



**Multifunctional  
power monitors with  
system analysis**

# SINEAX A210, A220, A230s, A230

## Multifunctional power monitors with system analysis

### SINEAX A210 and A220

#### Rational and economic measurement

48 measurands, 8 energy meters, average and max./min. value functions.

The electrical system can be comprehensively assessed in all 4 quadrants.

#### Displays

The measurands are displayed by high-contrast, 14 mm high, dimmable LEDs with 3 digits and sign (energy meters 8 digits, frequency 4 digits).

#### Meters

The integrated energy meters record active energy (incoming/outgoing) and reactive energy (inductive/capacitive).

If the digital input of the extension module is used for switching the tariff, the number of active meters is doubled.

#### Outputs

There are 2 SO outputs that can be used for controlling relays. Energy impulses or as an alternative, the status of the programmable limits can be output.



### SINEAX A230s and A230

#### Versatile and accurate measurement

134 measurands, 8 energy meters, comprehensive average and max./min. value functions, THD and harmonic analysis, asymmetric voltage and zero displacement voltage.

All these measurands form the basis for the comprehensive analysis and assessment of the electrical system in all 4 quadrants.

#### Displays

The measurands are displayed by high-contrast, 14 mm high, dimmable LEDs with 4 digits and sign (energy meters 8 digits). In USER mode, measurands that are not required can be suppressed. The LOOP mode displays from 2 to 10 programmable displays sequentially.

#### Analysis

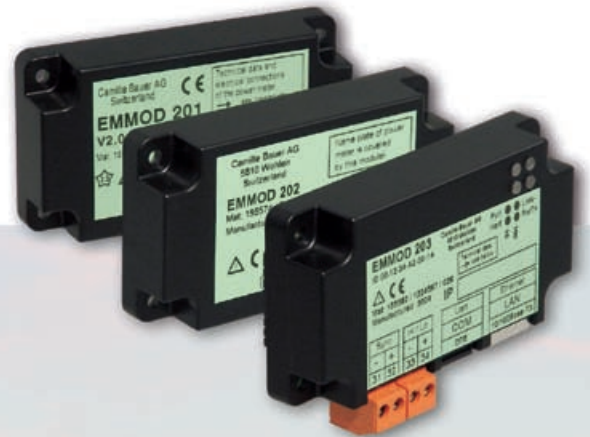
A trend analysis is available for all the average values. The calculations of the harmonic content and the asymmetry of the system, gives important information on the system status for the operators.

|                          | A210   | A220         | A230s                               | A230         |
|--------------------------|--|--------------|-------------------------------------|--------------|
| Front dimensions         | 96 x 96 mm   | 144 x 144 mm | 96 x 96 mm                          | 144 x 144 mm |
| Connection types         | Single phase, 3/4 wire balanced, 3/4 wire unbalanced       |              |                                     |              |
| Inputs                   | L-L: 0 – 500 V, L-N: 0 – 290 V, F: 45 – 65 Hz, I: 0 – 1/5A |              |                                     |              |
| Accuracy                 | U, I: 0,5%; P, Q, S, meters: 1%                            |              | U, I: 0,2%; P, Q, S, meters: 0,5%   |              |
| Display 14 mm            | 3 digits + sign  |              | 4 digits + sign, programmable       |              |
| Power supply             | 85 – 253 V AC/DC or 20 – 70 V AC/DC                        |              |                                     |              |
| Outputs                  | 2 digital outputs as pulse or limit outputs                |              |                                     |              |
| Measurands               | 85   |              | 266                                 |              |
| Energy meters            | 8  |              | 8                                   |              |
| Mean values              | 5 P, Q and S mean values each                              |              | Various functions                   |              |
| THD                      | No   |              | Yes                                 |              |
| Harmonic analysis        | No   |              | Up to the 15 <sup>th</sup> harmonic |              |
| Voltage unbalance        | No   |              | Yes                                 |              |
| Connections              | Spring clamps or screw clamp terminals                     |              |                                     |              |
| Protection class (front) | IP66   |              |                                     |              |

# EMMOD 201, 202, 203, 204

## Extension modules

The extension modules enlarge the functionality of the A210, A220, A230s and A230 power monitors. They can be simply snapped onto the back of the basic instrument and take their power supply from it.



### EMMOD 201

Modbus, data memory,  
RS232/485 interface, synchronizing input

#### Connections

Interface: RS232/485, selectable, screw clamp terminals

Baudrate 1200, 2400, 4800, 9600, 19200

Synchronizing input: logger or HT/NT-switching, screw clamp terminals

#### Protocol

Modbus RTU for SCADA

#### Data memory

Up to 166 days (at 15 min interval)

With A210/A220:

Average active power (incoming/outgoing)

Average reactive power (inductive/capacitive)

With A230s/A230:

Average active power (incoming/outgoing)

Average reactive power (incoming/outgoing or inductive/capacitive)

Average apparent power as well as 9 other freely programmable average values

#### Limit

0/3,7 mA or 21 mA

#### Load voltage

8 V

#### Accuracy

$\pm 0,1\%$  (without A2xx)

#### Measurands with A210/A220

U, I, Iavg, In, P, Q, S, F, cos $\phi$

#### Measurands with A230s/A230

In addition:

