

INCUBATOR



User manual
Ref : BPBE/E/rev2

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ATTENTION: GENERAL INFORMATION AND SAFETY

It is necessary to strictly follow the instructions for use of this manual to ensure the proper functioning of the appliances or to exercise any warranty claims.

Using this manual:

- Read this manual carefully before starting the appliance.
- Follow the instructions of the manual.
- This manual is an integral part of the product. Keep this manual in a convenient place.
- If you need to transfer this product, do not forget to attach the manual.
- In case of loss, on request, we will provide another manual.

In this manual:



The icon is intended to draw your attention to information or an observation of great importance or potential danger



The icon is intended to remind you to pay attention to the warm surface

On these devices, there are risks to consider:



MU Health hazard: respiratory, germ cell mutagenicity, carcinogenicity, or reproductive toxicity risks GHS08



IN Flame hazard: flammable solids risks GHS02



EN Hazardous to the aquatic environment GHS09



DA Acute toxicity, skin irritation, eye irritation, specific target organ toxicity risks GHS07

ENVIRONMENT:

This device contains gas fluorinated greenhouse under the Kyoto protocol.

Methods of disposal

Do not allow the product to be released into the environment

Destruction / Disposal: Consult the manufacturer or the supplier for information on recovery or recycling. Companies performing the installation, maintenance, servicing, repair, startup of equipment containing refrigerant must have a certificate referred to in Article R543-76 code of the environment or an equivalent certificate issued in one of the member states of the European Union.

TRANSPORT :

To move the appliance, you should always wear protective gloves! Two people are required to lift or carry the cabinet. Do not tip or place cabinet horizontally. Prevent unit from excessive vibrations.

1. CERTIFICATE OF CONFORMITY

FROILABO SAS certifies that the appliances mentioned below:

Bio PERFORMANCE / EXPERT (BP/BE) incubator

- Comply with the technical directives applying to them:
- European Directive covering machines: 2006/42/CEE
 - European Directive covering electromagnetic compatibility: 2004/108/CEE - European
 - Directive covering low voltage appliances: 2006/95/CEE

Note : *These appliances are not designed to operate in explosive environments (ATEX). Moreover they cannot be used to store flammable, corrosive or explosive substances*

2. WARRANTY

FROILABO SAS guarantees optimum operation of these appliances according to the installation and usage conditions indicated in this manual.

The duration of the warranty is: 24 months.

During this period, in the event of a malfunction of your appliance, the warranty is limited to an improvement in the operation, a repair free of charge or the replacement of equipment if it is evident that the malfunction or breakdown is caused by faulty material or workmanship.

All other claims for compensation are excluded.

3. GENERAL INFORMATION



Make sure that persons using these appliances are trained for the work.

Persons using these appliances must be informed regularly of the possible dangers linked to their work and of the safety measures to be observed. Make sure that all persons installing, using or repairing these appliances are aware of the possible danger connected to their work; the safety measures to be followed and that they have understood the operating instructions.

If you use hazardous substances, or ones that could become hazardous, only persons with perfect knowledge of these appliances can operate them. These persons should be able to assess the possible risks overall. If you have any questions about the use of the appliance or method of operation don't hesitate to contact us. FROILABO can in no circumstances be held responsible for the quality of the substances stored in the incubators.

4. INSTALLATION OF APPLIANCE

4.1. Delivery

Please check the delivery receipt :

BP/BE – 60 liters	BP/BEE – 120/240 liters
1 electricity supply cable	
2 or 4 rack supports	2 rack supports
1 rack (BP), 2 racks(BE)	3 rack (BP), 4 racks(BE)
1 installation and operation CD	



Avoid using sharp objects so as not to damage the paint.

To move the appliance, you should always wear protective gloves!
Two people are required to lift or carry the cabinet.
Do not tip or place cabinet horizontally. Prevent unit from excessive vibrations.

4.2. Location

Place the appliances in a position where they are protected from the sun's rays and other heat sources, in a sufficiently ventilated place. Room temperature should be between **+18°C and +30°C** and should be a minimum of **7°C** below the set point. Place the appliances in a place that is little affected by temperature variations. This can considerably affect the stability and the precision of the appliances. Keep a space of 100mm around the incubator.

4.3. Technical specifications

SPECIFICATIONS PERFORMANCE/EXPERT		Forced Convection BP/BE		
		60	120	240
Temperature Range		Amb -5°C at +100°C		
Temperature Uniformity +/- (°C)*	at 4°C	--		-
	at 37°C	0.5	0.5	0.5
	at 44°C	0.7	0.7	0.7
	at 60°C	1	1	1
Temperature stability (°C)	at 37°C	0.1	0.1	0.1
	at 44°C	0.1	0.1	0.1
Time for temperature elevation (min)**	at 37°C	4.5	6	6
	at 44°C	6	7	7
	at 60°C	6	8	7.5
Recovery time after door opening of 30 secs (min)**	at 37°C	1	1	1
	at 44°C	1	1	1

* Not including measure uncertainties, FROILABO procedure : 9 points characterisation according to NFX15-140 norm
 ** 98% of the value
 *** Set at 4°C (39°F) at the factory
 Testing at an ambient temperature of 25°C and a variation in the supply Voltage of +/- 10%

ELECTRICAL SPECIFICATIONS	60	120	240
IP rating	Front panel IP55		
Power supply	230V 50Hz 10A 220V 60Hz 10A 110V 50/60Hz 10A		

EXTERNAL DIMENSIONS

Length (mm)	526	626	626
Height (mm)	640	750	1230
Depth (mm)	579,5	679,5	679,5
Exterior depth (mm)	26.5	26.5	26.5
Side clearance (mm)	100	100	100

INTERIOR DIMENSIONS

Actual volume (l)	56	114	223
Length (mm)	400	500	500
Height (mm)	390	500	980
Depth (mm)	356	456	456
Shelves (standard/max) BE	1/6 2/6	2/10	2/18
Weight per shelf/total (kg)	20/50	20/70	20/90
Shelf dimensions L X P (mm)	380x320	480x430	480x430
Empty weight/Gross weight (kg)	40/54	55/71	82/100

4.4. Construction

The monobloc exterior bodywork is made from **electro-galvanized steel** and protected by epoxy paint.
 The inside tank is made from **304L stainless steel**.
 The support racks, rack brackets and racks are also made from 304L stainless steel as are all the interior accessories.

