BAMOPHOX 322 E - M

Conductivity monitor and controller

INSTRUCTION MANUAL

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Conductivity monitor and controller
BAMOPHOX 322
31-05-2007 322 M1 01 I

MES
322-01/1

Conductivity monitor and controller
BAMOPHOX 322 E & M

Content

(Technical information and Manual for LOGGER /RS422 version are on a specific document)

1. TECHNICAL FEATURES

Displayed parameters:	Measurement values - Configuration Menu - Temperature value
Display:	Back lighted - 2 lines of 16 alphanumerical characters ; 9,2 mm high
Indication:	LED alarms status
Configuration:	8 push buttons keyboard on front face - Keyword protected
Scales:	From 0...2 μS to 0...20 mS; please see details on page 9
Accuracy:	± 0,3%, ± 0,3°C
Probe input:	BNC plug
Temperature compensation:	Automatic with an input for a 3 wires Pt 100 Ohm/0°C, range 0…100°C Manually from 0…100°C
Relay outputs:	4 closing contacts (Silver alloy), voltage free
Thresholds:	3 programmable independent thresholds - with adjustable hysteresis 0…100% and adjustable timer from 0 to 9999 sec
1 Output relay:	Common alarm signal for system dysfunction
Contact:	Initial resistance 100 mΩ as a maximum (voltage drop 6 V DC 1 A) Rated at 831 V AC / 3 A / 277 V AC; 90 W / 3 A / 30 V DC Switching capacity (minimum) 100 mA, 5 V DC (depending of switching frequency, ambient conditions, accuracy) Mechanical life time (minimum) 5 x10^6 operations (180 commutation/min) Electrical life time (minimum) 2 x10^5 (20 comm./min) [3 A, 125 V AC], [3 A, 30 V DC] and 10^5 (evaluated charge) for 3 A, 125 V AC
Measurement output:	0/4-20 mA (maxi 600 Ω) proportional to measurement, galvanic insulated
Temperature output:	0/4-20 mA (max 600 Ω), scaling 0…100°C, galvanic insulated
Program Testing:	Simulation through the menu on measurement, temperature, and relay outputs
Main power supply:	230 V AC / 50-60 Hz [other on request] - Consumption 10 VA
Models:	Panel mounting, IP65, 72 x 144 mm, connections on screw terminal IP40 Cycle average measurement record, with a programmable period, 150000 records maxi on MMC (multi media card) / External driver necessary

OPTION (RS 422 + Logger)

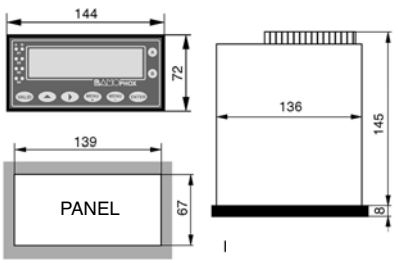
Communication:	RS422 output, J-BUS link, binary slave mode, 2400 to 9600 bauds
Data Logger:	Cycle average measurement record, with a programmable period, 150000 records maxi on MMC (multi media card) / External driver necessary
CE label:	Label CE in conformity with 73/23/CEE low power and electromagnetic compatibility 89/336/CEE

CAUTION

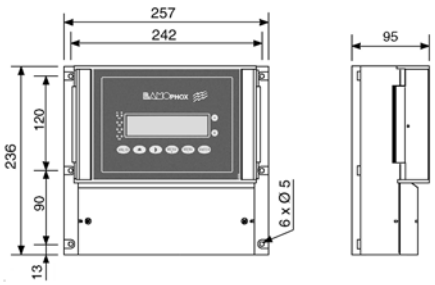
- The instrument may not be subject to vibrations and should be protected against direct sun shining.
- The ambient temperature should be between 0 and 50°C.
- Wiring has to be done by a specialist.
- Any error on electrical connection may cancel terms of warranty.
- Before to switch on your instrument, please check that the main power supply corresponds to the device requirement.

