Operating Instructions
Multifunctional
Power Monitor

ES210/ES220

DRANETZ

Geräte dürfen nur fachgerecht entsorgt werden!

Sicherheitshinweise

Die Installation und Inbetriebnahme darf nur durch geschultes Personal erfolgen.

Überprüfen Sie vor der Inbetriebnahme, dass:

- die maximalen Werte aller Anschlüsse nicht überschritten werden, siehe Kapitel «Technische Daten»
- die Anschlussleitungen nicht beschädigt und bei der Verdrahtung spannungsfrei sind
- Energierichtung und Phasenfolge stimmen.

Das Gerät muss ausser Betrieb gesetzt werden, wenn ein gefahrloser Betrieb (z.B. sichtbare Beschädigungen) nicht mehr möglich ist. Dabei sind alle Anschlüsse abzuschalten. Das Gerät ist an unser Werk bzw. an eine durch uns autorisierte Servicestelle zu schicken.

Ein Öffnen des Gehäuses bzw. ein Eingriff in das Gerät ist verboten. Das Gerät hat keinen eigenen Netzschalter. Achten Sie darauf, dass beim Einbau ein gekennzeichneter Schalter in der Installation vorhanden ist und dieser vom Benutzer leicht erreicht werden kann.

Bei einem Eingriff in das Gerät erlischt der Garantieanspruch.

Les appareils ne peuvent être éliminés que de façon appropriée!

Consignes de sécurité

L'installation et la mise en service doivent impérativement être faites par du personnel spécialement formé.

Avant la mise en service vérifier les points suivants:

- ne pas dépasser les valeurs maximales de tous les raccordements, voir chapitre «Caractéristiques techniques».
- s'assurer que les lignes raccordées ne soient ni abimées ni sous tension.
- vérifier que le sens d'énergie et la suite des phases soient corrects.

L'appareil doit être mis hors service si un fonctionnement sans danger n'est plus possible (p.ex. suite à un dommage visible). Tous les raccordements doivent être déconnectés. L'appareil doit être retourné en usine resp. à un atelier autorisé pour faire des travaux de service.

Toute intervention et l'ouverture de l'appareil sont interdites. L'appareil ne possède pas d'interrupteur principal propre. Faire attention qu'un interrupteur bien repéré et facilement atteignable par l'utilisateur soit installé.

Toute intervention dans l'appareil entraine l'extinction de la clause de garantie.

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 con-nections must be switched off. The instru-ment 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.

Contents

Brief description

The ES210/ES220 are panel mounting instruments for monitoring AC systems with dimensions 96 x 96 mm (ES210) and 144 x 144 mm (ES220). The following measurements are acquired: voltages, currents, frequency, and phase angles in single phase or 3 phase systems. From these, the active power, reactive power, apparent power, active energy, reactive energy, and the power factor and the neutral current can be calculated. With the use of voltage and current transformers, the instrument can be used for measurements in medium and high voltage systems. The transformation ratios are configurable for the direct display of all measurements. The ES210/ES220 instrument is used as a display with two S0 pulse or limit value outputs.

Technical data

(for more detailed information please see data sheet, 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 overload withstand

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

Short duration overload withstand

Input variable	Number of applications	Duration of overload	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

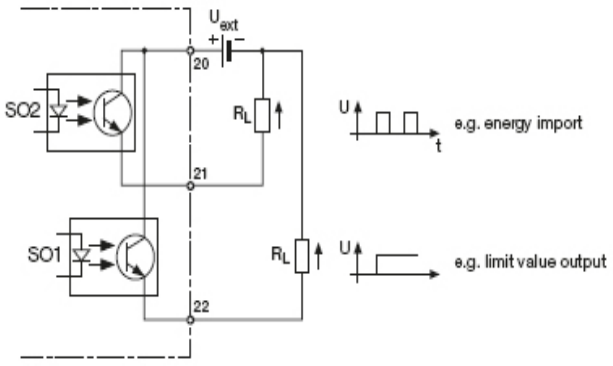
U, I, S:	≤120% of nominal value
P, Q:	≤± 120% of nominal value
F:	45 to 65 Hz
cosφ:	± 1

Pulse/Limit value outputs

Depending on the function selected, the two digital outputs can be used either as pulse outputs for active 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-relais.

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



Limit value outputs
Any measured value can be allocated to the limit values.

Impulse outputs
Active and reactive energy impulses can be generated for driving electronic and electromechanical energy meters.

Power supply*

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

Power input:	< 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	± 0.5%
Power	± 1.0%
Power factor	± 1.0%
Energy	± 1.0%
Frequency	± 0.02 Hz (abs.)

Environmental conditions

Operating temperature:	-10 to +55 °C
Storage temperature:	-25 to +70 °C
Relative humidity:	≤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. At 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

Note of maintenance

No maintenance is required.

Display

The measurement display is 3 digit resp. 4 digit (frequency) and right justified, with the exception of the energy values which are 8 digits. The left-hand 7-segment display is for the sign or an abbreviation.

