

SIRAX BM200

Analog Meters with Moving-Coil Movement and 90° Scale

Description

The analog display measuring devices with moving coil measuring mechanism SIRAX BM200 in a polycarbonate housing and 90° scale are intended for measuring DC currents or DC voltages.

The moving-coil measuring mechanism consists of a core magnet system with point bearings spring-loaded on both sides.

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
- 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								
Weight	<table border="1" data-bbox="440 1740 802 1816"> <tr> <td>□48</td> <td>□72</td> <td>□96</td> <td>□144</td> </tr> <tr> <td>0.15kg</td> <td>0.20kg</td> <td>0.25kg</td> <td>0.40kg</td> </tr> </table>	□48	□72	□96	□144	0.15kg	0.20kg	0.25kg	0.40kg
□48	□72	□96	□144						
0.15kg	0.20kg	0.25kg	0.40kg						

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	Linear								
Scale division	Coarse-fine								
Scale length	<table border="1" data-bbox="1150 1176 1513 1254"> <tr> <td>□48</td> <td>□72</td> <td>□96</td> <td>□144</td> </tr> <tr> <td>41mm</td> <td>63mm</td> <td>97mm</td> <td>146mm</td> </tr> </table>	□48	□72	□96	□144	41mm	63mm	97mm	146mm
□48	□72	□96	□144						
41mm	63mm	97mm	146mm						

Skala

Interchangeable

Electrical Data

Measuring unit	DC Voltage and DC Current									
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									
Burden	<table border="1" data-bbox="1150 1653 1517 1783"> <tr> <td>Connection to Shunt</td> <td>Power Consumption: 6mA Lead resistance: 0.06W</td> <td>±10%</td> </tr> <tr> <td>1A...60A</td> <td>Voltage drop: 60mV</td> <td>±10%</td> </tr> <tr> <td>≥1V</td> <td>1000 W/V</td> <td>±5%</td> </tr> </table>	Connection to Shunt	Power Consumption: 6mA Lead resistance: 0.06W	±10%	1A...60A	Voltage drop: 60mV	±10%	≥1V	1000 W/V	±5%
Connection to Shunt	Power Consumption: 6mA Lead resistance: 0.06W	±10%								
1A...60A	Voltage drop: 60mV	±10%								
≥1V	1000 W/V	±5%								

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

Housing protection class

IP52 Housing on the front

IP00 Connections without contact protection

IP20 Connections with contact protection

Safety terminal protection

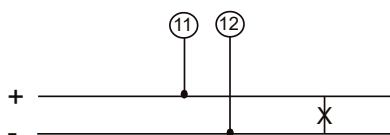
Full sized polycarbonate back cover to provide protection against accidental contact (hand and fingers) acc. to VDE 0410

Safety

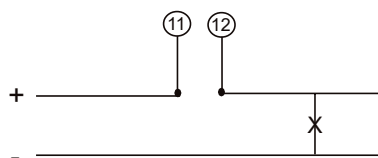
EMC resistance	acc. to EN 61 000-6-2
EMC emission	acc. to EN 61 000-6-4
Safety	acc. to EN 60 010-1
Installation category	III
Pollution degree	2
Maximal working voltage (phase-earth)	600 V (for □72, □96, □144) 300 V (for □48)
Insulation class	A (acc. to VDE 0110)
Insulation test voltage	3 kV (for □72,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

