



NemaMetrix

ScreenChip System

Setup Guide and Protocol
for the ScreenChip System





Welcome to your new ScreenChip System

NOTES:

- Before you begin setting up your new system, make sure you have at least 3 feet of open bench space.
- Setup your system with the laptop on the left and the microscope on the right

Setting Up Your System:

1. Locate and unpack the following:
 - a. Computer (if included) and charger
 - b. Camera (if included)
 - c. Dock
 - d. Amplifier
 - e. Flow Control Box
 - f. Waste Reservoir Bottle
 - g. Fluidics Kit (don't unpack yet)
 - h. Cables for EPG (don't unpack yet)
 - i. Camera Cables (don't unpack yet)
2. Connect the computer to power and turn it on
3. Locate and open the NemAcquire Software
 - Note: if using a personal computer, download the software [here](#)
4. Locate the cables for EPG, amplifier, and the dock and unpack
 - Place the dock on the microscope with the amplifier connection port facing left
 - Connect the amplifier to the dock using the "Amplifier to Dock" Cable
 - Note: Tape this cable down or situate in such a way that it will not move. Make sure to avoid letting the cable touch electronics (phone, computer, smartwatch, etc.). This is to avoid excess noise.
 - Connect the amplifier to the computer using the micro USB cable.
 - On your computer, a popup to run a noise test will open after all the cables are connected. If it does not run, go to the amplifier tab and select "Run noise test"
 - Locate a ScreenChip (a sample box was included in your main package, feel free to use one of these or one of your choice) Slide a ScreenChip into the dock until flush with the contact point
 - Note: there is a set of grounding wires included with the cables for EPG which can be used as a method to reduce noise
5. Camera Setup
 - Locate and unpack the Ximea Camera
 - Remove the camera lens



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- Screw the camera gently onto the scope
 - Do not overtighten or cross thread
- Open the camera cables bag
- Connect the camera to the amplifier using the sync cable, making sure to align the cable keyway correctly (see image below)
- Connect the camera to a 3.0 USB port on your computer using the “Ximea cable, USB” Cable, making sure to align the keyways on the camera. Make sure to plug the cable into a 3.0 USB port on the computer (if using a computer provided by NemaMetrix, this will be on the left side of the computer).
 - Note: if you are having framerate issues, you may be accidentally using a 2.0 USB port. Try a new USB port and see if the issue resolves itself.
- Gently hand-tighten the retaining screws into the camera
 - Note: if there is no image, check that the scope is in photoport mode
- The computer should detect the camera and synchronization. To check if everything is connected, see the top of the screen near the NemaMetrix logo.



Align cable keyway
into camera



6. Tubing Set

- Locate the Waste Bottle Reservoir, Fluidics Kit, and Flow Control Box
- Remove the tube on the top of the Waste Bottle Reservoir. This is necessary for travel and can be discarded. Remove the inside label.
- Unpack the Fluidics Kits
 - Inlet tubing (This is for the vacuum pump setup, if using a syringe, ignore the inlet tubing. 2 sizes are included, precut and uncut. You can use the precut tubing or cut the uncut to your desired length)
 - Goes from the worm reservoir into the chip
 - Outlet tubing
 - Goes from the chip to the Waste Reservoir Bottle

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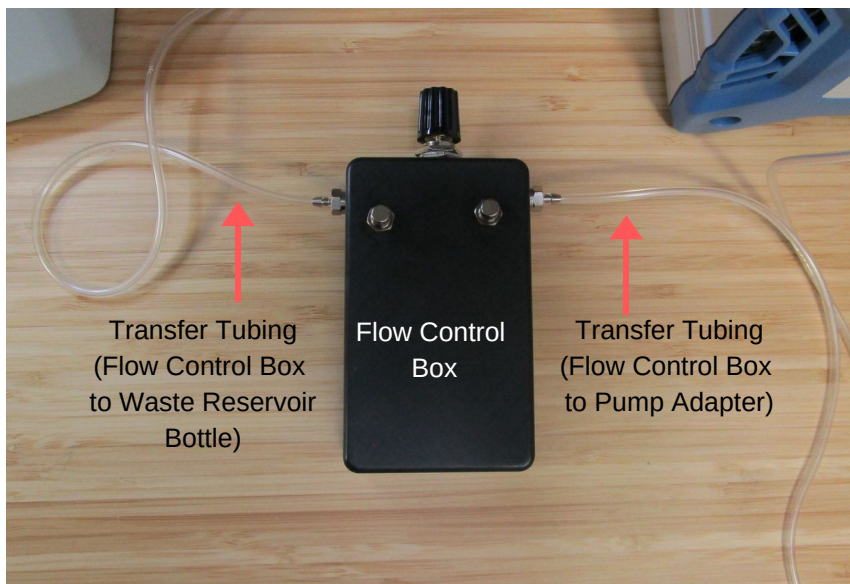
- Pump Adapter
 - Goes with the vacuum
- Syringe Assembly
 - Only necessary if using the syringe option. This feeds into the chip (Transfer tubing One goes from the Waste Reservoir Bottle to the Flow Control Box and the other goes from the Flow Control Box to the Vacuum Pump)

