



TP-100

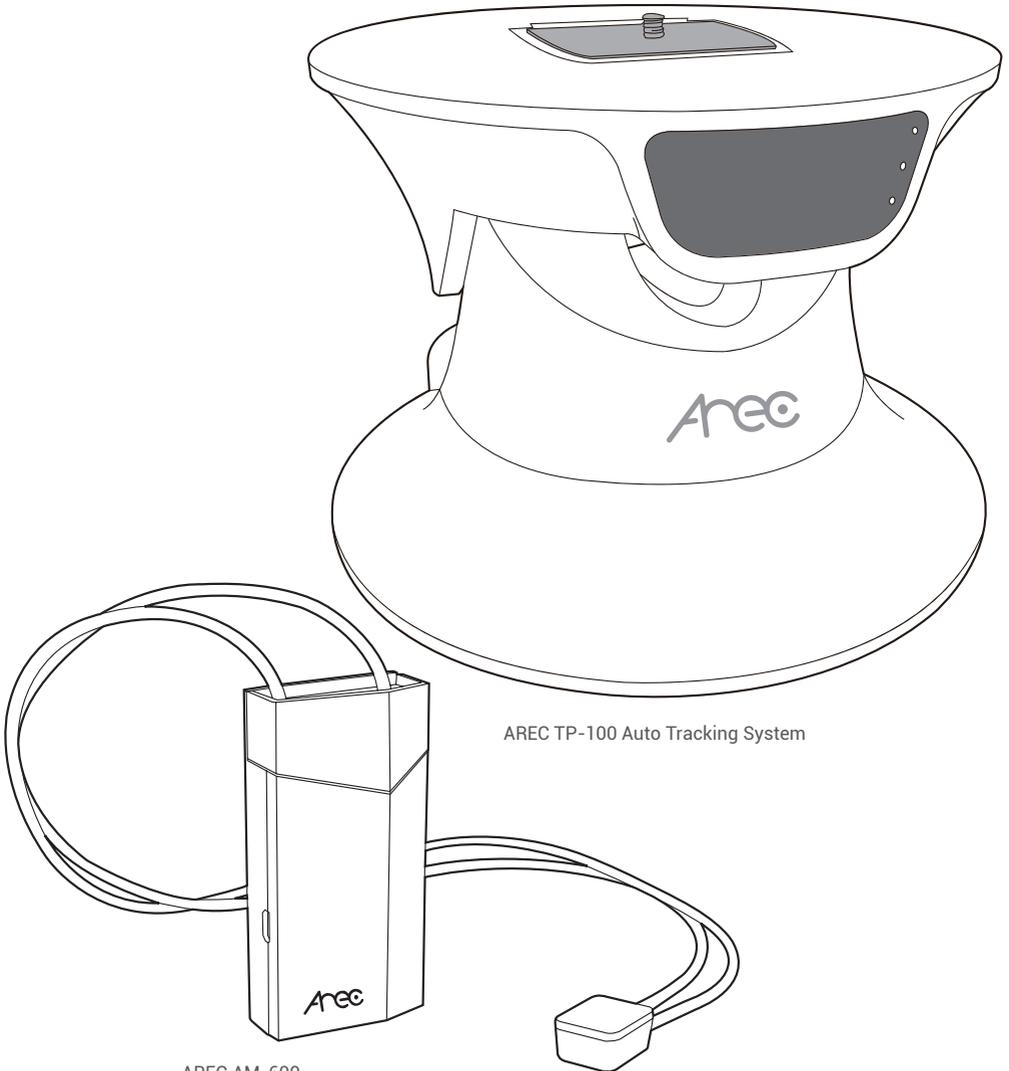
Auto Tracking System.

User Manual | English



Auto Tracking System

AREC TP-100 Auto Tracking System can work with different cameras for vertical and horizontal tracking. It may track lecturers/target in indoor environment when accompanied with a compact AREC AM-600 Positioner. In addition to online device setup, the AREC Auto Tracking System features both auto and manual tracking modes for even greater user conveniences. The best choice tracking recording device indeed!



AREC TP-100 Auto Tracking System

AREC AM-600

Wireless microphone positioner

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1. Product information

Safety Precautions

Precautions before using your product for the first time:

1. Please open the package of your product with care. Please keep the packaging material as you may need them for transport, storage, or return for service in future.
2. There is no switch or button inside your product that needs any operation from you. For your safety, DO NOT open the outer case of your product, apply improper operations on it, e.g. turn or swing it with great force, as you may get an electric shock and/or void the limited warranty. Contact your local dealer should there be any problem with your product.
3. For better tracking effect, please do not track in limited spaces. Install your product in open space without surrounding walls. Avoid walls, barriers like large size glasses and metal objects, in the planned tracking space.
4. The optimum installation distance: 4~7 meters away from the target object at height 2.5 meters above ground.
5. Your product is designed for use in indoor environments and without direct sunlight.
6. Please use your product in proper environment. Please DO NOT install your product in the following environment:
 - Unstable location or uneven surface
 - Location near strong magnetic field
 - Damp or leaking environment
 - Overheat or place near heater or wind pipes or location exposed to direct sunlight for long time
 - Dusty location
 - Vibrating location
 - Close to any amplifier
7. In case smoke or odor is detected, unplug the power adaptor and send to the service center for maintenance
8. Please insert the plug of the adaptor firmly in the power socket without exposing the pin to avoid electric shock. Ensure the socket is of adequate capacity for the required current. DO NOT insert the adaptor in the power socket before wiring to avoid personal injury.
9. Please remove the power plug if you are not to use your product for long time to maintain electric safety. Remove the plug by holding the plug's plastic part with dry hands.
10. Please wire your product according to the installation guide and instructions printed on your product for the optimal effect.

