

KjelROC Digestor Operation Manual

Version O



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2. Introduction

The KjelROC Digester is an instrument that let you perform rapid and safe Kjeldahl and other digestions. There are several options that can be configured and therefore it is recommended to read the advices and suggestions in this guide.

As the use of the KjelROC Digester includes handling of hazardous chemicals it is especially important that the operator reads and understands what is written in chapter 3, Safety.

3. Safety

Since the KjelROC Digester use hazardous chemicals it is important that every user read these safety instructions or be instructed by the laboratory manager.

3.1. USER SAFETY

The instrument may only be used by laboratory personnel and other persons who have knowledge and/or experience of doing chemical analysis and dealing with hazardous chemicals.

Applications not mentioned in this document are improper. In particular, it is forbidden to use the instrument in the following instances:

- use of the instrument that require ex-protected instruments
- use of chemicals or reagents which can explode or inflame

It shall be noted that:

- modifications or upgrades to the instrument shall only be carried out by authorized service personnel

3.2. SAFETY SYMBOLS



General Hazard



Corrosive acid



Crushing hazard



Electrical shock hazard



Hot Surface

Explanations used in this manual



Important, Please Note



Please Note, Protection Glasses is recommended



Please Note, Gloves should be used

3.3. PRODUCT SAFETY SYSTEMS

The instrument is designed and built in accordance with state-of-the-art technology. Nevertheless, risks to users, property, and environment can arise when the instrument is used carelessly or improperly. If the equipment is not used in a manner specified by this document, the protection provided by the equipment may be impaired.

3.3.1. Handling of Chemicals

The KjelROC Digestor boils hazardous chemicals at high temperature. Therefore it is of outmost importance to take care when moving glass tubes in and out of the instrument. Care should also be taken of the very high temperature used in the process. It is recommended that only operators that fully understand the used chemicals should do this task.

It is recommended to install the instrument in a fume hood. The installation should always be adapted to local regulations on lab environment.

3.3.2. Maintenance and Service

The operator is responsible for ensuring that recommended daily and monthly user maintenance is performed on the Instrument. Failure to do so might impair the functionality and/or shorten the lifespan of the instrument.

The operator is responsible to schedule regular maintenance with authorized service personnel only. Only OPSIS LiquidLINE spare parts should be used in the instrument.

4. Function

A digester boils chemicals at high temperatures, typically around 420°C. Since most digestions are typically with sulfuric acid it is important to achieve an efficient removal of all gases and vapours.

A typical digestion with a KjelROC Digester and KjelROC exhaust.

The sample, sulfuric acid and catalyst (1) are boiled within an aluminium block (6). The tubes fumes are collected via the glass inlet (2). A PTFE sealing ring (3) ensures a small intake of air and prevents vapours and gases to escape from the digestion. Gases from several tubes are collected (4) and transferred to the outlet (5). It is important that the outlet is connected to a outside suction so that an efficient fume suction can be achieved. It is recommended to connect the outlet to a KjelROC Scrubber or a water ejector.



1. Boiling liquid
2. Tube glass collector
3. PTFE Seal
4. Glass collector for 10 or 20 tubes
5. Outlet for gases and vapours
6. Aluminium heater

5. Installation

The KjelROC Digester does not require any specific installation. However, depending on your configuration there might be additional items that require mounting or unpacking. Please follow the instructions given in this section to unpack your digester.

All KjelROC Digesters are delivered together with power cables, user guide (this document) and a rack where tubes can be placed. After installation, please insert the power cable to the dedicated outlet on the back plate of the digester.

The tube rack is ready to be used without any mounting and will work well with KjelROC tubes as well as with most common tubes on the market.

