

## SIRAX BM1250

### Multifunctional measuring device for network parameters

#### Description

The multifunctional power and monitoring instrument SIRAX BM1250 is suitable for fixed installation and for the measurement of the most important electrical parameters in low-voltage systems. The measurement is designed for 1- or 3-phase networks with 2-, 3- or 4-wire connections and are used to safely monitor the electrical distribution. The measured values are displayed on the generous LCD display. The device has two optional outputs that can be configured as a pulse output for energy measurement, limit output, timer function or relay output. An RS485 interface with Modbus/RTU or Ethernet Modbus/TCP is also available.

#### Properties and advantages

##### User-friendly

- The device can be operated very easily via 3 pushbuttons.
- With its large, backlit LCD display, the measured data is very easy to read.
- The User Assignable Screens feature lets you define 1 to 10 on-screen displays out of 28 screens.
- Easy, flexible and quick installation thanks to Easy Clip or mounting brackets.

##### Multifunctional

- Variety of functions for measuring voltage, current, power, energy and quality
- The instrument measures per phase THD and individual harmonic up to 31st harmonics for voltage and current.
- The device measures more than 85 parameters and these are displayed through 28 different screens.
- Various relay functions integrated (pulse output for energy measurement, limit value output, timer function, RTC relay output).
- Built-in 8MB Flash Datalogger (event logging, time logging, load profile logger).
- On-site configuration (configuration via pushbuttons, USB interface, RS485 Modbus/RTU or Ethernet Modbus/TCP possible).
- Easy integration into higher-level systems through open communication via Modbus/RTU or Modbus/TCP.

##### Communicative

- RS485 interface with Modbus/RTU protocol.
- Ethernet with Modbus/TCP protocol.
- Can be integrated as a standard object in the SMARTCOLLECT software.

##### Safe

- Password protects against unauthorized modification of programming and configurations.
- No password given from factory default side.



#### Application sectors



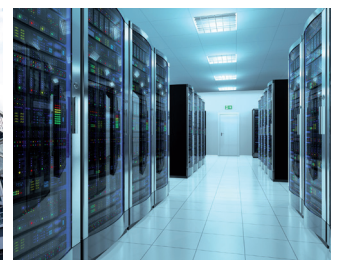
Industry



Automation



Infrastructure / Buildings



Data centers

#### Application

- Display and control of electrical characteristics in power distribution systems
- Internal energy billing/monitoring/auditing
- Submetering and utility billing
- Electrical load monitoring

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### Functionalities

#### Measurement

- Current (I1, I2, I3, IN, ISystem)
- Voltage (U1, U2, U3, USystem, U12, U23, U31)
- Frequency (f)
- Power (P1, P2, P3, ΣP, Q1, Q2, Q3, ΣQ, S1, S2, S3, ΣS)
- Power factor (PF1, PF2, PF3, ΣPF)
- Phase angle (Cosφ1, Cosφ2, Cosφ3, ΣCosφ)

#### Quality

- Total harmonic distortion (THDI1, THDI2, THDI3, THDISystem, THDU1, THDU2, THDU3, THDUSystem)
- Harmonics up to the 31st harmonic (I1, I2, I3, U1, U2, U3)

#### Counter

- Active energy (kWh Import/Export)
- Reactive energy (kvarh Import/Export)
- Apparent energy (kVah)
- Run and On hour counter
- Built-in Real Time Clock
- Time-based data logger

#### Events

- Phase absent indication
- Phase reversal indication (clockwise/counter clockwise)
- Number of interruptions

#### Output

- Communication RS485 Modbus RTU
- Relay output (pulse, limit, timer, RTC)

### Technical specifications

#### Input

##### Voltage input

Nominal input voltage	100 V <sub>LL</sub> ... 600 V <sub>LL</sub>
programmable on site	57.5 V <sub>LN</sub> ... 346.42 V <sub>LN</sub>
System PT primary values	100 V <sub>LL</sub> ... 1200 kV <sub>LL</sub> (programmable on site)
Max continuous input voltage	120% of nominal value
Nominal input voltage burden	ca. <0.3 VA per phase (at nominal 240 V)
Overload indication	"-OL-" >121% of nominal value
Overload withstand	2 x rated voltage for 1 sec, 10 times at 10 sec intervals

##### Current input

Nominal input current	1 A / 5 A (programmable on site)
System CT primary values	From 1 A ... 9999 A
Max continuous input current	120% of nominal value
Nominal input current burden	approx. <0.3 VA per phase
Overload indication	"-OL-" >121% of nominal value
Overload withstand	20 x rated current for 1 sec, 5 times at 5 min intervals

#### Auxiliary supply

Auxiliary supply range	100 ... 550 V AC/DC 12 ... 60 V AC/DC
Auxiliary supply frequency range	45 ... 65 Hz
Auxiliary supply burden (at 230 VAC/DC)	< 6 VA < 6 VA (with Ethernet)

