

SIRAX BM700

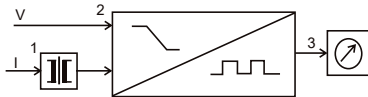
Analog Power Factor meter with 90° Scale

Description

The analog panel power factor meter SIRAX BM700 in a polycarbonate housing and 90° scale are intended for measuring the phase angle between the voltage and current in single-phase or 3-phase AC power networks.

These meters are calibrated to correspond to the cosine of the angle, i.e. the power factor.

The measuring system comprises a moving coil indicator & phase angle converter attached to the case of indicating instrument. Moving coil movements has pivots of very high hardness. Movement is suspended between spring loaded saphire jewels. Movement is properly shielded & critically damped by eddy currents induced in coil former.



A current transformer 1 of the phase angle converter provides input current to the electronic circuit. Both the input voltage and the current are passed to a bistable flip-flop stage 2.

The pulse duty cycle of flip-flop is proportional to the phase angle ϕ . A low pass filter allows the mean value which is proportional to the phase angle and is fed to the moving coil movement 3.

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 swivel screw
- 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	Vertical $\pm 5^\circ$
Mounting	stackable next to each other
Panel thickness	$\leq 25\text{mm}$



- Panel fixing
- Connections/terminals
- Swivel screw
- M4 screws and wire clamps form E3

Scaling

- Pointer
- Pointer deflection
- Scale characteristics
- Scale division
- Scale length
- knife-edge pointer
- 0 ... 90°
- Non-Linear
- Coarse-fine

□72	□96
61 mm	97 mm

Electrical Data

- Measuring unit
- Frequency
- Overload capacity
- Continuously
- Short time duration current
- Short time duration voltage
- External magnetic field
- Permissible voltage fluctuation
- Permissible current fluctuation
- Power consumption voltage
- Power consumption current
- Power factor
- 49 ... 51 Hz for single phase
- 45 ... 65 Hz for 3 phase
- acc. to DIN EN 60 051
- 1.2 times rated voltage / current
- 10 x for 0.5s: 9 overloads
- 10 x for 5s: 1 overload
- 2 x for 0.5s: 9 overloads
- 2 x for 5s: 1 overload
- 0.4 kA/m
- $\pm 15\%$
- 20 ... 120 %
- $\leq 3.0\text{ VA}$
- $\leq 1.0\text{ VA}$

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Reference conditions

Accuracy class	1.5% acc. to DIN EN 60 051
Reference temperature	23 °C / ± 2 °C
Position of use	Nominal position ±1°
Waveform	Sinewave
Current	95 ... 100 % rated current
Voltage	+ 2 % rated voltage
Preheating time	≥ 5 min at min 80% of rated current and 100% of rated voltage
Frequency	50 Hz ±0.1 %
Distortion factor	< 1 %
Other conditions	DIN EN 60 051-1

Environmental conditions

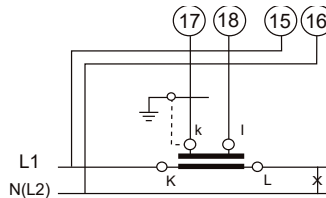
Climatic suitability	Climate category 2 acc. to DIN EN 60 051 Climate category 3 acc. to VDE/VDI 3540
Operating temperature	-10 ... +55 °C
Storage temperature	-25 ... +65 °C
Relative humidity	≤75% annual average, non condensation
Shock	150 m/s ² (15g) / 11 ms
Vibration	10 ... 55 ... 10 Hz, 0.15 mm amplitude (correspond to 1.5g at 50 Hz)

Safety

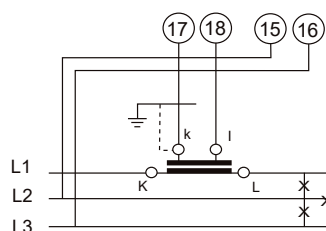
EMC resistance	acc. to EN 61 000-6-2
EMC emission	acc. to EN 61 000-6-4
Safety	acc. to EN 60 010-1
Installation category	300 V CATIII
Pollution degree	2
Rated insulation voltage	660 V
Insulation resistance	> 50 MΩ at 500 V DC
Insulation class	A (acc. to VDE 0110)
Insulation test voltage	2 kV
Housing 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

