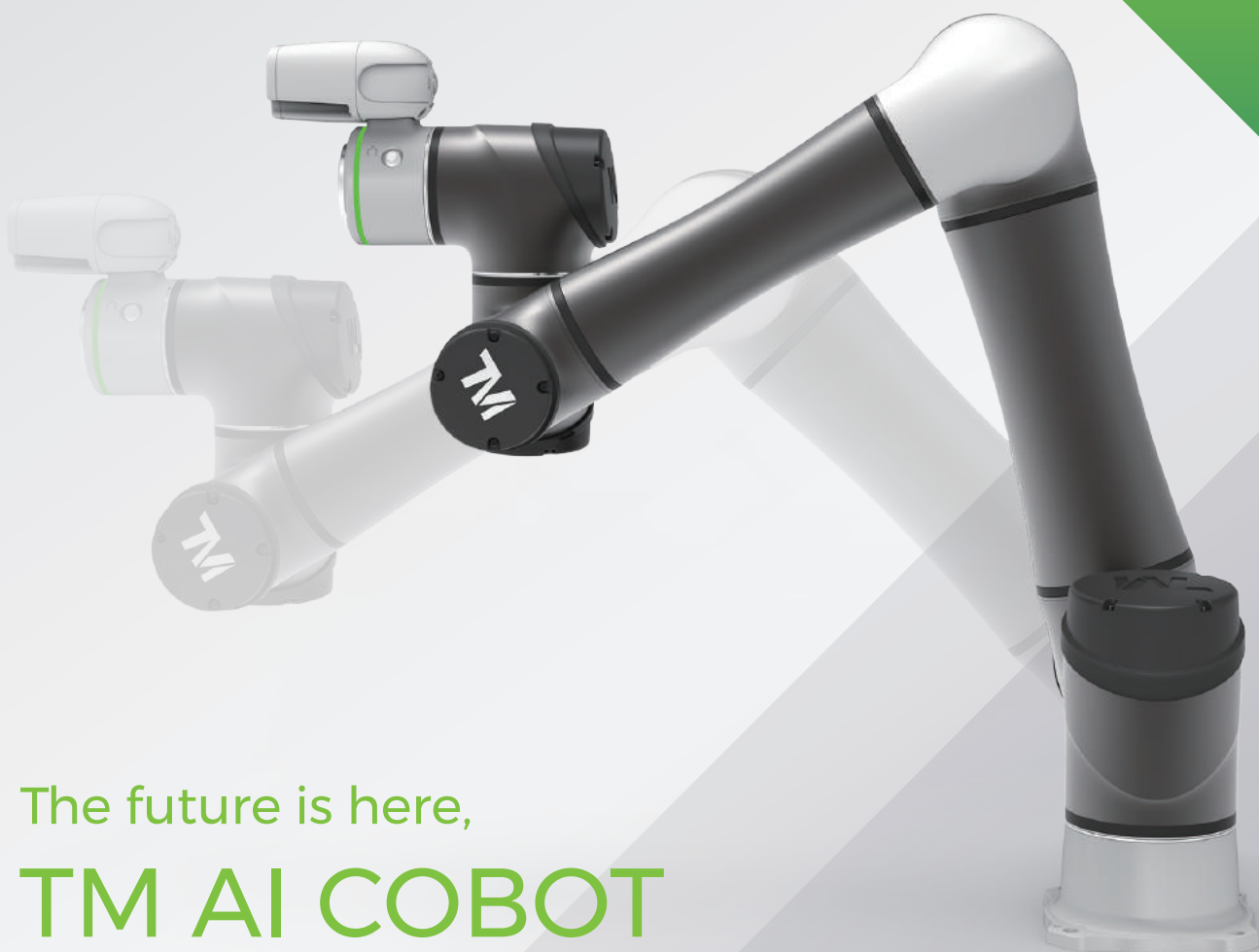All in **ONE**

The future is here,

TM AI COBOT

Native AI engine + Robotic arm + Vision system

TM Robot Distributor

GESSMANN®

What Is An AI Cobot?

AI Cobot is a collaborative robot that seamlessly blends three technological domains together - AI, Vision, and Cobot. This integration effectively combines the functions of a 'brain,' 'eyes,' and 'hands,' enabling the cobot to perform visual tasks, making judgments, and executing actions much like a human. Automating processes not only saves time and resources but also promotes effective human-robot collaboration, enhancing overall production quality, and adds a significant value to your factory.

Fifteen years ago, collaborative robots introduced the concept of humans and robots working together. Today, the new generation of AI collaborative robots has turned the dream of having intelligent and reliable partners into a reality.

AI COBOT

+

SOFTWARE

TMflow™

<u>Additional Software Features</u>
- TMcraft
- TMvision™
- TM 3Dvision™

TM AI+™ **Training Server**

TM Image Manager

TM AI+™ **AOI Edge**

TMstudio Pro

Industry Applications

TM AI Cobot offers exceptional performance and compatibility. Equipped with a built-in vision system, it enables the robot to perceive its surroundings. Its AI brain also translates image data into precise commands for tasks such as positioning and detection, seamlessly integrating with the robot arm to execute tasks efficiently.

In the era of AI, **TM AI Cobot** is the best choice to for realizing smart factories.

