

Ultra-thin 3D LiDAR

UCT-10LCM

Compact size. High precision.
Ready for integration.



3D LiDAR
High precision
detection



Ultra-thin
Compact
design

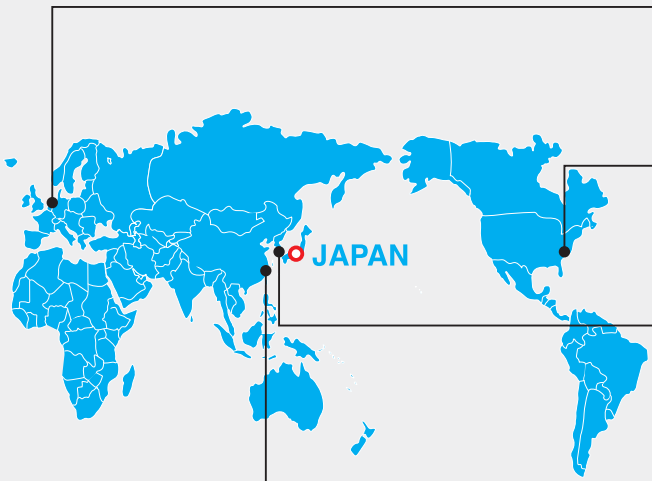


Easy Integration
Seamless system
integration

Scan for product page



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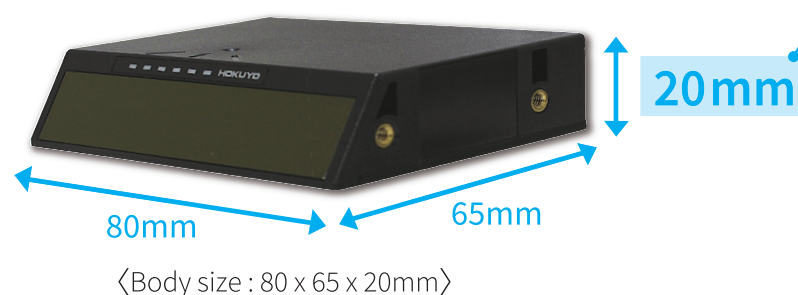


Ultra-thin 3D LiDAR UCT-10LCM



UCT-10LCM Ultra-thin 3D LiDAR

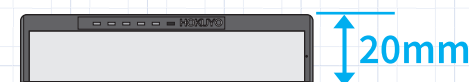
High-precision sensing for your application
Only 20mm thin — fits where conventional LiDAR cannot.
Designed for space-constrained environments.



Ultra-thin design

enables flexible installation
in tight spaces

<Thinner than a wine cork>



Easy to integrate into
height-restricted designs.

PERFORMANCE SPECIFICATIONS



Detection
Range :
Up to 10 m



Angular
Resolution:
0.125°



Horizontal
Field of View :
100°



Vertical Angles :
+3° / 0° / -3°
(3 layers)



Ethernet &
I/O Connectivity



Compatible
with ROS
and ROS2



Compact

20mm thin body for easy
integration in tight spaces.



High Precision

High-resolution sensing
with accurate point cloud.



Easy Integration

Supports standard interfaces
and major robot platforms.

Download nodes
& sample code



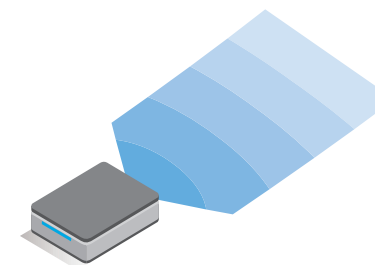
Use Cases

I/O Applications

Detects objects and outputs the result as an ON/OFF signal, enabling simple control such as stopping or operating machinery.

Obstacle Detection (AGV / AMR)

- Detects multi-height obstacles such as pallets, feet, forks, and overhangs
- Enables stable control of braking and stopping through multiple outputs.



