

BAMOPHOX 759 E - M

FLOW CALCULATOR



INSTRUCTION MANUAL

BAMO MESURES

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FLOW CALCULATOR
BAMOPHOX 759

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759 M1 02 F

MES

759-02/1

FLOW CALCULATOR BAMOPHOX 759 E & M

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Appendix: ALL EXISTING CHANNEL FLOW CURVES IN MEMORY

1. TECHNICAL FEATURES

Displayed parameters:	Flow rate – Total / daily volumes – Temperature - Water level height - Configuration Menu
Display:	Back lighted - 2 lines of 16 alphanumerical characters; 9.2 mm high
Indication:	LED relays status
Configuration:	8 push buttons keyboard on front face - Keyword protected
Scales:	Water height [mm] – Resolution 1 mm Flow rate [m ³ /h] – Resolution 0.1 m ³ /h Total indicator [m ³] – Resolution 1 m ³
Totalization:	Cumulative total on 8 digits – no reset possible Volume per day on 4 digits – Reset through the menu
Input:	4-20 mA proportional to the height of water
Memorized curves:	Venturi open channels ISO 4359 – DEBITFLO series (documentation 755-01) Weird plates ISO 1438/1-1980 – DEBITBAC series (documentation 755-02)
Limit contacts S1 and S3:	2 contacts dedicated to flow rate measurement or temperature, potential free Switching capacity of 500 VA / 250 V / 2 A Adjustable hysteresis from 0 to 100 % - Adjustable reset timer from 0 to 9999 s
Sampler control S2:	Configuration by step of measured volume measurement [m ³] 1 contact, potential free - switching capacity of 500 VA / 250 V / 2 A Adjustable reset timer from 0 to 9999 s
Pulse output S4:	For external Total indicator – 1 pulse/m ³ 1 contact, potential free
Contact (silver):	Initial resistance 100 mOhm 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 (minimal):	100 mA, 5 V DC (depending of switching frequency, ambient conditions, accuracy)
Mechanical lifetime (minimal):	5 x10 ⁶ operations (180 commutation/min)
Electrical life time (minimal):	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 Ohm) proportional to the flow rate – scalable - galvanic insulated
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 Idem DIN Rail mounting, only for blind monitor Wall mounting, IP65, cable glands, connections on screw terminal
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

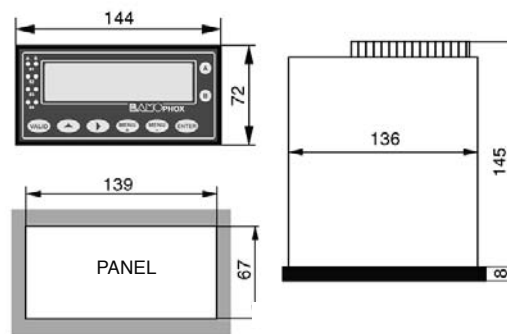
2. CAUTION

- 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.

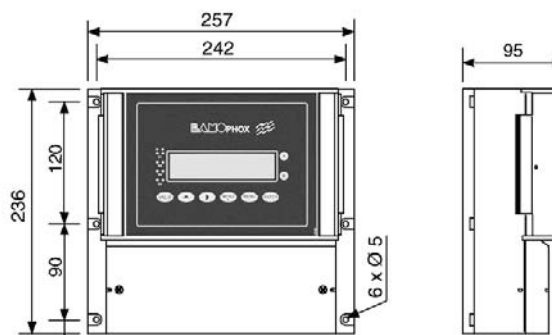
3. DESCRIPTION

- The BAMOPHOX 759 is a flow calculator designed for Venturi open channels and Weir plates.
- The flow rate is directly in relation with the fluid height in the channel.
- Flow rate is calculated from memorized curves of our range of Venturi open channel ISO4359 and standardized Weir plates V or U).
On request, we may configure the instrument for a special curve.
- Two mounting types are available, panel or wall mounting.
- The display allows an easy reading of flow rate (or water level height), total indication and temperature.
- Through a friendly using menu all configuration parameters are easily processed.
- A keyword protects the configuration.

