



DUO-MIX

USER MANUAL




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1. INTRODUCTION

1.1 USING THIS MANUAL

Prior to operating the DUO-MIX, carefully read the instructions in this manual for proper use.

 Before installing and working with the **DUO-MIX**, read this manual carefully and observe the safety precautions and regulations stated. Safety comes first!

Understanding Warnings

This manual uses the following warning levels to alert the user to important information as shown in the following examples.

 **WARNING!**

A Warning alerts to the possibility of personal injury, death, or other serious adverse reactions stemming from the use or misuse of this instrument or its components.

 **CAUTION:**

A Caution alerts to possible problems with the instrument associated with its use or misuse. Such problems include instrument malfunction, failure, damage, damage to the sample, or damage to other property. Where applicable, a Caution may include precautions to be taken to avoid the hazard.

1.2 SPECIFIC CAUTIONS AND WARNINGS

Pay particular attention to the following safety precautions. If these safety precautions are ignored, injury or damage to the instrument may occur. Each individual precaution is important.

 **CAUTION:**

When operating the DUO-MIX national guidelines and regulations must be observed, in regard to normal lab routine.

 **CAUTION:**

Power supply cords (cables/plugs) must be installed in such a way that sources of danger (overheating of cables, short circuit due to incorrect fuse ratings, loose cables etc.) are eliminated.

 **CAUTION:**

The user should be aware that if the DUO-MIX is not used in the manner specified by the manufacturer, the protection provided by the equipment may be impaired. This manual should be kept with the mixer for consultation when necessary.

 **WARNING!**

As with all electrical equipment, the power supply is a potential source of danger. To prevent the risk of electrical shock to the user and/or damage to the instrument, the operator should not open the covers of live electrical parts of the instrument. Only authorized and trained personnel may open the instrument to perform maintenance or repair. Comply with the power requirements described in section 5. For the correct replacement parts, see section 6, spare parts.

⚠ WARNING!

Specimens (patient samples and controls) and liquid waste should be considered potentially infectious and capable of transmitting human immuno-deficiency virus (HIV), hepatitis B virus (HBV) and other blood borne pathogens. The handling of these substances must be performed in accordance with established laboratory safety regulations in order to minimize risk to laboratory staff. This includes wearing applicable personal protective equipment. Contact with skin and mucous membranes must be avoided. This also applies to all components of the mixer that are exposed to these substances. If any specimen is spilled on the instrument, wipe it up immediately and clean the contaminated surface with a disinfectant such as 0.5% sodium hypochlorite solution. Compliance with local regulations pertaining to the disposal of waste is the responsibility of the operator. Refer to local sources for additional information on correct biohazardous waste disposal. Qualified technical service personnel must adhere to these same warnings when conducting maintenance.

1.2 IMPROPER USE

The following points are considered improper use:

- 1) The voluntary hindrance of rack movement during mixing.
- 2) The use of racks not belonging to the device and not indicated by manufacturer.
- 3) The use of the device near centrifuges or on a not flat surface (please follow the instructions written in section INSTALLATION of this manual).

Any use of the DUO-MIX other than what is specified as its intended use is considered improper.

1.3 INTENDED USE

The DUO-MIX is a stand-alone mixer intended for the automated mixing of whole blood samples prior to clinical analysis by laboratory professionals.

1.4 MIXER DESCRIPTION

The DUO-MIX is a simple and reliable device designed to perform the mixing of blood or other biological liquids. Different styles of tubes can be accommodated by a variety of rack adapters.

The microprocessor of the DUO-MIX controls different programs and speeds of mixing to ensure accuracy and reproducibility of results. To ensure proper mixing, the DUO-MIX mixes for five minutes. At the end of five minutes, the operator is alerted by an acoustic signal and a flashing display. Samples are now ready for analysis.

The mixer and accessories should be unpacked and installed using instructions supplied by ELITechGroup Inc. If these instructions are not observed, ELITechGroup Inc. assumes no responsibility for consequential damage or improper operation of the equipment.

2. SAFETY PRECAUTIONS

2.1 USER PRECAUTIONS

Before using the DUO-MIX, the operator must know the rules for handling potentially infectious materials and for handling electro-mechanical systems.

