

OMRON™ Collaborative Robot, S Series

TM 5S/7S/12S/14S/25S**S Series Collaborative Robot (Cobot) for assembly, palletizing, inspection, logistics and many other applications**

- Designed to promote a safe and harmonious workplace between humans and machines.
- 31 safety functions, all ISO 13849-1, Cat.3, PLd, certified.
- Full ISO 10218-1 compliance.
- Easy-to-use graphical programming environment for quick startup and operation.
- Built-in vision-based robot control enables visual servoing, inspection, and measurement operations.
- Optional camera and Landmark allows for truly flexible, fast changeover.
- Capability to integrate with mobile robots enables fully autonomous machine tending and logistics handling applications.

**Part Number Structure****RT6 - □□□□□□□□**

1 2 3 4 5 6 7 8

No.	Item	Specifications	Symbol
1		TMS Series	6
2	Model Type	TM5S	0
		TM7S	6
		TM12S	1
		TM14S	2
		TM25S	7
3	Power Source	AC	0
		DC*1	1
4	Vision	Standard Model with Integrated Camera	0
		X Model without Camera	1
5 & 6	Arm Length (mm)	700 (TM7S)	70
		900 (TM5S)	90
		1300 (TM12S)	13
		1100 (TM14S)	11
		1902 (TM25S)	19
7	Option	Standard	0
		SEMI	1
		Fieldbus	2
		SEMI, Fieldbus	5
8	Cable Length (m)	Standard Length (1.5 for DC unit / 3 for AC unit)	4
		Extended Length (3 for DC unit /12 for AC unit)	5

* 1 DC powered Cobots are capable of mobile operation when paired with an Autonomous Mobile Robot.

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Ordering Information

Standard Units Ordering Information

Product Model	Maximum Payload (kg)	Reach (mm)	Integrated Camera	Extended Cable ^{*1}	DC Power Source ^{*2}	SEMI S2 Certified ^{*3}	Global P/N
TM5S	5	900	Yes	No	No	No	RT6-0009004
TM5S, 12 m cable				Yes			RT6-0009005
TM5S-X			No	No			RT6-0019004
TM5S-X, 12 m cable				Yes			RT6-0019005
TM5S-M			Yes	No	Yes	Yes	RT6-0109004
TM5S-M, 3 m cable				Yes			RT6-0109005
TM5S-M SEMI							RT6-0109014
TM7S	7	700	Yes	No	No	No	RT6-6007004
TM7S, 12 m cable				Yes			RT6-6007005
TM7S-X			No	No			RT6-6017004
TM7S-X, 12 m cable				Yes			RT6-6017005
TM7S-M			Yes	No	Yes	Yes	RT6-6107004
TM7S-M, 3 m cable				Yes			RT6-6107005
TM7S-M SEMI							RT6-6107014
TM12S	12	1300	Yes	No	No	No	RT6-1001304
TM12S, 12 m cable				Yes			RT6-1001305
TM12S-X			No	No			RT6-1011304
TM12S-X, 12 m cable				Yes			RT6-1011305
TM12S-M			Yes	No	Yes	Yes	RT6-1101304
TM12S-M, 3 m cable				Yes			RT6-1101305
TM12S-M SEMI				No			RT6-1101314
TM14S	14	1100	Yes	No	No	No	RT6-2001104
TM14S, 12 m cable				Yes			RT6-2001105
TM14S-X			No	No			RT6-2011104
TM14S-X, 12 m cable				Yes			RT6-2011105
TM14S-M			Yes	No	Yes	Yes	RT6-2101104
TM14S-M, 3 m cable				Yes			RT6-2101105
TM14S-M SEMI				No			RT6-2101114
TM25S	25	1902	Yes	No	No	No	RT6-7001904
TM25S, 12 m cable				Yes			RT6-7001905
TM25S-X			No	No			RT6-7011904
TM25S-X, 12 m cable				Yes			RT6-7011905
TM25S-M			Yes	No	Yes	Yes	RT6-7101904
TM25S-M, 3 m cable				Yes			RT6-7101905

*1 The default cable length is 1.5 m for DC units and 3 m for AC units. The extended cable length is 3 m for DC units and 12 m for AC Units.

*2 Standard Omron Cobots use AC as the power source. DC powered cobots are capable of mobile operation when paired with an Autonomous Mobile Robot.

*3 SEMI (Semiconductor Equipment and Materials International) is the central global network of manufacturers of micro and nano electronics that issues safety guidelines. SEMI S2 is the most well-known standard in semiconductor manufacturing equipment for Environmental, Health, and Safety (EHS).

