

The future is here,

TM AI COBOT

Native AI engine + Robotic arm + Vision system

All in **ONE**

GESSMANN

TM Robot Distributor

W. Gessmann GmbH

Eppinger Straße 221
74211 Leingarten, Germany

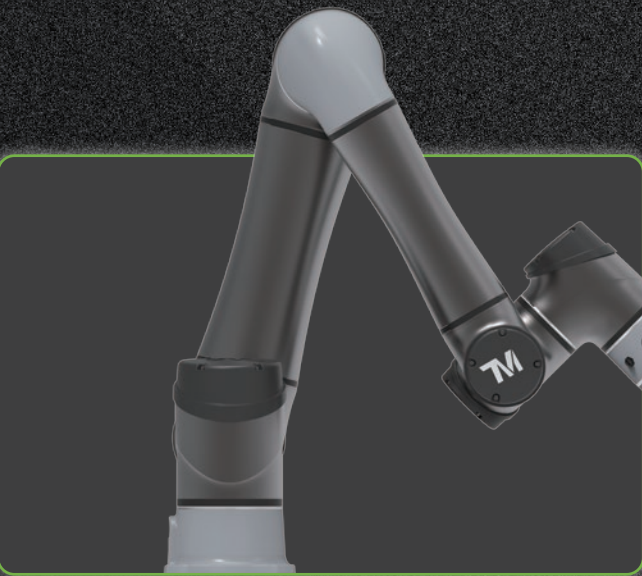
+49 7131 40 67 723
robotics@gessmann.com
www.gessmann.com



What Is An AI Cobot?

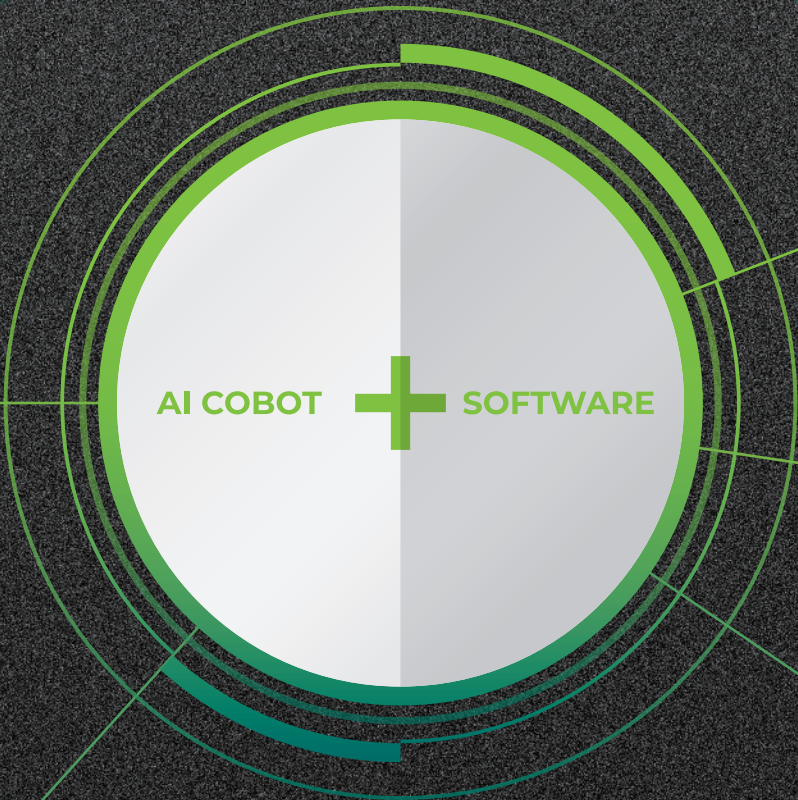
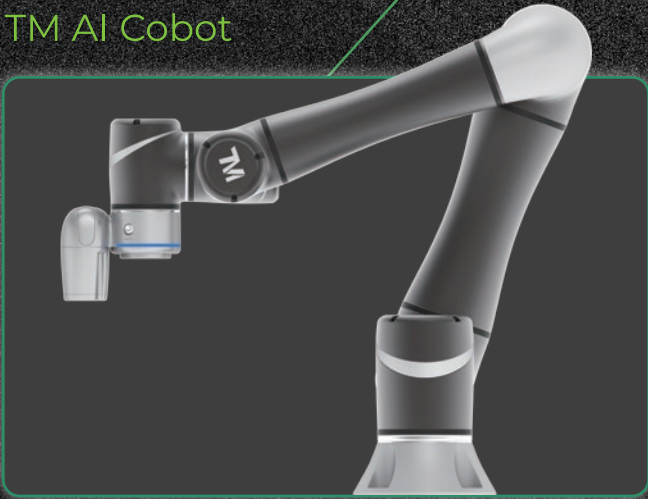
AI Cobot is a collaborative robot that seamlessly blends three technological domains together - AI, Vision, and Cobot. This integration effectively combines the functions of a 'brain,' 'eyes,' and 'hands,' enabling the cobot to perform visual tasks, making judgments, and executing actions much like a 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.