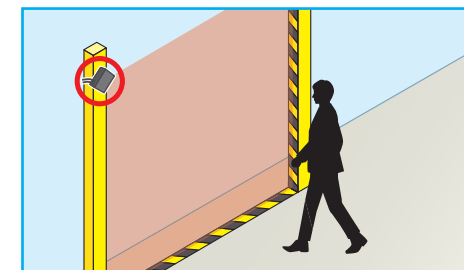
▲ Ideal for detecting obstacles



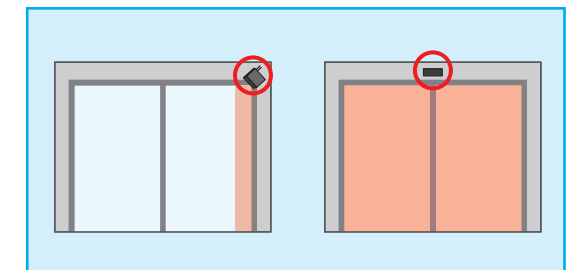
▲ Ideal for detecting overhangs

Door Safety

- Detects intrusion, entrapment, and pinch hazards around automated doors
- Prevents accidents when people pass near moving doors



▲ Detects intruders and entrapment



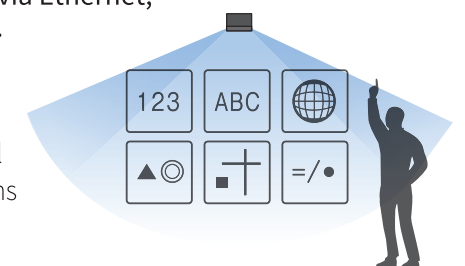
▲ Detects door entrapment / Detects pinch hazards

Ethernet Applications

Measures the distance and position of objects and sends the data via Ethernet, enabling a wide range of applications and more advanced control.

Touchless Interaction

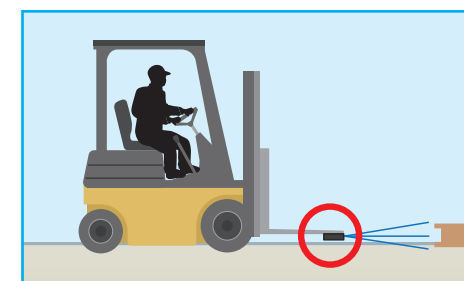
- Detects hands and body movements for intuitive, touch-free control
- Ideal for interactive walls, digital signage, and immersive installations



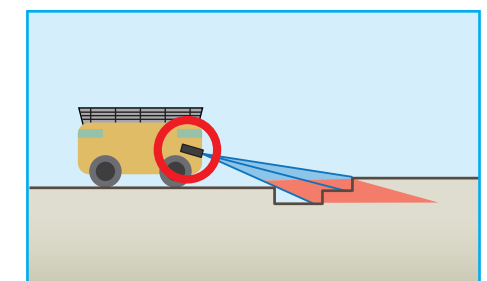
▲ Ideal for interactive walls
and digital installations

Shape Recognition

- Detects pallet holes and shapes with high precision
- Enables accurate positioning and monitoring floor conditions



▲ Detects pallet holes for autonomous fork operation

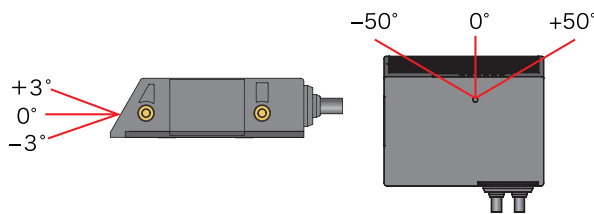


▲ Detects steps and level differences on floor

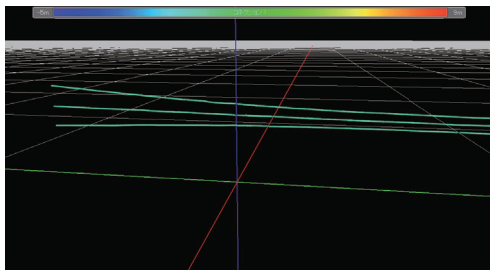
Key Features

3-Layer scanning

Covers a wider area with three vertical scan layers



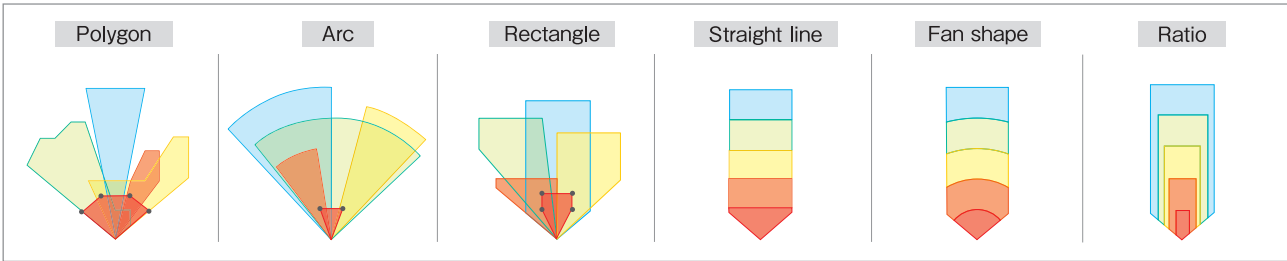
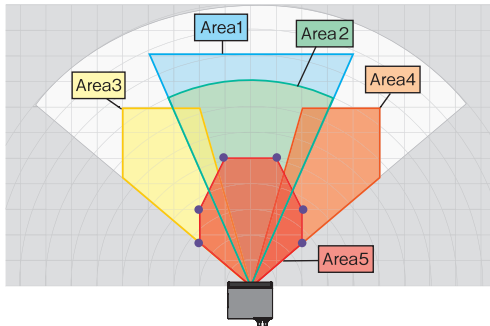
▲DETECTION ANGLE



