

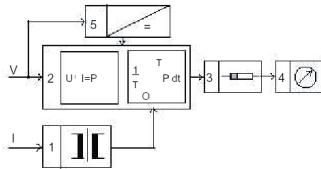
SIRAX BM850

Analog Power meter with 240° Scale

Description

The analog power meters SIRAX BM850 in plastic housing and 240° scale are used to measure active or reactive power in single-phase or three-phase AC networks. The devices can differentiate between energy output and energy consumption, as well as inductive and capacitive reactive power and are suitable for both sinusoidal and non-sinusoidal currents.

They consist of a moving-coil measuring mechanism with a core magnet system with pointed bearings spring-loaded on both sides and a measuring attachment.



The power converter uses one, two or three multiplier systems 2 depending on the measurement of balanced or unbalanced load AC systems. Current transformers 1 adapt the input current to the multiplier electronics. The multipliers form the product of the instantaneous values of current and voltage (TDM principle). Subsequently, the product resultant is integrated, thereby suppressing the AC ripple. A DC voltage output signal is fed to the moving-coil movement 3. Finally this current is fed to the moving coil movement, 4. For the instrument DC power supply is obtained from input voltage, 5.

The measuring devices are designed for installation in control panels, machine consoles or mosaic grids up to a panel thickness of no more than 25mm. The bezel, the glass window and the dial can be easily exchanged on site.

Features

- Robust polycarbonate housing with high flammability class UL94-V0
- Simple assembly using spring clips
- Quick and easy connection using screws and clamps
- Full-surface rear wall cover as protection against accidental contact
- Easy replacement of the glass window, the front bezel and the scale

Technical Data

Mechanical Data

Case details	Moulded square case suitable to be mounted in control / switchgear panels, machine tool consoles or mosaic panels
Material of case	Polycarbonate
Flammability class	UL94 V-0, self-extinguishing, non-dripping, halogen-free
Material of window	Glass
Front frame (bezel)	Polycarbonate black
Position of use	Vertica ±5°
Mounting	stackable next to each other
Panel thickness	≤25mm
Panel fixing	Spring clamps
Connections/terminals	M4 screws and wire clamps form E3



Scaling

Pointer	knife-edge pointer
Pointer deflection	0 ... 240°
Scale characteristics	Non-Linear
Scale division	Coarse-fine
Scale length	142 mm

Electrical Data

Measuring unit	Active and reactive power
Response time	4 s
Active power factor	$\cos\phi$ 1 ... 0.5 ind
Reactive power factor	$\sin\phi$ 1 ... 0.5 ind
Overload capacity	acc. to DIN EN 60 051
Continuously	1.2 times rated voltage / current
Short time duration current	10 x for 5s
Short time duration voltage	2 x for 5s
External magnetic field	0.4 kA/m
Permissible voltage fluctuation	± 15 %
Permissible current fluctuation	20 ... 120 %
Power consumption current	≤ 0.2 VA
Power consumption voltage	
Network system A, B, C, G, H	≤ 3.0 VA
Network system F	≤ 3.5 VA
Network system D, I	≤ 3.4 VA
Network system E, J	≤ 4.3 VA

Reference conditions

Accuracy class	1.5% acc. to DIN EN 60 051
Reference temperature	23 °C / ± 2 °C
Position of use	Nominal position ±1°
Input	full-scale power value P_N
Calibration factor	$\lambda = P_N / P_s$
Power factor	$\cos\phi = 1 \pm 0.01$ for active power $\sin\phi = 1 \pm 0.01$ for reactive power

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Current	20 ... 120 % rated current
Voltage	+ 2 % rated voltage
Preheating time	≥ 5 min at min 80% of rated current and 100% of rated voltage
Frequency	45 ... 65 Hz (50 Hz ±0.1 % for Type F)
Distortion factor	< 1 %
Other conditions	DIN EN 60 051-1

Electrical and mechanical zero point in the meter are not necessarily identical. Zero adjustment should be done only when voltage is applied and current circuit not energised.