2. DIMENSIONS

Extension terminal:
identical to the panel
or wall mounting



Panel mounting instrument

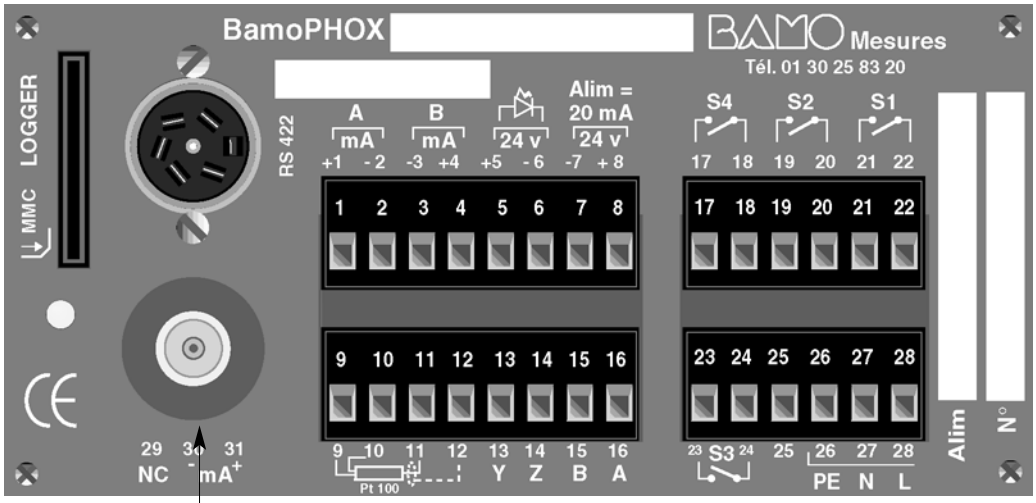


Wall mounting instrument

3. WIRING

ENCLOSURE BOX

OPTION:
LOGGER
&
RS 422

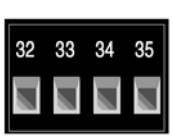


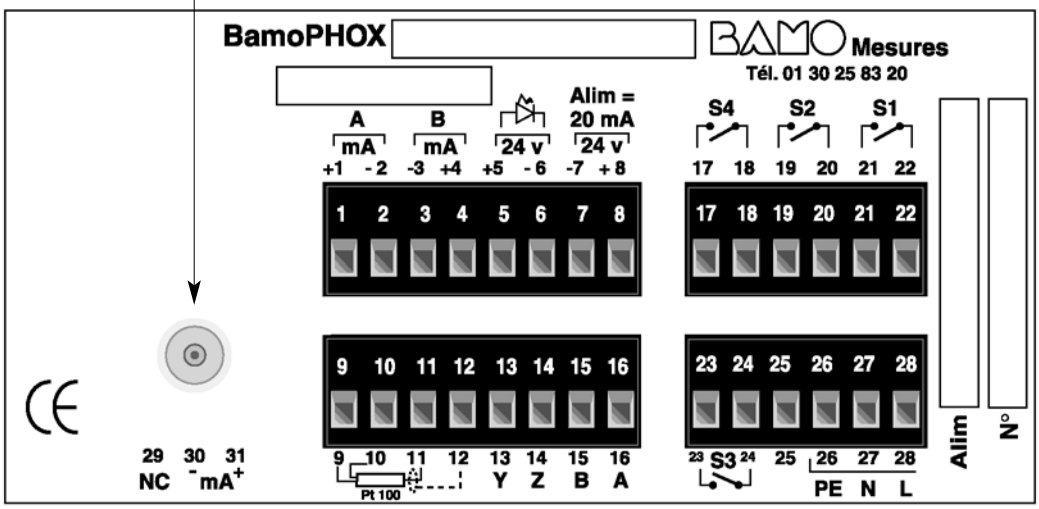
BNC plug
Input measurement

WALL HOUSING

OPTION:
LOGGER
&
RS 422
(accessible by removal the higher cap)

