

Geri Mixer

GMIX-TRI-03

User Manual



Genea Biomedx Pty Ltd

GENERAL INFORMATION

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Technical Support

Manufacturer

If any serious incident has occurred in relation to this device, it should be reported directly to the manufacturer and the competent authority of the Member State in which the user and/or patient is established.



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List of accessories

No.	Content	GMIX-TRI-03
1	Main Device	1
2	Power Cord	1
3	Gas Connecting Pipe	1
4	Fuse	2
5	Gas Pipe Connector	1
6	Supporting Documents	1

In case of any missing accessories, please promptly contact your local Genea Biomedx representative.

This product does not contain any parts that are prone to wear and tear or loss. The accessories require replacement only in the event of damage.

***Note:** In some cases, the “User Manual” can be obtained digitally as an eIFU; please contact your local Genea Biomedx representative to get the latest version of the User Manual.

Copyright description

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See the nameplate for the date of manufacture for the device.

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1. Safety &Precautions

This chapter introduces the precautions for using the instrument. Before using, please read and understand the contents carefully to ensure correct use and operator safety.

1.1 Important Notice

In this manual, some words are preceded by the following symbols for warnings and special reminders. The specific usage is as follows:

Item	Description
 Warning	Prompts the operator to follow the instructions, otherwise personal injury may result.
 Caution	The operator is reminded to follow the instructions, otherwise the instrument may malfunction or be damaged.

1.2 Safety Tips

1.2.1 General Security



Warning

- Do not perform any operation on the instrument before reading the user manual to avoid damage to the instrument or personal injury.
- This instrument must be operated by trained doctors or laboratory technicians.
- Do not place the instrument in a humid place or near water to avoid leakage or electric shock caused by low insulation.
- Do not use this instrument in flammable or explosive environments, otherwise it may cause personal injury.
- When the power of the instrument is on, unauthorized personnel are not allowed to dismantle the instrument casing to avoid personal injury.



Caution

- This instrument can only be disassembled, debugged and repaired by our authorized and qualified technical support personnel. Improper operation may affect the stability of the instrument or damage the instrument.

- This instrument is not waterproof, please do not spray liquid on it. Otherwise, it may cause damage to the parts.

- If liquid enters the instrument, please turn off the power immediately and contact the technician in time.

- Do not use accessories and consumables other than those specified.

1.2.2 Electrical safety



Warning

- It is prohibited to use this instrument near strong radiation sources (such as unshielded high-power radio frequency sources). Otherwise, it may interfere with the normal operation of the instrument.

- Do not remove the instrument cover to expose the internal components. Otherwise, there may be a risk of electric shock.

- If the power cord is damaged, frayed, cracked, or broken, replace it immediately.

- Do not use an underrated power cord instead of the power cord for this instrument.

Otherwise, it may overheat and cause a fire.



Caution

- Please make sure that the input voltage meets the requirements of this instrument.

- Please use the power cord provided with this instrument to connect to the power supply.

1.2.3 Accessory safety

- Replace it with a fuse of the specifications specified by Genea Biomedx (250V, F6AL). Please contact after-sales for specific operation methods.

1.3 Definition of icons, symbols and abbreviations

Definition of icons, symbols and abbreviations used on the labels of the product is as follows:

Sign	Description
	Indicates the device manufacturer
	Indicates the date when the device was manufactured
	Indicates the manufacturer's catalogue number
	Indicates the manufacturer's serial number so that a specific device can be identified
	Indicates the need for the user to consult the user manual
	Contents of the distribution packages are fragile therefore it shall be handled with care
	This is the correct upright position of the distribution packages for transport and/or storage
	Distribution packages shall not be rolled or turned over
	Distribution packages shall be kept away from rain and be kept in dry conditions
	Distribution packages shall not be exposed to sunlight
	Can only be placed in a single layer during transportation
	Temperature limit(s)
	Humidity limit(s)
	For connecting to WIFI

2. Instrument Overview

This chapter introduces the intended use, working principle and system composition of the instrument.

Geri Mixer (GMIX-TRI-03) is a high-precision, high-reliability gas mixing device developed by Genea Biomedx. The device uses advanced gas sensing technology and microprocessor control to accurately control and mix CO₂, O₂, and N₂ to ensure the stability and accuracy of the mixed gas. The output mixed gas has a CO₂ concentration of 6%, an O₂ concentration of 5%, and the rest is N₂.

2.1 Intended Use

The three gases CO₂, O₂ and N₂ are precisely mixed in a specific proportion to prepare a uniform mixed gas.