5.1. CHECKING THE PACKAGE

The package should contain the following items:

- 1 pce KjelROC Digester
- 1 pce power cable
- 1 pce KjelROC Digester Operation Manual (this document)
- 1 pce Temperature Measurement Test Protocol

Additionally for a Digester Advanced (motorlift):

- 1 pce Motorlift
- 1 pce drip tray

5.2. INSTALLING KJELROC DIGESTOR ADVANCED

5.2.1. Mounting of Motor Lift

The KjelROC Digester Advanced is an advanced model that contains a motor lift with a mounted exhaust. It is recommended that your service technician mount the motor lift on the KjelROC Digester Advanced.

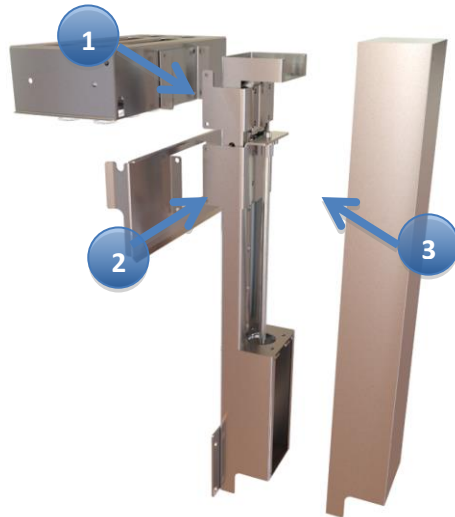


Fig.1

1. Attach the exhaust to the motor lift (arrow 1 in Fig.1). Use the supplied screws and lock washer.
2. Attach the holder to the motor lift (arrow 2 in Fig.1). Use the supplied screws and lock washer.
3. Place your digester block near or close to where it shall be used. Ensure that you have plenty of space to access the back plate of the instrument
4. Place the motor lift as close as possible to the digester, lying on a table. Insert the two cables from the digester to the dedicated connectors on the motor lift. The red/black cable should be connected to the upper left connector on the motor board, see picture below (fig 2).

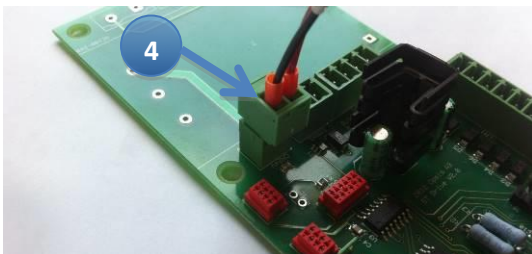


Fig.2

The ribbon cable should be connected to the topmost red connector on the board, see picture below (fig 3).

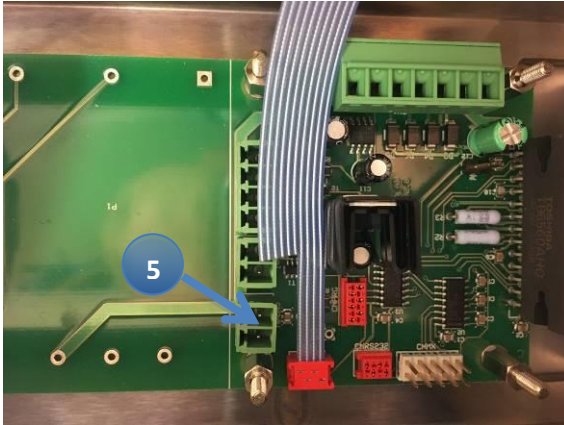


Fig.3



It is important that the plastic connector guide is facing down/right (see picture below, fig 4). The connector guide should fit well into the hole on the board (fig 5). No force should be necessary. (On older cables the red part of the ribbon cable should also be facing down)

