

Operating Instructions Multifunctional Power Monitor with System Analysis

SINEAX A 230 / A 230s



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A 230 / A230s Be

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02.06



The instruments must only be disposed of in the correct way!

Safety notes

The installation and commissioning should only be carried out by trained personnel.

Check the following points before commissioning:

- that the maximum values for all the connections are not exceeded, see the “Technical data” section,
- that the connection wires are not damaged, and that they are not live during wiring,
- that the power flow direction, and the phase rotation are correct.

The instrument must be taken out of service if safe operation is no longer possible (e.g. visible damage). In this case, all the connections must be switched off. The instrument must be returned to the factory or to an authorized service dealer.

It is forbidden to open the housing and to make modifications to the instrument. The instrument is not equipped with an integrated circuit breaker. During installation check that a labeled switch is installed and that it can easily be reached by the operators.

Unauthorized repair or alteration of the unit invalidates the warranty.

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Brief description

Panel mounting instrument A230 with dimensions 144x144x46mm resp. A230s with dimensions 96 x 96 x 46 mm. Four-quadrant measurement for power system and consumption analysis in single and multi-phase AC systems. Three large LED displays with four digits plus sign. The converter data are included for direct display and further processing. Configurable display settings for user specific presentation, integrated energy meters, impulse counters, and limit value indication. Comprehensive average value and max./min. value functions. Harmonic analysis and THD measurement. Determination of the neutral wire current. Asymmetry factor and neutral point voltage shift. Two switched outputs for the control of impulse counters, or for signalling limit alarms.

Technical data

(for more detailed information please see datasheet, download under www.camillebauer.com)

Measuring inputs

Nominal frequency:	50, 60 Hz
Nominal input voltage:	Phase-phase: 500 V Phase - N: 290 V
Nominal input current:	5 A or 1 A

Continuous thermal rating of inputs

10 A at 346 V in single-phase AC system
10 A at 600 V in three-phase system

Short-time thermal rating of inputs

Input variable	Number of inputs	Duration of overloads	Interval between two overloads
577 V LN	10	1 s	10 s
100 A	10	1 s	100 s
100 A	5	3 s	5 min

Measuring ranges

U, I, S:	≤ 120% of nominal value
P, Q:	≤ ± 120% of nominal value
F:	45 to 65 Hz
cosφ:	± 1

Display

The measurement display is 4 digit (frequency) and right justified. Energy values are displayed with 8 digits.

Zero value suppression

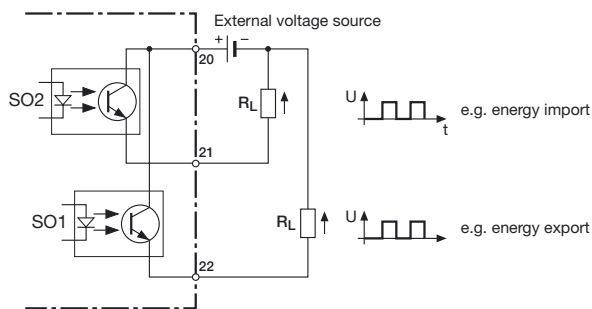
PF resp cosφ:	Display ---, if $S_x < 0.2\% S_{nenn}$
Currents:	Display 0, if $I_x < 0.1\% I_{nenn}$
unb. U:	Display 0, if $\emptyset U < 5\% U_{nenn}$

Pulse/Limit value outputs

Depending on the function selected, the two digital outputs can be used either as pulse outputs for actual and reactive energy or as limit signals.

The outputs are passive, and are galvanically isolated from all the other circuits by opto-couplers. They are suitable to drive tariff devices (S0-standard DIN 43 864), or 24 V relays.

U_{ext}	≤ 40 V DC (OFF: leakage current ≤ 0.1 mA)
I_L	≤ 150 mA (ON: terminal voltage ≤ 1.2 V)



Limit value outputs

The measured values can be freely allocated.

Pulse outputs

Active and reactive energy pulses can be generated for the control of electronic and electromechanical counters.

Power supply*

DC-, AC power pack 45 to 400 W
85 to 253 V AC/DC or
20 to 70 V AC/DC

Power consumption: < 3 VA (without extension module)

* For power supplies > 125 V the auxiliary circuit should include an external fuse.

Reference conditions

acc. to IEC 688 resp EN 60 688

Sine 50 - 60 Hz, 15 - 30°, application group II

Measurement accuracy (related to nominal value)

Current, voltage	± 0.2%
Power	± 0.5%
Power factor	± 0.5%
Energy	± 0.5%
Frequency	± 0.02 Hz (abs.)

Environmental conditions

Operating temperature:	-10 to +55 °C
Storage temperature:	-25 to +70 °C
Humidity relative:	≤ 75%
Altitude:	2000 m max.

Indoor use statement

Safety

Protection class: II (voltage inputs with protection impedances)

Measuring category: III

Pollution degree: 2

Measurement voltage: 300 V

Test voltage: Between current inputs, power supply, digital outputs, terminals of the plugged-in module: 3700 V / 50 Hz / 1 min.

On voltage inputs: 4.25 kV 1.2/50 μs

Module connections: The pin rail at the back is connected to the voltage inputs via a protection impedance. Only the permitted modules can be plugged-in!

Enclosure protection: Front IP 66, terminals IP 20

Commissioning

The multifunctional power monitor is made operational by switching on the power supply. The following appears sequentially on the display:

1. Segment tests: all the segments of the displays and all the LEDs are lit for 2 s.

2. **Version of the software:** e.g. A 230 1.04
 3. The 3 line voltages at switching on.

Loss of the power supply

All the values configured remain during a loss of the power supply.

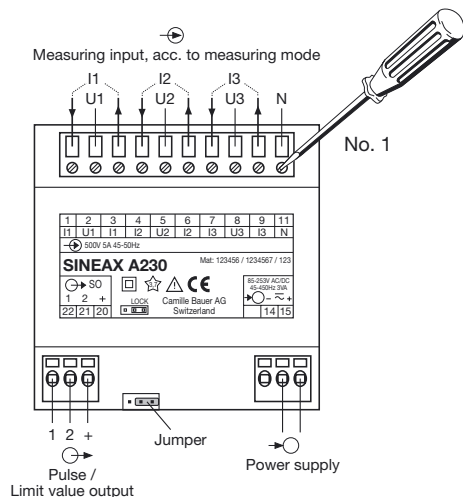
On reconnecting the power supply, the last **mode** selected is displayed.

Note of maintenance

No maintenance is required.

Electrical connections

(the electrical connections are identical for the SINEAX A 230 and A 230s).



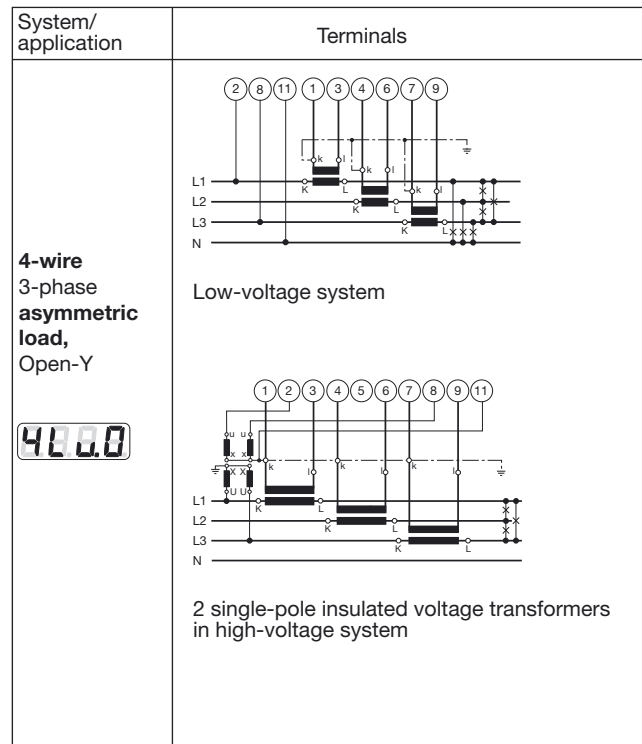
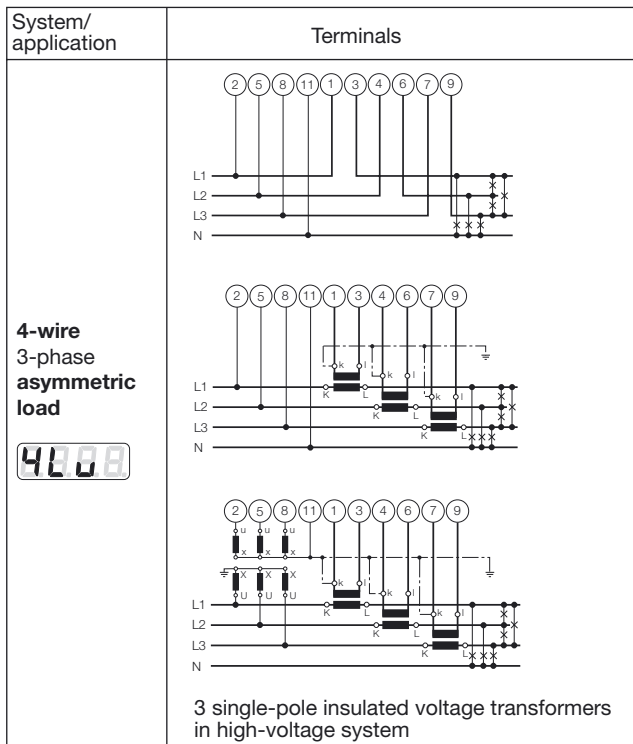
Connecting modes