4. DIMENSIONS



Panel mounting instrument



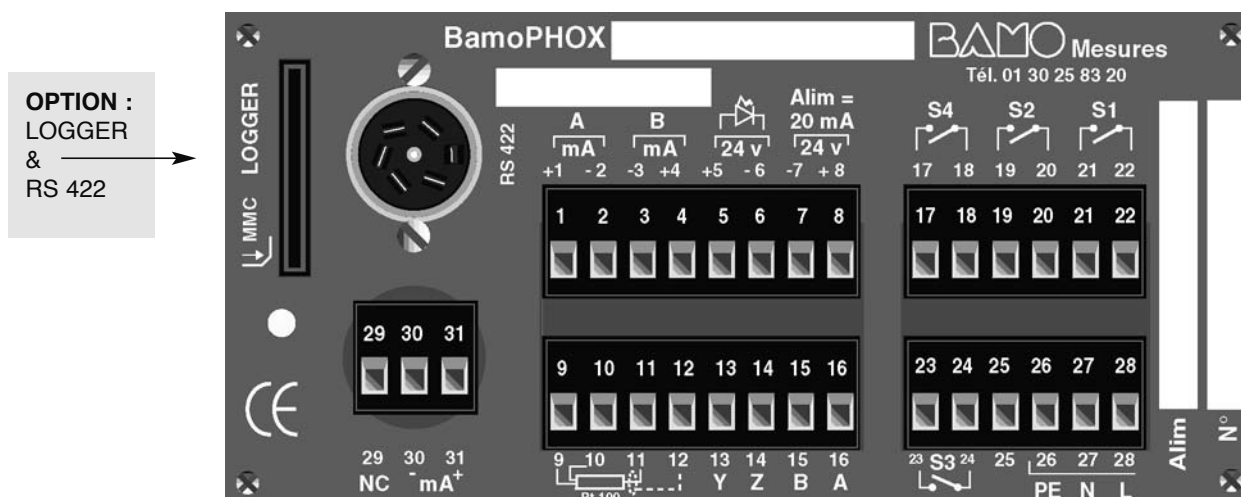
Wall mounting instrument

Extension terminal:

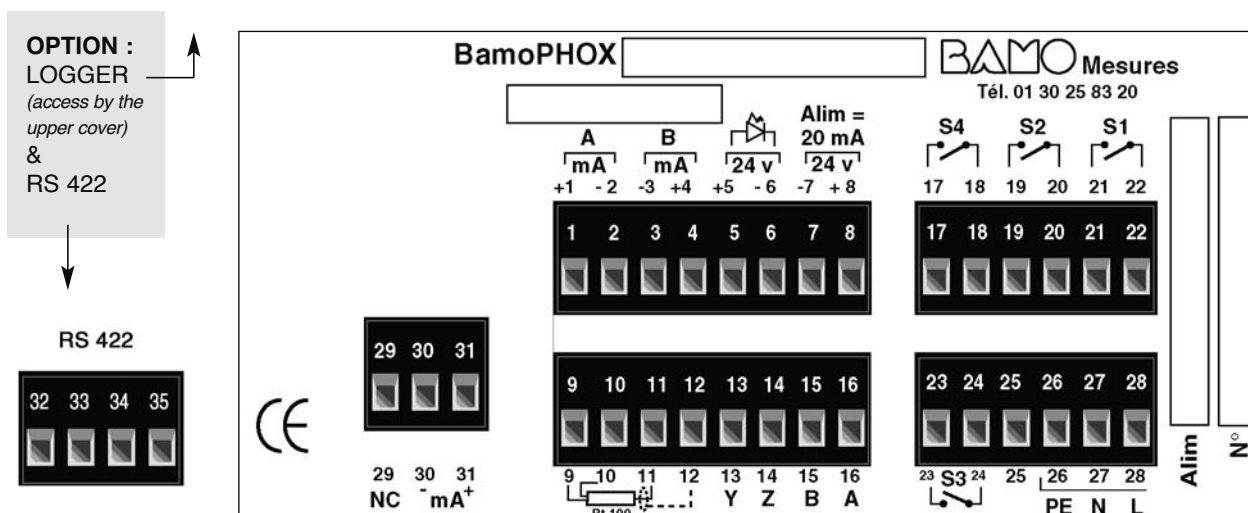
identical to the panel or wall mounting BAMOPHOX

