UP3D DENTAL SYSTEM

User Manual

Contents

Product Introduction

UP3D focuses on the development and manufacture of dental model scanner, CAD/CAM dental restoration software. At present, the main products are: high precision blue light model scanners, dental design software UPCAD, dental computer-aided manufacture software UPCAM.

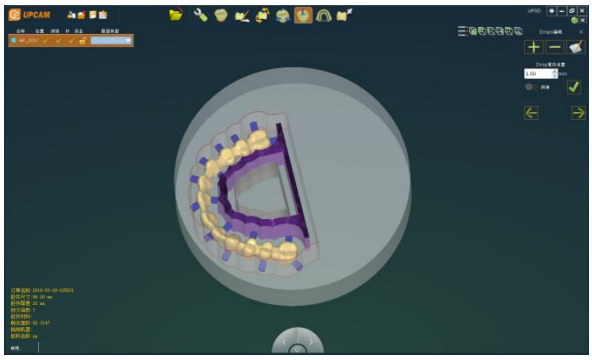
ACUBLU

UP300

UP500

UPSCAN

UPCAD



UPCAM

Ⅰ.Installation of UP3D DentalSystem

1.1 Hardware Configuration

To have a better experience, please configure your computer as recommended.

Item	Recommended
Windows system	Windows7/10,64 bit professional, Win10 is recommended
CPU	Intel Core i7 or above (or other same level CPU)
Graphics card	NVIDIA, 4G or above
Memory	8GB/16GB or above
Hard disc	Double hard disc: SSD 120G + 1TB HDD(7200R)
Main board	Please select a well-known manufacturer's main board (such as asus), include the USB 3.0 port

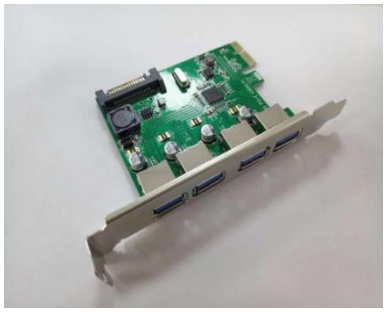
1）Check if it contains standalone graphics；

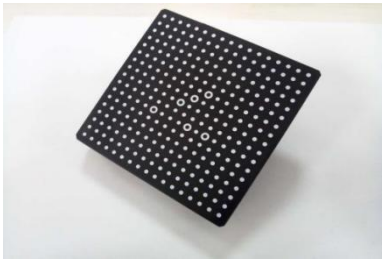
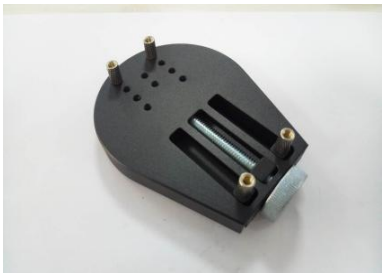
2）Check if the USB port is sufficient；

3）For better stability,it is recommended to use the brand computer, not the assembly computer；

1.2 Installation of Hardware

1.2.1 Check the scanner and accessories

Accessories	Quantity	Picture	Compatible scanners
USB cable	1		All scanners
Power cable	1		All scanners
PCI-E card	1		AcuBlu  The computer must have sufficient PCI interface
Blue Tack	1		All scanners

Shade cloth	1		All scanners
Calibration board	1	 Stone calibration board	All scanners
Plate	1	 Screw retained plate	All scanners
	1	 Regular plate	All scanners
Die plate	1	 6-hole-die plate	UP200 AcuBlu

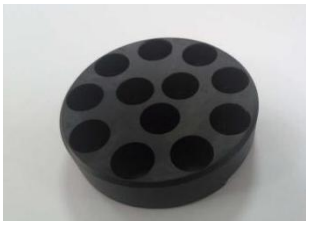
	1	 12-hole-die plate	UP300
Impression fixtures	1		UP300
Dongle	1		All scanners
User Manual	1		All scanners

Figure 1-1

1.2.2 Scanner Connection

（1）Connect USB cable of scanner to the computer's USB port；

（2）Connect the power line to the power port of scanner；

（3）Insert the UP3D dongle ;

（4）Power on the scanner；

Figure 1-2

Figure 1-3

1 ） The connection requires a ground wire to avoid damaging the internal components of the scanner！

2）Please unplug the scanner when it’s thunderstorms!

1.3 Installation of Software

Installation steps vary depending on the hardware version of the scanner!

（1）Download SCAN/CAD/CAM software package on the *http://www.up3d.cn*

Software Package: UP3D DentalSystem 2018-version number.exe

DentalManager、CAD、Viewer、DongleManager etc.

Software Package: UP3D Scanner 2018-version number.exe

Include: UPSCAN

（2）Double-click the setup, and the language selection dialog box pops up. Select the installation language

UP3D DentalSystem support multiple languages：Chinese, English, Russian, Korean, Italian, Bulgarian, Turkish etc.

（3）Click the ok button to enter the installation guide

（4）Click next, select the installation location. The default location is C:\UP3D...（Make sure there is enough free space to install）

（5）Click next, check the part you want to install, which defaults to full selection.

（6）Click next, add shortcut.

（7）Click next, create a desktop icon.

（8）Click install and start the installation.

（9）finish the installation.

After the installation, the shortcut of UP3D DentalSystem and relative software would be created on the desktop

1.4 Device Diagnostics

Used to diagnose working status of scanner and components

Diagnostic Method：

（1）connect the scanner, and turn on the scanner.

（2）Below the start menu-->UP3D-->Scanner, click the device diagnostics, enter the diagnostic interface. There are two methods:

- ✓ One key detection: check if all components drivers and connection is normal

（figure 1-4）.

✓ Manual detection: expert detection mode, check the status and parameters of all components drivers and connection（figure 1-5）.

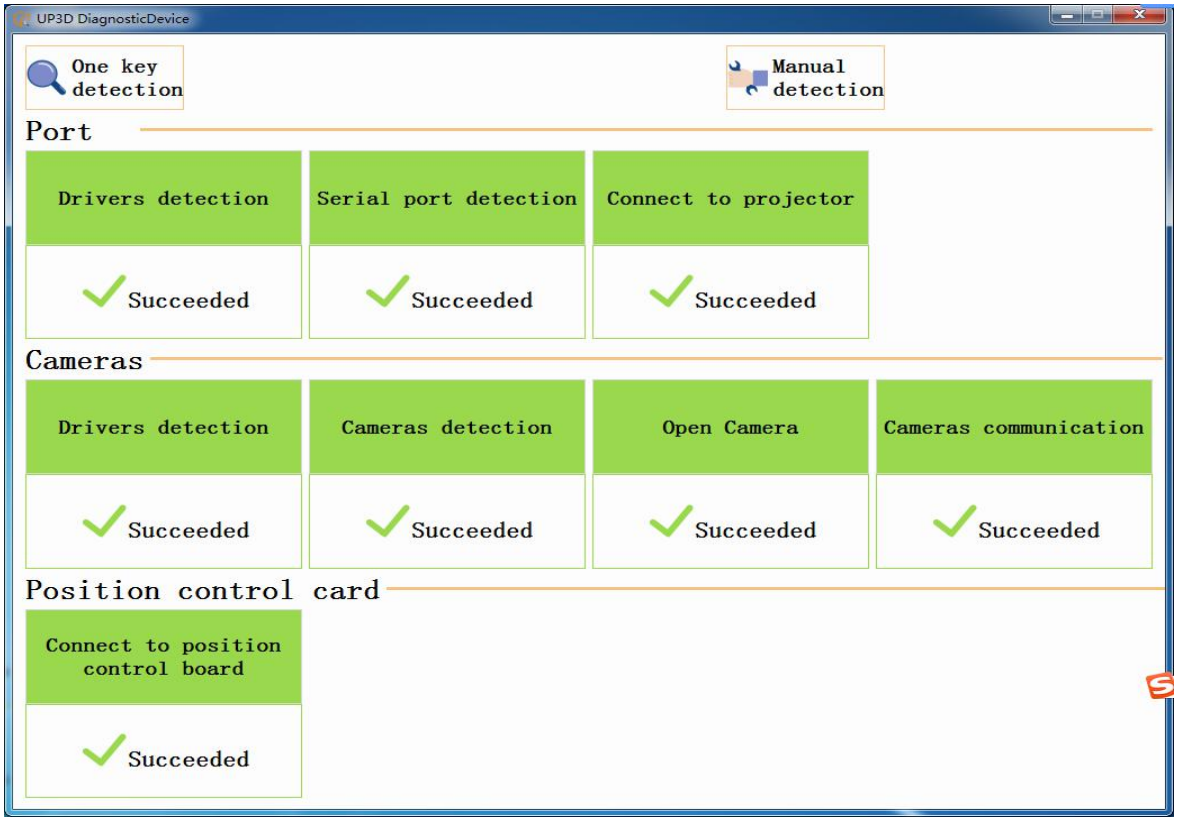


Figure 1-4

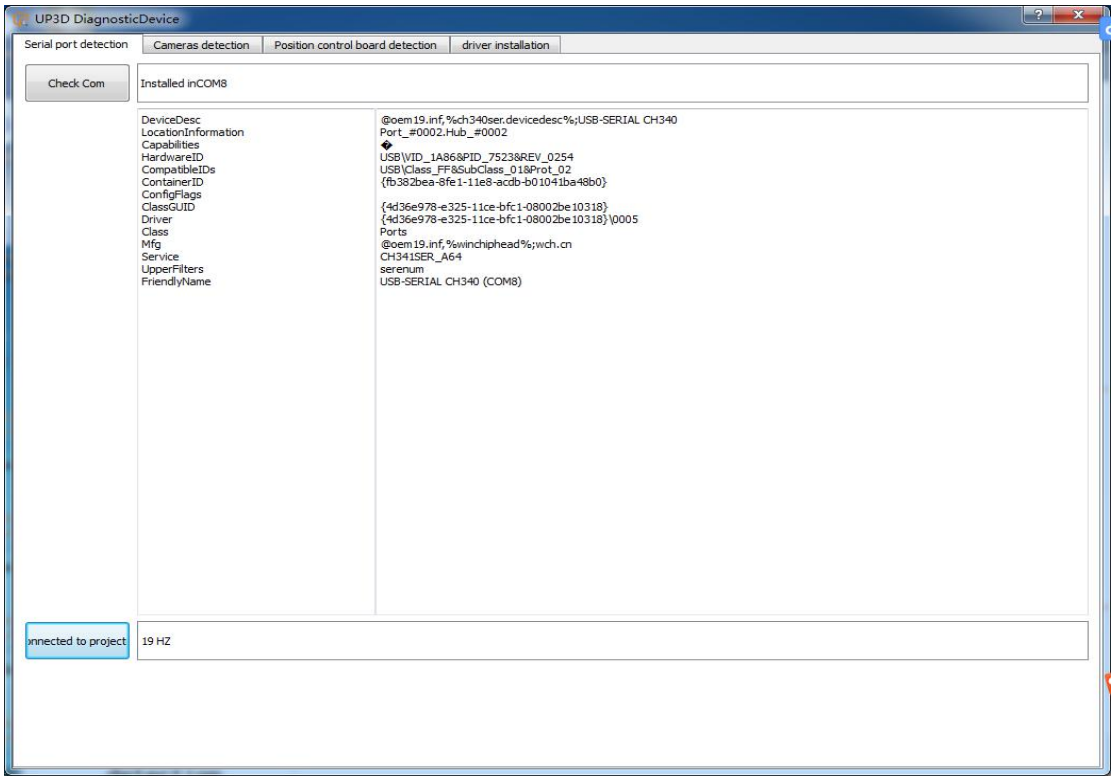


Figure 1-5

1.5 Calibration

Calibration will affect accuracy. Calibration is generally required in the following situations:

The first use of scanner; or use again after long period of time.

After opening the calibration software for the first time or starting the scan through the dental manager, the hint window (figure 1-6) will pop up. Click re-calibration.

（2）When starting calibration for the first time, if the software detects that the camera needs to initialize, then a dialog box (figure 1-7) will pop up and click the "ok" button. The software will automatically adjust the camera and enter the calibration interface again

When the scanner is used again after transportation.

When there is rough surface or abnormal data quality in the scanning process

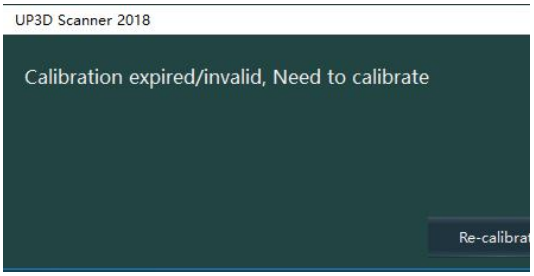


Figure 1-6

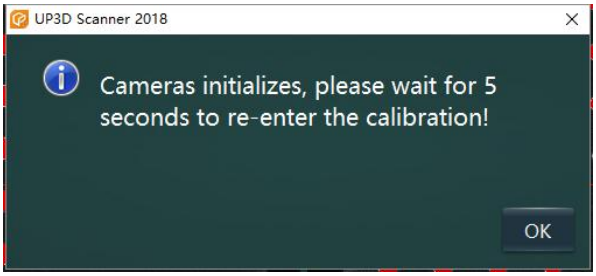


Figure 1-7

1.5.1 Step of calibration

（1）Double-click the ‘UP3D Scan Calibration’ shortcut or click the Calibrate scanner button at the dental manager interface to start the Calibration function.