TM AI Cobot S Series

TM AI Cobot



AI Model Training Platform



TM AI+™ Trainer

Inspection Image Management



TM Image Manager

Vision Inspection Software



TM AI+™ AOI Edge

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



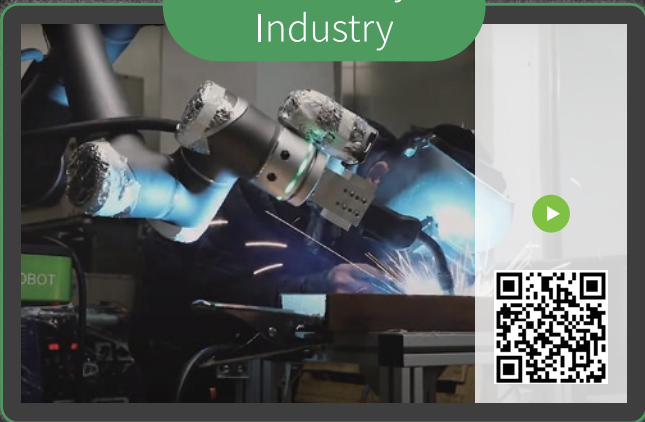
CNC



Warehousing Industry



Semiconductor Industry



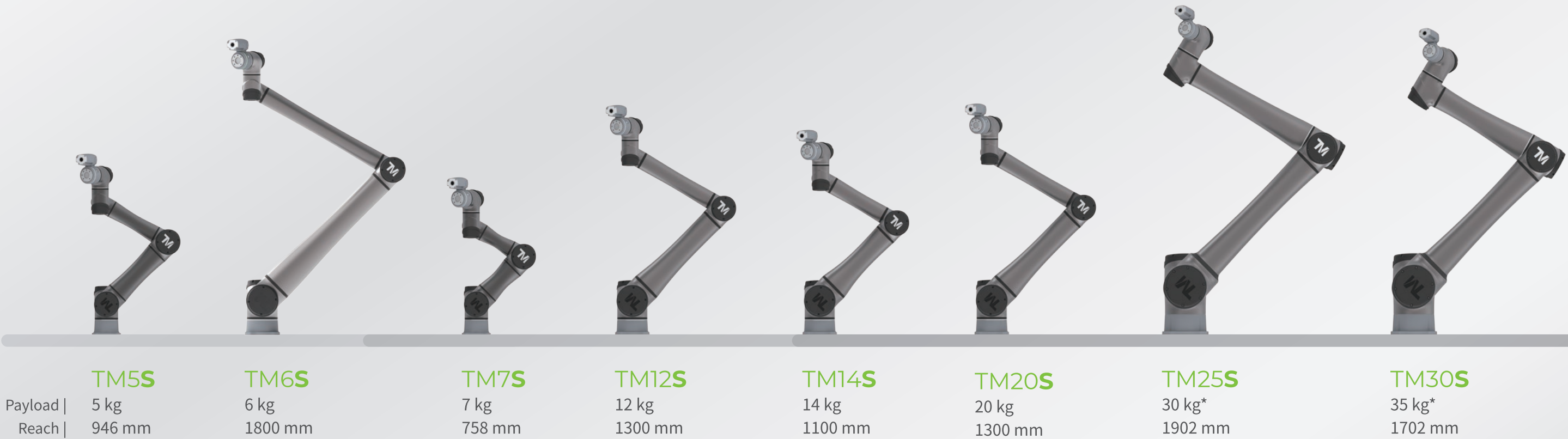
Machinery Industry

Introducing TM AI Cobot

The only AI-powered collaborative robot with advanced vision capabilities

TM AI Cobot

TM AI Cobot S Series



TM AI Cobot Series



+ Additional Types

TM Mobile Series

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.

No Built-in Vision Robot Series

TM Robot Series offers robot arms with no built-in vision for users who want to integrate external cameras by themselves. Feel free to check on the pre-verified list of cameras from our TM Plug&Play™ series to save time on finding a compatible camera.

