



# TeraRanger Evo Mini

#### Mini price, great performance

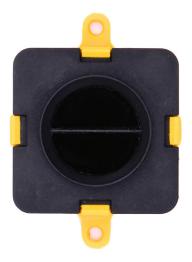
The smallest and lightest addition to the TeraRanger Evo sensor family provides versatile performance and value for money! Measure distance, detect movements, monitor stock levels and recognize simple gestures - just some of the amazing things you can do with Terabee's mini, closerange distance sensor!



**III**ROS

# Key features

- Time-of-Flight technology
- Great price vs performance ratio
- Optimized for indoor distance measurements 0.03 m to 3.3 m
- Select from 1, 2 or 4 pixel modes
- Lightweight & small size design only 9 grams (including backboard)
- Low power consumption suitable to battery powered IoT projects
- USB, UART and I2C clip-on, interchangeable, interfaces
- Compatible with Arduino, Raspberry Pi and ROS



# Enabler for the following applications



Detecting direction of movement and counting



Basic gesture recognition



Stock level monitoring (bins, shelves)



Anti-collision for mobile robotics



Precision-landing for indoor drones



Distance measurement applications

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Terabee, 90 Rue Henri Fabre, 01630, St-Genis-Pouilly, France (5km from Geneva airport) +33 7 50 15 16 64 terarabee-sales@terabee.com www.terabee.com

### **Technical specifications**

| Product code                   | TR-EVO-MINI-USB/TR-EVO-MINI-I2C   |
|--------------------------------|---|
| Performance                    |   |
| Detection Principle            | Infrared Time-of-Flight   |
| Light Source Wavelength        | 940 nm  |
| Use Environment                | Indoors   |
| Repetability                   | < 5 mm  |
| Output Distance Resolution     | 1 mm  |
| Field of View                  | 27°   |
| Projected Reception Area       | 48 cm x 48 cm @ 1 m   |
| Operation                      | Pixel (px) modes: 1px, 2px, 4px (2x2)<br>Range modes: short-range, long-range       |
| Range                          |   |
| Accuracy                       | Please see "Performance Matrix" table for more details                              |
| Update Rate                    |   |
| Electronics                    |   |
| Supply Voltage V <sub>DC</sub> | 5V DC +/-5%   |
| Current Consumption Average    | 50mA  |
| Initialization Time            | < 1 s   |
| Communication                  |   |
| Serial interfaces              | USB 2.0 Micro-B<br>UART, +3.3V level, 115200,8,1, None<br>I2C, +3.3V level, 400 kHz |
| Visual Notification            | 2 x LEDs (built-in backboard)   |
| Mechanical data                |   |
| Dimensions                     | 42 x 30 x 13 mm (incl. backboard)   |
| Weight                         | 9 g (incl. backboard)   |
| Operating Temperature          | -20°C to 75°C   |
| Housing Material               | ABS   |
| Mounting Style                 | 2 holes for M2 screws   |
| Type of Connection             | USB Backboard: USB 2.0 Micro-B  |
|                                | I2C/UART Backboard: DF13-7p connector   |
| Conformity                     | Hub Evo Backboard for use with TeraRanger Hub Evo                                   |
| Conformity                     |   |
| Reference Standard             | CE, RoHS  |

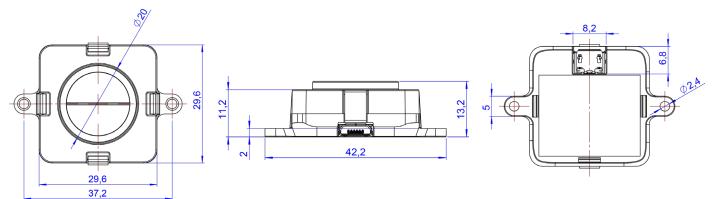
Back-panel installation



Front-panel installation



# Dimensions





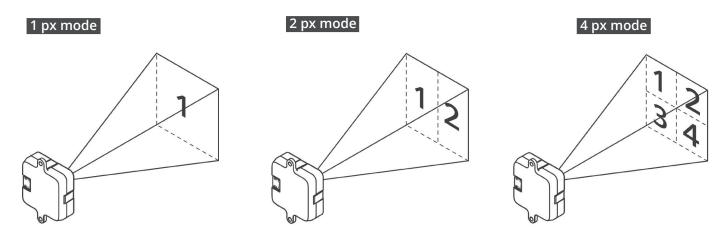


### Performance matrix

| Range mode  |                | Short-Range    |                |               | Long-Range     |                |
|-------------|----------------|----------------|----------------|---------------|----------------|----------------|
| Pixel mode  | 1px mode       | 2px mode       | 4px mode       | 1px mode      | 2px mode       | 4px mode       |
| Range       | 0.03m to 1.35m | 0.03m to 1.35m | 0.03m to 1.35m | 0.03m to 3.3m | 0.03m to 2.3m  | 0.03m to 1.65m |
| Accuracy    | Up to +/-1.5cm | Up to +/-1.5cm | Up to +/- 2cm  | Up to +/- 2cm | Up to +/-1.5cm | Up to +/- 3cm  |
| Update Rate | Fixed 40Hz     | Fixed 13Hz     | Fixed 6Hz      | Fixed 20Hz    | Fixed 8Hz      | Fixed 4Hz      |

Specifications are derived from tests in controlled conditions (target with 80% diffuse reflectivity, indoor fluorescent lighting, ambient temperature around 25°C). Note that bright sunlight, target surface reflectivity and other variables can affect sensor performance

# **Pixel modes**



### **Communication interfaces**

| Interface | Short-Range |          | Long-Range |          |          |          |
|-----------|-------------|----------|------------|----------|----------|----------|
|           | 1px mode    | 2px mode | 4px mode   | 1px mode | 2px mode | 4px mode |
| USB       | •           | •        | •          | •        | •        | •        |
| UART*     | •           | •        | •          | •        | •        | •        |
| I2C*      | •           |          |            | •        |          |          |
| Hub Evo   |             |          |            | •        |          |          |

\*Please note that UART and I2C data communication is supported by the same interface backboard



# **Recommended modes per application**

| Application                                      |   |           | Short-Range |           |           | Long-Range |           |
|--|---|-----------|-------------|-----------|-----------|------------|-----------|
|  |   | 1 px mode | 2 px mode   | 4 px mode | 1 px mode | 2 px mode  | 4 px mode |
| +1   | Counting applications, movement detection |           | ٠           | •         |           | •          | •         |
|  | Basic gesture recognition                 |           | ٠           |           |           |            |           |
|  | Stock level monitoring                    |           |             |           | •         | •          | •         |
|  | Anti-collision,<br>mobile robots          | •         |             |           | •         |            |           |
|  | Robot positioning,<br>guidance            | •         |             |           | •         |            |           |
| <del>*                                    </del> | Precision-landing for drones              |           |             |           | •         |            |           |
| □ ))) 🔶  | Distance measurement applications         | •         | ٠           | •         | •         | ٠          | ٠         |