Abbreviations:

MAX	Maximal value
MIN	Minimal value
AVG	Average value
MAD	Max. average value
MIn	Minimal value for power factor; the worst out of the 3 values of P1, P2, or P3 is displayed
nn	Neutral current
Ind	Inductive
CAP	Capacitive
InC	Incoming
oUt	Outgoing
PInt	Interval active power
QInt	Interval reactive power
SInt	Interval apparent power
-0	Last interval; t-0
-1, -2 ...	Previous interval; t-1, -2, -3, -4
oL	Overload, out of range indicator
≤	System value
≤	Delta voltage

Energy meter

.H High tariff
.L Low tariff

	Interval 0	Interval 1	Interval 2	Interval 3	Interval 4
Current time t	t-0	t-1	t-2	t-3	t-4

Zero value suppression

PF resp. cosφ: Display ---, if Sx < 0.2% Snenn

Currents: Display 0, if Ix < 0.1% Inenn

Commissioning

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

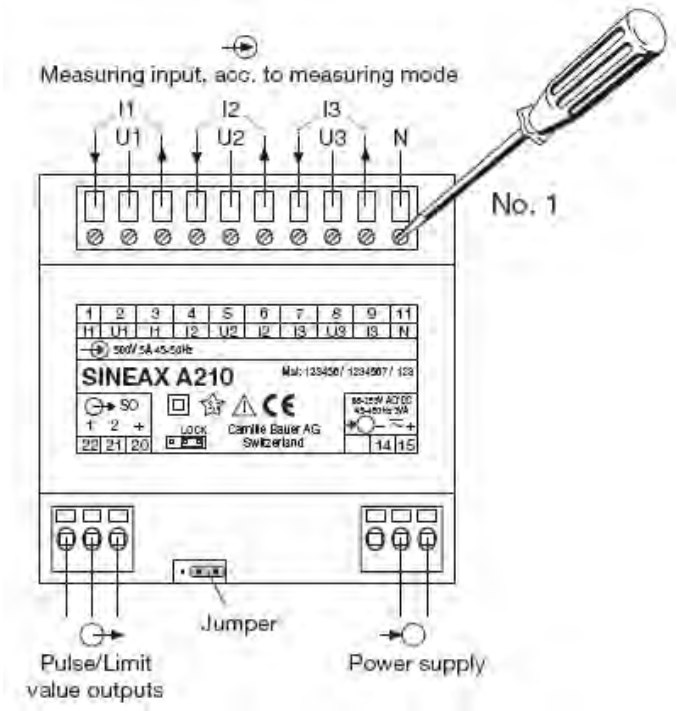
1. Segment tests: all the segments of the displays and all the LEDs are lit for 2 s.
2. Version of the software: e.g. ES210 1.04
3. The 3 line voltages at switching on.

Loss of the power supply

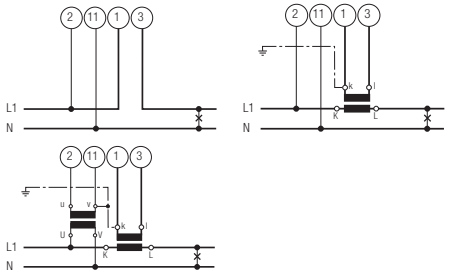
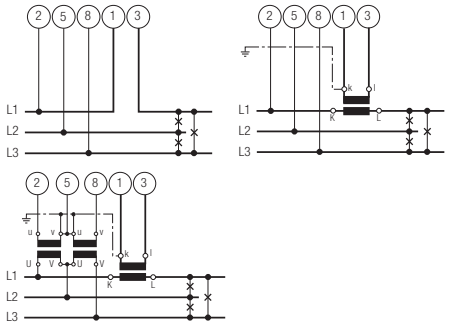
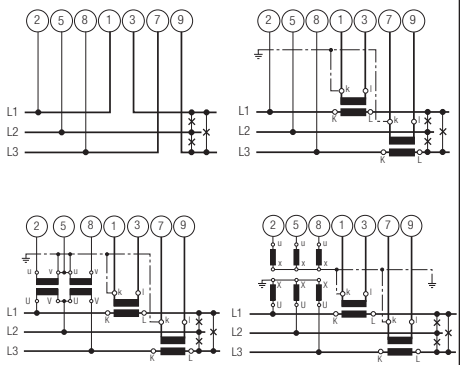
All the values configured remain during a loss of the power supply. On reconnecting the power supply, the last mode selected is displayed.

Electrical connections

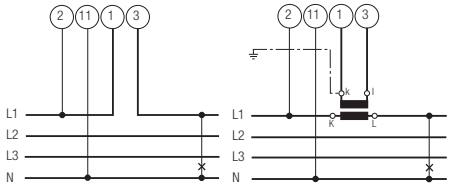
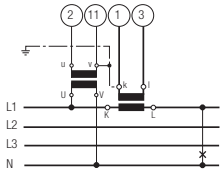
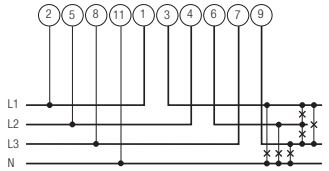
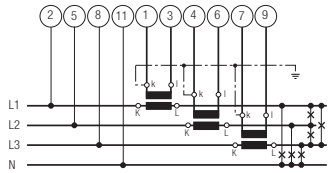
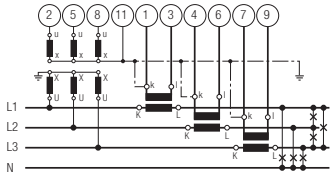
The electrical connections are identical for the ES210 and ES220).



