# EN Instruction manual





# Safety Enhanced Laboratory Gas Burner









- 1 Function knob
- 2,3 Dual knob: 2 Gas adjustment 3 - Air adjustment
- 4 Multifunction Display (LCD)
  - Power lamp
- 6 IR-Sensor

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- 7 Burner head
- 7a Flame orifice
- 8 Connector for foot pedal
- 9 Power connector for 9 V DC
- 10 Gas inlet R 1/4" L gas adapter (left hand thread)
- 11 Holding device for inoculation loop holder





- 12 Burner head screw
- 13 Monitor electrode
- 14 Ignition electrode

- 15 Active nozzle
- 16 Nozzle holder for alternative gas
- 17 Cover of the burner shaft
- 18 Retaining screw for cover of the burner shaft
- 18a- Position scew for the cover
- 19 Guide slots for tilt adjustment



Read these instructions carefully to familiarize yourself with the product. Please retain these operating instruction for future reference.

**Use:** Safety laboratory gasburners for heating and flame sterilizing. Ideal for use in cleanroom workbenches and the laboratory.

## WARNING: DO NOT LEAVE THE ACTIVATED LABORATORY GAS BURNER UNATTENDED!

## SAFETY PRECAUTIONS:

- On unpacking the unit, check for possible transportation damages. Do not operate the unit if damages are visible.
- After use or for any longer period of time without attendance, turn the main gas supply

off and turn off the gas burner at the function knob (1).

- Pay attention to your relevant rules for using liquid gas.
- Only use DVGW safety tubings with thread or tubing connectors. Check the condition of the tube/hose frequently. Depending upon type of tube/hose, hose clamps are required.
- All gas connections must be adequately tightened with two wrenches. Ensure gas
  proofness with a suitable test fluid / equipment. DO NOT seal the swivel nut with
  Teflon tape etc.
- Keep hands or other parts of the body away from the burner orifice (7a).
- Do not operate the unit near flammable liquids or hazardous materials.
- Unattended operation of the unit is not permissible.
- Always work in a well-ventilated area.
- Note that the burner orifice (7a) remains hot after the flame has been extinguished. Do not touch. Can cause burns.
- Allow sufficient time for flame orifice (7a) to cool down prior to cleaning, desinfecting, servicing or transport. Ensure that the unit and the gas supply are turned off.
- Because of the connectors at the back of the unit the backside should not be sterilized with a flame.
- Allow sufficient time for burner head (7) to cool down prior to disassembling.
- Operate the unit with assembled burner head only.
- After cleaning the burner head (7) allow sufficient time to dry before assembling again.
- Keep substances away from the flame orifice.
- Before mounting a nozzle check the O-Ring (20). Replace the sealing if damaged or worn.





# The range: Labflame IR

Art.-No. LF 8.000.000

IR-Sensor and LC-Display Adjustable IR-Sensor reaction distance DoubleClick IR-Sensor (connectable) 5 standard-programs for IR-Sensor, button (function knob) and foot pedal with count down display and foot pedal with count down display SCS (Safety Control System) BHC (Burner Head Control) Removable and decomposable burner head Tilt mechanism, right / left (23) Holding device for 3 inoculation loop holders Nozzles for natural gas, propane/butane gas Turbo flame Wrench 17 mm (21) for gas connection Screwdriver (22) for burner head and cover of the burner shaft Tubing connector with swivel nut (24) Power connection Instruction manual and 1-year warranty Optional: Foot pedal Art.-No. LF 4.000.402

# 1. Setup Procedure:

# The unit is shipped with the nozzle for natural gas (N) installed.

The nozzle must be changed if other gas is to be used.

Replacement procedure: Remove the Nozzle P from the nozzle holder (16) with a coin or the edge of the wrench (21) by turning it counterclockwise. Remove the active Nozzle N for natural gas (15) in the same way and exchange the nozzles.

ATTENTION: Before mounting a nozzle check the O-Ring (20). Replace the sealing if damaged or worn (Art.-No. 8.000.010).

Now you are ready to connect the gas supply to the gas inlet **(10)**. The correct pressure for natural gas is within the range of 18 - 25 mbar, for propane/butane gas 28 - 57 mbar.

Only use DVGW or other gas approved safety tubings with thread or tubing connectors (24). Check the condition of the tube/hose frequently. Depending upon type of tube/hose, hose clamps are required.