*Under the palletizing scenario

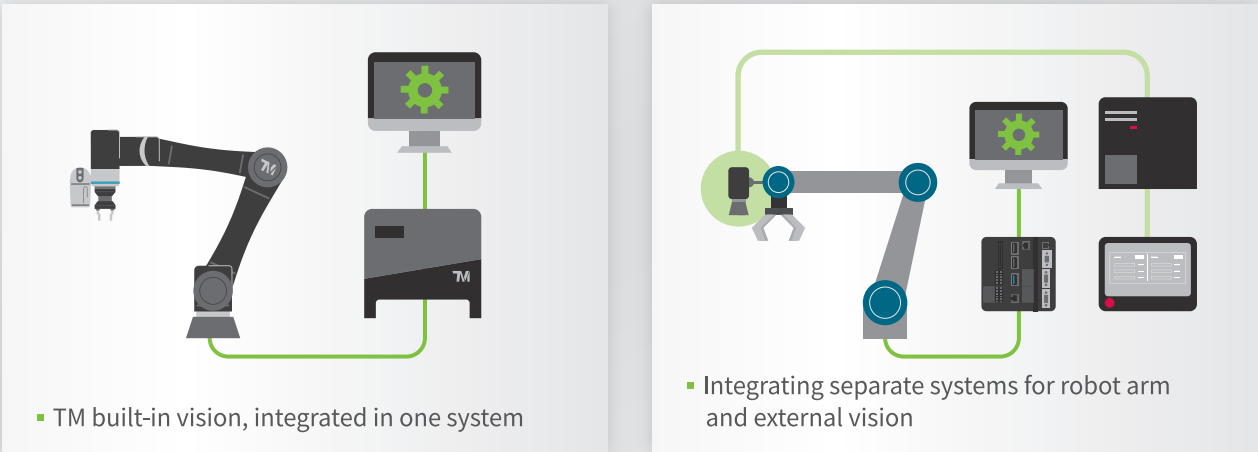
Introducing TM AI Cobot

The only AI-powered collaborative robot with advanced vision capabilities

SMART

A perfect integration of cobot and machine vision

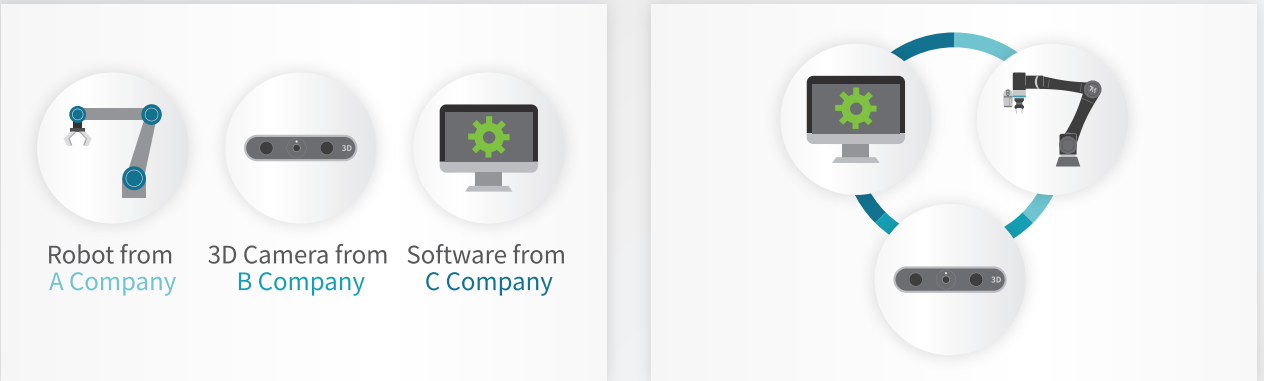
- Hand and eye integration for time/labor-saving solution
- Powerful vision function: The combination of traditional machine vision and AI vision offers the user a comprehensive vision function including vision positioning, measurement, defect inspection, OCR and barcode reading
- Easily manage both 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	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

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.



Traditional Solution

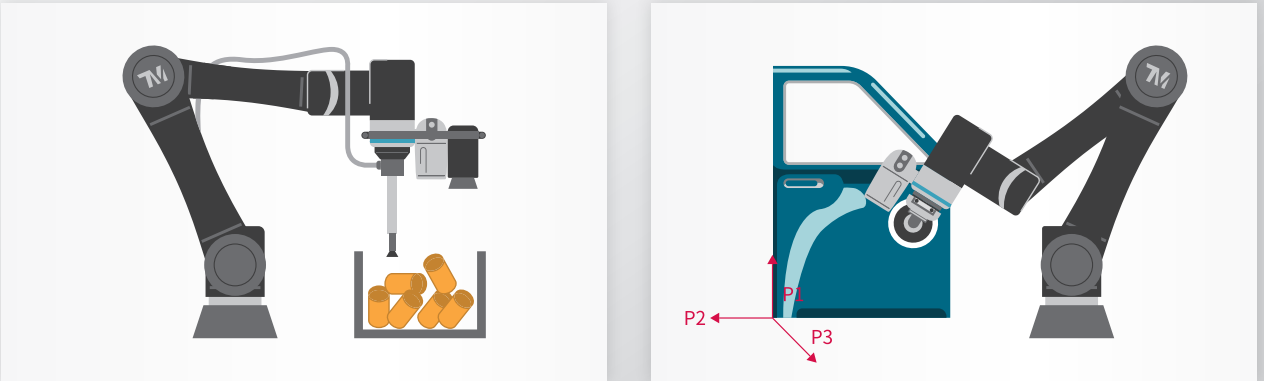
Requires more time and labor costs to integrate robot arm, 3D camera, and software from different brands

