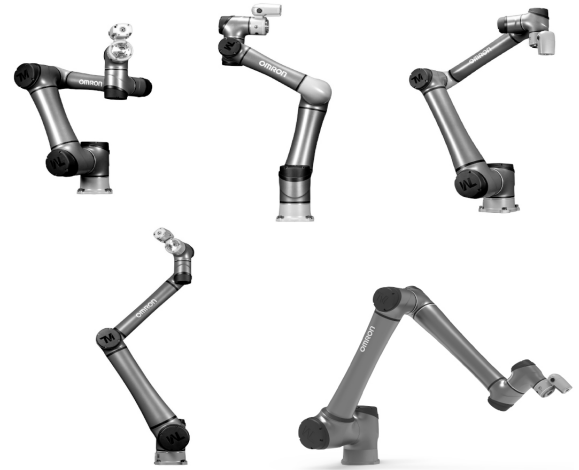


# OMRON TM Collaborative Robot, S Series

# TM 5S/7S/12S/14S/25S

## Omron 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.
- TM-Series robot arms are finished with an ESD-compliant coating.



## Part Number Structure

RT6 - □□□□□□□□  
 1 2 3 4 5 6 7

No.	Item	Specifications	Model	Symbol
1	Payload (kg max.)	5	TM5S	0
		7	TM7S	6
		12	TM12S	1
		14	TM14S	2
		25	TM25S	7
2	Power Source	AC		0
		DC*1		1
3	Vision	With Integrated Camera		0
		Without Integrated Camera		1
4 and 5	Reach/Arm Length (mm) *2	900	TM5S	90
		700	TM7S	70
		1300	TM12S	13
		1100	TM14S	11
		1902	TM25S	19
6	Option	Standard		0
		SEMI S2*3		1
		Fieldbus		2
		SEMI S2*3, Fieldbus		5
7	Cable Length (m)	Standard Length (1.5 m for DC unit / 3.0 m for AC unit)		4
		Extended Length (3.0 m for DC unit / 12 m for AC unit)		5

**Note:** Not all combinations are possible. Please refer to the Ordering Information tables for available combinations.

\* 1: DC-powered cobots are capable of mobile operation when paired with an Autonomous Mobile Robot.

\* 2: The payload and arm length are determined by model.

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

# OMRON TM Collaborative Robot, S Series

## Ordering Information

### Standard Units Ordering Information

Product Model	Maximum Payload (kg)	Reach (mm)	Integrated Camera	Extended Cable* <sup>1</sup>	DC Power Source* <sup>2</sup>	SEMI S2 Certified* <sup>3</sup>	Ordering Code	
TM5S	5	900	Yes	No	No	No	RT6-0009004	
TM5S, 12 m cable				Yes			RT6-0009005	
TM5S-X			No	No			Yes	RT6-0019004
TM5S-X, 12 m cable				Yes				RT6-0019005
TM5S-M			Yes	No	Yes		RT6-0109004	
TM5S-M, 3 m cable				Yes			RT6-0109005	
TM5S-M SEMI						Yes	RT6-0109014	
TM5S-MX			No	No	Yes	Yes	No	RT6-0119004
TM5S-MX, 3 m cable				Yes			RT6-0119005	
TM7S			7	700	Yes	No	No	No
TM7S, 12 m cable	Yes	RT6-6007005						
TM7S-X	No	No			Yes	RT6-6017004		
TM7S-X, 12 m cable		Yes				RT6-6017005		
TM7S-M	Yes	No			Yes	RT6-6107004		
TM7S-M, 3 m cable		Yes				RT6-6107005		
TM7S-M SEMI						Yes	RT6-6107014	
TM7S-MX	No	No			Yes	Yes	No	RT6-6117004
TM7S-MX, 3 m cable		Yes					RT6-6117005	
TM12S	12	1300			Yes	No	No	No
TM12S, 12 m cable			Yes	RT6-1001305				
TM12S-X			No	No	Yes	RT6-1011304		
TM12S-X, 12 m cable				Yes		RT6-1011305		
TM12S-M			Yes	No	Yes	RT6-1101304		
TM12S-M, 3 m cable				Yes		RT6-1101305		
TM12S-M SEMI						Yes	RT6-1101314	
TM12S-MX			No	No	Yes	Yes	No	RT6-1111304
TM12S-MX, 3 m cable				Yes			RT6-1111305	
TM14S			14	1100	Yes	No	No	No
TM14S, 12 m cable	Yes	RT6-2001105						
TM14S-X	No	No			Yes	RT6-2011104		
TM14S-X, 12 m cable		Yes				RT6-2011105		
TM14S-M	Yes	No			Yes	RT6-2101104		
TM14S-M, 3 m cable		Yes				RT6-2101105		
TM14S-M SEMI						Yes	RT6-2101114	
TM14S-MX	No	No			Yes	Yes	No	RT6-2111104
TM14S-MX, 3 m cable		Yes					RT6-2111105	
TM25S	25	1902			Yes	No	No	No
TM25S, 12 m cable			Yes	RT6-7001905				
TM25S-X			No	No	Yes	RT6-7011904		
TM25S-X, 12 m cable				Yes		RT6-7011905		
TM25S-M			Yes	No	Yes	RT6-7101904		
TM25S-M, 3 m cable				Yes		RT6-7101905		