4.5. Loading

To avoid any risk of damage to the structural parts and to guarantee the technical performance announced, it is important to respect the following instructions:

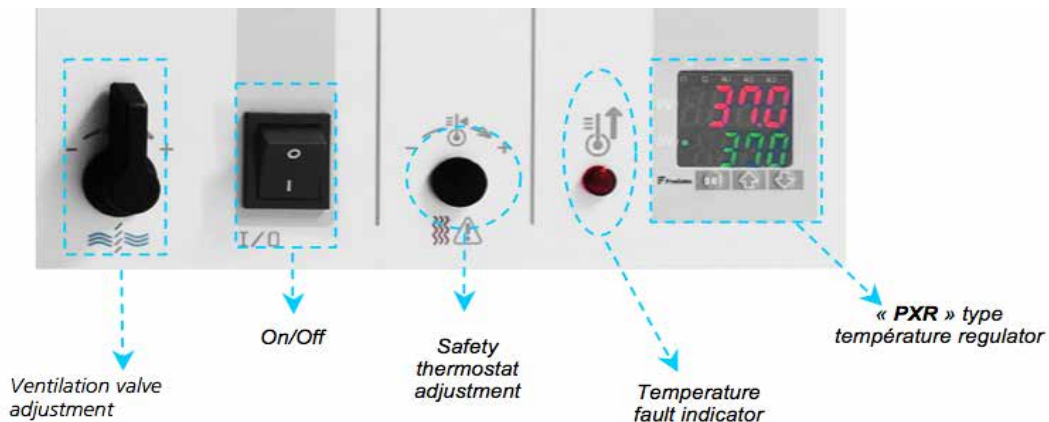
- Never place **highly corrosive materials** in the incubator,
- Never place **explosive or highly flammable materials** in the incubator,
- Never obstruct the whole surface of a rack,
- Leave a minimum clearance of **5 cm** along internal faces,
- Leave a minimum of **2 cm** between the products placed in the incubator
- Spread the load evenly.



These appliances are not explosion proof

5. GENERAL USE

5.1. Control panel



5.2. Starting up / Stopping the incubator

5.2.1. Starting up

1. Connect the appliance to the electricity supply protected by a 30 mA differential circuit breaker.
2. Press the On/Off knob (O/I) to start the appliance.
3. Enter the temperature setting on the regulator, using the ↑(S2) and ↓(S3) keys
4. Wait for the appliance to stabilize at the temperature setting.
5. Adjust the safety thermostat and load the appliance.

5.2.2. Stopping

1. Press the On/**Off** knob (O/I) to stop the appliance.
2. Disconnect the appliance safely.

	60	120	240	60	120	240	60	120	240
Electricity supply	230V (+/- 10%) Ph+N+E Single phase. frequency 50 Hz Current 10 A.			220V (+/- 10%) Ph+N+E Single phase. frequency 60 Hz Current 10 A.			110V (+/- 10%) Ph+N+E Single phase. frequency 50/60 Hz Current 15A		
Power (w)	750	750	1500	750	750	1500	790	790	1540

5.3. Safety devices

5.3.1. Safety thermostat

These appliances are fitted with a class 2 safety **thermostat to the NF EN 61010 2 010 standard**, (equivalent to 3.1 DIN). It protects the incubator and its contents from undesirable overheating (accidental changing of the setting, regulation system malfunction, etc.).

Adjusting the safety thermostat

 **The thermostat should be adjusted when the appliance is started up for the first time, and each time the set point is changed.**

1. Remove the white plug from the control panel strip to access the safety thermostat.
 2. Set the safety thermostat to its maximum setting using a flat screwdriver (turn clockwise).
 3. Allow the incubator to stabilize at the temperature setting.
 4. Turn the thermostat anti clockwise until you hear a click (the red light on the front panel goes on).
 5. Turn back slightly clockwise until you hear the click (the red light goes on).
 6. Replace the white plug.
- >The safety system is operational.



5.3.2. High temperature alarm

These appliances are fitted with a following high temperature alarm: a maximum temperature difference between the incubator (PV) and the temperature setting (**SV**) **SET VALUE** is acceptable in the incubator.

If the temperature measured (**PV**) exceeds this difference the alarm triggers and red light **AL1 goes on**.

The high temperature alarm value is factory set to +10°C above the temperature setting. It is possible to insert a time delay for this alarm. This value is factory set to **0 sec**. Hence, by default the alarm triggers as soon as the high temperature alarm value is reached.

Adjusting the high temperature alarm

1. Press the **SEL** key for 1 second to display parameter block no 1.
2. Display parameter (**AL2**, using the ↑(S2) and ↓(S3)) keys and select by pressing **SEL**.
3. Change parameter (**AL2**, using the ↑(S2) and ↓(S3) keys
4. Press **SEL** to confirm.

Delay the high temperature alarm

1. Press the **SEL** key for 5 second to display parameter block no 3.
2. Display parameter (**DLY2**, using the ↑(S2) and ↓(S3) keys and select by pressing **SEL**.
3. Change parameter (**DLY2**), using the ↑(S2) and ↓(S3) keys
4. Press **SEL** to confirm.

Thermal fuse

In addition to the safety thermostat these appliances are fitted with a thermal fuse. It protects the incubator from accidental overheating. Its cut off temperature is 190°C.