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

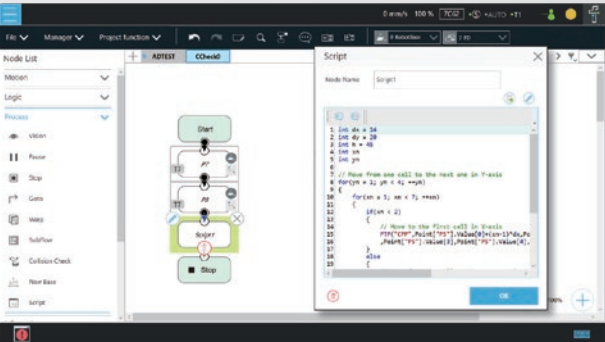
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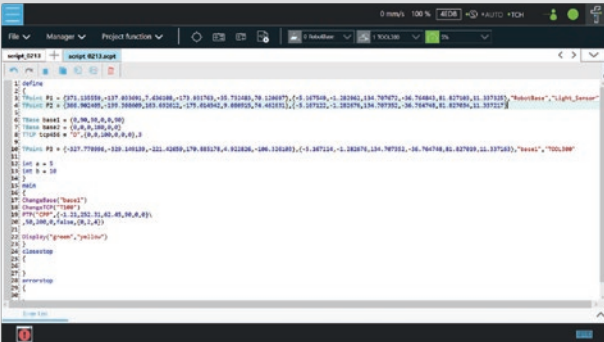
SIMPLE

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!



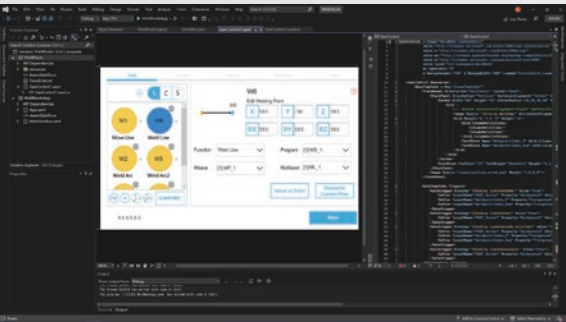
Flow-based UI



Script for Complex Logical Programming

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.

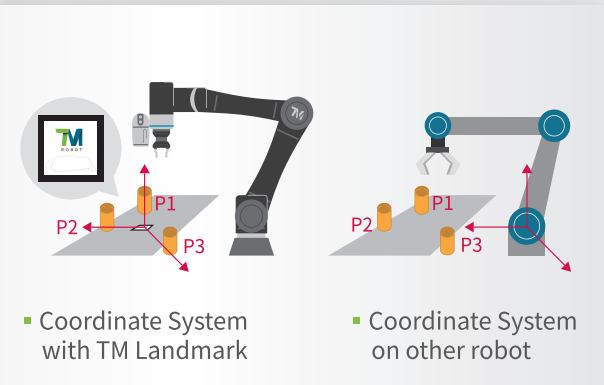


Developers can develop nodes in their own environment



Embed into TMflow™ using third-party plugins

Built-in vision with one-click positioning



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



Instance
Segmentation

AI Vision Software

Powering the future of factories with AI power

TM AI+™ Trainer

Completely integrate hands, eyes and brain in automation field

TM AI+™ Trainer 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

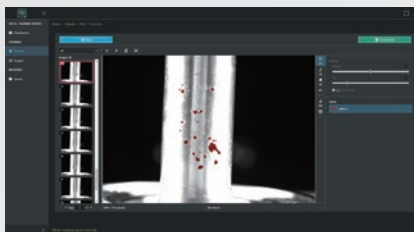
Image collection



Collect Image Data

- Take multiple photos of the object and upload them to TM AI+™ Trainer

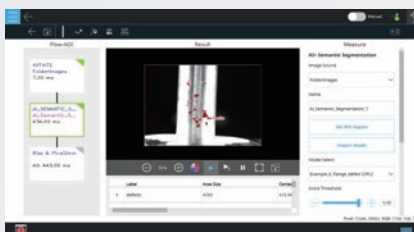
Annotation



TM AI+™ Trainer

- 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

Training



Import AI model

- Download the trained AI model from the TM AI+™ Trainer to TM Robot or external camera
- Begin AI inference

Deployment

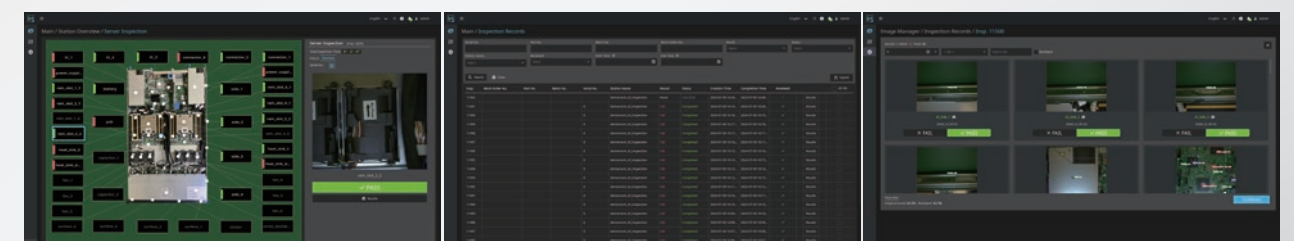
TM Image Manager

Comprehensive quality traceability for your product

After an enterprise sells its product to customers, they often must deal with customer feedback or complaints. Therefore, companies need to establish a comprehensive quality traceability system. TM Image Manager is a software tool that is highly compatible with the vision function of TM AI Cobot. 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 are automatically recorded as image data. This data can be reviewed at any time to increase inspection accuracy. Furthermore, a quality resume can be improved and the potential cost of after-sales service activities can be reduced.