Connecting modes

System/ application	Terminals
Single phase AC system 	
3wire 3 phase symmetric load I: L1 	 Connect the voltage according to the following table for current measurement in L2 or L3:
3 wire 3 phase **asymmetric load** 	

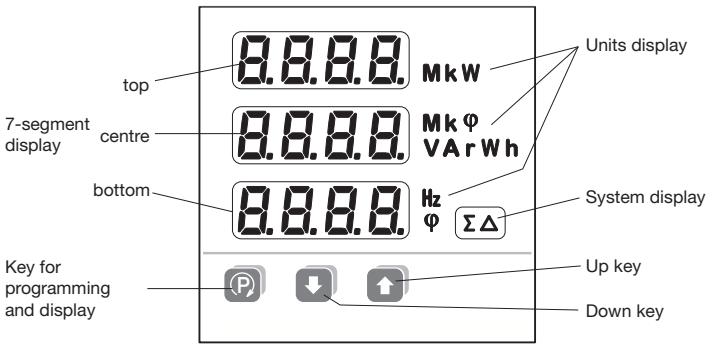
Current transf.	Terminals		2	5	8
L2	1	3	L2	L3	L1
L3	1	3	L3	L1	L2

System/ application	Terminals
4 wire 3 phase **symmetric load** I: L1 	  Connect the voltage according to the following table for current measurement in L2 or L3:
4 wire 3 phase **asymmetric load** 	   3 single-pole insulated voltage transformers in high-voltage system

Current trans.	Terminals		2	11
L2	1	3	L2	N
L3	1	3	L3	N

Display and operating

Display and operating are identical for the ES210 and ES220



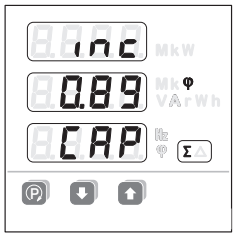
Available measurement data	Example display top	Example display centre	Example display bottom	Units display	System display
Phase voltages U1, U2, U3	230	231	229	V	
Maximum value $U1_{max.}$, $U2_{max.}$, $U3_{max.}$	235	236	231	V	
Minimum value $U1_{min.}$, $U2_{min.}$, $U3_{min.}$	227	226	225	V	
Delta voltages U12, U23, U31	400	402	398	V	≤
Maximum values $U12_{max.}$, $U23_{max.}$, $U31_{max.}$	405	406	403	V	≤
Minimum values $U12_{min.}$, $U23_{min.}$, $U31_{min.}$	395	397	396	V	≤
Phase current I1, I2, I3	2.35	2.37	2.34	A	
Maximum values $I1_{max.}$, $I2_{max.}$, $I3_{max.}$	2.39	2.40	2.38	A	
Average values $I1_{avg}$, $I2_{avg}$, $I3_{avg}$ (bimetal -15 min.)	2.04	2.05	2.07	A	
Max. average values $I1_{avgmax.}$, $I2_{avgmax.}$, $I3_{avgmax.}$ (slave pointer-15 min.)	2.07	2.05	2.04	A	
Neutral current IN		0.45		A	
Active powers P1, P2, P3	56.1	56.2	56.5	kW	
Maximum values $P1_{max.}$, $P2_{max.}$, $P3_{max.}$	60.5	60.4	60.3	kW	
Active power system P		125		kW	≤
Maximum value $P_{max.}$		239		kW	≤
Reactive power Q1, Q2, Q3	1.24	1.23	1.22	VAr	
Maximum values $Q1_{max.}$, $Q2_{max.}$, $Q3_{max.}$	1.51	1.52	1.54	VAr	
Reactive power system Q		1.54		VAr	≤
Maximum value $Q_{max.}$		2.31		VAr	≤
Apparent power S1, S2, S3	2.56	2.58	2.60	VA	
Maximum values $S1_{max.}$, $S2_{max.}$, $S3_{max.}$	3.43	3.44	3.67	VA	
Apparent power system S		5.33		VA	
Maximum value $S_{max.}$		6.23		VA	≤
Power factor PF1, cosφ	1 inc	0.87	ind	φ	
Power factor PF2, cosφ	2 inc	0.88	ind	φ	
Power factor PF3, cosφ	3 inc	0.89	ind	φ	
Power factor system PF, cosφ	inc	0.88	ind	φ	≤
Minimum value power factor inductive	Min	0.76	ind	φ	≤
Minimum value power factor capacitive	Min	0.84	CAP	φ	≤
Frequency, F			49.99	Hz	
Active energy incoming EP high tariff	4589	2356	inc.H	kWh	≤
Active energy incoming EP low tariff *)	1234	5678	inc.L	kWh	≤
Active energy outgoing EP high tariff	4589	2356	out.H	kWh	≤
Active energy outgoing EP low tariff *)	1234	5678	out.L	kWh	≤
Reactive energy inductive EQ high tariff	9876	5432	ind.H	kVarh	≤
Reactive energy inductive EQ low tariff *)	1234	9876	ind.L	kVarh	≤
Reactive energy capacitive EQ high tariff	9876	5432	CAP.H	kVarh	≤
Reactive energy capacitive EQ low tariff *)	1234	9876	CAP.L	kVarh	≤
5 active power intervals Pint0, Pint1, …	PintE	234	-0	kW	≤
5 reactive power intervals Qint0, Qint1, …	QintE	123	-0	VAr	≤
5 apparent power intervals Sint0, Sint1, …	SintE	10.1	-0	VA	≤

*) Tariff switching via digital input only (optional extension module required)

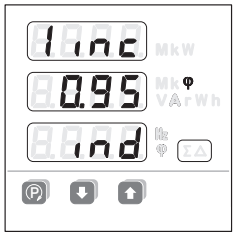
Determination of measured quantities: The calculation of the measurements is made in accordance with DIN 40 110, with the exception of the reactive power. This is calculated by the ES210/ES220 as a signed value.

Transducers and displays can possibly display different values for the reactive power in the same power system. The reason is the different calculation methods.