 **Take care over the presence of hot surfaces on the back of the machine on the top cover (screw head).**

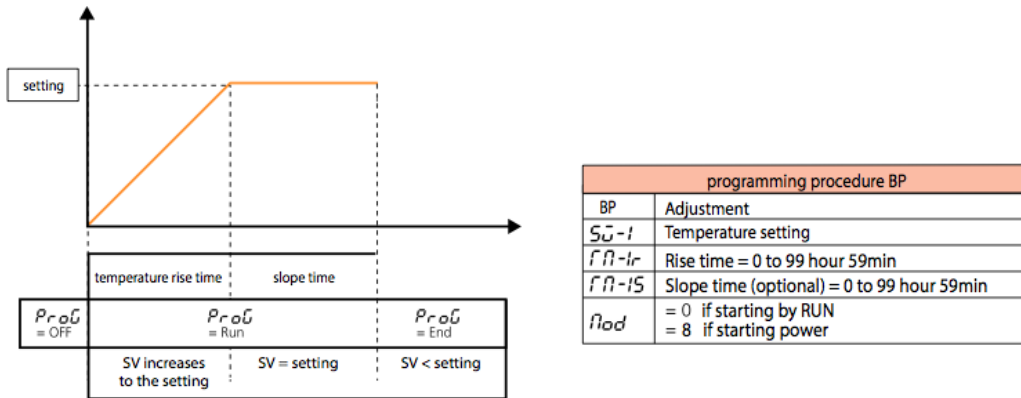
5.4. PXF temperature regulator

See appendix at the end of the document

5.5. Functions programmable on PERFORMANCE models

5.5.1. Slope function

Serves to programme the speed of temperature rise of the incubator and then maintain the temperature of the enclosure at the temperature setting for a maximum time of 99h59min (per programming segment). The incubator will operate according to the diagram below starting from switching ON (O/I). Depending on whether or not the step time TM-1S is programmed, the incubator will stop by operation of the O/I knob or at the end of the programmed TM-1S time. To restart the incubator, either use the O/I knob or the RUN function.



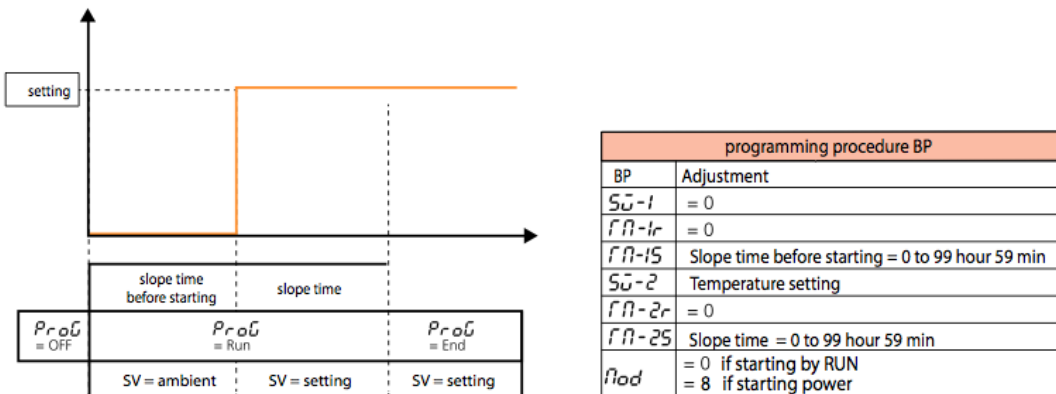
To select a parameter:

Press **SEL** for 3s. Display Su I using the \uparrow (S2) and \downarrow (S3) keys and then confirm with **SEL**. Choose the temperature setting using the \uparrow (S2) and \downarrow (S3) keys and confirm with **SEL**. Repeat the operation for the other parameters.

5.5.2. Program run (differed)

Serves to differ the start of heating of the enclosure in relation to switching on. The incubator will operate according to the diagram below.

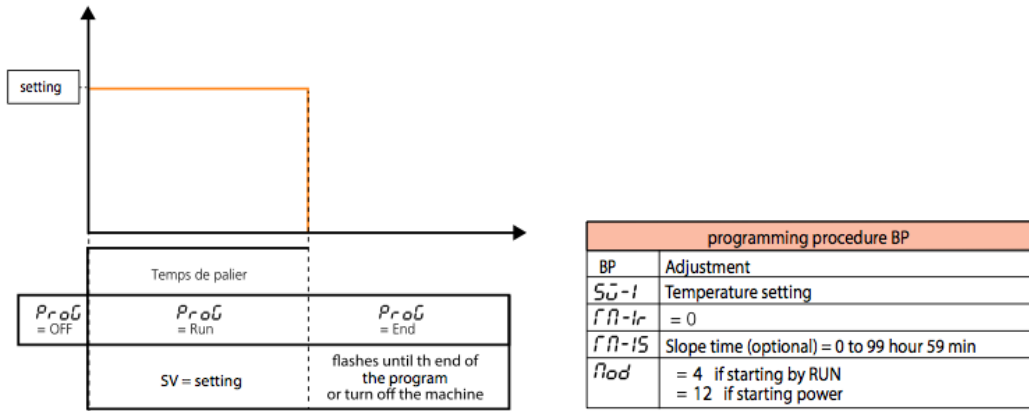
⚠ This appliance is not fitted with an internal clock. The time delay for the start of heating is set in hours and minutes and not by the programming of a start time.



It is always possible to programme a temperature rise time by entering the parameter TM-2r of the desired value. Depending on whether or not the step time TM-1S is programmed, the incubator will stop by operation of the O/I knob or at the end of the programmed TM-1S time. To restart the incubator, either use the O/I knob or the RUN function.

5.5.2. Programmed stoppage

Serves to stop the heating of the enclosure automatically at the end of a fixed time after starting. The incubator will operate according to the diagram below from switching on (O/I).



The incubator will stop by operating the O/I knob after the programmed TM-15 time. To restart the incubator use either the O/I knob if the incubator is stopped, or the RUN function RUN depending on the ode chosen (12 or 4).

5.5.4. Adjustable air outlet valve

Depending on the applications, it may be useful to adjust the opening of the air outlet situated at the back of the appliance. This adjustment is done by means of the knob on the incubator control panel.

Note : The temperature homogeneity and stability performance are given with the outlet valve closed.

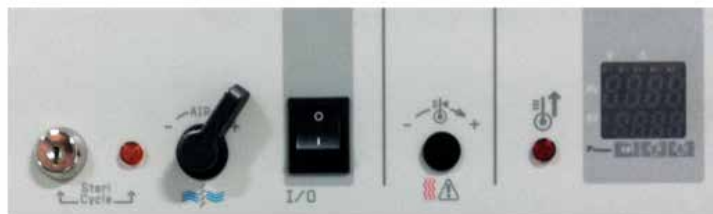
6. FUNCTIONALITIES SPECIFIC TO THE EXPERT MODEL

6.1. Steri-cycle, sterilization cycle

Bio EXPERT incubators are fitted with a hot air sterilization cycle

Running the sterilization cycle

The sterilization cycle is started with the key operated switch on the incubator control panel (cf. photo below). Incubators are supplied with 2 sets of keys. For safety reasons, (operating error), it is preferable not to leave the keys in the switch.



