TiM series

EFFICIENT DETECTION – ABSOLUTELY ACCURATE AT MEASURING

2D LiDAR sensors

SICK

Sensor Intelligence.

SMALL HOUSING, HIGH PERFORMANCE – WITH SAFETY

Whether your application involves picking up the presence of an object in a specific area (detection) or determining its exact position (ranging), the 2D LiDAR sensors in the TiM series are a highly efficient solution for both tasks – and they are safety devices with performance level b in accordance with EN ISO 13849-1:2015.

Every 2D LiDAR sensor of the TiM series has its particular strengths in surface monitoring. But even the common basis of the sensors is impressive. All LiDAR sensors work with the HDDM technology developed by SICK, for example, enabling them to deliver particularly stable measured values. Everything works highly efficiently too, because all LiDAR sensors can be integrated both into your stationary plant and your mobile vehicle quickly and easily.

HDDM and HDDM+ technology

SICK's innovative HDDM technology produces very stable measurements: Multiple laser pulses are emitted in a swift chronological sequence and their reflections from the measuring object are calculated to produce a mean value. This approach ensures seamless scanning and reliable results, even in the presence of dirt, dust, moisture, and ambient light. Some variants of the TiM series are based on the advanced HDDM+ technology variant. Depending on the variant, these are characterized by certain advantages.

The laser scanner principle

The 2D LiDAR sensors of the TiM series are based on the laser scanner principle and use time-of-flight measurement. Laser scanners scan their surroundings by emitting a laser pulse which they then direct in the required direction using a moving mirror. When the laser pulse hits an object in the scan range, it is reflected and sent back to the laser scanner's receiver. By calculating the time difference between sending and receiving and also the signal strength, the position of the object is detected with millimeter accuracy.

Efficient detection with the TiM series

LiDAR sensors have one specific task in "detection" applications, namely to detect whether or not an object is located in a defined scanning field. Switching outputs deliver the result "object in field" or "object not in field" within fractions of a second. The LiDAR sensors can detect whether a bay in a high-bay warehouse is full or empty, for example – see page 4.
LiDAR sensors are often in used detection processes to prevent vehicle collisions. These non-contact sensor scan the environment and keep track of important objects at all times. If there is a risk of a collision, the scanners can be relied upon to output a warning via the switching outputs prior to an accident occurring.

Ranging with the TiM series – complete measurement accuracy

LiDAR sensors for ranging applications detect the exact position of an object in the scanning field and output this data and the object's coordinates at the interface of the sensor in a digital, machine-readable format. This information includes distance data in the form of polar coordinates with distance and angle. Even the energy level of the reflected signal is fed back. The result is an accurate map of the scanned area. If objects or sensors are mobile, the data can even be analyzed in 3D, with directions of movement being mapped.

## Field evaluation and measurement data output with TiM7xx – double benefits

The sensors of the TiM7xx product family offer simultaneous field evaluation and measurement data output in one device, therefore completing the performance range of the TiM series. Localization tasks and collision avoidance can be implemented at the same in both stationary and mobile applications.

Functionally secure – TiM361S and TiM781S

The two safety-related variants TiM361S (field evaluation) and TiM781S (field evaluation and measurement data output) can be used for both stationary and mobile applications. Certification according to EN ISO 13849-1:2015 (category B and PL b) enables use for personal protection in presence and access monitoring in industrial environments as well as for mobile platforms or service robots taking into account EN ISO 13482:2014.
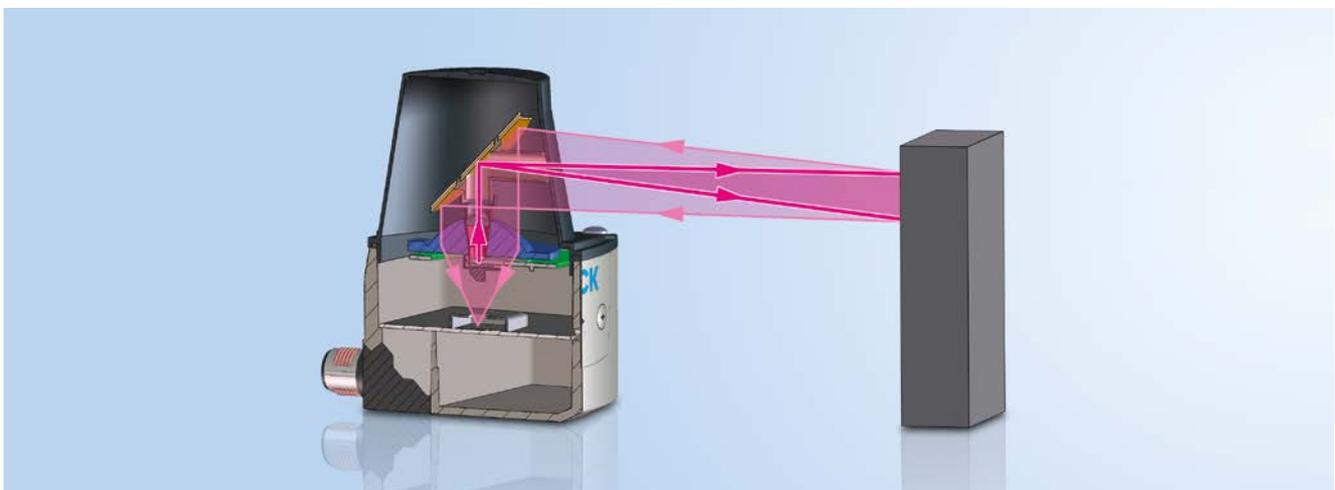
Principle of operation of a laser scanner with time-of-flight measurement

THE TIM SERIES: THREE LETTERS – FOUR PRODUCT FAMILIES – NUMEROUS POSSIBLE APPLICATIONS

There are numerous tasks to be undertaken in the field of surface monitoring. Although all of the LiDAR sensors of the TiM series are able to rise to these challenges, each individual sensor plays its trump card in a different area.

TiM1xx – the efficient detection solution

The TiM1xx is all about combining reliable object detection and collision avoidance with low running costs. Although its compact design allows it to be installed virtually unnoticed in plant systems, its field of view of 200° means that hardly anything passes by it unnoticed. And with the help of IO-Link, it is ideal for networking.

Rotating male connectors on the outside, modern HDDM+ technology on the inside
The TiM1xx LiDAR sensor can offer flexibility and leeway in installation, because the rotating male connector on its housing enables it to be mounted and aligned in various positions according to the needs of the application. Its internal values are also impressive. Built-in HDDM+ technology means that the TiM1xx can work unaffected by ambient light and other sources of ambient interference with even more reliable measured values.
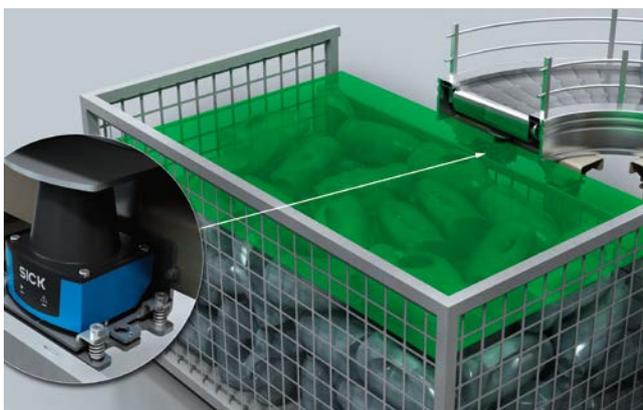
Typical applications
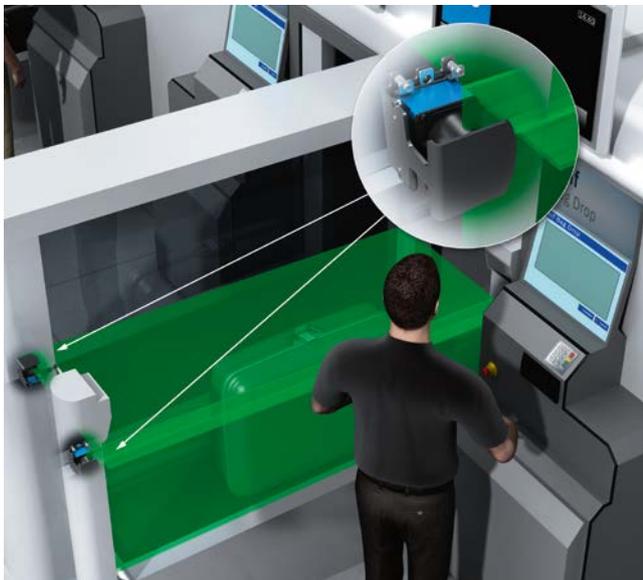
Detection of oversize bags at a check-in terminal
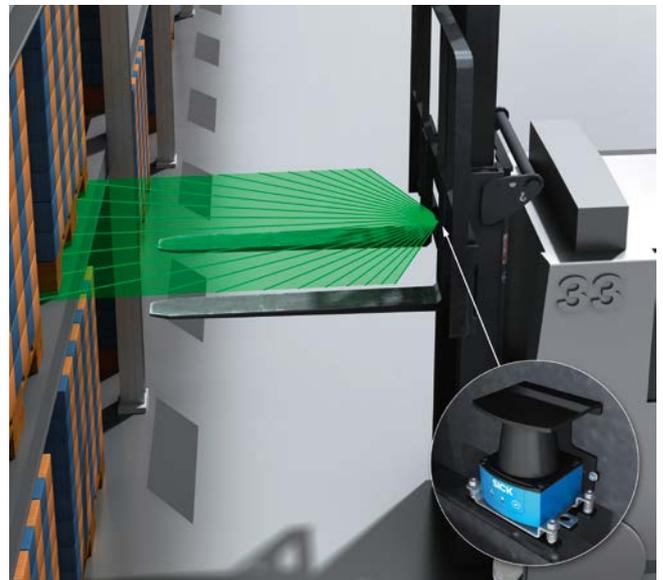
Detection of empty bays in a high-bay warehouse

Protrusion monitoring and part counting at the material box

Protection of valuable objects in a museum

TiM3xx – the intelligent solution for collision avoidance and object detection

The TiM3xx is a highly intelligent device inside a compact housing. This combination makes it a flexible and user-friendly 2D LiDAR sensor for mobile and stationary applications. Thanks to the low power consumption, it is perfect for collision avoidance in automated guided vehicle systems (AGV systems) or presence monitoring in high-bay warehouses – and all that up to a scanning range of 10 m. As a safety component, the TiM361S can be used in accordance with EN ISO 13849-1:2015 (category B and PL b) in mobile and stationary personal protection applications up to a scanning range of 4 m.

Multiple fields with a single touch of a button: "Touch and teach"

Depending on the variant, the TiM3xx gives you 16 pre-configured field sets, each containing three fields that can be selected and evaluated via input wiring. Rectangular, radial and free fields are available. The dimensions of the field shape are also very easy to adjust, as the "touch and teach" automated teach-in program can be started at the touch of a button without ever connecting to a computer. It takes less than two minutes to configure the TiM3xx and make it ready for operation. With the TiM361S, parameterization is done only via the USB interface.

Rectangular

Radial

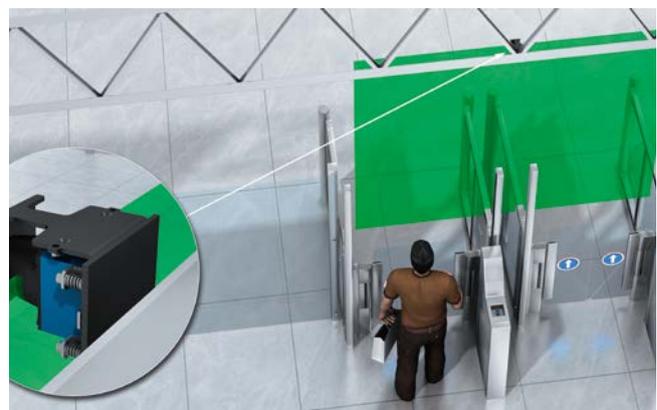Free form

Typical applications
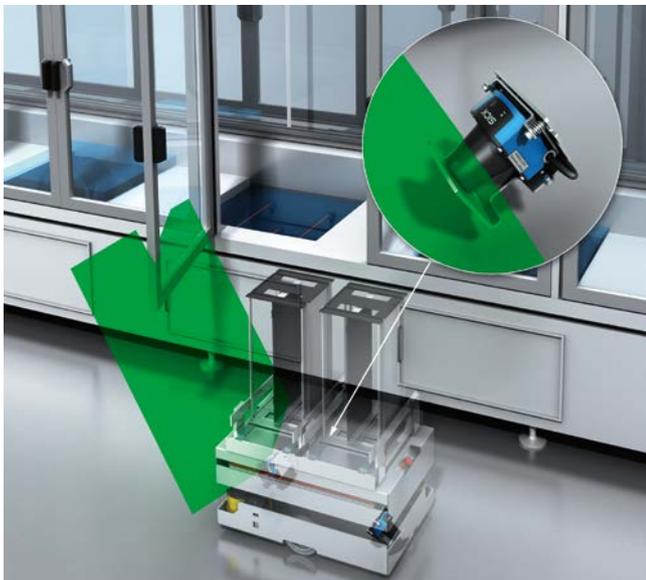
Preventing collisions between AGV systems and hanging objects

Mobile service robots at the airport

Two-dimensional collision avoidance for automatically guided vehicle systems

**Anti-climb monitoring at automated boarding gates**

TiM5xx – flexible with Ethernet interface

The TiM5xx is incredibly flexible. Meticulously measuring its surroundings with coverage of up to 25 meters and a 0.33° raster, it monitors and signals movements in the scanning field. With its compact size and industrial-strength design, the TiM5xx is ideal for use in small automated guided vehicles (AGVs) and mobile platforms. With a monitored area of 1,470 m², it detects sufficient contour properties based on natural landmarks to localize automated vehicles.