Environmental conditions

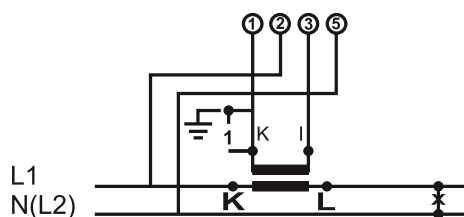
Climatic suitability	Climate category 2 acc. to DIN EN 60 051 Climate category 3 acc. to VDE/VDI 3540
Operating temperatur	-10 ... +55 °C
Storage temperature	-25 ... +65 °C
Relative humidity	≤75% annual average, non condensation

Shock	150 m/s ² (15g) / 11 ms
Vibration	10 ... 55 ... 10 Hz, 0.15 mm amplitude (correspond to 1.5g at 50 Hz)

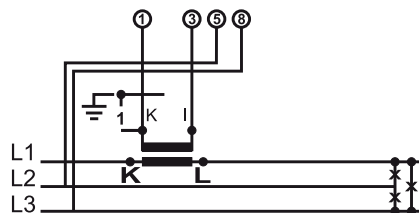
Safety

EMC resistance	acc. to EN 61 000-6-2
EMC emission	acc. to EN 61 000-6-4
Safety	acc. to EN 60 010-1
Installation category	300 V CATIII
Pollution degree	2
Rated insulation voltage	660 V
Insulation resistance	> 50 MΩ at 500 V DC
Insulation class	A (acc. to VDE 0110)
Insulation test voltage	2 kV
Housing protection class	IP52 Housing on the front IP00 Connections without contact protection IP20 Connections with contact protection
Safety terminal protection	Full sized polycarbonate back cover to provide protection against accidental contact (hand and fingers) acc. to VDE 0410

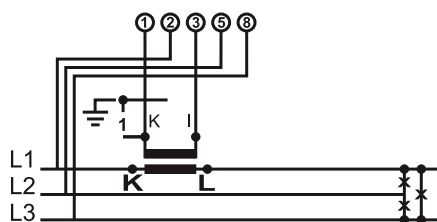
Electrical connections



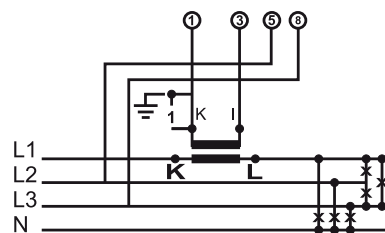
Active and reactive power measurement in singlephase Network



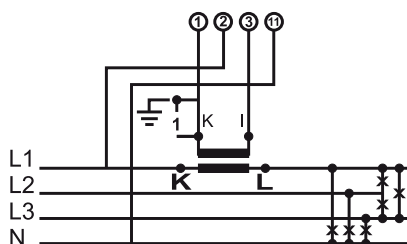
Reactive power measurement in 3-phase, 3-wire Network balanced load



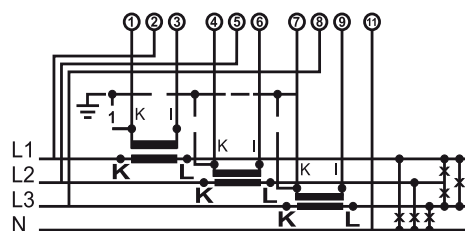
Active power measurement in 3-phase, 3-wire Network balanced load



Reactive power measurement in 3-phase, 4-wire Network balanced load



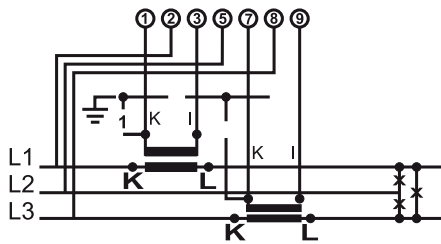
Active power measurement in 3-phase, 4-wire Network balanced load



