

EPC-3D

3D Stereo People Counter



Manual Last Updated: June 19, 2019

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Introduction:

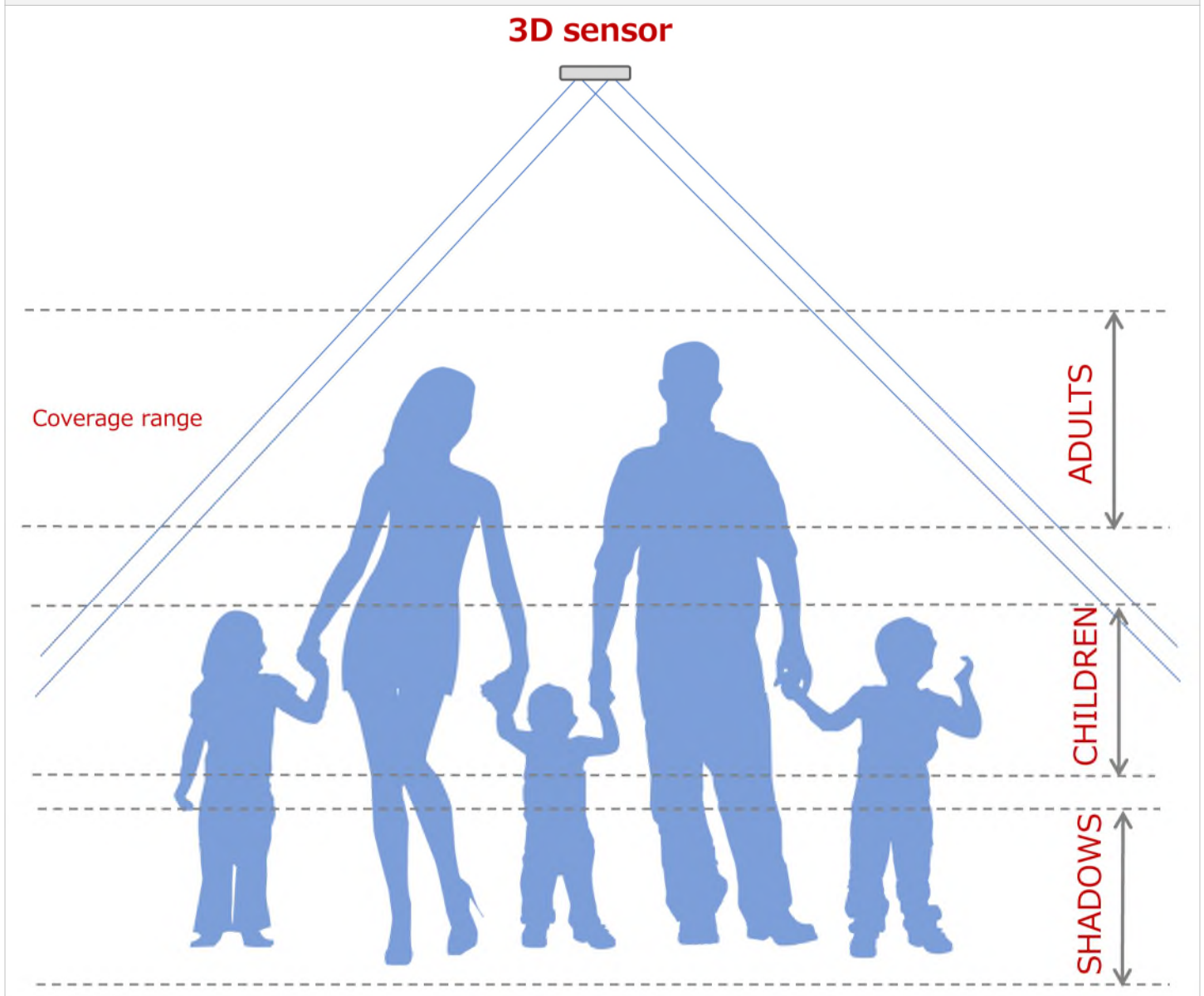
Our 3D Stereo Camera People Counter is a device that accurately senses and counts pedestrians in many environments and public establishments, particularly where you may have dense pedestrian traffic and in locations with unstable lighting.

How it Works:

Two cameras send the image to the counter's processor, which creates a 3D model of the objects' movement. This allows the system to determine the location and height of the pedestrian with high accuracy.

The processor stores the gathered data in the FLASH memory and later transfers it to the data processing system.

Figure 1:



The people counter has the ability to set a coverage range. The top and bottom range of the coverage range is defined as the distance from the floor. This allows for filtering and ignoring things such as:

1. Shadows
2. Children
3. Strollers
4. Shopping trolleys
5. Bags

Features:

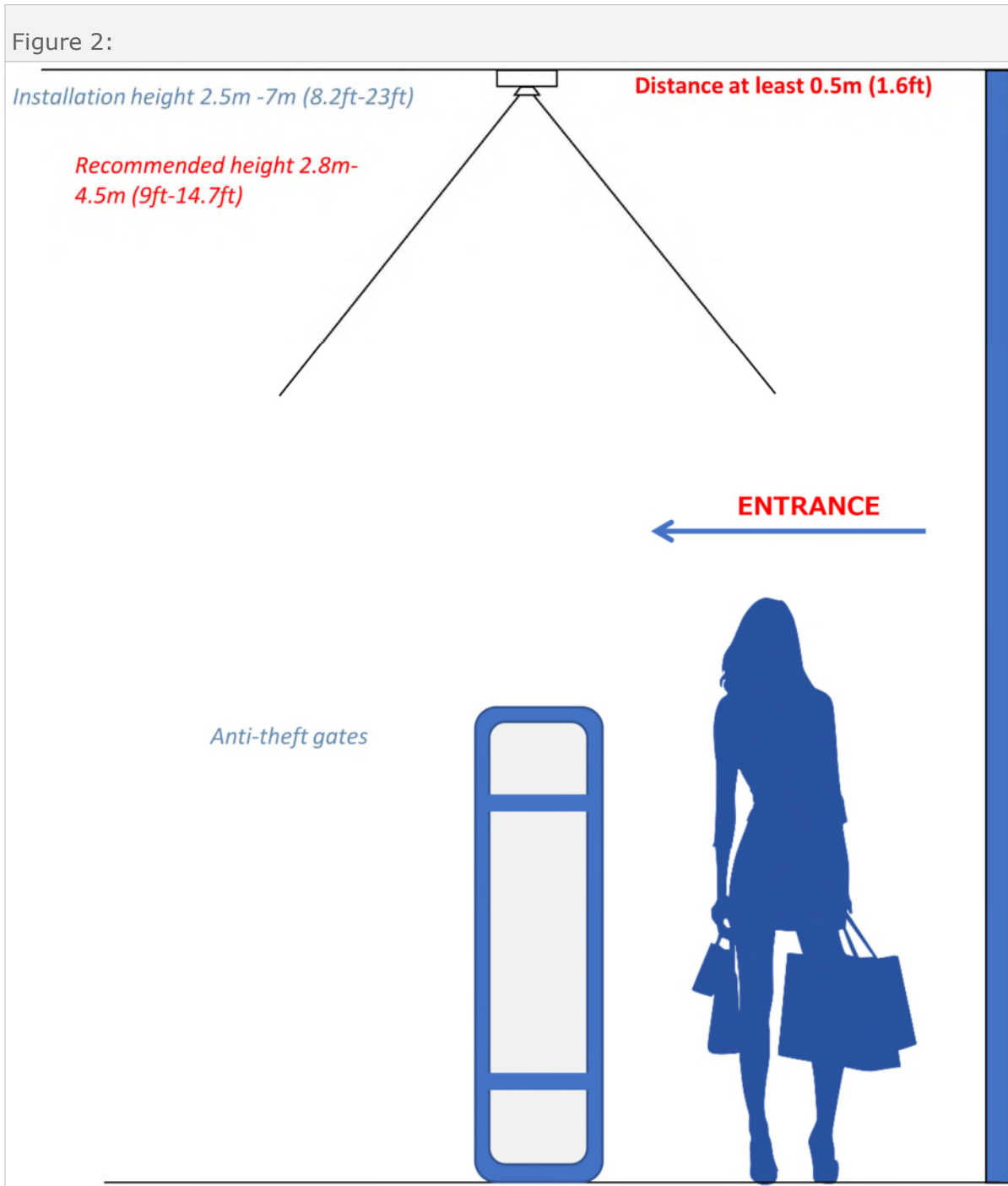
The people counter uses digital signal processing (DSP) to process a stereo video stream from two cameras. The people counter detects pedestrians walking through, sorts them according to their height, assigns an ID number to each of them and tracks each of them from the moment they are detected until the moment they leave the counter's view.

- Sensors: Two black-and-white megapixel CMOS sensors
- Installation Height Range: 8.2 ft - 19.7 ft (2.5 m - 6.0 m)
- Up to 8 people counters can be grouped together
- Data recording intervals starting from one minute
- 3D Stereo Vision algorithm for primary data processing
- Built-in DSP processor: all the calculations are done in the people counter
- Memory: Micro SD FLASH 8Gb
- iBeacon, AltBeacon, Eddystone-UID, Eddystone-EID, Eddystone-URL
- Wi-Fi scanning and recording MAC addresses of mobile devices
- Automated adjustment to outside lighting (darkness, bright sun, light specks)
- Height filter—Can eliminate children, shadows, strollers, shopping trolleys, bags from traffic count
- Height filter—Can separately count children
- Numerous counting tools: set lines, areas, filters and portals to customize how the system counts
- Automated recovery of the data not completely exported
- Transfer Protocols: FTP, SNTP, DNS, HTTP, TFTP
- Export in TXT, CSV, XML, JSON, JPG (tracking maps, heatmaps)
- Automated HTTP, TFTP update
- Automated floor level positioning
- Warranty: 5-year warranty - see policies on our website for more information.

Mounting:

Mounting the People Counter:

The system can be installed in many different scenarios. It is idea for entrances, elevators and vestibules, to name a few. It is best to mount the system at approximately 1.5 feet (approximately 0.5 meters) from the entrance, as is shown in **Figure 2**.

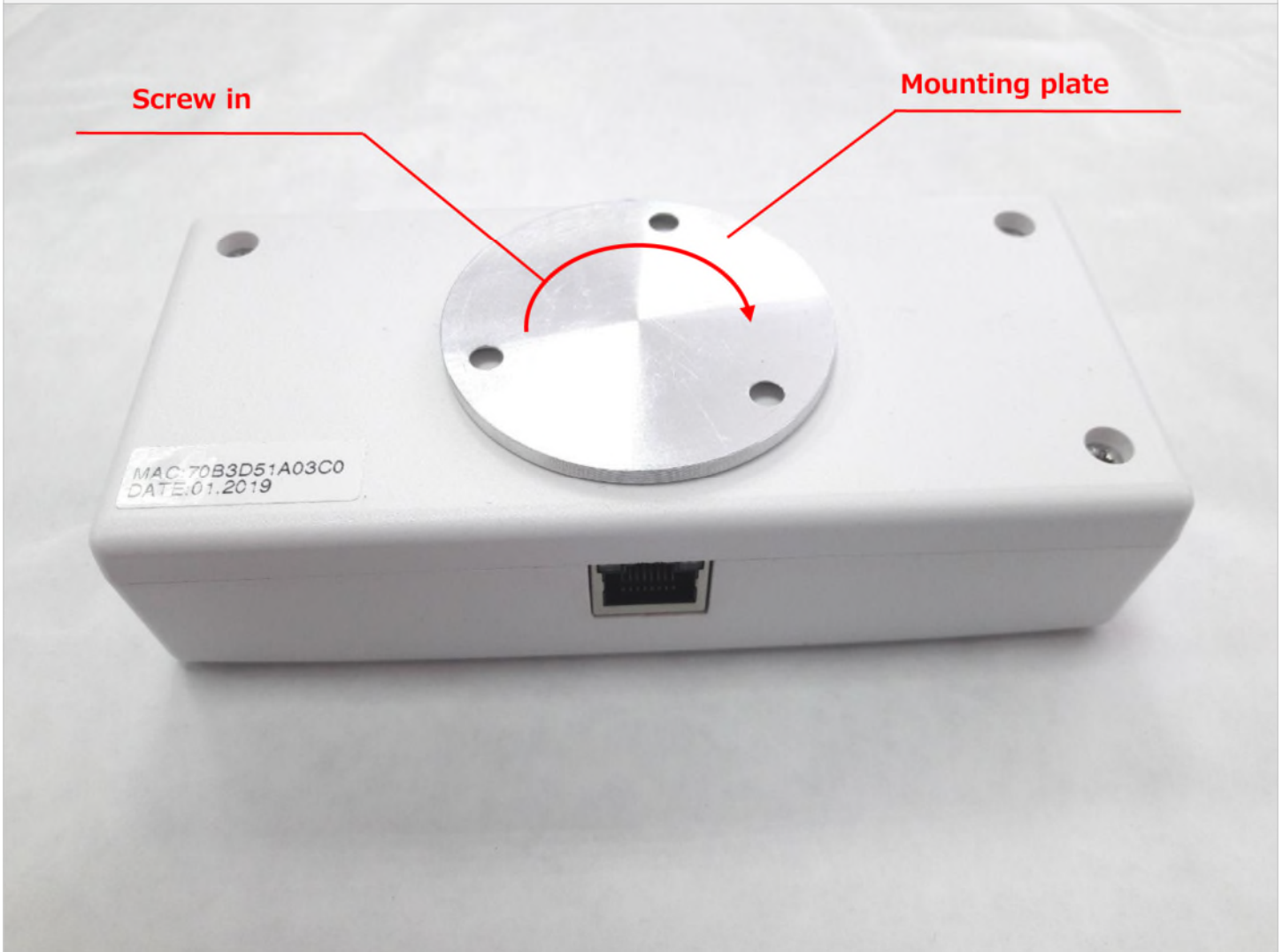


The counter is mounted to the ceiling with the help of the included circular mounting plate.

The process to mount the people counter is explained next.

Step 1: Screw the mounting plate tightly into the counter in a clockwise direction, as shown in **Figure 3**.

Figure 3:

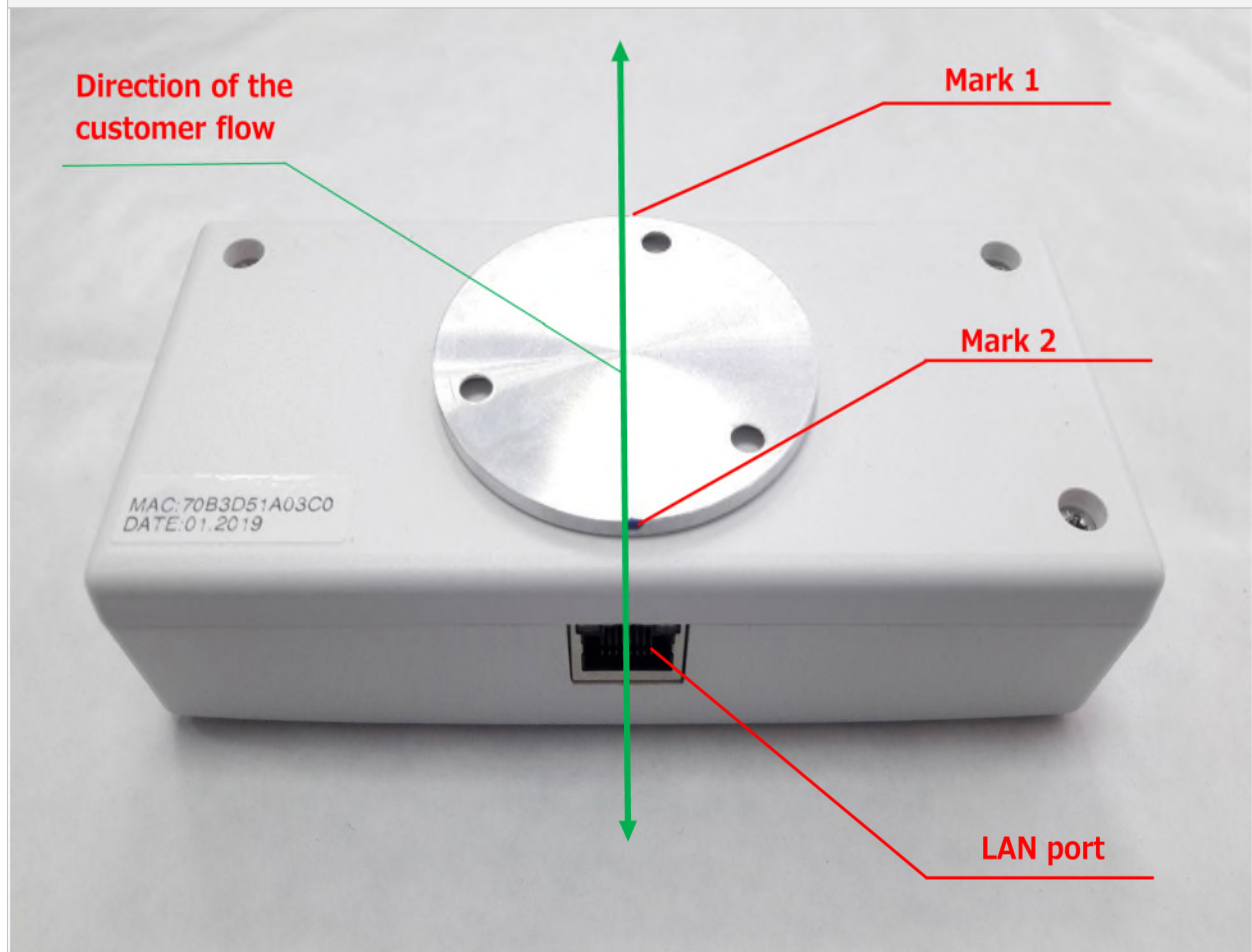


Step 2: Put two small marks on the edge of the circular mounting plate, as shown in **Figure 4**. The marks should be such that the flow of customers would be along the green arrowed line in **Figure 4**.