Sterilisation principle

The sterilisation cycle heats up to 160°C for 2h30. While it is running the orange light is on.

The function of the sterilisation cycle is to decontaminate the inside tank of the incubator. It can in no circumstances be used to decontaminate tools or other objects.

Sterilisation cycle stoppage

At the end of the cycle, the incubator automatically returns to the setting temperature shown on the display (SV). To stop the sterilisation cycle once it is running, simply switch off the power to the appliance.

6.2. Programming a temperature cycle

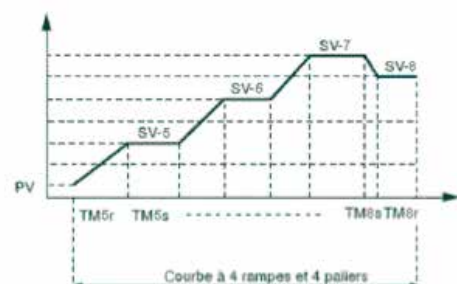
It's possible to programme a cycle of temperatures (up to 8 segments) to generate 4 set points (SV) such as those shown on the graph below: 1 cycle of 4 slopes and 4 steps corresponds to 8 segments).

The cycle runs starting from the value measured (PV).

SV x: temperature setting,

TMx: rise time (slope),

TMxs: step time.



Take care over the adjustment of the safety thermostat. It should be adjusted according to the highest temperature in the cycle.

Cycle of 4 temperatures max.

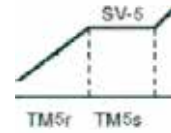
6.3. Configuration of the parameters

Only temperature cycle no 2 can be used for the incubators, cycle 1 is reserved for the sterilisation cycle.

Allocate the following parameters for each step:
 Temperature setting (SV x),
 Rise time (slope) (TMxr),
 Step time (TMxs).

Note: x represents the step number (5 to 8).

Adjusting the temperature setting (SV)
 Adjustment range: (above ambient t°) +5°C to 100°C..



Example for step n°5

	Nombre of T° /cycles	Active	Step temperature	Rise time	Step time
Symbol			SV	TMxr	TMxs
Adjustment range		5 to 8	Amb +5°C* to 100°C	99h 59min	99h 59min
PTn 2	4	5 to 8	SV-5 to SV-8	TM5r to TM8r	TM5s to TM8s

* The incubator can only adjust properly for temperatures above ambient t° by at least + 5°C.

6.4. Selection of the operating mode

There are 16 operating modes for a programmed temperature cycle, accessible via the parameter Mod (block no 2).

The following parameters can be adjusted:

- **Starting of the temperature cycle:** the temperature cycle can be activated either by the appliance being switched on (O/I) or by using the RUN function.

- **Programme end management:** determines the regulation status at the end of the temperature cycle.

Stop mode: no regulation, the temperature at the end of cycle flashes.

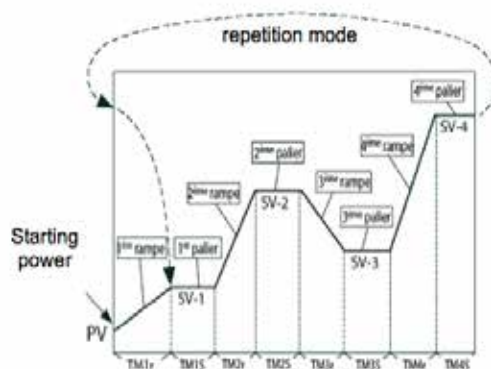
Regulation active: the last temperature of the cycle is regulated.

- **Management in the event of a voluntary stoppage of the programme:** determines the regulation status when the temperature cycle is put into pause (HLD function).

Stop mode: no regulation, the temperature setting flashes.

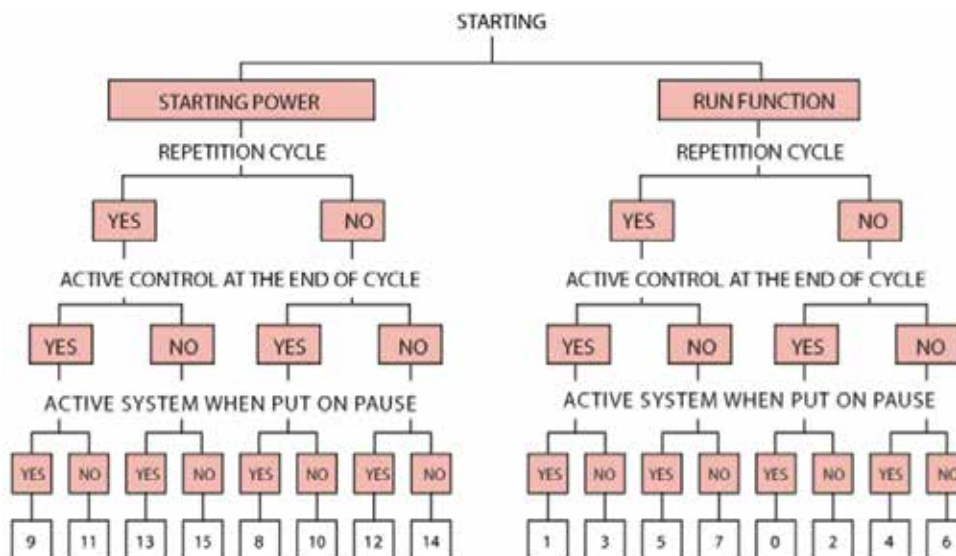
Regulation active: the current temperature setting is regulated.

Repetition mode: Causes repetition of the cycle when the previous the cycle is finished.