Fieldbus Units Ordering Information

Product Model	Maximum Payload (kg)	Reach (mm)	Integrated Camera	Extended Cable ^{*1}	DC Power Source ^{*2}	SEMI S2 Certified ^{*3}	Global P/N
TM5S, Fieldbus	5	900	Yes	No	No	No	RT6-0009024
TM5S, 12 m cable, Fieldbus				Yes			RT6-0009025
TM5S-X, Fieldbus			No	No			RT6-0019024
TM5S-X, 12 m cable, Fieldbus				Yes			RT6-0019025
TM5S-M, Fieldbus			Yes	No	Yes	Yes	RT6-0109024
TM5S-M, 3 m cable, Fieldbus				Yes			RT6-0109025
TM5S-M SEMI, Fieldbus				No			RT6-0109054

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Product Model	Maximum Payload (kg)	Reach (mm)	Integrated Camera	Extended Cable ^{*1}	DC Power Source ^{*2}	SEMI S2 Certified ^{*3}	Global P/N
TM7S, Fieldbus	7	700	Yes	No	No	No	RT6-6007024
TM7S, 12 m cable, Fieldbus				Yes			RT6-6007025
TM7S-X, Fieldbus			No	No			RT6-6017024
TM7S-X, 12 m cable, Fieldbus				Yes			RT6-6017025
TM7S-M, Fieldbus			Yes	No	Yes	Yes	RT6-6107024
TM7S-M, 3 m cable, Fieldbus				Yes			RT6-6107025
TM7S-M SEMI, Fieldbus				No			RT6-6107054
TM12S, Fieldbus	12	1100	Yes	No	No	No	RT6-1001324
TM12S, 12 m cable, Fieldbus				Yes			RT6-1001325
TM12S-X, Fieldbus			No	No			RT6-1011324
TM12S-X, 12 m cable, Fieldbus				Yes			RT6-1011325
TM12S-M, Fieldbus			Yes	No	Yes	Yes	RT6-1101324
TM12S-M, 3 m cable, Fieldbus				Yes			RT6-1101325
TM12S-M SEMI, Fieldbus				No			RT6-1101354
TM14S, Fieldbus	14	1100	Yes	No	No	No	RT6-2001124
TM14S, 12 m cable, Fieldbus				Yes			RT6-2001125
TM14S-X, Fieldbus			No	No			RT6-2011124
TM14S-X, 12 m cable, Fieldbus				Yes			RT6-2011125
TM14S-M, Fieldbus			Yes	No	Yes	Yes	RT6-2101124
TM14S-M, 3 m cable, Fieldbus				Yes			RT6-2101125
TM14S-M SEMI, Fieldbus				No			RT6-2101154
TM25S, Fieldbus	25	1902	Yes	No	No	No	RT6-7001924
TM25S, 12 m cable, Fieldbus				Yes			RT6-7001925
TM25S-X, Fieldbus			No	No			RT6-7011924
TM25S-X, 12 m cable, Fieldbus				Yes			RT6-7011925
TM25S-M, Fieldbus			Yes	No	Yes		RT6-7101924
TM25S-M, 3 m cable, Fieldbus				Yes			RT6-7101925

*1 The default cable length is 1.5 m for DC units and 3 m for AC units. The extended cable length is 3 m for DC units and 12 m for AC Units.

*2 Standard Omron Cobots use AC as the power source. DC powered cobots are capable of mobile operation when paired with an Autonomous Mobile Robot.

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Items Included with an S Series Cobot System

Item	Cobot	Cable	Robot Stick	Control Box	Calibration Plate ^{*1}	I/O Cables	Landmark	Ground wire	Jumper Wire	Power cable	SEMI Switch	SEMI ESTOP Cable	External Brake Release Cable
Description	TM5S, TM7S, TM12S, TM14S	3, 1.5, and 12 m options	Hand control to move cobot	Robot Control Box	Large plate	1 m	Not compatible with X model cobots	2 m	3 cm	For Control Box, 3 cables: B, G, F, 1.8 m	SEMI Emergency OFF, SEMI cobots only	SEMI cobots only, 3 m	N/A
	TM25S									For Control Box, 1 cable, 5 m	N/A	N/A	For external brake release, 3 m
Quantity	1	1	1	1	1	1	2	2	2	3 or 1	1	1	1

*1 The calibration plate is provided only for the standard units with the camera.

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Accessories And Optional Items

Appearance	Product Name	Description	Remarks	Part Number
	Landmark	Robot positioning tool as a reference to the environment.	Two included with purchase of a cobot. Not included with X model cobots	RT6-A000021
	Mobile Workstation (MWS)	MWS is a convenient tool for users to mount the cobot arm on work surface, and store the control box safely within. Users can easily move the MWS with the cobot to different work cells.	Compatible with OMRON TM5S, TM7S, TM5-700, and TM5-900.	RT6-A000010
	Robot stand	Similar to MWS, the robot stand can be easily moved with the cobot to different work stations.	Compatible with OMRON TM5S, TM7S, TM5-700, and TM5-900.	RT6-A000009
	SSD with cable	128 GB solid state hard drive.	SATA cable included. Recommended for external cameras image logging.	RT6-A000012
	Kit, calibration set with additional pin	Toolkit for teaching a precise tool center point (TCP) that can be used for manual workspace calibration within TMvision.	Required for TCP and manual vision calibration.	RT6-A000002
	Polarizer Light Module, S Series	Improves the reflection caused by the cobot's own light source on the surface of highly reflective objects.	For S Series Cobots only.	RT6-A000025
	Air Filter (ROHS)	Replacement air filter for the control box.	The filter must be changed regularly to maintain efficiency. The replacement procedure can be found in the Hardware Installation Manual.	19937-214F
	TM Screen (Teaching Pendant) with Pen	The TM Screen devices can be combined with the Robot Stick design to become a teaching pendant, and operate the cobot from the touch screen environment.	The TM Screen is only compatible with S Series units. No additional wiring is needed.	RT6-A000024
	TM5S/TM7S Metal Joint Cover Sets	6 piece set of black metal joint covers without logo. Design for harsh working environments.	Only available for TM5S and TM7S unit.	RT6-A000027

Software

Product Name	Add-On Product Names	Remarks	Part Number
TMFlow 2.XX	N/A	Software required to control the cobot. Free download	N/A
Super Software Dongle	USB dongles with below software licenses		RT6-A000026
	TM Identify & Measure	License, add-on to TMflow. Includes: identification of pose variation, specific color area size, subtract reference image, line/circle burr, counting and gauge.	
	TM External Vision	License, add-on to TMflow. Required when using eye-to-hand cameras.	
	TM OCR	License, add-on to TMflow. Includes: Text OCR and Number OCR.	