All gas connections must be adequately tightened with the wrench **(21)** (SW 17mm, included). Ensure gas proofness with a suitable test fluid / equipment. Do not seal up the included tubing connector **(24)** and swivel nut with Teflon tape etc.

A DVGW-proven or other gas approved pressure regulator (50mbar) must be used for liquid gas. **Pay attention to your relevant rules for using liquid gas.** 

# 1.1 Foot pedal connection:

Insert the connection cable of the foot pedal (accessory) into the socket (8) at the back of the unit.









# 1.2 Electrical connection:

Insert the power cord into the socket (9) on the back panel of the unit, or into the socket of the foot pedal. The default supply must be connected to a voltage source of 100 - 240 V / 50/60 Hz.

## 2. Operation: Flame regulation:

The flame can be varied in size and intensity by turning the gas knob (2) and adjusting the air knob (3) to suit all requirements.

Attention When operating the unit for the first time or after changing the nozzle, turn the gas adjustment knob (2) two revolutions to the left and turn the air adjustment knob (3) 3-4 revolutions to the left, too.

## 2.1 Operation: On-Off switch, menu navigation

Switch the unit on by a short push on the function knob (1). It can be turned off by a long push (2 seconds +) on the function knob.

By pushing and turning the function knob all programs and settings can be selected and adjusted. Structure of menu:



According to the arrows in the LCD (4) all menu items can be selected and deselected. The arrows in the display (+) (left, push, right) show, in which direction the next menu items are accessible. If a menu item for time adjustment or settings is selected the time or parameter can be altered generally by turning the function knob.



# 2.2 Operation: Application programs - BUTTON StartStop:

BUTTON StartStop

The flame is ignited by operation of the function knob (1). The flame is extinguished after renewed actuation of the function knob (1). Additionally the flame is automatically extinguished when the burning timer has expired. (The application program "BUTTON StartStop" uses the same timer as the application program "SENSOR StartStop". If a different burning time is required, the timer can be adjusted in application program "SENSOR StartStop". For more information see paragraph "SENSOR StartStop".)

## - PEDAL Standard:

# PedalStandard

The flame is ignited by operation of the foot pedal. The foot pedal remains depressed for the duration of use. The flame is extinguished upon release of the pedal. (In case of a connected Autoloop (Pro) the unit switches over to a special Autoloop program. Please see Autoloop manual for further information)

## - PEDAL Start-Stop:



The flame is ignited by operation of the foot pedal. The flame is extinguished after renewed actuation of the foot pedal. Additionally the flame is automatically extinguished when the burning timer has expired. Alternatively the flame can be extinguished by a short push on the function knob. (In case of a connected Autoloop (Pro) the unit switches over to a special Autoloop program. Please see Autoloop manual for further information)

Varying the burning time (1sec. - 2 h): The burning time can be adjusted when the flame is off, only. To change the timer, press the function knob (1) at the particular application program. The time adjustment appears on the display. Now, by turning the function knob (1) the minutes can be varied. If the desired minute value is achieved press the function knob (1) again. Then, the needed seconds can be set by turning the function knob (1). By pushing the knob again the time will be memorized and the menu returns to the application program.

# - SENSOR Auto-Off:



For flame ignition, activate the sensor window (6) by passing your hand over it at a distance of 5-50 mm. The flame will burn for the timespan set on the burning timer and then extinguish automatically. Alternatively the flame can be extinguished by a short push on the function knob (1).

# Varying the burning time (1sec. - 2 h): see PEDAL Start-Stop

#### - SENSOR Start-Stop:

SENSOR StartStop 05:00 (**^**)

For flame ignition, activate the IR-Sensor (6) by passing your hand over it at a distance of 5-50 mm. The flame is extinguished after renewed activation of the IR-Sensor. Additionally the flame is automatically extinguished when the burning timer has expired. Alternatively the flame can be extinguished by a short push on the function knob (1).

## Varying the burning time (1sec. - 2 h): see PEDAL Start-Stop

Notice: All burning times are memorized and are available upon the next switch-on of the unit. Additionally the application program which was used the last time before turning off the unit is memorized and will be called upon the next switch-on.

## 2.3 Operation: Settings

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SETTINGS

To select the settings menu turn the function knob (1) to the right till "Settings" appear on the LCD. Access the settings menu by a short push on the function knob.