Integrated Ethernet interface included
The TiM5xx outputs measurement data for each individual angle in the form of a machine-readable data string (ASCII or binary format). Everything – including object distance and signal strength – is relayed via a USB or Ethernet interface. The data can be visualized in SOPAS or imported into a customer-specific application. With its compact design, the TiM5xx is even suitable for narrow and angular installation conditions.

Typical applications
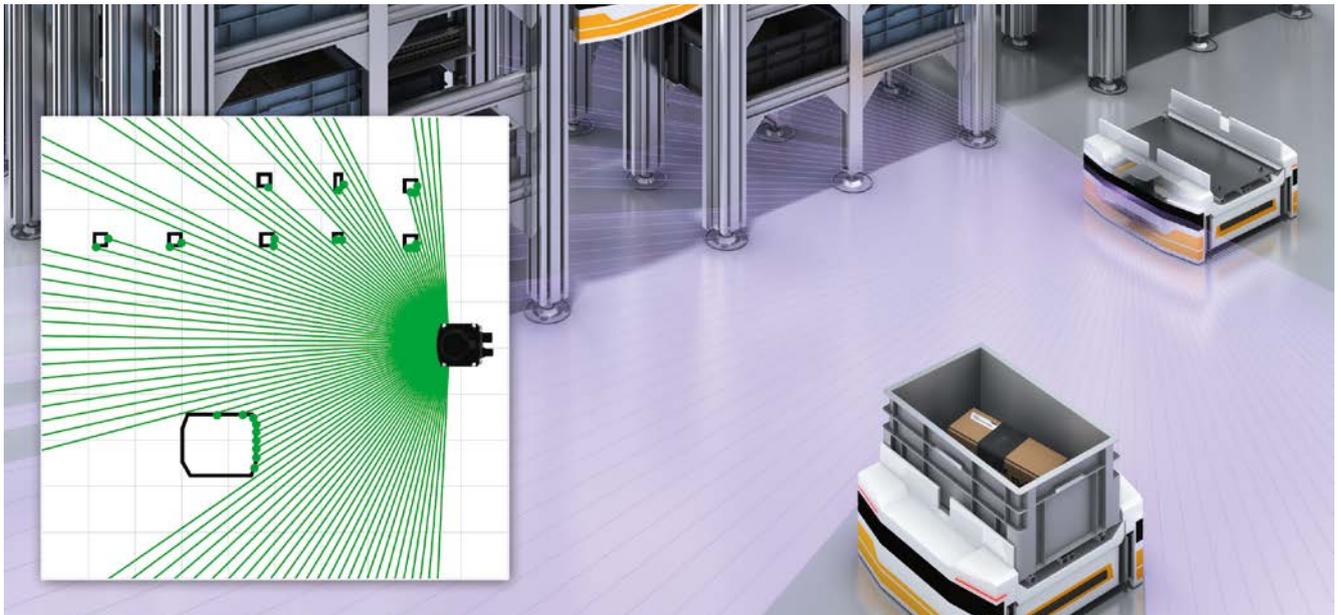
Localization of automated guided vehicles
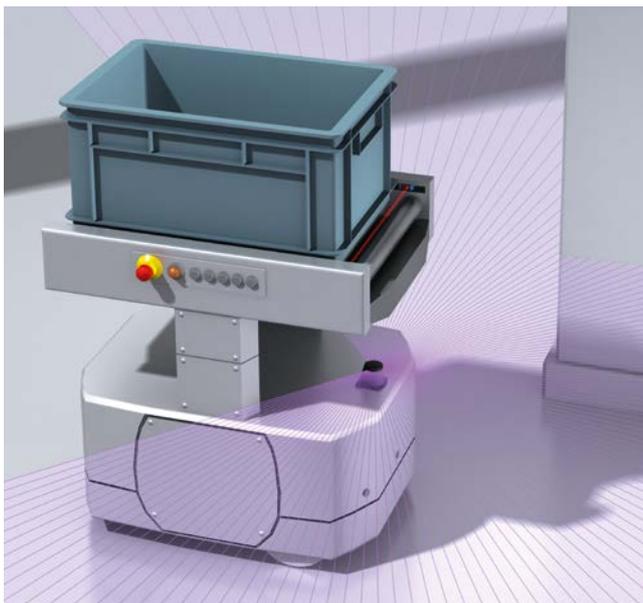
Simultaneous localization and mapping for service robots
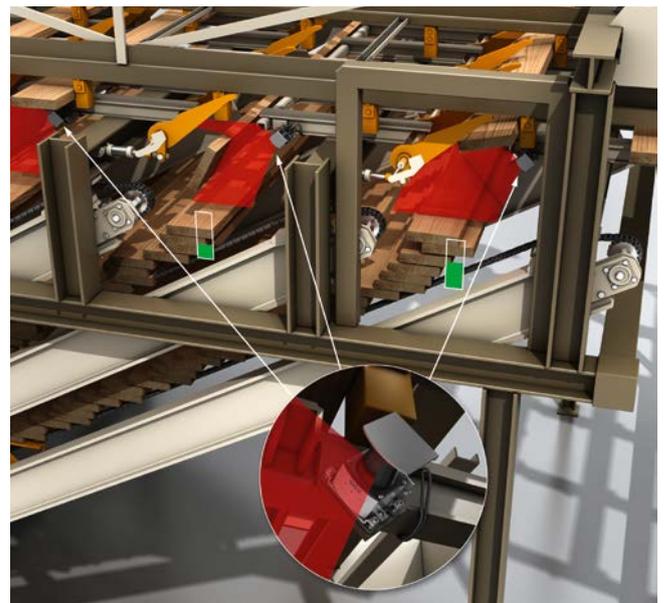
Level and board detection

TiM7xx – two functions united in one device

The TiM7xx unites the two central functions of field evaluation and measurement data output of the TiM series in just one sensor. With a working range of 25 meters, the 2D LiDAR sensor monitors up to 48 freely-configurable fields – and outputs measurement data via Ethernet TCP/IP. The TiM7xx therefore allows for localization and collision avoidance at the same time.

Play it safe

For the first time, the TiM781S is allowing for the simultaneous, safety-related evaluation of individual protective fields (collision avoidance) and safety-related measurement data (localization) in accordance with EN ISO 13849-1:2015 (category B and PL b) up to a scanning range of 5 m and a remission of 5 %.

Typical applications

Localization and collision avoidance in automated warehouses

Collision avoidance and localization for small automated guided vehicles

Collision avoidance and localization of mobile robots and platforms

PRODUCT FAMILY OVERVIEW

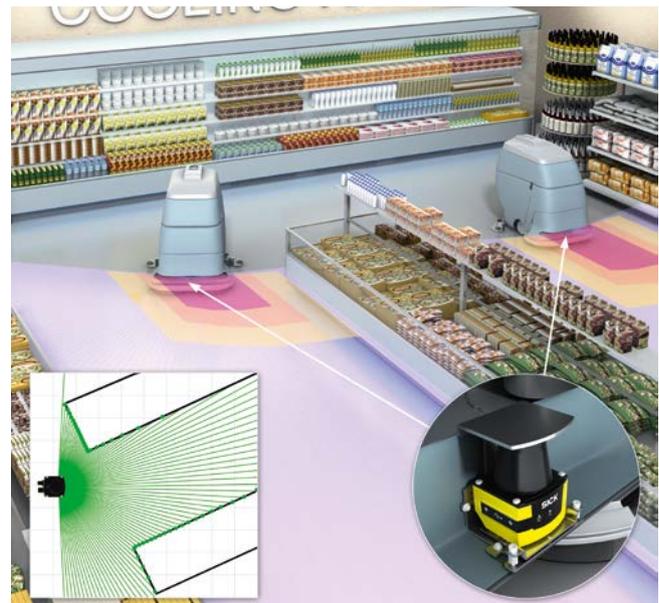|	TiM1xx	TiM3xx	
	Sensor for area monitoring: small, simple, cost-effective	The safe and reliable detection solution	

Technical data overview			
Application	Indoor	Indoor / Outdoor	
Measurement principle	HDDM+	HDDM / HDDM+	
Integrated application	Field evaluation	Field evaluation, field evaluation with flexible fields, protective field evaluation with flexible fields	
Aperture angle	200°	270°	
Angular resolution	1°	1° / 0.33°	
Working range	0.05 m … 10 m	0.05 m … 10 m	
Scanning range at 10% remission	1.2 m … 3 m, depending on the angle	2 m / 8 m	
Scanning frequency	14.5 Hz	15 Hz	
Ambient operating temperature	–10 °C … +50 °C	–25 °C … +50 °C	
IO-Link	✔	–	
Serial	–	–	
USB	–	✔	
Ethernet	–	✔	
Digital inputs	1	4	
Digital outputs	1 / 2	3	
Weight	90 g / 122 g	150 g / 250 g	

At a glance			
	• Small, simple, and cost-effective sensor for area monitoring • Monitoring of an area of up to 15.7 m² • Low weight of just 90 g • Field evaluation using integrated software algorithms • Low power consumption of typically 2.2 W • Configuration and cloning using IO-Link • Industrial design	• Incredibly compact, light, and economical sensor • Field evaluation using intelligent software algorithms • Configuration interface accessible from the side When the device is mounted • Low power consumption (typically 4 W) • TiM3xxS only: Certified to Machinery Directive 2006/42/EG and DIN EN ISO 13849-1:2015	
Detailed information	➔ 10	➔ 16	

TiM5xx	TiM7xx
Complete measurement accuracy	Simultaneous field evaluation and measurement data output in just one device
Indoor / Outdoor	Indoor / Outdoor
HDDM / HDDM+	HDDM+
Output of measurement data	Field evaluation with flexible fields, output of measurement data, protective field evaluation with flexible fields
270°	270°
1° / 0.33°	0.33°
0.05 m ... 25 m	0.05 m ... 25 m
2 m / 8 m	8 m
15 Hz	15 Hz
–25 °C ... +50 °C	–25 °C ... +50 °C
–	–
✔	–
✔	✔
✔	✔
0	4
1	3
150 g / 250 g	250 g

- Monitoring area of up to 1,470 m^2 with just one sensor
- High ambient light tolerance due to HDDM technology
- Rugged housing with up to an IP 67 enclosure rating
- Low power consumption (typ. 4 W)
- Compact design with a housing height of just 86 mm maximum
- Integrated Ethernet interface
- Long sensing range of up to max. 25 m
- Industry-standard design and M12 male connector

- Wide detection range: 0.05 m up to maximum 25 m
- Low power consumption (typically: 4 W)
- Immediate commissioning and configuration via USB and Ethernet
- Intelligent field evaluation and measurement data output in one device
- Rugged design suitable for industry thanks to enclosure rating up to IP67

SENSOR FOR AREA MONITORING: SMALL, SIMPLE, COST-EFFECTIVE

Product description

TiM1xx is a small, simple, cost-effective laser scanner for a wide variety of area-monitoring applications. It is the starter model of the 2D LiDAR sensors from SICK and opens up new application possibilities with its compact design. TiM1xx is the ideal sensor for challenging presence-monitoring applications. HDDM+ technology ensures reliable object detection and offers maximum machine availability even under difficult conditions. With the TiM1xx, detection fields of up to 15.7 m^2 are easy to configure via software. The integrated IO-Link interface makes sure that commissioning can be performed as quickly as possible and enables flexibility during application as well as simple parameter cloning.

At a glance

- Small, simple, and cost-effective sensor for area monitoring
- Monitoring of an area of up to 15.7 m^2
- Low weight of just 90 g
- Field evaluation using integrated software algorithms
- Low power consumption of typically 2.2 W
- Configuration and cloning using IO-Link
- Industrial design

Your benefits

- Low installation effort thanks to monitoring of a 200° field of view
- Low overall operating costs
- Low space requirements thanks to compact dimensions
- Rapid commissioning thanks to simple configuration of the detection zone with software
- Low installation costs and rapid replacement thanks to rotatable connector, IO-Link, and parameter cloning
- Particularly suitable for use in battery-operated vehicles thanks to low power consumption

Additional information

➜ www.sick.com/TiM1xx

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

Detailed technical data

Features

	TiM10x	TiM15x
Measurement principle	HDDM+	
Light source	Infrared (850 nm)	
Laser class	1 (IEC 60825-1:2014, EN 60825-1:2014)	
Aperture angle	200°	
Scanning frequency	14.5 Hz	
Working range	0.05 m … 3 m	0.05 m … 10 m
Scanning range at 10% remission	1.2 m … 1.5 m, depending on the angle	2.8 m … 3 m, depending on the angle

Performance

	TiM10x	TiM15x
Response time	Typ. 70 ms	
Systematic error [1]	± 50 mm	± 40 mm
Statistical error [1]	20 mm	30 mm
Integrated application	Field evaluation	
Number of field sets	1 field set	
Simultaneous evaluation cases	1 (1 field)	1 (2 fields)

[1] Typical value; actual value depends on environmental conditions.

Interfaces

IO-Link	✔
Function	AUX, parameterization
Digital inputs	1
Delay time	69 ms … 30,015 ms (configurable)
Dwell time	69 ms … 30,015 ms (configurable)
Optical indicators	2 LEDs (ON, switching status)

Mechanics/electronics

	TiM10x	TiM15x
Supply voltage [1]	9 V DC … 28 V DC	10 V DC … 28 V DC
Power consumption	Typ. 2.2 W	Typ. 2.7 W
Enclosure rating	IP65 (IEC 60529:1989+AMD1:1999+AMD2:2013)	
Protection class	III (IEC 61140:2016-1)	
Weight	90 g, without connecting cables	122 g, without connecting cables
Dimensions (L x W x H)	60 mm x 60 mm x 75.8 m	

[1] When using IO-Link output V_s > 18 V.

