RESISTIVITY-METER AND CONDUCTIVITY-METER
- SERIES BAMOCOR 321 -

- **Universal and programmable**
- **Controlled by microprocessor**
- **Alphanumeric displayer**
- **Display back lighted LCD**
- **Simultaneous Mesure/Température display**
- **Measure range**
  0 - 200 Ω up to 0 - 200 MΩ
  or 0 - 2 µS up to 0 - 20 mS
  or 0 - 20 mS up to 0 - 2000 mS /TOR version
- **Automatic/manual compensated temperature**
- **2 adjustables alarm with switching output**
- **0/4 - 20 mA analogic output, isolated**
- **Housing**
  Enclosure box 72 x 144 BAMOCOR 321 E
  Wall mounting IP 65 BAMOCOR 321 M
- **Associated probes**
  Coefficient : 10 - 1 - 0,1 - 0,01
  TCS 100 TOR probe

OPTIONS

- **J-Bus communication RS 422 or RS 485 digital links**
- **348 000 measures data logger**

DESCRIPTION

The BAMOCOR series are easy-to-use microprocessor based controllers. Calibration and configuration is as easy as pushing a button. Calibration and configuration is done by a simple step-trough menu for all settings. A single 16 alphanumeric characters back lighted LCD display is used to indicate the measures and temperature. It displays also the menu for the allocation of sets, the adjustment of the analog output, as well as all function modes. Associated probes can be set with coefficient of 0,01, 0,1, 1 or 10. These coefficients allow accurate measures between 20 Ω up to 200 MΩ and in conductivity from 0,2 µS up to 20 mS. The analog output is galvanically isolated and can be set over the measured range. These versions of our conductivity / resistivity meters allows to solve all problems of measure with or without automatic temperature compensation, more a RS 485 2-wire output module is available for communication between a computer and the BAMOCOR 321.

BAMO MESURES
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TECHNICAL SPECIFICATIONS

Main power supply	: 230 V ±10 % 50-60 Hz single phase. (117 V, 48 V, 24 V on request)
Consumption	: 10 VA
Enclosure box	: Dimensions : 72 x 144 x 185 - Weight : 1100 g Protection: IP 40, front panel IP 65 - Material: Noryl, front panel polycarbonat Connection: Dismountable screwed connector
Wall mounting box	: Dimensions: 355 x 237 x 95 - Weight : 1900 g Protection: IP 65 - Material: ABS, front panel polycarbonat Connections: Terminal screw, input by plastic cable gland.
Temprature	: Stockage: -10 up to 70 °C Fonctionning: -5 up to 50 °C
Measure range	: Measure: 0 - 2 µS up to 0 - 20 mS or 200 Ω up to 200 MΩ (0 - 20 mS, 0 - 200 mS, 0 - 2000 mS, /TOR Vers.) Temperature: 0 up to 100 °C
Probes	: Measure: Coaxial probe with K= 0,01 or K=0,1 or K=1 or K=10 or TOR probe (TCS 100) Temperature: Pt 100 Ω à 0 °C, 3 wires system.
Accuracy	: Measure: ± 0,3 % - Temperature: ± 0,3 °C
Displayer	: 16 alphanumeric characters - H = 9.22 mm - Back lighted
Input probe	: BNC coaxial connector PIN type , or dismountable screwed connector (TOR version)
S1 and S2 alarm sets	: Volt free change over contact rated at 500 VA / 250 V / 2 A
Current/Measure output	: 0/4 - 20 mA (600 Ω max) proportional to measurement - Galvanic insulation included
Communication	: J-BUS connection - Slave binary mode - RS 422 or RS 485 - 1200 up to 9600 bauds
Visualization	: Red leeds of relays functions, located on front panel.
Programmation	: On front panel with 5 push-button keyboard - Password protected keyboard
Simulation measurement	: By menu - Action on output measures.

ORDERING CODES

Code	Resistivity	Code	Conductivity	Code	Conductivity TOR	Designation
321 300	321 RE	321 500	321 CE	321 364	321 TOR/E	Enclosure IP 40, 72 x 144 mm
321 350	321 RE/LOG	321 550	321 CE/LOG			+ data logger
321 352	321 RE/BUS	321 552	321 CE/BUS			+ J-BUS
321 400	321 RM	321 600	321 CM	321 464	321 TOR/M	Wall mounting, IP 65
321 450	321 RM/LOG	321 650	321 CM/LOG			+ data logger
321 452	321 RM/BUS	321 652	321 CM/BUS			+ J-BUS

