Implant Scanner MK3

by TUPEL 3D



Designed 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; they 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 use chemicals on the Dot Posts and Calibration Plate.
- Do not disassemble the device.
- Do not allow the scanner to get damp or wet.
- Do not drop the posts into the patient's mouth. (The post is made of anodized aluminum with titanium screw).

Precautions

- Note down the post set number. You won't be able to scan with an incorrect number.
- Note down the calibration plate number. You won't get accurate scan results with an incorrect number.
- Always use the original power supply and USB cable.
- Switch off the device when not used for a long period.
- Discontinue the use of the scanner if it becomes damaged.
- 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.

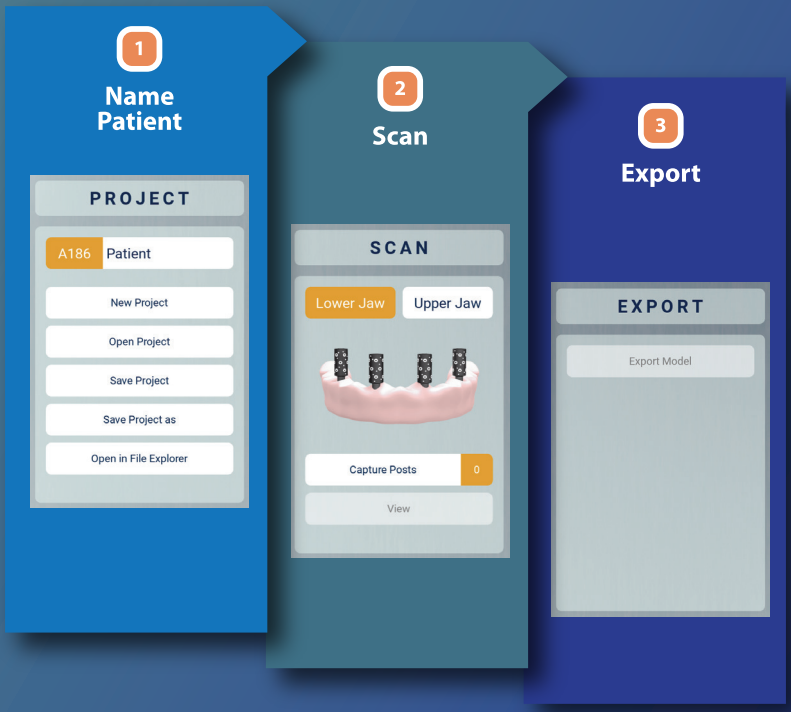
Here's how the process will work

- You'll screw in our dot posts. The posts are cylindrical so they can never face the wrong way. Each post has a unique dot pattern that the computer will recognize - 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

SCAN HERE

Quick Start Guide



Setting up your scanner

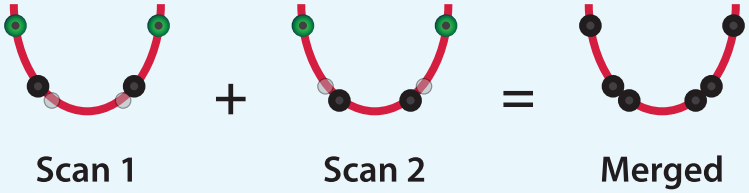
- Install the latest Implant Scanner Desktop software from https://www.tupel3d.co.uk
- You can choose USB or WiFi connection in the Settings menu
- Connect the scanner to the desktop via USB or WiFi
- If you want to use WiFi
  - Turn on the scanner and wait for green screen to appear (successful boot up)
  - On your PC, connect directly to your scanner's WiFi Network: **Implant Scanner_000XXX** Password: **Implant00**
  - **Pro Tip:** Use the included WiFi dongle to simultaneously connect to your scanner and the internet.

Making a scan

- Screw the dot post into patient's abutments and tighten it either until it is snug (finger-tight) or to a specific torque of **10 N-cm** using an appropriate tool. Do not over-tighten the posts, as this risks damage to the abutment's thread.
- You will be asked to calibrate the scanner, if required (calibration is 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.
- Ensure that at least 2 posts are left unchanged between scans. If only 2 common posts are used , they should not be adjacent to each other.
- Click **Capture More Posts** to perform additional scans.

Export

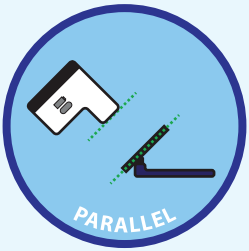
- Scans can be exported into multiple STL files by clicking **Export Model**.
- You can choose from a variety of abutment types and s can body types in the **Export Library** to suit your design needs.
- To select exports individually for each implant position: Go to **Export Model** → **Custom Export**.

Get the best scan results from your scanner

Calibration

- Be sure to use the correct calibration plate number in the software.
- Keep the scanner vertically parallel to the calibration plate to start calibration.
- 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.
- Move the scanner slowly from side to side in a radial motion, not exceeding a 45° angle from the center of the plate.