▲3D VIEWER SCREEN

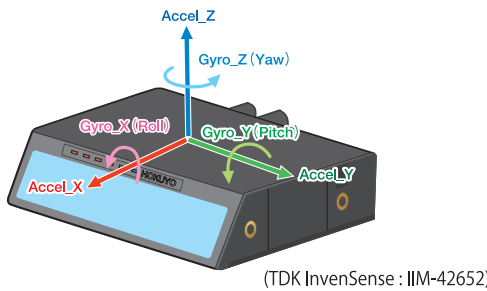
Flexible Area Configurations

- Up to 5 areas
- Independent mode (Polygon, Arc, Rectangle)
- Dependent mode (Straight line, Fan shape, Ratio)
- Both modes can be combined



Equipped with a built-in IMU

- Enables correcting tilt and motion using a built-in IMU
- 3-axis acceleration and 3-axis angular



(TDK InvenSense : IIM-42652)

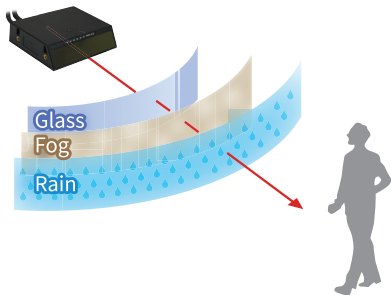
Other Functions

Multi-echo function (Available with LX mode) :

- Receives multiple echoes from a single direction, including reflections from rain, fog, or transparent objects
- Allows selection of distance data from each echo, enabling more reliable detection.

Filter function (Available with LA mode) :

- Removes objects that do not continuously appear at the same position
- Helps eliminate noise from rain, fog, or other unstable reflections



Specification

Model	UCT-10LCM
Supply Voltage	12VDC / 24VDC (operation range : 10 to 30V, ripple within 10%)
Power Consumption	3W
Light Source	Laser semiconductor (905nm)
Laser Safety	Class 1 (IEC60825-1 : 2014) Class 1 Laser Product
Accuracy *1	±40 mm
Repeated Accuracy *1	σ<20 mm
Detection Range and Object *1	■ Scan angle range : -45° to +45° 0.05 m to 10 m (reflectivity 90%, white-kent sheet 600 × 2,000 mm) / 0.05 m to 4 m (reflectivity 10%, black paper 600 × 2,000 mm) ■ Scan angle range : -50° to -45° and +45° to +50° 0.05 m to 8 m (reflectivity 90%, white-kent sheet 600 × 2,000 mm) / 0.05 m to 3 m (reflectivity 10%, black paper 600 × 2,000 mm) Maximum measurement distance : 30 m Minimum detectable size : 35 mm (at 4 m), 90 mm (at 10 m)
Scan Angle	100°
Vertical Angles	Layer 1 : 0° / Layer 2 : +3° / Layer 3 : -3° ※Vertical angle in the front step
Scan Speed	Multi-layer mode : 16.7 ms (motor speed : 1,200 rpm / 3 layers) Single-layer mode : 50 ms
Measurement Resolution	1 mm
Angular Resolution	0.125°
Startup Time	Within 10 seconds (may exceed under specific startup conditions)
Outputs	Total 7 outputs (NPN open collector output, 30VDC, 100mA MAX, residual voltage < 2V) Output 1-5 : OFF in case of detection within region 1-5 Output 6 : ON during normal operation, OFF during malfunction Output 7 : Reference output (ON during normal operation) Note : Outputs 1 to 5 and Output 7 are switched OFF during a malfunction state
Inputs	Total 1 input (photo-coupler input) Input 1: For switching the detection area
Output Response Time	Multi-layer mode : 37 ms *2 Single-layer mode : 70 ms Note : Additional ON/OFF delay settings are possible (LA mode only).
Area Switching Time	Multi-layer mode : 24 ms Single-layer mode : 57 ms
Interface	Ethernet 100BASE-TX
LED Display	Power indicator (blue) : Lights up during normal operation, blinks during startup, configuration, reference output operation, and malfunction states. Output indicators 1 to 5 (orange) : Light up when detection occurs in the area (off during LX mode). Blink patterns indicate malfunction status.
Connection	Power and I/O : Connector (1 m), Ethernet : RJ45 (1 m)
Ambient Operating Temperature	-10 to +50 °C, below 85% RH (without dew, frost)
Storage Temperature	-30 to +70 °C, below 85% RH (without dew, frost)
Ambient Light *3	Less than 100,000 lx (indirect light)
Vibration Resistance	10-55 Hz, double amplitude 1.5 mm, 2 hours each in X, Y, Z directions 55-200 Hz, 98 m/s ² (10 G), 2-minute sweep, 1 hour each in X, Y, Z directions
Shock Resistance	196 m/s ² (20 G), X, Y, Z directions, 10 times each
Electromagnetic Compatibility (EMC)	EN 55011: 2016+A1 : 2017+A2 : 2021 EN IEC 61000-6-4 : 2019 EN IEC 61000-6-2 : 2019
Protective Structure	IP65
Weight	100g (excluding cable)
Material	Optical window : Acrylic / Bottom case : Aluminum / Top cover : Polycarbonate
Dimensions (W×D×H)	80 mm × 65 mm × 20 mm
IMU *4	3-axis acceleration and 3-axis angular (TDK InvenSense : IIM-42652) Relative position to measurement origin : X : 17.1 mm, Y : 8.2 mm, Z : -8.3 mm
Communication Protocol *5	SCIP (TCP/UDP), VSSP (TCP)

