Fully Automated State-of-the-art Manufacturing Facility
of 1,50,000 Sq.Ft. in Manesar, INDIA


ISO 13485:2016 | ISO 9001:2015 | GMP Quality

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# Automated **NGS Library Preparation** Workstation


## EZY-AutoPrep-48

Construct upto 48 sample libraries in one run

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# AUTOMATED NGS LIBRARY PREPARATION WORKSTATION

Our user friendly software, robust hardware and automation processes help you provide with a good library preparation experience.

With the continuous advancements in Next-Generation Sequencing (NGS) technology and the decreasing costs associated with it, NGS has rapidly become the preferred choice for genomic research.

As the demand for efficient and scalable NGS workflows increases, we are proud to introduce the EZY-AutoPrep 48, an automated NGS library preparation workstation that can automate the NGS sample library preparation for up to 48 libraries in a single run.

EZY-AutoPrep 48 is designed to streamline and automate the entire NGS library construction process. By directly loading nucleic acid samples, the system fully automates critical steps such as fragmentation, end repair, adapter ligation, PCR amplification, hybridization, and quantification. The workstation is equipped with a built-in thermal cycler and a fluorometer. This end-to-end solution minimizes hands-on time, reduces human errors, and significantly enhances throughput, making it an ideal choice for high-throughput sequencing applications.

With EZY-AutoPrep 48, one can rely on consistent, reproducible results, allowing them to focus on their scientific discoveries and patient diagnostics with confidence.

# EZY-AutoPrep – 48

Construct upto 48 sample libraries in one run

## SPECIAL FUNCTION MODULE

1. The instrument is equipped with a built-in flexible touchscreen computer, designed to provide maximized flexibility and effortless operation. Comes preloaded with GUI Software, drag & drop features for a seamless user experience .
2. The 24 channel pipettor has a pipetting range of 0.5 - 200 µL. With accurate PLLD/ CLLD & multiple liquid parameter settings, it can flexibly handle samples and reagents of different properties and volumes to meet various application scenarios.
3. At the same time, the workstation integrates heating and cooling module, magnetic plate gripper module, PCR thermal cycle module, UV sterilization lamp and efficient purification filter module, ensuring efficient library construction & eliminating cross-contamination.

## Hybridized DNA LIBRARY CONSTRUCTION WORKFLOW

Nucleic Acid → 01 EP-ER / A → 02 Adaptor Connection → 03 Purification → 04 PCR Amplification → **05 Purification** → 06 Library Pooling → 07 Hybridization → 08 Post Clean-up → 09 PCR Amplification → 10 Purification → 11 Quantify Hybridized Library

Note: EZY-AutoPrep can achieve the whole process of library construction except for "quality control"

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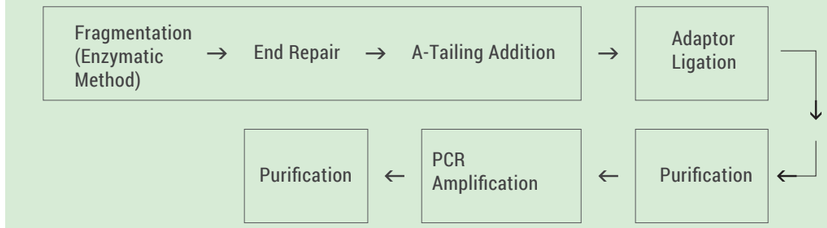
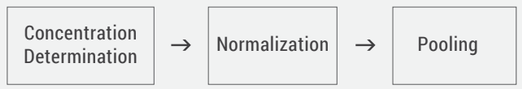
## INSTRUMENT FUNcTION

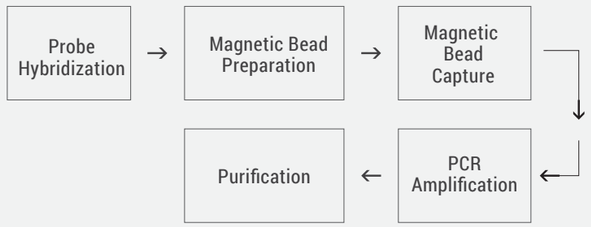
**Library Preparation**




**Quantitation, Pooling**




**Hybrid Capture**




## 24-channel Pipettor

- 24-channel fixed spacing pipettor can be used as 24 channels, 16 channels, 8 channels, single channel or any channel.
- PLLD / CLLD function, which can sensitively detect liquid level, residual liquid volume and blockage to ensure precise control of liquid sampling process.

