µCT Troubleshooting Guide

By PCMD MicroCT Imaging Core pcmd.microct@gmail.com (2020.08 updated)

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1. μCT Scanning

1.1. How to refresh the system session

Description: This is a thorough troubleshooting technique during your scan setup. If all other troubleshooting tips failed, try this one.

Solution: Look for the "Session Manager" window (at the top left of the screen).

Click "Session", and click "End Session".

Session Manager on LOCAL:.SC2361

Session Views Co	mmands Utilities Applications Options		
Logical Names	-		
Privileges			
Work in Progress	lected: 0 Eiles Shown: 29 Excluded: 0		
Automatic Startup		64	14 370 0017
Keyboard	26_INNERCIRCUM.TXT	64	14-AUG-2017
Lanouage	5A.TIF	256	28-ЈОЦ-2017
	67_ISHMEAL.TIF	128	21-AUG-2019
Security	85-YAPTAZLYSM.TIF	256	9-DEC-2019
Pause	. DAT	0	27-FEB-2018
End Session	RL_DMM_ANT_BH.TIF	128	22-NOV-2019
DIL D	0013014_SEG.TIF	128	31-JAN-2019
MMM D	ECW\$ENDSESSION.DECW\$XAUTH	64	4-ЈЛГ-2020
XDEFAULTS D	ECW\$SM.LOG	64	4-ЈЛС-2020
_MOZILLA D	ECW\$XAUTHORITY.DECW\$XAUTH	64	5-JUL-2020

Click "Yes". Then you will need to re-login the system



Please enter the username & password (printed besides the monitor), and click the "OK" button. **Note**: Nothing will be shown in the Password box (Unlike Windows or Mac system). Type "PCMD" in the "Operator:" box, and press ENTER



1.2. System requires login

Username	Ι		
Password	1		
	ок	Clear	

Solution: Please enter the username & password (printed besides the monitor), and click the "OK" button. **Note**: Nothing will be shown in the Password box (Unlike Windows or Mac system).

1.3. The Scan button is missing

The scan button is usually the 2nd button from the left.



Sometimes the button is missing, such as below:

	μ	T V6.1	
VIVACT 40	Operator:	PCMD MicroCT Imaging Core	Edit.

Solution: Refresh the system session. Please refer to <u>1.1 How to refresh the system session</u>.

1.4. The Control Box is missing

The control box (as shown below) is located at the left bottom of the screen.



If the above box is missing, refresh the system session. Please refer to <u>1.1 How to refresh the system session</u>.

1.5. The command window is missing

Solution: Look for the "Session Manager" window (at the top left of the screen), click "Applications", and click "DECterm".

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Session <u>View</u>	rs <u>Commands</u> <u>Utilities</u>	Applications	Options	-	Help
DISK1:[MICROC	71	Bookreader			Apply
DATA DATABASE EVAL LOGS MAIN	Selected: 0 Files Show 3626_INNERCIRCUM.T 575A.TIF 6967 ISHMEAL.TIF	CDA Viewer Calculator Calendar Cardfiler		··· ··· ··· 01 ··· 01	Shown Size: 6976 7 17:05:5 7 14:03:3
NEWTEMP RESULTS SCRATCH SSH2	7585-YAPTAZLYSM. TI CD. DAT CTRL_DMM_ANT_BH. TI D0013014_SEG. TIF	Clock DECterm FileView	ſ	019 019 018 019 019	9 13:30:4 9 15:37:1 8 22:03:5 9 11:25:3 10:27:1

Then you will see the command window:

File Edit Commands Options Print	Help
Total number of jobs: 6	
\$ que	
QUEUE: SC2361_BATCH	
890 MEASUREMENT_2 SC2361\$DKC1: [MICROCT.SCRATCH]MEASUREMENT_2.LOG; 891 MEASUREMENT_2 SC2361\$DKC1: [MICROCT.SCRATCH]MEASUREMENT_2.LOG;	
2 jobs in SC2361_BATCH	
QUEUE: SC2361_SLOW	
28 UCT_RECONSTRUCTION DISK1: [MICROCT.SCRATCH]REC0_0000000_00000037.L06	
31 ULT_RELUNSTRUCTION DISKI. [HICKOCT.SCRATCH]RECOLOGOUTT.COO	

1.6. There are no ongoing scan jobs, but the scanner's door is still locked.

Solution: Click the "Scan" button in the control box (shown below), and the door will be unlocked. If the problem persists, contact the manager for further assistance.