（2）insert the calibration board and use the shading cloth. Click ‘start’ (figure 1-8) to enter the calibration interface

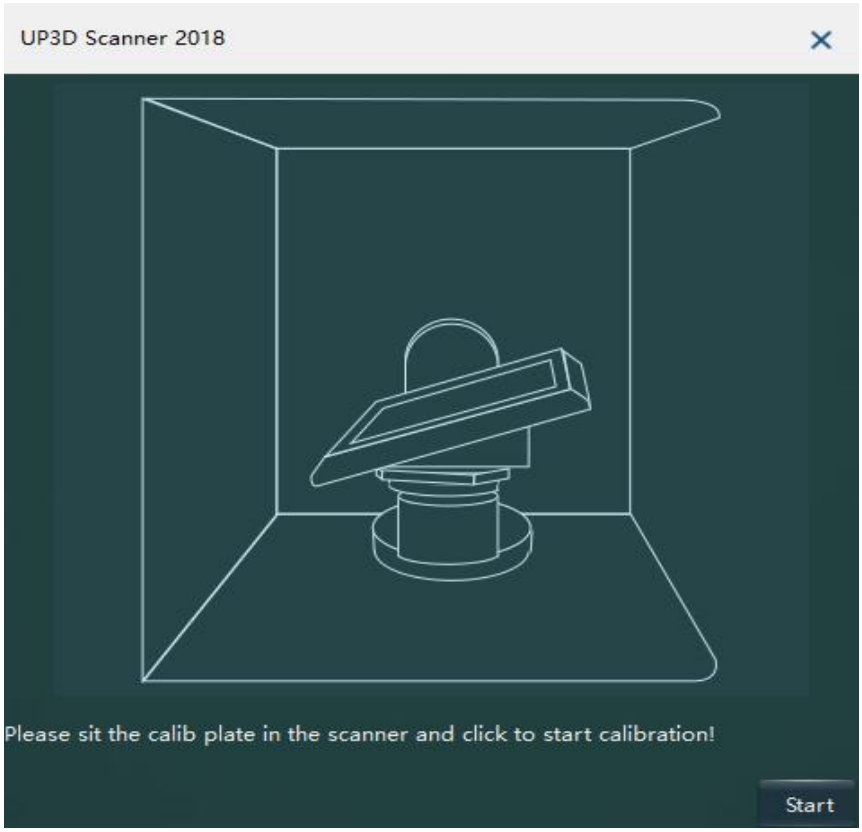


Figure 1-8 Calibration startup interface

（3）Enter calibration interface（figure1-9）

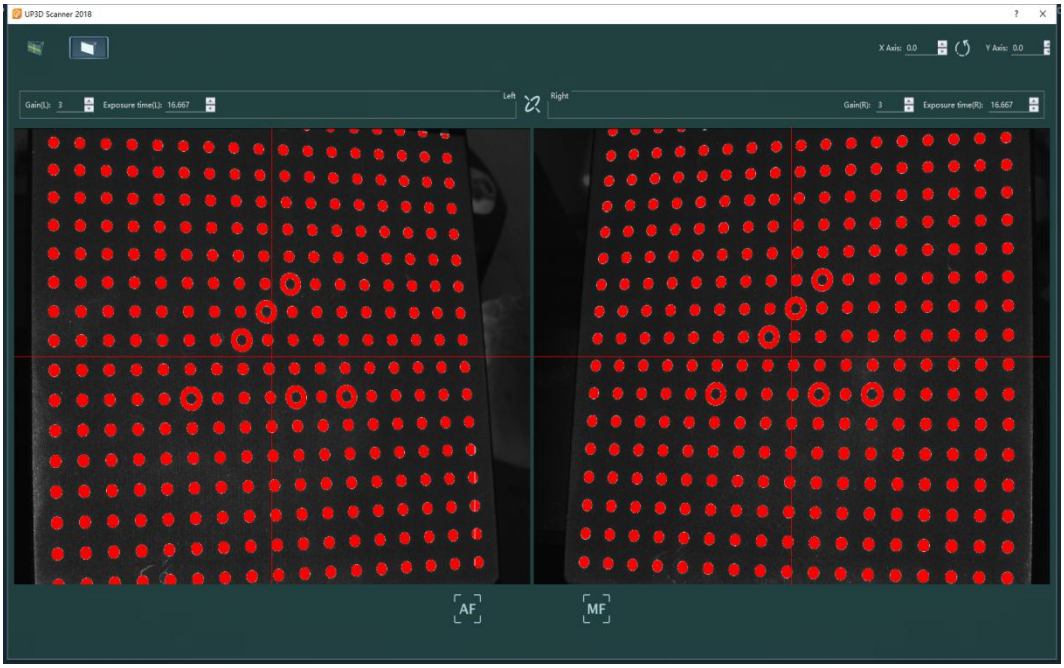


Figure 1-9 calibration interface

- Adjust the appropriate gain value and exposure time

➢ Select one of the calibration methods to calibrate, please select **AF** (automatic calibration), **MF** (manual calibration) is generally used in expert mode.

（4）Select automatic calibration method：click【AF】to start calibrate

【AF】automatic calibration: calibrate automatically

➢ After click AF, the scanner starts to calibrate automatically (figure 1-10). In this process, the calibration progress bar will be displayed at the bottom of the interface. Please wait for the camera to automatically complete the 13-step image acquisition and processing, after shows ‘calibration successful’, click ‘ok’ (figure 1-11), and exit the calibration

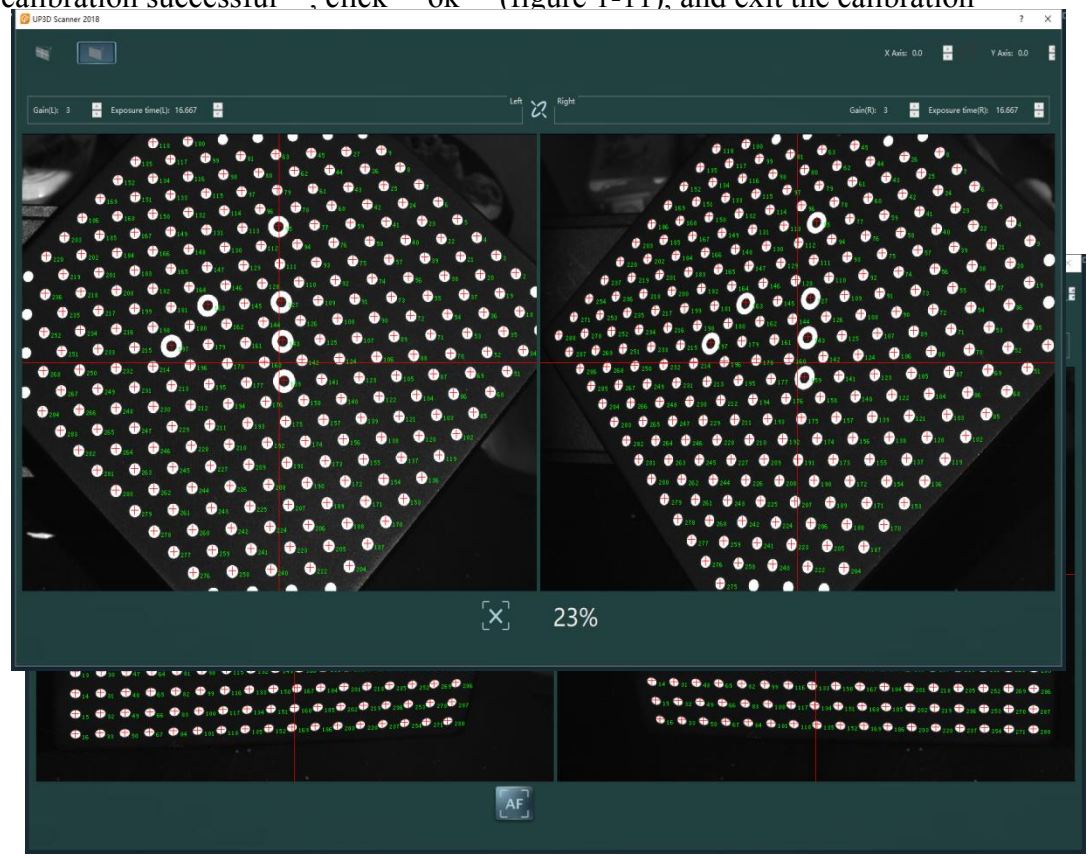


Figure 1-11 AF interface

（5）Select manual calibration method

Manual calibration is generally used in expert mode, where users could check the image acquisition status of each step and display the calibration precision after the calibration is completed

【MF】manual calibration:

Click MF to enter the manual calibration interface, and click 【next】 button to perform the acquisition. After 13 steps, the camera image acquisition is completed, the pop-up dialog box shows the camera calibration and axis calibration results (figure 1-12) and click the OK button to complete the calibration

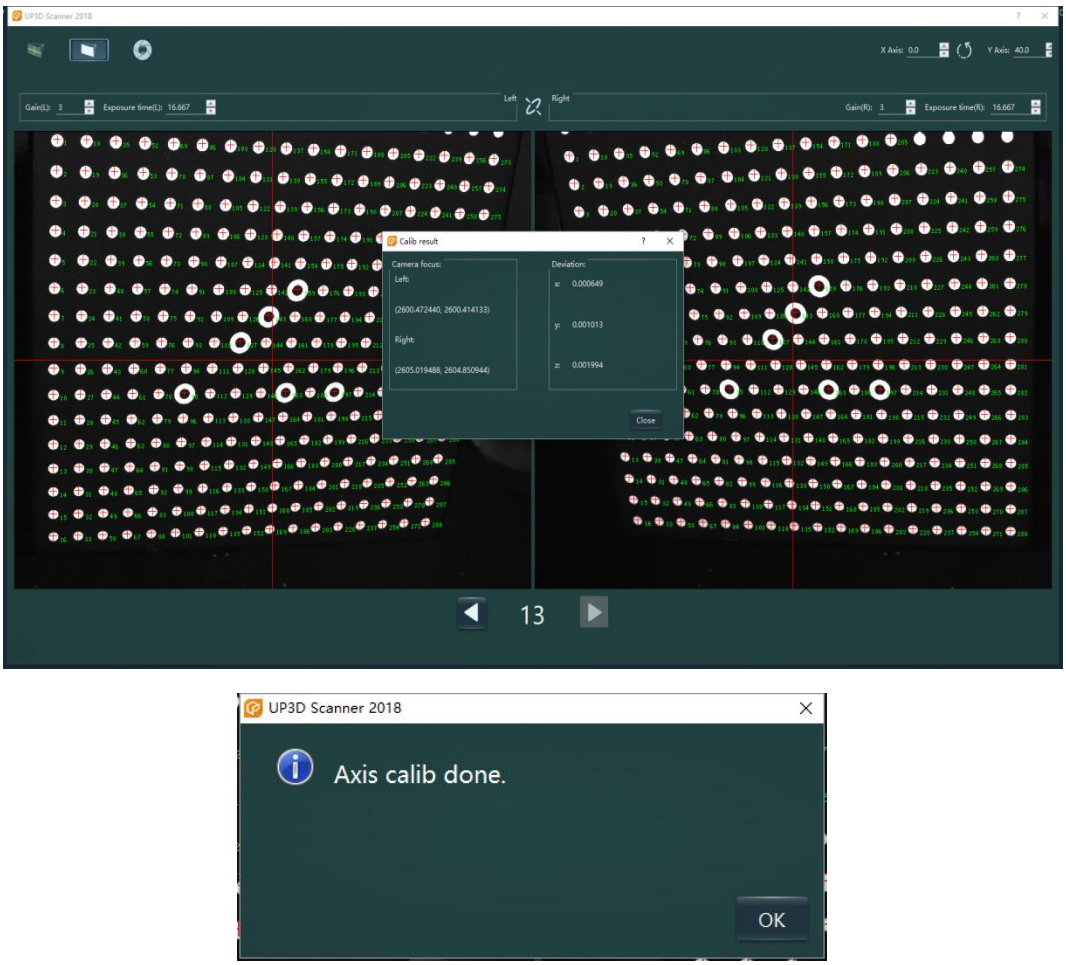


Figure1-12 The interface of manual calibration finishing

【Recollection】： when the image acquisition failed, left click “recollection” or “F5” to recollect. Please adjust the gain value and exposure time manually when recollect.

Ⅱ. UPDentalManager

UPDentalManager, mainly provides the new order creating and management, order query and other functions

2.1 Main interface

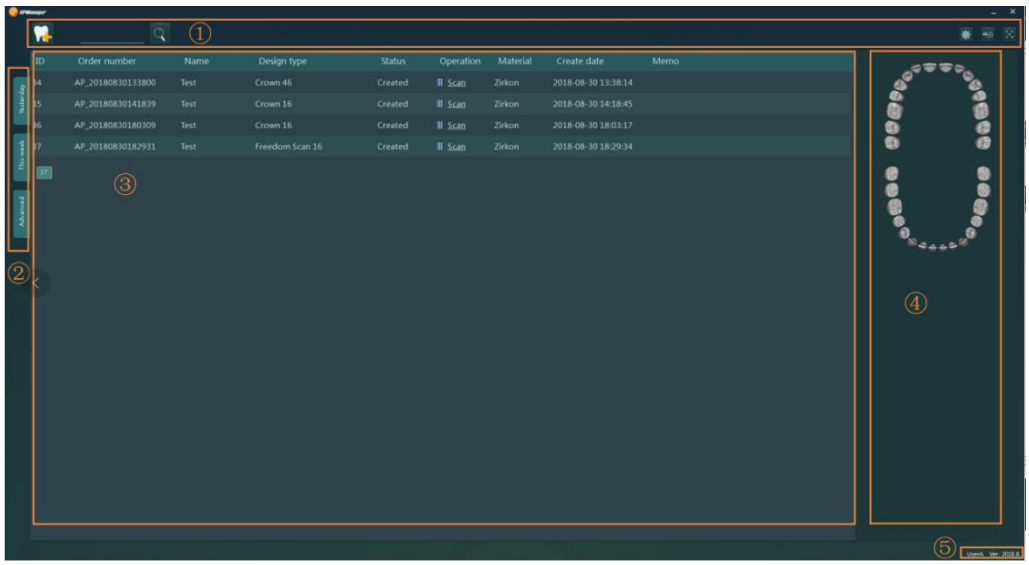


Figure 2-1

The main interface consists of the following parts(Figure 2-1)：

1.Menu bar

2.Order query

3.Order list

4.Design information

5.Prompt bar

The menu bar includes the following functions

New order button: Build the new order

Fuzzy search: Used to search for orders, searching for orders containing the specified text information in order No., name, and memo.

System setting: set the parameters of UPDentalSystem, CAD/SCAN etc.

Dongle management: check and update the dongle license

Calibrate the scanner: start the calibration

（2）Order query

Search the orders from yesterday or this week

Advanced Search:(figure 2-2), searched by date range or by customer

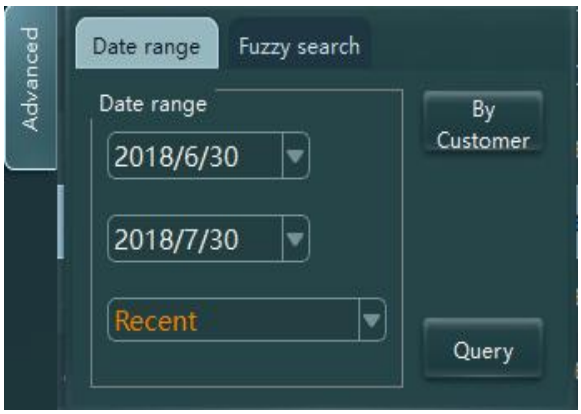


Figure 2-2

(3) Order list

Display the queried order list. The basic information of every order could be checked here directly, such as: ID number, name, date, design type, status etc.

Operation：

Single click：click on the order management list to displayed the tooth number and design type of current order, also could view the model in real time at the information area (right bottom corner)

Right click：select the order and right click or right click at the blank area, pops up the menu as figure2-3.

