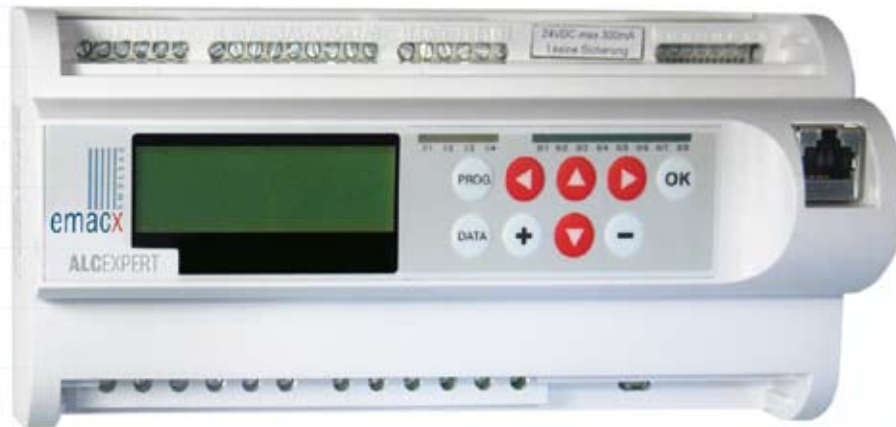




Network-enabled Optimization and Energy Management System



Ethernet TCP-IP

Application / functions

- Optimization of 1/4h peak loads
- Instantaneous power monitoring
- Max. load optimization up to 100MW and up to 8 transformer stations
- Commercial kitchen optimization
- Emergency power / generator control
- Network supervision and management
- Energy data acquisition
- Gateway function for DDC/GLT
- Sub-control loops
- Network-enabled

REDUCE ELECTRICITY EXPENSES

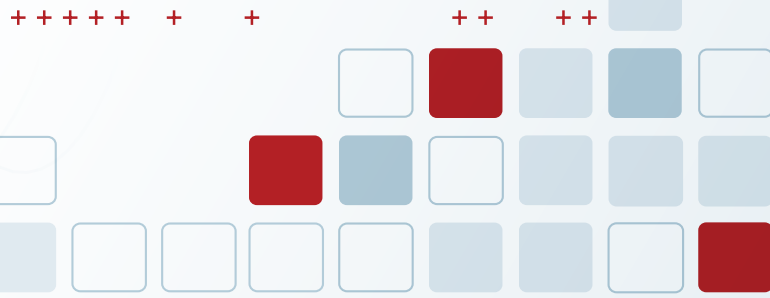
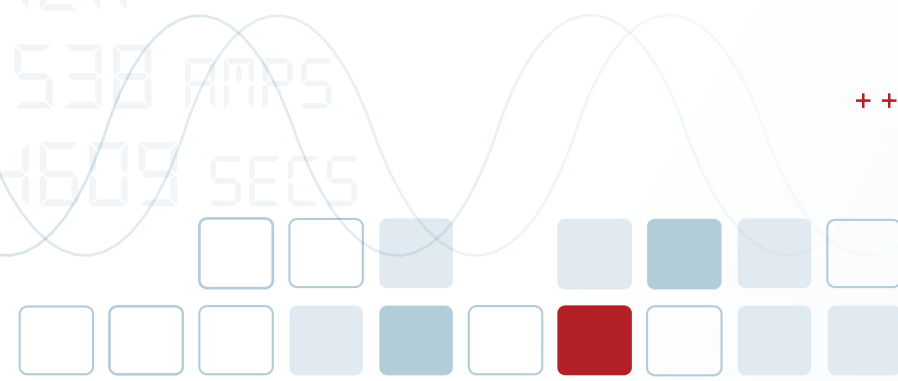
through peak load optimization

MONITOR RATES

based on accurate recording of consumption and load profile

IMPROVE RELIABILITY OF SUPPLY

through permanent network supervision and management





System Description



Eingabenauswahl:
* Ein/Ausgänge
* Lastgruppen
* Lastkontrolle

EQUIPPED with intelligent measurement technology and state-of-the-art microelectronics, the ALS Professional is designed to continuously measure power demands. When specified thresholds are exceeded, the behavior of electrical consumers can be controlled via rules, switches or clocks. Peaks are prevented without significantly disturbing operational flow.

THE COMPACT SYSTEM solution is suitable for industrial applications and is CE-certified and EMC-tested for easy installation on top-hat rails in existing or new facilities.