Features

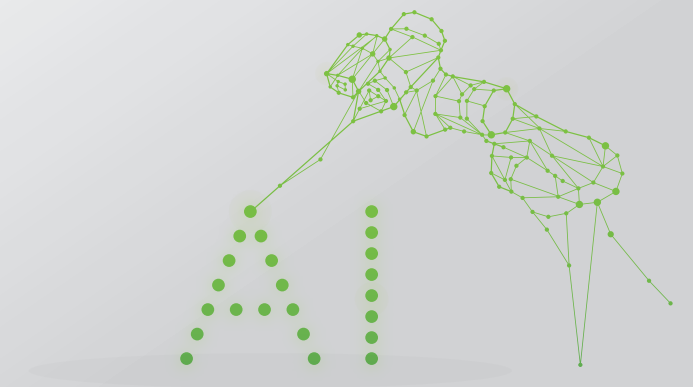
- Browser-based interface for intuitive and easy operation
- Manage inspection images and results through the database to address the needs of backup and search
- The user can filter the images of quality inspection by different conditions, like time, work order, barcode, etc. at any time
- Help inspectors 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

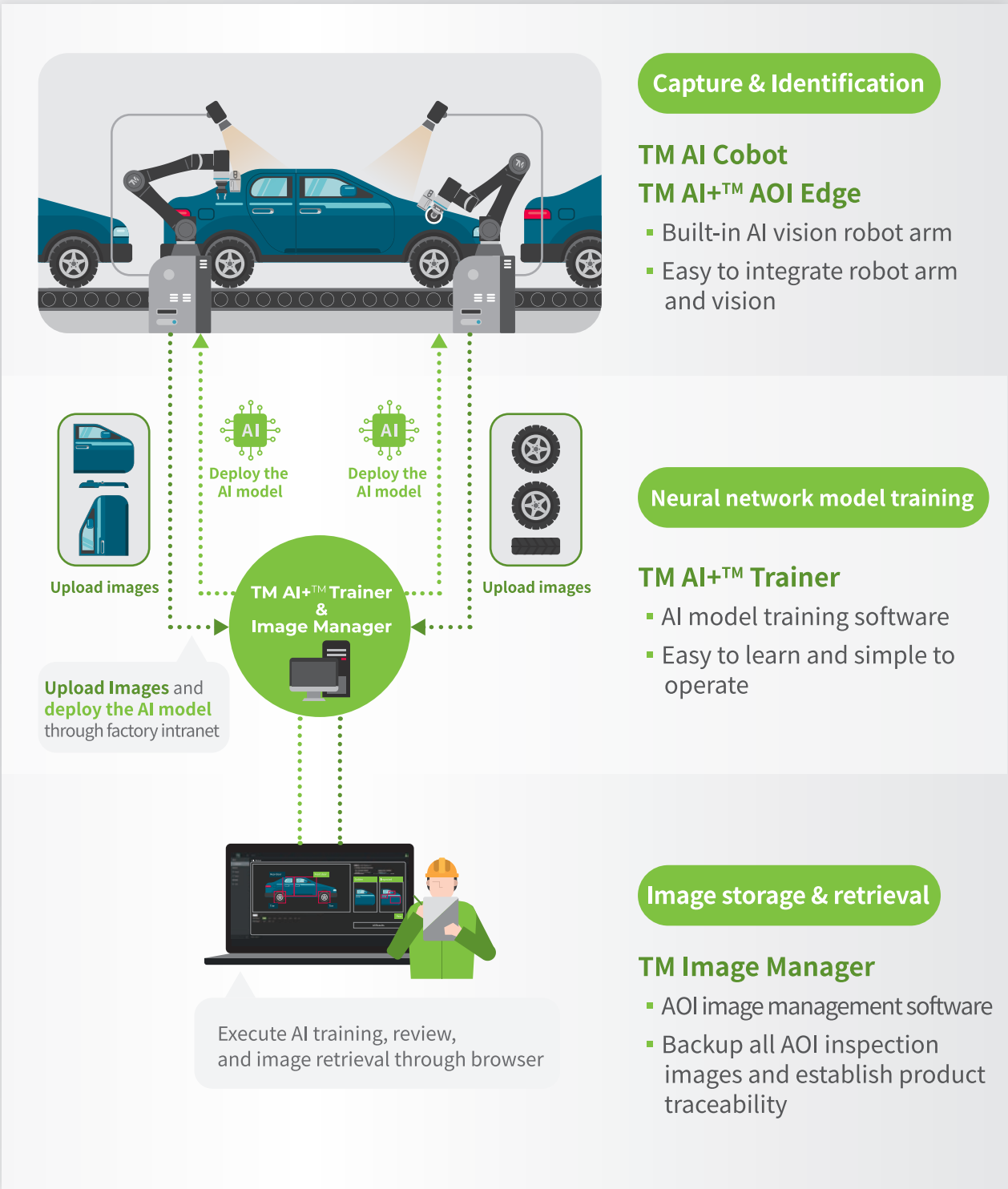


AI Vision Software

Powering the future of factories with AI power

AI Vision Operating Architecture

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.



Application Examples

Assembly Inspection



- Checking if the tires are wrapped with PE film



- Checking if all wires are connected correctly

Classification

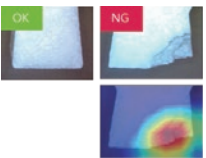


- Sorting different materials for wooden furniture

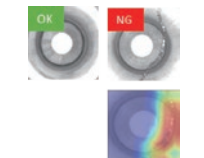


- Recognition of pizza flavor and crust

Defects Inspection

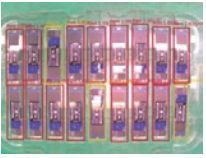


- Identifying objects with damage on the edge

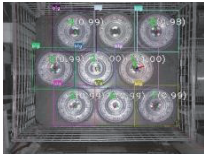


- Checking if there are metal scrap on the surface

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