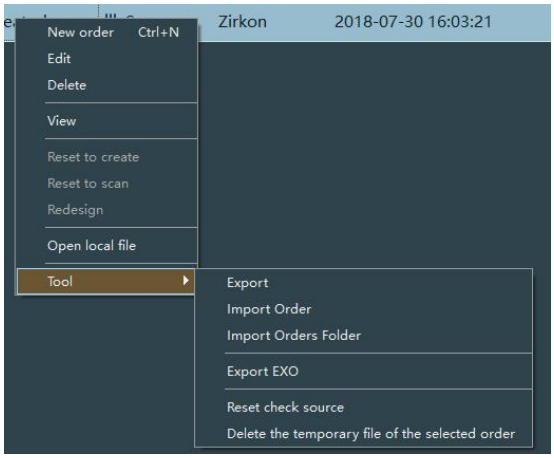


Figure 2-3

（4）Design information

Tooth diagram：display the tooth number or design type of current order on the tooth diagram

Model viewer: preview the scan model and design model of current order

（5）Prompt

Dongle license information: display the dongle license information, click to start the dongle management;

User: display the current user information, click to start the user management;

2.2 Order Management

(1) 3 ways to create a new order

- ✓ Click “create” icon
- ✓ Right click and select “Create a new order”
- ✓ Keyboard shortcut: Ctrl+ N

Edit orders: modify order information.

When editing an order, please pay attention to the following:

1） Do not modify “model source”.

2）After saving modifiction,it will be prompted ‘re-scan’ or ‘import order?’

The key information includes: add or delete tooth, modify design type, teeth design parameters, scan settings.

(2) View the order: check the details of the order.

(3) Delete Order: delete the specified order from the order library. When deleting the order, it will pop up “Delete completely” or “Keep the data”.

Delete completely: completely remove the order from the order library and delete the model file stored on the disk.

Keep the data：orders are only deleted from the order library, but the model files on the disk are still kept.

(4) Rest order: change order status

Reset to design: The order that have been designed or milled, revert to the state when the scan was completed , remodeling

Reset to create: an order that has been scanned, designed, or processed, reverted to the state when the creation was completed, and rescanned;

(5) Open local file: Open the directory where the order is located.The folder contains scanned data and design data.

(6) Order import and export

Export Order: Export order information and order model file to “uorder2 file” in the order library. You can back up any orders you want. Uoder2 file can be imported into UPDentalManager by “Import Order” function.

Import Order : import “uorder2” order into UPDentalManager.

Export exocad project : UP3D order can be exported to exocad project files so you can import to Exocad for design easily

(7) Reset the checkout source: as long as the data source computer user name is changed when the order is checked out, in order to avoid the data source computer name does not match the computer IP, so it needs to be resetted the checkout source. But resetting the checkout source is only for the current order.

(8) Delete selected order temporary data: Delete the temporary scanned data.

(10) Order Search

Fuzzy search: in the search box of the menu bar, input directly content that you want to search and click “Enter”. The search range can be selected from the fuzzy search options in the advanced menu of the search area, including the order number, Memo, and Name.

Quick Search: click ‘yesterday’ or ‘This week’ icons. All orders for yesterday or this week are displayed in the order list.

Advanced Search:

According to date —— After selecting the date range, click “search” icon; All orders during the date range will be displayed in the order list.

According to precise time: If you select ‘today’ in the drop down list, click “search” icon; All orders for today are displayed in the order list.

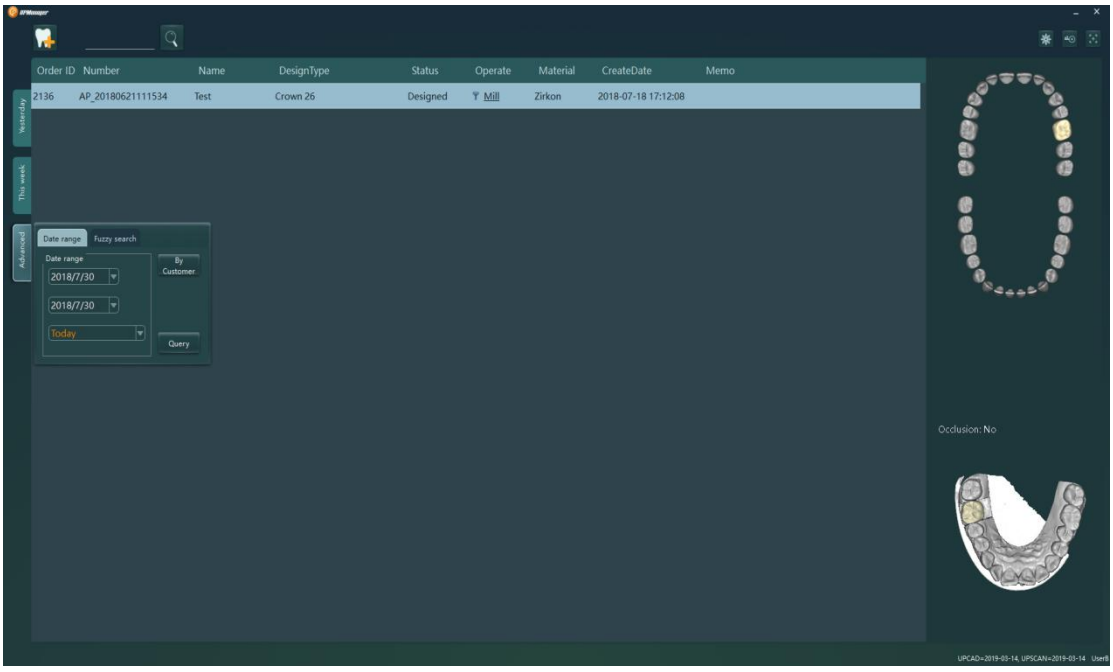


Figure 2-4

According to status: mouse moving over the status column title bar of the order, select ‘unscanned’, ‘scanned’ or ‘designed’ in the pop-up window to display all orders currently selected.

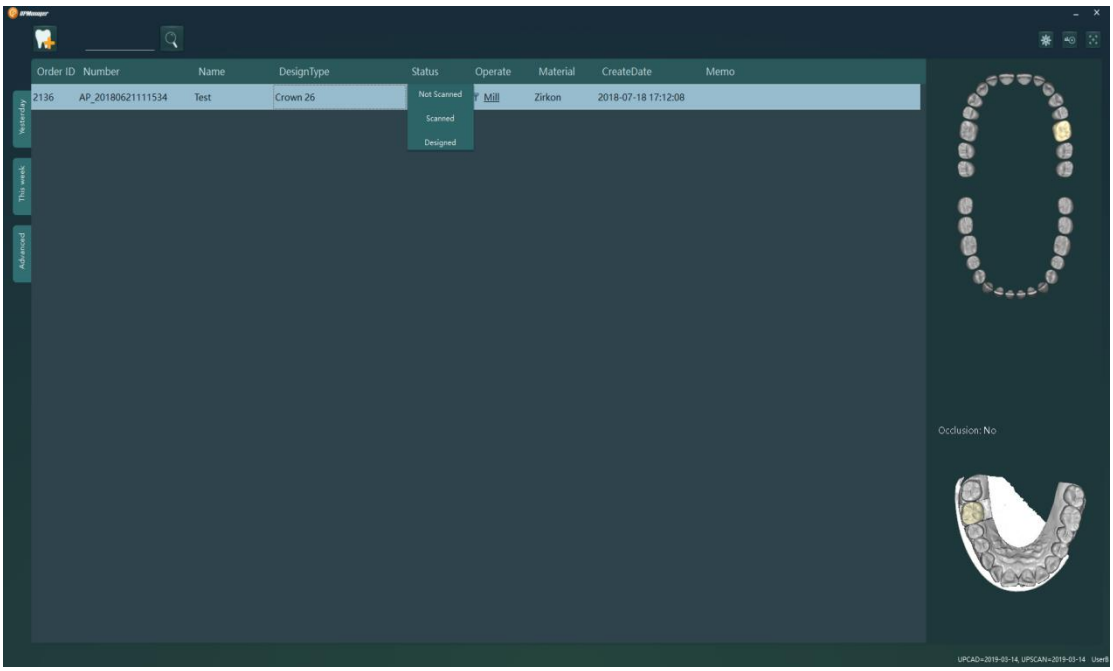


Figure 2-5

(11) Enter Scan and Design

Double-click ‘scan’ or ‘design’ icon. It will start to scan or design according to current status.

(12) Other Functions

Calibrate Scanner: Click ‘Calibrate’ icon,it will enter calibrate interface.

Select column function: Right click in the title bar of the order list,select column in the pop-up window,select ‘Hide’ or ‘Show’ column.(as shown in the figure 2-6)

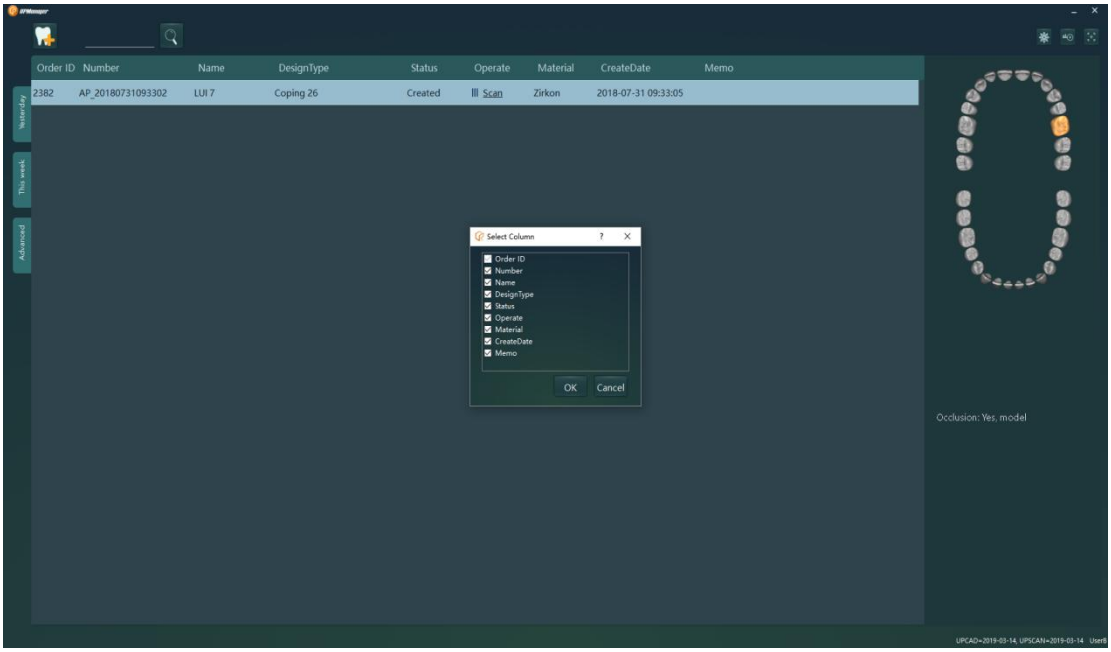


figure **2-6**

Sharing and checkout function

Applicable scenario: For computer A, it is only responsible for scanning orders. (ie,the scanned model files are in the A’s disk), the other computers B, C and D are just responsible for designing orders.

The order server IP of computer B,C and D are set as IP of computer A by ‘CAD Configuration’.

When opening UPDentalManager in the Computer B, C and D, it will display all created orders by computer A. Double-click the order, it will download model files automatically from computer A to current computer for designing.

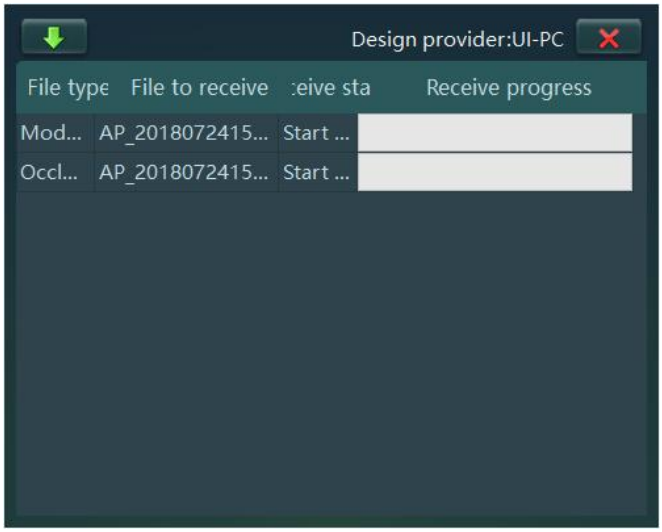


Figure 2-7

2.3 UPDentalManager Configuration

2.3.1 General setting

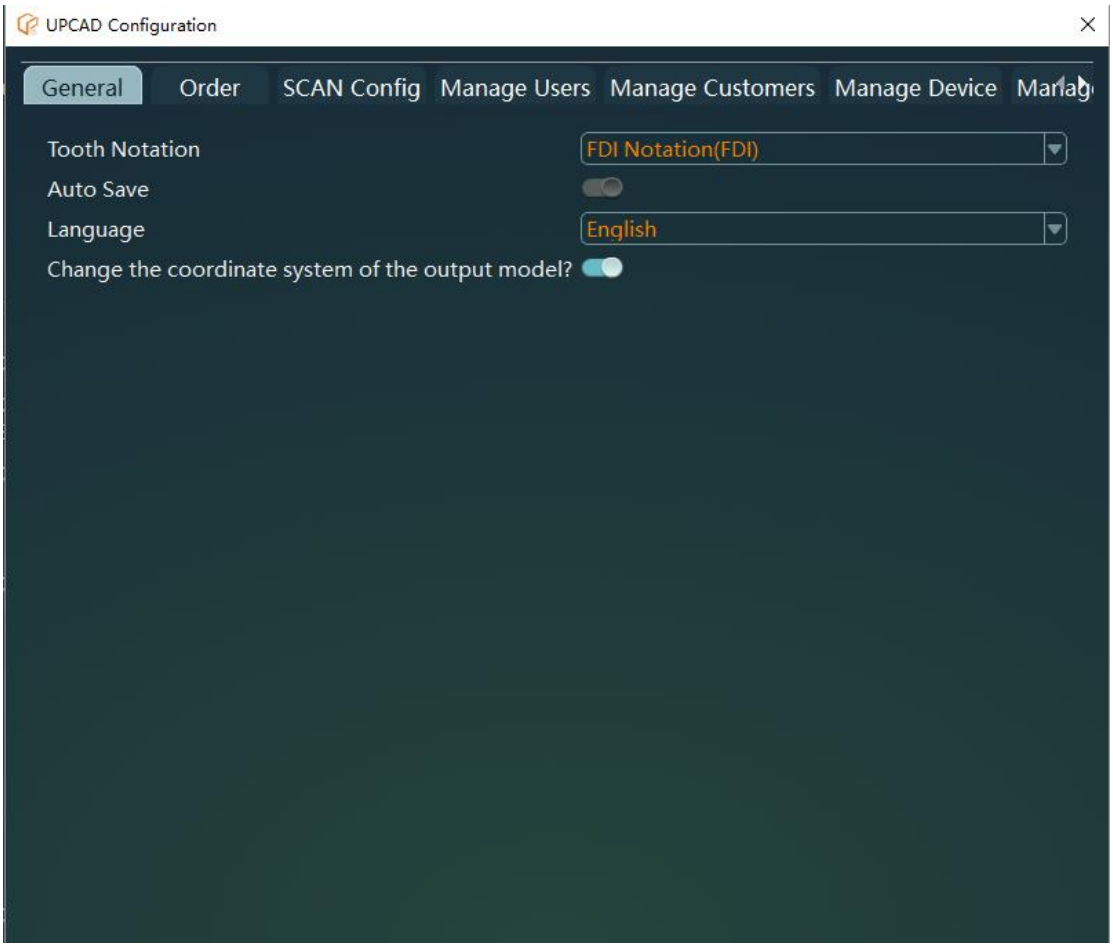


Figure 2-8

(1) Tooth Notation: The default is the FDI Notation and it can be changed.