Electronics Industry

Food Industry

CNC

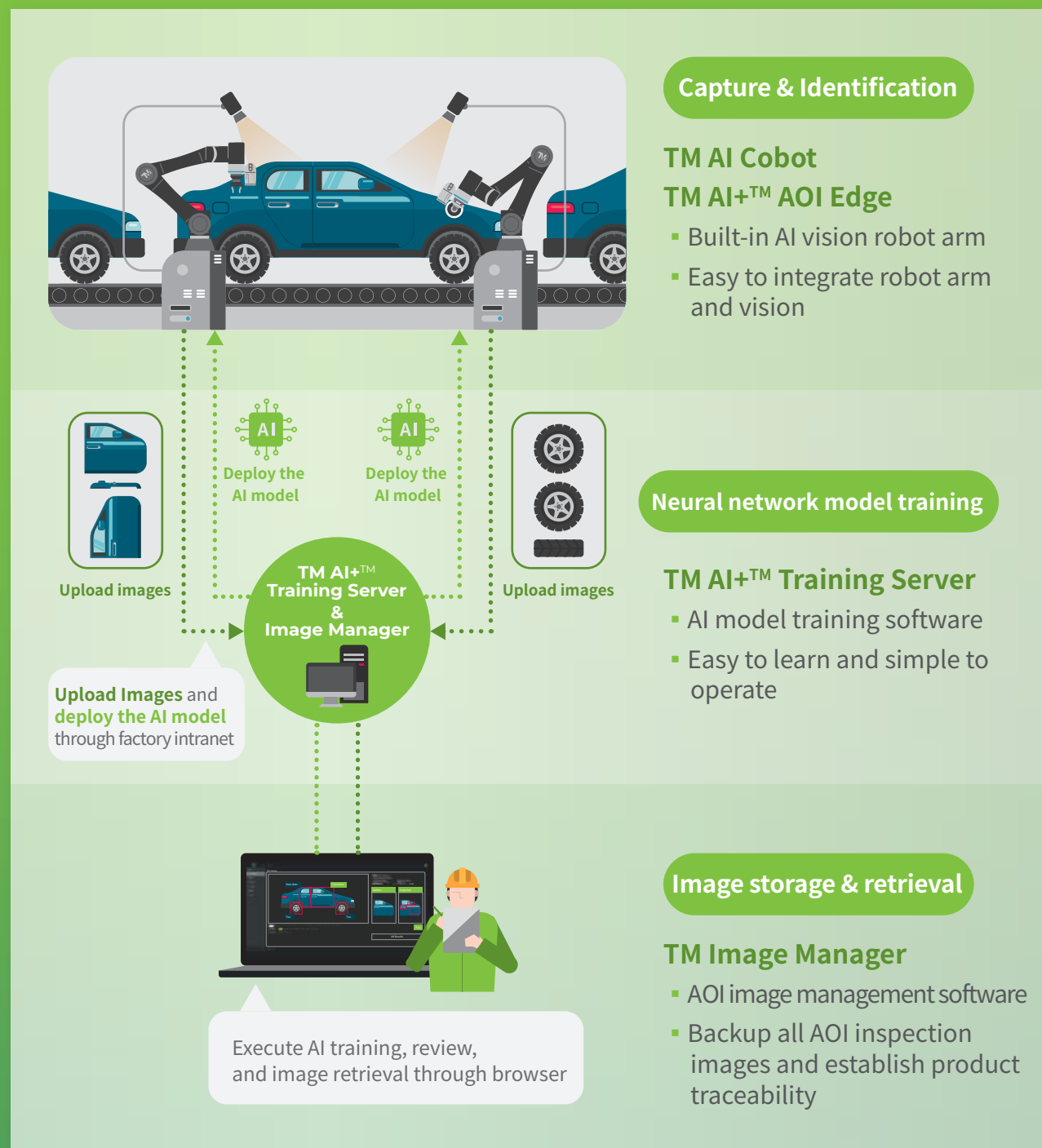## Warehousing Industry

Semiconductor Industry

Machinery Industry

AI Cobot Application Scenario

The graphical interface of TM AI Cobot's integrated vision system eliminates the need for programming and enables a seamless process from image collection and annotation to training and deployment. It serves as an ideal solution for small and medium-sized enterprises (SMEs) lacking an AI or software division. Throughout production, AI Cobot accumulates valuable production history data, empowering companies to track, analyze, and integrate this information to proactively prevent defects, enhance quality, and reduce costs.

One-stop AI Solution

Capture & Identification

TM AI Cobot
TM AI+™ AOI Edge

- Built-in AI vision robot arm
- Easy to integrate robot arm and vision

Deploy the AI model

Deploy the AI model

Upload images

Upload images

TM AI+™ Training Server & Image Manager

Upload Images and **deploy the AI model** through factory intranet

Neural network model training

TM AI+™ Training Server

- AI model training software
- Easy to learn and simple to operate

Image storage & retrieval

TM Image Manager

- AOI image management software
- Backup all AOI inspection images and establish product traceability

Execute AI training, review, and image retrieval through browser

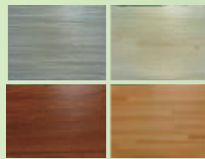# Application Examples

Assembly Inspection

- Checking if the tires are wrapped with PE film

- Checking if all wires are connected correctly
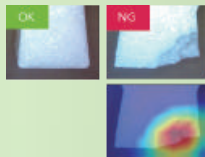
Classification

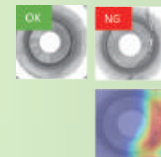- Sorting different materials for wooden furniture

- Recognition of pizza flavor and crust

Defects Inspection

- Identifying objects with damage on the edge

- Checking if there are metal scrap on the surface

Counting /Detection

- Counting the amount of the object in the tray

- Objects detection and 3D positioning
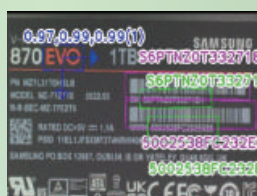
Scratches /Cuts /Dents Inspection

- Checking scratches on DRAM gold fingers

- Checking the dents on metal parts

AI OCR

- Label text reading

- Label text reading

TM AI Cobot
New Generation AI Cobot **S Series**

TM5**S**
- Payload: 5 kg
- Reach: 900 mm
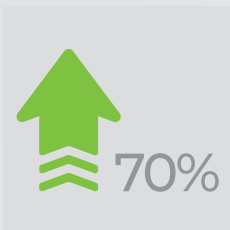
TM7**S**
- Payload: 7 kg
- Reach: 700 mm

TM12**S**
- Payload: 12 kg
- Reach: 1300 mm

Enhanced motor speed! **25%** faster cycle time
- The joint speed of the 6th axis is increased from 225°/s to 450°/s
- Improved cycle time by 25%*, enchaning efficiency

Repeatability increased by up to **70%** to **0.03** mm
- Repeatability of TM5S/TM7S/TM12S/TM14S is 0.03mm, a 70%* improvement!

70%

Control box is upgraded to **IP54**
- Control box has a IP54 rating and is suitable for harsh environment applications
- Effective protection against dust and water

IP54

*In comparison with the previous version

TM14**S**

- Payload: 14 kg
- Reach: 1100 mm

TM25**S**

- Payload: 25 kg
- Reach: 1902 mm

Brand new **Robot Stick** with Enabling Switch and RESET button

- Robot Stick with 3-position Enabling Switch, RESET button for safer operation
- Combine with TM Screen for easy teaching, debugging, and control via teach pendant and TM Pen

Up to 31 safety functions certified by **TÜV** such as PL=d, Cat.3

- TÜV-certified safety features in accordance with ISO 13849-1 and international safety certification ISO 10218-1
- Complies with SGS-certified UL & CSA in North America and CE in Europe
- Enables easy safety assessments with flexible safety functions that lower the cost of safety control configuration
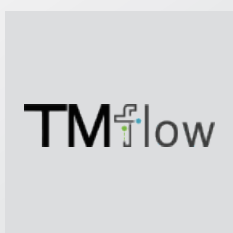
TMflow™ 2 Series: Safe, Easy, and More Intelligent

- Innovative graphical UI with more exclusive software
- Include dozens of user-friendly function nodes to close the gap between integration and robot application

TM AI Cobot
AI Collaborative Robot

TM5-700
- Payload: 6 kg
- Reach: 700 mm

TM5-900
- Payload: 4 kg
- Reach: 900 mm

TM12
- Payload: 12 kg
- Reach: 1300 mm

Industries Application

3D Bin Picking	AGV	Pick & Place	Assembly	Packaging
Palletizing	Conveyor Tracking	Machine Tending	Quality Inspection	PCB Handling
Polishing & Deburring	Glue Dispensing	Injection Molding	Screw Driving	Welding

TM14
- Payload: 14 kg
- Reach: 1100 mm

TM16
- Payload: 16 kg
- Reach: 900 mm

TM20
- Payload: 20 kg
- Reach: 1300 mm

TM5S/TM5-900

3D Bin Picking, AGV, Pick & Place, Assembly, Packaging, Labeling, Palletizing, Conveyor Tracking, Machine Tending, Quality Inspection, PCB Handling, Polishing & Deburring, Glue Dispensing, Screwing, Welding

TM7S/ TM5-700

3D Bin Picking, Pick & Place, Assembly, Labeling, Quality Inspection, PCB Handling, Polishing & Deburring, Screwing

TM12S/ TM14S/ TM12/ TM14

3D Bin Picking, AGV, Pick & Place, Packaging, Palletizing, Conveyor Tracking, Machine Tending, PCB Handling, Polishing & Deburring, Screwing, Welding

TM25S/ TM16/ TM20

3D Bin Picking, AGV, Pick & Place, Packaging, Palletizing, Conveyor Tracking, Machine Tending, Polishing & Deburring, Injection Molding, Screwing, Welding

TMflow™

More Freedom to Program the Cobot

TMflow™ is a user-friendly software that allows you to create and edit robot tasks through a graphical interface using a series of function nodes, making it easy for first-time users to learn our flow-based programming without any robotics experience.