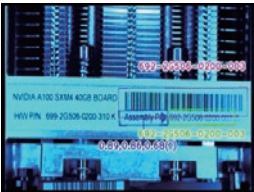


- Checking the dents on metal parts

AI OCR



- Label text reading



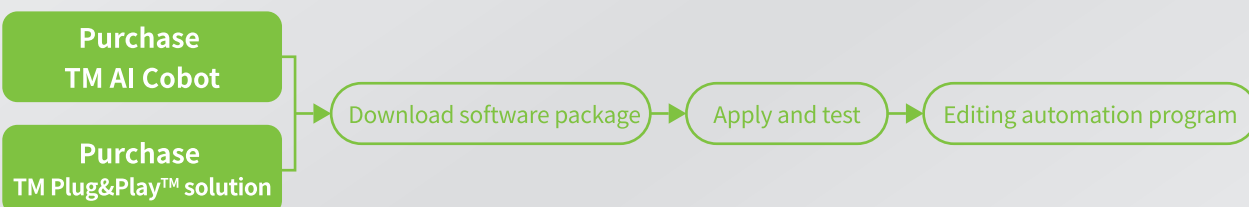
- Label text reading

TM Plug&Play™ Solution

TM certified, perfect integration, and usable upon installation

TM AI Cobot works with peripheral equipment vendors to create a comprehensive TM Plug&Play™ ecosystem. Each certified TM Plug&Play™ product has been calibrated and tested by Techman Robot and peripheral equipment vendors. This ensures users benefit from an optimal experience and highly reliable robot performance, while significantly reducing the time and labor costs associated with hardware production and automation programming.

Start to use within 5 minutes



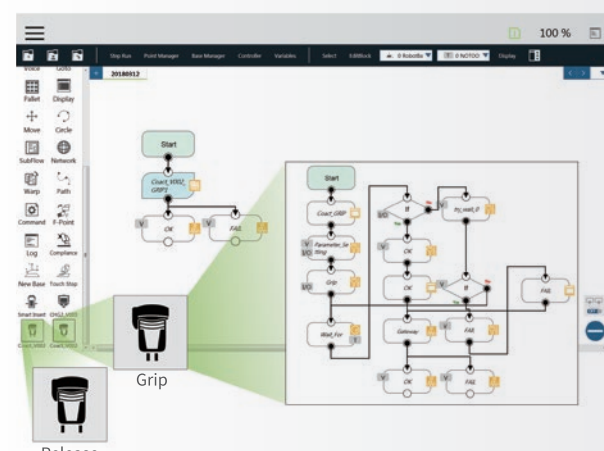
Simple, efficient, and fast production line introduction

HARDWARE
PACKAGE

+

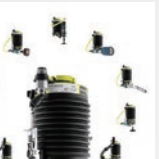
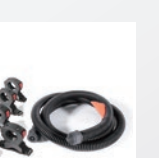
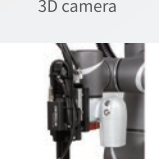
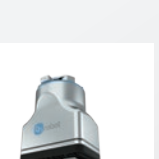
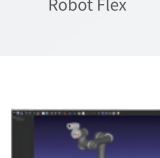
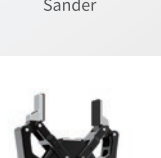
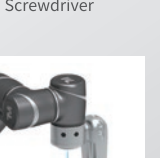
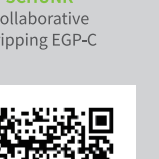
SOFTWARE
PACKAGE