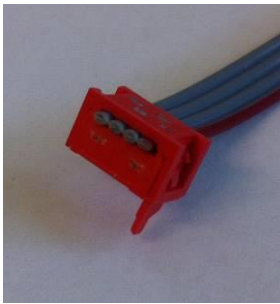


Fig.4

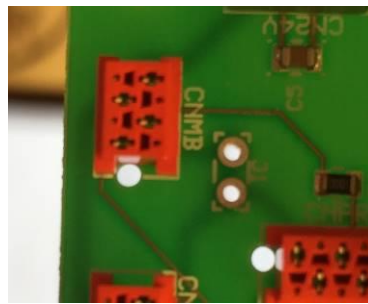


Fig.5

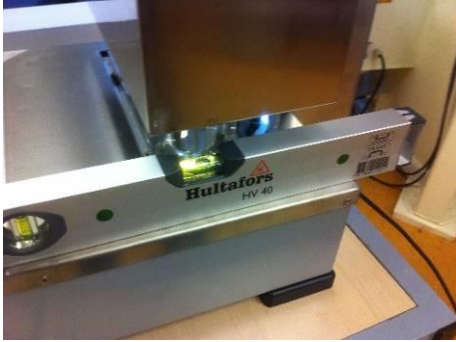
5. Mount the motor lift on the back plate, while ensuring that connected cables are moving freely. Use the supplied screws and lock washers to secure the mounting.
6. Place the cover over the motor lift and secure with the supplied screws and lock washers

5.2.2. Installing the Motor Lift



Take care when installing the Motor lift the first time to avoid that glass get broken. Use DOWN or UP in case you need to stop the motor at any time.

1. Use a spirit level to ensure that the Digester is standing on a flat surface



2. Loosen all screws to the rack holder so that it will be easy to adjust
3. Move the lift to “pick position” and insert a Tube Rack. The Tube Rack should be full with tubes and it is advised that they are filled with water or similar (to ensure that the weight corresponds to a normal running analysis)
4. Use a spirit level and place it in one corner of the rack and ensure that the rack is horizontal by adjusting the screw behind the rack lift, see figures below



5. Repeat for the other corner. Make sure that both sides of the Tube Rack are horizontal.



6. Ensure that all Screws to the Rack Holder are fixed before proceeding to the next step

7. Loosen all screws above the Exhaust (holding the glass in place) so that it will be easy to adjust



8. Move the Tube Rack upwards but stop 3 cm below it reaches the exhaust. You stop the motor by pressing the UP or DOWN buttons.



9. Check that all tubes will fit correctly into the exhaust glass. Adjust by moving the glass inside the Exhaust. Ensure that all screws to the Exhaust are fixed before proceeding to the next step
10. Move the Tube Rack to heating position (long press at DOWN button when in cooling position). Verify that Tube Rack is moving easily into the Digester Block.

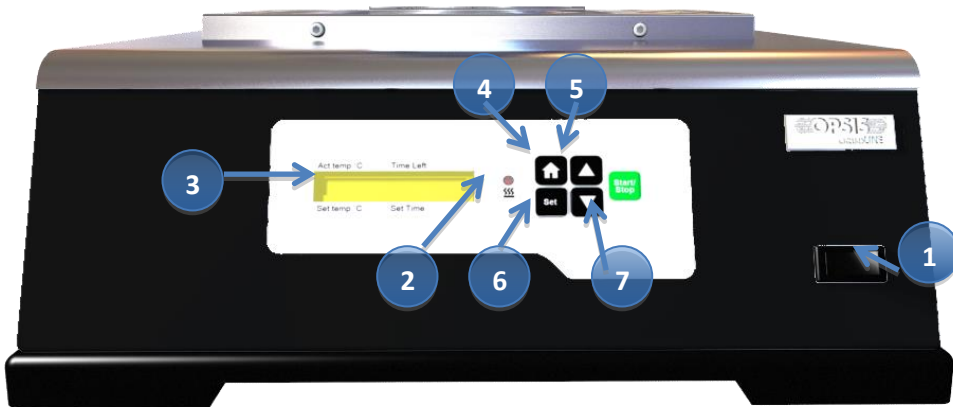


11. Verify that all positions – Pick, Cooling and Heating are correct. If not then repeat the steps above.

6. Overview of KjelROC Digestor

6.1. THE FRONT PANEL

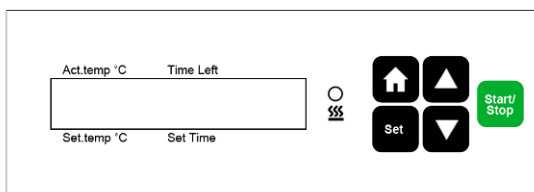
The KjelROC Digestor has an on/off button and five different control buttons. Additionally there is an indicator light to highlight when there is a running program.



