SOP for MICROTEST FTM500

Microtest Controllers

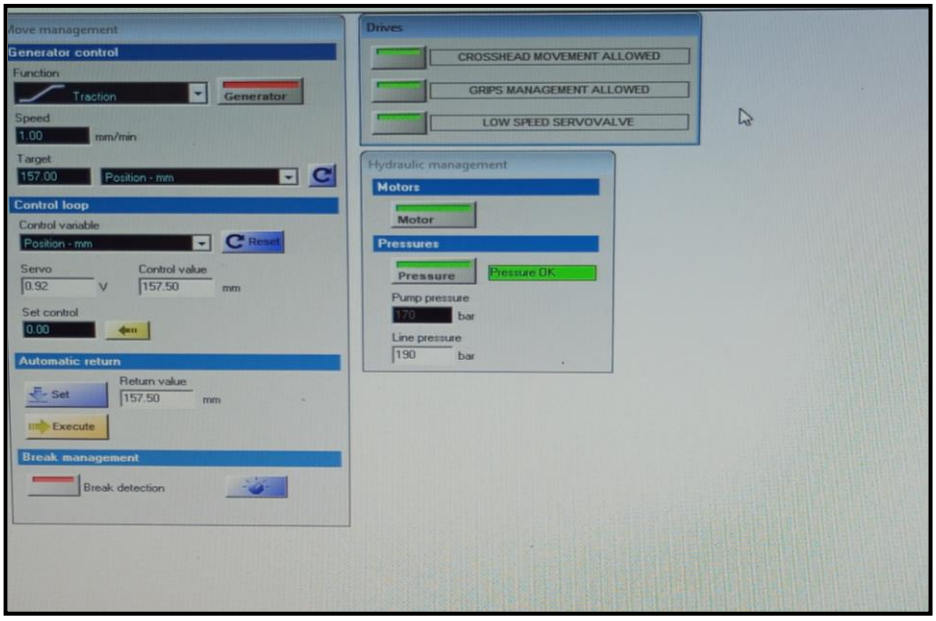
MOOG Controller

Hydraulic Power Unit

Chiller

- **FTM500 Equipment is currently connected with MOOG Controller for Actuator Controls & with Microtest Controllers for HPU Controls. Separate UPSs & PCs have been connected with both controllers**.

1. Turn ON all the 3 UPSs connected with Controllers, CPUs and Monitors. **Make sure that Stabilizers connected with UPSs are ON.**
2. Turn on both PCs.
3. Switch ON all the Controllers. Wait for around 2 minutes to establish communication between Controllers and PC.
4. Switch ON the Chiller & then HPU. Make sure that any alarm light is not blinking in Chiller and HPU.
5. Run the 'Test Control' Software in Microtest PC. Select '**Low Speed file'.**