#### - BHC, Burner Head Control:

BURNERHEADCONTRL OFF× ON 🔺

The safety feature BHC (see paragraph 3) identifies burner head clogging by liquids or solid substances. If the burner head is clogged "BHC" appears on the LCD (see also paragraph 3) and the maximum burning time is limited to 30 seconds. To disconnect this time limit press the function knob and set the asterisk "\*" to OFF. Memorize and return to the settings menu with a short push on the function knob.

BHC: ON: 30 s time limit activated (factory settings)

BHC: OFF: 30 s time limit deactivated

#### - DC, DoubleClick IR-Sensor:

DOUBLECLICK OFF×. ON 🔺

When activated, this safety function ensures that the burner can only be ignited by activating the DoubleClick IR-Sensor twice. As a result, unintentional ignition or ignition due to dropping or falling objects is virtually impossible. To turn the DoubleClick ON press the function knob and set the asterisk "\*" to ON. Memorize and return to the settings menu with a short push on the function knob.

DC ON: DoubleClick connected, within one second the IR-Sensor needs to be activated twice to ignite the flame

DC OFF: DoubleClick disconnected. The IR-Sensor needs to be activated one time only to ignite the flame (factory settings).

Working with the DoubleClick: Ignite the flame by passing the IR-Sensor (6) with your hand twice within a time range of one second. After the first activation "DC" appears in the LCD for one second. During the period "DC" is shown on the LCD the IR-Sensor (6) needs to be activated a second time to ignite the flame.

#### - Stand-By:

STAND-BY TIMER 05m in

This automatic unit cut-off system can be varied from 1 to 120 minutes. When the flame has been not ignited for a longer time as set on the Stand-By-timer the unit is switched off to avoid accidental activation, for example after a break.

To adjust the Stand-By timer press the function knob (1) and set the time by turning the knob clockwise or counterclockwise. If the needed time is set, memorize and return to the settings menu with a short push on the function knob (1).

#### - IR-Sensor:

IR-SENSOR RANGE -1111 +

At the menu IR-Sensor, the detection range of the IR-Sensor can be varied. To adjust the IR-Sensor range press the function knob (1) and set the range by turning the knob clockwise or counterclockwise.

clockwise rotation: IR-Sensor range ++

counterclockwise rotation: IR-Sensor range --

The bar indicates the current (quantitative) IR-Sensor range. The adjusted range can be checked by passing the IR-Sensor (6) with your hand. If the IR-Sensor (6) is activated by your hand "IR" appears in the LCD.

If the needed range is set, memorize and return to the settings menu with a short push on the function knob (1).

Attention: It is possible to adjust the sensor range to 0 mm or more than 50 mm. Then the IR-Sensor is out of range and cannot be activated or "IR" is shown on the LCD permanently. In that case, increase or decrease the IR-Sensor range.

#### - Language:

LANGUAGE ¥EN DE FR SP▲

To adjust the language press the function knob (1) and set the language by turning the knob clockwise or counterclockwise. If the asterisk "\*" is placed in front of the required language, memorize and return to the settings menu with a short push on the function knob (1).

## - Factory settings:

DEFAULT SETTINGS ×N0. YES 🔺

Enter the selection "NO"/ "YES" by pushing the function knob (1). If "YES" is selected and if the function knob is pressed again, all timer and parameters will be reset to factory settings.

#### - Up:



To exit the settings menu press the function knob (1). Then turn the function knob counterclockwise to return to the application programs.

# 2.4 Operation: switch-off

The unit can be turned off by pushing the function knob (1) for more than 2 seconds.

## 3. Safety symbols:

**Residual heat display:** The residual heat display  $\langle \rangle \langle$  indicates a hot burner head.



Attention: If the residual heat display is on DO NOT TOUCH the burner head. Can cause burns!

Even after switching-off the unit the residual heat display remains on the LCD till the burner

head is cooled down.

<u>Notice:</u> Disconnecting the power supply or removing the power cord will clear the residual heat display even if the burner head is still hot.

**BHC:** If the burner head is clogged "BHC" will blink on the LCD. Additionally, if BHC is ON in the settings menu, the maximum burning time will be limited to 30 seconds. (see paragraph 2.3)

PedalStandard BHC

If BHC is blinking it is requested to clean the burner head immediately.(see paragraph 5.1) 4. Error displays:

#### - Ignition failure:

FLAME FAILURE

B.HEAD DIRTY?

