Calibration Guide of VCHD8000-TC Tracking Camera

Camera Calibration

Calibration software is installation-free. Double click software icon to start calibration.

1.1   Teacher

Step 1:

Enter the IP address showed in Fig.1 to connect the feature camera and the panorama camera and then click "Stop Track" to start calibration. See Fig. 1.
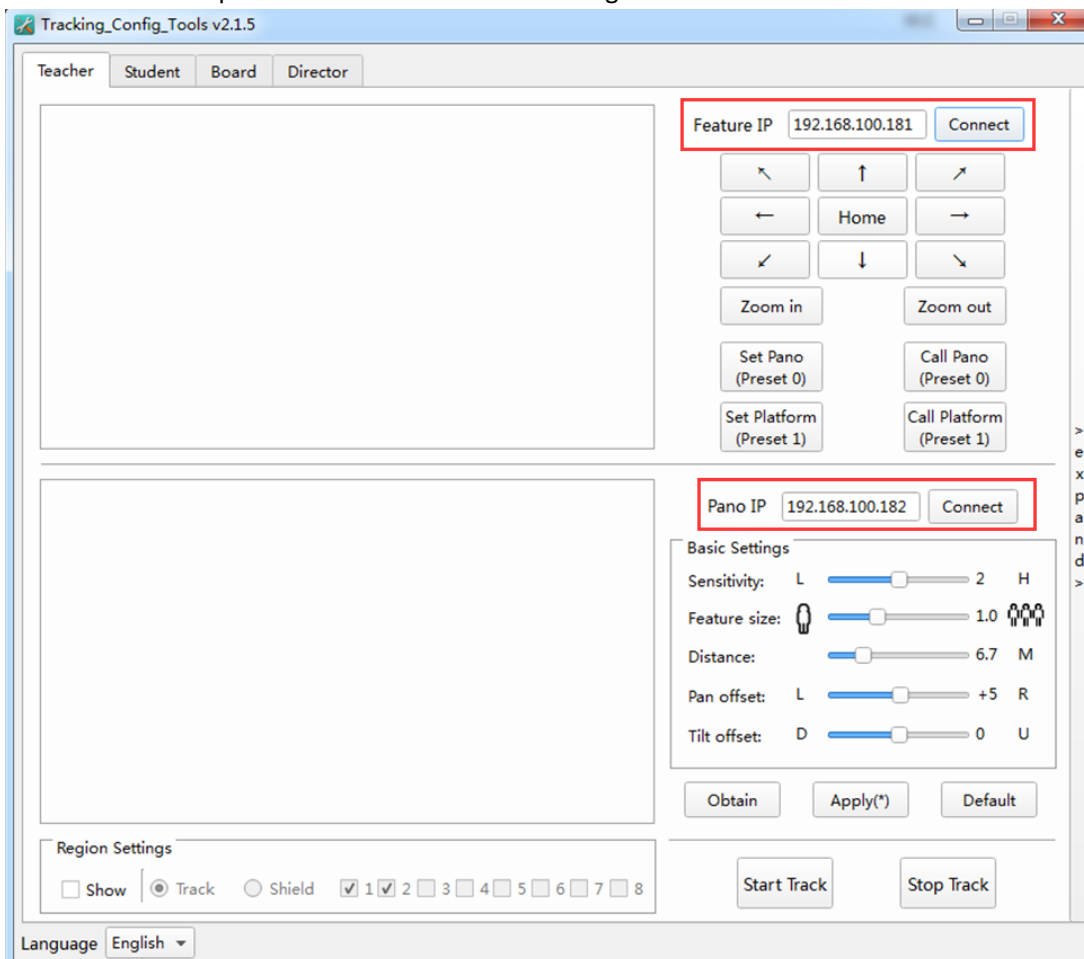

Fig. 1   Camera IP Address

Step 2

When setting cameras, use 【↑】【↓】【←】【→】【Zoom In】【Zoom Out】 to adjust camera positions in order to test the effectiveness of panorama scenes or feature scenes. See Fig.2.

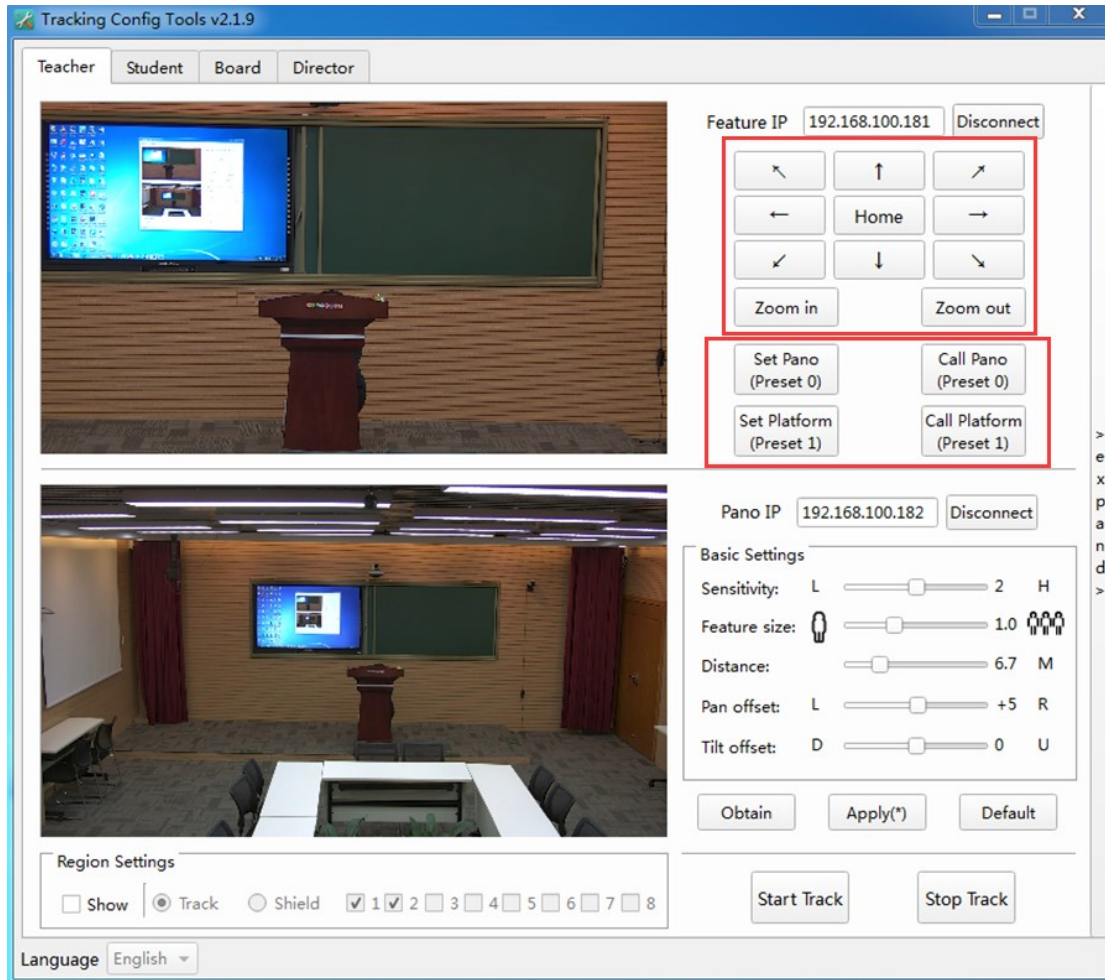Fig. 2   Preset Position Settings

Step 3:

Adjust parameters in "Basic Settings" and click the "Apply" button to take effect. See Fig.3.

- **Sensitivity**: sets tracking range and response speed for the camera based on 0~4; default value: 2.

- **Feature Size**: sets view range of the feature cameras; setting range: 0.5~2.0; default value: 1.0.

- **Distance**: sets horizontal distance between the teacher camera and the podium; setting range: 3.0~20.0m; default value: 6m.

- **Pan Offset**: sets camera horizontal range -200~+200 (steps), 0.069° /step; Left offset: -200~0; Right offset: 0~200; default value: 0.

- **Tilt Offset**: sets camera vertical range -200~+200 (steps), 0.069° /step; Down offset: -200~0; Up offset: 0~200; default value: 0.
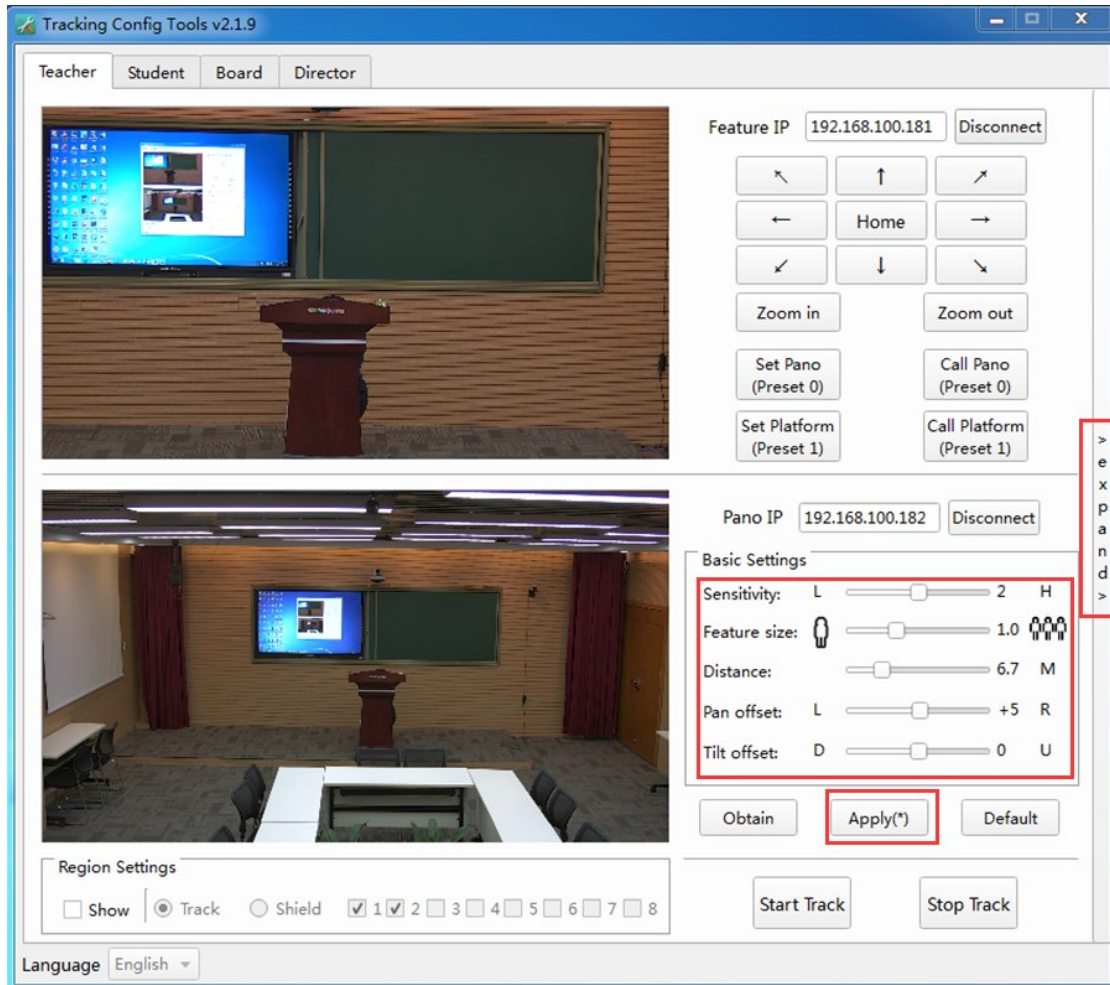
Fig. 3   Basic Settings for Teacher Camera