If you prefer non-graphical programming, experience a more flexible way to program by using the new Script Node and Script Project. The Script feature allows experienced engineers to program with complex logic, and freely edit robot tasks by compiling codes. Embrace the method that suits you best and enjoy coding with unparalleled freedom!
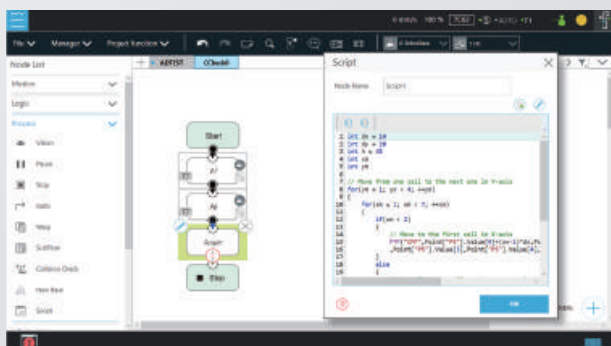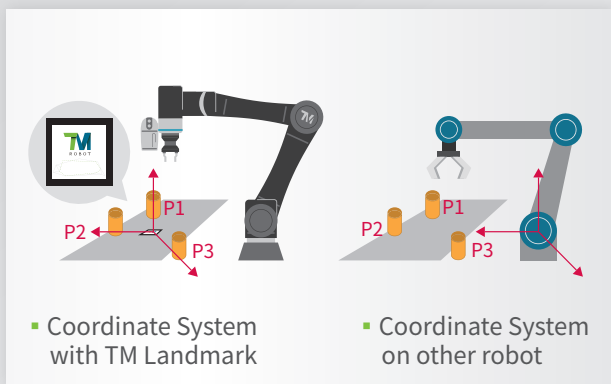

▪ Flow-based UI
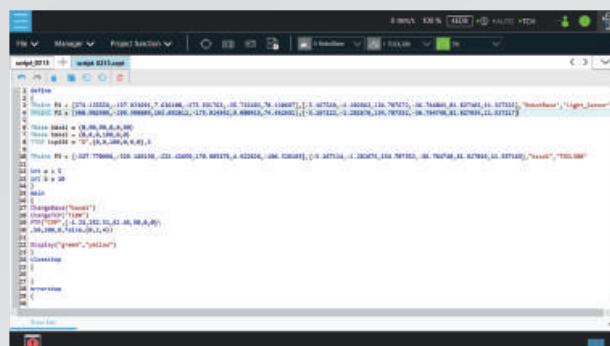
▪ Script for Complex Logical Programming

Built-in vision

▪ Coordinate System with TM Landmark

▪ Coordinate System on other robot

TM Landmark

General robot has the coordinate system built on its base, when the relative position between the objects and the robot changes, the robot require re-adjustment. With TM Landmark, the coordinate system is built on the landmark, the robot will only need to scan the landmark and the coordinate info can be updated without re-adjustment. This is especially recommended to robot with AGV!

Visual Calibration

TM Calibration board can largely reduce the complexity of visual calibration process. Whether users are using EIH, ETH or Upward-looking camera, just simply place the calibration board under the camera, press the button and TMvision™ will do all the work!
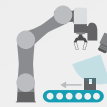
Built-in vision application

Positioning

Eye-in-Hand   Eye-to-Hand   Upward-looking   Conveyor Tracking

Identification

Barcode/
QR code Reading   OCR

Measurement

Distance and Angle
Measurement   Caliper   Count (Edge)

AI inspection

Image Classification   Object Detection   Semantic Segmentation   Anomaly Detection

TMcraft

Create Personalized Interface with TMcraft for 2nd Development

TMcraft is a new architecture that allows you to create your own customized UI or background program and embed it onto TMflow™, our cobot programming software. It offers the freedom to develop third-party plug-and-play applications using **C#** and **WPF** development. Additionally, a wizard is available to facilitate the development of high-level applications, such as welding, palletizing, and sanding, making it easier to customize and create the applications you need.
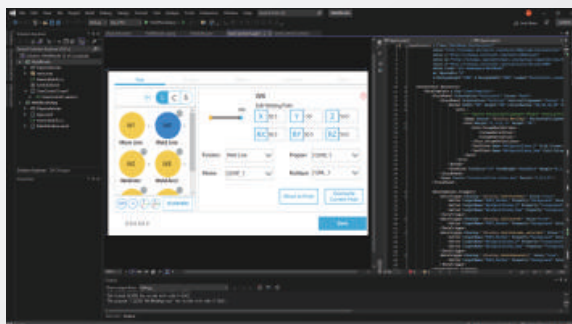
▪ Developers can develop nodes in their own environment

▪ Embed into TMflow™ using third-party plugins

TMflow™

TMvision™

A perfect integration of cobot and machine vision

- Hand and eye integration for time/labor-saving solution
- Powerful vision function: The combination of traditional machine vision and AI vision offers the user a comprehensive vision function including vision positioning, measurement, defect inspection, OCR and barcode reading
- Easily manage both robot arm and vision functions within a single software, eliminating the need to learn two separate programs and concerns about system compatibility or interface issues
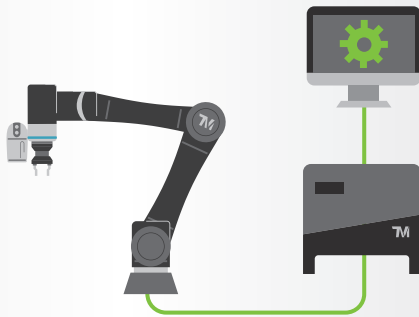
- TM built-in vision, integrated in one system
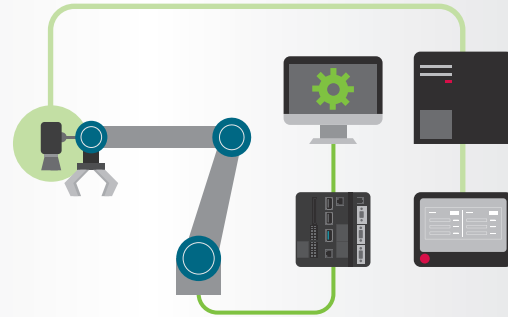
- Integrating separate systems for robot arm and external vision

	TM built-in vision	Robot arm + External vision
Camera	All-in-one	Requires additional mechanism for integration
Camera signal cable and power cord	Internally routed cables	Externally routed cables can lead to problems like tangled or pulled cables or dust resulted from friction
Vision recognition system	5M color camera, auto focus, built-in light source, various applications	Complicated configuration of lens, camera, light source and software
Vision and Robot Programming	Integrated in one software TMflow™ for easy programming	Need to handle the communication interface of 2 different software
Charge	The cost of the robot arm includes the vision system	Additional charge of vision software /hardware is required

TM 3DVision™

A plug-and-play 3D vision solution requires no additional software/hardware integration