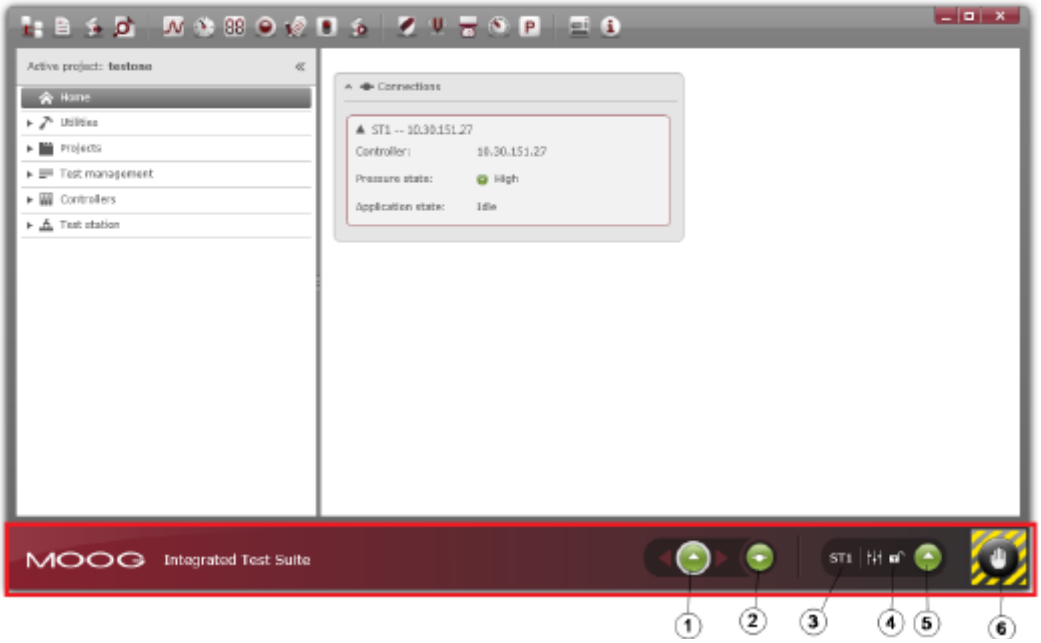


6. Check whether any Cooling Alarm warning is not indicated.
7. Click on Motor button to start the HPU motor. Click on Pressure button to activate the hydraulics. Check the corresponding lights indicator in the control panel.
8. Enable **'Crosshead movement allowed'** option to allow the movement of crosshead using Control Panel of FTM. Adjust the crosshead position according to sample height.
   Note: Press 'unlock crosshead' push button on the control panel and simultaneously press 'UP' or 'Down' push button for the movement of crosshead.
9. Enable **'Grips Management Allowed'** option for wedge grips control (to grip and un-grip the specimen).
   Note: Use Control Panel Push buttons to Grip and Un-grip the top and bottom wedges.

10. Run the Test suite software in MOOG PC. Select **Project Name- IIT HYD.** Go to connection bar.

11. Enable the controller connections, as mentioned below:

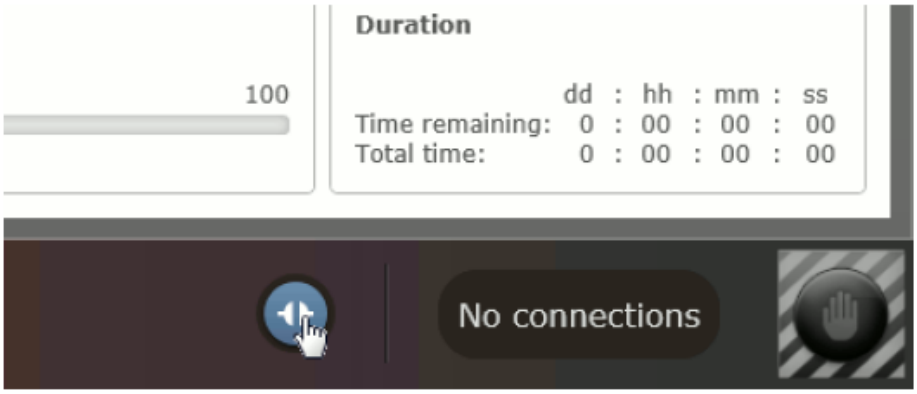
The Connection bar lets you connect to and activate a station on your Test Controller, and shows you the current status of your connection. It also provides access to the Hardware Control Panel and the Software Stop button.



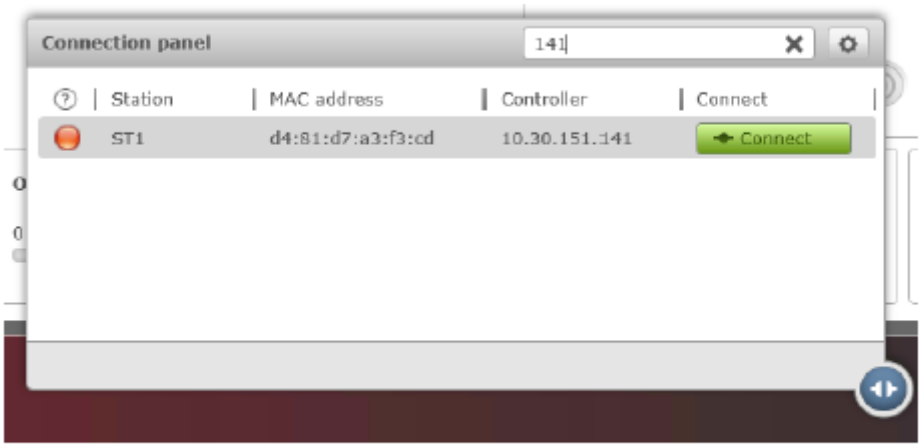
1. Station indicator
2. Controller connections
3. Connected station
4. Station mode (locked/ unlocked)
5. Hardware control (opens the Hardware Control Panel)
6. Software stop