Step 4:

Tracking area and shield area settings:

Tracking area settings: tick "Show" box and select "Track". Click LMB (left mouse button) to make a start point and hold LMB to draw the tracking area. See Fig.4.
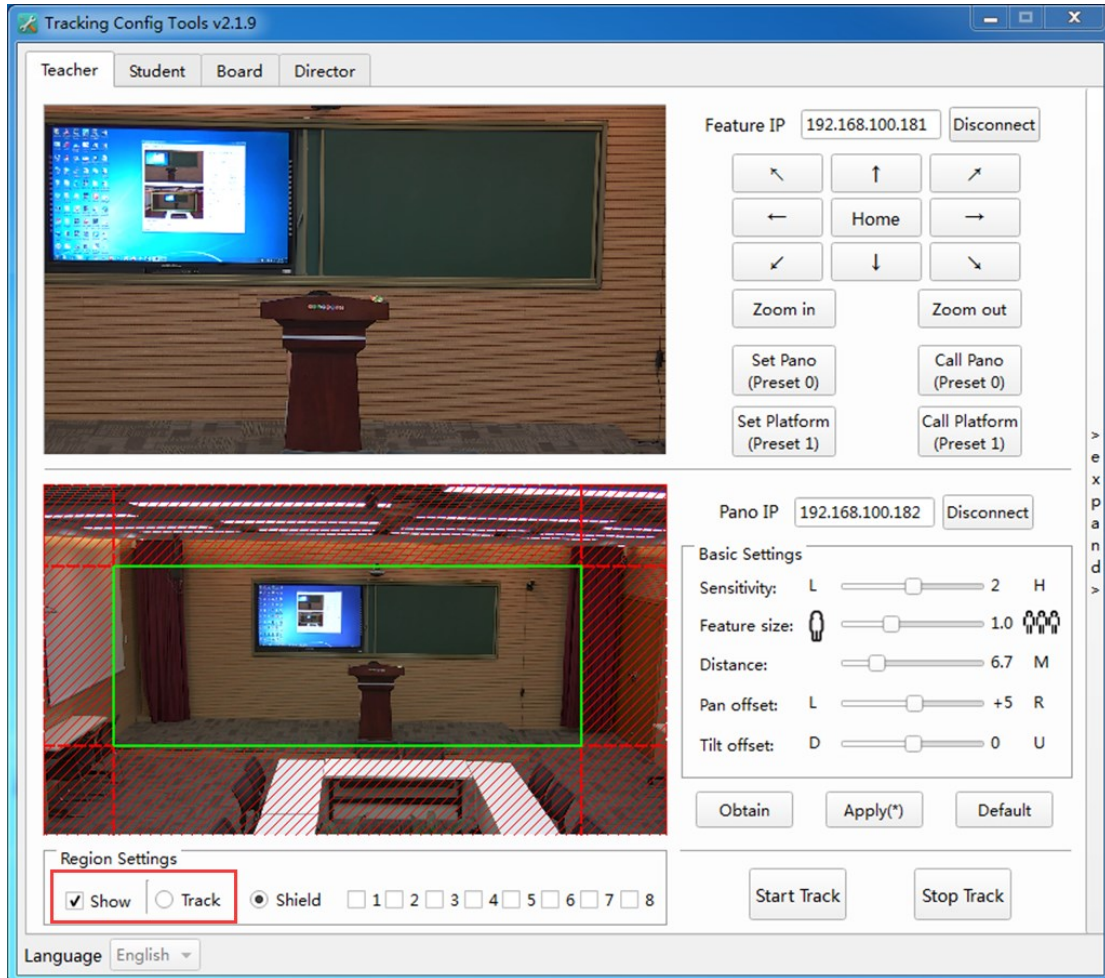
Fig. 4   Tracking Area

Shield area settings: shield area is used to screen interference sources in the tracking area; up to 8 shield areas are supported. Check "Show" box and select "Shield"; click LMB (left mouse button) to make a start point and hold LMB to draw shield areas. See Fig.5.
P.S. A portion of tracking area should be kept beneath shield areas; shield areas cannot set on the left and right borders of tracking areas.
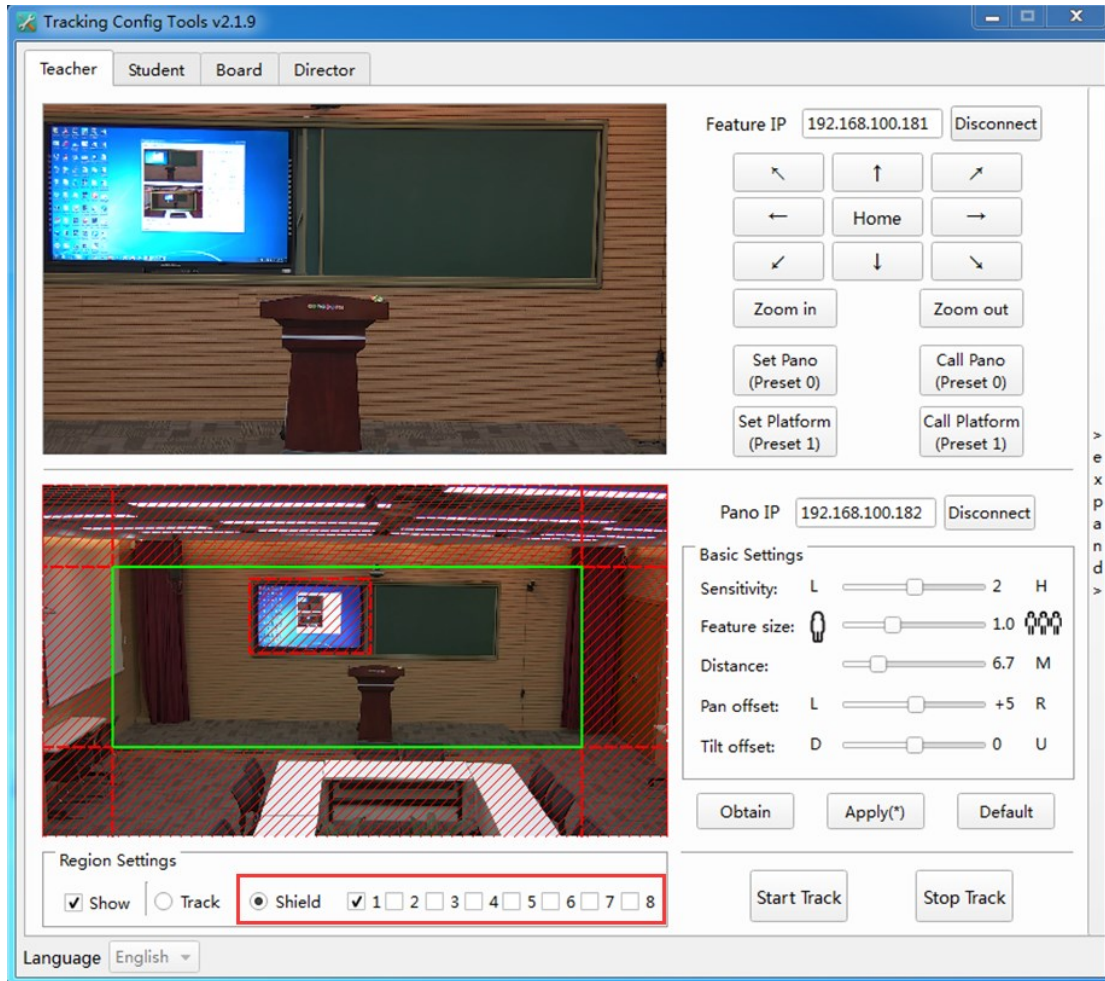
Fig. 5   Shield Area

Step 5:

Advanced settings: click "expand" to access advanced settings.

Panorama scene camera calibration: check "Show calibration cross" box to show the calibration cross on the screen. Use PTZ to control camera positions and make sure the center point of feature scene camera and panorama scene camera are converged. Then click "Calibration" to calibrate cameras; click "Reset" to get back to calibrated positions. See Fig. 6.
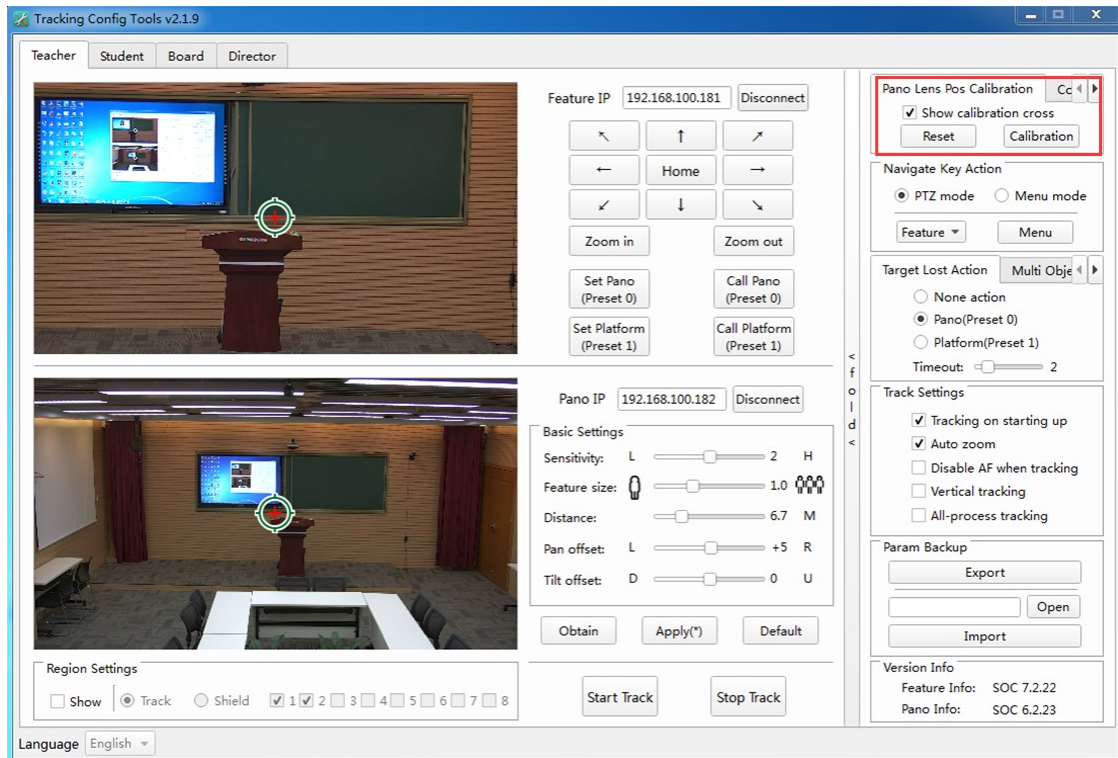
Fig. 6   Calibration of Camera Position

