

Operating SanjVIEW 7 with the Visible Camera (TR)

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Opening and initial setup:

1. Open SanjVIEW v7.0 from the Computer desktop.
2. Center the sample in Project Manager and focus on the desired device.
3. Confirm all indicator lights are green for your connected system.
4. Select the camera to use (Infrared / Visible-Thermoreflectance / Near-Infrared). Press **F1** to switch cameras.
5. Click the Auto Focus tab.
6. Set "Mag" to your objective (example: 5X).
7. Click "Enable Motion" ON and "Center Stage" ON. (Note: the microscope may need refocusing after centering the stage.)
8. Click the file icon; name your file path and click "current folder."
9. Select the desired imaging operation.

Note: Transient Thermoreflectance is not available with an Infrared camera selected — it requires the Visible camera.

Steady State:

Hardware:

1. Enter the desired Base Temp (°C) and click "SET" next to Set Base Temp.
2. Set Stage State "ON."
3. Set "Vo ON Voltage" to 7V.

Timing/Illumination:

1. Set Device On Time to 10.

2. Set Image Averages (#/cycle) to 10.

3D Alignment — Focus ROI:

1. Select a region on the CCD image with the rectangle tool (choose a unique feature, e.g. an edge or scratch mark).
2. Press "Focus ROI" to set the selected region as your ROI.
3. Wait until the Focus ROI light turns green. (Zoom: hold SHIFT to zoom out, SHIFT+CLICK to zoom in.)
4. Confirm "Enable 3D NanoAlign" is checked; check it if not.

3D Alignment — Capture Reference:

1. After the ROI focuses, press "Capture Reference" to set the reference region.
2. Wait for the Capture Ref light to turn green ("Enable Digital Anti-vibration" turns on automatically).
3. Set initial Focus Tolerance, Alignment %, and Vibration Filter parameters — lights turn green when in range. (Increasing Alignment % and decreasing Vibration Filter improves alignment accuracy. Alternatively, load a prior reference.)

Start Measurement:

1. Click "START Measurement."
2. Progress shows in the System Status bar ("Turn OFF" after each cycle) with a "Loop Iterations" count. For TR, 9–11 loop iterations is sufficient.
3. Under Save Path, confirm the directory/name (example: `C:\Data\Qualification\`); append a filename.
4. Click "Save Every Cycle," then click "Save Data" when ready. (Save the image before stopping the measurement.)
5. To stop: click "STOP MEASUREMENT," then "Return to Project Manager," or File → Quit.

Calibration:

Hardware:

1. Set "Magnification" to match the objective (example: 5x).
2. Set "High Temp" to 120 °C and "Base Temp" to 20 °C.
3. Turn "Stage State" ON.
4. Click "Set Low Temp" to initialize the chuck to the base temperature.
5. Click "Use Chuck Sensor" to use the embedded chuck thermal sensor for calibration (off = use an external thermal probe).

Timing/Illumination:

1. Set Stage Heating Time to 40.
2. Set Image Averages to 50.

3D Alignment — Focus ROI / Capture Reference: same procedure as Steady State above.

Start Measurement:

1. Click "START Measurement." The system cycles through temperatures, showing "Calibration Done" after each cycle and a Loop Iterations count.
2. Select the region on Thermal Image View to view the Calibration Factor (shown in "Mean CTR").
3. Under Save Path, confirm directory/name (example: `C:\Data\Qualification\Training`).
4. Check "Save Every Cycle," then click "Save Data." (Save before stopping.)
5. Stop via "STOP MEASUREMENT," "Return to Project Manager," or File → Quit.

Failure Analysis (FA) Mode:

Parameter Setup:

1. In Project Manager, change "Cam Selection (F1)" to "VISIBLE."
2. Uncheck "INT Vo 20mA Range" (green = checked, grey = unchecked).
3. File → Options to open a new window.
4. Software tab → set "FA Mode Pulse Width" to Long (15 Frames).
5. Return to Project Manager, click "FA Mode" to open the FA Mode window.