Average voltage and current

Zero displacement voltage

Voltage unbalance factor, THD U, THD I

#### Real time clock

Battery-buffered

Synchronized via LAN

or

externally (e.g. 230 V/50 Hz)

### EMMOD 202

2 analog outputs

#### Output

0 – 20 mA, 4 – 20 mA, inverting,

screw clamp terminals

#### Number of channels

2 (galvanically isolated)

### EMMOD 203

Ethernet, real time clock,  
extensive data memory

#### Connections

Ethernet: 10/100 Base Tx, RJ45-Port

Synchronizing input: 5 V – 300 V AC, 1–500 Hz, screw clamp terminals

Tariff switching: 5 V – 300 V, AC/DC, screw clamp terminals

#### Protocols

Modbus/TCP, HTTP, SNMP

#### Data memory

Up to 390 days with time stamps (at 15 min interval)

Storable measured variables see EMMOD 201

### EMMOD 204

Profibus DP

#### Connections

9-pin D-sub socket, EIA RS485 standard

15 kV ESD protection

#### Type

DPV0, SPC4-2

#### Baudrate

Automatic recognition  
or 9600 bit/s to 12 Mbit/s

#### Cyclic data exchange

Only the actually required variables are transferred

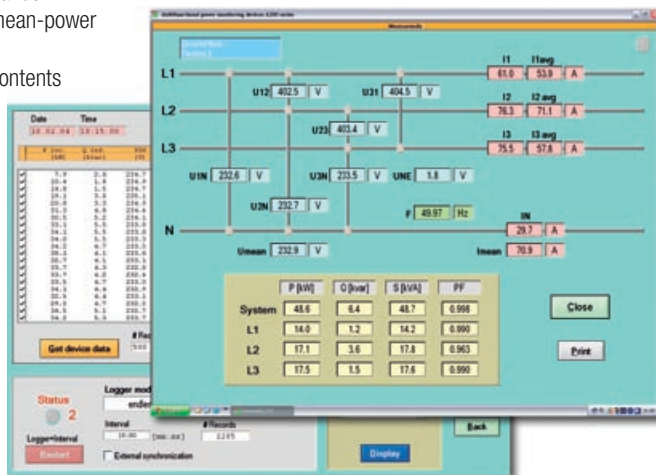
#### DMF parameterising

Device parameters are engineered in the control system. The device address can be set on site.

## PC-Software A200plus

The clear PC software allows to establish a communication with the devices of the A200 series:

- Upload and modification of all device features: Measuring input, digital outputs, mean-power values, digital input, logger
- Display of present measurands
- Acquisition of integrated mean-power values
- Display/Set/Reset meter contents
- Display/Reset of minimum/maximum values
- Acquisition of mean-power values stored in the logger
- Direct export of logger data to Microsoft Excel
- Store/load logger data on/from disk
- Executable under Windows 95, 98, ME, NT, 2000, XP



## The benefits of the A series

- The good legibility, the simple operation, and the easy-to-use software, guarantee secure installation and operation.
- The flat design makes more space available in your cabinet.
- The high functionality saves costs for engineering, installation and documentation
- You only pay for the required functions, thanks to the modular extensibility.
- The settings and measurands are power fail-safe.

# A210-HH, A230-HH

## Handheld 3 Phase Power Analyzers



### A210-HH

3 phase power analyzer with load profile recorder

- 4-quadrant measurement of all values in AC systems
- 2 load profile recorders for active, reactive power
- Energy meters for active and reactive energy
- RS232 interface to your PC and easy to use software



### A230-HH

3 phase power quality analyzer, load profile/average value recorder

- Adds functions for system and load analysis to the features of A210-HH
- Measurement of harmonics, THD, asymmetry, comprehensive average and max/min. values
- Average value and load profile recording (up to 14 measurands)

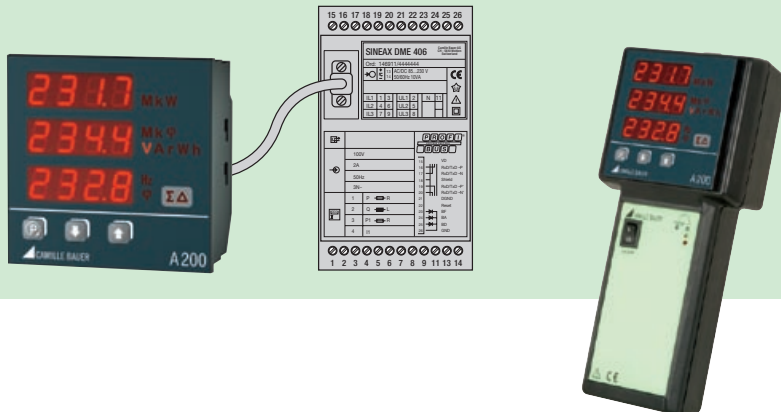
### Kit includes

The 3 phase power analyzers are delivered as a set in a hardcase with or without 3 current clamps WZ11. The set contains additionally: voltage cables with alligator clips, PC software, RS232 cable, Li-Ion battery, mains adaptor.



### Display units A200 and A200-HH

The A series is rounded off with the display units A200 and A200-HH. These instruments can show all the measurands of our SINEAX/EURAX DME4 series. The connection is made with an RS232 cable. The basic functions of the instrument, especially the output of the analog and digital values, and the bus functions for LON, Profibus or Modbus remain unchanged.



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