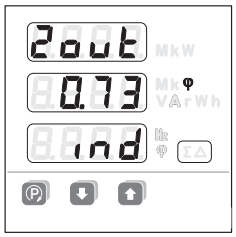
Power factor cosφ 4 quadrant operation



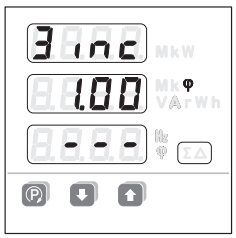
System



Phase 1



Phase 2



Phase 3

Display levels

Within a level (1, 2, 3 …) you can change the 3 displays to the next mode (a, b, c, ...) with the P key. From the last mode, the display changes to mode a again.

Change to the next level with the ↑ and ↓ keys.

4 wire asymmetric load

	a	b	c	d	e	f
1	U1 U2 U3	$U1_{max.}$ $U2_{max.}$ $U3_{max.}$	$U1_{min.}$ $U2_{min.}$ $U3_{min.}$	U12 U23 U31	$U12_{max.}$ $U23_{max.}$ $U31_{max.}$	$U12_{min.}$ $U23_{min.}$ $U31_{min.}$
2	I1 I2 I3	$I1_{max.}$ $I2_{max.}$ $I3_{max.}$	$I1_{avg}$ $I2_{avg}$ $I3_{avg}$	$I1_{avgmax.}$ $I2_{avgmax.}$ $I3_{avgmax.}$	IN	$IN_{max.}$
3	P1 P2 P3	$P1_{max.}$ $P2_{max.}$ $P3_{max.}$	P	$P_{max.}$		
4	Q1 Q2 Q3	$Q1_{max.}$ $Q2_{max.}$ $Q3_{max.}$	Q	$Q_{max.}$		
5	S1 S2 S3	$S1_{max.}$ $S2_{max.}$ $S3_{max.}$	S	$S_{max.}$		
6	PF1	PF2	PF3	PF	PF_{minind}	PF_{mincap}
7	F					
8	EP inc HT[1]	EP inc LT[2]	EP out HT[1]	EP out LT[2]		
9	EQ ind HT[1]	EQ ind LT[2]	EQ cap HT[1]	EQ cap LT[2]		
10	P Q PF	P S F				
11	Pint0	Pint1	Pint2	Pint3	Pint4	
12	Qint0	Qint1	Qint2	Qint3	Qint4	
13	Sint0	Sint1	Sint2	Sint3	Sint4	

3 wire asymmetric load

	a	b	c	d	e
1	U12 U23 U31	$U12_{max.}$ $U23_{max.}$ $U31_{max.}$	$U12_{min.}$ $U23_{min.}$ $U31_{min.}$		
2	I1 I2 I3	$I1_{max.}$ $I2_{max.}$ $I3_{max.}$	$I1_{avg}$ $I2_{avg}$ $I3_{avg}$	$I1_{avgmax.}$ $I2_{avgmax.}$ $I3_{avgmax.}$	
3	P	$P_{max.}$			
4	Q	$Q_{max.}$			
5	S	$S_{max.}$			
6	PF	PF_{minind}	PF_{mincap}		
7	F				
8	EP inc HT[1]	EP inc LT[2]	EP out HT[1]	EP out LT[2]	
9	EQ ind HT[1]	EQ ind LT[2]	EQ cap HT[1]	EQ cap LT[2]	
10	P Q PF	P S F			
11	Pint0	Pint1	Pint2	Pint3	Pint4
12	Qint0	Qint1	Qint2	Qint3	Qint4
13	Sint0	Sint1	Sint2	Sint3	Sint4

Single-phase, 3 wire symmetric load, 4 wire symmetric load

	a	b	c	d	e
1	U	$U_{max.}$	$U_{min.}$		
2	I	$I_{max.}$	I_{avg}	$I_{avgmax.}$	
3	P	$P_{max.}$			
4	Q	$Q_{max.}$			
5	S	$S_{max.}$			
6	PF	PF_{minind}	PF_{mincap}		
7	F				
8	EP inc HT[1]	EP inc NT[2]	EP out HT[1]	EP out NT[2]	
9	EQ ind HT[1]	EQ ind NT[2]	EQ cap HT[1]	EQ cap NT[2]	
10	P Q PF	P S F			
11	Pint0	Pint1	Pint2	Pint3	Pint4
12	Qint0	Qint1	Qint2	Qint3	Qint4
13	Sint0	Sint1	Sint2	Sint3	Sint4

Operating

Brightness

13 levels: continuous pressing of the ↓ key (darker), or the ↑ key (brighter).

Delete / Clear

To delete the min. or max. values, or the energy values of the displayed measurements, press the ↓ ↑ keys at the same time.

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.

[1] HT = high tariff

[2] LT = low tariff

Programming

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

The following table shows all parameters with their adjustable ranges or possible selections respectively. The black numbers give a cross-reference to the appropriate diagram position on page 30.

Starting at the measurands display by pressing the key (P) you may change to the menu level.

Afterwards you can select the desired menu item by pressing the key (P) shortly.

Use (↓) to enter the level where the desired parameter is displayed.

Pressing (P) shortly will force the selectable element to flash.

The flashing content may be modified using the keys (↓) or (↑).

Press (P) for a longer time to leave the parameter or menu level.

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

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

The programming may be modified via an optional extension module as well.

Locking the configuration

Place the jumper in the LOCK position.

The configuration of all parameters is disabled.

