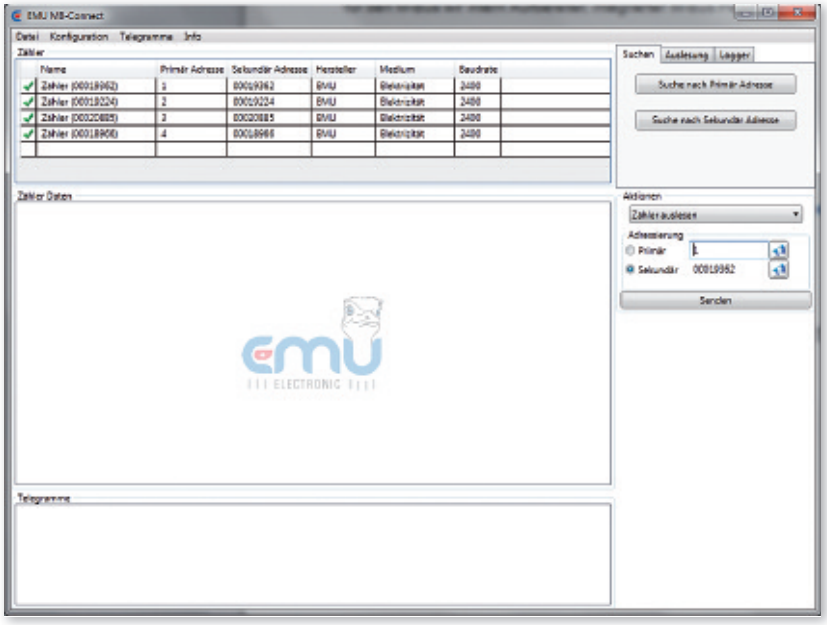
Energy meters with 0.5 % accuracy, for deviating operating voltages or with other display data, for instance apparent energy, can be supplied on request.

EMU MB-Connect Software

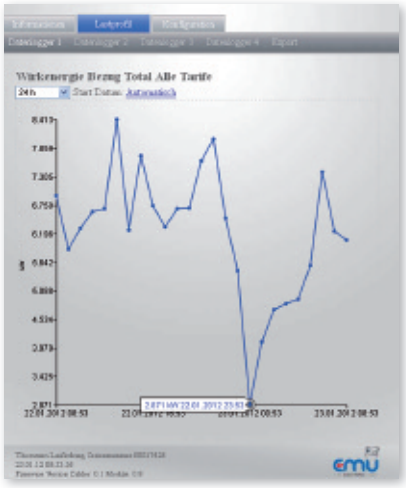
All energy meters with an M-Bus interface according EN13757-2,-3 can be configured and read by our MB-Connect. Read-out occurs manually or periodically in an adjustable interval. The selected readings can be exported to a CSV file (Comma Separated Values) and processed in Excel for instance.

Functions

- Checking the M-Bus installation
- Addressing energy meters
- Setting individual read-out data
- Changing the baud rate
- Analysing response times
- Automatic meter read-out
- Export of read-out data to a CSV file
- Switching on/off S0 outputs



EMU S0 Impulse-Logger



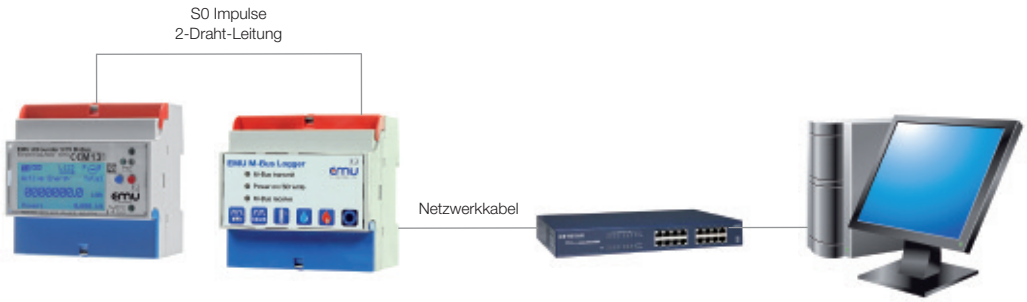
You are sitting in your office in Zurich and want to know how high the current energy use in your branches in Lucerne and London is. You are faced with the choice of a two-day trip or a dozen telephone calls. Both are laborious and take up a lot of your time. But it doesn't have to be like that.
With the EMU S0 Impulse-Logger you have access on your computer screen to all the relevant data, at any time. The S0 Impulse-Logger is a S0 Impulse log system with which energy use can be monitored and analysed via remote access.
Via your IP address and web browser you can call-up the measurement data and load profile and compare them easily and conveniently. This makes efficient and cost- effective evaluation possible.
A variety of energy meters can be connected to the EMU S0 Impulse-Logger using the S0 Impulse output. This means you can also conveniently compare energies such as gas, water, heat and electricity. Most energy meters have already been equipped with an S0 Impulse output. As a result we can integrate energy meters which are already available in the EMU S0 Impulse-Logger without any trouble. This means you can retain any investments you have already made.
9 energy meters with S0 Impulse output and two temperature sensors can be connected to the EMU S0 Impulse-Logger.