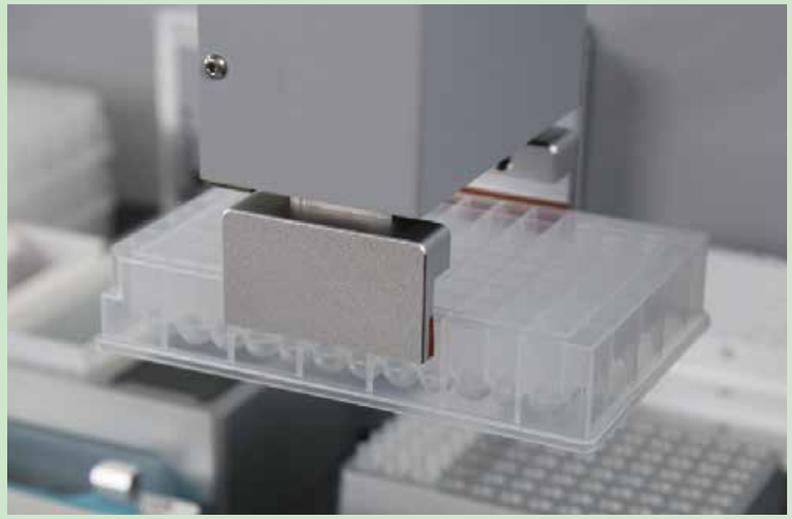
| Pipetting range | Pipetting precision (CV) | Pipetting accuracy (A) |
|---|---|---|
| 0.5~200μL | 0.5 μl : ≤12% 100 μl : ≤1%<br>1 μL: ≤5 % 200 μL: ≤1 %<br>20 μL: ≤2 % | 0.5 μl : ±20% 100 μl : ±1%<br>1 μL: ±12 % 200 μL: ±1 %<br>20 μL: ±2 % |

### 24-channel high-precision pipettor for faster and more accurate pipetting

| Standard volume: 2 μL | | | |
|---|---|---|---|
| Channel | Measured mean value (μL) | Accuracy | CV |
| 1 | 1.99 | -0.50% | 2.28% |
| 2 | 1.95 | -2.30% | 1.87% |
| 3 | 1.93 | -3.60% | 4.16% |
| 4 | 1.93 | -3.50% | 3.82% |
| 5 | 1.98 | -1.20% | 3.08% |
| 6 | 1.97 | -1.60% | 2.92% |
| 7 | 1.98 | -1.20% | 5.03% |
| 8 | 1.93 | -3.60% | 2.48% |

| Standard volume: 200 μL | | | |
|---|---|---|---|
| Channel | Measured mean value (μL) | Accuracy | CV |
| 1 | 200.25 | 0.13% | 0.10% |
| 2 | 200.44 | 0.22% | 0.27% |
| 3 | 199.69 | -0.16% | 0.10% |
| 4 | 199.89 | -0.06% | 0.32% |
| 5 | 200.03 | 0.02% | 0.16% |
| 6 | 200.04 | 0.02% | 0.25% |
| 7 | 199.93 | -0.03% | 0.24% |
| 8 | 200.54 | 0.27% | 0.33% |

Note: actual measured data of 24-channel pipettor. Due to space limitations, only 8-channel are displayed, each channel are repeated 10 times



EZY-AutoPrep – 48

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# PRODUCT FEaTURES

Built to streamline the intricate process of sample preparation for NGS, our platform combines state-of-the-art technology with user friendly design to empower your library preparation experience

## Precise Pipetting

- The self-developed high-precision 24-channel pipettor can be used as a single channel.
- A variety of liquid parameters setting ensure accurate control of liquid aspirating and dispensing process.
- Capacitive & air pressure detection function can sensitively detect the liquid level, residual liquid and blockage, ensuring accurate control of the pipetting volume.

## Intelligent & Visual

- Allows users to freely choose running part or all of the experimental processes.
- Program settings like error reporting and prompt functions ensure that users can quickly find programming errors.
- TIP area prompts the experimental demand, current available amount & whether it is sufficient to ensure the smooth progress of the experiment.
- The PC simulation operation experiment function can enable users to find problems at any time and avoid wasting samples, reagents and time.

## Gripper Arm Feature

- The gripper arm picks up and transfers sample plates between different locations moving along multiple axes to access different deck locations of the workstation. This may include stacking plates or moving the plates to magnet location or orbital shaker or incubation deck location based on experimental needs. It is based on the clamping mechanism to securely hold onto sample plates while taking them from one deck location to another deck location.

## Flexible to Match Experimental Needs

- Equipped with several temperature control modules to meet the special temperature requirements such as - for reagent and sample storage.
- High efficiency magnetic module to avoid loss or residual of magnetic beads.
- The fully automatic thermal cycling module can effectively meet the nucleic acid amplification process in the process of library construction.