(2) Save orders automatically: When you are designing, the order design files will be saved automatically.

(3) Language: The default language when installed.

(4) Whether to transform the coordinate axis system of the output model: whether the coordinate system is transformed when the UPCAD completes the output model

2.3.2 UPCAD Configuration

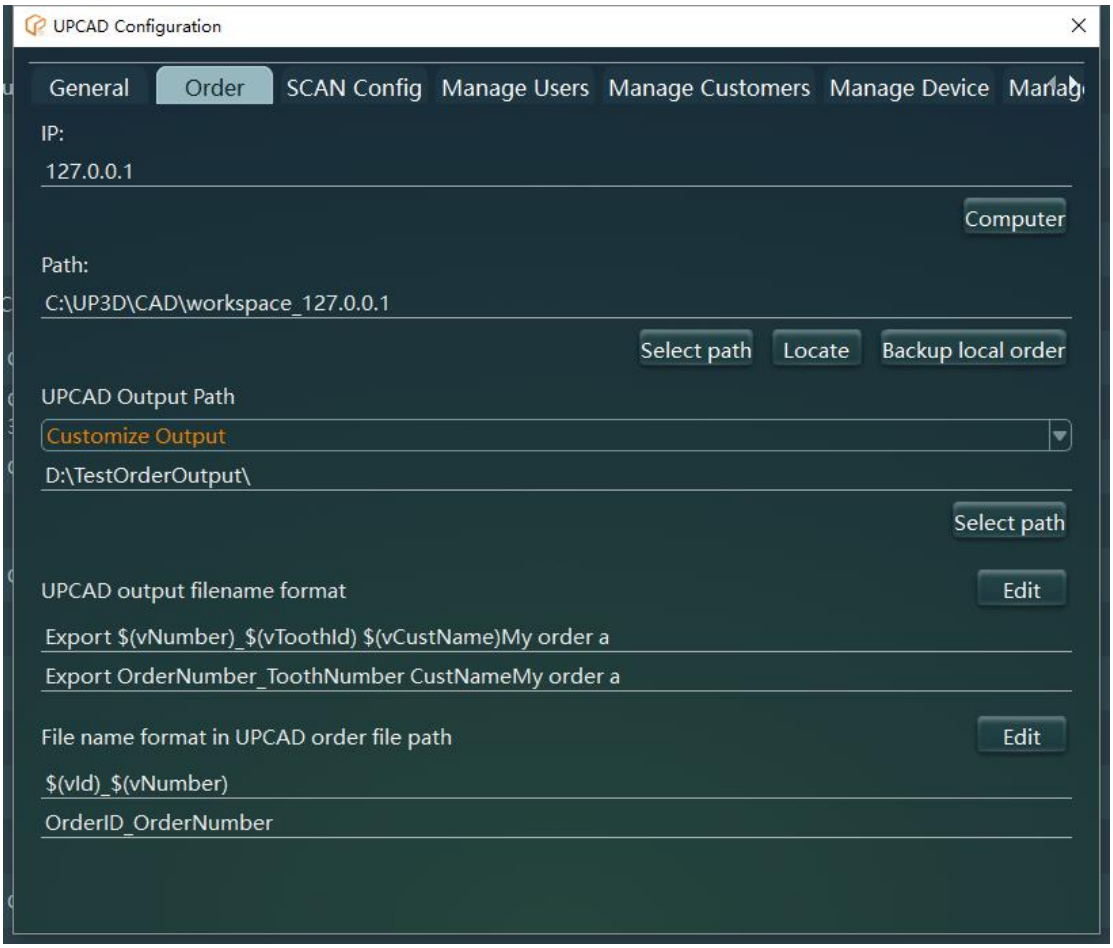


Figure 2-9

(1) Order serve IP address: When using orders in this computer, click current computer. If you need sharing orders function, please input a IP address of computer that providing orders (IPv4); Reference: Checkout function.

(2) Orders storage path: The folder location of the scanned and designed model.

(3) UPCAD output path: The folder location of designed model.

Default Output Order: outputs in <orders storage path:\OutputFile>.

Custom Output: The output location of designed model is defined by the user.

(4) UPCAD output filename format: The file name used to personalize the output model (Figure 2-10). You can type the file name directly, or double-click in the list to select the information contained in the output file name.

Note: When modifying, please make sure that the folder name does not conflict with the same name

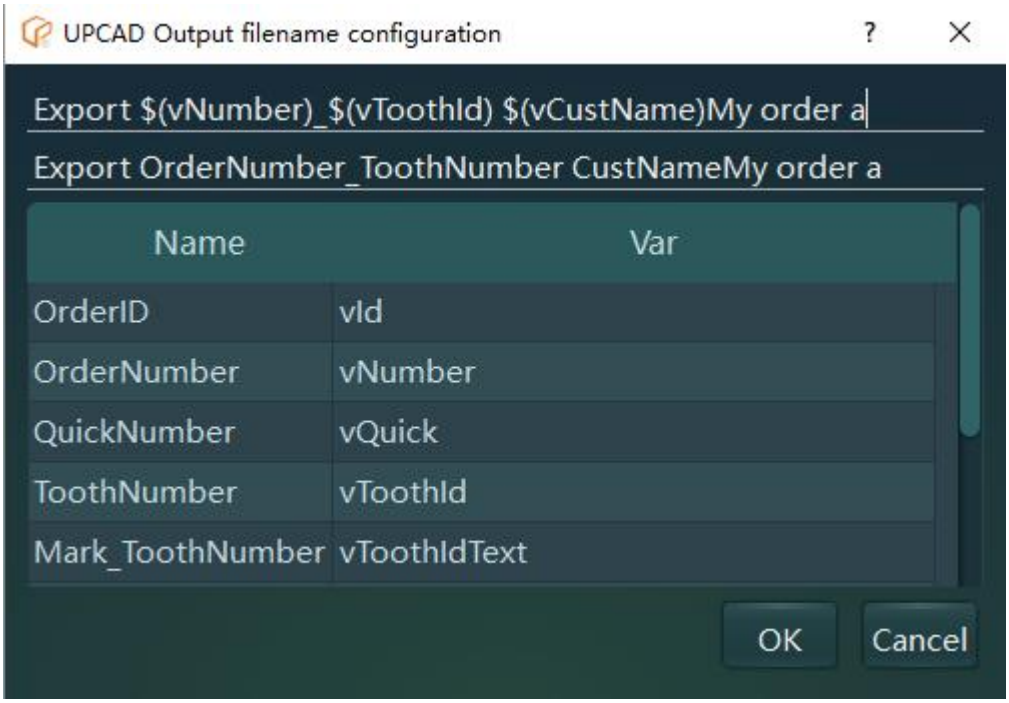


Figure 2-10

(5) UPCAD order path filename format: folder names used to personalize the storage order (Figure 2-11)

Note: When you are modifying, please make sure that the folder name does not conflict with the same name.

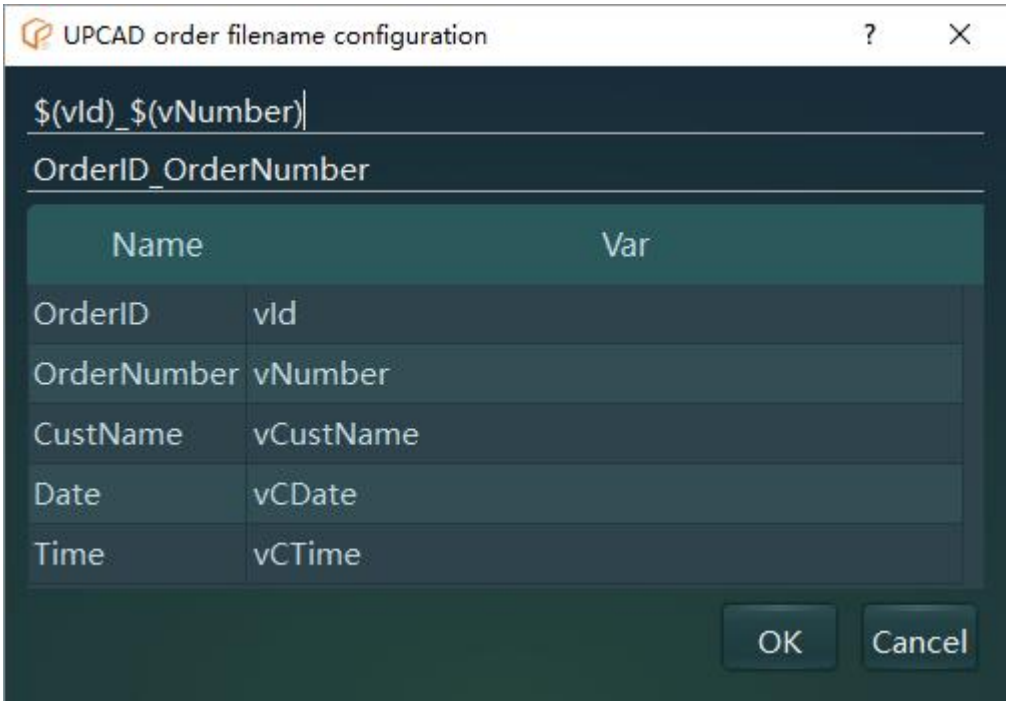


Figure 2-11

2.3.3 UPSCAN Configuration

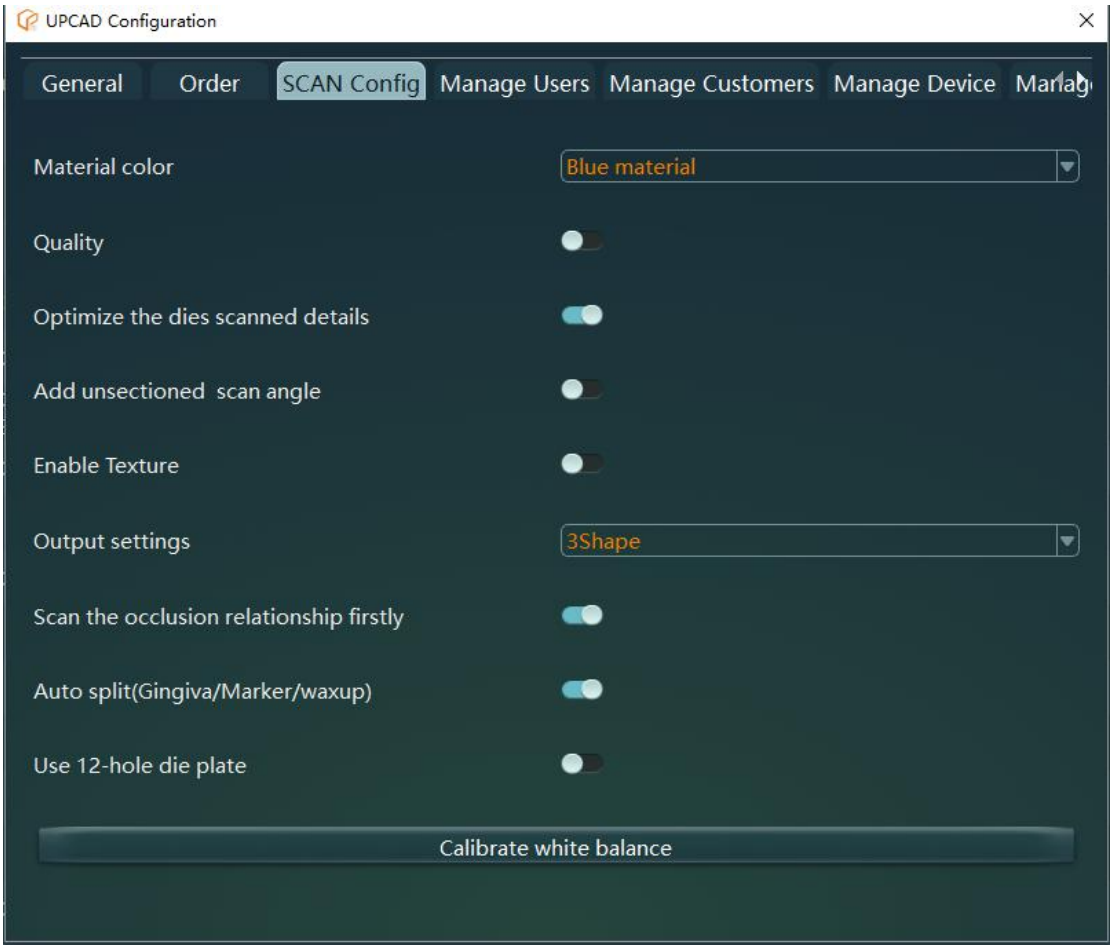


Figure 2-12

Used to configure the scanning and output parameters of the scanner.

(1) Material color: You can choose different projecting colors depending on your model color.

When the model can not be scanned of current projecting color (because of reflection-the blue light can not scan the blue area of the model),you can choose different projecting color to scan the different color models. Now there is 3 projecting colors available: blue light, red light and white light.

(2) Quality

When scanning arch and occlusion we suggest you open the ‘quality’.

The default status is off. After ‘quality’ is on, it will get more accurate data.

(3) Optimize the scanned details

When scanning the multi-dies, if you turn it on, it will enhance data quality of feature areas such as the neck region;The default status is on.