RS 422

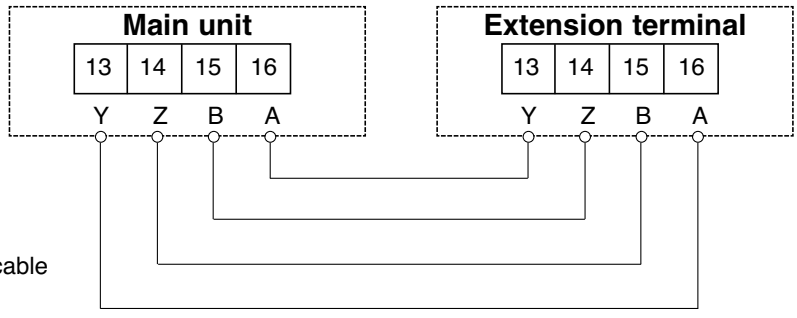




BamoPHOX terminal

1	+ mA measure output
2	- mA measure output
3	- mA temperature output
4	+ mA temperature output
5	+ 24 V — Stand by regulation
6	- 24 V
7	- 24 V — Power supply = 20 mA
8	+ 24 V
9	Pt 100 Ω
10	
11	
12	
13	Y — Main device link (blind version)
14	Z
15	B
16	A
17	S4 relay / not used
18	
19	S2 relay (NO contact) / alarme commande 2
20	
21	S1 relay (NO contact) / alarme commande 1
22	
23	S3 relay (NO contact) / alarme commande 3
24	
25	Not connected
26	Grounding (equipotential)
27	N — Main supply (N = Neutral, L = Line)
28	L

Wiring from wall or panel mounting BAMOPHOX to an Extension terminal BAMOPHOX



- Maximum length cable
  500 m

- Wire specifications:
  Mains cable or 4 wires shielded cable
  ≥ 0,25 mm² cross section

4. FRONT PANEL

S1, S2, S3, and S4
indicate relays status:

LED lighting = contact ON
LED OFF = contact OFF
LED flashing = Timer in use

2 lines /16 alphanumeric characters
9.22 mm high - Back lighted

Key **"A"**
To display the parameters of upper line.
(main BAMOPHOX)

Key **"B"**
To display the parameters of lower line.
(Extension blind BAMOPHOX)

"VALID" key
To save the parameters on EPROM
when it asks:

VALIDATION ?

Caution, when you press this key,
all parameters are saved.
(previous data programmation
will be overwrited).
If you are not sure of any modification,
do not press the VALID key,

"ENTER" key
To change the step displayed menu.
At the last step, it comes back to the
first line.

"MENU - " key
To move the cursor during configuration.
At the last digit, comes back on the first one.

To change parameters of data capture:

Numéric input increase the
flashing digit (loop 0 after 9).

Reverse the choice Yes / No,
Up/Down, 0-20 mA / 4-20 mA etc.

"MENU +" key
To go to the next menu.

Pushing simultaneously both keys
"**MENU +**" and **"ENTER"**
allows a fast return to measurement display.

To go to the next display or to change a value.

SCROLLING MENU

MEASUREMENT DISPLAY

MENU +

ABOUT BAMOPHOX

MENU +

CONSULTATION / MODIFICATION

MENU +

MEASUREMENT PARAMETERS

MENU +

ADJUST ALARM 1

MENU +

ADJUST ALARM 2

MENU +

ADJUST ALARM 3

MENU +

OUTPUT mA CONDUCTIVITY

MENU +

OUTPUT mA TEMPERATURE

MENU +

TEMPERATURE

MENU +

FORCED RELAY

MENU +

CLOCK

MENU +

RECORDING PERIOD

MENU +

LIAISON SERIE

MENU +

With LOGGER option

See documentation

LOGGER + RS 422

LANGUAGE

MENU +

ABOUT Bamophox

ABOUT Bamophox

ENTER

VERSION 1.00

ENTER

SERIAL N°

ENTER

20879 05

ENTER

CONSULTATION / MODIFICATION

CONSULTATION

▲

MODIFICATION

ENTER

CODE ? **0000**

ENTER

CODE ? 7905

ENTER

"**ERROR**"
TIME: 30 mn

▲ ▶

Using 4 last digits of serial N°

In case of invalid password,
message appear during 3 second.

CONSULTATION mode
resets automatically after 30 min.

MENU
+

From this mode MODIFICATION it is easy to return back to measurement fot testing the relay outputs and regulation mode.
Once in modification mode, **reach measurement display and press ENTER**

ENTER

FORCED MEASURE

ENTER

0,000 MΩ / °C

▲ ▶

(one digit is flashing) Modify the value. Immediately the instrument acts within the configuration (thresholds, regulation, analog outputs ...).