Factory Default

Brightness:	(mid setting)
Limit value / S01:	Off
Limit value / S02:	Off
Transformer ratio:	1 : 1
Jumper:	Not in the LOCK position
Connecting mode:	4 wire asymmetric load
Synchronizing interval:	15 min.

Parameters overview

No.	Topmost display Middle display	Undermost display (Selection, * = Default)	Meaning	Hints
1	SYSTEM TYPE		System configuration	
		4LOAD *	4-line system, unbalanced load	(4 lines unbalanced)
		3LOAD	3-line system, unbalanced load	(3 lines unbalanced)
		4LbAL	4-line system, balanced load	(4 lines balanced)
		3LbAL	3-line system, balanced load	(3 lines balanced)
		1LOAD	Single-line system	(1 line)
2	CoS PHAS	MATH	Load type for energy recovery: Mathematical	4 quadrant display, ind-cap-ind-cap
		ELEC	Load type for energy recovery: Electrical	4 quadrant display, ind-ind-cap-cap
3	UoLt Prim	0.500 kV*	Primary voltage of an external transformer on the voltage (line-to-line voltage)	First you enter any 3-digit number followed by the appropriate power unit selection in steps of factor 10
		100 V to 999 kV		
4	UoLt SEC	0.500 V*	Secondary voltage of an external transformer on the voltage input (line-to-line voltage)	
		100 V to 999 V		
5	Curr Prim	0.5.00 A*	Primary current of an external transformer on the current input	
		1.00 A to 999 kA		
6	Curr SEC	0.5.00 A*	Secondary current of an external transformer on the current input	
		0.1 A to 9,99 A		

No.	Topmost display Middle display	Undermost display (Selection, * = default)	Meaning	Hints		
7	out.1 / .2 mode		Operating mode of both digital outputs “out.1” and “out.2”	(mode)		
		oFF *	Output switched-off	Simulation via interface module is still possible		
		PULS	Energy pulse output	The output generates energy pulses depending on the rate set under 12. The meter measurands to output may be selected under 11.		
		ALM	Alarm output	If the alarm limit 9 is exceeded the output will be active (current flows). If the measurand is below limit 10 the output will be passive. The source of the monitored is selected under 8.		
8	out.1 / .2 Asrc		Alarm supervision source	This selection is presented only if operating mode 7 is set to ALM previously		
				Line Type		
				'1L', '3Lb', '4Lb'	'3Lu'	'4Lu'
		FREQ	Frequency	●	●	●
		InEU	Neutral current			●
		S.int	Apparent power interval	●	●	●
		q.int	Reactive power interval	●	●	●
		P.int	Active power interval	●	●	●
		PF.L1	Power factor (cos φ)	●	●	○
		S.L1	Apparent power	●	●	○
		q.L1	Reactive power	●	●	○
		P.L1	Active power	●	●	○
		U.L1	Voltage	●		
		U.LN *	Line-neutral voltage			○
		U.LL	Line-to-line voltage		○	○
		I.AVG	Average current (bimetal)	●	○	○
		I.L1	Phase current	●	○	○
				○: 'A.on'= OR-operation of line-measurands 'A.off'= AND-operation of line-measurands		
9	out.1 / .2 A.on	0.210 v*	Alarm limit 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 system configuration and transformation ratios.		
10	out.1 / .2 A.oFF	0.220 v*	Alarm limit for OFF-state			

No.	Topmost display Middle display	Undermost display (Selection, * = default)	Meaning	Hints
11	bUE.1 / .2 E.SrC		Source of energy meters for pulse output	
		CAP.L	Reactive energy capacitive, low tariff	
		CAP.H	Reactive energy capacitive, high tariff	
		ind.L	Reactive energy inductive, low tariff	
		ind.H	Reactive energy inductive, high tariff	
		out.L	Active energy outgoing, low tariff	(outgoing low tariff)
		out.H	Active energy outgoing, high tariff	(outgoing high tariff)
		inc.L	Active energy incoming, low tariff	(incoming low tariff)
		inc.H *	Active energy incoming, high tariff	(incoming high tariff)
12	bUE.1 / .2 E.rtE	0.100 Mk* Wh 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)
13	SYnC tIME	0015 * 1 to 60 min.	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

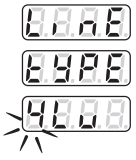
Examples

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

1. Press (P) > 2 s

2. Press ↓ (present setting is displayed)

3. Press (P) (alterable parameter flashes)



4. Press ↓ / ↑ to select desired setting

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

6. Press (P) > 2 s to return to display level

Example 2: Programming voltage transformer ratio and synchronization interval

1. Press (P) > 2 s

2. Press (P) (transformer ratio menu)

3. Press ▼ (present setting of primary voltage)

4. Press Ⓟ (leftmost digit flashes)

5. Press ▲ / ▼ until desired number appears
6. Press Ⓟ (middle digit flashes)
7. Press ▼ / ▲ until desired number appears
8. Press Ⓟ (rightmost digit flashes)
9. Press ▼ / ▲ until desired number appears
10. Press Ⓟ (decimal point flashes)
11. Press ▼ / ▲ until the decimal point is on the desired position and the kilo/Mega display is correct
12. Press Ⓟ (takes over new value).
    The display stops flashing
13. Press ▼ (present setting of secondary voltage)

14. Programming procedure same as for primary voltage (1 to 12)
15. Press ▲ until the topmost display as shown

16. Press Ⓟ three 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)

Konformitätserklärung / Certificat de conformité / Declaration of conformity

ES210

EG - KONFORMITÄTSERKLÄRUNG
DECLARATION OF CONFORMITY

CAMILLE BAUER

Dokument-Nr./ Document.No.:	A210.DOC
Hersteller/ Manufacturer:	**Camille Bauer AG** Switzerland
Anschrift / Address:	**Aargauerstrasse 7** **CH-5610 Wohlen**
Produktbezeichnung/ Product name:	**Multifunktionales Leistungsmessgerät** Multifunctional Power Monitor
Typ / Type:	**SINEAX A 210**

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	Messverfahren / Measurement methods
Störaussendung / Emission	EN 50 081-2 : 1993	EN 55011 : 1998 + A1 : 1999
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 11. Juni 2002

Unterschrift / Signature:  M.Ulrich

Leiter Entwicklung

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

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.

