

INDICATOR

Remote display for BAMOFLO NIC PFA



Article number: 776 002

INSTRUCTIONS MANUAL

BAMO MESURES

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Remote indicator for BAMOFLO NIC
ELECTRONIC INDICATOR

29-01-2015

776 M1 03 A

MES

776-03/1

General safety instructions

Please pay attention to the safety instructions with the following pictograms and signal words in these operating instructions:



IMPORTANT

Indicates situations or cases which, if not avoided, could result damage or failure on the used equipment.

WARNING

Indicates general hazardous situations or cases which, if not avoided, could result in serious injury.

NOTICE

Used to lead users to helpful information not related to personal injury.

Intended use

- This instrument is manufactured and designed according to the current industry standard EN 61010 (*corresponds to VDE 0411 "Safety specifications for electrical measurement, control and laboratory devices"*).
- BAMO Mesures cannot be held liable for any damage from inappropriate or unintended use. Conversions and/or changes to the device may only be made according to these operating instructions.

Personnel for installation, commissioning and operation

- **Assembly, electrical installation, commissioning and maintenance of the flowmeter must be carried out by qualified, trained personnel.**
- **The qualified personnel must read and understand these operating instructions and must follow all appropriate instructions.**
- **The installer has to ensure that the device is correctly connected according to the electrical connection diagrams.**



WARNING

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1. Information

1.1 Areas of application

The indicator is designed for displaying measurements of flow and configuring the flow meter connected to.

It has the following features and benefits:

- Service tool and configuration tool for flow meter
- Real time display of operating parameters
- Independent power supply from the flow meter one
- Wall mounting

1.2 Operational safety

Comprehensive self-tests ensure highest possible safety. The protection class is **IP 65**.

This indicator meets the general EMC immunity requirements according to **CE, EN 50081-2, EN 50082-2, and EN 60601-1** for low voltage.

2. Assembly and installation

2.1 Installation instructions for associated flow meter

NOTICE

- Installation and commissioning of associated flow meter must follow complete instructions of the flow meter manual.

2.2 Mounting

For an easy and smooth wall-mounting use the mounting plate with the Ø8mm bores.

The distance between the two holes is 145mm.

Mounting can be done horizontally or vertically therefore the display is rotatable in 90, 180 and 270°.



2.3 Electrical wiring

WARNING

Injuries and deadly accidents may occur when wiring is done without disconnecting the system from power supply and any electrical source.

Signalizing on the circuit breaker that you are working on this electrical line is necessary to prevent unwished connections of the main line.

The unit must not be installed, wired or disassembled with live power (operating voltage) present. Disconnect or shutdown all power before working on the flowmeter and indicator.

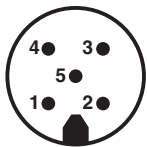
Connection between indicator and flow meter, as well as for 24 V supply, must be realized with and only with the T connector corresponding to BAMOFLONIC.



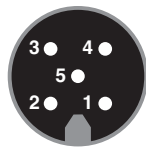
No other power source is needed.

IMPORTANT

Fig. 1:



5-Pin connecting plug



Socket for 5-Pin

Connector cable pin configuration defined by manufacturer.

The outlets may be re-programmed for specific applications.

Pin	Function	Description
1	L+	Voltage supply 18...30 V DC
2	Not in use	Not in use
3	GND Ground	0 V
4	Communication	Communication interface
5	Not in use	Not in use

Only operate the flowmeter BAMOFLONIC PFA within the operating limits stipulated on the product label and the operating manual / data sheet.

Use outside these conditions lead to overloads which cause permanent damages.



IMPORTANT

3. Commissioning

3.1 Operation

With the indicator, measurements are displayed in real time and parameters are displayed and programmable. 4 keys allow to run inside the menu and to modify any parameter.

CAUTION: without connection to a flow meter, the display is "Search Flowmax"

NOTICE

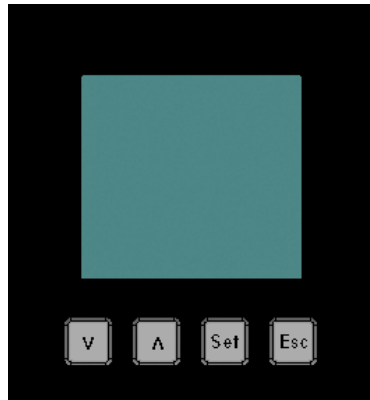


Fig. 2 : Functions of key board

Press the key "Set" to open the menu.
Go across the menu using the arrows.

