

NEW Technology

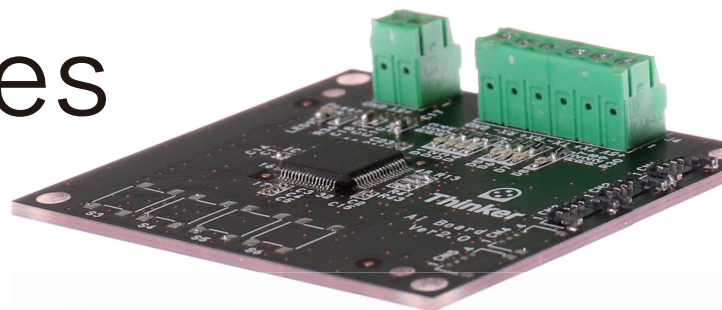
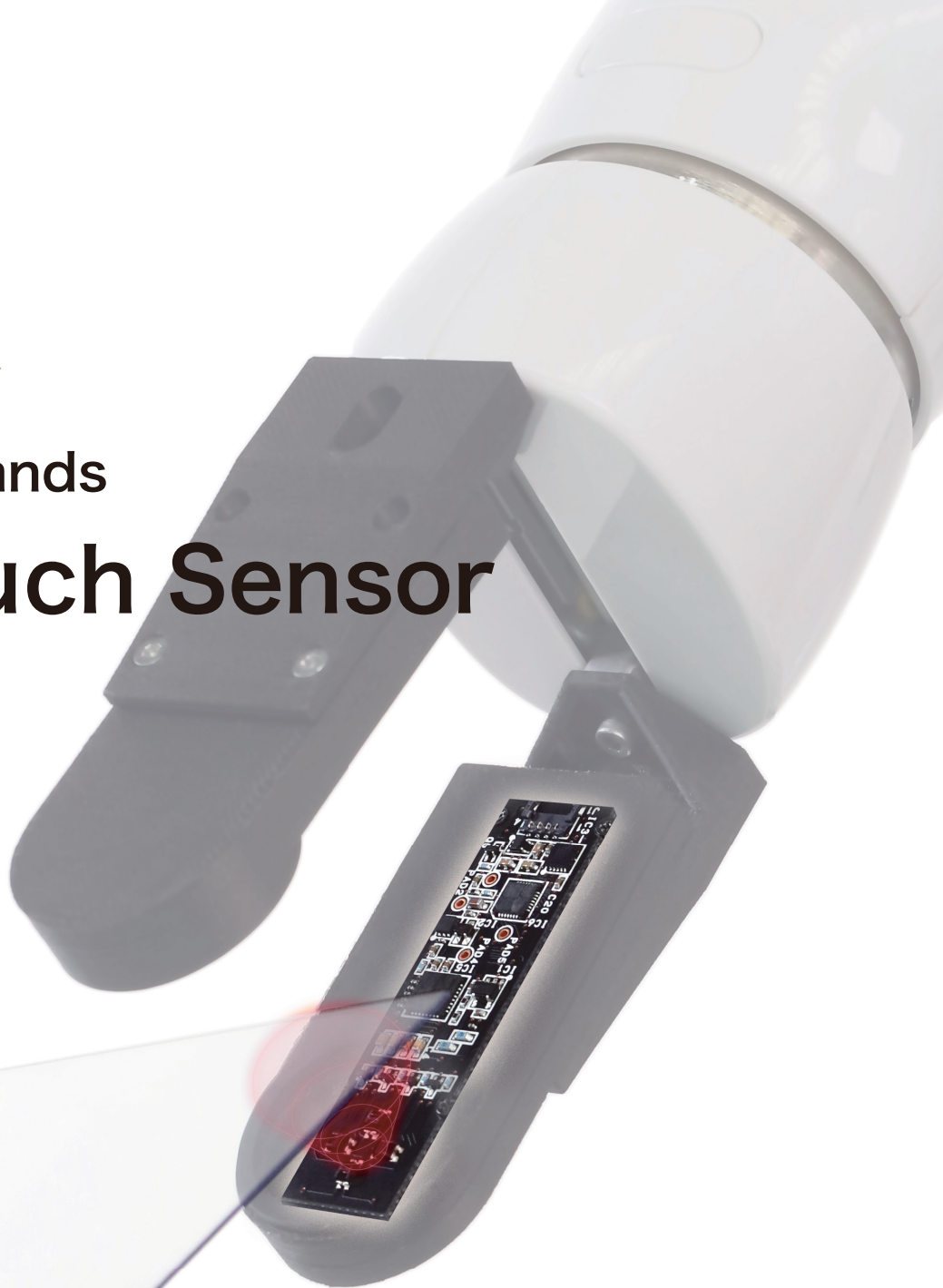
For Robot Hands

Pre-Touch Sensor

TK-01

Pushing
the boundaries
of grasping

Using a unique infrared sensing technology, the position and shape of the object can be detected without contact. A simple teaching system enables the robot to grasp objects that were previously difficult to handle.