2.1.1 USER IDENTIFICATION

This mixing device is intended for professional use only in a laboratory. The operator must be trained for working in laboratory using hazardous materials and professional equipment.

2.2 ELECTRICAL EQUIPMENT

As in all electrical equipment, the power supply is a potential source of danger. Please avoid handling any internal electrical parts prior to disconnecting the DUO-MIX from the power supply. Never conduct maintenance on the DUO-MIX while it is under electrical power. Pay attention to the power supply and ensure that it is not damaged in any way. Although the DUO-MIX is powered by low voltage, it has a voltage elevator circuit inside which could provoke a strong electrical shock if not handled as instructed. The Duo-Mix is not dangerous to service personnel when completely unplugged. We suggest disconnecting the power supply anytime personnel perform maintenance tasks.

2.3 MECHANICAL EQUIPMENT

Do not open the DUO-MIX to service mechanical parts of the mixing without having disconnected it from the power supply first.

2.4 BIOHAZARDOUS MATERIAL

Patient samples and quality control (QC) products that are mixed on this system should be treated as potentially biohazardous. All materials should be handled according to your facility's biohazard procedure. Always wear the personal protective equipment recommended by your facility when using the DUO-MIX.

2.4.1 HUMAN SAMPLES

Always wear protective gloves and glasses when handling human samples. Treat all samples as potentially biohazardous and infectious. If any sample is spilt, utilize the correct personal protective equipment (PPE-gloves, lab coat, etc.), wipe it up immediately and clean the contaminated surface with a disinfectant (e.g. sodium hypochlorite 0.5%) solution.

2.4.2 WASTE SOLUTION AND SOLID WASTE

Avoid direct contact with samples and/or solid waste. Both should be handled as potentially biohazardous. Dispose of samples and/or solid waste according to local governmental regulations.

2.5 DISPOSAL AND RECYCLING

The DUO-MIX should be disposed of following all applicable national and local laws pertaining to electronic waste. The Duo-Mix should be disposed separately, not as urban waste. The user may request that the supplier collect the instrument for correct disposal, if a new instrument is ordered.

2.6 SYMBOLS GLOSSARY

The following symbols are placed on the instrument:



Caution



General Warning



Biological Hazard



DC (direct current)



Disposal and recycling
(see chapter 2.5)



Manufacturer



Serial number



Conformité Européenne
(European Conformity)



Catalogue number

3. INSTALLATION

3.1 CONTENTS

The following contents are included:

- Mixer, Qty: 1
- Rack 8-10 mm, Qty: 2
- Rack 13 mm, Qty: 1
- Certificate of Quality, Qty: 1
- User's Manual, Qty 1
- Power adapter, 1.8 A 100-240 V ≈50-60 Hz Class I, Qty: 1
- Power cord with US plug, Qty: 1
- Power cord with CEE 7/7 plug, Qty: 1

3.2 RACK ASSEMBLY

Racks can be removed or inserted by pressing the button as shown in the picture.



Connect the power supply outlet to the mixer and insert the power supply plug into the electrical socket on the rear of the mixer. Only use the power supply provided. Once connected, the DUO-MIX automatically turns on.

Each time the DUO-MIX turns on, it carries out an electronic and mechanic initialization and performs an instrument self-test to check for proper operation.

3.3 CONTROL PANEL

The DUO-MIX is controlled by two buttons:

START/STOP button
SPEED button

The four LEDs indicate the level of rotation speed.



4. DUO-MIX STARTUP

4.1 POSITIONING OF THE ANALYZER

The DUO-MIX must not be placed near centrifuges, oscillating agitators or other vibrating instruments which might cause movement of the bench. The workbench must be flat and leveled. Direct light on the mixer and sudden changes in temperature should be avoided.

The mixer is not intended to be integrated with any other system.

Do not replace the supplied detachable power cord with one not supplied by ELITechGroup Inc.

Connect the DUO-MIX to the electricity supply by plugging the 12V power supply into the intended power inlet on the DUO-MIX. Only use the power supply provided.