Specifications

Product		TM5S	TM7S	TM12S	TM14S	TM25S
Weight (With Camera / kg)		23.9	22.9	33.3	33	81.6
Weight (Without Camera / kg)		23.6	22.6	33	32.7	81.3
Maximum payload (kg)		5	7	12	14	25
Reach (mm)		900	700	1300	1100	1902
Mounting		Wall, Table, Ceiling				
Joint ranges	J1, J2, J4, J5, J6	+/- 360°				
	J3	+/- 158°	+/- 152°	+/- 162°	+/- 159°	+/- 166°

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Product		TM5S	TM7S	TM12S	TM14S	TM25S
Joint speed	J1, J2	210°/s		130°/s		100°/s
	J3			210°/s		130°/s
	J4	225°/s				195°/s
	J5					210°/s
	J6	450°/s				225°/s
Average speed (m/s)*		1.4	1.1	1.3	1.1	2.1
Repeatability (mm)		+/- 0.03				+/- 0.05
Degrees of freedom		6 rotating joints				
I/O Ports	Control Box	Digital In: 16 / Digital Out: 16 Analog In: 2 / Analog Out: 2				
	Tool Conn.	Digital In: 3 / Digital Out: 3				
I/O Power Supply	Control Box	24 V 2.0 A				
	Tool	24 V 1.5 A				
Ingress Protection		IP54 for Robot Arm, AC control Box, Robot Stick and TM Screen				
Operating Temperature and Humidity		0 to 50°C, 85% max. (with no condensation)				
Motor Power Supply	AC Units	100 to 240 VAC, 50/60 HZ				200-240 VAC, 50-60 Hz
	DC Units	24 to 60 VDC				48-60 VDC
I/O Interface		2×COM, 1×HDMI, 3×LAN, 2×USB2.0, 4×USB3.0				
Communication		RS232/RS-422/RS-485, Ethernet, Modbus TCP/RTU (master & slave), PROFINET (optional), EtherNet/IP (optional)				
Programming Environment		TMflow (flowchart-based and script-based)				
Certification		ISO Cleanroom Class 3 and SEMI S2 (Optional)				ISO Cleanroom Class 3
Robot Vision	Eye in Hand (Built in)	1.2M / 5M pixels, color camera (camera models only)				
	Eye to Hand (Optional)	Supports Maximum 2 x GigE 2D cameras				

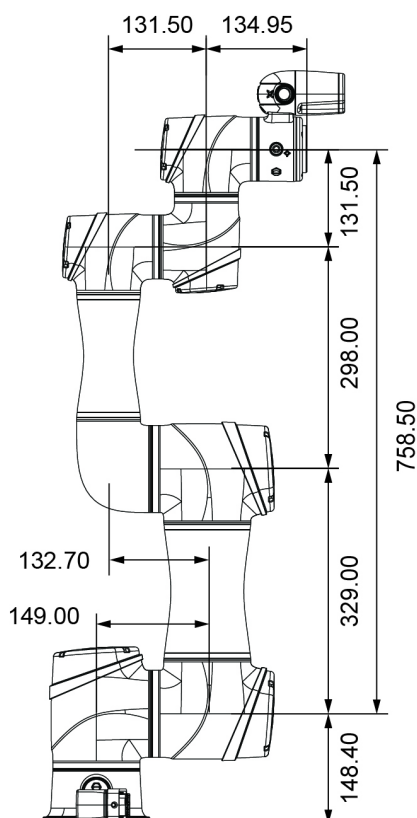
*Average speed is tested under a performance mode condition.