Inputs
9x S0 Impulse inputs, 2x temperature sensors.

Data storage
Micro SD-Card, removable, memory capacity of 8 million log entries, 20 years on 2GB.

Power supply
EMU S0 Impulse-Logger requires a 230V AC supply.
The supply voltage (13V DC) for the S0 Impulse is processed internally.

Part. No	Description
LS920000	EMU S0 Impulse-Logger with webserver
LT000000	EMU Temperature sensor



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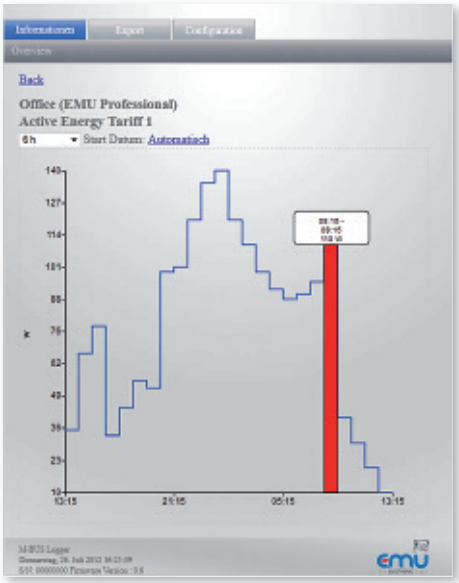
EMU M-Bus Logger

The EMU M-Bus Logger automatically reads out all M-Bus slaves and displays these readings including load profile on the website. The energy data can be accessed and analysed via IP address and web browser. Saved data can be exported from the website to CSV file or automatically saved to FTP server. The EMU M-Bus Logger supports all meters with M-Bus interface.

Features:

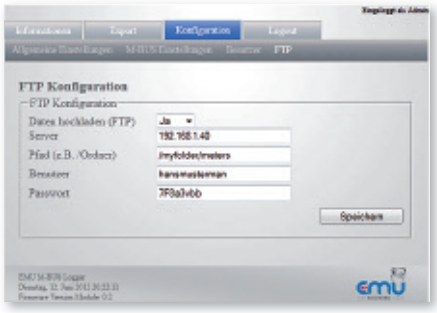
- M-Bus data logger for up to 60 slaves
- Built-in M-Bus level converter/master
- Supports all M-Bus devices per EN 13757-2, -3 (previously EN 1434-3)
- Shows monthly energy consumption
- Website integrated via IP address
- Load profiles for all energy values
- Data export to CSV file
- FTP upload of readings (CSV file)
- Converts M-Bus to SML
- Communication to smart-me



Integrated webserver

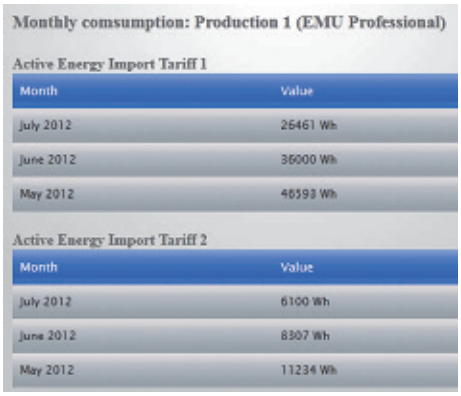
The integrated webserver is accessed via IP address and web browser. The EMU M-Bus Logger website lists all connected M-Bus users. It also displays all available readings and load profiles.