\*1 The default cable length is 1.5 m for DC units and 3.0 m for AC units. The extended cable length is 3.0 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 nanoelectronics that issues safety guidelines. SEMI S2 is the most well-known standard in semiconductor manufacturing equipment for Environmental, Health, and Safety (EHS).

# OMRON TM Collaborative Robot, S Series

## Fieldbus Units Ordering Information

Product Model	Maximum Payload (kg)	Reach (mm)	Integrated Camera	Extended Cable*1	DC Power Source*2	SEMI S2 Certified*3	Ordering Code
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	No	RT6-0109024
TM5S-M, 3 m cable, Fieldbus				Yes			RT6-0109025
TM5S-M SEMI, Fieldbus			No	No	Yes	Yes	RT6-0109054
TM5S-MX, Fieldbus			No	Yes		RT6-0119024	
TM5S-MX, 3 m cable, Fieldbus				No	Yes	RT6-0119025	
TM7S, Fieldbus			7	700	Yes	No	No
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	No	RT6-6107024
TM7S-M, 3 m cable, Fieldbus		Yes					RT6-6107025
TM7S-M SEMI, Fieldbus	No	No			Yes	Yes	RT6-6107054
TM7S-MX, Fieldbus	No	Yes				RT6-6117024	
TM7S-MX, 3 m cable, Fieldbus		No			Yes	RT6-6117025	
TM12S, Fieldbus	12	1300			Yes	No	No
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	No	RT6-1101324
TM12S-M, 3 m cable, Fieldbus				Yes			RT6-1101325
TM12S-M SEMI, Fieldbus			No	No	Yes	Yes	RT6-1101354
TM12S-MX, Fieldbus			No	Yes		RT6-1111324	
TM12S-MX, 3 m cable, Fieldbus				No	Yes	RT6-1111325	
TM14S, Fieldbus			14	1100	Yes	No	No
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	No	RT6-2101124
TM14S-M, 3 m cable, Fieldbus		Yes					RT6-2101125
TM14S-M SEMI, Fieldbus	No	No			Yes	Yes	RT6-2101154
TM14S-MX, Fieldbus	No	Yes				RT6-2111124	
TM14S-MX, 3 m cable, Fieldbus		No			Yes	RT6-2111125	
TM25S, Fieldbus	25	1902			Yes	No	No
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	No	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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# OMRON TM Collaborative Robot, S Series

## Items Included with an S-Series Cobot System

Item	Cobot	Cable	Robot Stick	Control Box	Calibration Plate	I/O Cables	Landmark	Ground Wire	Jumper Wire	Power Cord	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

## Accessories And Optional Items

Appearance	Product Name	Description	Remarks	Ordering Code
	Landmark	Robot positioning tool as a reference to the environment	Two included with purchase of a cobot. Not included with S-X model cobots	RT6-A000021
	Mobile Workstation (MWS)	MWS is a convenient tool for users to mount the cobot arm on work surface, and safely store the control box. 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 disk	SATA cable included. Recommended for external cameras image logging.	RT6-A000012
	Kit, calibration set with additional pin	The 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. Designed for harsh working environments,	Only available for TM5S and TM7S units	RT6-A000027

## Software

Product Name	Add-On Product Names	Remarks	Ordering Code
TMflow 2.X.X	N/A	Software required to control the cobot. Free download	N/A
Super Software Dongle	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.	RT6-A000026
	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.	

