

# THK

The World's First Process-Optimizing Robot

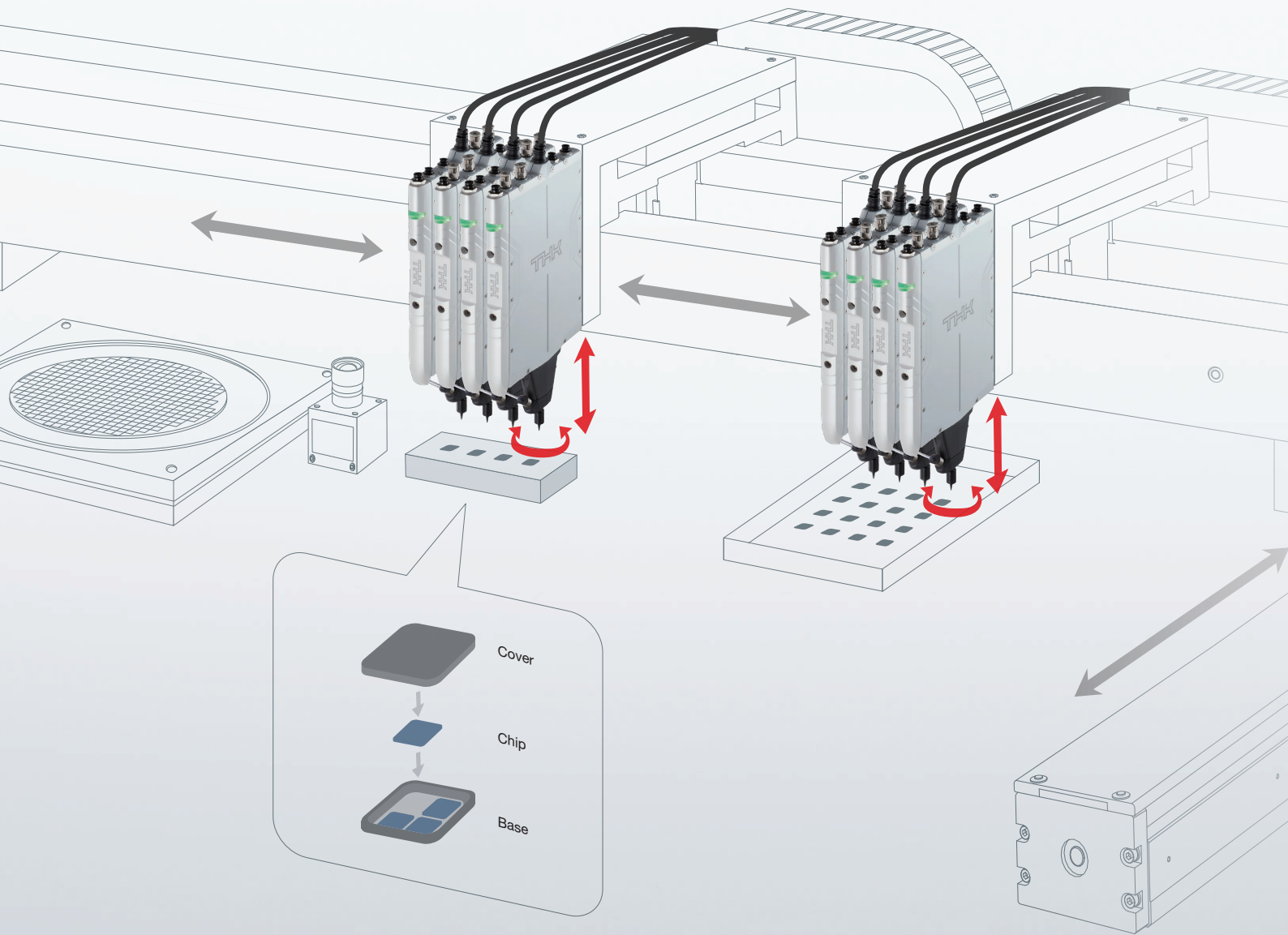
Now introducing the Model PPR-LR3-LF1  
designed for use with position control!