Ambient data

	TiM10x	TiM15x
Electromagnetic compatibility (EMC)	IEC 61000-6-3:2006+AMD1:2010 / IEC 61000-6-2:2005	
Vibration resistance	IEC 60068-2-6:2007	
Shock resistance	IEC 60068-2-27:2008	
Ambient operating temperature	–10 °C … +50 °C	
Storage temperature	–30 °C … +70 °C	
Ambient light immunity	80,000 lx	30,000 lx

Ordering information

- **Application:** Indoor
- **Electrical connection:** 1 x 5-pin M12 male device connector (rotatable)
- **Angular resolution:** 1°
- **Housing color:** Light blue (RAL 5012)

Sub product family	Digital outputs	Type	Part no.
TiM10x	1	TIM100-3010200	1077524
TiM15x	2	TiM150-3010300	1093243

Working range diagram

TiM10x

Scanning range in m (ft)

Scanning range in m (ft)
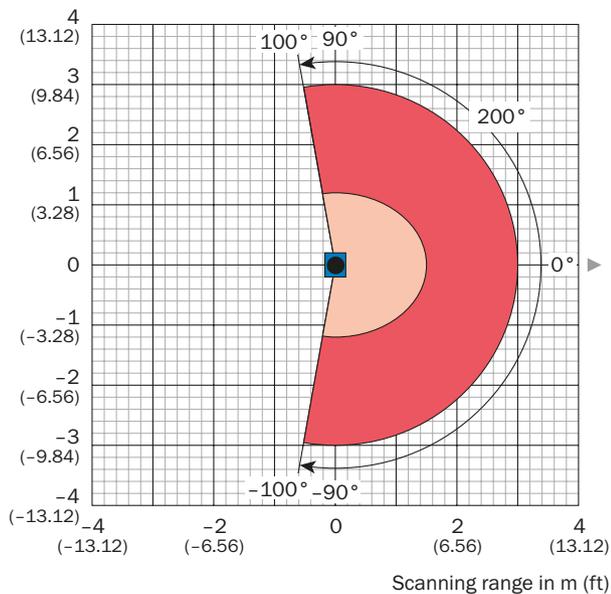
■ Scanning range max. 3 m (9.84 ft)

■ Scanning range 1.2 m to 1.5 m (3.94 ft to 4.92 ft)
for objects with 10 % remission, dependent on the angle

TiM15x

Scanning range in m (feet)

Scanning range in m (feet)
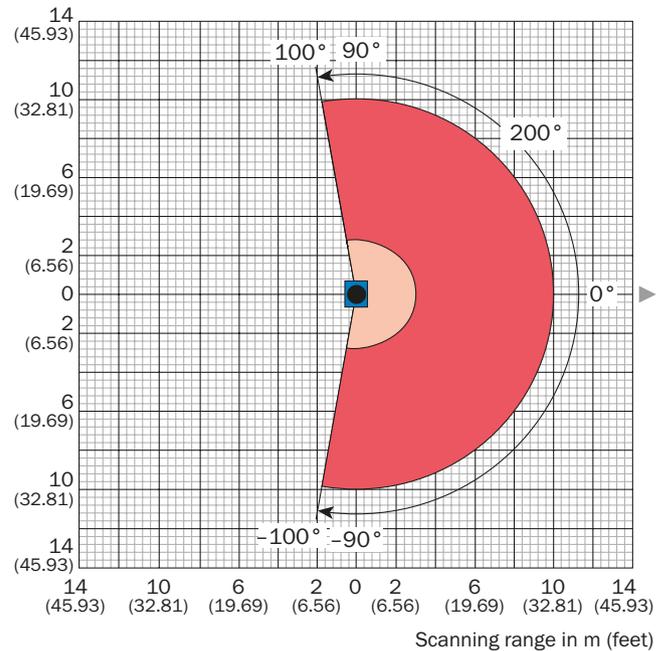
■ Scanning range max. 10 m (32.81 ft)

■ Scanning range 2.8 m to 3 m (9.19 ft to 9.84 ft)
for objects with 10 % remission, dependent on the angle

Dimensional drawing (Dimensions in mm (inch))

TiM1xx
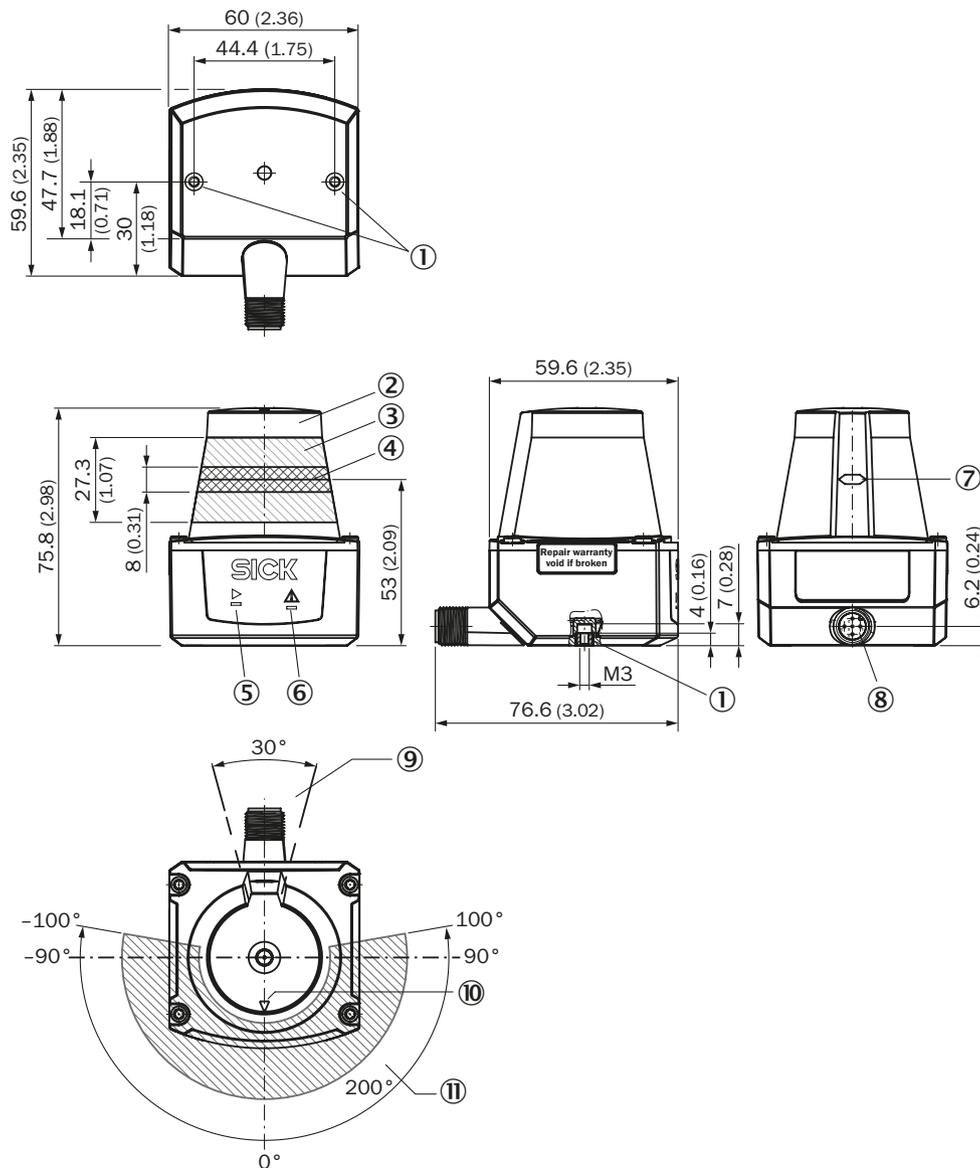
① M3 threaded mounting hole, 2.8 mm deep (blind hole thread), tightening torque 0.8 Nm
② Optical hood
③ Receiving range (light inlet)
④ Transmission range (light emission)
⑤ Green LED
⑥ Red LED
⑦ Marking for the position of the light emission level
⑧ 5-pin M12 male connector (rotatable)
⑨ Area in which no reflective surfaces are allowed for mounted devices
⑩ Bearing marking to support alignment (0° axis)
⑪ Aperture angle 200° (scanning angle)

Recommended accessories

Mounting systems

Mounting brackets and plates

	Brief description	Part no.
Illustration may differ	Mounting kit	2082188
Illustration may differ	Q-lock mounting system	2083311

Connection systems

Modules and gateways

	Brief description	Type	Part no.
	IO-Link V1.1 Class A port, USB2.0 port, optional external power supply 24V / 1A	IOLA2US-01101 (SiLink2 Master)	1061790

Plug connectors and cables

	Signal type/ application	Connection type head A	Connection type head B	Cable	Length of cable	Part no.
	Sensor/actuator cable	Female connector, M12, 5-pin, straight, A-coded	Male connector, M12, 5-pin, straight, A-coded	5-wire, CE, UL	2 m	2096009
			Flying leads	5-wire, CE, UL	2 m	2095617

For more accessories, see ➜ 39

THE SAFE AND RELIABLE DETECTION SOLUTION
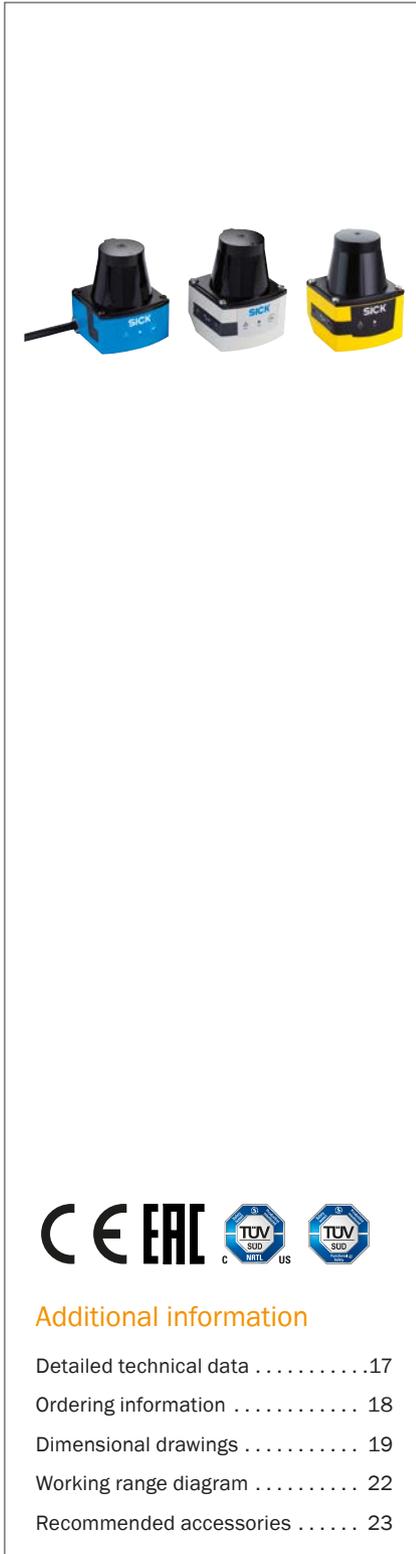
Product description

The TiM3xx 2D LiDAR sensor uses HDDM technology, which minimizes machine downtimes thanks to high measurement accuracy and ambient light immunity. Its monitoring field can reach up to 10 m. Commissioning is quick and easy thanks to 16 preconfigured field sets (each with 3 fields), which are selected via the input circuit. The TiM3xx is flexible, cost-effective, and user-friendly. It is particularly suitable for mobile and stationary applications in factory automation and logistics automation. A version certified for safety-related applications according to EN ISO 13849-1:2015 is also available (TiM3xxS). Low power consumption and a compact and rugged design makes the TiM3xx ideal for use on mobile platforms.

At a glance

- Incredibly compact, light, and economical sensor
- Field evaluation using intelligent software algorithms
- Configuration interface accessible from the side when the device is mounted
- Low power consumption (typically 4 W)
- TiM3xxS only: Certified to DIN EN ISO 13849-1:2015

Your benefits

- Low operating costs
- Flexible installation due to compact dimensions
- Low implementation and replacement costs due to M12 x 12 or D-Sub male connector
- Long battery service life when used in battery-operated vehicles
- Easy commissioning thanks to pre-configured field sets
- Low costs as a result of monitoring large fields (up to 235 m^2) with just one scanner
- No cabling required between sender and receiver
- For TiM3xxS only: Can be used in safety-related applications

Additional information

→ **www.sick.com/TiM3xx**

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

Detailed technical data

Features

	TiM31x	TiM32x	TiM35x	TiM36x	TiM361S
Measurement principle	HDDM / HDDM⁺		HDDM		
Light source	Infrared (850 nm)				
Laser class	1 (IEC 60825-1:2014, EN 60825-1:2014)				
Aperture angle	270°				
Scanning frequency	15 Hz				
Working range	0.05 m … 4 m		0.05 m … 10 m		
Safety-related working range	–				0.05 m … 4 m (At 5% remission)
Blind zone	–				0 m … 0.05 m
Scanning range at 10% remission	2 m		8 m		

Performance

	TiM31x	TiM32x	TiM35x	TiM36x	TiM361S
Response time	Typ. 67 ms		1 scan, typ. 67 ms 2 scans, ≤ 134 ms		
Systematic error [1]	± 40 mm		± 60 mm		–
Statistical error [1]	30 mm		20 mm		–
Integrated application	Field evaluation	Field evaluation with flexible fields			Protective field evaluation with flexible fields
Protective field tolerance	–				100 mm, 0.66° (DIN CLC/TS 62046:2009, 5% remission)
Number of field sets	16 field triples (48 fields, 1 triple (3 fields) can be configured directly at the scanner)	16 field triples (48 fields, 1 triple (3 flexible fields) can be configured directly at the scanner)	16 field triples (48 fields, Contour as reference; 1 triple (3 flexible fields) can be configured directly at the scanner)		16 field triples (48 protective fields)
Simultaneous evaluation cases	1 (3 fields)		1 (3 fields) 2 (2 fields for detection and 1 field for contour as reference)		3 simultaneous protective fields (per field set)

[1] Typical value; actual value depends on environmental conditions.