When incoming materials are stacked or arranged in different configurations, the positioning function may become ineffective or less accurate due to the limitations of a standard robot's 2D vision, which cannot capture 3D coordinates. To overcome this challenge, Techman Robot has introduced TM 3DVision™, a 3D machine vision solution with paried designated Plug&Play 3D camera, designed to expand the range of items recognizable by the vision system and enhance the precision of both vision-based positioning and arm movement.
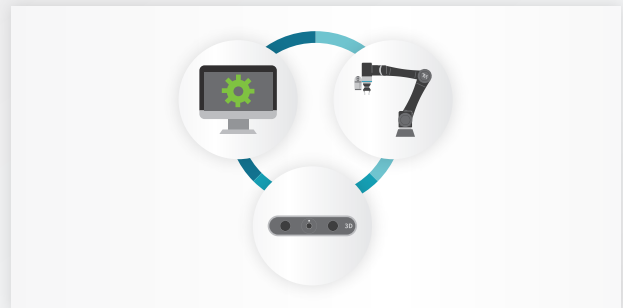

Robot from
A Company

3D Camera from
B Company

Software from
C Company

Traditional Solution

Requires more time and labor costs to integrate robot arm, 3D camera, and software from different brands

All-In-one Solution

Significantly reduces integration costs and efforts, maintenance and accountability issues

Features

- The integration of 3D software and TMflow™ interface achieves high integration and easy operation
- No additional vision controller is required. No need for complicated system handshaking settings
- Can be used with the collision check function and prevent any potential collision risks.
  This is highly recommended for the Random Bin Picking applications.
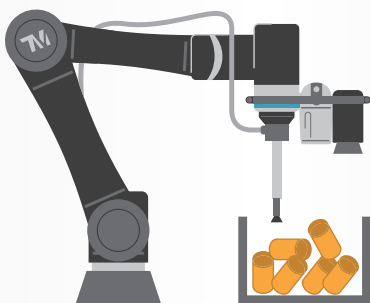
- Picking up scattered materials

- Single item 3D positioning

TM AI+™ Training Server

Completely integrate hands, eyes and brain in automation field

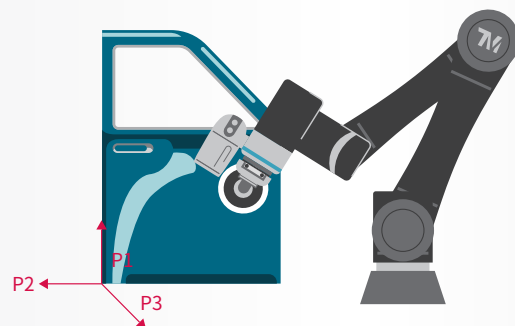**TM AI+™ Training Server** is a software tool that will help you manage image data, set up AI training parameters, and train AI models. The AI solution can help you train a model that fits your needs effortlessly. This AI model can be applied to both the robot arm and machine vision, thus forming a powerful combination of the arm(cobot), eye(machine vision), and brain(AI). Easy and simple UI helps the user to rapidly and conveniently introduce AI vision technology to production. AI incorporating vision system can effectively eliminate quality issues resulted from fatigue or human error.

Features

- A graphical interface that is easy to learn
- Designed as a browser-based software that you can log in anywhere with a web browser
- All image data used for AI model training is stored in a local database to ensure enterprise classified data is secure
- Powerful AI Vision technology with capabilities including anomaly detection, classification, object detection, and semantic segmentation

4 steps for easy AI model training

Image collection ▶ **Annotation** ▶ **Training** ▶ **Deployment**

Collect Image Data
- Take multiple photos of the object and upload them to TM AI+™ Training Server
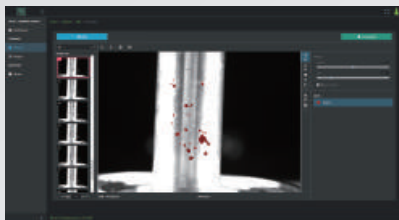
TM AI+™ Training Server
- Select the type of vision task: Classification, Detection, Segmentation, Anomaly Detection
- Label the uploaded image samples
- Configure training parameters and begin training
- Evaluate the training outcome
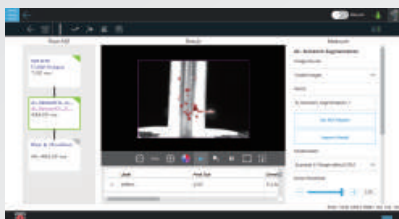
Import AI model
- Download the trained AI model from the training server to TM Robot or external camera
- Begin AI inference

TM Image Manager

Build quality traceability for your product

After an enterprise sells their product to customers, they will often need to deal with customers' feedback or complaints. Therefore, a comprehensive quality tracking system is essential for businesses to establish.

TM Image Manager is a software tool that is highly compatible with TM Robot's vision function. It can help you effectively manage the quality inspection records of 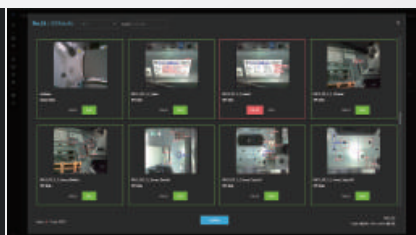each product. The inspector can monitor the inspection progress in real-time,and the results will automatically be recorded as image data. These data can be reviewed anytime in order to increase inspection accuracy. Furthermore, a quality resume can also be built for each product and the potential costs needed for after-sales service activities can be reduced.

Features

- Browser-based interface for intuitive and easy operation
- Manage inspection images and results through the database to address the needs of backup and search
- The user can filter the images of quality inspection by different conditions, like time, work order, barcode, etc. at any time
- Help inspectors to compare the images of inspection and standard item to effectively reduce the probability of misjudgement
- The user can plan and design inspection configuration to perform real-time monitoring on inspection position, result and progress

- Configuration inspection and progress review
- Backup and search of inspection history
- Support human double-check interface
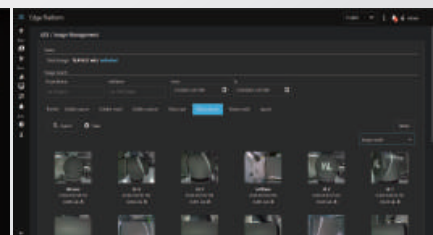
TM AI+™ AOI Edge

The smart function software that helps you to deploy TMvision™ to all required spots in the factory

TMvision™, one of the most iconic functions of TM Robot, is now becoming more flexible to deploy.If you have requirements for setting up pure visual working areas in the factory or require multiple cameras in a single visual working area,
TM AI+™ AOI Edge will be the best solution for you to optimize your implementation costs while fulfilling visual function needs.