5. WIRING

PANEL MOUNTING



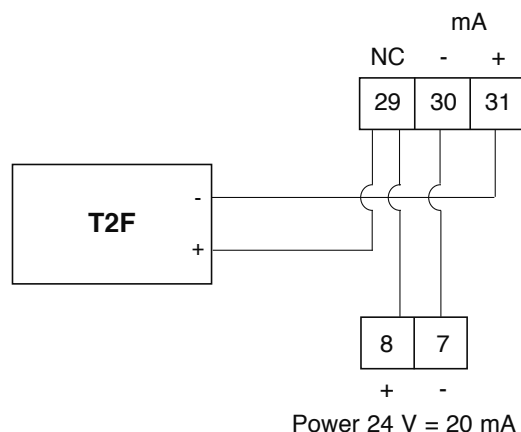
WALL MOUNTING



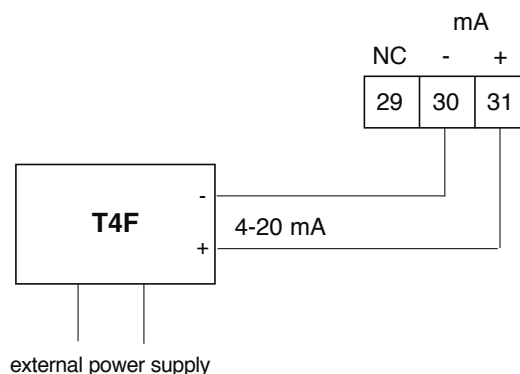
Screwing terminals

1	+ mA output / measurement
2	- mA output / measurement
3	- mA output / temperature
4	+ mA output / temperature
5	+ 24 V
6	- 24 V
7	- 24 V
8	+ 24 V
9	To switch the regulation on stand-by
10	
11	Sensor power supply = 20 mA
12	
13	Pt 100 Ω
14	Connection to an extension terminal (blind BAMOPHOX)
15	
16	
17	
18	Shield
19	Y
20	Z
21	B
22	A
23	S4, output: Pulse signal 1 pulse /m ³
24	S2 threshold, NO contact – Sampler control
25	S1 threshold NO contact – Measurement / Temperature
26	S3 threshold NO contact – Measurement / Temperature
27	NOT USED
28	Ground
29	N
30	L
31	Power supply (N= Neutral, L= Live)
	NC
	- mA
	To level transitter (2 or 4 wires loop)

Electrical connection for a 2 wires transmitter (power through the loop)



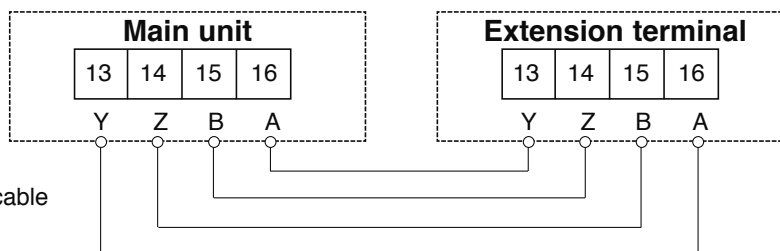
Electrical connection for a 4 wires transmitter (external power supply)



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



6. 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 overwritten).

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.

"MENU +" key

To go to the next menu.

Pushing simultaneously both keys

"MENU +" and "ENTER"
allows a fast return to measurement display.