Operation sites with robots face various obstacles.

- Four issues hindering the implementation of robots -

Inability to grasp some objects

- Cameras have trouble recognizing transparent and reflective objects.
- Human hands can easily handle spoons, glass cups, plastic bottles, etc., but robots can't.

Teaching can be troublesome

- Teaching requires the skill of an expert.
- Improper teaching leads to robot damage and reduced productivity.

Change of set-up is laborious

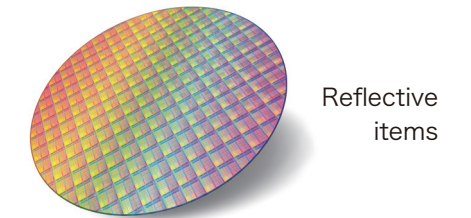
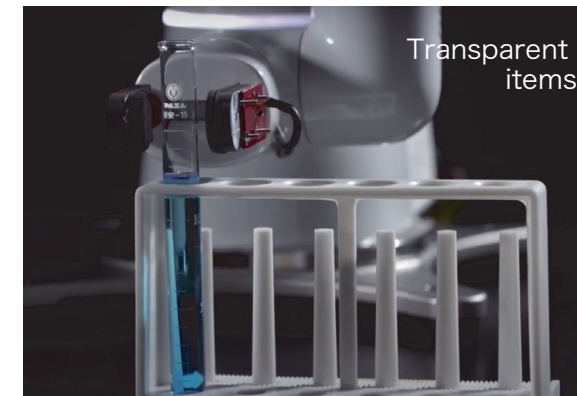
- When handling a variety of types, teaching is required for each type separately.
- Altering the setup costs time and labor, posing challenges for boosting productivity if the range of products is wide.

High cost

- Sourcing and training personnel to conduct teaching is costly
- Improving picking rates requires expensive investments in image recognition cameras and distance measurement sensors.

*Teaching: The process of training a robot to perform a task.

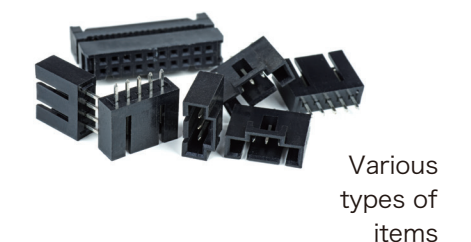
01 Objects that were difficult to handle, now handled with ease



Unique infrared mechanism equipped with a lightweight AI model

Pre-Touch Sensor TK-01 enables the picking of objects that camera systems and conventional optical sensors are unable to handle. The ability to properly grasp not only transparent and reflective objects but also uneven and soft objects such as vegetables, opens up the possibility of introducing robots into areas and applications where they have not been utilized before.

02 Teaching made simple boosts productivity



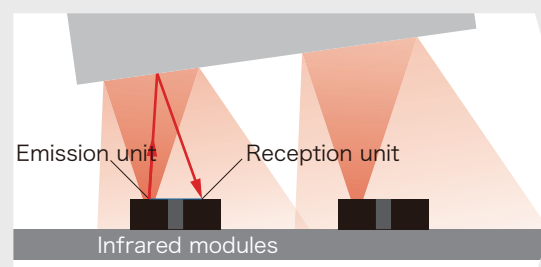
Measures the distance to the object and the inclination of the gripping surface with high accuracy

Robot hands with the Pre-Touch Sensor TK-01 can fine-tune the fingertip position based on measurement results. This enables operation after just a brief teaching period. The need for task-specific algorithms can also be minimized, reducing Sler's setup work and the burden on on-site workers. The time needed to change the set-up can be reduced, boosting productivity and lowering multi-product line production costs.