**SMART SERIES**

Pick and Place Robot

# PPR





# Competitive strength on the production floor.

— A robot optimized for pick and place applications —

An all-in-one model equipped with a drive mechanism, sensors, solenoid valve, and control module. Reduces both workpiece damage and cycle time, contributing to improved productivity.

## Reduced workpiece damage

THK's unique sensing technology detects contact between the nozzle and workpiece.

Minimum detection

**0.15 N**

The high-speed feedback control quickly stops the nozzle the moment it contacts the workpiece.

Impact on the workpiece

**0.3 N or less**

\* Speed at which the workpiece is contacted: 1 mm/s

## Reduced cycle time

The integrated control of the motor, sensors, and pneumatic device reduces the number of communications with the host device, contributing to shortened cycle time.

## Visualizes the pick and place process

Visualizes various sensor information such as force, flow rate, pressure, and temperature.

The cause of trouble can be investigated, contributing to quality stabilization.

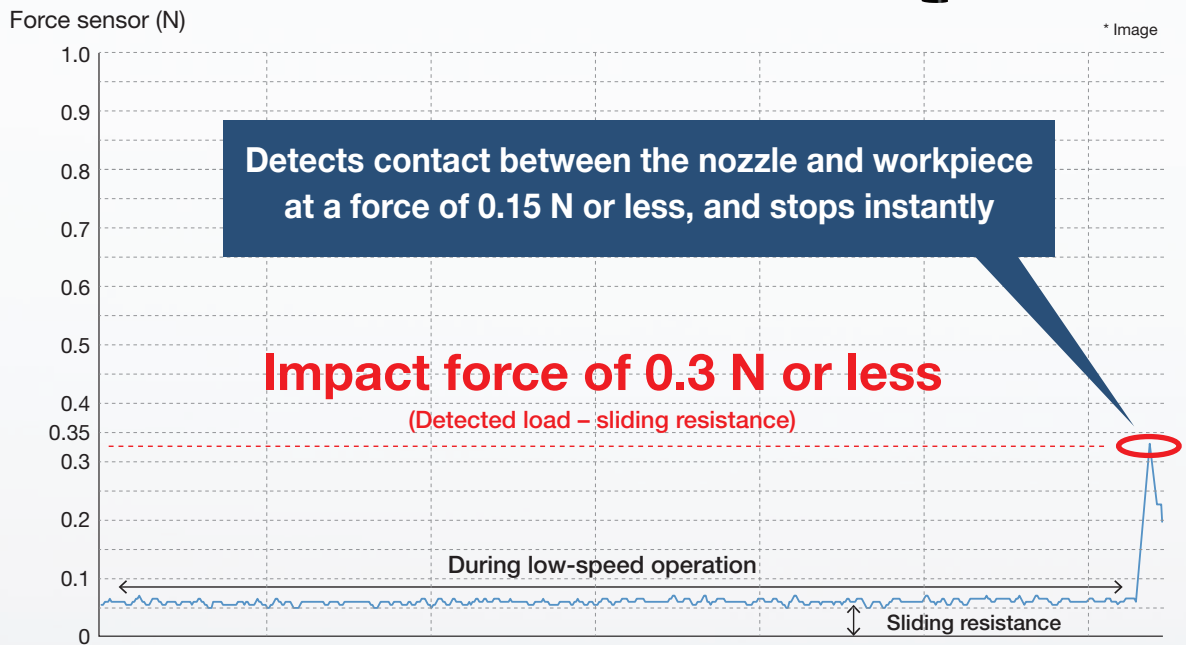
# Reduced workpiece damage

## The force sensor provides instantaneous contact stop

THK's unique sensing technology detects minute forces when the workpiece comes into contact with the nozzle, which has conventionally been difficult.

The feedback control makes it possible to achieve both high-speed operation and reduced workpiece damage.

