

Implant Scanner MK3

by  TUPEL 3D



Designed in Oxford. Made in Oxford.

User Instructions

A user guide for accurate scanning.

Please read and understand all of this instruction manual, it is **IMPORTANT** for making reliable and accurate scans

Warnings

- Do not stare at the LED lights. It may be harmful to the eyes. (LED Risk Group 1 - IEC 62471)
- Do not shine the LED light directly into your patient's eyes, protect your patient's eyes with the red glasses provided.
- Do not block the vents (holes) to avoid the risk of overheating.
- Do not disassemble the device.
- Do not allow the scanner to get damp or wet.
- The post holder is not intended for sterile storage.
- Take care and do not drop the posts into the patient's mouth. (The post is made of anodised aluminium with titanium screw).

Precautions

- Always use the original power supply and USB cable.
- Switch off the device when not used for long period.
- Discontinue the use of the scanner if it becomes damaged.
- Be aware that the scanner contains lithium-ion batteries

CONGRATS on receiving your new Implant Scanner!

You will be able to make supremely accurate measurements of your patients' abutments, and make comfortable passive fit restorations.

Here's how the process will work

- You'll screw in our scan posts. The posts are cylindrical so they can never face the wrong way. Each post has a unique dot pattern that the computer will recognise - so you can put any post anywhere.
- You'll have to calibrate the scanner before the scan to get the best possible accuracy. Then scanning the posts should take less than 2 minutes.
- Finally you will be able to export an STL file containing precisely positioned abutments that can be used in the next step of your design process. All output data are open-sourced file format that can be used as you wish.

We recommend watching our instructional videos, available at:
www.tupel3d.co.uk



Quick Start Guide

1

Name Patient

Project

Patient Name

2

Scan

Scan

Upper

Posts captured: 0

Lower

Posts captured: 0

3

Export

Export

Setting up your scanner

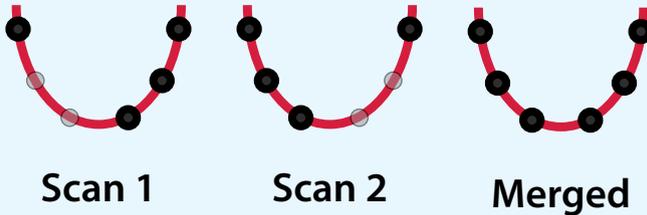
- Install the latest Implant Scanner Desktop software from <https://www.tupel3d.co.uk>
- You can choose USB or WiFi connection in the Settings menu
- Connect the scanner to the desktop via USB or WiFi
- If you want to use WiFi
 - Turn on the scanner and wait for green screen to appear (successful boot up)
 - On your PC, connect directly to your scanner's WiFi Network: **Implant Scanner**
Password: **Implant00**
 - Restart the scanner if the Country Code is changed in the Settings menu
 - **Pro Tip:** Use the included WiFi dongle to simultaneously connect to your scanner and the internet

Making a scan

- Screw the posts into patient's abutments tightly with **10 N-cm** of torque. Be careful not to over tighten the posts as this would risk **DAMAGES** to the abutment's thread.
- You will be asked to calibrate the scanner, if required (calibration valid for 3 hours).
- Select the number of posts to be scanned and start scanning.
- The screen of the scanner will turn green when the scan is done.

Merge multiple scans

Use this function when the mouth is too crowded to scan all the abutments in one go



- Follow the same instructions in '*Making a Scan*' with posts that are easily visible
- Swap the posts' positions but leave at least 2 posts unchanged
- Use the 'Add Post' function in the software to do a second scan

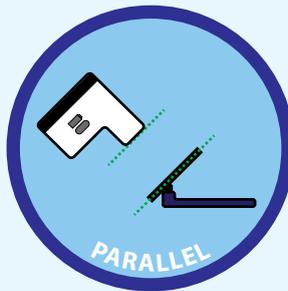
Export

- Scans can be exported into multiple STL files by clicking 'Export Abutment Meshes'
- You can choose a variety of abutment types and scan body types to suit your design needs.
- A .txt file with raw data coordinates is already saved alongside the STL

Get the best scan results from your scanner

Calibration

- Be sure to use the correct calibration plate number in the software
- Make sure all 4 big dots are lined up in the middle of both cameras when calibrating the scanner and the small dots can go off screen
- The scanner should be vertically parallel to the calibration plate
- Move the scanner slowly from side to side in a radial motion not exceeding 45° angle from the centre



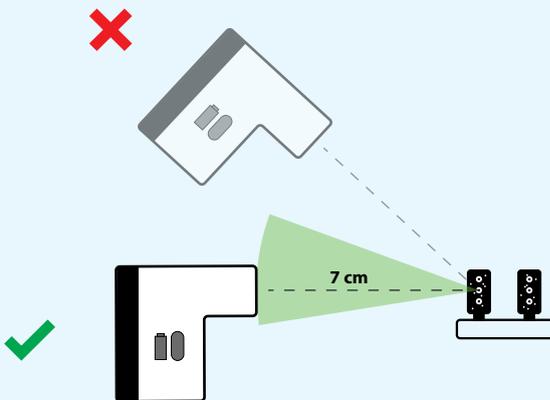
Scan condition

- The posts should be clean and dry while scanning
- The ambient light should be no brighter than 5000 lx



Scan distance and angle

- Scan close to the posts, but far enough away so that the posts are visible in both camera views (about 7cm)
- Multiple green dots should appear on the post when it is in focus
- Maintain the same scan distance throughout the scan
- Scan should not be made further than 10 cm from the first post



- Try to scan level with the posts, and during scanning try to capture the posts from a wide range of horizontal angles.
- With the trigger held, use a slow and steady scanning action from one side of the post to another. Then release the trigger for a short time to allow your computer to process the data.
- If more data is required, push the trigger again and try to capture more shots of the uncaptured posts

- Posts that need more data will be showing on the display with a dark shade.