(4) Add unsectioned scan angle

Whether to add the scan angles when scanning an unsectioned model;The default status is off

(5) Enable Texture

Turn it on if you need to scan the texture or pencil line of the model;The default status is off.

(6) Output settings

When scanning completely and export the model data, transform the coordinate system of the model by configuration. Currently supported output settings include:3Shape, exocad, EGS, UPCAD, general CAD and Digilea.

（7）Scan the occlusion relationship firstly

Occlusion scan (defaulted) is placed into the first step of the scan. If not chosen, the occlusion scan is placed into the final step when scanning.

(8)Auto split (Gingiva/Scan body/Wax-up)

When the Gingiva/Scan body/Wax-up is aligned, the software automatically calculates the data of Gingiva/Scan body/Wax-up and automatically deletes the other spare scan data ;The default status is on.

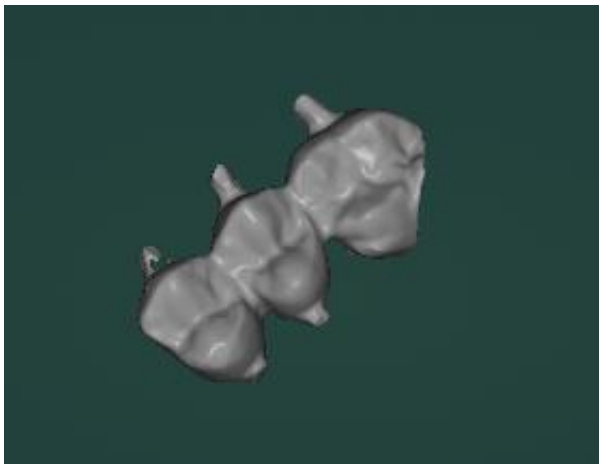


Figure 2-13

If you don’t choose it, it will manually separate the Gingiva/Scan body/Wax-up. (Note: In the output step, manually delete the scan data except the Gingiva/Scan body/Wax-up by the editing tool.)

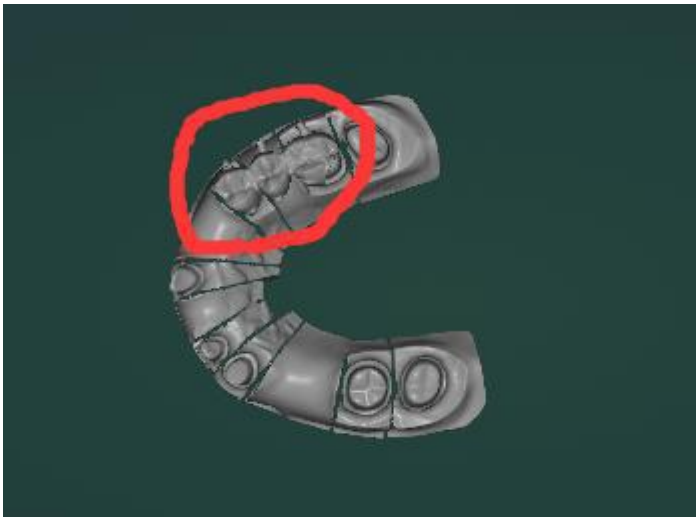


Figure 2-14

(9) Use 6-hole-die plate, this function is only available for AcuBlu dental scanner;
Use 12-hole-die plate,this function is only available for UP300 dental scanner.
(10) Calibrate white balance

When to scan the color texture, you need to calibrate the white balance. First enter the scanning interface, put a blank sheet of paper in the scanning chamber, and click [Calibrate White Balance] to complete the calibration.

2.3.4 Manage Users

DentalManager can be used by one technician,and also can be used by other technicians at the same time. For this point,different customers can be assigned to each technician.

Multi-user functions are generally used for scanning on one computer and designing on other multiple computers (refer to order checkout function).

In Manage Users, you can create new, edit, and delete users as needed.(Figure 2-15)

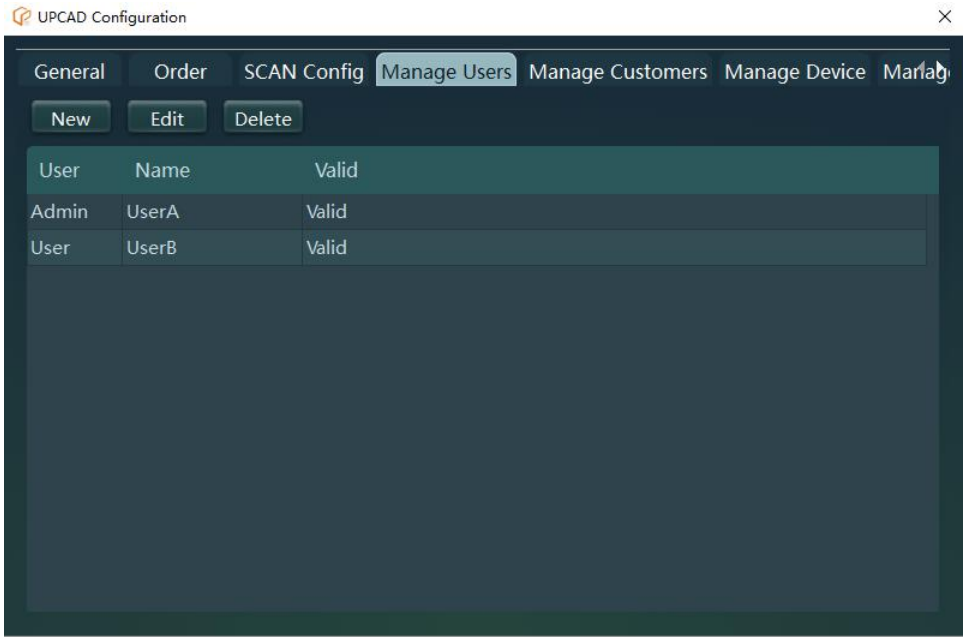


Figure 2-15

Manage Users can also be initiated by clicking the UserA in the information bar.(Figure2-16)

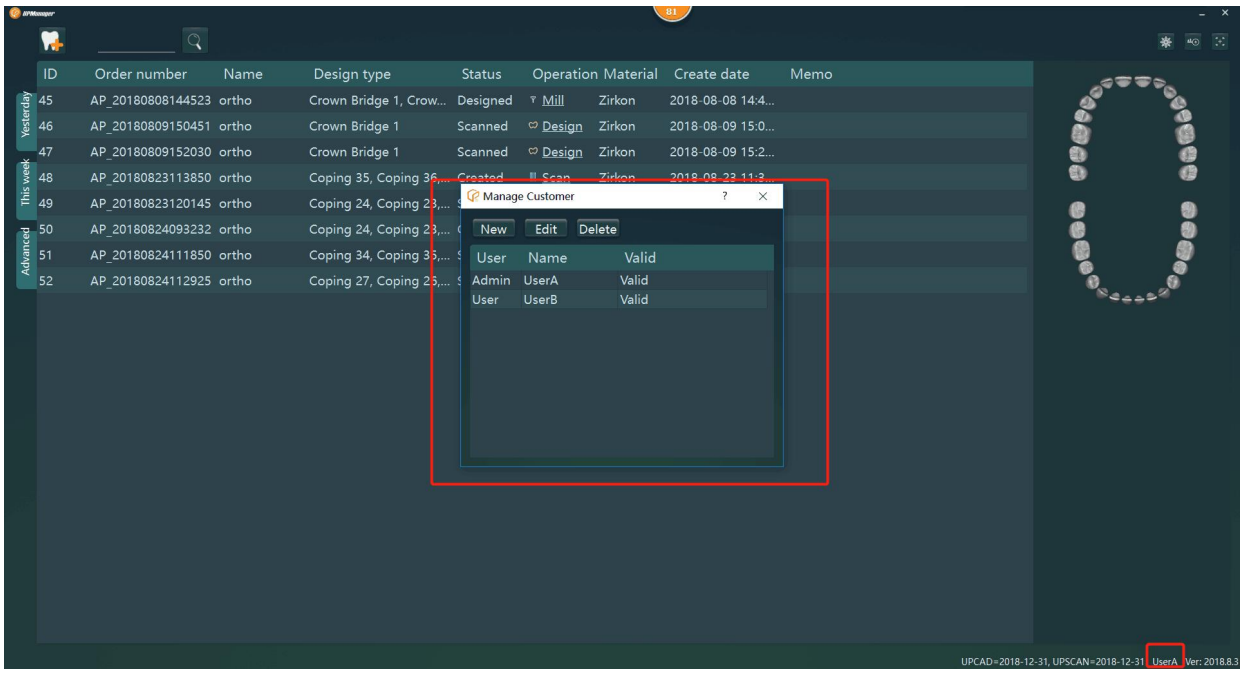

ID
Order number
Name
Design type
Status
Operation
Material
Create date
Memo
45 AP_20180808144523 ortho Crown Bridge 1, Crow... Designed Mill Zirkon 2018-08-08 14:4...
46 AP_20180809150451 ortho Crown Bridge 1 Scanned Design Zirkon 2018-08-09 15:0...
47 AP_20180809152030 ortho Crown Bridge 1 Scanned Design Zirkon 2018-08-09 15:2...
48 AP_20180823113850 ortho Coping 35, Coping 36,...
49 AP_20180823120145 ortho Coping 24, Coping 23,...
50 AP_20180824093232 ortho Coping 24, Coping 23,...
51 AP_20180824111850 ortho Coping 34, Coping 35,...
52 AP_20180824112925 ortho Coping 27, Coping 23,...
Yesterday
This week
Advanced
Manage Customer
New
Edit
Delete
User
Name
Valid
Admin UserA Valid
User UserB Valid
UPCAD=2018-12-31, UPSCAN=2018-12-31
UserA
Ver: 2018.8.3

Figure 2-16

III.Authorization Management

Please be sure that the dongle is connected to the USB port of your computer correctly before starting UPSCAN/UPCAD/UPCAM software, it will automatically detect whether the software has connected the dongle and verify that the authorization module and permissions when it starts. The software will not open if it has not be connected or the permissions are incorrect.

You can open the UP3D Dongle Management by clicking the dongle button in the menu of the order management or by clicking the dongle information in the information bar.

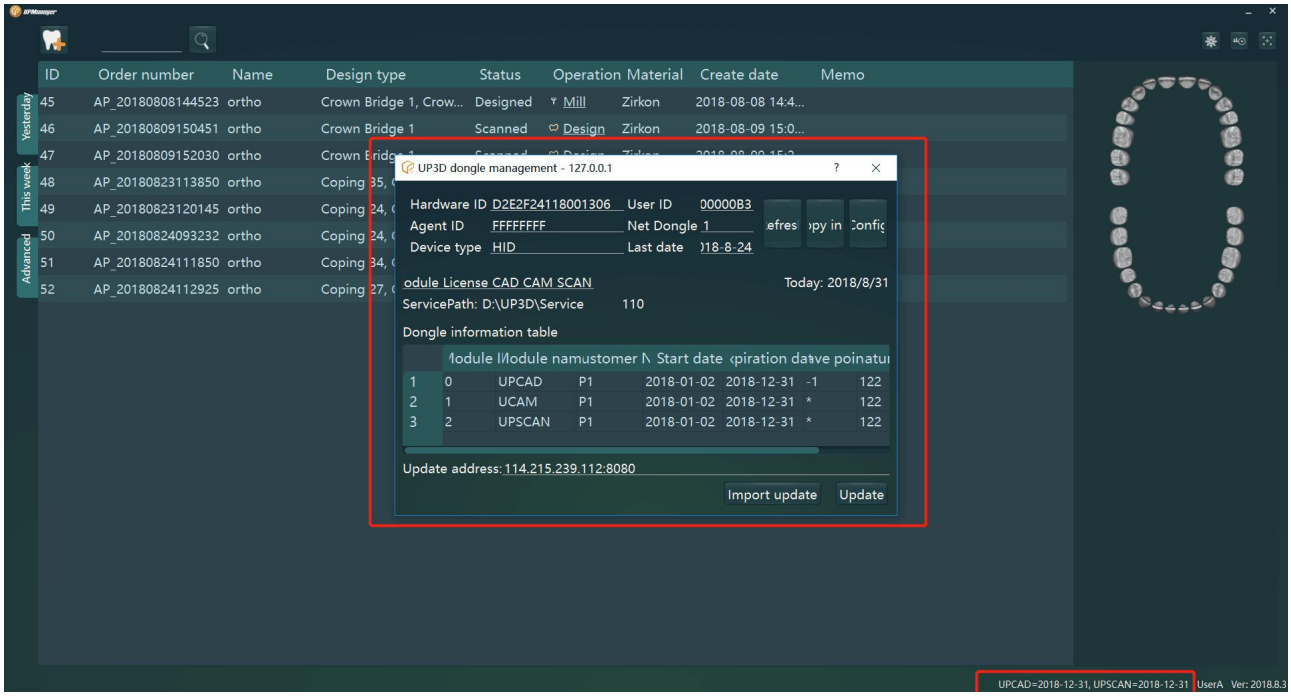


Figure 3-1

Authorization Management provides the following features:

1.You can check the dongle information (Hardware ID, User ID, etc.)

2.You can check product authorization information (authorization module, authorization period, etc.)

3.You can update dongle online or locally.