Navigate Key Action: PTZ mode and menu mode are available. In the menu mode, select "Feature" or "Pano" camera and click "Menu" button to show camera OSD (on-screen display) menu. See Fig. 7 and Fig. 8; in the menu mode, the feature camera can be controlled manually.
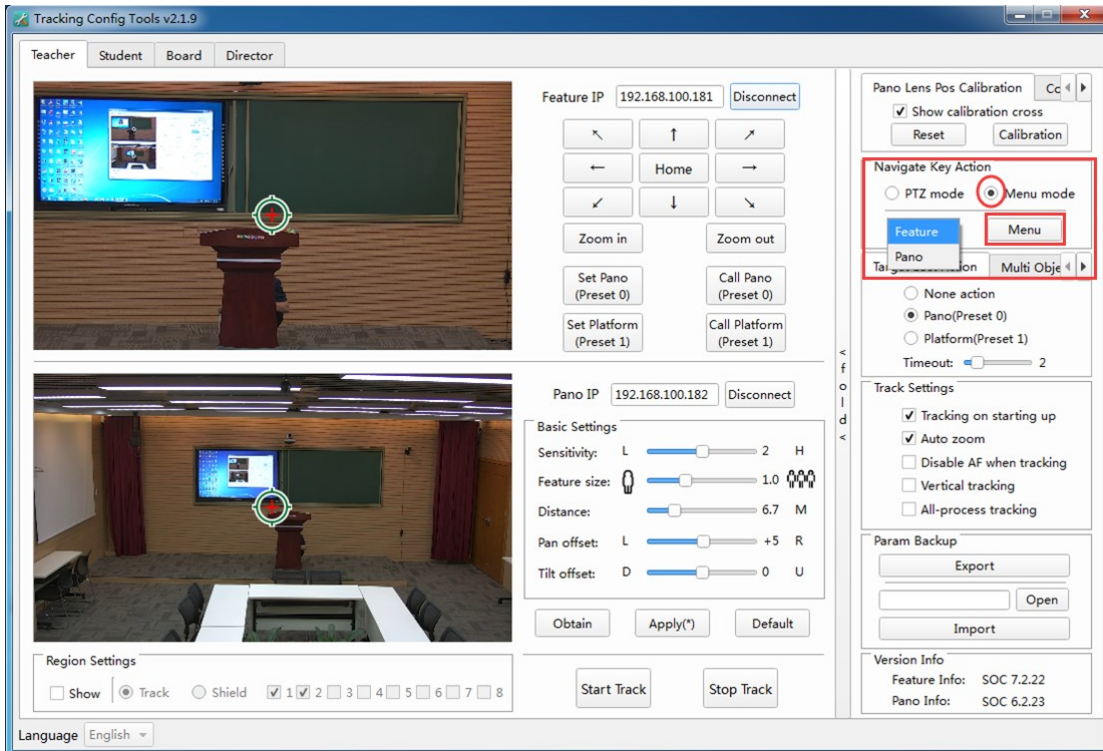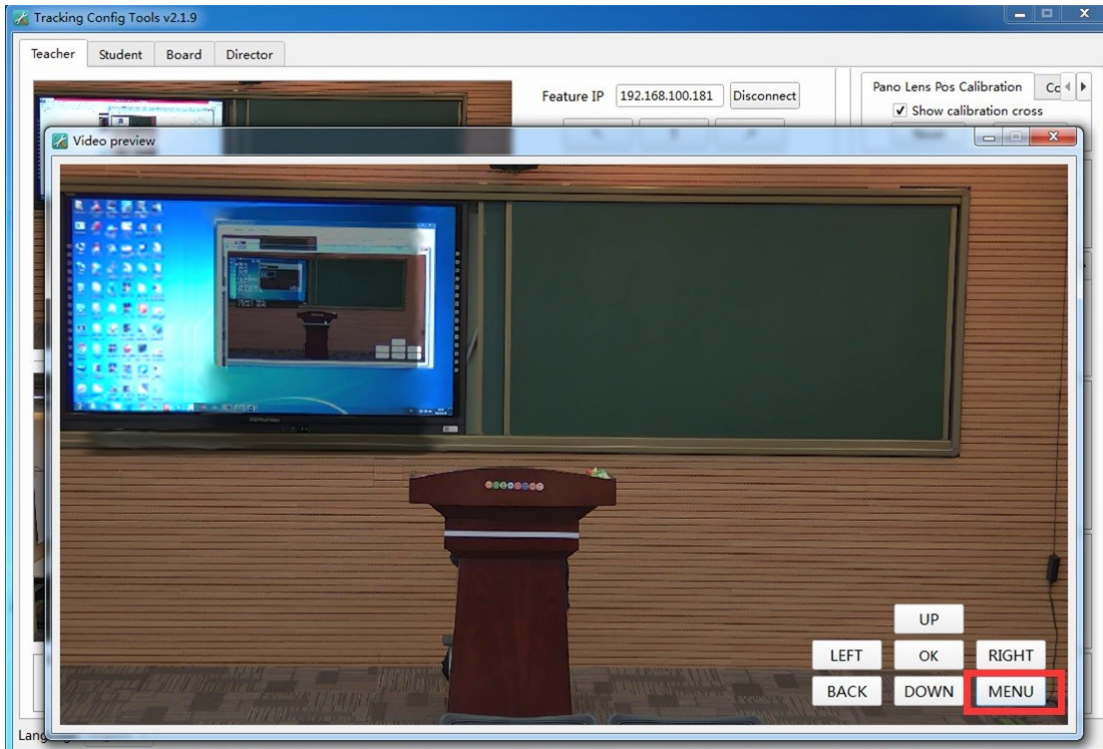
Fig. 7   Navigate Key Action

Fig. 8   Menu Preview

Target Lost Action: set up feature camera action after target is lost. Three actions can be selected: None action, Pano (Preset0), Platform (Preset 1).

Timeout: execute **Target Lost Action** after Timeout when target is lost; setting range: 0-15s; default value: 3s. See Fig. 9.
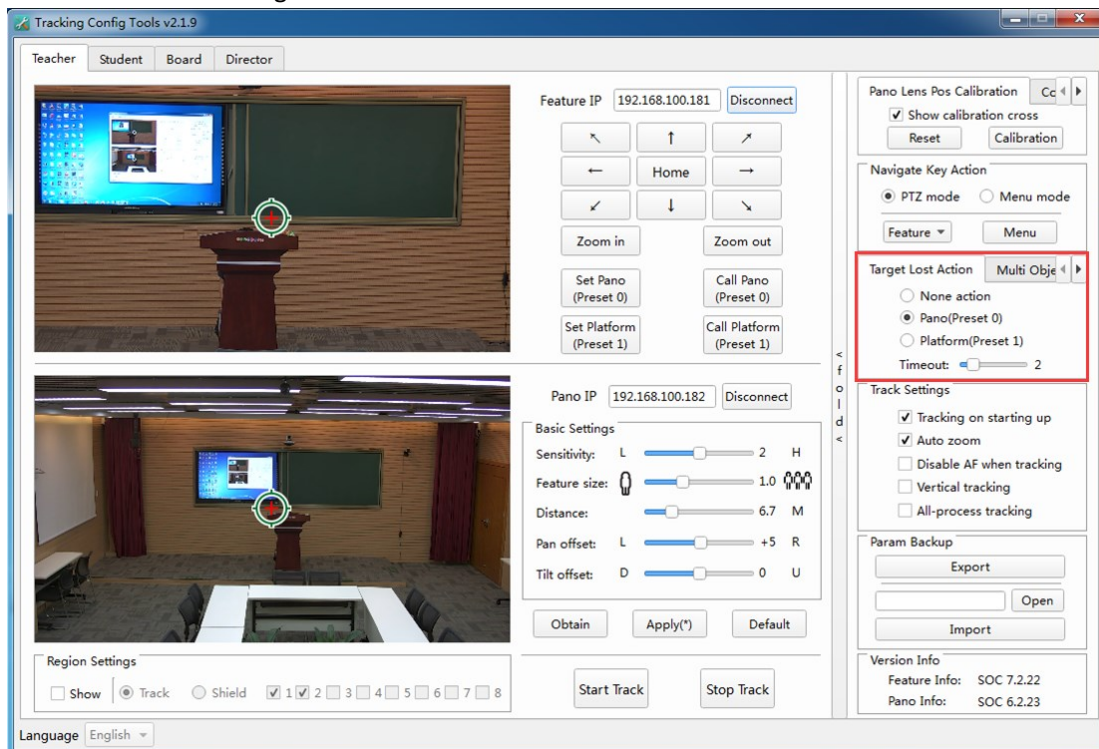

Fig. 9   Target Lost Action

Multi Objective Action is used to set up the tracking status when there are multiple targets in teachers tracking area. Two actions can be selected: Track moving objective and Return Pano. When teacher numbers reduced from multiple targets to single target, cameras need 5 seconds delay before tracking single target. See Fig. 10.
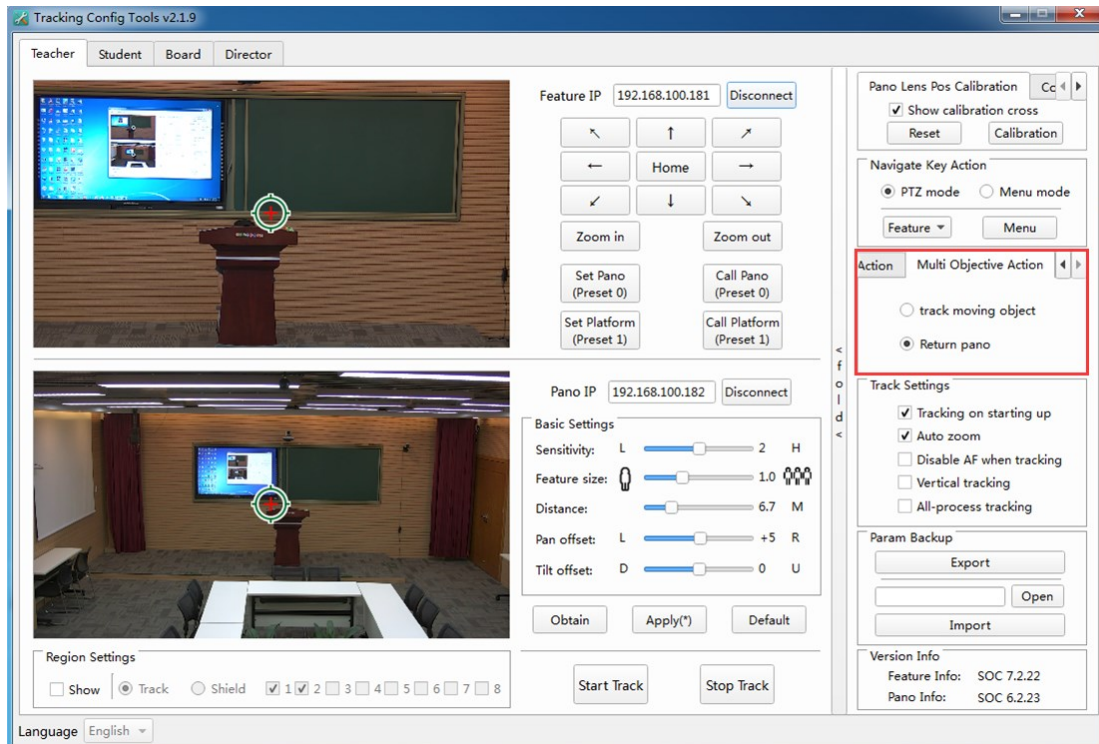
Fig. 10   Multi Objective Action