ES220

CE

EG - KONFORMITÄTSERKLÄRUNG
DECLARATION OF CONFORMITY

CAMILLE BAUER

Dokument-Nr./ Document.No.:	A220.DOC
Hersteller/ Manufacturer:	**Camille Bauer AG** Switzerland
Anschrift / Address:	**Aargauerstrasse 7** **CH-5610 Wohlen**
Produktbezeichnung/ Product name:	**Multifunktionales Leistungsmessgerät** Multifunctional Power Monitor
Typ / Type:	**SINEAX A 220**

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	Messverfahren / Measurement methods
Störaussendung / Emission	EN 50 081-2 : 1993	EN 55011 : 1998 + A1 : 1999
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 7. März 2003

Unterschrift / Signature: M.Ulrich

Leiter Entwicklung

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

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.

Kurzanleitung zum Ändern der Parameter

1. In der Parameter-Ebene Taste (P) drücken
2. Einstellbare 7-Segmentanzeige(n) 8 blinkt
3. Mit Taste ▼ oder ▲ den blinkenden Inhalt einstellen.
   Einstellbare Werte siehe Legende zu Diagramm (1 bis 13), abgebildet sind Default-Werte
4. Taste (P) drücken.
   Falls die nächste 7-Segmentanzeige, 8 der Dezimalpunkt oder eine Masseinheit blinkt: Zurück zu Punkt 3.
5. Mit Taste ▼ k oder ▲ zum nächsten Parameter wechseln. Weiter mit Punkt 2.
   oder
   mit Taste ▲ zurück in die Menü-Ebene. Weiter mit Punkt 1.

Rückkehr in die Messwert-Anzeige:
(P) -Taste länger als 2 Sekunden drücken

Instruction abrégée pour modifier les paramètres

1. Au niveau paramètres appuyer la touche (P)
2. L'affichage à 7 segments respectif clignote 8
3. Avec les touches ▼ ou ▲ ajuster les valeurs clignotantes, voir légende aux diagrammes (1 à 13), les valeurs en défaut sont illustrées
4. Appuyer la touche (P) .
   Si un autre affichage à 7 segments 8 , ou un point décimal ou une unité de mesure clignote retour au point 3.
5. A l'aide des touches ▼ ou ▲ passer au paramètre suivant. Continuer avec point 2.
   ou
   par la touche ▲ retourner au niveau Menu. Continuer avec point 1.

Retour à l'affichage des valeurs de mesure en appuyant la touche (P) pour plus de 2 secondes.

Brief operating instruction for parameter modification

1. On the parameter level press key (P)
2. Adjustable 7-segment display 8 flashes
3. Use ▼ or ▲ to set the flashing content.
   Adjustable values see 1 to 13 in the parameter overview. All values shown are default values
4. Press key (P) .
   If there is still a flashing 7-segment digit 8 , decimal point or unit : Back to 3.
5. Change to the next parameter by pressing ▼ k or ▲ and go back to 2.
   or
   go back to menu level with ▲ and go on with 1.

Return to measurands display:
Press (P) for more than 2 seconds.