This message appears and indicates a malfunction if the flame fails to ignite after 7 seconds. In case of ignition failure check the burner head **(7)** for possible clogging, check the correct input pressure of the gas supply and verify that the correct nozzle is installed. In case of this malfunction the gas supply will be shut off automatically. <u>Nozzle N:</u> natural gas, 18-25 mbar <u>Nozzle P:</u> propane-/ butane gas, 47-57 mbar

#### - Flame failure:

IGNITION FAILURE CHECK GAS SUPPLY

This message indicates a malfunction if the flame is extinguished by external factors and fails to reignite within 5 sec. In case of flame failure check the burner head (7) for possible clogging and verify the correct input pressure of the gas supply.

In case of this malfunction the gas supply will be shut off automatically.

#### - Overtemperature

OVERTEMPERATURE	SUFFICIENT TIME
ALLOW	FOR COOL DOWN

This message indicates a malfunction if the interior temperature has exceeded 70 °C. At a normal room temperature with normal air circulation the unit is suited for continuous operation.

In case of overtemperature increase the air ventilation or change the operation site. In case of this malfunction the gas supply will be shut off automatically.

#### - BHC:



This message indicates that the time limit (30 seconds) was turned on due to a clogged burner head. For cleaning the burner head **see paragraph 5.1.** 

#### - Burner head assembly monitor:

REPLACE BURNER HEAD

This message indicates that the burner head is removed. Further operation is possible after the burner head is reinstalled.

<u>Notice:</u> All error displays can be reset by a long push (2 seconds+) on the function knob (1). (In case of overtemperature the unit needs to be cooled down and in case of burner head assembly monitor the burner head needs to be reinstalled prior a reset is possible.)

# 5. Cleaning and sterilizing:

Allow sufficient time for burner orifice (**7**, **7a**) to cool down before disassembling or cleaning the burner head. Check the unit is disconnected and that the gas supply is turned off at the mains. The burner can be cleaned with customary commercial disinfectants. Additionally, it is possible to remove the burner head and to clean it separately.

The stainless steel and glass construction allow 100% UV-radiation sterilization and short time surface flame sterilization.

Attention: Because of the connectors at the back of the unit the backside should not be sterilized with a flame.

# 5.1 Burner head disassembly and cleaning:

Allow sufficient time for burner orifice (**7**,**7a**) to cool down before disassembling or cleaning the burner head. Check the unit is turned off, that the gas supply is turned off at the mains. Clean the burner head with customary commercial disinfectants, sterilize it in an autoclave or wash it in a dishwasher. To remove the burner head proceed as follows:

Unscrew the burner head screw (12) completely with the included screwdriver. Turn approx. 8 revolutions to

the left. Now remove the burner head from the device by pulling it upwards. Reinstallation is performed in the reverse sequence.

The dismounted burner head can be even dismantled into the individual components for indepth cleaning: Unscrew both screws (12a) and take off the base plate (12b) of the burner head which was fixed by the two screws (12a). After the base plate is removed both electrodes can be pulled out for seperate cleaning. Reinstallation is performed in the reverse sequence.

# 5.2 Burner shaft cleaning:

Unscrew the screw (18) completely

with the included screwdriver. Take off the cover (17) of the burner shaft. Now the burner shaft can be cleaned or solid substances which have fallen into the unit can be removed. Reinstallation is performed in the reverse sequence. Take care that the notch of the cover fits to the screw (18a).

## 6. Turbo flame:

If the cover of the burner shaft (17) is removed the flame is extremely firm and consistent.

To take off the cover of the burner shaft unscrew

the screw (18) completely with the included screwdriver. With an open burner shaft the intensity of the flame cannot be adjusted by the air knob any longer. During the use of the turbo flame most of the needed air is taken inside through the open burner shaft. Remounting the cover of burner shaft. (see paragraph 5.2)

# 7. Tilt adjustment:

Insert the tilt adjustment (23) into the slots (19, see page 1) at the bottom of the unit. The tilt-adjustment can be used to the left or right side to protect the burning chamber from contamination when working with liquids.



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# 8.Warranty:

All Labflame burners are covered under one-year manufacturer warranty against any manufacture defects in material and workmanship. The warranty guarantees all Labflame burners under normal usage conditions and does not cover any damages as a direct result of user misuse or/and abuse. The warranty is void upon any unauthorized servicing, disassembly or modifications.

