



Omron TM Collaborative Robots

Omron's TM series of collaborative robots with integrated vision advances robotics to the next level in collaborative manufacturing



Omron TM Collaborative Robots

Omron's TM series of collaborative robots help companies produce a high mix and low volume of products, as well as harness the true potential of human resources.

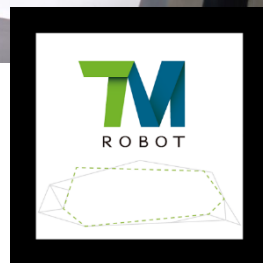
The versatility of these robots makes them adaptable for a number of applications, especially machine tending, loading and unloading, assembling, screwing, gluing, testing, and soldering.



Omron TM Advantages

- 3D vision intelligence
- Interactively teach the robot
- Visual based user programming
- Integrated industry certified safety



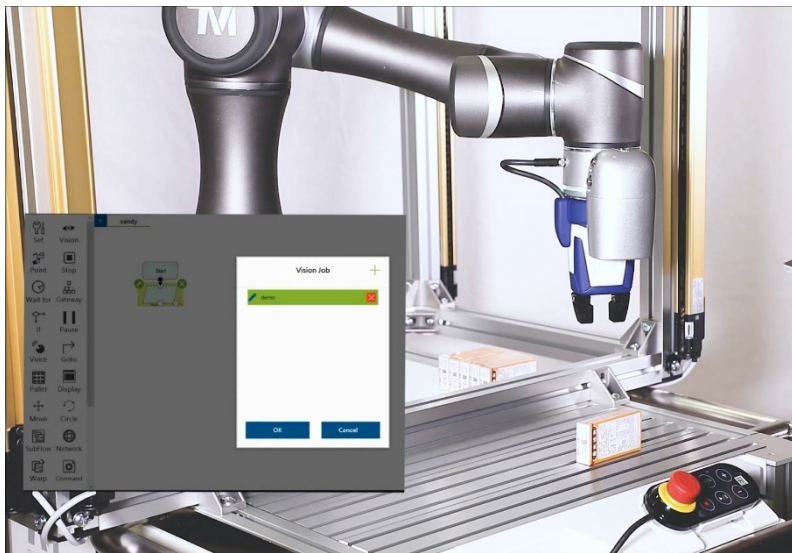


3D Vision Intelligence

- Using a 2D camera the TM Landmark is measured to calibrate a 3D robot position
- Eliminates the need for rigid and costly robot work fixtures
- Stacking applications and high mix product applications can be easily accomplished
- Different machines, parts, and work tasks can be automatically detected

Interactive and visual teaching makes applications simple

Teach buttons are located directly on the wrist of the cobot arm for hands on position teaching, gripper activation, and vision task placements.



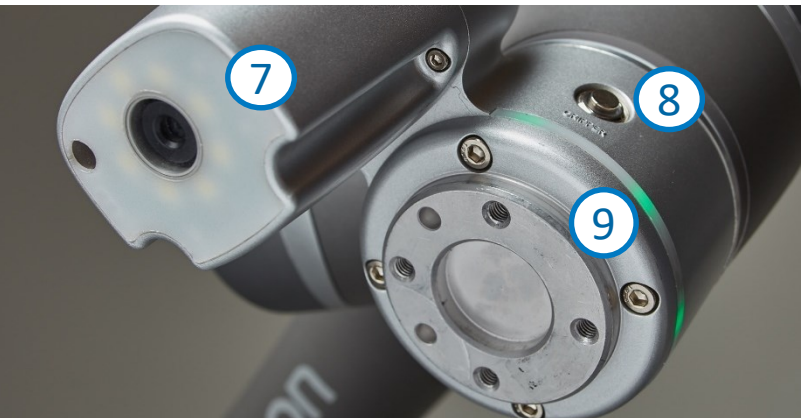
Collaboratively teach the robot positions and gripper actions



Integrated vision display with drag and drop vision functions



Press RUN and you are DONE



Omron TM Cobot Arm Tool Features

Having these teach control on the end of arm tool is an advantage for user friendly operations.