Interfaces

		TiM31x	TiM32x	TiM35x	TiM36x	TiM361S
USB		✔				
	Remark	Micro USB				
	Function	AUX, parameterization				
Ethernet		–		✔, TCP/IP		–
Digital inputs		4				
Delay time		67 ms … 30,000 ms (configurable)				
Dwell time		67 ms … 10,000 ms (configurable)				
Optical indicators		2 LEDs (ON, switching status)				

Mechanics/electronics

	TiM31x	TiM32x	TiM35x	TiM36x	TiM361S
Supply voltage	9 V DC … 28 V DC				
Power consumption	16 W, with 4 max. loaded digital outputs				
Enclosure rating	IP65 (IEC 60529:1989+AM-D1:1999+AMD2:2013)		IP67 (IEC 60529:1989+AMD1:1999+AMD2:2013)		
Protection class	III (IEC 61140:2016-1)				
Weight	150 g, without connecting cables		250 g, without connecting cables		
Dimensions (L x W x H)	60 mm x 60 mm x 79 mm		60 mm x 60 mm x 86 mm		

Ambient data

	TiM31x	TiM32x	TiM35x	TiM36x	TiM361S
Electromagnetic compatibility (EMC)	IEC 61000-6-3:2006+AMD1:2010 / IEC 61000-6-2:2005				
Vibration resistance	IEC 60068-2-6:2007				
Shock resistance	IEC 60068-2-27:2008				
Ambient operating temperature	–10 °C … +50 °C		–25 °C … +50 °C		–10 °C … +50 °C
Storage temperature	–30 °C … +70 °C		–40 °C … +75 °C		
Ambient light immunity	80,000 lx				

Ordering information

Non safety-related sensor variants

Sub product family	Application	Electrical connection	Digital outputs	Angular resolution	Housing color	Type	Part no.
TiM31x	Indoor	Open wires (2.0 m) [1]	3 (NPN, additional 1 x "Device Ready")	1°	Light blue (RAL 5012)	TIM310-0130000S02	1069932
		1 x 15-pin D-sub HD male connector (0.9 m)	3 (PNP, additional 1 x "Device Ready")	1°	Light blue (RAL 5012)	TIM310-1030000	1052627
			3 (NPN, additional 1 x "Device Ready")	1°	Light blue (RAL 5012)	TIM310-1030000S02	1062221
		1 x M12 12-pin male connector (0.8 m)	3 (PNP, additional 1 x "Device Ready")	1°	Light blue (RAL 5012)	TIM310-1130000	1056550
			3 (NPN, additional 1 x "Device Ready")	1°	Light blue (RAL 5012)	TIM310-1130000S02	1067917
TiM32x	Indoor	Open wires (2.0 m) [1]	3 (NPN, additional 1 x "Device Ready")	1°	Light blue (RAL 5012)	TIM320-0131000S02	1069933
		1 x 15-pin D-sub HD male connector (0.9 m)	3 (PNP, additional 1 x "Device Ready")	1°	Light blue (RAL 5012)	TIM320-1031000	1063467
		1 x M12 12-pin male connector (0.8 m)	3 (PNP, additional 1 x "Device Ready")	1°	Light blue (RAL 5012)	TIM320-1131000	1062219
			3 (NPN, additional 1 x "Device Ready")	1°	Light blue (RAL 5012)	TIM320-1131000S02	1067919
TiM35x	Outdoor	1 x "Ethernet" connection, 4-pin M12 female connector 1 x connection "Power", 12-pin, M12 male connector 1 x Micro USB female connector, type B	3 (PNP, additional 1 x "Device Ready")	1°	Gray (RAL 7032)	TIM351-2134001	1067299
			3 (NPN, additional 1 x "Device Ready")	1°	Gray (RAL 7032)	TIM351-2134001S02	1080181
TiM36x	Outdoor	1 x "Ethernet" connection, 4-pin M12 female connector 1 x connection "Power", 12-pin, M12 male connector 1 x Micro USB female connector, type B	3 (PNP, additional 1 x "Device Ready")	0.33°	Gray (RAL 7032)	TIM361-2134101	1071399
			3 (NPN, additional 1 x "Device Ready")	0.33°	Gray (RAL 7032)	TIM361-2134101S02	1080182

[1] Delivery in part with male connector, but it can be disconnected (see "Technical information").

Safety-related sensor variant TIM361S

- **Category**: B (EN ISO 13849-1:2015)
- **Performance level:** PL b (EN ISO 13849-1:2015)
- **MTTF$_D$ (mean time to dangerous failure):** 100 years
- **T$_M$ (mission time):** 10 years (EN ISO 13849-1:2015)

Sub product family	Application	Electrical connection	Digital outputs	Angular resolution	Housing color	Type	Part no.
TiM361S	Indoor	1 x "Ethernet" connection, 4-pin M12 female connector 1 x connection "Power", 12-pin, M12 male connector 1 x Micro USB female connector, type B	3 (PNP, to display a protective field violation, additional 1 x "Device Ready")	0.33°	Yellow	TIM361S-2134101	1090608

[1] Delivery in part with male connector, but it can be disconnected (see "Technical information").

Dimensional drawings (Dimensions in mm (inch))

TiM31x

TiM32x
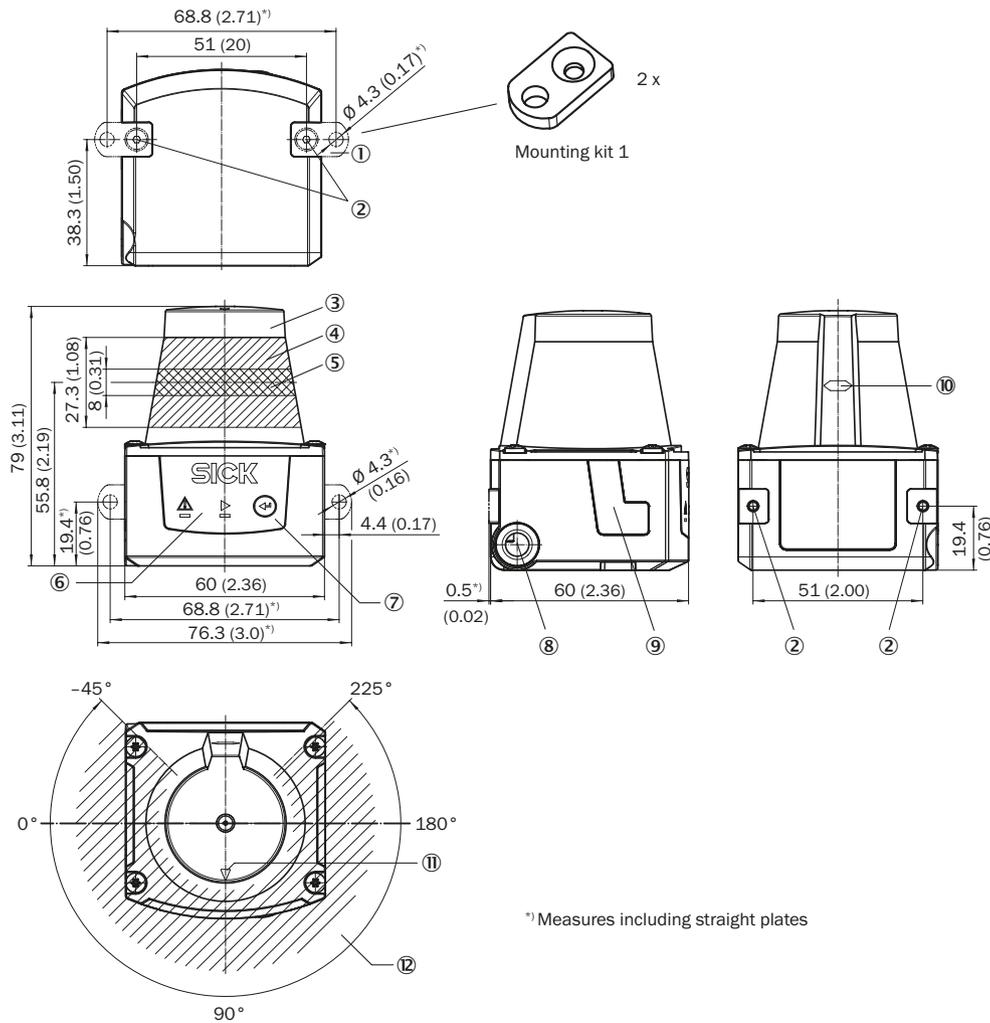
Mounting kit 1

*) Measures including straight plates

① 2 x straight plates with M3 x 4 mm screw (included in delivery)
② M3 threaded mounting hole, 2.8 mm deep (blind hole thread)
③ Optical hood
④ Receiving range (light inlet)
⑤ Transmission range (light emission)
⑥ Red and green LED (status displays)

⑦ Function button for teach-in
⑧ Connecting cable exit ("power/switching inputs/outputs" connection)
⑨ Micro USB female connector, type B
⑩ Marking for the position of the light emission level
⑪ Bearing marking to support alignment (90° axis)
⑫ Aperture angle 270° (scanning angle)

TiM35x
TiM36x

All dimensions in mm (inch)

① 2 x straight plates with M3 x 4 mm screw (included in delivery)
② M3 threaded mounting hole, 2.8 mm deep (blind hole thread)
③ Optical hood
④ Receiving range (light inlet)
⑤ Transmission range (light emission)
⑥ Function button for teach-in
⑦ Red and green LED (status displays)
⑧ Swivel connector unit
⑨ Micro USB female connector, type B
⑩ Connection "Power", 12-pin, M12 male connector
⑪ Marking for the position of the light emission level
⑫ "Ethernet" connection, 4-pin M12 female connector
⑬ Area in which no reflective surfaces are allowed for mounted devices
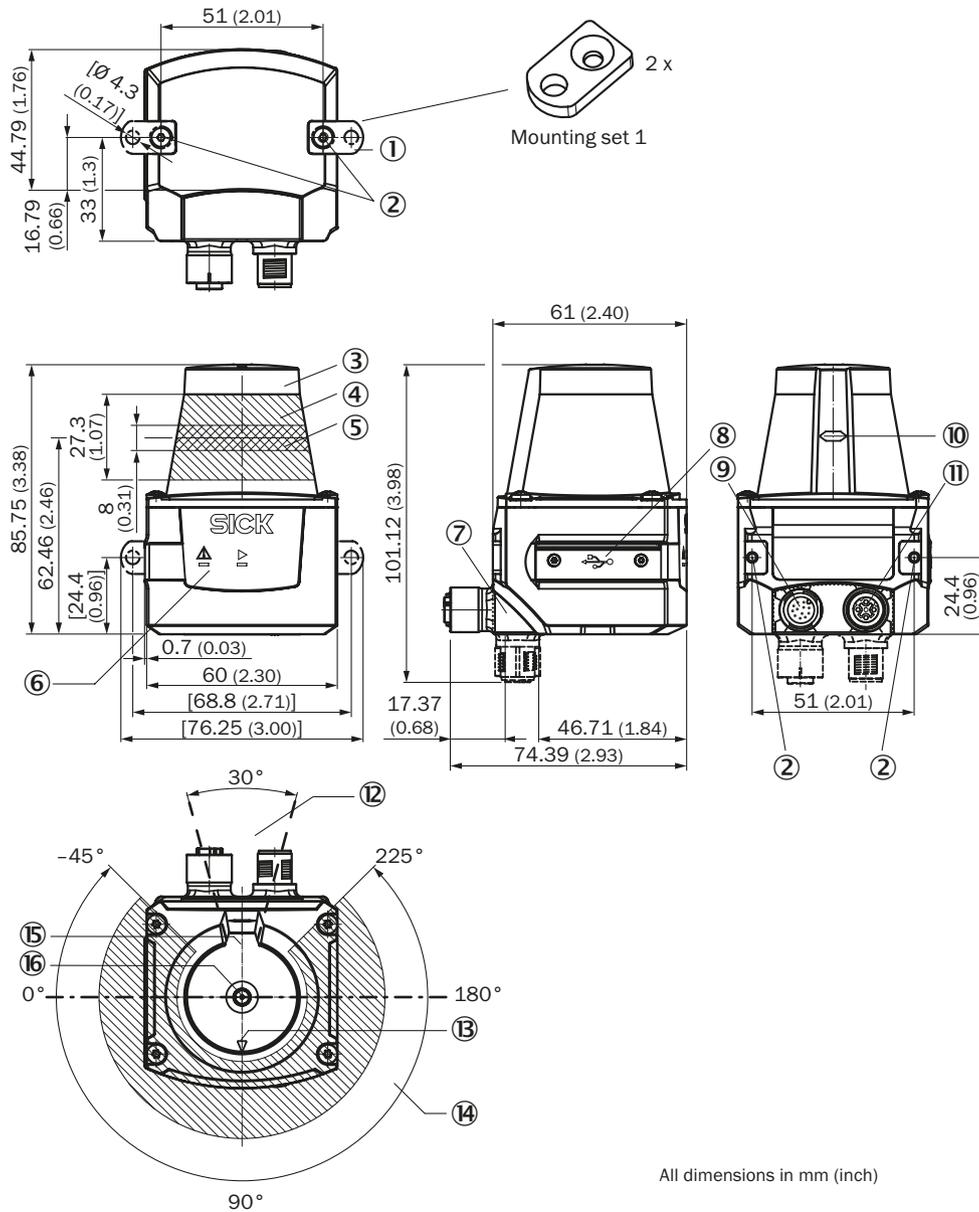⑭ Bearing marking to support alignment (90° axis)
⑮ Aperture angle 270° (scanning angle)