Exemple of a cycle of 4 repeated steps

Lists of available operating modes



6.5. Configuration of a temperature cycle

1. Press the **SEL** key for 3 seconds; the **(PVOF)** programme is displayed
2. Display **SV-1** (value of the 1st step) using the ↑(S2) and ↓(S3) keys. Confirm (**SEL**)
3. Change the value flashing **SV-1** using the ↑(S2) and ↓(S3) keys. Confirm (**SEL**)
4. Display **TM-1r** (rise time) using the ↑(S2) and ↓(S3) keys. Confirm (**SEL**)
5. Change the value flashing **TM-1r** using the ↑(S2) and ↓(S3) keys. Confirm (**SEL**)
4. Display **TM-1s** (rise time) using the ↑(S2) and ↓(S3) keys. Confirm (**SEL**)
5. Change the value flashing **TM-1s** using the ↑(S2) and ↓(S3) keys. Confirm (**SEL**)
8. Repeat the procedure for the next slopes/steps.
9. Display the chosen parameter of the operating mode (Mod) using the ↑(S2) and ↓(S3) keys and choose the desired mode (0 to 15).

6.6. Running the temperature cycle

Depending on the mode chosen, the temperature cycle programmed will be run directly either by switching on (On/Off), or by the RUN function of the regulator. In this case:

1. Press the **SEL** key for 1 second.
2. Display the parameter (**Prog**) and choose RUN (**rUn**) with the ↑(S2) and ↓(S3) keys.
3. The temperature cycle starts from the current temperature (**PV**).
 - To interrupt the cycle momentarily select HLD (**HLd**).
 - To cancel the interruption chosen RUN (**rUn**).
 - To stop the cycle chosen OFF (**off**).
 - **End** is displayed when the cycle is finished.

6.7. Important notes

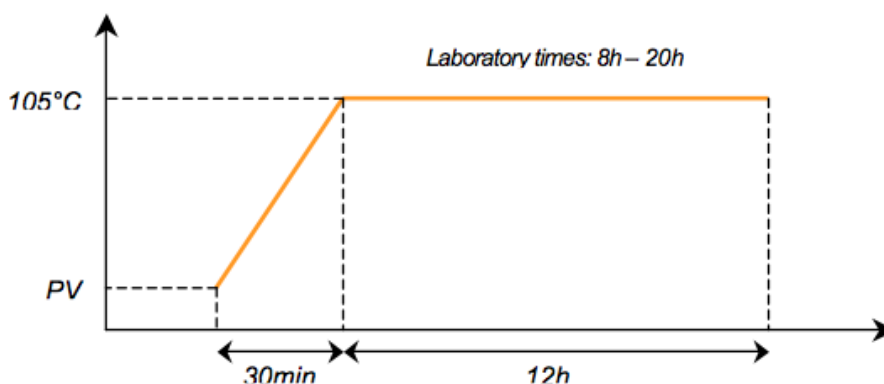
It is possible to programme a temperature cycle with **a number of steps different from 4**. To do this, simply put the **values of the unused steps to 0** and configure the **Mod** parameter according to the desired protocol.

Note: The rise times must be coherent with the performances of the appliance.

6.8. Example to the use of the programmer : the chronorupteur timer

The incubator needs to operate according to the curve below:

Every day the operator runs the incubator at 60°C for 12h. The cycle starts when the operator switches the appliance on and stops automatically after 12h and is not repeated.



6.8.1. Adjustment of the temperature, rise time and step time

- Adjust the temperature setting (**SV-5**) to **60°C**.
- Adjust the rise time (**TM-5r**) to **00.30** (00h30).
- Adjust the step time (**TM-5s**) to **12.00** (12h).

Note : the rise time and step time 6 to 8 should be set to 0 (not used)

6.8.2. Selection of the operating mode

The cycle is started as from the switching on of the incubator.

When the cycle is finished it is not repeated > “**Stop**” mode

At the end of the cycle the incubator temperature is not regulated. If the cycle is interrupted (pause), the incubator temperature must be regulated > “regulation active” mode. Select the **Mod** parameter on **12**.

Note : Simply pressing the **ON/OFF** knob automatically starts or stops the programmed temperature cycle.

7. RS485 COMMUNICATION INTERFACE

BIO EXPERT (BE) incubators are fitted as standard with a RS485 communication interface.

The transfer software, cables and USB protocol are available on option and enable the transfer of data from the appliance and also the control of the enclosure from a PC.

8. CABLE ROUTING

A 22mm diameter cable chute is situated on the left of the appliance. It facilitates the routing of cables and sensors and hence the monitoring of the performance of the appliance and its qualification.

9. BIO EXPERT OPTIONS

9.1. Remote control and data transfer

9.1.1. Control Manager software

BIO EXPERT (BE) incubators are fitted as standard with a RS485 connector. Users wishing to control their incubators remotely and save the parameters can acquire the Control Manager software offered as an option. Use of the Control Manager software makes it possible to monitor the adjustments and programme the incubator remotely from a PC and also transfer and record the temperatures and their evolution over time as well as automatically drawing the temperature curves.

This software makes it possible to manage and store simultaneously data supplied by several regulators and provides very wide versatility as to the choice of the data and its format:

- Determination and frequency of data acquisition.
- Selection of the types of data to draw.
- Curve drawing start and stop.
- Automatic or manual scrolling of the line.
- Modification of the extent of the line.
- Automatic or manual updating of the curve (depending on the acquisition speed).

It also possible to copy the image, save the image, make up, print, choose scales, etc.

9.1.2. Communication kit

The communication kit (ref AEBESOFT) comprises:

- A CD containing the Control Manager software operating with Windows 98 and more recent operating systems,
- A RS485/USB cable with USB protocol,
- Complete operating and installation instructions

10. MAINTENANCE PERFORMED BY THE USER

10.1. Safety rules



Before doing any maintenance work. It is essential to switch off the appliances with the ON/OFF knob and then disconnect the supply cable

10.2. Maintenance

Do not clean the incubator with a water jet to avoid causing splashing onto the appliance. In the same way as a motorist maintains his vehicle to keep it in the best possible working order, the use of an incubator necessitates a minimum of maintenance to ensure permanent optimum operation of the appliance.

10.2.1. External surfaces

Wash with warm water with soap or a neutral (noncorrosive) detergent. Rinse and dry thoroughly.