Ⅳ.Model Scanning

4.1 Types of dental scanners

	**ACUBLU** Application scope: gypsum, bite wax, scan body, orthodontics, unsectioned model, 6- hole multi-dies
	**UP300** Application scope: gypsum, impression, bite wax, scan body, color texture, orthodontics, unsectioned model, all-in-one model, 12-hole multi-dies
	**UP500 High precision** Application scope: gypsum, impression, bite wax, scan body, color texture, orthodontics, unsectioned model, multi-dies
	**UP360 Impression Scanner** Application scope: One time impression

4.2 Use of accessories

4.2.1 Die scan

scanning with multi-dies plate

scanning on the dental arch

4.2.2 Gypsum scan

Full arch scan

Jaw arch+wax-bite scan

All-in -one scanning

Partial jaw arch scan

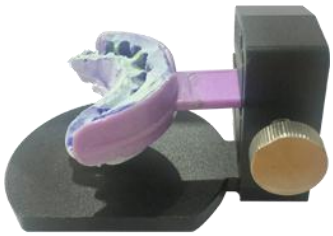
Occlusion scanning without articulator

Side-lay articulator scan

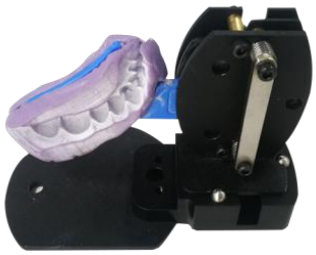
4.2.3 Impression scan

Single side impression scan

Impression wax-bite scan

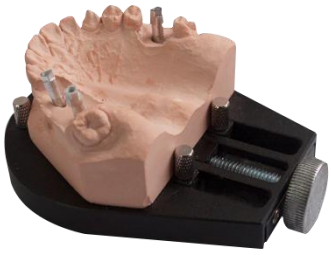


Triple tray impression scan



Triple tray impression partial scan

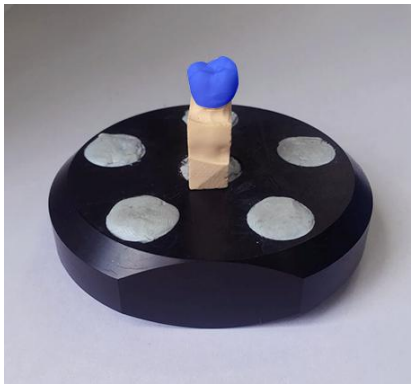
4.2.4 Implant scan body scanning



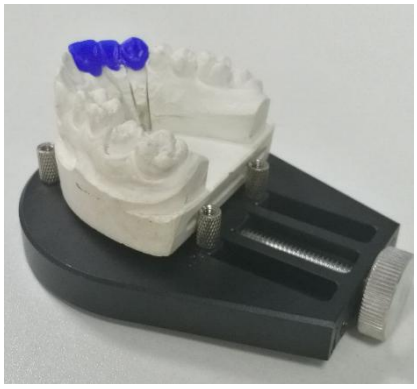
Scan body scan

Gingiva scan

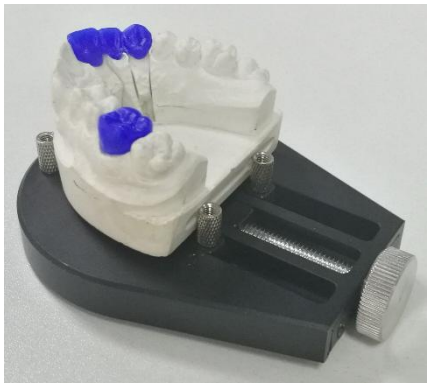
4.2.5 Wax-up scanning



Single wax-up scan



Wax-up bridge scan



Combined wax-up scan

Wax-up bottom scan

4.3 Main interface

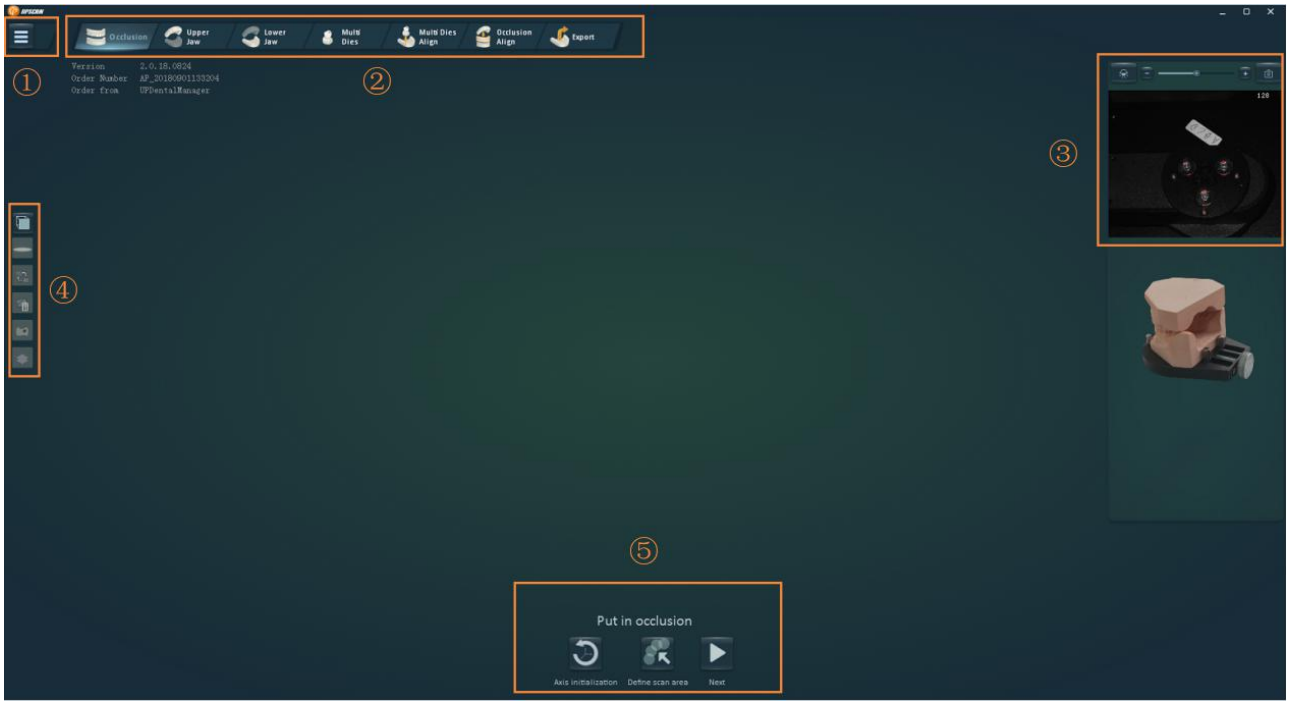


Figure4-1

Main interface components: ①Advanced setting ②Navigation ③Camera panel ④Tools ⑤Application panel

4.3.1 Application panel

Different buttons are displayed in different scanning steps in Application panel, including previous, next, scan, and add scan.

(1) 【previous】

Function: Switch to the previous step

Operation: Click 【Previous】 or press the 【Backspace】 button to return to the previous step.

(2) 【next】

Function: Go to next step

Operation: After prompted to put into the model, click 【Next】or press the Enter key to start scanning. Click 【Next】or press the Enter key to proceed to the next process after the scan is completed.

(3) 【Stop】

Function: Stop the ongoing scan

Operation: Click【Stop】

（4）【Select the scanning area】

Function: Set the scan height and scan area

Operation:-Click 【Front View】, Keep pressing the mouse left button , then drag the red arrow up and down, the area below the arrow will not be scanned.

-Click 【Vertical view】

Click the left button on the model then select the scanning area;

Zoom in and out the selected area with the mouse wheel

Click the right button can delete the selected area.

Click 【YES】,scan the selected area.

Click 【Cancel】,Scan the whole area.

（5）【Axis initialization】

Function: The scanner rotating and swing axis return to their original position (return to zero)

Operation: Click【Axis initialization】

（6）【Add scan】

Function: Add scan of the model area that is not scanned comprehensively

Operation: Rotate the model to the angle that needs to add scan and double click the left button to view the add scan area after you determined scan angle.

Click the 【Add scan】button or press 【Space】. The main scene has an orange color to be displayed on the model after add scan completed.

（7）【Apply】

Function: post-processing of scanned data

Operation: Click 【Apply】after the re-scan or add scan are completed. (This button is only displayed after scanning, such as re-scan ,add scan and before data processing.)

（8）【Remark】

Function: Cancel all marked teeth and remark

Operation: Click【Remark】（This button is only displayed in the step of marking the teeth）

（9）【Delete batch】

Function: If you do not use die plate to scan the die and there is die scan data, then the die scan data would be deleted. If there is no die scan data, then delete the current die batch.

Operation: Click【Delete batch】(This button is only displayed when the die plate in scanning die step is not used.)

（10）【Reset all】

Function: Cancel the result of automatic alignment and perform manual alignment

Operation: Click【Reset all】

（11）【Reset current】

Function: The alignment point is revoked when aligning manually

Operation: If the point position is selected incorrectly when one point is aligned, click the【Reset current】button, undo the point and then re-select the point position.(Or if not use this button, you can directly drag move the point to another location.)

If the point position is selected incorrectly when three points are aligned, click the【Reset current】button, undo these points and then re-select the points position.(Or double-click the point and delete it then re-select the point position)

（12）【Align】

Function: Apply current manual alignment;

Operation: Click【Align】

（13）【Export】

Function: Export scan data

Operation: Click【Export】

4.3.2 Tools

The tools includes: view tools, 2D sections, model editing tools, and margin detecting tools. Among them, the model editing tools include: selection tool, hole filling tool, invert, undo/redo.

（1）  View tools

View tools are used for viewing models in different directions.

（2）  2D sections

It is used to measure the occlusion gap in a 2D scene, this button is only displayed if there is antagonist data

（3）Model editing tools-selection tool

Model editing status, the software provides shortcut keys for users to perform professional and fast operations.The corresponding user instructions will be displayed at the bottom of the software interface when the corresponding editing function is enabled.

Selection tool: Users can select redundant data in the model using different selection tools as needed when the model (point cloud and mesh data) is scanned. Selection tools include:

- ✓ Plane selection tool
- ✓ Rectangle selection tool
- ✓ Polygon selection tool
- ✓ Lasso selection tool
- ✓ Sphere selection tool
- ✓ Connected region selection tool

 【Plane selection tool】

Operation:

A1.Click 【Plane selection tool】 to enable or disable the plane selection function. The software automatically calculates a circular plane according to the type of the model (eg, arch, occlusion model, etc.). When the function is activated, and the model data below the plane is automatically set to red (**Note: Other selection tools will be disabled when use the plane selection tool**).Users can adjust the height and angle of the plane.

A2. Click left button to drag the inner area of the plane (not the boundary) to move the plane in the plane direction. The red area below the plane is automatically updated.

A3. Click left button to drag the boundary of the plane and rotate the plane. The red area below the plane is automatically updated.


【Rectangle selection tool】

Operation:

A1.Click 【Rectangle selection tool】 to enable or disable the rectangle selection function.

A2. Click the mouse to determine the selection area of the rectangle,drag the mouse to select the model with a rectangle, then release the mouse, and all the data (**including the uncovered area**)in the rectangle range is marked as red.

A3.If the model is mesh(non-point cloud), hold down the Alt key and select only the visible area when selecting an area(**the covered area will not be selected**)

A4. Hold down the Ctrl key when selecting an area, so you can deselect the area in the selected

A5.The mouse is not released when the area is selected, you can press 【Esc】to cancel the selection.


【Polygon selection tool】

Operation:

A1.Click 【Polygon selection tool】 to enable or disable the polygon selection function.

A2. Click the left button to construct the polygon point by point, click right button to end selection, and all data in the range of the polygon (including the uncovered area) is marked as red.

A3 .If the model is mesh (non-point cloud), hold down the Alt key and select only the visible area when selecting an area (**the covered area will not be selected**)

A4. Hold down the Ctrl key when selecting an area, so you can deselect the area in the selected red area.

A5.the mouse is not released when the area was selected, you can press 【Esc】to cancel the selection.

【Lasso selection tool】

Operation:

A1.Click 【Lasso selection tool】 to enable or disable the lasso selection function.

A2. Click the left button to start dragging and dropping the mouse to construct an arbitrary polygon area and release the mouse, all data in the range of the polygon (including the uncovered area) is marked in red.

A3.If the model is mesh (non-point cloud), hold down the Alt key and select only the visible area when selecting an area(**the covered area will not be selected**)

A4.Hold down the Ctrl key when selecting an area, so you can deselect the area in the selected red area.

A5.The mouse is not released when the area is selected, you can press 【Esc】to cancel the selection.

 【Sphere selection tool】

Operation:

A1.Click 【Sphere selection tool】 to start or close the sphere selection tool. The sphere assisting selection will be displayed in the scene when activated.

A2.Click the left button to start to drag the mouse to make a selection. All data (including the covered area) in the sphere range is marked in red;

A3.Hold down the Ctrl key when selecting an area, so you can deselect the area in the selected red area.

A4.Press Ctrl+wheel to instantly adjust the size of the sphere.

 【Connected region selection tool】

Connected region are areas that are connected together when the model is only a mesh (not a point cloud). A mesh model may have one connected region or multiple connected regions. The boundary of the mesh is the boundary of the connected region.

Operation:

A1.Click 【Connected region selection tool】to enable or disable the connected region selection function.

A2.Click on a separate connected region and select the connected area, which is marked in red.

A3.Selecting multiple independent connected regions with a rectangle frame, you can select multiple connected regions and marked in red.

A4.Hold down the Ctrl key to click or frame the marked connected region for deduction.

【Visible】

Select visible is only used for mesh models, not for point cloud models, and only rectangle, polygonal, lasso selection tools can support the features;

The covered area will not be marked (non-through selection) when activated, the covered area will be marked for selection (through selection) when closed.

✧ The following operations can be performed on the selected area after selecting the area through the above selection tool.

A1.Hot key【Ctrl + C】,Clearing all selected areas;

A2.Hot key【Ctrl + R】,Inverse the selected areas

A3.Click【Delete Selected Data】or press the【Delete】key to delete the area marked red

（3） Model editing tools-Hole filling tool

	Please note, not all the holes need to be filled when you select a hole to be filled.

【Hole filling】

Operation:

A1.Click【Hole filling】to enable or disable Hole detection function. The software will automatically detect the hole with a blue line when activated.

A2.Move the mouse to the blue border, the blue border turns red, click to perform the fill hole.

【One-key filling】

Operation:

A1.It will display the【One-key filling】icon after clicking【Filling】,you can turn it on or off. It will automatically display 【hole threshold】if you turn it on, the holes within the threshold range

are detected and displayed with blue lines.

A2.You can drag and drop the hole radius to draw a blue hole boundary smaller than the radius in real time.

A3.Click【One-key filling】then it will fill all selected holes.

（4）  Model editing tools-【invert】

It is divided into obverse side (model outer surface) and reverse side(model inner surface) display when the model (mesh) is displayed in the scene, the obverse side is generally displayed in gray, and the reverse side is displayed in yellow; Users can reverse the obverse and back sides by the 【invert】 function when the front and back of the model are reversed incorrectly.

Generally speaking, we use this function when scanning impressions or model with normal errors.

Operation:

A1.Click【invert】to enable or disable the invert function.

A2.Click the left button on a connected region of the model to perform the invert function; You need to reverse the entire model if the model has only one connected area.

A3.Hold down the Alt key and click left button on the connected area to invert the current model. the whole connected areas will perform the invert function if the model has many connected areas.

（5）Model editing tools-【**Undo/redo**】

The undo function can be used to cancel the executed operation when an edit operation such as delete, fill hole, or invert function is performed on the model.

Operation:

A1.Undo hot key: Ctrl + Z

A2.Redo hot key: Ctrl + Y

（6）Margin edit

The software provides a margin line editing function in the impression and model scanning process, which is convenient for the user to draw a margin line for each tooth during the scanning phase, and the margin line file is output for the CAD(UPCAD and Exocad) software to directly read the margin line when enter the design software.

Operation:

A1.Click【Margin edit】to enable or disable the margin line generation and editing function.