Electrical connections

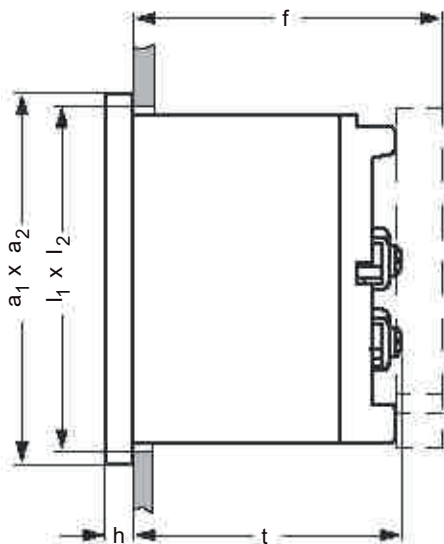
DC Voltage



DC Current



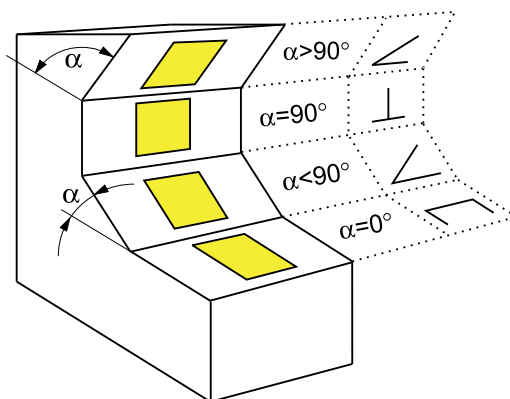
Dimensions



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		<4A	5...60A	60...100A	<4A	4...60A	60...100A
□48	48 x 48	5.5	45 ^{+0.6} x 45 ^{+0.6}	54	72	--	62.5	75	--
□72	72 x 72	5.5	68 ^{+0.7} x 68 ^{+0.7}	54	67	67	62.5	70	70
□96	96 x 96	5.5	92 ^{+0.8} x 92 ^{+0.8}	54	67	67	62.5	70	70
□144	144 x 144	5.5	138 ⁺¹ x 138 ⁺¹	54	67	67	62.5	70	70

Working position

Code	Working position	Code	Working position	Code	Arbeitsposition
A	α = 0°	D	α = 45°	G	α = 90°
B	α = 15°	E	α = 60°	H	α = 105°
C	α = 30°	F	α = 75°	I	α = 120°



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Measurement ranges

Type	□48 (48 x 48mm)	□72 (72 x 72mm)	□96 (96 x 96mm)	□144 (144 x 144mm)
Internal resistance $\pm 10\%$ or voltage drop				
Measuring range	self-consumption			
DC Current				
15 μA ¹⁾	140 mV	140 mV	140 mV	140 mV
25 μA ¹⁾	240 mV	240 mV	240 mV	240 mV
40 μA ¹⁾	374 mV	374 mV	374 mV	374 mV
60 μA ¹⁾	424 mV	424 mV	424 mV	424 mV
60 μA ¹⁾	600 mV	600 mV	600 mV	600 mV
100 μA	400 mV	400 mV	400 mV	400 mV
150 μA	600 mV	600 mV	600 mV	600 mV
250 μA	140 mV	140 mV	140 mV	140 mV
400 μA	540 mV	540 mV	540 mV	540 mV
500 μA	540 mV	540 mV	540 mV	540 mV
600 μA	540 mV	540 mV	540 mV	540 mV
1 mA	37 mV	37 mV	37 mV	37 mV
1.5 mA	196 mV	196 mV	196 mV	196 mV
2.5 mA	196 mV	196 mV	196 mV	196 mV
4 mA	196 mV	196 mV	196 mV	196 mV
5 mA	196 mV	196 mV	196 mV	196 mV
6 mA	196 mV	196 mV	196 mV	196 mV
10 mA	196 mV	196 mV	196 mV	196 mV
15 mA	11 mV	11 mV	11 mV	11 mV
20 mA	60 mV	60 mV	60 mV	60 mV
25 mA	60 mV	60 mV	60 mV	60 mV
40 mA	60 mV	60 mV	60 mV	60 mV
60 mA	60 mV	60 mV	60 mV	60 mV
100 mA	60 mV	60 mV	60 mV	60 mV
150 mA	60 mV	60 mV	60 mV	60 mV
250 mA	60 mV	60 mV	60 mV	60 mV
400 mA	60 mV	60 mV	60 mV	60 mV
600 mA	60 mV	60 mV	60 mV	60 mV
1 A	60 mV	60 mV	60 mV	60 mV
1.5 A	60 mV	60 mV	60 mV	60 mV
2.5 A	60 mV	60 mV	60 mV	60 mV
4 A	60 mV	60 mV	60 mV	60 mV
5 A	60 mV	60 mV	60 mV	60 mV
6 A	60 mV	60 mV	60 mV	60 mV
10 A	60 mV	60 mV	60 mV	60 mV
15 A	60 mV	60 mV	60 mV	60 mV
20 A	60 mV	60 mV	60 mV	60 mV
25 A	60 mV	60 mV	60 mV	60 mV
30 A	60 mV	60 mV	60 mV	60 mV
40 A	60 mV	60 mV	60 mV	60 mV
60 A	72 mV	72 mV	72 mV	72 mV
100 A	--	60 mV	60 mV	60 mV
for transformer connection				
4...20 mA	60 mV	60 mV	60 mV	60 mV

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Type	□48 (48 x 48mm)	□72 (72 x 72mm)	□96 (96 x 96mm)	□144 (144 x 144mm)
Internal resistance ±10% or voltage drop				
Measuring range	self-consumption			
DC Voltage				
15 mV ^{1) 2)}	3330 Ω / V	3330 Ω / V	3330 Ω / V	3330 Ω / V
25 mV ^{1) 2)}	3330 Ω / V	3330 Ω / V	3330 Ω / V	3330 Ω / V
40 mV ^{1) 2)}	3330 Ω / V	3330 Ω / V	3330 Ω / V	3330 Ω / V
50 mV ²⁾	3330 Ω / V	3330 Ω / V	3330 Ω / V	3330 Ω / V
60 mV ²⁾	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
75 mV ²⁾	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
100 mV ²⁾	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
150 mV ²⁾	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
250 mV ²⁾	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
400 mV ²⁾	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
600 mV ²⁾	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
1 V	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
1.5 V	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
2.5 V	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
4 V	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
6 V	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
10 V	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
15 V	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
25 V	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
30 V	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
40 V	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
50 V	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
60 V	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
100 V	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
150 V	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
200 V	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
250 V	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
300 V	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
400 V	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
500 V	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
600 V	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
800 V	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
1000 V	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
for Shunt connection				
60 mV ²⁾	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
75 mV ²⁾	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V
150 mV ²⁾	1000 Ω / V	1000 Ω / V	1000 Ω / V	1000 Ω / V