1.7. "File is not a Calendar Datafile."



Solution: Click the "OK" button.

1.8. Why can't I adjust the centrifuge tube holder (for VivaCT40/VivaCT80)?



Cause: The screws (red and/or green circles above) may be too tight.

Solution: Use Allen wrench to loosen the screws. Then you should be able to adjust the screw accordingly to fit your tube into the centrifuge tube holder.

1.9. "X-ray tube is not ready! Wait for 20 minutes"



Cause: The scanner may be shut down or emergency stopped. **Solution**: Please wait for 20 minutes.

1.10. Error code 24: "Selected operator is not an operator"



Cause: No name in the "Operator" box.

Solution: Type "PCMD", press ENTER, as shown below.



1.11. Error code 90: "TCPIP error. Connection is lost!"



Cause: There is an ongoing scan. To confirm, type "que", and press **ENTER** in the command window. When you see the keyword "**MEASUREMENT**", it means there are currently ongoing scan jobs in the scanner. **Solution**: Please contact the manager if you want to stop the ongoing scan.

File Edit Commands Options Print	Help
toue	
· que	
QUEUE: SC2361_BATCH	
890 MEASUREMENT_2 SC2361\$DKC1: [MICROCT.SCRATCH]MEASUREMENT_2.LOG;	
891 MEASUREMENT 2 SC2361\$DKC1: [MTCROCT, SCRATCH]MEASUREMENT_2, LOG;	

Note: If you don't see the keyword "MEASUREMENT" after the "que" command, close all minimized windows at the right bottom of the screen (refer to the solution in <u>1.12: Error code 2112: "device already allocated to</u> <u>another user"</u>).

1.12. Error code 2112: "device already allocated to another user"



Cause: These is another minimized window at the right bottom of the screen (see below)



Solution: Close all minimized window at the right bottom of the screen (see the above image)

1.13. Error code 7040: "Z - motor moving error! Door is open. Move not allowed!"

This error may be seen on VivaCT40 or VivaCT80.

Cause: The door (or hood) is not closed entirely prior to starting the scan.

Solution: Close the hood completely, and restart the scan software.

1.14. Error code 7053: "Door opening error! Motors are still moving"



This error may be seen on VivaCT40 or VivaCT80. **Cause**: You opened the hood when the motor inside the scanner was still moving. **Solution**: Close the door, and open it again.

2. µCT Evaluation/Analysis (Command: uct_evaluation)



2.1. I can't load my sample that was scanned a long time ago (>4 months)

Cause: Due to limited space on the scanner server, we relocate samples onto tapes every 4 months. **Solution**: We recommend users to finish analysis within 4 months after scan. If users want to retrieve historical samples from the tape, please send the tape retrieval form to <u>pcmd.microct@gmail.com</u>

Note: The tape retrieval processing time is dependent on the availability of both the server space and tape drive. **Please submit a request at least 7 days in advance.**



2.2. Error code 36: "Reading data %FOR-W-ATTACCNON, attempt to access non-existent record!"

Cause: This happens shortly after (<2 hours) your scan. The system needs time to post-process your scans. **Solution**: Wait up to 12 hours after your scan. If the problem still persists, contact the manager.

2.3. I can't draw any contours in the Evaluation software

Solution: Turn OFF the Num Lock, Cap Lock, Scroll Lock on your keyboard!



If you are on a remote computer, type keyboard in the Windows search box, and open the "On-Screen Keyboard" to turn them off.

Bes	st match		
~	Keyboard Control panel	/	
Ар	ps		
4	On-Screen Keyboard	>	
Set	tings		
	Typing settings	>	C
ç	Hear words as you type	>	
	Show text suggestions as I type on the hardware keyboard	>	
	Autocorrect misspelled words	>	
Sea	arch the web		
2	keyboard - See web results	>	
م 1	keyboard		Ħ

2.4. Do I have to click the "Default VOI" in the Evaluation program?

Solution: YES! You must always click the "Default VOI" before clicking the "Start Evaluation" button.

Task: 5: Bo	one Trab. Morphometry (3	3D Seg, 3D Calc, Print Select
VOI Start:	Dim:	Segmentation:
X: 208	64	◆1 ◆2 ◆3 ◆1 1/1000 =
Y: 101	80 Default VOI	1.2 2
Z: 106	[11 1	
	•	Gauss Sigma Gauss Support
		Lower Threshold Upper Threshold
	2	Preview Grayscale Reset
	Start Evaluation	on Close Window

2.5. The Evaluation program crashes when I draw the contours, especially when drawing semi-automatic contours (e.g., for cortical bone midshaft analysis).