A2.The software will display the tooth position indicator and the margin line panel when the function is enabled.

A3.The tooth position diagram is used to select the tooth position, and the margin line is generated or edited for different tooth positions. Click right button on the blank area of the tooth diagram, which can display the right button menu, including the upper and lower jaw switching functions.

A4.The margin line panel is used to select the generation and editing functions.

A5.Generating margin line-【Traction detection】Function: Click to select a point as the starting point (red point) at the margin line of the model of the current tooth position, click in the same direction along the margin line to select margin line point (blue) until the last point meets with the first point, then the margin line is generated. The margin line is connected in real time between every two points. When the margin line is off the margin, the user can click to add a new point to guide the margin line generation.

Generally only three points are needed to guide the generation of the margin line, no need to add too many points

A6.Generate margin line-【Multi-points detection】function: select a point at the margin of the model of the current tooth position. The margin line is automatically generated if the one-point detection is successful. If the detection fails, add points in different areas of the margin and guide the generation.

Multipoint detection is used by default. You must add three points to generate if one-point detection fails.

A7. Display margin line: Show or hide the margin line of the current tooth position

A8. Display control points: show or hide the control points of the current tooth position

A9. Margin line editing

When the margin line is displayed in green, it means the current tooth position, the others will display in blue.

Hand drawing editing: click and drag the left button on the margin to hand draw, which the margin line is in red. After release the left button, the margin line will be constructed according to the trail of the red line.

Single click editing: Click at the position near the margin line, and it will be adjusted automatically.

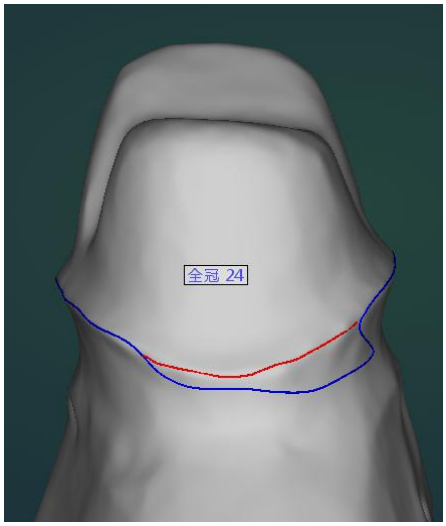


Figure4-2

Control points editing: Display control points, you can edit the margin line on both sides of the current control point by dragging the control points. The control points can be dragged across the different teeth to edit the margin line of the corresponding tooth position when the margin line control points of multiple teeth are displayed.

Add control points: double click the left button to add a control point on the margin line (Figure 4-3).

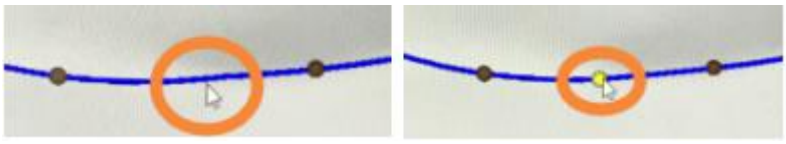


Figure4-3

Delete control points: click right button on the control points to delete the control point and also you can click and select the control point, press【Delete】to delete the control point.

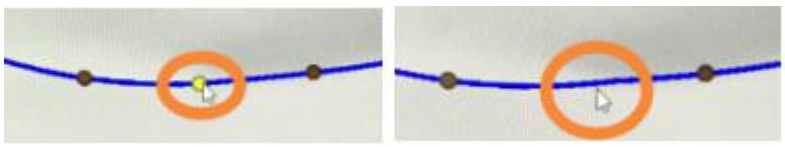


Figure4-4

Control point spacing: Press Ctrl+mouse wheel to adjust the control point spacing

Margin line overall translation:

【Ctrl】+【UP】: Overall upward translation of the margin line for the current tooth position
【Ctrl】+【Down】: Overall downward translation of the margin line for the current tooth position

【Alt】+ Mouse wheel：Adjust the overall translation threshold;

【Ctrl】+【Z】：Undo margin line editing for the current tooth position

【Ctrl】+【Y】:Redo margin line editing for the current tooth position

Clear the margin line

Clear the current margin line: Click the clear margin line button in the panel to clear the margin line

Clear all the margin lines: open the ALL switch under the margin line button, then all the margin lines can be cleared (This feature is enabled by default)

A10. Save the margin line: complete the scan to save the edited margin line.

4.3.3 Camera panel

Function: Adjust the projector brightness and switch camera view

(1) Adjust projector brightness automatically

A1.Click【Automatic】

A2. Single click at the model on the camera window, the software will adjust the appropriate brightness according to the position.

(2) Adjust the projector brightness Manually

A1. Drag the bar or use the mouse wheel to adjust the projection brightness when the mouse is over the drag bar

You can observe that the area on the model turns red in the camera view window during the adjustment process. The red area indicates that the brightness is too high and the appropriate brightness standard is that there is not too much red on the model area to be scanned.

A2.Click【+】and【-】to adjust the projector brightness slightly

4.4 Scanning step

Start scanning

- ✓ Create an order in UPDentalManager and start scanning;
- ✓ Create an order in EXO and start scanning;

The scanning step varies with specific conditions, mainly including the following conditions:

- ✓ Order settings (ie,model type [gypsum model, impression model], if there is antagonist jaw, sectioned, use multi-dies plate or not, etc.)
- ✓ UPSCAN settings (ie, if use texture, scan the occlusion relationship at first or not,etc.)

4.4.1 Multi-dies scanning

Application:

For single or multiple dies, no need for occlusion and adjacent tooth scans

Steps:

Create orders, follow the instructions for die scanning

4.4.1.1 Create orders

A1. Create an order, select the tooth position and define a design type

A2. Select the following scan options and start scanning.

Model source: Model.

Adjacent teeth: None (ie: use multi-dies plate)

Figure4-5

4. 4. 1. 2 Dies scanning

A1. Insert the corresponding **Dies** on the multi-dies plate according to the hole position indication in the scanning guide.

A2. Click【Next】/ press【Enter】to scan

A3. Check if it needs to add scan after the scan is completed

If you need to add scan, please refer to the add scan operation in this manual

A4. If you do not need to add scan, click the【Apply】button to perform post-processing of the cloud points to generate the mesh

A5. Click【Export】and the order scan is finished.

The model can be edited regardless of whether they need to add scan or not after scanning (cloud point or mesh). Please refer to 4.3.2 Editing Tool Panel

4.4.2 Model scanning

Refer to the type of gypsum scan supported by UPSCAN: 4.2.2 Gypsum Scan.

4. 4. 2. 1 Use multi-dies plate for sectioned model

Application: need to scan the adjacent tooth relationship, the die has been sectioned and use the multi-dies plate to scan.

Take the model with antagonist jaw (the antagonist jaw can be gypsum or wax-bite) for example to introduce the scanning process.

（1）Create an order

A1. Create an order, select the tooth position and define a design type

A2. Select the following scan options and start scanning

Model source: model

Occlusion: antagonist

Adjacent teeth: sectioned model

Multi-die: activated

（2）Occlusion scanning

A1. Follow the instruction of the scanning guide to insert the **Occlusion Model**

A2. Click【Next】/【Enter】to scan

A3. Check if it needs to add scan after the occlusion model is scanned, if not, click【Apply】

（3）Jaw scan (working model)

A1. Follow the instruction of the scanning guide then insert the **Working model**. Please put the upper jaw first if the upper and lower jaws are both working models.

A2. Click【Next】/【Enter】to scan

A3. Check if it needs to add scan after the jaw is scanned, if not, click【Apply】

Mark the tooth position on the working model (**This step has been canceled in UPSCAN version after 20180725**)

Mark the tooth position on the occlusion surface according to the indication in the tooth diagram.

Marking order: clockwise

Operation:

A1. The direction of the model can be adjusted to be the same as the tooth position indication map in order to facilitate the marking, there is a text prompt in the tooth diagram: please mark the XX tooth position and an orange circle will be displayed on the corresponding tooth position;

A2.The tooth diagram will prompt the tooth positions to be marked one by one (refer to tooth marking method) if there are multiple teeth positions to be marked

A3. Single click to mark the tooth position on the occlusal surface of the corresponding model tooth position and the marker point will display blue. There will not prompt text in the tooth position indication diagram after all the indicated teeth marks are completed, only the jaw will be displayed.

Figure4-6

Figure4-6

A4. 【Remark】

Please drag the blue marker point to modify the marker point position when marking the tooth position in error.

Click【Remark】,The points on the model are all cleared

A5.Click【Next】to enter other scans after all the teeth marks are completed.

Click【Next】when there is an unmarked tooth position, the following dialog box will pop up (Figure 4-8)

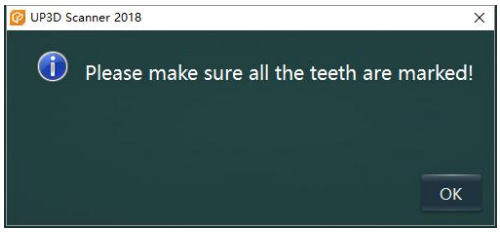


Figure4-8

(5) Scanning of the antagonist jaw (non-working model): the same as (3) working model scanning
(6)Die scanning: the same as die scanning of multi-dises scanning.

(7) Model alignment

A1. Dies alignment: Each die on the multi-dies plate is automatically aligned to the working model

A2. Occlusion alignment: Automatic alignment of the upper or lower jaw to the occlusion model

The manual alignment can be used for interactive alignment if the automatic alignment of the dies or the occlusion fails.

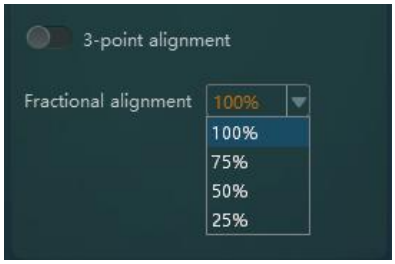
A1.One point alignment (default)

The orange model (small window on the left) and the gray model (small window on the right) are clicked on the same position for alignment

A2. 3-point alignment: Click to open 3-point alignment 

Click on the same position on the orange model and the gray model to align

A3. You can do a one-point alignment or a 3-point alignment by selecting the percentage in the fractional alignment when both of them fail.



100%: Align the entire model

75%: Model alignment from 75% below the occlusion

50%: Model alignment from 50% below the occlusion

25%: Model alignment from 25% below the occlusion

The alignment will be completed automatically if the selection is correct, a prompt dialog box will pop up if no alignment is successful and you will re-select the point for alignment after clicking OK

A4.The system prompts you to manually align and if the current alignment result is correct, you do not need to manually align, you can click【Apply】to execute the current alignment result.

For the model needs to be manually selected for alignment, you can re-select the position by clicking the [Reset Current] button when the position of the selected point is wrong or you can directly move the point to another location or double-click the point, delete the point, and re-select the point location.

It will enter status of all alignment completed after the alignment is successful and the alignment result can be visually checked.

【Reset all】: It will cancel the result of automatic alignment and perform manual alignment after clicking this button.

Figure4-9

(8) Next, enter the export step and the order scanning is finished.

4.4.2.2 Sectioned model without die plate

Application: it needs to scan the adjacent tooth relationship and the dies has been sectioned, but without scanning the multi-dies plate, you can scan the dies directly on the model

Take the model without antagonist jaw for example to introduce the scanning process.

（1）Create an order

A1. Create an order, select the tooth position and define a design type

A2. Select the following scan options and start scanning

Model source: model

Occlusion: none

Adjacent teeth: sectioned model

Multi-dies: not activated

（2）Working model scanning

A1.Follow the instruction of the scanning guide to insert the working model

A2.Click【Next】/【Enter】to scan;

A3.Check if it needs to be add scan after the jaw is scanned (editable),if not, click【Apply】

（3）Die scanning

A1. Follow the instruction of scanning guide, take out the parts on the model except the dies

A2. In order to prevent the dies from obstructing the scanning, it is generally necessary to insert the dies one by one. Please follow the instruction to insert the model and start scanning.

A3.The model scan is completed, please click【Next】,the following dialog box will pop up (Figure 4-10)

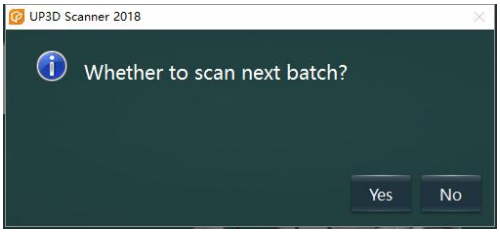


Figure4-10

Click【Yes】: Enter the next batch scan of the model, same as (3), It provides the【Delete Batch】function to cancel the current batch scan after entering the next batch scanning step.

Click【No】:Enter the alignment step

(4) Model automatic alignment (refer to model alignment)

(5) The order scanning is finished

4.4.2.3 Unsectioned model

Application: For that needs to scan the adjacent tooth relationship, but the die is not sectioned.

Take the model without antagonist jaw for example to introduce the scanning process.

（1）Create an order

A1. Create an order, select a tooth position and define a design type

A2. Select the following scan options and start scanning

Model source: gypsum model

Occlusion: none

Adjacent teeth: unsectioned

(2) Jaw scan (refer to jaw scan)

(3) The order scanning is finished

4.4.2.4 Quarter model (all-in-one scanning)

Application: For that sectioned model with an incomplete arch and an antagonist jaw model.

（1）Create an order

A1. Create an order, select the tooth position and define a design type

A2. Select the following scan options and start scanning

Model source: Model

Occlusion: Quadrant

Adjacent teeth: sectioned

（2）Quadrant model occlusion scan

A1.Follow the instruction of the scanning guide to put in quadrant occlusion model

A2.Click【Next】/【Enter】to scan;

A3.Check if it needs to be add scan after the occlusion model is scanned (editable),if not, click【Apply】.

（3）All-in-one scanning

A1. Follow the instruction of the scanning guide to use an all-in-one plate then put in a quadrant model and dies (upper jaw, lower jaw and dies on the plate)

A2.Click【Next】/【Enter】to scan

A3.Check if it needs to be re-scanned after the combined model scan is completed (editable),if not, click【Apply】

(4) Mark the tooth position: mark the upper jaw, lower jaw and die according to the text prompts in the application panel.

Figure4-10

The model will display red after clicking the independent connected area with the left mouse button and display the text at the model: upper jaw, lower jaw and tooth position XX.

If you encounter factors such as maxillary or mandibular scanning height clipping or the model itself, there are two connected areas, as shown below. One of the connected areas of the lower jaw and a part of the area also belongs to the lower jaw. You can complete the lower jaw mark in another part of the connected area by Alt+click the left mouse button or select the frame. At this time, both connected areas are displayed in red and the jaw text is displayed at the position of the first mark.