TiM36x

All dimensions in mm (inch)

① 2 x straight plates with M3 x 4 mm screw (included in delivery)
② M3 threaded mounting hole, 2.8 mm deep (blind hole thread)
③ Optical hood
④ Receiving range (light inlet)
⑤ Transmission range (light emission)
⑥ Red and green LED (status displays)
⑦ Swivel connector unit
⑧ Micro USB port, behind the black rubber plate ("Aux interface" connection for configuration with PC)
⑨ "Power/inputs and outputs" connection, 12-pin M12 male connector
⑩ Marking for the position of the light emission level
⑪ 4-pin M12 female connector: not assigned
⑫ Area in which no reflective surfaces are allowed for mounted devices
⑬ Bearing marking to support alignment (90° axis)
⑭ Aperture angle 270° (scanning angle)
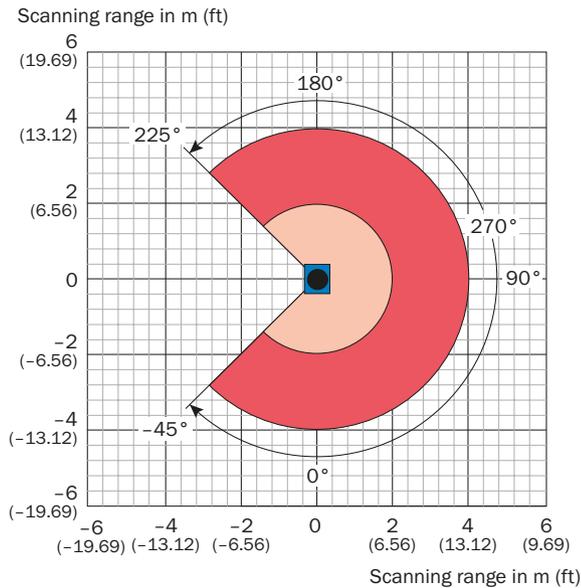⑮ Internal reference target
⑯ Measurement origin

Working range diagram

TiM31x
TiM32x

Scanning range in m (ft)

Scanning range in m (ft)

■ Scanning range max. 4 m (13.12 feet)

■ Scanning range typical 2 m (6.56 feet)
for objects up to 10 % remission

TiM35x
TIM36x
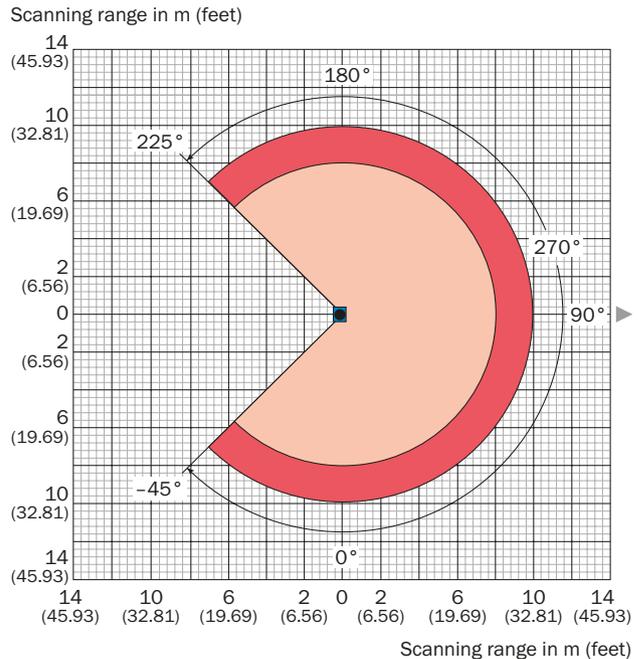
Scanning range in m (feet)

Scanning range in m (feet)

■ Scanning range max. 10 m (32.81 feet)

■ Scanning range typical 8 m (26.25 feet)
for objects up to 10 % remission

TIM361S

Scanning range in m (feet)

Scanning range in m (feet)
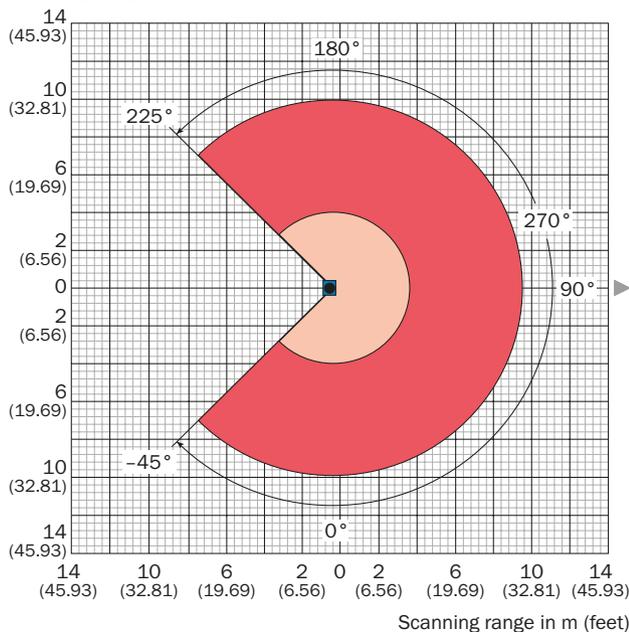
■ Range for **not safety-related** detection:
0.05 m to max. 10 m (32.81 feet)

■ Range for **safety-related** detection:
0.05 m to max. 4 m (13.21 feet)

Attention! From the measurement origin up to a distance of
0.05 m (0.17 feet) no objects are detected (blind zone!) over
the entire radial field of view (scanning range of 270°).

Recommended accessories

Mounting systems

Mounting brackets and plates

	Brief description	Part no.	TiM31x	TiM32x	TiM35x	TiM36x	TiM-S
Illustration may differ	Mounting kit with sun shade/weather protection	2068398	–	–	●	●	–
Illustration may differ	Mounting kit	2086761	–	–	–	–	●
	Mounting set 2, fender and alignment aid	2061776	●	●	–	–	–

Connection systems

Plug connectors and cables

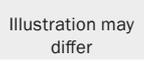|	Signal type/application	Connection type head A	Connection type head B	Cable	Length of cable	Part no.	TiM31x	TiM32x	TiM35x	TiM36x	TiM-S
	Power, serial, CANopen, digital I/Os	Female connector, D-Sub-HD, 15-pin, straight	Flying leads	Extension cable, 15-wire, AWG26	2 m	2043413	●	●	–	–	–
	Power, I/O	Female connector, M12, 12-pin, straight, A-coded	Flying leads	12-wire	5 m	6054974	●	●	●	●	●
Illustration may differ	Ethernet	Male connector, M12, 4-pin, straight, D-coded	Male connector, RJ45, 8-pin, straight	4-wire, Ecolab, AWG26	5 m	6050200	–	–	●	–	–
				4-wire, twisted pair, AWG26	5 m	6034415				●	●
	USB 2.0	Male connector, USB-A	Male connector, Micro-B	–	2 m	6036106	●	–	–	–	●
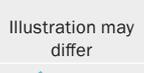
4*pro*Connectivity

Modules

	Brief description	Type	Part no.	TiM31x	TiM32x	TiM35x	TiM36x	TiM-S
Illustration may differ	Small connection module for one sensor, 4 cable glands (only for TiM3xx-10xxxxx)	CDB730-001	1055981	●	●	–	–	–

For more accessories, see ➜

COMPLETE MEASUREMENT ACCURACY

Product description

More than just object detection: The TiM5xx 2D LiDAR sensor is a non-contact ranging solution within the TiM series from SICK. Thanks to its HDDM technology, the TiM5xx is able to monitor large areas in indoor and outdoor applications – regardless of the surface or ambient light. Enclosed in a compact, rugged housing, the TiM5xx provides accurate measurement data from the scanned surface, making it possible to determine additional information such as the size and shape of objects. The TiM5xx is flexible for use in a variety of industrial applications as well as in building automation. The integrated Ethernet interface makes for easy implementation and remote maintenance. The TiM5xx is an efficient solution for stationary use as well as for use on automated guided vehicles (AVG) and in other mobile applications.

At a glance

- Monitoring area of up to 1,470 m^2 with just one sensor
- High ambient light tolerance due to HDDM technology
- Rugged housing with up to an IP 67 enclosure rating
- Low power consumption (typ. 4 W)
- Compact design with a housing height of just 86 mm maximum
- Integrated Ethernet interface
- Long sensing range of up to max. 25 m
- Industry-standard design and M12 male connector

Your benefits

- Reliable object detection independent of the surface and ambient light
- IP 67 enclosure rating can be relied upon to withstand both indoor and outdoor conditions
- Easy integration into compact automated guided vehicles (AGV) due to small size
- Ethernet interface makes for easy implementation and remote maintenance
- Can determine additional information such as object size, shape, etc. through measurement data output
- Low implementation costs due to scalability: Sensor telegram is identical to sensor telegrams for 2D LiDAR sensors in the SICK portfolio

Additional information

→ **www.sick.com/TiM5xx**

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

Detailed technical data

Features

	TiM51x	TiM55x	TiM56x	TiM57x	TiM58x
Measurement principle	HDDM⁺	HDDM			HDDM⁺
Light source	Infrared (850 nm)				
Laser class	1 (IEC 60825-1:2014, EN 60825-1:2014)				
Aperture angle	270°				
Scanning frequency	15 Hz				
Working range	0.05 m … 4 m	0.05 m … 10 m		0.05 m … 25 m	
Scanning range at 10% remission	2 m	8 m			

Performance

	TiM51x	TiM55x	TiM56x	TiM57x	TiM58x
Response time	Typ. 67 ms				
Systematic error [1]	± 40 mm	± 60 mm			
Statistical error [1]	30 mm	20 mm			
Integrated application	Output of measurement data				

[1] Technical data such as measurement errors and sensing range can only be guaranteed up to a sensing range of 10 m.

Interfaces

	TiM51x	TiM55x	TiM56x	TiM57x	TiM58x
Serial	✔, RS-232				
Function	Host	–			
Data transmission rate	460.8 kBaud	–			
USB	✔				
Remark	Micro USB				
Function	AUX, parameterization				
Ethernet	–	✔, TCP/IP			
Digital inputs	0				
Optical indicators	2 LEDs (ON, switching status)	2 LEDs (ON, "device ready")			

Mechanics/electronics

	TiM51x	TiM55x	TiM56x	TiM57x	TiM58x
Supply voltage	9 V DC … 28 V DC				
Power consumption	Typ. 4 W				
Enclosure rating	IP65 (IEC 60529: 1989+AD1:1999 +AMD2:2013)	IP67 (IEC 60529:1989+AMD1:1999+AMD2:2013)			
Protection class	III (IEC 61140:2016-1)				
Weight	150 g, without connecting cables	250 g, without connecting cables			
Dimensions (L x W x H)	60 mm x 60 mm x 79 mm	60 mm x 60 mm x 86 mm			

Ambient data

|	TiM51x	TiM55x	TiM56x	TiM57x	TiM58x
Electromagnetic compatibility (EMC)	IEC 61000-6-3:2006+AMD1:2010 / IEC 61000-6-2:2005				
Vibration resistance	IEC 60068-2-6:2007				
Shock resistance	IEC 60068-2-27:2008				
Ambient operating temperature	–10 °C ... +50 °C	–25 °C ... +50 °C			
Storage temperature	–30 °C ... +70 °C	–40 °C ... +75 °C			
Ambient light immunity	80,000 lx				

Ordering information

- **Digital outputs:** 1 (PNP, "SYNC"/"device ready")

Sub product family	Application	Electrical connection	Angular resolution	Housing color	Type	Part no.
TiM51x	Indoor	1 x cable with 12-pin M12 male connector (0,3 m) 1 x Micro USB female connector, type B	1°	Light blue (RAL 5012)	TIM510-9950000S01	1062210
TiM55x	Outdoor	1 x "Ethernet" connection, 4-pin M12 female connector 1 x connection "Power/Synchronization output" 5-pin, M12 male connector 1 x Micro USB female connector, type B	1°	Gray (RAL 7032)	TIM551-2050001	1060445
TiM56x	Outdoor	1 x "Ethernet" connection, 4-pin M12 female connector 1 x connection "Power/Synchronization output" 5-pin, M12 male connector 1 x Micro USB female connector, type B	0.33°	Gray (RAL 7032)	TiM561-2050101	1071419
		1 x "Ethernet" connection, cable, with RJ45 male connector (1 m) 1 x "Power/Synchronization output" connection, 5-wire cable with open end (1 m) 1 x Micro USB female connector, type B	0.33°	Gray (RAL 7032)	TiM561-9950101S01	1079741
TiM57x	Outdoor	1 x "Ethernet" connection, 4-pin M12 female connector 1 x connection "Power/Synchronization output" 5-pin, M12 male connector 1 x Micro USB female connector, type B	0.33°	Gray (RAL 7032)	TiM571-2050101	1075091
		1 x "Ethernet" connection, cable, with RJ45 male connector (1 m) 1 x "Power/Synchronization output" connection, 5-wire cable with open end (1 m) 1 x Micro USB female connector, type B	0.33°	Gray (RAL 7032)	TiM571-9950101S01	1079742
TiM58x	Outdoor	1 x "Ethernet" connection, 4-pin M12 female connector 1 x connection "Power/Synchronization output" 5-pin, M12 male connector 1 x Micro USB female connector, type B	0.33°	Gray (RAL 7032)	TiM581-2050101	1099504

Dimensional drawings (Dimensions in mm (inch))