\* Force sensor resolution: 0.01 N



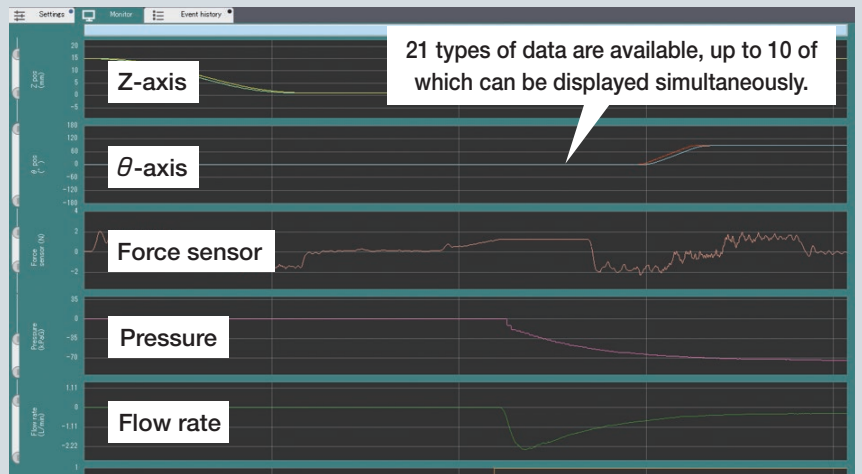
# Visualizes the pick and place process

Setting/monitoring software "T-ACT"

Obtaining waveforms by monitor function

All sensor information can be monitored in waveform, including the force, pressure, flow rate, and position sensors. The information is displayed for each pick-and-place cycle.

\* CSV output is also available



# Reduced cycle time

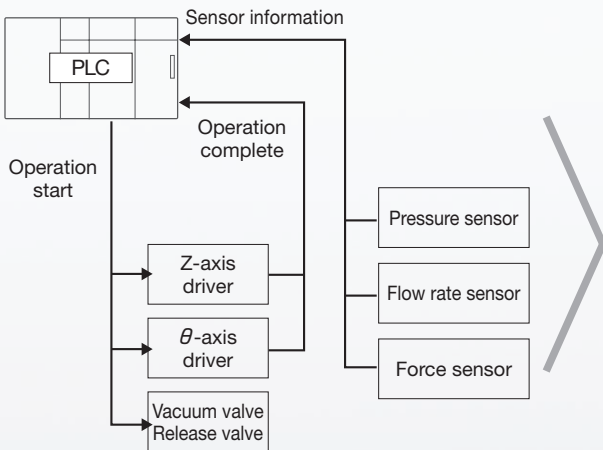
## The integrated control system reduces time loss

The PPR enables sequence control with each motor and sensor integrated. Compared to conventional PLC-based control, the number of communications is reduced and time loss is minimized.



