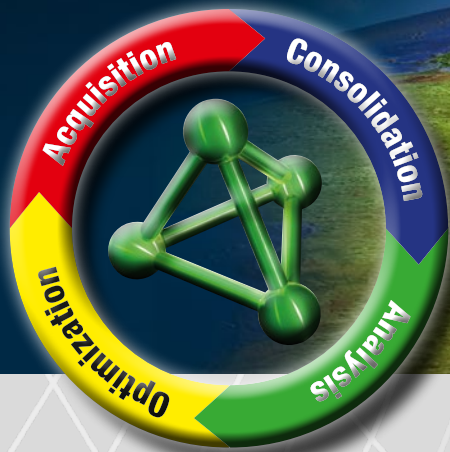


Would Energy Management Pay Off For My Company?



Using Energy Efficiently

ACQUISITION • OPTIMIZATION • BILLING

Energy Management

Reducing Costs and Protecting the Environment by Using Energy Efficiently!

Rising prices for electrical power, gas and water are dominating the media. Experts are forecasting even higher costs in the years to come. Those who have not yet addressed the issue of energy costs should act immediately in order to reduce power consumption and energy import permanently.

According to leading institutes and energy consultants, potential savings of 20% can be achieved. Actual practice reveals that savings of 5 to 10% can be achieved alone by means of responsible use of valuable resources or minimal investment. This allows committed companies to increase their yield, sharpen their competitive edge and make a valuable contribution to environmental protection.

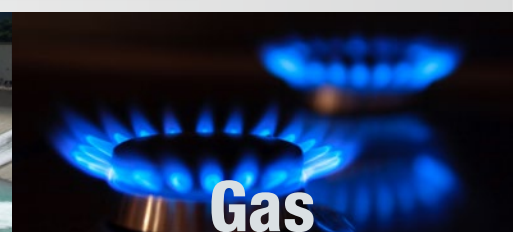
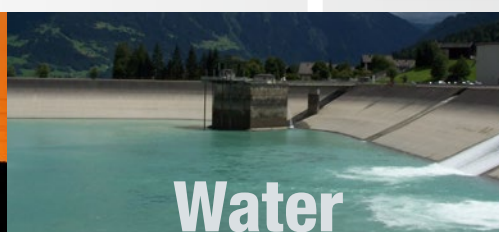
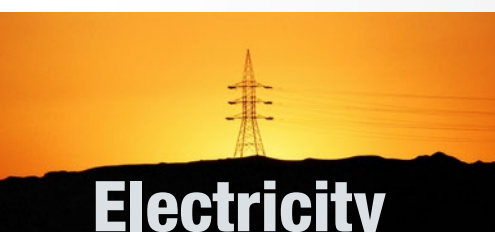
Inefficient use of energy results from unnecessary power consumption, leaks, poor efficiency levels and capacity utilization rates, as well as inadequate reactive current compensation. Due to peak and off-peak tariffs, the time of day at which energy is consumed also influences costs. Process-oriented logging of consumption data assures full transparency and provides a basis for allocating costs fairly to the respective divisions and products – a basic prerequisite for achieving sustainable energy savings at production facilities.

As a pioneer in the field of modern energy-data logging, GMC-I Messtechnik GmbH started developing its now widespread Energy Control System (ECS) long before business and politics got involved with energy management.

25 years of experience makes us a reliable and competent partner – for the implementation of your project.

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Energy Management

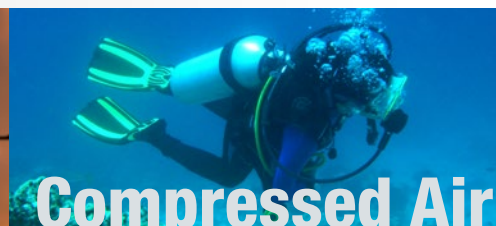
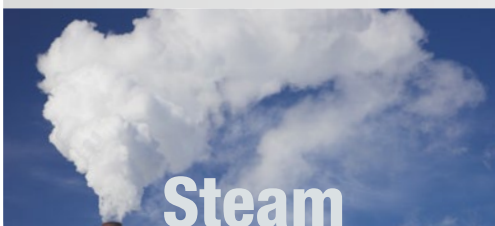
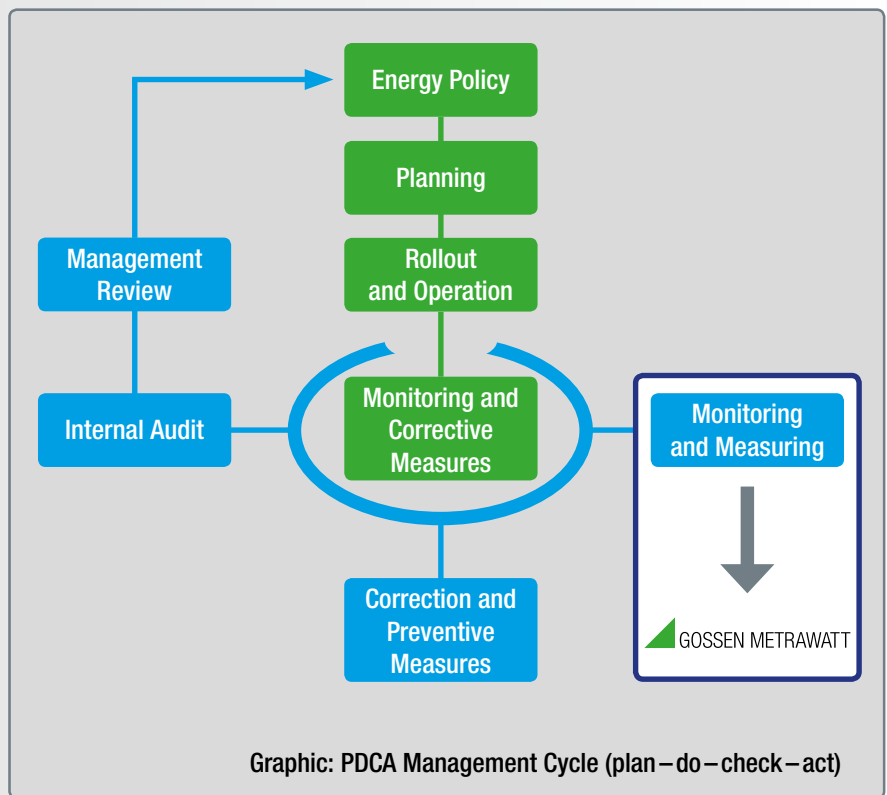
Standardized Energy Management – Support for Reducing Energy Costs

Improving energy efficiency, decreasing costs, reducing emissions and protecting the environment as a result: These are important reasons for implementing an energy management system (EMS).

Standardized support for the establishment of an EMS is offered by the internationally valid DIN EN ISO 50001 standard. In addition to the formulation of an energy policy, this also includes the allocation of responsibility, as well as strategic and operative energy goals. And all of this is targeted at systematically and lastingly reducing energy consumption. The standard is aligned to the PDCA management cycle (plan – do – check – act)

The logging of energy data, i.e. an Energy Control System from GOSSEN METRAWATT, is an essential constituent of any EMS. It provides the means for logging, analyzing and evaluating energy consumption. Energy saving potential can be determined on the basis of the acquired data, from which efficiency-increasing measures can be derived.

The energy audit per DIN EN 16247-1 offers an alternative to ISO 50001. This standard is particularly interesting for small and mid-sized companies, and is targeted at improving energy efficiency and reducing consumption. The first step involves the establishment of goals, a range of applications and limits for the energy audit. Internal company processes and user conduct is then analyzed, on the basis of which suitable characteristic figures and measures are ascertained. Finally, the most significant areas of potential for reducing energy consumption, as well as measures for exploiting this potential, are summarized in a report.



Energy Management

Would Energy Management Pay Off for My Company?!

More than a hundred years ago, the prerequisites had already been defined upon which all approaches to energy management are based. Sensible optimization concepts can only be developed if we know exactly when, where and why how much energy is being used. Taking stock of a company's current energy situation encompasses all consumption data including electrical power, heat, combustible fuels, water, compressed air, temperatures and other relevant information.