FTP upload



The CSV files are automatically uploaded to an FTP server. The EMU M-Bus Logger website then allows you to select and configure your FTP server.

Monthly energy consumption



Monthly comsumption: Production 1 (EMU Professional)

Active Energy Import Tariff 1

Month	Value
July 2012	26461 Wh
June 2012	36000 Wh
May 2012	46593 Wh

Active Energy Import Tariff 2

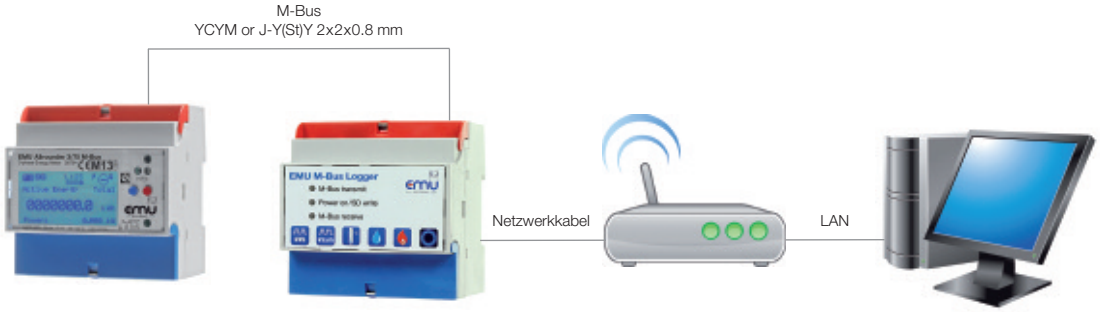
Month	Value
July 2012	6100 Wh
June 2012	8307 Wh
May 2012	11234 Wh

Monthly energy consumption (or supply) is shown on the website.

EMU Bill and Report

The user-friendly EMU Bill and Report software generates custom invoices and reports at your fingertips. The consumption data are read from the EMU M-Bus logger.

Part No.	Description
LM620000	EMU M-Bus Logger 60 TCP/IP



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TCP/IP-Module

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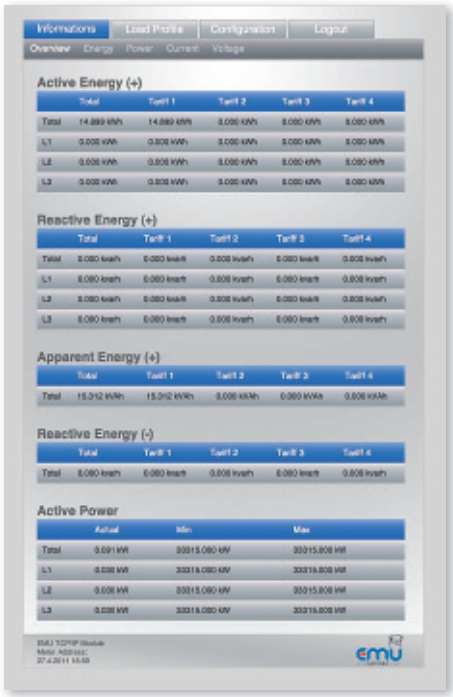
With the TCP/IP module you can analyse different measurement readings and load profile can be analysed via your web browser and IP address in a LAN or WAN. The module logs measurement values in a configurable interval and exports it to a CSV file (Comma-Separated Values).



The integrated warning system provides reliable alerts about the exceedance or under-limits of the defined measurement value via e-mail (or e-mail to SMS gateway).

