

TM80 Countertop Measuring Instrument User Manual

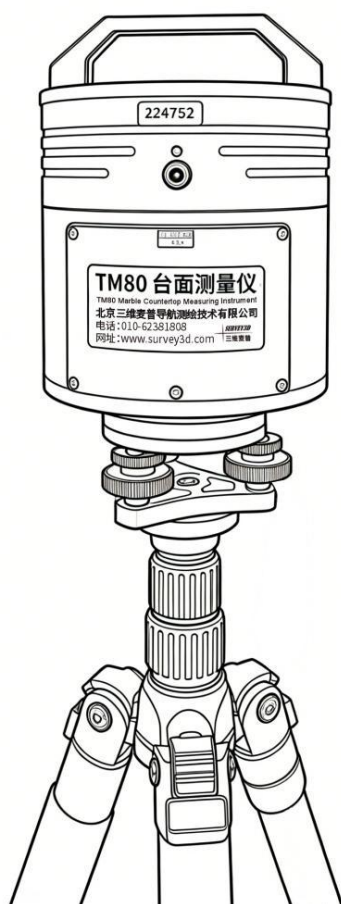


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Important Notice

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If you have any questions or objections regarding the contents of this manual, please submit a written objection to Beijing Sanwei Maipu Navigation Surveying Technology Co., Ltd. within seven days of receiving the instrument. Otherwise, it shall be deemed that you have understood, agreed to, and accepted all contents of this manual.

If you encounter any problems during use, please feel free to contact us:

Pre-sales and after-sales consultation hotline: 010-62381808

Service hours: 7 days/week, 9 hours/day, 8:30-17:30

24-hour service phone: 18511635101 (Manager Zhang)

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Thank you!

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Declaration

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Chapter 1 Hardware Description

Older Countertop Measuring Instruments on the market have an angle measurement accuracy of only 0.1° with significant errors, a measurement range of less than 5 meters, and require manual dimension verification, otherwise the margin of error is too large and prone to mistakes, making the process time-consuming and labor-intensive.

Sanwei Maipu, a manufacturer with 18 years of experience in producing 3D laser scanners, has leveraged its proprietary 3D laser scanner total station patent technology to launch the TM80 Countertop Measuring Instrument, achieving an angle measurement accuracy of up to 0.0005° (2 arc seconds).

With a measurement range exceeding 80 meters, eye-safe millimeter-level ranging laser, and on-site CAD drawing export, it provides users in the stone countertop cutting industry with a broader, more precise, and reliable measurement solution.

In the custom cabinetry, wooden door customization, carpet installation, and building surveying industries, as well as in tunnel monitoring and oil tank inspection fields, it can measure door frame building CAD outline shapes, cabinet installation shapes,

irregular countertop dimensions, and stair profiles. The TM80 2D Countertop Measuring Instrument can be widely applied.



1 Instrument Checklist

After receiving the instrument, please read the product user manual carefully. The instrument should include the following items:

No.	Product Name	Quantity
1	Countertop Main Unit	1 unit
2	Tripod	1 set
3	Three-Jaw Base	1 piece
4	User Manual	1 copy
5	Certificate of Conformity	1 piece
6	Warranty Card	1 piece
7	Software USB Drive	1 piece

2 Specifications

Laser Measuring Range	0.05-80m
Angle Measurement Accuracy	0.0005° (2")
Distance Measurement Accuracy	±1mm (<10m), ±1.5mm (<20m), ±1.7mm (<30m) ±1.9mm (40m), ±2.1mm (50m), ±2.3mm (<60m), ±2.8mm (<80m) ±1mm (<10m), ±1.5mm (<20m), ±1.7mm (<30m) ±1.9mm (40m), ±2.1mm (50m), ±2.3mm (<60m), ±2.8mm (<80m)
IP Rating	IP65
Measurement Range	Manual or automatic rotation, 360° omnidirectional scanning
Battery Type	11.1V built-in 3500mAh lithium battery
Drive Mode	Friction brake technology, motor drive or manual drive available without accuracy loss
Instrument Weight	2.6kg
Product Dimensions	With handle: Diameter 12.7cm × Height 21cm, Without handle: Diameter 12.7cm × Height 17.1cm
Operating Temperature	-40~60°C
Data Transmission	Bluetooth
Cross Line	High-precision green laser cross line, switchable at any time, anti-glare
Ranging Laser	Class 2 eye-safe red ranging laser, 635 nm wavelength, < 1 mW; Class 2 green cross line laser, 520 nm wavelength

Leveling Method	Three-jaw base, fast and precise leveling via three leveling screws
Mounting Method	Supports upright, inverted and horizontal mounting
Data Format	*.dxf (CAD file), *.csv (Excel point cloud file), *.db (Factory original file)
Point Cloud Registration	Supports station setup and orientation survey, resection, and automatic registration of multi-station point cloud data on the instrument
Device Connection	Machining center, 4-axis & 5-axis bridge saw, waterjet, strip cutting machine, etc.
Display Hardware	Display on Android phones or tablets, supports HarmonyOS for mobile devices

Notes: ① When reflectivity is greater than 70% and ambient light is less than 3000 Lux, the measurement range exceeds 80 meters. ② Distance measurement accuracy within 10 meters is $\pm 1\text{mm}$.

Chapter 2 Tabletop Measurement Software

Description

When first downloading the measurement software, make sure to enable all permissions in the software interface (if permissions are not enabled, the software will not function).

After the software installation is complete, restart the tablet or phone.

The tabletop instrument program does not distinguish between 32-bit and 64-bit systems; it is a universal cross-platform operating system program.

Please modify the ranging difference value in the software to the correct number.

Bluetooth connection and operation must be initiated from within the graphic interface only; do not use external buttons to start operations.

Before each measurement, you need to reopen the program to perform the measurement.

Ensure that both the phone and the instrument have sufficient battery charge.

The green light on the back of the instrument cycles every 5 seconds. When the green light is on for 1 second and off for 4 seconds, it indicates the instrument is in a low-battery state.

After turning off the instrument, please wait 30 seconds before turning it on again. Otherwise, measurement data may fail to return, resulting in no data.

Before use, ensure that the circular level bubble is centered in all directions (it should be within the inner circle).

To avoid the instrument laser producing an elliptical light spot on the wall, try to position the instrument at a 45° angle to the wall being measured.

If measuring countertop sections beyond 20 meters, please change the maximum distance setting in the station setup configuration to the actual distance from the measuring instrument to the countertop.

分辨长度	0.001	0.002
起伏阈值	0.005	点密度/ 5mm 1
贴合夹角	0.001	倒挂 ☒
显示标注	☒	显示单位 毫米
去除节点	☐	178 182 0 30

直线拟合
弧线拟合

Standard parameter properties are shown in the figure. If the measurement length is too long and causes the fitted line segment to not fit properly, you can adjust the 起伏 threshold appropriately so that the fitted line segment overlaps with the white point cloud.

Note: The device supports flexible installation methods, including upright, inverted, and horizontal mounting, adaptable to on-site conditions. The instrument main unit is equipped with level bubbles on both the top and bottom for quick calibration and leveling.



Chapter 3 Operating Procedure

1、Unboxing and Assembly

Press the red button on the instrument case to open the lid. The case contains a tripod, measuring instrument main unit, masking tape, charger, and three wrenches of different sizes. See Figure 1-1.

Remove the tripod and extend it; the leg height can be adjusted according to on-site requirements. Then remove the main unit, align the screw port at the bottom of the main unit base with the tripod screw interface, and rotate to tighten. The main unit and tripod are now assembled. See Figure 1-2.



Figure 1-1



Figure 1-2

2 Connection

Please confirm that the bubble level on the TM80 main unit is centered, ensuring the instrument is placed stably. Press the red power button on the main unit to start the instrument. Press the green laser power button to activate the green laser, achieving coaxial red-green laser alignment, which effectively improves countertop measurement accuracy. See Figure 1-3.

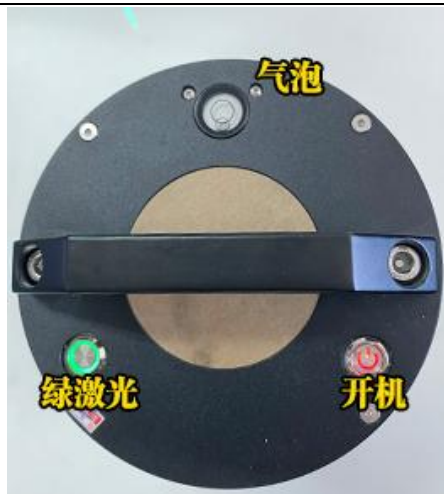


Figure 1-3

Open the Sanwei Maipu APP (see Figure 1-4), enter the main interface, and select [Connect] in the upper left corner (see Figure 1-5). Align the red laser perpendicular to the wall before connecting Bluetooth. Connect to the [sanwei] Bluetooth signal (see Figure 1-6). When connecting Bluetooth, it will also prompt you to aim the red light at the front wall, then click Next (see Figure 1-7). After the software connection is complete, it will automatically return to the main interface. Once connected, the Connect button will switch to [Disconnect] status, and the instrument will enter measurement-ready mode. (See Figure 1-8)



Sanwei Maipu APP (Figure 1-4)



Countertop Measuring Instrument Main Interface Figure 1-5



Figure 1-6



Figure 1-7



Figure 1-8

2 Prepare for Measurement

First, rotate the red laser to the starting measurement point to prepare for measurement. See the figure below.



3 Start Measurement

Click the [Start] button on the main interface to enter the orientation calibration step. At this point, confirm again whether the red laser is perpendicular to the front wall. If not perpendicular, please adjust it to a perpendicular state. After orientation calibration is complete, click [OK] in the orientation popup. See Figures 1-9 and 1-10.



Figure 1-9



Figure 1-10

After orientation confirmation is complete, return to the main interface and click the [Start] button. The page will display a prompt asking [Save History Data?]. You can choose [Save] or [Don't Save] as needed. After confirmation, it will automatically return to the main interface, and the device will start scanning and display point cloud data, showing the point cloud map in real time. See Figures 1-11, 1-12, and 1-13.



Figure 1-11

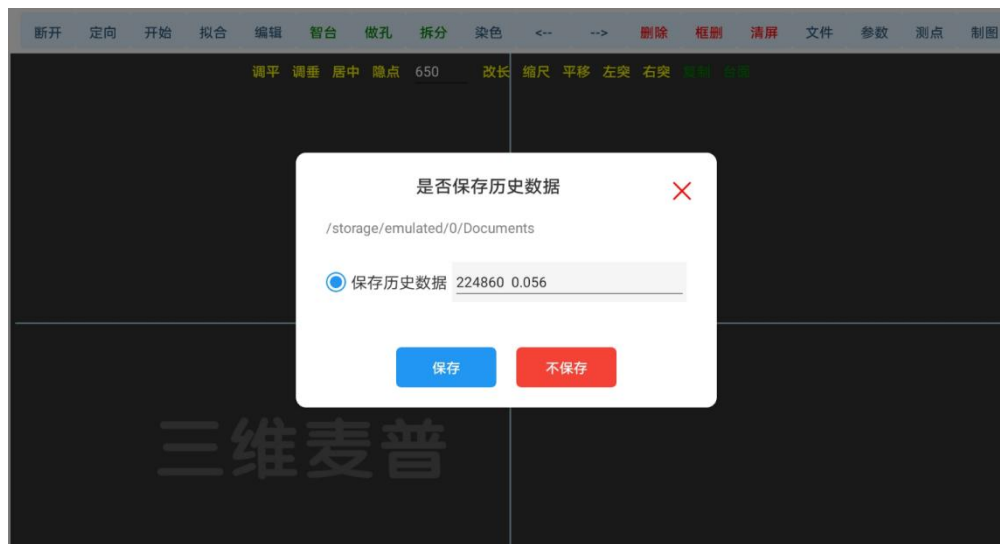


Figure 1-12



Figure 1-13

When the red laser moves to the end point, click the [End] button, and the measuring instrument will stop immediately. After measurement is complete, a popup will appear with options for polyline, circle, and curve arc. You can select the appropriate type as needed. The countertop measured this time has a polyline structure. After returning, the main interface will automatically display the measured point cloud polyline graphic. See Figures 1-14, 1-15, and 1-16.



Figure 1-14



Figure 1-15



Figure 1-16

4 Function Introduction:

Based on the completed measurement and generated point cloud polyline graphic, proceed with the following function operations:

Click the [Fit] button, and the interface will display a selection window for polyline, circle, and curve arc. You can choose according to the actual on-site conditions. The countertop measured this time has a polyline structure, so select polyline directly, and the software will automatically complete the graphic fitting. See Figures 1-17 and 1-18.



Figure 1-17



Figure 1-18

After fitting is complete, excess noise points will appear in the point cloud data and need to be cleaned up. First, click on the point cloud image, and red control points will appear on the line segments. Select the red endpoint to be deleted, and when the endpoint turns yellow, click [Delete] to complete the single noise point deletion. Follow the same procedure to select and delete other excess endpoints one by one until all noise points are cleaned up. See Figures 1-19 and 1-20.



Figure 1-19



Figure 1-20

After all noise points are cleaned up, each line segment should retain only one annotation, and then you can begin the [Level] operation.

Leveling operation instructions: First select the line segment to be leveled. After selection, red endpoints will appear at both ends of the line segment (see Figure 1-21), then click the Level button on the interface to complete the leveling.

For example, select line segment number 3823. After both endpoints turn red, click the [Level] button to level the line segment with one click (see Figure 1-22).



Figure 1-21



Figure 1-22

After all noise points are cleaned up, each contour line segment should retain only one annotation, and then you can proceed with the [Plumb] operation.

Plumb operation notes: First select the line segment to be plumb-adjusted. After selection, red endpoints will appear at both ends (see Figure 1-23), then click the Plumb button on the interface to complete the vertical correction with one click.

Example: Select line segment number 1728. After both endpoints turn red, click the [Plumb] button to quickly complete the vertical correction of the line segment.

(See Figure 1-24)



Figure 1-23



Figure 1-24

Center: If you cannot find the graphic position in the point cloud view after performing point deletion, zooming in or out (see Figure 1-25), click [Center] to automatically reset the point cloud view to the center of the interface. (See Figure 1-26)



Figure 1-25 Point cloud zoomed view not found



Figure 1-26 Point cloud centered back to interface center position

Hide Points (Show Points): After measurement is complete, the interface automatically generates a white point cloud graphic. After fitting, red contour line segments are generated. If the white point cloud is no longer needed after fitting and noise point deletion, or if the white point cloud visually conflicts with the red contour lines during subsequent leveling operations, click the [Hide Points] button to hide the white point cloud. After hiding, the button automatically switches to [Show Points]. You can toggle between hiding/showing the point cloud at any time according to your needs. See Figures 1-27/1-28.



Figure 1-27 Both white point cloud and red contour lines are present



Figure 1-28 White point cloud hidden

Annotation: The annotation function displays length values on each line segment. Click the [Annotation] button to hide all line segment values with one click, flexibly turning off annotation display as needed. Click the annotation button again to display all line segment length values again. See Figure 1-29.

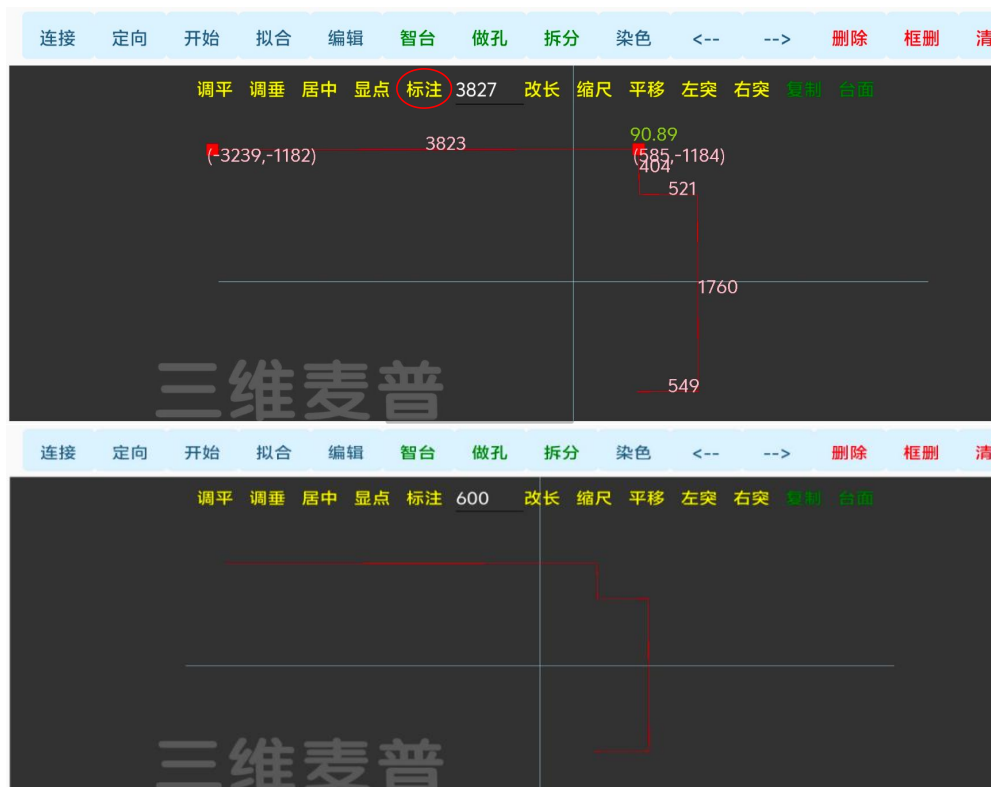
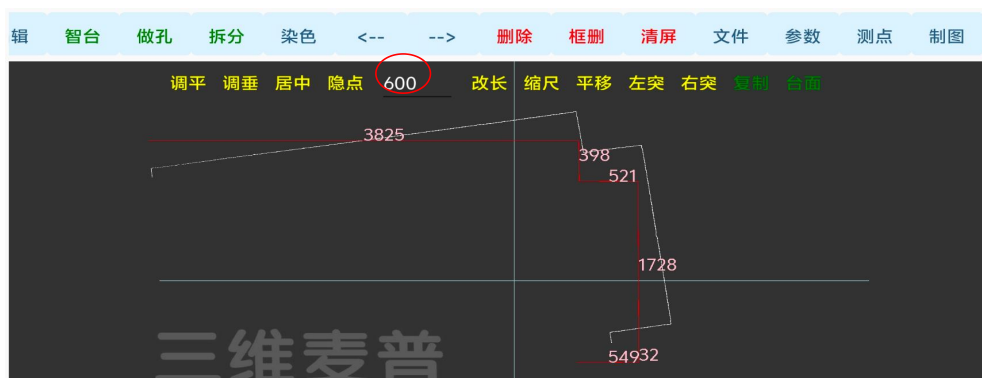


Figure 1-29

600 Value Box: The default value is 600. This input box applies globally to the functions on the right: Extend, Shrink, Offset, Left Protrusion, and Right Protrusion. When operating, first select the line segment to be adjusted, then enter the corresponding value in the 600 value box to quickly achieve line segment extension, shrinkage, offset, left protrusion, right protrusion, and other effects. See Figure 1-30.



See Figure 1-30

Extend: Select any line segment, and both endpoints will turn red to indicate selection. Change the default value of 600 in the value input box to the total length of the line segment after adjustment, then click [Extend] to complete the line segment extension. Example: To extend line segment 3823 by 4mm, first select the line segment so its endpoints turn red, change the value box to 3827, click [Extend], and the line segment length will automatically update to 3827. The extension operation is complete. See Figure 1-31.



Figure 1-30

Shrink: Select any line segment, and both endpoints will turn red to indicate selection. Change the default value of 600 in the value input box to the shrinkage length, then click the [Shrink] button. Note: The left and right endpoints of the line segment will each shrink inward by the value set in the input box, automatically updating the total line segment length to complete the shrinkage operation.

Example: To shrink line segment 3827 by 4mm on each side: First select the line segment so its endpoints turn red, change the value box to 4, click [Shrink], and the line segment length will automatically update to 3819. The shrinkage modification is complete. See Figure 1-31.



Figure 1-31

Offset: Select the line segment to be offset, change the default value of 600 in the input box to the target offset distance, and click the [Offset] button to complete the perpendicular offset at the specified value.

Example: For line segment 3819, if you need to offset downward by 600 perpendicularly, simply enter 600 in the input box and click the [Offset] button to complete the 600 downward perpendicular offset.

See Figure 1-32.

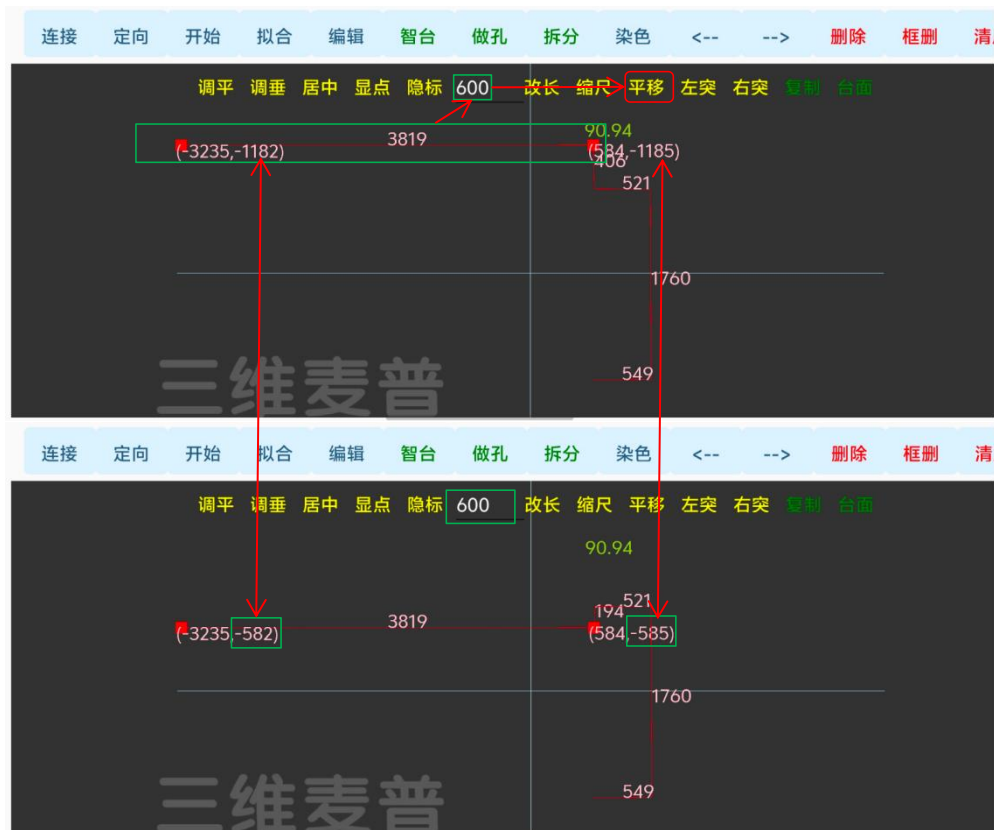


Figure 1-32

Left Protrusion: Select the line segment to be left-protruded, and change the default value of 600 in the input box to the target left protrusion distance. Example: Select line segment 3819. If you need a left protrusion of 20, enter the value 20 and click the [Left Protrusion] button to complete the left protrusion at the specified distance, generating a line segment value of 3839. See Figure 1-33.



Figure 1-33

Right Protrusion: Select the line segment to be right-protruded, and change the default value of 600 in the input box to the target right protrusion distance. Example: Select line segment 3839. If you need a right protrusion of 20, enter the value 20 and click the [Right Protrusion] button to complete the right protrusion at the specified distance, generating a line segment value of 3859. See Figure 1-34.

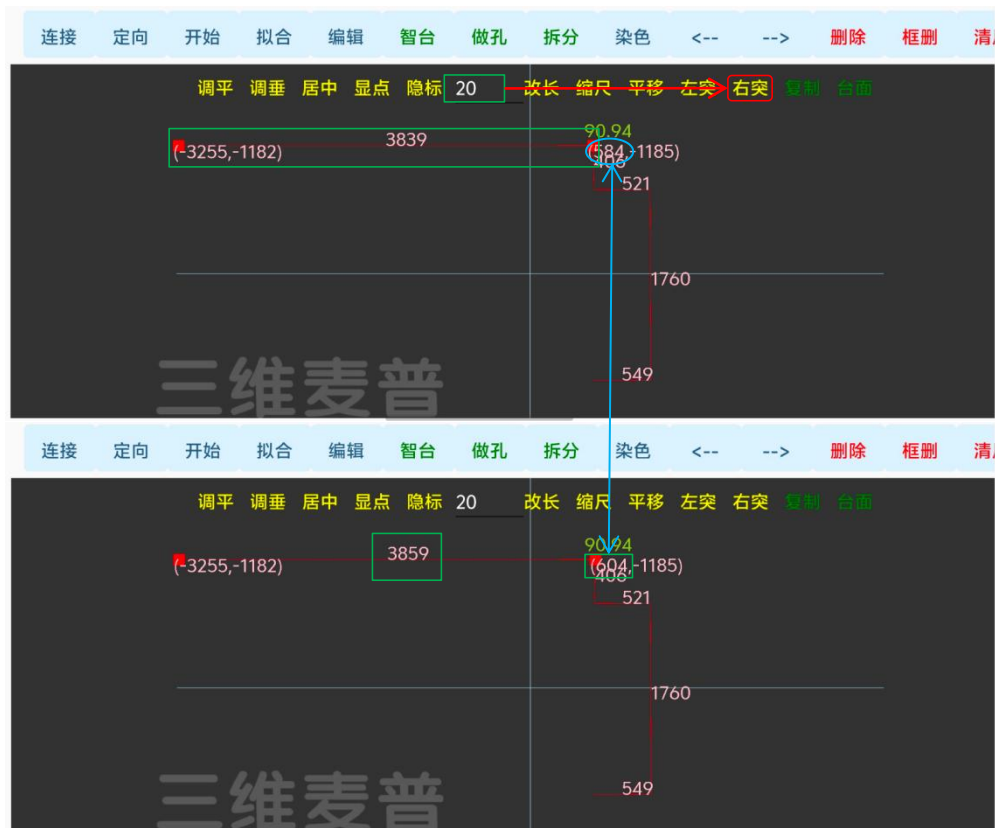


Figure 1-34

Copy: Select the line segment to be copied and click the [Copy] button to copy the selected line segment. Example: Select line segment 3819, click the [Copy] button, and a copy of the line segment with the same number 3819 will be generated. See Figure 1-35.

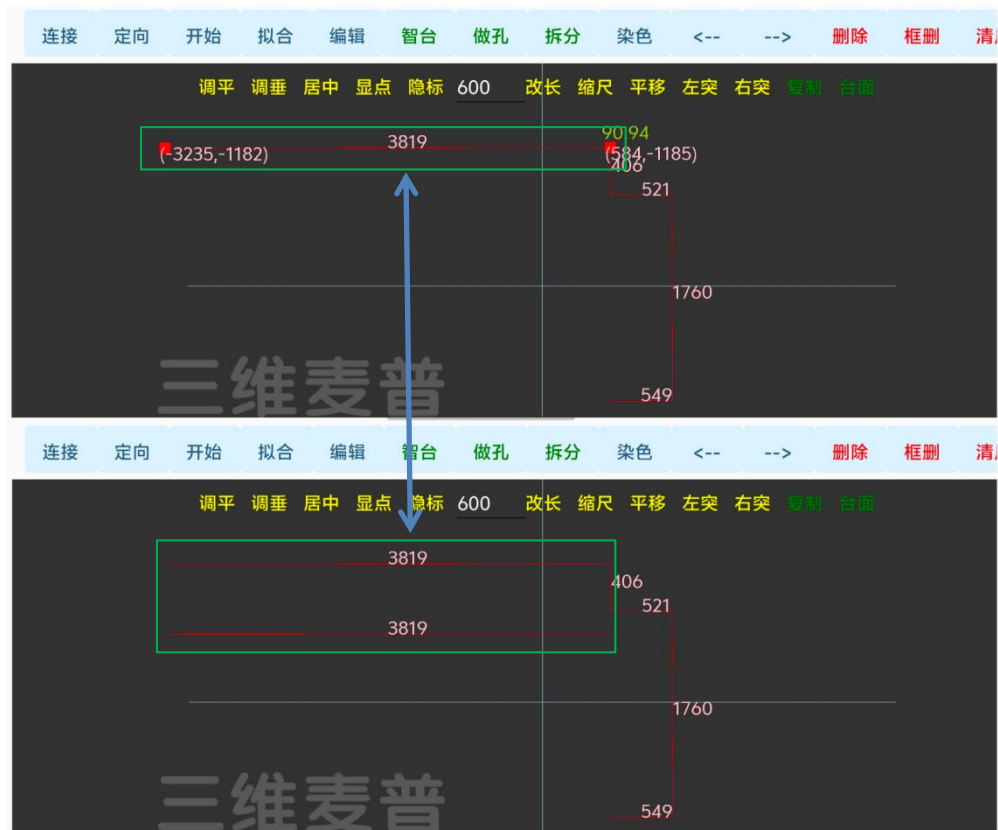


Figure 1-35

Countertop: After copying the line segment, change the default value of 600 in the input box to the desired countertop width value, click the [Countertop] button, and click [OK] in the popup countertop dialog to generate the countertop with the corresponding dimensions. Example 1: To generate a 600mm wide countertop, change the default value in the input box to 600, click [Countertop], click [OK] in the popup countertop dialog, and a 600-wide countertop will be generated. See Figure 1-36.

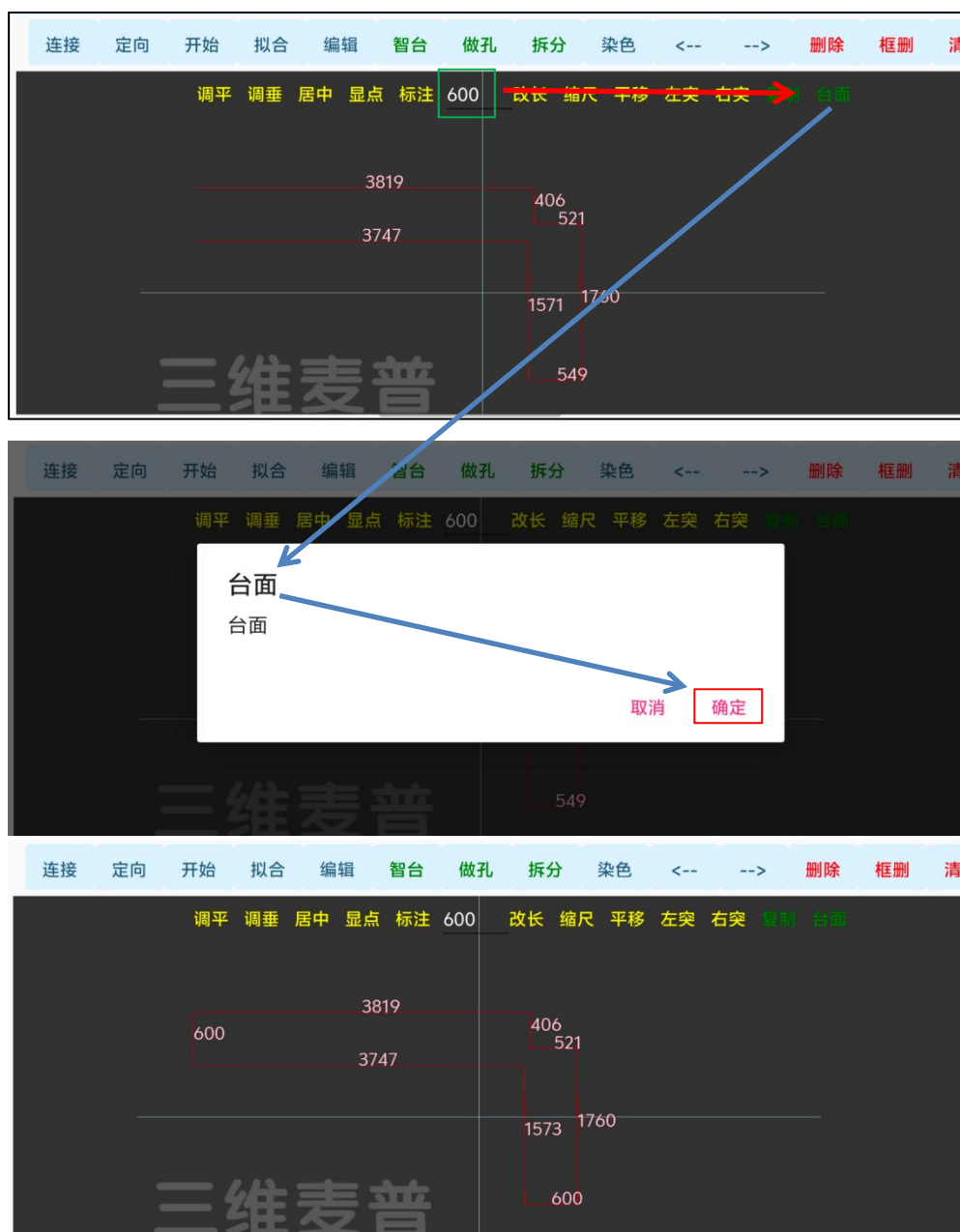


Figure 1-36

Example 2: To generate a 630mm wide countertop, change the default value in the input box to 630, click [Countertop], click [OK] in the popup countertop dialog, and a 630-wide countertop will be generated. See Figure 1-37.

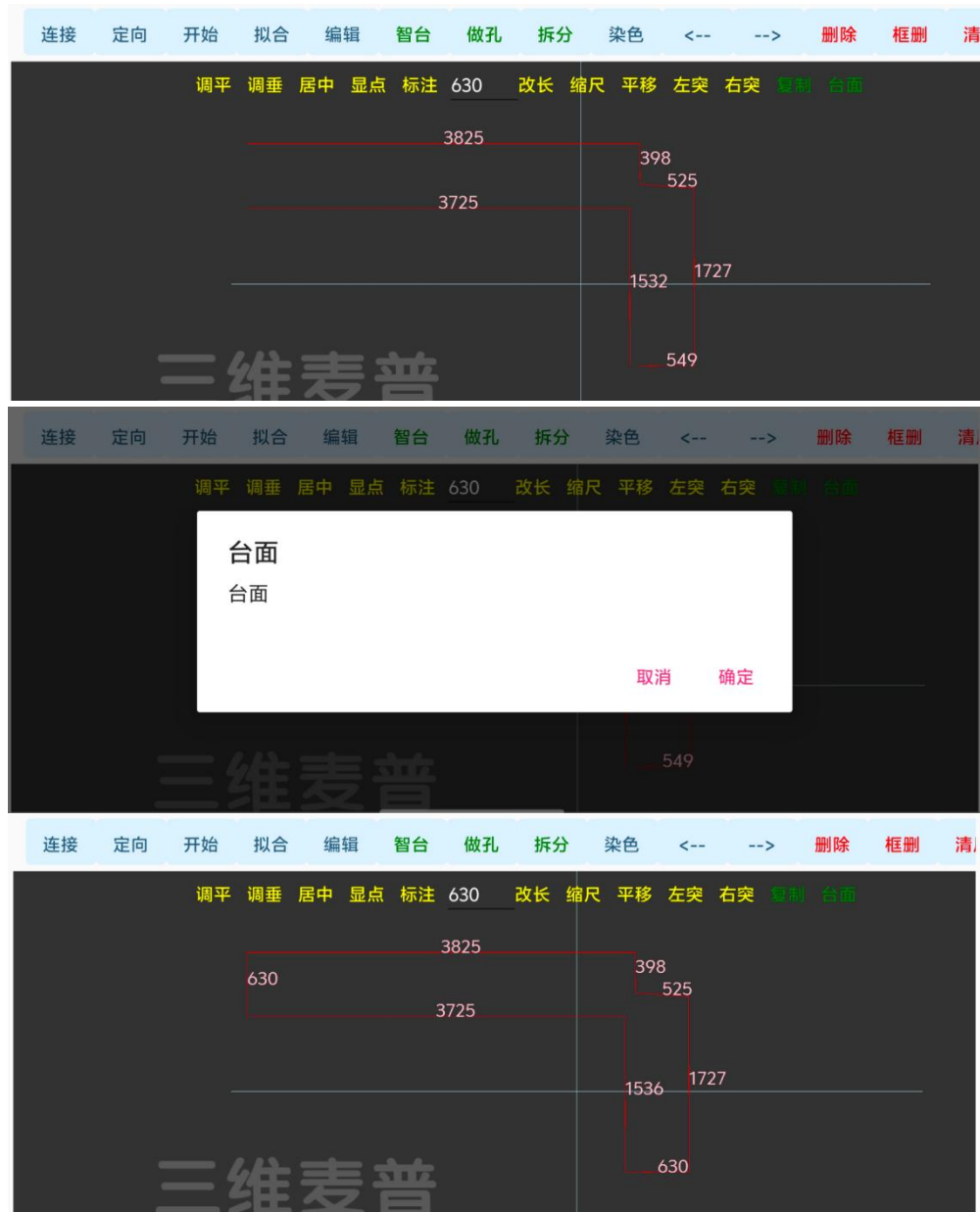


Figure 1-37

Edit: First use the online editing function to adjust line lengths and calibrate dimensions accurately, and complete manual shrinkage before generating the countertop. Once the countertop is generated, you can no longer perform shrinkage or modify line lengths. Open the Edit dropdown menu, select the Draw Line function to manually draw split lines. If you need a line to extend to the right, first select the target line, click Extend in the Edit bar, and the line will extend to the specified position. See Figure 1-38.



Smart Countertop: After scanning, the system automatically generates contour line segments. First adjust the head and tail line segment lengths, and clean up excess lines: select excess nodes to turn them yellow, and click [Delete] to remove excess line segments. After dimension adjustment and line cleanup are complete, click [Smart Countertop]. In the popup dialog, fill in the countertop width according to your actual needs. After filling, confirm the countertop to complete the creation.

Example: To create a 630 countertop, enter 630 in the dialog, then click [Smart Countertop]. A popup dialog will appear. Fill in the countertop width as needed (in this case, 630), and click the countertop button to directly generate a 630-wide countertop. See Figure 1-39.





Figure 1-39

Make Hole: After the basic countertop shape is created, you can start making sink holes. Click the [Make Hole] function to display a dropdown menu with three built-in styles: square basin, round basin, and U-hole. You can drag and drop the corresponding basin template as needed. Drag the basin template to the countertop position and release, and a parameter setting window will immediately pop up. Enter the upper and lower edge distances, left and right center distances, basin left-right width, basin top-bottom height, basin hole R-angle, and other data according to the actual on-site dimensions. After all parameters are set, click [OK] to generate a complete countertop with sink hole.

Make Hole operation has four steps:

- Select upper and lower edge distances: Click the [Upper/Lower Edge Distance] position, select the upper or lower wall line segment, and enter the edge distance value;
- Select left and right center distances: Click the [Left/Right Center Distance] position, select the left or right wall line segment, and enter the center distance value;
- Set basin dimensions: Fill in the basin left-right width and top-bottom height;
- Configure corners and installation mode: Enter the basin hole R-angle parameter, then select one of three installation methods: under-mount sink, above-counter sink, or drop-in sink.

Example: After selecting [Square Basin], [Make Hole] will automatically switch to square basin mode. Drag the basin template to the center position on the countertop and release. The square basin will appear, and the parameter setting interface will immediately pop up. See the figure below.



After the parameter setting interface appears, click the [Upper/Lower Edge Distance] position. The page will automatically switch back to the countertop view. Select the upper wall line segment 3825, and two red positioning points will appear on the interface. Then an upper and lower edge distance input box will pop up. Change the default value of 161 to the actual dimension of 140. See the figure below.



After entering 140, click the [Left/Right Center Distance] position. The page will return to the countertop view again. Select

the left wall line segment on the 630 side, and two red positioning points will appear on the interface. Then an input box will pop up. Change the default value of 2624 to the actual dimension of 2700. See the figure below.



2700

完成

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8

9

返回

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🗨

🗨

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🗨

🗨

连接 定向 开始 拟合 编辑 智台 做孔 拆分

调平 调垂 居中 显点 标注 630 改长

90

(-3252,-1368)

3825

630

(-983,-1138)

710

430

90

(-3252,-738)

3722

(-273

上下边距 140

左右中距 2700

盆左右宽 710

盆上下高 430

盆孔R角 10

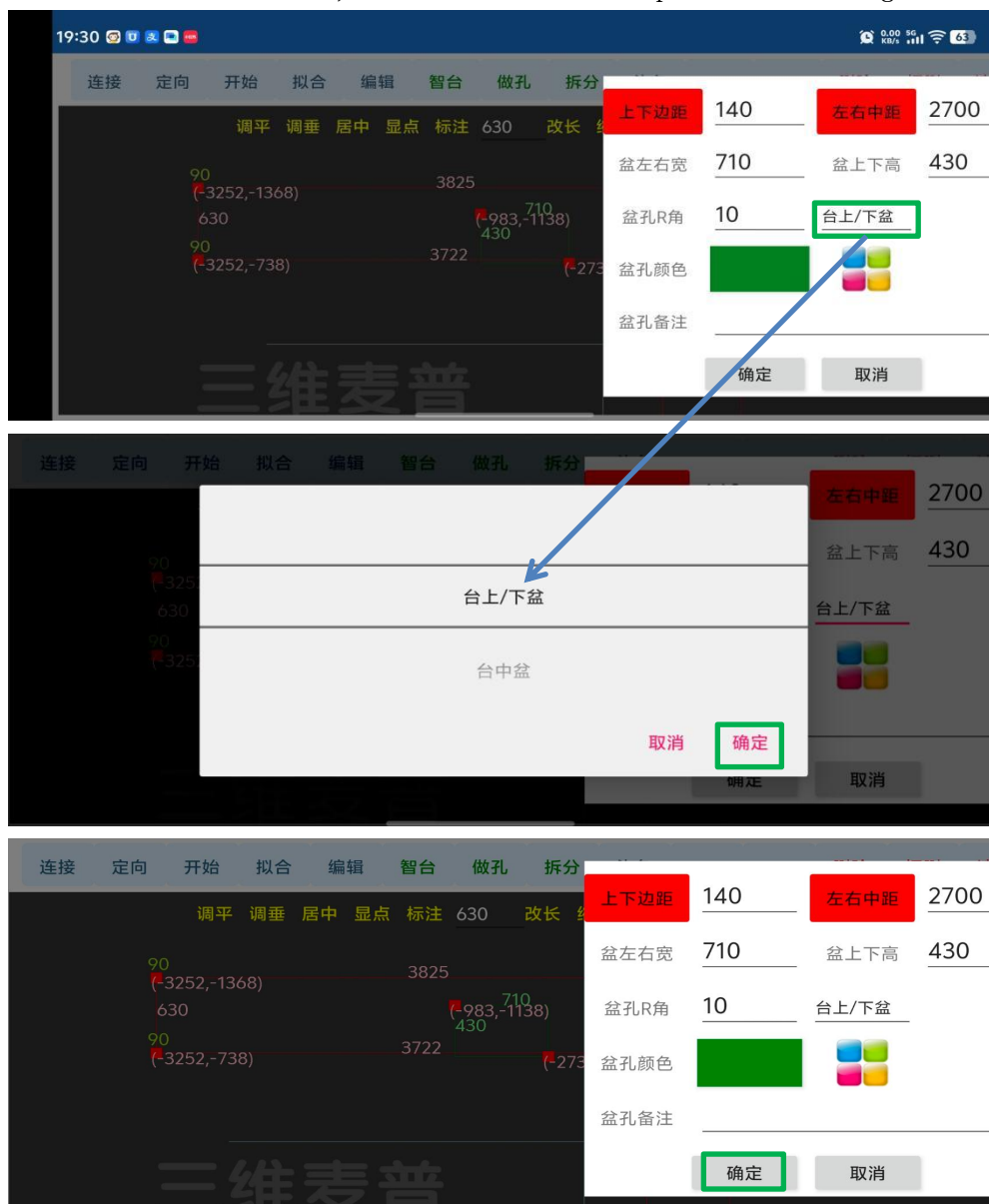
台上/下盆

盆孔颜色

盆孔备注

确定 取消

After completing the left/right center distance, fill in the basin left-right width, basin top-bottom height, basin hole R-angle value, and select above-counter/under-counter sink as needed. The basin hole color can use the default value. Click OK to generate the square basin. Note: The operation logic for making a pipe hole is the same as for a basin hole, with identical steps. See the figure below.





Split: Then proceed with panel splitting: Open the Edit dropdown menu, select the Draw Line function to manually draw split lines. If you need a line to extend to the right, first select the target line, click Extend in the Edit bar, and the line will extend to the specified position. Then click Split to split the entire panel into multiple pieces.



Color: After splitting, you can apply colors: Click the Color function and select blue to apply color to the corresponding area. For the seam saw blade position, you can change color number 329 to red. After adjustment, click Cancel to exit color mode.



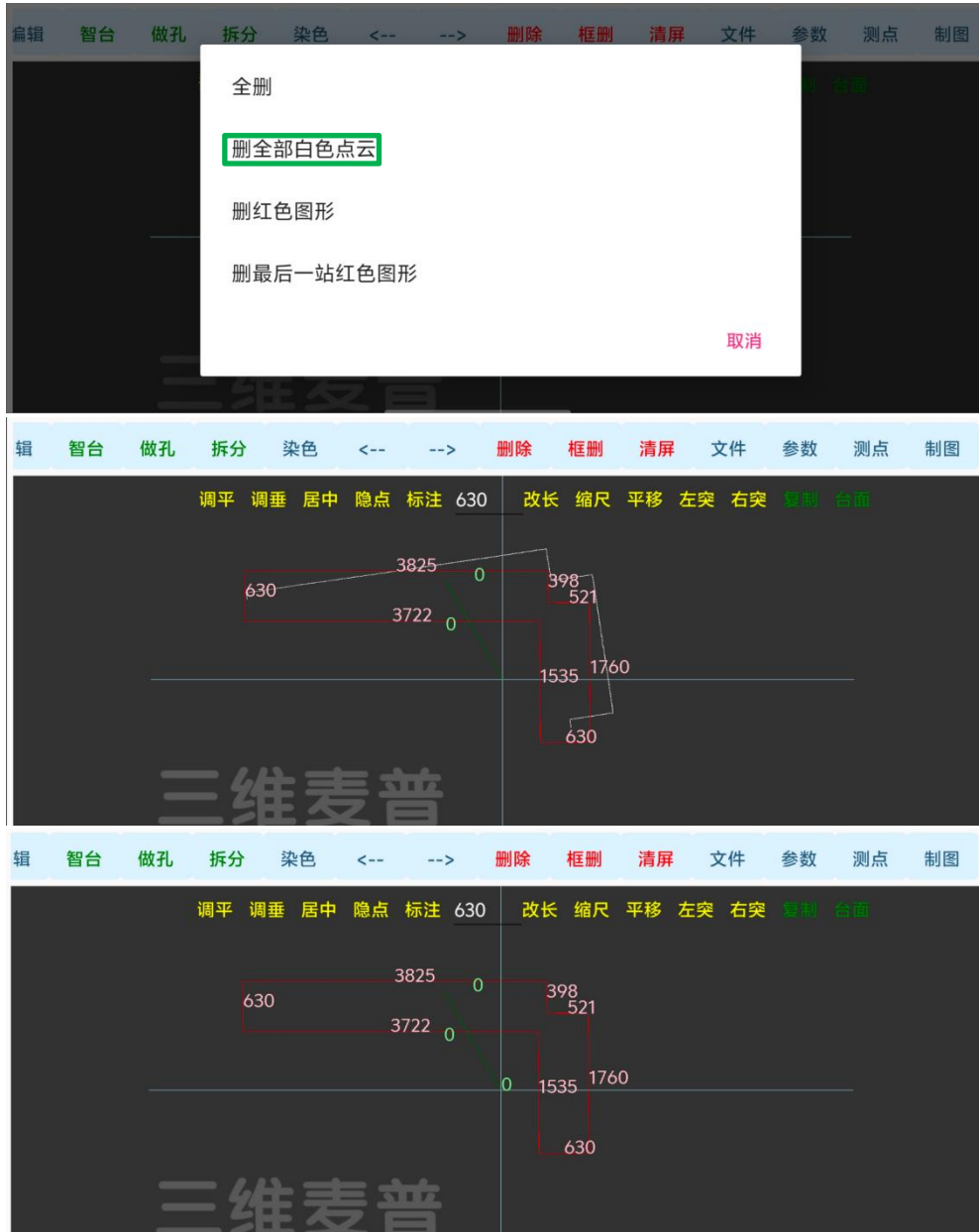
Left/Right Arrows: The left and right arrow buttons can be used to undo mistaken operations or incorrect steps. After undoing, you can re-perform the operation. See the example figure below.



Box Delete: When you need to delete multiple nodes or lines in batch, instead of clicking them one by one, simply box-select the target content to delete them all at once, making the operation more efficient. See the example figure below.

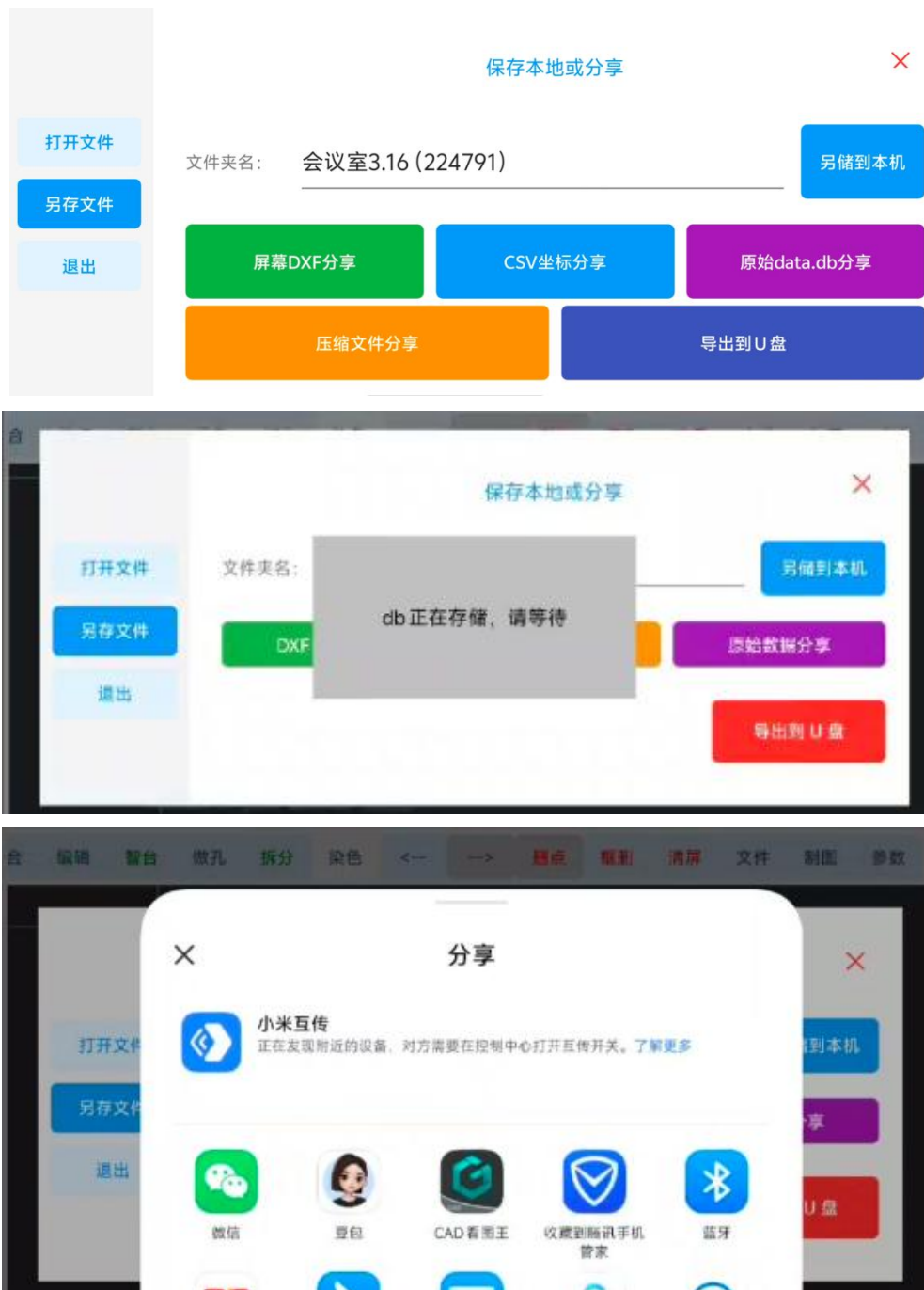


Clear Screen: Clear Screen provides four deletion modes: [Delete All], [Delete All White Point Cloud], [Delete Red Graphics], [Delete Last Red Graphics]. You can select the corresponding deletion method according to your actual operation needs. After selection, click OK to complete the cleanup and deletion. See the example figure below.



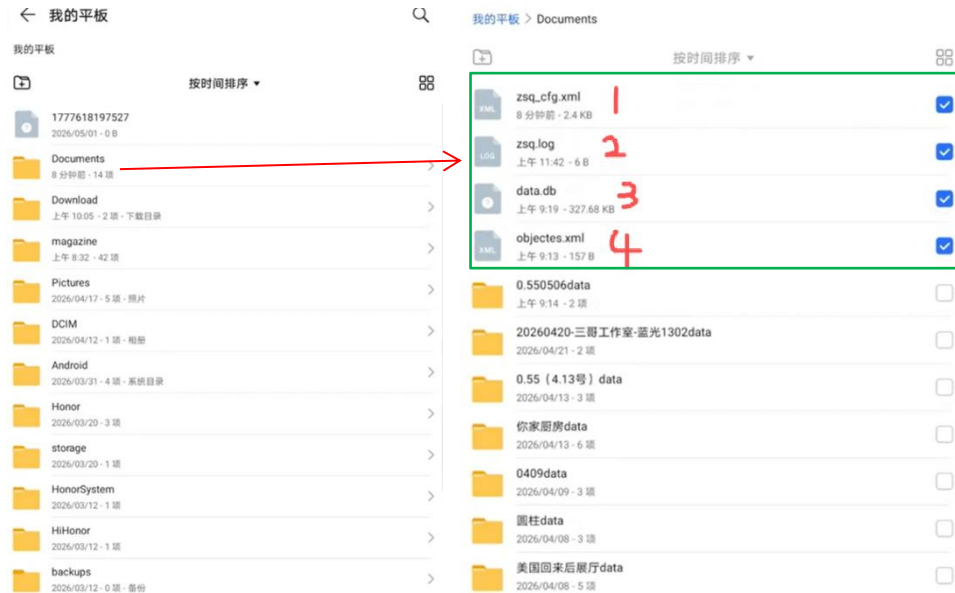
All white point cloud deleted

File: After the file is completed, you can save and share it. Select the drawing from left to right, click the [File] button, and customize the name as "Community Name + Building Unit Information". Click Save to Local. The system will automatically generate three files: DXF, DX1, and DX2 for the entire drawing. If the drawing has pipe holes, an additional patch file will be generated. To share, you can directly send the entire set of files via WeChat. To export raw data, insert a USB drive for one-click export. The entire drawing operation process is then complete.



Chapter 4 How to Modify the Ranging Difference

When upgrading the software to a new version, uninstall the old program first, and delete the four excess files in the document folder. See the figure below.

