



COD-Reactor AL 38 SC

Content

1.	Introduction	3
2.	Instrument description	3
3.	Instrument Accessories	3
4.	Assembling and installation	3
5.	Operation	4
5.1	Description of controls	4
5.2	Power Interruptions	5
5.3	Safety Features	5
6.	Start of cycle	6
7.	Maintenance	6
7.1	Ordinary Maintenance	6
7.2	Service and Repair	6
7.2.1	Replacing Fuses	7
8.	Disposal	7
9.	Accessories	7
9.1	Verifying the temperature of the heating block	7
10.	Spare parts	7
11.	Technical features	8
12.	Electric scheme	9
13.	Suggestions	10

COD-Reactor AL 38 SC

IMPORTANT

READ THE INFORMATION CONTAINED IN THE OPERATION MANUAL BEFORE USING THE UNIT. THE MANUFACTURER DOES NOT ACCEPT RESPONSIBILITY FOR THE IMPROPER USE OF THE EQUIPMENT OR FOR FAILURE TO FOLLOW INSTRUCTIONS.

The labels applied to the unit warn of the dangers to which the user may be exposed during use or maintenance of the unit. The labels must be left on the unit and replaced if they are no longer readable.



Danger Warning:

To prevent accidents associated with the use of this instrument



Start of Operations:

Read instructions for use and maintenance before using this instrument

SAFETY RULES

- 1) The heating plate may reach temperatures of up to 150°C. Temperatures may remain high even in the cooling phase.
- 2) The vials and reagents used with this equipment must be compatible with the temperature set on the unit.

CLEANING

Always unplug the unit before cleaning. The heating plate must be cool. Use a damp cloth and a mild, non-flammable detergent.

PERSONAL PROTECTIVE EQUIPMENT

The equipment used for personal protection must protect the user from the possible danger associated with the reagents used and glass vials.

MAINTENANCE

According to the law on product guarantees, our instruments must be repaired at our factory, except for specific agreements with our agents. For more information see Chapter 7 "Maintenance" in this manual.

GUARANTEE

Starts from the date of delivery note and is referenced by the unit serial number.

The manufacturer, engaged in a continuous product improvement process, reserves the right to modify any product characteristics without notice.

COD-Reactor AL 38 SC

1. Introduction

The thermoreactor will hold 25 round glass tubes with a 16 mm external diameter. It is designed for sample preparation in determining COD, total phosphorous, total chromium and other parameters in water and sludge.

This instrument, when combined with photometers and reagents and accessories for colorimetric analysis, is part of a complete analytical setup capable of high precision and reproducibility, with a limited space requirement.

2. Instrument description

The instrument is highly resistant to chemical and mechanical corrosion through the use of epoxy paint on metal surfaces. The block holding the test tubes is manufactured from an aluminum alloy to ensure thermal homogeneity at all of the preset temperatures. The temperature of the heating block is controlled by a microprocessor with PID logic. The temperature probe, Pt100 probe, performs a self calibration every time the instrument is turned on, to ensure precision and reproducibility.

Four different temperatures have been preset: 70, 100, 120, and 150°C, along with four different times: 30, 60, and 120 minutes or infinite time.

The heating block is protected against overheating by a thermostat that turns off the power supply when the temperature exceeds 180°C.

3. Instrument Accessories

The instrument is equipped with the following:

- Cable for electrical connection to a European plug

4. Assembling and installation

Connect the instrument to electric supply with the power cable, checking that the values reported on label correspond to that of the electric line.

COD-Reactor AL 38 SC

5. Operation

Connect the instrument to the electrical supply by the lighted switch located in the front panel of the instrument.