Track Settings is used to set up the operation mode of tracking cameras. Five operation modes are available: Tracking on starting up, Auto zoom, Disable AF when tracking, Vertical tracking and All-process tracking. Operation mode takes effect after checking " √ ". See Fig. 11.
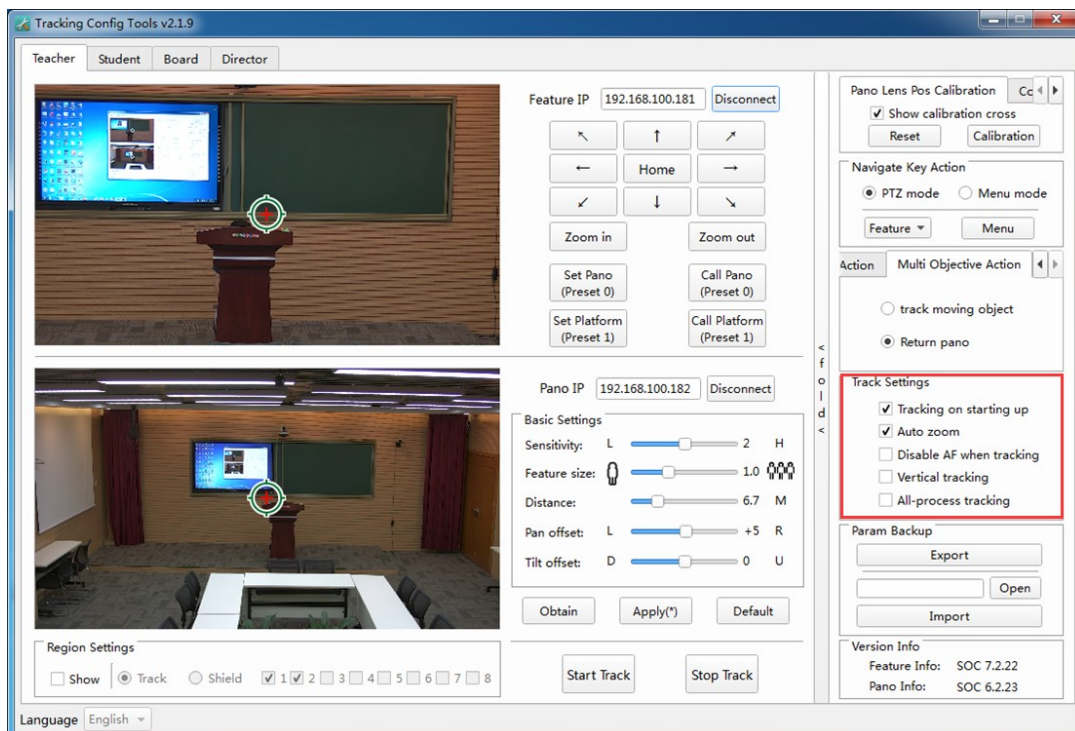

Fig. 11   Tracking Settings

Param Backup is used to import and export setting parameters of feature cameras to Simplify setting operations under similar conditions. See Fig. 12.

Export: when camera stops tracking, click "Export" to backup tracking parameters. Click "Open" to show file path.

Import: when camera stops tracking, click "Open" and select a parameter file. Then click "Import" to import the file.
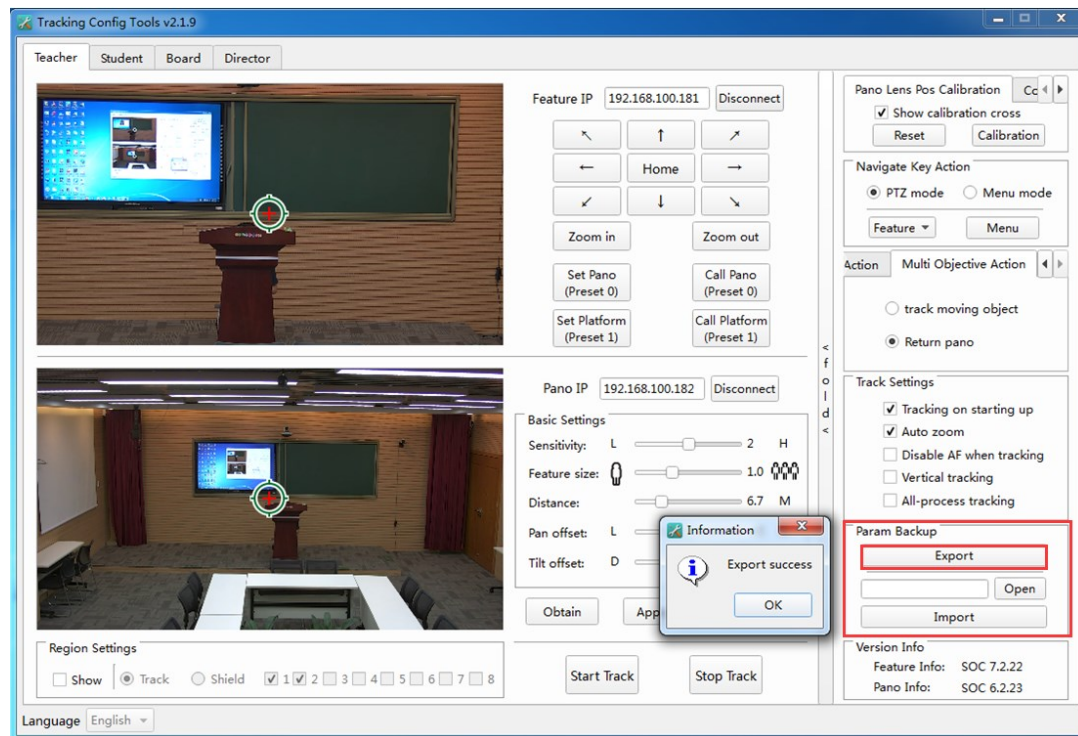

Fig. 12   Parameter Backup

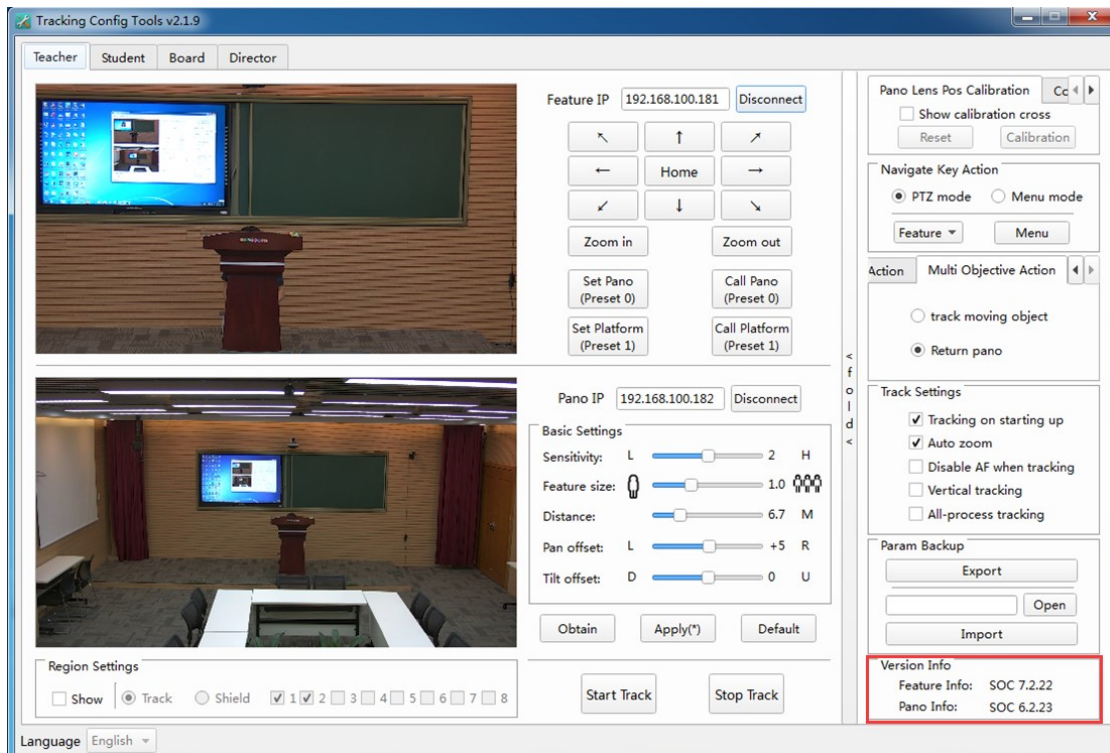**Version Info** is used to show version information of feature and pano cameras. See Fig. 13.

Fig. 13   Version Information

Step 6:

Start tracking: after finishing step 1 ~5, click "Apply" button for the parameters to take effect. Click "Start Track" for auto tracking. See Fig. 14.
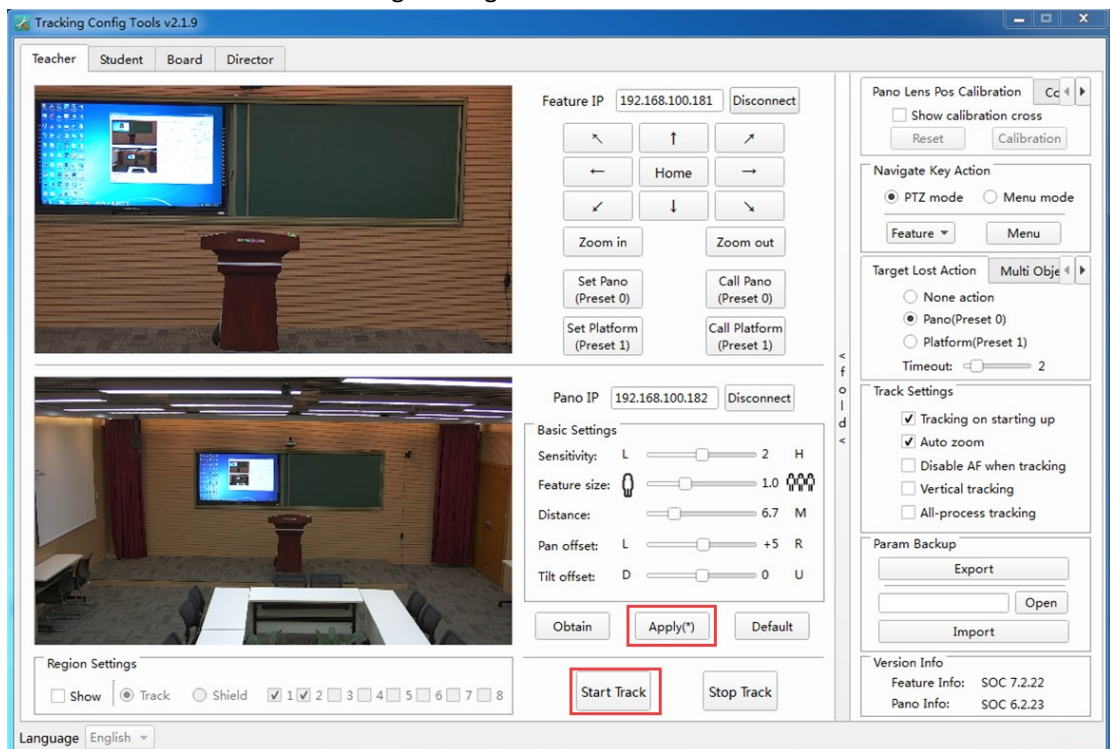

Fig.14   Start Track

Student

Step 1:

Enter the IP address showed in Fig.15 to connect the feature camera and the panorama camera and then click "Stop Track" to start calibration. See Fig. 15.
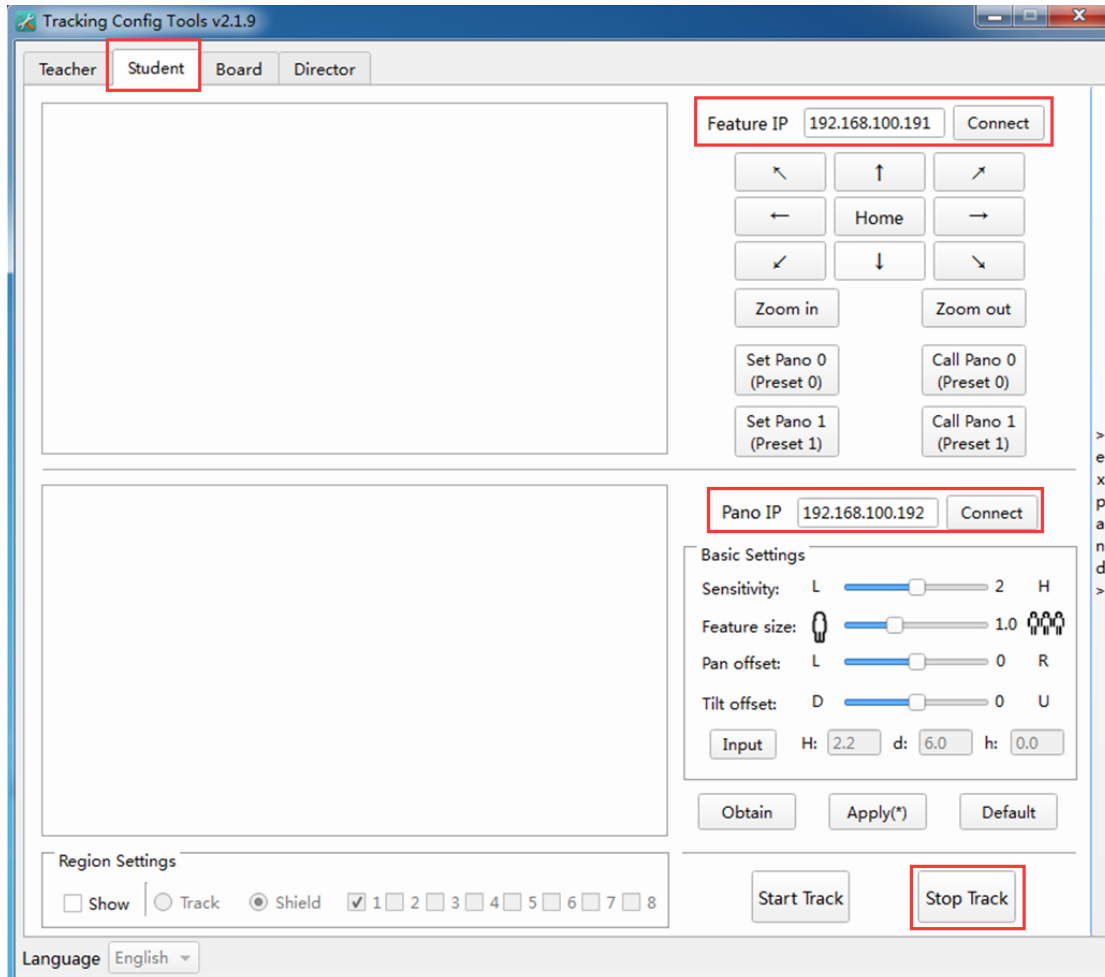
Fig. 15   Camera IP Connection

Step 2:

When setting cameras, use 【↑】【↓】【←】【→】【Zoom In】【Zoom Out】 to adjust camera positions in order to test the effectiveness of Panorama or feature scenes. See Fig. 16.
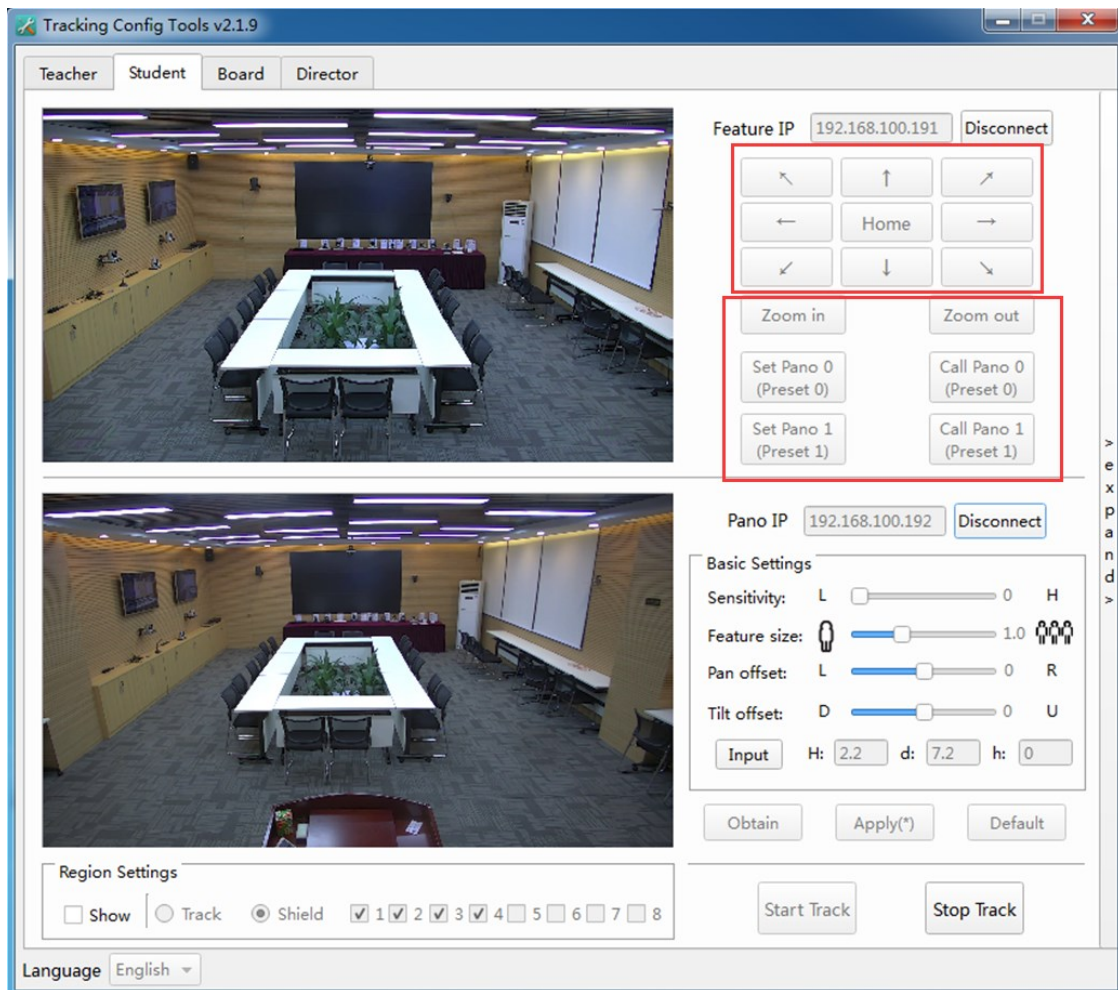
Fig. 16   Preset Position Settings

Step 3:

Adjust parameters in "Basic Settings" and click the "Apply" button to take effect. See Fig. 17.

● **Sensitivity**: sets tracking range and response speed based on different tracking targets: for primary school students and junior high school student, set value to 3~4; for senior high school students, set value to 2; for college student, set value to 0 or 1. Default value: 2.

● **Feature Size**: sets view range of the feature camera; setting range: 0.5~2.0; default value: 1.0.

● **Pan Offset**: sets camera horizontal range -200~+200 (steps), 0.069° /step; Left offset: -200~0; Right offset: 0~200; default value: 0.

● **Tilt Offset**: sets camera vertical range -200~+200 (steps), 0.069° /step; Down offset: -200~0; Up offset: 0~200; default value: 0.

● **Input:**
  H - panorama camera install height;
  h - objects height;
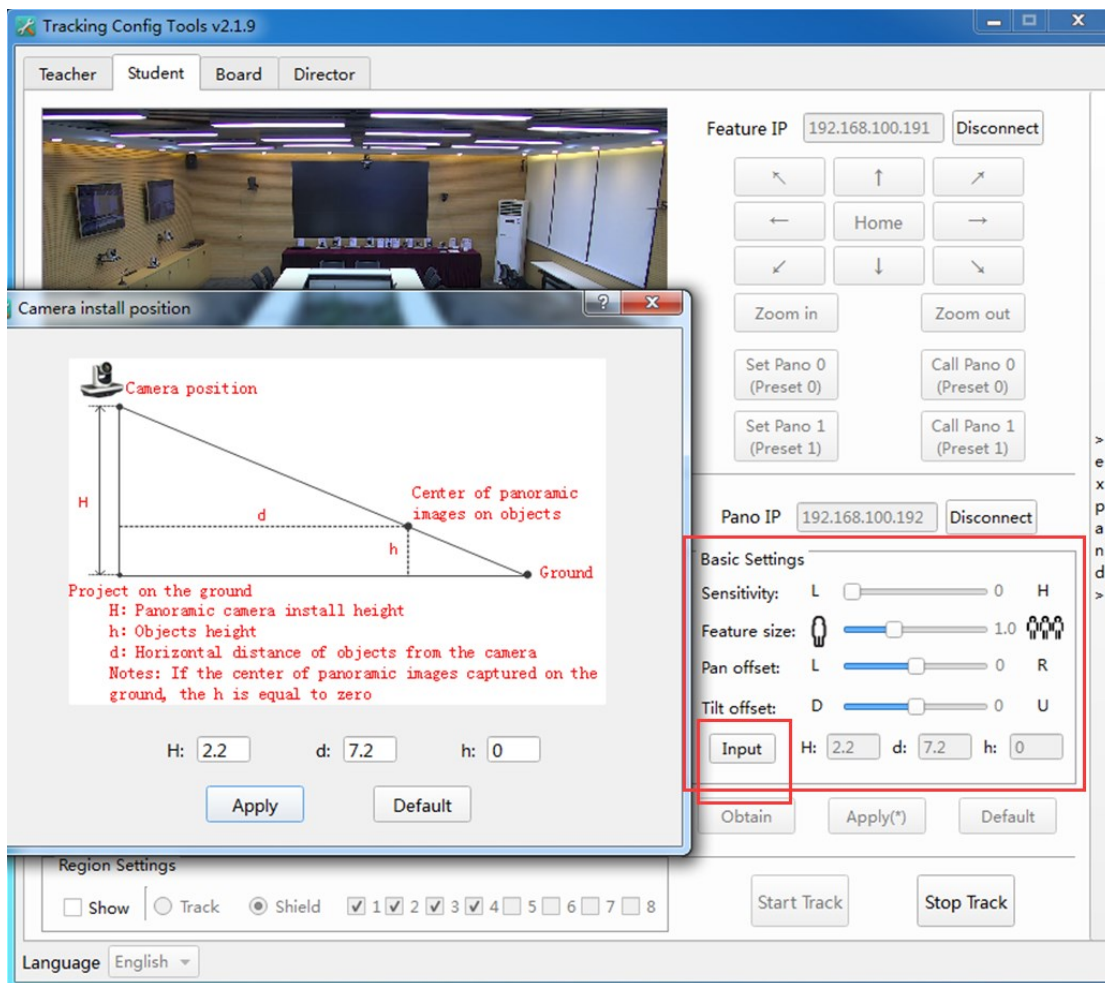 d – horizontal distance of objects from the camera.