Features

- Easy integration of TM AI+™ to improve the precision and width of AOI inspection
- Support TM Plug&Play™ camera to save the time of camera integration
- User-friendly TMflow™ interface is easy to master. No need for experienced workers to learn new software
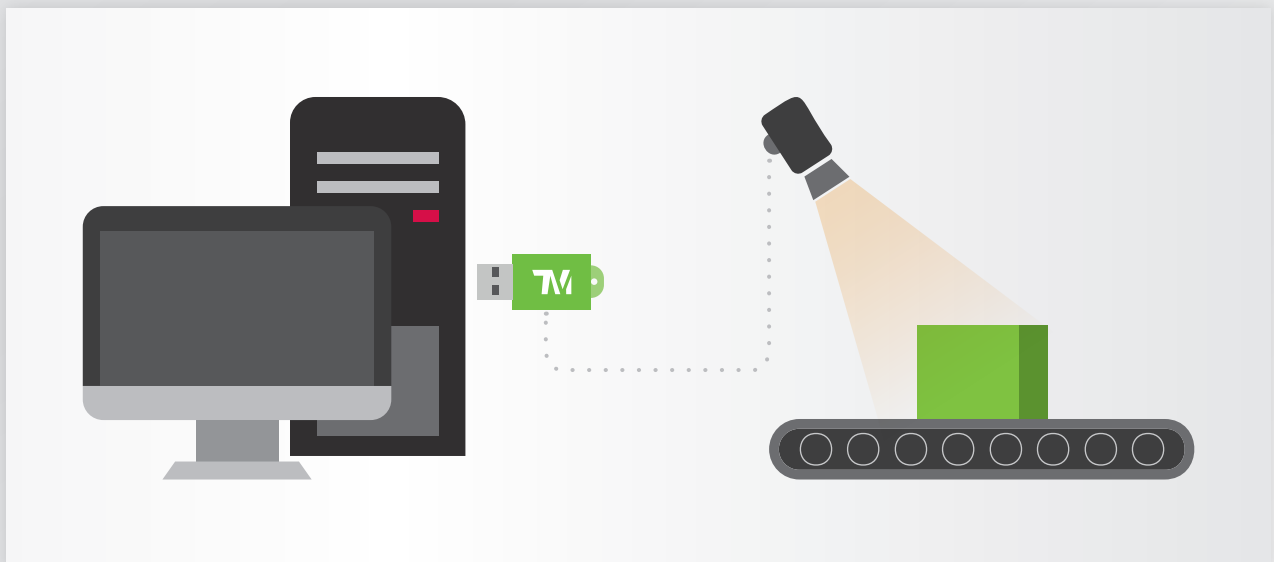
- TM AI+™ AOI Edge is compatible with both personal and industrial computers used in production lines. By connecting an external camera to a computer, users can utilize TMvision™ to perform tasks such as defect inspection and measurement.

TMstudio Pro

TMstudio Pro is offline programming simulation software for TM AI Cobot, enabling users to create multi-robot simulation scenes without the need for a physical robot.

1.Create a Scene
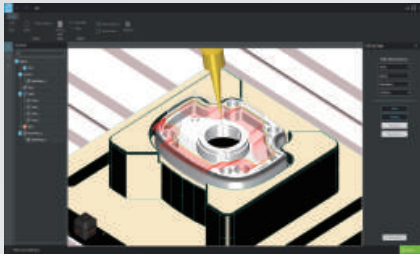- Import CAD file instead of setting up in the real world
- Generate a path for the robot from CAD
- Simulate multi-robot in the same virtual scene
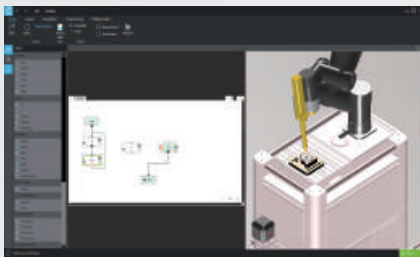
2.Program
- Program the same way as using TMflow™
- Import or export between TMstudio Pro and robot
- Test your project and TMcraft Node in the virtual scene

3.Simulate
- Visualize the robot's reach in a virtual scene
- Check for collision detection and correct your solution
- Estimate the robot's cycle time

Product Features
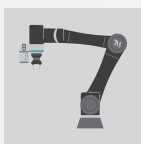
Validation
Detects collisions, ensures the robot's reach, and validates the workspace during programming, thereby minimizing errors during runtime.

Time Saving
Design your robot usage efficiently without setting up robot workstations in the real world
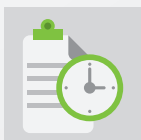
Reliable Planning
Program your robot system with accurate cycle time
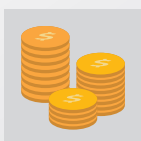
Increase Revenue
Facilitate users in planning, simulating, and presenting solutions to end-customers, enabling clearer demonstrations and discussions in details to enhance sales success

TM Plug&Play™ Solution

All leading robot peripherals work with Techman Robot and developed TM Plug&Play™ together, a suite integrating related software and hardware. All software and hardware are tested and verified to allow the user to download the software package and apply to the hardware they purchase. This can significantly reduce the time and labor costs required by producing hardware and programming for automation.

Start to use within 5 minutes

Purchase TM AI Cobot

Purchase TM Plug&Play™ solution

Download software package → Apply and test → Editing automation program
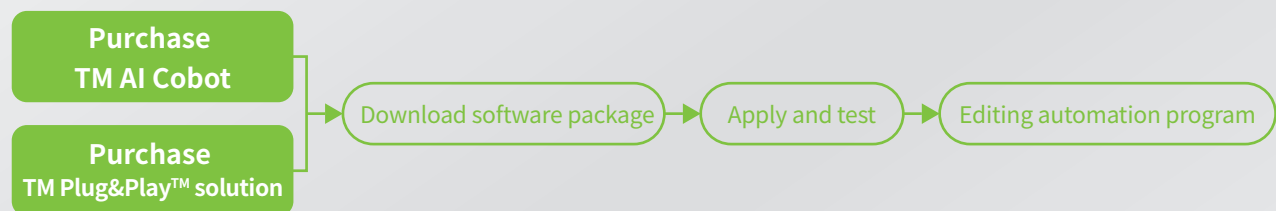
Simple, efficient, and fast production line introduction

