BioXp® 3250 system
Remote installation and sign-off

Part number 43035 | Version 1.2 | Effective 05JAN2023

TelesisBio

Congratulations on the purchase of your BioXp 3250 system. This install guide will help you run through the steps required to set up your BioXp system and perform the qualification tests to ensure it's working correctly.

Please coordinate this install with your Telesis Bio field application specialist. Your field application specialist can help you through any areas of this procedure where you have questions or require additional help. CAUTION: Read the entire installation guide before unpacking the BioXp system. Adhere to all safety warnings. Contact Telesis Bio customer service at 858.228.4115 or help@telesisbio.com immediately if you have any concerns or questions.

This guide describes the correct procedures for commissioning the BioXp 3250 system.

Site preparation checklist

The BioXp 3250 system is a self-contained system requiring only power and internet connectivity.
The following checklist will help verify that the installation of the BioXp system in your laboratory will go smoothly.

Suitable surface or bench space for the instrument

- Size (W × D × H): 99 × 80 × 86 cm [39 × 32 × 34 in].
- Weight capacity: 90.7 kg [200 US lbs].
- Place the instrument on a clean, dry, flat surface capable of holding the weight of the system.
- The instrument must be on stable surface, where there is no movement or vibration during use.
- To provide adequate ventilation, allow 15 cm of clearance on both sides of the instrument.
- The back of the instrument may be placed against a wall.
- Avoid areas where accidental reagent spillage could seep into or onto the instrument.
- Avoid dusty areas.
- Separation distance: The BioXp system is intended for use in an electromagnetic environment where radiated disturbances are controlled. To prevent electromagnetic interference for the BioXp system, maintain a minimum distance between portable and mobile RF communications equipment and the BioXp system as recommended.
  See Recommended separation distances for details.

Grounded power source

- 110–120 VAC 60 Hz (15A minimum) [220 VAC 50 Hz (7.5A minimum)].
- Within 183 cm [6 feet] of the BioXp system installation point.
- Make certain that the power cord connection point is free and clear of obstructions, and is easily accessible.
- AC power outlet should be within 2 meters of the instrument.

Internet connection and dedicated ethernet port

It is essential to provide a fast internet connection for the BioXp system to support the electronic transfer of job information between Telesis Bio and your lab. Once an order is placed in the system, the BioXp system will communicate directly to the Telesis Bio server to retrieve specific run parameters for your job. Please note that the system can run locally for installations where there are internet restrictions for instruments such as the BioXp system. However, we strongly suggest you have your BioXp system connected to the internet, to take advantage of software updates and remote troubleshooting, should issues arise. If your system can not connect to the internet, you must notify Telesis Bio before the instrument ships so the system can be set up accordingly. This connection requires an available ethernet cable provided by your facility. Please coordinate with your IT department on the internet access, port accessibility, and website whitelisting.

- ☐ **Yes:** minimum 256 kilobits/sec upload speed (a typical broadband connection or business intranet)
- ☐ **No:** Telesis Bio customer service notified at help@telesisbio.com

- Standard 10/100/1000BASE-T port
- Configured to allow for a port 80/443 connection to the internet
- Within 183 cm [6 feet] of the BioXp system installation point
- Websites to be whitelisted: **drive.google.com, logmein.com, telesisbio.com**

Recommended separation distances

The BioXp system is intended for use in an electromagnetic environment where radiated disturbances are controlled. To prevent electromagnetic interference for the BioXp system, maintain a minimum distance between portable and mobile RF communications equipment and the BioXp system as recommended below. The recommended separation distances are based on non-life-supporting equipment and according to the communications equipment's maximum output power.

Rated maximum output power of transmitter	**Separation distance according to frequency of transmitter** ***m***		
	150 kHz to 80 MHz $d = [3.5]\sqrt{P}$ / ***V1***	80 MHz to 800 MHz $d = [3.5]\sqrt{P}$ / ***E1***	800 MHz to 2.5 GHz $d = [3.5]\sqrt{P}$ / ***E1***
W			
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance (d) in meters (*m*) can be estimated using the equation applicable to the frequency of the transmitter, where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

Note: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

Note: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.

Uncrating

Uncrating and placing the BioXp system requires two people, capable of lifting 34 kg [75 US lbs] each. A forklift and wheeled cart are also recommended.