*1 : Under factory standard testing conditions using a white-kent sheet.

*2 : The slowest response time applies when continuous detection is possible in multi-layer mode. If continuous detection is not possible, the response time will be the same as in single-layer mode.

*3 : Detection is not guaranteed under direct sunlight or strong ambient light. Ensure that no direct sunlight enters the sensor.

*4 : For details, refer to the data sheet.

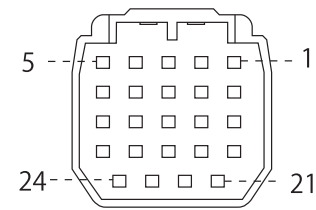
*5 : For details, refer to the respective communication specifications (C-42-04609, C-42-04610).

Connection

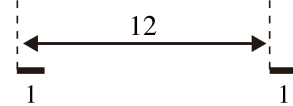
Power source, I/O cable

Connector : Hirose / DF62B-24EP-2.2C

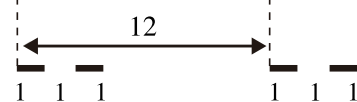
Cable length 1000 mm



Short point 1 : [mm]



Short point 2 :



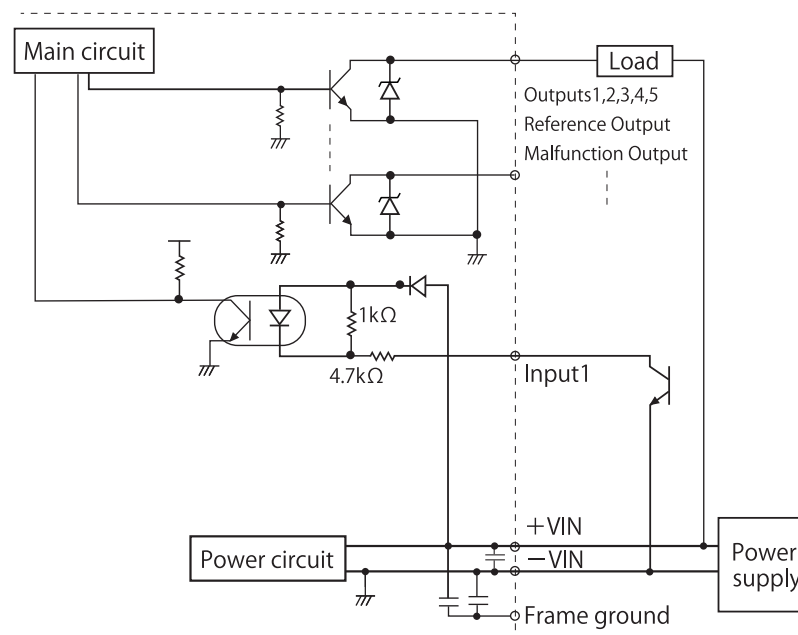
PIN No.	Wire color	Function
1	Orange (Red short point 1)	+VIN (12VDC / 24VDC)
2	Orange (Black short point 1)	-VIN
3	Gray (Red short point 1)	Output 1
4	Gray (Black short point 1)	Output 2
5	White (Red short point 1)	Output 3
6	White (Black short point 1)	Output 4
7	Yellow (Red short point 1)	Output 5
10	Pink (Black short point 1)	Input 1
15	White (Red short point 2)	Reference Output
16	White (Black short point 2)	Malfunction Output