#### Reference conditions Measuring ranges (according to IEC60053-22)

Voltage (energy measurement)	1 ... 120% of nominal value
Current	20 ... 120% of nominal value
Power factor	0.5 inductive ... 1 ... 0.8 capacitive
Frequency range	45 ... 66 Hz

#### Accuracy

##### Reference conditions accuracy (according to IEC60053-21)

Reference temperature	23 °C / ± 2 °C
Input frequency	50/60 Hz / ± 2%
Auxiliary supply frequency	50/60 Hz / ± 1%
THD	50% up to 15th harmonics 10% up to 31st harmonics
Voltage range	50 ... 100% of nominal value
Current range	20 ... 100% of nominal value

##### Accuracy Energy

Active energy	Class 0,2S (according to EN 62053-22)
Apparent energy	Class 2 (according to EN 62053-23)
Reactive energy	Class 1

##### Accuracy Power

	Class 0.2S
Voltage	± 0.2%
Current	± 0.2%
Frequency	± 0.2%
Active power	± 0.2%
Reactive power	± 1%
Apparent power	± 0.2%
Power factor / angle	± 3°
THD (voltage / current)	± 3%

#### Operation and display

##### Controls

User interface	3 push buttons
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##### Display

Type	LCD display with backlight (4 lines for measurements, 1 line for energy values, 3 graphs for burden display)
Refresh rate	approx. 1 sec
Display range measured values	0 ... ± 9999 plus unit
Display area energy values	0 ... ± 99999999.9 plus unit

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### Mechanical properties

Mounting	Frontpanel mounting
Bezel size	96 mm x 96 mm (DIN 43718)
Panel cutout	92+0,8 mm x 92+0,8 mm
Panel thickness	1 - 3 mm for easy clip-in 1 - 6 mm for mounting clamps
Material	Polycarbonate
Flammability class	UL94 V-0, self-extinguishing, non-dripping, free of halogen
Weight	approx. 620 g
Connections	Screw type terminals

### Environmental conditions

Operating temperature	-20 ... +70 °C
Storage temperature	-25 ... +75 °C
Relative humidity	0 ... 95% (non condensing)
Warm up time	Min. 3 minute
Shock	300 m/s <sup>2</sup> (30g) / 18 ms
Vibration	10 ... 150 ... 10 Hz, 0.15 mm amplitude, 10 Cycles per axis

### Safety

EMC immunity	10V/m - Level 3 (according to IEC 61000-4-3)
EMC emission	IEC 61326-1: 2012
Safety	IEC 60010-1:1010
Pollution degree	2
Installation category	III
Protective class	2
Housing protection class	IP54 (front), IP20 (housing/terminal)
High voltage test	4.0 kV RMS, Input and power supply against surface 3.3 kV RMS, Input against all other circuits

### Communication interface

#### RS485, Modbus/RTU

Modbus /RTU	Via plug-in terminal, 2.5 mm <sup>2</sup>
Protocol	Modbus/RTU
Physics	RS485, max. 1200 M (4000 ft)
Baud rate	4'800, 9'600, 19'200, 38'400, 57'600 Baud
Number of participants	< 32

#### Ethernet, Modbus/TCP

Modbus /TCP	RJ45 Connector
Protocol	Modbus/TCP
Physics	Ethernet

### Relay output

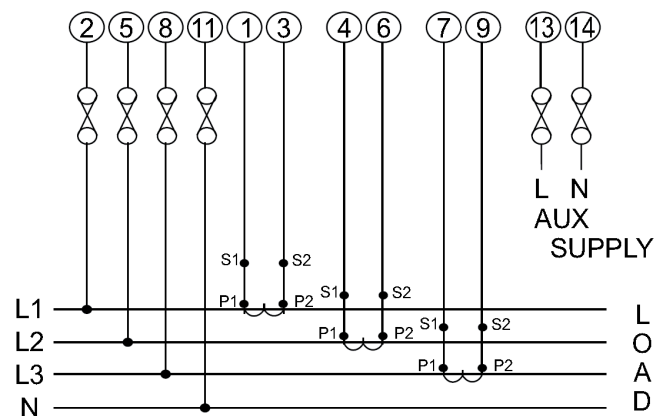
Number of Relays	2 (freely selectable for limit, pulse or timer output)
Switching voltage	250 VAC / 30 VDC
Switching current	5 AAC / 5ADC

### Standard compliance

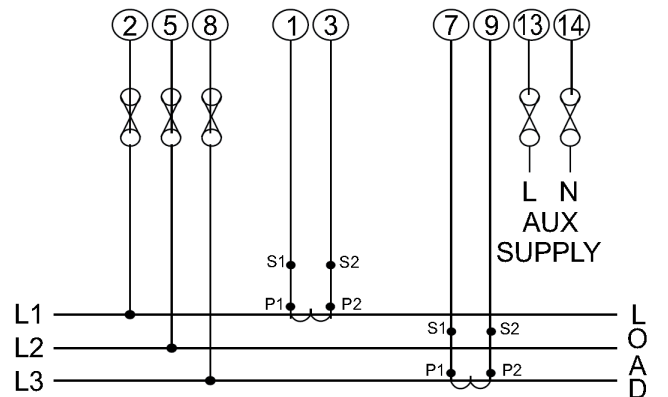
Safety	IEC 61010-1
EMC	IEC 61326-1, IEC 61000-4-3
IP protection	IEC 60529
Energy	IEC 62052-22 / IEC 62052-23