# OMRON TM Collaborative Robot, S Series

## Specifications

Product		TM5S	TM7S	TM12S	TM14S	TM25S
Weight (With Camera / Without Camera kg)		23.9 / 23.6	22.9 / 22.6	33.3 / 33.0	33 / 32.7	81.6 / 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°
Joint Speed	J1, J2	210°/s		130°/s		100°/s
	J3			210°/s		130°/s
	J4	225°/s				195°/s
	J5	225°/s				210°/s
	J6	450°/s				225°/s
Average Speed (m/s) <sup>*1</sup>		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 Conn.	24 V 1.5 A				
Ingress Protection		IP54 for Robot Arm, AC control Box, Robot Stick and TM Screen				
Cleanroom Class		ISO Cleanroom Class 3				
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 to 240 VAC, 50/60 Hz
	DC Units	24 to 60 VDC				48 to 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) TMScript (script-based)				
Certifications		ISO 13849-1(Pld Category 3), ISO 10218-1, UL1740, CAN/CSA Z424-14, SEMI S2 (optional)				
Robot Vision	Eye in Hand (Built in)	1.2MP / 5MP, color camera (camera models only)				
	Eye to Hand (Optional)	Supports maximum of 2 x GigE 2D cameras				

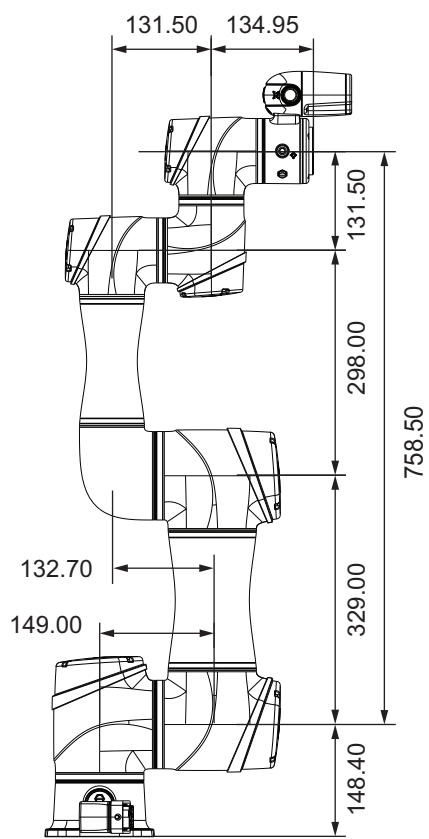
\*1: Average speed is determined for each robot by performing a large linear motion at full project speed and default acceleration with no payload.

