AutoMobilia

by

Ed's Garten Bahn

# Lidar: ***L**aser **I**maging **D**etection **A**nd **R**anging*

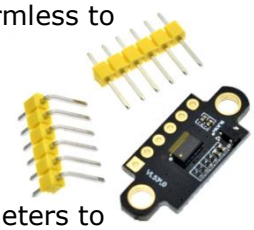
## Introduction.

Since September 2019, AutoMobilia's cars have been fitted with a Lidar. In this document we want to describe what this means.

## What is a Lidar?

A Lidar is a piece of electronics that can measure the distance to a surface or object with the help of laser pulses. A Lidar works according to the same principle as a radar: a signal is transmitted and, after reflection, picked up again. The elapsed time between sending and receiving a pulse indicates the distance traveled.

The laser that is built in emits light in the infrared spectrum and is therefore harmless to use. No light beam is visible.



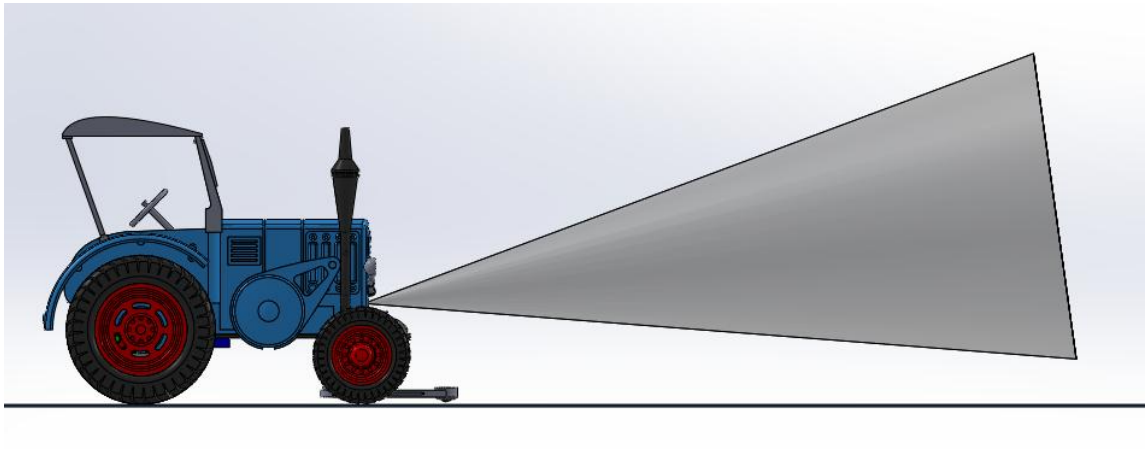
## Lidar and AutoMobilia

The electronic module (VL53L0X) used in the cars returns this distance in millimeters to the Arduino microcomputer. The Arduino is programmed in such a way that the measured distance is converted into an adjustment of the vehicle's speed. A few limits have been adhered to:
Is the distance 300 mm or greater: speed 100%
Is the distance between 300 mm and 150 mm: speed lineair drops from 100% to 60%
Is the distance smaller than 150 mm: speed = 0%

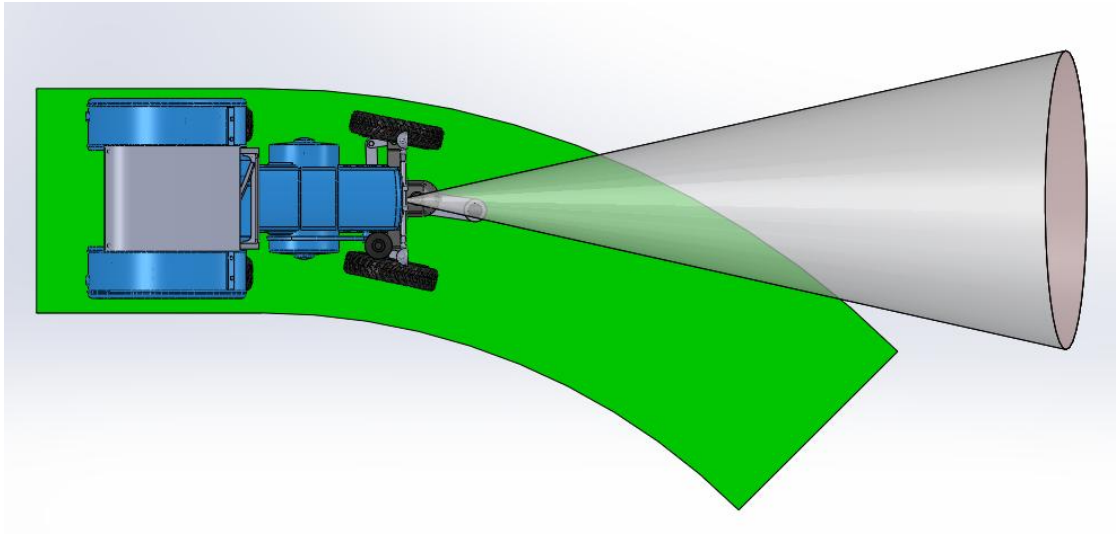
The result of this is that the underlying (fast) car adjusts its speed to the (slow) predecessor. Because the Lidar measures constantly (around 300 times per second), the speed adjustment is stepless and fluid.

## What to watch

The Lidar sends a cone of light at an angle of 15 degrees. This angle is to prevent the ground from being detected and the speed being adjusted. Schematically, things look like this:



Every obstacle in the light cone will be noticed and the speed will be adjusted. A stationary object will therefore cause the vehicle to stop. This must be taken into account when cornering and e.g. tunnels.



The length of the cone can be adjusted for specific purposes. To do this, a modified program must be loaded into the Arduino. Contact us (service@edgb.nl) if necessary.

If you have any questions: we are happy to answer them!

Team Ed’s Garten Bahn