## Multiple Functional Modules

- The 24 plate positions, together with the gripper, 24-channel pipettor, can realize the relative simple library preparation of 48 samples, as well as the simplified type fully automated library preparation
- The software program allows flexibility for sample processing by enabling the same program to quickly execute the same experimental process by simply adjusting the number of samples.

## Efficient Contamination Prevention

- Equipped with efficient purification and filter system (positive pressure HEPA system) and UV sterilization to prevent cross-contamination of the experimental cabin.
- The PCR module in EZY-AutoPrep 48 can use disposable automatic cover or conventional sealing cover to avoid condensation on the top & reduce the risk of cross-infection.

## Simple Operation, Get Started Quickly

- Multi-level account management system supports the different needs of new users and advanced users.
- Drag-and-drop flows simplifies program setting.
- GUI is easy to understand and use.
- New users can also quickly master the operation methods of library construction.

# DeCK LAYOUT

## (01) Tip Area

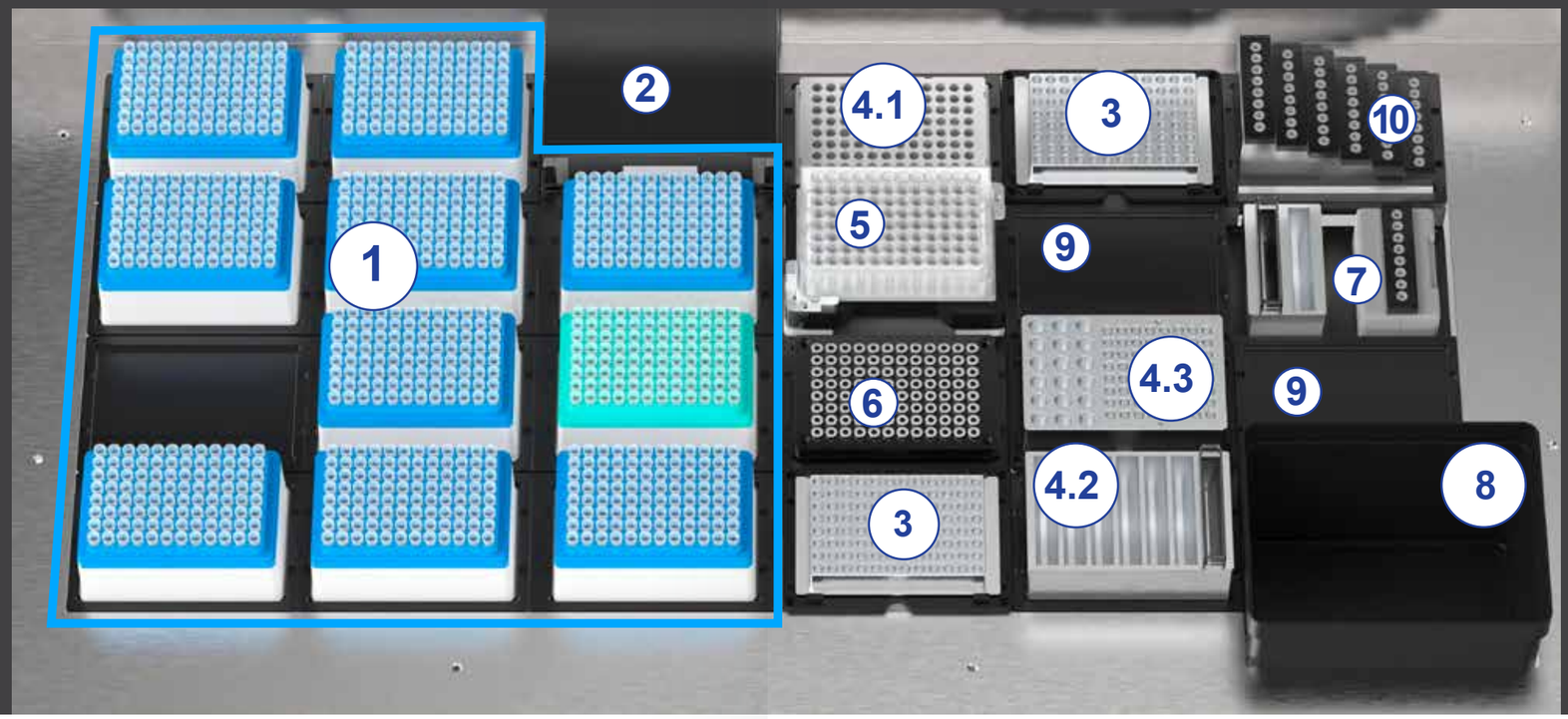
200 μL / 50 μL TIP holders.Two specifications of TIP can be combined into one plate for single channel pipetting; automatic loading tip mode, saving time and reducing consumption.