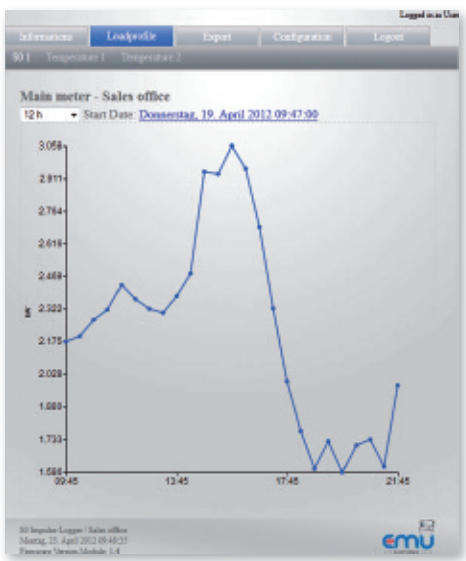
The S0 Impulse outputs (Opto Power MOSFET, 400V AC or V DC, 90 mA) are convertible as a switch and are able, for instance, to control a relay in order to activate heating in a holiday home.

Features:

- Display of instantaneous measurement reading
- Graphical load profile
- Logging of different measurement values
- Display of minimum and maximum values
- Alerts via e-mail upon measurement values falling below or exceeding set values
- Turning on/off of S0 Iimpulse output
- Access protection with password
- Remote reading via Modbus TCP and BACnet IP
- Communication to smart-me

Integrated warning system

A warning system alerts you reliably, even when you are on the go, about your company's energy use. If a set measured value is exceeded you receive a message via e-mail or SMS. For instance you will receive an alert if the heating's power consumption falls below a set value.



Data logger
The TCP/IP module stores four configurable measurement readings in intervals of 10 seconds, 5, 15, 30 or 60 minutes.

In the TCP/IP module up to 245'000 readings can be stored. All readings are recorded and remain stored, even if the EMU Professional is not connected to the LAN network.

Read-out via BACnet IP and Modbus TCP
EMU Professional with TCP/IP module supports BACnet IP (Analog Input Objects) and Modbus TCP protocol.

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The user-friendly EMU Bill and Report Software generates customer-specific bills and reports at the touch of a button.

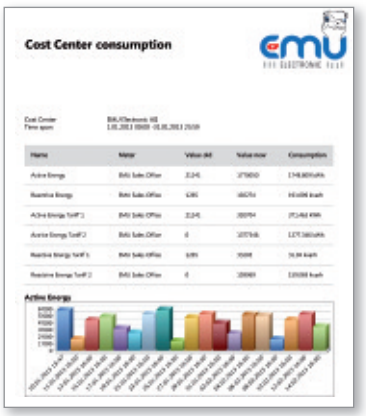
System configuration

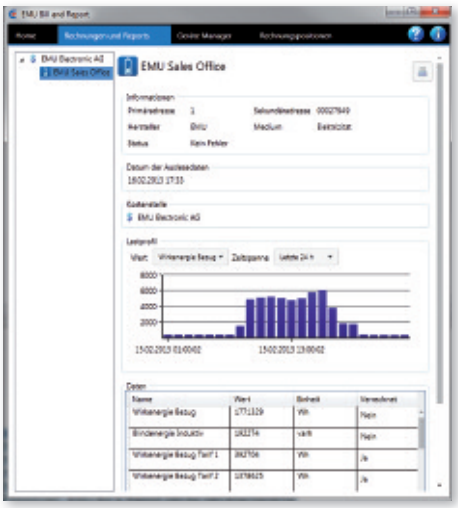
The EMU M-Bus Logger automatically reads out the connected M-Bus energy meter. The Bill and Report downloads the stored user data via TCP/IP network connection from the EMU M-Bus Logger and processes them. The Bill and Report can manage several EMU M-Bus Loggers.

Functions

- Displays all measured data from the connected energy meter
- Supports all energy meters (electricity, gas, water, heating, etc.)
- Creates evaluations (reports) and bills with just one click
- Loads profile for all energy values, bar chart
- Creates virtual meters, sum of other meters
- Creates a consumption overview per meter, freely selectable time period
- Assigns meters and virtual meters to cost centres
- Creates bills for cost centre, freely selectable time period
- Can be installed on any Windows PC
- Several PCs can access the same EMU M-Bus Logger
- No online (24 hours/7 days) operation necessary