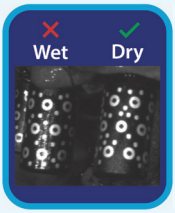






Scan condition

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

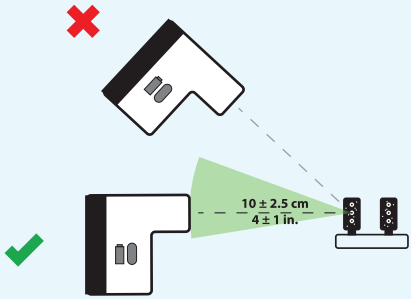


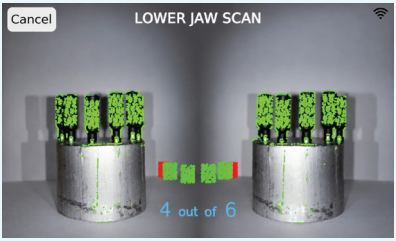
Scanning technique

- Hold the scanner about 10 ± 2.5 cm (4 ± 1 in.) away from the closest posts so that as many dot posts as possible are visible in the center of both camera views.

- When the posts are in focus, multiple green dots should appear on them in both camera views.

- Keep the scanner level and directly facing (head-on) toward the posts throughout the scan.





- Hold down the trigger and move the scanner slowly and steadily from left to right, keeping the dot posts centered in both camera views.

- After completing a scanning pass, release the trigger briefly to allow the computer to process the scan data. Fully scanned posts will appear green, while posts requiring more data will appear red.

- If any dot posts are missing or not fully captured, press the trigger again and continue scanning the missing posts using the same technique and distance.

Precautions

- 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.
- Please check the Tupel 3D website (www.tupel3d.co.uk) for the latest information and instruction.
- Verify clinical fit **before** installation of the restoration.

Preparation

Battery precaution

- Ensure that the scanner is well charged before use.

Cleaning & care

- **Scanner**
  - Clean the exterior surface of the scanner and post holder with isopropyl alcohol and a soft lint-free cloth.

- **Dot Posts**
  - Dot posts are supplied non-sterile and must be cleaned and sterilised prior to use.
  - Do not use any chlorine-based products, solvents, acids, or alkaline cleaners.
  - Place the dot posts in an ultrasonic cleaner filled with an enzymatic detergent solution of neutral pH, prepared using tap water and diluted according to the manufacturer's instructions.
  - Recommended Detergents:
    - 3M™ Rapid Multi-Enzyme Cleaner
    - EmPower™ Dual-Enzymatic Detergent
  - Sonicate for no more than 5 minutes to remove residues and contaminants. Do not soak the dot posts for extended periods. After cleaning, wipe and dry immediately.
  - Sterilization
    - Ensure all parts are completely dry and free of any detergent residues before sterilization to prevent water spots or oxidation.
    - Sterilize the dot posts in an autoclave at 121 °C (250 °F) for 30 minutes.

Cleaning & care (cont.)

- **Calibration Plate**
  - Clean the calibration plate using a microfiber cloth dampened with lukewarm water and mild soap only.
  - Do not use alcohol, chemicals, solvents, or any abrasive materials, as these may damage or alter the surface finish.

- **Warnings**
  - Not following these instructions may cause faster fading of the dot posts, making them impossible to scan accurately.
  - Not following these instructions may cause fading of calibration plate markers or make the surface too reflective, making it impossible to calibrate the scanner properly.

Send debug data to us

- Debug data helps us diagnose and resolve any issues that may occur during scanning. (Approximately 10 GB of storage will contain debug data for about 30 scans.)

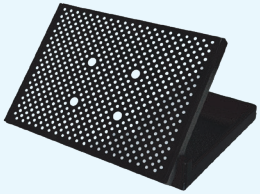
- To send your debug data:
  Go to **Settings → Debug Data → Send Debug Data to Tupel**

- All data is anonymous and used solely to improve product reliability and support ongoing development.

Practice!

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

Accessories



Calibration Plate



USB Cable
& WiFi Dongle



Dot Posts



Safety Glasses



Country Specific Charger

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

Updates

- Keeping your Implant Scanner software and firmware up to date ensures optimal performance, improved accuracy, and access to the latest features.

  Use:

  - **Settings → Update → Check for Software Updates**
    Or you can also download the latest PC software directly from the Tupel 3D website (www.tupel3d.co.uk).
  - **Settings → Update → Check for Scanner Firmware Updates**
  - **Settings → Update → Update Dot Post and Calibration Plate Database**
    This update is required when a new post set or calibration plate is used with the scanner.

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" LCD 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 micrometers**
Positional Repeatability	**± 6 micrometers**
Angular Repeatability	**± 0.034° (~ 1/30th 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.

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



Medical Device



Direct Current


Refer to instructions manual



Catalog Number



Serial Number


Recycle


Storage conditions

IP20 Protection against solid objects over 12 mm in size. No protection against water.


Fulfills the requirements of relevant European Product directives



EU authorized representative

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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