■ Screw Plug&Play example

TM Plug&Play™ CERTIFIED

 Advantech AIR-3002022 -TM AI+ Trainer	 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	 ZLIN ROBOTICS Universal Mobile Stand	 More Information on www.tm-robot.com

Specification											
TM14S	TM20S	TM25S	TM30S	TM14S-M	TM20S-M	TM25S-M	TM30S-M	TM14S-X	TM20S-X	TM25S-X	TM30S-X
33kg	33.3 kg	81.6kg	80.6kg	33kg	33.3 kg	81.6kg	80.6kg	32.7kg	33 kg	81.3kg	80.3kg
14kg	20kg	25kg	30kg	14kg	20kg	25kg	30kg	14kg	20kg	25kg	30kg
1100mm	1300mm	1902mm	1702mm	1100mm	1300mm	1902mm	1702mm	1100mm	1300mm	1902mm	1702mm
+/- 360°											
+/- 159°	+/- 162°	+/- 166°	+/- 170°	+/- 159°	+/- 162°	+/- 166°	+/- 170°	+/- 159°	+/- 162°	+/- 166°	+/- 170°
130°/s		100°/s		130°/s		100°/s		130°/s		100°/s	
130°/s	95°/s	100°/s		130°/s	95°/s	100°/s		130°/s	95°/s	100°/s	
210°/s	125°/s	130°/s		210°/s	125°/s	130°/s		210°/s	125°/s	130°/s	
225°/s	160°/s	195°/s		225°/s	160°/s	195°/s		225°/s	160°/s	195°/s	
225°/s	190°/s	210°/s		225°/s	190°/s	210°/s		225°/s	190°/s	210°/s	
450°/s		225°/s		450°/s		225°/s		450°/s		225°/s	
4.5m/s		5.2m/s		4.5m/s		5.2m/s		4.5m/s		5.2m/s	
+/- 0.03mm	+/- 0.05mm	+/- 0.05mm		+/- 0.03mm	+/- 0.05mm	+/- 0.05mm		+/- 0.03mm	+/- 0.05 mm	+/- 0.05mm	
6 rotating joints											
Digital In: 16 / Digital Out: 16											
Analog In: 2 / Analog Out: 2											
Digital In: 3 / Digital Out: 3											
DO_0 (DO-0/AI) / DO_1 (DO-1/RS485-) / DO_2 (DO-2/RS485+)											
24V 2.0A for control box, 24V 1.5A for tool											
IP65 (Robot Arm)* ⁽¹⁾ IP54 (Control Box)				IP65 (Robot Arm)* ⁽¹⁾				IP65 (Robot Arm)* ⁽¹⁾ IP54 (Control Box)			
400W		600W		400W		600W		400W		600W	
0~50°C											
ISO Class 3											
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	
2×COM, 1×HDMI, 3×LAN, 2×USB2.0, 4×USB3.0											
RS-232/RS-422/RS-485, Ethernet, Modbus TCP/RTU (master & slave)											
Optionally support specified network card of PROFINET, EtherNet/IP, EtherCAT, CC-Link* ⁽²⁾											
TMflow (flowchart based), TMscript (script based), TMcraft (developer based)											
TÜV certificated ISO 13849-1, ISO 10218-1, ISO/TS 15066											
SGS certificated UL1740, CAN/CSA Z424-14 (R2019)											
CE, NSF/ANSI 169 (optional), SEMI S2 (optional)											
AI & Robot Vision											
Classification, Object Detection, Segmentation, Anomaly Detection, AI OCR								N/A			
Positioning, 1D/2D Barcode Reading, OCR, Defect Detection, Measurement, Assembly Check											
2D Positioning: 0.1 mm											
TM Landmark 3D Positioning (Working Point away from Landmark 100/200/300 mm): 0.10/ 0.20/ 0.33 mm* ⁽³⁾											
Auto-focused color camera with 5M resolution, Working distance 100 mm ~ ∞											
Support Maximum 2× GigE 2D cameras or 1× GigE 2D Camera + 1× 3D Camera* ⁽⁴⁾											
* ⁽¹⁾ IP65 robot arm will be available in 2025/Q3											
* ⁽²⁾ Please contact sales/agent for detailed specifications.											
* ⁽³⁾ 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.											
* ⁽⁴⁾ Refer to the official website of TM Plug&Play for camera models compatible to TM Robot.											

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Software Specification

Contact Us



TM AI+ Trainer Installation Requirements

Software Requirements	
TM AI+ Trainer Software version	Ver. 2.18 or above
Hardware Requirements	
Operating System	Ubuntu 22.04 ^{*(1)}
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)
Storage	2TB or above (SSD Recommended)
Communication Interface	Ethernet
Language Support	EN, TW, CN, DE, ES, FR, JP, KO, PT, TH, VI
^{*(1)} TM AI+ Trainer cannot be installed in a virtual environment on a personal computer, such as VirtualBox. ^{*(2)} Only NVIDIA GPUs are supported; GPUs from other manufacturers like AMD and Intel are not compatible. ^{*(3)} NVIDIA GPUs based on other micro-architectures, such as the GeForce RTX 40 series (Ada Lovelace architecture), are also not supported.	