Precaution

- Make sure that the dots on the post are not obscured, (by stitches for example).
- Do not cross-thread the post, ensure it is screwed in straight.
- Allow more than 1 minute between scans for the most accurate results. Temperature changes can cause slight accuracy loss.

Preparation

Battery precaution

- Ensure that the scanner is well charged before use.

Post & device care

- Inspect the posts for scratches or dirt before using them.
- Sterilise the posts in an autoclave at 121°C for 30 minutes.
- The exterior surface of the scanner & post holder can be cleaned with isopropyl alcohol.

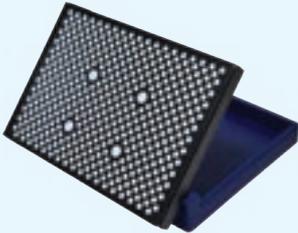
Advance settings

- Debug data allow us to troubleshoot any problems that might occur during scanning. (5 GB will save the debug data of ~10 scans)
- Use 'Tools' > 'Send debug data to Tupel' > 'Upload' to send us your debug data. It is anonymous and all data greatly helps our product development.

Practice!

- Lay posts on the table and scan them to familiarise the scanning technique and the different software functions

Accessories



Calibration Plate



**USB Cable
& WiFi Dongle**



**Dot Posts &
Scan Bodies***



Safety Glasses



**Country Specific Charger
with Extension Lead**



Instruments*

Note: Post set number can be found on the posts holder.

**Scan bodies and instruments may vary.*

Updates

Please check the Tupel3D website for software and firmware updates.

- Your Implant Scanner PC software is updated via download links available on our website
- Your scanner firmware may be updated by putting “firmware update codes” into the Implant Scanner PC software. Details on our website when available.

Specification

MK3 Scanner Specs

Scanner Size	14.2 x 9.1 x 11.4 cm
Weight	650 g
Power Consumption	15W
Battery Life	Up to 25 scans / 2.5 hours stand-by
Charge Time	2.5 hours
Battery Type	Lithium-ion
Connectivity	WiFi USB 2.0 or 3.0 (2 m type C cable included)
Illumination	3 x Green LEDs, 520nm, approx. 2W each
Display	5" Touch Screen
Camera	2 x 2MP Global Shutter
Operating Temp.	18 - 28°C
Storage Temp.	5 - 40°C (10 - 25°C for optimum battery longevity)
Tool Specification	US : 0.048" Hex Driver Europe : 1.3 mm Hex Driver

Scanning Condition

Optimum Scan Range	6 - 8 cm (lens to first post)
Max. Ambient Light	5000 lx

Scanner Accuracy*

Positional Accuracy	± 9 micrometres
Positional Repeatability	± 6 micrometres
Angular Repeatability	$\pm 0.034^\circ$ (~ 1/30 th of a degree)

*Refer to the Accuracy Report on our website to see our test conditions.

Software Functions

Auto calibration	Auto merge, enable up to 10 abutments scans per jaw
Real-time scanning feedback	STL & coordinates export
Able to scan up to 6 posts per scan	Iterative Noise Reduction for enhanced accuracy

System Requirements

Operating System	Windows 10 & 11	
GPU	Not required**	
	Minimum	Recommended
CPU	4 cores	8 cores
RAM	8 GB	16 GB

** Our software only uses CPU so you don't need a powerful GPU. We use parallel processing so using a modern CPU with many cores (8 or more) allows the fastest scanning.

Instruments Sterility

- Instruments are supplied non-sterile and must be cleaned and sterilized prior to use.
- Steam Sterilization Procedure: Place the autoclave pouch containing item to be sterilized into the autoclave and follow the specific instructions provided by the manufacturer for pouched items. In general, a pouch must be sterilized by heating for 30 minutes at 250 °F (121 °C).

Instruments Cleaning

- Reusable instruments: Rinse with cool-to-lukewarm water for two and one half minutes.
 - For all parts, place in an ultrasonic cleaner with an enzymatic detergent diluted with tap water per the manufacture's guidelines. Sonicate for 10 minutes. Rinse with tap water for three minutes.
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Implant Scanner FCC Information

Contains TX FCC ID: 2ABCB-RPI4B

Contains IC: 20953-RPI4B

This device complies with Part 15 of FCC Rules, Operation is Subject to following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received including interference that cause undesired operation

Symbol Definition



Manufactured by



Date of Manufacture



Electronic instructions for use



Universal Device Identifier

5V  3A

Direct Current



Refer to instructions manual



Catalog Number



Serial Number



Recycle

IP20

Protection against solid objects over 12 mm in size. No protection against water.



Fulfills the requirements of relevant European Product directives

Support

Further information, instructional videos, and a troubleshooting guide are available on our website.

If you have any concerns, comments or feedback, please contact us, and we will do our best to help.

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