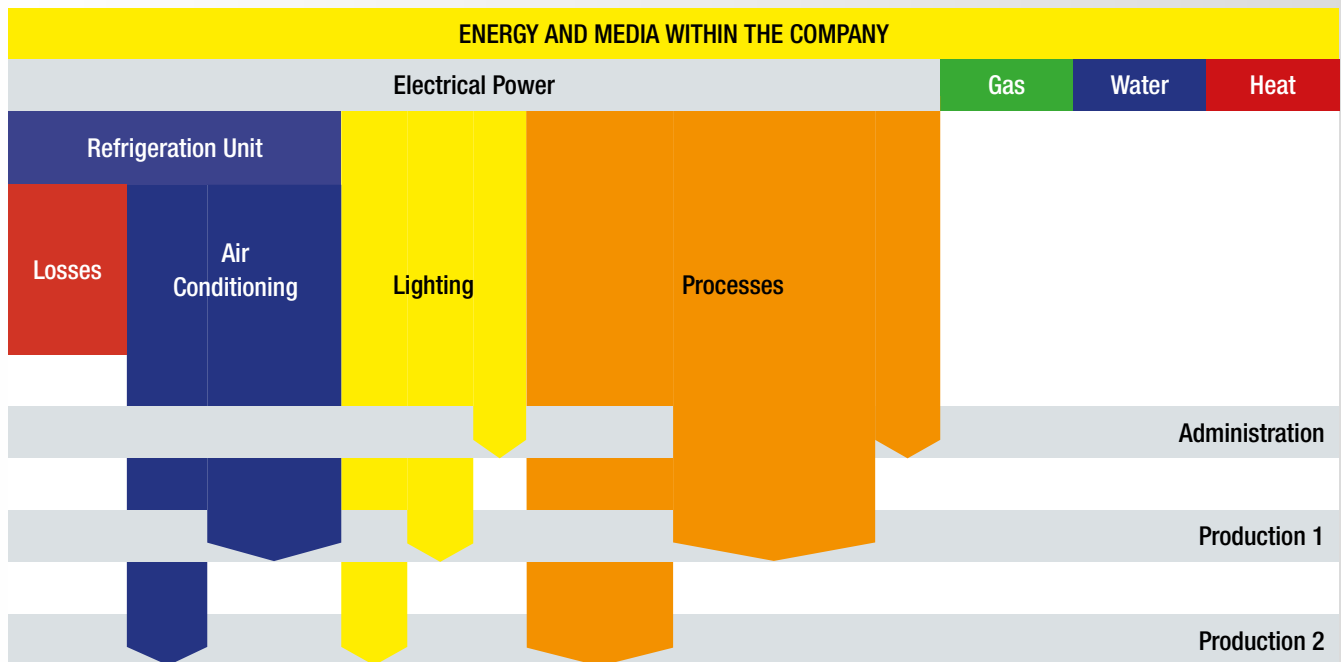
Temporary versus Stationary

Temporary measurement indicates approaches by means of which energy management really pays off, and it supports the analysis of individual system components. In contrast, stationary measurement unceasingly delivers important data for process optimization, assures the success of implemented optimization measures for the long-term and continuously makes consumption data available for allocation and billing purposes.

” GOSSEN METRAWATT has more than 25 years of experience in the field of energy management. You can profit from this expertise too! “

Transparency for Energy Distribution

Only by being familiar with one's energy consumption patterns can they be changed. And thus each company division must be precisely informed regarding the makeup of its energy costs in order to recognize ways of generating savings, and to immediately see the effects of implemented measures.



Transparency for Consumption Habits



Energy demand changes over time, and is depicted as a load profile or a consumption profile. This profile plainly displays extreme values, makes operating cycles apparent and points out unequivocal approaches to optimization with correlation to process sequences.



Continuous load structure analysis, as well comparing the profiles of two different time periods, immediately indicate the effectiveness of optimization measures or changes in the operating cycle.

Creating Transparency with Figures

Recording energy and consumption figures provides a basis for an initial examination of how efficiently energy is being used or consumed. Excessive deviation amongst energy consumption figures for similar devices, processes or systems is an unfailing indicator that action is required. Numerous associations and energy consultants make characteristic figures available for benchmarking. Weak points and sources of waste can be detected immediately with the help of a load or consumption profile. Consumption during

idle time is a plain indicator of energy waste or leaks. Obtained figures make it possible to determine whether or not equipment is functioning efficiently, or if it needs to be replaced with new, low-energy equipment. Considerable energy savings can often be achieved with only minimal investments or by changing consumption habits. This includes the avoidance of unnecessary consumption by shutting equipment down instead of setting it to the idle or standby mode and the elimination of leaks, as well as maintenance and repair at regular intervals.



Energy Management

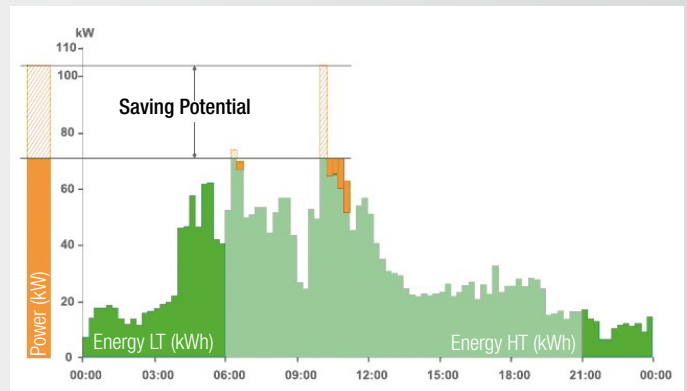
Reducing Costs and Protecting the Environment by Using Energy Efficiently!

Reduced Peak Load

Excellent cost saving potential can be implemented above all by reducing or suppressing peak loads. Adequate acceptance of load limiting consumption habits can be achieved by invoicing responsible company divisions for peak loads in accordance with the guilty-party-pays principle. However, this presumes transparency of the consumption habits of each respective division, in order to assure that the necessity for corrective measures and their effectiveness can be substantiated.

Process Energy Optimization

If the load or consumption profile is related to production quantities, industrial engineering is provided with ideal prospects for optimizing energy use within the process. The effects of modifications on energy use become immediately apparent after they're implemented. Optimization is complete after the most economical working level has been achieved. Considerable savings can frequently be realized with larger investments such as energy-optimized processes with enhanced levels of effectiveness and utilization, energy recovery, the use of speed-controlled drives for demand-driven compressors, fans and pumps, and switching over to energy-efficient lamps and lighting.



Prompt Billing

Remote meter reading makes all energy and consumption values available to the user at any desired point in time. These can be transferred to a billing system automatically, and thus in an error-free fashion. Logging of load and consumption profiles for a multitude of measuring points is only possible with the help of remote meter reading. Defective meters are detected by means of plausibility checks.

All energy media are billed in accordance with definable allocation policies for individual cost centers in consideration of various tariffs. Data logging synchronized to the power utility and transfer of billing data to the in-house computer system are the basis for company internal billing.

Energy Management

Which Requirements do Systems for Logging Energy Data Have to Fulfill?

- The data loggers must be capable of processing the various output signals and bus systems of the utilized energy and consumption meters.
- The data loggers should process and save measured values in order to eliminate the possibility of data loss in the event of a network error or a problem with the analysis computer.
- The selected system must be easily expandable, and must be able to manage the required number of meters after final expansion has been completed.
- In order to assure that energy and consumption figures can be queried on-site, the data should be collected centrally and made available via the office communications network.
- For simple optimizations, the data logger should be programmable and equipped with appropriate control outputs.
- The individual data loggers should be networked via the building's already installed standard network, or it should be possible to set up a network using standard components.
- It must be possible to transmit values from distant network stations or other locations via public telephone lines.
- Logging of energy and consumption data must be consistently isolated from high-quality load optimizing systems and other previously installed control systems in order to assure that resulting influences on energy consumption are recorded in the event of their failure.

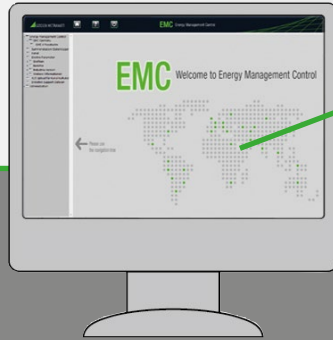


Energy Control System (ECS) – the Smart Way to Reduce Costs

All of the above prerequisites are met by GOSSEN METRAWATT's Energy Control System. It's the clever solution for logging energy data and provides the fundamentals for optimizing consumption and load, as well as for cost center billing. It also serves as a basis for energy audits in accordance with DIN EN 16247, or the EMS per DIN EN ISO 50001.

Energy Management

Example of How Your Solution Could Be Set Up



EMC 5.x

A Perfect Fit for Every Company

EMC 5.x takes its data from GOSSEN METRAWATT's Energy Control System (ECS). Professional system components are used for autonomous acquisition and optimization of energy consumption.

Custom tailored information networks can be configured depending upon the size of the company and its applications. In actual practice, a combination of intelligent software and world-class hardware assures a reliable, smooth flow of information.