System/ application	Terminals
Single phase AC system 	
3-wire 3-phase symmetric load I: L1 	

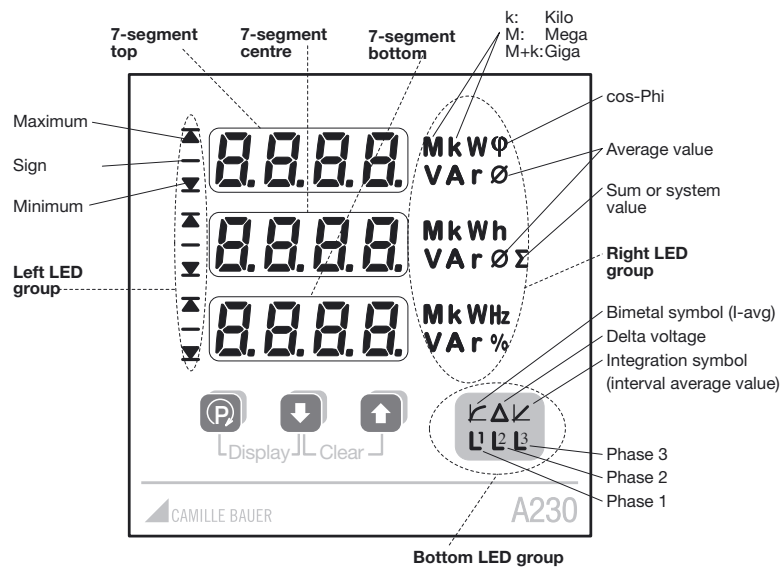
Connect the voltage according to the following table for current measurement in L2 or L3:

Current transf.	Terminals	2	5	8	
L2	1	3	L2	L3	L1
L3	1	3	L3	L1	L2

System/ application	Terminals															
4-wire 3-phase symmetric load I: L1 48.88	Connect the voltage according to the following table for current measurement in L2 or L3: <table><tr><th>Current transf.</th><th colspan="2">Terminals</th><th>2</th><th>11</th></tr><tr><td>L2</td><td>1</td><td>3</td><td>L2</td><td>N</td></tr><tr><td>L3</td><td>1</td><td>3</td><td>L3</td><td>N</td></tr></table>	Current transf.	Terminals		2	11	L2	1	3	L2	N	L3	1	3	L3	N
Current transf.	Terminals		2	11												
L2	1	3	L2	N												
L3	1	3	L3	N												
3-wire 3-phase asymmetric load 38.88	3 single-pole insulated voltage transformers in high-voltage system															
3-wire 3-phase asymmetric load, Aron 38.8A																



Measured value display



Abbreviations and symbols

oL	Overload, out of range indicator
U.nE	Neutral point voltage shift (U neutral-earth)
unb.U	Voltage asymmetry factor (un balance U)
in	Neutral current
SYSt.	System power
x.xx i ϕ	Power factor incoming inductive
x.xx c ϕ	Power factor incoming capacitive
-x.xx i ϕ	Power factor outgoing inductive
-x.xx c ϕ	Power factor outgoing capacitive
inc	Incoming
out	Outgoing

ind	Inductive
CAP	Capacitive
.H	Energy high tariff
.L	Energy low tariff
thd.U	THD-U
thd.i	THD-I
trnd	Interval power: Trend
t-0...t-4	Interval power: last to fifth last interval
H2.U...H15.U	2 nd - 15 th harmonic U
H2.i...H15.i	2 nd - 15 th harmonic I

Available measurement data (at connection mode 4-wire asymmetric load)	LED group left (t c b)	Example 7-segm. display top	Example 7-segm. display centre	Example 7-segm. display bottom	LED group right	LED group bottom
Phase voltages: U1, U2, U3		230.2	231.1	229.9	V	L1 L2 L3
Maximum values: U1-max, U2-max, U3-max	⚡ ⚡ ⚡	235.1	236.4	231.2	V	L1 L2 L3
Minimum values: U1-min, U2-min, U3-min	⚡ ⚡ ⚡	227.8	226.6	225.7	V	L1 L2 L3
Delta voltages: U12, U23, U31		400.0	402.5	398.4	V	Δ
Maximum values: U12-max, U23-max, U31-max	⚡ ⚡ ⚡	405.2	406.4	403.3	V	Δ
Minimum values: U12-min, U23-min, U31-min	⚡ ⚡ ⚡	395.5	397.4	396.8	V	
Neutral point voltage shift: UNE and UNE-max	⚡	U.nE	2.3	8.6	V	
Voltage asymmetry factor (unbalanced U)	⚡	unb.U	1.4	6.2	%	
Phase currents: I1, I2, I3		11.54	10.98	10.23	A	L1 L2 L3
Maximum values: I1-max, I2-max, I3-max	⚡ ⚡ ⚡	12.65	11.86	11.07	A	L1 L2 L3
Average values: I1avg, I2avg, I3avg (bimetal-15minutes)		7.23	6.86	6.46	A	⚡ L1 L2 L3
Max. average values: I1avg-max, I2avg-max, I3avg-max (slave pointer -15 minutes)	⚡ ⚡ ⚡	7.98	7.48	6.98	A	⚡ L1 L2 L3
Neutral current: IN and IN-max	⚡	in	1.13	2.75	A	
Active power: P1, P2, P3	a) ⚡	2240	2032	1491	W	L1 L2 L3
Maximum values: P1-max, P2-max, P3-max	a) ⚡ ⚡ ⚡	2554	2825	2482	W	L1 L2 L3
Active power system: P and P-max	a) ⚡	5Y5t.	5.76	7.86	kW	
Reactive power: Q1, Q2, Q3	b) ⚡	1078	393	721	VAr	L1 L2 L3
Maximum values: Q1-max, Q2-max, Q3-max	b) ⚡ ⚡ ⚡	1704	561	1027	VAr	L1 L2 L3
Reactive power system: Q and Q-max	b) ⚡	5Y5t.	2.19	3.29	kVAr	
Apparent powers: S1, S2, S3		2281	2157	2089	VA	L1 L2 L3
Maximum values: S1-max, S2-max, S3-max	⚡ ⚡ ⚡	3066	2874	2682	VA	L1 L2 L3
Apparent power system: S and S-max	⚡	5Y5t.	6.64	8.11	kVA	
Power factors: PF1, PF2, PF3	a) ⚡	0.82c	0.97c	0.92c	φ	L1 L2 L3
PF-system, PF-min-inductive-incoming, PF-min-capacitive-incoming	a) ⚡ ⚡	0.90c	---	0.72c	φ	
PF-system, PF-min-inductive-outgoing, PF-min-capacitive-outgoing	a) ⚡ ⚡	0.90c	---	---	φ	
Frequency: F-max, F-actual, F-min	⚡ ⚡	50.14	50.03	49.78	Hz	
Active power incoming EP high tariff		4589	2356	inc.H	kWh Σ	
Active power incoming EP low tariff	c) ⚡	1234	5678	inc.L	kWh Σ	
Active power outgoing EP high tariff		4589	2356	out.H	kWh Σ	
Active power outgoing EP low tariff	c) ⚡	1234	5678	out.L	kWh Σ	
Reactive power inductive EQ high tariff	d) ⚡	9876	5432	ind.H	kVarh Σ	
Reactive power inductive EQ low tariff	c) d) ⚡	1234	9876	ind.L	kVarh Σ	
Reactive power capacitive EQ high tariff	d) ⚡	76	5432	CAP.H	kVarh Σ	
Reactive power capacitive EQ low tariff	c) d) ⚡	234	9876	CAP.L	kVarh Σ	
Reactive power incoming EQ high tariff	e) ⚡	9876	5432	inc.H	kVarh Σ	
Reactive power incoming EQ low tariff	c) e) ⚡	1234	9876	inc.L	kVarh Σ	
Reactive power outgoing EQ high tariff	e) ⚡	76	5432	out.H	kVarh Σ	
Reactive power outgoing EQ low tariff	c) e) ⚡	234	9876	out.L	kVarh Σ	
P-system, Q-system, S-system		5.76	2.19	6.64	kW kVAr kVA	
Average U1-U2-U3, average I1-I2-I3, P-system		230.4	10.92	5.76	VØ AØ kW	
PF-system, P-system, Q-system		0.90c	5.76	2.19	φ kW kVAr	
P-system, S-system, frequency		5.76	6.64	50.03	kW kVA Hz	
P1, Q1, S1		2240	1078	2485	W VAr VA	L1
P2, Q2, S2		2032	393	2070	W VAr VA	L2
P3, Q3, S3		1491	721	2089	W VAr VA	L3
U1, I1, P1		230.2	11.54	2240	V A W	L1
U2, I2, P2		231.1	10.98	2032	V A W	L2
U3, I3, P3		229.9	10.23	1491	V A W	L3