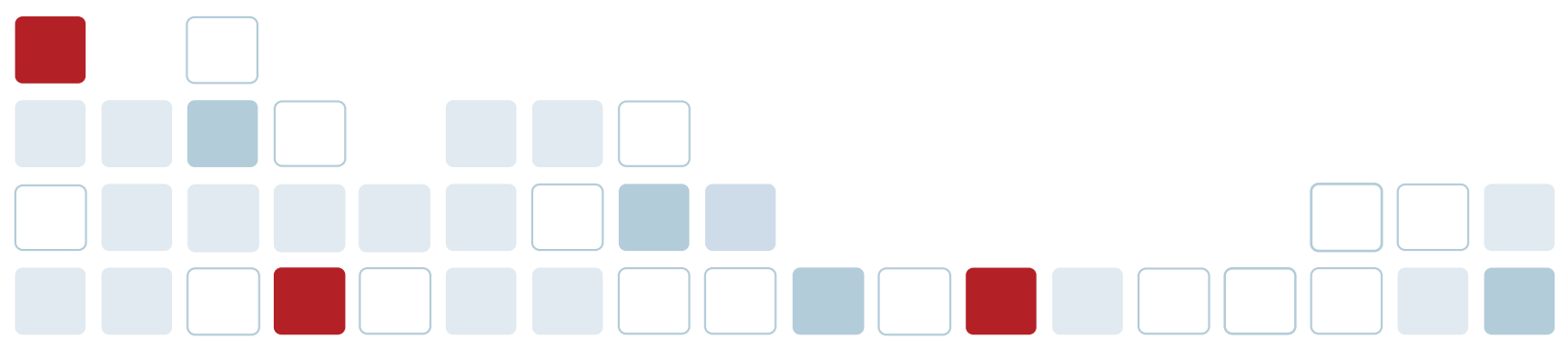
USER-FRIENDLY design with backlit graphic display, front plug, screw terminals and integrated power supply

EASY to integrate in existing facilities via communication option with the building technology (Instabus, EIB, LON, Dupline, ethernet, etc.)

MODULAR construction with scalable options for up to 128 users (groups) and more than 512 digital and analog inputs/outputs such as meters, messages and temperatures via intelligent bus substations.

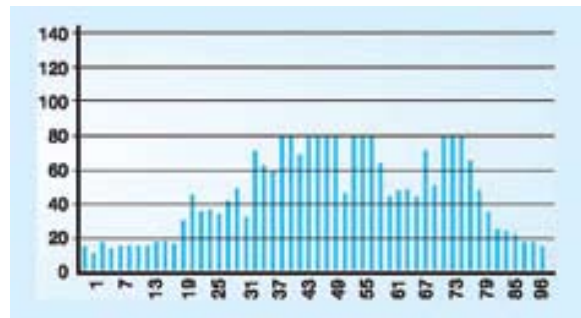
NETWORK-ENABLED (ethernet TCP-IP) devices and software for easy integration of systems in the IT infrastructure

TREND DYNAMIC control stability with load-dependent calculation of characteristic curve and variable correction value for optimal 1/4h peak load limitation without significant impact on operation and with few switching actions