10.2.2. Inside tank

 **Never use disinfectant bleach, even heavily diluted. Never rub stainless steel with steel wool or any other abrasive. Take care over the risk of burns.**


Incubators and incubators are fitted with removable racks for easier maintenance. For this, follow these instructions:

1. Remove the racks with a flat screwdriver.
2. Clean the whole of the tank with a soft cloth soaked in methylated spirit.
3. Refit the racks taking care over their direction (if a rack is reversed all the screws cannot be refitted).

Any serious problem will require intervention by our Maintenance Department, or diagnosis and help by telephone.

Depending on the type of contract, FROILABO undertakes to intervene within predetermined times in the event of a breakdown. To take out a maintenance contract, please send the contract request fax (page 14)

10.3. Problems and solutions

 **Any work on an appliance must be done by qualified personnel. Respect the settings of the safety systems (see 10.1. Safety rules).**

SYMPTOMS	POSSIBLE PROBLEMS	SOLUTIONS
The regulator does not light up	Plug disconnected	Check the supply cable connection
	Switch in the "O" position	Set the switch to position "I"
	Faulty mains supply	Check the electrical installation
	Faulty supply cable	Replace the cable
The regulator lights up but the appliance does not heat up	No temperature setting has been adjusted	Adjust the setting value
	The safety thermostat has triggered: the red light is on	Adjust the safety thermostat
	The thermal fuse is open	Call customer service
	The appliance has a lot of inertia	Normal operation, wait for the appliance to stabilise
The appliance heats up until the safety thermostat triggers	The load prevents hot air circulating	Check the positioning of the load
	The safety thermostat is not set to the correct value	Adjust the safety thermostat
The regulator displays L.L.L.L or U.U.U.U.	Set point exceeded during the first start up, or a problem (door opening)	Normal operation, wait for the appliance to stabilise
	Sensor broken	Call customer service
	Temperature range exceeded	Check the ambient temperature

MAINTENANCE CONTRACT

(form to fax to the number: +331 60 37 41 78)

YOUR DETAILS:

Ms. Miss M Name

Company or institution

Function.....

Service

Phone __/__/__/__/__/__/__/ Fax __/__/__/__/__/__/__/

Adress

Post code City

YOUR REQUEST:

Maintenance contract Renewal Number.....

Type of device

temperature

brand

For freezers:

Emergency LN₂ yes No C O₂ yes no

Number of devices

Desired number of visits per year

You already have a maintenance contract FROILABO yes no

If so, contract number

12. DISPOSAL

TRANSPORT :

To move the appliance, you should always wear protective gloves! Two people are required to lift or carry the cabinet. Do not tip or place cabinet horizontally. Prevent unit from excessive vibrations.

DISPOSAL :

In case the product is to be disposed of, the relevant legal regulations are to be observed. Information on the disposal of electrical and electronic devices in the European Community: Within the European Community, the disposal of electrical devices is regulated by national regulations based on EU Directive 2002/96/EC pertaining to waste electrical and electronic equipment (WEEE). According to these regulations, any devices supplied after August 13, 2005, in the business-to-business sphere, to which this product is assigned, may no longer be disposed of in municipal or domestic waste.

To document this, they have been marked with the following identification:



Because disposal regulations may differ from one country to another within the EU, please contact your supplier if necessary.

13. CUSTOMER SERVICE

Any serious problem will require intervention by our Maintenance Department, or diagnosis and help by telephone.



NORTHERN FRANCE
froilabo.paris@froilabo.co

Sales call centre
☎ +33(1) 60 95 15 65
☎ +33(1) 60 37 41 78

Technical call centre
☎ +33(1) 60 95 15 70
☎ +33(1) 60 37 41 78

SOUTHERNFRANCE
froilabo.lyon@froilabo.com

Sales call centre
☎ +33(4) 78 04 75 75
☎ +33(4) 78 04 75 76

Technical call centre
☎ +33(4) 37 44 19 19
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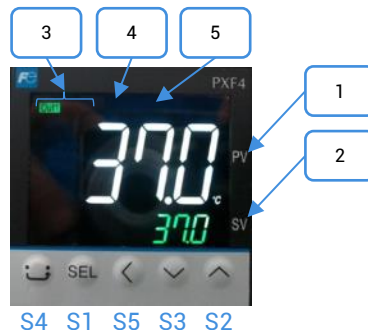


Regulator PXF4:

Operation and programming for
incubators BP & BE

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Precision for life

1. PXF4 temperature regulator



Functions buttons

Mark	Designation
S1	Selects the parameter blocks and displays the name or value of the chosen parameter
S2	Increases the value of the set temperature In case of prolonged pressure, the value increases more rapidly Switch from one parameter to another
S3	Increases the value of the set temperature. In case of prolonged pressure, the value decreases more rapidly Switch from one parameter to another
S4	Return to main menu
S5	Back

Display and indicators

Mark	Description	Designation
1	Display temperature / selected parameter	Indicates the actual temperature Displays the symbols of the parameters in the setting mode Display errors codes
2	Setpoint temperature (SV)	Display the setpoint temperature (SV) Display the parameter values
3	Regulated exit light	Out1: the light comes on when the incubator is heating up Out2: the light comes on when the incubator is cooling down
4	Alarm output / Indicator stericycle EV1	<i>BIO PERFORMANCE:</i> The indicator goes out when the temperature alarm AL1 is on. <i>BIO EXPERT:</i> The indicator goes out when the sterilization temperature is reached (only during the stericycle)
5	Alarm output EV2	<i>BIO EXPERT:</i> The indicator goes on when the temperature alarm AL2 is on.

2. Starting up / Shutdown the incubator

Commissioning:

1. Connect the device to a 230V / 50Hz / 10A + Neutral + Earth electrical network, protected by a 30mA differential circuit breaker.
2. Press the **ON/OFF (O/I)** button to turn on the unit.
3. Enter the setpoint on the regulator using **↑** (S2) et **↓** (S3) keys.
4. Wait for the unit to stabilize at the set temperature.
5. Adjust the safety thermostat (cf. below) then load the appliance.

Shutdown:

1. Press the **ON/OFF (O/I)** to stop the device.
2. Unplug the device safely.

3. Safety

Safety thermostat:

These devices are equipped with a class 2 safety thermostat, according to standard NF EN 61010-2-010, (equivalent to DIN 3.1).