Hardware specifications:

TP-100 Auto Tracking System	
Rotation	Panning: 355 degree Tilting: 60 degree (-25 ~ +35 degree)
Tracking range	3~12 meter radius (from Positioner to TP-100)*
Manual operation	Webpage control (via TP-100 setting page or <AREC media station> online director)
	Joystick & console control via RS-485 interface (Pelco-D/Pelco-P protocol)
Setup function	Enable panning/tilting tracking Tracking sensitivity adjustment Offset position definition 15 preset points and 3 patrolling path One login user account and password management Device name definition and software update
Power supply	DC12V 2A (TP-100 + CI-218 / CI-303 / CI-430)
Working temperature	Celsius: 0~50 degree
Loading capacity	800g
Interface	RJ-45 port*2 Power socket*2 RS-485 connector*1
Suggested external camera devices	
Optional camera	AREC CI-218 (18X) digital network camera
	AREC CI-303 (3X) digital network camera
	AREC CI-430 (30X) digital network camera
Video format	H.264, up to 1080p@30fps
AM-600 wireless microphone positioner**	
Function key	stop tracking and mute function
Effective range of microphone	A circle of 12 meter radius (from microphone to sound receiving antenna)***
Audio input	Built-in microphone Φ3.5 audio input jack
Power input	Built-in rechargeable lithium battery 3.7V 720mA Interface: USB Micro-B port
Battery life	4 hours (approximate continuous operating time)

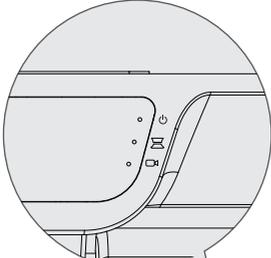
* Based on actual results in AREC recommended indoor operation environment.

** The wireless microphone must work together with AREC Media Station.

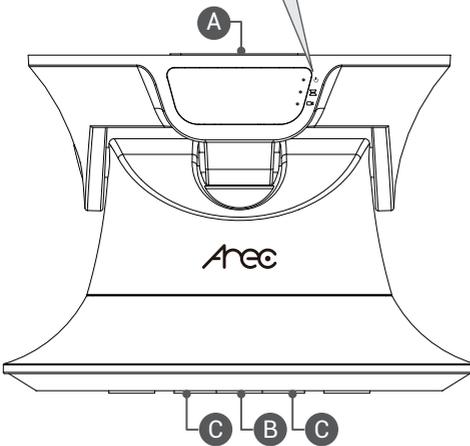
*** Without wall, human body or any large size barrier in between.

2. Getting to know your product

■ Front light indicators



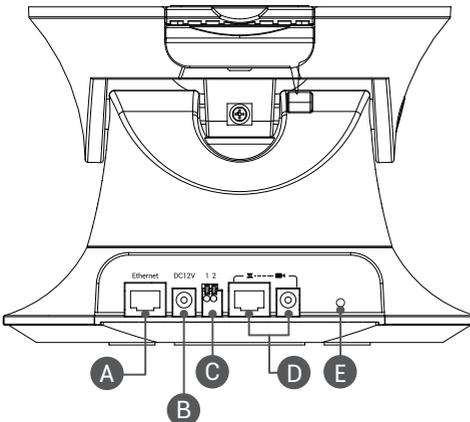
■ Front



- Power light indicator*
- TP-100 network light indicator
- Camera network light indicator
- * Steady green: When powered ON
Flashing green: When any object is identified

- A. Fast removing board
(for camera mounting)
- B. Standard 1/4" 20 UNC screw hole
(to fix to the fast removing board)
- C. M3 screw holes
(for fixing with included screws)

■ Rear



- A. TP-100 external network port*
- B. TP-100 external power socket
- C. RS-485 connector
- D. Power and network connector for TP-100 and Cloud console
- E. TP-100 reset button, reset all settings to the factory defaults, including the IP address.

*To connect to Local Area Network(LAN) or AREC Media Station

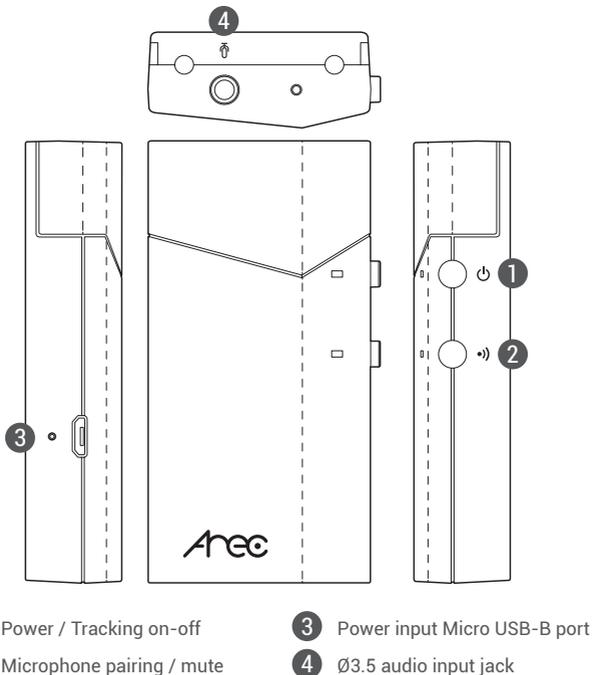
3. Light indicators of your TP-100

Light indicator displays its function and status and signals something is being tracked.

TP-100	Light indicator	Status
 Power Indicator	Red and green	The light turns green after power ON It flashes green when something is being tracking Flashing orange means firmware update/ system reset is ongoing.
 TP-100 Network Indicator	Blue	The light flashes blue when TP-100's network connection is working well.
 Network Indicator of the Network Camera	Blue	The light flashes blue when the network camera is working normally

4. Wireless microphone positioner information

AREC TP-100 can work with the AREC AM-600 wireless microphone, an exclusive positioner, for concurrent lecturing and tracking shooting. When the person wearing the microphone moves, the TP-100 would follow its movement without interruption by other moving objects.



5. Light indicators of your wireless microphone

Light indicator of your wireless microphone displays its function and status and signals pairing status with the AREC Media Station.