Savings / Applications

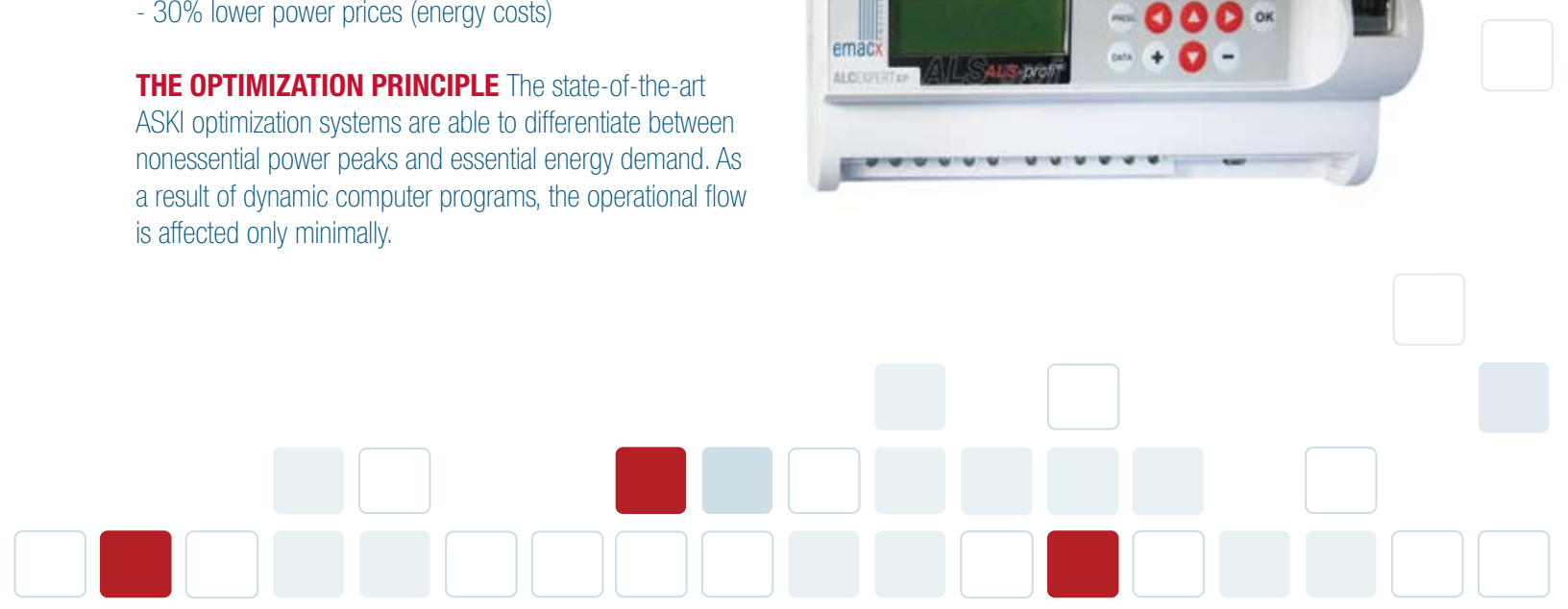


POWER PEAKS cost money! Because power can be stored only on a limited basis, it has to be generated when the customer needs it. Power plants, substations, transformers and lines to customers must be sized to handle these power peaks. In addition, the measurement equipment, distribution system and lines in a facility must be designed to handle these short-term peaks.

With the ALS Professional you benefit from the following savings:

- 30% lower connection costs
- 30% lower power prices (network costs)
- 30% lower power prices (energy costs)

THE OPTIMIZATION PRINCIPLE The state-of-the-art ASKI optimization systems are able to differentiate between nonessential power peaks and essential energy demand. As a result of dynamic computer programs, the operational flow is affected only minimally.





Applications / Features

ASKI PEAK LOAD OPTIMIZATION SYSTEMS HAVE A NUMBER OF BENEFITS, INCLUDING THE SAVINGS IN ELECTRICITY COSTS RESULTING FROM THE INTEGRATED ENERGY AND NETWORK DATA ACQUISITION.

IMPROVE the reliability of supply by rapidly detecting critical situations in the power supply, setting alarms or controlled modification if the specified thresholds are exceeded

MINIMIZE time and personnel expenses while improving the accuracy of the recorded data

DETERMINE INDICATORS to improve ease of comparison of several branches, facilities, etc.

ENERGY BOOKKEEPING, cost center accounting and the ability to better assign energy costs to their source, increases awareness regarding energy consumption

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CHECK the energy accounting of suppliers as well as the basic information for negotiating energy contracts

PEAK LOAD ANALYSIS to detect and prevent costly peak loads in electricity and gas demands

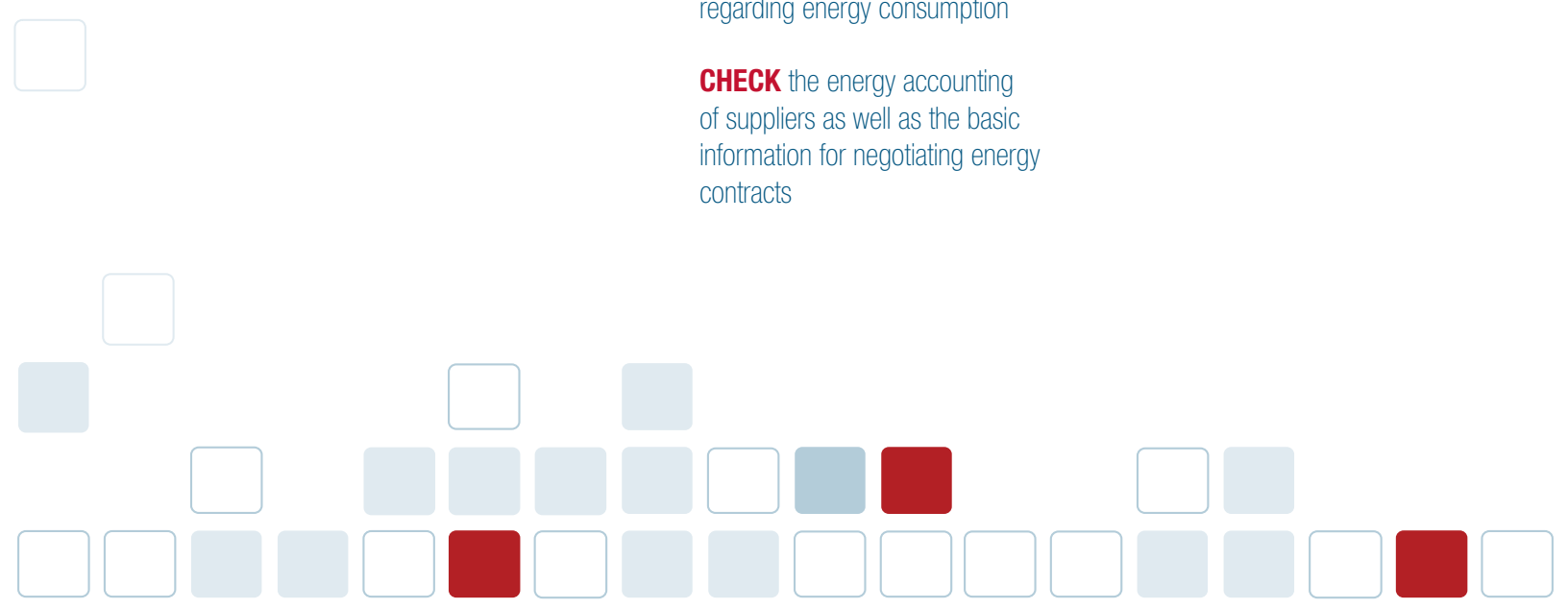
BASIC INFORMATION for planning investments and energy-saving activities