Warning

The BioXp 3250 system is heavy. Do not attempt to lift or move the instrument without the assistance and/or supervision of colleagues. Be certain to use appropriate moving equipment and proper lifting techniques (including but not limited to making certain that you have a secure grip on the instrument before lifting, keeping your spine in a neutral position while lifting with your legs, and coordinating lifting and moving movements with all appropriate personnel). Improper lifting can cause permanent back injury.

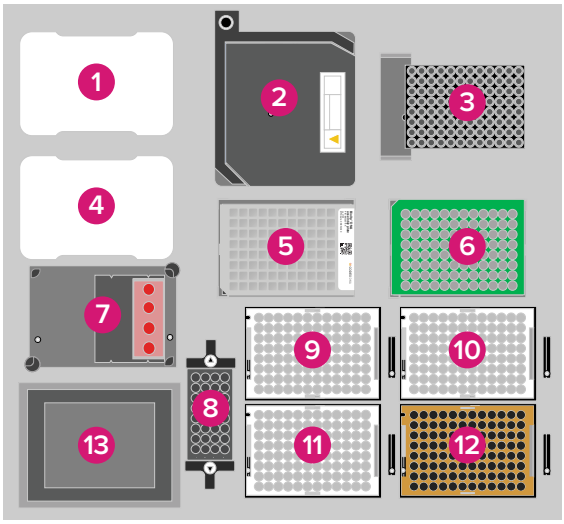
1. Remove the quarter turn latches from the crate and lift off the sides and top.
2. Remove the accessory box and upper foam support.
3. Slide the plastic bag down from the top of the instrument to expose the lower portion of the instrument.
4. (Recommended) For easier lifting, raise the pallet approximately 24 inches off the ground with a forklift and set it on a sturdy base.
5. (Recommended) For easier transport, transfer instrument to a wheeled cart, capable of holding 91 kg [200 US lbs] before moving instrument to prepared site.
6. Using two people, lift the instrument clear of the crate and set on the prepared site or the wheeled cart. If using a wheeled cart, move the instrument to the prepared site. Using two people, lift the instrument clear of the wheeled cart and set on the prepared site.
7. Telesis Bio recommends keeping the shipping materials until installation and acceptance testing have been completed.

Setup and powering up

Telesis Bio customer service is ready to assist with the setup and powering up of the BioXp system.
Contact us at **858.228.4115** or help@telesisbio.com to proceed.

Warning

Using the BioXp system in a manner not specified by Telesis Bio may result in damage to the equipment and/or personal injury.



1. Thermal cover
2. Thermocycler lid
3. Purification station
4. Thermal cover
5. Chiller 1
6. Chiller 2
7. Ethanol reservoir
8. Strip holder
9. Tip tray 1
10. Tip tray 2
11. Tip tray 3
12. Tip tray 4
13. Tip waste

Figure 1. Deck map

1. Remove tape holding lid and open lid.
2. Inside the system, in deck location 2, remove all tape securing the thermocycler lid to the thermocycler (see figure 1).
3. Remove the two white thermal covers from the accessory box and place them in locations 1 and 4 (see figure 1).
4. Place the ethanol reservoir, found in the accessory box, on the right side of location 7 as shown in figure 1.

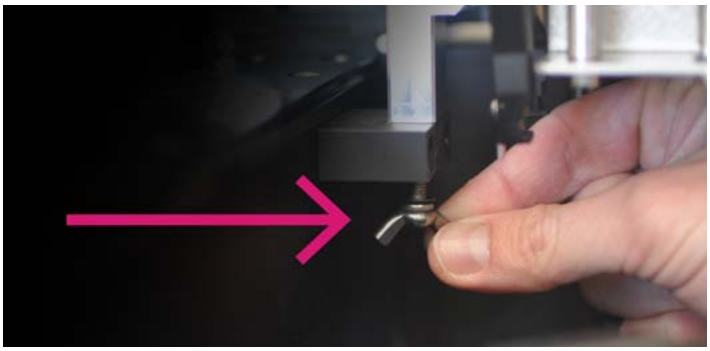


Figure 2: Shipping screw shown with pipette head cover removed

Figure 3: Shipping screw secured to instrument power cord

5. Remove the shipping screw, located under the pipette head, above location 3 (see figure 2).
6. Once removed, secure the shipping screw to the zip tie located on the instrument power cord (see figure 3).