Example: Set up "max. value" on analogue output

Press "Set" to open the menu
Press ▼ until you read "Analog Output QA"
Press ▼ to enter sub-menu: You read: "max Range"
Press "Set" the display is ready for max. value set up (use the arrows)
Press "Set" to save the value

To go back to previous menu step, press "Esc"

**To modify a configuration a pass word is necessary,
from factory the pass word is
41414**

Pass word may be changed through the software "FlowSoft"

Configuration mode is available to end-user during 5 minutes after last key pressed.

When no action occurs, the display goes back to normal screen after 3 min and 20 seconds, excepted for operating menus

- "Dosage"
- "Diagnostic"

Level 1	Level 2	Level 3	Level 4
Flow simulation	↓		
	Flow	"Edit"	
	Stop		
	Start		
Digital Output Q2	↓		
	Function	↓	
		Pulse output	
		Off	
		Dosing	
		Negative Flow	
		Upper Limit	
		Lower Limit	
		Empty Pipe	
	Logic	↓	
		PNP normal open	
		PNP normal closed	
		NPN normal open	
	NPN normal closed		
Options Output	↓		
	Pulse Value	"Edit"	
	Upper Limit	"Edit"	
	Lower Limit	"Edit"	
Digital Input I1	↓		
	Off		
	Dosing		
	Reset Counter		
	Creeping Flow Off		
	Set Offset		
Diagnostic	↓		
	Version	↓	
		SW-Ver	
		Designver	
		HW-Ver	
	Service Command	↓	
		Value1	"Edit"
		Value2	"Edit"
		Value3	"Edit"
		Value4	"Edit"
		Value5	"Edit"
		Value6	"Edit"
		Value7	"Edit"
		Value8	"Edit"
	Fab.No.	↓	
	Fab.No.:		
Values	↓		
	VST		
	PH-Window		

*“Digital Output Q2:
Available only for
BAMOFLONIC equipped
with a 8 pins connector*

	Amplitude
	SLZ
	Raw Flow
	Temp
Configuration	↓
	PCK1
	PCK2
	PCK3
	PCK4
	PCK5
	PCK6
Status	↓
	Flag0
	Flag1
	Flag2

Dosing	↓	
	Dosing Quantity	"Edit"
	Stop	
	Start	
	Dosing Time	"Edit"

Language	↓
	<i>Deutsch</i>
	<i>English</i>

Reset Counter	↓
	Start?

Display	↓	
	*Units	↓
		*ml/s + L
		*L/min + m ³
		*Gal/min + Gal
		*L/min + L
	*Rotate Display	↓
		*270°
		*180°
		*90°
		*0°
	*Backlight	↓
		*on
		*off
	*Flashing	↓
		*on
		*off

Functions with a * are related to display only

Configuration	↓
	Read Config
	Delete Config
	Write Config

Media	↓
--------------	---

Water	
Amplifier	↓
	Max
	Strong
	Medium
	Soft
Creeping Flow	"Edit"
Set Offset	↓
	Start?
Basic Trim	↓
	Start?
Correction	"Edit"

Analog Output QA	↓
max Range	"Edit"
Filter	↓
	Soft
	Off
	Strong
	Medium
Output Value	↓
	Flow
	Temperature
	(Sonic Speed)
Function	↓
	Off
	0-20mA
	4-20mA
min Range	"Edit"

Digital Output Q1	↓
Function	↓
	Pulse Output
	Off
	Dosing
	Negative Flow
	Upper Limit
	Lower Limit
	Empty Pipe
Logic	↓
	PNP normal open
	PNP normal closed
	NPN normal open
	NPN normal closed

3.2 Functionalities of indicator and default settings

Set Offset

In sub-menu "Set Offset" adjust the required value; this function is useful when the pipe is filled up but without flow. Some changes on the real flow may occur due to temperature changes, the flow meter correct them automatically. You can adjust Offset through numeric input.

