GMC INSTRUMENTS

CAMILLE BAUER

SIRAX BM100
Analog Meters with Moving-Iron measuring mechanism and 90° scale

Description

The analog display measuring devices with moving iron measuring mechanism SIRAX BM100 in a polycarbonate housing and 90° scale are intended for measuring AC currents in the frequency range of 15 ... 400 Hz and AC voltages in the frequency range of 15 ... 100 Hz.

They show the rms value regardless of the shape of the curve, even with a high harmonic content. Only with extreme curve shapes (e.g. phase gating controls) and frequencies greater than 100 Hz can the class accuracy no longer be maintained.

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
- 90° scale
- Near linear scale
- 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 ±5°
Mounting	stackable next to each other
Panel thickness	≤25mm
Panel fixing	Swivel screw

Connections

Voltmeter or Ammeter <30A	M4 screws and wire clamps form E3
Ammeter >30A	Threaded studs M6 with nuts
Ammeter >60A	Threaded studs M8 with nuts

Scaling

Pointer	knife–edge pointer
Pointer deflection	0 ... 90°
Scale characteristics	practically linear above 10% of rated full–scale value
Scale division	Coarse–fine
Scale length	

□48	□72	□96	□144
41mm	63mm	97mm	146mm

Overload scaling Ammeter	2 times the nominal current
Voltmeters for transformer connection	1.2 times the nominal voltage

Electrical Data

Measuring unit	AC Voltage and AC Current
Frequency range	AC Voltage 15 ... 100 Hz AC Current 15 ... 400 Hz
Power consumption Voltmeters	<4.5 VA
Ammeters ≤15 A	<0.5 VA
Ammeters >15 A	<0.8 VA
Overload capacity	acc. to DIN EN 60 051
Continuously	120% In, 120% Un
Short time voltage measurement	2 x for 0.5s: 9 overloads 2 x for 5s: 1 overload (max. 1000 V)
Short time current measurement	10 x for 0.5s: 9 Overloads 10 x for 5s: 1 Overload (max. 200 A)
External magnetic field	0.4 kA/m

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 variable	Rated measuring value
Wave form	Sinusoidal, distortion factor <5%
Frequency	45 ... 65 Hz
Other conditions	DIN EN 60 051-1

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Environmental conditions

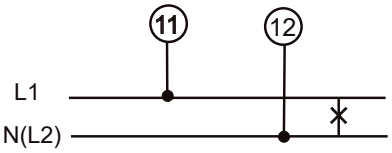
Climatic suitability	Climate category 2 acc. to DIN EN 60 051 Climate category 3 acc. to VDE/VDI 3540
Operating temperature	-10 ... +55 °C
Storage temperature	-25 ... +65 °C
Relative humidity	≤75% annual average, non condensation
Shock	150 m/s² (15g) / 11 ms
Vibration	10 ... 55 ... 10 Hz, 0.15 mm amplitude (correspond to 1.5g at 50 Hz)

Safety

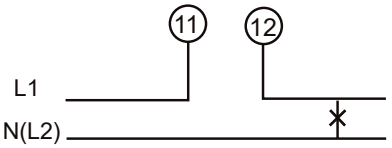
EMC resistance	acc. to EN 61 000-6-2
EMC emission	acc. to EN 61 000-6-4
Safety	acc. to EN 60 010-1
Installation category	III
Pollution degree	2
Maximal working voltage (phase-earth)	600 V (for ☐72, ☐96, ☐144) 300 V (for ☐48)
Insulation class	A (acc. to VDE 0110)
Insulation test voltage	3 kV (for ☐72, ☐96, ☐144) 2 kV (for ☐48)
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

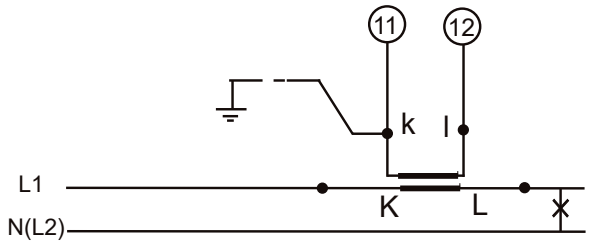
AC Voltage (directly connected)