# OMRON TM Collaborative Robot, S Series

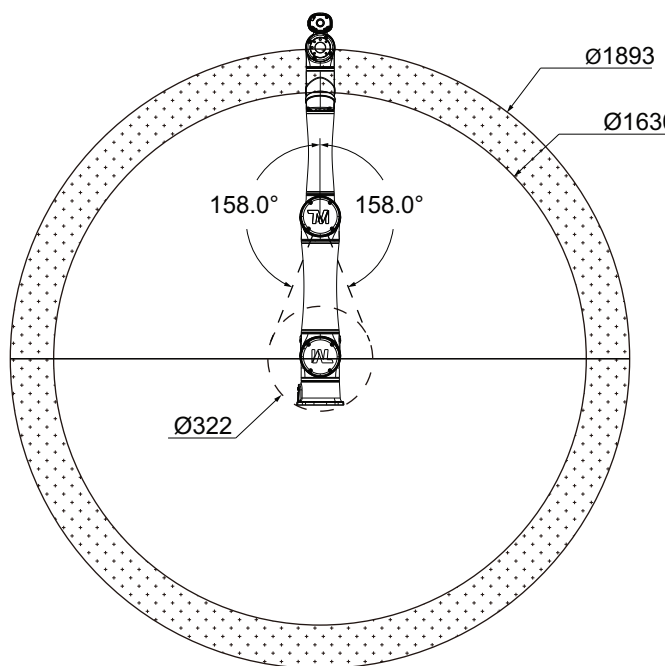
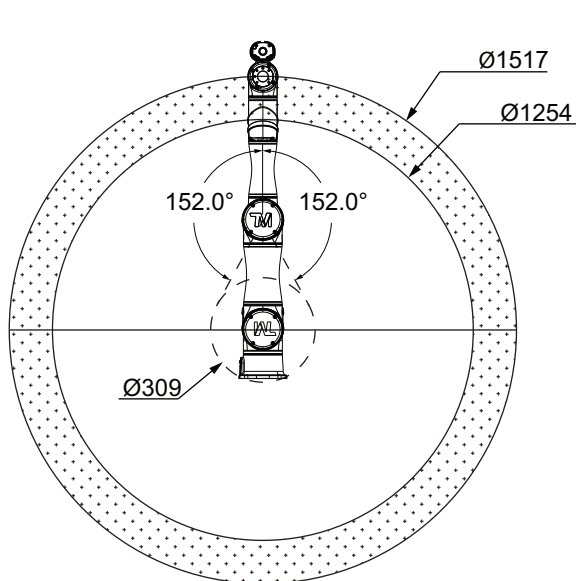
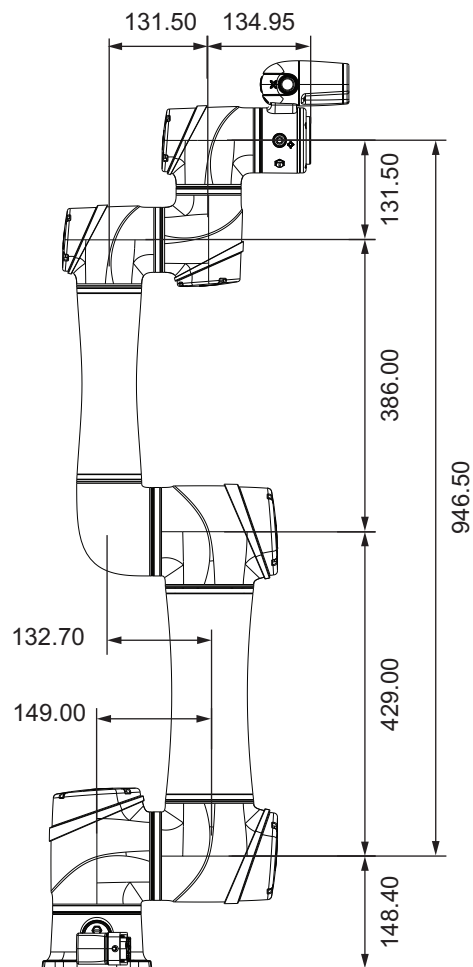
## Dimensions

(Units: mm)

TM7S/TM7S-X/TM7S-M/TM7S-MX\*



TM5S/TM5S-X/TM5S-M/TM5S-MX\*



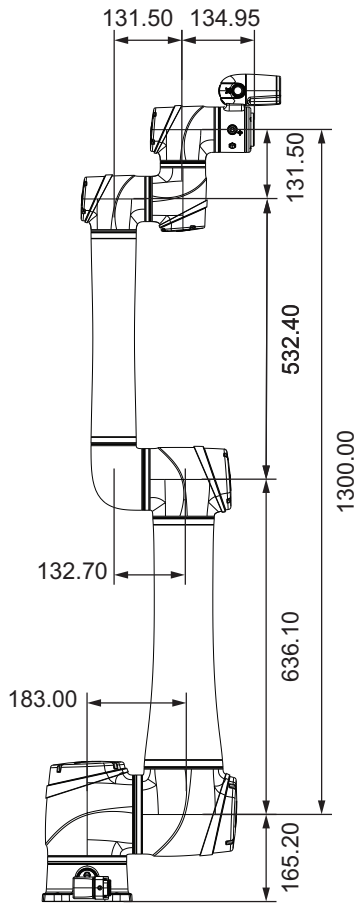
\* Dimensions do not include the camera. Refer to the Camera Flange dimensions on page 9 for more information.