In other words, the green arrowed line should bisect the two camera eyes on the other side of the counter. This will ensure that the people counter's camera eyes will be oriented correctly, relative to the entrance, when the counter is screwed onto the circular mounting plate that will be described in the next installation steps.

IMPORTANT NOTE: Each of the two marks should be slightly different, so that you know which one is closer to the LAN port. The reason for this is so that you can also orient the counter so that the LAN port is in the direction where the network cable will be.

Figure 4:

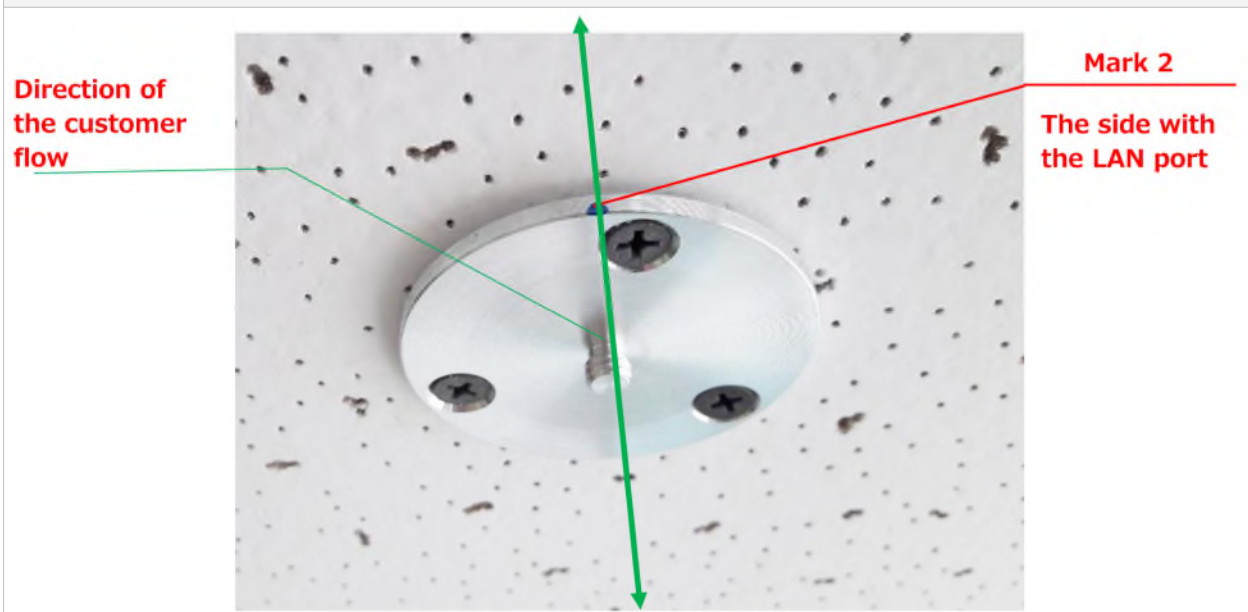


Step 3: Remove the circular mounting plate from the counter by turning it counter-clockwise until it comes off of the counter.

Next, mount the mounting plate to the ceiling, paying close attention to the marks that you placed on the edge of the mounting plate in Step 2. Make sure that these marks are oriented so that the green arrowed line in **Figure 5** is in the flow of traffic. Also make sure that the mark that was closest to the LAN port is position properly so that the network cable can be neatly run to the counter.

The LAN port placement does not influence the counting in any way. This means that it can face in the direction of people going either in or out.

Figure 5:



Step 4: Screw the counter tightly onto the mounting plate, in a clockwise direction, as shown in **Figure 6**. After the counter is tightly secured, it will be oriented according to the traffic direction and the LAN port will be on the side of "Mark 2" in **Figure 4** and **Figure 5**.

Figure 6:



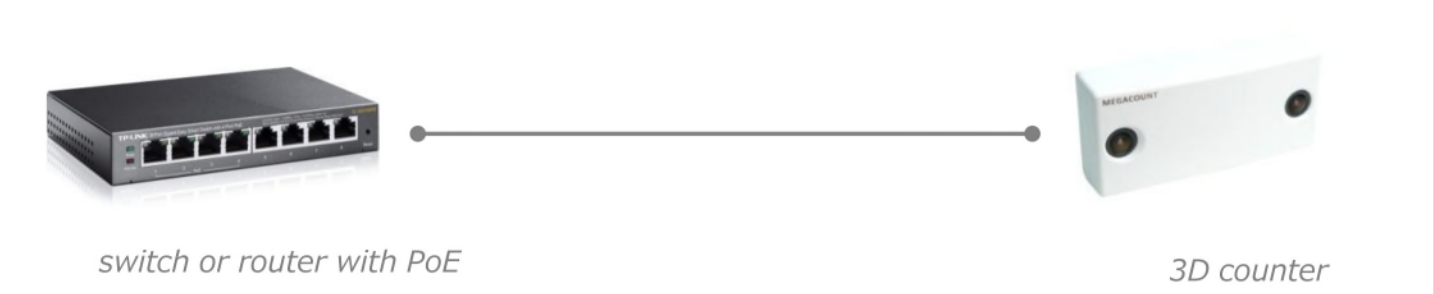
Connecting the People Counter to the Network:

is connected with unshielded twisted pair (UTP) cable with RJ45 connectors. Power is supplied from the PoE injector or network equipment according to the diagram below. Use a UTP cable (4 pairs); a shielded cable is not recommended.

Figure 7: Connecting to Network Equipment that does not have PoE capability:

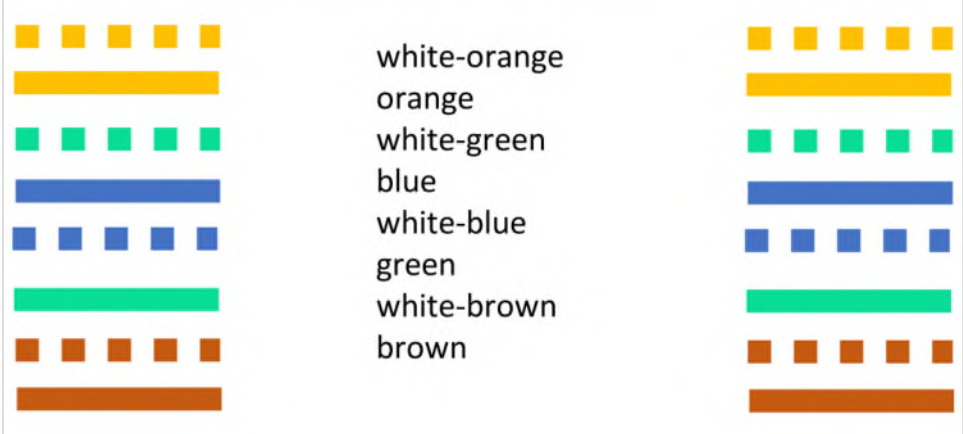


Figure 8: Connecting to Network Equipment that has PoE capability:



Using the 802.3af PoE standard is recommended.
A PoE injector is optional and can be supplied with the delivery set.

Figure 9: Pin-outs for Cable:



Assigning an IP Address:

People Counter’s Default Network Settings:

IP Address: 192.168.1.18
Mask: 255.255.255.0
Gateway: 192.168.1.1

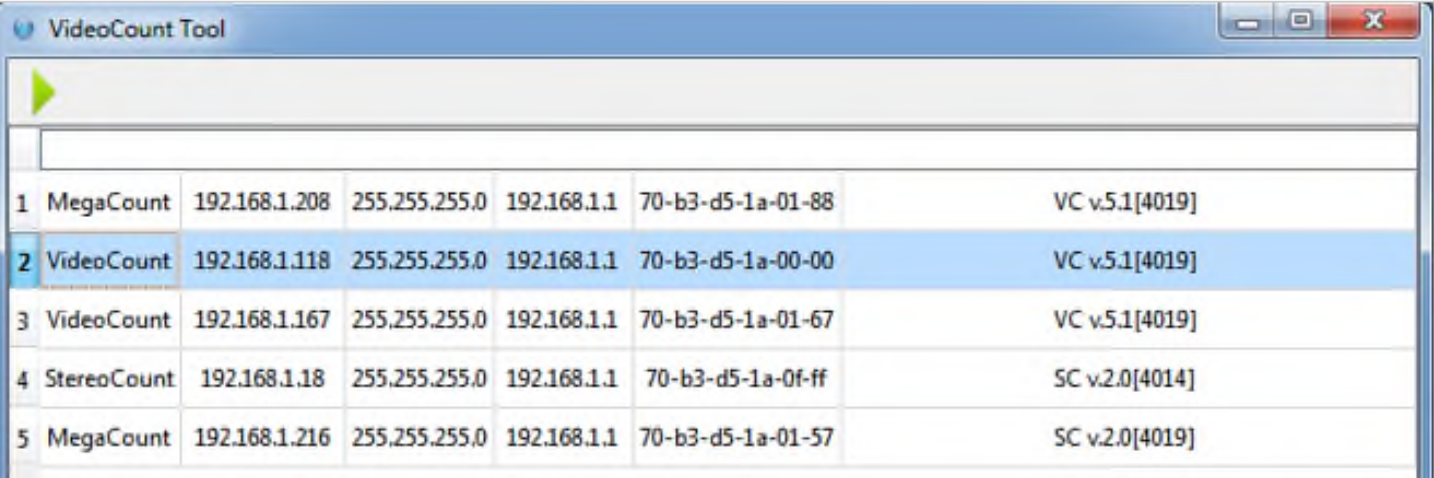
Login: admin
Password: 18318

Changing Network Settings:

Method 1: The first method can be used if you have access to the network at this point in the installation. This method uses the VideoCount software tool that is included with the software to change the network settings.

1. Connect the counter to the LAN.
2. Open the VideoCount software from any computer that is on the network.
3. Next, find the counter in the list and change the network settings by double-clicking on the counter, as shown in **Figure 10**.
4. After the settings are changed, the counter will reboot and will have new network settings.
5. Next, use the VideoCount software again to scan and make sure that IP, Mask and Gateway have changed.
6. Open the counter’s interface in a browser using the login and password.

Figure 10: VideoCount Software Tool:



| | | | | | | |
|---|-------------|---------------|---------------|-------------|-------------------|----------------|
| 1 | MegaCount | 192.168.1.208 | 255.255.255.0 | 192.168.1.1 | 70-b3-d5-1a-01-88 | VC v.5.1[4019] |
| 2 | VideoCount | 192.168.1.118 | 255.255.255.0 | 192.168.1.1 | 70-b3-d5-1a-00-00 | VC v.5.1[4019] |
| 3 | VideoCount | 192.168.1.167 | 255.255.255.0 | 192.168.1.1 | 70-b3-d5-1a-01-67 | VC v.5.1[4019] |
| 4 | StereoCount | 192.168.1.18 | 255.255.255.0 | 192.168.1.1 | 70-b3-d5-1a-0f-ff | SC v.2.0[4014] |
| 5 | MegaCount | 192.168.1.216 | 255.255.255.0 | 192.168.1.1 | 70-b3-d5-1a-01-57 | SC v.2.0[4019] |

Method 2: The second method can be used if you do not have access to the network at this point in the installation.

1. Connect the counter directly to the computer via PoE injector, as shown in **Figure 11**.
2. Enter **192.168.1.18** into the subnet box in the network adapter settings.
3. Open a browser and type **192.168.1.18**.
4. If everything is done correctly, a window requesting login and password will appear. Go to the counter's interface and change the network settings.

Figure 11: Connecting the People Counter Directly to a PC:



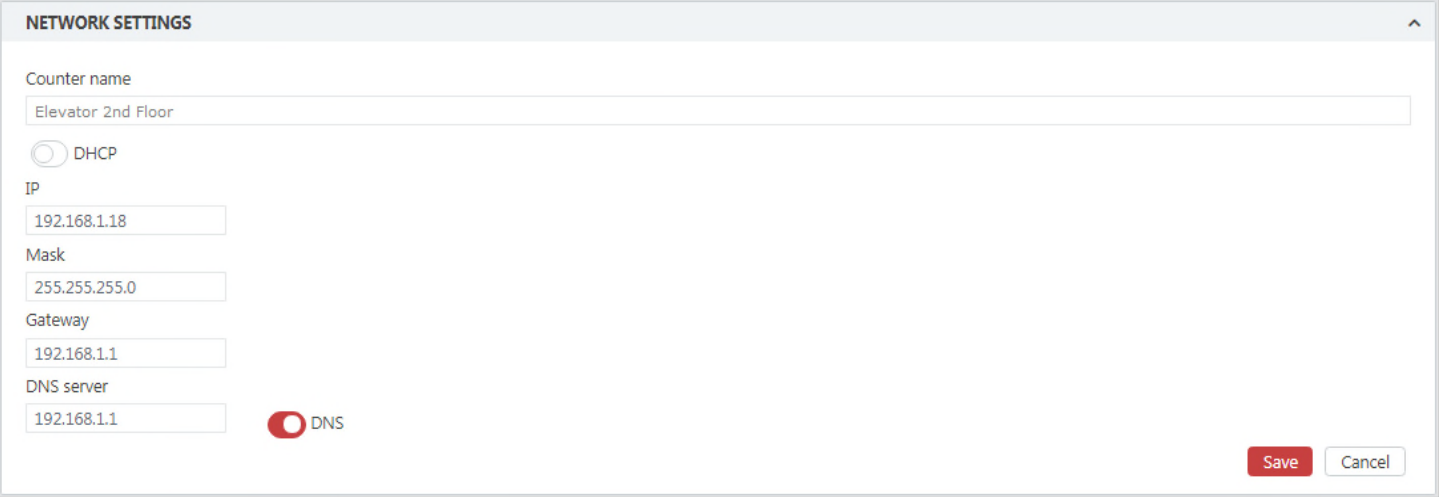
Settings:

Network settings and counter configurations can be changed by using the people counter’s interface using a browser. Clicking on the “**Settings**” tab will display various options as shown in **Figure 12**.

Figure 12:



Figure 13:



Network Settings:

Clicking on “**Network Settings**” section will yield settings similar to that found in **Figure 13**. The following is a description of these settings:

- Counter name:** The counter’s name in the network. For convenience’s sake it can be changed. For example, if it is in a shopping mall, one can put the entrance name here (for example, “Elevator 2nd Floor”).
- DHCP:** Turns on DHCP to automatically receive an IP-address (this is not recommended if it is possible to use a static IP).
- IP, Mask, Gateway:** The counter’s IP addresses.

Figure 14:

TIME AND DATE

Time: 11:22 AM | Date: 04.17.19 | Counter operating time: 10:00 AM to 10:00 PM | ☒ At all times

Time zone: UTC +03:00 | ☒ SNTP

Time server: time.windows.com | Port: 123

Save **Cancel**

Time and Date:

The “**Time and Date**” section can be seen in **Figure 14**. The user can set the time and date on the counter, as well as the time server and the counter’s uptime. The following is a description of these settings:

Time and Date: Time and date currently set on the counter.

SNTP: Turn this option on in order to determine time and date automatically.

Time server: The server from which the time and date are set if SNTP is turned on.

Counter operating time: The option will determine when the counter will begin counting each day and when it will stop counting each day.