		Function		
		No Program running	Program running	In SET Menu
1	POWER ON/OFF	Power on and off		
2	Indicator light	Red light if a program is running.		
3	LCD Display	Displays current status of the KjelROC Digestor		
4	HOME	-	-	Go to start screen
	HOME (Long Press)	Displays the SW version or Calibration Mode (alternating)	-	-
5	UP and DOWN	Used to manual control the motor rack on the KjelROC Digestor Advanced, Please see section 8.1. Not used in KjelROC Digestor Auto.		Select desired values in SET menu
6	SET	Selects the SET menu	-	Choose value and continues to next step in the menu
	SET (Long Press)	Toggles between Celsius and Fahrenheit temperature scale	-	-
7	START/STOP	Start program	Stops current program	Start selected program

6.2. THE DISPLAY

The display of KjelROC Digester contains the following information.



		Function		
		No Program running	Program running	In SET Menu
1	Act temp	Shows the actual temperature of the digester block	Shows the actual temperature of the digester block and in addition it will display the current step in a program ("R1", "R2", etc.). "R" indicates that a program is running.	Displays the SET menu item
2	Set temp	Displays the last used program. In addition, if the program was P1/P2/P3 then the first temperature step will be shown	Displays the current running program. In addition, if the program is P1/P2/P3 then the current temperature step will be shown	Displays the current value. If confirming with SET or START then this value will be stored.
3	Time left	If the last program was P1/P2/P3 then the first time step will be shown	Shows time left in current program step (custom programs)	-
4	Set Time	-	Shows desired time in current program step (custom programs)	-

7. Operation of KjelROC Digester Auto

7.1. STARTING YOUR DIGESTION

This section describes the required steps to run a digestion with the Digester Auto.

1. Unless it has already been done, switch on your KjelROC Digester with the POWER ON button.
2. Press SET to open the Settings menu
3. Use UP and DOWN arrow to find your preferred program. Select program by pressing SET

Name	Step 1	Step 2	Step 3	Step 4
Pre-heat	customizable	n/a	n/a	n/a
P1*	customizable	customizable	customizable	customizable
P2*	customizable	customizable	customizable	customizable
P3*	customizable	customizable	customizable	customizable
WATER	R1=170°C 20min	R2=300°C 30min	R3=420°C 45min	n/a
FAT MEAT	R1=200°C 15min	R2=300°C 20min	R3=420°C 45min	n/a
BEVERAGES	R1=200°C 10min	R2=300°C 15min	R3=420°C 40min	n/a
CEREALS	R1 =420 °C 45min	n/a	n/a	n/a
S1-S99 or S1-50	Special programs with customizable amount of steps (1-255). One customizable time for all steps. Amount of available S-programs depends on Digester model Auto or Advanced.			

7.1.1. Program and Run a Pre-Heat program

1. Use UP and DOWN arrow to select desired temperature. Select time by pressing SET.
2. Press START/STOP to start your Pre-heat program. The red indicator lamp will light. A signal will be played when the temperature has been reached. Press START/STOP again to stop your Pre-Heat program and continue with a standard program.

7.1.2. Program and Run a Digestion Program, P1-P3

1. If a customizable program (P1, P2, P3) has been selected then you will have the option to adjust the time and temperature for each step;
 - a. Select temperature for the first step with UP and DOWN arrows. Confirm with SET. Select "---" to create a program with less than three temperature steps (Minimum one step is always required).
 - b. Select time for the first step with UP and DOWN arrows. Confirm with SET. Select "---" to create a short temperature step (zero minutes).