RANGE AGAINST PROBE (Except TOR probe)

WITH AUTOMATICTEMPERATURE COMPENSATION								
CONDUCTIVITY								
Coef.	**0,01**		**0,1**		**1**		**10**	
Scale 1	2,000	µS	20,00	µS	200,0	µS	2,000	mS
Scale 2	20,00	µS	200,0	µS	2,000	mS	20,00	mS
RESISTIVITY								
Coefficient	**0,01**		**0,1**		**1**		**10**	
Scale 1	20,00	MOhms	2,000	MOhms	200,0	KOhms	20,00	KOhms
Scale 2	2,000	MOhms	200,0	KOhms	20,00	KOhms	2,000	KOhms
WITHOUT AUTOMATICTEMPERATURE COMPENSATION								
CONDUCTIVITY								
Coefficient	**0,01**		**0,1**		**1**		**10**	
Scale 1	2,000	µS	2,000	µS	20,00	µS	200,0	µS
Scale 2	20,00	µS	20,00	µS	200,0	µS	2,000	mS
Scale 3			200,0	µS	2,000	mS	20	mS
RESISTIVITY								
Coefficient	**0,01**		**0,1**		**1**		**10**	
Scale 1	200,0	MOhms	20,00	MOhms	2,000	MOhms	200,0	KOhms
Scale 2	20,00	MOhms	2,000	MOhms	200,0	KOhms	20,00	KOhms
Scale 3	2,00	MOhms	200,0	KOhms	20,00	KOhms	2,000	KOhms
Scale 4	200,0	KOhms	20,00	KOhms	2,000	KOhms	200,0	Ohms

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SELECTION OF THE MEASURING PROBE

The measuring range imposes a coefficient of the probe to work with optimum conditions to get good measures.
Our technical service is at your disposal to guide you in the choice of the most appropriated probe.
Coefficient of the selected probe will be allocated on the menu.

TEMPERATURE COMPENSATION

The BAMOCOR 321 allows an automatic or manual temperature compensation.
The temperature affects the behaviour of the fluid itself and not the probe. The ionic dissociation is different in regard of the fluid the temperature and the measuring range.
The variation of resistivity (conductivity) can change with small temperature variation. For example, with demineralized water (18 MOhms), the slope varies from 2% in low temperatures (5 to 10 °C) to only 0.5% between 80 and 90 °C. These variations are different for water with a high amount of salt. A universal and linear correction is therefore difficult.
The BAMOCOR 321 allows an automatic or manual temperature compensation on 2 measuring ranges from 0 to 100 °C.
Without temperature compensation 2, 3 or 4 measuring ranges are possible. Only the choice of the probe will determine the possible ranges according to its coefficient. (Refer to page 321/ 2)
In case of over scale the meter displays the former by the symbol > 2 MΩ for a scale 0 to 2 MΩ selected in the programming.

Manual

The temperature will not be measured. The resistivity (conductivity) displayed will be therefore the only measure of the probe corrected with the assigned temperature 20 or 25 °C (selection on the menu). This application is available only when the temperature varies a few degrees.

Automatic

The temperature will be measured with a Pt 100 probe integrated in the conductivity cell or with a separate probe. The correction is made with the microprocessor between 0 and 100 °C on two measuring ranges according to the coefficient of probe. For specific applications our technical service can design a custom specific compensation.

CABLE CONNECTION

The choice of the cable is very important.
The cable resistance and capacity can produce an measuring error up to 50%, typical on high resistivitys (low conductivities).
Connection of the cable to the probe and the BAMOCOR wiring bare have to be made without any intermediate connection.
The max. cable length is depending from the measuring range and the coefficient of the probe.
Standard we supply shielded coax cable reference CCA (code 368 100), for some applications the type 9060 (code 160 300) is delivered for series BS 1200 measuring probes with 9054 connector.
The measuring cable has to be separated from power cables and any other power sources for at least 20 cm, we advice to use separate cable glands. In case of crossing the measuring cable with power cables it is recommended to cross them in an straight angle to limit the interference.

LENGTH OF MEASURING CABLES

Conductivity

Du to a specific electronic circuit to measure conductivity the cable can have a length of 100 m on all measuring ranges independent from the coefficient of probe.

Resistivity

According to the following table (max. length in meter).