To connect to a station:

1. Click the **Controller connections** button in the Connection bar:



The Connection Panel will open:



To connect a station to a Test Controller, select the station in the list and click the **Connect** button in the Connect column.

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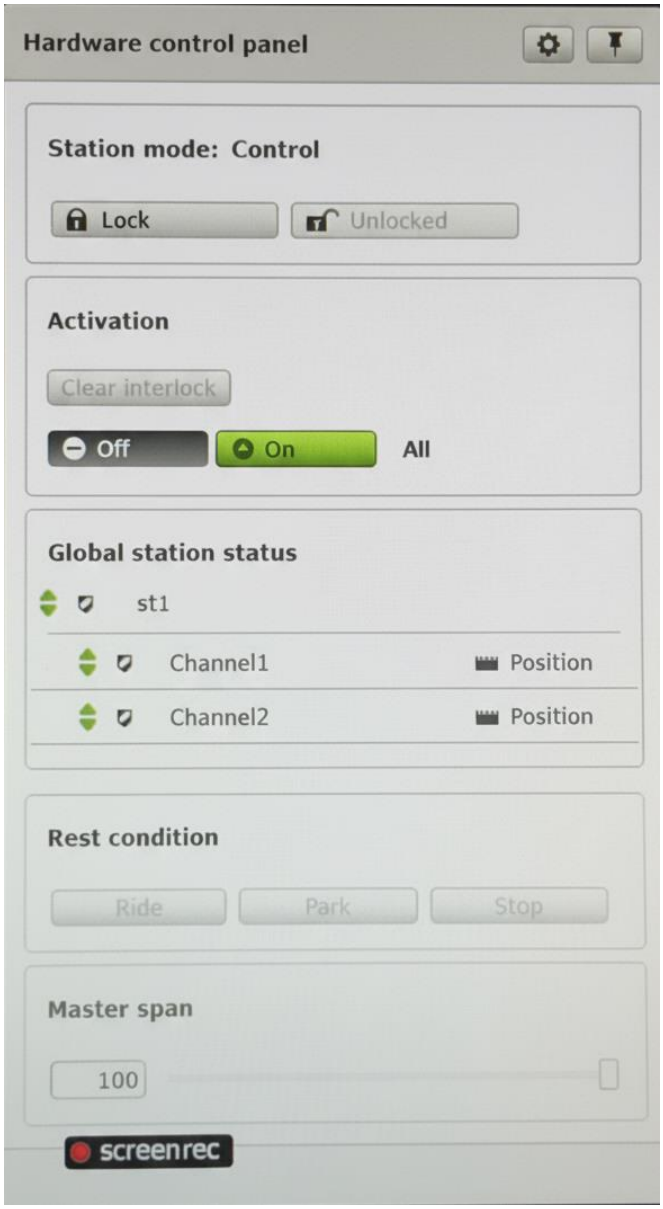
12. Click the Clear Interlock button on the Hardware Control Panel to reset the interlocks of the station(st1). Click 'ON' button to activate the station.



13. Open digital meters. Click on Node Tree and drag ‘Displacement Feedback’ and ‘Force Feedback’ for the Real time values of displacement and load.