- ① Vision button to teach vision tasks
- ② "Point" button records position in program
- ③ "Free mode" allows user to move robot arm into position by hand
- ④ Analog I/O port to connect user provided analog devices
- ⑤ Multi-color indicator light ring to signal various robot states
- ⑥ Digital I/O port to connect user provided digital device
- ⑦ Autofocus camera with integrated light
- ⑧ Gripper button triggers user provided grippers and tools
- ⑨ End of arm tooling flange



27 Different Tools Available

Vision find tools:



Pattern Matching



Position Alignment



Image Matching



Blob Detection

Vision enhancement tools:



Contrast



Morphology



Smoothing



Color extraction



Threshold

Code reading tools:



Barcode, 2D, QR



Color identification

SMART Vision

- Use vision to determine if machine doors are open or closed along with machine indicators to initiate cobot tending process - eliminating control and communication integration
- Use the vision to operate machine controls from buttons to switches to touch screens
- Use vision to provide quality inspections
- Use vision to identify or read codes for new products and line changes

Take your cobot to next level in collaborative automation



Fast and simple visual programming

You can accomplish your automation tasks with our revolutionary simple to use TMFlow™ programming software.

Users with ZERO coding experience can complete a pick & place application in 5 minutes.

Omron TM robots reduce your time-to-production and the total cost of automation integration.

Guided industry safety set up

TM Robot complies with the combined scope of ISO 10218-1:2011 and ISO/TS-15066 for human-robot co-operational safety, allowing the robot to be programmed with both speed and force limits.

Step
1

Safety Setting

Performance Safety Settings

Human - Machine Safety Settings

Safety IO Settings

Cartesian Limit

Body Region Risk Setting X

More Limit Setting X

1.Please set body regions that could be contacted by the robot in the collaborative workspace