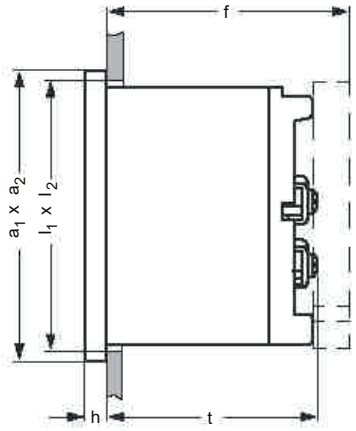
AC Current (directly connected)



AC Current (for use on current transformer)



Dimensions



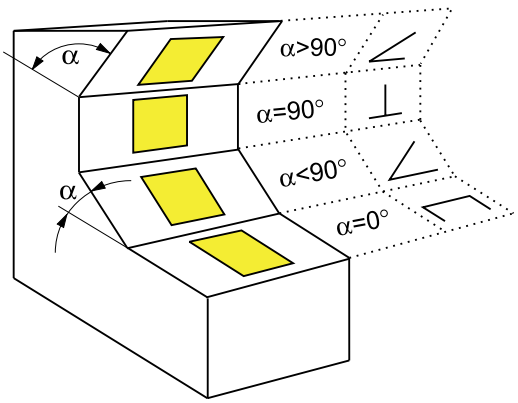
Front [mm]	Nominal Dimensions [mm]		Cutout [mm]	Installation depth (t) including terminal [mm]			Installation depth (f) including back cover [mm]	
	a_1 x a_2	h	l_1 x l_2	<30A	30..60A	100A	<30A	30...100A
☐48	48 x 48	5.5	$45^{+0.6}$ x $45^{+0.6}$	54	72	--	62.5	75 (bis 60A)
☐72	72 x 72	5.5	$68^{+0.7}$ x $68^{+0.7}$	54	62	66	62.5	70
☐96	96 x 96	5.5	$92^{+0.8}$ x $92^{+0.8}$	54	62	66	62.5	70
☐144	144 x 144	5.5	138^{+1} x 138^{+1}	54	62	67	62.5	70

