SUMEC Optics

1. Distance measurement

2. Presence of objects

# TF-LUNA 1.

**LiDAR Range Sensor / ToF**

Distance measured: **8m**

Communication protocol: **UART/I2C**

Output: **Digital**

Technology: **Infrared**

Input voltage: **Vin = 5V**

Connector: **Molex PicoBlade**

[TF-LUNA Manual](https://www.waveshare.com/wiki/TF-Luna_LiDAR_Range_Sensor#Communication_Interface)

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**PROS:**

* **We have 3 of them**
* **Low FoV: 2°**
* **Accurate**
* **We know they work**

**CONS:**

* **Cost (500/600Kč)**
* **Dimensions: 35mm\*21.25mm\*13.5mm**
* **Blind zone: 20cm – unreliable measurement**
* **Harder measurement for objects with high reflectivity**

# Pololu Distance Sensor 1.

**LiDAR-based Distance Sensor / ToF**

Distance measured: **50, 130cm**

Communication: **Digital Pulse Width**

Output: **Digital**

Technology: **Infrared laser**

Input voltage: **Vin = 3-5V**

Connector: **2,54 - 3Pad holes**

[Polulu Pulse Width manual](https://www.pololu.com/product/4071)

**PROS:**

* **Dimensions: (21.6 × 8.9 × 3.5 mm)**
* **Accurate**

**CONS:**

* **Cost: (400Kč)**
* **Minimum range: 4 cm (for accurate measurement); < 1 mm (for detection)**
* **High FoV: 15°**
* **We don’t know if they work**

# VL53L1X 1.

**Laser distance measurement sensor / ToF**

Distance measured: **400cm max**

Communication: **I2C**

Output: **Digital**

Technology: **Infrared laser**

Input voltage: **Vin = 3-5V**

Connector: **2,54 - Pad holes**

[VL53L1X Datasheet](https://www.laskakit.cz/user/related_files/vl53l1x.pdf)

**PROS:**

* **Cost: (200Kč)**
* **Dimensions: 29.5x22mm**
* **Accuracy 1mm**

**CONS:**

* **Programmable FoV from 15 to 27 degrees (?)**
* **We don’t know if they work**

# VL53L3CX 1.

**Laser distance measurement sensor / ToF**

Distance measured: **300cm max**

Communication: **I2C**

Output: **Digital**

Technology: **Infrared laser**

Input voltage: **Vin = 2.8-5V**

Connector: **2,54 - Pad holes**

[VL53L3CX](https://cz.mouser.com/datasheet/2/389/vl53l3cx-satel-1858618.pdf)

**PROS:**

* **Dimensions:**
* **True distance measurement independent of target size and reflectance**

**CONS:**

* **Cost: (400Kč)**
* **We don’t know if they work**

# TF-LC02 1.

**LiDAR laser distance Sensor / ToF**

Distance measured: **200cm**

Communication: **UART**

Output: **Digital**

Technology: **Infrared laser**

Input voltage: **Vin = 3-3.7V**

Connector: **JST SH**

[Polulu Pulse Width manual](https://www.pololu.com/product/4071)

**PROS:**

* **We have 1 of them**
* **Cost: (250Kč)**
* **Very small size 20 x 11.5 x 7.6 mm**
* **Accurate**

**CONS:**

* **Minimum range: 3 cm (for accurate measurement)**
* **High FoV: 18°**
* **We don’t know if they work**
* **Almost no documentation**

# Pololu Digital Distance Sensor 2.

**Obsah obrázku text, snímek obrazovky, číslo, Písmo

Popis byl vytvořen automatickyLiDAR based distance sensor / I/O**

Distance measured: **50/100cm**

Communication: **HIGH/LOW**

Output: **Digital**

Technology: **Infrared laser**

Input voltage: **Vin = 3-5.5V Distance seen is based on the jumper config.**

Connector: **2.54, 3 Pad Holes**

[Polulu digital detection manual](https://www.pololu.com/product/4067)

**PROS:**

* **Size 21.6 × 8.9 × 3.5 mm**
* **Accurate – 1mm**
* **Adjustable distance**
* **Adjustable type of measurement**

**CONS:**

* **Cost: (500Kč)**
* **FoV: 15°**
* **We don’t know if they work**