3 Evaluation and Processing of Energy and Consumption Data

Ethernet – Analog Telephone Lines – ISDN – GSM



SMARTLOGGER

The energy data logger unites energy and consumption data acquisition for a wide variety of media with error messaging and monitoring functions. The perfect solution for a small number of measuring points.



SMARTCONTROL

SMARTCONTROL acquires energy and consumption data via Modbus, M-Bus and LON, as well as via pulse and analog inputs. Networking is made possible via Ethernet, or via public communications networks with a built-in modem.

2 Evaluation, Storage and Transmission of Energy and Consumption Data

Pulse Output – Analog Signal – M-Bus – LON – Modbus – Ethernet



Consumption Meters

In combination with meters for gas, water, heat and compressed air, electrical power meters acquire consumption data for all types of media.



Power Meters

In addition to important 3-phase quantities, multifunctional power meters indicate energy consumption as well.

1 Measurement of Energy and Consumption Values

Energy Management

Project Engineering – Services

Depending on individual requirements and tasks, we provide you with support in setting up a suitable system solution in consideration of prevailing on-site circumstances:

- ▲ **Setup or expansion of an energy management systems for the continuous PDCA cycle of a sustainable energy management system per DIN ISO 50001**
- ▲ **Peak load optimization for limiting costly system loads**

Differentiating criteria for

- ▲ **small/mid-sized companies with manageable organizational structures and limited availability of employees who are familiar with energy management, as well as a quantifiable number of measuring points and**
 - ▲ **large companies in an economic sense who may have several locations and an accordingly complex organizational structure**
- are just as significant as the prevailing infrastructure at the communications and field levels.

Numerous successfully completed projects have resulted in optimized procedures.

The tasks at hand are implemented in direct cooperation with the customer. The development of solution concepts and proposed measures is subdivided along the timeline into various phases in advance. Quotations are provided for the components required for a complete solution and are incorporated into the concept, and existing measuring systems for other media are made available and connected to the system.

Initial start-up of the system and training of the operators upon completion of the project make it possible for the customer to expand or modify the system if needs be. Beyond this, long-term support and service is assured by hardware and software maintenance contracts.



Energy Management

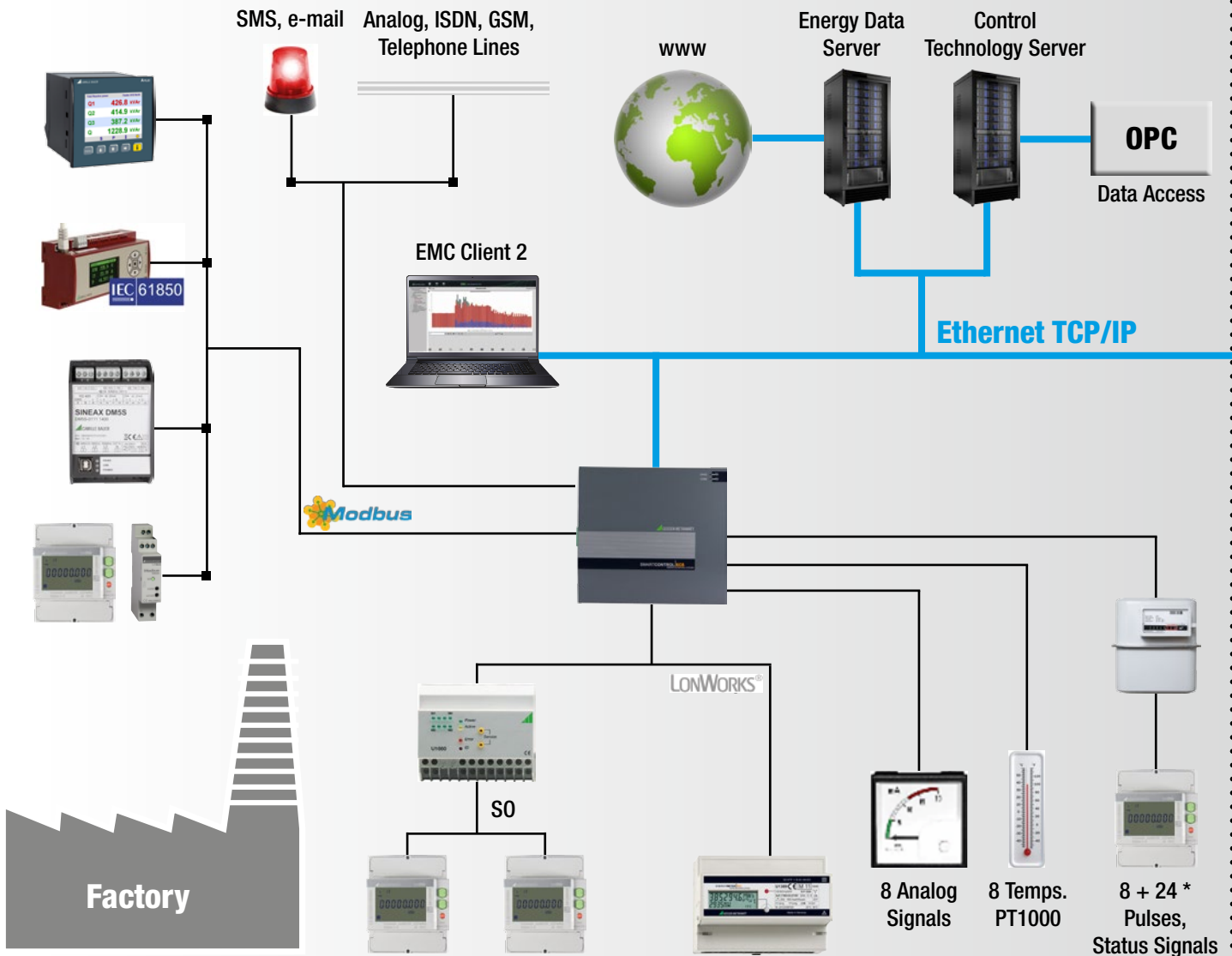
Sample System – Layout of an Energy Control Systems (ECS)

Cost-effective installation of networks over large distances is an important factor and must be taken into consideration during the system planning phase. Maximum system size and response time are determined by the transmission medium, as well as by network topology.

The ECS makes it possible to transmit consumption data at the acquisition level via numerous bus systems (LON, Modbus TCP / RTU, M-Bus). And thus within the factory environment, robust and interference-resistant bus systems like LON can be used, whereas



Communication



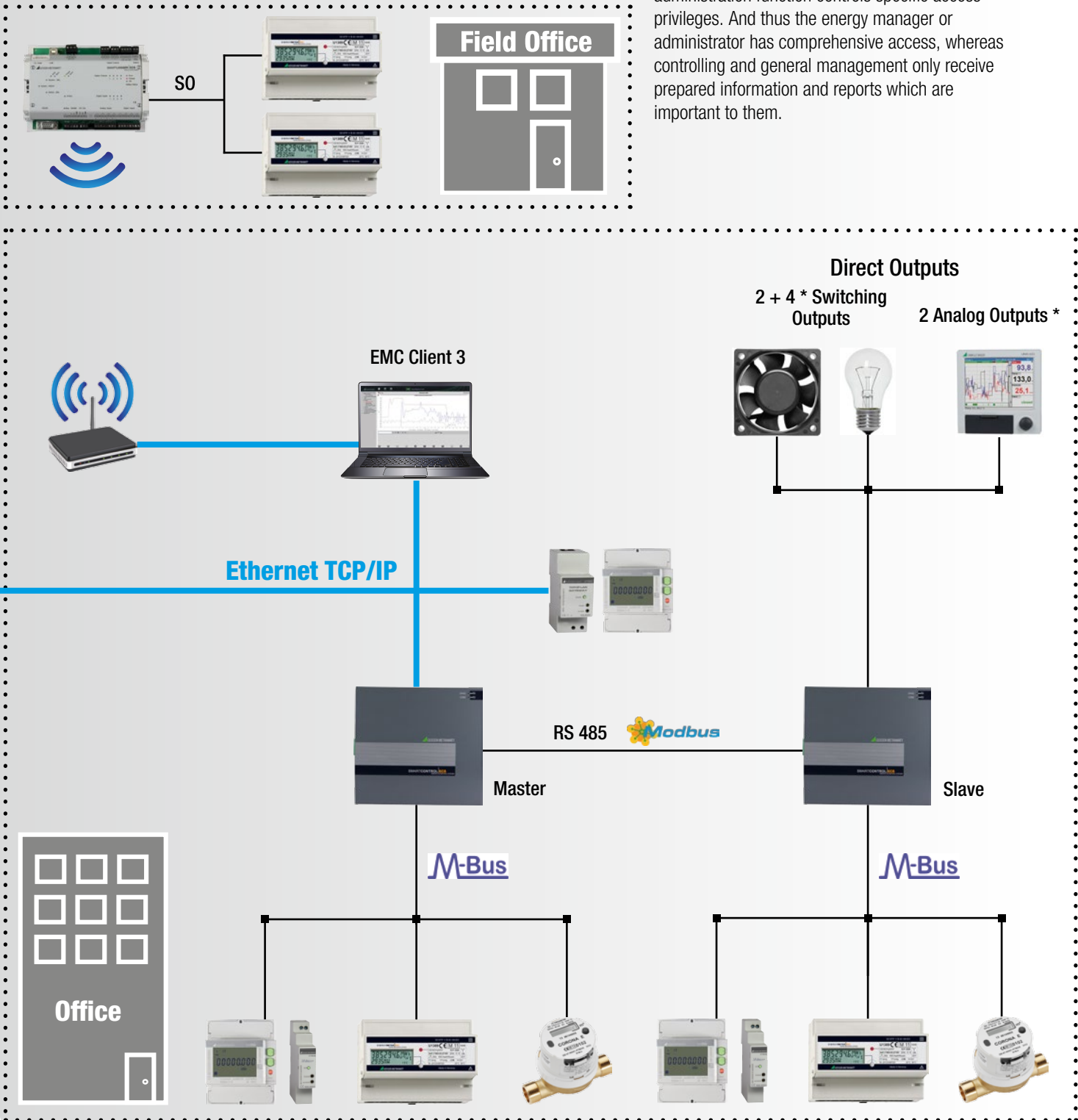
the system is implemented with a typical building bus such as the M-Bus in office buildings.