## (02) PCR Block

Mainly used for the PCR amplification step during the library preparation process. Can place 96×0.1 mL full-skirted PCR consumables.

## (03) Temp. Control Block

Temp. control range: 4~105 °C, can store reagents with refrigeration needs.
16×1.5 / 2.0 mL frozen storage tube + 6×8×0.2 mL PCR tube.




## (04) Reagent Area

Equipped with a normal reagent rack, which can place fluorescent reagents and transfer tube caps.

- **4.1** 6×8×0.2 mL PCR tube.
- **4.2** 4×60 mL large volume reservoir.
- **4.3** 12×8×0.2 mL PCR tube, corresponding sample racks can also be selected according to the type of sample tube.

## (10) Fluorometer Consumables

Equipped with shading covers to store fluorescent reagents and consumables.

## (09) Expandable Area

Can be used for any SBS consumble or stacking deepwell plates and PCR plates.

## (08) Waste Area

Waste liquid container, TIP off box; both the waste liquid container and TIP off box are freely accessible.

## (07) Fluorometer

The quantitation block can simultaneously detect 8 samples, requiring 2 to 20 μl of samples to obtain accurate sample concentrations, with a minimum detection limit of down to 0.4 ng (dsDNA).

## (06) Magnetic Area

The bottom 96-well magnetic area can closely fit with the 2.0 mL / 1.0 mL 96-well plate.

## (05) Thermo Shaker Incubator Block

96-deepwell plate can be heated, incubated and mixed, with an amplitude of 2 mm and a max speed of 3000 rpm. Temperature range: RT. +5 °C~105 °C, good temperature uniformity.

# Temperature Control

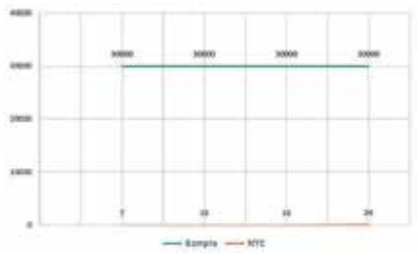
## PCR Amplification Block

(1) Block temperature control range: 4 °C ~ 99 °C, the max temperature of the thermo lid is 120 °C
(2) Temperature precision: ±0.3 °C @55 °C, temperature accuracy <0.3 °C @55 °C
(3) Temperature uniformity: ±0.7 °C (@55 °C, 72 °C)

### Built in PCR block is safe and reliable, with extremely low cross-contamination rate

Interleave NTC (Nuclease-Free Water) between the samples for comparison, run the amplification program, and the results show that the number of reads in the control group is extremely low.

Total Number of Sequence Reads



## Temperature Control Module

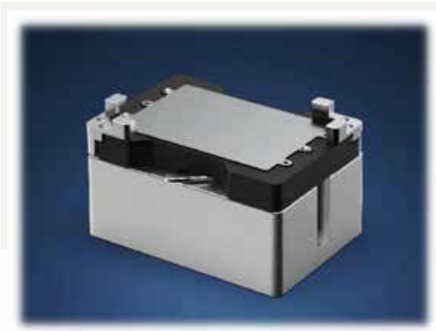
Can be freely set at 4~105 °C. It's the standard temperature control block of NGS series. According to the usages, block adapters can be customized to meet different consumables requirements.

| | |
|---|---|
| **Temperature accuracy:** | 0.5°C, @55°C |
| **Temperature uniformity:** | 0.5°C, @55°C |

## Thermo Shaker Incubator Block

A thermo shaker incubator has been provided in this automation workstation. The incubator can be used for heating, incubation and mixing of deepwell plates. The high-precision zero positioning function ensures the safe pipetting by the pipettor, with the anti-vibration technology and 2D motion control.

| | |
|---|---|
| **Temperature accuracy:** | 0.5°C, @55°C |
| **Temperature uniformity:** | 0.5°C, @55°C |



# Built-in Fluorometer

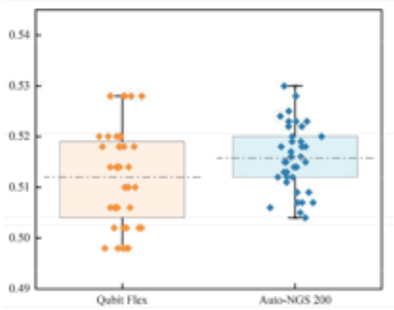
## The built-in fluorometer quantitative method is sensitive and highly accurate, making it a reliable dsDNA measurement method