Figure 15: Bluetooth Beacon Settings (if module is installed):

BEACON SETTINGS

☒ iBeacon | UUID: 18318131-8131-8318-8313-831831813181 | MINOR: 1025 | MAJOR: 34987

☒ AltBeacon | UUID: 02351351-3531-6646-2131-351351333133 | Region Id: 12000000

☒ Eddystone-URL | Prefix: http://www. | URL: IDTElectronics.com

☒ Eddystone-UUID | Namespace: 18318181-318131813161 | Instance: 145315555555

Signal sending frequency: 100 ms to 30000 ms (set at 100 ms)

Signal power: -26 dB to 8 dB (set at 0 dB)

Save **Cancel**

Beacon Settings (if the module is installed):

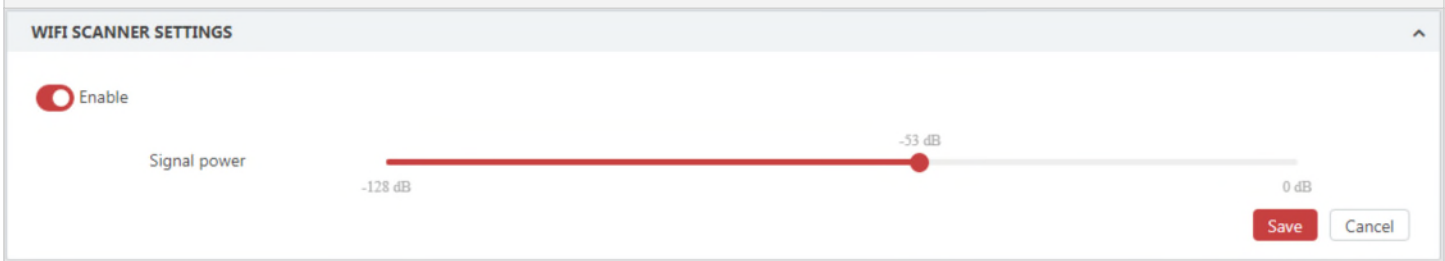
The section can be seen in **Figure 15**. It allows the user to choose a beacon type, and configure it with various parameters. The following is a description of these settings:

iBeacon, AltBeacon, Eddystone-URL, Eddystone-UUID: Switches turn on the given beacon type.

Signal sending frequency: Sets how often the messages are transmitted.

Signal power: Sets the signal power with which the messages will be transmitted.

Figure 16: WiFi Scanner Settings (if the module is installed):



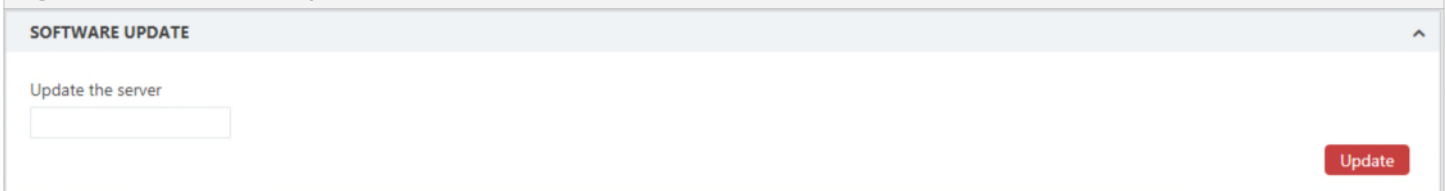
WiFi Scanner Settings (if the module is installed):

The “**WiFi Scanner Settings**” section can be seen in **Figure 16**, and allows the user to turn the Wi-Fi scanner on/off and set the filter for the incoming signal. The following is a description of these settings:

Enable: Turns the Wi-Fi scanner on or off.

Signal power: This is the filter for the power of the sent MAC packet.

Figure 17: Software Update:

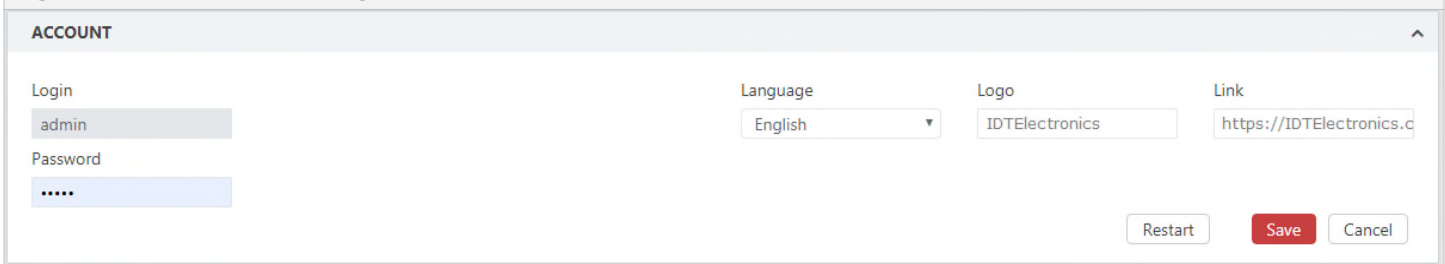


Software Update:

The “**Software Update**” section can be seen in **Figure 17**, and allows the user to update the counter’s firmware. Firmware is the computer program that is on the microprocessor of the people counter. The following is a description of these settings:

Update the server: It will typically not be needed, unless we are working with you on a technical support issue. Please contact us concerning this option.

Figure 18: Account Settings:



Account Settings:

The “**Account Settings**” section can be seen in **Figure 18**, and allows the user to manage login parameters, as well as to reboot the people counter.

Login: This will always be set to “admin” and it will not change.

Password: This is the password to access the counter. The default password is 18318.

Language: Allows the user to set the language.

Logo: This is the people counter’s logo, which will be displayed in the upper-left corner.

Link: This is the link that is “behind” the logo. It will direct the user to this URL.

Restart: Reboots the device.

Calibrating People Counter Height:

After the counter is mounted on the ceiling, it is necessary to calibrate it by setting the installation height in the **"Counting"** section, by using the people counter's interface in a browser. Clicking on **"Counting"** will display a screen similar to what is shown in **Figure 19**.

Figure 19:



Introduction:

The **"Counting"** section is an extremely important section. The people counter may not work reliably if these settings are not set correctly. The following is a description of these settings:

- **Installation height:** The height at which the people counter is mounted, relative to the floor. You can set this option manually or automatically.
- **Auto:** This option determines the installation height automatically. If manual setting is needed, then make sure that this option is turned off.
- **Determine:** This option starts the automated process of determining the height determination.
- **Capture the background:** This option allows the user to capture and set the "background" image. In other words, this is the view of the camera when there is no activity. Press this button after the installation height has been set.

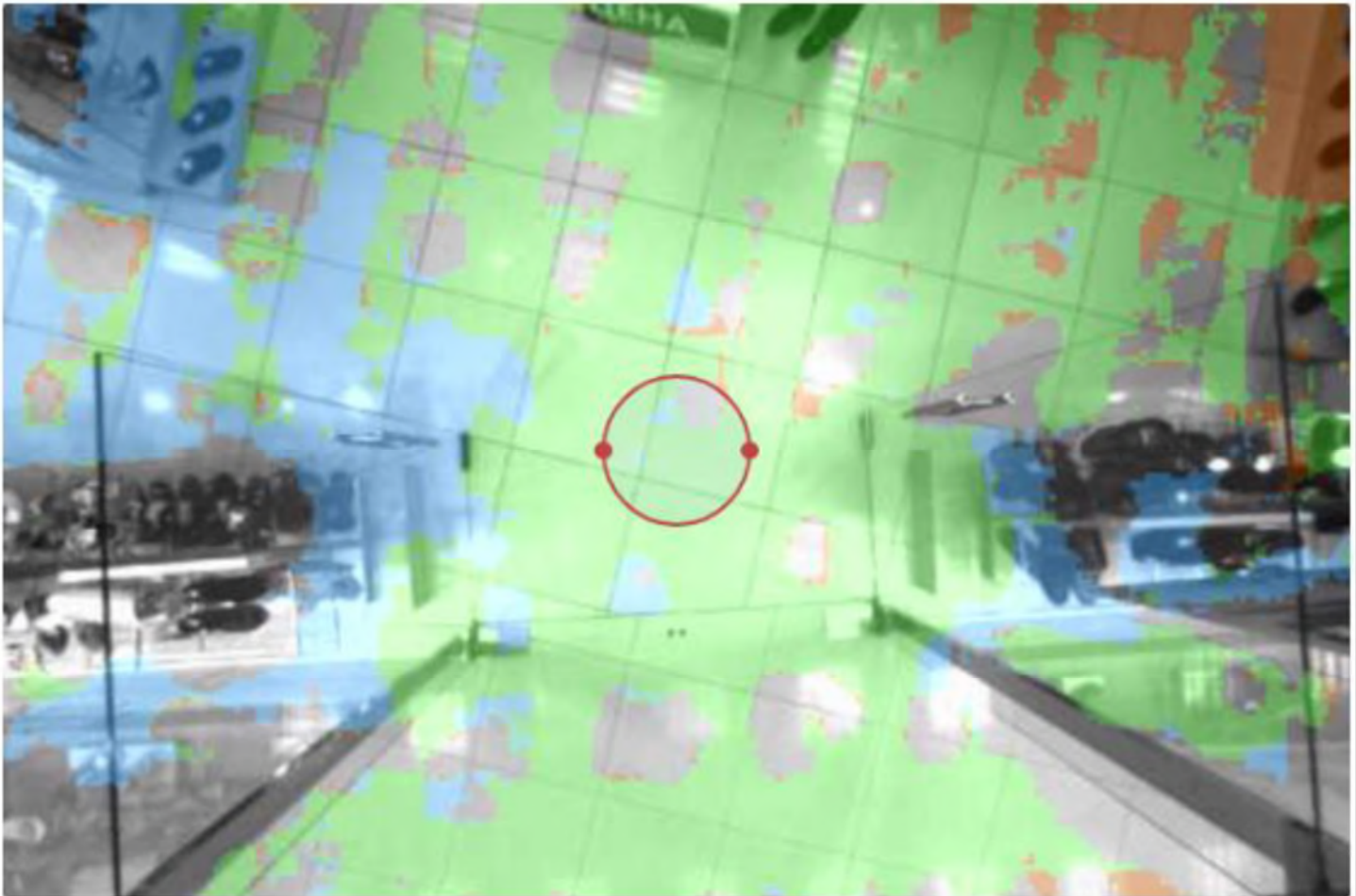
- **Adjust the height:** If the height was determined automatically, but does not seem to be accurate, then the user can adjust the height by clicking on “+” or “-” buttons until it is correct. The “+” button increases the height, the “-” button decreases the height.

Automatically Calibrating the Installation Height:

The following directions explain how to correctly calibrate the installation height of the counter automatically. Please refer to **Figure 20** when reading about these steps. (Note that 1 ft = 30.48 cm.) It is recommended that you use this automated calibration of the installation height. However, if you wish to set the installation height manually, then please see the directions below for doing so.

- 1.) Switch on the “auto” button in order to tell the system that you wish to automatically calibrate the height.
- 2.) Press the “Determine” button until the floor becomes green. Then press again 2-3 times to make sure, while also checking the “Installation height” parameter.
- 3.) In the example in Figure 20, the floor is green. This means that the people counter believes that the height is correct. You should verify the height to see if it seems correct.
- 4.) Press “Save”.

Figure 20:



Counter installation height

Installation height cm 320



auto

Determine

Capture the background

adjust the height

-

+

Making Adjustments to the Height after Automatic Calibration:

If, after automatically determining the height, the floor becomes green but the height does not seem to be displayed correctly after pressing the "Determine" button 2-3 times (for example, the actual height is 350cm but the sensor shows it to be 260cm), it is necessary to adjust the height by repeatedly clicking on the "+" button until the readings are close to the actual mounting height.

Similarly, If, after automatically determining the height, the readings are higher than the actual height, repeatedly click on the "-" button until it is correct.

You will know that the installation height is calibrated correctly when:

- The floor is evenly highlighted with the color green (just the floor);
- The height is automatically determined correctly and is close to the actual mounting height.

Manually Calibrating the Installation Height:

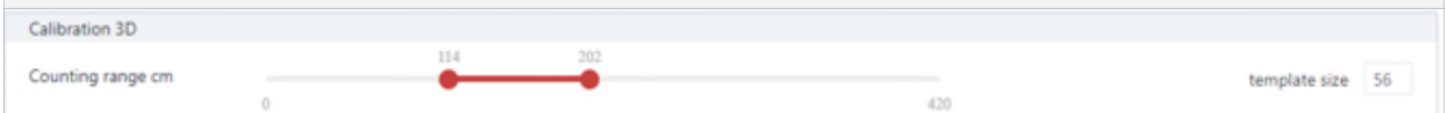
It is recommended that you use the automated calibration of the installation height. However, if you would like to manually set the installation height, then the following are directions to manually set the installation height. Please refer to **Figure 20** when reading about these steps. (Note that 1 ft = 30.48 cm.)

- 1.) Turn off the "auto" floor determining switch.
- 2.) Manually set the installation height (for example, 320 cm).
- 3.) Check the color of the floor:
 - If the color of the floor is green, then the calibration is complete.
 - If the color of the floor is red, then adjust the value by clicking the "+" button.
 - If the color of the floor is blue, then adjust the value by clicking the "-" button.
- 4.) Click "Save".

Setting Height Range of Objects to Sense and Count:

Now that the installation height is set, it is now necessary to set the height range of the people or objects which you will like to be counted. The section in **Figure 19**, as well as **Figure 21**, will allow the user to do this. This is very useful to eliminate strollers, shopping carts and children.

Figure 21:



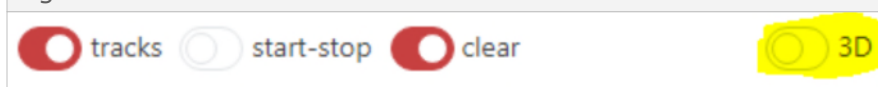
Here is a description of the two parameters in the "Calibration 3D" section:

Counting range: This is the range in which the people counter will detect people. within the counter's installation height in cm. The optimum range is typically 120-200cm (approximately 4 ft to approximately 6.5 ft).

Template size: This sets the dimensions of the customers underneath the counter, in cm.

Next, you will see that **Figure 22** is a part of **Figure 19**. This is where you can switch between the layers. Switch to 3D mode by setting the "3D" switch on. The sensor will switch to the 3D mode and will

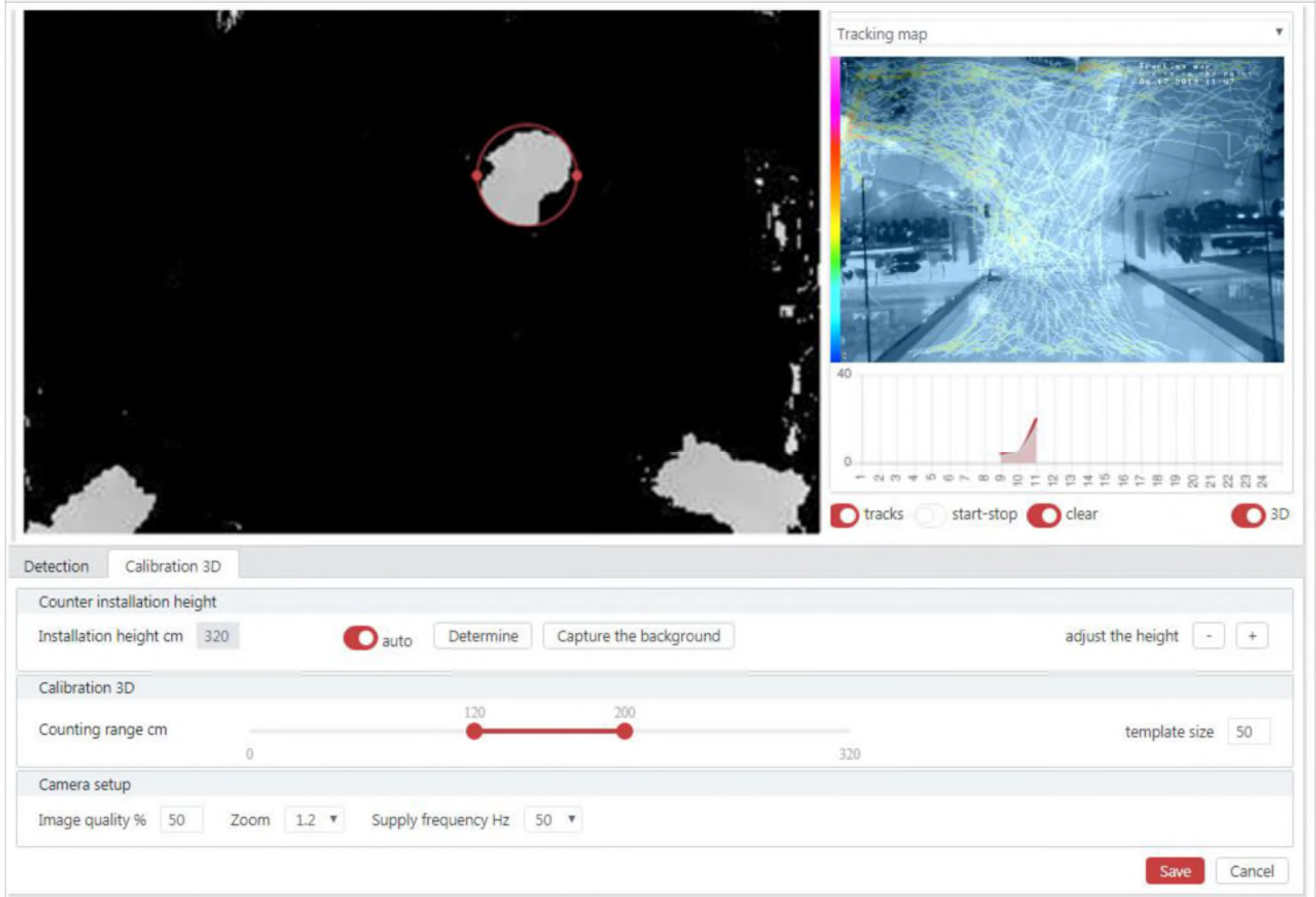
Figure 22:



display the 3D space as a black mask, as shown in **Figure 23**.