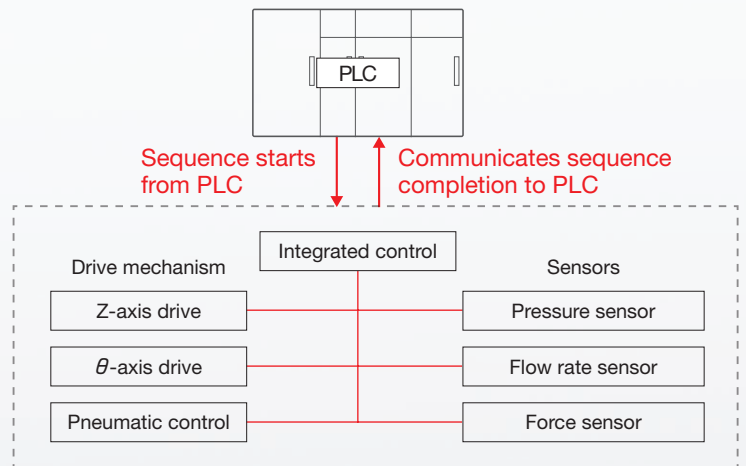
### Conventional system

All linked operations and timings are managed by PLC



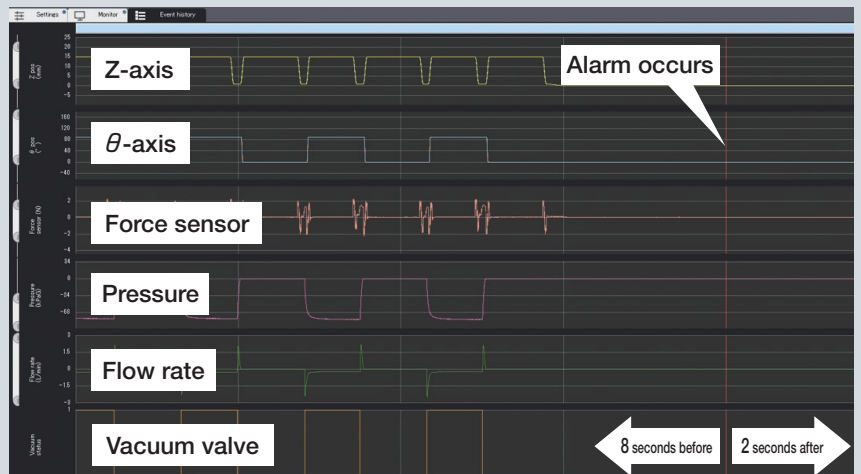
### PPR system

Linked operations and timings are completed with integrated control



### Error logging function

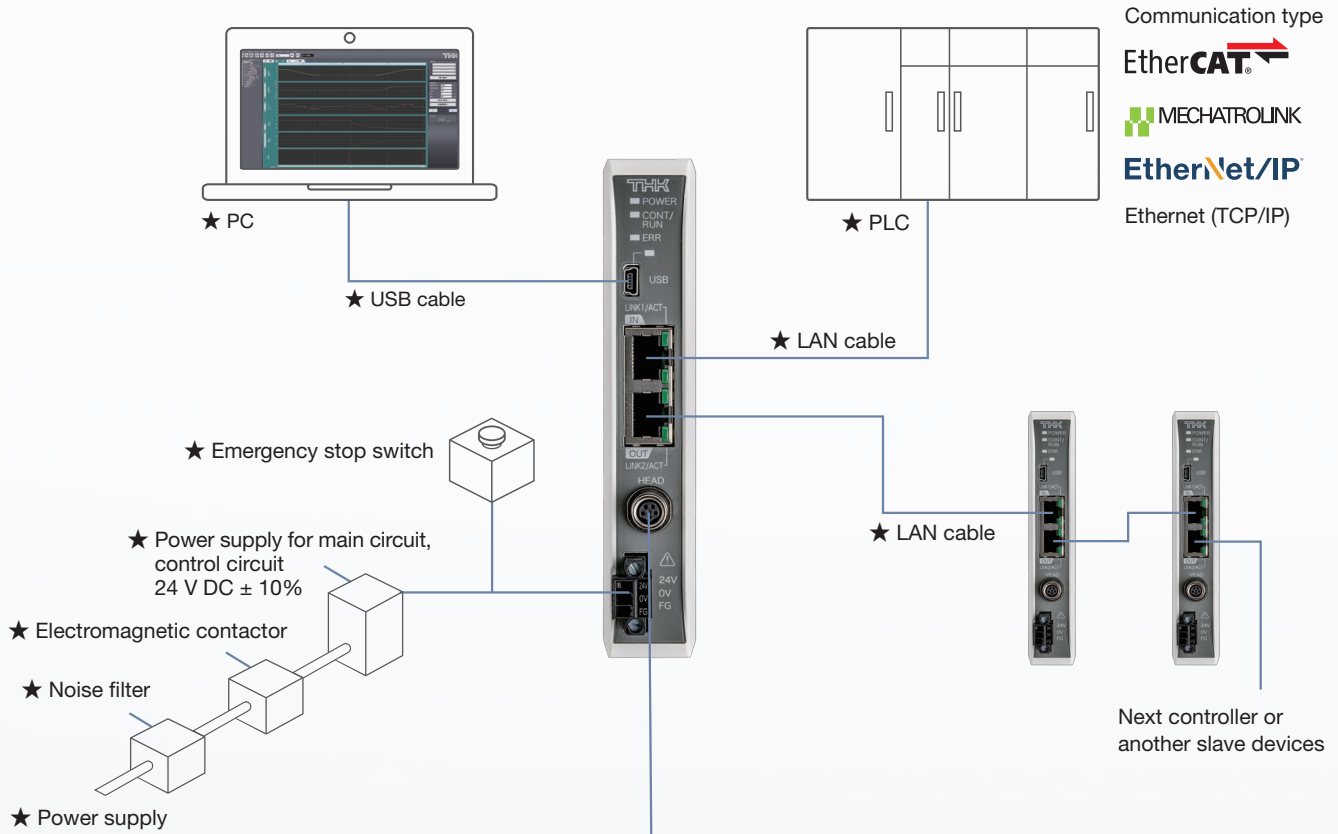
Sensor information can be logged when an alarm occurs or at a specified timing. Data at a sampling cycle of 0.1 ms can be acquired for a 10-second period.  
 \* Data 8 seconds before and 2 seconds after alarm