7. Tubing Assembly

- Unpack the syringe
- Remove the syringe cap and attach the lure
- Attach the tubing to the lure, connecting the bare end of the tubing to the metal tip of the lure, leaving the metal tip of the tubing free
- For a new chip, load M9 to calibrate, after calibration you would load worms at this step.
- Insert the free metal tip into the left side of the Chip, inserting only ~1/8th of an inch into the hole.
- Run a noise test
- Unpack the Outlet Tubing
- Connect the metal tip of the Outlet Tubing to the right side of the chip. Connect the other end to the left side of the Waste Reservoir Bottle

8. Pump Assembly

- Unpack the Pump Adapter.
- Attach the Pump Adapter to your vacuum (either the one we provided or the one you have)
- Unpack the Transfer Tubing
- Connect the Transfer Tubing from the Pump Adapter to the right side of the Flow Control Box

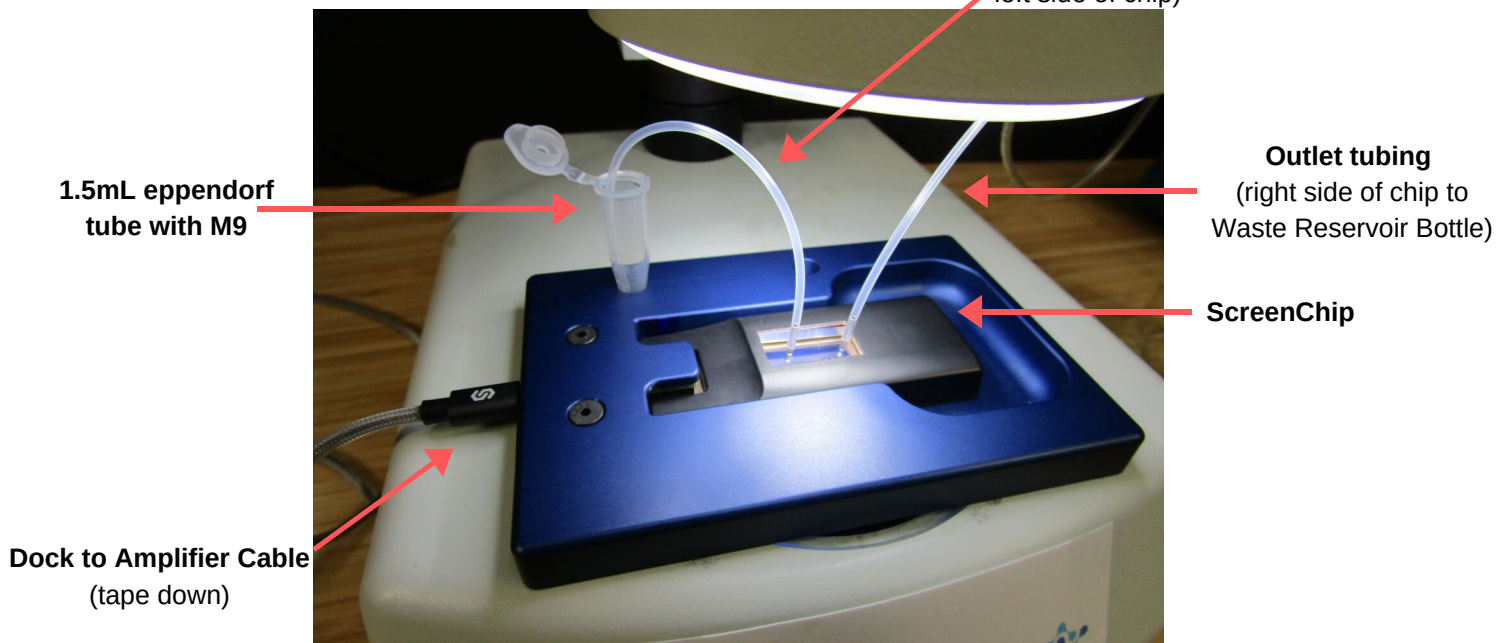




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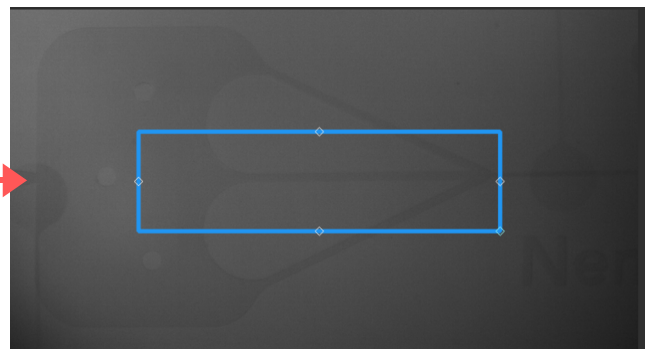
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- Connect the second Transfer Tubing from the left side of the flow control box to the right side of the Waste Reservoir Bottle
- Unpack the Outlet Tubing
- Connect the rubber end of the Outlet Tubing to the left side of the Waste Reservoir Bottle and attach the metal tip ~1/8th inch into the right side of the Chip
- Take a 1.5mL eppendorf tube and inject M9 into it
- Place the eppendorf tube into the holder on the Dock



- Connect the inlet tubing from the eppendorf tube with the M9 to the left side of the Chip. The metal tip of the tubing should be inserted ~1/8 th of an inch into the Dock.
- Turn the knob on the flow control box clockwise until there is resistance. You do not need to tighten, just close until there is resistance. Turn the knob two full rotations counterclockwise from the close point. You should not have to adjust from here.
 - If you do need to adjust, please note - turning it counterclockwise increases pressure and clockwise decreases pressure.
- Align the camera image with the parachute

Parachute
(Screenshot from NemAcquire)