VERIFIABILITY of efficiency and sustainability of investments and energy-saving activities

PROOF for use with environmental regulations and improving energy usage

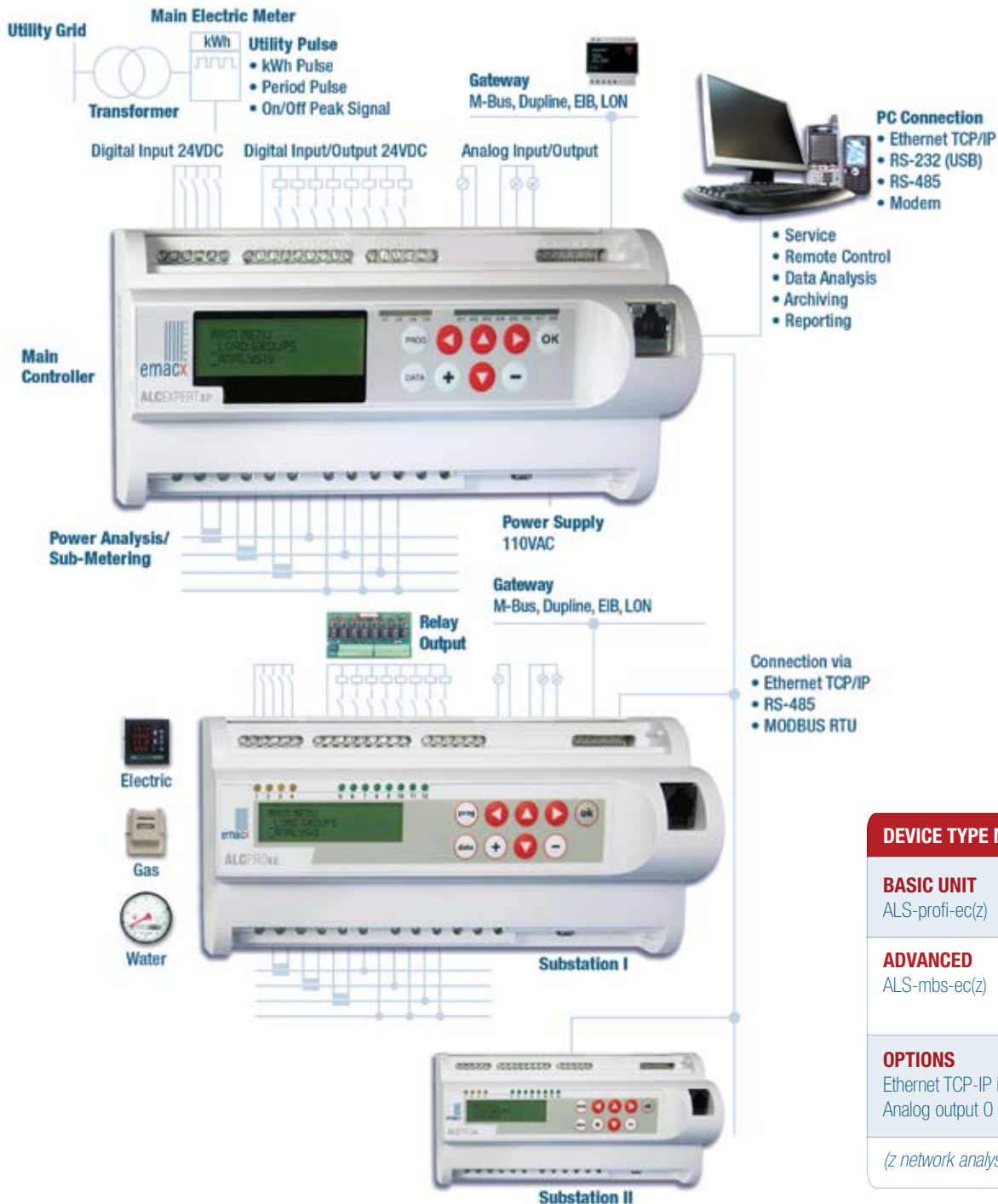
IMPROVE the overall efficiency of buildings

IMPROVE the profitability of your power generation facilities through efficient use of diesel generators, cogeneration units, photovoltaics, etc.