Wireless microphone	Light Color	Status
 Power switch and stop tracking button	Red and green	<p>Press and hold the button for more than 3 seconds until the green light turns on.</p> <ul style="list-style-type: none"> • Green light turns on when power is ON. • Red light flashes when power is low <p>Press the button twice to pause/resume tracking function. When the tracking function is paused, the TP-100 Auto Tracking Mount will return to the full-view position.</p> <ul style="list-style-type: none"> • Red light is on when auto tracking function is suspended. <p>To turn off the wireless microphone positioner, press and hold the button till the light turn red.</p> <p>The light turns off when the unit is power off.</p> <p>* Power saving function: The wireless microphone positioner will automatically power off, if it has been placed flat and static for more than 5 minutes.</p>
 Wireless microphone pairing and mute button	Blue and Red	<p>Press and hold the button for more than 3 seconds to pair the wireless microphone positioner with AREC media station*.</p> <ul style="list-style-type: none"> • Blue light flashes fast during pairing • Blue light flashes slow after successfully pairing <p>Press the button twice to mute/unmute the wireless microphone positioner.</p> <ul style="list-style-type: none"> • Red light is on, when the wireless microphone positioner is muted. <p>The wireless microphone positioner memorizes the latest pairing result. To clear the pairing, press and hold the button for more than 10 seconds.</p>
Micro USB port	Green	Green light is on during power charging
 Ø3.5 audio input jack		For external microphone

6. How to install your system

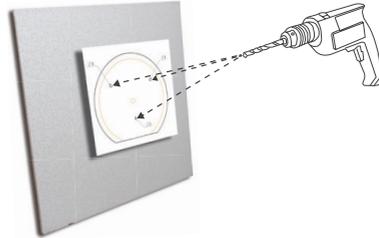
Your TP-100 can be ceiling mounted or wall mounted or affixed on a stand. See below for each installation method.

1. Ceiling mounted installation

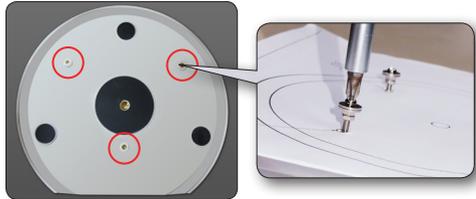
- (1) Remove the ceiling panels at the target installation location.



- (2) Open the positioning sticker, and affix it to the desired location at the target ceiling. Drill holes with a drilling tool.



- (3) Align the screw holes in your TP-100 to the holes you made earlier, lock it with the included screws and nuts.



- (4) Replace the ceiling with TP-100 to its original location, connect both the network and power cables, and the installation is completed.



2. Wall mounted or on a stand

- (1) The standard 1/4" 20 UNC and three M3 screw holes at bottom of TP-100 enable it to mount to a wall or on a stand.

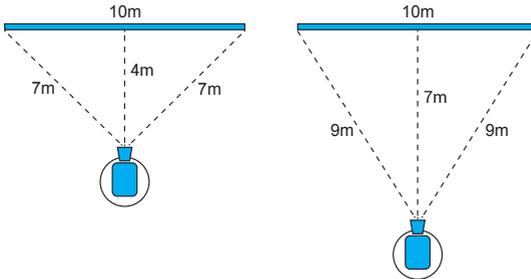


- (2) Fix the hanger or stand to a wall or floor, then mount your TP-100 to the fast removal board or the screw holes in the hanger.



Note 1: Some hangers may feature a screw locking place with limited size. The bottom of your TP-100 may thus fail to fully snap to it and lead to vibration during panning or tilting and, in turn, poor recording. Please use hanger with larger screw locking place.

Note 2: Recommended installation position: 4~7 meters away from the object being tracked.



7. How to enable the auto tracking function?

1. Connect your TP-100 to power source and the green power indicator lights up.
2. Power ON AM-600 by pressing and holding the button for more than 3 seconds. Its light indicator is steady green when powered ON.



3. Fix your AM-600 to the target person or object properly. After your AM-600 is detected by your TP-100, its power indicator flashes, and it follows the movement of the person automatically.



* Note: Fix your AM-600 to the target person or object properly. For better tracking effect, wear a positioner with the smooth and transparent side facing out.

8. How to install a network camera?

1. Pull open your TP-100's QUICK SHOE lock, remove the QUICK SHOE.



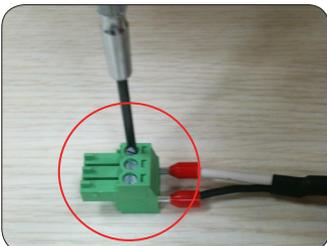
2. Lock the QUICK SHOE to network camera's standard screw holes by referring to directions shown in QUICK SHOE's instruction label.



3. Pull open your TP-100's QUICK SHOE lock, insert the network camera until the lock snaps back to its original position.



4. Prepare the power wire to connect your TP-100 and the network camera. If your network camera comes with a power terminal block, then lock it to the power wire first. Please make sure you have the anode and electrode aligned correctly.



* The white end is the anode and the black is the electrode.

5. Connect the network and power cables by referring to the printed instructions at the back of your TP-100 and the installation is completed.



9. The TP-100 management web page

You can connect your TP-100 to a PC or notebook with standard network cable and enter the TP-100 management site via your Internet browser or connect your TP-100 to an AREC Media Station and enter the setup page via the AREC Media Station management web page. See below for details.

Auto-Tracking System Administration Webpage

User Name :

Password :

The screenshot shows the 'Admin' tab of the TP-100 management interface. It includes sections for 'Device Info' (Device Name: TP100, MAC: BC:BA:E1:01:99:19, Firmware Version: V5.0.0.1), 'Auto Tracking Setting' (Tracking Mode: Auto-Tracking, Offset Position: Pan/Tilt, Sensitivity, and Full View Mode), 'Export/Import' buttons, 'Factory Settings', 'Installed Direction' (Device/Loggi/Upright), 'RS-485 Settings' (Protocol, Baud Rate, Control ID), and 'Network Setting' (DHCP, IP Address: 192.168.1.120, Subnet Mask, Default Gateway, User Name, Password).