Continuation see next page!

Available measurement data (at connection mode 4-wire asymmetric load)	LED group left (t c b)			Example 7-segm. display top	Example 7-segm. display centre	Example 7-segm. display bottom	LED group right	LED group bottom
THD-U1, THD-U1-max	▲			<i>thd.U</i>	2.5	8.0	%	L1
THD-U2, THD-U2-max	▲			<i>thd.U</i>	2.6	8.3	%	L2
THD-U3, THD-U3-max	▲			<i>thd.U</i>	2.4	3.9	%	L3
THD-I1, THD-I1-max	▲			<i>thd.I</i>	2.4	10.8	%	L1
THD-I2, THD-I2-max	▲			<i>thd.I</i>	2.5	9.5	%	L2
THD-I3, THD-I3-max	▲			<i>thd.I</i>	2.4	4.6	%	L3
Interval active power: Trend-incoming				<i>P.inc</i>	5.23	<i>trnd</i>	kW Σ	ℓ
Interval active power: Maximum-incoming Minimum-incoming	▲ ▼			<i>P.inc</i>	6.02	1.56	kW Σ	ℓ
Interval active power: last interval (t-0) incoming to fifth last interval (t-4) incoming				<i>P.inc</i>	3.91	t-0	kW Σ	ℓ
				<i>P.inc</i>	5.52	t-4	kW Σ	ℓ
Interval active power: Trend-outgoing				<i>P.out</i>	0.00	<i>trnd</i>	kW Σ	ℓ
Interval active power: Maximum-outgoing Minimum-outgoing	▲ ▼			<i>P.out</i>	0.00	0.00	kW Σ	ℓ
Interval active power: last interval (t-0) outgoing to fifth last interval (t-4) outgoing				<i>P.out</i>	0.00	t-0	kW Σ	ℓ
				<i>P.out</i>	0.00	t-4	kW Σ	ℓ
Interval react. power: Trend-inductive d)				<i>Q.ind</i>	0.00	<i>trnd</i>	kVAr Σ	ℓ
Interval react. power: Maximum-inductive Minimum-inductive d)	▲ ▼			<i>Q.ind</i>	0.00	0.00	kVAr Σ	ℓ
Interval react. power: last interval (t-0) inductive d) to fifth last interval (t-4) inductive				<i>Q.ind</i>	0.00	t-0	kVAr Σ	ℓ
				<i>Q.ind</i>	0.00	t-4	kVAr Σ	ℓ
Interval react. power: Trend-capacitive d)				<i>Q.cap</i>	2.17	<i>trnd</i>	kVAr Σ	ℓ
Interval react. power: Maximum-cap., Minimum-cap. d)	▲ ▼			<i>Q.cap</i>	2.53	0.78	kVAr Σ	ℓ
Interval react. power: last interval (t-0) capacitive d) to fifth last interval (t-4) capacitive				<i>Q.cap</i>	1.41	t-0	kVAr Σ	ℓ
				<i>Q.cap</i>	1.14	t-4	kVAr Σ	ℓ
Interval react. power: Trend-incoming e)				<i>Q.inc</i>	2.17	<i>trnd</i>	kVAr Σ	ℓ
Interval react. power: Maximum-incoming Minimum-incoming e)	▲ ▼			<i>Q.inc</i>	2.53	0.78	kVAr Σ	ℓ
Interval react. power: last interval (t-0) incoming e) to fifth last interval (t-4) incoming				<i>Q.inc</i>	1.41	t-0	kVAr Σ	ℓ
				<i>Q.inc</i>	1.14	t-4	kVAr Σ	ℓ
Interval react. power: Trend-outgoing e)				<i>Q.out</i>	0.00	<i>trnd</i>	kVAr Σ	ℓ
Interval react. power: Maximum-outgoing Minimum-outgoing e)	▲ ▼			<i>Q.out</i>	0.00	0.00	kVAr Σ	ℓ
Interval react. power: last interval (t-0) outgoing e) to fifth last interval (t-4) outgoing				<i>Q.out</i>	0.00	t-0	kVAr Σ	ℓ
				<i>Q.out</i>	0.00	t-4	kVAr Σ	ℓ
Interval appar. power: Trend				S	5.23	<i>trnd</i>	kVA Σ	ℓ
Interval appar. power: Maximum, Minimum	▲ ▼			S	6.02	1.56	kVA Σ	ℓ
Interval appar. power: last interval (t-0) to fifth last interval (t-4)				S	3.91	t-0	kVA Σ	ℓ
				S	5.52	t-4	kVA Σ	ℓ
2nd harmonic U1: H2-U1, H2-U1-max	▲			<i>H2.U</i>	0.1	1.2	%	L1
15th harmonic U1: H15-U1, H15-U1-max	▲			<i>H15.U</i>	0.5	1.8	%	L1
2nd harmonic U2: H2-U2, H2-U2-max	▲			<i>H2.U</i>	0.1	0.4	%	L2
15th harmonic U2: H15-U2, H15-U2-max	▲			<i>H15.U</i>	0.7	2.0	%	L2
2nd harmonic U3: H2-U3, H2-U3-max	▲			<i>H2.U</i>	0.2	1.5	%	L2
15th harmonic U3: H15-U3, H15-U3-max	▲			<i>H15.U</i>	1.5	2.8	%	L2

Continuation see next page!

Available measurement data (at connection mode 4-wire asymmetric load)		LED group left (t c b)	Example 7-segm. display top	Example 7-segm. display centre	Example 7-segm. display bottom	LED group right	LED group bottom
2nd harmonic I1:	H2-I1, H2-I1-max to	▲	H2.I to	0.4	2.2	%	L1
15th harmonic I1:	H15-I1, H15-I1-max	▲	H15.I	0.9	4.8	%	L1
2nd harmonic I2:	H2-I2, H2-I2-max to	▲	H2.I to	0.3	1.8	%	L2
15th harmonic I2:	H15-I2, H15-I2-max	▲	H15.I	0.8	5.2	%	L2
2nd harmonic I3:	H2-I3, H2-I3-max to	▲	H2.I to	0.5	3.2	%	L2
15th harmonic I3:	H15-I3, H15-I3-max	▲	H15.I	1.1	5.8	%	L2

- a) incoming: no sign Outgoing: sign –
- b) incoming inductive, outgoing capacitive: no sign
incoming capacitive, outgoing inductive: sign –
- c) Tariff switching via digital input or controlled via the bus only (optional extension module required)
- d) only active if the Q definition is set to “ind/cap” (display configuration **7** : Q.tot)
- e) only active if the Q definition is set to “inc/out” (display configuration **7** : Q.tot)

Determination of measured quantities

The calculation of the measurements is made in accordance with DIN 40 110, with the exception of the reactive power. This is calculated by the SINEAX A 230/A 230s as a signed value. Transducers and displays can possibly display different values for the reactive power in the same power system. The reason is the different calculation methods.