Ethernet cable

Cable length 1000 mm / RJ45

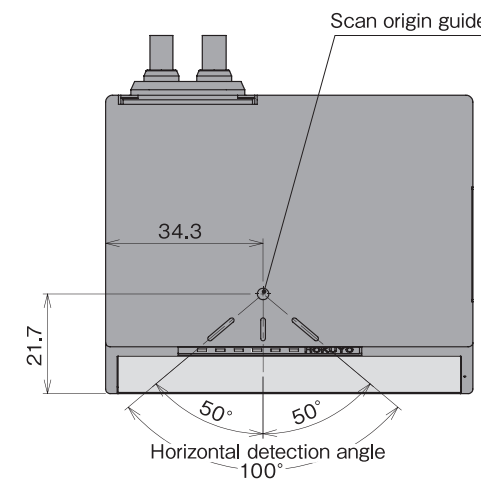
Wire color	Signal
White(Orange)	TX+
Orange	TX-
White(Green)	RX+
Green	RX-

I/O Circuit

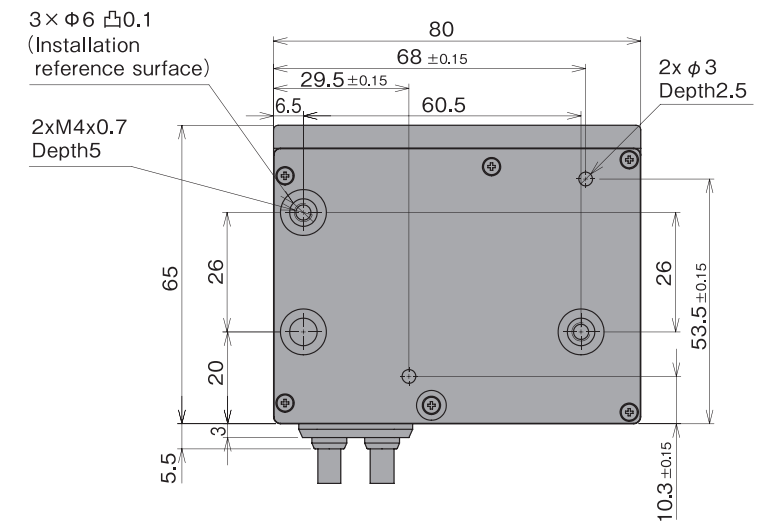


External Dimension

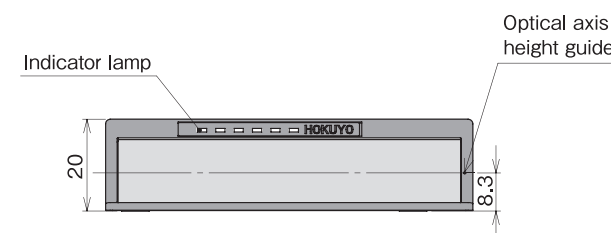
Top view



Bottom view

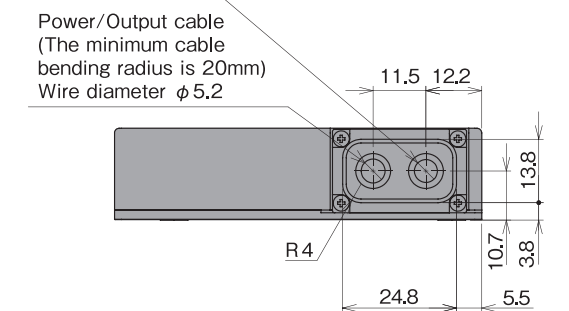


Front view



Rear view

Ethernet cable
(The minimum cable bending radius is 20mm)
Wire diameter $\phi 5$



Side view