It protects the incubator and its contents from unwanted overheating (involuntary modification of the setpoint, malfunction of the control system, etc.).

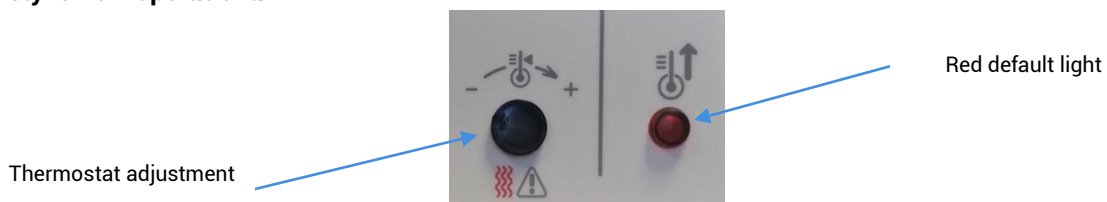
Setting the safety thermostat:



The thermostat must be adjusted to the first commissioning of the device, as well as to each setpoint change.

1. Remove the black cap from the console panel to access the safety thermostat.
2. Set the safety thermostat to its maximum temperature using a flat screwdriver turn to the right).
3. Allow the incubator to stabilize perfectly at the set temperature.
4. Turn the thermostat to the left until you hear a click (the red LED on the front panel lights up).
5. Raise very slightly to the right until you hear a click (the red light goes out).
6. Reposition the black cap.

Safety is now operational.



High visual alarm:

These devices are equipped with a high temperature alarm: a maximum deviation between the temperature in the enclosure (PV) and the set temperature (SV, Set Value) is admitted in the enclosure.

If the measured temperature (PV) crosses this gap, the alarm is triggered and the red LED EV2 comes on.

The high alarm value is set at the factory at + 10 ° C above the set temperature. It is possible to delay this alarm. This value is set at the factory at 0 sec. By default, the alarm is active as soon as the high alarm value is reached.

Setting the high temperature alarm:

1. Press **SEL**.
2. Display AL2 parameter using ↑ (S2) et ↓ (S3) keys and select by pressing **SEL**.
3. Modify parameter AL2, using ↑ (S2) et ↓ (S3) keys
4. Validate by pressing **SEL**.
5. Return to main menu by pressing the home button (S4).

High temperature alarm delay:

1. Press and hold **SEL** until CH 1 appears.
2. Select block parameter n°5 CH 5 using ↑ (S2) et ↓ (S3) keys and validate using **SEL**.
3. Display parameter (DLY2) using ↑ (S2) et ↓ (S3) keys and select by pressing **SEL**.
4. Modify the parameter (DLY2), using ↑ (S2) et ↓ (S3) keys.
5. Validate by pressing **SEL**.
6. Return to main menu by pressing the home button (S4).

Thermal fuse:

In addition to the safety thermostat, these devices are equipped with a thermal fuse. It protects the incubator from unwanted overheating. Its cut-off temperature is 190 ° C.

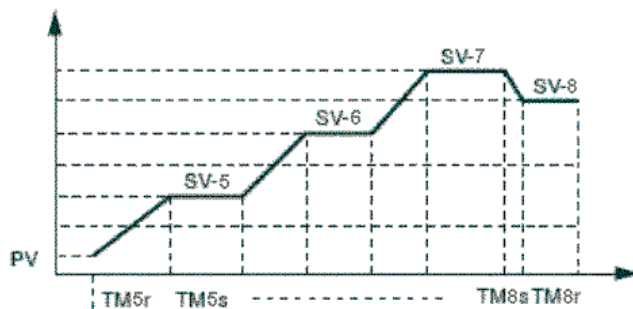
Hot surfaces:



Beware of hot surfaces on the back and top cover of the machine (screw head).

4. Programming a temperature cycle

It is possible to program a temperature cycle (up to 128 segments) and generate 64 set point (SV)
The cycle runs from the measured value (PV).



SV-x: setpoint temperature

TMxr: ramp time

TMxs: level time

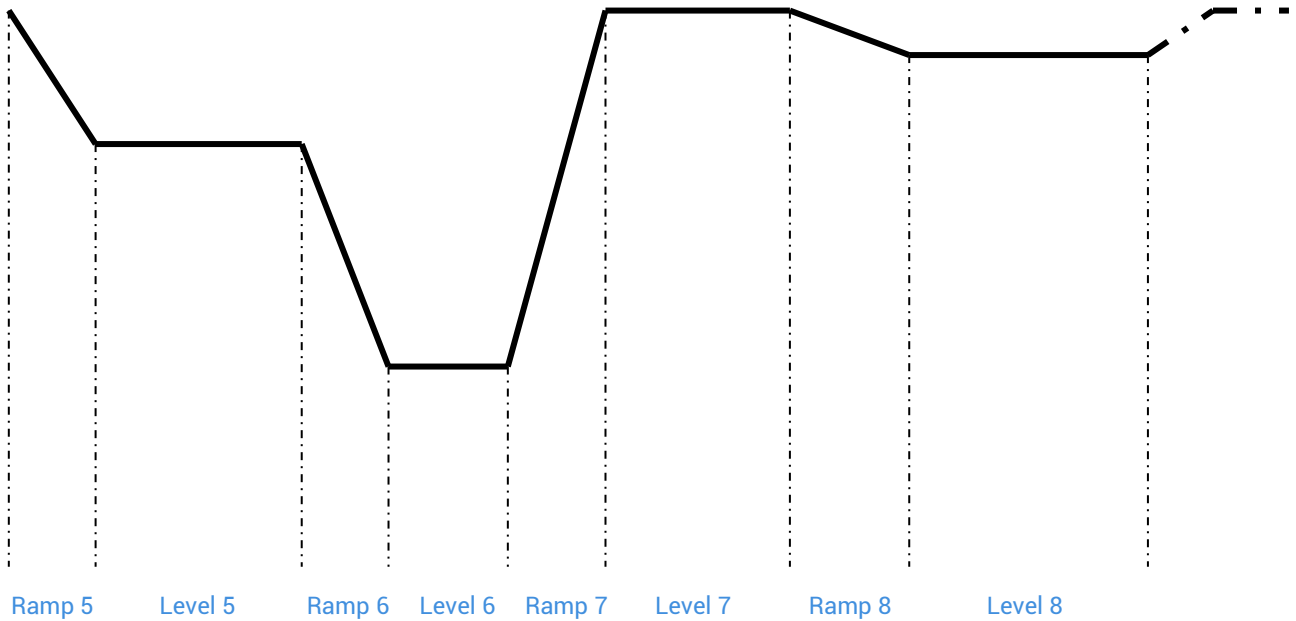


Pay attention to the setting of the safety thermostat. This must be adjusted to the highest temperature of the cycle.

