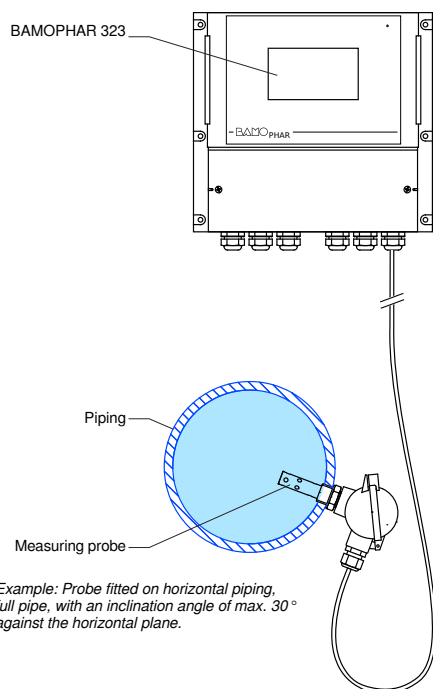


Conductivity / Resistivity BAMOPHAR 323



- Color touch screen
- Programmable ranges:
From 0-200 Ω .cm up to 0-200 MΩ .cm
From 0-2 μS/cm up to 0-20 mS/cm
- Associated measuring cells:
Cell factors: 10 - 1 - 0.1 - 0.01
- Temperature compensation
Automatic or manual compensation
- 2 outputs 0/4-20 mA, configurable
- 4 relays (Thresholds, alarm)
- Options:
RS422/ J-BUS + LOGGER
Extension terminal for 2nd measuring parameter



APPLICATIONS

In combination with one of our conductivity cells (data-sheet 360-01), BAMOPHAR 323 is designed for conductivity or resistivity measurements.

Examples:

- Conductivity on drinkable and ground water
- Conductivity in cooling tower
- Resistivity on demineralized water
- Control of ultra pure water production units

DESCRIPTION

The device is equipped with a color touch screen for the display of a multilingual menu friendly and intuitive. It provides easy reading of measurement, temperature and state of the thresholds.

It displays a menu with all parameters for configuration of analogue outputs, thresholds set up and regulation mode. In order to facilitate its commissioning, a programming menu can simulate the measurement, acting on the analog outputs, as well as on the thresholds.

Associated measuring cells have cell factors from 0.01 up to 10 for accurate measurements between 0 to 2 μS/cm and 20 mS/cm or 0 to 200 Ω.cm and 200 MΩ.cm .

BAMOPHAR 323 displays an absolute or compensated temperature measurement (Access to two reference charts: 20 °C and 25 °C).

An extension terminal (wall, panel or DIN rail mounting):

- Allows a second measuring parameter (pH, flow-rate, turbidity, etc.)
Data from this blind unit are displayed on the main unit
- Connected to main unit via a 4 wire shielded cable
(Cable length between both devices: max. 500 m)
- RS422 and Data Logger of main unit are shared between both units.

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TECHNICAL FEATURES

End-user interface	Color touch screen 4.3", resolution 480x272 pixels Display of measurements, menus, temperature, relay status Configuration: Keyword protected
Measuring range	From 0-2 $\mu\text{S/cm}$ up to 0-20 mS/cm or from 200 $\Omega\cdot\text{cm}$ up to 200 $\text{M}\Omega\cdot\text{cm}$
Accuracy	$\pm 0.3\%$; $\pm 0.3\text{ }^\circ\text{C}$
Connection of probe	With a BNC connector
Temperature compensation	Automatic with built-in Pt 100 sensor, from 0 to 100 $^\circ\text{C}$ Manually between 0 and 100 $^\circ\text{C}$
Relay outputs	4 contacts, N.O., potential free
Configurable thresholds	S1, independent threshold, to set up for measurement or temperature S2, independent threshold, to set up for measurement or temperature S3, independent threshold, to set up for measurement or temperature or external function S4, to set up for alarming function: out of range or broken cable
Hysteresis	To set up between 0 and 100 % on S1, S2 and S3
Contact Initial resistance	100 $\text{m}\Omega$ max. (voltage drop 6 V DC 1 A)
Switching power	831 VA AC / 3 A / 277 V AC 90 W / 3 A / 30 V DC
Switching capacity (min.)	100 mA, 5 V DC (variable according to switching frequency, environmental conditions and accuracy).
Measurement output	0/4-20 mA (max. 600 Ω) proportional to measurement
Temperature output	0/4-20 mA (max. 600 Ω), for all scales from 0 to 100 $^\circ\text{C}$
Main power supply	230 V AC / 50-60 Hz (others on request) - Consumption 10 VA
Models	Panel mounting, 96x144 mm, front IP65, rear IP 40 Wall mounting, IP65, cable glands
Storage	-10 ... +70 $^\circ\text{C}$
Operating temperature	-5 ... +50 $^\circ\text{C}$
OPTION (RS 422 + Logger)	
Interface	RS 422 output, J-BUS link - Binary slave mode - 2400 to 9600 bauds
Data Logger	Record of cycle average measurement, programmable cycle time - 150 000 records max. on memory card.