Trend values display the predicted value for the current interval.

Example: Power factor 4 quadrant display



PF-L1, PF-L2, PF-L3 actual

(Matrix table 4-wire asymmetric load: field a-6)

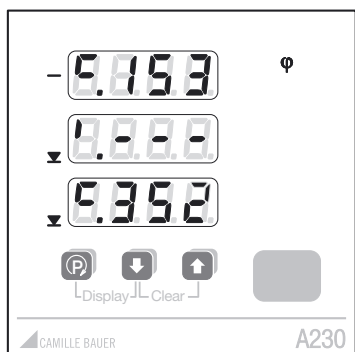
Actual power factors per phase:

top: PF L1 = incoming / capacitive / 0.352

centre: PF L2 = outgoing / inductive / 0.875

bottom: PF L3 = cannot be measured

(---: apparent power < 1% of nominal input power
→ PF cannot be measured)



PF-system-actual and PF-min-incoming

(Matrix table 4-wire asymmetric load: field b-6)

top: PF system actual = outgoing / capacitive / 0.153

(---: apparent power < 1% of nominal input power
→ PF cannot be measured)

centre: PF minimum incoming inductive = no measuring value

bottom: PF minimum incoming capacitive = 0.352

(minimum: lowest value of PF1, PF2 or PF3)

(---: no measured value in the quadrants concerned)



PF-system-actual and PF-min-outgoing

(Matrix table 4-wire asymmetric load: field c-6)

top: PF system actual = incoming / — / 1.000

(---: apparent power < 1% of nominal input power
→ PF cannot be measured)

centre: PF minimum outgoing inductive = 0.486

bottom: PF minimum outgoing capacitive = 0.617

(Minimum: lowest value of PF1, PF2 or PF3)

(---: no measured value in the quadrants concerned)

Display modes



All the display values in accordance with the matrix tables can be displayed (factory setting).



Only the pre-configured display values are displayed. The factory pre-configured values are shown in the matrix tables with a gray-background.



Automatically changing display. The display time, and the values to be displayed are pre-configurable.

The factory pre-configured values are shown in the matrix tables with a **bold outline**. The factory setting for the display time is 4 seconds.

Preferred display

Application:

Everywhere where the permanent display of a certain value is required. The preferred display is normally always displayed. In addition, any other value can be selected as for the full mode. After the reset time period (2 - 32 s), the display automatically returns to the preferred display.

Configuration:

If continuous operation is required with the preferred display, the Loop mode can be blocked with the mode lock **16**. The reset time is configured with the display interval configuration **17**. Set the required window to "on" in the display configuration under No. **19** (Menu Disp). Set all the other display elements to "off".

Duration of the display

It may be difficult to read the measured values when they change quickly. Therefore the write interval can be increased in the menu "Display settings".

Operation

Changing the display mode

By simultaneously pressing the buttons **(P)** and **(display)** for a longer time, the display mode changes and then remains in the last mode displayed when the buttons are released (factory setting: FULL). If the mode cannot be changed, the mode lock is switched on.

Locking

In the display configuration menu (Menu Disp), changing the display modes can be blocked with the mode lock **16**.

Navigation

X axis (a, b, c, ...)

For each pressing of the **(P)** button, the displayed value changes in accordance with the preconfiguration and matrix table one window towards the right and loops back to the beginning.

Y axis (1, 2, 3, ...)

For each pressing of the **(up)** or **(down)** buttons, the displayed value changes in accordance with the preconfiguration and matrix table one window upwards as far as the top window or respectively one window downwards as far as the bottom window.

Brightness (13 levels)

brighter Press the key **(up)** for a longer time.

darker Press the key **(down)** for a longer time.

Deletion of the max./min. values and meters

Simultaneous longer pressing of the **(up)** and **(down)** buttons (clear) deletes the max. respectively min. values of the measured value displayed and the associated values. The energy meters are reset in the same way.

Locking

The reset function for the energy meters can be locked by setting the jumper at the rear of the instrument to the position LOCK.

Display window

▲ = Maximum, ▼ = Minimum

Matrix table 4L, asymmetric load

Q measured values are in *italics*: depending on the Q definition **7**, either the values for incoming/outgoing or the values for inductive/capacitive are displayed.

	P							
	a	b	c	d	e	f	g	h
1	U1 U2 U3	U1 U2 U3	U1 U2 U3	U12 U23 U31	U12 U23 U31	U12 U23 U31	UNE UNE	unb. U unb. U
2	I1 I2 I3	I1 I2 I3	I1avg I2avg I3avg	I1avg I2avg I3avg	IN IN			
3	P1 P2 P3	P1 P2 P3	P P					
4	Q1 Q2 Q3	Q1 Q2 Q3	Q Q					
5	S1 S2 S3	S1 S2 S3	S S					
6	PF1 PF2 PF3	PF PF -inc-ind PF -inc-cap	PF PF -out-ind PF -out-cap					
7	F F F							
8	 EP_inc HT	 EP_inc LT	 EP_out HT	 EP_out LT				
9	 EQ_inc/ind HT	 EQ_inc/ind LT	 EQ_out/cap HT	 EQ_out/cap LT				
10	P Q S	U I P	PF P Q	P S F				
11	P1 Q1 S1	P2 Q2 S2	P3 Q3 S2	U1 I1 P1	U2 I2 P2	U3 I3 P3		
12	thd.U1 thd.U1	thd.U2 thd.U2	thd.U3 thd.U3					
13	thd.I1 thd.I1	thd.I2 thd.I2	thd.I3 thd.I3					
14	P.inc-int-Trend	P.inc-int- P.inc-int-	P.inc-int t-0	P.inc-int t-1	P.inc-int t-2	P.inc-int t-3	P.inc-int t-4	
15	P.out-int-Trend	P.out-int- P.out-int-	P.out-int t-0	P.out-int t-1	P.out-int t-2	P.out-int t-3	P.out-int t-4	
16	Q.inc/ind-int-Trend	Q.inc/ind-int- Q.inc/ind-int-	Q.inc/ind-int t-0	Q.inc/ind-int t-1	Q.inc/ind-int t-2	Q.inc/ind-int t-3	Q.inc/ind-int t-4	
17	Q.out/cap-int-Trend	Q.out/cap-int- Q.out/cap-int-	Q.out/cap-int t-0	Q.out/cap-int t-1	Q.out/cap-int t-2	Q.out/cap-int t-3	Q.out/cap-int t-4	
18	S.int-Trend	S.int- S.int-	S.int t-0	S.int t-1	S.int t-2	S.int t-3	S.int t-4	

	P													
	a	b	c	d	e	f	g	h	i	j	k	l	m	n
19	H2.U1 H2 .U1	H3.U1 H3 .U1	H4.U1 H4 .U1	H5.U1 H5 .U1	H6.U1 H6 .U1	H7.U1 H7 .U1	H8.U1 H8 .U1	H9.U1 H9 .U1	H10.U1 H10 .U1	H11.U1 H11 .U1	H12.U1 H12 .U1	H13.U1 H13 .U1	H14.U1 H14 .U1	H15.U1 H15 .U1
20	H2.U2 H2 .U2	H3.U2 H3 .U2	H4.U2 H4 .U2	H5.U2 H5 .U2	H6.U2 H6 .U2	H7.U2 H7 .U2	H8.U2 H8 .U2	H9.U2 H9 .U2	H10.U2 H10 .U2	H11.U2 H11 .U2	H12.U2 H12 .U2	H13.U2 H13 .U2	H14.U2 H14 .U2	H15.U2 H15 .U2
21	H2.U3 H2 .U3	H3.U3 H3 .U3	H4.U3 H4 .U3	H5.U3 H5 .U3	H6.U3 H6 .U3	H7.U3 H7 .U3	H8.U3 H8 .U3	H9.U3 H9 .U3	H10.U3 H10 .U3	H11.U3 H11 .U3	H12.U3 H12 .U3	H13.U3 H13 .U3	H14.U3 H14 .U3	H15.U3 H15 .U3
22	H2.I1 H2 .I1	H3.I1 H3 .I1	H4.I1 H4 .I1	H5.I1 H5 .I1	H6.I1 H6 .I1	H7.I1 H7 .I1	H8.I1 H8 .I1	H9.I1 H9 .I1	H10.I1 H10 .I1	H11.I1 H11 .I1	H12.I1 H12 .I1	H13.I1 H13 .I1	H14.I1 H14 .I1	H15.I1 H15 .I1
23	H2.I2 H2 .I2	H3.I2 H3 .I2	H4.I2 H4 .I2	H5.I2 H5 .I2	H6.I2 H6 .I2	H7.I2 H7 .I2	H8.I2 H8 .I2	H9.I2 H9 .I2	H10.I2 H10 .I2	H11.I2 H11 .I2	H12.I2 H12 .I2	H13.I2 H13 .I2	H14.I2 H14 .I2	H15.I2 H15 .I2
24	H2.I3 H2 .I3	H3.I3 H3 .I3	H4.I3 H4 .I3	H5.I3 H5 .I3	H6.I3 H6 .I3	H7.I3 H7 .I3	H8.I3 H8 .I3	H9.I3 H9 .I3	H10.I3 H10 .I3	H11.I3 H11 .I3	H12.I3 H12 .I3	H13.I3 H13 .I3	H14.I3 H14 .I3	H15.I3 H15 .I3