Schematic circuit diagram



DEVICE TYPE MODULES

BASIC UNIT

ALS-profi-ec(z)

ALS-profi-xp(z)

ADVANCED

ALS-mbs-ec(z)

AZS-ecp4(z)

AZS-ecp12(z)

OPTIONS

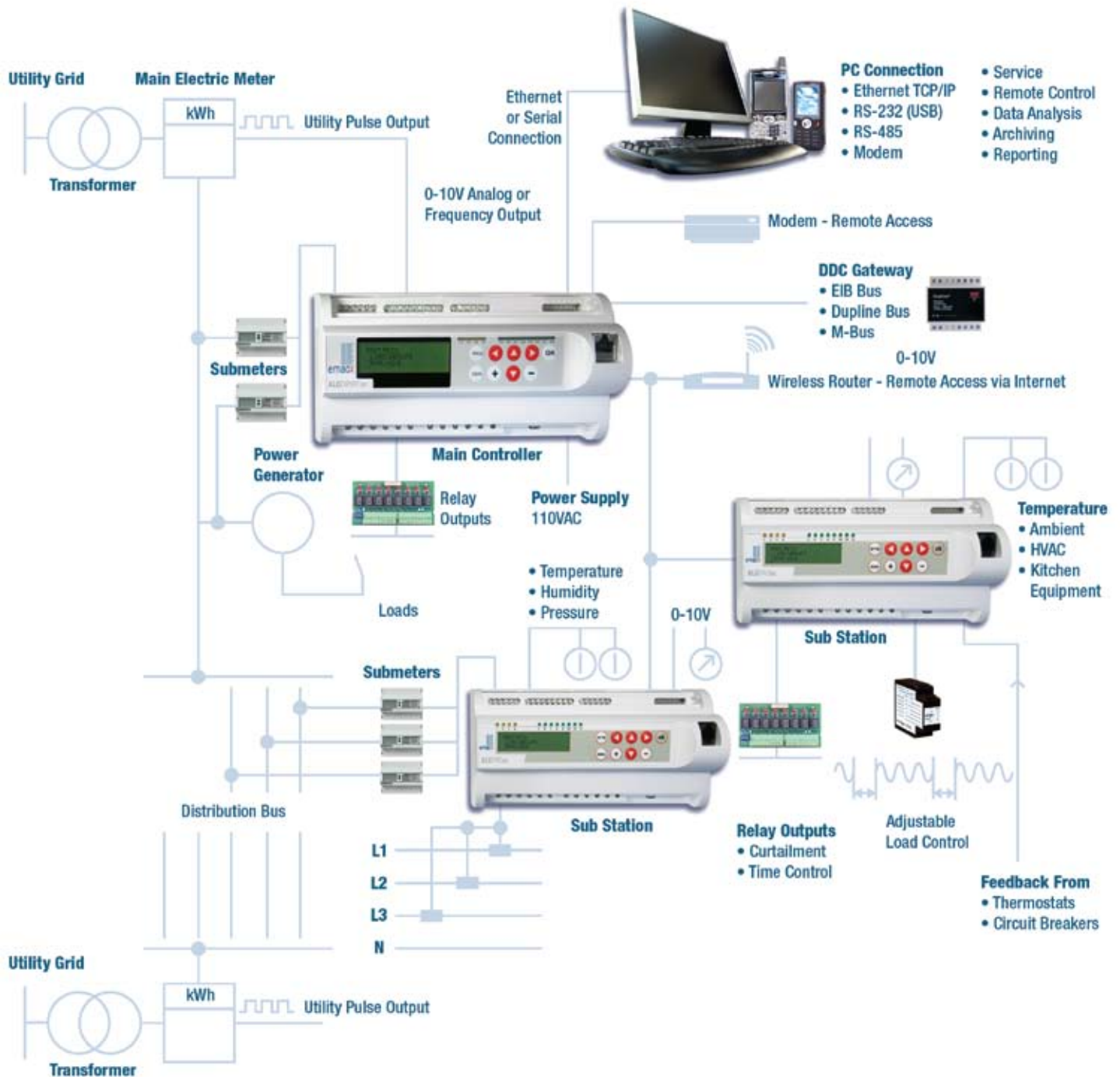
Ethernet TCP-IP interface > ALS-TCP-IP

Analog output 0 – 20 mA > ALS-AOUT

(z network analysis module is integrated)