Process: (confirms the device is biased and current is flowing, before using Movie or Transient mode)

1. Go to the "Biasing" tab.
2. Change Vo(V) to 7.000.
3. Click "Update Values" to apply voltages.
4. Check that "Peak Voltage (V)" and "Peak Current (I)" read near 7V and 70 mA for device 2 (Center Diode). (If current is much lower than expected, confirm "INT VO 20mA Range" is unchecked in Project Manager.)

Save Data:

1. File → Save Data.
2. Click File Browser, select the target folder, click "Current Folder" (example: `C:\Data\Qualification\Training`).
3. Enter the desired file name (example: "FA-File").
4. Click "Save."
5. Click "Return" to exit the Save Microsanj Data pop-up. (Remember to update the Microsanj Data Save Path before a new dataset, to avoid overwriting prior data.)

Transient Thermoreflectance:

System Status:

1. Change camera to VISIBLE.

2. Click "Transient Thermoreflectance."
3. Click the "Measurement Settings" tab.

Measurement Setting (alignment — two approaches):

First approach (Focus Region + Capture Reference):

1. Select a region on the CCD image with the rectangle tool (unique feature, e.g. edge/scratch).
2. Press "Focus ROI"; wait for the Focus ROI light to turn green.
3. Press "Capture Reference"; wait for the Capture Ref light to turn green.

Second approach (Load Reference):

1. Click "Load Reference."
2. Enter the calibration file path (browse icon), then click "LOAD."
3. Wait for the "Load Reference" light to turn green.
4. Click "Enable 3D Motion" and "Enable DAV."
5. Set "Alignment %" to 99.00.

Transient Thermoreflectance — single image: (thermal image should appear before proceeding)

1. In Measurement Settings, set "Voltage to Device (V)" to 7V.
2. Click "Update Values" to apply voltages.
3. Review the auto-populated "DUT Pulse," "LED width," and "Acq Period" values (changeable, but left as-is in this example).
4. Click "Start Measurement."
5. Wait ~30 s or until noise averages out, then File → Save Data.
6. Click File Browser, choose the save location, enter a file name, click "Save."
7. Click "Measurement Running" to stop.

Transient Thermoreflectance — series:

1. Set "Voltage to Device (V)" to 7V.
2. Click "Update Values."
3. Review auto-populated "DUT Pulse," "LED width," "Acq Period" (changeable).
4. Set "Image Delay" to 0s; click "Update Delay."
5. Go to File → Setup Sweep.
6. Click File Browser, choose the save location ("current folder"); append the desired file name.
7. Enter "Number Delay Images" (example: 10).
8. Enter "Delay Step" (example: 50 μ s — the DUT Pulse increment per frame).
9. Enter "Ave time per frame" (example: 30 s).
10. Click "START" to begin thermal imaging and data collection.
11. When the designated number of images has been collected, the "start" button turns green again; click "close" to exit the dialog, then click "measurement running" to stop the process.

SanjAnalyzer (Visible camera path):

System Status:

1. Confirm camera is set to VISIBLE.
2. Click "SanjAnalyzer" to open the "SanjVIEW Image Analyzer" window.

Process Data:

1. Select the "Calibration" tab.
2. Select "Point to Point" under the "Method" dropdown (opens a "Load CTR Map" window).
3. Click the Browse icon and select the calibration image.
4. Click "LOAD" to overlay the calibration image onto your selected test image.
5. In the file window (top left), click the Browse icon and double-click the file to analyze. (If the file is not listed, update the directory with "UP Dir.")
6. Drag an ROI box across the specimen with the rectangle tool to measure temperatures (up to 5 ROI boxes; hold Ctrl to select additional boxes).
7. Adjust temperature scale and image averaging factors as desired (optional).
8. Select the "Settings" tab, choose a save path (Browse icon), and click "Save Image Current View."
9. To process a series: enter the number of files into "Number of Images in Series" and click "Process Series." The ROI Mean graph plots mean temperature of the selected ROIs over time. (Right-click the graph → Export → "Export Data to Clipboard" to export the data to a table.)

Revision #1

Created 2026-08-26 18:16:54 UTC by Accounts

Updated 2026-08-26 18:16:54 UTC by Accounts