2.2 Working Principle

The Geri Mixer blends CO₂, O₂, and N₂ to a default composition of 6% CO₂, 5% O₂, with the balance N₂. The mixed gas is first delivered into a 5 L gas tank and then supplied to external lines at a default outlet pressure of 0.15 MPa. Tank pressure is monitored in real time: when it falls below 0.25 MPa, the high-precision gas mixer replenishes the tank; when the pressure reaches 0.35 MPa, refilling stops automatically.

2.3 System composition

The system is composed of high-precision gas distribution system, gas storage tank, pipeline system, electronic control system and casing.

Composition	Function
High-precision gas distribution system	By default, the gas mixture is set to 6% CO ₂ , 5% O ₂ , and the remainder N ₂ .
Gas storage tank	Cache the prepared gas mixture.
Pipeline system	Connect the gas distribution system with the gas tank and realizes external gas supply.
Electronic control system	Control high-precision gas distributors.

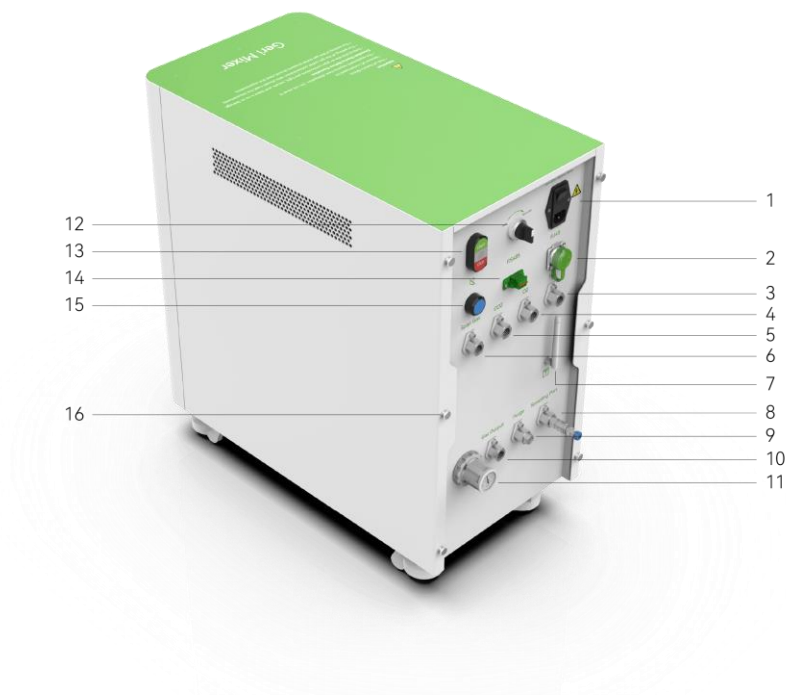
Casing

Used to cover the surrounding of the instrument and protect the internal parts of the instrument.

2.4 Basic components



No.	Name	Function
1	Cooling holes	Used for instrument heat dissipation.
2	Display	Used to display the current status of the instrument.
3	Casters	Used to move and support the instrument.



No.	Name	Function
1	Power switch	To turn the instrument power on or off: Switch to  position to turn on the power. Switch to  position to turn off the power.
2	USB interface	Connects to an external PC for monitoring and modifying the control program.
3	Nitrogen interface	Used to connect 99.999% high purity N ₂ gas cylinders.
4	Oxygen interface	Used to connect 99.999% high-purity O ₂ gas cylinders.
5	Carbon Dioxide interface	Used to connect 99.95% high purity CO ₂ cylinders.
6	Premixed gas interface	Used to connect to 6% CO ₂ +5% O ₂ +89% N ₂ premixed gas cylinder.
7	Sampling port	For gas sampling.
8	Drain port	For emptying gas tanks.

9	Air outlet	For access to embryo incubator.
10	Pressure reducing valve	Used for outlet pressure regulation, the default value is 0.15MPa.
11	Operation mode switch knob	Used to switch the working state of high-precision gas distributor.
12	Device switch	Used to control the device to start/stop working
13	Alarm interface	For external alarm
14	Mute button	Used to eliminate alarm sound.
15	Thumb screw	Used to fix the housing on both sides.

3. Instrument Installation

Instrument installation requires advance preparation, including laboratory preparation before instrument installation and preparation before instrument use.