Our pre-touch sensor eliminates these obstacles with its two key features

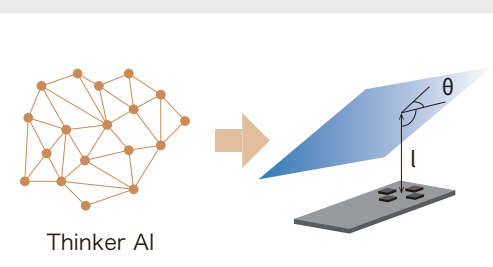
Pre-touch Sensor Mechanism

Diffused emission and reception of infrared light



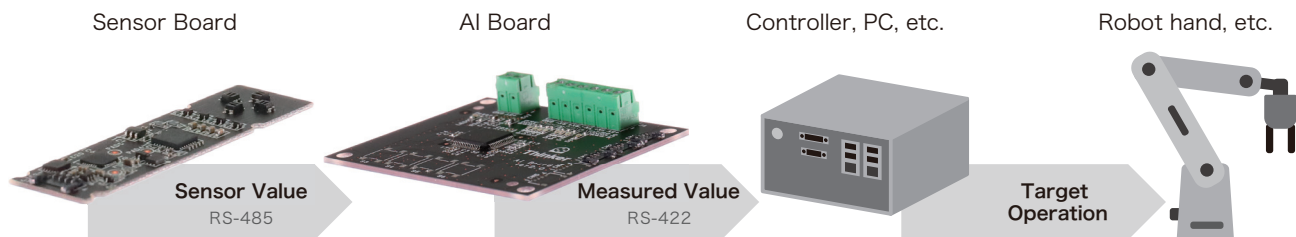
Four infrared modules measure the amount of reflected light corresponding to the distance and angle of the object.

Lightweight AI model to estimate distances and angles



Thinker AI processes the reflected light levels, which differ across materials, to determine distances and angles.

System Configuration



Specifications

Measured Data	Distance, Pitch and Yaw Angle
Detection Range	1.5 ~ 20.0mm (RES: 0.1mm)
Angle Range	-20.0deg ~ +20.0deg (RES: 0.5deg)
Sensor Board Size	55mm(L) × 15mm(W) × 2.5mm(D)
AI Board Size	55mm(L) × 60mm(W) × 14mm(D)
Transmission Method	RS-422
Ambient Temp.	0 °C ~ 40 °C (no condensation)
Source Voltage	5V
Max Response Speed	ca. 5ms

* Specifications may change without notice due to revisions.

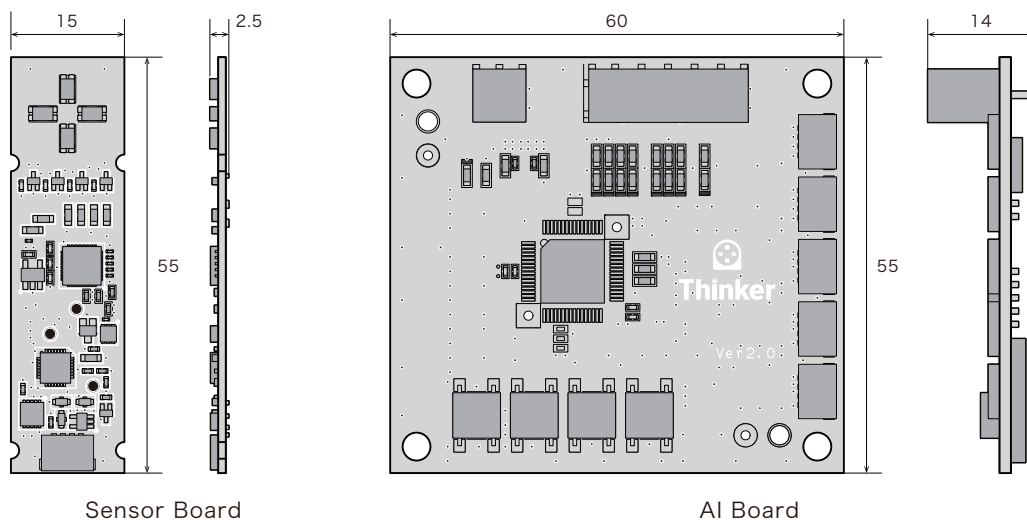
Contents

- Sensor Board x1
- AI Board x1
- RS-485 Cable 0.5m x1, 1m x1
- Storage case x1
- User Manual, Product Specifications x1

* RS-422 Transmission cable not included.

Dimensions

(unit : mm)



DUE TO CONTINUOUS PRODUCT IMPROVEMENT, THE DESIGN AND TECHNICAL SPECIFICATIONS
ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE

TASHIKA CO., LTD.

1-12, Kaiyo-cho, Ashiya, Hyogo
659-0035 Japan
Tel: + 81-797-23-9035 Fax: + 81-797-23-2105
e-mail: sales@tashika.co.jp URL: www.tashika.co.jp