7. Verify that the power switch located above the power cord inlet is in the ***Off*** position (O).
8. Connect the system to a grounded power outlet.
9. Connect an ethernet cable from the access panel on the right side of the system to an available ethernet connector located in your lab. **Note**: If the ethernet setup has not been completed, set the system to local mode and proceed with the install.
10. Switch the system power to the ***On*** position (|).
11. The system will boot up and perform a self-check.
12. Once the self-check is complete, the BioXp home screen will load. The system is now ready for operation.

Installation qualification

A demo run and BioXp QC test run will qualify the BioXp system installation. Once the self-check is complete, execute the demo run, followed by the BioXp QC test run.

The run kits are shipped separately from the instrument. The kits include all the components required to perform the runs.

Demo kit

All components are stored at room temperature.

- BioXp module A, DEMO
  - Oligo Vault™ plate, non-biological test plate
  - Recovery plate, green, empty
- BioXp module B, DEMO
  - DNA assembly reagent block, empty and sealed

BioXp QC test kit

Components should be stored at the temperature indicated.

- BioXp module A (+4 °C)
  - Oligo Vault plate, containing dried down DNA
  - Recovery plate, green, empty
  - DNA purification strip
- BioXp module B (–20 °C)
  - DNA assembly reagent block
- 3 × 50 µL tips, clear (20 °C, room temperature)
- 1 × 200 µL tips, black (20 °C, room temperature)

Demo run

The demo run tests the plate press functions, plate movement, cycling the thermocycler lid on and off, and thermal cover lid movement.

1. Load the ***Oligo Vault*** plate so that notch is positioned in the upper left corner of the thermocycler (location 2).
2. Load the ***DNA assembly plate*** onto the reagent chiller, with notch in the lower left corner and barcode on the right (location 5).
3. Load the ***recovery plate*** onto the recovery chiller with the notch in the upper left corner (location 6).
4. Once the deck is loaded, confirm that all components are securely seated.
5. Close the door.
6. Press ***Start***. The run will initiate.
7. When the BioXp run is complete, open the door.
8. Confirm that all deck locations are correct as shown in figure 5, and that the machine displays no errors. Observe that all plate captures and releases are clean and without any out-of-the-ordinary sounds or sudden motions. Note: report any issues to your Telesis Bio field application specialist.
9. Remove all the labware in preparation for the BioXp QC test run.

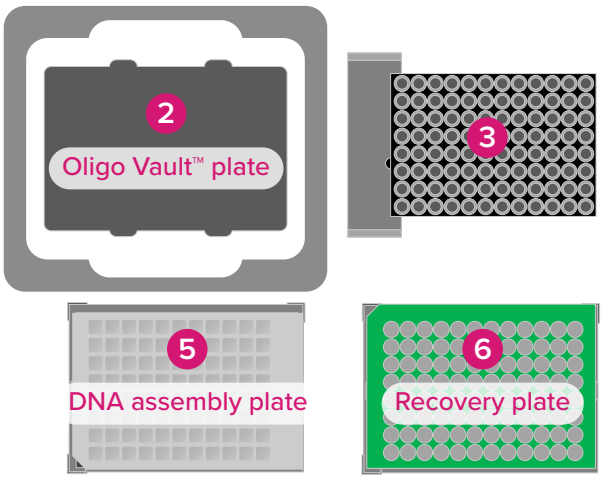


Figure 4: Placement of demo labware before the run

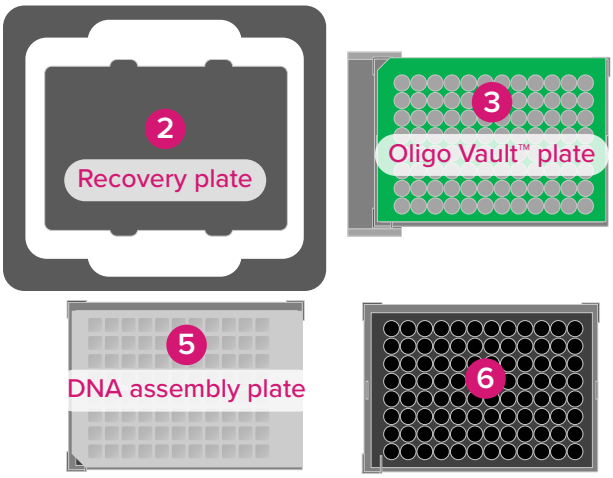


Figure 5: Placement of demo labware after the run

BioXp QC test run

The quality of BioXp fragments is a key indicator of the overall assembly process. Successful results of the BioXp QC test run ensure the BioXp system is correctly installed and is working properly.