The data loggers are networked via Ethernet TCP/IP or Modbus TCP. Linking to the management system is also implemented via Ethernet TCP/IP or by wireless connection, i.e. GSM/GPRS. This option also

makes it possible to transmit data into the system from remote locations which are not integrated into the company network.

The management software evaluates and processes the collected data. Several users can gather any required data simultaneously with a browser via an intranet or the Internet. The integrated user

administration function controls specific access privileges. And thus the energy manager or administrator has comprehensive access, whereas controlling and general management only receive prepared information and reports which are important to them.



* Optional



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ENERGY METERS



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2-wire system
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U1387
3-wire system
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U1289, U1389
4-wire system
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ENERGY METERS
COMPACT LINE



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2-wire system
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U187A/B
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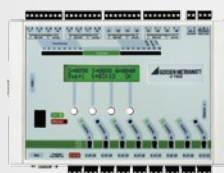
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LOAD MANAGEMENT /
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U1500
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CURRENT TRANSFORMERS



SC
Split-core current
transformers
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Bushing-type current
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Wound-primary current
transformers
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ENERGY METERS



U1281, U1381

Alternating current, 2-wire system



U1387

Three-phase current, 3-wire system



U1289, U1389

Three-phase current, 4-wire system



Electronic active energy meters with power display

Acquisition of active energy in 4-wire three-phase systems according to DIN EN 50470-3.

Application

The energy meters may be universally used for the acquisition and billing of electrical energy in trade, household, industry and building management applications. Momentary circuit loads can be evaluated at any time using the additional instantaneous power display. Variants for direct connection (U1281, U1289) are designed for currents up to 65 A without the installation of additional current transformers. The variants for transformer connection (U1381, U1387, U1389) may be connected both to $x/1$ A and $x/5$ A current transformers.

Integrated error recognition for incorrect rotary field direction, missing phases, reverse-poled current transformers, measuring range overloads and missing bus connections saves valuable time and test equipment during troubleshooting.

More transparency in operation

In addition to active energy and instantaneous power, the multifunctional variant (M1) also displays individual currents, voltages, active, reactive and apparent power, power factors and frequency by simply pressing a key. Voltage level, phase utilization, reactive power component and compensation can thus be continuously evaluated during operation.

Universal bus connection

The energy meters transmit meter readings and other data to data logging, billing and optimizing systems, as well as building automation and control technology applications, via optional interfaces.

- ▲ LON interface with FTT-10A transceiver (W1)
- ▲ M-Bus interface according to EN 1434-3 (W2)

Customer benefits

- ▲ Precise active energy measurement class B per DIN EN 50470-3
- ▲ Reactive energy class 2 per DIN EN 62053-23
- ▲ Cost savings thanks to initial calibration at the factory, in accordance with MID, conformity evaluation procedure module B+D
- ▲ Display of instantaneous power
- ▲ Extendable for additional system measurement variables
- ▲ Direct connection 5(65) A, without additional current transformers
- ▲ Transformer connection 5//1 A
- ▲ Transformer ratios can be set and calibrated
- ▲ Variant for 60 Hz system frequency available
- ▲ Display of installation errors without additional measuring equipment
- ▲ Pulse output S0 or 230 V
- ▲ Adjustable pulse rate and pulse duration
- ▲ Compact design requires little space
- ▲ Optional LON, M-bus, L-bus interface
- ▲ Optional reading while electrical circuit is switched off

Diverse calibration capability – approval for official billing

According to legal requirements, the calibration certificate may not show any deviation in measurement. Depending upon requirements, the following variants are possible:

- ▲ Calibrated main display for primary energy, calibrated pulse output with reference to primary energy and a fixed pulse rate of 1000 pulses/kWh (V1, V3) – directly measuring variant
- ▲ Calibrated main display for primary energy, transformer ratios stated upon ordering are fixed (Q9) and calibrated, calibrated pulse output with reference to primary energy and a fixed pulse rate depending on CTxVT (V1, V3)
- ▲ Calibrated main display for secondary energy, fixed transformer ratios $CT=VT=1$ (Q0), calibrated pulse output with reference to secondary energy and a fixed pulse rate of 1000 pulses/kWh (V1, V3)
- ▲ Uncalibrated main display for primary energy, adjustable transformer ratios (Q1) in combination with a calibrated ancillary display for secondary energy, calibrated pulse output with reference to secondary energy and a fixed pulse rate of 1000 pulses/kWh (V1, V3)

ENERGY METERS

Electronic active energy meters with power display

Meter reading and bus operation while the electric circuit is switched off

The meter can be optionally equipped with a 24 V DC auxiliary power input (H1) for assured discharge-free voltage, which allows for direct meter reading, or remote meter reading for bus compatible variants, even when the electrical circuit is switched off. The use of a UBAT-24V battery pack permits meter readings without continuously active supply power.

Technical data	
Measured input:	Nominal voltage 100–110 V (L–L), 230 V (L–N), 400 V (L–L), 500 V (L–L) Nominal frequency 50 Hz or 60 Hz Direct: Nominal current 5(65) A Transformer: Nominal current 1(6) A and 5(6) A
System configuration:	2-wire alternating current, 3-wire or 4-wire three-phase alternating current
Measured variables:	Active energy and instantaneous power in standard variants; currents, voltages, active, reactive, apparent power, power factor, frequency optional
Display:	LCD, 7-digit main display, 8-digit ancillary display
S0 output:	Pulse output according to EN 62053-31 or 230 V Pulse rate and pulse duration fixed or adjustable
Interface:	Optional LON, M-bus
Accuracy:	Active energy class B per DIN EN 50470-3 Reactive energy class 2 per DIN EN 62053-23
Approval:	EU Directive 2004/22/EG for measuring instruments (MID)
Assembly:	DIN rails according to EN 50 022

Stock variants

Energy meter for direct connection 5 (65) A, class B (or 1)

Description	Article number
4-wire system, 3 x 230/400 V, S0, 1000 pulses/kWh	U1289-V011
4-wire system, 3 x 230/400 V, S0, pulse rate programmable	U1289-V012
4-wire system, 3 x 230/400 V, S0, pulse rate programmable, LON	U1289-V013
4-wire system, 3 x 230/400 V, S0, pulse rate programmable, M-Bus	U1289-V014

Energy meter for transformer connection 5 (6) A and 1 (6) A, class B (or 1)

Description	Article number
3-wire system, 3 x 100 V, 1 (6) A, S0, CT/VT/pulse rate programmable	U1387-V011
3-wire system, 3 x 400 V, 1 (6) A, S0, CT/VT/pulse rate programmable	U1387-V012
4-wire system, 3 x 230/400 V, 1 (6) A, S0, CT/VT/pulse rate programmable	U1389-V011
4-wire system, 3 x 230/400 V, 1 (6) A, S0, 1000 Impulse/kWh, CT=VT=1	U1389-V012
4-wire system, 3 x 230/400 V, 1 (6) A, S0, pulse rate programmable, CT=VT=1, LON	U1389-V013
4-wire system, 3 x 230/400 V, 1 (6) A, S0, 1000 pulses/kWh, CT=VT=1, LON	U1389-V014
4-wire system, 3 x 230/400 V, 1 (6) A, S0, CT/VT/pulse rate programmable, M-Bus	U1389-V015
4-wire system, 3 x 230/400 V, 1 (6) A, S0, CT/VT/pulse rate programmable, LON	U1389-V016