### Electrical connections

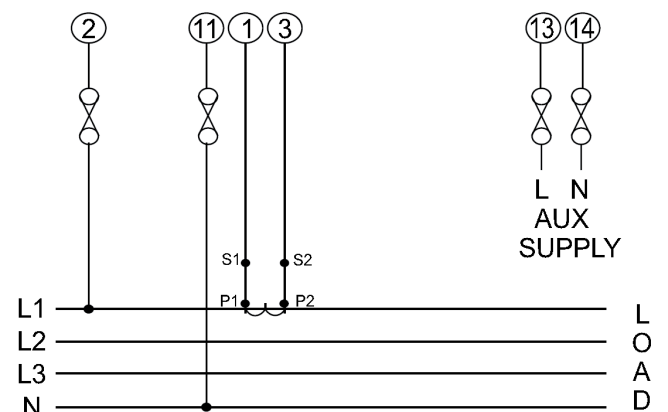
#### 3 Phase, 4 Wire



#### 3 Phase, 3 Wire



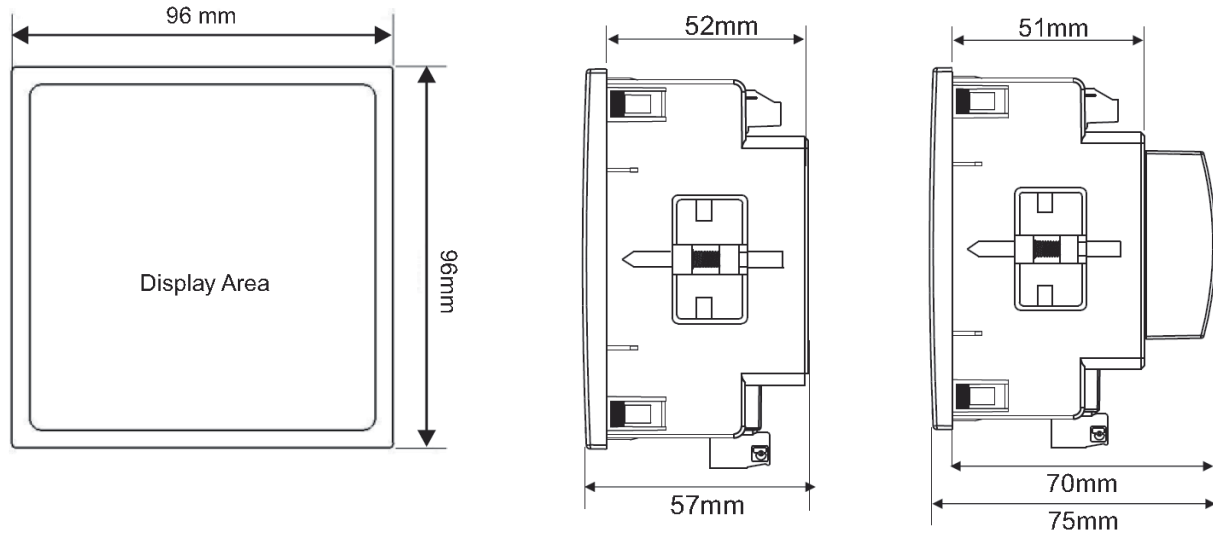
#### 2 Phase, 2 Wire



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### Dimensions



### Ordering information

Type	Article No.
SIRAX BM1250 - 0.2S - 100...550 V AC/DC	182858
SIRAX BM1250 - 0.2S - 12...60 V AC/DC	186032
SIRAX BM1250 - 0.2S - 100...550 V AC/DC - RS485 - 2 Pulse output	182866
SIRAX BM1250 - 0.2S - 12...60 V AC/DC - RS485 - 2 Pulse output	186040
SIRAX BM1250 - 0.2S - 100...550 V AC/DC - Ethernet	185901
SIRAX BM1250 - 0.2S - 12...60 V AC/DC - Ethernet	186082
SIRAX BM1250 - 0.2S - 100...550 V AC/DC - RS485 - 2 Pulse output - Datalogger - USB	182874
SIRAX BM1250 - 0.2S - 12...60 V AC/DC - RS485 - 2 Pulse output - Datalogger - USB	186058
SIRAX BM1250 - 0.2S - 100...550 V AC/DC - Ethernet - Datalogger	185919
SIRAX BM1250 - 0.2S - 12...60 V AC/DC - Ethernet - Datalogger	186090



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