In the case where the DHCP server is available

The default network setting of TP-100 is DHCP, which means IP is assigned by a router or any DHCP server. To log in to the administration web, please connect the TP-100 and your PC / Notebook to a router or a DHCP server.

Follow below steps to access the TP-100 for the first time:

Run the "Device Search Tool" utility, and click button.

- The tool should find the TP-100 and show detailed information.

Double click on the founded TP-100.

- An access window will pop-up and ask for user name and password. (Enter account ID and password admin/admin for the first time.)

Device Search Tool

Language : English ▼

5 device(s) found!

Model	Manufacture	Name	IP	MAC
CI-218	CI-218	CI-218	10.2.50.166	BC:BA:E1:01:00:CE
CI-303	CI-303	CI-303	10.2.50.131	BC:BA:E1:01:00:00
CI-430	CI-430	CI-430	10.2.50.141	84:7E:40:F0:83:CE
TP-100	TP-100	TP-100	10.2.50.140	BC:BA:E1:01:00:AA
TP-100	TP-100	TP-100	10.2.50.143	BC:BA:E1:01:00:BB

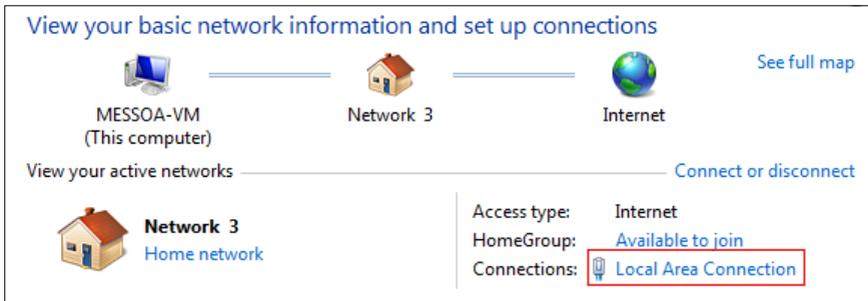
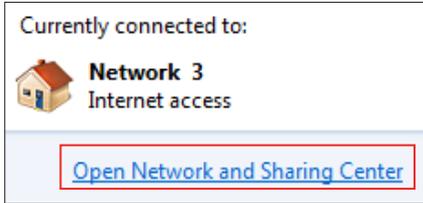
In the case where the DHCP server is unavailable

If no IP is assigned due to a DHCP server failure, or simply because the TP-100 is not connected to a DHCP server, the TP-100 provides an alternate IP address: 192.168.11.100

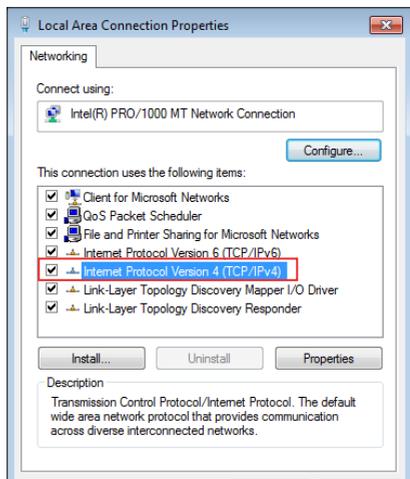
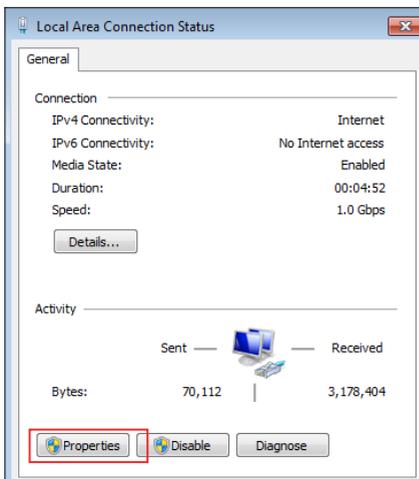
Therefore, to access the camera for the first time, please set the IP address of the PC as: 192.168.11.XXX; for example:

1. Your TP-100 connected to a desktop or notebook computer :

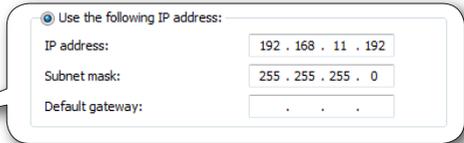
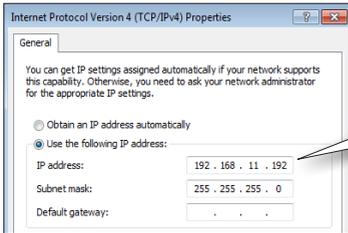
(1) Click to open Network and Sharing Center



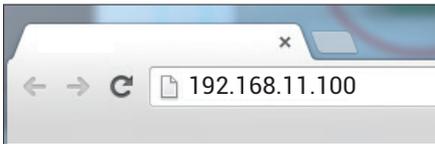
(2) Click the Properties button in Local Area Connection window and click the Internet Protocol Configuration (TCP/IPV4) option.



- (3) Type IP : 192.168.11.1XX in Use the following IP address: field (Figure 1). Enter the static IP address of your TP-100: 192.168.11.100 in your browser's URL bar (Figure 2). The login page displays. (Enter account ID and password admin/admin for the first time.)