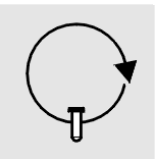

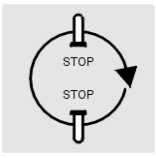

4.2 FUNCTIONS

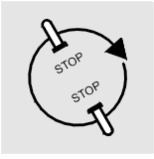

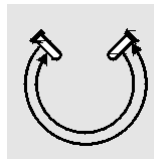
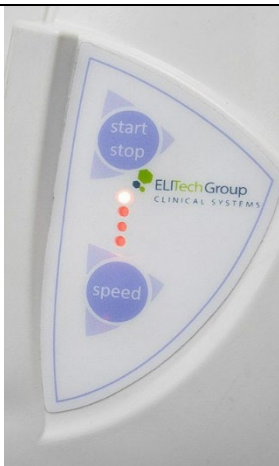
4.2.1 SELECTING ROTATION FUNCTIONS

When the DUO-MIX is in stand-by mode, it is possible to select 4 different programs.

Note: Changes to mix programs cannot be carried out while the DUO-MIX is functioning, only while the mixer is in stand-by mode.

To change programs, press the SPEED button for 2 seconds. Once in the program mode, the LED will flash. Press the START/STOP button to change program.

<p>F1</p>		<p>Continuous rotation</p>	<p>1st LED flashing</p>	
<p>F2</p>		<p>Continuous rotation of the rack with STOPS in upper and lower vertical position.</p>	<p>2nd LED flashing</p>	

F3		Rotation with STOPS at 150° and 300° angles.	3rd LED flashing	
F4		Loop type of rotation under the angle of $\pm 300^\circ$	4th LED flashing	

Once the desired rotation is selected, exit the “program mode” by pressing the SPEED button.

4.2.2 MIXING SPEED

To select the mixing speed, press the SPEED button. The speed will increase from level 1 (1 LED on) to level 4 (4 LEDs on).

4.3 START MIXING

To start mixing, press the START button. The DUO-MIX will start mixing using the program selected. To stop mixing, press the STOP button; the rack will return to the home position. After five minutes of mixing, the DUO-MIX beeps and the indicators start to blink. To stop mixing, press START/STOP button. If the mixer has not been used for 10 minutes, it will convert to SLEEP mode to conserve energy. All LED indicators will turn off. To activate the device again, simply press the START/STOP button.

4.3.1 ELITECHGROUP ESR TUBE MIXING

The best program to mix ELITechGroup’s ESR tubes (MONOSED® and Excyte®) is Program F3, set to the second speed level. Five minutes mixing is enough to ensure samples are thoroughly mixed. After five minutes of mixing, the DUO-MIX beeps and the indicators start to blink. Stop mixing by pressing the START/STOP button.

5. TECHNICAL SPECIFICATIONS

Area of application:	ESR tube mixer/Sample mixer
Instrument size:	Width: 350 mm (13.8 inches) Depth: 170 mm (6.7 inches) Height: 170 mm (6.7 inches)
Weight:	≈ 2 kg (≈ 4.4 lbs)
Instrument input and output:	1.5 A, 12 Vdc
External power supply unit input:	Input: 100 - 240 VAC +/-10%, 1.8A, 50/60 Hz Output: 12 Vdc, 1.5A
Operating Conditions:	Temperature 15 ° - 32 °C Altitude: up to 2,000 m Overvoltage: category II Pollution: degree 2 For indoor use only Sound level <60 dBA
Transport and storage:	Temperature: -10 to 45 °C Humidity: 0% - 95%

Appropriate decontamination must be performed prior to transportation, removal from use and/or disposal.