¹⁾ Accuracy class 2.5

²⁾ Total lead resistance of 0.035 ohm or less considered for mV ranges while calibration

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Order details

Description	Blockingcode	No-go with blockingcode	Article No. / Feature
SIRAX BM200, Analog meters with moving-coil movement and 90° Scale			BM200-
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			
DC Current	B		1
DC Current for transformer connection	C		2
DC Voltage	D		3
DC Voltage for Shunt connection	E		4
03 Measuring range			
DC Current			
15 µA		C, D, E	01
25 µA		C, D, E	02
40 µA		C, D, E	03
50 µA		C, D, E	04
60 µA		C, D, E	05
100 µA		C, D, E	06
150 µA		C, D, E	07
250 µA		C, D, E	08
400 µA		C, D, E	09
500 µA		C, D, E	10
600 µA		C, D, E	11
Special range DC Current			
0 ... >100 µA ... <600 µA		C, D, E	80
1 mA		C, D, E	12
1.5 mA		C, D, E	13
2.5 mA		C, D, E	14
4 mA		C, D, E	15
5 mA		C, D, E	16
6 mA		C, D, E	17
10 mA		C, D, E	18
15 mA		C, D, E	19
20 mA		C, D, E	20
25 mA		C, D, E	21

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40 mA		C, D, E	22
60 mA		C, D, E	23
100 mA		C, D, E	24
150 mA		C, D, E	25
250 mA		C, D, E	26
400 mA		C, D, E	27
600 mA		C, D, E	28
Special range DC Current 0 ... >1 mA ... <600 mA		C, D, E	81
1 A		C, D, E	29
1.5 A		C, D, E	30
2.5 A		C, D, E	31
4 A		C, D, E	32
5 A		C, D, E	33
6 A		C, D, E	34
10 A		C, D, E	35
15 A		C, D, E	36
20 A		C, D, E	37
25 A		C, D, E	38
30 A		C, D, E	39
40 A		C, D, E	40
60 A		C, D, E	41
100 A		A, C, D, E	42
Special range DC Current 0 ... >1 A ... <100 A		C, D, E	82
DC Current for transformer connection 4 ... 20 mA		B, D, E	43
DC Voltage			
15 mV		B, C, E	44
25 mV		B, C, E	45
40 mV		B, C, E	46
50 mV		B, C, E	47
60 mV		B, C, E	48
75 mV		B, C, E	49
100 mV		B, C, E	50
150 mV		B, C, E	51
250 mV		B, C, E	52
400 mV		B, C, E	53
600 mV		B, C, E	54

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Special range DC Voltage			
0 ... >60 mV ... <600 mV		B, C, E	83
1 V		B, C, E	55
1.5 V		B, C, E	56
2.5 V		B, C, E	57
4 V		B, C, E	58
6 V		B, C, E	59
10 V		B, C, E	60
15 V		B, C, E	61
25 V		B, C, E	62
30 V		B, C, E	63
40 V		B, C, E	64
50 V		B, C, E	65
60 V		B, C, E	66
100 V		B, C, E	67
150 V		B, C, E	68
200 V		B, C, E	69
250 V		B, C, E	70
300 V		B, C, E	71
400 V		B, C, E	72
500 V		B, C, E	73
600 V		B, C, E	74
800 V		B, C, E	75
1000 V		B, C, E	76
Special range DC Voltage			
0 ... >1 V ... <1000 V		B, C, E	84
DC Voltage for Shunt connection			
60 mV		B, C, D	77
75 mV		B, C, D	78
150 mV		B, C, D	79
04 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

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05	Zero Position			
	Left			1
	Centre			2
	Shifted			3
06	Front window			
	Glass			1
07	Scalefactor			
	Standard			1
	Non Standard (Customized)			2
08	Contact protection			
	without back cover			1
	with back cover			2
09	Color of Dial, pointer and letters			
	Standard (dial white / pointer black / letters black)			1
	Non Standard (dial / pointer / letters customized)			2
10	Red pointer kit			
	Without red pointer kit			1
	With red pointer kit		F	2



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