Accessories

Battery pack for meter reading without continuously active power supply UBAT-24V

Installation set for door assembly U270 A

Plug-on current transformers ASK 31.3, ASK 63.4, ASK 105.6, ASK 412.4

Winding current transformer WSK 30, WSK 40, WSK 70.6N

Split-core current transformers SC 30, SC 40-B, SC 40-C, SC 50-E

OVERVIEW

Energy meters

Description						
Active energy meter for 2-wire system, direct, class 1 (resp. B)		U1281				
Active energy meter for 4-wire system, direct, any load, class 1 (resp. B)			U1289			
Active energy meter for 2-wire system, transformer, class 1 (resp. B)				U1381		
Active energy meter for 3-wire system, transformer, any load, class 1 (resp. B)					U1387	
Active energy meter for 4-wire system, transformer, any load, class 1 (resp. B)						U1389
System frequency	50 Hz	F0	F0	F0	F0	F0
External auxiliary voltage 24 V DC	without	H0	H0	H0	H0	H0
	with	H1	H1	H1	H1	H1
Multifunctional design	without	M0	M0	M0	M0	M0
	with	M1	M1	M1	M1	M1
	without + reactive energy	M2	M2	M2	M2	M2
	with + reactive energy	M3	M3	M3	M3	M3
Rated value of input voltage Ur	100 – 110V	–	–	–	U3	U3
	230V	U5	–	U5	–	–
	400V	–	U6	–	U6	U6
	500V	–	–	–	U7	–
Approval	MID	P8	P8	P8	P8	P8
	MID + calibration certificate	P9	P9	P9	P9	P9
Pulse output						
can be calibrated, 1000 pulses/kWh	S0 Standard	V1	V1	V1	V1	V1
Rate programmable	S0 programmable	V2	V2	V2	V2	V2
Switching output up to 230 V, 1000 pulses/kWh, can be calibrated (not possible with Feature H1)	Pulse 230V Standard	V3	V3	V3	V3	V3
Switching output up to 230 V, rate programmable (not possible with Feature H1)	Pulse 230V programmable	V4	V4	V4	V4	V4
can be calibrated, 100 pulses/kWh	S0 130 ms, 100 pulses/kWh	V7	V7	V7	V7	V7
can be calibrated, 1000 pulses/kWh	S0 130 ms, 1000 pulses/kWh	–	–	V8	V8	V8
can be calibrated, 2000, 5000, 10000 pulses/kWh	S0 customized	–	–	V9	V9	V9
Bus connection	without	W0	W0	W0	W0	W0
	LON	W1	W1	W1	W1	W1
	M Bus	W2	W2	W2	W2	W2
Transformer ratios						
Current/voltage fixed, main display can be calibrated	CT=VT=1	–	–	Q0	Q0	Q0
Current/voltage programmable, secondary display can be calibrated	CT, VT programmable	–	–	Q1	Q1	Q1
Current/voltage fixed, main display can be calibrated CT=1...10000, VT=1...1000, CTxVT ≤ 1 million	CT, VT fixed	–	–	Q9	Q9	Q9



Calibration mark

Extensive Initial Calibration at the Factory

The meters comply with the MID directive which is valid throughout Europe and in Switzerland, and are shipped with initial factory calibration. They can be used immediately for billing purposes. Lead-times and costs are reduced as a result. Conformity assessment is conducted in accordance with modules B and D, and a declaration of conformity is included in the operating instructions.

Meter and calibration from the same source

GOSSEN METRAWATT has a state registered test office for electric instruments and is authorized to recalibrate energy meters for the German market.

COMPACT LINE



U181A

AC current, 2-wire system



U187A/B

3-phase current, 3-wire system



U189A/B

3-phase current, 4-wire system

Energy meters

for industrial, household, commercial and building management applications

Application

The calibrated, compact energy meter can be used to acquire and bill active energy in industrial, household, commercial and building management applications. Relevant values are transmitted to data logging, billing and optimizing systems, as well as to building automation and control technology applications, by means of pulse outputs, Modbus, M-Bus or Ethernet TCP/IP. In addition to energy, the meter also measures all of the electrical system's essential parameters and makes them available via the Bus interface. Energy and instantaneous power values appear directly at the display

Customer benefits

- ▲ Compact, double-tariff energy meter for 4 quadrants, import and export, partial and aggregate meters and up to 30 measured values for real-time quantities
- ▲ Variants for 2, 3 and 4-wire-systems with 80 A direct-connection, or 1 A, 5 A transformer connection
- ▲ Programmable current transformer ratio of 1 to 10000 and additionally displayable secondary value for energy
- ▲ Double-tariff measurement with input for tariff switching
- ▲ Partial meter can be started, stopped and reset
- ▲ Active energy measurement per EN50470-3, class B, for industrial, commercial and demanding household applications
- ▲ Reactive energy measurement per EN 62053-23, class 2
- ▲ Cost savings thanks to initial calibration at the factory in accordance with MID, conformity assessment procedure modules B and D
- ▲ Phase sequence indicator and error detection for violation of voltage, current and frequency measuring ranges
- ▲ 2 programmable pulse outputs for energy values
- ▲ Flexible communication via infrared interface and optional interface modules for M-Bus, Modbus and Ethernet
- ▲ Large LCD panel with background illumination

Stock variants

Energy meter for direct connection, 80 A – 4 quadrants, import/export, double-tariff, 2 ea. S0, class B, MID

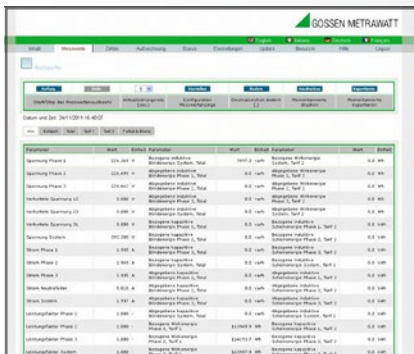
Description	Article number	
	with display of reactive energy	without display of reactive energy
for 2-wire system, 230 V...240 V, 50/60 Hz	U181A	U181D
for 3-wire system, 3x400...415 V, 50/60 Hz	U187A	–
for 4-wire system, 3x230/400...240/415 V, 50/60 Hz	U189A	U189D

Energy meter for transformer connection, 1 (6) A and 5 (6) A – 4 quadrants, import/export, double-tariff, 2 ea. S0, class B, MID

Description	Article number	
	with display of reactive energy	without display of reactive energy
for 3-wire system, 3x400...415 V, 50/60 Hz	U187B	–
for 4-wire system, 3x230/400...240/415 V, 50/60 Hz	U189B	U189W

Interface modules see next page

COMPACT LINE



LAN module web server

Interface modules

Modbus

The Modbus module transmits data from the energy meter to a logging system via an RS 485 interface using the Modbus RTU or ASCII protocol.

Modbus Master software for configuring the module and displaying measured values is included in the scope of delivery free of charge. A CD with a description of the Modbus register is provided as well.

M Bus

The M-Bus module transmits data from the energy meter to a logging system using the M-Bus protocol. The M-Bus (meter bus) is a European standard in accordance with EN 13757-2/3 for reading out consumption meters.

M-Bus Master software for configuring the module and displaying measured values is included in the scope of delivery free of charge.

TCP/IP LAN GATEWAY

The LAN gateway module makes it possible to access an energy meter via a web browser from any PC with Internet/LAN access.

The integrated web interface is laid out for Internet Explorer 7, Internet Explorer 8, Mozilla Firefox 3.xx, Apple Safari, Google Chrome, Opera and Netscape Navigator.

Password protected access to the module is possible at two levels. Whereas the administrator is able to adjust all settings, users (up to 20) can only retrieve measured values and status information.

The LAN gateway has an integrated data logger with adjustable sampling rate and selectable measured quantities. Memory content, as well as momentary measured quantities, can be downloaded as a CSV file. Alternatively, communication can be managed by means of a Modbus TCP protocol. A CD with a description of the Modbus register is included.