(Figure 1)

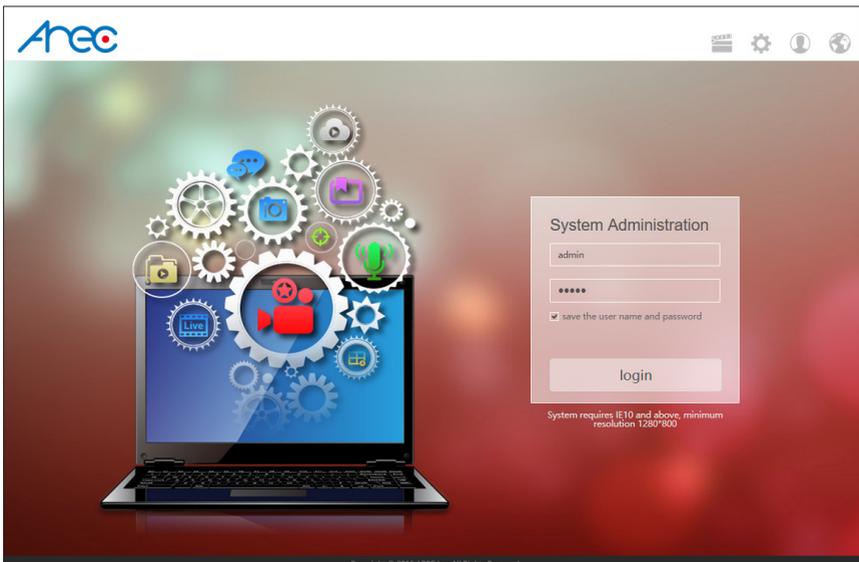


(Figure 2)

Note: If you failed to enter the setup page, try several times by repeating the above steps. If the problem persists, connect your TP-100 to a router, discover it by scanning with the "Device Search" utility. After the new IP address of your TP-100 is acquired, set the first three number of your computer's IP address to the same as that of the newly found IP address of your TP-100, open up your network browser, type in the newly found IP address of your TP-100 and it should work now.

2. Connect via AREC media station

- (1) Connect the TP-100 to KS-710, for example, enter this web page from the management interface.



(2) Click sensor setup in your KS-710 management page.

The screenshot shows the Arec System Administration interface. The left sidebar contains a menu with 'Sensor Setting' highlighted. The main content area is titled 'Sensor Setting' and has two tabs: 'Sensor Setting' and 'Discovery'. Under 'Video Sensors', there are four channels: Channel 1 (Computer), Channel 2 (Document Camera), Channel 3 (Teacher Camera), and Channel 4 (Network Camera). Below this, under 'Audio Sensors', there are sliders for Line in 1, Line in 2, HDM 1, HDM 2, and AREC Wireless Mic. An 'Apply' button is located at the bottom right.

(3) The search page displays. Click the Auto Tracking System tab and the Auto Tracking System information page displays.

The screenshot shows the Arec System Administration interface. The left sidebar contains a menu with 'Sensor Setting' selected. The main content area is titled 'Sensor Setting' and has two tabs: 'Sensor Setting' and 'Discovery'. Under 'Network Camera', there is a table with columns: Status, Manufacturer, Host Name, IP Address, MAC, and an action icon. Below this, under 'Auto-Tracking Mount', there is a table with columns: Status, Manufacturer, Host Name, IP Address, MAC, and an action icon. The table shows a scanning progress of 23%.

Status	Manufacturer	Host Name	IP Address	MAC	
1	?	AREC	192.168.0.102	BC:BA:E1:A0:00:1E	
2	?	AREC	192.168.0.133	00:D0:89:0E:51:61	
3	?	AREC	192.168.0.125	BC:BA:E1:A0:00:08	
4	?	AREC	192.168.11.22	BC:BA:E1:A0:00:40	

Status	Manufacturer	Host Name	IP Address	MAC	
Scanning 23 %					
1	OK	AREC	TP100WAN	192.168.0.106	BC:BA:E1:01:00:BB

- (4) Click Advance and the system login page pops up. Type the default account ID and password (admin and admin) and the Auto Tracking System management page displays.

Language | Log out
System Administration

System Information

Back

Manufacturer : AREC
Name : TP100
IP Address : 192.168.11.88
MAC : BC:BA:E1:01:00:00
Administrator : admin
Password : ****
Submit

Following Speed : Speed 1
Advance

Preset Setting : P01 Save

P01	P02	P03
P04	P05	P06
P07	P08	P09
P10	P11	P12
P13	P14	P15

Auto-Tracking System
Administration Webpage

User Name :

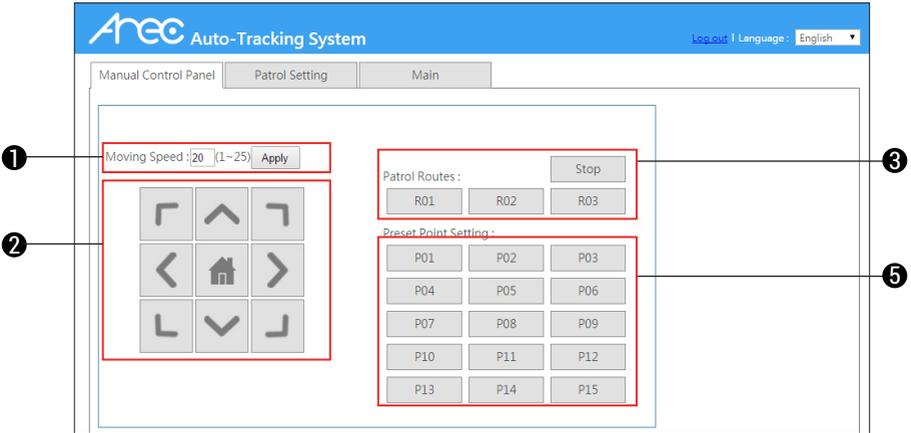
Password :

Log in

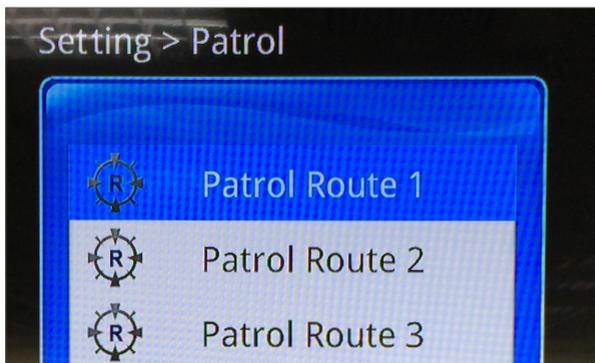
10. The administrator web page

The administrator web page displays with three tabs: Manual Control Panel, Main, and Patrol Setting.