Face & Head

Neck Muscle

Shoulder Joint and Muscle

Upper Arm & Elbow Joint

Lower Arm & Wrist Joint

Lower Leg

Thigh & Knee

Chest

Abdominal Muscle

☒

Hand & Fingers

Default

Save

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Step
2

Safety Setting

Performance Safety Settings

Human - Machine Safety Settings

Safety IO Settings

Cartesian Limit

Body Region Risk Setting X

More Limit Setting X

TCP

TCP Speed 0.2000000079 m/sec

TCP Force 130 N

Joint Speed Joint Torque

J1: 190 deg/sec J1: 65 Nm

J2: 190 deg/sec J2: 65 Nm

J3: 190 deg/sec J3: 65 Nm

J4: 235 deg/sec J4: 15 Nm

J5: 235 deg/sec J5: 15 Nm

J6: 235 deg/sec J6: 15 Nm

Default

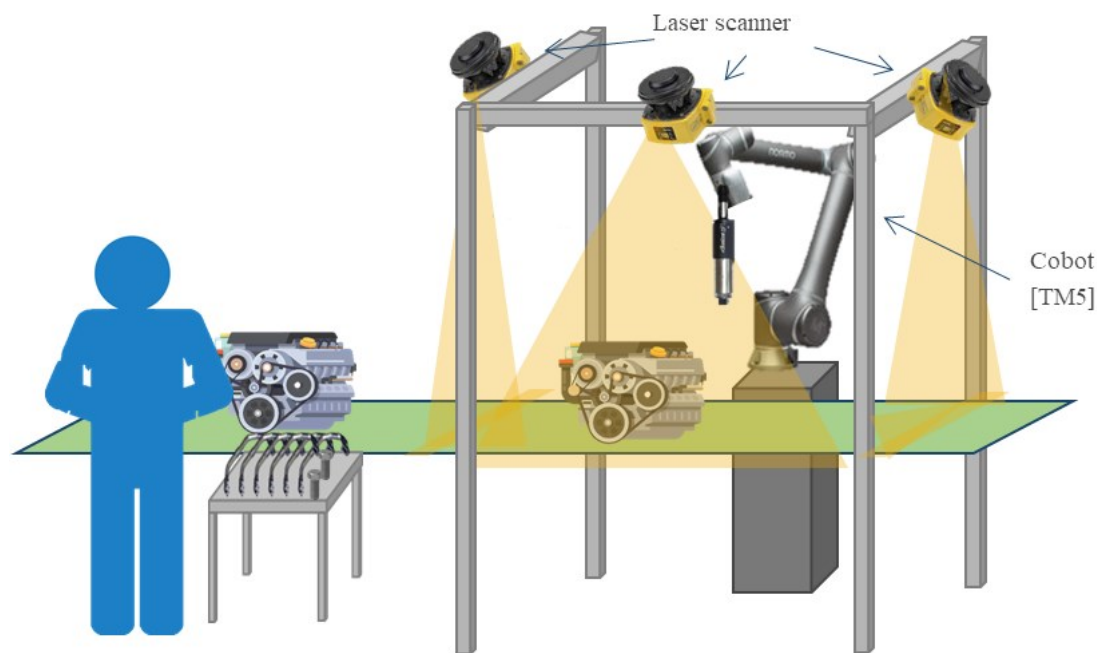
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Safety rated hardware

Equipped with an expansive set of safety rated I/O, external safety devices such as area scanners, light curtains, and safety mats can be connected, enabling the robot to change modes or operation when a person is near. These types of integrations allow users to create more intelligent and capable collaborative applications that remain safe



Safety Function Number	Name	Robot Stopping Function	Structure Category	PL
SF0	Robot Stick ESTOP	Emergency Stop	Cat. 3	d
SF1	User Connected ESTOP Input	Emergency Stop	Cat. 3	d
SF2	Encoder Standstill	Protective Stop	Cat. 2	d
SF3	User Connected External Safeguard Input	Protective Stop	Cat. 2	d
SF4	Joint Torque Monitoring	Protective Stop	Cat. 2	d
SF5	Joint Position Limit	Protective Stop	Cat. 2	d
SF6	Joint Speed Limit	Protective Stop	Cat. 2	d
SF7	TCP Speed Limit	Protective Stop	Cat. 2	d
SF8	TCP Force Limit	Protective Stop	Cat. 2	d
SF9	User Connected External Safeguard Input for Human-Machine Safety Settings	--	Cat. 2	d
SF10	Robot ESTOP Output	--	Cat. 3	d
SF11	User Connected External Safeguard Output	--	Cat. 3	d
SF12	User Connected External Safeguard Output for Human-Machine Safety Settings	--	Cat. 3	d
SF13	Robot Internal Protective Stop Output	--	Cat. 3	d
SF14	Robot Encoder Standstill Output	--	Cat. 3	d
SF15	User Connected Enabling Device Input	Protective Stop	Cat. 2	d
SF16	User Connected ESTOP Input without Robot ESTOP Output	Emergency Stop	Cat. 3	d
SF17	Cartesian Limit	Protective Stop	Cat. 2	d



Omron TM cobot safety solutions

- Safety devices enable full speed operation when safety conditions are met
- Dedicated safety inputs provide pre-programmed functionality
- Omron can also provide the safety products and safety assessment for your collaborative applications.

Collaborative Robot Line Up

Omron's line-up of collaborative robots include a variety of models to guarantee the right reach and payload for different applications



Designed to meet safety regulations ISO 10218-1
(including TS 15066) and ISO 13849-1.