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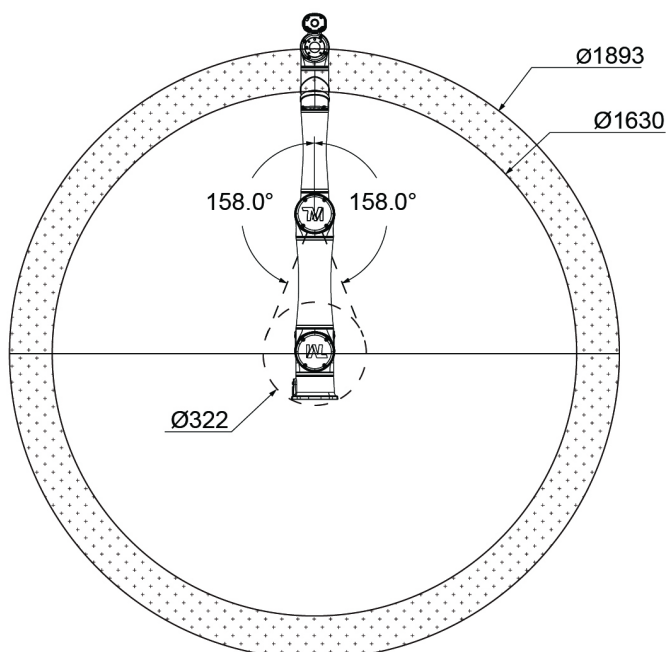
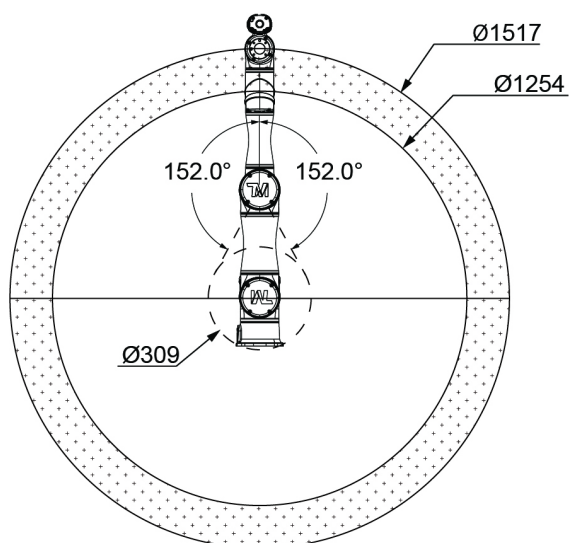
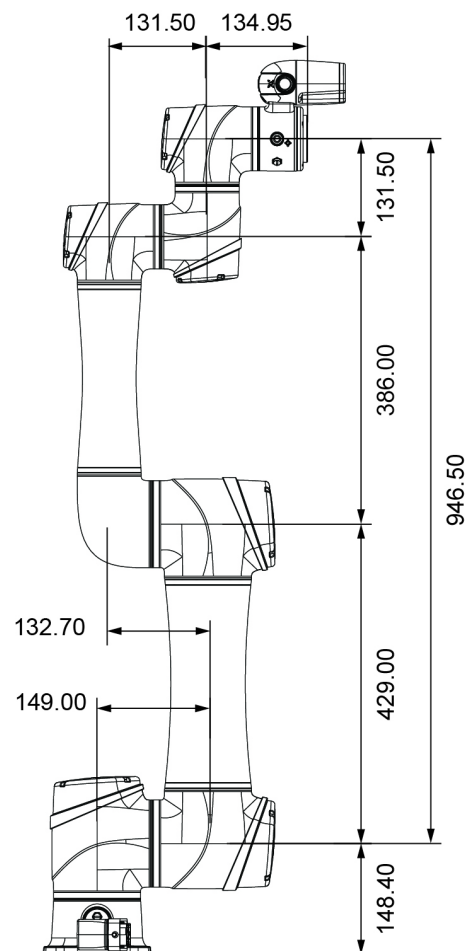
Dimensions

(Units: mm)