5.1 Description of controls

- Main switch** The switch will light when the instrument is turned on
- Start/Temp Button** When the **Start/Temp.** button is pressed, a work cycle will start with the preset values of 150°C and 120 minutes. The corresponding LED's will light. It is possible to select a different temperature by pressing the **Start/Temp.** button to reach the desired setting BEFORE the programmed temperature is reached and the time countdown starts. If the selected temperature is lower than the running temperature of the heating block (when the **Start/Temp.** button is pressed), the work cycle will not start and all temperature LED's will light intermittently, signaling an error. To correct the error, select a temperature that is higher than the running temperature or wait until the heating block cools to a temperature that is lower than the temperature to be programmed.
- Time Button** Pressing the **Time** button allows the run time to be changed. It is possible to select 120, 60, 30 minutes or infinite time. When a time is selected, the corresponding LED will light. The run time will start when the heating block reaches the selected temperature. The LED corresponding to the selected run time will blink once the run starts and the **Time** button will no longer be operative.
- Temperature LED's** When the instrument is turned on, the four temperature LED's will not be lit. This signals that a work cycle is not in progress. When a preset temperature is selected the corresponding LED will light. All of the LED's will blink when the selected temperature is higher than the block temperature.
- Time LED's** When the instrument is turned on, the four time LED's will not be lit. When a preset time is selected the corresponding LED will light. The LED blinks to signal that the preselected temperature has been reached and the time count has started.

5.2 Power Interruptions

The instrument will register a black out or a lack of power supply as a manual stop of the cycle. The work cycle will have to be restarted.

5.3 Safety Features

The instrument is protected against overheating by a thermostat that turns off the power supply when the temperature exceeds 180°C. The temperature setting is continuously controlled by electronic equipment that stops thermoregulation if anomalous measurements are sensed. In the event of anomalous measurements, all temperature and time LED's will start to blink and an acoustical warning signal will sound.

COD-Reactor AL 38 SC

6. Start of a cycle

A work cycle is started by pressing the **Start/Temp.** button.

The default option is set at 150°C and 120 minutes as shown by the corresponding LED's. It is possible to select other temperatures and times by pressing the corresponding buttons.

LED's will light when the corresponding value is selected. It is possible to change both the time and the temperature until the temperature of the heating block reaches the selected temperature and the run time starts.

When the selected temperature is reached a beeper will sound intermittently for 5 seconds. At this time the LED corresponding to the selected time will start to blink, signaling that the run time has started. The end of the run time will be signaled by a beeper that will sound continuously for 5 seconds.

At this time the heating element and the LED's corresponding to time and temperature will turn off.

The instrument is now ready for a new work cycle. If the selected temperature of the new work cycle is lower than the running temperature (when the Start/Temp. button is pressed), the work cycle will not start and all temperature LED's will light intermittently, signaling an error. To correct the error, select a temperature that is higher than the running temperature or wait until the heating block cools to a temperature that is lower than the temperature to be programmed.

7. Maintenance

All maintenance, service and repair must be performed after disconnecting the instrument from the electrical supply.

7.1 Ordinary maintenance

Regular maintenance is not required except cleaning with a damp cloth and a mild, non-flammable detergent.

7.2 Service and Repair

Any periodical service or repair that is not specifically mentioned in this manual, including the servicing of internal parts, should be made by the qualified personnel of the manufacturer.

7.2.1 Replacing fuses

The heating block is equipped with two fuses connected to the socket located on the rear panel. Before replacing a fuse, disconnect the power cable from the heating block and use a screwdriver to open the fuse box.

COD-Reactor AL 38 SC

8. Disposal

Dispose of in a manner consistent with the laws and regulations of the country and locality in which the unit will be disposed.

9. Accessories

Protection cover

9.1 Verifying the temperature of the heating block

The temperature is controlled electronically which ensures stability without temperature oscillations around the set point. The Pt100 probe provides high precision and does not require calibration because the internal software performs a self calibration every time the instrument is turned on.