Probe coefficient	0,01	0,1	1	10
Scale				
200 MOhms	10			
20 MOhms	50	10		
2 MOhms	100	50	10	
200 KOhms		100	50	10
20 KOhms		100	100	50
2 KOhms			100	100
200 Ohms			100	100

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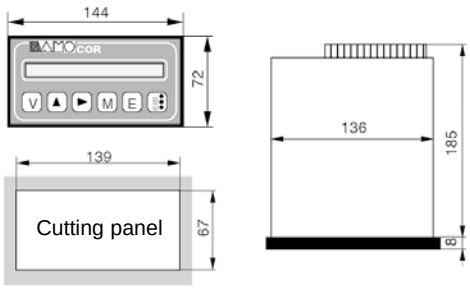
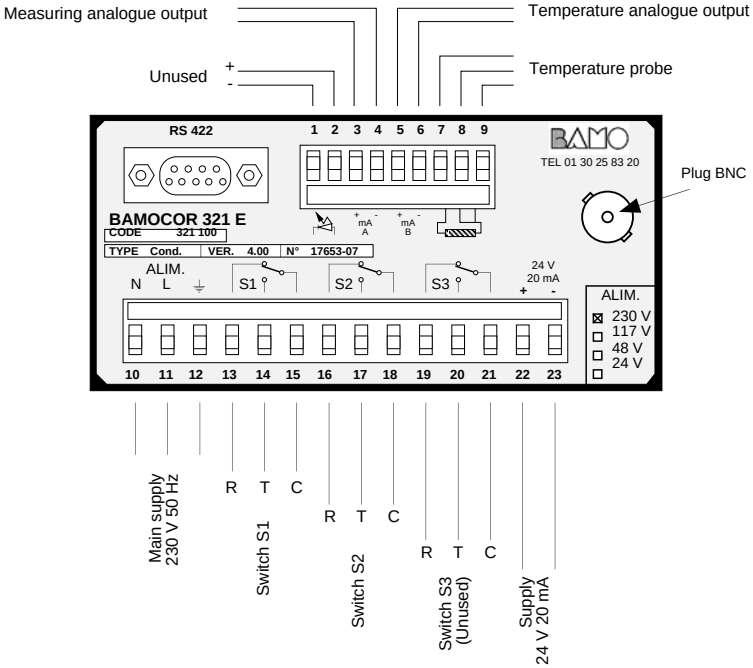
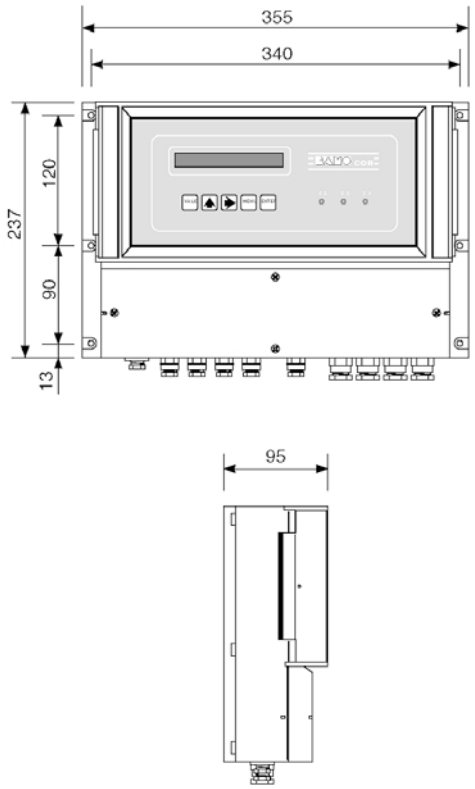
DIMENSIONS & WIRING

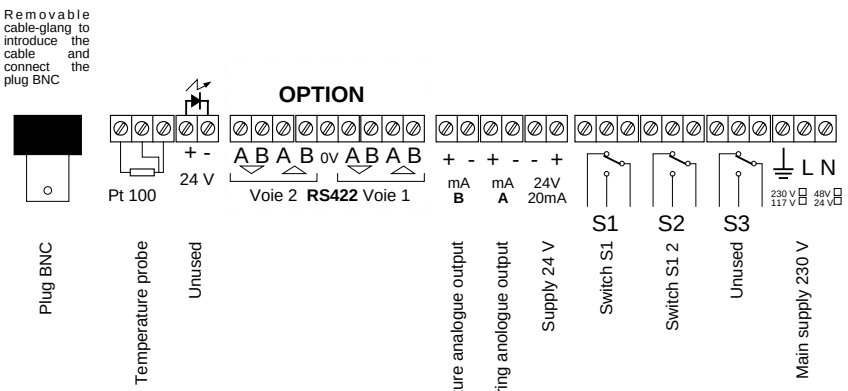


ENCLOSURE BOX



WALL MOUNTING BOX





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