TM7S/TM7S-X/TM7S-M*



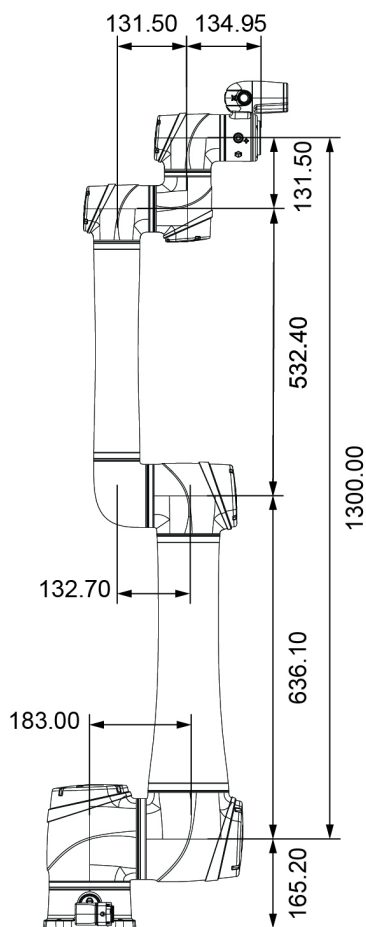
TM5S/TM5S-X/TM5S-M*



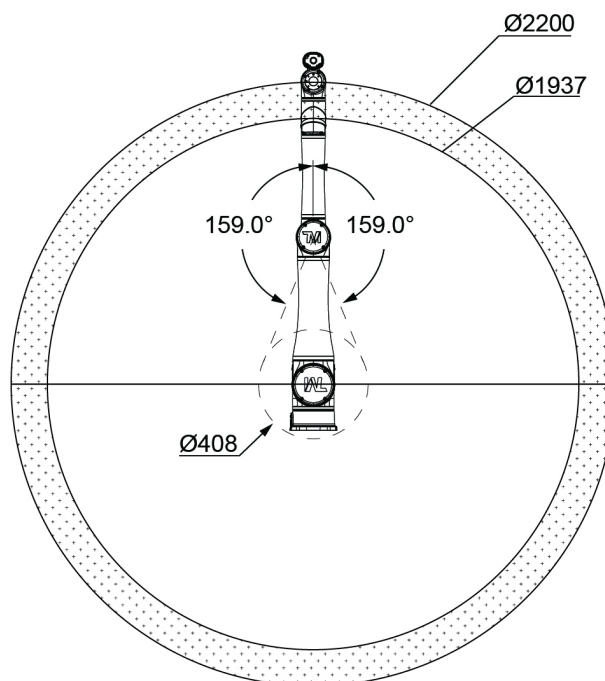
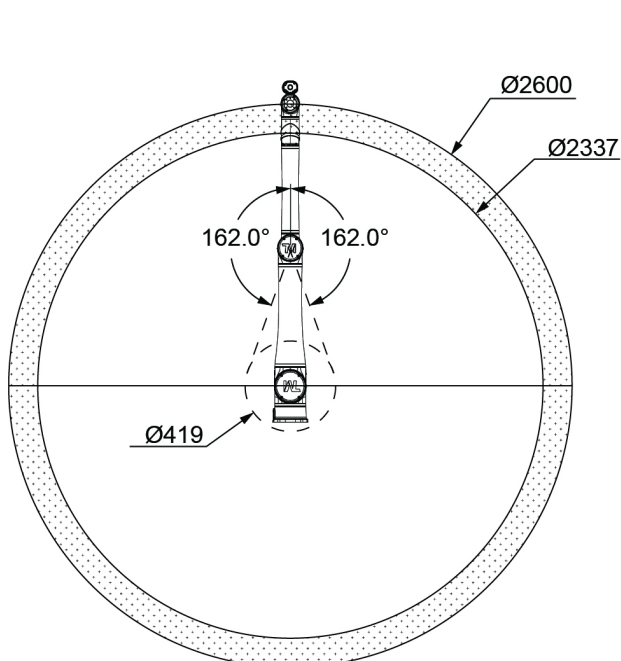
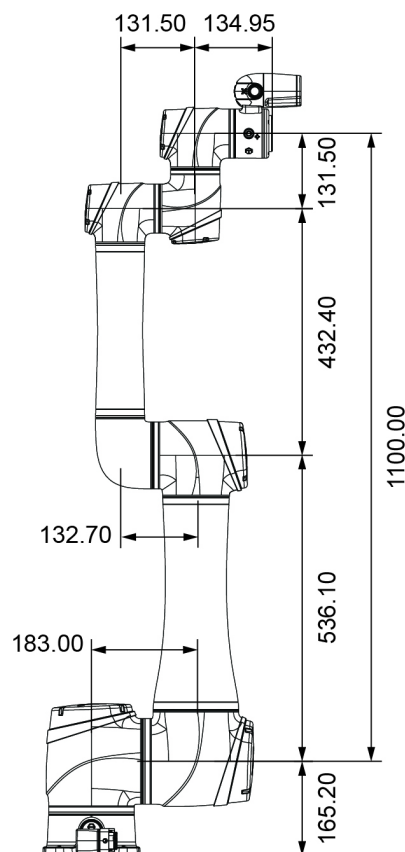
* Dimensions do not include the camera. Refer to the Camera Flange dimensions on page 9 for more information.

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TM12S/TM12S-X/TM12S-M*



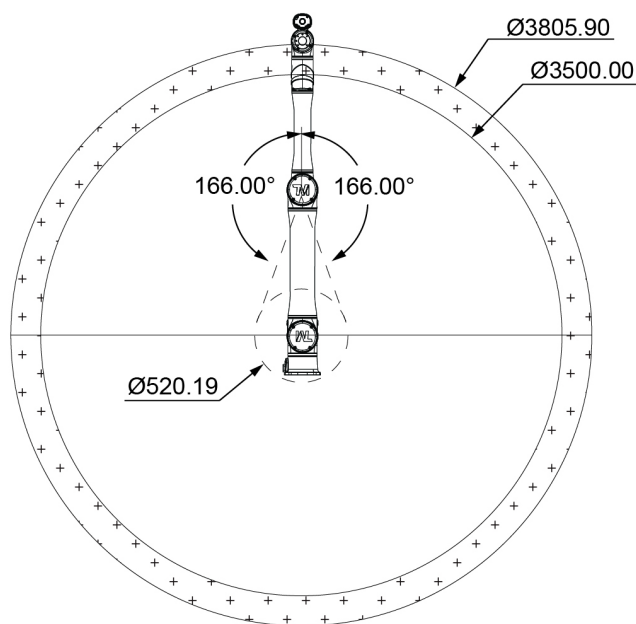
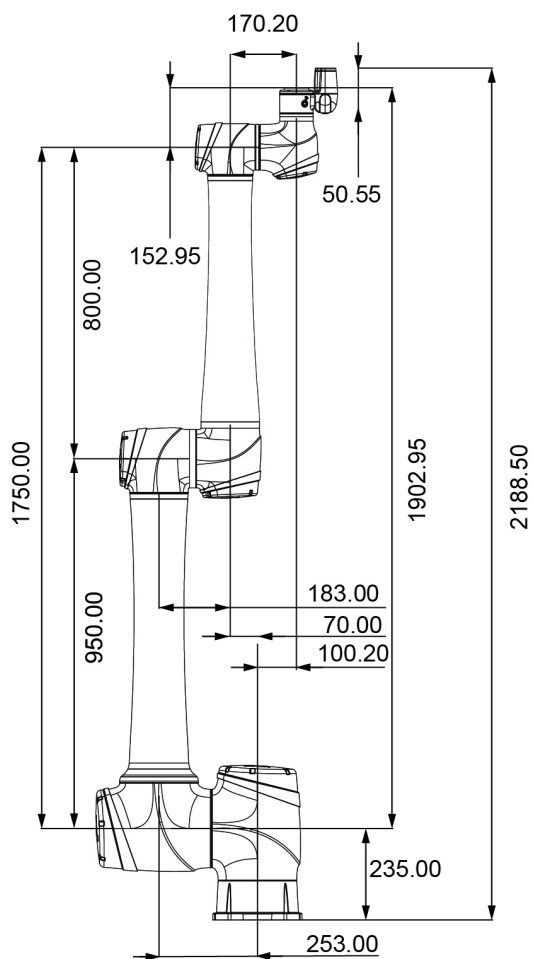
TM14S/TM14S-X/TM14S-M*