Anzeige-Ebene

Niveaux d'affichage

Display level

Menü-Ebene

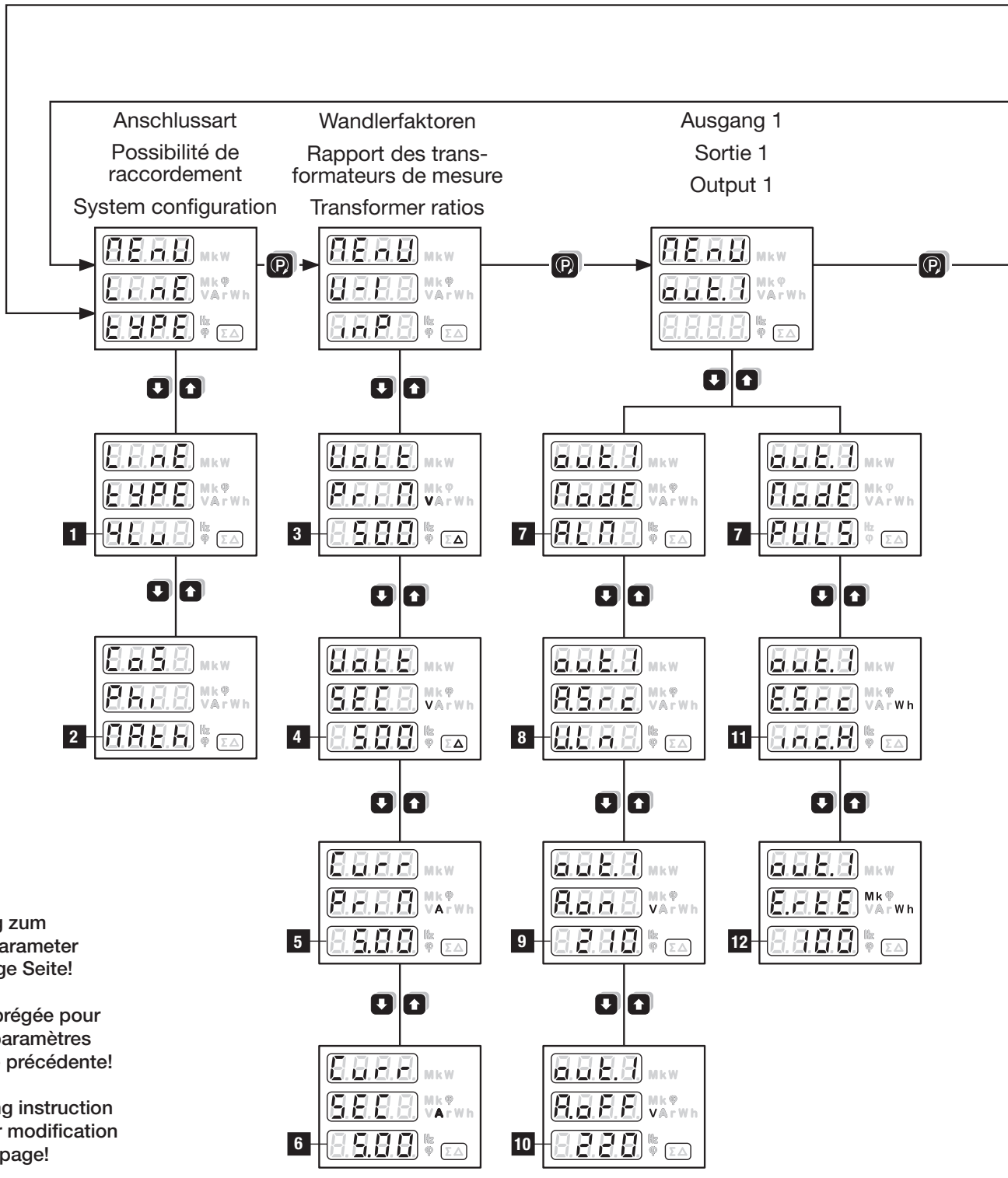
Niveaux du menu

Menu level

Parameter-Ebene

Niveaux du paramètre

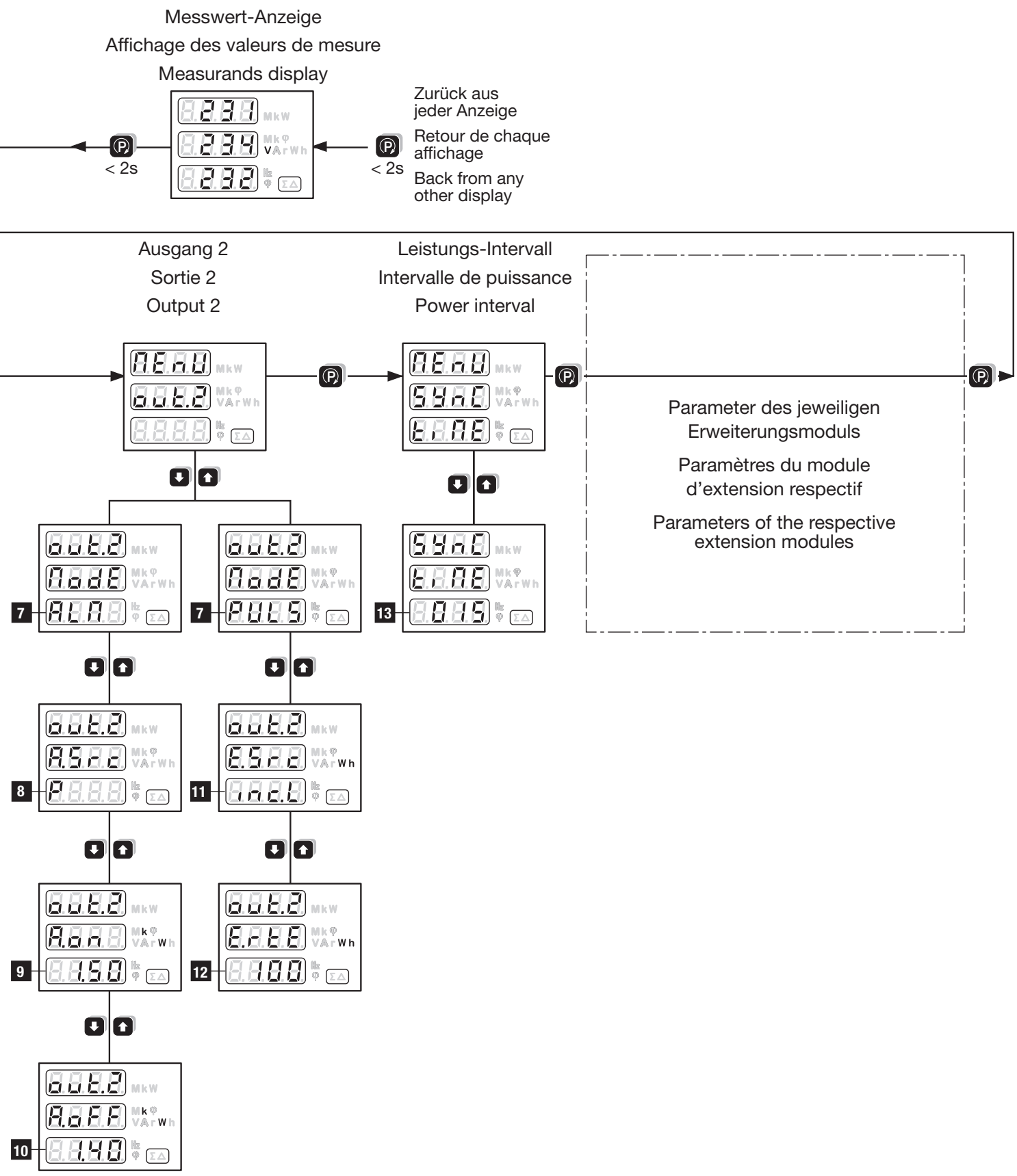
Parameter level



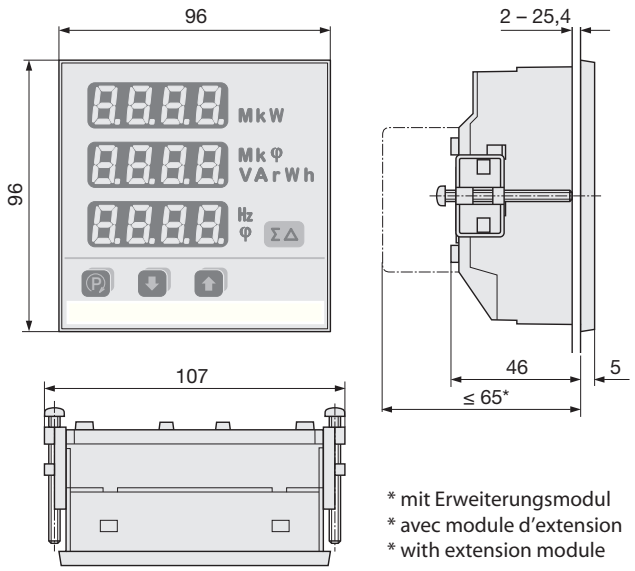
Kurzanleitung zum Ändern der Parameter siehe vorherige Seite!

Instruction abrégée pour modifier les paramètres voir à la page précédente!

Brief operating instruction for parameter modification see previous page!



Masszeichnung / Croquis d'encombrement / Dimensional drawing ES210

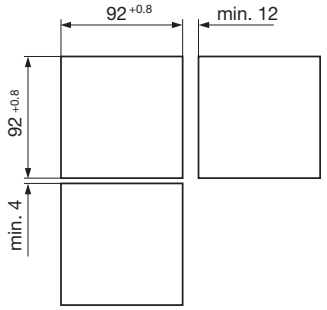


