IND-TOF-1

Compact, rugged Time-of-Flight distance sensor,
6 operating modes and industrial communication protocol

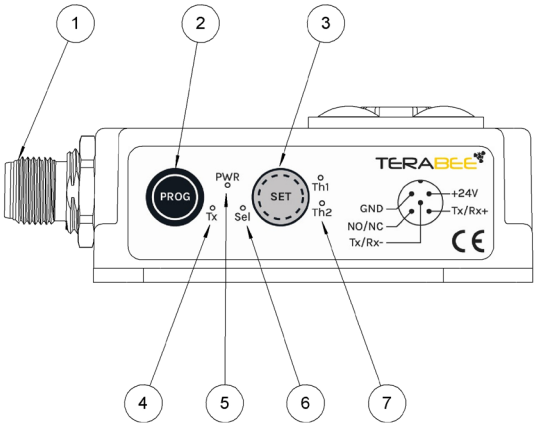
Key features

- Up to 12.5 meter range, Time-of-Flight technology
- IP65 rated enclosure
- 6 operating modes based on distance thresholds
- RS485 (Modbus) interface for distance-to-target feedback
- NO/NC switching output (0-24V) for threshold notification
- Integrated teach-in buttons for quick on-the-field programming
- Compact form-factor, 99 grams

Application examples

- Object presence detection and counting
- Object sorting for size
- Material level monitoring
- Monitoring object position tolerances
- Robot positioning tasks
- Height warning for vehicle entry
- Distance measurement applications

Operation and indicators



Communication

1	M12	A-coded male connector, 5-pin	

Teach-in buttons

2	PROG	Program background threshold
3	SET	Program threshold 1 and 2

LED indicators

4	Tx	RS485 data transmission	Red
5	PWR	Power indicator	Red
6	Sel	Sensor selected	Blue
7	Th1 / Th2	Threshold breach notification, error indication	Green/Red

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

IND-TOF-1
SPECIFICATION SHEET

Technical specifications

Product code	TB-IND-TOF-1-RS485
Performance	
Detection Principle	Infrared Time-of-Flight
Range[1]	0.5 m to 12.5 m
Output Resolution	5 mm
Accuracy [1]	±4 cm in the first 4 m, ±1% beyond 4 m
Repetability [1] [2]	±5 mm
Field of View	Approx. 2°
Projected Reception Area	10.5 cm × 10.5 cm @ 3 m range
Light Source Wavelength	940 nm
Access Time for Distance Measurements	11 ms
Response Time for NO/NC State Change [3]	35 ms to 100 ms
Electronics	
Supply Voltage V_{IN}	$24V_{\pm 5\ \%}$ DC
Current Consumption (max. @ V_{IN}= 24V DC)	90 mA
Warm-up Time (advised)	≥ 15 min
Initialization Time	< 1 s
Interfaces	
Digital Output	Switching (NO/NC in PNP/NPN configuration), 0V - 24V Maximum output current: 450 mA (@ V_{IN}= 24V DC), unfused
Serial Interface (distance measurement and remote settings)	RS485 (half-duplex, 19.2 kbps)
Communication Protocol	Modbus
Visual Notification	5 x LEDs (multicolor)
Mechanics	
Dimensions (L×W×H)	94 mm x 56 mm x 31 mm
Weight	99g
Enclosure Rating	IP65
Housing Material	Main body: ABS Backplate: Aluminium
Type of Connection	M12 A-coded male connector, 5-pin
Ambient Temperature Operation (@ V_{IN} = 24 V DC)	-20°C to +45°C
Mounting Style	4 slots for M4 screws
Conformity	
Reference Standard	CE, RoHS, Eye-Safety, Vibration & Shock [4]

(1) 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
(2) Evaluated as one standard deviation over multiple measurements
(3) Applicable to modes 1 and 3
(4) Refer to conformity certificates in the User Manual for details

Terabee, 90 Rue Henri Fabre, 01630,
St-Genis-Pouilly, France (5km from Geneva airport)

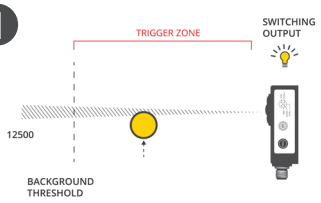
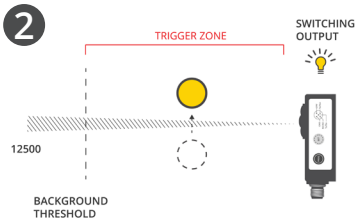
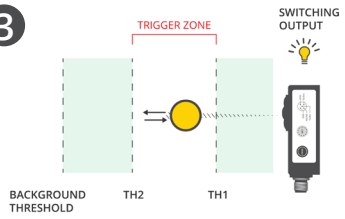
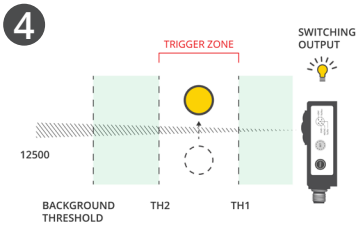
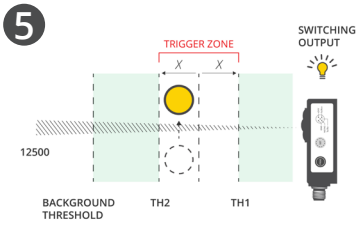
+33 7 50 15 16 64
terabee-sales@terabee.com
www.terabee.com