If the floor is determined correctly by the people counter, then a passing customer will be seen as a grey "spot" in the 3D mode. Adjust the size of the calibration circle (pattern) to fit the dimensions of the object by using the mouse and making the circle bigger or smaller.

Figure 23:



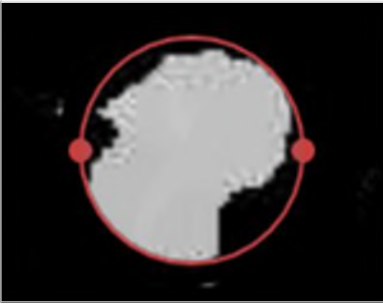
Calibrating Pedestrian Height:

- 1.) Turn the 3D mode switch on, as show in **Figure 23**.
- 2.) Observe a person walking through to see how the are shown in 3D mode.
- 3.) If only their heads and shoulders are seen, then calibration is complete.

Manually Adjusting the Counting Range (Pedestrian Height Range):

1. If the persons' legs, torsos or shopping carts are displayed in 3D mode, then it is necessary to increase the lower range of the "Counting range cm."
2. If the upper part of the door or other objects that are over the head of the people are displayed, then it is necessary to decrease the upper range of the "Counting range cm."
3. Make sure that after the adjustments that the people are displayed as "spots" in the 3D mode. Adjust the template (circle) to fit their size by dragging its frame with the mouse and making it bigger or smaller so that it matches the person's "spot," as shown in **Figure 24**.
4. If these steps are taken, then the passing people will be correctly shown as distributed objects.

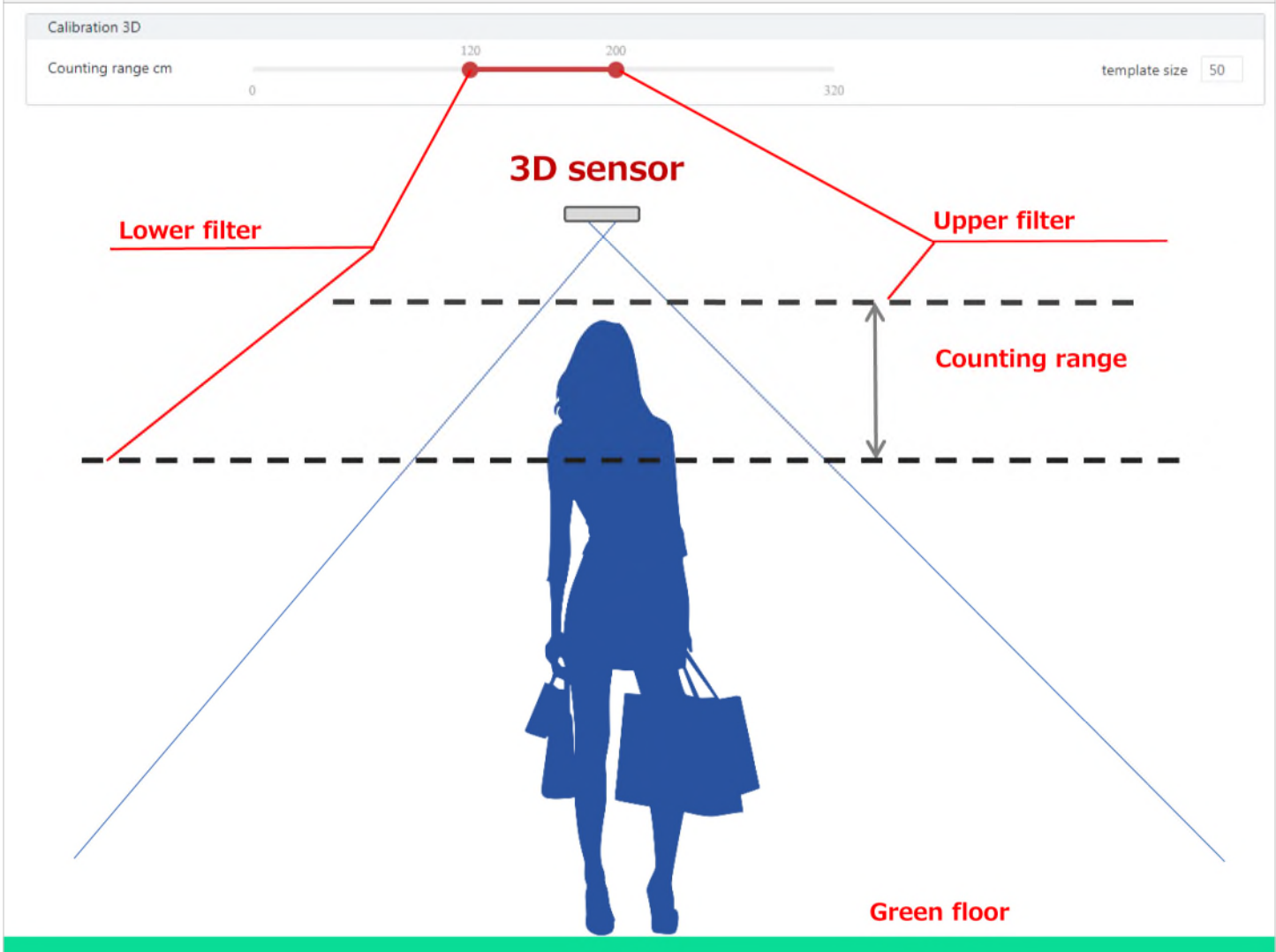
Figure 24: How a person is shown in the 3D mode if calibration is correct:



Once the installation height is set, as well as the "counting range" is set, then the system is set up to sense people properly. This is represented by **Figure 25**.

IMPORTANT: However, the counter will not count until counting tools are added. After the installation height and the counting range are set, go to the "Detection" tab and add a counting sensor. This is shown in a section below. After that the counter will start showing the tracks of the customers walking through.

Figure 25: Example of Installation Height and Counting Range (Customer Height):



Setting Image Quality:

Please refer to **Figure 26**.

Image quality: This sets the quality of the video stream sent to the interface. If the connection cannot ensure a smooth video stream loading, it is recommended to choose a lower quality (40-50% or less) until the image is adequate. *This aspect does not affect the quality of the count in any way. It only adjusts how the image is viewed in the interface in the browser.*

Zoom: This is the camera zoom setting. The valid values are 1, 1.2, 1.5, 2.0 and 3.0.

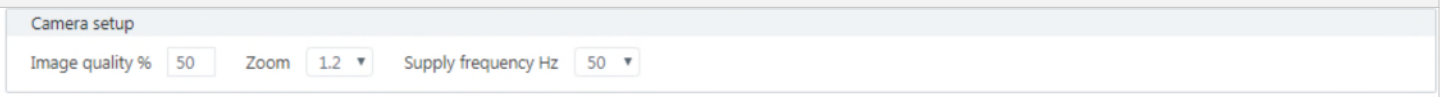
- 1: Use this setting when the installation height is less than 270cm (approximately 8.9 feet) and when a wider coverage is needed.
- **1.2: This is recommended for the installation height between 270cm and 400cm (approximate 8.9 feet and 13.1 feet).**
- 1.5 , 2.0 and 3.0: Use when installation height is greater than 4 00cm (approximately 13.1 feet).

IMPORTANT: When setting different zoom indices, make sure that the diameter of the 3D customer “spot” (template size) is no less than 40.

After changing zoom settings, check detection of the customers and their track creation.

Supply frequency (Hz): Needed to eliminate flickering caused by lighting with 50Hz or 60Hz frequencies in some countries.

Figure 26:



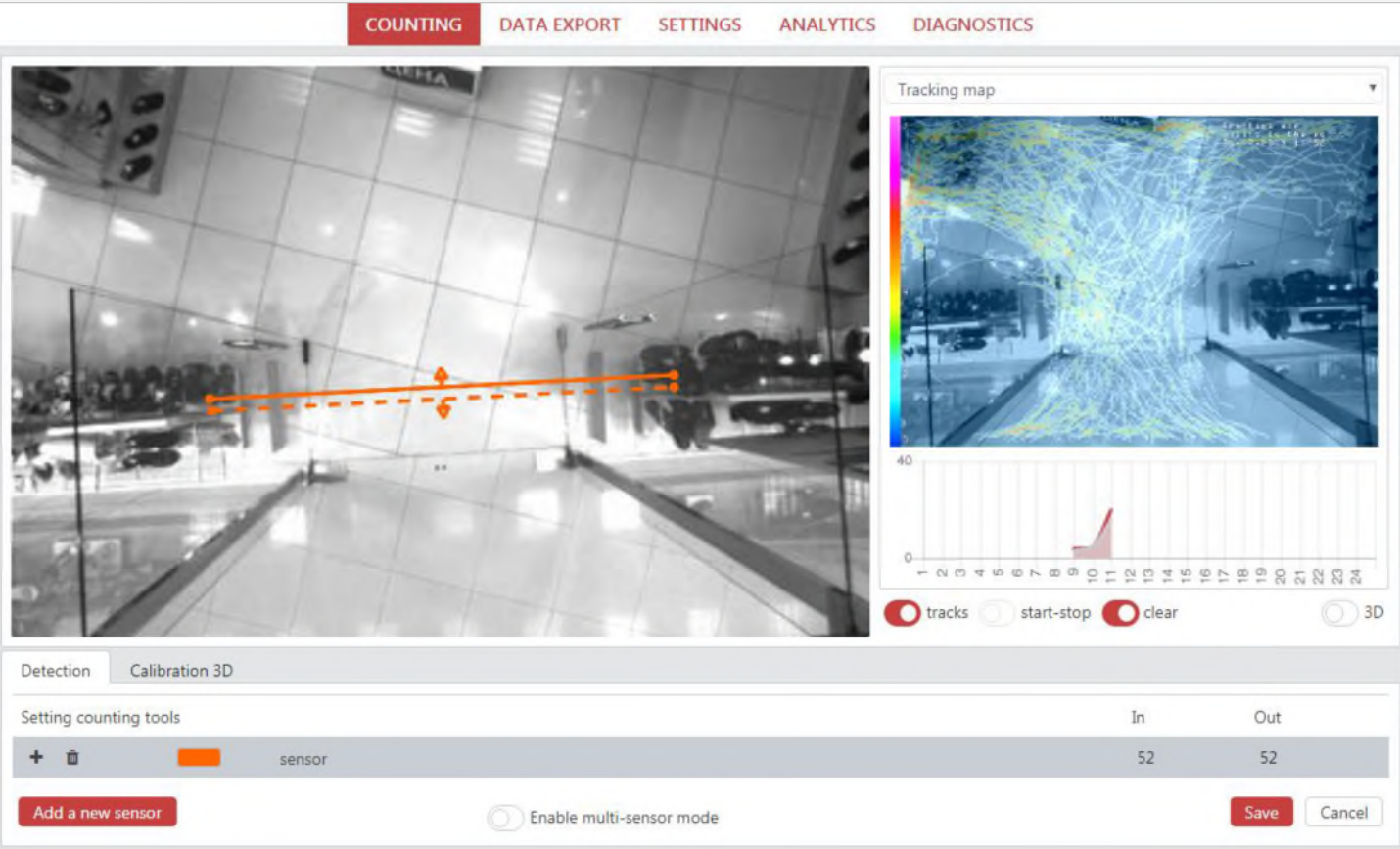
The screenshot shows a 'Camera setup' section with three configuration options: 'Image quality %' set to 50, 'Zoom' set to 1.2 (indicated by a dropdown arrow), and 'Supply frequency Hz' set to 50 (indicated by a dropdown arrow).

Telling the People Counter How to Count:

Adding Sensors:

To add a people counter to the interface, click the “**Add a new sensor**”. A line for the new people counter will appear below. The name can be changed by double-clicking it. **The system allows creating up to 10 independent sensors.**

Figure 27:



Description of Counting Tools:

Now that you added a people counter to the interface, you can now add a counting tool. This is done by right-clicking on the sensor and choosing the desired people counting tool from the context menu, which is shown in **Figure 28**. We will provide examples of these counting tools in the coming sections of this manual. However, for now, here are the types of counting tools that you can use:

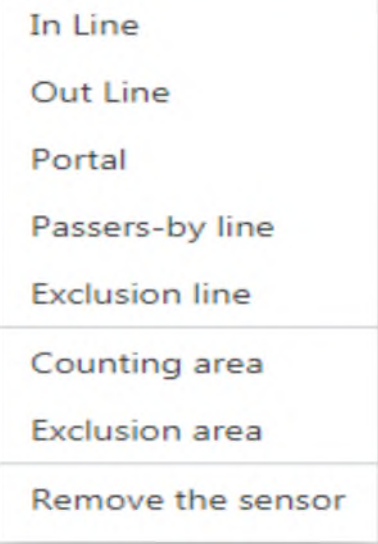
In Line: This is used to count people entering the establishment. This only counts when people are entering.

Out Line: This is used to count people leaving the establishment. This only counts when people are exiting.

Portal: This is an area counting people going both in and out.

Crossing line: This is used for counting in both directions without differentiating between people going in and out.

Figure 28:



Exclusion line: This is used to exclude activity from being counted.

Counting area: This is used to define an area where counting is performed.

Exclusion area: This is used to define an area where counting is *not* performed.

Remove the sensor: This option allows the user to delete a sensor from the system.

Adding Counting Tools - Overview:

- The main element of counting is a sensor (people counter). As was described previously, a new one can be added by clicking “**Add a new sensor,**” as shown in **Figure 29**.
- You can change the color of the sensor so it is more convenient to set counting lines.

