

# Buffer Exchanger User Manual

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Curiox Biosystems Pte Ltd 2 Gambas Crescent #07-14 Nordcom II (Tower 1) Singapore 757044 T: +65 6908 4201 F: +65 6908 4203

E: sales@curiox.com W: www.curiox.com

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#### **GENERAL INFORMATION**

In general, this user manual has been written for the purpose of providing technical, installation, operating and troubleshooting information to the operators of the Buffer Exchanger. The content of this manual includes:

How to set up and operate the Buffer Exchanger

#### **FUNCTIONAL DESCRIPTION**

The Buffer Exchanger is added as an accessory to support multiple reagents input to the Laminar Wash HT series washer, without needing the user to manually move the tube fitting across different fluid bottles. The Buffer Exchanger can support up to 6 ports for different wash buffers, while having dedicated ports for Air, H<sub>2</sub>O and EtOH separately. Normal usage of the Washer should not be affected with or without the Buffer Exchanger. A firmware is required drive the HT Washer in conjunction with the Buffer Exchanger operation.

The Buffer Exhanger is available in 2 configurations:

- 1) Buffer Exchanger 5: which support up to 2 different wash buffers
- 2) Buffer Exchanger 10: which support up to 6 different wash buffers

#### **TECHNICAL DESCRIPTION**

Description	Specification				
Physical					
Dimension	260(L) x 310(W) x 72(H) mm				
Weight	4.5 kg				
Electrical					
Voltage Requirement	100 – 240 V (Driven using HT Laminar Wash washer)				
Environmental					
Operating Temperature Range	15 - 28 °C				
Operating Humidity	< 80%, non-condensing				
External Interface					
1 x outlet port	A connector for outgoing buffers to HT Washer				
5 or 10 x inlets port	Connectors for incoming wash buffer				
1 or 2 mini-DIN connector port	Connection to HT Washer				

#### **SETUP**

Upon arrival of the BX System package, check that all the accessories listed below are present. Depending on the BX System configuration, the quantity of the accessories would differ too.

#### List of items:

- 0.2 meter INLET tubing, RED coded ring on connector x1 (x1 for BX10)
- 0.5 meter INLET tubing, RED coded ring on connector x4 (x8 for BX10)
- 6 Way Male-Female mini DIN Cable Assembly x1 (x2 for BX10)
- Bottle Caps x1 (x5 for BX10)
- 4 To 1 Connector x1 (x2 for BX10)
- 15 metres ACF00007-C tubing x1 (x1 for BX10)

Remove all connecters' cap shown in the steps below before installing.



#### Connector caps preinstalled



Connector caps removed

### a) BUFFER EXCHANGER WITH HT WASHER



The Buffer Exchanger is design to be stack underneath the Laminar Wash HT series Washer

### b) INSTALLATION INSTRUCTION

(refer to the appendix for assembly of the HT Laminar Washer with older version of Buffer Exchanger)



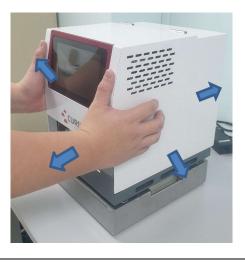
#### Step 1:

Ensure the orientation of the Washer and Buffer Exchanger are in the same direction



#### Step 2:

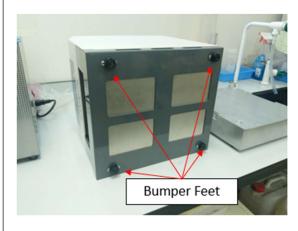
Place the washer on top of the Buffer Exchanger

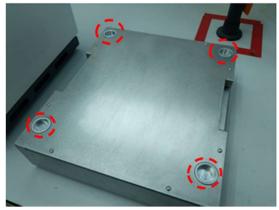


#### Step 3:

Adjust the washer until the bumper feet of the washer drops into the designated slot position.

Refer to next slide for illustration.





Orientation of Washer for illustration purpose only

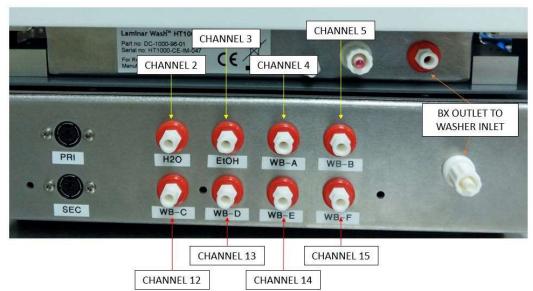


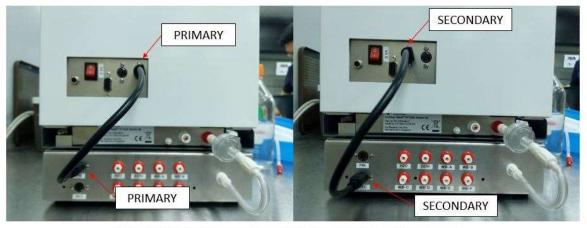
#### Step 4:

Check visually to ensure the washer is seats securely on the Buffer Exchanger.