10. Spare parts

Fuse

Electric resistance

Control electronic card

Safety thermostat

Pt100 probe

COD-Reactor AL 38 SC

11. Technical features

Power supply:	220-240/50-60 V/Hz
Power:	400 W
Weight:	3.600 kg
Dimensions (W x H x D):	155 x 95 x 275 mm
Selectable temperatures:	150 – 120 – 100 – 70 °C
Selectable times (t ¹):	30 – 60 – 120 and infinite
Diameter of holes:	ø 16 x n° 25 mm
Thermoregulation:	P.I.D. microprocessor
Precision:	± 0.2 end of scale %
Temperature probe:	Pt 100 class A
Probe calibration:	Automatic by software

Heating block

Temperature stability:	± 0.3 °C
Temperature homogeneity:	± 0.3 °C
Temperature precision:	± 0.3 °C
Overtemperature protection:	On the block

Performance:

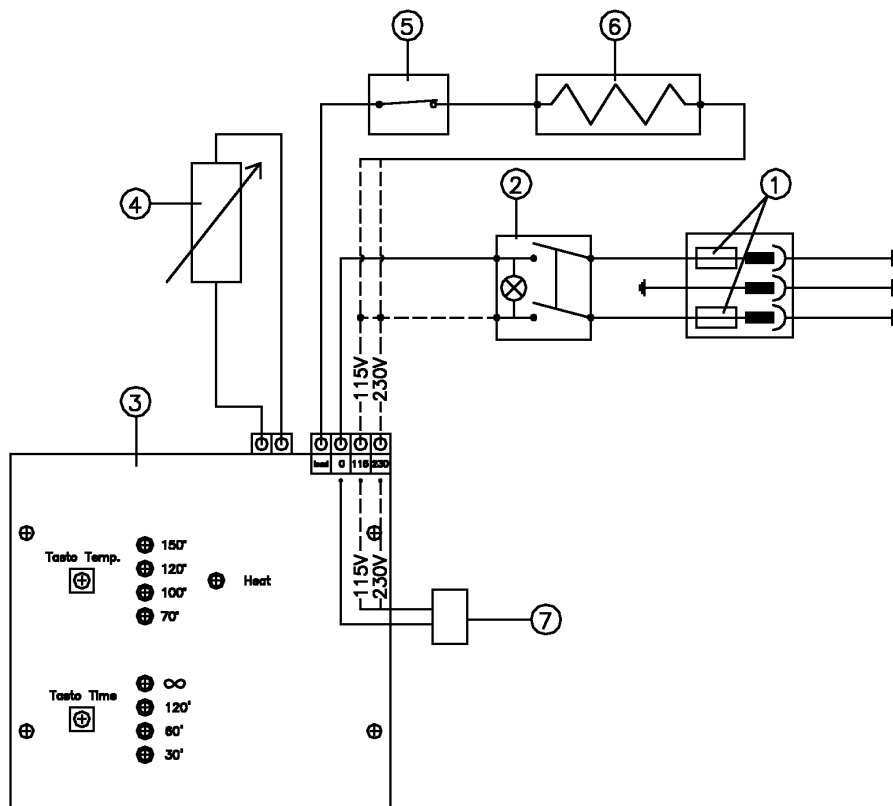
From 20°C to 150°C:	10 min.
---------------------	---------

Signals:


Reaching of set temperature:	Acoustic
During time count:	Visual
End of cycle:	Acoustic
Error: (set temperature > block t°)	Visual and acoustic
Alarm (broken probe):	Visual and acoustic

COD-Reactor AL 38 SC

12. Electric scheme



- 1) 5x20mm retarded fuse 3.15 A
- 2) General lighted switch
- 3) Electronic card
- 4) Pt100 probe
- 5) Safety thermostat
- 6) Electric resistance
- 7) Condenser



Technische Änderungen vorbehalten.
Printed in Germany 10/03

We reserve the right to alter or amend
any of the items contained herein
without prior notice.

AQUALYTIC®
Postfach 41 02 53
44272 Dortmund
Germany
Telefon: (+49) (0)2 31/9 45 10 - 755
Telefax: (+49) (0)2 31/9 45 10 - 750