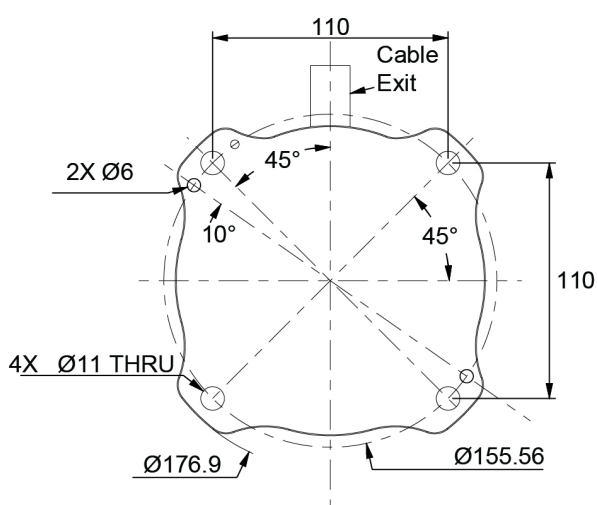
* Dimensions do not include the camera. Refer to the Camera Flange dimensions on page 9 for more information.

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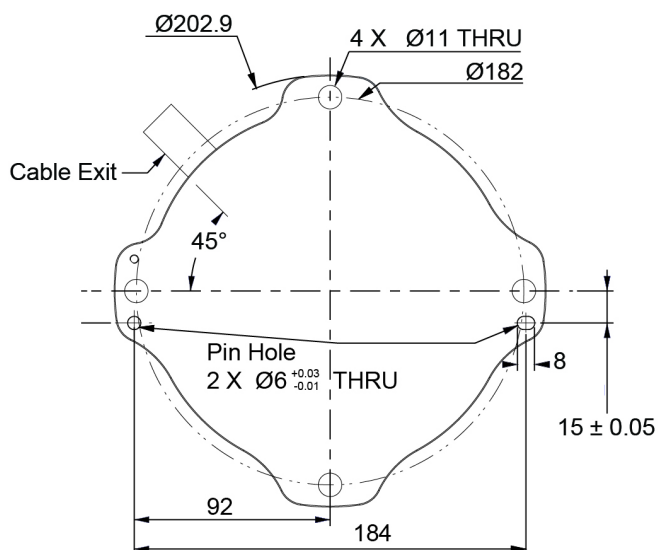
TM25S/TM25S-X/TM25S-M*



Footprint (TM5S/7S Models)



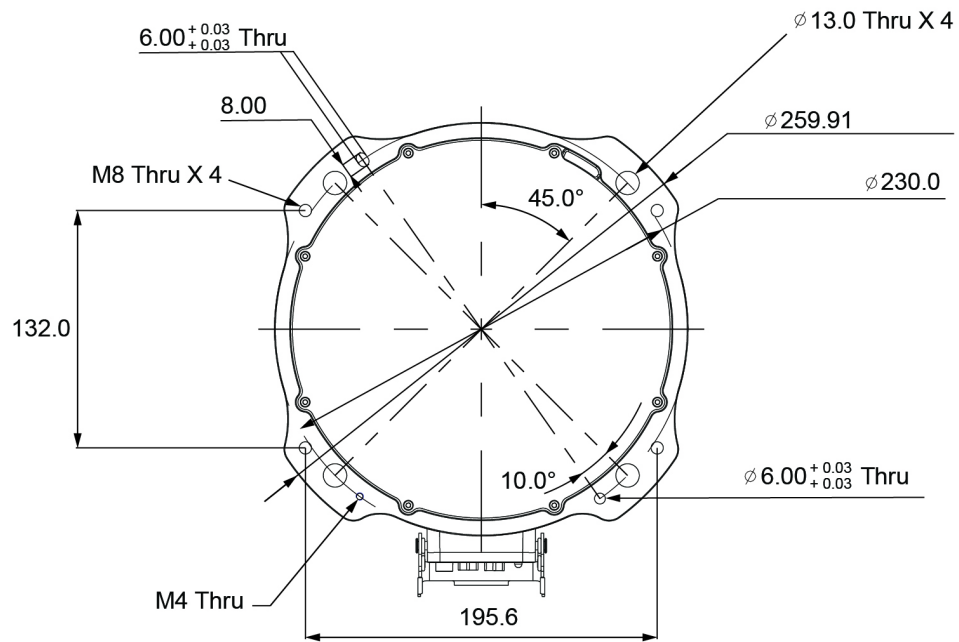
Footprint (TM12S/14S Models)