- c. If not “---“ has been selected as the temperature then the same procedure will be repeated for step 2, 3 and 4. Press SET to continue.
2. Select ending procedure for your program with UP and DOWN arrows. Press SET when done

Beep	There will be an alarm at the end of digestion but the heating will continue. To stop the heating press the START/STOP button.
Timer	There will be an alarm at the end of the digestion and the heating will stop automatically. Press START/STOP button the start your digestion

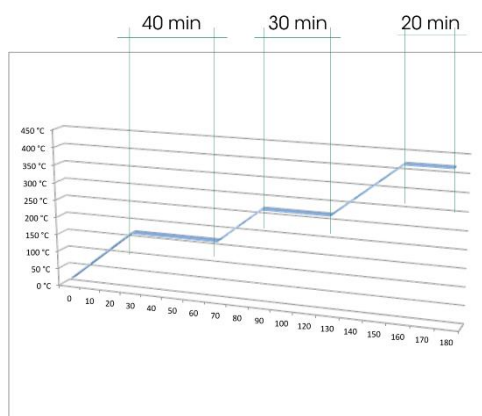
3. Place your tube rack with samples to be digested into the KjelROC Digester. Place the exhaust on top of the tube rack. The exhaust should be connected to a water ejector or a KjelROC Scrubber.



Please ensure that PTFE seals are closing correctly between the glass tubes and the exhaust

4. Press START/STOP to start your program. The red indicator lamp will light.
5. During the digestion, the display will constantly be updated with the status of your digestion. In the lower left corner you will see the name of your selected program. In the upper left corner you will get a display with R1, R2 and R3 – corresponding to the three different steps in your digestion.

Please note that the timer will only count down when the initial temperature has been reached. Time between the different steps is not counted. For example, the first timer (40 minutes) in the below example will only start when the first temperature of 150°C has been reached.



6. Depending on your alarm settings there will be a sound at the end of your digestion and/or automatic switch-off of temperature.
7. When digestion is finished, please take care when moving the tube rack for cooling, it might be very hot.
8. If a manual stand has been mounted then it is advisable to place the Tube Rack with exhaust in the lower holder. When cooling is completed the exhaust can be moved to the upper position while the Tube Rack is used elsewhere. Please attach the supplied drip tray below the exhaust to avoid drops onto the instrument.

7.1.3. Program and Run a Special Digestion Program, S1-S99

1. If a special program (S1 – S99) has been selected then you will have the option to adjust the final temperature, the time for each step and amount of steps to reach final temperature;
 - a. Select final/end temperature for the digestion with UP and DOWN arrows. Confirm with SET
 - b. Select time for each step in the digestion with UP and DOWN arrows. Confirm with SET.
 - c. Select amount of steps (1-255) for the digestion. Each step will have equal temperature increase.
 - d. CHAIN YES/NO. Select if the selected S-program shall be chained with the next S-program. I.e, you can set several S-programs to follow each other in a sequence. Ending procedure will then only apply for the last, unchained program.
2. Select ending procedure for your program with UP and DOWN arrows. Press SET when done (see section

7.2. QUICK START OF A PROGRAM

The KjelROC Digester will always store the last used program. This means that if you want to use same program again there are few steps necessary:

1. Switch on the KjelROC Digester. Your last program will be shown in the display. Press SET and UP/DOWN arrows in case you want to show another program.
2. Place your Tube Rack, with sample tubes, into the KjelROC Digester and place an exhaust on top.
3. Press the START/STOP button to start the shown program.
4. When digestion is finished, please take care when moving the tube rack for cooling, it might be very hot.

7.3. CALIBRATION AND SW VERSION

Press and hold HOME button for an extended period and you will enter the SW version and Calibration menu. This function alternates so every second time the SW version will be displayed and every second time the calibration menu.

The calibration menu allows you to modify the temperature measurement.

1. Measure the temperature, using the calibration hole and a certified probe (recommendation is to test at your desired digestion temperature, using a Testo 925 measurement device with Testo Rapid injection probe).
2. Enter the Calibration menu by pressing HOME for an extended period. The actual temperature will be displayed on the first row and your offset temperature will be displayed on the second row.
3. You have three options in this menu:
4. Press SET to remove a previous offset.