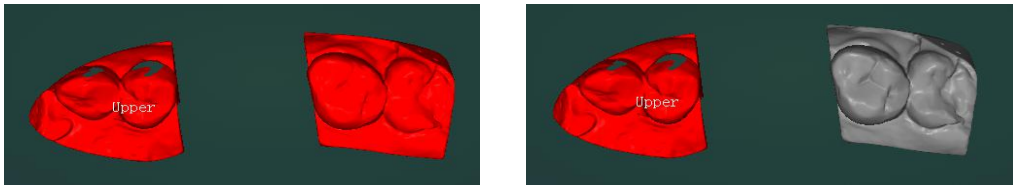


Figure4-11

(5) Model alignment, including automatic alignment of die and occlusion

(6) The order scanning is finished

4.4.2.4 Quadrant model (unsectioned)

Application: For that unsectioned model with an incomplete arch and an antagonist model

（1）Create an order

A1. Create an order, select the tooth position and define a design type

A2. Select the following scan options and start scanning

Model source: gypsum model

Occlusion: Quadrant

Adjacent teeth: unsectioned

（2）Quadrant model occlusion scan

A1. Follow the instruction of the scanning guide to put in quadrant occlusion model

A2. Click【Next】/【Enter】to scan;

A3. Check if it needs to add scan after the occlusion model is scanned (editable),if not, click 【Apply】.

（3）All-in-one scanning

A1.Follow the instruction of the scanning guide to put in a quadrant model (upper jaw and lower jaw)

A2.Click【Next】/【Enter】to scan;

A3.Check if it needs to add scan after the quadrant dental model scan is completed (editable),if not, click【Apply】

(4) Model occlusion automatic alignment

(5) The order scanning is finished

4.4.3 Impression scan

4.4.3.1 Single side impression scan (antagonist: opposite tray)

Application: For scanning impressions that have not been turned into gypsum

（1）Create an order

A1. Create an order, select the tooth position and define a design type

A2. Select the following scan options and start scanning

Model source: impression

Impression tray: single side

Occlusion: opposite tray.

（2）Impression tray scanning (working model)

A1. Follow the instructions of the scanning guide then insert the working impression tray

A2.Click【Next】/【Enter】to scan;

A3.Check if it needs to add scan after the working impression tray is scanned (editable),if not, click【Apply】

（3）Opposite tray scanning (non-working model)

A1. Follow the instructions of the scanning guide then insert the non-working impression tray

A2.Click【Next】/【Enter】to scan;

A3.Check if it needs to add scan after the non-working impression tray is scanned (editable),if not, click【Apply】

(4)Manual alignment: occlusion alignment

(5)The order scanning is finished

The impression automatically performs the invert in the export step.

4.4.3.2 Single side impression scan (antagonist: opposite tray + wax-bite)

Application: For scanning impressions that have not been turned into gypsum.

（1）Create an order

A1. Create an order, select the tooth position and define a design type

A2. Select the following scan options and start scanning

Model source: impression

Impression tray: single side

Occlusion: opposite tray+wax-bite

（2）Wax-bite scan

A1. Follow the instructions of the scanning guide then insert the wax-bite

A2. Click【Next】/【Enter】to scan

A3. Check if it needs to add scan after the wax-bite is scanned (editable),if not, click【Apply】

（3）Impression scan (working model)

A1. Follow the instructions of the scanning guide then insert the working impression model

A2. Click【Next】/【Enter】to scan

A3. Check if it needs to add scan after the working impression model is scanned (editable),if not, click【Apply】

（4）Opposite tray scan (non-working model)

A1. Follow the instructions of the scanning guide then insert the non-working opposite tray model

A2. Click【Next】/【Enter】to scan;

A3.Check if it needs to add scan after the non-working opposite tray model is scanned (editable),if not, click【Apply】

(5) Manual alignment: occlusion alignment

(6) The order scanning is finished

4.4.3.3 Triple tray impression scanning (Full arch, place it horizontally)

Application: For scanning impressions that have not been turned into gypsum and the arch is a bit long.

（1）Create an order

A1. Create an order, select the tooth position and define a design type

A2. Select the following scan options and start scanning

Model source: impression

Impression tray: double side

Occlusion: full arch

（2）Triple tray impression scan (working model facing upward)

A1. Follow the instructions of the scanning guide then insert the triple tray impression (working model facing upward)

A2. Click【Next】/【Enter】to scan;

A3. Check if it needs to add scan after the impression is scanned (editable),if not, click【Apply】

（3）Opposite tray scan (non-working model facing upward)

A1. Follow the instructions of the scanning guide then insert the opposite tray (turn over the impression tray and continue scanning);

A2.Click【Next】/【Enter】to scan;

A3.Check if it needs to add scan after the dental tray model is scanned(editable),if not, click【Apply】

(4) Automatic alignment: occlusion alignment

(5) The order scanning is finished

4.4.3.4 Triple tray impression scanning (Partial arch, place it vertically)

Application: For scanning impressions that have not been turned into gypsum and the arch is a bit short.

（1）Create an order

A1. Create an order, select the tooth position and define a design type

A2. Select the following scan options and start scanning

Model source: impression

Dental tray: double side

Dental arch: partial arch.

（2）Impression scan

A1. Follow the instructions of the scanning guide then insert the impression

A2.Click【Next】/【Enter】to scan;

A3.Check if it needs to add scan after the impression is scanned (editable),if not, click【Apply】

（3）Opposite tray scan

A1. No need to turn over the impression, just next (the scanning will automatically continue)

A2. Click【Next】/【Enter】to scan;

A3. Check if it needs to add scan after the impression is scanned (editable),if not, click【Apply】

(4) Automatic alignment: occlusion alignment

(5) The order scanning is finished

4.4.4 Implant scan body scanning

4.4.4.1 Gypsum, scan body, with ginginva

Application: For orders that need to scan the scan body for implant

（1）Create an order

A1. Create an order, select the tooth position and define a design type

A2. Select the following scan options and start scanning

Model source: model

Occlusion: none

Adjacent tooth scan: sectioned or unsectioned

Implant type: customized abutment

Gingiva scan: yes

（2）Jaw scan

A1. Follow the instructions of the scanning guide then insert the **jaw model**

A2. Click【Next】/【Enter】to scan;

A3. Check if it needs to add scan after the model is scanned (editable),if not, click【Apply】

（3）Scan body scan

A1. Follow the instructions of the scanning guide then put the **scan body on the model**

A2.Click【Next】/【Enter】to scan;

A3.Check if it needs to add scan after the scan body model is scanned (editable),if not, click【Apply】

（4）Gingiva scan

A1. Follow the instructions of the scanning guide then insert the **gingiva on the model**

A2. Click【Next】/【Enter】to scan;

A3. Check if it needs to add scan after the gingiva model is scanned (editable),if not, click【Apply】

(5) Automatic alignment including: scan body and gingiva alignment

(6) The order scanning is finished

4.4.5 Wax-up scanning

4.4.5.1 Gypsum model, sectioned, single wax-up (take no antagonist for example)

（1）Create an order

A1. Create an order, select the tooth position and define a design type

A2. Select the following scan options and start scanning

Model source: model

Occlusion: none

Adjacent tooth scan: sectioned model

（2）Model scan

A1. Follow the instructions of the scanning guide then insert the **model**

A2. Click【Next】/【Enter】to scan;

A3. Check if it needs to add scan after the model is scanned (editable),if not, click【Apply】

（3）Die scanning

A1. Follow the instructions of the scanning guide then insert the **dies**

A2. Click【Next】/【Enter】to scan;

A3. Check if it needs to add scan after the dies is scanned (editable),if not, click【Apply】

（4）Single wax-up scan (Use the multi-dies plate)

A1. Follow the instructions of the scanning guide then insert the **wax-up**

A2. Click【Next】/【Enter】to scan;

A3. Check if it needs to add scan after the wax model is scanned(editable),if not, click【Apply】

(5) Automatic alignment including: die and wax-up alignment

(6) The order scanning is finished

4.4.5.2 Gypsum model, sectioned, wax-up bridge (take no antagonist for example)

（1）Create an order

A1.Create an order, select the tooth position and define a design type

A2. Select the following scan options and start scanning

Design type: wax-up (whether bridge or not)

Model source: model

Occlusion: none;

Adjacent tooth scan: sectioned model

（2）Model scan

A1. Follow the instructions of the scanning guide then insert the model

A2. Click【Next】/【Enter】to scan;

A3. Check if it needs to add scan after the model is scanned (editable),if not, click【Apply】

（3）Wax-up bridge scan

A1. Follow the instructions of the scanning guide then insert the **wax-up bridge**

A2. Click【Next】/【Enter】to scan;

A3. Check if it needs to add scan after the wax-up bridge is scanned (editable),if not, click【Apply】

（4）Dies scan

A1. Follow the instructions of the scanning guide then insert the **dies**

A2. Click【Next】/【Enter】to scan

A3. Check if it needs to add scan after the dies is scanned (editable),if not, click【Apply】

(5) Automatic alignment including: die and wax-up alignment

(6) The order scanning is finished

4.4.5.3 Gypsum model, sectioned, mixed wax-up: both single tooth wax-up and wax-up bridge (take no antagonist for example)

（1）Create an order

A1. Create an order, select the tooth position and define a design type

A2. Select the following scan options and start scanning

Design type: wax-up (whether bridge or not)

Model source: model

Occlusion: none

Adjacent tooth scan: sectioned model

（2）Model scan

A1. Follow the instructions of the scanning guide then insert the **model**

A2. Click【Next】/【Enter】to scan;

A3. Check if it needs to add scan after the model is scanned (editable),if not, click【Apply】

（3）Wax-up bridge scan

A1. Follow the instructions of the scanning guide then insert the **wax-up bridge**

A2. Click【Next】/【Enter】to scan;

A3. Check if it needs to add scan after the wax-up bridge is scanned (editable),if not, click【Apply】

（4）Dies scan

A1. Follow the instructions of the scanning guide then insert the **dies**

A2. Click【Next】/【Enter】to scan;

A3. Check if it needs to add scan after the dies is scanned (editable),if not, click【Apply】

（5）Single wax-up scan (with multi-dies plate)

A1. Follow the instructions of the scanning guide then insert the **single wax-up**

A2. Click【Next】/【Enter】to scan;

A3. Check if it needs to add scan after the single wax-up is scanned (editable),if not, click【Apply】

(6) Automatic alignment including: dies and wax-up alignment

(7) The order scanning is finished

4.4.5.4 Gypsum model, unsectioned, single tooth wax-up/wax-up bridge/mixed wax-ups (take no antagonist for example)

（1）Create an order

A1. Create an order, select the tooth position and define a design type

A2. Select the following scan options and start scanning

Design type: wax-up (whether bridge or not)

Model source: model

Occlusion: none

Adjacent tooth scan: unsectioned model

（2）Model scan

A1. Follow the instructions of the scanning guide then insert the **model**

A2. Click【Next】/【Enter】to scan;

A3. Check if it needs to add scan after the model is scanned (editable),if not, click【Apply】

（3）Wax-up scanning (whatever types)

A1. Follow the instructions of the scanning guide then put the **wax-up**

A2. Click【Next】/【Enter】to scan

A3. Check if it needs to add scan after it is scanned (editable),if not, click【Apply】

(4) Automatic alignment: wax-up alignment

(5) The order scanning is finished

4.4.6 Freedom scan

（1）Create an order

A1. Create an order,select the tooth position and define a design type

A2. Select the following scan options and start scanning

Design type: Freedom scan

（2）Observe side scan

A1. Follow the instructions of the scanning guide then insert the **front of the object**

A2. Click【Next】/【Enter】to scan;

A3. Check if it needs to add scan after it is scanned (editable),if not, click【Apply】

（3）Reverse side scan

A1. Follow the instructions of the scanning guide then insert the object on the opposite side

A2. Click【Next】/【Enter】to scan;

A3. Check if it needs to add scan after it is scanned (editable),if not, click【Apply】

(4) Automatic alignment: freedom scan alignment

(5) The order scanning is finished

V .Appendix

5.1 5.1 Mouse and shortcut key operation

5.1.1 Mouse operation

Operation	Function
Right button drag and drop	Model rotating
Wheel button drag and drop	Model translating
Wheel button scrolling	Model zooming

5.1.2 5.1.2 Shortcut keys operation

Shortcut keys	Instruction
Enter	Next step (in CAD and SCAN)
Backspace	Last step (in CAD and SCAN)
Space	Set model view as default

5.2 UPSCAN scanning software

5.2.1 5.2.1 In cloud point or mesh edit mode

（1）General shortcut keys

【Ctrl】+【C】 : Cancel the selection

【Ctrl】+【R】 : Invert the selection

【Delete】 : Delete the selection

【Ctrl】+【Z】 : Undo

【Ctrl】+【Y】 : Redo

（2）Model selecting tools

Plane tool

When the model is occlusion (upper jaw and lower jaw)

Ctrl+wheel button ： Upper plane translate wholly

Alt+wheel button ： Lower plane translate wholly

When the model is single arch (upper jaw or lower jaw)

Ctrl+wheel button ： Plane translate wholly

Circle tool

Ctrl+wheel button : Adjust the size of radius of the circle

Reduce the selection

Ctrl+left button ： Reduce the selection

（3）invert

Alt+left button ： Reverse the normal of the model

5.2.2 Shortcut keys in impression scanning

Single side impression and the antagonist is the other single side impression (need to adjust the occlusion manually)

Shift+left button: model rotating

Shift+right button: model translating

5.2.3 Impression margin line edit function (UP300)

Ctrl+wheel button: adjust the distance of control point

Ctrl+ Up: translate upward wholly

Ctrl+Down: translate downward wholly

Alt+wheel button: adjust the whole translation amount

5.3 Frequently used shortcut keys of UPCAD

5.3.1 Connector

Ctrl+left button: move wholly (blue point of connector)

Shift+left button: move the connector wholly (except in auto shape)

Alt+left button: move the 3 control point in the same row

Ctrl+V: Display the connector edit interface

Ctrl+L: Dsiplay the adjacent teeth of connector

5.3.2 Morphing function

(1) In morphing step

Q: morphing

W: partial morphing

E: add wax

R: remove wax

T: partial smooth

Ctrl+Z: undo

Ctrl+Y: redo

（2）In morphing

Shift+left button: deform

（3）In partial morphing

Shift+left button: radius adjustment

（4）In wax morphing

Shift+wheel button: radius adjustment

Ctrl+wheel button: strength adjustment

（5）Attachment

Shift+left button+drag: translate

Ctrl+left button+drag: rotate

Ctrl+wheel button: lengthen

Shift+wheel button: widen

Delete: delete