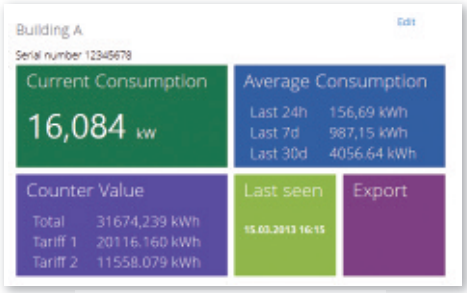
Part No.	Description
SW1M000020	EMU Bill and Report 20 for 20 energy meters
SW1M000060	EMU Bill and Report 60 for 60 energy meters
SW1M000120	EMU Bill and Report 120 for 120 energy meters
SW1M000180	EMU Bill and Report 180 for 180 energy meters
SW1M000240	EMU Bill and Report 240 for 240 energy meters
SW1M000300	EMU Bill and Report 300 for 300 energy meters
SW1M000400	EMU Bill and Report 400 for 400 energy meters
SW1M000500	EMU Bill and Report 500 for 500 energy meters
SW1M000999	EMU Bill and Report unlimited





smart-me

smart-me is a free web application that evaluates and monitors consumption data online. Whether it's electricity, water, gas or heating, with smart-me you have control of your energy consumption.



Functions

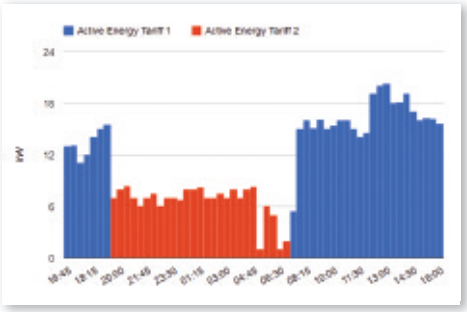
- Automated data processing
- Individual user account
- Fast and simple start up
- Supports all M-Bus energy meters
- Worldwide access
- Detailed evaluations and reports
- Export of measured data
- smart-me Basic is free

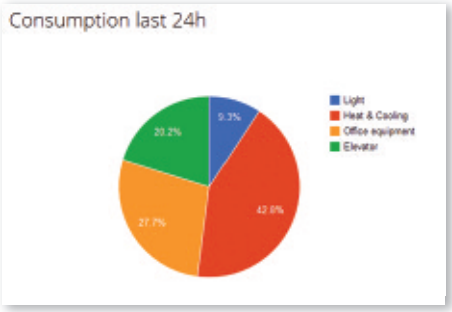
Your benefits

With smart-me you can manage all your metering stations worldwide and generate reports, comparisons and analyses.
You have worldwide access to your measured data and reports using your PC, tablet or smartphone.

How it works

Measured data are communicated to the smart-me server via SML (Smart Meter Language) by the EMU M-Bus Logger and the EMU Professional TCP/IP.





EMU Professional
EMU Allrounder
EMU Professional
EMU Allrounder
S0 Impulse-Logger
M-Bus Logger
TCP/IP-Module
EMU Bill & Report
smart-me
Services

Services

EMU Professional
EMU Allrounder
EMU Professional
EMU Allrounder
S0 Impulse-Logger
M-Bus Logger
TCP/IP-Module
EMU Bill & Report
MB-Connect Software
Services

Advice

Need support with a project? We provide you with a personal advisor who, together with you, will develop a professional measurement and evaluation system. Whether it is a brand new product, the latest trend or a cleverly devised project – you receive a tool from us so that you get the maximum from your electricity.

Development and Production

Since we manufacture our energy meters in-house ourselves in Switzerland, we know all the ins-and-outs and are able to cater to our client's specific requirements. Tell us what you have in mind and we will develop a practical solution, for you.

Quality guarantee

With EMU energy- and powermeters you are choosing the highest quality. In production we emphasise state-of-the-art manufacturing technology and competent suppliers. All energy meters are subject to stringent test procedures and accuracy measurements.

Individual configuration

We configure all our products as per your requests and requirements, whether it is M-Bus addresses, IP addresses or current transformer ratios. We archive the configuration and will make it available, as required, to project managers, electrical designers or local fitters.

Training

On a training day we provide you with our specialist knowledge of measuring techniques and evaluation systems. You get comprehensive background knowledge about the construction and the functionalities of energy meters. Together we talk over examples of usage in practice.

February 2014. Subject to modifications and amendments.

emu
ELECTRONIC

3-phase Energy and Power Meter • Impulse-Logger • M-Bus Logger

Quality that counts.

Made in Switzerland

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