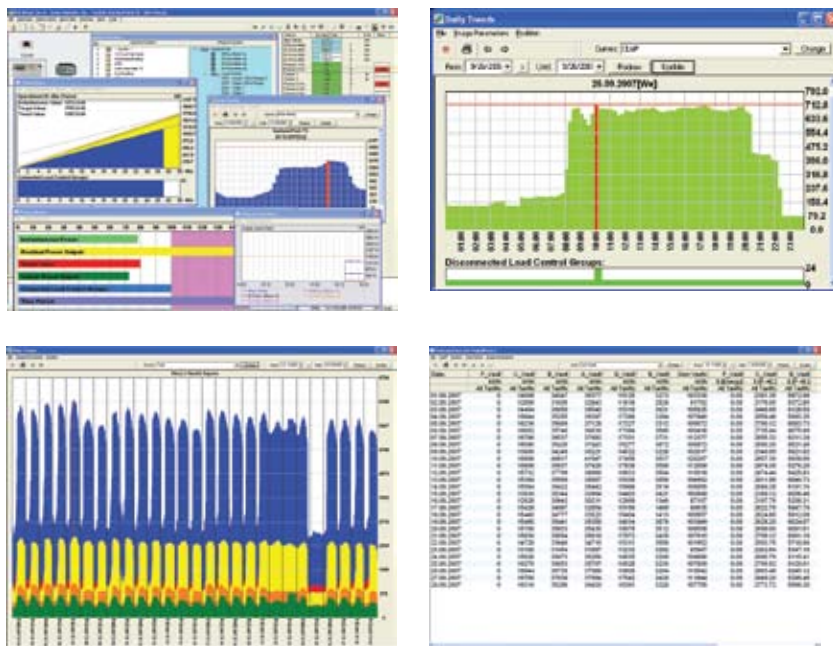
System design





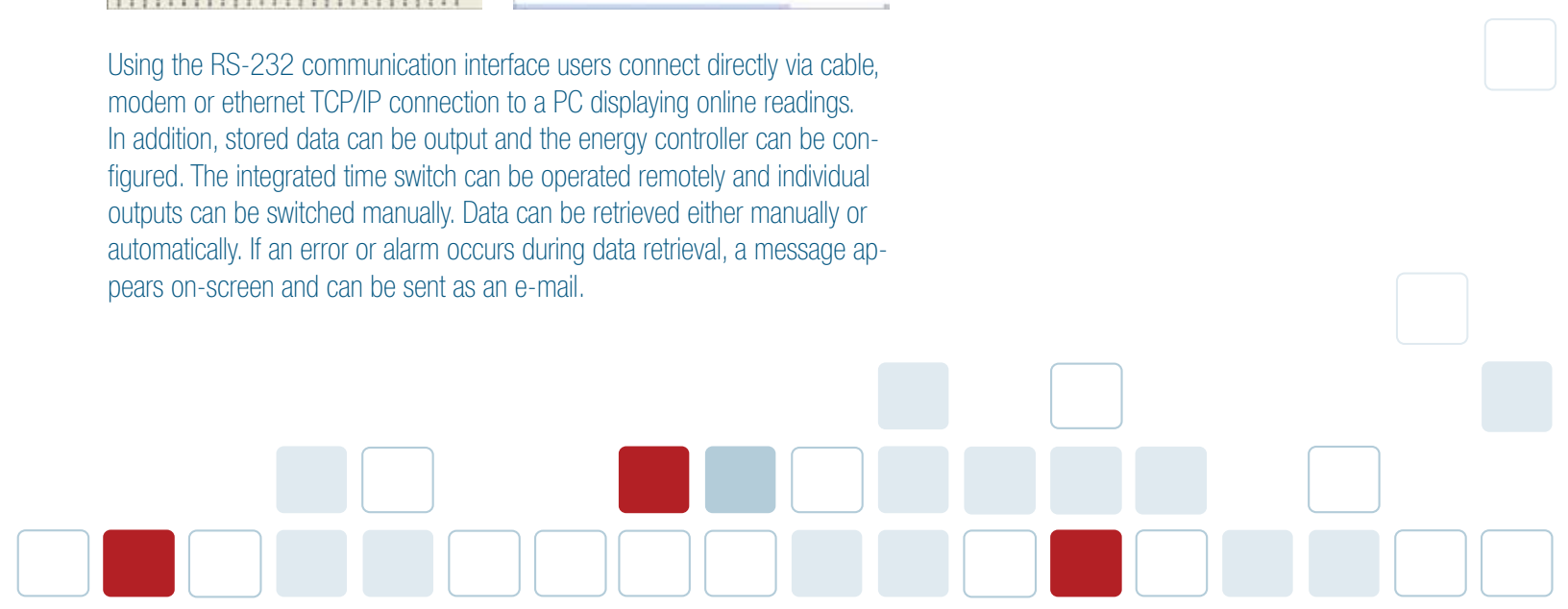
Visualization software

THE ASKI ENERGY MANAGEMENT PROGRAM FOR PCS IS A WINDOWS-BASED, DATABASE-SUPPORTED SOFTWARE PACKAGE FOR CONFIGURING AND SETTING UP ASKI ENERGY MANAGEMENT SYSTEMS AND IS ALSO USED FOR MANAGING, ANALYZING, INVOICING AND ONLINE MONITORING OF MEASUREMENT AND COUNTING DATA.



- *Parametrization*
- *Facilities management*
- *Remote control*
- *Remote maintenance*
- *Online data monitoring*
- *Automated or manual data synchronization*
- *Data analysis*
- *Alarm configuration*
- *Energy, operations and process data acquisition*
- *Cost center accounting*

Using the RS-232 communication interface users connect directly via cable, modem or ethernet TCP/IP connection to a PC displaying online readings. In addition, stored data can be output and the energy controller can be configured. The integrated time switch can be operated remotely and individual outputs can be switched manually. Data can be retrieved either manually or automatically. If an error or alarm occurs during data retrieval, a message appears on-screen and can be sent as an e-mail.