Matrix table 3L, asymmetric load

$\blacktriangle$ = Maximum, $\blacktriangledown$ = Minimum

Q measured values are in *italics*: depending on the Q definition **7**, either the values for incoming/outgoing or the values for inductive/capacitive are displayed.

														
	a	b	c	d	e	f	g							
1	U12 U23 U31	U12 $\blacktriangle$ U23 $\blacktriangle$ U31 $\blacktriangle$	U12 $\blacktriangledown$ U23 $\blacktriangledown$ U31 $\blacktriangledown$											
2	I1 I2 I3	I1 $\blacktriangle$ I2 $\blacktriangle$ I3 $\blacktriangle$	I1avg I2avg I3avg	I1avg $\blacktriangle$ I2avg $\blacktriangle$ I3avg $\blacktriangle$										
3	P P $\blacktriangle$													
4	Q Q $\blacktriangle$													
5	S S $\blacktriangle$													
6	PF PF $\blacktriangledown$ -inc-ind PF $\blacktriangledown$ -inc-cap	PF PF $\blacktriangledown$ -out-ind PF $\blacktriangledown$ -out-cap												
7	F $\blacktriangle$ F F $\blacktriangledown$													
8	 EP_inc HT	 EP_inc LT	 EP_out HT	 EP_out LT										
9	 EQ_inc/ind HT	 EQ_inc/ind LT	 EQ_out/cap HT	 EQ_out/cap LT										
10	P Q S	U $\emptyset$ I $\emptyset$ P	PF P Q	P S F										
11	thd.U12 thd.U12 $\blacktriangle$	thd.U23 thd.U23 $\blacktriangle$	thd.U31 thd.U31 $\blacktriangle$											
12	thd.I1 thd.I1 $\blacktriangle$	thd.I2 thd.I2 $\blacktriangle$	thd.I3 thd.I3 $\blacktriangle$											
13	P.inc-int-Trend	P.inc-int- $\blacktriangle$ P.inc-int- $\blacktriangledown$	P.inc-int t-0	P.inc-int t-1	P.inc-int t-2	P.inc-int t-3	P.inc-int t-4							
14	P.out-int-Trend	P.out-int- $\blacktriangle$ P.out-int- $\blacktriangledown$	P.out-int t-0	P.out-int t-1	P.out-int t-2	P.out-int t-3	P.out-int t-4							
15	Q.inc/ind-int-Trend	Q.inc/ind-int- $\blacktriangle$ Q.inc/ind-int- $\blacktriangledown$	Q.inc/ind-int t-0	Q.inc/ind-int t-1	Q.inc/ind-int t-2	Q.inc/ind-int t-3	Q.inc/ind-int t-4							
16	Q.out/cap-int-Trend	Q.out/cap-int- $\blacktriangle$ Q.out/cap-int- $\blacktriangledown$	Q.out/cap-int t-0	Q.out/cap-int t-1	Q.out/cap-int t-2	Q.out/cap-int t-3	Q.out/cap-int t-4							
17	S.int-Trend	S.int- $\blacktriangle$ S.int- $\blacktriangledown$	S.int t-0	S.int t-1	S.int t-2	S.int t-3	S.int t-4							
	a	b	c	d	e	f	g	h	i	j	k	l	m	n
18	H2.U12 H2 $\blacktriangle$.U12	H3.U12 H3 $\blacktriangle$.U12	H4.U12 H4 $\blacktriangle$.U12	H5.U12 H5 $\blacktriangle$.U12	H6.U12 H6 $\blacktriangle$.U12	H7.U12 H7 $\blacktriangle$.U12	H8.U12 H8 $\blacktriangle$.U12	H9.U12 H9 $\blacktriangle$.U12	H10.U12 H10 $\blacktriangle$.U12	H11.U12 H11 $\blacktriangle$.U12	H12.U12 H12 $\blacktriangle$.U12	H13.U12 H13 $\blacktriangle$.U12	H14.U12 H14 $\blacktriangle$.U12	H15.U12 H15 $\blacktriangle$.U12
19	H2.U23 H2 $\blacktriangle$.U23	H3.U23 H3 $\blacktriangle$.U23	H4.U23 H4 $\blacktriangle$.U23	H5.U23 H5 $\blacktriangle$.U23	H6.U23 H6 $\blacktriangle$.U23	H7.U23 H7 $\blacktriangle$.U23	H8.U23 H8 $\blacktriangle$.U23	H9.U23 H9 $\blacktriangle$.U23	H10.U23 H10 $\blacktriangle$.U23	H11.U23 H11 $\blacktriangle$.U23	H12.U23 H12 $\blacktriangle$.U23	H13.U23 H13 $\blacktriangle$.U23	H14.U23 H14 $\blacktriangle$.U23	H15.U23 H15 $\blacktriangle$.U23
20	H2.U31 H2 $\blacktriangle$.U31	H3.U31 H3 $\blacktriangle$.U31	H4.U31 H4 $\blacktriangle$.U31	H5.U31 H5 $\blacktriangle$.U31	H6.U31 H6 $\blacktriangle$.U31	H7.U31 H7 $\blacktriangle$.U31	H8.U31 H8 $\blacktriangle$.U31	H9.U31 H9 $\blacktriangle$.U31	H10.U31 H10 $\blacktriangle$.U31	H11.U31 H11 $\blacktriangle$.U31	H12.U31 H12 $\blacktriangle$.U31	H13.U31 H13 $\blacktriangle$.U31	H14.U31 H14 $\blacktriangle$.U31	H15.U31 H15 $\blacktriangle$.U31
21	H2.I1 H2 $\blacktriangle$.I1	H3.I1 H3 $\blacktriangle$.I1	H4.I1 H4 $\blacktriangle$.I1	H5.I1 H5 $\blacktriangle$.I1	H6.I1 H6 $\blacktriangle$.I1	H7.I1 H7 $\blacktriangle$.I1	H8.I1 H8 $\blacktriangle$.I1	H9.I1 H9 $\blacktriangle$.I1	H10.I1 H10 $\blacktriangle$.I1	H11.I1 H11 $\blacktriangle$.I1	H12.I1 H12 $\blacktriangle$.I1	H13.I1 H13 $\blacktriangle$.I1	H14.I1 H14 $\blacktriangle$.I1	H15.I1 H15 $\blacktriangle$.I1
22	H2.I2 H2 $\blacktriangle$.I2	H3.I2 H3 $\blacktriangle$.I2	H4.I2 H4 $\blacktriangle$.I2	H5.I2 H5 $\blacktriangle$.I2	H6.I2 H6 $\blacktriangle$.I2	H7.I2 H7 $\blacktriangle$.I2	H8.I2 H8 $\blacktriangle$.I2	H9.I2 H9 $\blacktriangle$.I2	H10.I2 H10 $\blacktriangle$.I2	H11.I2 H11 $\blacktriangle$.I2	H12.I2 H12 $\blacktriangle$.I2	H13.I2 H13 $\blacktriangle$.I2	H14.I2 H14 $\blacktriangle$.I2	H15.I2 H15 $\blacktriangle$.I2
23	H2.I3 H2 $\blacktriangle$.I3	H3.I3 H3 $\blacktriangle$.I3	H4.I3 H4 $\blacktriangle$.I3	H5.I3 H5 $\blacktriangle$.I3	H6.I3 H6 $\blacktriangle$.I3	H7.I3 H7 $\blacktriangle$.I3	H8.I3 H8 $\blacktriangle$.I3	H9.I3 H9 $\blacktriangle$.I3	H10.I3 H10 $\blacktriangle$.I3	H11.I3 H11 $\blacktriangle$.I3	H12.I3 H12 $\blacktriangle$.I3	H13.I3 H13 $\blacktriangle$.I3	H14.I3 H14 $\blacktriangle$.I3	H15.I3 H15 $\blacktriangle$.I3

Matrix table single phase, 3L and 4L symmetric load

▲ = Maximum, ▼ = Minimum

Q measured values are in *italics*: depending on the Q definition **7**, either the values for incoming/outgoing or the values for inductive/capacitive are displayed.