TM5-700
Reach: 700 mm



6kg
Payload



TM5-900
Reach: 900 mm



4kg
Payload



TM14
Reach: 1100 mm



14kg
Payload



TM12
Reach: 1300 mm



12kg
Payload

TM5 Specifications



Product Name		TM5-700	TM5M-700	TM5M-700 SEMI	TM5-900	TM5M-900	TM5M-900 SEMI
Part Number		RT6-000700X	RT6-010700X	RT6-010701X	RT6-000900X	RT6-010900X	RT6-010901X
Weight (kg)		22.1			22.6		
Controller Weight (kg)		13.5	14.5	14.5	13.5	14.5	14.5
Max Payload (kg)		6			4		
Reach (mm)		700			900		
Mounting		Wall, Table, Ceiling					
Typical Speed (m/s)		1.1			1.4		
Joint Range	Joint 1	±270°					
	Joint 2, 4, 5	±180°					
	Joint 3	±155°					
	Joint 6	±270°					
Joint Speeds	Joint 1, 2, 3	180°/s					
	Joint 4, 5, 6	225°/s					
Repeatability (mm)		±0.05					
IP		IP54 (robot arm), IP32 (control box), IP40 (robot stick)					
Cleanroom Class		ISO Class 5					

TM12 / 14 Specifications



Product Name		TM12	TM12M	TM12M SEMI	TM14	TM14M	TM14M SEMI
Part Number		RT6-100130X	RT6-110130X	RT6-110131X	RT6-200110X	RT6-210110X	RT6-210111X
Weight (kg)		33.3			32.6		
Controller Weight (kg)		13.8	14.5	14.5	13.8	14.5	14.5
Max Payload (kg)		12			14		
Reach (mm)		1300			1100		
Mounting		Wall, Table, Ceiling					
Typical Speed (m/s)		1.3			1.1		
Joint Range	Joint 1	±270°					
	Joint 2, 4, 5	±180°					
	Joint 3	±166°			±163°		
	Joint 6	±270°					
Joint Speeds	Joint 1, 2	120°/s					
	Joint 3	180°/s					
	Joint 4, 5	180°/s			150°/s		
	Joint 6	180°/s					
Repeatability (mm)		±0.1					
IP		IP54 (robot arm), IP32 (control box), IP40 (robot stick)					
Cleanroom Class		ISO Class 5					



TM Controller Specifications

Operating Temperature (°C)		0 to 50				
Power Supply		100-240 VAC, 50-60 Hz	22-60 VDC	22-60 VDC	100-240 VAC, 50-60 Hz	22-60 VDC
Robot Arm Cable Length		3m/12m	1.5m	1.5m	3m/12m	1.5m
I/O Ports	Control Box	Digital In: 16 Digital Out: 16 Analog In: 2 Analog Out: 1				
	Tool	Digital In: 4 Digital Out: 4 Analog In: 1 Analog Out: 0				
I/O Interface		3 X COM, 1 X HDMI, 3 X LAN, 4 X USB2.0, 2 X USB3.0				
Communication		RS232, Ethernet(master), Modbus TCP/RTU (master & slave)				
Integrated Camera		5M pixels, color	5M pixels, color	5M pixels, color	5M pixels, color	5M pixels, color
I/O Power Supply		24V 1.5A (control box and tool)				
Programming Environment		TMflow, flowchart based				
SEMI S2 Certified*		No	No	Yes	No	Yes



Different Models to Suit Your Unique Needs

The Omron TM line of collaborative robots is available in a variety of additional configurations to satisfy the unique needs of your application

- X Models (without wrist mounted camera)
- DC power versions
- SEMI S2 Certified



Omron TM Solution Accessories

Quickly assemble all the required products for a complete cobot solution with available plug n play accessories which have integrated configurations within in TMFlow