EC Conformity: The instrument meets the legal requirements of the current European Directives

MEASURING RANGES

CONDUCTIVITY: Measurements with BAMOPHAR 323 C				
WITH temperature compensation:				
Cell factor	0.01	0.1	1	10
Scale Nr 1	2.000 $\mu\text{S/cm}$	20.00 $\mu\text{S/cm}$	200.0 $\mu\text{S/cm}$	2.000 mS/cm
Scale Nr 2	20.00 $\mu\text{S/cm}$	200.0 $\mu\text{S/cm}$	2.000 mS/cm	20.00 mS/cm
WITHOUT temperature compensation:				
Cell factor	0.01	0.1	1	10
Scale Nr 1	2.000 $\mu\text{S/cm}$	2.000 $\mu\text{S/cm}$	20.00 $\mu\text{S/cm}$	200.0 $\mu\text{S/cm}$
Scale Nr 2	20.00 $\mu\text{S/cm}$	20.00 $\mu\text{S/cm}$	200.0 $\mu\text{S/cm}$	2.000 mS/cm
Scale Nr 3		200.0 $\mu\text{S/cm}$	2.000 mS/cm	20 mS
RESISTIVITY: Measurements with BAMOPHAR 323 R				
WITH temperature compensation:				
Cell factor	0.01	0.1	1	10
Scale Nr 1	20.00 $\text{M}\Omega\cdot\text{cm}$	2.000 $\text{M}\Omega$	200.0 $\text{k}\Omega$	20.00 $\text{k}\Omega$
Scale Nr 2	2.000 $\text{M}\Omega$	200.0 $\text{k}\Omega$	20.00 $\text{k}\Omega$	2.000 $\text{k}\Omega$
WITHOUT temperature compensation				
Cell factor	0.01	0.1	1	10
Scale Nr 1	200.0 $\text{M}\Omega\cdot\text{cm}$	20.00 $\text{M}\Omega\cdot\text{cm}$	2.000 $\text{M}\Omega\cdot\text{cm}$	200.0 $\text{k}\Omega\cdot\text{cm}$
Scale Nr 2	20.00 $\text{M}\Omega\cdot\text{cm}$	2.000 $\text{M}\Omega\cdot\text{cm}$	200.0 $\text{k}\Omega\cdot\text{cm}$	20.00 $\text{k}\Omega\cdot\text{cm}$
Scale Nr 3	2.00 $\text{M}\Omega\cdot\text{cm}$	200.0 $\text{k}\Omega\cdot\text{cm}$	20.00 $\text{k}\Omega\cdot\text{cm}$	2.000 $\text{k}\Omega\cdot\text{cm}$
Scale Nr 4	200.0 $\text{k}\Omega\cdot\text{cm}$	20.00 $\text{k}\Omega\cdot\text{cm}$	2.000 $\text{k}\Omega\cdot\text{cm}$	200.0 $\Omega\cdot\text{cm}$

See on page 4: "Temperature compensation".

Note: This function can be enabled or disabled on all BAMOPHAR 323.

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CODE NUMBERS AND REFERENCES

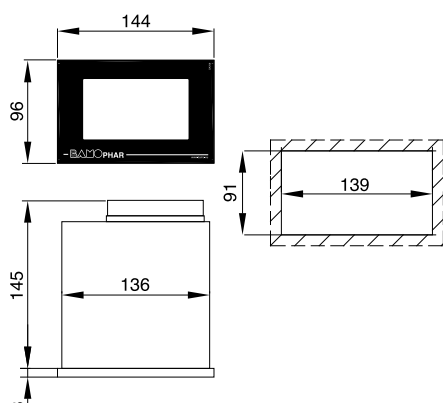
RESISTIVITY

Code	Reference	Description
323 300	BAMOPHAR 323 RE	Panel mounting, box 96x144 mm, Front IP65, rear IP40
323 301	BAMOPHAR 323 RE/A	Panel mounting, box 96x144 m- Extension, blind monitor; Front IP65, rear back IP40
323 303	BAMOPHAR 323 RD/A	DIN Rail mounting/ Extension, blind monitor/ IP40
323 304	BAMOPHAR 323 RE LOG BUS	Panel mounting, box 96x144 mm/ RS422 + logger/ Front IP65, rear IP40
323 400	BAMOPHAR 323 RM	Wall mounting, Box IP 65, cable glands
323 401	BAMOPHAR 323 RM/A	Wall mounting, box IP 65/ Extension, blind monitor/ cable glands
323 450	BAMOPHAR 323 RM LOG BUS	Wall mounting, box IP 65/ RS 422 + logger/ cable glands