Stock variants

Description	Article number
ModBus-Modul, RS485	U180A
M-Bus-Modul	U180B
TCP/IP LAN-Modul	U180C

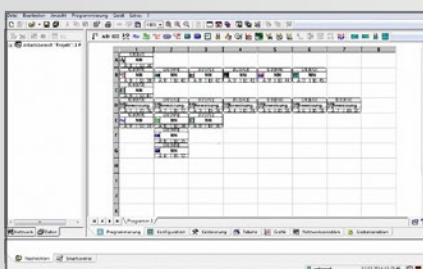
SMARTCONTROL



U300A



SMARTCONTROL manager



SMARTCONTROL manager

U300A

Application

The multitasking SMARTCONTROL supplements the Energy Control System (ECS) which is widespread in industry and building technology. It unites energy and consumption data logging for a wide variety of media with load management and error messaging functions. It can be used autonomously, or together with Energy Management Control (EMC) software within the ECS. Both solutions contribute to sustained conservation of valuable resources and reduced energy costs.

The versatile data collector can acquire directly meter readings, temperatures, statuses and analog signals via existing inputs. The connection of bus-compatible instruments or energy meters is effected by Modbus via M-Bus with an optional level converter or via the optional LON interface.

The different parameters and functions of SMARTCONTROL are defined via SMARTCONTROL manager and its graphic programming surface. In particular, linking of the inputs with calculations, logic functions, time programs, relay, analog, SMS and e-mail outputs is easily realised. The acquired channel data may also be read out, visualised in tables or diagrams and exported in csv or bmp format.

SMARTCONTROL is integrated into existing infrastructures via Ethernet TCP/IP. The talented communicator may also be equipped with an internal analog modem, ISDN, GSM module. An OPC server is available for an easy connection to process and building control systems.

Using the Modbus TCP version multiple SMARTCONTROL stations can be networked. This offers as well the possibility to define a master station, which serves as a data central. Within this central all relevant data of the complete network can be acquired, saved and provided to superior systems.

The internal 2 MB flash ring buffer can be extended by the installation of a 2 GB Micro SD memory card. The slot for the memory extension is on the PCB by default.

Customer benefits

- ▲ Acquisition of energy and consumption data, temperatures, switching statuses and process variables
- ▲ Error message management, continuous comparison of characteristic values and indication of errors via switching output, e-mail or SMS
- ▲ Peak load management in combination with switching outputs
- ▲ Timer programs and switching of relays after the occurrence of predefined events
- ▲ Calculation of mean values and integrals, as well as heat and cold quantities
- ▲ SMARTCONTROL manager configuration and data read-out software included in the scope of delivery

Technical data

Inputs:	8 digital inputs, adjustable to active or passive 8 analog inputs 0 – 20 mA or 0 – 10 V, adjustable 8 temperature inputs for Pt1000 sensors Option input/output module for 24 channels: 24 digital inputs, active or passive setting possible
Outputs:	2 semiconductor relays max. 40 VDC/AC, 1 A Option input/output module for 24 channels: 4 semiconductor relays* max. 40V DC/AC, 1A 2 analog outputs* 0-20mA or 0-10V setting possible
Interfaces:	Ethernet TCP/IP 10/100 Mbit, Modbus-RTU, RS485, M-Bus over RS232 with optional level converter, slot for level converter (80 slaves) integrated by default, 2 x RS232 for fieldbus devices Option LON interface module: LON, FTT-10 A, 78 kBit/s
Memory:	2 MB flash, optional 2 GB microSD memory card
Power supply:	12 – 24 V DC, optional pluggable power pack, see accessories
Dimensions:	225 x 210 x 70 mm

* can be configured individually instead of a digital input

SMARTCONTROL



LON extension set



Input /output module for 24 channel

ECS – Energy Control System

Stock variants

Description	Article number
SMARTCONTROL standard	U300 A
SMARTCONTROL control cabinet IP 65 with 24 VDC power pack	U300C
SMARTCONTROL standard with I/O24	U300D
SMARTCONTROL standard with LON	U300E
SMARTCONTROL standard with I/O24 und LON	U300F
SMARTCONTROL standard with Modbus TCP	U300G

Accessories

Description	Article number
Pluggable power pack 100–240 V AC / 24 V DC / 24 W	Z301U
LON extension set **	Z301V
IO24 input /output module for 24 channel extension set **	Z301W
Analog modem socket module for analog telephone network	Z301C
ISDN modem socket module for ISDN telephone network	Z301D
GSM/GPRS modem socket module for GSM telephone network	Z301E
M-Bus level converter for 80 devices, on board slot *	Z301Y

* Requirement: SMARTCONTROL starting Rev. V3

** Requirement: SMARTCONTROL basic PCB starting Rev. 2.3x

For further accessories see data sheet and price list.

SMARTLOGGER



U201A/U201B

Multifunctional Data Logger

Multifunctional data logger with integrated modem

The SMARTLOGGER expands the Energy Control System (ECS), which is widespread in industry and facility management, for use in applications with just a few measuring points.

Application

Versatile Data Collector

The SMARTLOGGER has 4 digital inputs for meters with pulse output and can additionally manage 10 energy meters with M-Bus interface. Supplementary measured values can be acquired via 4 analog inputs, which are configurable as voltage, current or temperature inputs. This means that nearly all

- ▲ Meter readings (electrical power, gas, water, heat etc.)
- ▲ Temperatures (outside, inside, inlet and return temperature, etc.)
- ▲ Statuses (burner and pump on-times etc.)
- ▲ Analog signals (signal converters, measuring transducers etc.)
- ▲ Data from bus compatible measuring instruments and energy meters

can be acquired. Bus compatible measuring instruments and energy meters can be connected via Modbus or M-Bus for users with integrated level converter

Customer benefits

It unites energy and consumption data logging for a wide variety of media with error messaging and monitoring functions. Faults can be reported either directly by SMS or e-mail, or via intrusion to a fault messaging unit. Valuable resources can be used more efficiently, energy costs can be lastingly reduced and opportunities provided by modern energy management can be fully exploited.

- ▲ Acquisition of energy and consumption data, temperatures, switching statuses and process quantities
- ▲ Error message management, continuous comparison of characteristic values and indication of errors via switching output, e-mail or SMS
- ▲ 4 digital inputs, active or passive
- ▲ 4 analog inputs: 0 to 20 mA, 0 to 10V, 5 K NTC
- ▲ 2 relay switching outputs. 30V= / 2 A or 125V~ / 0,5 A
- ▲ 2 open collector switching outputs, max. 30V= / 50 mA
- ▲ M-Bus interface for 10 users
- ▲ RS 485 / Modbus interface for external devices
- ▲ RS 232 interface for configuration and tunnel function
- ▲ UPS function with optional, external 12 V= lead-gel batter

Exceptional functions:

- ▲ Manufacturer independent connection of data sources via analog, digital and temperature inputs, as well as universal M-Bus and Modbus interfaces
- ▲ Connection to existing infrastructures via Ethernet TCP/IP, as well as
- ▲ GSM, ISDN or analog modem
- ▲ Inexpensive creation of networks with standard components
- ▲ Internal 2MB flash memory for data
- ▲ SMARTLOGGER ECS manager for easy configuration included
- ▲ 3 year guarantee
- ▲ Made in Germany

Description	Article number
4 digital and 4 analog inputs, 2 relays and 2 open collector outputs: 5 / 17 V DC, M-Bus repeater for 10 slave modules, Auxiliary voltage: 230 V AC, SMARTLOGGER manager on CD	
Ethernet variant	U201A
GSM variant	U201B

EMC 5.X



Energy data management with system

Systematic Energy Management for Lasting Benefits

As a high performance software solution, Energy Management Control 5.x is laid out specifically for applications in the fields of industry, energy and housing. It allows for automatic logging, visualization, analysis and billing of all relevant consumption data. With the help of this well founded database, targeted and effective measures for improvement can be implemented – and opportunities for modern energy management can be fully exploited.