Cause: The software might be experiencing some errors. Solution: You may restart this computer (Simplest solution). Or: You may check our video tutorial <u>https://www.med.upenn.edu/orl/uct/resources.html</u> <u>How to use "microCT Analysis" computers</u> (3'26" to 4'26")

2.6. The Evaluation program crashes when I click the "Start Evaluation" button

Cause: You might have opened an AIM file in the Evaluation program.

Solution: Always click the "ISQ" button when opening the images in the Evaluation program.

ample: ilter: I	Measurement:
1: QC1 (weekly, density) 2: QC2 (monthly, geometry) 3: Test Scan 17: XSL_PTH1_6-18-2012_2959 412: XSL_WIT_rat perfusion_092812 419: XSL_Sept27_LeftT_PTHALN2 725: XSL_control0 726: XSL_control1 728: XSL_control2 729: XSL_control3	3: 21-JUN-2012 11:12 CU 470/XR + 4854: 11-FEB-2015 15:41 CU 115/LR + 7208: 8-FEB-2016 15:37 CU 114/NR + 9209: 16-DEC-2016 10:44 U 45/CU + 10867: 19-JUL-2017 14:42 CU 115/HR + 10880: 20-JUL-2017 14:42 CU 115/HR + 10881: 20-JUL-2017 10:13 CU 231/HR 12366: 21-FEB-2018 10:10 CU 462/HR 18063: 25-0CT-2019 14:15 CU 109/HR
> ISQ + AIM + All Files * =	aborted o = archived + = evaluated

2.7. I have multiple GOBJ contour files, but the evaluation program was not using them for analysis.

Cause: The analysis program can ONLY recognize the GOBJ contour files of the default filename (e.g.:D0016730.GOBJ). If you save GOBJ contour as a customized name (e.g.:D0016730_trabecular.GOBJ), the evaluation program can't recognize and use them for analysis.

Solution: You may save your GOBJ contour as a customized name (e.g.:D0016730_cortical.GOBJ) for future reference, but please make sure to save the GOBJ contour as the default filename (e.g.:D0016730.GOBJ) before you click "Start Evaluation".

2.8. Why do I see the tilde sign "~" and the exclamation mark "!" in my analysis result TXT?

Cause: The tilde sign "~" means: The result is approximate for a certain reason.

The exclamation mark "!" means: Be careful, the result might be wrong. (mostly due to low scan resolution) If you don't use this value, you may ignore them.

Solution: You may consider to increase your scan resolution in future.

3. μCT 3D Rendering (Command: uct_3d)

We strongly recommend you review the "<u>Video tutorial for 3D display of microCT images</u>" listed on our website. <u>https://www.med.upenn.edu/orl/uct/resources.html</u>

3.1. "Error Creating TIFF-Image"



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Cause: The filename may have some special characters, like ()[]/\.

Solution: The simplest solution is to use screenshot software on Windows/Mac.

If you want to use µCT 3D to save images: ONLY use numbers, letters, hyphen, underscore for "Filename".

DO NOT exceed 12 characters! Avoid using special characters, including () []/\

Number of Copies 1	
Page Range: From To	
Orientation: 💠 Default 💠 Portrait 💠 Landscape	Cancel
Print Format Printer	Options
PostScript(R)	Help
Print After now	
Directory:	
Filename: D0012437_SEG 🥥	
Printfile*	
	111
◆ Printer ✓ Color □ Auto-Print	
☆ File	
Ale Koth	

3.2. Why is it so difficult to rotate the 3D view to my desired orientation?

Solution: Please refer to "<u>Video tutorial for 3D display of microCT images</u>": "<u>Step 3: 3D display</u>" **Tip 1**: Try to use the arrow keys $\uparrow \downarrow \rightarrow \leftarrow$ (on keyboard) on the parameter bars to control the 3D orientation. **Tip 2**: You can click the "Stop" button to stop the rendering anytime.

3.3. Why do my 3D images look like stacked layers?



Cause: After you draw contours in the uct_evaluation program, you may have forgotten to click "morph". **Solution**: Click the "morph" button in the uct_evaluation program to re-generate the _SEG.AIM file.