5. Use UP and DOWN arrows to modify the desired temperature to correspond to your measurement (adding an offset). Press SET to use this new offset.
6. Press HOME to leave the menu without any change



Please note that the calibration menu is only enabled when the temperature is above 40°C. Take care that temperature measurement with an external probe (even using calibration hole) is often several of degrees lower than the actual temperature in the Digestor block, especially when measuring at 200 degrees and above, when ambient temperature will affect the measurement to a high degree.

7.4. DAILY MAINTENANCE

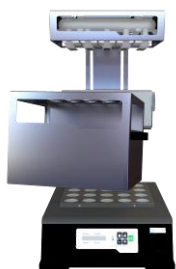
Follow the advices in this section to maintain a good functionality of your instrument. As a daily routine you should;

1. Each working day, use a soft cloth to clean and remove any chemicals that might have come onto the instrument. Always ensure that all tube holes are clean with no residuals or leftovers.
2. Clean the exhaust with water and a soft cloth. Check that the PTFE rings can move freely and that they close properly towards the tubes (optional exhaust).
3. Always switch-off the instrument when not used over a longer period. It is advisable to switch-off the instrument if not used during the night.

8. Operation of KjelROC Digestor Advanced

8.1. THE MOTOR LIFT

The KjelROC Advanced is supplied together with a motor lift which facilitates a fully automatic digestion. The motor lift has three defined positions:



Pick position



Cooling position



Heating position

8.1.1. Pick position – in the middle

Position used when inserting and removing racks. The exhaust and rack holder are separated in this position.

8.1.2. Cooling position – top

Position used when digestion is ready and the tubes are cooling down. This is also the default position for the KjelROC Digestor, meaning that if power is interrupted the rack holder will always move to this position when power is restored. The cooling position is also used to “store” the exhaust when it is not used.

8.1.3. Heating position – bottom

Position is used when holder is lowered into the KjelROC Digestor and digestion is running.

8.1.4. Motor Control

All programs will automatically move the tube rack to the right position, i.e. when starting a program the rack holder will move to pick position for inserting the tube rack and when finished the tube rack and exhaust will automatically move to the cooling position.

However, there might be instances when manual control of the lift is desired. This section describes the possible movements.

Button	No Program running	Program running
UP	Going to cooling position. (If lift is already moving then movement will stop.)	Going to cooling position (If lift is already moving then movement will stop.)
DOWN	If lift is in cooling position then holder will move to pick position (to unload rack). If holder is in pick position then it first will move up (to get exhaust) and thereafter down to heating position. (If holder is already moving then movement will stop.)	Going to heating position. (If lift is already moving then movement will stop.)
DOWN long press (press and hold 2 sec)	If lift is at cooling position then it will go to heating position.	-
START/STOP	If not Pre Heating has been selected then rack holder will move to pick position.	Stops program. rack holder will automatically move to cooling position



Note that if no program is running and the holder is on the way up then this movement will continue until holder has reached cooling position, i.e. the motor lift will not react on DOWN button.

8.2. STARTING YOUR DIGESTION

This section describes the required steps to run a digestion with the Digester Advanced.

1. If the drip tray has been inserted below the exhaust then please remove it before starting the KjelROC Digester Advanced.
2. Unless it has already been done, switch on your KjelROC Digester with the POWER ON button. The rack holder will automatically move to cooling position.
3. Press SET to open the Settings menu
4. Use UP and DOWN arrow to find your preferred program. Select program by pressing SET

Name	Step 1	Step 2	Step 3
Pre-heat	customizable	n/a	n/a
P1*	customizable	customizable	customizable
P2*	customizable	customizable	customizable
P3*	customizable	customizable	customizable
WATER	R1=170°C 20min	R2=300°C 30min	R3=420°C 45min
FAT MEAT	R1=200°C 15min	R2=300°C 20min	R3=420°C 45min
BEVERAGES	R1=200°C 10min	R2=300°C 15min	R3=420°C 40min
CEREALS	R1 =420 °C 45min	n/a	n/a
S1-S50	Special programs with customizable amount of steps (1-255)		

8.2.1. Program and Run a Pre-Heat program

1. Use UP and DOWN arrow to select desired temperature. Select time by pressing SET
2. Press START/STOP to start your Pre-heat program. The red indicator lamp will light. A signal will be played when the temperature has been reached. Press START/STOP again to stop your Pre-Heat program and continue with a standard program.