Preparing the BioXp system for a QC test run

1. If the door is closed, select ***Unlock door*** from the instrument LCD screen and open the door.
2. Thaw the **DNA assembly reagent plate** (at 25 °C for one hour or on ice for at least 3 hours).
3. Load tips by aligning the tip tray notch with the upper left corner of each tip tray retainer.
   - ☐ Load 3 × 50 µL tips
   - ☐ Load 1 × 200 µL tips
4. Add a minimum of 12 mL freshly prepared 70% ethanol to the reusable ethanol reservoir.
   - ☐ Load ethanol reservoir in the right-most reservoir retainer position of the instrument deck.
     Note: Do not discard the ethanol reservoir after the run; keep for future use.
5. Load plates stored at 4 °C:
   - ☐ Load the recovery plate onto chiller 2 with the notch in the upper left corner (position 6).
   - ☐ Load the Oligo Vault plate so that the notch is positioned in the upper left corner of the thermocycler (position 2).
6. Briefly spin the DNA purification strip for one to three seconds.
   - ☐ Load the black DNA purification strip into the #1 position (left-most) with the strip pinhole closest to the front of the instrument. Secure strips with the spring-loaded arms while holding strips securely in place.
7. Visually inspect the wells of the DNA assembly reagent plate to ensure they are completely thawed. Spin the thawed plate for one minute at 500 rpm.
   - ☐ Load DNA assembly reagent plate onto chiller 1; notch in the lower left corner. Note: Be certain that the plate is properly seated within the chiller and that the barcode is on the right.

Initiating a BioXp system QC test run

8. Once the deck is loaded, confirm that all components are securely seated (figure 6).
9. Close the door.
10. Press ***Start***. The run will initiate. The run will take approximately 13 hours.

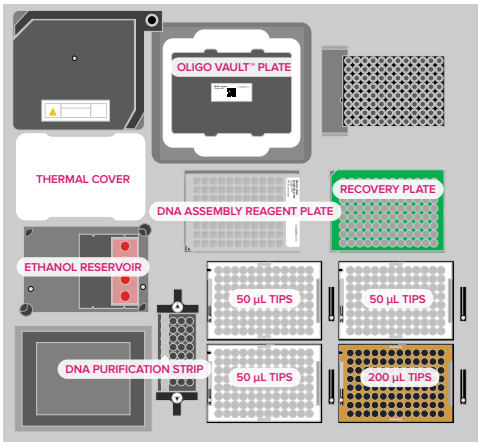


Figure 6: Placement of BioXp QC test labware before the run

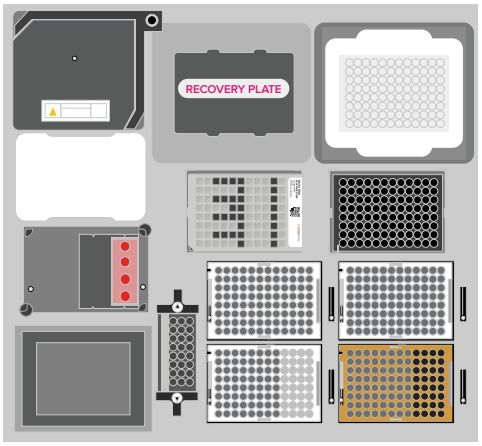
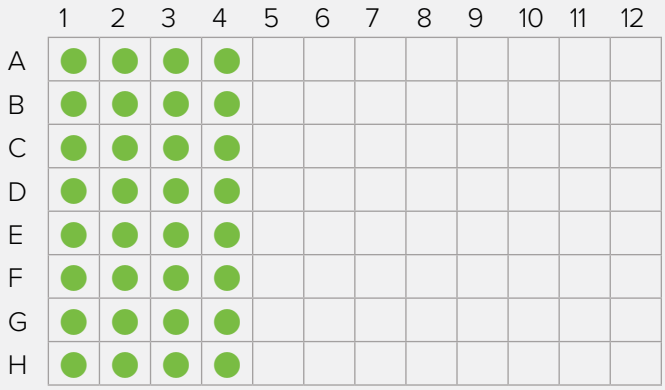


Figure 7: Placement of BioXp QC test labware after the run

BioXp QC test post-run analysis

Using 2% agarose of ~5 µL of the BioXp fragments from zone 1 (positions A1–H4) of the recovery plate, perform a gel electrophoresis to evaluate the success of the BioXp QC test run.