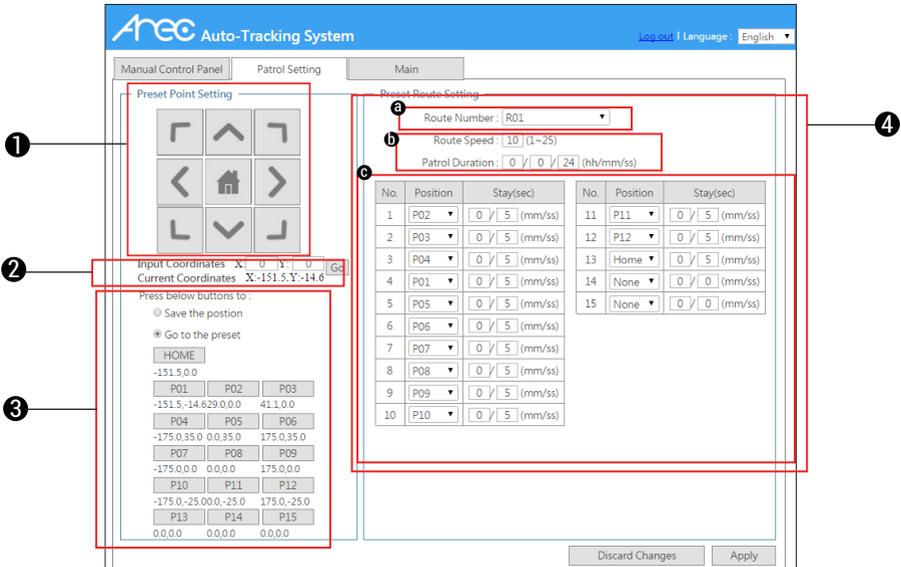
Manual control page:



1. Tracker moving speed: Press the arrow key one to move the unit distance. The greater the number is the faster the TP-100 is scanning. Your changes become effective only after you press the Apply button.
2. Manual direction control panel: Press the arrow key to change direction. Press HOME key to back to the origin.
3. Test the patrol route: Click any one of the three patrol routes, R01~R03, to start the test and press the Stop button to stop testing.
4. Start patrol during shooting:
 - If only one route is defined for code R01/R02/R03, you can start it by pressing the Patrol key in the remote controller to start it.
 - If more than one route are defined for code R01/R02/R03, the "Please choose the route to patrol" window displays after the Patrol key in the remote controller is pressed. Select the desired route in it:
 - The console back to its origin after each patrolling.
5. P01~P15 test: Press any of these 15 keys to test the preset patrolling point.



Patrol setup:



1. Preset point setting: Set up the arrow key direction control. Press the HOME key to return to the origin.
2. Coordinates of the system: Negative, "-" coordinates to the left and positive "+" the right.
 - Press the Go button, after the X- and Y-coordinates are given, to move the system to position defined by the coordinate value.
 - Current position of the system will show in the coordinates bar which changes with varying console locations.
3. Default position setup (P01~P15):
 - Save the position: Select the option and press any of the fifteen keys, P01~P15, to save current X- and Y-coordinates in it. Keys with preset coordinates are marked with saved position.
 - Go to the position: Select the option and press any of the fifteen keys, P01~P15, to move the system to position saved by the coordinate value.
 - Press button P1, P2, and P3 on your remote controller to move the system to location predefined by them.
4. Set up patrol route in the Preset route setting window:
 - a. Route No.: Select the code of the route you want to set up in Route No field. You have three options: R01, R02, and R03.
 - b. Total span of time for each patrol in Patrol duration field: Set up total time of each patrol. Once the time expires, the patrol stops and the system back to its origin..
 - c. Select position to stop at: Every route can have 15 positions to stop at. You can define time to spend at each position in unit of minutes/seconds.

Note: Your changes become effective only after you press the Apply button. If you press the Discard button instead, changes you made are deleted.

The Main setup page:

The screenshot shows the 'Main' configuration page of the Arec Auto-Tracking System. The page is divided into several sections, with red boxes highlighting specific areas and numbered callouts (1-10) pointing to them:

- 1:** Language selection dropdown (English).
- 2:** Device Name field (TP100).
- 3:** Firmware update section, including 'Browse...' and 'Update' buttons.
- 4:** New User Name and New Password fields.
- 5:** Export and Import configuration buttons.
- 6:** Factory Settings: Reset button.
- 7:** Auto-Tracking Setting section, including Tracked Mode (Auto-Tracking), Offset Position-Pan, Offset Position-Tilt, Sensitivity, and Full View Mode options.
- 8:** Installed Direction section, with radio buttons for Device (logo) Upright and Upside Down.
- 9:** RS-485 Settings section, including Protocol (Pelco-D), Baud Rate (9600), and Control ID.
- 10:** Network Setting section, including DHCP, IP Address (192.168.11.23), Subnet Mask, and Default Gateway.

1. Change language: Traditional Chinese/Simplified Chinese/English.
2. Device Name: Name your device for easy identifying when used together with AREC media station or IP address searching.
3. Firmware update: Select the software to update with the following steps:
 - a. Press the "Open file" button and the File selection window pops up.
 - b. Press OK after located the target software update in its original storage path.
 - c. Name of the software file displays in your Main setup page.
 - d. Validate the file name, press the Upload button to start software updating.
 - e. The power light indicator of TP-100 flashes orange during software updating.
 - f. Once the update is completed, the power light stops flashing to turn to steady green and the TP-100 back to its original position.