Working position

Code	Working position
A	α = 0°
B	α = 15°
C	α = 30°

Code	Working position
D	α = 45°
E	α = 60°
F	α = 75°

Code	Working position
G	α = 90°
H	α = 105°
I	α = 120°



Measurement ranges

Frontframe dimensions [mm]	48 x 48	72 x 72	96 x 96	144 x 144
Scale lenght [mm]	41	63	97	146
Weight [kg]	0.1	0.16	0.2	0.4
Type	☐48	☐72	☐96	☐144
Measuring range	self-consumption			
AC Current				
100 mA	< 0.5 VA	< 0.5 VA	< 0.5 VA	< 0.5 VA
150 mA	< 0.5 VA	< 0.5 VA	< 0.5 VA	< 0.5 VA
250 mA	< 0.5 VA	< 0.5 VA	< 0.5 VA	< 0.5 VA
400 mA	< 0.5 VA	< 0.5 VA	< 0.5 VA	< 0.5 VA
600 mA	< 0.5 VA	< 0.5 VA	< 0.5 VA	< 0.5 VA
1 A	< 0.5 VA	< 0.5 VA	< 0.5 VA	< 0.5 VA
1.5 A	< 0.5 VA	< 0.5 VA	< 0.5 VA	< 0.5 VA
2.5 A	< 0.5 VA	< 0.5 VA	< 0.5 VA	< 0.5 VA
4 A	< 0.5 VA	< 0.5 VA	< 0.5 VA	< 0.5 VA
6 A	< 0.5 VA	< 0.5 VA	< 0.5 VA	< 0.5 VA
10 A	< 0.5 VA	< 0.5 VA	< 0.5 VA	< 0.5 VA
15 A	< 0.8 VA	< 0.8 VA	< 0.8 VA	< 0.8 VA
20 A	< 0.8 VA	< 0.8 VA	< 0.8 VA	< 0.8 VA
25 A	< 0.8 VA	< 0.8 VA	< 0.8 VA	< 0.8 VA
40 A	--	< 0.8 VA	< 0.8 VA	< 0.8 VA
50 A	--	< 0.8 VA	< 0.8 VA	< 0.8 VA
60 A	--	< 0.8 VA	< 0.8 VA	< 0.8 VA
100 A	--	< 0.8 VA	< 0.8 VA	< 0.8 VA
AC Current for transformer				
X/5A	< 0.5 VA	< 0.5 VA	< 0.5 VA	< 0.5 VA
X/1A	< 0.5 VA	< 0.5 VA	< 0.5 VA	< 0.5 VA
AC Voltage				
6 V	< 4.5 VA	< 4.5 VA	< 4.5 VA	< 4.5 VA
10 V	< 4.5 VA	< 4.5 VA	< 4.5 VA	< 4.5 VA
15 V	< 4.5 VA	< 4.5 VA	< 4.5 VA	< 4.5 VA
25 V	< 4.5 VA	< 4.5 VA	< 4.5 VA	< 4.5 VA
40 V	< 4.5 VA	< 4.5 VA	< 4.5 VA	< 4.5 VA
60 V	< 4.5 VA	< 4.5 VA	< 4.5 VA	< 4.5 VA
100 V	< 4.5 VA	< 4.5 VA	< 4.5 VA	< 4.5 VA
120 V	< 4.5 VA	< 4.5 VA	< 4.5 VA	< 4.5 VA
132 V	< 4.5 VA	< 4.5 VA	< 4.5 VA	< 4.5 VA
150 V	< 4.5 VA	< 4.5 VA	< 4.5 VA	< 4.5 VA
250 V	< 4.5 VA	< 4.5 VA	< 4.5 VA	< 4.5 VA
300 V	< 4.5 VA	< 4.5 VA	< 4.5 VA	< 4.5 VA
400 V	< 4.5 VA	< 4.5 VA	< 4.5 VA	< 4.5 VA
500 V	< 4.5 VA	< 4.5 VA	< 4.5 VA	< 4.5 VA
600 V	< 4.5 VA	< 4.5 VA	< 4.5 VA	< 4.5 VA
800 V [1)]	--	< 4.5 VA	< 4.5 VA	< 4.5 VA
1000 V [1)]	--	< 4.5 VA	< 4.5 VA	< 4.5 VA
AC Voltage for transformer				
X/100V	--	< 4.5 VA	< 4.5 VA	< 4.5 VA
X/110V	--	< 4.5 VA	< 4.5 VA	< 4.5 VA

[1)] Applies only to phase-to-phase voltage measurements i a 3-phase network

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Order details

Description		Blockingcode	No-go with blockingcode	Article No. / Feature
SIRAX BM100, Analog meters with movin-iron measuring mechanism and 90° scale				BM100-
Features, Selection				
01	**Dimensions Frontframe**			
	☐48 (48 x 48 mm)	A		1
	☐72 (72 x 72 mm)			2
	☐96 (96 x 96 mm)			3
	☐144 (144 x 144 mm)	F		4
02	**Measuring input**			
	AC Current	B		1
	AC Current for transformer	C		2
	AC Voltage	D		3
	AC Voltage for transformer	E		4
03	**Measuring range**			
	AC Current			
	100 mA		C, D, E	01
	150 mA		C, D, E	02
	250 mA		C, D, E	03
	400 mA		C, D, E	04
	600 mA		C, D, E	05
	1 A		C, D, E	06
	1.5 A		C, D, E	07
	2.5 A		C, D, E	08
	4 A		C, D, E	09
	6 A		C, D, E	10
	10 A		C, D, E	11
	15 A		C, D, E	12
	20 A		C, D, E	13
	25 A		C, D, E	14
	40 A		C, D, E	15
	50 A		A, C, D, E	16
	60 A		A, C, D, E	17
	100 A		A, C, D, E	18
	Special range AC Current			
	100mA … >1A … <100A		A, C, D, E	B1
	AC Current for transformer			
	5A/5A		B, D, E	19
	6A/5A		B, D, E	20
	10A/5A		B, D, E	21
	20A/5A		B, D, E	22
	30A/5A		B, D, E	23
	40A/5A		B, D, E	24
	50A/5A		B, D, E	25