ENTER

Press ENTER to cancel the test mode and to go back to the measurement mode.

MEASUREMENT PARAMETERS

MEASURE

ENTER

CONDUCTIVITY

ENTER

KR : **1,002** ▲ ▶ Constant cell entry

ENTER

SCALE: **µS / mS** ▲ ▶ Scale

ENTER

With automatic temperature compensation				
Coefficient	**0,01**	**0,1**	**1**	**10**
Scale1	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
Without temperature compensation				
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

MAXIMUM CABLE LENGTH: With specific electronic conductivity measurement, cable should have a maximun length of 100 m, for each scale, and eachcontant cell.

ADJUST ALARM 1 — MENU + → ADJUST ALARM 2 → see page 10

ENTER

ALARM 1 **ON/OFF** ▲

ENTER

ALARM 1 **MEASURE/TEMP.** ▲ **MEASURE**= Alarm dedicated to the measure. **TEMPERATURE**= Alarm dedicated to the temperature

ENTER

HIGH/LOW ▲ **High**= Energized if measure is higher to the set point **Low**= Energized if measure is lower to the set point

ENTER

ON **0000** mS / °C ▲ ▶ Value to which S1 relay will be energized

ENTER

OFF **0000** mS / °C ▲ ▶ Value to which S1 relay will be down

ENTER

DELAY UP **ON/OFF** ▲ With or without delay for S1 energizing

ENTER

TIME**0000** SEC ▲ ▶ Duration of the delay for S1 energizing

ENTER

DELAY DOWN **ON/OFF** ▲ With or without delay S1 will be down

ENTER

TIME **0000** SEC ▲ ▶ Duration of the delay for S1 will be down

ENTER

SAVING ?

VALID

ADJUST ALARM 2

MENU + → ADJUST ALARM 3

ENTER

ALARM 2 **ON/OFF** ▲

ENTER

ALARM 2 **MEASURE/TEMP.** ▲

MEASURE= Alarm dedicated to the measure.
TEMPERATURE= Alarm dedicated to the temperature

ENTER

HIGH/LOW ▲

High= Energized if measure is higher to the set point
Low= Energized if measure is lower to the set point

ENTER

ON **0000** mS / °C ▲ ▶ Value to which S2 relay will be energized

ENTER

OFF **0000** mS / °C ▲ ▶ Value to which S2 relay will be down

ENTER

DELAY UP **ON/OFF** ▲ With or without delay for S2 energizing

ENTER

TIME**0000** SEC ▲ ▶ Duration of the delay for S2 energizing

ENTER

DELAY DOWN **ON/OFF** ▲ With or without delay S2 will be down

ENTER

TIME **0000** SEC ▲ ▶ Duration of the delay for S2 will be down

ENTER

SAVING ?

VALID

ADJUST ALARM 3

ENTER

MENU + → OUTPUT mA → see page 11

ENTER

ALARM 3 **ON/OFF** ▲

ENTER

ALARM 3 **MEASURE/TEMP.** ▲

MEASURE= Alarm dedicated to the measure.
TEMPERATURE= Alarm dedicated to the temperature

ENTER

HIGH/LOW ▲

High= Energized if measure is higher to the set point
Low= Energized if measure is lower to the set point