Fig. 17   Basic Settings for Student Camera

Step 4:

Shield area settings:

Shield area settings: tick "Show" box and select " √ " in the shield area box such as box 1. Click left border of shield area 1 with LMB (left mouse button) and hold LMB in anti-clockwise direction to right border. See Fig. 18.
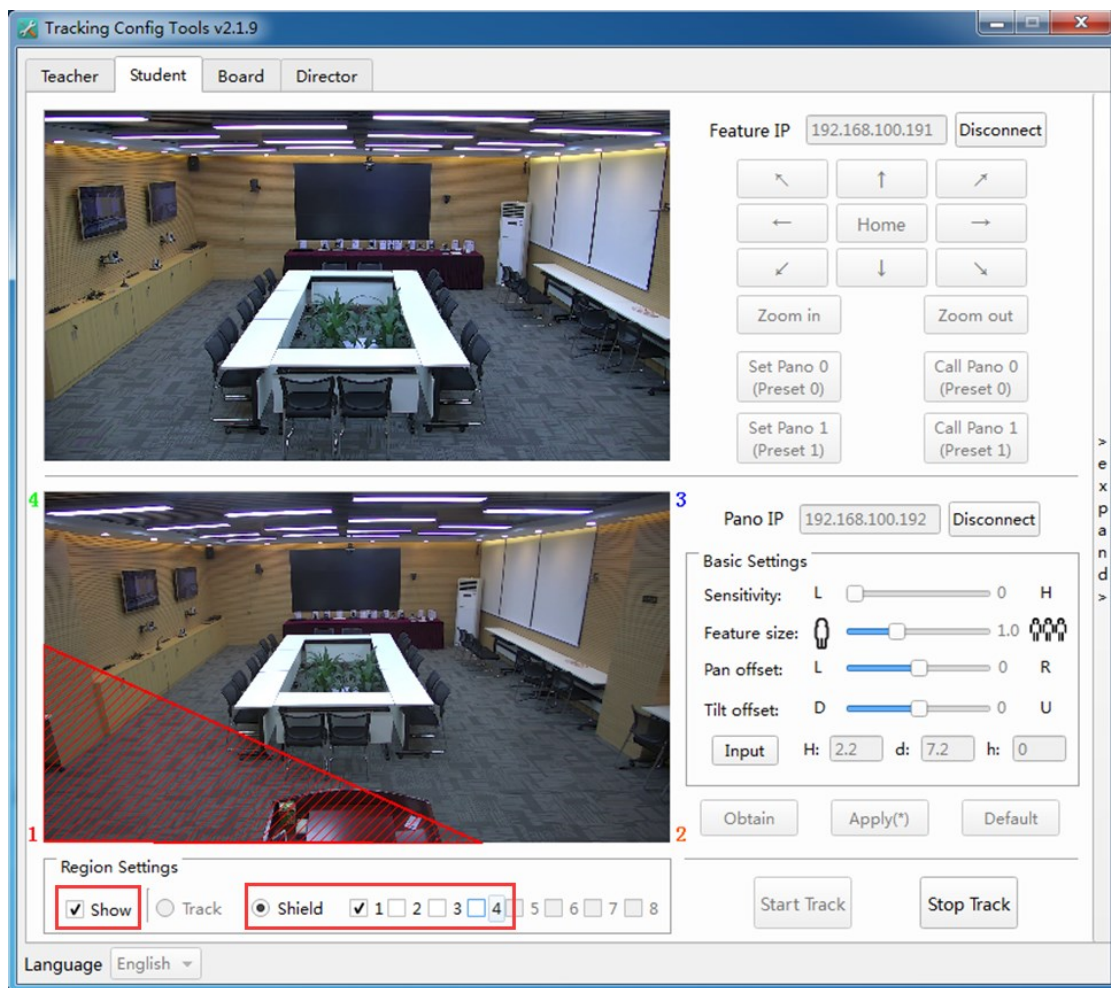
Fig. 18   Shield Area

Step 5:

Advanced settings: click "expand" to access advanced settings.

Panorama camera calibration: check "Show calibration cross" box to show the calibration cross on the screen. Use PTZ to control camera positions and make sure the center point of feature scene camera and Panorama camera are converged. Then click "Calibration" to calibrate cameras; click "Reset" to get back to calibrated positions. See Fig. 19.
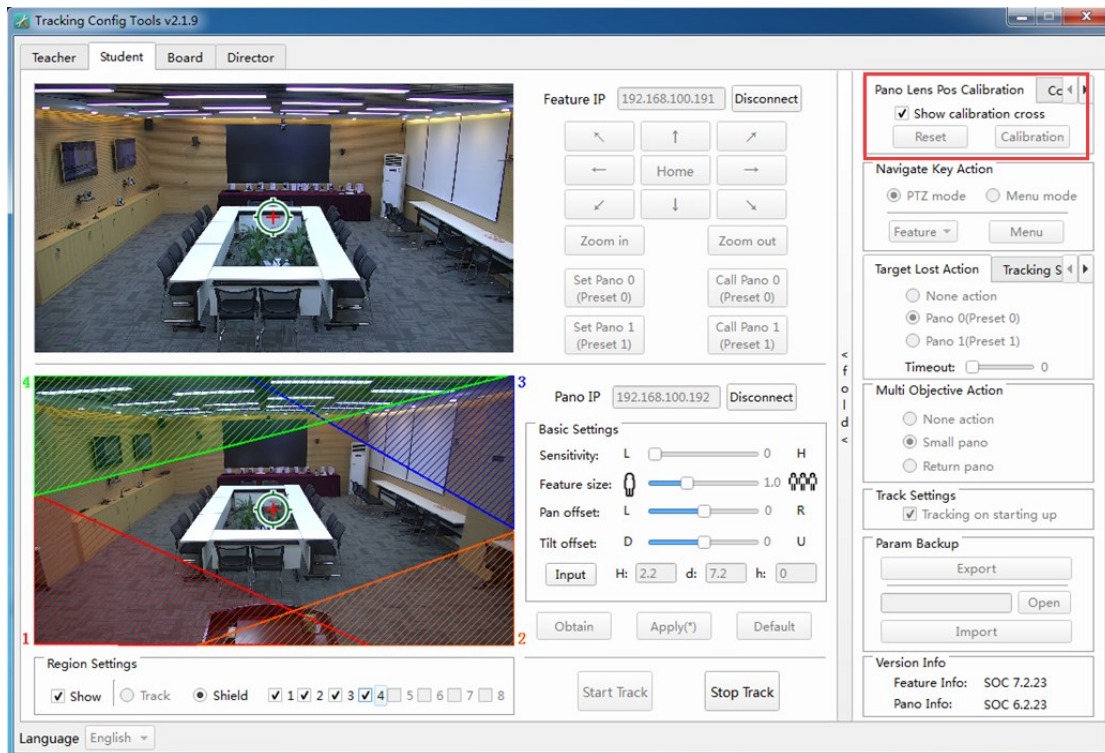
Fig. 19   Calibration of Camera Position

Navigate Key Action: PTZ mode and menu mode are available. In the menu mode, select "Feature" or "Pano" camera and click "Menu" button to show camera OSD (on-screen display) menu. See Fig. 20; in the menu mode, the feature camera can be controlled manually.
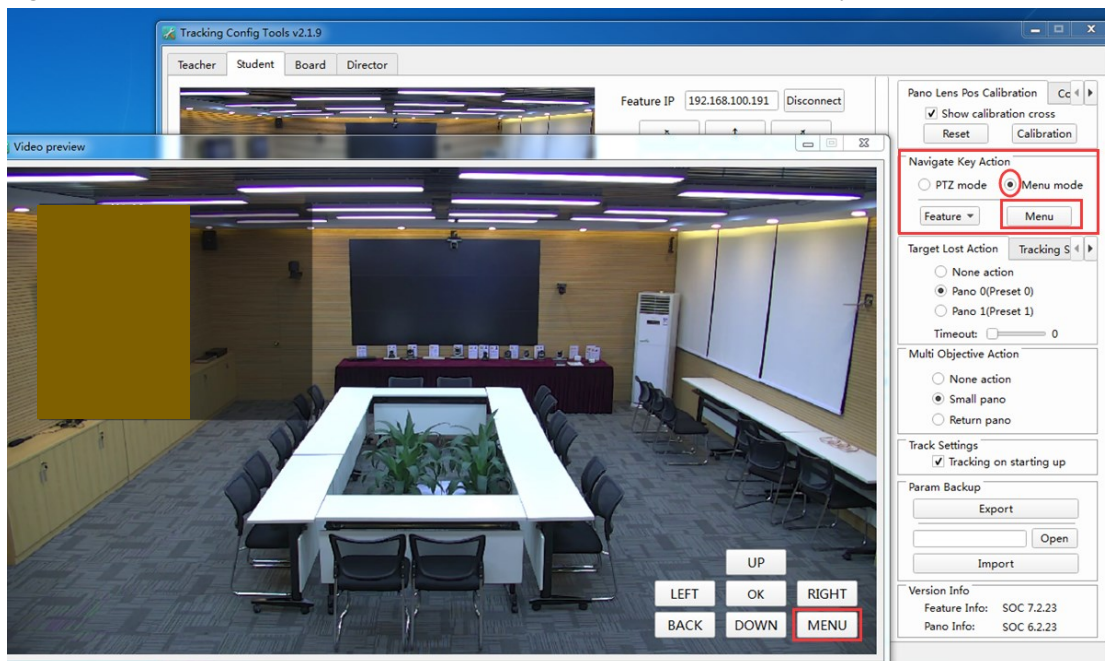

Fig. 20   Navigate Key Action

Target Lost Action: set up feature camera action after target is lost. Three actions can be selected: None action, Pano (Preset0), Platform (Preset 1).

Timeout: execute **Target Lost Action** after Timeout when target is lost; setting range: 0-15s; default value: 0s. See Fig. 21.
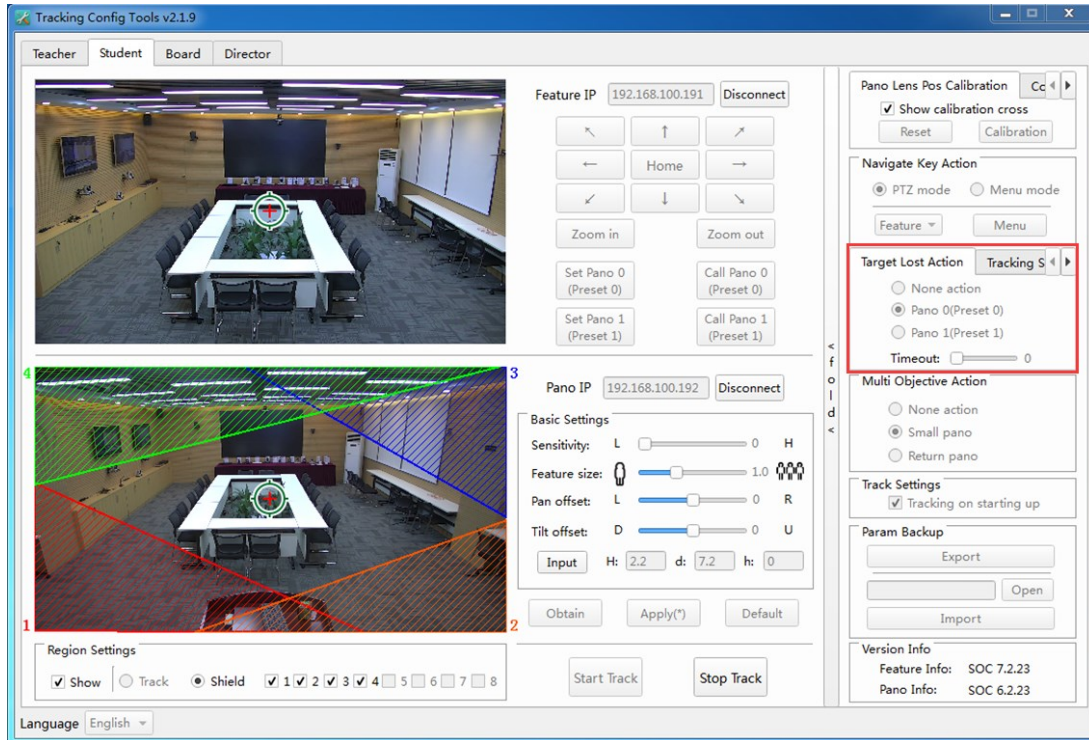

Fig. 21   Target Lost Action

Tracking Speed: sets the vertical tracking speed (Tilt Speed) and horizontal tracking speed (Pan Speed) of the feature camera;