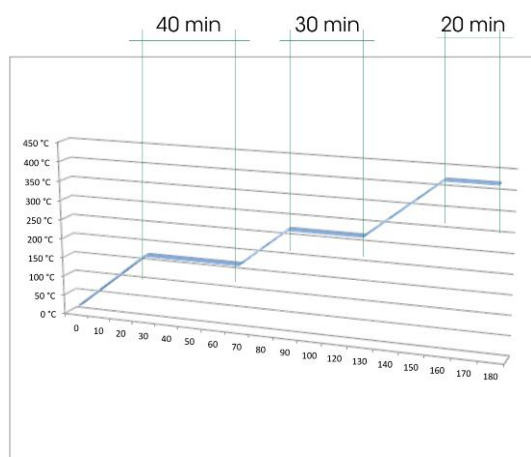


Please note that the Pre heat program does not use the motor lift (the lift will be disabled while running this program)

8.2.2. Program and Run a Digestion Program, P1-P3

1. If a customizable program (P1, P2, P3) has been selected then you will have the option to adjust the time and temperature for each step;
 - a. Select temperature for the first step with UP and DOWN arrows. Confirm with SET. Select "---" to create a program with less than three temperature steps (Minimum one step is always required).
 - b. Select time for the first step with UP and DOWN arrows. Confirm with SET. Select "---" to create a short temperature step (zero minutes).
 - c. If not "---" has been selected as the temperature then the same procedure will be repeated for step 2 and 3. Press SET to continue.
2. Select ending procedure for your program with UP and DOWN arrows. Press SET when done.
3. Press START/STOP to start your program. The red indicator lamp will light.
4. The program will start by moving the holder to Pick position. Insert your Tube Rack and press DOWN button to continue to next step.
5. The motor lift will now automatically pick the exhaust and start the digestion. The exhaust should be connected to a water ejector or a KjelROC Scrubber.
6. During the digestion, the display will constantly be updated with the status of your digestion. In the lower left corner you will see the name of your selected program. In the upper left corner you will get a display with R1, R2 and R3 – corresponding to the three different steps in your digestion

Note that the timer will only count down when the initial temperature has been reached. Time between the different steps is not counted. For example, the first timer (40 minutes) in the below example will only start when the first temperature of 150°C has been reached.



7. Depending on your alarm settings there will be a sound at the end of your digestion and/or automatic switch-off of temperature. The Tube Rack will automatically move to cooling position – with the exhaust still on.

It is possible to continue to run the program from this position. To do this, press START/STOP button to interrupt the program. Move the holder and

exhaust to heating position by pressing and holding the DOWN button a couple of seconds. Select the pre-heat program and heating will continue. Please note that this program is manual and there will be no automatic move of tube rack when finished.

8. Press DOWN to move the holder to pick position and remove your finished tube rack. Please take care when moving the tube rack for cooling, it might be very hot.
9. Insert the drip dray under the exhaust to avoid chemicals to drop onto the instrument while the tube rack is used elsewhere.

8.2.3. Program and Run a Special Digestion Program, S1-S50

1. If a special program (S1 – S50) has been selected then you will have the option to adjust the final temperature, the time for each step and amount of steps to reach final temperature;
 - a. Select final/end temperature for the digestion with UP and DOWN arrows. Confirm with SET
 - b. Select time for each step in the digestion with UP and DOWN arrows. Confirm with SET.
 - c. Select amount of steps (1-255) for the digestion. Each step will have equal temperature increase.
2. Select ending procedure for your program with UP and DOWN arrows. Press SET when done.