Note: Your settings remain intact after software update.
4. Change user name and password: You can change the default user name and password (admin and admin) at your wishes.
5. Configurations Import/Export:
 - Press "Export" button to save all the setting data into assigned folder.
 - Press "Open file" button to select the file you want to import into this device. Press OK and "Import" button to finish the import process.
6. Reset settings: reset content settings to the factory defaults, except network settings.

7. Auto tracking setup:
 - a. Tracking mode:
 - OFF: Switch off auto-tracking when you would like to control manually without any interference.
 - Auto-Tracking: TP-100 do horizontal and vertical tracking
 - Auto Tracking (Pan only): Switch off tilting movement to fix TP-100 only do horizontal tracking and improve the stability.
 - Student Tracking: Switch off auto-tracking and set TP-100 work with AREC media station student tracking functions
 - b. Offset position-Pan define: Set up offset rate for tracking positioning in range from the left most (-50: about 6 degree from central to the left) to the right most (+50: about 6 degree from central to the right)
 - c. Offset position-Tilt define: Set up offset rate for tracking positioning in range from the lowermost (-20: about 2.4 degree from central to the left) to the upper most (+20: about 2.4 degree from central to the right)
 - d. Tracking sensitivity: Adjust the parameter by the distance range between TP-100 and the lecturer. Set to higher sensitivity for longer distance range.
 - e. Enable full view mode: Enable the function could make target missing compensation by changing TP-100 to the preset full-view automatically while the tracking target is missing or out of TP-100's view range. This function ensures the camera could always have shooting target inside the view.
 - Activate lead-time: the compensation mechanism would not be triggered during the tolerance period.
 - Full view sustaining period: The tracking would not be activated during the full view sustaining period.
 - Above two settings are designed for avoiding the view changes too many times or too often and make viewers confusing.
8. Installed direction: Select to install your TP-100 in upright direction (e.g. installed on a tripod) or upside down direction (e.g. ceiling mounted). Set up the upside down direction installation if your TP-100 is ceiling mounted or it may move opposite to your instruction when operating it manually.
9. Joystick setup: You can control your TP-100 for tracking shooting with joystick. Please setup its protocol, baud rate, and control ID according to manuals included with your joystick.
10. Network setup:
 - DHCP options: Select to assign IP address by router.
 - Manual IP address setup: Give IP address, subnet mask and default gateway manually.

Note: Your changes become effective only after you press the Apply button. If you press the Discard key instead, changes you made are deleted.

11. How to setup full view function?

When TP-100 cannot “see” the tracking target, the video will take useless scenes without any lecturer or teacher inside. Therefore, we could suggest users to activate full view function to cover this problem. This function MUST be set in AREC Media Station web page and work with it to get a better performance. Here is the instruction about how to setup full view function.

1. Log into AREC media station administrator web page and go to Sensor Setting page. Find auto tracking system and double click to get the device setting page.

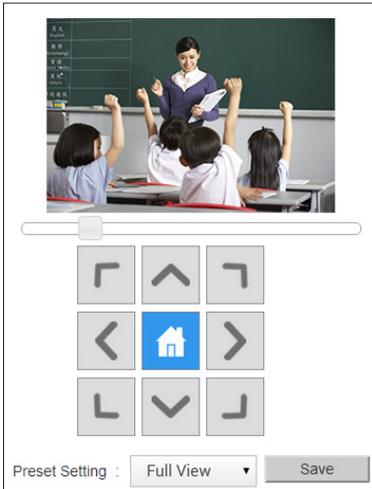
Auto-Tracking Mount

Refresh Add

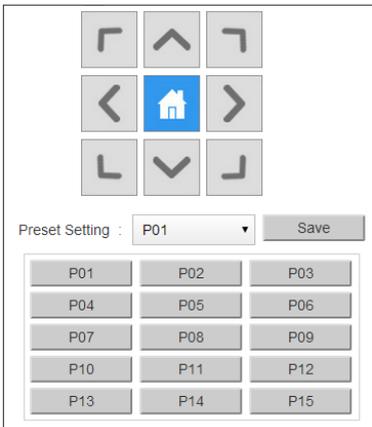
Status	Manufacture	Host Name	IP Address	Mac
1 OK	AREC	TP100WAN	192.168.0.106	BC:BA:E1:01:00:BB

2. Using direction keys and zoom in/out bar to get a close-up shot.
3. Choosing P01 as the Preset Point and click “Save” button.

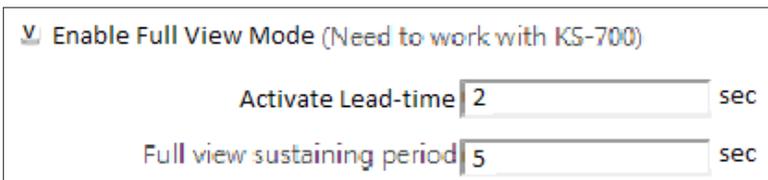
4. Moving the zoom out bar to get a full view shot.
5. Choosing "Full View" point as the preset point and click on "Save".



6. The setting completed. You could click on P01 button below to check the close-up shot and "Home" button which in the direction keys to check the full view setting.



7. Log into TP-100 administrator web page, and check if the function already activated.



Appendix:

The optimum installation environment:

1. TP-100 is applicable in an "indoor environment".

- Indoor lighting: Ceiling mounted fluorescent tubes. The ceiling must be at least 2.5 meters high and without any spotlights or down lights of yellow light source.
- Wall surface behind the target: blackboard or whiteboard.
- Without night-vision monitoring device in existence.