# System Configuration

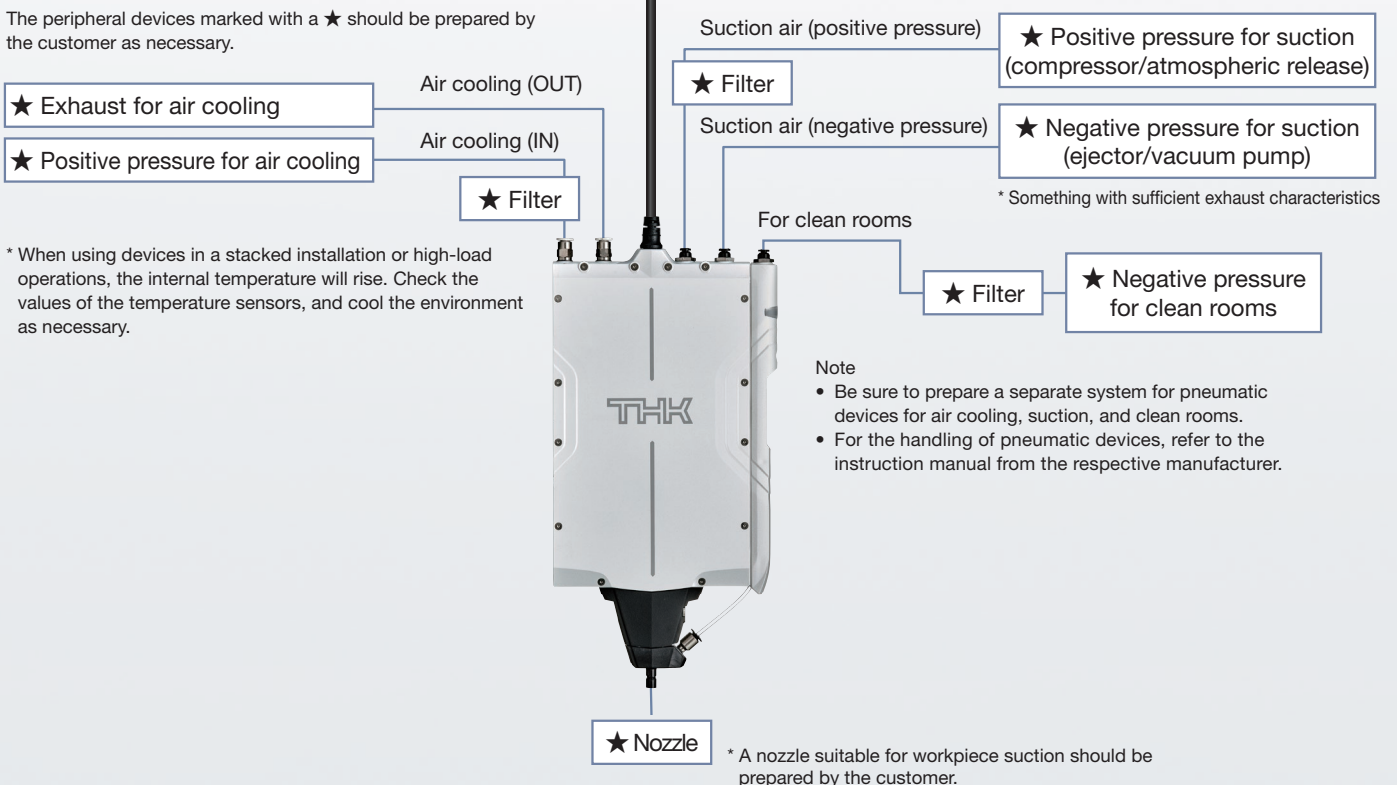
## Electrical system configuration

The peripheral devices marked with a ★ should be prepared by the customer as necessary.