Plate: 1.1.4.1418082298
Order: 4
Date: December 08, 2020
Customer: Telesis Bio
Project STOCK 32
Sequences: Control + 31



A1: 1,416 bp control
B1: 1,416 bp control
C1: 1,416 bp control
D1: 1,416 bp control
E1: 1,416 bp control
F1: 1,416 bp control
G1: 1,416 bp control
H1: 1,416 bp control
A2: 1,416 bp control
B2: 1,416 bp control
C2: 1,416 bp control
D2: 1,416 bp control
E2: 1,416 bp control
F2: 1,416 bp control
G2: 1,416 bp control
H2: 1,416 bp control
A3: 1,416 bp control
B3: 1,416 bp control
C3: 1,416 bp control
D3: 1,416 bp control
E3: 1,416 bp control
F3: 1,416 bp control
G3: 1,416 bp control
H3: 1,416 bp control
A4: 1,416 bp control
B4: 1,416 bp control
C4: 1,416 bp control
D4: 1,416 bp control
E4: 1,416 bp control
F4: 1,416 bp control
G4: 1,416 bp control
H4: 1,416 bp control

Figure 8. BioXp QC test product output map

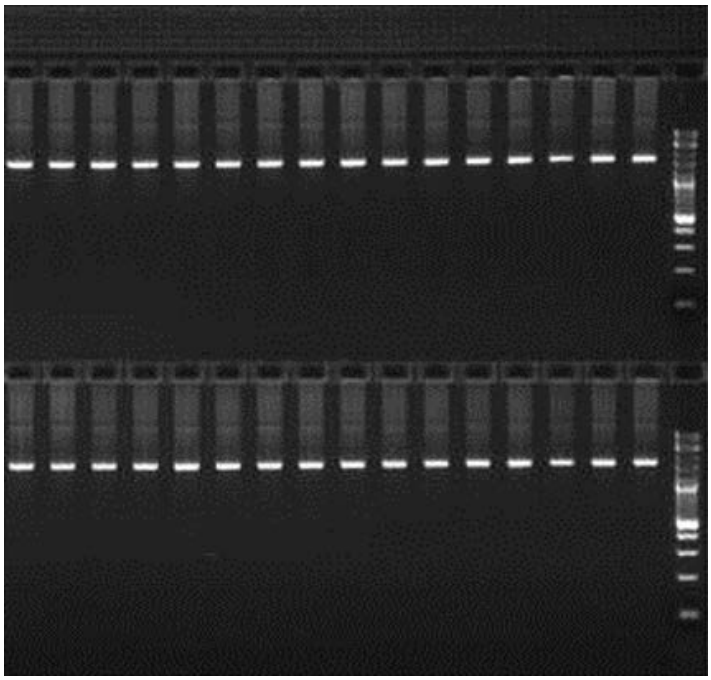


Figure 9. An example gel image of a completed BioXp QC test run with a clearly distinguishable assembled fragment of interest.

Compare BioXp QC test run to the gel in figure 9 and verify that the intensity of the bands of the two gels are similar.

All lanes verified

◯ Yes

◯ No

Initials:

Customer acceptance and sign-off

This is to confirm that the BioXp system installation has been completed and that all items on this acceptance form have been achieved and demonstrated.

By signing this form, the customer accepts title or responsibility of this instrument and gives Telesis Bio, Inc. the approval to invoice the customer via the agreed upon terms of sale or placement.

Instrument install date

Serial number

Internet connection mode ◯ Local ◯ Online

Customer name

Company or institution

Customer address

Phone number

Fax number

Email address

Application

Customer signature

Date

Email a copy of the completed remote installation and sign-off, along with images of the gel from the BioXp QC test run, to orders@telesisbio.com. Retain the original for your records.

Technical assistance: help@telesisbio.com | 858.228.4115