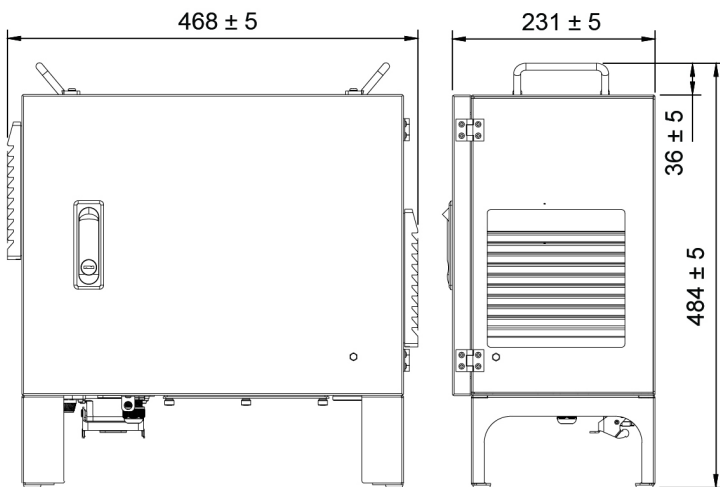
* Dimensions do not include the camera. Refer to the Camera Flange dimensions on page 9 for more information.

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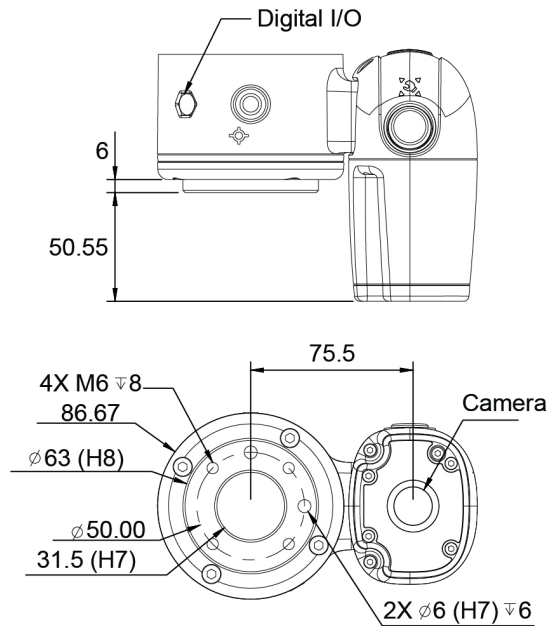
Footprint (TM25S Models)



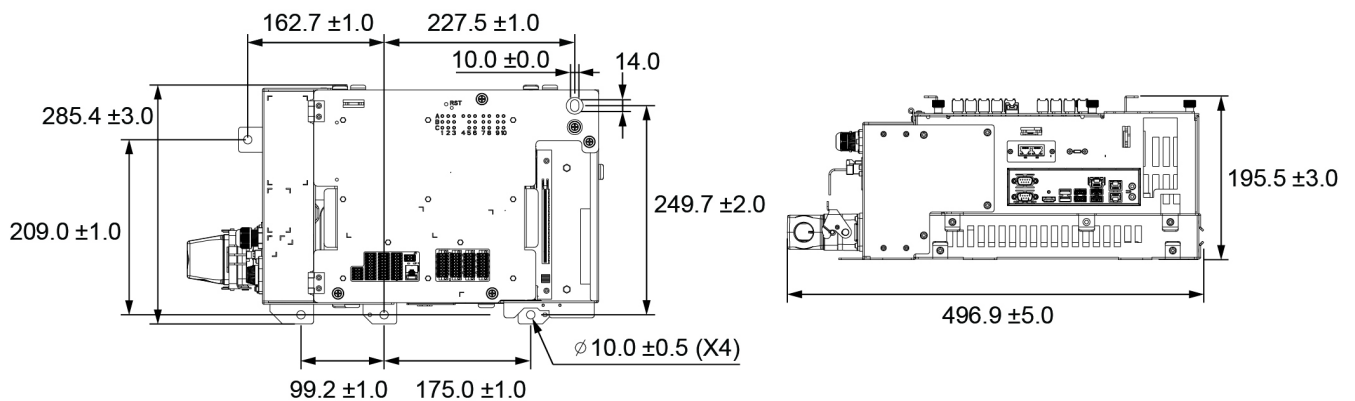
TM5S/7S/12S/14S Control Box (AC)