	P						
	a	b	c	d	e	f	g
1	U ▲ U U ▼						
2	I ▲ I	lavg lavg ▲					
3	P P ▲						
4	Q Q ▲						
5	S S ▲						
6	PF PF ▼-inc-ind PF ▼-inc-cap	PF PF ▼-out-ind PF ▼-out-cap					
7	F ▲ F F ▼						
8	 EP_inc HT	 EP_inc LT	 EP_out HT	 EP_out LT			
9	 EQ inc/ind HT	 EQ inc/ind LT	 EQ out/cap HT	 EQ out/cap LT			
10	P Q S	U I P	PF P Q	P S F			
11	thd.U thd.U ▲						
12	thd.I thd.I ▲						
13	P.inc-int-Trend	P.inc-int- ▲ P.inc-int- ▼	P.inc-int t-0	P.inc-int t-1	P.inc-int t-2	P.inc-int t-3	P.inc-int t-4
14	P.out-int-Trend	P.out-int- ▲ P.out-int- ▼	P.out-int t-0	P.out-int t-1	P.out-int t-2	P.out-int t-3	P.out-int t-4
15	Q.inc/ind-int-Trend	Q.inc/ind-int- ▲ Q.inc/ind-int- ▼	Q.inc/ind-int t-0	Q.inc/ind-int t-1	Q.inc/ind-int t-2	Q.inc/ind-int t-3	Q.inc/ind-int t-4
16	Q.out/cap-int-Trend	Q.out/cap-int- ▲ Q.out/cap-int- ▼	Q.out/cap-int t-0	Q.out/cap-int t-1	Q.out/cap-int t-2	Q.out/cap-int t-3	Q.out/cap-int t-4
17	S.int-Trend	S.int- ▲ S.int- ▼	S.int t-0	S.int t-1	S.int t-2	S.int t-3	S.int t-4

	P													
	a	b	c	d	e	f	g	h	i	j	k	l	m	n
18	H2.U H2.▲.U	H3.U H3.▲.U	H4.U H4.▲.U	H5.U H5.▲.U	H6.U H6.▲.U	H7.U H7.▲.U	H8.U H8.▲.U	H9.U H9.▲.U	H10.U H10.▲.U	H11.U H11.▲.U	H12.U H12.▲.U	H13.U H13.▲.U	H14.U H14.▲.U	H15.U H15.▲.U
19	H2.I H2.▲.I	H3.I H3.▲.I	H4.I H4.▲.I	H5.I H5.▲.I	H6.I H6.▲.I	H7.I H7.▲.I	H8.I H8.▲.I	H9.I H9.▲.I	H10.I H10.▲.I	H11.I H11.▲.I	H12.I H12.▲.I	H13.I H13.▲.I	H14.I H14.▲.I	H15.I H15.▲.I

Programming (Programming diagram on page 18)

All parameter may be displayed at any time. For modifications the jumper on the backside of the device must be removed (not on position LOCK).

- (1) Change from the display level to the menu level by pressing the  button for a longer time.
- (2) Select the required menu item by pressing the  button for a shorter time.
- (3) Use  to enter the level where the desired parameter is displayed.
- (4) Pressing  shortly will force the selectable element to flash.
- (5) The flashing content may be modified using the keys  or .
- (6) To acknowledge, shortly press the  button.
- (7) If the next 7-segment display, the decimal point, or a unit flashes: continue at (5).
- (8) If additional parameters are to be modified at the same menu item, change to the required parameter with the  or  buttons and continue at (4).
- (9) If modifications are to be made in other menu columns, return to the menu level with the  button, and continue at (2).
- (10) Return to the display level by pressing the  button for a longer time.

The navigation steps for the selection of display elements under "Menu Disp" differ from the above description between points (4) and (8) (see configuration diagram Nos. **19** and **21**).

Hints

All settings will remain non-volatile stored even in case of power-fail.

First you have to set the system configuration, the transformer ratios and the Q definition because further measurand selections, alarm limit settings etc. will depend on them.

As an alternative to the configuration of the various options with the display buttons, they can be configured comfortably with the A200plus software (with the extension module EMMOD 201 and EMMOD 203). The data can be stored on the PC and used later.



LOCK

Locking the configuration

Place the jumper in the LOCK position.

The configuration of all parameters is disabled.

Factory Default

Jumper:	not in the LOCK position
Connecting mode:	4-wire asymmetric load
Transformer ratio:	1:1
Q definition:	inductive / capacitive
Limit value / S01:	Off
Limit value / S02:	Off
Synchronizing interval:	15 min.
Display mode:	FULL, duration of the display 0.0 s
Brightness:	middle value

Overview of the parameters

The following table gives all the parameters together with their adjustable ranges or the possible selections. The numbers with a black background (xx) give a reference to the corresponding positions in the navigation diagram on page 18.

No.	Topmost display	Undermost display	Meaning	Hints
1	 		System configuration	
			4-line system, unbalanced load, Open-Y	(4 lines unbalanced, Open-Y)
			4-line system, unbalanced load	(4 lines unbalanced)
			3-line system, unbalanced load, Aron	(3 lines unbalanced, Aron)
			3-line system, unbalanced load	(3 lines unbalanced)
			4-line system balanced load	(4 lines balanced)
			3-line system, balanced load	(3 lines balanced)
			Single-line system	(1 line)
2	 		Load type for energy recovery: Mathematical	4 quadrant display, ind-cap-ind-cap
			Load type for energy recovery: Electrical	4 quadrant display, ind-ind-cap-cap
2	 	 100 V to 999 kV	Primary voltage of an external transformer on the voltage input (line-to-line voltage)	First you enter any 3-digit number followed by the appropriate power unit selection in steps of factor 10
3	 	 100 V to 999 V	Secondary voltage of an external transformer on the voltage input (line-to-line voltage)	
4	 	 1.00 A to 999 kA	Primary current of an external transformer on the current input	
5	 	 0.1 A to 9.99 A	Secondary current of an external transformer on the current input	

No.	Topmost display	Undermost display	Meaning	Hints
7			Q definition for meters, pulse outputs and power average values	(Q-totalizers)
			Q-incoming Q-outgoing	(incoming) (outgoing)
			Q-inductive Q-capacitive	(inductive) (capacitive)
8			Operating mode of both digital outputs "out.1" and "out.2"	(Mode)
			Output switched-off	Simulation via interface module is still possible
			Energy pulse output	The output generates energy pulses depending on the rate set under 13. The meter measurands to output may be selected under 12.
			Alarm output	If the alarm limit 10 is exceeded the output will be active (current flows). If the measurand is below limit 11 the output will be passive. The source of the monitored is selected under 9.
9			Alarm supervision source	This selection is presented only if operating mode 8 is set to ALM previously
				Line type '1L', '3Lb', '4Lb' '3Lu', '3Lu.A' '4Lu', '4Lu.O'
			Q interval (Reactive power interval) (cap./outg. to Q-definition 7) Trend	• • •
			P interval (Active power interval) outgoing (Outgoing) Trend	• • •
			S interval (Apparent power interval) Trend	• • •
			Q interval (Reactive power interval) (ind./inc. to Q-definition 7) Trend	• • •
			P interval (Active power interval) incoming (Incoming) Trend	• • •
			Q interval (Reactive power interval) (cap./outg. to Q-definition 7) Trend	• • •
			P interval (Active power interval) outgoing (Outgoing) Trend	• • •
			unbalance U (Voltage asymmetry factor)	•