TiM51x
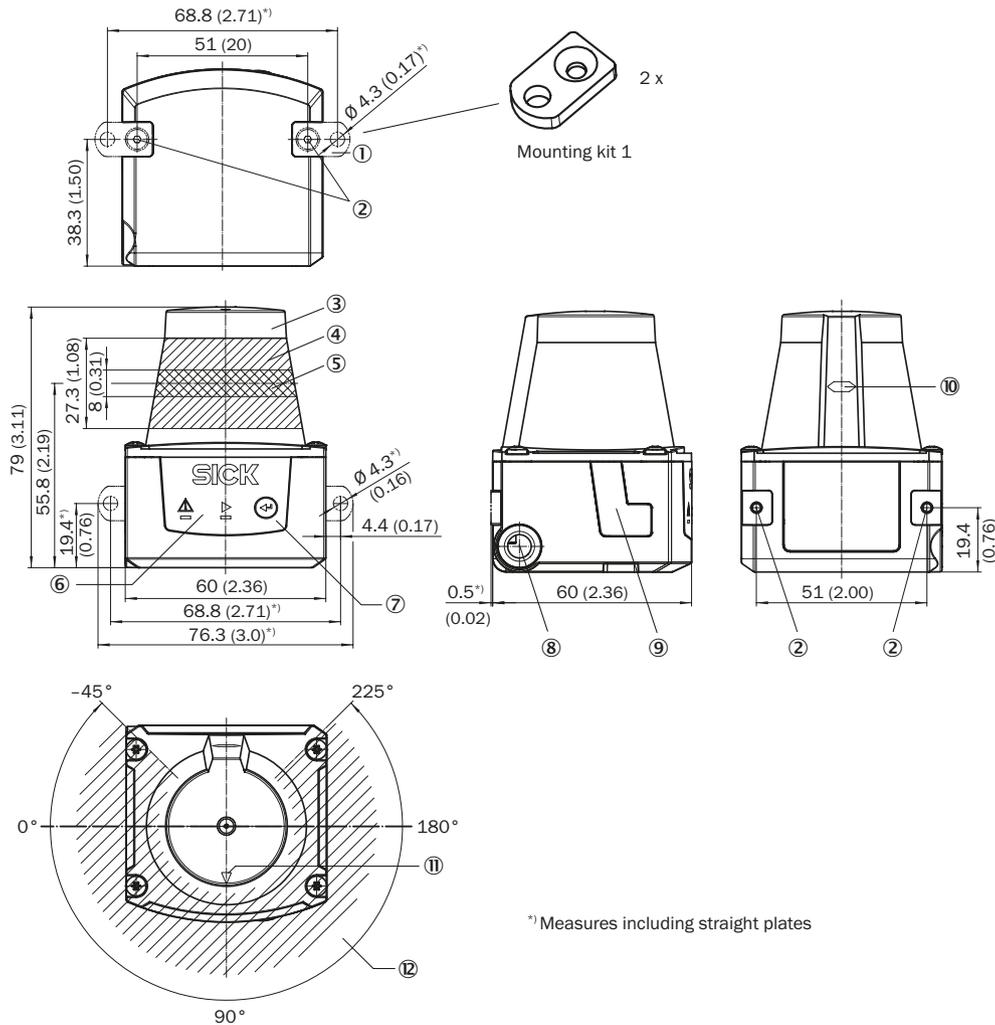
Mounting kit 1

2 x

*) Measures including straight plates

① 2 x straight plates with M3 x 4 mm screw (included in delivery)
② M3 threaded mounting hole, 2.8 mm deep (blind hole thread)
③ Optical hood
④ Receiving range (light inlet)
⑤ Transmission range (light emission)
⑥ Red and green LED (status displays)
⑦ Function button for teach-in
⑧ Connecting cable exit ("power/switching inputs/outputs" connection)
⑨ Micro USB female connector, type B
⑩ Marking for the position of the light emission level
⑪ Bearing marking to support alignment (90° axis)
⑫ Aperture angle 270° (scanning angle)

TiM55x
TiM56x
TiM57x
TiM58x
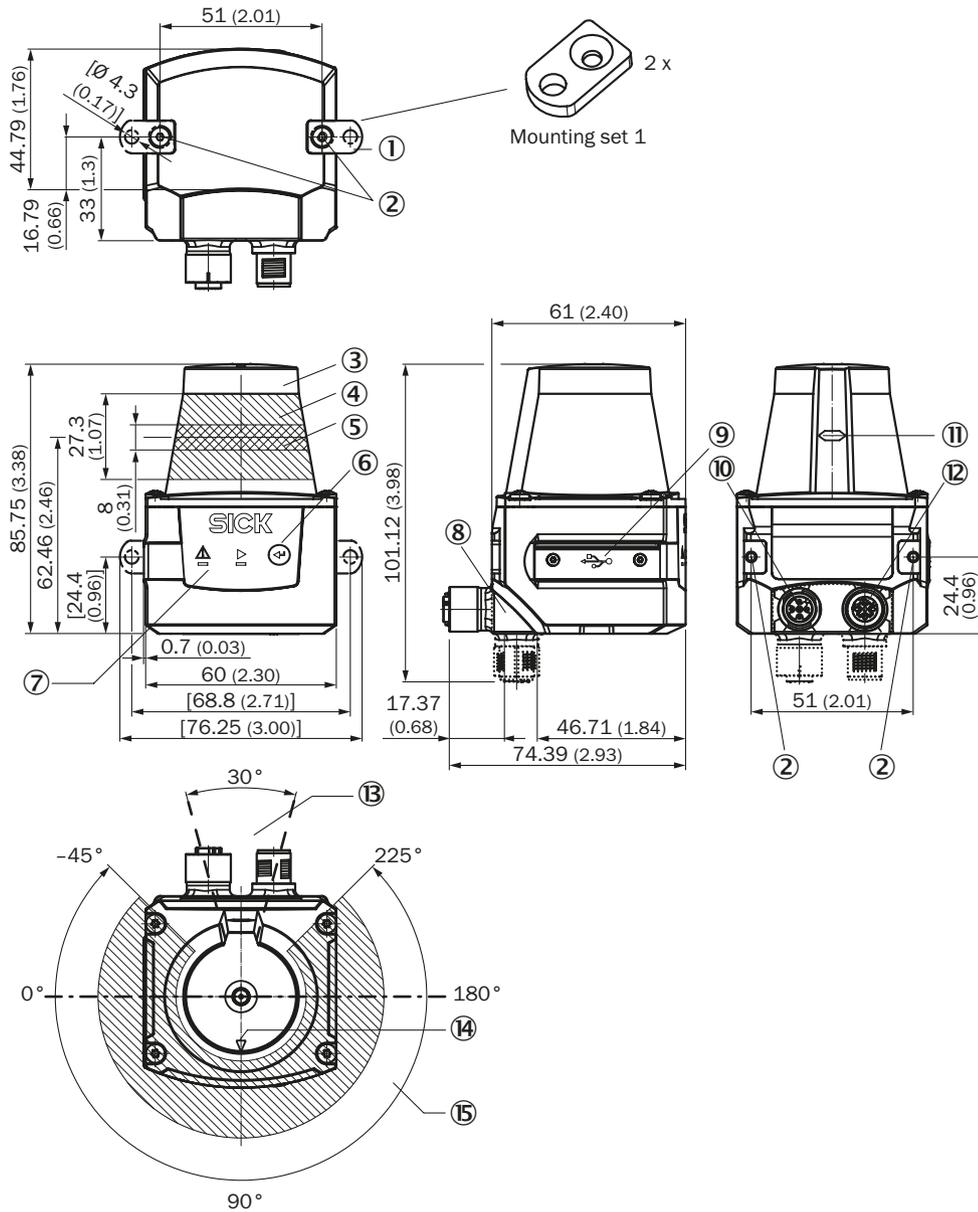
① 2 x straight plates with M3 x 4 mm screw (included in delivery)
② M3 threaded mounting hole, 2.8 mm deep (blind hole thread)
③ Optical hood
④ Receiving range (light inlet)
⑤ Transmission range (light emission)
⑥ Push-button (no function)
⑦ Red and green LED (status displays)
⑧ Swivel connector unit
⑨ Micro USB female connector, type B
⑩ Connection "Power/Synchronization output" 5-pin, M12 male connector
⑪ Marking for the position of the light emission level
⑫ "Ethernet" connection, 4-pin M12 female connector
⑬ Area in which no reflective surfaces are allowed for mounted devices
⑭ Bearing marking to support alignment (90° axis)
⑮ Aperture angle 270° (scanning angle)

Working range diagram

TiM51x

Scanning range in m (ft)
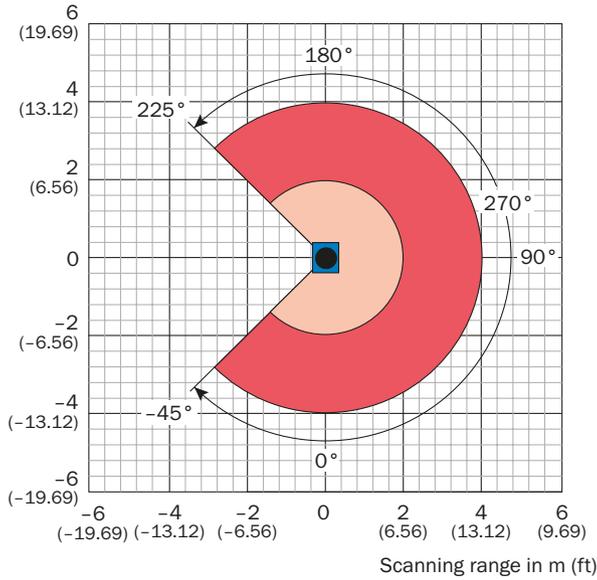
Scanning range in m (ft)

■ Scanning range max. 4 m (13.12 feet)

■ Scanning range typical 2 m (6.56 feet)
for objects up to 10 % remission

TiM55x
TiM56x

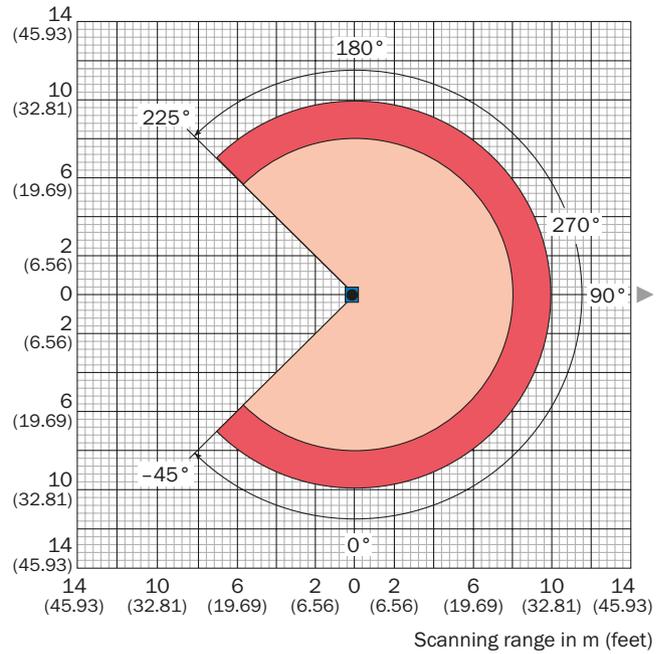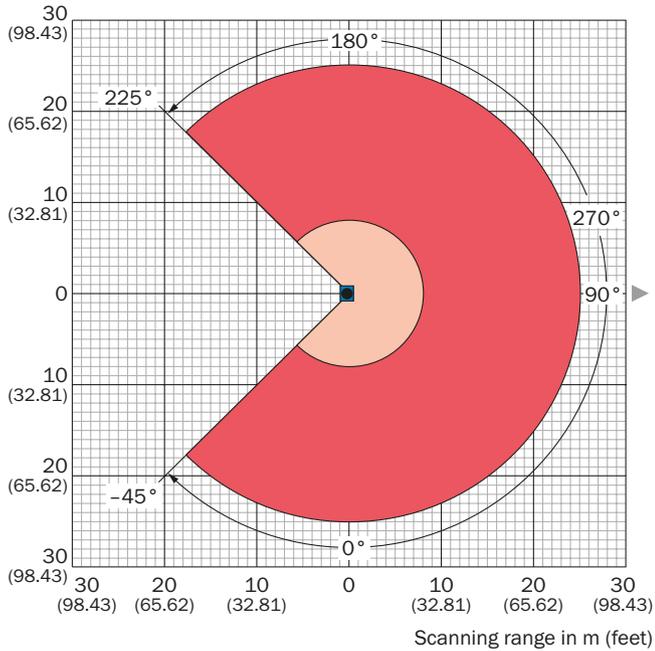Scanning range in m (feet)

Scanning range in m (feet)

■ Scanning range max. 10 m (32.81 feet)

■ Scanning range typical 8 m (26.25 feet)
for objects up to 10 % remission

TiM57x
TiM58x

Scanning range in m (feet)

Scanning range in m (feet)

■ Scanning range max. 25 m (82.02 feet)

■ Scanning range typical 8 m (26.25 feet)
for objects up to 10 % remission

Recommended accessories

Mounting systems

Mounting brackets and plates

	Brief description	Part no.	TiM51x	TiM55x	TiM56x	TiM57x	TiM58x
Illustration may differ	Mounting kit with sun shade/weather protection	2068398	–	●	●	●	●
Illustration may differ	Mounting set 2, fender and alignment aid	2061776	●	–	–	–	–