Mobile and stationary cobot stands



3rd Party Grippers and additional vision solutions

Cable management
Solutions

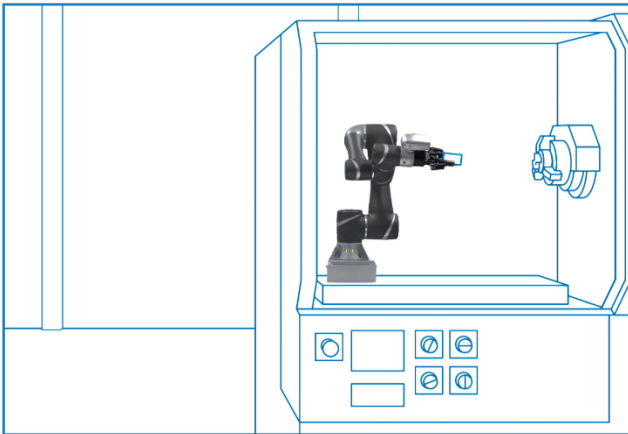


Integrated robot and automation solutions provide savings and higher performance

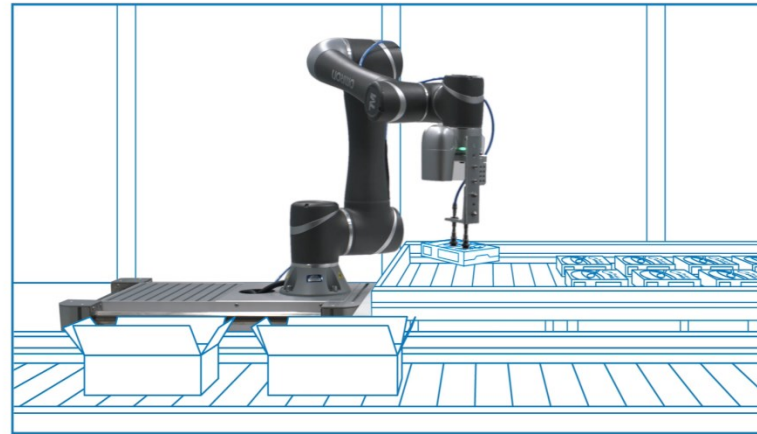
Omron's integrated robot and automation capability lets you develop your complete solution in one software package for robot, motion, safety, vision, HMI, IIoT, and Industry 4.0 programming

Omron's TM cobots provide solutions for applications in a variety industries

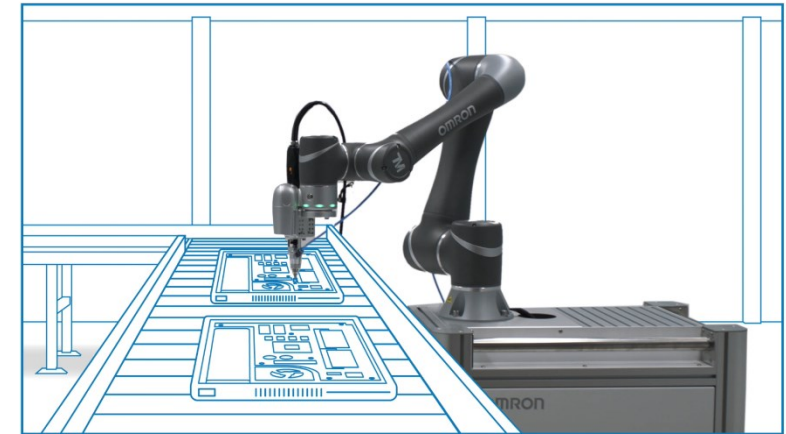
Automotive, Machine Tool, Plastics, Packaging, Food, Beverage, Assembly, Electronics, and Semi-conductor



- Machine Tending
- Part Feeding



- Pick n Place
- Packaging



- Assembly / Screw Driving
- Dispensing

Omron Engineering and Support services

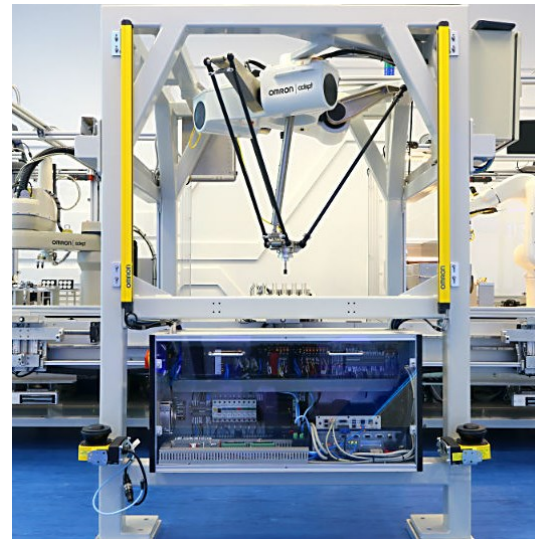
Omron provides engineering and support throughout the customer journey - from project development to product life cycle services. Omron Americas has regional engineering centers and application engineers all across the north, central, and south America.