HARDWARE PACKAGE

+

SOFTWARE PACKAGE

Grip

Release

▪ Screw Plug&Play example

TM Plug&Play
CERTIFIED
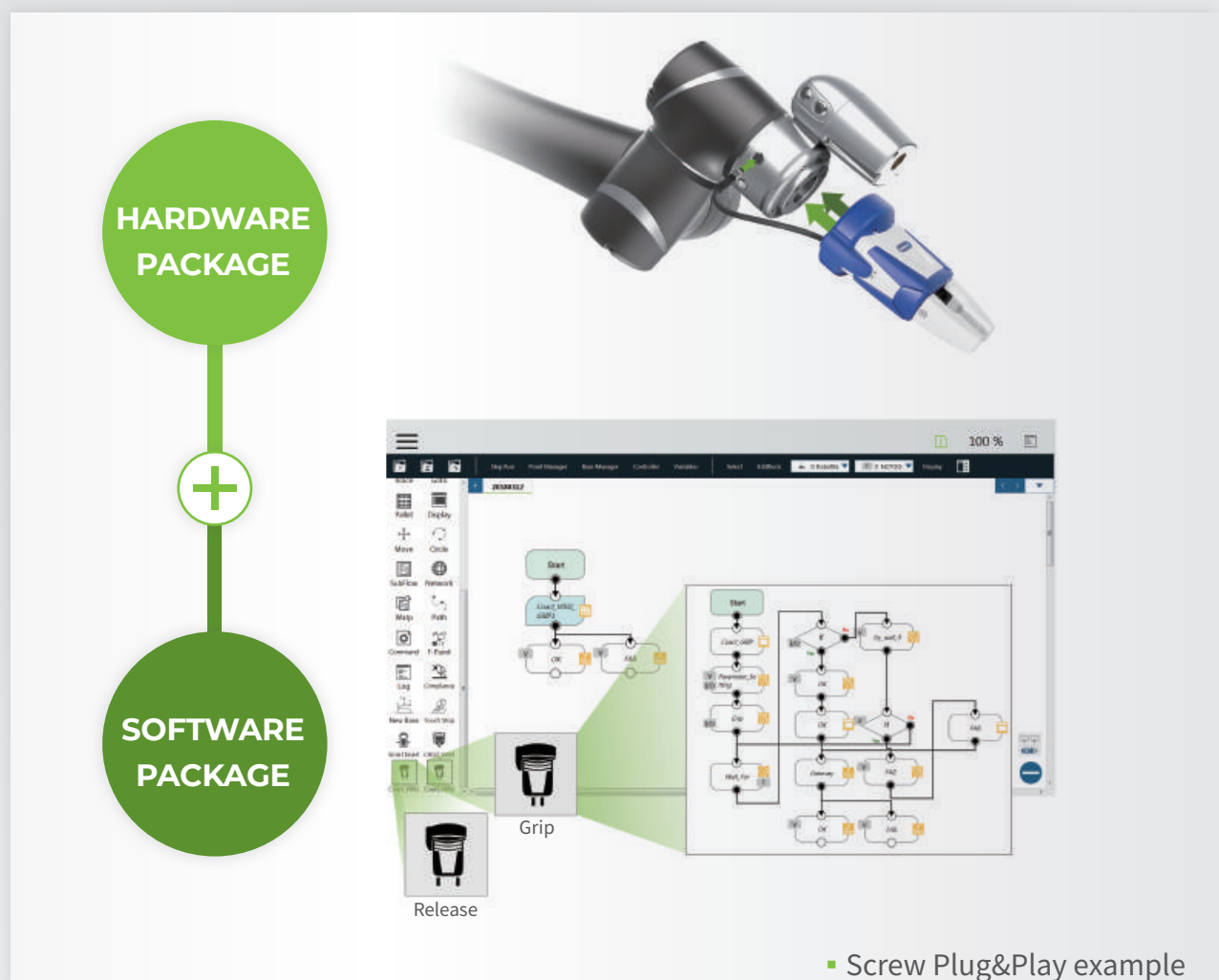
TM certified, perfect integration, and usable upon installation

TM Robot works with peripheral equipment vendors to co-build a comprehensive TM Plug&Play™ eco system. Each certified TM Plug&Play™ product has been calibrated and tested by TM Robot and peripheral equipment vendors. This ensures that users receive the optimal user experience and the most reliable robot operating quality.

Advantech AIR-3002022 -TM AI+ Training Server

ARS Automation FlexiBowl® Kit for TM

ASPINA ARH350A Kit for TM

ATI 9105-TM-Axia80
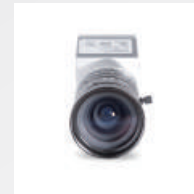
Basler Industrial Camera

CKD RCKL/RHLF/RLSH -TM Gripper

COBOTRACKS Linear Motion Plug&Play for TM
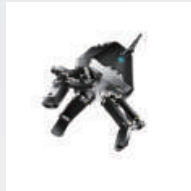
DH-Robotics Adaptive Gripper DH-3 TM Kit

EWELLIX LIFTKIT-TM
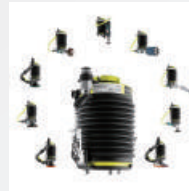
FerRobotics ACF-K Active Contact Flange-Kit

Flir Industrial Camera

Gimatic KIT-TM-J

HIWIN Electric Gripper X-series

IDS Ensenso N36/N46 3D camera
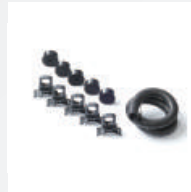
Igus® 3D e-chain TM Kit - PMA Tubes

KILEWS Screw Driver Solution

Mindman All-in-One Gripper for TM Robot (3-Finger)
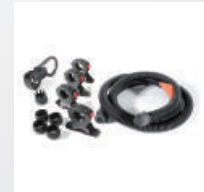
Murrplastik Murrplastik FHS-SH-Set

NABELL Robot Flex

NITTOSEIKO Pick and Drive System PD400TM

OnRobot Sander

OnRobot 2FG7

OnRobot Screwdriver

Pickit Pickit3D Vision Solution
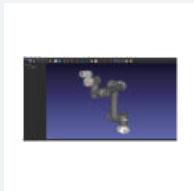
RoboDK Simulation and Offline Programming Software for TM

Robotiq FTS-300-TM-KIT
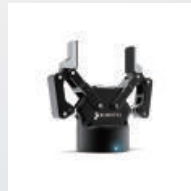
Robotiq Adaptive Gripper, 2-Finger 85/140 TM Kit

Schmalz FXCB

SCHUNK Changing by SCHUNK - Plug & Work Portfolio Techman Robot

SCHUNK Collaborative gripping EGP-C

SMC Magnet Gripper Unit for Collaborative Robots

TOYO CHY2B-S80

Weiss Robotics GRIPKIT-CR-PRO-L

Zimmer HRC-03 TM-Kit

ZLÍN ROBOTICS Universal Mobile Stand

More Information on
www.tm-robot.com

TM AI Cobot
S Series Specification

Specification							
Model		TM5S	TM7S	TM5S-M	TM7S-M	TM5S-X	TM7S-X
Weight		23.9 kg	22.9 kg	23.9 kg	22.9 kg	23.6 kg	22.6 kg
Maximum Payload		5kg	7kg	5kg	7kg	5kg	7kg
Reach		900mm	700mm	900mm	700mm	900mm	700mm
Joint ranges	J1, J2, J4, J5, J6	+/- 360°					
	J3	+/- 158°	+/- 152°	+/- 158°	+/- 152°	+/- 158°	+/- 152°
Speed	J1, J2, J3	210°/s					
	J4, J5	225°/s					
	J6	450°/s					
Max. Speed		4.5m/s					
Repeatability		+/- 0.03 mm					
Degree Of Freedom		6 rotating joints					
I/O	Control box	Digital In: 16 / Digital Out: 16					
		Analog In: 2 / Analog Out: 2					
	Tool Conn.	Digital In: 3 / Digital Out: 3					
		DO_0 (DO-0/AI) / DO_1 (DO-1/RS485-) / DO_2 (DO-2/RS485+)					
I/O Power Supply		24V 2.0A for control box; 24V 1.5A for tool					
IP Classification		IP54 (Robot Arm); IP54 (Control Box)		IP54 (Robot Arm)		IP54 (Robot Arm); IP54 (Control Box)	
Typical Power Consumption		240 watts					
Temperature		0~50°C					
Cleanliness		ISO Class 3					
Power Supply		100~240 VAC, 50~60 Hz		24~60 VDC		100~240 VAC, 50~60 Hz	
I/O Interface		3×COM、1×HDMI、3×LAN、4×USB2.0、2×USB3.0					
Communication		RS-232/RS-422/RS-485, Ethernet, Modbus TCP/RTU (master & slave)					
		PROFINET (optional), EtherNet/IP (optional)					
Programming Environment		TMflow (flowchart/script based)					
Certification		CE, SEMI S2 (optional)					

AI & Robot Vision			
AI Function	Classification, Object Detection, Segmentation, Anomaly Detection, AI OCR	N/A
Application	Positioning, 1D/2D Barcode Reading, OCR, Defect Detection, Measurement, Assembly Check	
Positioning Accuracy	2D Positioning: 0.1 mm* [1]	
Eye in Hand (Built in)	Auto-focused color camera with 5M resolution, Working distance 100 mm ~ ∞	
Eye to Hand (Optional)	Support Maximum 2× GigE 2D cameras or 1× GigE 2D Camera + 1× 3D Camera* [2]	

*[1] The data in this table are measured by TM laboratory and the working distance is 100mm. It should be noted that in practical applications, the relevant values may be different due to factors such as the on-site ambient light source, object characteristics, and vision programming methods that will affect the change in accuracy.