No.	Topmost display	Undermost display	Meaning	Hints
9	8.588		Alarm supervision source (continuation)	Line type '1L', '3Lb', '4Lb' '3Lu', '3Lu.A' '4Lu', '4Lu.O'
		0.888	U neutral-earth (Neutral point voltage shift)	● ●
		8.888	THD current	● ○ ○
		8.888	THD voltage	● ○ ○
		8.888	Frequency	● ● ●
		8.888	I neutral (Neutral current)	●
		5.888	S interval (Apparent power interval)	● ● ●
		8.888 8.888 resp. 8.888	Q interval (Reactive power interval) (ind./inc. to Q-definition 7)	● ● ●
		8.888 8.888	P interval incoming (Active power interval) (incoming)	● ● ●
		8.888	Power factor (cos-phi)	● ● ○
		5.888	Apparent power	● ● ○
		8.888	Reactive power	● ● ○
		8.888	Active power	● ● ○
		0.888	Voltage	●
		0.888	U Line-Neutral (Phase voltage)	○
		0.888	U Line-Line (Line to line voltage)	○ ○
		8.888	I Average (Phase current bimetal)	● ○ ○
		8.888	Phase current	● ○ ○
				○: 'A.on' = OR-operation of line-measurands 'A.off' = AND-operation of line-measurands
10	888.8 / .2 8.888	88.00 v	Alarm unit for ON-state	The maximum values of the alarm limits depend on the possible measuring range (fixed by hardware), converted into possible primary values given by the selected systemconfiguration and transformation ratios.
11	888.8 / .2 8.888	88.00 v	Alarm unit for OFF-state	
12	888.8 / .2 8.588		Source of energy meters for pulse output	(Reactive energy acc. to Q definition 7).
		8.888 resp. 8.888	Reactive energy capacitive / outgoing low tariff	(capacitive low tariff) (outgoing low tariff)
		8.888 resp. 8.888	Reactive energy capacitive / outgoing high tariff	(capacitive high tariff) (outgoing high tariff)
		8.888 resp. 8.888	Reactive energy inductive / incoming low tariff	(inductive low tariff) (incoming low tariff)

No.	Topmost display	Undermost display	Meaning	Hints
12			Source of energy meters for pulse output (continuation)	(Reactive energy acc. to Q definition 7).
			Reactive energy inductive / incoming high tariff	(inductive high tariff) (outgoing high tariff)
			Active energy outgoing low tariff	(outgoing low tariff)
			Active energy outgoing high tariff	(outgoing high tariff)
			Active energy incoming low tariff	(incoming low tariff)
			Active energy incoming high tariff	(incoming high tariff)
13		 1 to 5000 / Wh to GWh	Number of pulses per displayed energy unit. After entering a number from 1 to 5000 you may input the scaling: Basic unit (-), kilo (k), Mega (M) or Giga (Mk)	(energy rate)
14		 1 to 60 minutes	Time interval in minutes for the calculation of power intervals 0 = Interval controlled via the bus	For external synchronization, the value displayed is not relevant
15		 0.0 to 7.5 seconds	Duration of the display To stabilize the display, the duration can be set to max. 7.5 s; in steps of 0.5 s	The set duration only affects the display.
16			Locking the change of the display mode	
			Only the Loop mode is enabled	Loop: Automatically changing pre-configured display values
			Only the User mode is enabled	User: Pre-configured display values
			Only the Full mode is enabled	Full: Full display values
			All display modes are enabled	
17		 2 - 32 sec.	Display time in Loop mode	
18			Configuration of the display values in Loop mode	Enter 19 : Press the key shortly
19			Position in the matrix table Display element on/off	See "matrix table" (page 9 to 11) Navigation X: Press shortly Navigation Y: Press or shortly on/off: Press and for a longer time Exit: Press for a longer time (back to 18)
20			Configuration of the display values in User mode	Enter 21 : Press shortly
21			Position in the matrix table Display element on/off	See "matrix table" (page 9 to 11) Navigation X: Press shortly Navigation Y: Press or shortly on/off: Press and for a longer time Exit: Press for a longer time (back to 20)

Examples

Example 1: Programming the system configuration (3-line, unbalanced load)

1. Press **[P]** > 2 s

NEAU
UARE
EYPE

2. Press **[↓]** (present setting is displayed)

UARE
EYPE
4000

3. Press **[P]** (alterable parameter flashes)

UARE
EYPE
4000

4. Press **[↓]** / **[↑]** to select desired setting

UARE
EYPE
3000

5. Press **[P]** (takes over new setting).
Display stops flashing

UARE
EYPE
3000

6. Press **[P]** > 2 s to return to display level

2. Press **[P]** (transformer ratio menu)

NEAU
UARE
AAAB

3. Press **[↓]** (present setting of primary voltage)

UARE
PAPN
8500

4. Press **[P]** (leftmost digit flashes)

UARE
PAPN
500

5. Press **[↓]** / **[↑]** until desired number appears

6. Press **[P]** (middle digit flashes)

7. Press **[↓]** / **[↑]** until desired number appears

8. Press **[P]** (rightmost digit flashes)

9. Press **[↓]** / **[↑]** until desired number appears

10. Press **[P]** (decimal point flashes)

11. Press **[↓]** / **[↑]** until the decimal point is on the
desired position and the kilo/Mega display is cor-
rect

12. Press **[P]** (takes over new value).
The display stops flashing

13. Press **[↓]** (present setting of secondary voltage)

UARE
SECB
8500

14. Programming procedure same as for primary vol-
tage (1 to 12)

Example 2: Programming voltage transformer ratio and synchronization interval

1. Press **[P]** > 2 s

NEAU
UARE
EYPE

15. Press until the topmost display
 as shown

16. Press four times

17. Press (present setting of synchronization interval in minutes)

18. Press (left digit flashes)

19. Press / until desired number appears

20. Press (right digit flashes)

21. Press / until desired number appears

22. Press (takes over new value).
The display stops flashing

23. Press > 2 s (return to display level)

Declaration of conformity SINEAX A230



EG - KONFORMITÄTSERKLÄRUNG CAMILLE BAUER DECLARATION OF CONFORMITY

Dokument-Nr. /
Document No.: A230.DOC

Hersteller /
Manufacturer: Camille Bauer AG
Switzerland

Anschrift /
Address: Aargauerstrasse 7
CH-5610 Wohlen

Produktbezeichnung /
Product name: Multifunktionales Leistungsmessgerät mit Netzanalyse
Multifunctional Power Monitor with System Analysis

Typ / Type: SINEAX A 230

Das bezeichnete Produkt stimmt mit den Vorschriften folgender Europäischer Richtlinien überein, nachgewiesen durch die Einhaltung folgender Normen:

The above mentioned product has been manufactured according to the regulations of the following European directives proven through compliance with the following standards:

Nr. / No.	Richtlinie / Directive
89/336/EWG 89/336/EEC	Elektromagnetische Verträglichkeit - EMV - Richtlinie Electromagnetic compatibility - EMC directive
EMV / EMC	Fachgrundnorm / Generic Standard
Störaussendung / Emission	EN 50 081-2 : 1993
Störfestigkeit / Immunity	EN 61000-6-2 : 2001
	IEC 61000-4-2 : 1995+A1:1998+A2:2000 IEC 61000-4-3 : 1995+A1:1998+A2:2000 IEC 61000-4-4 : 1995+A1:2000 IEC 61000-4-5 : 1995+A1:2000 IEC 61000-4-6 : 1996+A1:2000 IEC 61000-4-8 : 1993+A1:2000 IEC 61000-4-11:1994+A1:2000

Nr. / No.	Richtlinie / Directive
73/23/EWG 73/23/EEC	Elektrische Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen - Niederspannungsrichtlinie - CE-Kennzeichnung : 95 Electrical equipment for use within certain voltage limits - Low Voltage Directive - Attachment of CE mark : 95

EN/Norm/Standard	IEC/Norm/Standard
EN 61 010-1 : 1993	IEC 1010-1 : 1990 + A1 : 1992

Ort, Datum /
Place, date:

Wohlen, den 21. Juli 2003

Unterschrift /

M.Ulrich

Signature:

Diese Erklärung bescheinigt die Übereinstimmung mit den genannten Richtlinien, beinhaltet jedoch keine Zusicherung von Eigenschaften. Die Sicherheitsanweise der mitgelieferten Produktdokumentationen sind zu beachten.

Leiter Technik

This declaration certifies compliance with the above mentioned directives but does not include a property assurance. The safety notes given in the product documentations, which are part of the supply, must be observed.