Single phase



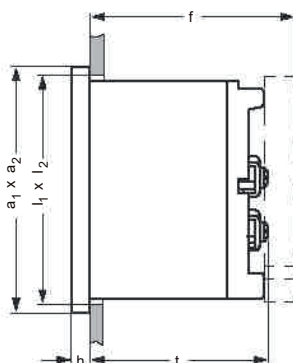
3 phase balanced load



Measurement ranges

Dimensions frontframe [mm]	72 x 72	96 x 96
Scale length [mm]	61	97
Type	□72	□96
System type	Single phase system 3 phase system balanced loadb	
Measuring ranges	COSφ cap 0.5...1...0.5 ind COSφ cap 0.8...1...0.3 ind COSφ cap 0.8...1...0.8 ind	
Rated voltages	57.7 V 63.5 V 100 V 110 V 115 V 120 V 127 V 220 V	230 V 240 V 289 V 380 V 400 V 415 V 440 V 500 V
Rated currents	1 A 5 A	

Dimensions



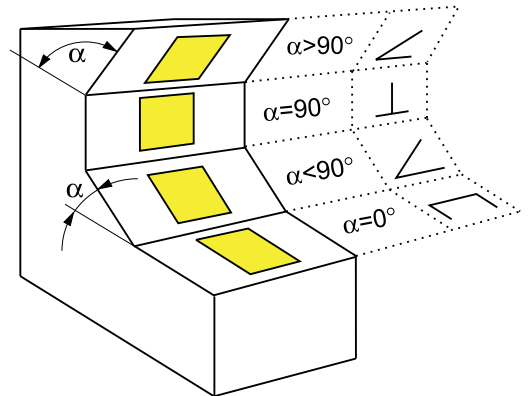
Front [mm]	Nominal Dimensions [mm]		Cutout [mm] l ₁ x l ₂	Installation depth (t) including terminal [mm]	Installation depth (f) including back cover [mm]
	a ₁ x a ₂	h			
□72	72 x 72	5.5	68 ^{+0.8} x 68 ^{+0.8}	82.5	--
□96	96 x 96	5.5	92 ^{+0.8} x 92 ^{+0.8}	53	62.5

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Working position

Code	Working position	Code	Working position	Code	Working position
A	$\alpha = 0^\circ$	D	$\alpha = 45^\circ$	G	$\alpha = 90^\circ$ (vertical)
B	$\alpha = 15^\circ$	E	$\alpha = 60^\circ$	H	$\alpha = 105^\circ$
C	$\alpha = 30^\circ$	F	$\alpha = 75^\circ$	I	$\alpha = 120^\circ$



Order details

Description	Blockingcode	No-go with blockingcode	Article No. / Feature
SIRAX BM700, Analog Power factor meter with 90° Scala			BM700-
Features, Selection			
01 Dimensions Frontframe			
□72 (72 x 72 mm)			1
□96 (96 x 96 mm)			2
02 System type			
Single phase system			1
3 phase system balanced load			2
03 Measuring ranges			
COSφ cap 0.5...1...0.5 ind			1
COSφ cap 0.8...1...0.3 ind			2
COSφ cap 0.8...1...0.8 ind			3
04 Rated voltage			
57.7 V			01
63.5 V			02
100 V			03
110 V			04
110 V			05
127 V			06
220 V			07
230 V			08
240 V			09
289 V			10
380 V			11
415 V			12
440 V			13
500 V			14

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05	Rated voltage			
	1 A			1
	5 A			2
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
	$\alpha = 90^\circ$ (vertical)			G
	$\alpha = 105^\circ$			H
	$\alpha = 120^\circ$			I
07	Front window			
	Glass			1
08	Scalefactor			
	Standard			1
	Non Standard (Customized)			2
09	Contact protection			
	without back cover			1
	with back cover			2
10	Color of Dial, pointer and letters			
	Standard (dial white / pointer black / letters black)			1
	Non Standard (dial / pointer / letters customized)			2
11	Red pointer kit			
	Without red pointer kit			1
	With red pointer kit			2



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