Language

Choose your preference between English or German

Filter

This function sends an averaged (analogue output) signal.

Choose between: low, medium, strong, off.

The output signal will react quickly to changes in the pipe with a low grade filter; it reacts smoothly when filter in on strong grade.

Display

According to existing configuration, display may be oriented in 3 positions: 90° ; 180° ; 270°.

Back-lighting and flashing alarm signal can be activated or disabled.



When flashing alarm signal is disabled, there is no more message of alarm status on the display

IMPORTANT

The indicator can display these couples of units: ml/s + l , Gal/min +Gal , l/min + l , l/min + m³.

The first letters correspond the unit of the flow value. The letters after the + correspond the unit of the volume value.

Reset Counter

Reset counter: by reset, the previous values are definitely erased.

Basic Trim

This function is a self-diagnostic for parameters optimization.

It delays about 1 minute, and pipe must be full of liquid and no flow at all.

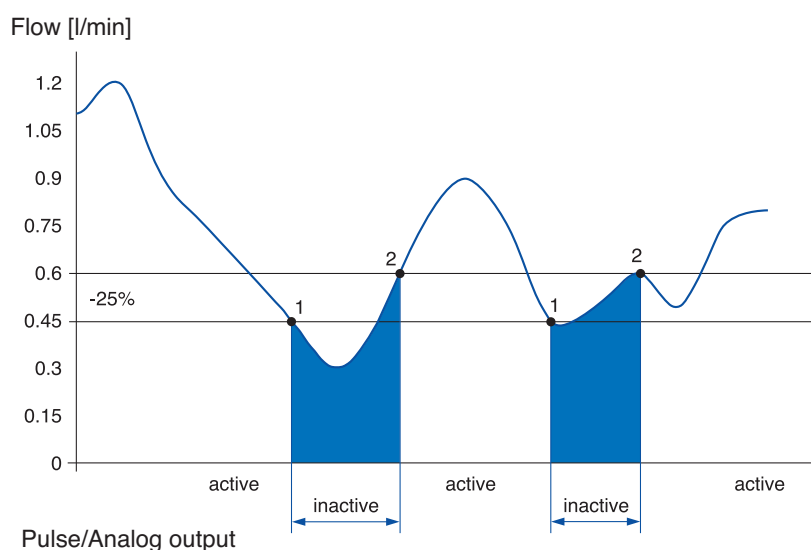
Ending the diagnostic, display "Done" appears. In case of an error, display "Error" appears.

Creeping suppression

The creeping suppression excludes flow measurements in a narrow band around zero.

At the factory, the creeping suppression is set at a standard value in relation to the cross-section of the flowmeter.

The creeping suppression works with a hysteresis of -25 %.



The creeping suppression works with a hysteresis of - 25%.

Example:

Creeping suppression = 0.6 l/min If the flow rate is lower than 0.45 l/min the pulse output/analog output becomes inactive. If the flow rate exceeds 0.6 l/min a pulse is output again and added to the totalizer. Similarly, a value is transmitted to the analog output again.

Plages disponibles:

0.0...20 l/min, in 0.006 l/min steps

Default settings:

0.3 l/min for DN10 / 3/8"

0.9 l/min for DN15 / 1/2"

3.5 l/min for DN20 / 3/4"

5.0 l/min for DN25 / 1"

Fig. 3 : Correctif "Creeping suppression"

Diagnostic

The sub menu "Diagnostic" shows the software/hardware version and other helpful values for analysis.

Analog output

The analogue output is available as current output 4-20 mA.

It can be switched to 0-20 mA, through the sub-menu.

The current output varies from 0 to 22.6 mA according to flow rate and condition of flow measurement.

Values by default for 4-20mA configuration:

- 20 mA → upper limit of relevant measurement
- 4 mA → lower limit of relevant measurement
- 3.5 mA → empty pipe



IMPORTANT

Pulse value

This chapter determines the output settings for pulsed outputs.

Choose configuration such as to:

- Neither exceed the maximum output frequency (10 kHz) of flow meter,
- Nor the maximum frequency of external control input.