Figure 29: A configuration example: one sensor, one line for customers going in, one line for customers going out:

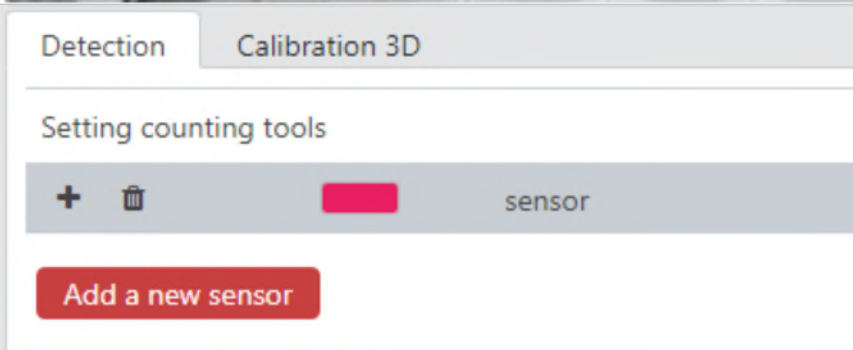
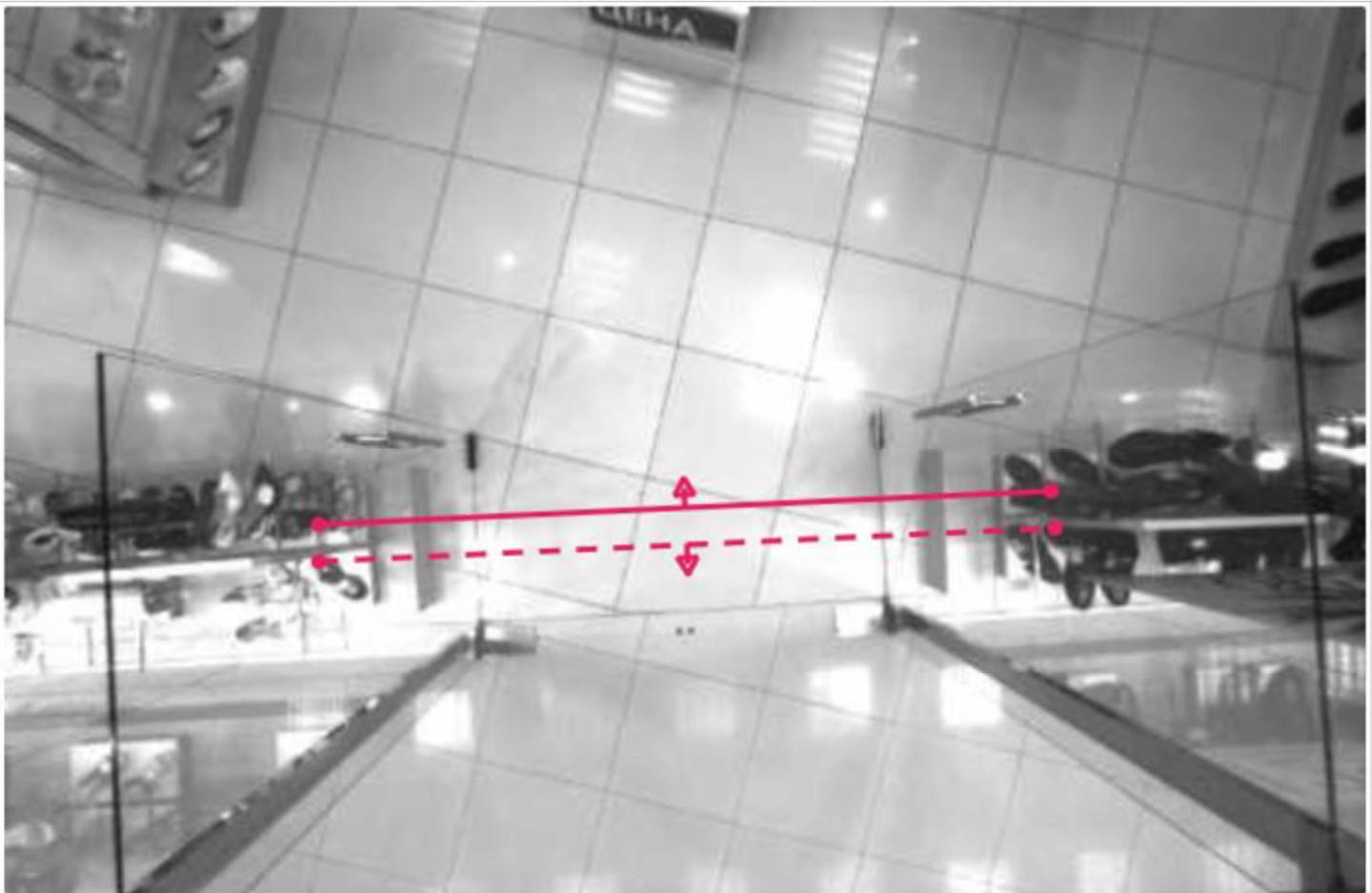
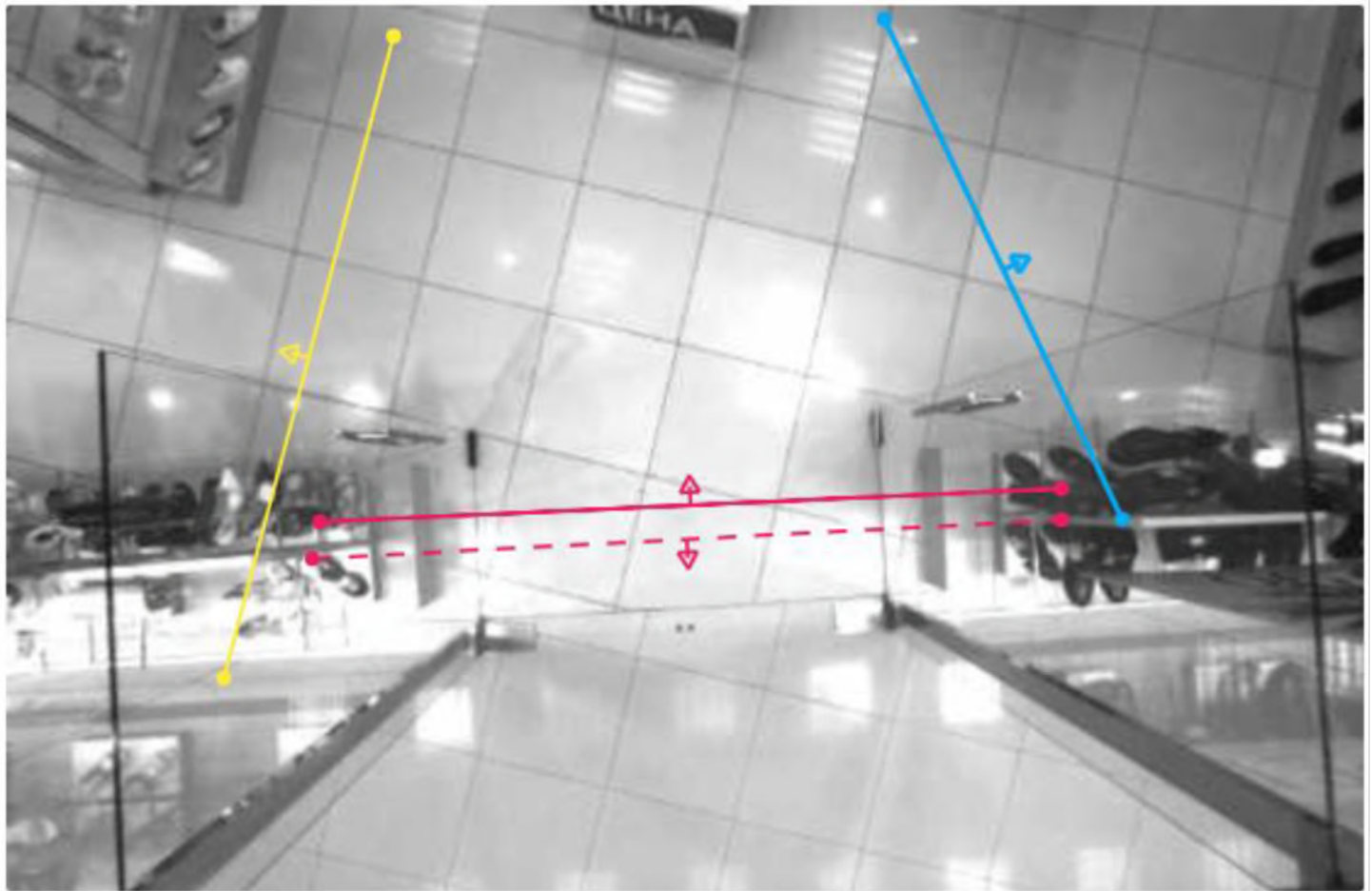


Figure 30: An example of setting counting tools when multi-directional counting is desired:



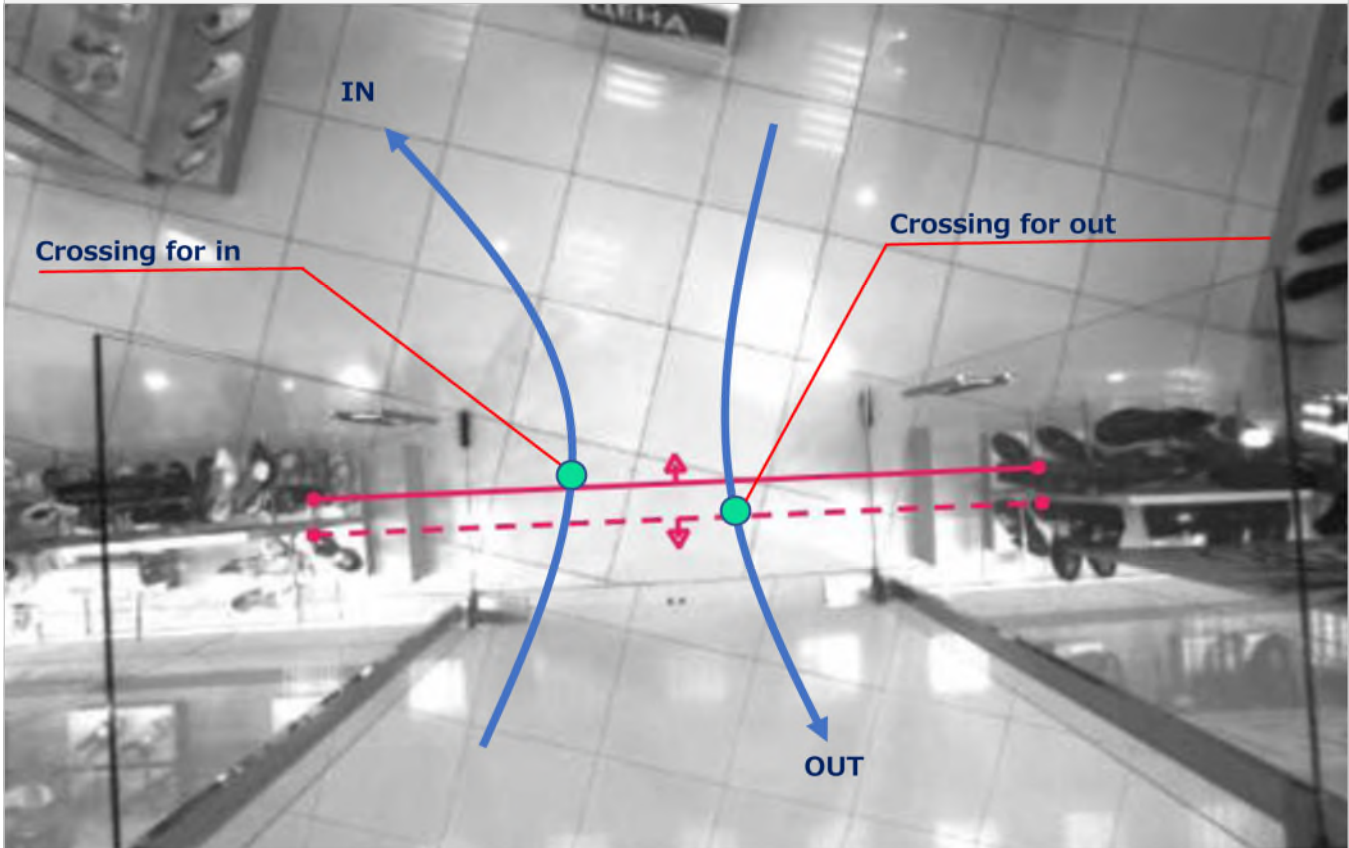
| Detection | | Calibration 3D | |
|--|----|---|------------------|
| Setting counting tools | | | |
| + | 🗑️ | <div style="width: 20px; height: 10px; background-color: red; display: inline-block;"></div> | straight forward |
| + | 🗑️ | <div style="width: 20px; height: 10px; background-color: yellow; display: inline-block;"></div> | to the left |
| + | 🗑️ | <div style="width: 20px; height: 10px; background-color: blue; display: inline-block;"></div> | to the right |
| <div style="background-color: #c00; color: white; padding: 5px; display: inline-block;">Add a new sensor</div> | | | |

- You can change the name of the sensor by double-clicking on it.
- A sensor can count people entering and exiting.
- Multiple counting tools can be added for each sensor. For example, if it is required to sense and count when people went straight, to the right and to the left, then the user needs to add the associated counting tools and assign each a name, as shown in **Figure 30**.

Setting In and Out Lines:

In-Lines and Out-Lines are typically the primary counting tool. To set them, right click on the given sensor and choose “**In line**” in the context menu, as shown in **Figure 28**. Drag the anchor points in order to place the lines so that they are guaranteed to be crossed by the customers. Also, expand the width of the lines in order to maximize the coverage of the entrance.

Figure 31: Optimal configuration for a store’s entrance:



- **In Line:** This is used to count people entering the establishment. When a person crosses the line when entering, it increments the “incoming” count. This counting tool is displayed as a solid line, as shown in **Figure 32**. If you need to count people going out in the same sensor, choose the Out line in the context menu.
- **Out Line:** This is used to count people exiting the establishment. When a person crossed the line when exiting, it increments the “outgoing” count. This counting tool is displayed as a dotted line.

Figure 32:



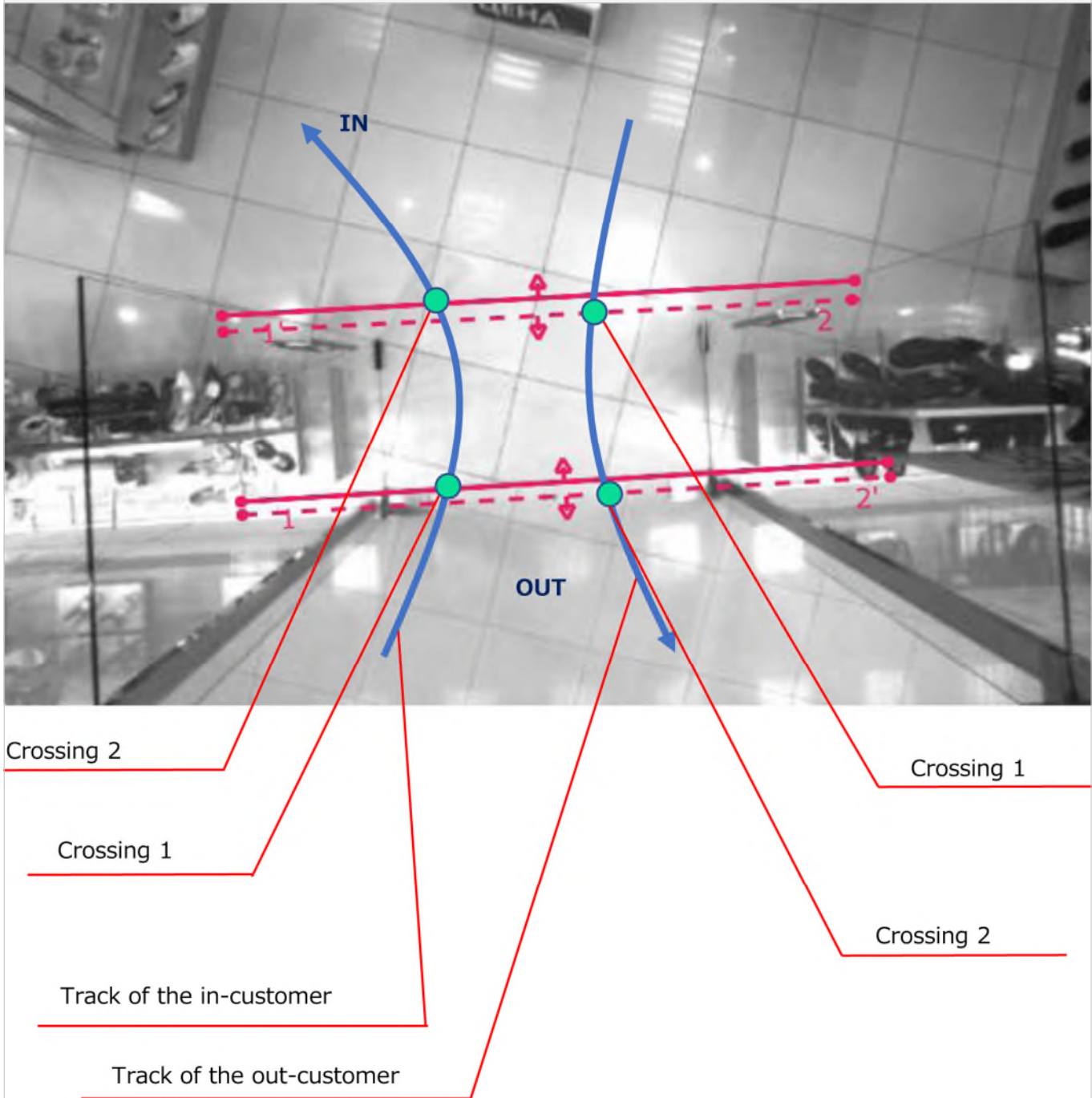
Splitting In and Out Lines:

For a more complex example, for example, if you need to count customers who have come a certain distance or add a crossing filter, In and Out lines can be “split.” To do this, the user should right-click on the appropriate line and choose “**Add a supplementary line**” in the menu and a second line will appear. Next, move the lines apart as needed and Click “Save.”

As shown in **Figure 33**, you can see a visualization of this counting principle. Note that the blue lines in this figure show the path of one person entering and of one person leaving. These blue lines are not counting tools.

- A person will be counted as going in when their track crosses both In lines.
- A person will be counted as going out when their track crosses both Out lines.

Figure 33: An example of split “In” and “Out” lines:



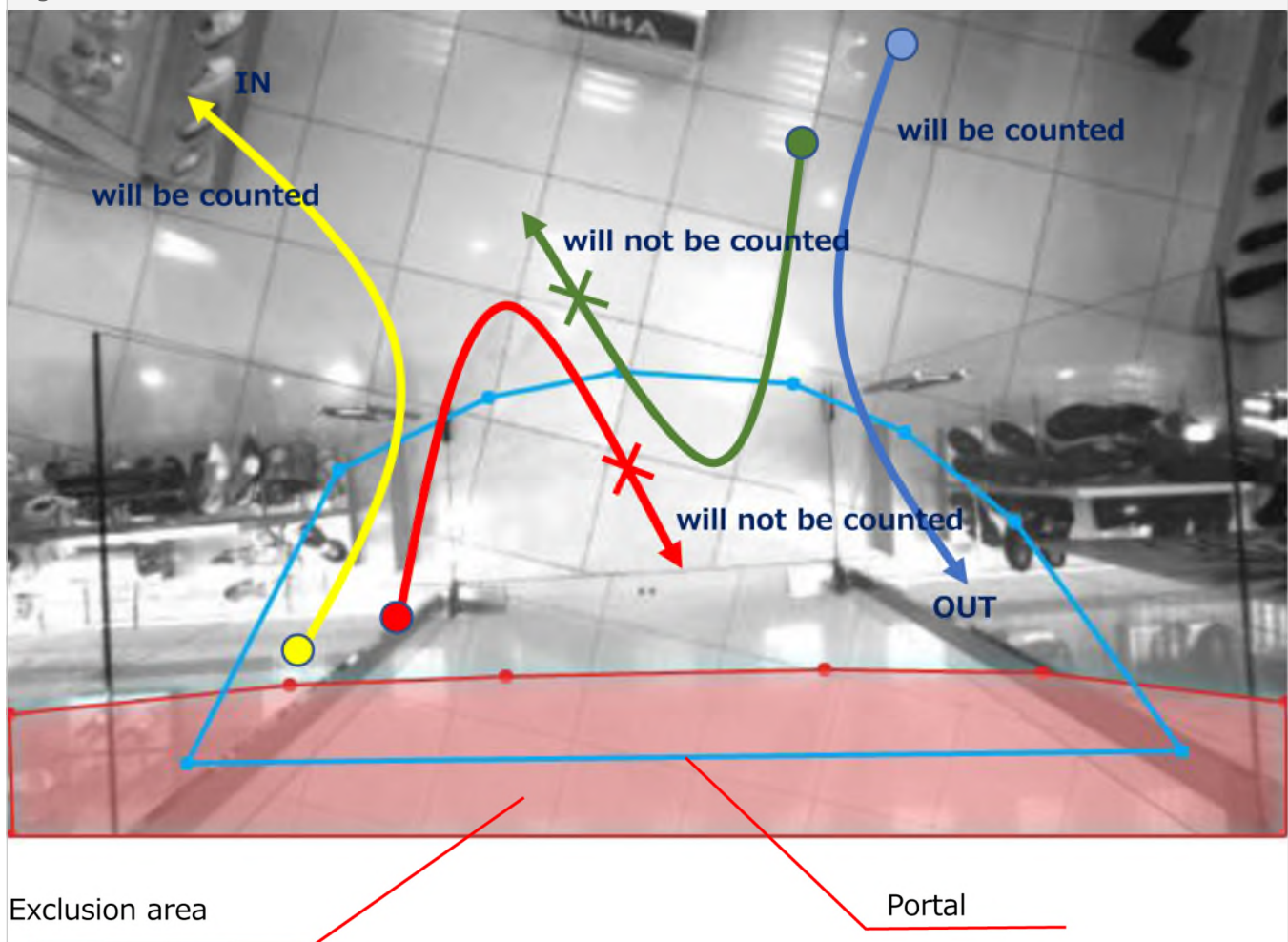
Setting a Portal for In and Out Counting:

- The portal in **Figure 34** is defined by the light blue line and creates an enclosed area.
- If the person appears within the portal and exits the portal (yellow line in **Figure 34**), then the person will be counted as going IN.
- If the person appears outside of the portal and enters the portal (dark blue line in **Figure 34**), then the person will be counted as going OUT.
- The path of two people in Figure 34 (the red line and the green line), show when a person will not be counted.

To change the logic of the count, right click on the portal and choose "Invert logic". After it is inverted, the portal will operate as follows:

- If the person appears within the portal and exits the portal, then the person will be counted as going OUT.
- If the person appears outside of the portal and enters the portal, then the person will be counted as going IN.

Figure 34:



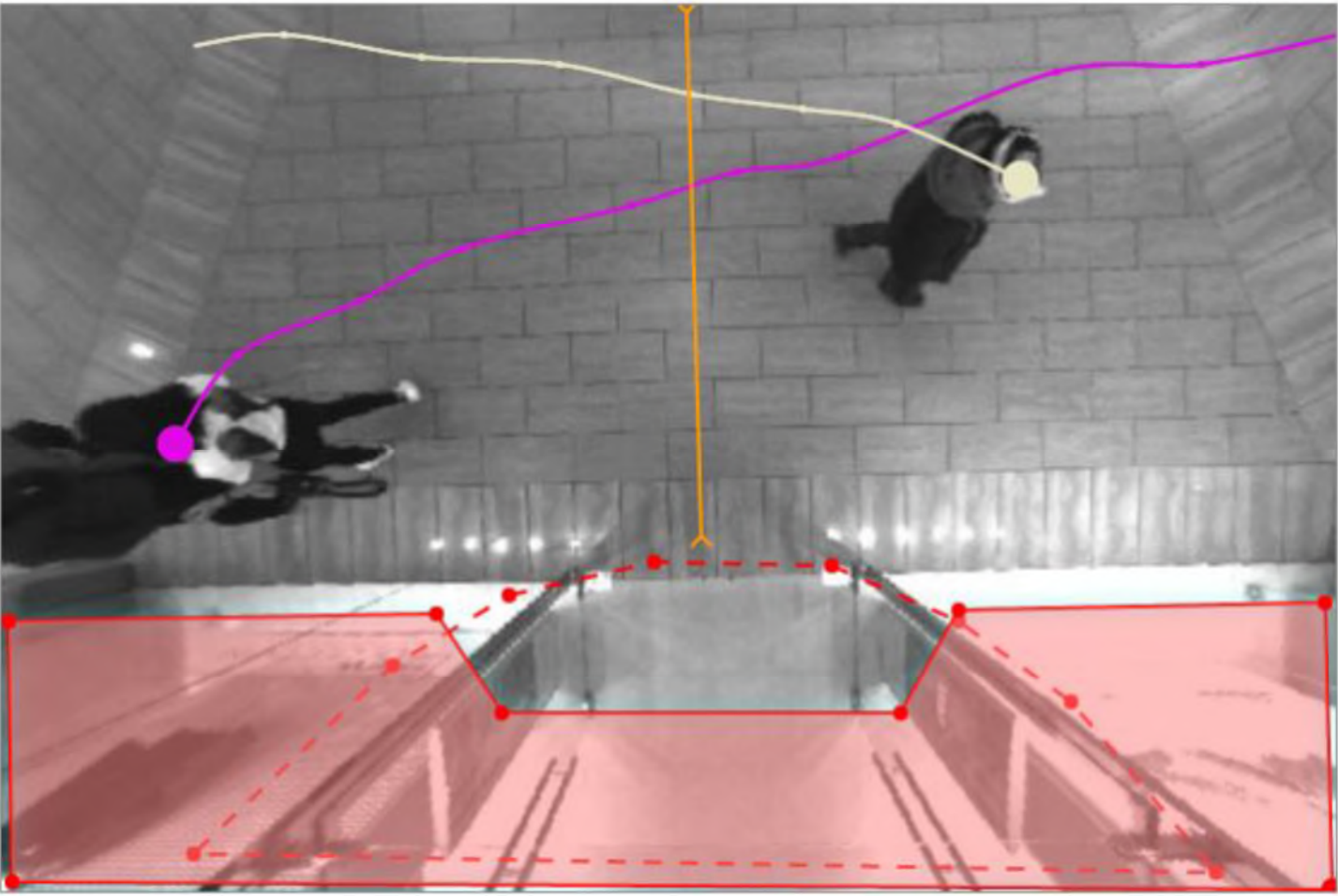
- **IMPORTANT!!!** A portal must always be combined with an exclusion area, as shown in Figure 34. The exclusion area is the solid red area towards the bottom of the figure.

Setting Crossing Lines:

Crossing lines (the orange line in **Figure 35**) are employed to count traffic in general without differentiating between those going in and those going out. This is extremely useful for counting people passing by your establishment, but not entering. All of the people who have crossed the line are included into the general count without the differentiating between those going in and those going out.

Crossing lines are best used when the people counter is installed outside of an establishment, such as a mall environment. The people counter counts how many people entered the establishment and how many passed it by. This allows for calculating conversion rates.

Figure 35:



Detection Calibration 3D

Setting counting tools

| | | |
|---------------|-------------|-------------------|
| <div>+ </div> | <div></div> | Tenant's entrance |
| <div>+ </div> | <div></div> | Passed by |

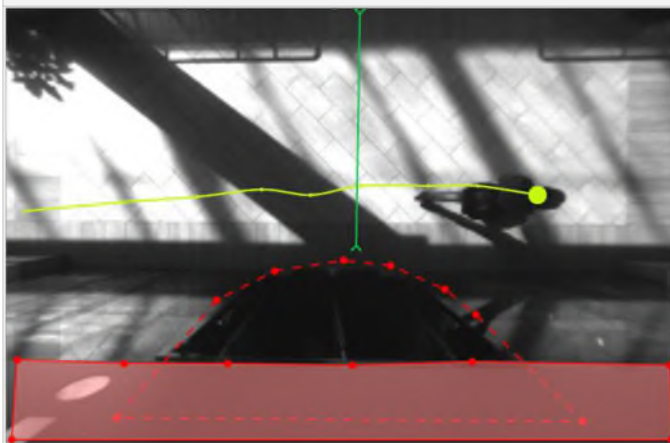
Add a new sensor

See **Figure 36** and **Figure 37** for more examples.

Figure 36:



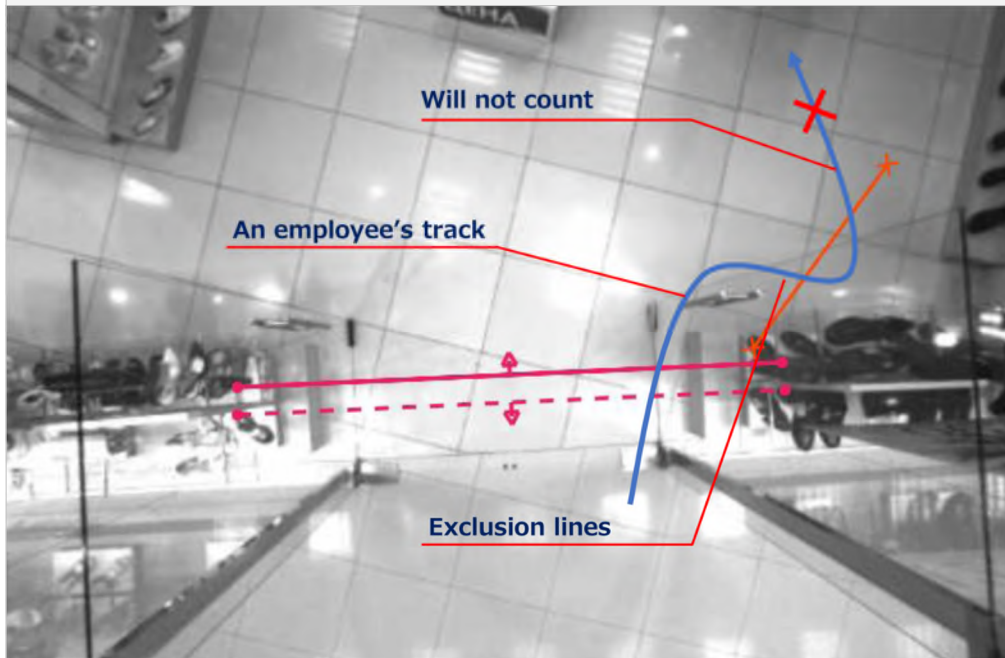
Figure 37:



Setting Exclusion Lines:

An exclusion line is a counting tool that can help do things such as eliminate employees from the traffic count. If the person crosses an exclusion line, then that person will not be counted, even if the person crossed another counting tool, either before or after crossing the exclusion line.

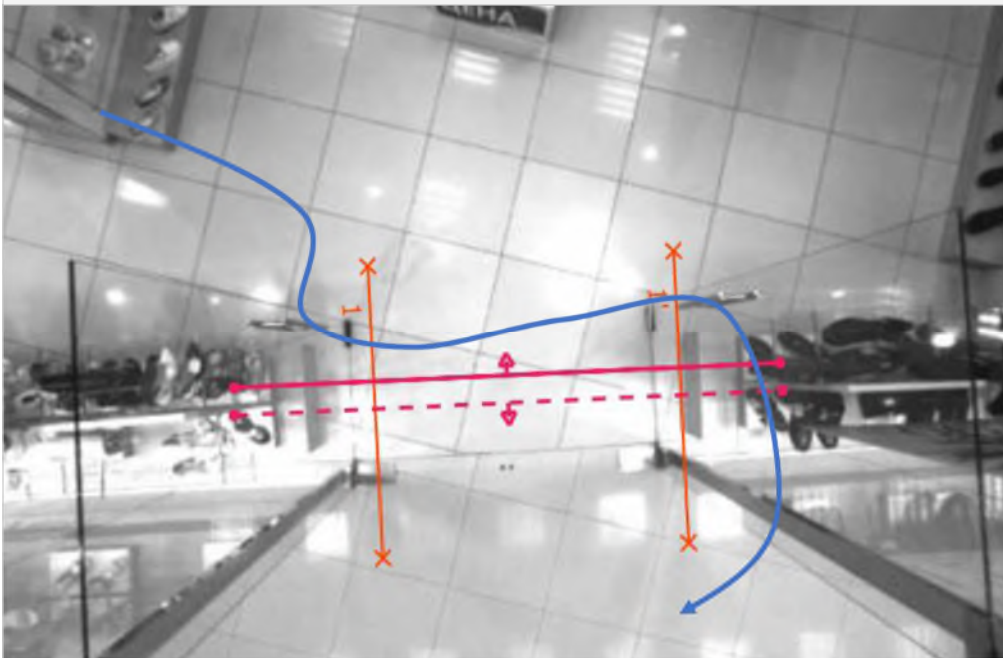
Figure 38:



An example, as shown in **Figure 38**, the employees can be instructed to break the exclusion line, which can be seen to the right of the image, when going in or out of the store.

As shown in **Figure 39**, exclusion lines can be “split” by right clicking on the line and choosing “Add a

Figure 39:

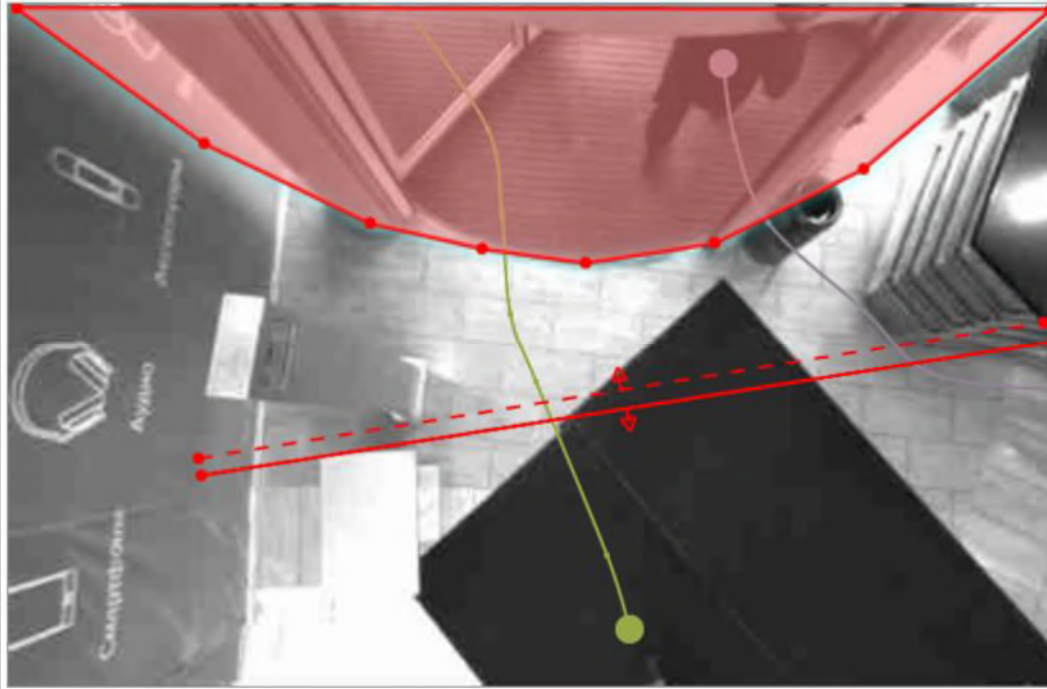


supplementary line”. Move the lines apart. A person will not be counted if the person crosses both lines.

Setting Exclusion Areas:

An exclusion area can be used to decrease the number of “false hits” that can occur. Customers will only be acknowledged when they are outside the exclusion areas. This can be useful if a store has point-of-sale displays, such as clothing racks or products on shelves close to the entrance area. Using an exclusion area will help make sure these people aren’t counted while browsing inside the store.

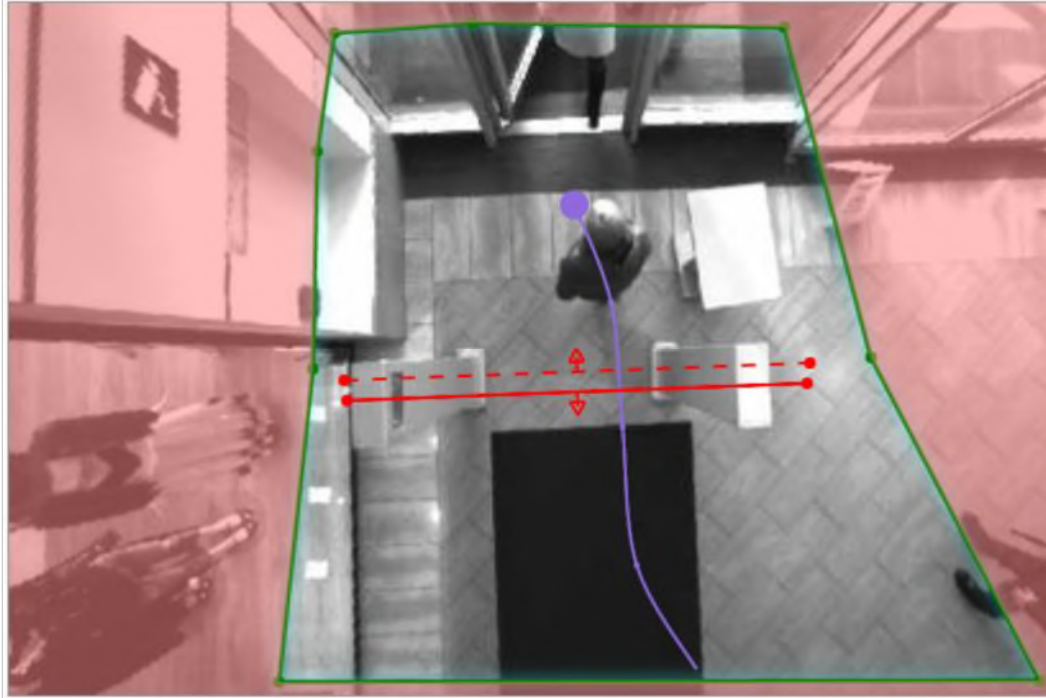
Figure 40: Setting an Exclusion Area



Setting Counting Areas:

A counting area can be created by setting up multiple exclusion areas. However, it is sometimes easier to use the Counting Area tool, instead. An example of this is shown in **Figure 41**.

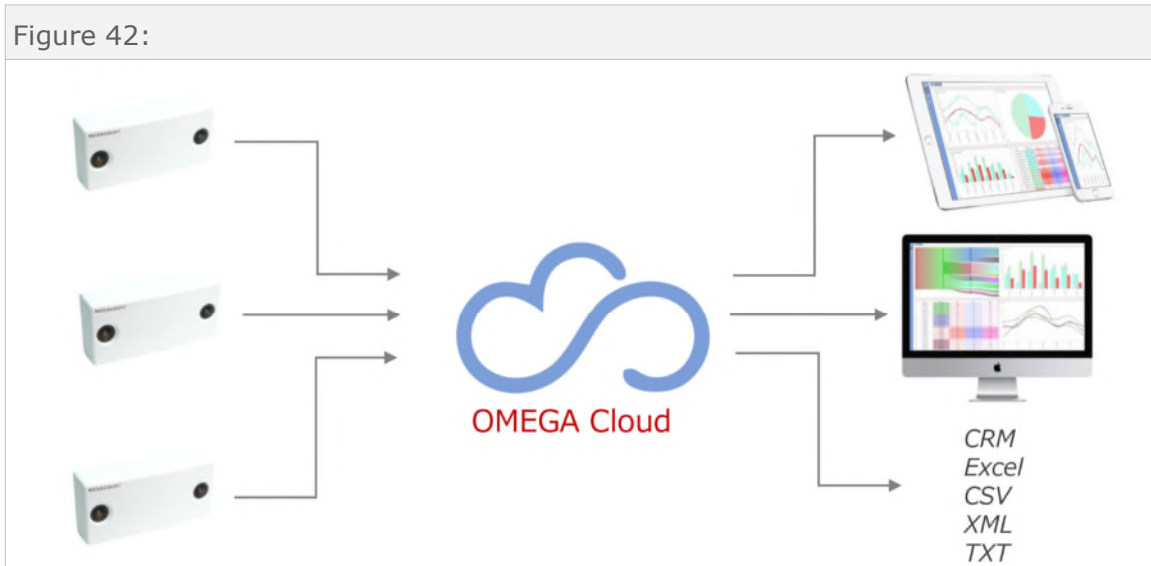
Figure 41: Setting a Counting Area



Data Transfer:

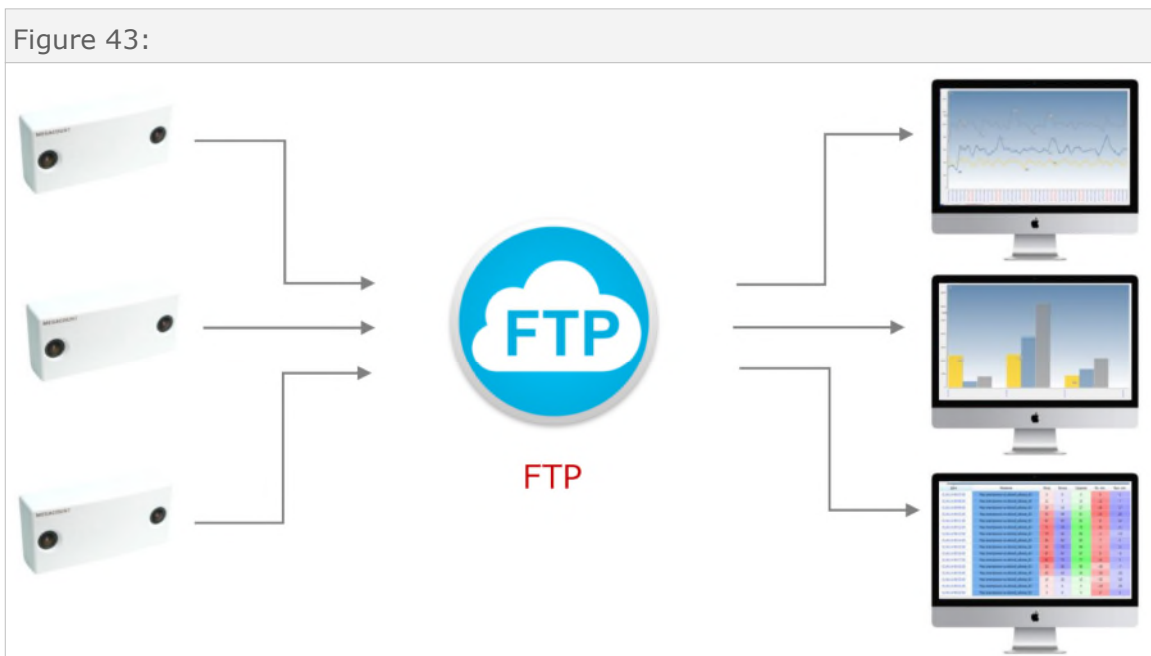
Data Transfer to the OMEGA System (Cloud):

The data from each people counter is transferred to the server on the Web via JSON or XML stream. To access the data, the user connects through the WEB interface from any browser. This is illustrated in **Figure 42**.



Data Transfer to the STATISTICS System (PC):

The data from each people counter is transferred to the FTP server. To access the processed analytical data, the user installs the STATISTICS program. This is illustrated in **Figure 43**.



Data Transfer to Third-Party Products:

The data from each people counter can be transferred to third-party products and systems in a variety of ways. Please contact us for more information. This is illustrated in **Figure 44**.

Figure 44:



Data Export:

Overview:

Data can be transmitted for four different scenarios.

Set: choose the required data export type.

- **STATISTICS:** Export to the STATISTICS system via FTP. This allows for viewing/analyzing the data on a local computer or server by using the STATISTICS software, which is PC-based software that is included with the people counter.
- **WEB OMEGA:** Export to the OMEGA cloud system via HTTP. This allows for viewing/analyzing the data from the Cloud/Web by using the OMEGA software, which is Web-based software that is optional. There is a monthly fee associated with this option. Please call us for more information.
- **XML:** Export in the XML format to the FTP/HTTP. This can be used if the customer is not using our STATISTICS or OMEGA software.
- **PROGRAMMABLE:** Freely programmed export to the FTP/HTTP. This is another option that can be used if the customer is not using our STATISTICS or OMEGA software.

It is possible to set up to three export patterns of each type.

Exporting to the STATISTICS System:

Figure 45, shows an example of how to set a data export to the FTP server so that the data can be viewed by the STATISTICS software. Here is a description of the parameters:

- **Server:** The FTP server address; if the FTP is in the DNS format, it will require turning on DNS in the counter's network settings, see the article **SETTINGS — NETWORK SETTINGS—DNS**.
- **Login:** Login name to access the FTP.
- **Password:** Password to access the FTP.
- **Port:** FTP connection port.
- **Sending interval:** How often the data is sent to the FTP server (10/15/30/60 minutes).
- **Test:** Launches test recording and removing of a file on the FTP server.
- **Graphs:** Turns on/off the export of heatmaps and tracking maps to the FTP server.
- **Export:** How often heatmaps and tracking maps are sent to the FTP (1/2/3/4 hours).
- **Image quality:** The quality of the image of maps exported in the JPG format.

Figure 45: Data Export to the STATISTICS System:

SET THE DATA EXPORT

Set
STATISTICS

Server
192.168.1.201

Login
mega

Password

Port
21

Sending interval
30 minutes

Test

Maps

Export interval
4 hours

Image quality
60

Save Cancel

Testing was successful

Here is the process for setting the export for STATISTICS software:

- Connection to the FTP.
- Enter the parameters to access the FTP and click "Test."

- If everything is correct, a message that the test was successful will pop up and the "Connect" button will become active, as shown in **Figure 45**.
- Note **Figure 47** and **Figure 48** if you have any issues at this point.
- Next, press the "Connect" button.
- If everything is correct, then the button will change to "Reconnect" and an "Add" button will appear, as shown in **Figure 46**.
- Click the "**Add**" button and enter the name of the company.
- After adding the name of the company, double click the Company level and the system will switch to the Country level and will suggest entering the name of the Country. Repeat the same actions for the Country level. Next, the system will require stating the **Region, City, Object, Subobject**. It is necessary to fill all the fields. Note that **Object** can be something like the name of the store, the street name or building name, etc. The **Subobject** is typically the name of the entrance (for example, "front entrance").
- Click the "Save" button. A block for the created export pattern will appear, similar to what is shown in **Figure 49**.

After export to Statistics is set, launch the STATISTICS program, type in the FTP server in the settings to make sure the data can now be viewed.

Figure 46:

The screenshot shows a web interface with a light blue background. At the top, there is a red button labeled 'Reconnect'. Below it is a light blue horizontal bar with a single forward slash '/' in the center. Underneath that bar is a white input field with the placeholder text 'Company'. To the right of this input field is a red button labeled 'Add'.

Figure 47: Common FTP-Related Issues:

Here are a few common errors, along with solutions to FTP-related issues:

- **Error creating directory:** Turn on the option of creating and deleting files and folders in the FTP application.
- **Wrong login:** Make sure that a user with the given login and password exists in the FTP application.
- **Connection error:** Make sure that the port is entered correctly.

Figure 48: Recommendations Regarding the FTP Server:

Here are some recommendations regarding the FTP server:

- Use FileZilla filezilla-project.org as the FTP application.
- If the FTP is deployed on a Windows machine, set the UNIX data format.
- Allow creating and deleting files and folders.
- FTP must work in a passive mode.
- If the FTP is deployed on a Linux machine, set the return to the root directory correctly.

Note about adding additional sensors: Think through and plan the level structure beforehand because it is then fixed and applied to the whole chain. Also, when adding a second or more sensors to the system, always use the same FTP server. When connecting a new sensor, it will display the entire data structure that was set previously. Double-click the level where you need to add the sensor and add a new level by clicking "Add." For example, Company, Country, Region, City, Object, Subobject...depending on where you are installing the sensor.

Note about modifying FTP server data: Folders for each level with service files are created on the FTP server. Text logs and track images are exported to the end catalogue on the Subobject level. **Do not change any text files on the FTP, as it will lead to a failure in the system.**

Figure 49:

SET THE DATA EXPORT

Set

STATISTICS

Server

192.168.1.201

Login

mega

Password

Port

21

Sending interval

30 minutes

Test

☐ Maps

Export interval

4 hours

Image quality

60

Reconnect

CharlesSons/USA/Pennsylvania/Philadelphia/Store_Cottman_2275/Entrance

Company

Charles&Sons

Country

USA

Region

Pennsylvania

City

Philadelphia

Object

Store_Cottman_2275

Subobject

Entrance

Save

Cancel

Exporting to the OMEGA Cloud:

Figure 50 shows the fields for setting up an export to the OMEGA Cloud system. If you wish to view the data from a browser or smartphone without having to install dedicated software, then this option would suit your needs. Call us for pricing for this feature. Here is a description of these fields:

Server, Security key: Please contact us if you are interested in the OMEGA Cloud system and we will provide you with this information.

Sensor description: The name of the sensor.

Port: Data export port.

Sending frequency: This is how often the data will be sent.

Data interval: Data interval format.

Ping Frequency: This is how often the sending of the data is checked.

Figure 50: Exporting to the OMEGA Cloud System:

WEB OMEGA

Server

Port

3000

Data interval

10 minutes

Security key

Sending frequency

10 minutes

Ping Frequency

10 seconds

Sensor description

Test

Delete

Save

Cancel

Exporting via XML:

The data can exported via XML. **Figure 51** shows the fields. Here is a description of the fields:

Export protocol HTTP/FTP: Sets the protocol of the data export.

Server: Data export server.

Port: Data export port.

Sending frequency: How often the data will be sent.

Data interval: Data interval format.

Server response: Server response command.

Site ID, Site Name Division ID, Device ID, Device Name: System tags.

Figure 51: Setting export with XML:

SET THE DATA EXPORT

Set

XML

Export protocol

HTTP

Server

Port

21

Data interval

5 minutes

URL Address

Sending frequency

Immediate

Server response

Data format

XML 1.0

Site ID

Site Name

Division ID

Device ID

Device Name

Create

Cancel

Exporting via Programmed Export:

The data can also be exported in various custom ways. **Figure 52** shows the fields associated with this option. Here is a description of these fields:

Data export script: See optional export.

Export protocol: FTP/HTTP protocol selection.

Server: Data export server.

Port: Port for the export server.

Login: Login name for accessing the FTP application.

Password: Password for accessing the FTP application.

Directory: Directory/Folder to which the data will be exported.

Name template for the FTP file: See optional export.

Data interval: Data structure interval.

Sending frequency: How often the data will be sent.

File type: When set to "hourly," the file will contain the data for the previous hour. When set to "daily," the file will contain the data for the whole day.

Figure 52:

The screenshot shows a web-based configuration window titled "SET THE DATA EXPORT". The window contains the following fields and controls:

- Set:** A dropdown menu with "PROGRAMMABLE" selected.
- Data export script:** A large text area for entering a script.
- EOL format:** A dropdown menu with "Win format (CR+LF)" selected.
- Export protocol:** A dropdown menu with "FTP" selected.
- Server:** A text input field.
- Port:** A text input field with "21" entered.
- Login:** A text input field.
- Password:** A text input field.
- Directory:** A text input field.
- Create:** A radio button next to the Directory field.
- Enable auto-create directory:** A radio button.
- Test:** A red button.
- Name template for the FTP file:** A text input field.
- Data interval:** A dropdown menu with "10 minutes" selected.
- File type:** A dropdown menu with "Hourly" selected.
- Sending frequency:** A dropdown menu with "10 minutes" selected.
- Test the script:** A button located to the right of the EOL format dropdown.
- Save:** A red button at the bottom right.
- Cancel:** A button at the bottom right.

Analytics:

Displaying Graph of Traffic:

Clicking on “Analytics” will show a screen similar to what is shown in **Figure 53**. Next, click on “Graphs” and a screen similar to what is shown in **Figure 54** will appear. Here are the parameters for this option:

Direction: Choose the data you want to see (in/out/in-out).

