

For operators only

PC starting for control of the TEM

1. Turn on the PC and the monitor with the PC switch and the monitor switch
2. Type the password “JEOL”, to start the PC.
3. The illustration of TEM appears at lower right of the monitor.
Wait for the change of color of the small circle from blue to reds.
4. Double click the TEMCON icon, to start the TEMCON software.

For users (TEM)

The sample exchange (The sample removal)

1. Click on the **HT** button at upper left of the screen, and display the **high voltage control** window on the screen.
2. Click the **filament off** button on the **high voltage control** window, to turn off the electron beam emission (Check! **Beam current: 0 μA**).
3. **Before the sample removal, double click the stage neutral button, to set the stage position where the sample is possible to remove from the TEM.**

Confirm the **stage position (x,0; y,0; z,0; t,0)**.

4. Pull the sample holder from the lens barrel, and keep the holder in the sample port (small vacuum chamber) temporary.
5. Select the **air** of the **pump/ air** switch.
Wait for approximately 30 sec, and pull out the sample holder from the port.
6. Attach the sample (grid) to the sample cartridge, using the tweezers carefully.
After the observation, remove the sample from the cartridge.

Notice: Perform carefully this operation, to prevent the damage to the cartridge.

7. Confirm the **stage position (x,0; y,0; z,0; t,0)** where the sample is possible to insert to the port.
Insert the sample holder into the port, and fit the guide pin to the port gate.

Notice: Don't rotate the sample holder during this operation.

8. Select the **pump** of the **pump/ air** switch, and wait for several minutes.
After the lamp lights up green, rotate clockwise the sample holder, and insert slowly the holder into the lens barrel.
9. Select the **EM-21010/21020: single tilt holder** of the list displayed on the TEMCON window (upper-right corner).

The application of the HT (high tension = high voltage)

1. Set the **HT (high tension)** value to **80kv** on the **high voltage control** window.
2. Click the **ON (HT)** button, to apply the high tension.

The electron beam emission and observation

1. Insert the object aperture (NO.3) into the light path, using the aperture control on the right side of the control panel.
 2. Click the **ON (Filament)** button, to start the electron beam emission.
 3. Center the beam spot, using **shift** knobs (**x, y**) on the right and left sides of the control panel.
Move the sample to the desired position, using the track ball.
Adjust the brightness of the view field for the observation, using the **Brightness** knob.
In this setting, the user can observe the sample, using the stereo microscope.
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For operators only

Turning-off of the electron beam emission

1. Click the **OFF (Filament)** on the high voltage control window, to turn off the electron beam emission.

Turning-off of the HT (high tension)

1. Click the **OFF (HT)** on the high voltage control window, to turn off the HT.

For operators only

Turning-off of the PC controlling the TEM

1. Close the **TEMCON** window.
2. Turn off the **Windows**, the **monitor** and the **TEM** with power switch.

iTEM starting and CCD camera setting

1. Turn on the PC and the monitor for camera controlling, and start the iTEM software.
2. Display the sample image on the fluorescent screen according to the procedure mentioned above (**The electron beam emission and observation**, 2-3).

Turn on the camera controller with the ON/OFF switch

3. Insert the CCD camera to the lens barrel by pressing the **IN** button (green light) of the camera insert controller.

Notice: Don't insert the CCD camera in the Low Mag, DIFF mode.

The user have to use the CCD camera only in the MAG1 mode.

The capturing of the image by the CCD camera, and image saving

1. Display the full-screen iTEM window by clicking the **full-screen** icon.
2. Click the **intelligent exposure** icon on the iTEM window
3. Display the live image of the sample by clicking the acquisition button.
4. Display the target sample in the obtained image.

Adjust the brightness of the image for the observation, using the **Brightness** knob on the right side of the TEM control panel.

5. Display the enlarged image by clicking the **focus mode** button.

Adjust the focus of the image, using the focus knob on the left side of the TEM control panel.

6. Click the **focus mode** button again, to display the normal size image.
7. Capture the image by clicking the **snap shot** button.
8. Select the useful images of the sample, and save the images as **jpg** or **tiff** format (8bit).

To display the live image again, click the **acquisition** button.

Notice: The user have to use the USB memory stick which is not infected by any computer virus.

The removal of the CCD camera from the TEM

1. Turn off the live image display by clicking the acquisition button.
2. Pull out the CCD camera from the lens barrel by pressing the **OUT** button (red light) of the camera insert controller.

Turning-off the iTEM and the CCD camera

1. Confirm the pulling out of the CCD camera from the. When the CCD camera is still in the lens barrel, pull out the camera (see above).
2. Turn off the **iTEM** and **Windows** (XP).
3. Turn off the **monitor**, the **CCD camera** and the **camera controller** with each power switch.