Notes

# Troubleshooting guide

The blue power lamp does not light up

Check for correct connection and specification of the power adapter. Ensure that the original power adapter is used. Specifications: 9 V / DC, 1A Polarity: + - (--)

## The foot pedal does not work

Check for correct connection of the foot pedal. Ensure that the foot pedal socket and plug is not twisted or broken.

#### No Flame

In case of ignition or flame faliure check if the burner head is clogged. Verify the input pressure of the used gas. Ensure that the correct nozzle is installed in the unit. Nozzle **N**: natural gas, input pressure: 18-25 mbar Nozzle **P**: propane / butane gas, input pressure: 47-57 mbar

# Inspection of the burner head (clogging)

Take care that there are no liquids or other substances at the Bypass (area between the



inner and the outer ring) Especially remove substances in the marked areas at the electrodes. If there are contaminants in this area, the flame cannot encircle the electrodes correctly.

Clean this areas with a brush. The burner head can be cleaned with customary commercial disinfectants, or it can be sterilized in an autoclave or washed in a dishwasher.

## Flame burns 30 seconds, only

BHC time limit is active, BHC appears at the LCD. The burner head is clogged and must be cleaned. (see paragraph 5.1) The time limit can be disconnected in the settings menu at point BHC.

(see paragraph 2.3)

## Flame too small / large / soft

Check the position of the air and gas adjustment. Check if the correct nozzle is installed. Nozzle N: natural gas, 18-25 mbar Nozzle P: propane / butane gas, 47-57 mbar Check if the drilling of the active nozzle is blocked. Unscew the active nozzle. (see paragraph 1) If the drillig is blocked clean with a brush or compressed air.

## No ignition spark / BHC blinks but the burner head is clean.

Check if the ceramic electrodes are in good condition. In some cases the electrodes may break. To check move the ends of the electrodes. If they are not moving they should be okay. If they are moving more than 0.5 mm the electrodes are broken. The electrodes can be dismantled and changed by the user. (see paragraph 5.1)

## The IR-Sensor does not work

It is possible to adjust the sensor range to 0 mm or more than 50 mm. Then the IR-Sensor is out of range and cannot be activated or "IR" is shown on the LCD permanently. In that case, increase or decrease the IR-Sensor range at the point IR-Sensor in the setting menu. (see paragraph 2.3)

# The burner shuts-off due to overtemperature frequently

In case of overtemperature increase the air ventilation or change the operation site.

#### Technical data:

Technology

Programs IR Sensor:

Foot pedal:

Button:

#### Safety features

Safety Control System (SCS): with gas safety cut off



**Gas supply and consumtion** Gas supply: Gas types:

Connected load: Continuous cartridge operation

Temperatures

Flame temperature:

Temperature threshold level:

#### Electrical

Power consumption: Power connection:

IR-Sensor coverage: DoubleClick IR-Sensor:

### Mechanical

Casing and operating controls: Burner head: Cover of the burner shaft: Measurements (B x H x T): Weight:

Licences DIN-DVGW Reg.-Nr.: CE: EEC guidelines: Microprocessor, LC-Display

Start-Stop with timer, 1 sec - 2h Auto-Off with timer, 1 sec - 2h Standard (flame during pressed foot pedal) Start-Stop with timer, 1 sec - 2h Start-Stop with timer, 1 sec - 2h

ignition and flame control, temperature monitor burner head clogging and assembly monitor (BHC) automatic unit switch off,1 - 120 min residual heat display

1/4" left + filter Il2ELL3B/P: natual gas E/LL,18 - 25 mbar liquid gas, 20 - 50 mbar 70 g/h liquid gas CV 360 - 40 min, Express 444 - 50 min, CG 1750 - 150 min, C 206 - 170 min, CP 250 - 210 min, CV 470 - 3470 min

1350 °C on liquid gas 1300 °C on natural gas (E) 1 kW liquid gas, 1 kW natural gas

2 VA 100 - 240 V / 50/60 Hz / max. 0.3 A 9 V DC / 1 A 5 - 50 mm, adjustable time range 1sec (can be disconnected)

stainless steel / glass, UV and solvent resistant removable and decomposable, stainless steel Ø 23 mm, with drains 103 x 49 x 130 mm 700 g

NG-2211AS0167 EN 61326-1, EN61000-3-2, EN 61010 89/336/EEC und 73/23/EEC





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