TM Image Manager Installation Requirements



Software Requirements	
TMflow Software Version	Ver. 2.18 or above
Hardware Requirements	
Operating System	Ubuntu 22.04 ^{*(1)} ^{*(2)}
CPU	Gen 7 intel i7 or above
RAM	32 GB or above
Storage	SSD 2TB-8TB
Communication Interface	Ethernet
Language Support	EN, TW, CN, JP, KO, TH
Remark	Supports up to 10 TM AI Cobots and AI+ AOI Edges for continuous, simultaneous image transmission ^{*(3)}
^{*(1)} Image Manager is not allowed to be installed on the virtual environment of personal computer, like VirtualBox. ^{*(2)} Please verify if the computer hardware supports Ubuntu 22.04 LTS 64. ^{*(3)} When more than 10 connections are established with simultaneous image transmissions, users should assess the potential risks of system overload.	



HEADQUARTER

TECHMAN ROBOT INC.

5F., No. 58-2, Huaya 2nd Rd., Guishan Dist., Taoyuan City, 333411 , Taiwan
TEL: +886-3328-8350 | EMAIL: tmsales@tm-robot.com

SUBSIDIARY COMPANY

TECHMAN ROBOT (SHANGHAI) LTD.

Room 402, Building 6, No. 1158 Zhongxin Rd., Songjiang District, Shanghai, 201615, China
TEL: +86-021-37748058 # 60105 / +86-13621868920 / +86-15002148013
EMAIL: TRI_Sales_China@tm-robot.com

BRANCH OFFICE

▪ SHANGHAI BRANCH OFFICE

No.6, Valley 66 Sanzhuang Rd., Songjiang Export Processing Zone, Shanghai, 201600, China | TEL: +86-021-37748068 #60105

▪ CHONGQING BRANCH OFFICE

F0, No. 18 Zongbao Rd., Shapingbai District, Chongqing, 401331, China | TEL: +86-23-88288168 #10351 / +86-17782160499

▪ SOUTH-CHINA BRANCH OFFICE

2107A, Building C, Huanzhi Center, Longhua Street, Longhua District, Shenzhen City, Guangdong Province, China
TEL: +86-183-6086-5487 | EMAIL: TRI_Sales_China@tm-robot.com

▪ EUROPE OFFICE

Staalindustrieweg 21 NL-2952 AT Alblaserdam, Netherlands
EMAIL: TRI_Sales_NL@tm-robot.com

▪ KOREA BRANCH OFFICE

No.904, 99, Centum dong-ro, Haeundae-gu, Busan, 48059, Republic of Korea
TEL: +82-10-6382-1619 | EMAIL: daniel.yun@tm-robot.com

▪ JAPAN BRANCH OFFICE

〒461-0001 Aichi, Nagoya, Higashi Ward, Izumi, 2 Chome-21-28 5F
EMAIL: tmsales@tm-robot.com

GESSbot & TM AI Cobot

GESSbot & TM AI Cobot

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SYSTEM DATA:

Weight: 150kg
Size: length 950mm / width 718mm / height 420mm
Maximum payload: 350kg
Maximum speed: 1,2m/s (4,3km/h)
Maximum gradient: 5%
Operating Temperature Range: 5°C up to 50°C
Battery life: up to 12 hours
Communication: via sound system / LED-Panel / Display



TECHNICAL FEATURES:

- Automated charging (inductive or contact-based) for uninterrupted operation
- Individual user interfaces (web interface, tablet, push-button, etc.)
- Advanced navigation using LiDAR and digital mapping no need for colour or magnetic tracks
- Multi-camera system for enhanced monitoring and safety
- Seamless integration with existing machinery, elevators, roller shutters, and fire alarm systems
- Adaptable to the existing infrastructure
- Comprehensive onboard safety system
- Intelligent fleet management and control software
- VDA 5050 integration
- Engineered and serviced by Gessmann Germany

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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Our solutions - for your individual application

GESSbot applications

GESSbot[®]

GESSbot applications



Transfer of
workpiece carriers
per lifting unit



Transfer of
workpiece carriers by
belt conveyor



Transfer of KLTs
by roller conveyor



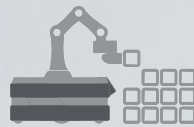
Transfer of KLTs
by lifting unit and
roller conveyor



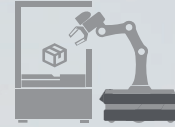
Transportation of trolleys
(with pallet, lattice box,...)



Transportation of
different parts
per rack



Cobot Pick & Place
incl. transportation



Cobot workpiece handling
on multiple
processing machine



GESSbot with
individual solution



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