Example: 2.0 ml/Pulse (1 pulse is emitted every 2.0 ml)

Setting range: 0.1...3000.0 ml/Pulse, in 0.1 ml/Pulse steps

Digital output Q1

Digital output Q1 may be used as pulse output, empty pipe detection, for switching dosing valve or limit control.

User can switch between NPN and PNP-transistor logic.

In case of inductive load a diode has to be connected parallel to the coil.

NPN output connected to counter

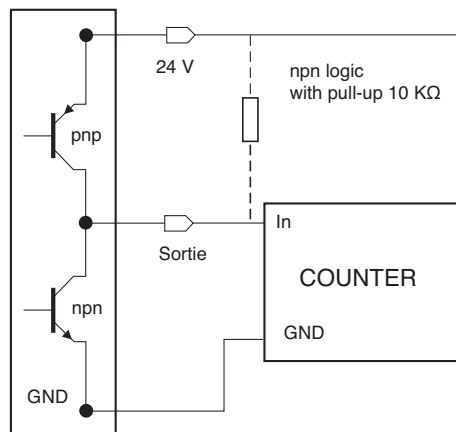


Fig. 4: Connecting Output Q1 to external counter

Dosing function

Dosing can be determined in different ways:

a) Flow meter is used as dosing device (dosing control via flow meter)

Flow meter controls the complete dosing function. The dosing quantity (e.g. 400 ml) is pre-set in the Flow meter via the digital interface (RS485) and through the remote display. Dosing starts, as soon as line digital output is wired to 24 V (e.g. via a pushbutton). Flow meter will open the dosing valve via the output configured for it. When the pre-set dosing quantity is reached, the dosing valve is closed via the above output. The dosing procedure can also be started and stopped by using the dosing user menu. .

b) Flow meter is used as dosing device (dosing control via software interface FlowSoft)

Flow meter controls the complete dosing function. The dosing quantity (e.g. 400 ml) is pre-set in the BAMOFLONIC via the digital interface (RS485) and operating software "FlowSoft". Dosing starts via the operating software. Flow meter will open the dosing valve via the output configured for it. When the pre-set dosing quantity is reached, the dosing valve is closed via the above output

c) Flow meter used as flowmeter only (dosing control via dosing equipment)

The dosing equipment controls the entire dosing function. The dosing quantity is fixed in the dosing equipment control during commissioning by pre-selecting the meter pulses. Dosing starts, when the relevant pushbutton of the dosing equipment is pushed. The control will open the dosing valve. From now on Flow meter will send a voltage pulse to the control for each volume unit that has flown through (e.g. per 1mL). When the pre-selected pulses quantity is reached, the control closes the dosing valve.

The customer has to provide an emergency stop and an overfilling alarm to prevent hazardous situations.

Both functions must perform safety shut down of pumps and closing of valves.



WARNING

Media

Default parameters are with the configuration "water".

Different media can be managed in the sub menu "Media" by using the sub menu § "Correction":

It is possible to correct the measured flow in percent.

Corrective range: from -99.9% to +99.9%, by 0.1% steps

Digital input I1

The digital input I1 is available for:

Start dosing / Offset setup / Creeping suppression on standby / Reset counter

For function «start dosing» a 24 V DC supply is necessary (loop under voltage); Input is blocked until dosing is finished.

Configuration

In this menu, all parameters from flow meter can be transferred to the indicator using the function "read config".

To transfer these parameters to other flow meters, use the function «write config».

Slave mode

This mode is necessary for up-dating, technical assistance. Before to enter to this "slave mode" be sure there is no flow meter connected and display may show the message: "Searching Flowmax".

To enter the "slave mode" press ▲ during 3 seconds. While the slave mode is running display is "slave mode".

To quit this slave mode, press "Esc", display is back to normal mode.

3.3 General Information

Please check the following before powering the flowmeter for the first time:

- Check the electrical connections and cable allocations.
- Check the installation position of the flowmeter.
Are the direction of the arrow on the housing/name plate and the actual flow direction in the pipe congruent?
- Is the measurement pipe completely filled with fluid?
- Check the back pressure in the system.

When everything has been checked, switch on power.