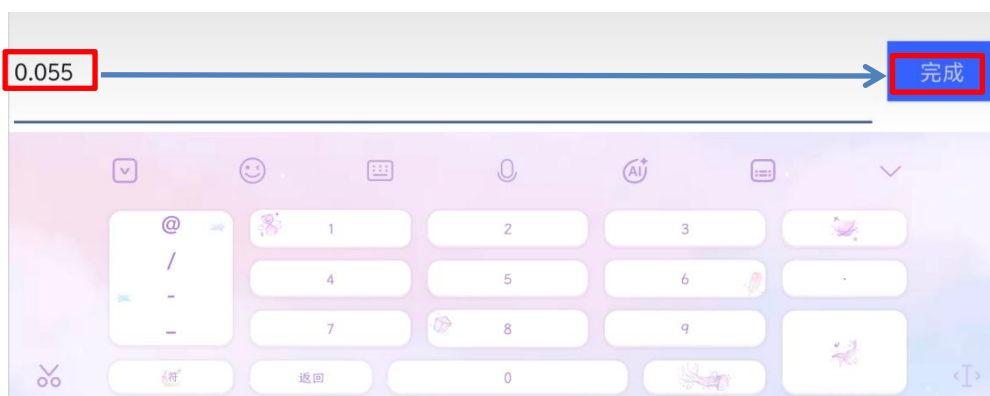


After deletion, open the Countertop APP program. After entering the APP main interface, click Back (on some devices you can swipe left to return, and on some interfaces click the less-than icon; use the actual device operation method to return). Then click [Station Setup], find the [Configuration] option in the lower left corner of the page and enter it. Change the ranging difference value to 0.055, and click Save after modification. Then click [Measurement], find and open [Image] to return to the measurement interface. The ranging difference parameter modification is now complete, and the instrument can be used normally. Tip: If the instrument has been idle for a long time, it is recommended to exit the APP program and re-enter before operating. See the figure below.



Station Setup	定向	测量
站号: _____		浏览
仪高: 0.148		
属性: _____	X值: 0	
Y值: 0	Z值: 0	
蓝牙: jishiyu		
下一步	保存	配置
	连接	断开
		退出

仪器类型:	台面测量仪	最大距离:	20
连接命令:	\$WKON	断开命令:	\$WKOF
间隔:	50	补偿角:	
阈值:	7	改正数:	0
测距差:	0.055	经线:	117
北偏移量:	0	东偏移量:	0
高偏移量:	0	距离SN:	A400gFb9
透传开始:	\$SIO3=1,\$SIO4=1	透传结束:	\$SIO3=0,\$SIO4=0



0.055 → 完成

连接命令:	\$WKON	断开命令:	\$WKOF
间隔:	50	补偿角:	
阈值:	7	改正数:	0
测距差:	0.055	经线:	117
北偏移量:	0	东偏移量:	0
高偏移量:	0	距离SN:	A400gFb9
透传开始:	\$SIO3=1,\$SIO4=1	透传结束:	\$SIO3=0,\$SIO4=0

蓝牙连接 断开 保存 退出

设站 定向 测量

开始 结束 图像 浏览 V120

测量数据:

存储数据:

高程测量

高差显示

0

站点名称:

标靶高度:

0

站点测量

站点偏心

连接 定向 开始 拟合 编辑 智台 做孔 拆分 染色 <-- --> 删除 框删 清

调平 调垂 居中 显点 120 改长 缩尺 平移 左突 右突 复制 台面

三维麦普

Chapter 5 Advanced Features for Other Surveying Industries (Reference When Needed)

1 Station Setup

The TM80 tabletop scanner has two methods for entering station coordinates (method b is generally used):

- Click the blank space after X, Y, Z, and the system will automatically pop up a soft keyboard interface. Switch between letter, number, pinyin, or English input methods and enter the known coordinates. See the figure:



- You can click the [Browse] button to call up point coordinate data. For the first measurement, if there is existing data, click Delete All to clear the memory. Then, on the control point interface, click the [Add] button, and the software will automatically add a row of default point coordinate data. See the figure.

控制点		基准点		数据
点号	属性	坐标X	坐标Y	坐标Z
1		0	0	0

添加 选择 删除 全删 修改 导出 退出

At this point, select the T:1 column information and click [Select]. The system will automatically return to the station setup interface and connect all T:1 information from data management to the station setup interface. See the figure:



The image shows the 'Station Setup' (设站) interface. It has a blue header with three tabs: '设站' (selected), '定向' (Orientation), and '测量' (Measurement). The form contains the following fields:

- 站号 (Station Number): 1
- 仪高 (Instrument Height): 3
- 属性 (Attribute): (empty)
- X值 (X Value): 0
- Y值 (Y Value): 0
- Z值 (Z Value): 0
- 蓝牙 (Bluetooth): sanwei

At the bottom, there are six buttons: '下一步' (Next), '保存' (Save), '配置' (Configure), '连接' (Connect), '断开' (Disconnect), and '退出' (Exit). A '浏览' (Browse) button is located next to the Station Number field.

Then click Next to enter the station setup interface.

Note: The X, Y, and Z values in the station setup interface can be modified directly, but after modification, you must click Save. Although the data will take effect, the point will not be displayed in Browse.

2 Orientation

After completing the station setup step, click Next to enter the orientation interface. Click the orientation method, and three orientation methods will be available for selection. See the figure:



The image shows the 'Orientation' (定向) interface with a modal dialog box open. The dialog box has three options for orientation methods:

- 设置方位角 (Set Azimuth)
- 已知后视点 (Known Backsight Point)
- 后方交会 (Backsight Intersection)

At the bottom of the dialog box, there are two buttons: '取消' (Cancel) and '确定' (Confirm). The background interface shows the '定向方式' (Orientation Method) field set to '设置方位角' and the '方位角值' (Azimuth Value) field set to 0. A '下一步' (Next) button is visible at the bottom left of the background interface.

a. Set Azimuth: Aim the laser red dot at the north direction, click [Next] to

complete orientation, and the program enters the measurement interface.

设站	定向	测量
定向方式: 设置方位角		
方位角值: 0		
<button>下一步</button>		

b. Known Backsight Point: First, place the instrument at a known point position. During station setup, import that point's coordinates, then enter the station setup interface. Click [Query] to select the required control point, then aim at it and click [Resurvey]. See the figure, then click Next.

设站	定向	测量
定向方式: 已知后视点		
后视点号:		<button>查询</button> <button>复测</button>
计算方位角: 0	距离偏差: 0	
ΔX : 0	ΔY : 0	
ΔZ : 0		
<button>下一步</button>		

c. Resection: (This function is only used in surveying applications and is omitted for now)

3 Measurement

Enter the measurement interface. See the figure:



The screenshot shows a mobile application interface with three main tabs: 设站 (Station Setting), 定向 (Orientation), and 测量 (Measurement). The 测量 tab is currently selected. Below the tabs, there is a toggle switch and four buttons: 开始 (Start), 结束 (End), 图像 (Image), and 浏览 (Browse). Below these buttons are several input fields and buttons: 测量数据 (Measurement Data), 存储数据 (Storage Data), 基准测量 (Reference Measurement), 站点名称 (Station Name), 标靶高度 (Target Height) with a value of 0, 站点测量 (Station Measurement), and 站点偏心 (Station Eccentricity).

Start: Start scanning. The instrument will automatically measure continuously (This function is not yet available and is prohibited from use)

End: End scanning (This function is not yet available and is prohibited from use)

Image: Open the point cloud image interface (Do not view images when there is no station measurement data)

Measurement Data: Angles and distances measured by the instrument

Stored Coordinates: Point numbers and coordinates already stored in memory (Data appears only when Start is pressed)

Reference Measurement: Measure the reference surface height of the target

Station Name: Names for conveniently remembering each control point measured at a station

Station Measurement: When one station cannot measure all sides of the target, this function can be used to measure coordinates of other stations. This data is mainly used for resection

Target Height: Height of the target

Browse: Query data in memory

Chapter 6 Product Warranty

Unless otherwise specifically stated by the company, the warranty period for this equipment is twelve months from the date the user receives the instrument. The instrument warranty is subject to the following terms:

(1) The company is not responsible for warranty coverage if equipment failure or damage is caused by modifications made to the equipment at the customer's request;

(2) Damage or failure caused by improper use, improper storage, transportation, or power supply issues; any equipment damage or failure caused by on-site or personal reasons of the user is not covered by warranty;

(3) The company is not responsible for free warranty if equipment is damaged or fails due to unauthorized repairs or modifications without the company's written consent;

(4) The instrument's accessories are also covered by the warranty.

In the event of equipment failure, the user should contact the company promptly and notify the company of the equipment condition in writing or by email, while keeping the equipment properly stored. For equipment that needs to be shipped to the company for repair, the user is responsible for safely transporting the equipment to the company's designated location and bearing the associated costs. For issues caused by the equipment itself, the company provides free repair during the warranty period. After repair, the company is responsible for transporting the equipment to the user's designated location. After the warranty period expires, the company will charge certain costs depending on the situation.

FCC Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

RF Exposure Information

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.