ENTER

ON **0000** mS / °C ▲ ▶ Value to which S3 relay will be energized

ENTER

OFF **0000** mS / °C ▲ ▶ Value to which S3 relay will be down

ENTER

DELAY UP **ON/OFF** ▲ With or without delay for S3 energizing

ENTER

TIME**0000** SEC ▲ ▶ Duration of the delay for S3 energizing

ENTER

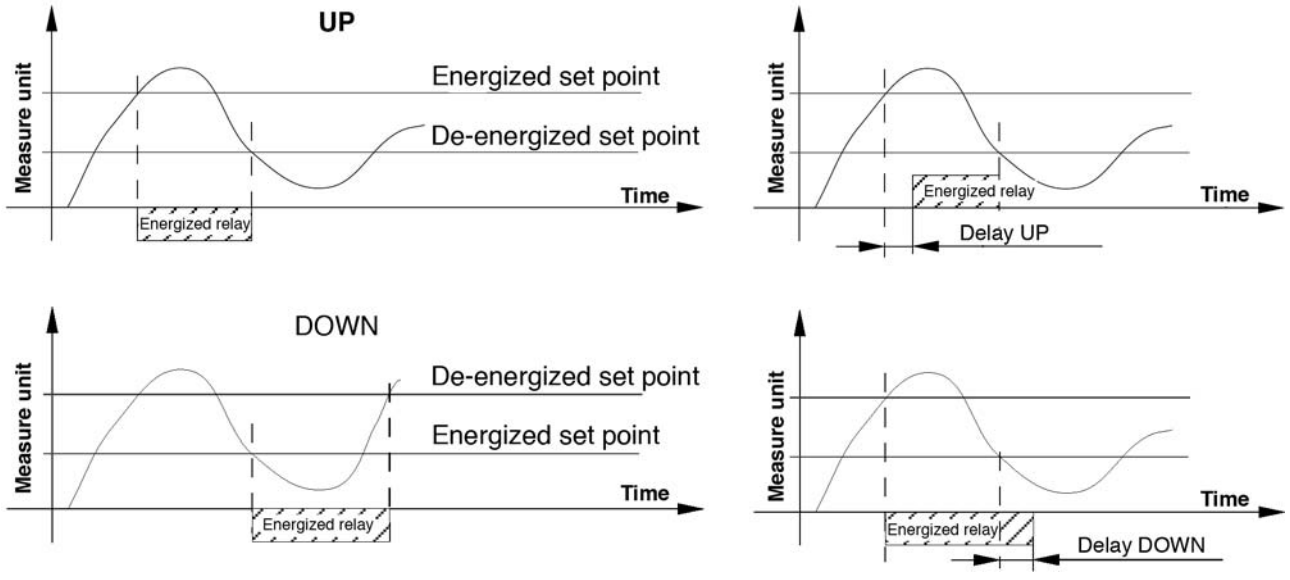
DELAY DOWN **ON/OFF** ▲ With or without delay S3 will be down

ENTER

TIME **0000** SEC ▲ ▶ Duration of the delay for S3 will be down

VALID

SAVING ?



OUTPUT mA — MENU + → OUTPUT mA TEMP

ENTER		
	HIGHER **2000 mS**	▲ ▶ Valeur corresponding to 20,00 mA output
ENTER		
	LOWER **0 mS**	▲ ▶ Valeur corresponding to 4,00 mA output (0,00 mA)
ENTER		
	OUTPUT **4-20 mA/ 0-20mA**	▲ Output selection 0,00 mA or 4,00 mA
ENTER		
	SAVING ?	
VALID		

Output mA TEMP — MENU + → TEMPERATURE → see page 12

ENTER		
	HIGHER **+160,0** °C	▲ ▶ Valeur corresponding to 20,00 mA output
ENTER		
	LOWER **+000,0** °C	▲ ▶ Valeur corresponding to 4,00 mA output (0,00 mA)
ENTER		
	OUTPUT **4-20 mA/ 0-20mA**	▲ Output selection 0,00 mA or 4,00 mA
ENTER		
	SAVING ?	
VALID		

TEMPERATURE — MENU + → FORCED RELAYS

ENTER

MEASURE: **AUTO / MANUAL**

AUTO : Measure wich Pt 100 Ω sensor

MANU : Without Pt 100 Ω sensor, the temperature value is manually set at the next step

ENTER

FLUID T° + **025,0** °C

Fluide temperature manual setting

ENTER

AUTO TC : **YES / NO**

(Reference temperature 20°C)

ENTER

VALID

SAVING ?

FORCED RELAY — MENU + → LANGUAGE

ENTER

ALARM 1 OFF/ON

ENTER

ALARM 2 OFF/ON

Alarm manual test mode

ENTER

ALARM 3 OFF/ON

VALID

LANGUAGE — MENU + → Go back to display

ENTER

FRENCH / ENGLISH / ITALIAN / GERMAN

ENTER

SAVING ?

VALID