*[2] Refer to the official website of TM Plug&Play for camera models compatible to TM Robot.

Specification									
Model	TM12S	TM14S	TM25S	TM12S-M	TM14S-M	TM25S-M	TM12S-X	TM14S-X	TM25S-X
Weight	33.3 kg	33 kg	80.6Kg	33.3 kg	33 kg	80.6 Kg	33 kg	32.7 kg	80.3 Kg
Maximum Payload	12kg	14kg	25kg	12kg	14kg	25kg	12kg	14kg	25kg
Reach	1300㎜	1100㎜	1902mm	1300㎜	1100㎜	1902mm	1300㎜	1100㎜	1902mm
Joint ranges — J1, J2, J4, J5, J6	+/- 360°								
Joint ranges — J3	+/- 162°	+/- 159°	+/- 166°	+/- 162°	+/- 159°	+/- 166°	+/- 162°	+/- 159°	+/- 166°
Speed — J1, J2	130°/s		100°/s	130°/s		100°/s	130°/s		100°/s
Speed — J3	210°/s		130°/s	210°/s		130°/s	210°/s		130°/s
Speed — J4	225°/s		195°/s	225°/s		195°/s	225°/s		195°/s
Speed — J5	225°/s		210°/s	225°/s		210°/s	225°/s		210°/s
Speed — J6	450°/s		225°/s	450°/s		225°/s	450°/s		225°/s
Max. Speed	4.5㎧		5.2㎧	4.5㎧		5.2㎧	4.5㎧		5.2㎧
Repeatability	+/- 0.03 ㎜		+/- 0.05 ㎜	+/- 0.03 ㎜		+/- 0.05 ㎜	+/- 0.03 ㎜		+/- 0.05 ㎜
Degree Of Freedom	6 rotating joints								
I/O — Control box	Digital In: 16 / Digital Out: 16								
I/O — Control box	Analog In: 2 / Analog Out: 2								
I/O — Tool Conn.	Digital In: 3 / Digital Out: 3								
I/O — Tool Conn.	DO_0 (DO-0/AI) / DO_1 (DO-1/RS485-) / DO_2 (DO-2/RS485+)								
I/O Power Supply	24V 2.0A for control box; 24V 1.5A for tool								
IP Classification	IP54 (Robot Arm); IP54 (Control Box)			IP54 (Robot Arm)			IP54 (Robot Arm); IP54 (Control Box)		
Typical Power Consumption	400W		600W	400W		600W	400W		600W
Temperature	0~50℃								
Cleanliness	ISO Class 3								
Power Supply	100~240 VAC, 50~60 Hz		200~240 VAC, 50~60 Hz	24~60 VDC		48~60 VDC	100~240 VAC, 50~60 Hz		200~240 VAC, 50~60 Hz
I/O Interface	2×COM、1×HDMI、3×LAN、2×USB2.0、4×USB3.0								
Communication	RS-232/RS-422/RS-485、Ethernet、Modbus TCP/RTU(master & slave)								
Communication	PROFINET (optional), EtherNet/IP (optional)								
Programming Environment	TMflow (flowchart/script based)								
Certification	CE, SEMI S2 (optional)								

AI & Robot Vision	
AI Function	Classification, Object Detection, Segmentation, Anomaly Detection, AI OCR
Application	Positioning, 1D/2D Barcode Reading, OCR, Defect Detection, Measurement, Assembly Check
Positioning Accuracy	2D Positioning: 0.1 mm*[1]
Eye in Hand (Built in)	Auto-focused color camera with 5M resolution, Working distance 100 mm ~ ∞
Eye to Hand (Optional)	Support Maximum 2× GigE 2D cameras or 1× GigE 2D Camera + 1× 3D Camera*[2]

*[1]The data in this table are measured by TM laboratory and the working distance is 100mm. It should be noted that in practical applications, the relevant values may be different due to factors such as the on-site ambient light source, object characteristics, and vision programming methods that will affect the change in accuracy.

*[2]Refer to the official website of TM Plug&Play for camera models compatible to TM Robot.

TM AI Cobot Specification

Specification							
Model		TM5-700	TM5-900	TM5M-700	TM5M-900	TM5X-700	TM5X-900
Weight		22.1kg	22.6kg	22.1kg	22.6kg	21.8kg	22.3kg
Maximum Payload		6kg	4kg	6kg	4kg	6kg	4kg
Reach		700mm	900mm	700mm	900mm	700mm	900mm
Joint ranges	J1,J6	+/- 270°	+/- 270°	+/- 270°	+/- 270°	+/- 360°	+/- 360°
	J2,J4,J5	+/- 180°	+/- 180°	+/- 180°	+/- 180°	+/- 360°	+/- 360°
	J3	+/- 155°					
Speed	J1,J2	180°/s					
	J3	225°/s					
	J4	225°/s					
	J5	225°/s					
	J6	225°/s					
Max. Speed		4 m/s					
Repeatability		+/- 0.05 mm					
Degree Of Freedom		6 rotating joints					
I/O	Control box	Digital In: 16 / Digital Out: 16					
		Analog In: 2 / Analog Out: 1					
	Tool Conn.	Digital In: 4 / Digital Out: 4					
		Analog In: 1 / Analog Out: 0					
I/O Power Supply		24V 2.0A for control box; 24V 1.5A for tool					
IP Classification		IP54 (Robot Arm); IP32 (Control Box)					
Typical Power Consumption		220 watts					
Temperature		0-50°C					
Cleanliness		ISO Class 3					
Power Supply		100-240 VAC, 50-60 Hz		22-60 VDC		100-240 VAC, 50-60 Hz	
I/O Interface		3×COM、1×HDMI、3×LAN、4×USB2.0、2×USB3.0					
Communication		RS-232, Ethernet, Modbus TCP/RTU (master & slave)					
		PROFINET (optional), EtherNet/IP (optional)					
Programming Environment		TMflow (flowchart/script based)					
Certification		CE, SEMI S2 (optional)					

AI & Robot Vision		
AI Function	Classification, Object Detection, Segmentation, Anomaly Detection, AI OCR	N/A
Application	Positioning, 1D/2D Barcode Reading, OCR, Defect Detection, Measurement, Assembly Check	
Positioning Accuracy	2D Positioning: 0.1 mm* [1]	
Eye in Hand (Built in)	Auto-focused color camera with 5M resolution, Working distance 100 mm ~ ∞	
Eye to Hand (Optional)	Support Maximum 2× GigE 2D cameras or 1× GigE 2D Camera + 1× 3D Camera* [2]	

* [1] The data in this table are measured by TM laboratory and the working distance is 100mm. It should be noted that in practical applications, the relevant values may be different due to factors such as the on-site ambient light source, object characteristics, and vision programming methods that will affect the change in accuracy.

* [2] Refer to the official website of TM Plug&Play for camera models compatible to TM Robot.