Camera Flange

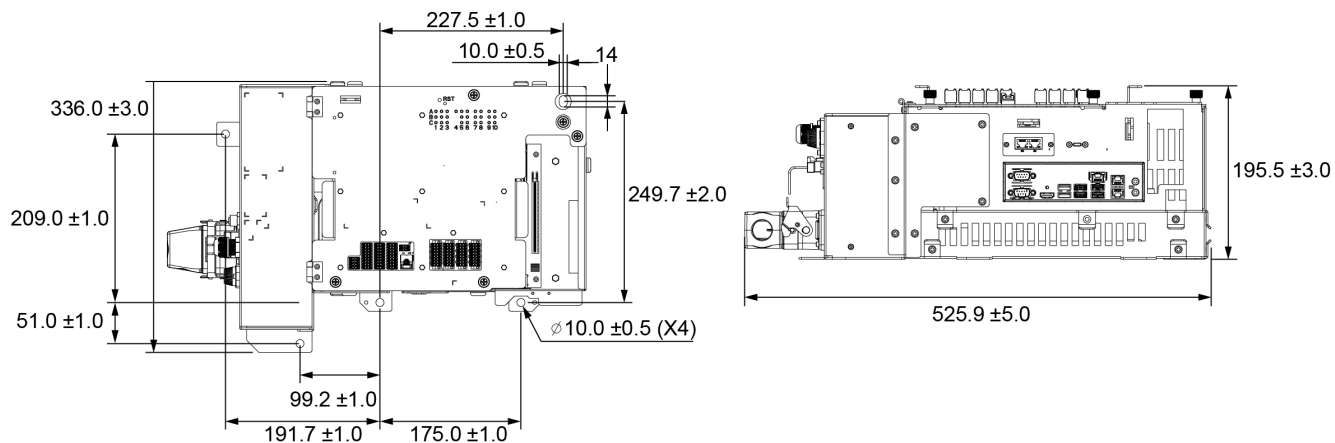


TM5S/7S/12S/14S Control Box (DC)

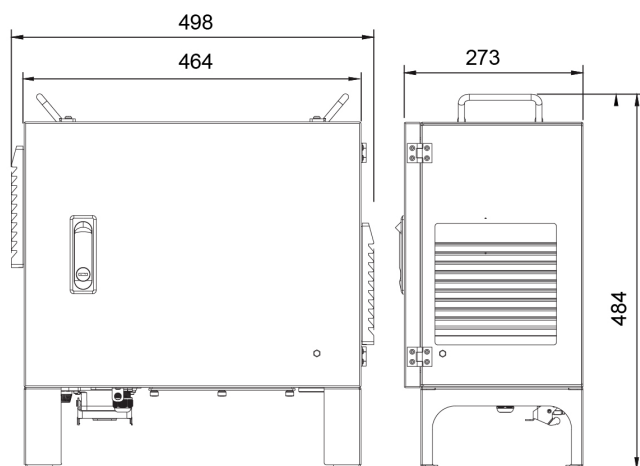


OMRON TM Collaborative Robot, S Series

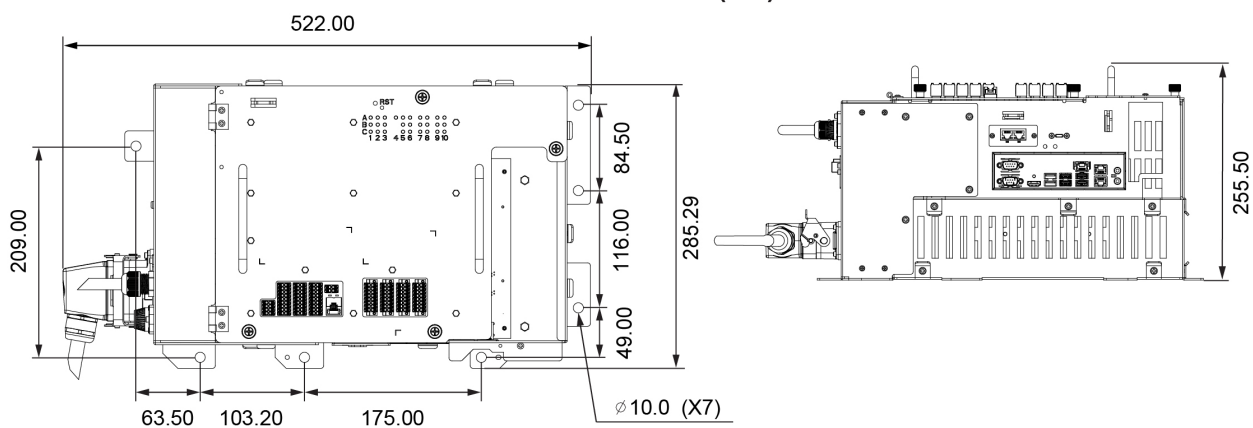
TM5S/7S/12S/14S Control Box (DC SEMI)



TM25S Control Box (AC)



TM25S Control Box (DC)



OMRON TM Collaborative Robot, S Series

Related Manuals

Catalog Number	Title
I686	Omron TM Collaborative Robot S Series: TM5S and TM7S Hardware Installation Manual
I687	Omron TM Collaborative Robot S Series: TM12S and TM14S Hardware Installation Manual
M104	Omron TM Collaborative Robot S Series: TM25S Hardware Installation Manual
I688	Omron TM Collaborative Robot S Series: Safety Manual
I689	Omron TM Collaborative Robot: Software Manual TMFlow, Version 2
I690	Omron TM Collaborative Robot: TMVision Software Manual, Version 2
I691	Omron TM Collaborative Robot S Series: Touch Screen User's Manual
I628	Omron TM Collaborative Robot: Mobile Work Station User's Manual
I629	Omron TM Collaborative Robot: Robot Stand User's Manual
I664	Omron TM Collaborative Robot: TMScript Language Manual

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Read and understand this catalog.

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Product specifications and accessories may be changed at any time based on improvements and other reasons. It is our practice to change part numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the Product may be changed without any notice. When in doubt, special part numbers may be assigned to fix or establish key specifications for your application. Please consult with your Omron's representative at any time to confirm actual specifications of purchased Product.

Errors and Omissions.

Information presented by Omron Companies has been checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical or proofreading errors or omissions.

[illegible]

Note: Do not use this document to operate the Unit.

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M108-E-02

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