* mit Erweiterungsmodul
* avec module d'extension
* with extension module

Schalttafelausschnitt

Découpe dans le tableau de commande

Panel cutout

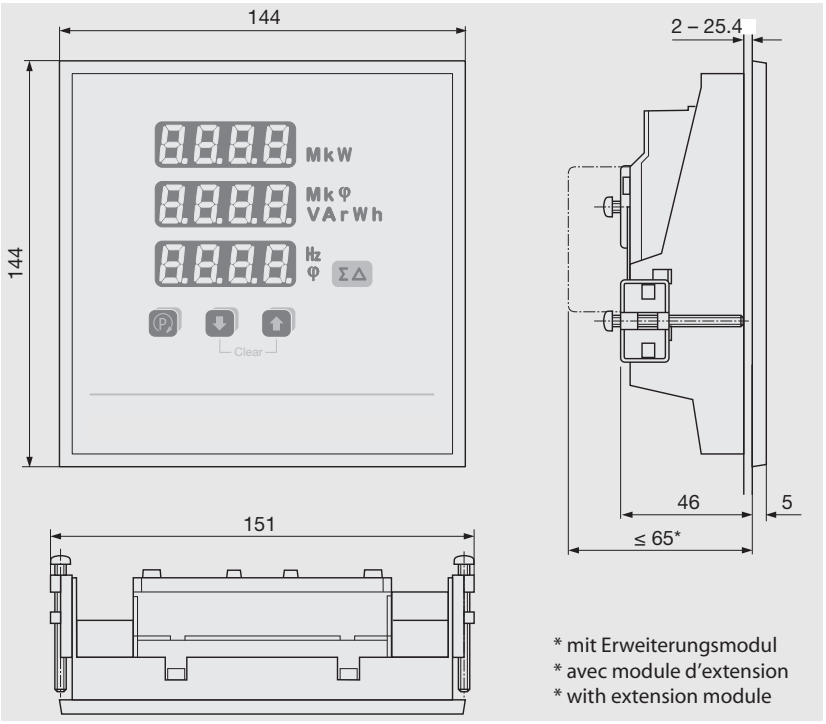


Massangaben in mm

Toutes les dimensions sont indiquées en mm

All dimensions in mm

Masszeichnung / Croquis d'encombrement / Dimensional drawing ES220

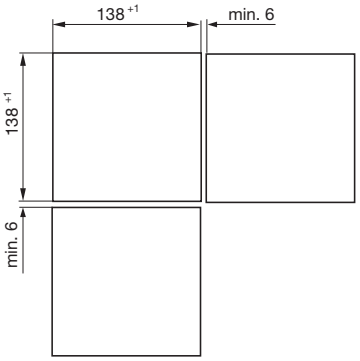


* mit Erweiterungsmodul
* avec module d'extension
* with extension module

Schalttafelausschnitt

Découpe dans le tableau de commande

Panel cutout



Massangaben in mm

Toutes les dimensions sont indiquées en mm

All dimensions in mm