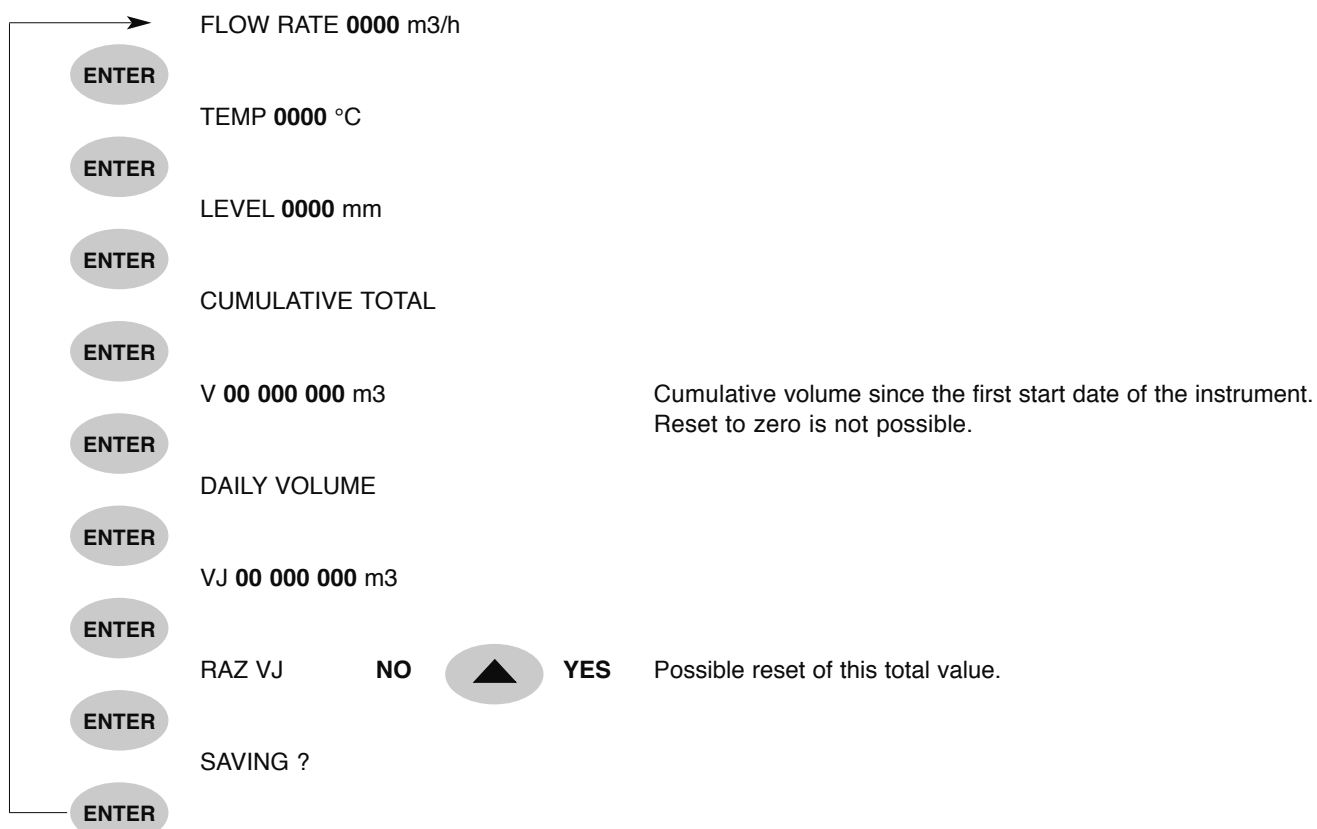
To change parameters of data capture:

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

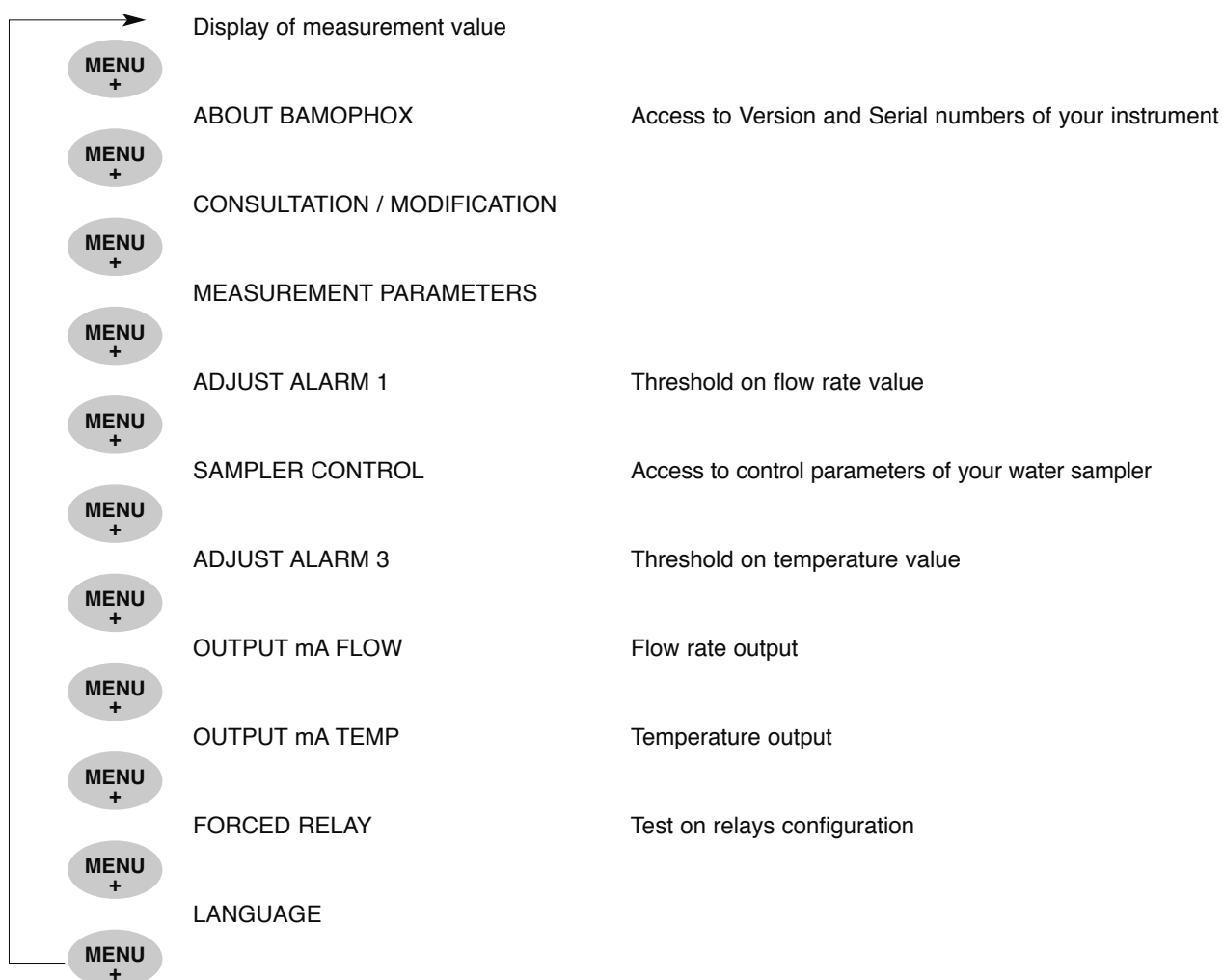
Reverse the choice Yes / No,
Up/Down, 0-20 mA / 4-20 mA etc.

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

SCROLLING DISPLAY



SCROLLING MENU



ABOUT Bamophox

ENTER

ABOUT BAMOPHOX

ENTER

VERSION 2.04

ENTER

SERIAL N°

ENTER

20451 05

CONSULTATION / MODIFICATION

CONSULTATION



MODIFICATION

ENTER

CODE ? 0000



ENTER

CODE ? 5105

ENTER

TIME : 30 mn

MENU
+

Last 4 digits (of serial number) are the key code to access the MODIFICATION menu.
When wrong code is entered, a message **"ERROR"** appears during 3 seconds.

After 30 minutes, the display returns automatically to the measurement mode.

MEASUREMENT PARAMETERS

MENU
+

ALARM 1

See page 10

ENTER

VENTURI



This display concerns type/model of Venturi channel curve in use from the data bank.
Any specific curve would be named as "SPECIFIC N° ---".

ENTER

LEVEL TRANSMITTER

ENTER

MINI: 04,00 mA



Enter the displayed value I in mA for the level zero.

ENTER

MAXI: 20,00 mA



Enter the displayed value I in mA for the maximal level.

ENTER

SCALE: 0365 mm



Enter the scale of your level transmitter.

ENTER

SAVING ?

VALID

When a BAMOBUL is connected the I"zero" and I"maxi" remain the same: 4 and 20 mA.

ADJUST ALARM 1

MENU
+

SAMPER CONTROL CONFIGURATION

ENTER

ALARM 1 **ON/OFF**



ENTER

ALARM 1 **MEASURE/TEMP**



MEASURE= Threshold against pH/mV measured value
TEMP= Threshold against temperature measured value

ENTER

ALARM 1 **LOW/HIGH**



HIGH= Contact closes when value goes over the limit
LOW= Contact closes when the value goes under the limit

ENTER

ON **0000** m3 / °C



To close the contact S1 at this value

ENTER

OFF **0000** m3 / °C



To open the contact S1 at this value

ENTER

DELAY UP **ON/OFF**



Delay (or no delay) before to close the contact S1

ENTER

TIME **0000** SEC



Delay time to close the contact S1

ENTER

DELAY DOWN **ON/OFF**



Delay (or no delay) before to open the contact S1

ENTER

TIME **0000** SEC



Delay time to open the contact S1

ENTER

SAVING ?