Sectors and functions

EVEN THOUGH THE PREREQUISITES FOR A PEAK LOAD OPTIMIZATION AND DATA ACQUISITION SYSTEM ARE VIRTUALLY THE SAME ACROSS SECTORS, SPECIAL, INDUSTRY-SPECIFIC REQUIREMENTS CAN BE SOLVED FOR THE MOST PART THROUGH THE MULTIFUNCTIONALITY OF THE ALS PROFESSIONAL.

HOSPITALITY AND TOURISM *Hotels and restaurants, elevator and certification facilities or thermal bath*

COMMUNAL FACILITIES *Hospitals, retirement homes, sport and leisure facilities, swimming pools or administrative buildings*

In both sectors the high peak loads of modern commercial kitchens combine with the considerable energy demand of ventilation, AC, building services, laundries as well as health and sport facilities.

The state-of-the-art control strategy based on trend dynamic calculation of characteristic curve and numerous other functions help users to optimize their operations in commercial kitchens and beyond.



■ **Switching / timing** Guaranteed run times for every consumer based on prioritization, min/max switch or cycle times, optimized through cyclical exchange of consumers

■ **Stepless load control** Continuously adjustable control of ohmic consumers (heating units, kitchen appliances, etc.) through pulse width modulation and full wave control with help of electronic load relay.

■ **Self-optimization** Using a “progressive maximum,” the ALS Professional adjusts the setpoint automatically to the respective system within the specified limits

■ **Self-optimization** Using a “progressive maximum,” the ALS Professional adjusts the setpoint automatically to the respective system within the specified limits

■ **DDC gateway** Easy integration of the load management system in building technology via Instabus EIB, Dupline, ethernet, LON and several others using RS-232 or RS-485 interface, with Send Data functionality (ASCII or binary)

■ **Emergency power function (ec/xp) special rate** Control of power in emergency mode; switch measurement functions to your own meter; functions include: consumer lock, shift prioritization, quick switch-off, power-dependent startup

■ **Setpoints / rate management** Up to eight preset rates summer/winter, high/low, etc. can be programmed and retrieved via external contacts or internal time switch with up to 24 setpoints (2 per month).



INDUSTRIAL COMPANIES *Metal and woodworking operations, automotive and plastics industries, food and beverage industries.*

■ **Second setpoint characteristic curve** Noncritical consumers can be controlled via a second setpoint characteristic curve shifted by a percentage

can be modified using inputs or the integrated time switch for every consumer (ec only on device-specific basis, xp also via contacts from substations)

■ **Warning contacts** Warning via a contact can be provided for critical consumer cut-offs

■ **Diesel generator set / cogeneration unit** Separate configuration options for diesel generator sets for peak coverage or under emergency power operation and for optimized operation of cogeneration units using instantaneous or trend values.

■ **Freely selectable time period** Time periods between 1 to 60 minutes can be freely selected

■ **Analog controller (option)** Control equipment or frequency converters via 0-20 mA (0-10V) analog signal

■ **Parameter switchover** Priorities as well as min/max switch and cycle times



GENERAL APPLICATIONS

■ **Synchronization with automated power company pulse modification** Automatic detection of power company pulses, freely selectable period of 15, 30, 45 or 60 minutes.

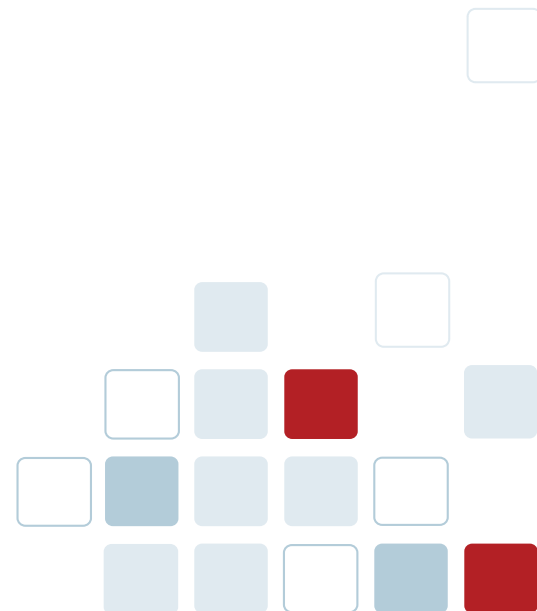
■ **Freely selectable contacts and manual switching** Close/open function for each output is configurable, manual switching options for outputs

■ **Integrated system protection** Predefinable alarm response for system alarms, meter alarms, out-of-limits conditions, etc.

■ **Recording of switching data** All switching operations are recorded with time and date stamp

■ **Consumer definition / system configuration** Consumer definition with name and power rating as well as several additional system- and facility-specific configuration options for optimal operation-specific modification

■ **Annual time switch** Integrated annual time switch for each output with special day program and for modification of rates, etc.