# OMRON TM Collaborative Robot, S Series

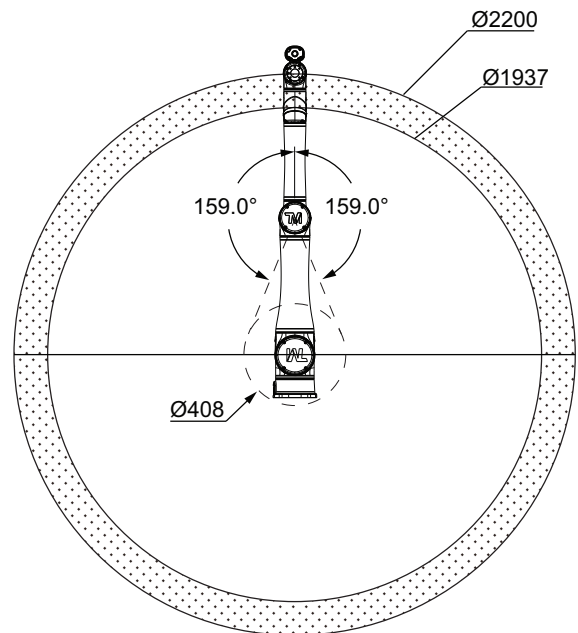
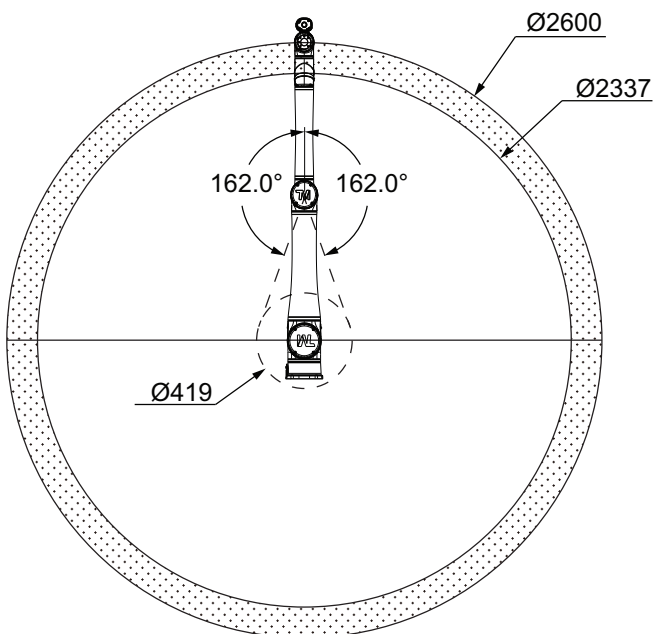
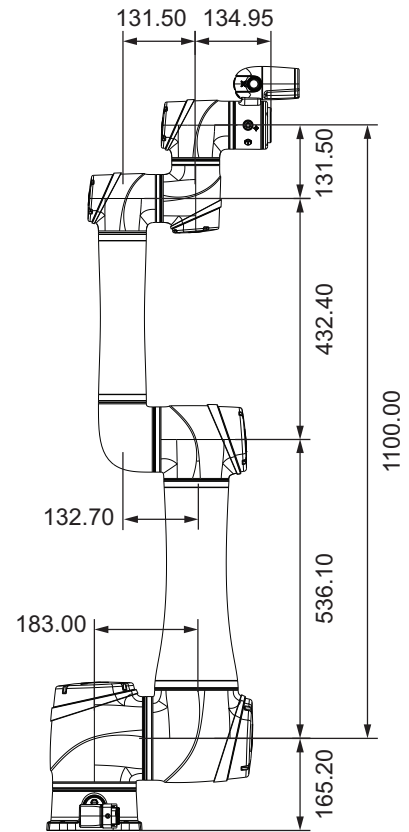
## Dimensions

(Units: mm)