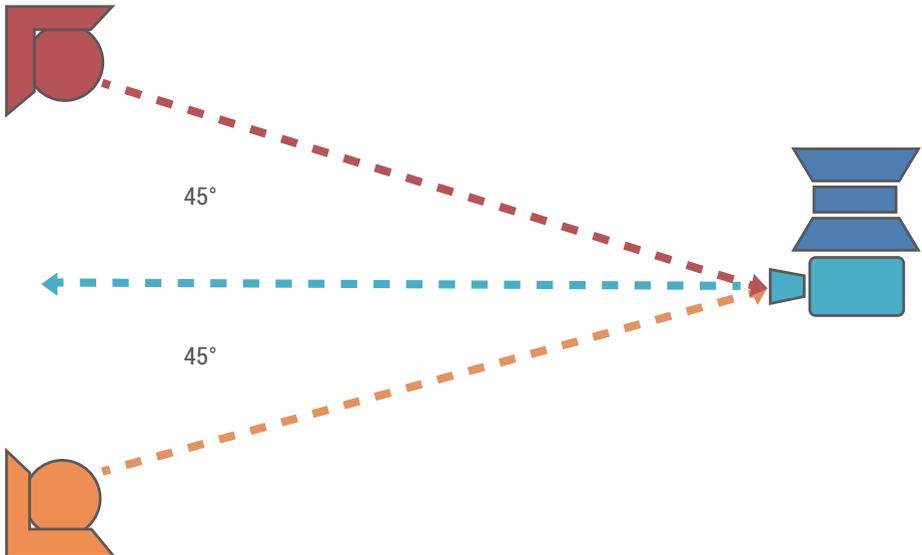
2. Optimum space for the use of TP-100 (capable of faultless tracking*)

- Space dimension: 8m(L) x 5m(W) x 2.5m(H)
- Proper installation position of TP-100 (the best tracking distance): 4~7 meters away from the target object.

* Faultless tracking: Nothing stands in between AM-600 and TP-100, e.g. the target turn around. Once the target is lost, the TP-100 can detect the target again in 3 seconds automatically.

3. Other conditions:

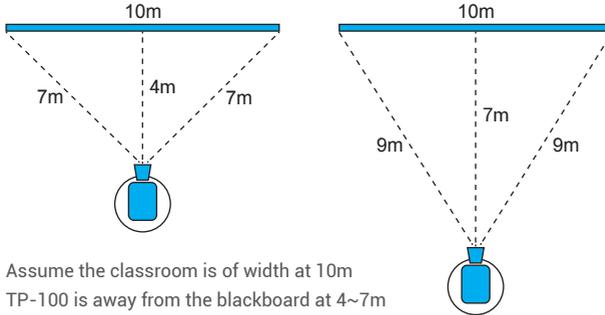
- TP-100 should be installed in open space without any barrier in a range of 3~5 meter.
- Keep reflective object, e.g. mirrors and glass, out of the moving range of the target object.
- Keep other light sources in a position that angle between the center line of their light beam and the center line of your TP-100 faced to is greater than 45 degrees, see Figure below.



The optimum installation distance:

Standard classroom:

- Classroom for higher education is usually of area 135~180 m²
 - General classroom is usually of area 60~90 m²
- For classroom in a rectangle shape and the blackboard end has a width of 10 meter, the
- optimum installation layout may look like the figure below:



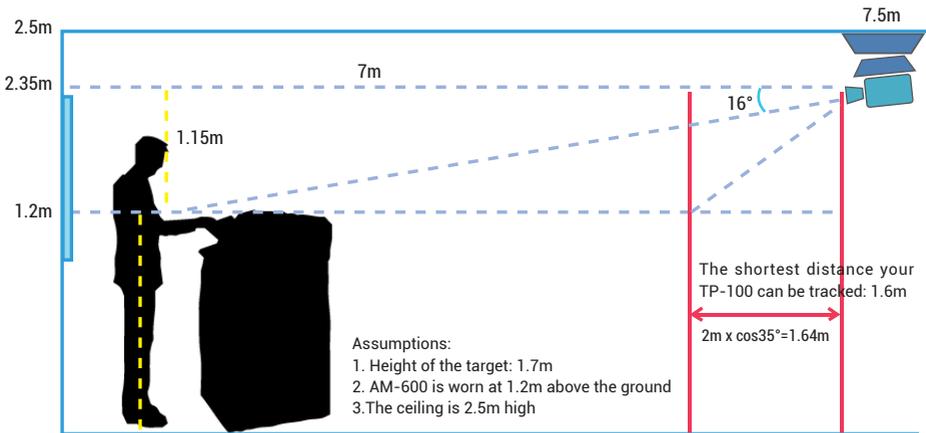
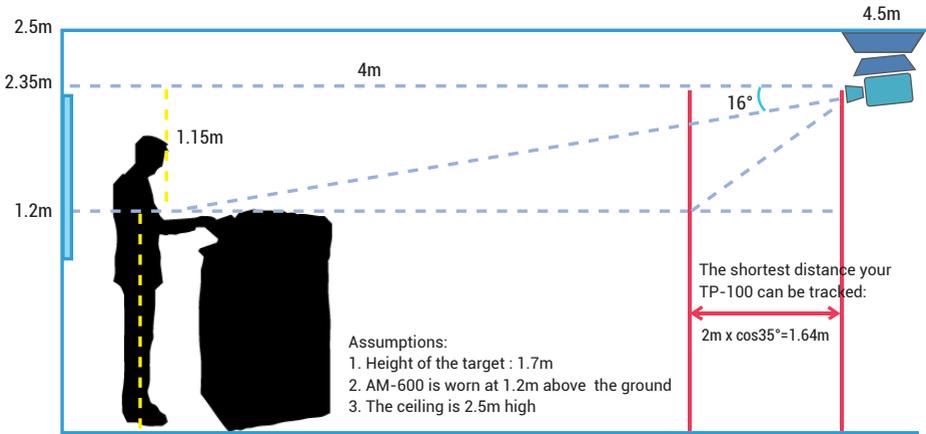
Assume the classroom is of width at 10m
TP-100 is away from the blackboard at 4~7m

You may employ the projector ceiling mount in the system installation:

You may employ a projector ceiling mount in the system installation to adapt to different classroom height. There are many hanger options. See figure below for some examples:



Installation conditions:



These two figures are for illustration only. The proportion may be incorrect.



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