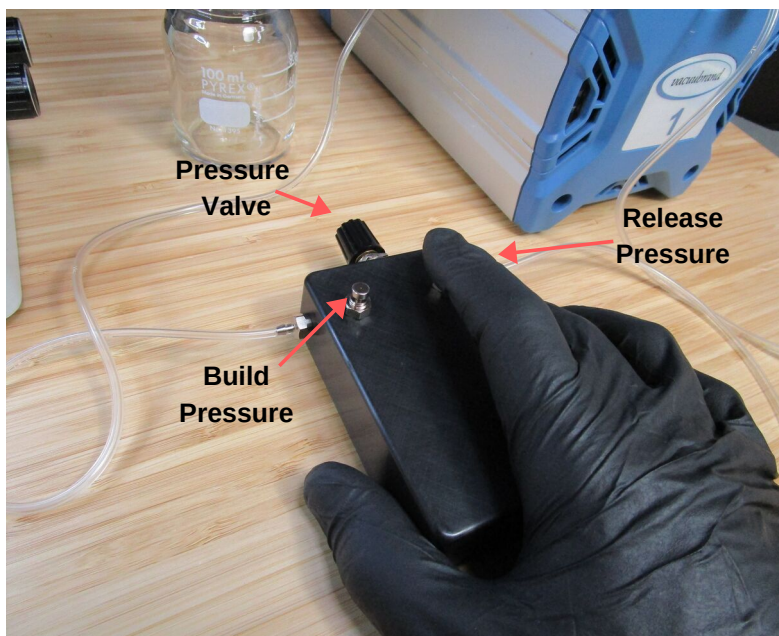




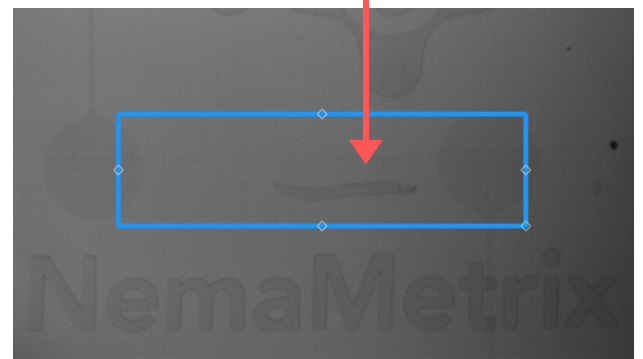
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- Start to pull fluid through the chip. At this time your chip resistance will start to read off as something that is more consistent (less than 100kohm)
- Run Noise Test
- After the noise test, reconnect the outlet tubing
- Replace the M9 eppendorf tube with one that has the worms you want to pull through
- Turn on your vacuum and begin pulling worms through
 - To pull worms through, use the flow control box to build and release pressure. The left button builds pressure and the right one releases it. The goal is to stop the worm when it is aligned with the ScreenChip Worm
 - Note: The pressure release is not an instantaneous stop, the worms may continue to move forward depending on how much pressure had been built up. Be gentle with the pressure build and release