8.3. QUICK START

The KjelROC Digester will always store that last used program. This means that if you want to use same program as last time there are few steps to follow:

1. Remove Drip tray, if inserted.
2. Switch on your KjelROC Digester. Your last program will be shown in the display. Press SET and UP/DOWN arrows in case you want to show another program.
3. Press START/STOP button to start the shown program. The rack holder will move to pick position.
4. Insert tube rack and press DOWN to continue. The rack holder will move to heating position and the digestion will start with the last run program.

8.4. CALIBRATION AND SW VERSION

Please see section 7.3 Calibration and SW version.

8.5. DAILY MAINTENANCE

Follow the advices in this section to maintain a good functionality of your instrument. As a daily routine you should;

1. At each working day, use a soft cloth to clean and remove any chemicals that might have come onto the instrument. Take care to ensure that all tube holes are clean with no residuals or leftovers.
2. Insert the drip dray under the exhaust whenever the rack is removed, to avoid chemicals to drop onto the instrument.
3. Clean the exhaust with water and a soft cloth. Check that the PTFE rings can move freely and that they close properly towards the tubes.
4. Always switch-off the instrument when not used over a longer period. It is advisable to switch-off the instrument if not used during the night.

9. Technical Data

Operating Temperature	5°C - 40°C
Relative humidity	max 80 %
Power Supply	190-240 VAC, 50-60 Hz, 10A
Power consumption	max 1200 W (10 position) max 2200 W (20 position)
Dimensions (WxHxD)	360 x 132 x 329 mm (10 position) 360 x 132 x 439 mm (20 position)
Weight	12 kg without rack/exhaust (10 position) 18 kg without rack/exhaust (20 position)

10. Declarations and Requirements

10.1. DECLARATION OF CONFORMITY



Declaration of Conformity

Identification of apparatus: KjelROC Digester DI-210, DI-220, DI-221, DI-310, DI-320

Model/type: Digester

Manufacturer: OPSIS AB
Box 244, SE-244 02 Furulund, Sweden
Phone: +46 46 72 25 00

The undersigned hereby declares that the above-referenced product, to which this declaration relates, is in conformity with the provisions of:

- Council Directive 2014/30/EU (February 26, 2014) on Electromagnetic compatibility (EMC),
- Council Directive 2014/35/EU (February 26, 2014) on Electrical Safety: low-voltage electrical equipment,
- Council Directive 2006/42/EC (June 9, 2006) on Safety of Machinery,
- Council Directive 2011/65/EU (June 8, 2011) on Restriction of the use of hazardous substances (RoHS 2).

The below harmonised standard specifications have been applied:

Safety:


ANSI/ISA-61010-1 (November 5, 2012) Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 1: General Requirements

Electromagnetic Compatibility:

Emission: EN 61000-6-3 (2007)

Immunity: EN 61000-6-2 (2005)

October 8, 2018


Svante Wallin
President OPSIS AB

10.2. FCC REQUIREMENTS (FOR USA AND CANADA)

English:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to both Part 15 of the FCC Rules and the radio interference regulations of the Canadian Department of Communications. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Français:

Cet appareil a été testé et s'est avéré conforme aux limites prévues pour les appareils numériques de classe A et à la partie 15 des réglementations FCC ainsi qu'à la réglementation des interférences radio du Canadian Département of Communications. Ces limites sont destinées à fournir une protection adéquate contre les interférences néfastes lorsque l'appareil est utilisé dans un environnement commercial.

Cet appareil génère, utilise et peut irradier une énergie à fréquence radioélectrique, il est en outre susceptible d'engendrer des interférences avec les communications radio, s'il n'est pas installé et utilisé conformément aux instructions du mode d'emploi. L'utilisation de cet appareil dans les zones résidentielles peut causer des interférences néfastes, auquel cas l'exploitant sera amené à prendre les dispositions utiles pour pallier aux interférences à ses propres frais.

DASTECSRL

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