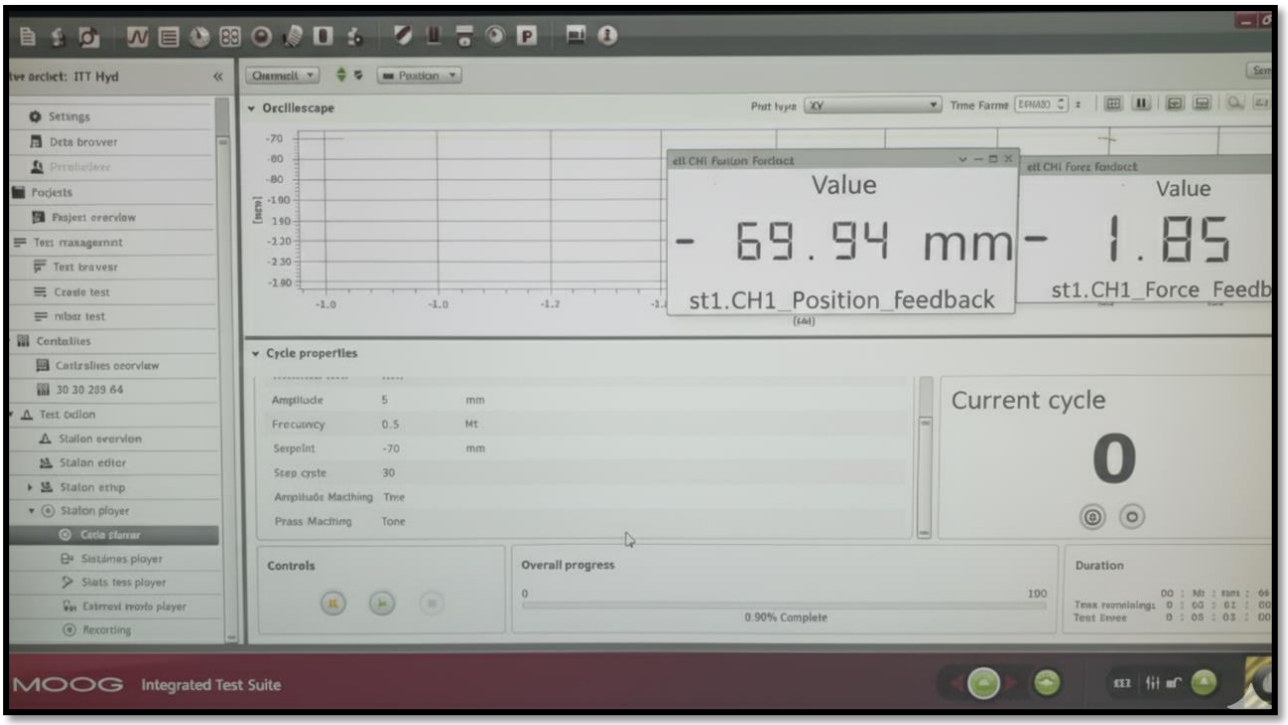
To monitor a signal in the Digital Meter:

1. Click **Digital meter** in the main toolbar
2. Click **Node tree viewer** in the main toolbar.
3. Drag and a drop a signal property from the Node Tree Viewer onto the Digital Meter.

14. Actuator movement is controlled via the **'Cycle Player' tab** by adjusting the **'Set Point'**.

- Sign **Convention:** A **lower set point w.r.t to current actuator position** results in **Tension** (Upward Movement), and a **higher set point w.r.t to current actuator position** results in **Compression** (Downward Movement).

- Recommendation**:** Use the **up/down arrows** for finer, more precise actuator movement.



15. Go to Test Management Option. Open the file named as **'Rebar Test'** in Test browser. Select mode of test and give test speed {whether load control(kN/sec) or displacement control(mm/sec)}.

16. Give absolute end level based on Compression test or Tension test requirement. **NOTE**: **Absolute End level will be defined w.r.t current position of the actuator piston.**

17. **Save the test**. Go to sequence player. Open the test (**Rebar Test**). Set the oscilloscope(graph) settings.