Guide Worm on ScreenChip
(to align with your worms)



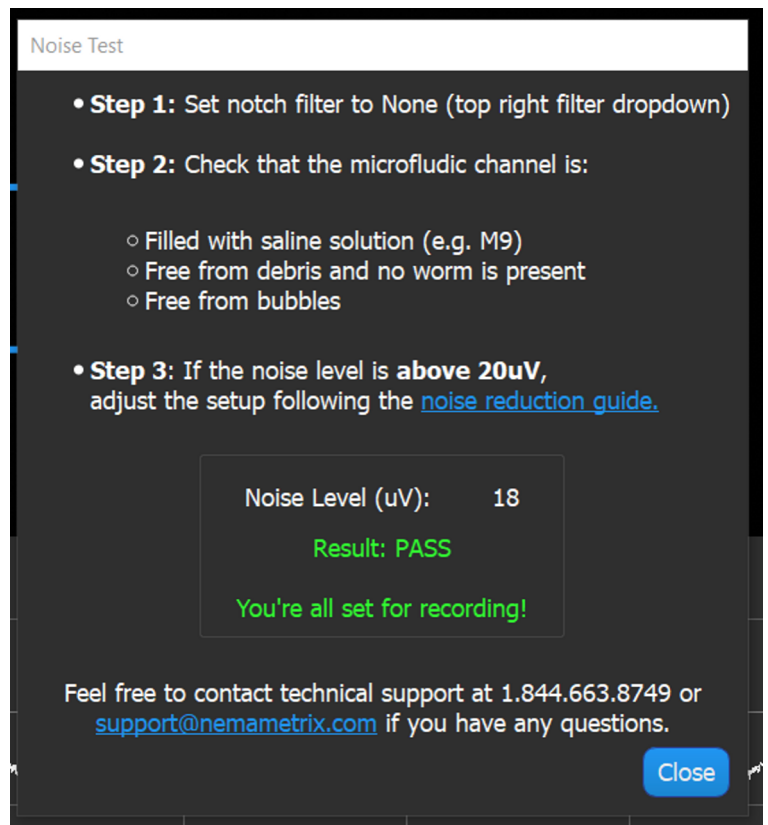
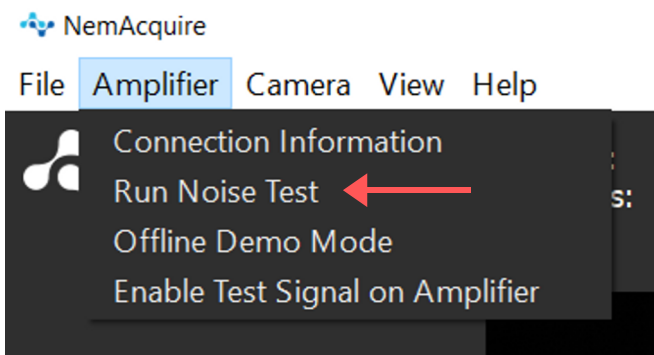


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9. Noise Test:

- Pull M9 through the chip (either by Syringe or by Pump) until you begin to see M9 leaving the chip via the Outlet Tubing. Make sure there are no bubbles.
- On your computer, go to the amplifier tab and select “Run Noise Test”
- Detach the Outlet Tubing and follow the onscreen instructions to run the noise test
 - When detaching the Outlet Tubing, make sure no liquid gets on the Chip housing. If liquid does get on the housing, use a tissue or Q-tip to dry it off
- Reattach Outlet Tubing once noise test is complete



Noise Test on-screen instructions

Help is only ever a phone call or email away! Please contact us at support@nemametrix.com or by phone at **844-663-8749**