Connection systems

Plug connectors and cables

	Signal type/application	Connection type head A	Connection type head B	Cable	Length of cable	Part no.	TiM51x	TiM55x	TiM56x	TiM57x	TiM58x
	Power, I/O	Female connector, M12, 12-pin, straight, A-coded	Flying leads	12-wire, twisted pair	5 m	6042735	●	●	–	–	–
				12-wire	5 m	6054974	●	●	–	–	–
	Power	Female connector, M12, 5-pin, straight, A-coded	Flying leads	4-wire	5 m	6036159	–	●	●	●	●
	Ethernet	Male connector, M12, 4-pin, straight, D-coded	Male connector, RJ45, 8-pin, straight	4-wire, twisted pair, AWG26	5 m	6034415	–	●	●	●	●
Illustration may differ				4-wire, Ecolab, AWG26	5 m	6050200	–	●	●	●	●
	USB 2.0	Male connector, USB-A	Male connector, Micro-B		2 m	6036106	●	●	●	●	●

SIMULTANEOUS FIELD EVALUATION AND MEASUREMENT DATA OUTPUT IN JUST ONE DEVICE
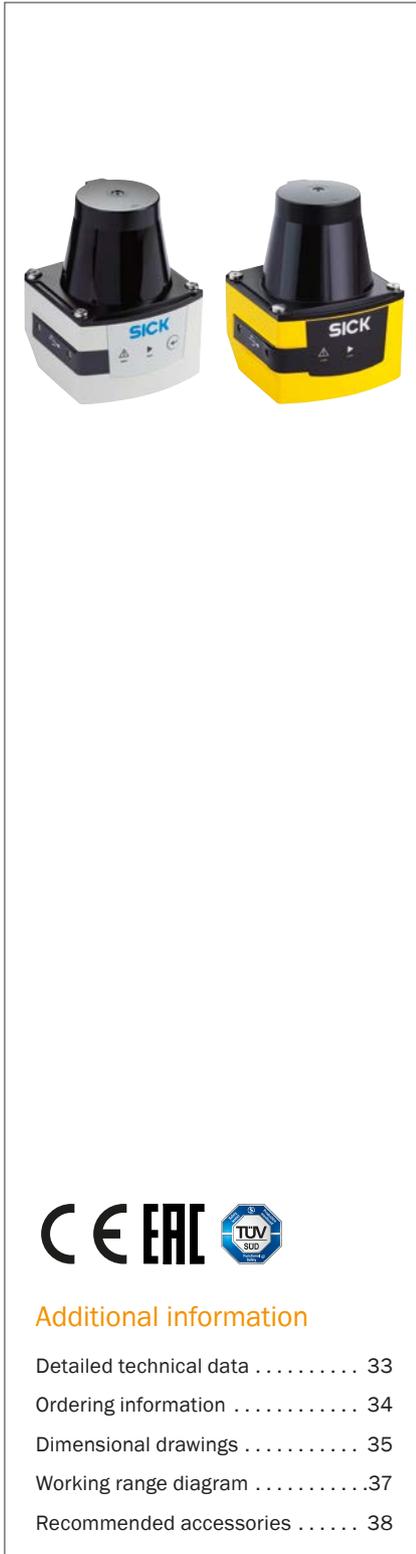
Product description

SICK is adding the TiM7xx to the TiM series for a seamless and scalable 2D-LiDAR sensor portfolio. This sensor combines intelligent field evaluation and measurement data output in one device. This makes it possible to output both data about the presence of an object in a defined area and exact measured data of the scanned surface. The TiM7xx is SICK´s solution for reducing the number of sensors needed for mobile applications. This enables customers to develop customized solutions for their applications. The compact design of the sensors is ideal for applications such as mobile platforms, automated guided vehicles (AGVs) and mobile service robots. The TiM7xx supports localization and collision avoidance in these applications.

At a glance

- Wide detection range: 0.05 m up to maximum 25 m
- Low power consumption (typically: 4 W)
- Immediate commissioning and configuration via USB and Ethernet
- Intelligent field evaluation and measurement data output in one device
- Rugged design suitable for industry thanks to enclosure rating up to IP67

Your benefits

- Enables new solutions for mobile applications by combining intelligent field evaluation and measurement data output.
- Reliable object detection independent of the object, even with strong ambient light
- The measurement data output enables capture of additional data about parameters such as object size, shape, etc.
- Easy integration into compact AGVs thanks to small size of the sensor
- Easy commissioning with rotatable connections and accessories perfectly attuned to the sensors; only a few adjustable SOPAS software parameters are necessary for commissioning
- Improved behavior for edge hits thanks to HDDM[+]

Additional information

➜ **www.sick.com/TiM7xx**

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

Detailed technical data

Features

	TiM781	TiM781S
Measurement principle	HDDM⁺	
Light source	Infrared (850 nm)	
Laser class	1 (IEC 60825-1:2014, EN 60825-1:2014)	
Aperture angle	270°	
Scanning frequency	15 Hz	
Working range	0.05 m … 25 m	
Safety-related working range	–	0.05 m … 5 m (At 5% remission)
Blind zone	–	0 m … 0.05 m
Scanning range at 10% remission	8 m	

Performance

	TiM781	TiM781S
Response time	1 scan, typ. 67 ms 2 scans, ≤ 134 ms	
Systematic error [1]	± 60 mm	± 60 mm
Statistical error [1]	20 mm	20 mm
Integrated application	Field evaluation with flexible fields, output of measurement data	Protective field evaluation with flexible fields, output of measurement data
Protective field tolerance	–	100 mm, 0.66° (DIN CLC/TS 62046:2009, 5% remission)
Number of field sets	16 field triples (48 fields, Contour as reference; 1 triple (3 flexible fields) can be configured directly at the scanner)	16 field triples (48 protective fields)
Simultaneous evaluation cases	3 simultaneous fields (per field set)	3 simultaneous protective fields (per field set)

[1] Typical value; actual value depends on environmental conditions.

Interfaces

		TiM781	TiM781S
Ethernet		✔, TCP/IP	
USB		✔	
	Remark	Micro USB	
	Function	Parameterization	
Digital inputs		4 (PNP, for field set switching)	
Delay time		67 ms … 30,000 ms (configurable)	
Dwell time		67 ms … 10,000 ms (configurable)	
Optical indicators		2 LEDs (ON, "device ready")	

Mechanics/electronics

	TiM781	TiM781S
Supply voltage	9 V DC … 28 V DC	
Power consumption	16 W, with 4 max. loaded digital outputs	
Enclosure rating	IP67 (IEC 60529:1989+AMD1:1999+AMD2:2013)	
Protection class	III (IEC 61140:2016-1)	
Weight	250 g, without connecting cables	
Dimensions (L x W x H)	60 mm x 60 mm x 86 mm	

Ambient data

	TiM781	TiM781S
Electromagnetic compatibility (EMC)	IEC 61000-6-3:2006+AMD1:2010 / IEC 61000-6-2:2005	
Vibration resistance	IEC 60068-2-6:2007	
Shock resistance	IEC 60068-2-27:2008	
Ambient operating temperature	–25 °C … +50 °C	–10 °C … +50 °C
Storage temperature	–40 °C … +75 °C	
Ambient light immunity	80,000 lx	–

Ordering information

Non safety-related sensor variant

- **Electrical connection:** 1 x "Ethernet" connection, 4-pin M12 female connector, 1 x connection "Power", 12-pin, M12 male connector, 1 x Micro USB female connector, type B
- **Angular resolution:** 0.33°

Application	Digital outputs	Housing color	Type	Part no.
Outdoor	3 (PNP, additional 1 x "Device Ready")	Gray (RAL 7032)	TIM781-2174101	1096807

Safety-related sensor variant TiM781S

- **Electrical connection:** 1 x "Ethernet" connection, 4-pin M12 female connector, 1 x connection "Power", 12-pin, M12 male connector, 1 x Micro USB female connector, type B
- **Angular resolution:** 0.33°
- **Category**: B (EN ISO 13849-1:2015)
- **Performance level:** PL b (EN ISO 13849-1:2015)
- **MTTF$_D$ (mean time to dangerous failure):** 100 years
- **T$_M$ (mission time):** 20 years (EN ISO 13849-1:2015)

Application	Digital outputs	Housing color	Type	Part no.
Indoor	3 (PNP, to display a protective field violation, additional 1 x "Device Ready")	Yellow	TIM781S-2174104	1096363

Dimensional drawings (Dimensions in mm (inch))

TiM781

Mounting set 1

All dimensions in mm (inch)

① 2 x straight plates with M3 x 4 mm screw (included in delivery)
② M3 threaded mounting hole, 2.8 mm deep (blind hole thread)
③ Optical hood
④ Receiving range (light inlet)
⑤ Transmission range (light emission)
⑥ Function button for teach-in
⑦ Red and green LED (status displays)
⑧ Swivel connector unit
⑨ Micro USB female connector, type B
⑩ Connection "Power", 12-pin, M12 male connector
⑪ Marking for the position of the light emission level
⑫ "Ethernet" connection, 4-pin M12 female connector
⑬ Area in which no reflective surfaces are allowed for mounted devices
⑭ Bearing marking to support alignment (90° axis)
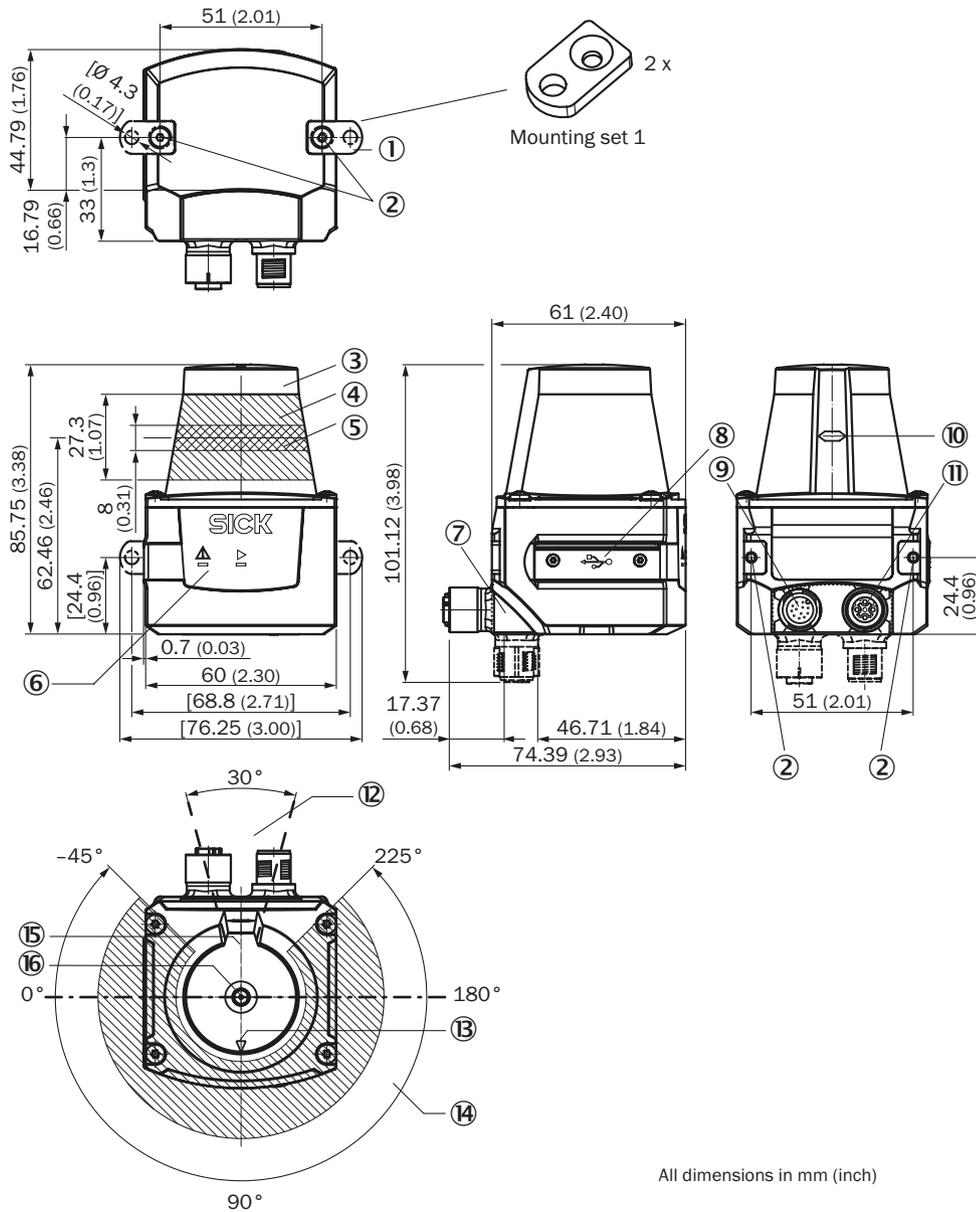⑮ Aperture angle 270° (scanning angle)

TiM781S

All dimensions in mm (inch)