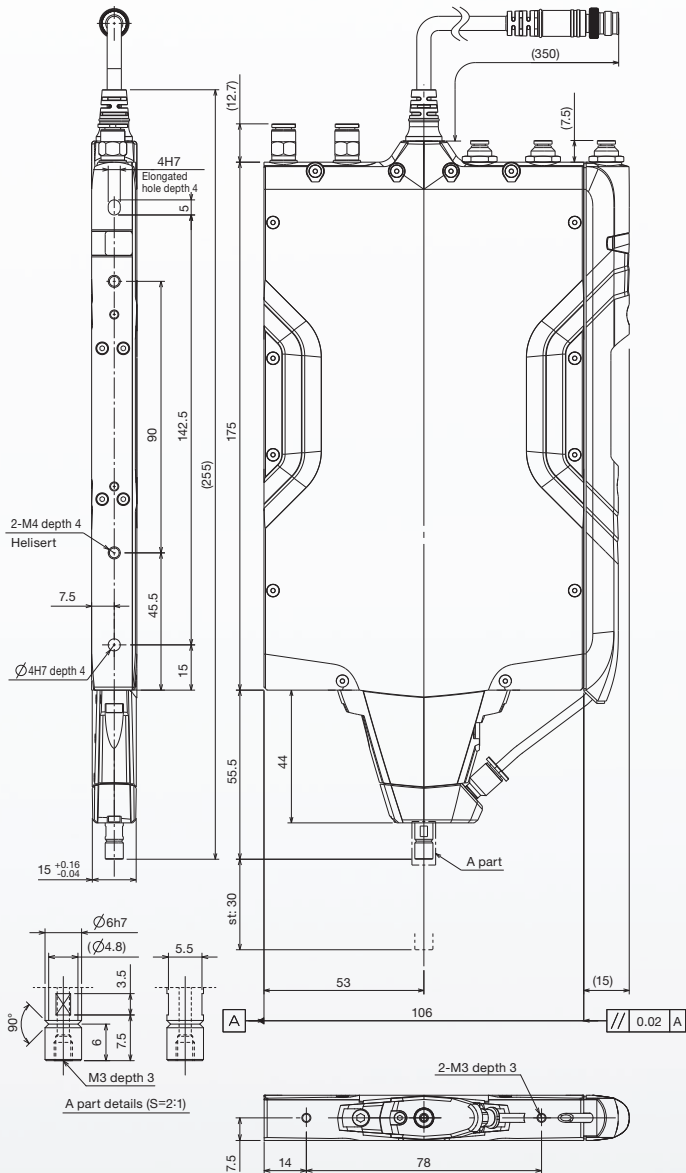
## Pneumatic system configuration

The peripheral devices marked with a ★ should be prepared by the customer as necessary.