TERABEE

IND-TOF-1

SPECIFICATION SHEET

Embedded operating modes

Operating mode	Setup	Operation		Application examples
		Switching output	Distance data	
1 	1 threshold PROG x1	Output is triggered as soon as an object **BREAKS** the light beam in the trigger zone. Output remains triggered as long as the light beam in the trigger zone is broken.	Available via RS485 (Modbus)	• Presence detection • Robot positioning • Alarm applications
2 	1 threshold PROG x1	Output is triggered as soon as an object **LEAVES** the light beam in the trigger zone.*	Available via RS485 (Modbus)	• Counting applications
3 	3 thresholds PROG SET x1 x2	Output is triggered as soon as an object **ENTERS** the trigger zone. Output remains triggered as long as the light beam in the trigger zone is broken.	Available via RS485 (Modbus)	• Stock level monitoring • Approach position monitoring
4 	3 thresholds PROG SET x1 x2	Output triggered as soon as an object **LEAVES** the trigger zone of the light beam. *	Available via RS485 (Modbus)	• Counting applications, • Height monitoring • Object sorting by size
5 	3 thresholds PROG x1	Output triggered as soon as an object **LEAVES** the trigger zone of the light beam.*	Available via RS485 (Modbus)	• Monitoring object position tolerances
6 	No setup	No switching output	Available via RS485 (Modbus)	• Distance measurement applications

* The sensor is not triggered while the light beam in the trigger zone is broken (applicable to mode 2, 4 and 5)

Please refere to the Terabee IND-TOF-1 User Manual for instructions on mode setup and operation

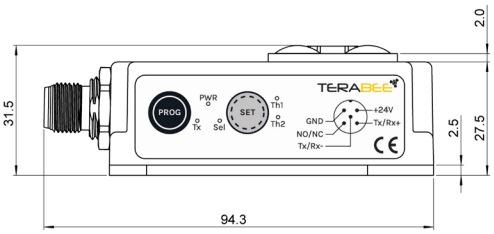
Terabee, 90 Rue Henri Fabre, 01630,
St-Genis-Pouilly, France (5km from Geneva airport)

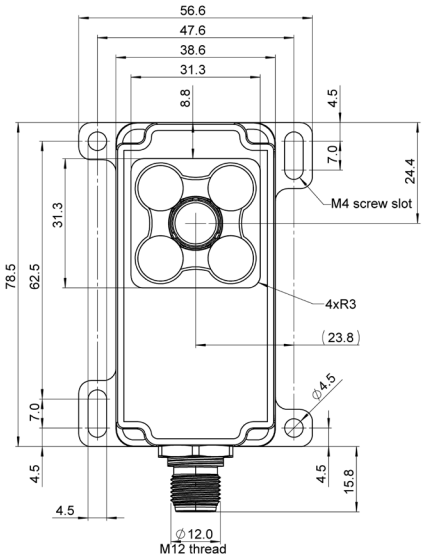
+33 7 50 15 16 64
terabee-sales@terabee.com
www.terabee.com

IND-TOF-1

SPECIFICATION SHEET

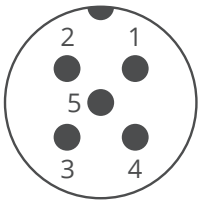
Dimensions





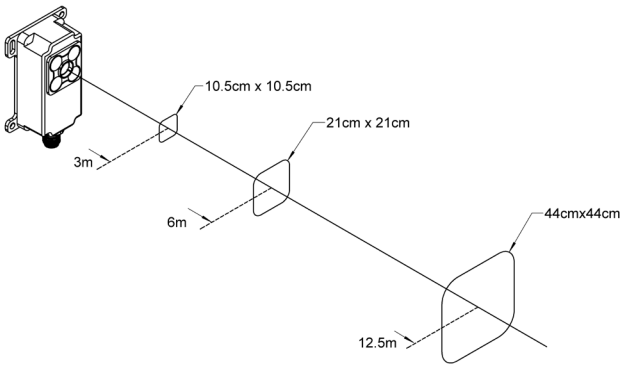
Connector pinout

Pin	Designetor	Description
1	+24V	24V DC power supply
2	GND	Ground (power supply and data)
3	NO/NC	Normal Open or Normal closed (PNP/ NPN) connection
4	Tx/Rx+	RS485 differential line
5	Tx/Rx-	RS485 differential line



M12 A-coded male connector

Projected reception area



Terabee, 90 Rue Henri Fabre, 01630,
St-Genis-Pouilly, France (5km from Geneva airport)

+33 7 50 15 16 64
terabee-sales@terabee.com
www.terabee.com

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Terabee:
TB-IND-TOF-1-RS485