Customer benefits

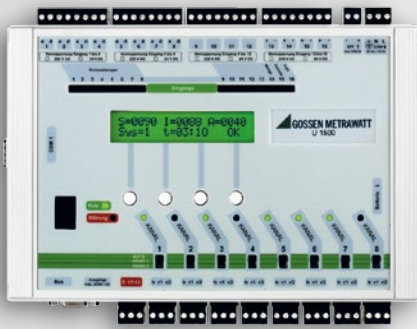
- ▲ Transparency: visualization of consumption and load structures - detection of weak points
- ▲ Responsibility: source-related allocation of consumption or costs
- ▲ Benchmarking: acquire figures and compare objects
- ▲ Cost minimization: identify and exploit potential savings
- ▲ Budget security: precise planning and monitoring of energy costs
- ▲ Tariff optimization: selection of the least expensive tariff for energy import by power utility, as well as consumption and contract conditions
- ▲ Environmental compatibility: reduced consumption decreases CO2 emissions
- ▲ Up to date: real-time overview of consumption and billing data
- ▲ Flexible: billing based upon individually adjustable parameters
- ▲ Service requirements: rising energy consumption indicates the need for maintenance or repair

Technical data	
Computer:	min. Pentium PC, 1 GHz, 250 MB RAM
Browser:	Internet Explorer starting Version 6.0 SP 1
Operating system:	XP and Windows 7
Languages:	D, GB, F, I, NL, CZ, PL switchable

Description	Article number
EMC Basic version – Reading and display data, 1 energy type / location, 1 user, 64 channels, 20 virtual channels*	Z508A
EMC Expansion – Providers and Tariffs	Z508B
EMC Expansion – Building Automation / Industrial Version*	Z508C
EMC Expansion – Consortium*	Z508D
EMC Expansion – Virtual Channels	Z508E
EMC Expansion – Export Interface	Z508L
EMC Expansion – DL Manager as Service	Z508M
EMC Expansion – Real-time Display	Z508N
EMC License – 5 User	Z508F
EMC License – 5 Locations / Energy Types	Z508G
EMC License – 100 Measuring Points	Z508H
EMC License – 5 Companies	Z508i
EMC Full Version*	Z508J
EMC Start-up – 1 energy type / location, 1 user, 10 channels*	Z508K
EMC maintenance contract for 1 year, 12% of the purchase price (annually in advance)	-

* only in combination with a maintenance contract

LOAD OPTIMISATION



U1500

U1500

System to reduce power peaks, extendable in steps from 8 to 64 optimising channels.

Application

Electrical power prices for customers with special contracts consist of energy costs (in EUR per kWh) for current consumption, and power costs for the maximum power value (in EUR per kW). A reduction of power peaks can reduce costs considerably.

Power optimisation assumes that the start-up of consumers which draw large amounts of power can frequently be postponed a few minutes without significantly affecting operations. This applies, in particular, to power consumers which are capable of storing energy to a certain extent, e.g. heaters and refrigerators.

Integrated time switching programs can lower the energy costs and optimise operational procedures. The system can also be used for cost-oriented control of consumers which require other forms of energy, e.g. gas.

Customer benefits

- ▲ Minimum interference in the production process due to the combined trend-extrapolation process
- ▲ Simultaneous optimising of different media
- ▲ Future-oriented setpoint management specifying the load profile for 7 days with 96 values each
- ▲ Inputs for operating feedback from the consumers
- ▲ Takes minimum and maximum making and breaking times of the power consumers into consideration
- ▲ Special control programs for kitchen optimisation

Technical data

Inputs:	16, individually switchable 24 V DC or 230 V AC, with potential-isolated in two groups
Browser:	9 Relays changer, 250 V AC max. 2 A, power supply 24 V DC, max. 100 mA
Power supply:	230 V AC, 50 Hz, max. 15 VA
Dimensions:	240 x 160 x 60 mm
Assembly:	DIN rails according to 50 022

Stock variants

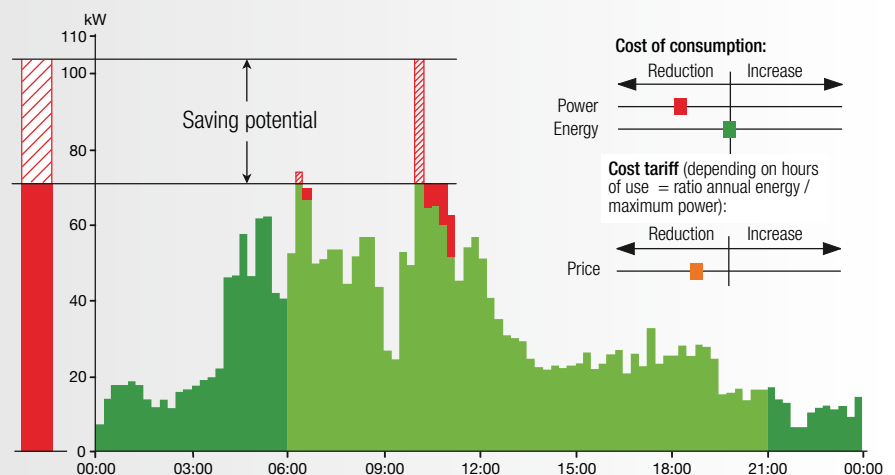
Description	Article number
Optimising computer for 8 channels	U1500A0
Optimising computer for 8 channels, extendable via system bus	U1500A1
System extension for 8 channels	U1500A2

Accessories

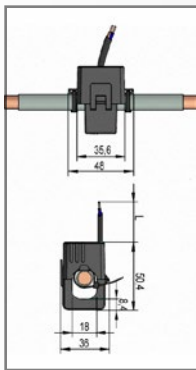
PC-Software configuration Z302C

PC-Software online display Z302D

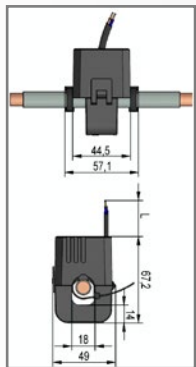
PC-Software graphic data analysis Z302B



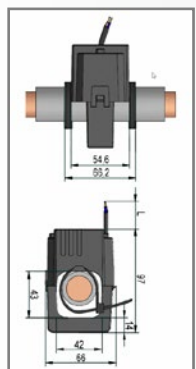
SPLIT-CORE CURRENT TRANSFORMERS



SC30



SC 40-B



SC 50-E

SC 30 / SC 40-B / SC 40-C / SC 50-E

Fast retrofitting of energy meters without interrupting the mains power supply thanks to split-core current transformers

Application

Current transformers convert high amperage AC current of up to 1000 A (primary current) into small, safe, measurable current of 1 A or 5 A (secondary current). Thanks to their compact design, the split-core current transformers are especially suited for use in areas of restricted access and confined space. The separable core makes it easier to install the transformers on cables or rails.

The split-core current transformers are the right choice when an interruption of the electrical circuit is difficult or a measuring instrument has to be easily and quickly refitted.

The safe installation of the primary lead in the current transformer is guaranteed by the mechanical design and is confirmed by a distinctly audible click sound. Two UV proof cable ties, which are part of the standard equipment, help to fix the transformer additionally.

Customer benefits

- ▲ Converts high amperage AC current into safe, measurable current
- ▲ Very easy and time-saving installation thanks to split-core design
- ▲ Compact design allows for use in areas with restricted access and confined space
- ▲ Particularly suited for retrofit purposes since the dismantling of primary leads is not necessary
- ▲ Allows for retrofitting without interrupting mains power supply
- ▲ Clearly audible click sound confirms proper installation – additional safety is provided by UV proof cable ties
- ▲ Accuracy class: 0.5, 1 or 3, depending on type

Technical data	SC 30	SC 40-B	SC 40-C	SC 50-E
Maximum cable diameter	18 mm	18 mm	28 mm	42 mm
Secondary current 1 A				
Primary current	60 A ... 250 A	100 A ... 250 A	200 A ... 500 A	250 A ... 1000 A
Cable length	3 m	3 m	3 m	5 m
Class (depending on type)	1 or 3	0.5 or 1	0.5 or 1	0.5 or 1
VA	0.2	0.2	0.2	0.5
Secondary current 5 A				
Primary current		150 A ... 250 A	250 A ... 500 A	300 A ... 1000 A
Cable length		0.5 m	0.5 m	3 m
Class (depending on type)		0.5 or 1	1	0.5 or 1
VA		1	1	0.5

Description	Class	Primary current A	Secondary current A	VA	Article number
SC30, cable opening diameter 18 mm	3	60	1	0.2	U118A

	1	250	1	0.2	U118G
SC40-B, cable opening diameter 18 mm	1	100	1	0.2	U118H

	0.5	250	5	1	U518C
SC40-C, cable opening diameter 28 mm	1	200	1	0.2	U128A

	1	500	5	1	U528D
SC50-E, cable opening diameter 42 mm	1	250	1	0.2	U142A

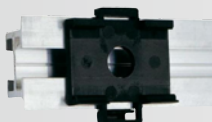
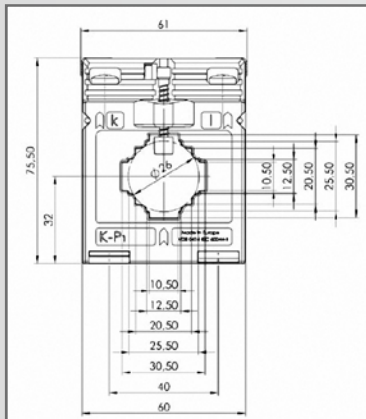
	0.5	1000	5	0.5	U542G

* for further stock variants see price list "Industrial Measuring and Control Technology 2014"

BUSHING-TYPE CURRENT TRANSFORMER ASK



ASK 31.3



Snap Fastener

ASK 31.3 / ASK 63.4 / ASK 412.4

Application

Current transformers are required wherever high amperage AC current is to be converted into low, safe and measurable current. The bushing-type current transformers convert primary current of 1500 A into secondary current of 1 A or 5 A which can be processed by measuring systems.