IMPORTANT

4. Exchange of indicator

- Switch off power before disconnecting the electrical connections

Please note that after replacing the indicator, the previous programming (saved) should be copied on the new indicator.

Repair, hazardous substances

Before sending the indicator for repair:

- Attach a detailed report describing the failure, the application and join the decontamination certificate (see the last page of present document).



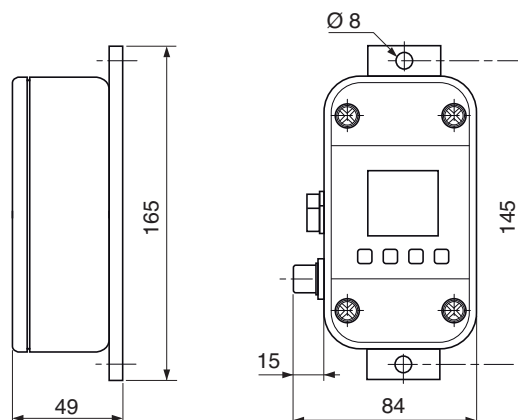
WARNING



WARNING

5. Technical features

5.1 Dimensions and weight (360 g)



5.2 Features

Housing:	IP65, PSU (Polysulfone), wall mounting (support in anodized aluminium)
Power supply:	18...30 V DC; 3.6 W
Connector:	M12, Socket 5 pins
Ambient temperature:	+5...+60°C; Storage: 0...+70°C
Communication:	Interface for configuration
Display:	LCD, backlighted
Keyboard:	4 keys
CE Mark:	In conformity with Directives EN 50081 EMC, and EN 50082

Error messages

Message	Occurrence / Correction	Display
Empty pipe	When no measurement allowed <u>Check the pipe is full of fluid</u>	Flashing display + message
Low voltage	Power supply is lower than 18 V and outputs non active <u>Check the tension of power supply</u>	Flashing display + message
Searching Flowmax	When no flow meter is connected <u>Check connections and cable</u>	Message only
Sonic Speed	Present sonic speed is lower than specified value <u>Run the function "Basic trim"</u>	Message only
Short Circuit	When load on digital output is less than 100mA, output non active	Message only
Lower Limit	Change of status on output when flow rate is lower than specified value	Information
Upper Limit	Change of status on output when flow rate is greater than specified value	Information
Data backup	Only when modifications are saved and quit the menu	Information
Slave mode	When slave mode is running	Information

RETURNED EQUIPMENT HANDLING FORM

SENDER

Contact person:
Company:
Your reference:
Date:

Please, return your equipment to:
 BAMO MESURES SAS
 22, rue de la Voie des bans
 Z.I de la gare
 95100 ARGENTEUIL
 FRANCE
 Phone: +33 130 258 320
 Fax Nr: +33 134 101 605

EQUIPMENT DESCRIPTION, OPERATING CONDITIONS / MALFUNCTION DESCRIPTION

Type of device: **Serial number:**

EQUIPMENT HISTORY







- The equipment operates correctly
- Was delivered damaged
- Malfunction during the start up
- Damaged during installation
- Operating since:(period/time)
- Previous maintenance already done by BAMO

INFORMATIONS FROM BAMO (DO NOT FILL THE BLANK)

Customer Account: SAV Ref.:
 P.O. Nr.: Date:
 Delivery note:
 Delivery date:
 Invoice Nr.:

REASON OF RETURN, OBSERVATIONS / DESCRIPTION OF FAULT / MALFUNCTION:

DECLARATION OF DECONTAMINATION

	Denomination							Harmless
		Corrosive	Flammable materials	Irritant Harmful	Toxic	Biological hazard	Other *	
Process medium:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cleaning material:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
* Please specify the type of the risk!.....								

Legal directives :

According to legal obligations and for our staff safety and workshop protection, it is necessary to send with the equipment this certificate to declare the decontaminating procedures have been applied before shipment.
Your responsibility will apply in case of non-respect of proper operations.

DECLARATION: I hereby declare that the returned equipment has been carefully cleaned and disinfected. It remains free of residues of harmful / toxic substances.

Name, Dept.:
STAMP:

Signature:
Date: