EURECAM

INSTALLATION GUIDELINES

COMPTIPIX 3D

SETTING APPENDIX

I. INTRODUCTION

       Thank you for choosing an Eurecam Product. The aim of this manual is to help you set up the system and make the most of it. In case of trouble, our team is at your entire disposal to provide you with necessary technical support :

support@eurecam.net

> **This document is complementary to the installation guidelines of Comptipix 3D.**

II. TABLE OF CONTENTS

III. Generalities

A. Setting

Wizard allows you to carry out the main steps of sensor setting (**sensor** section in the **wizard**);
- Height map adjustment (steps 4 and 5)
- Ground configuration (step 7 and 8)
- Configuration of the counting line (step 9)

If you want to fine tune the settings, you should go to the sensor page of the configuration interface. Different tabs provide access to the following options:

Configuration interface → **Sensor** page

- **General** tab : Allow to select simple / advanced interface and reset all main settings
- **Stereo** tab: these options allow you to configure the height map
- **Lines** tab: these options allow you to configure the ground, the exclusion areas or the counting lines
- **Image** tab: these options allow you to configure the sensor image
- **Processing** tab: these options allow you to configure the detection and the people tracking parameters
- **Display** tab: these options allow you to configure the display in the configuration interface. They do not affect the operation of the sensor.
- **Info** tab: this tab provides you with information on sensor's state (image, processing, etc)

B. Ground Definition

The operating mode of the stereo sensor requires the definition of a ground. Only objects or persons above the ground will be detected by the sensor.

In the absence of a ground, the sensor will not be able to detect or count peoples

For detection and height filtering to work properly, it is also important to set correctly the ground parameters.

**Incorrect ground distance or inclination settings
can degrade and even prevent to have a correct counting**

Automatic ground mode is used by default. It enables the sensor to estimate by himself the right values for distance and eventually for inclination. As soon as satisfactory ground parameters are found, **it is recommended to switch to manual mode**.
The manual mode will make sure that the ground will always be initialized in the same way regardless of the light environment or the presence of disturbing objects.

When the setting wizard is used, the ground is automatically switched to manual mode.

This can be performed manually by copying the state values (**State**) to the manual values (**Manual configuration**):

Configuration interface → **Sensor** page → **Lines** tab
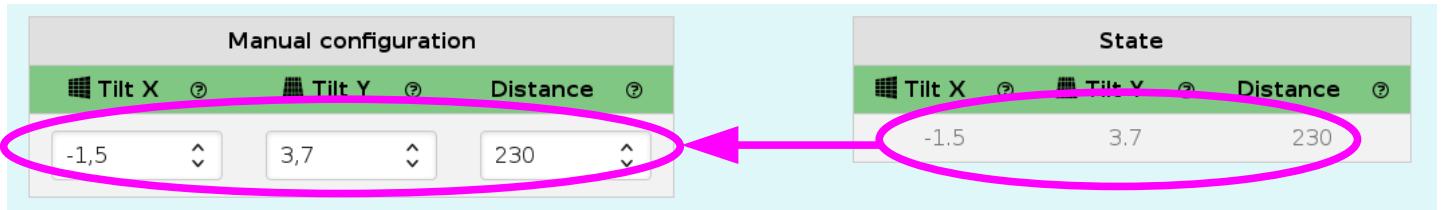
C. WORK AREA

People detection and tracking can be done optimally only in the work area of the sensor. The work area is displayed in the interface with the button «**Show work area**», only green areas enable optimal sensor operation:

Configuration interface → **Sensor** page → **Lines** tab

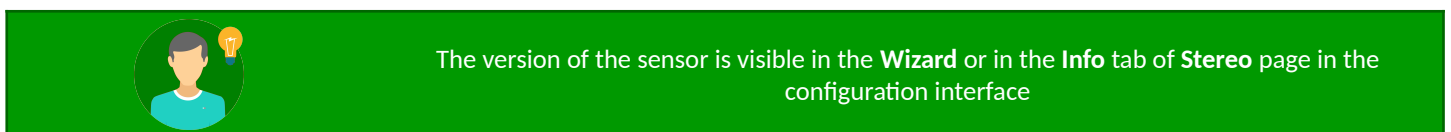| Work area definition	Work area displayed in the interface
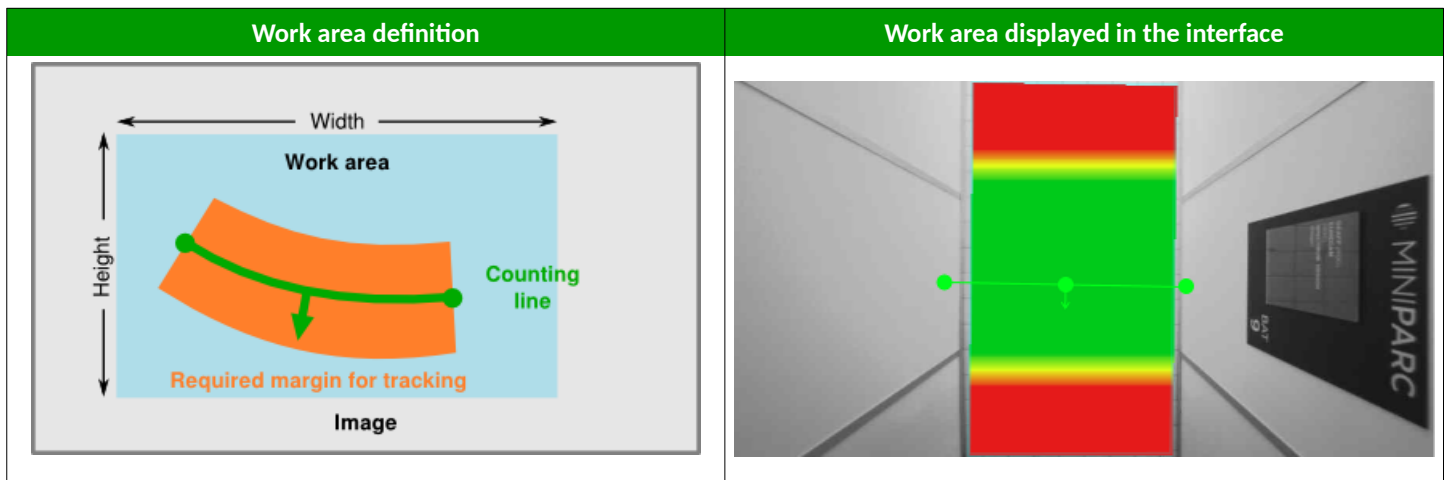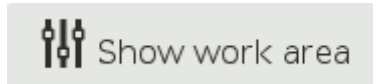
D. MODIFICATIONS SAVING

If any modifications are made outside of wizard, do not forget to save them with the **save** button. Otherwise, the changes will be lost if the sensor is rebooted:

E. HEIGHT / WIDTH OF THE COUNTING AREA

The following table gives the size of the counting area according to the height for different versions of the sensor **for an inclination of 0°**:

→ Orange values are not recommended because of a very small work area for tracking
→ Yellow values are possible, but it is recommended, insofar as possible, to use another version

The version of the sensor is visible in the **Wizard** or in the **Info** tab of **Stereo** page in the configuration interface

Installation	Wide Angle Version		Standard Version		High Mounting Version	
Height (m)	Width (m)	Depth (m)	Width (m)	Depth (m)	Width (m)	Depth (m)
2.25	2.3	1.0	1.5	0.8		
2.5	3.2	1.4	2.1	1.1		
2.75	4.1	1.8	2.7	1.4		
3.0	5.0	2.3	3.2	1.7	1.4	0.8
3.25	5.9	2.7	3.8	2.0	1.6	1.0
3.5	6.7	3.1	4.3	2.3	1.9	1.1
3.75	7.6	3.5	4.9	2.6	2.2	1.3
4.0	8.5	3.9	5.5	2.9	2.4	1.5
4.25			6.0	3.2	2.7	1.6
4.5			6.6	3.5	2.9	1.8
4.75			7.1	3.8	3.2	1.9
5.0			7.7	4.1	3.4	2.1
5.5					3.9	2.4
6.0					4.5	2.7
6.5					5.0	3.1
7.0					5.5	3.4

IV. Simple Examples

By default, the ground is a large blue rectangle that covers the entire image. The configuration of the ground and the lines is done either through the Wizard, or in the following page:

Sensor page → **Lines** tab

In a general way:
- **The outlines and the points of the selected item appear in red**
  - To select an item → click on it
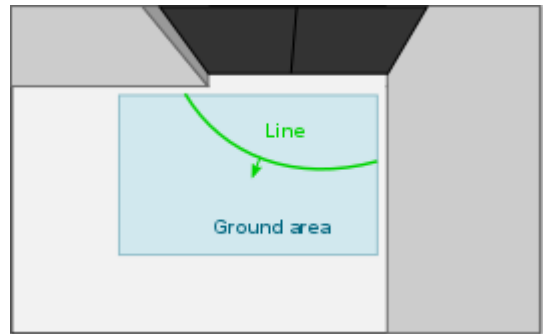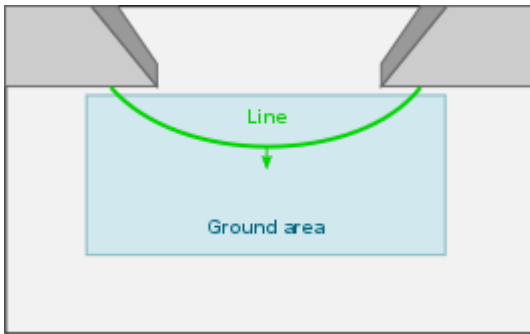 - To deselect an item → click outside the item

For the ground and the areas:
- Move corners or edges with the mouse
- Add a point by double-clicking on an edge
- Delete a point by clicking on it with the middle button
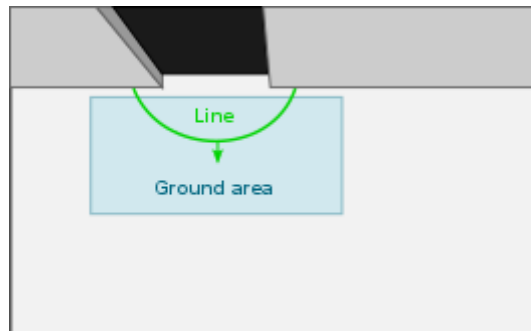
For the line:
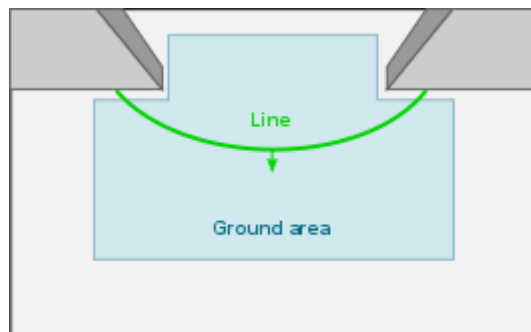- Move one of the 3 points of the line with the mouse

Most frequently, a simple rectangle at the counting line level is sufficient:

It is not necessary to select a large ground area. For people counting a simple ground area around the counting line is sufficient:
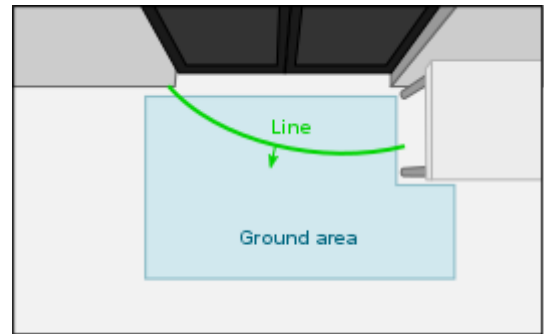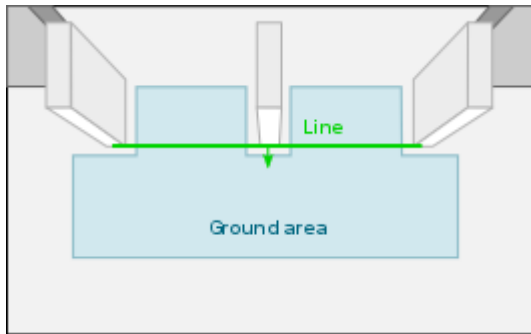

We can use a more complex ground form to have a sufficient area to count (often used in low height cases):

V. Presence of Fixed Objects on the Ground

The ground should be configured in a way to avoid static objects as much as possible.

For instance, in the case of anti-theft antennas at the entrance of a store, or a table, we recommend to do the following:
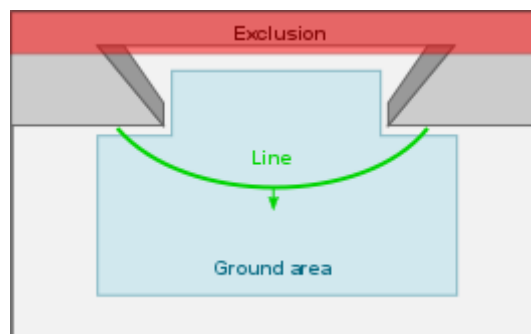
VI. The Use of Exclusion

Exclusion areas are used to hide areas that may be **above the ground**. Exclusion areas are not needed in previous examples. It is possible to define up to 4 exclusion areas. They can be set up in the configuration interface.

Configuration interface → **Sensor** page → **Lines** tab → **Exclude** buttons from 1 to 4
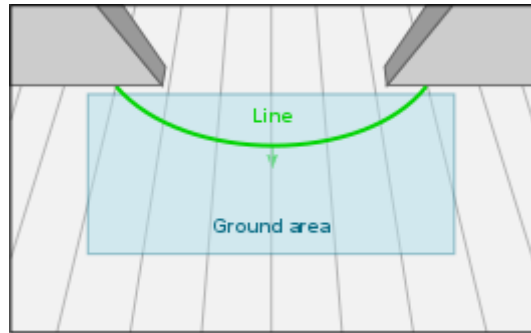
This is the case, for instance, of a lintel:

Or in the case of a display panel on the ceiling:
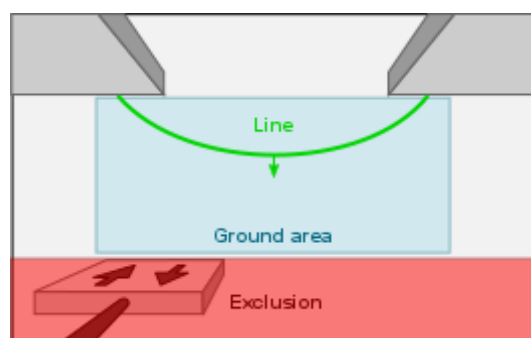
VII. TILTING

The 3D sensor can operate with an tilt angle of ± 10%. It is quite possible to tilt more the sensor but this will have a significant impact on the counting accuracy.
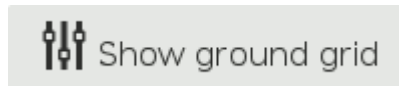
Example with an inclination following Y:

When configuring, remember to activate ground inclination (**Tilt)** in X or Y and check that the found inclination by the sensor in automatic mode corresponds well by displaying the grid. When the parameters are satisfactory, it is recommended to return to **manual mode** by copying the automatic mode values (see Ground Definition).

The grid is displayed with the "**Show ground grid**" button:

Configuration interface → **Sensor** page → **Lines** tab

Display example with the grid:

| Correct inclination	Incorrect or not used inclination
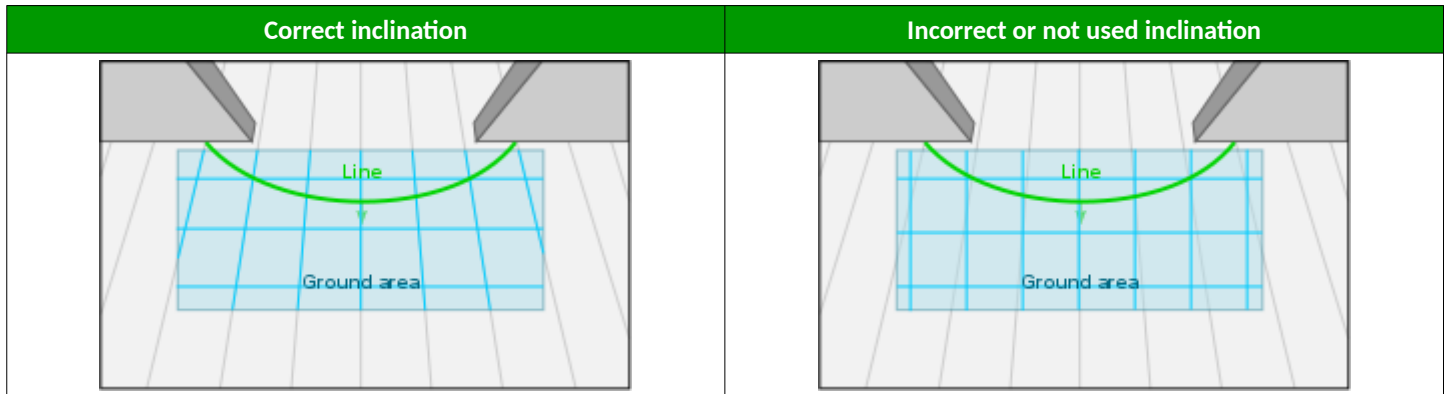
When inclination is used, it is important to check that the maximum distance in the work area is not exceeded. We can refer to the **maximum installation height** table below:

| Inclination	0°	5°	10°
Wide Angle Version	4 m	3.6 m	3.2 m
Standard Version	5 m	4.5 m	4.2 m
High Mounting Version	7.0 m	6.7 m	6,4 m

VIII. STAIRS

With the 3D sensors you can count people in the stairs. The ground area must then be positioned only in the stairs:

Inclination (Tilt) following Y	Inclination (Tilt) following X
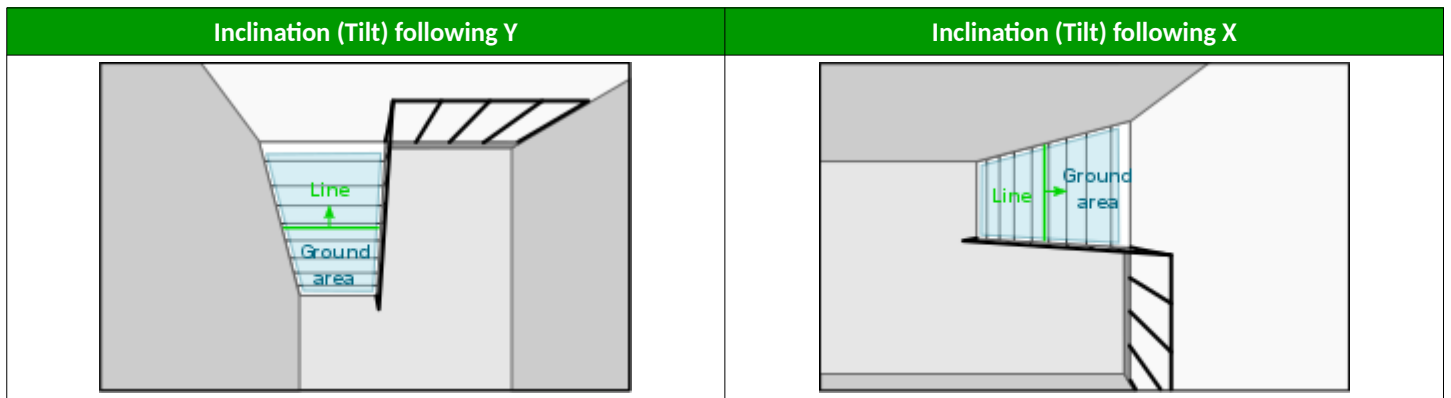
Reminder: It is not necessary to tilt the sensor when counting in the stairs (see installation guidelines).

When configuring, remember to activate the ground inclination (**Tilt**) in X or Y and check that the found inclination by the sensor in automatic mode corresponds by displaying the grid. When the parameters are satisfactory, it is recommended to return to **manual mode** by copying the automatic mode values (see Ground Definition).

Configuration interface → **Sensor** page → **Lines** tab
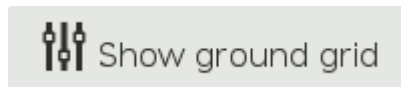
IX. HELP

Problem	Possible Causes	Solution(s)
Targets appear after the counting line	The counting line is too close to the edge of the counting area	Display the work area and move the line away from the edge of the counting area
	The counting line is too close to the edge of the work area	Display the work area and put the line closer to the center of the image
Walls are detected	The ground area contains walls	Move the ground area a little away from the walls (5-10 cm), then do the initialization again
False detections appear on the ground	Wrong ground initialization	Check the initialization result
	Objects are present above the ground area (lintel, light, etc)	Add exclusion areas
		If the counting line is far, reduce the ground area

X. SPECIFIC SETTINGS

A. CHILDREN COUNTING

Check beforehand that the ground position is correct. Improperly configured ground can cause false or no detection at all. For a good children detection, we can use the following parameters:

Sensor page → **Processing** tab

| Parameter	Recommended value	Default value
Min spacing (cm)	40 or 45	45 or 50
Counting threshold (cm)	90 or 100	120

B. NOISY HEIGHT MAP

Check beforehand that the value for **Manual adjust** is optimal (either with the wizard or by modifying it manually):

Sensor page → **Stereo** tab

Repetitive textures (example: tiles) **can** cause problems. In this case, during the implementation, it is possible to;
- tilt the sensor (up to +/-10°)
- or, turn the sensor:
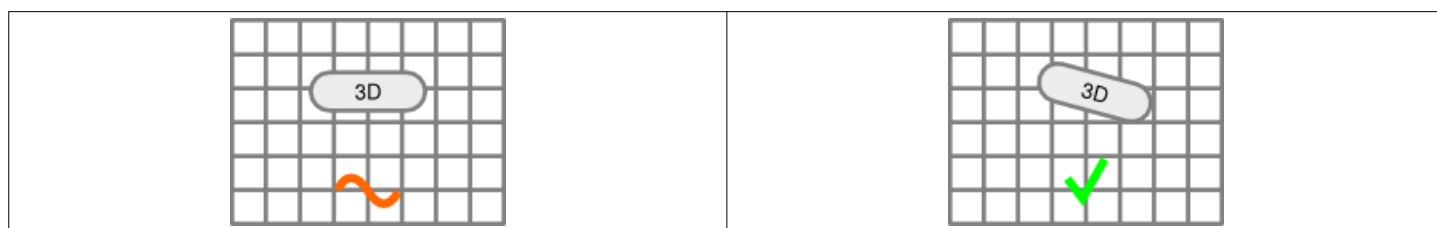
Finally, we can try the following parameters:

Sensor page → **Stereo** tab
(please also select **Advanced** mode in **General** tab)

Parameter	Possible values	Default value
Disp K	12 / 16 / 20	16
Census K	4 / 8 / 16	8
Grad threshold	25 / 26 / 27	25