VALID

SAMPLER CONTROL

MENU
+

ADJUST ALARM 3

See page 11

ENTER

SAMPLER **ON/OFF**



ENTER

ON **000.1** m3



Partial volume to order on sampling

ENTER

PULSE PERIOD



Period of time to keep the relay "ON"

ENTER

TIME **0000** SEC

ENTER

SAVING ?

VALID

ADJUST ALARM 3

MENU
+

OUTPUT mA FLOW RATE

ENTER

ALARM 3 ON/OFF



ENTER

ALARM 3 MEASURE/TEMP



ENTER

ALARM 3 LOW/HIGH



ENTER

MEASURE= Threshold against pH/mV measured value
TEMP= Threshold against temperature measured value

HIGH= Contact closes when value goes over the limit
LOW= Contact closes when the value goes under the limit

ON 0000 m3 / °C



To close the contact S3 at this value

ENTER

OFF 0000 m3 / °C



To open the contact S3 at this value

ENTER

DELAY UP ON/OFF



Delay (or no delay) before to close the contact S3

ENTER

TIME 0000 SEC



Delay time to close the contact S3

ENTER

DELAY DOWN ON/OFF



Delay (or no delay) before to open the contact S3

ENTER

TIME 0000 SEC



Delay time to open the contact S3

ENTER

SAVING ?

VALID

OUTPUT mA FLOW RATE

MENU
+

OUTPUT mA TEMP → See page 12

ENTER

HIGHER 0000 m3



Value corresponding to 20,00 mA

ENTER

LOWER 0000 m3



Value corresponding to 00,00 or 04,00 mA

ENTER

OUTPUT 4-20 mA / 0-20 mA



Output type

ENTER

SAVING ?

VALID

OUTPUT mA TEMP

MENU
+

FORCED RELAY

ENTER

HIGHER +160 °C



Value corresponding to 20,00 mA

ENTER

LOWER +000,0 °C



Value corresponding to 00,00 or 04,00 mA

ENTER

OUTPUT 4-20 mA / 0-20 mA



Output type

ENTER

SAVING ?

VALID

FORCED RELAY

MENU
+

LANGUAGE

ENTER

ALARM 1 ON/OFF



ENTER

ALARM 2 ON/OFF



ENTER

ALARM 3 ON/OFF



ENTER

ALARM 4 ON/OFF



} Diagnostic mode to test the threshold configurations

VALID

LANGUAGE

MENU
+

CHOICE OF THE PARAMETER

ENTER

ENGLISH, ITALIAN, FRENCH



ENTER

SAVING ?

VALID

Annexe 1:

Open channel in Data Bank.

The BAMOPHOX 759 has in memory the following open channel parameters.

	V2.03	Input	
LINEAR	2 m3/h	4/20 mA	
	20 m3/h	4/20 mA	
	200 m3/h	4/20 mA	
	2000 m3/h	4/20 mA	
	2 m3/s	4/20 mA	
	20 m3/s	4/20 mA	
VENTURI	DF7	96 mm	
	DF20	122 mm	
	DF100	285 mm	
	DF250	327 mm	
	DF500	395 mm	
	DF1000	545 mm	
	DF1500	622 mm	
	DF2500	621 mm	
WEIR PLATE	V 28°4	180 mm	
	V 28°	299 mm	28°4
	V 53°	299 mm	53°8
	V 90°	299 mm	90°
	U 10	250 mm	
	U 20	250 mm	
	U 30	250 mm	
	U 40	250 mm	
	U 50	250 mm	
	U 60	250 mm	
VENTURI	94FL001	58 mm	
	94FL002	82 mm	
	94FL005	111 mm	
	94FL010	146 mm	
	94FL025	205 mm	
	94FL050	268 mm	
	94FL100	365 mm	
	94FL250	536 mm	
	94FL500	717 mm	
V BAMO	V 20°	150 mm	
	V 30°	150 mm	
	V 45°	150 mm	
	V 60°	150 mm	
	V 90°	150 mm	
VENTURI	AV07	100 mm	
	AV25	142 mm	

Curves according to NFX 10-311

If you ordered a special curve, it would be memorized as “SPECIFIC N°”