	60A/5A		B, D, E	26
	80A/5A		B, D, E	27
	100A/5A		B, D, E	28
	150A/5A		B, D, E	29
	160A/5A		B, D, E	30
	200A/5A		B, D, E	31
	300A/5A		B, D, E	32
	400A/5A		B, D, E	33
	500A/5A		B, D, E	34
	600A/5A		B, D, E	35
	630A/5A		B, D, E	36
	800A/5A		B, D, E	37
	1000A/5A		B, D, E	38
	1200A/5A		B, D, E	39
	1500A/5A		B, D, E	40
	2000A/5A		B, D, E	41
	3000A/5A		B, D, E	42
	4000A/5A		B, D, E	43
	5000A/5A		B, D, E	44
	6000A/5A		B, D, E	45
	8000A/5A		B, D, E	46
	10000A/5A		B, D, E	47
	1A/1A		B, D, E	48
	5A/1A		B, D, E	49
	6A/1A		B, D, E	50
	10A/1A		B, D, E	51
	15A/1A		B, D, E	52
	20A/1A		B, D, E	53
	30A/1A		B, D, E	54
	40A/1A		B, D, E	55
	50A/1A		B, D, E	56
	60A/1A		B, D, E	57
	80A/1A		B, D, E	58
	100A/1A		B, D, E	59
	150A/1A		B, D, E	60
	200A/1A		B, D, E	61
	300A/1A		B, D, E	62
	400A/1A		B, D, E	63
	500A/1A		B, D, E	64
	600A/1A		B, D, E	65
	800A/1A		B, D, E	66
	1000A/1A		B, D, E	67
	1200A/1A		B, D, E	68
	1500A/1A		B, D, E	69
	2000A/1A		B, D, E	70

3000A/1A		B, D, E	71
4000A/1A		B, D, E	72
5000A/1A		B, D, E	73
6000A/1A		B, D, E	74
8000A/1A		B, D, E	75
10000A/1A		B, D, E	76
Special range AC Current for transformer			
… A / 5 A		B, D, E	B2
… A / 1 A		B, D, E	B3
AC Voltage			
6 V		B, C, E	77
10 V		B, C, E	78
15 V		B, C, E	79
25 V		B, C, E	80
40 V		B, C, E	81
60 V		B, C, E	82
100 V		B, C, E	83
120 V		B, C, E	84
132 V		B, C, E	85
150 V		B, C, E	86
250 V		B, C, E	87
300V		B, C, E	88
400 V		B, C, E	89
500 V		B, C, E	90
600 V		B, C, E	91
800 V		B, C, E	92
1000 V		B, C, E	93
Special range AC Voltage			
6 V … <100 V		B, C, E	B4
AC Voltage for transformer			
4000V/100V		A, B, C, D	94
6000V/100V		A, B, C, D	95
10000V/100V		A, B, C, D	96
15000V/100V		A, B, C, D	97
20000V/100V		A, B, C, D	98
40000V/100V		A, B, C, D	99
60000V/100V		A, B, C, D	A1
150000V/100V		A, B, C, D	A2
250000V/100V		A, B, C, D	A3
400000V/100V		A, B, C, D	A4
4000V/110V		A, B, C, D	A5
6000V/110V		A, B, C, D	A6
15000V/110V		A, B, C, D	A7
150000V/110V		A, B, C, D	A8
250000V/110V		A, B, C, D	A9

	Special range AC Voltage for transformer			
	… V / 100 V		A, B, C, D	B5
	… V / 110 V		A, B, C, D	B6
04	**Working position**			
	α = 0°			A
	α = 15°			B
	α = 30°			C
	α = 45°			D
	α = 60°			E
	α = 75°			F
	α = 90° (vertical)			G
	α = 105°			H
	α = 120°			I
05	**Front window**			
	Glass			1
06	**Scalefactor**			
	Standard			1
	Non Standard (Customized)			2
07	**Contact protection**			
	without back cover			1
	with back cover			2
08	**Color of Dial, pointer and letters**			
	Standard (dial white / pointer black / letters black)			1
	Non Standard (dial / pointer / letters customized)			2
09	**Red pointer kit**			
	Without red pointer kit			1
	With red pointer kit		F	2

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