Engineering, application,
and proof of concept



Technical support and field
engineering services



Safety product and services



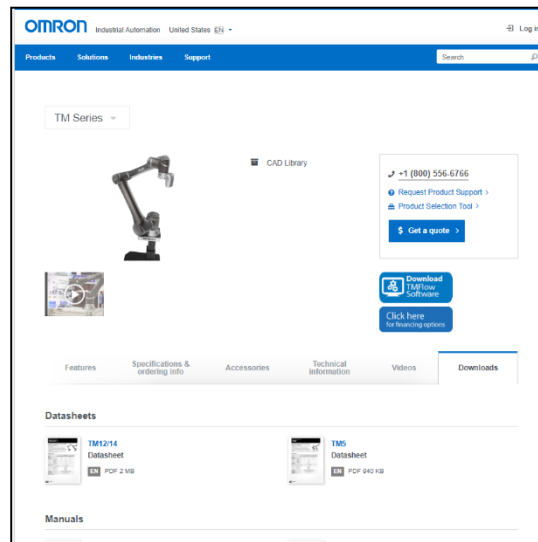
Repair and field support
services

Let's start your project today!

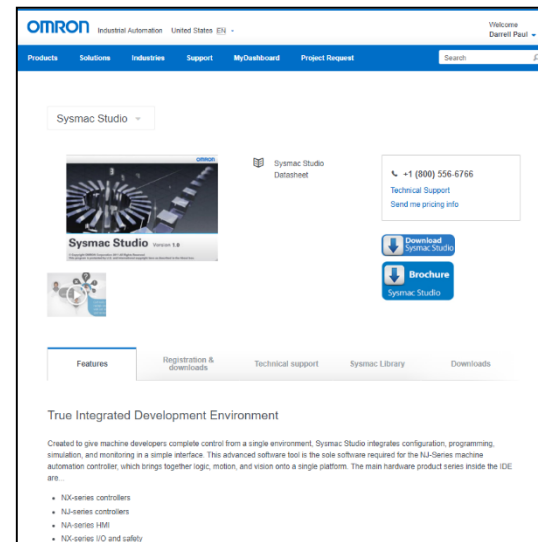
The number one reason why customers choose Omron robots and automation is our engineering team and resources. Let us help you all the way through the project from the initial robot automation return on investment analysis, simulation validation, and proof of concept testing, to start up and safety integration.



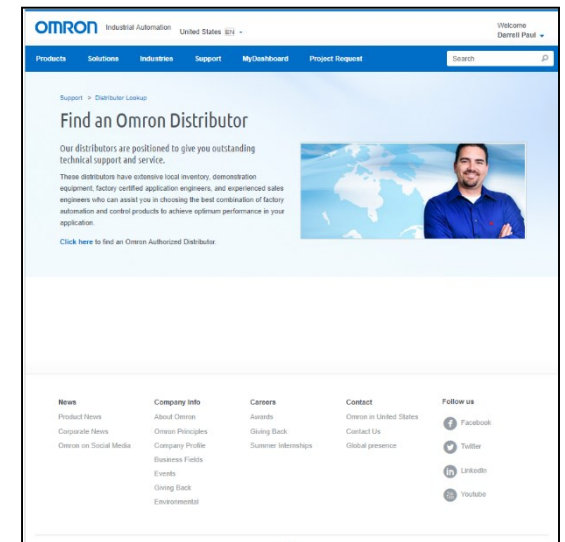
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