Active and reactive power measurement in 3-phase, 4-wire Network unbalanced load

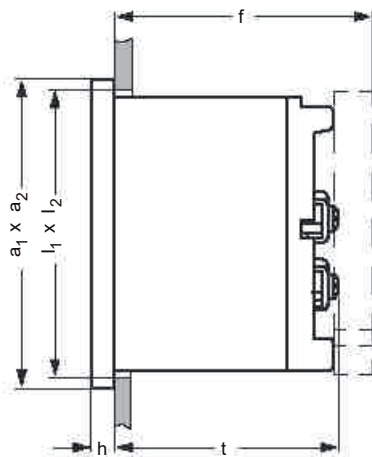
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Analog Power meter with 240° Scale



Active and reactive power measurement in 3-phase, 3-wire Network unbalanced load

Dimensions



Measurement ranges

Dimensions frontframe [mm]	96 x 96			
Scale length [mm]	97			
Type	□96			
Network System type	Singlephase-System, active power Singlephase-System, reactive power 3-phase 3-wire, active power, balanced load 3-phase 3-wire, reactive power, balanced load 3-phase 3-wire, active power, unbalanced load 3-phase 3-wire, reactive power, unbalanced load 3-phase 4-wire, active power, balanced load 3-phase 4-wire, reactive power, balanced load 3-phase 4-wire, active power, unbalanced load 3-phase 4-wire, reactive power, unbalanced load			
Rated voltage	57.7 V 63.5 V 100 V	110 V 127 V 220 V	230 V 289 V 380 V	415 V 440 V 500 V
Rated current	1 A 5 A If used on current transformer, please state transformer ration on the order			

Front [mm]	Nominal Dimensions [mm]		Cutout [mm]	Installation depth (t) including terminal [mm]	Installation depth (f) including back cover [mm]
	a ₁ x a ₂	h			
□96	96 x 96	5.5	92 ^{+0.8} x 92 ^{+0.8}	106	111.5

Order details

Description	Blockingcode	No-go with blockingcode	Article No. / Feature
SIRAX BM850, Analog power meter with 240° Scale			BM850-
Features, Selection			
01 Dimensions Frontframe □96 (96 x 96 mm)			1
02 Network system Singlephase system, active power			A
3-phase 3-wire system, active power, balanced load			B
3-phase 3-wire system, active power, unbalanced load			C
3-phase 4-wire system, active power, balanced load			D
3-phase 4-wire system, active power, unbalanced load			E
Singlephase system, reactive power			F
3-phase 3-wire Systeme, reactive power, balanced load			G
3-phase 3-wire Systeme, reactive power, unbalanced load			H
3-phase 4-wire Systeme, reactive power, balanced load			I
3-phase 4-wire Systeme, reactive power, unbalanced load			J

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03	Measuring ranges Specify while ordering			X
04	Rated voltage			
	57.7 V			01
	63.5 V			02
	100 V			03
	110 V			04
	127 V			05
	220 V			06
	230 V			07
	289 V			08
	380 V			09
	415 V			10
	440 V			11
	500 V			12
05	Rated current			
	1 A			1
	5 A			2
	If used on current transformer, please state transformer ration on the order			
06	Working position			
	$\alpha = 0^\circ$			A
	$\alpha = 15^\circ$			B
	$\alpha = 30^\circ$			C
	$\alpha = 45^\circ$			D
	$\alpha = 60^\circ$			E
	$\alpha = 75^\circ$			F
	$\alpha = 90^\circ$			G
	$\alpha = 105^\circ$			H
	$\alpha = 120^\circ$			I
07	Zero Position			
	Left			1
	Centre			2
	Shifted			3
08	Front window			
	Glass			1
09	Scalefactor			
	Standard			1
	Non Standard (Customized)			2
10	Contact protection			
	without back cover			1
	with back cover			2

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11	Color of Dial, pointer and letters			
	Standard (dial white / pointer black / letters black)			1
	Non Standard (dial / pointer / letters customized)			2



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