The secondary side – as a rule a measuring instrument, a display or a controller – is connected via terminals. Bushing-type current transformers are available with ratings as of 50 A in various sizes for busbars and cables.

Customer benefits

- ▲ Converts high amperage AC current into safe and measurable current
- ▲ Flexible application – suitable for CU busbars and circular cables
- ▲ Foot and busbar mounting with insulation safety cap (contact-protected) is included in the scope of delivery
- ▲ Current transformers with other accuracy classes (0.2s, 0.2, 0.5s, 3) available upon request
- ▲ Calibrated bushing-type current transformers upon request

Technical data	ASK 31.3	ASK 63.4	ASK 412.4
Primary conductor	30x 10 mm 25.4 x 13 mm 2 x 20 x 10 mm	60 x 30 mm 50 x 40 mm	40 x 12 mm 30 x 15 mm
Round cable	26 mm	44 mm	30.5 mm
Transformer width	60 mm	95 mm	70 mm
Primary current	75 A ... 750 A	750 A ... 1500 A	50 A ... 500 A
Secondary current	5 A or 1 A	5 A or 1 A	5 A or 1 A
Class	1, higher classes upon request	1, higher classes upon request	1, higher classes upon request
VA	1.5 – 10 (depending on type)	5 – 10 (depending on type)	1.5 – 10 (depending on type)

Type	Description	Primary current A	VA	Sec.	Article number
ASK 31.3	Primary conductor 30 x 10 mm, 25.4 x 13mm, 2 x 20 x 10mm Circular cable 26 mm diameter, transformer width 60 mm	75	1.5	5 A	1715V0120
		...*	...*	...*	...*
		750	10	1 A	1717V1260
ASK 63.4	Primary conductor 60 x 30 mm, 50 x 40mm Circular cable 44 mm diameter, transformer width 95 mm	750	10	5 A	1717V0220
		...*	...*	...*	...*
		1500	10	1 A	1717V1260
ASK 412.4	Primary conductor 60 x 30 mm, 50 x 40mm Circular cable 44 mm diameter, transformer width 95 mm	50	1.5	5 A	1716V0100
		...*	...*	...*	...*
		500	10	1 A	1716V1200

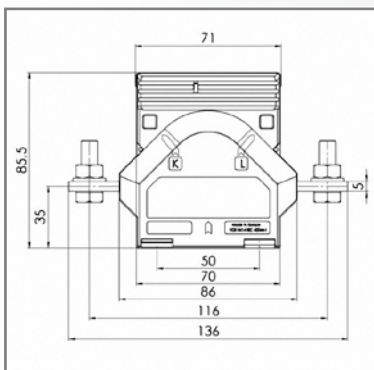
* for further stock variants see price list "Industrial Measuring and Control Technology 2014"

Accessories	Article number
Snap fastener suited for 35 mm top-hat rail mounting according to DIN EN 50522	1722V9010
Sealing cap	1722V9120

WOUND-PRIMARY CURRENT TRANSFORMERS WSK



WSK 70.6 N



WSK 30 / WSK 40 / WSK 70.6 N

Application

As opposed to bushing-type current transformers, wound-primary current transformers have 4 screw terminals. Primary and secondary current are both connected by means of terminals. Wound-primary current transformers are suitable for low amperage current for which bushing-type current transformers cannot be used.

Customer benefits

- ▲ Wound-primary current transformer with primary winding and primary connection terminals instead of one universal busbar
- ▲ Connection to busbars or cables
- ▲ Especially suited for low primary current as of 1 A
- ▲ High rated power/power load in VA
- ▲ Current transformers in other accuracy classes upon request
- ▲ Calibrated wound-primary current transformers available on request

Technical data	WSK 30	WSK 40	WSK 70.6 N
Width	60 mm	70 mm	60 mm
Height	75.5 mm	85.5 mm	85.5 mm
Depth	35 mm	45 mm	136 mm
Primary current	1 A ... 20 A	1 A ... 40 A	30 A ... 100 A
Secondary current	5 A or 1 A	5 A or 1 A	5 A or 1 A
Class	1, higher classes upon request	1, higher classes upon request	1, higher classes upon request
VA	5	10	10

Type	Description	Primary current A	VA	Sec.	Article number
WSK 30	Transformer width 60 mm	1	5	5 A	1719V0010
		...*	...*	...*	...*
		20	5	1 A	1719V1060
WSK 40	Transformer width 70 mm	1	10	5 A	1720V0010
		...*	...*	...*	...*
		30	10	1 A	1720V1080
WSK 40 N	Transformer width 70 mm	40	10	5 A	1720V0090
				1 A	1720V1090
WSK 70.6 N	Transformer width 60 mm	30	10	5 A	1721V0080
		...*	...*	...*	...*
		100	10	1 A	1721V1140

* for further stock variants see price list "Industrial Measuring and Control Technology 2014"



Snap Fastener

Accessories	Article number
Snap fastener suited for 35 mm top-hat rail mounting according to DIN EN 50522 for WSK 30	1722V9010
Snap fastener suited for 35 mm top-hat rail mounting according to DIN EN 50522 for WSK 40 and WSK 40 N	1722V9020
Sealing cap	1722V9120

Sales Terms and Delivery Conditions

The "General Terms and Conditions of Delivery for Electrical Industry Products and Services" are applicable, including the supplement on the extended reservation of proprietary rights, in the current version.

Subject to change without notice. Errors excepted.

Prices

All prices are listed in our current price list "Industrial Measuring and Control Technology".

Order Information

Please enter complete, explicit order information in order to avoid unnecessary enquiries and misunderstandings during the course of order processing.

Devices and components can be ordered either by entering the designation and description in plain text, or by entering the article number and all required features.

Export and Customs Documentation

One service charge will be invoiced per document for shipping instructions which deviate from normal shipping conditions within the Federal Republic of Germany, for example preparation of certificates of origin, issuance of delivery notes in foreign languages, preparation of export declarations etc.

Online Information

Online information is available from our website and from our online shop at www.gossenmetrawatt.com.

Meters and Calibration from a Single Source

GOSSEN METRAWATT has a state registered test office for electric measuring instruments and is authorized to recalibrate energy meters for the German market.

Orders / RFQs (pre-sales service)

Experienced employees can be contacted by phone at:
0911 8602 – 111

Monday through Thursday
from 7:30 a.m. to 5 p.m. and
Friday
from 7:30 a.m. to 3 p.m.

Address: GMC-I Messtechnik GmbH
Order Processing
Südwestpark 15
90449 Nürnberg, Germany
Phone: +49-911-8602-111
Fax: +49-911-8602-777
e-mail: vertrieb@gossenmetrawatt.com

Service Offerings (after-sales service)

Repair of all measuring and test instruments supplied by ourselves.
Delivery of replacement parts within three workdays.

- ▲ Rental equipment service
- ▲ DAkkS calibration center
- ▲ Test equipment management
- ▲ Disposal of old instruments

Address: GMC-I Service GmbH
Technical Services
Thomas-Mann-Str. 20
90471 Nürnberg, Germany

Information:
Phone: 0911 81 77 18-0
Fax: 0911 81 77 18-253
e-mail: service@gossenmetrawatt.com
Internet: www.gmci-service.com

Training Offerings

Comprehensive seminar offerings are available for technical training on all of our measuring instruments. Please request a seminar calendar.

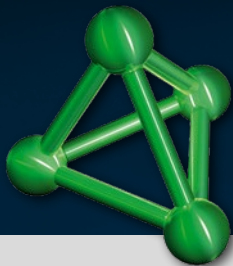
Address: GMC-I Messtechnik GmbH
Training Department
Südwestpark 15
90449 Nürnberg, Germany

Information:
Phone: +49-911-8602-935
Fax: +49-911-8602-724
e-mail: training@gossenmetrawatt.com





GOSSEN METRAWATT



GMC-I Messtechnik GmbH

Südwestpark 15 ■ 90449 Nürnberg ■ Germany

Phone: +49 911 8602-111 ■ Fax: +49 911 8602-777

www.gossenmetrawatt.com ■ info@gossenmetrawatt.com