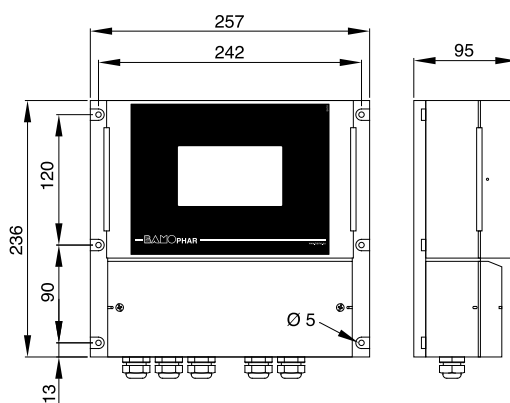
CONDUCTIVITY

Code	Reference	Description
323 500	BAMOPHAR 323 CE	Panel mounting, box 96x144 mm, Front IP65, rear back connector IP40
323 501	BAMOPHAR 323 CE/A	Panel mounting, box 96x144 m- Extension, blind monitor; Front IP65, rear back connector IP40
323 503	BAMOPHAR 323 CD/A	DIN Rail mounting/ Extension, blind monitor/ IP40
323 504	BAMOPHAR 323 CE LOG BUS	Panel mounting, box 96x144 mm/ RS422 + logger/ Front IP65, rear back connector IP40
323 505	BAMOPHAR 323 CM	Wall mounting, Box IP 65, cable glands
323 506	BAMOPHAR 323 CM/A	Wall mounting, box IP 65/ Extension, blind monitor/ cable glands
323 509	BAMOPHAR 323 CM LOG BUS	Wall mounting, box IP 65/ RS 422 + logger/ cable glands

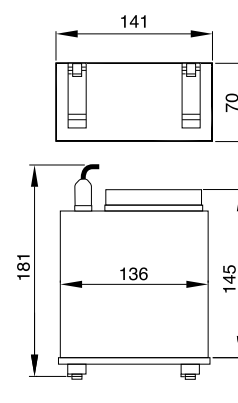
DIMENSIONS



BamoPHAR ... E, E/A, E LOG BUS



BamoPHAR ... M, M/A, M LOG BUS



BamoPHAR ... D/A

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COMPONENTS OF A MEASURING SYSTEM

1) Selecting a measuring cell and probe

The measuring range imposes the cell factor in order to work under the best conditions for a correct measurement. Our technical department will help you in choosing the most appropriate probe. See table "Measuring ranges" on page 2.

The cell constant will determine the possible ranges to program on the BAMOPHAR.
If the scale is exceeded, the display flashes with the symbol $> M\Omega$ and the maximum value of the preselected scale.

2) With or without temperature compensation

BAMOPHAR 323 is able to display or an absolute value or a temperature compensated value.

BAMOPHAR uses two charts at 20 °C or at 25 °C for the temperature compensation.
One more option for operator is to set the temperature compensation as manual or as automatic mode.

Manual mode:

Temperature will be set up manually.

Conductivity (or resistivity) displayed value corresponds to corrected value at 20 °C or at 25 °C: to set up by choosing the chart through the menu.

This application is valid if the temperature is known and constant.

Automatic compensation

The temperature will be measured by a Pt 100 Ω sensor integrated into cell or separated from the probe.

The correction is carried out by BAMOPHAR between 0 and 100 °C on one of the two reference charts (20 °C or 25 °C).

For specific applications, our technical department can achieve a specific compensation mode for your application.

3) Measuring loop cable

The choice of cable is very important.

Because of intrinsic impedance (resistance and capacitance) the cable could induce an error of 50 % on measurements, mostly on low conductivity ranges (high resistivity ranges). The connecting cable must be connected directly from the probe to the terminal block of the device without any intermediate connection. The maximum length depends on the measuring range and the cell factor (see table below).

In general, the cable used will be of the aerated coaxial type reference CCA (code 368 100). With specific cells BF 1200 series with connector 9054, it is recommended to use the cable BRG-58 (code 368105).

Cable length for conductivity:

The cable can have a length of 100 m and work on all measuring ranges independantly of the cell factor.

Cable length for resistivity:

Table of recommended lengths:

Cell factor	0.01	0.1	1	10
Scale: 200 M Ω	10 m			
Scale: 20 M Ω	50 m	10 m		
Scale: 2 M Ω	100 m	50 m	10 m	
Scale: 200 k Ω		100 m	50 m	10 m
Scale: 20 k Ω		100 m	100 m	50 m
Scale: 2 K Ω			100 m	100 m
Scale: 200 Ω			100 m	100 m

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