3.1 Normal operating conditions

- Power supply: 100 V–240 V AC, 50 Hz/60 Hz, power consumption: 150 VA
- Ambient temperature: 10 °C – 50 °C
- Relative humidity: $\leq 80\%$
- Place the instrument on a stable, level surface away from heaters; avoid moisture and direct sunlight.
- Keep the instrument away from flammable or corrosive gases.
- Maintain at least 100 mm of clear space on all sides to ensure adequate ventilation.
- Gas source requirements:

No.	Gas Source	Requirements
1	CO ₂	$\geq 99.95\%$ purity, moisture-free. Cylinder must be fitted with a pressure regulator set to 0.4 MPa–0.6 MPa.
2	O ₂	$\geq 99.999\%$ purity, moisture-free. Cylinder must be fitted with a pressure regulator set to 0.4 MPa–0.6 MPa.
3	N ₂	$\geq 99.999\%$ purity, moisture-free. Cylinder must be fitted with a pressure regulator set to 0.4 MPa–0.6 MPa.

4	Premixed gas (spare)	Moisture-free blend containing $6\% \pm 0.5\% \text{ CO}_2$ and $5\% \pm 0.5\% \text{ O}_2$, balance N_2 . Cylinder must be fitted with a pressure regulator set to 0.4 MPa–0.6 MPa.
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3.2 Check the instrument

- This instrument can only be unpacked by after-sales personnel. After receiving the instrument, please contact after-sales personnel for unpacking and installation.

- After receiving the instrument, please check whether the outer packaging is intact and whether the anti-shock and anti-tilt labels are abnormal. If there are any abnormalities, please contact the after-sales staff in time.

This instrument contains precision components. In order to monitor the impact on the instrument during transportation, anti-vibration labels and anti-tilt labels are affixed to the outer packaging box.

The meaning of the transistor status in the label is as follows.

Label transistor status explanation	
Label	Transistor status explanation
Shockproof label	● No color change: The instrument is intact and there is no strong collision during transportation or the collision degree does not exceed the required range.
	● Turns red: Indicates that the instrument has been severely impacted during transportation and exceeds the required range.
Anti-tilt label	● No color change: The instrument is intact and has not tilted during transportation or the tilt degree does not exceed the required range.
	● Turns red: Indicates that the instrument is tilted during transportation and exceeds the required range.

3.2.1 Access Rights

This instrument operates as a standalone system; users cannot modify the control program. For any required changes, please contact the authorized and certified technical support personnel.

3.3 Prepare the power supply

- In order to ensure the safe and stable operation of this instrument, it is recommended to equip it with a UPS power supply (please consult the relevant manufacturer for installation methods).

- UPS power requirement $\geq 3\text{kVA}$ (including server power supply), please connect the instrument to the UPS power output terminal.

- Before using the instrument, please use a voltmeter or multimeter to measure the voltage of the AC power socket or UPS output terminal to ensure that the voltage is within the required range, otherwise the performance of the electronic components of the instrument may be reduced.

- Such as directly connecting the instrument to the mains power supply.

The power requirements are as follows:

- ✧ Wall socket power supply voltage: 100-240V~, 50/60Hz, power supply voltage fluctuation should not exceed $\pm 10\%$ of the nominal voltage.

- ✧ Rated power: 150VA, supply current not less than 10A.

- ✧ Transient overvoltage category: II

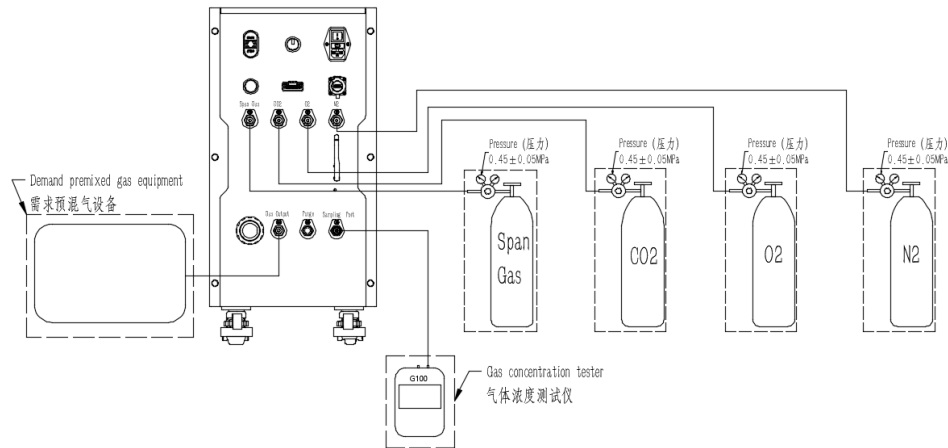
3.4 Instrument Installation

1. Upon receiving the instrument, first confirm that the anti-tilt and anti-shock indicators on the wooden crate are intact. Only then should you dismantle the crate and position the instrument in the prepared location.

