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 then 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, PF1, PF2, PF3, ZPF)
- 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 VLL ... 600 VLL
  programmable on site 57.5 VLN ... 346.4 VLN
- System PT primary values 100 VLL ... 1200 kVLL (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 ... 60 Hz
- Auxiliary supply burden < 6 VA
  (at 230 VAC/DC) < 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

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<tr>
<td>Voltage</td>
<td>± 0.2%</td>
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<tr>
<td>Current</td>
<td>± 0.2%</td>
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<tr>
<td>Frequency</td>
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<tr>
<td>Active power</td>
<td>± 0.2%</td>
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<tr>
<td>Reactive power</td>
<td>± 1%</td>
</tr>
<tr>
<td>Apparent power</td>
<td>± 0.2%</td>
</tr>
<tr>
<td>Power factor / angle</td>
<td>± 3°</td>
</tr>
<tr>
<td>THD (voltage / current)</td>
<td>± 3%</td>
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Operation and display

Controls
- User interface 3 push buttons

Display
- Type LCD display with backlit
  (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/s² (30g) / 18 ms
Vibration: 10 ... 150 ... 10 Hz, 0.15 mm amplitude, 10 Cycles per axis

Safety

EMC immunity: 10 V/m - Level 3 (according to IEC61000-4-3)
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 mm²
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

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