- Automation-specific block can test 8 samples simultaneously.
- Accurate quantitation and high accuracy with only 2-20 μl of samples
- Lowest detection limit down to 0.4 ng (dsDNA).
- Cooperates well with the automatic calculation of the software and high-precision pipetting to quickly achieve accurate sampling.

| | |
|---|---|
| Repeatability | CV ≤ 1.5% |
| Linear | $R^2 \geq 0.995$ |
| Linear range | 4 orders of magnitude |

Using built-in fluorometer and Qubit Flex for concentration detection on 8 groups of 8 low concentration samples, with a sample addition

The results showed no significant difference between the two test results.



# EZY-AutoPrep – 48

Construct upto 48 sample libraries in one run

## SOFTWARE

The user-friendly and intuitive GUI allows you to easily initiate the library construction program right after installation, making it simple to create and run automated liquid handling protocols. To further enhance the usability of EZY-AutoPrep 48, we can customize the design based on customer needs for common NGS library construction methods.


### Main Page

The main page has a simple layout, which is convenient and easy to use


### Program Interface

The program settings are open and flexible. Different processes such as reagent transfer, sample transfer and PCR can be set up according to different kits to meet the needs of different experimental steps.

## Specification

| | | | | | | |
|---|---|---|---|---|---|---|
| Model | | EZY-AutoPrep 48 | | | | |
| Throughput | | 1 - 48 | | | | |
| Deck locations | | 24 | | | | |
| Available well plate | | SBS standard 24/96/384 deep and shallow well plates | | | | |
| Consumable | | Matching TIP | | | | |
| Magnetic plate | | 96-well annular magnetic plate | | | | |
| UV sterilization | | Equipped with UV sterilization lamp, high-efficiency purification filter device | | | | |
| Instrument port | | USB port, CAN communication | | | | |
| Ambient condition | | Temperature requirement: 20±5°C, humidity: ≤80 % | | | | |
| Power input | | 100~240 V, 50~60 Hz, rated power 1200 W | | | | |
| Dimension (W×D×H) | | 1420 × 790 × 800 mm | | | | |
| Pipettor | Pipettor type | 24-channel fixed spacing pipettors, can be used as a single channel | | | | |
| | Pipetting principle | Air displacement pipetting technology | | | | |
| | Pipetting range | 0.5 - 200 μL (20 μL tip: 0.5-20 μL; 50 μL tip: 1-200 μL; 200 μL tip: 2-200 μL) | | | | |
| | Precision(CV) | 0.5 μL: ≤12% | 1 μL: ≤5% | 20 μL: ≤2% | 100 μL: ≤1% | 200 μL: ≤1% |
| | Accuracy | 0.5 μL: ±20% | 1 μL: ±12% | 20 μL: ±2% | 100 μL: ±1% | 200 μL: ±1% |
| Gripper | | 1 Gripper for automated consumable transfer and handling | | | | |
| Temperature control module | | Including 2 temperature control blocks.<br>Temperature control range: 4~105 °C<br>Temperature control accuracy: ±0.5 °C<br>Temperature control uniformity: ±0.5 °C | | | | |
| Fluorescence detection range | | 0.4 ng~100 ng | | | | |

## Thermal Cycling Module Specification

| | |
|---|---|
| Applicable consumables | 96 PCR plate |
| Application scenarios | For independent PCR experiment or liquid handling workstation |
| Temperature control range | Thermo lid: +30°C~+120°C |
| | Module: +4°C~+99 °C |
| Default use temperature of thermo lid | 110 °C |
| Average heating rate | Module 50°C~90 °C: ≥2.8°C/s |
| Max. heating rate | Module 50°C~90°C: ≥4.5°C/s |
| Average cooling rate | Module 90°C~50°C: ≥2.2°C/s |
| Max. cooling rate | Module 90°C~50°C: ≥4.5°C/s |
| Temperature accuracy | ±0.2°C |

| | |
|---|---|
| Module temperature control accuracy | ±0.1°C |
| Temperature uniformity | ±0.3°C @55°C |
| Temperature duration accuracy | ±5% |
| Power supply | AC100-240 V 50-60 HZ Max. 600 W |
| Thermo lid cleaning | The thermo lid can be flipped for easy cleaning and disinfection |
| 4°C heat preservation | Unlimited |
| Communication port | CAN |
| Control software | Controlled by workstation for automated operation |
| Dimension | 162×280×160 mm |
| Weight | <10 kg |