2. Gas supply requirements:

No.	Gas Source	Requirements
1	CO ₂	$\geq 99.95\%$ purity, moisture-free. Cylinder must be fitted with a pressure regulator set to 0.4 MPa–0.6 MPa.
2	O ₂	$\geq 99.999\%$ purity, moisture-free. Cylinder must be fitted with a pressure regulator set to 0.4 MPa–0.6 MPa.
3	N ₂	$\geq 99.999\%$ purity, moisture-free. Cylinder must be fitted with a pressure regulator set to 0.4 MPa–0.6 MPa.
4	Premixed gas (spare)	Moisture-free blend containing $6\% \pm 0.5\%$ CO ₂ and $5\% \pm 0.5\%$ O ₂ , balance N ₂ . Cylinder must be fitted with a pressure regulator set to 0.4 MPa–0.6 MPa.

3. The simplified diagram of equipment gas pipeline connection is as follows:



Note: The equipment in the dotted box is provided by the user. The gas concentration tester shall be connected and tested by the company's authorized and qualified technical support personnel when necessary.

4. Connect the power supply. If the instrument can start normally after power-on, the installation is complete.

4. Instrument Operation

This chapter introduces how to use the instrument. To ensure the normal operation of the instrument, please operate it as required.

4.1 Equipment Installation

Connect the pipes and power supply to the instrument according to 3.4. (The gas concentration tester may not be connected)

4.2 Power on and off

The instrument is powered on/off by the power switch.

Switch to  position to turn on the power.

Switch to  position to turn off the power.

4.3 Start and stop

Use the device switch to control the instrument to start/stop working.

4.4 Operation mode switching

Use the operating mode switching knob to switch the working state of the high-precision gas

distributor: AUTO mode; SG mode.

AUTO mode: The instrument mixes gases to a fixed ratio of 6% CO₂, 5% O₂, and the balance N₂. After blending, the mixture is stored in a gas tank and delivered from there.

SG mode: Directly supply gas to the outside from premixed gas (spare).

4.5 Mute Alarm

Press the Mute Button to mute the device alarm sound. The mute time is 3 minutes. If the alarm is not cleared after 3 minutes, the alarm sound will sound again. If the alarm is cleared within 3 minutes and there is no new alarm, the alarm sound will not sound again after 3 minutes.

5. Maintenance and care

5.1 Main device maintenance

With the power off, perform the following maintenance:

- Once a month, it is recommended to wipe the instrument casing (including the display) with a dust-free cloth;
- Use a small brush to remove dust from the small holes on the side of the instrument.
- If the instrument is not used for more than 7 days, the external gas source should be disconnected.

5.2 Power supply maintenance



Warning

- If the instrument is not used for more than 7 days, the power should be turned off.
- Before each use, check that the "power switch" is in the off position.
- Before each use, check that the cables are properly connected and intact. If damaged, replace them promptly.

5.3 Software Maintenance

The maintenance and update of the built-in software of this instrument must be performed by professional technicians or under the guidance of technicians. If the software runs abnormally,

please contact the technicians in time.

5.4 Transportation and storage

Packaging	Fully enclosed wooden crate.
Storage Environment	Temperature: –20°C to +65 °C. Humidity: ≤ 80 % RH at 25 °C. Store indoors in an environment free of acidic, alkaline, or any other corrosive gases.
Transport	May be shipped by road, air, sea, or rail. Protect from direct rain or snow during transit.
Other	No stacking or excessive pressure. Keep upright. Avoid impact.

6. Warnings & Faults: Troubleshooting

Problem	Cause	Solution
Unable to turn on	Power cord not connected	Connect the power cord and turn on the power switch
	The power switch is not turned on	
The alarm sounds and the CO ₂ indicator turns red on the display.	Insufficient CO ₂ pressure	1. Verify that the CO ₂ cylinder output pressure is set to 0.4–0.6 MPa. 2. Replacement of CO ₂ cylinder
The alarm sounds and O ₂ turns red on the display.	Insufficient O ₂ pressure	1. Verify that the O ₂ cylinder output pressure is set to 0.4–0.6 MPa. 2. Replace O ₂ cylinder
The alarm sounds and N ₂ turns red on the display.	Insufficient N ₂ pressure	1. Verify that the N ₂ cylinder output pressure is set to 0.4–0.6 MPa. 2. Replace N ₂ cylinder
The alarm sounds and SG on the display turns red.	Insufficient SG pressure	1. Verify that the Span Gas cylinder output pressure is set to 0.4–0.6 MPa. 2. Replace Span Gas Cylinders

FCC Warning

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.