① 2 x straight plates with M3 x 4 mm screw (included in delivery)
② M3 threaded mounting hole, 2.8 mm deep (blind hole thread)
③ Optical hood
④ Receiving range (light inlet)
⑤ Transmission range (light emission)
⑥ Red and green LED (status displays)
⑦ Swivel connector unit
⑧ Micro USB port, behind the black rubber plate ("Aux interface" connection for configuration with PC)
⑨ "Power/inputs and outputs" connection, 12-pin M12 male connector
⑩ Marking for the position of the light emission level
⑪ 4-pin M12 female connector: not assigned
⑫ Area in which no reflective surfaces are allowed for mounted devices
⑬ Bearing marking to support alignment (90° axis)
⑭ Aperture angle 270° (scanning angle)
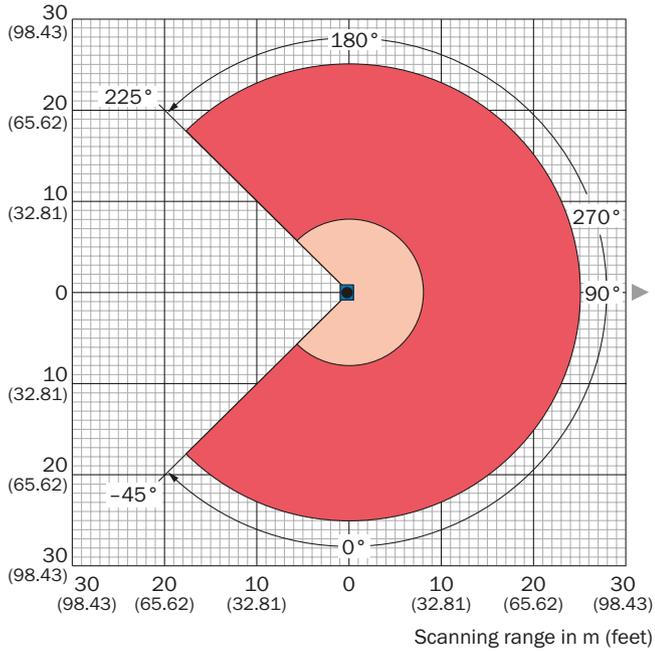⑮ Internal reference target
⑯ Measurement origin

Working range diagram

TIM781

Scanning range in m (feet)

Scanning range in m (feet)

■ Scanning range max. 25 m (82.02 feet)
■ Scanning range typical 8 m (26.25 feet)
for objects up to 10 % remission

TIM781S

Scanning range in m (feet)

Scanning range in m (feet)
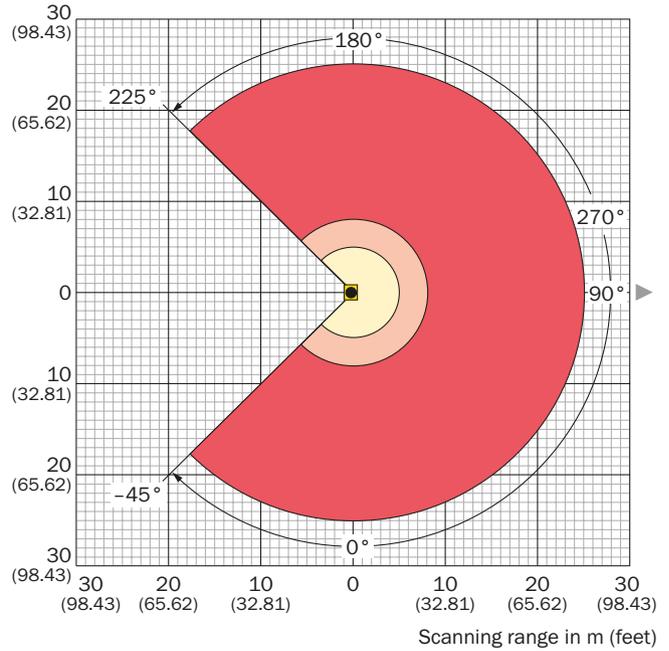
■ Range for **not safety-related** detection at > 50% remission:
0.05 m (0.17 feet) to max. 25 m (82.02 feet)
■ Range for **not safety-related** detection 10% remission:
0.05 m (0.17 feet) to max. 8 m (26.25 feet)
□ Range for **safety-related** detection at 5% remission:
0.05 m (0.17 feet) to max. 5 m (16.40 feet)

Attention! From the measurement origin up to a distance of
0.05 m (0.17 feet) no objects are detected (blind zone!) over
the entire radial field of view (scanning range of 270°).

Recommended accessories

Mounting systems

Mounting brackets and plates

	Brief description	Part no.	TiM78x	TiM-S
Illustration may differ	Mounting kit with sun shade/weather protection	2068398	●	–

Connection systems

Plug connectors and cables

	Signal type/ application	Connection type head A	Connection type head B	Cable	Length of cable	Part no.	TiM78x	TiM-S
	Power, I/O	Female connector, M12, 12-pin, straight, A-coded	Flying leads	12-wire	5 m	6054974	●	●
Illustration may differ	Ethernet	Male connector, M12, 4-pin, straight, D-coded	Male connector, RJ45, 8-pin, straight	4-wire, Ecolab, AWG26	5 m	6050200	●	–

For more accessories, see ➜ 39

TiM series

Mounting systems

Mounting brackets and plates

	Brief description	Part no.	TiM1xx	TiM31x	TiM32x	TiM35x	TiM36x	TiM51x	TiM55x	TiM56x	TiM57x	TiM58x	TiM78x	TiM-S
Illustration may differ	Mounting kit	2082188	●	–	–	–	–	–	–	–	–	–	–	–
Illustration may differ	Mounting kit with shock absorber	2086074	–	●	●	●	●	●	●	●	●	●	●	–
Illustration may differ	Mounting kit with sun shade/weather protection	2068398	–	–	–	●	●	–	●	●	●	●	●	–
Illustration may differ	Mounting kit	2086761	–	–	–	●	●	–	●	●	●	●	●	●
	Mounting set 2, fender and alignment aid	2061776	–	●	●	–	–	●	–	–	–	–	–	–
Illustration may differ	Q-lock mounting system	2083311	●	–	–	–	–	–	–	–	–	–	–	–

Other mounting accessories

	Brief description	Part no.	TiM1xx	TiM31x	TiM32x	TiM35x	TiM36x	TiM51x	TiM55x	TiM56x	TiM57x	TiM58x	TiM78x	TiM-S
	For loosening and tightening M12 plug connectors to the system plug with defined torque (0,4 Nm)	2081618	●	–	–	●	●	–	●	●	●	●	●	●

Connection systems

Modules and gateways

	Brief description	Type	Part no.	TiM1xx	TiM31x	TiM32x	TiM35x	TiM36x	TiM51x	TiM55x	TiM56x	TiM57x	TiM58x	TiM78x	TiM-S
	Relay connection box for wiring voltage supply and I/Os as well as four volt-free outputs; with cover contact.	Connection box	2082916	–	●	●	●	●	–	–	–	–	–	●	–
	IO-Link V1.1 Class A port, USB2.0 port, optional external power supply 24V / 1A	IOLA2US-01101 (SiLink2 Master)	1061790	●	–	–	–	–	–	–	–	–	–	–	–
Illustration may differ	Small connection module for one sensor, 4 cable glands (only for TiM3xx-10xxxxx)	CDB730-001	1055981	–	●	●	–	–	–	–	–	–	–	–	–

Plug connectors and cables

	Signal type/application	Connection type head A	Connection type head B	Cable	Length of cable	Part no.	TiM1xx	TiM31x	TiM32x	TiM35x	TiM36x	TiM51x	TiM55x	TiM56x	TiM57x	TiM58x	TiM78x	TiM-S
	Power	Female connector, M12, 5-pin, straight, A-coded	Flying leads	4-wire	5 m	6036159	–	–	–	–	–	–	●	●	●	●	–	–
	Power, I/O	Female connector, M12, 12-pin, straight, A-coded	Flying leads	12-wire	5 m	6054974	–	●	●	●	●	●	●	–	–	–	●	●
				12-wire, twisted pair	5 m	6042735	–	●	●	●	●	●	●	–	–	–	●	–
					10 m	6042736	–	●	●	●	●	●	●	–	–	–	●	–
					20 m	6042737	–	●	●	●	●	●	●	–	–	–	●	–
				12-wire	10 m	6054973	–	●	●	●	●	●	●	–	–	–	●	–
					20 m	6054972	–	●	●	●	●	●	●	–	–	–	●	–
Illustration may differ	Ethernet	Male connector, M12, 4-pin, straight, D-coded	Male connector, RJ45, 8-pin, straight	4-wire, Ecolab, AWG26	10 m	6050201	–	–	–	●	●	–	●	●	●	●	●	–
					20 m	6050596	–	–	–	●	●	–	●	●	●	●	●	–
					5 m	6050200	–	–	–	●	●	–	●	●	●	●	●	–
				4-wire, CAT5, CAT5e	5 m	6054493	–	–	–	●	●	–	●	●	●	●	●	–
				4-wire, twisted pair, AWG26	5 m	6034415	–	–	–	●	●	–	●	●	●	●	●	–
				4-wire, CAT5, CAT5e	10 m	6054492	–	–	–	●	●	–	●	●	●	●	●	–
				4-wire, twisted pair, AWG26	10 m	6030928	–	–	–	●	●	–	●	●	●	●	●	–
				4-wire, CAT5, CAT5e	20 m	6050685	–	–	–	●	●	–	●	●	●	●	●	–
				4-wire, twisted pair, AWG26	20 m	6036158	–	–	–	●	●	–	●	●	●	●	●	–
	Power, serial, CANopen, digital I/Os	Female connector, D-Sub-HD, 15-pin, straight	Flying leads	Extension cable, 15-wire, AWG26	2 m	2043413	–	●	●	–	–	–	–	–	–	–	–	–
	USB 2.0	Male connector, USB-A	Male connector, Micro-B	–	2 m	6036106	–	●	●	●	●	●	●	●	●	●	●	●

	Signal type/application	Connection type head A	Connection type head B	Cable	Length of cable	Part no.	TiM1xx	TiM31x	TiM32x	TiM35x	TiM36x	TiM51x	TiM55x	TiM56x	TiM57x	TiM58x	TiM78x	TiM-S
	Sensor/actuator cable	Female connector, M12, 5-pin, straight, A-coded	Male connector, M12, 5-pin, straight, A-coded	5-wire, CE, UL	2 m	2096009	●	–	–	–	–	–	–	–	–	–	–	–
			Flying leads	5-wire, CE, UL	2 m	2095617	●	–	–	–	–	–	–	–	–	–	–	–
		Female connector, M12, 5-pin, angled, A-coded	Male connector, M12, 5-pin, straight, A-coded	5-wire, CE, UL	2 m	2095601	●	–	–	–	–	–	–	–	–	–	–	–
			Flying leads	5-wire, CE, UL	2 m	2095772	●	–	–	–	–	–	–	–	–	–	–	–
	–	Female connector, M12, 4-pin, straight, A-coded	Flying leads	4-wire	2 m	2088079	–	–	–	–	–	–	●	●	●	●	–	–

Reflectors and optics

Optics cloths

	Brief description	Part no.	TiM1xx	TiM31x	TiM32x	TiM35x	TiM36x	TiM51x	TiM55x	TiM56x	TiM57x	TiM58x	TiM78x	TiM-S
	Cloth for cleaning the front screen	4003353	●	●	●	●	●	●	●	●	●	●	●	●

Further accessories

Cleaning agent

	Brief description	Part no.	TiM1xx	TiM31x	TiM32x	TiM35x	TiM36x	TiM51x	TiM55x	TiM56x	TiM57x	TiM58x	TiM78x	TiM-S
	Plastic cleaner and care product, anti-static, 0.5 liter	5600006	●	●	●	●	●	●	●	●	●	●	●	●

Test and monitoring tools

|	Brief description	Part no.	TiM1xx	TiM31x	TiM32x	TiM35x	TiM36x	TiM51x	TiM55x	TiM56x	TiM57x	TiM58x	TiM78x	TiM-S
Illustration may differ	Alignment aid for detecting the infrared light of SICK sensors.	2101720	●	●	●	●	●	●	●	●	●	●	●	●
Illustration may differ	Scan finder, receiver to localize infrared scans	6020756	●	●	●	●	●	●	●	●	●	●	●	●

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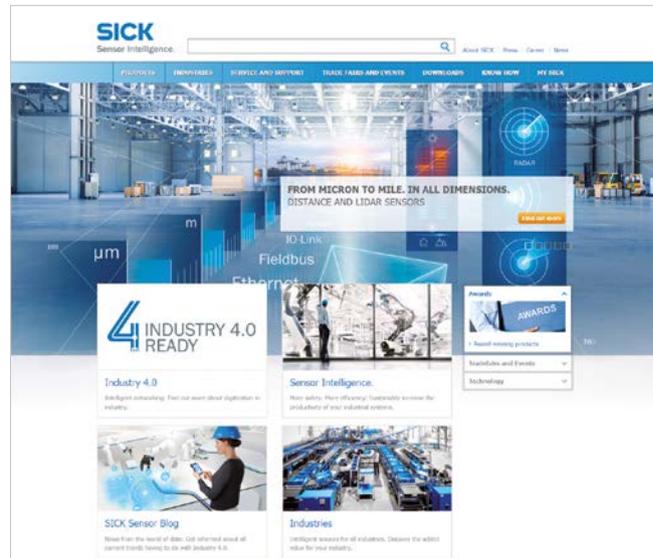
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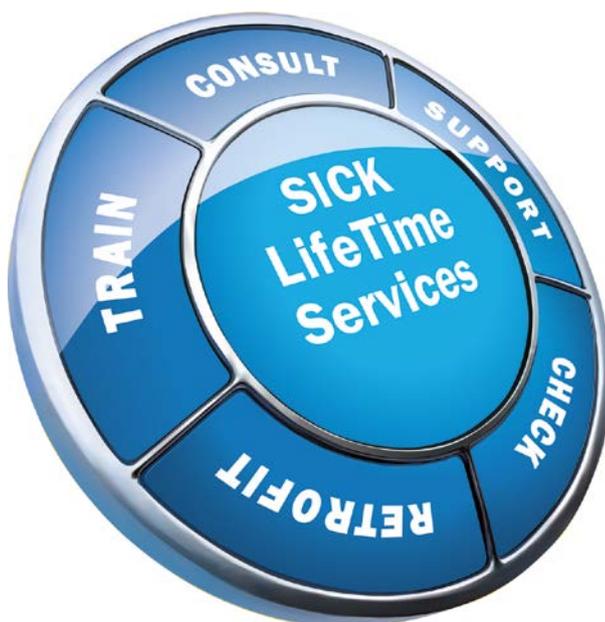
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