Response Time: sets the response time of the tracking camera when a student stands up. Default time: 0.6s. See Fig. 22.
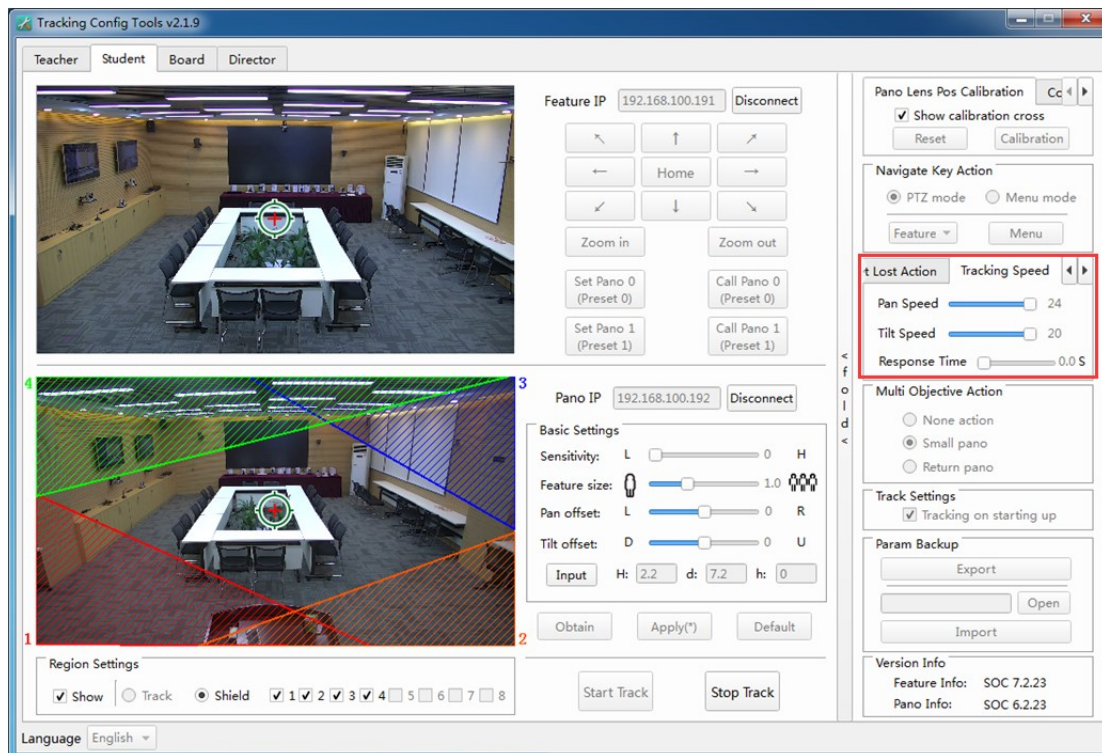
Fig. 22   Tracking Speed

Lens Param: sets the parameters of panorama camera. "Lens 1" is for 3.6mm lens and "Lens 2" is for 3mm lens. Default lens: lens 1. See Fig 23.
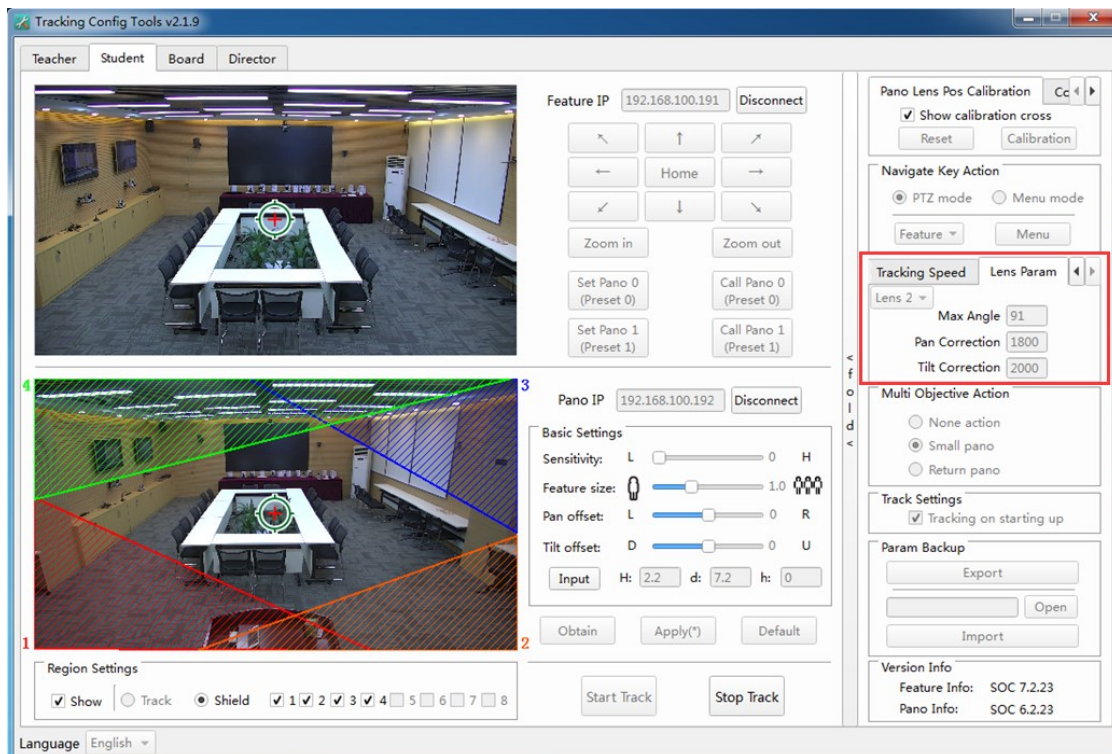

Fig. 23   Lens Type

Multi Objective Action is used to set up the tracking status when there are multiple students standing up. Three actions can be selected: None action, Small pano, Return pano. Default settings: small pano.

Track Settings is used to set up the operation mode of tracking cameras. Five operation modes are available: Tracking on starting up, Auto zoom, Disable AF when tracking, Vertical tracking and All-process tracking. Operation mode takes effect after ticking " √ ".

Param Backup is used to import and export setting parameters of the feature camera to simplify setting operations under similar conditions.

Export: when camera stops tracking, click "Export" to backup tracking parameters. Click "Open" to show file path.

Import: when camera stops tracking, click "Open" and select a parameter file. Then click "Import" to import the file.

Version Info is used to show version information of feature and pano cameras. See Fig. 24.
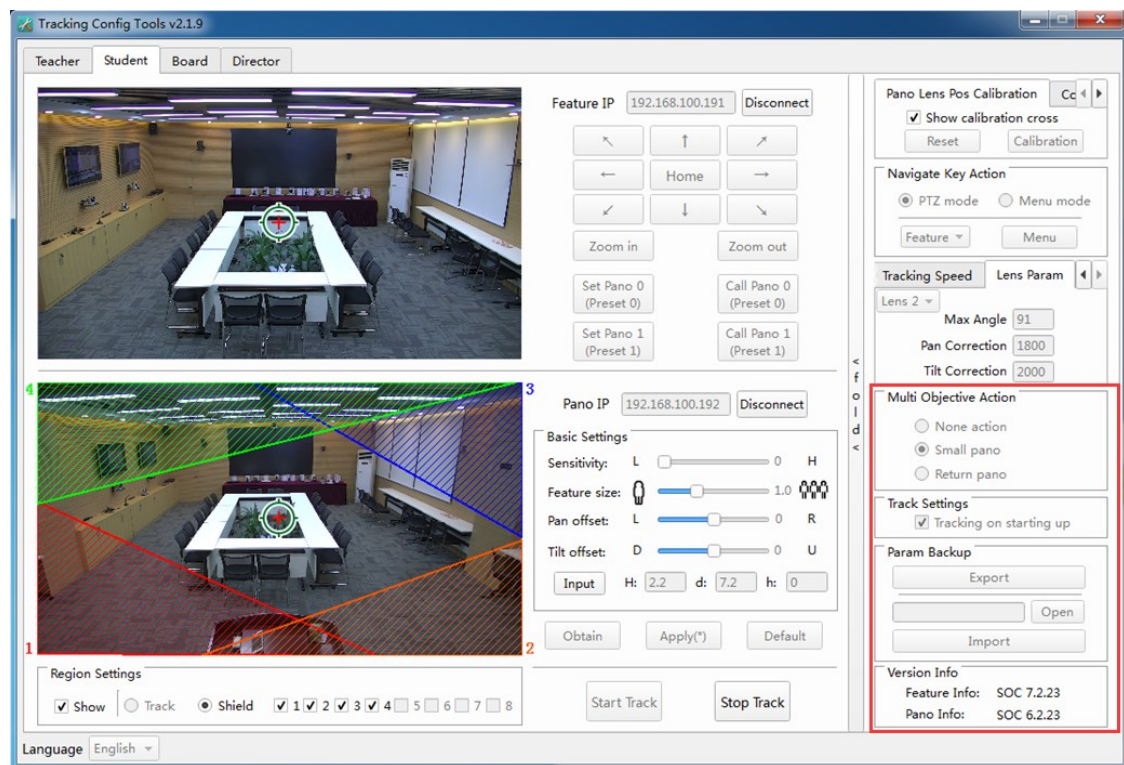
Fig. 24   Version Information

Step 6:

Start tracking: after finishing step 1 ~5, click "Apply" button for the parameters to take effect. Click "Start Track" for auto tracking. See Fig. 25.

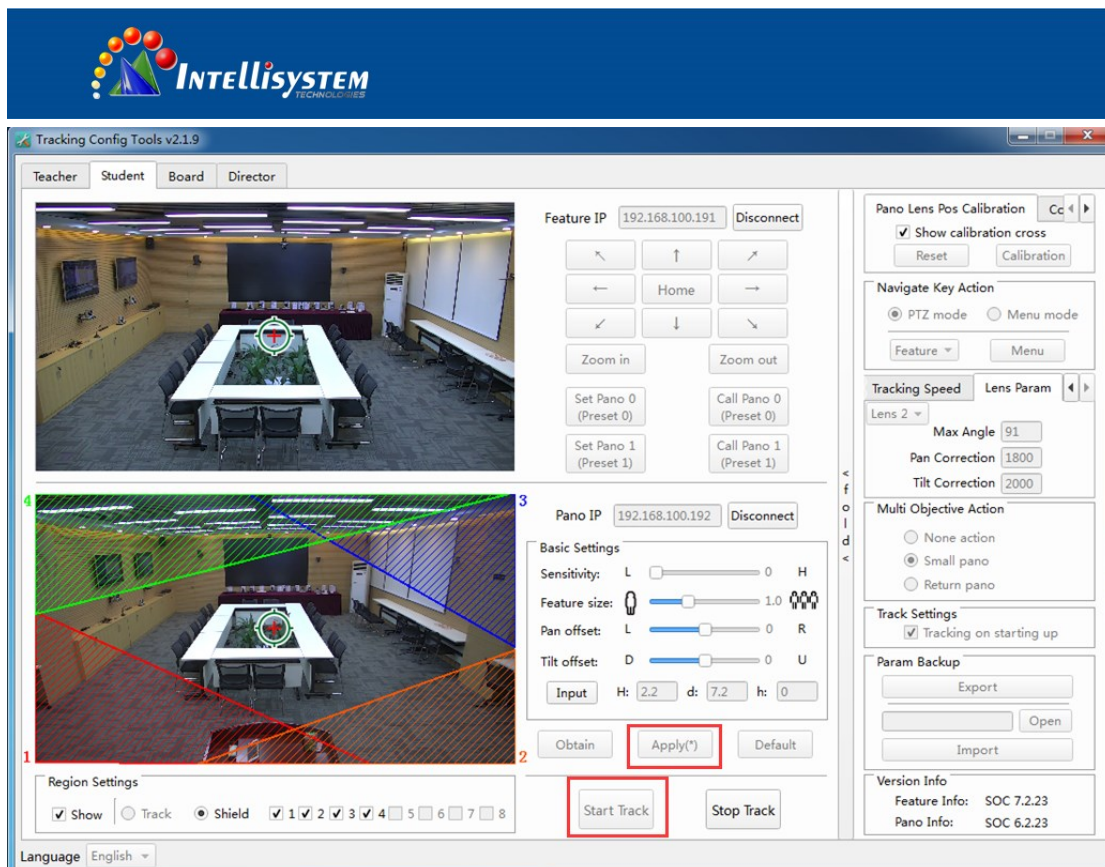Fig. 25   Start Tracking

1.3 Director

Director settings are used to configure the communication parameters among teacher camera, student camera and board system. In order to set Director parameters, it is required to enter the board system IP and receiving port number as well as the communication commands among teacher camera, student camera and board system.