Declaration of conformity SINEAX A230s



EG - KONFORMITÄTSERKLÄRUNG CAMILLE BAUER DECLARATION OF CONFORMITY

Dokument-Nr. /
Document No.: A230S.DOC

Hersteller /
Manufacturer: Camille Bauer AG
Switzerland

Anschrift /
Address: Aargauerstrasse 7
CH-5610 Wohlen

Produktbezeichnung /
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Multifunctional Power Monitor with System Analysis

Typ / Type: SINEAX A 230S

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Nr. / No.	Richtlinie / Directive
73/23/EWG 73/23/EEC	Elektrische Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen - Niederspannungsrichtlinie - CE-Kennzeichnung : 95 Electrical equipment for use within certain voltage limits - Low Voltage Directive - Attachment of CE mark : 95

EN/Norm/Standard	IEC/Norm/Standard
EN 61 010-1 : 1993	IEC 1010-1 : 1990 + A1 : 1992

Ort, Datum /
Place, date:

Wohlen, den 29. März 2004

Unterschrift /

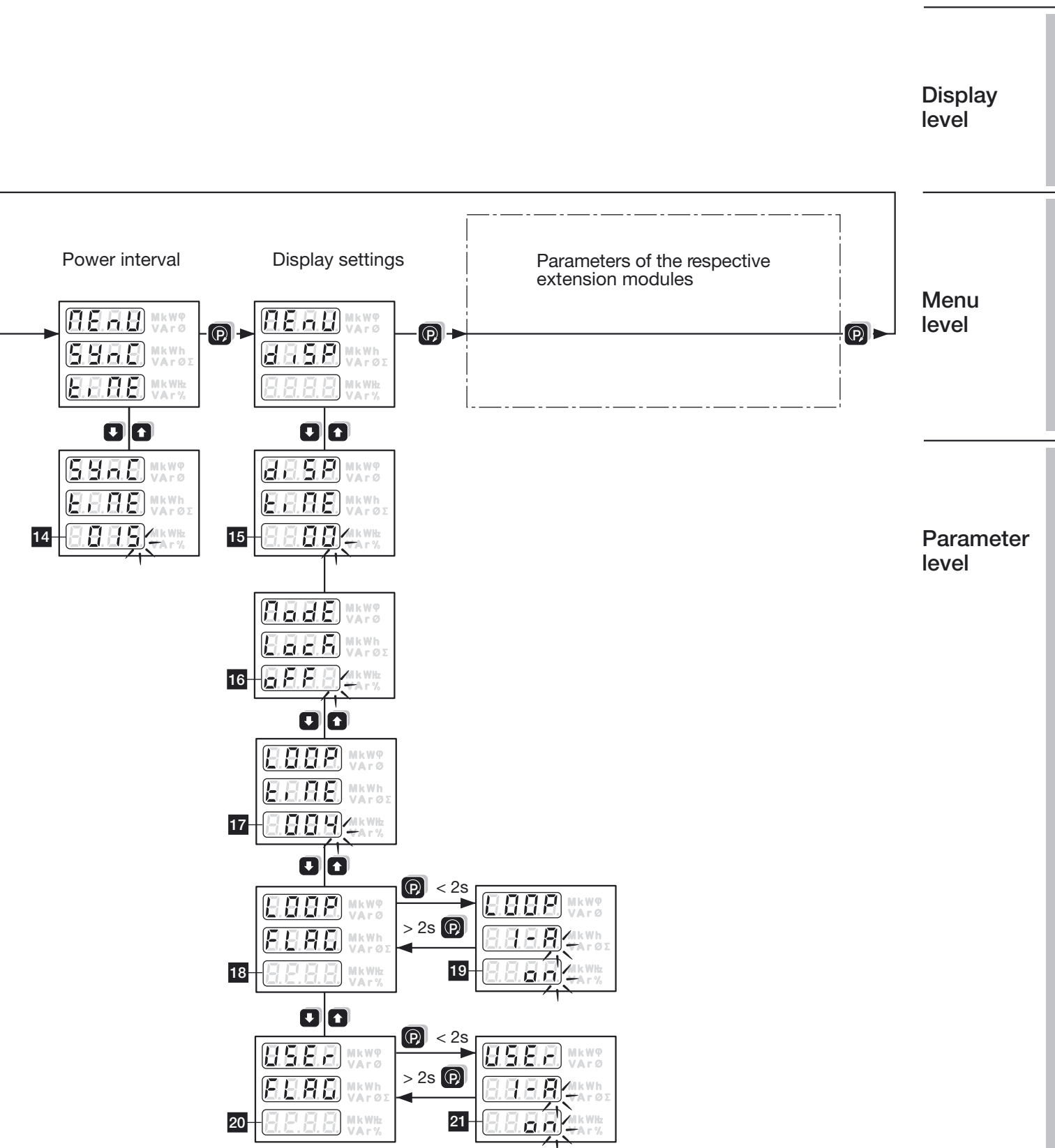
M.Ulrich

Signature:

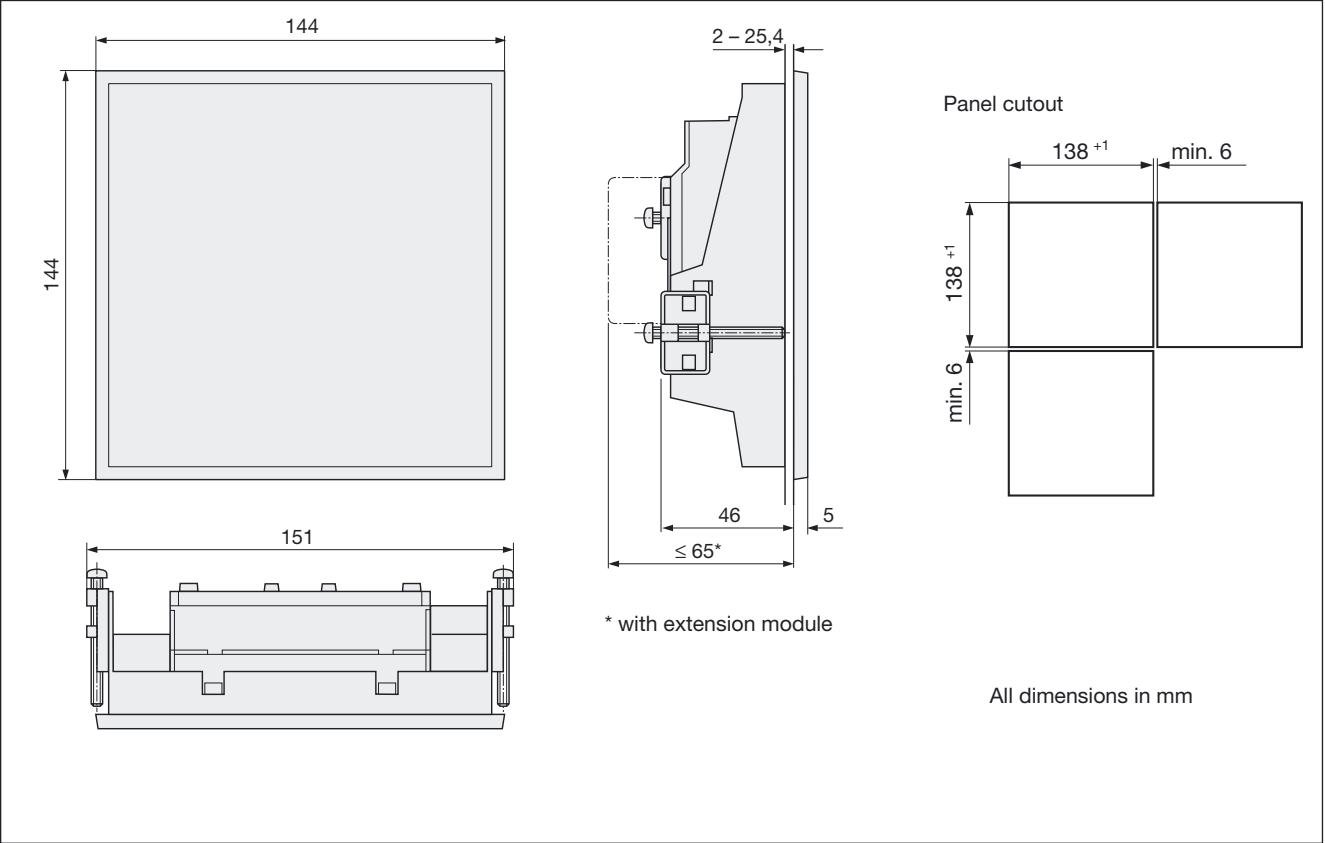
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Dimensional drawing SINEAX A 230



Dimensional drawing SINEAX A 230s