Specification											
TM12	TM14	TM16	TM20	TM12M	TM14M	TM16M	TM20M	TM12X	TM14X	TM16X	TM20X
32.8kg	32.5kg	32kg	32.8kg	32.8kg	32.5kg	32kg	32.8kg	32.5kg	32.2kg	31.7kg	32.5kg
12kg	14kg	16kg	20kg	12kg	14kg	16kg	20kg	12kg	14kg	16kg	20kg
1300mm	1100mm	900mm	1300mm	1300mm	1100mm	900mm	1300mm	1300mm	1100mm	900mm	1300mm
+/- 270°	+/- 270°	+/- 270°	+/- 270°	+/- 270°	+/- 270°	+/- 270°	+/- 270°	+/- 360°	+/- 360°	+/- 360°	+/- 360°
+/- 180°	+/- 180°	+/- 180°	+/- 180°	+/- 180°	+/- 180°	+/- 180°	+/- 180°	+/- 360°	+/- 360°	+/- 360°	+/- 360°
+/- 166°	+/- 163°	+/- 155°	+/- 166°	+/- 166°	+/- 163°	+/- 155°	+/- 166°	+/- 166°	+/- 163°	+/- 155°	+/- 166°
120°/s	120°/s	120°/s	90°/s	120°/s	120°/s	120°/s	90°/s	120°/s	120°/s	120°/s	90°/s
180°/s	180°/s	180°/s	120°/s	180°/s	180°/s	180°/s	120°/s	180°/s	180°/s	180°/s	120°/s
180°/s	150°/s	180°/s	150°/s	180°/s	150°/s	180°/s	150°/s	180°/s	150°/s	180°/s	150°/s
180°/s	150°/s	180°/s	180°/s	180°/s	150°/s	180°/s	180°/s	180°/s	150°/s	180°/s	180°/s
180°/s	180°/s	180°/s	225°/s	180°/s	180°/s	180°/s	225°/s	180°/s	180°/s	180°/s	225°/s
4 m/s											
+/- 0.1 mm											
6 rotating joints											
Digital In: 16 / Digital Out: 16											
Analog In: 2 / Analog Out: 1											
Digital In: 4 / Digital Out: 4											
Analog In: 1 / Analog Out: 0											
24V 2.0A for control box; 24V 1.5A for tool											
IP54 (Robot Arm); IP32 (Control Box)											
300 watts											
0-50°C											
ISO Class 3											
100-240 VAC, 50-60 Hz				22-60 VDC			24-60 VDC	100-240 VAC, 50-60 Hz			
3×COM、1×HDMI、3×LAN、4×USB2.0、2×USB3.0											
RS-232, Ethernet, Modbus TCP/RTU (master & slave)											
PROFINET (optional), EtherNet/IP (optional)											
TMflow (flowchart/script based)											
CE, SEMI S2 (optional)											

AI & Robot Vision	
Classification, Object Detection, Segmentation, Anomaly Detection, AI OCR	
Positioning, 1D/2D Barcode Reading, OCR, Defect Detection, Measurement, Assembly Check	
2D Positioning: 0.1 mm*[1]	
Auto-focused color camera with 5M resolution, Working distance 100 mm ~ ∞	N/A
Support Maximum 2× GigE 2D cameras or 1× GigE 2D Camera + 1× 3D Camera*[2]	

*[1] The data in this table are measured by TM laboratory and the working distance is 100mm. It should be noted that in practical applications, the relevant values may be different due to factors such as the on-site ambient light source, object characteristics, and vision programming methods that will affect the change in accuracy.

*[2] Refer to the official website of TM Plug&Play for camera models compatible to TM Robot.

Software Specification

TM AI+ Training Server Installation Requirements

Software Requirements	
TM AI+ Training Server Software version	Ver. 2.14
Hardware Requirements	
Operating System	Ubuntu 20.04 LTS Desktop *[1] (64-bit)
CPU	7th Generation Intel® Core™ i7 Processors or above
RAM	32 GB or above
Graphics Cards	Only support NVIDIA Turing and Ampere micro-architectures GPU*[2] *[3]. Recommendation： NVIDIA GeForce RTX 30 series (3060 12GB or above) NVIDIA RTX professional GPUs (A4000 16GB or above) NVIDIA Quadro RTX professional GPUs (4000 or above)
Storage	2TB or above (SSD Recommended)
Communication Interface	Ethernet
Language Support	EN, TW, CN, DE, ES, FR, JP, KO, PT, TH, VI

*[1] Linux on VM is not compatible.

*[2] Not support GPU other than NVIDIA, such as AMD and Intel.

*[3] Not support with NVIDIA GPU of other micro-architectures,
    such as the GeForce RTX 40 series based on the Ada Lovelace micro-architecture.

TM Image Manager Installation Requirements

Software Requirements	
TMflow Software Version	Ver. 2.14
Hardware Requirements	
Operating System	Ubuntu 20.04
CPU	Intel i7 or above
RAM	16GB or above
Storage	SSD 2TB or above
Communication Interface	Ethernet
Language Support	EN, TW, CN
Limitations	1. Exclusive compatibility with TM AI Cobot and TM AI+ AOI Edge 2. License fees are determined based on the number of connected devices, with a maximum of 10 devices* [1] 3. Supports simultaneous image transmission for up to 10 devices* [2]

* [1] When users purchase 10 devices, the system will no longer impose a maximum limit on the number of device connections.

* [2] Techman Robot can guarantee normal operation for up to 10 connected devices. Exceeding this limit may require users
    to assess potential system overload issues, such as reduced system performance.

TMstudio Pro System Requirements

Hardware Requirements	
Operating System	Windows 10 or above
CPU	Intel I7 Gen 7+, AMD Ryzen+
Cores	4
RAM	16GB RAM
Storage	C Drive 30GB of available SSD storage
Display Resolution	1920×1080 or above

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TM TECHMAN ROBOT INC.

GESSbot & TM AI Cobot

Technical data

Permissible playload: 350 kg
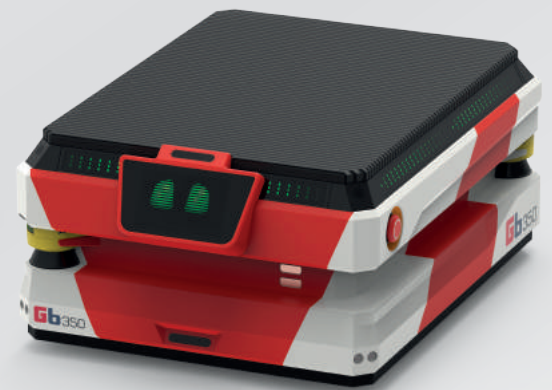
Weight: 150 kg

Maximum playload incline: 5 %

Dimensions (LxWxH): 950 x 718 x 420 mm

Maximum speed: 1,2 m/s (4,3km/h)

Permissible environmental temperatures: 5 °C to 50 °C

Battery life: up to 12 h

Working range of navigation sensors: 0-20 m

Versatile • Intelligent • Autonomous

The Gb350 is an automated guided vehicle (AGV) for quick and
cost-efficient automation of your internal transport processes.
No expensive extras and auxiliary systems, such as magnetic tracks,
induction loops or additional safety systems are required. The AGV
easily integrates into your existing production and logistical structures.

TM Mobile Series

TM5S-M / TM7S-M / TM12S-M / TM14S-M
TM5M / TM12M / TM14M / TM16M / TM20M

TM Mobile Series cobots can be integrated with almost all AGV/AMR brands on the market. With its embedded vision and TM Landmark vision function, the mobile series is extremely suitable for applications and tasks that require mobility. Such as machine tending or palletizing.

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TM AI COBOT

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