Step 1:

Set up communication protocols, command formats and director strategies, etc. See Fig. 26.

Port: when the UDP is selected as the communication protocol, the default port number is 8791 (no adjustment is permitted).

Baudrate: when the serial port is used for the communication protocol, the baudrate of the serial port is 9600K bps (no adjustment is permitted).

Protocol: the communication between the camera and the director system can be serial port or network. It is required to select one from UDP, TCP or serial port. Default setting: UDP.

Command Type:

It is used to select the type format between the camera and the director system. Support hexadecimal or character string for your free choice. Default format: hexadecimal.

Director Server: configure director system's IP address and receiving port. Default address: 192.168.100.66; default port: 9999.

Director Code Send Mode is used to select sending times of director code: Single, Triple and Continuously.
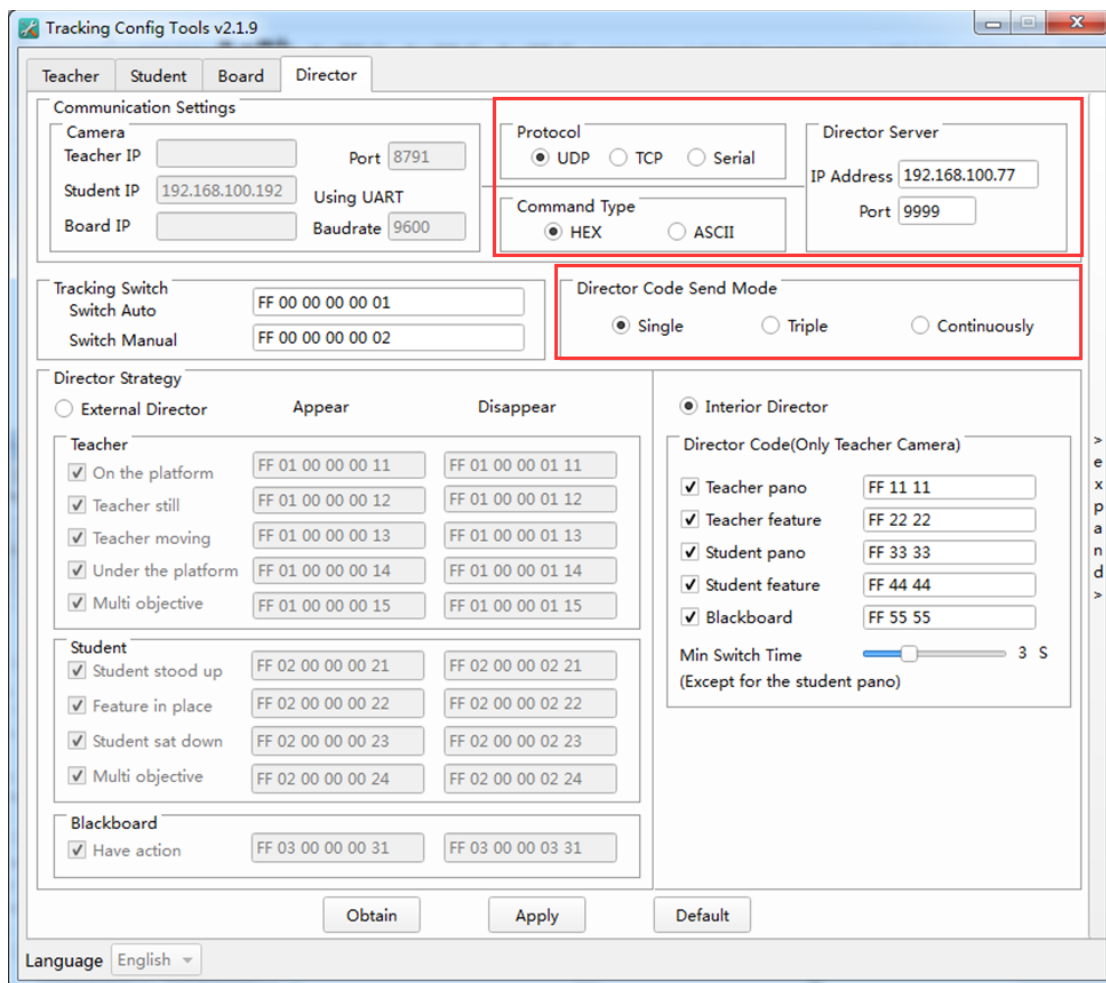
Fig. 26   Director Parameter Settings

Step 2:

Select director mode and fill in director strategy. Default setting: Interior Director. See Fig. 27.

Switch Auto: when "Switch Auto" is selected, the tracking mode is switched to automatic tracking. Default value: ff 00 00 00 00 01 (adjustment is available).

Switch Manual: when "Switch Manual" is selected, the tracking mode is switched to manual tracking. Default value: ff 00 00 00 00 02 (adjustment is available).

Director Strategy:

External Director: the board camera, the student camera and the teacher camera will send current status codes to the director system independently. For example: board camera has two status (action, no action); student camera has four status (stand up, take a seat, sit down and multiple targets); teacher camera has five status (step on the stage, no move, move, step down the stage, multiple targets). The director system needs to collect status from three cameras for directing the broadcast. For example, when the teacher steps on the stage, the PRM displays teacher's feature scene; when the teacher steps down the stage, the PRM displays student's panorama scene; when a student stands up, the PRM displays student's feature scene; when multiple students stand up, the PRM displays student's panorama scene.

Interior Director: the teacher camera will receive the status of board camera, student camera

and teacher camera and send switch codes to the director system for broadcast. The director system needs not to judge current status. That is, when there is movement in board camera, the camera will send board switch code. If there is no movement in board camera, the system will judge if there is movement in student's camera and finally judge if there is movement in teacher's camera.

Min Switch Time: when the minimum switch time is locked, the broadcast image can switch to images with higher priority. Student feature scenes will not be processed.
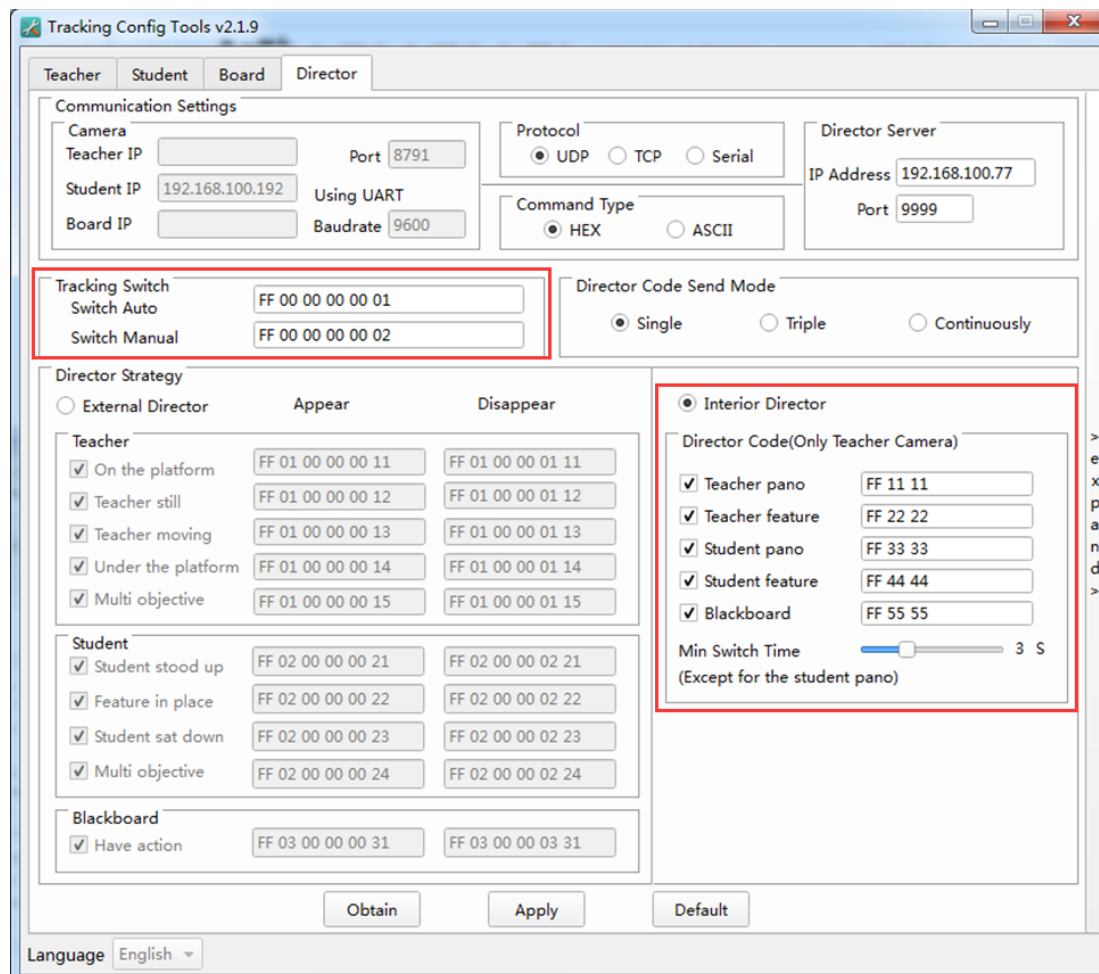
Fig. 27   Interior Director

Step 3:

After setting is complete, click "Apply" for the parameters to take effect. See Fig. 28.

Fig. 28   Setting Complete

2. Precautions

1. After setting the parameters, it is required to click "Apply" button for the system to take effect. Otherwise the changed parameters will not work.
2. A portion of tracking area should be kept beneath teacher shield areas; shield areas cannot set on the left and right borders of tracking areas. Otherwise when the teacher leaves the tracking area from shield area, the target will not lose.
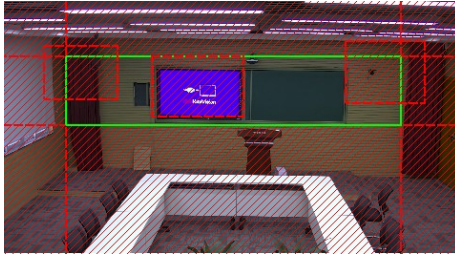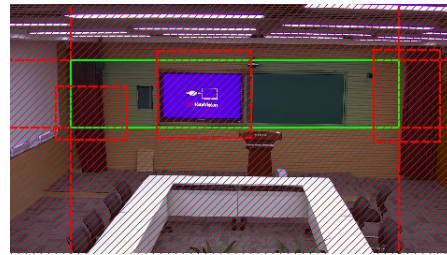
Correct Settings	Wrong Settings

3. When the teacher enters shield area, the camera will stop tracking after 30s; when there is teacher in the tracking area, the camera will lose target in shield area. When there are multiple teachers in the tracking area, if the parameter is set to "Return Pano", then the tracking position will return to panorama 0 or feature 1 (optional). It will take 5 seconds delay from multiple teachers tracking to single teacher tracking.

4. The user should set Sensitivity based on different people. The default value is 0, which is suitable for adults.

3. Firmware Update

Please refer to *V6 Network Update Guide*.