18. For creating data recording file, follow the below instructions.

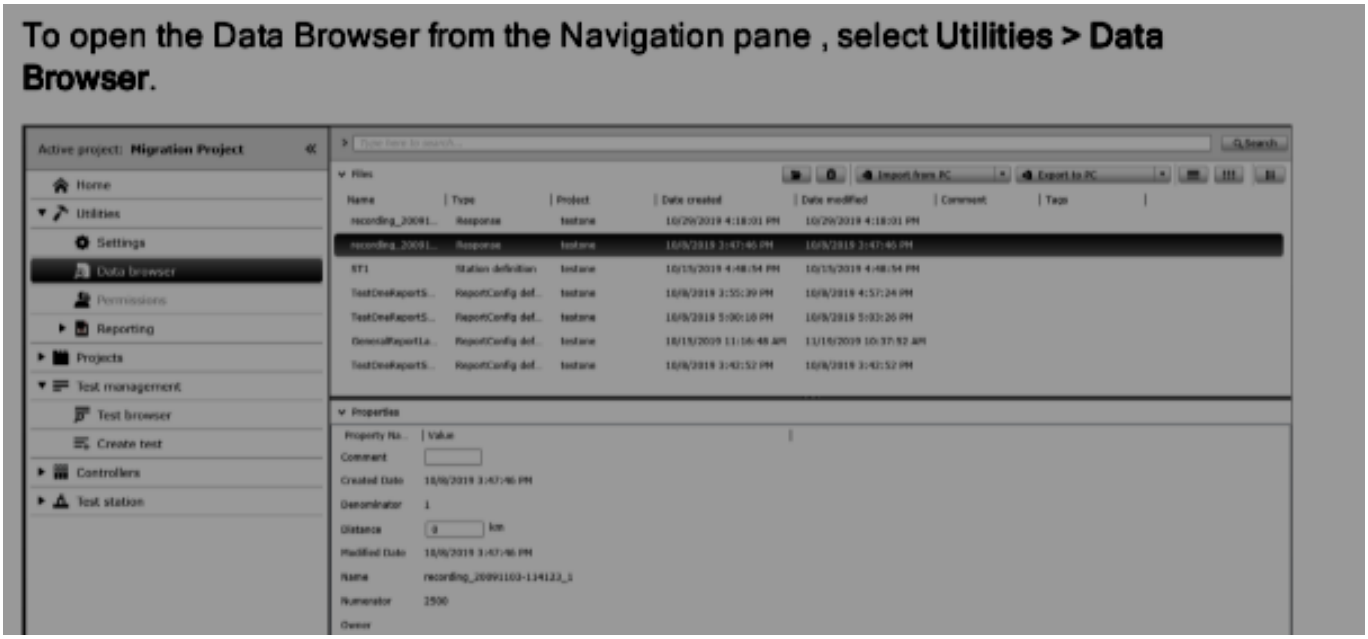
To create a recording:

1. Go to **Test station > Station player > Recording**.
2. Click **Create new** .
3. In the **Basic properties** section enter the **Setup**, **Recording name**, and the **Duration** of the recording.

   The properties in the signal list will be recorded for the duration specified, and the recording will be saved to a single recording file.
4. Open the **Node tree viewer** from the toolbar and drag the properties (or aliases in alias view) that you want to record to the **Signal list**.

19. Start the Recording first, then Come to sequence player tab.. Start the test by clicking on '**play**' button. Monitor the load & displacement in digital meters.

20. Once test will be over, Click on **'pause'** button in the sequence player window. Stop the recording.
21. Recorded data can be accessed through data browser window. Open the response file. Export the data at desired folder in CSV Format.



22. Unload the specimen slowly if there is any load in the equipment.
23. Unlock the wedges using control panel. Remove the tested specimen.
24. For new test, steps 14-23 need to be followed again.
25. Turn off the pressure and then motor from Microtest software.
26. Close the software.
27. Switch off the Microtest controllers.
28. Similarly, disconnect the moog software from controller using Connection bar. Close the software.
29. Shutdown both PCs. Turn off UPSs.
30. Turn off HPU and then Chiller.
31. Clean the equipment frame area and wedge grips.

Safety Precautions:

- Monitor the temperature of chiller frequently in between the test. **Keep a check on cooling alarm in MICROTEST PC**.
- Movement of Crosshead and Actuator up to the extreme limits should be avoided.
- Equipment in running condition must not be left idle. At least one student who is aware of equipment operation must always be present near the PC.
- **Wear PPE during testing**." **Personal Protective Equipment** (like safety glasses, gloves, etc., depending on the test) is mandatory for protection against potential hazards (e.g., flying debris from a brittle failure).
- Be Aware of Emergency buttons while testing.
- **Do not unlock the wedges when there is load in the specimen**.