Additional functions

DATA ACQUISITION / DATA ANALYSIS

■ **Pulses** Guaranteed run times for every consumer based on prioritization, min/max switch or cycle times, optimized through cyclical exchange of consumers

■ **Stepless load control** from energy meters (electricity, gas, water) are captured and recorded via the digital inputs. The data are saved as daily, monthly and annual consumption rates as well as load profile values for accurate consumption analysis.

■ **Operating** and process data as well as malfunction and alarm messages are also captured and recorded via digital inputs. The operating and process data are stored in daily values or user-defined units of 1

to 60 minutes, and the malfunction and alarm messages are saved with time and date stamp.

■ **Network** Uand energy data as well as system and single phase values for electricity, voltage and cosPhi, in addition to active, apparent and reactive power, can be recorded for supply and demand. The data are recorded in daily, monthly and annual values as well as with a freely selectable integration time of 1 to 60 minutes.

■ **Analog values** such as temperature, humidity, fill level, etc. can also be recorded via two integrated analog inputs in freely configurable integration times from 1 to 60 minutes.

MONITORING / CONTROL

■ **Recorded** consumption values can be automatically monitored for maximum values in daily or annual consumption.

■ **Readings** such as electricity, voltage, etc. can be monitored at any time for min.

and max. values. Out-of-limits values are saved with time and date stamp and can be linked with outputs for messages.

■ **The time switch function** can regulate connected consumers via an annual program with calendar for special days.

COMMUNICATION

■ **All models** of the energy controller feature two serial ports: 1x RS-232 for the PC connection via direct cable hook-up or analog modem and 1x RS-232/RS-485 for bus connection of multiple data loggers or integration of data loggers in an ASKI load optimization system.

■ **As an option** can regulate connected

consumers via an annual program with calendar for special days.

■ **Functions** are configurable via ALS-profi-ec/xp, data can be output automatically or manually, current measurement and calculated values can be shown online, and all operating, malfunction and alarm messages or out-of-limits conditions can be displayed on-screen or sent via e-mail.





Special features of the xp series

CONTROL TECHNOLOGY FUNCTIONS (XP) Logical connectivity for inputs and outputs such as device thermostats (kitchens), operating and malfunction messages. Monitoring of analog values. Control loops as function of submeters can be set up.

SELECTABLE CONTROL PROCESSES Variety of control processes or curve functions can be selected: standard, linear, direct

VARIABLE CYCLES (NEW KITCHEN MODULE) Power-dependent modification of cycle ratio within specified limits

8 MAIN METERS Up to eight main meters can be added to a common peak for optimization

SCHEDULE OPTIMIZATION (IN PREPARATION) Optimization of daily, monthly and annual schedules (96 setpoints per day)

AUTOMATIC CALCULATION OF SAVINGS (IN PREPARATION) The function available only with visualization calculates the desired savings based on the configured consumption data and recorded switching actions

ELECTRICITY SAVINGS FUNCTION (IN PREPARATION) Switches a consumer to reduced electricity consumption based on specific, user-defined operating conditions



Technical data / dimensioned drawing



■ Auxiliary supply	230 VAC +/- 10% 50 Hz
■ Ports	Screw terminals for wires of 1.5 mm ² , 2.5 mm ² or 4 mm ²
■ Housing	ABS plastic casing
■ Dimensions	Approx. H x W x D : 100 x 210 x 78 mm, 12 TE
■ Installation	Mount on 35 mm top-hat rail (DIN 46277/3, EN 50022)
■ Protection class	IP 20
■ Operating temp	0 – 40° C
■ Shielding	ENV 50140, ENV 50204, EN 61000-4-4, ENV 50141
■ RFI suppression	EN 50081-1
■ Measurement	Four-quadrant measurement of 1 and 3 phases/4-conductor networks, 5A converter, 35A direct, 3x230V/400VAC 50 Hz (only with integrated network analysis module)
■ Measuring accuracy	Class 1 according to IEC 1036 (network analysis module)
■ Digital in/outputs	8x output 24 VDC max. 25 mA; input 24 VDC, 10 mA
■ Digital inputs	4 x 24 VDC, 10 mA, input delay 10 ms (25 Hz)
■ Analog inputs	2 x 0-10V, 10-bit (0/4-20 mA over 500R resistance)
■ Analog output	0-20 mA (0-10V over 500R resistance) 8-bit
■ Ports	2x SS1=RS-232; SS2=RS-485(RS-232 jumper)
■ Memory	1 MB RAM (battery backup); 32 KB EE-Prom
■ Display	2-digit 2 x 16 characters
■ Keypad	9-digit keypad
■ Weight	approx. 950 g
■ Network downtimes	Data backup and automatic restart
■ Hardware clock	30 days reserve power with automatic summer/winter switchover
■ Intrinsic power	Approx. 9 VA