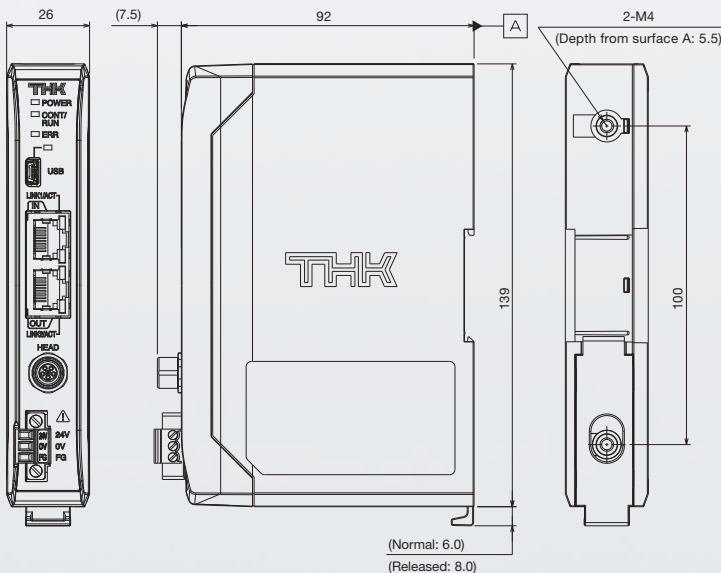


# Specifications

## Head external dimensions



## Controller external dimensions



## Product Models

Product	Model		
Head	PPR-LR3	PPR-LR3-LF1 <sup>1</sup> (for use with position control)	
Controller	PPR-CTR3		
Dedicated head cable	PPR-FXC1 (1 m)	PPR-FXC3 (3 m)	PPR-FXC5 (5 m)

<sup>1</sup> PPR-LR3-LF1 cannot use features that require a force sensor.

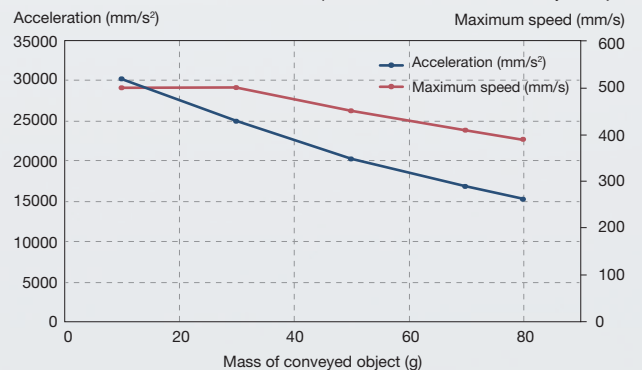
## Basic Specifications

Item		Specifications	
Head	Z-axis	Stroke	30 (mm)
		Resolution	1 (µm)
		Positioning repeatability	±1 (µm)
		Maximum speed	500 (mm/s)
		Rated thrust <sup>2</sup>	3.3 (N)
		Maximum thrust <sup>2</sup>	5.6 (N)
		Force resolution	0.01 (N)
		Load capacity	80 (g)
		Movable part mass	115 (g)
		Head	θ-axis
Resolution	0.01 (deg)		
Positioning accuracy	0.06 (deg/180 deg) or less		
Axis runout accuracy <sup>3</sup>	50 (µm) or less		
Maximum rotational speed	1400 (rpm)		
Rated torque <sup>2</sup>	1.6 (mN·m)		
Maximum torque <sup>2</sup>	5.2 (mN·m)		
Maximum allowable inertia	2 (kg·mm <sup>2</sup> )		
Movable part inertia	0.1 (kg·mm <sup>2</sup> )		
Operating/storage temperature			
Operating/storage humidity		20 to 80% RH / 90% RH or less (No condensation)	
Mass		Approx. 620 (g)	
Controller	Input power supply	24 (V) ±10%	
	Power supply capacity	4 (A)	
	Supported networks	EtherCAT, MECHATROLINK-III, EtherNet/IP, Ethernet (TCP/IP)	
	Operating/storage temperature	0 to 50°C / -10 to 60°C (No freezing)	
	Operating/storage humidity	90%RH or less / 90%RH or less (No condensation)	
	Mass	Approx. 190 (g)	
	Standards	CE	

<sup>2</sup> The values shown are those when the average temperature of the armature winding is 100°C. For items other than the relevant parts, the values are at a temperature of 20°C.

<sup>3</sup> The values shown are those when the shaft is extended as far as possible (st: 30 mm).

## Z-axis drive: Acceleration and maximum speed relative to mass of conveyed object



\* The above graph assumes a stroke of 10 mm and a duty cycle of 70%.

# SMART SERIES

## Pick and Place Robot PPR

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- The actual products may differ from the illustrations and photographs in this catalog.
  - Outward appearances and specifications are subject to change without notice for the purpose of improvement. Please consult with THK before using.
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### Precautions for Safety

**In order to promote the safe use of the product, be certain to read the instruction manual carefully, ensure you fully understand its contents, and observe precautions for safety and the installation and operating environments.**

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