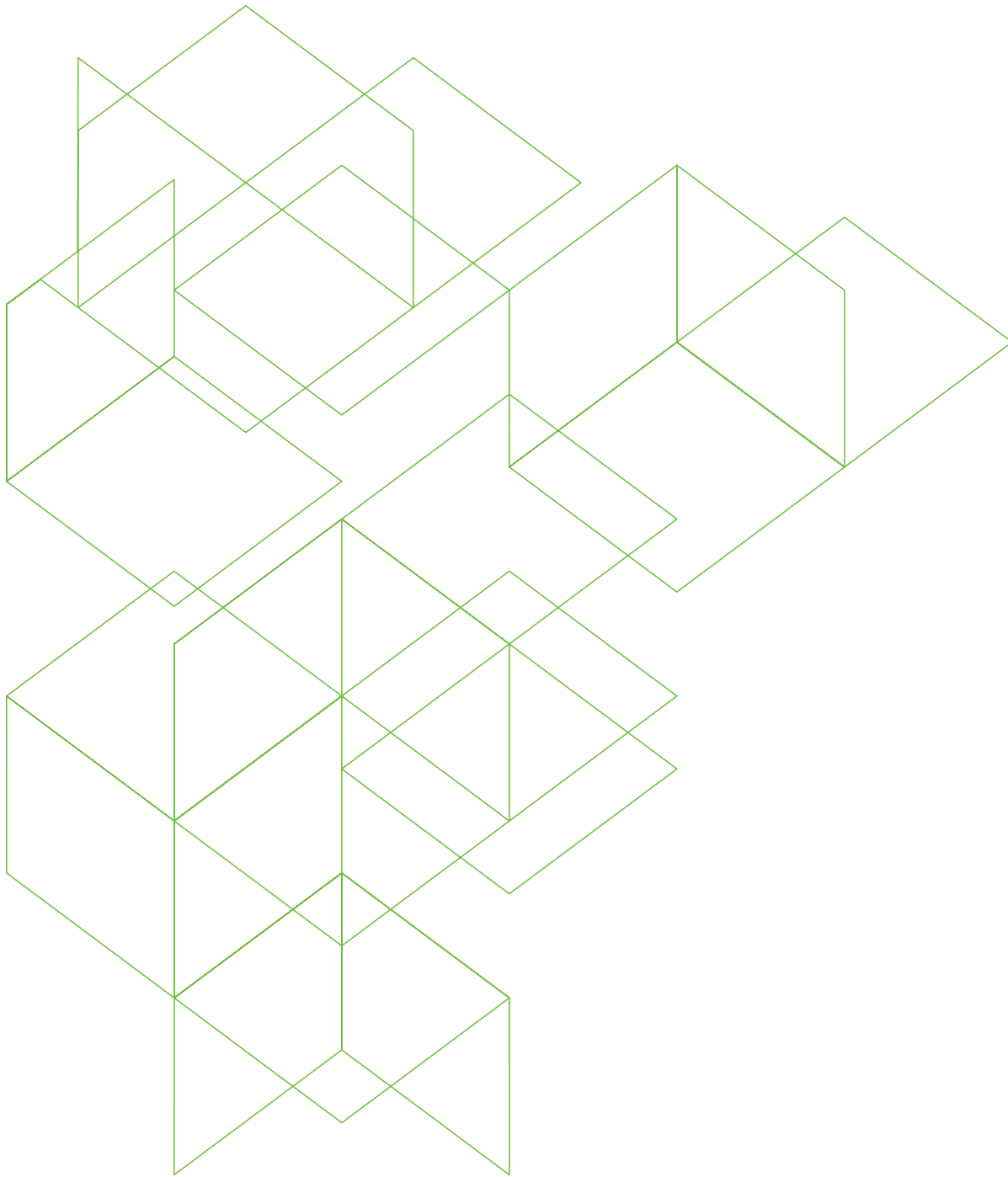
Do not throw away the packaging. The packaging can be used to transport the DUO-MIX if you change location or to return the DUO-MIX to the manufacturer when needed.

6. MAINTENANCE

The DUO-MIX should be cleaned, when deemed necessary, or after about 40 hours of work. Before cleaning, you should unplug the mixer from the outlet. To clean, wipe the mixer with a damp rag and then dry. Do not use any acids or other solvents to clean the device.

6.1 SPARE PARTS LIST

Code	Description
EX-10907	Wired fan 12 VDC; 40x40x10mm
EX-20615	Power supply (Voltage 12 VDC)
EX-10574	Rack kit DUO-MIX complete 8-10mm tubes
EX-10575	Rack kit DUO-MIX complete 13 mm tubes
WARNING: in order to ensure the safety and performance of the instrument do not use other spare parts than the ones specified above.	



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