Sensor: Choose the sensor’s data you wish to view.

Date: Current date.

Show: Click this button to display the data.

Figure 53:

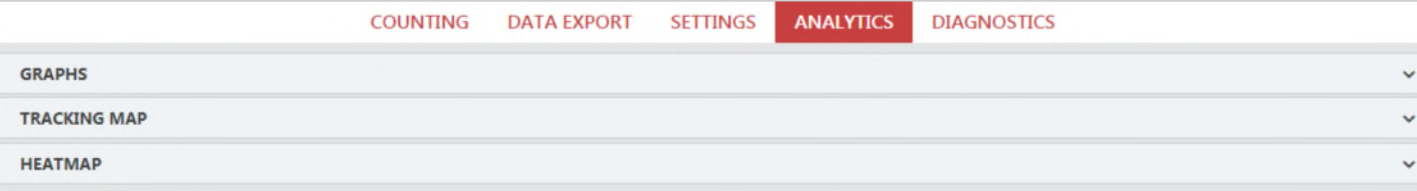


Figure 54:



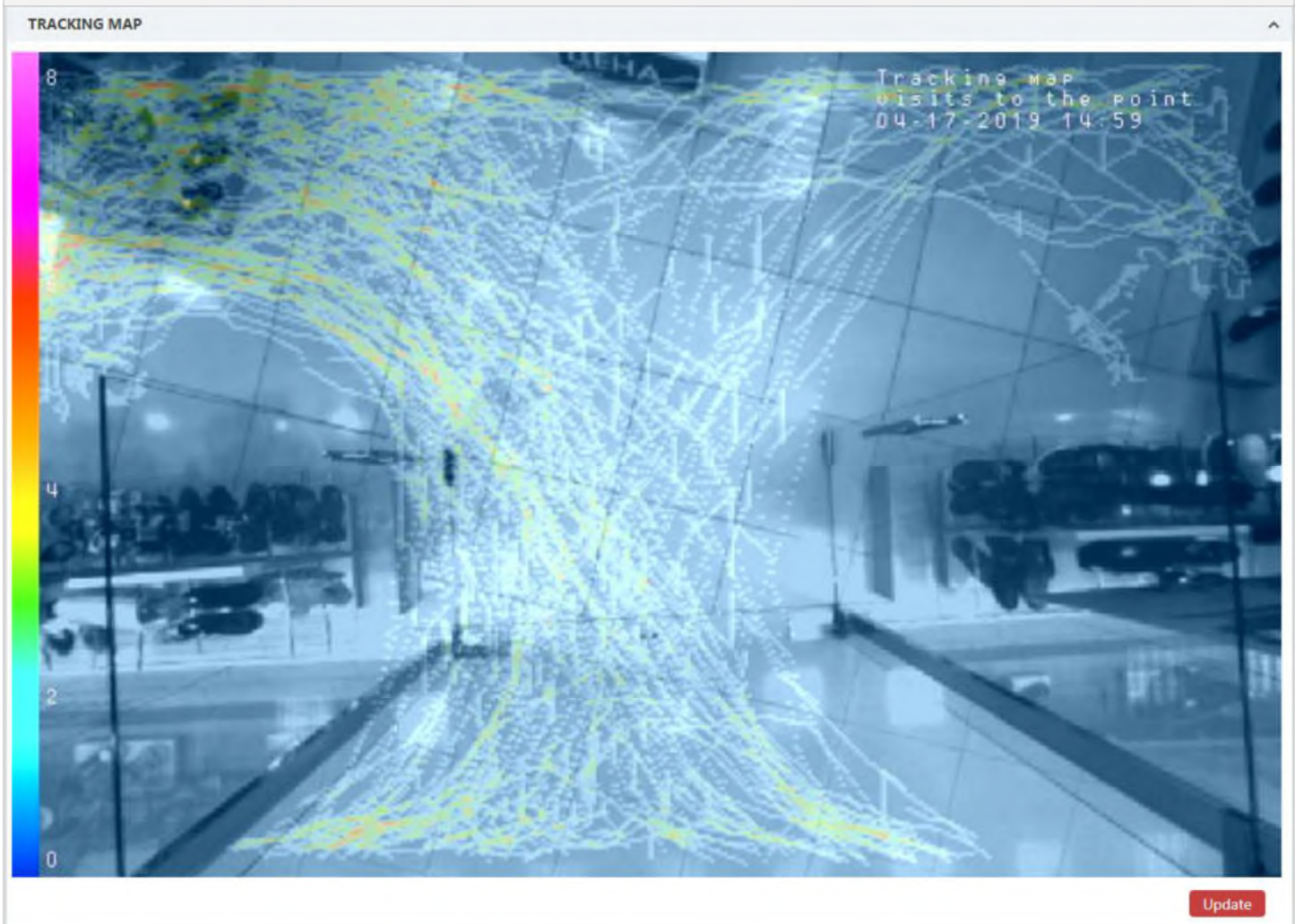
Displaying Tracking Map of Traffic:

Clicking on "Analytics" will show a screen similar to what is shown in **Figure 53**. Next, click on "Tracking Map" and a people tracking map for the current day will appear, similar to what is shown in **Figure 55**.

When people walk through the field of view of the counter, it creates tracks for each of the people. It saves these tracks and overlays them onto each other. Later the tracking map is transferred to the FTP server or to the OMEGA cloud system.

Data is exported to the FTP in the JPG file format, the size of a chart is about 80kb.

Figure 55:



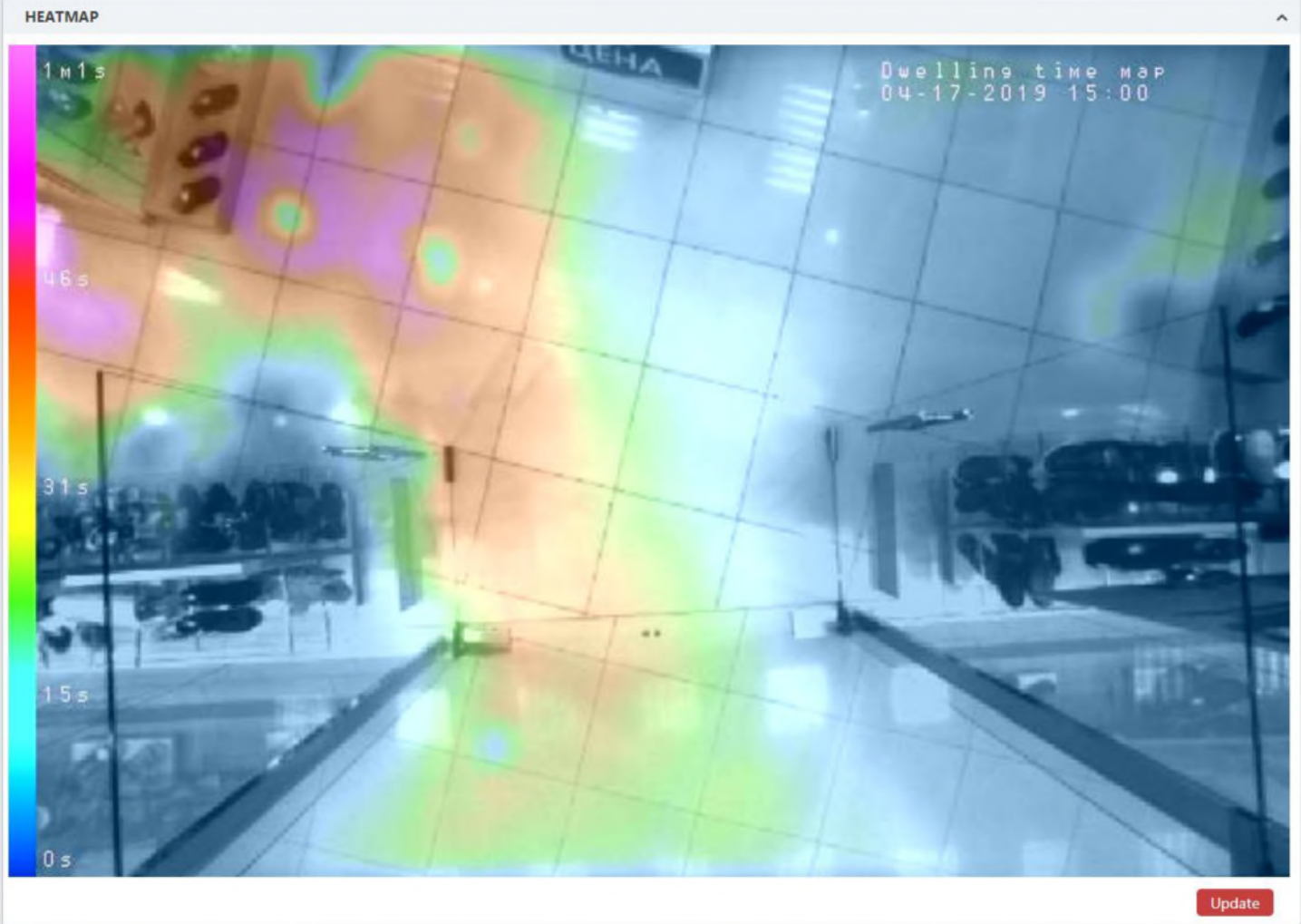
Displaying Heatmap of Traffic:

Clicking on “Analytics” will show a screen similar to what is shown in **Figure 53**. Next, click on “Heatmap” and a heatmap for the current day will appear, similar to what is shown in **Figure 56**.

When people walk through the field of view of the counter, the sensor tracks and saves how much time each person spent in any given area. It then overlays and adds that time and displays it on the camera image in a color spectrum. Later the heatmap is transferred to the FTP server or to the OMEGA cloud system.

Data is exported to the FTP in the JPG file format, the size of a chart is about 80kb.

Figure 56:

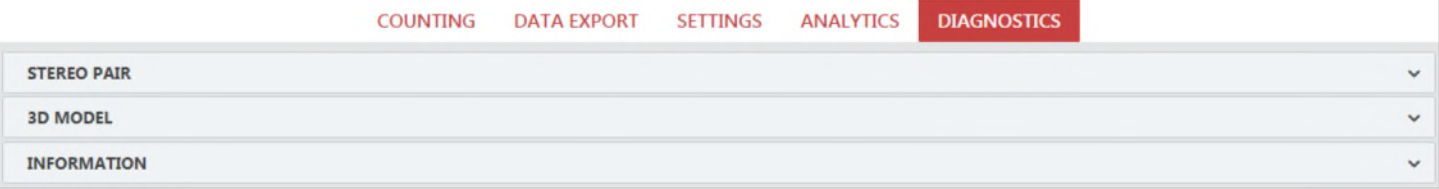


Diagnostics:

Reviewing Left and Right Camera Image:

Clicking on "Diagnostics" will show a screen similar to what is shown in **Figure 57**. Next, click on "Stereo Pair" and a screen similar to what is shown in **Figure 58** will appear.

Figure 57:



This displays the image from the left and from the right cameras of the people counter. This allows the user to check if the lens has smudges on it, or to simply verify that each of the two cameras is operating properly.

controlling the performance of the graphic sensors.

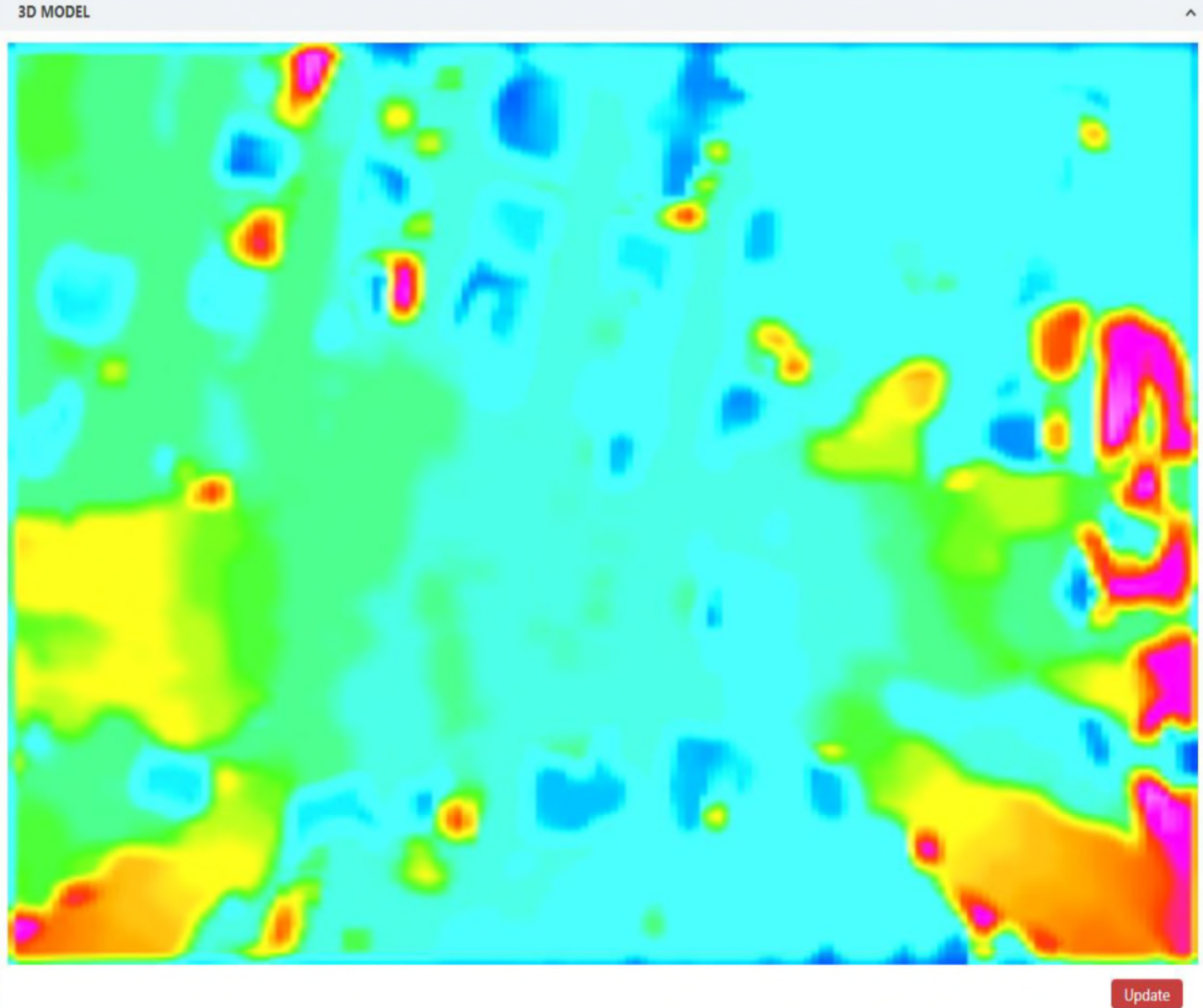
Figure 58: Example of left and right images of the people counter:



Reviewing 3D Model View:

Clicking on “Diagnostics” will show a screen similar to what is shown in **Figure 57**. Next, click on “3D Model” and a screen similar to what is shown in **Figure 58** will appear.

Figure 59:



Reviewing People Counter Information:

Clicking on "Diagnostics" will show a screen similar to what is shown in **Figure 57**. Next, click on "Information" and a screen similar to what is shown in **Figure 60** will appear.

This block shows information about the counter. Here is a description of each piece of information:

Start time: When the counter was turned on or rebooted.

System time: Time and date set on the people counter.

Version: The counter's firmware version. Firmware is the software that is programmed onto the micro-controller inside the people counter.

Manufacturing date: When the counter was manufactured.

Wi-Fi module: Wi-Fi module's firmware version (*if installed*).

Bluetooth module: Bluetooth module's firmware version (*if installed*).

Board version: Board revision number. This represents the version of the circuit board in the people counter. This will only be used for trouble-shooting purposes with our technicians.

Figure 60:

| INFORMATION | |
|----------------|-------------------|
| Start time | 12:15 |
| System time | 04.17.19 15:00:50 |
| MAC Address | 70:b3:d5:1a:05:68 |
| Operating time | At all times |
| | |
| Version | SC v.2.0[4030] |
| Board version | 1.8 |

Technical Specifications:

- Power: Power Over Internet (PoE) (48V, 3W)
- Ethernet Data Transfer Interface: 100/100 Mbit
- Impact-resistant ABS plastic enclosure (IP 60)
- Dimensions: 5.3" x 2.6" x 0.9" (135 mm x 65 mm x 25 mm)

Contact Information:

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322 Greenwood Street
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Web: www.IDTElectronics.com

Document Updates:

This is a list of changes to this document. Note that it is not a list of changes to the product.

June 19, 2019 - Initial creation of manual.