### c) INTERFACE PANEL







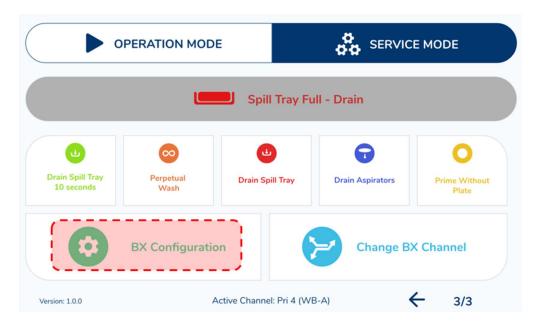
Connect the 6-way MINI-DIN Connector into the respective ports

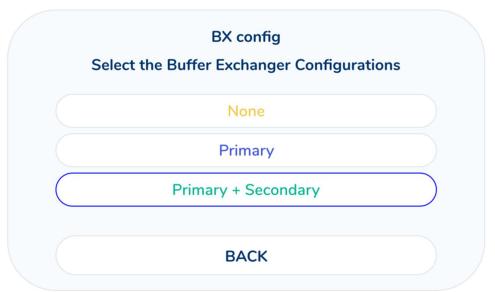
#### **OPERATION**

The below illustration shows the selection and functions pertaining to the Buffer Exchanger through the HT Washer interface.

### a) Selecting Buffer Exchanger configuration

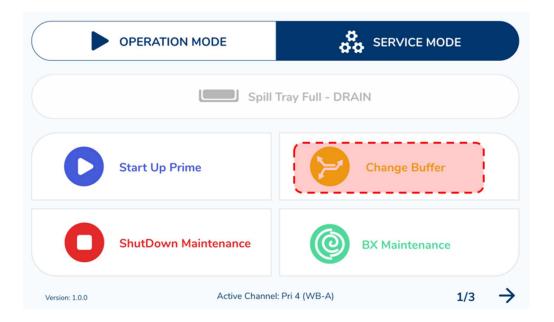
On page 3 of 'Service' mode, choose "BX Configuration" and selected the type of Buffer Exchanger used. Select 'back' to exit the page after selection.





### b) Selecting channel for Buffer Exchanger

On page 1 of 'Service' mode, select "Change Buffer" to toggle between different channel of the Buffer Exchanger to be active. Select 'back' to exit the page after selection.





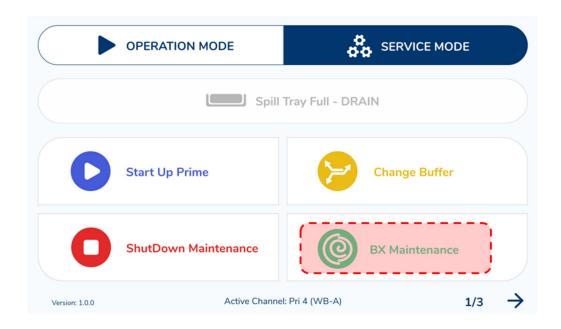
### c) BX Maintenance

On page 1 of 'Service' mode, select "BX Maintenance" to prime all the different channels of the Buffer Exchanger. This will also double up as a shutdown function for the Buffer Exchanger.

To do a shutdown on Buffer Exchanger, connect all tubing to the 1 to 4 connector (accessory added in Oct 2020), which is then connected to the bottle cap.

Activate BX Maintenance and select the channels accordingly to proceed with the shutdown procedure.







#### **APPENDIX**

Below mentioned instruction are meant for assembly of older version Buffer Exchanger to HT Washer.



Place the Washer on its side on a soft backing to avoid scratching the surface

LEVEL MOUNT

#### STEP 2:

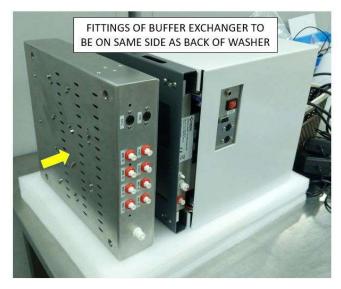
Remove the 4 level mount of the washer by unscrewing them in the anti-clockwise direction.



STEP 3:

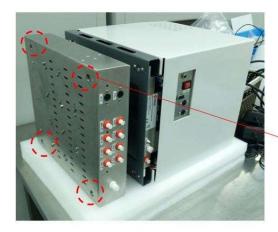
Unscrew the 4 nuts of the Buffer Exchanger slightly to enable the screw stud to rotate





STEP 4: Align the 4 screw studs to the position where the Level Mount position are





#### STEP 5:

Use a Philip screw driver to turn the screw studs in the clockwise direction (at 4 positions) till the nut is touching both the Buffer Exchanger and Washer







Screw the 4 Level Mount clock-wise back to the base of the Buffer Exchanger at the screw-stud position



### STEP7:

Raise the Washer back into the upright position

#### 1. **REVISION HISTORY**

REVISION	DATE	MODIFICATIONS	AUTHOR
0	31/8/2020	First Release	Reese
1	7/10/2020	Added 1 to 4 connector	IhChin
2	11/11/2020	Added packing list under Setup	IhChin
3	11/3/2021	New logo and addresses	IhChin