Step n°1: Draw the temperature cycle based on this diagram.

Ramp: temperature ramp between two instructions. It is defined by its duration.

Level: given time during which a temperature setpoint is executed.



Step n°2: Fill in the table of values defining the cycle.

For unuse level, the **TMxs** and **TMxr** values must be set to « 0 ».

Ramp 5	___ / ___ hour/min	TM5r
Level 5	___ / ___ hour/min	TM5s
	_____°C	SV-5
Ramp 6	___ / ___ hour/min	TM6r
Level 6	___ / ___ hour/min	TM6s
	_____°C	SV-6
Ramp 7	___ / ___ hour/min	TM7s
Level 7	___ / ___ hour/min	TM7s
	_____°C	SV-7
Ramp 8	___ / ___ hour/min	TM8r
Level 8	___ / ___ hour/min	TM8s
	_____°C	SV-8

Step n°3: Program the controller and set the conditions for stopping and starting the cycle and automatic repetition.

To program the regulator:

1. From home menu, press **SEL** until CH1 Pid is displayed.
2. Then select CH3 using **↑** (S2) et **↓** (S3) keys.
3. Press **SEL** 1 time to enter the programming menu.
4. Set the **PtN** parameter to define the number of used segments. Press **SEL**, the parameter starts blinking, set the value using **↑** (S2) et **↓** (S3) keys and validate using **SEL**.
5. Display SV-x using **↑** (S2) et **↓** (S3) keys and validate using **SEL**. Choose the setpoint temperature using **↑** (S2) et **↓** (S3) keys and validate using **SEL**.
6. Repeat operation with the other parameters.

To program the regulation cycle:

Depending on the mode chosen, the programmed temperature cycle will be started directly either at power-on (On / Off) or by the RUN function of the controller. In that case:

1. Press 1 time the **SEL** button.
2. Display (**ProG**) parameter and choose **RUN (rUn)** using **↑** (S2) et **↓** (S3) keys.
3. Temperature cycle start from actual temperature (**PV**).

Nota:

- To pause the cycle, select **HLD (HLd)**.
- To cancel the interruption, choose **RUN (rUn)**.
- To stop the cycle, select **OFF (oFF)**.
- End is displayed when the cycle is over.

There are 16 operating modes for a programmed cycle accessible via the Mod (CH3).

The following parameters can be set:

Start of the temperature cycle: the temperature cycle can be activated either when the device is switched on (0 / 1) or by using the **RUN** function.

End of program management: determines the status of the control at the end of the temperature cycle.

Stop mode: no regulation, the end of the cycle temperature flashes.

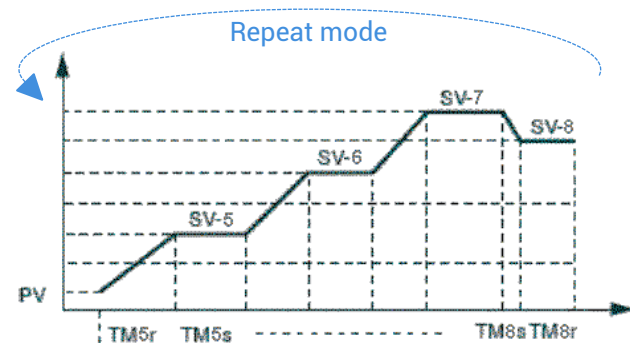
Active regulation: the last temperature of the cycle is regulated.

Management in case of voluntary program shutdown: determines the status of the control at the end of the temperature cycle (HLD function).

Stop mode: no regulation, the set temperatures flashes.

Active regulation: The current set temperature is regulated.

Repeat mode: Allows repetition of the cycle when the previous cycle is completed.



Nota: The rise times must be consistent with the performance of the device.

5. Example of programmer use: the chrono-breaker timer

Step 1:

Designation	Parameter	Value
Set point 1	SV-1	37 °C
Ramp time 1	TM-1r	1.0 (hr.min)
Level time 1	TM-1S	94.0 (hr.min)
Set point 2	SV-2	37 °C
Ramp time 2	TM-2r	0.0 (hr.min)
Level time 2	TM-2S	50.0 (hr.min)

Designation	Parameter	Value
Set point 3	SV-3	4°C
Ramp time 3	TM-3r	1.0 (hr.min)
Level time 3	TM-3S	22.0 (hr.min)
Set point 4	SV-4	0 °C
Ramp time 4	TM-4r	0.0 (hr.min)
Level time 4	TM-4S	0.0 (hr.min)

Step 2:

Temperature cycle starting using is manual (launching via **PROG** parameter) and repeat: **MOD :1**

Nota: This cycle of temperatures is pre-programmed by default on the refrigerated incubators.

5.12 Parameter tree

DESCRIPTION	BLOC	ACCESS
Starting / stopping the programmed temperature cycle	Ope	From home menu press SEL 1 time
Setting the alarm threshold		
Locking		
Setting the temperature cycle	CH3 PRG	From home menu hold on SEL until CH1 Pid is displayed then select CH3
High alarm delay	CH5 ALM	From home menu hold on SEL until CH1 Pid is displayed then select CH5
Offset adjustment	CH6 SEt	From home menu hold on SEL until CH1 Pid is displayed then select CH6
Communication settings	CH9	From home menu hold on SEL until CH1 Pid is displayed then select CH9
Réservé	CH11 dSP	
Réservé	CH13 PASS	

Nota: if no adjustment is made for 30 seconds, the display will reset to (PV) / (SV) values displayed when the power is turned on.