TM12S/TM12S-X/TM12S-M/TM12S-MX\*



TM14S/TM14S-X/TM14S-M/TM14S-MX\*

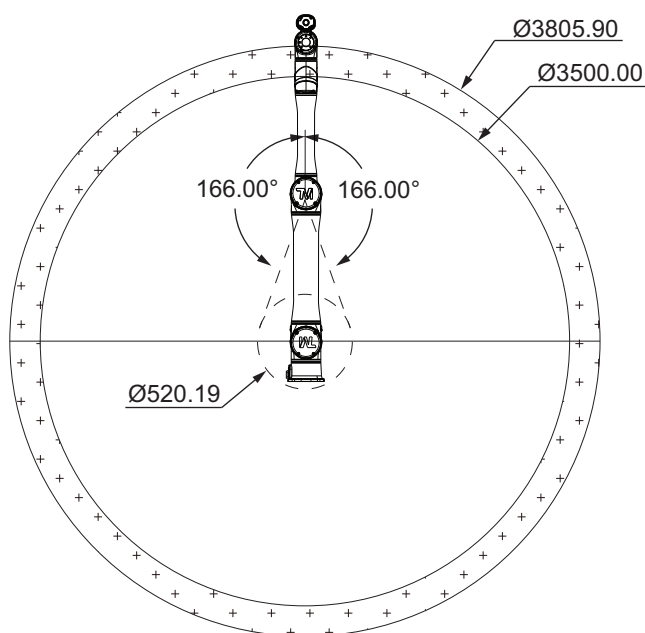
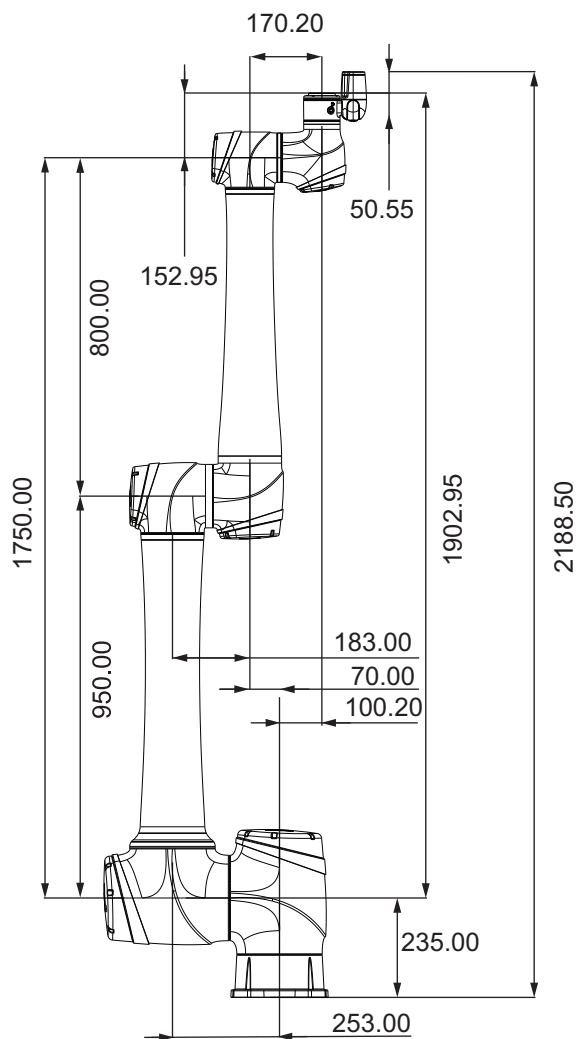


\* Dimensions do not include the camera. Refer to the Camera Flange dimensions on page 9 for more information.

# OMRON TM Collaborative Robot, S Series

## Dimensions

(Units: mm)

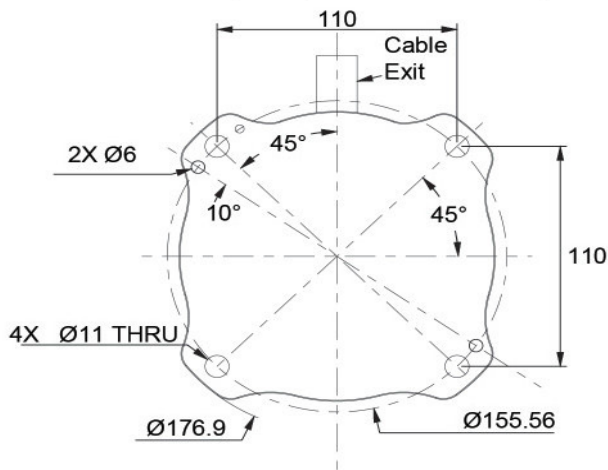


\* Dimensions do not include the camera. Refer to the Camera Flange dimensions on page 9 for more information.

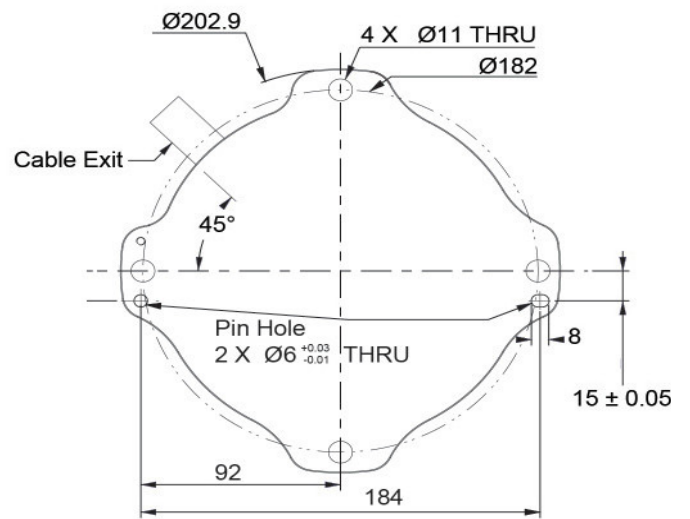
## Dimensions

(Units: mm)

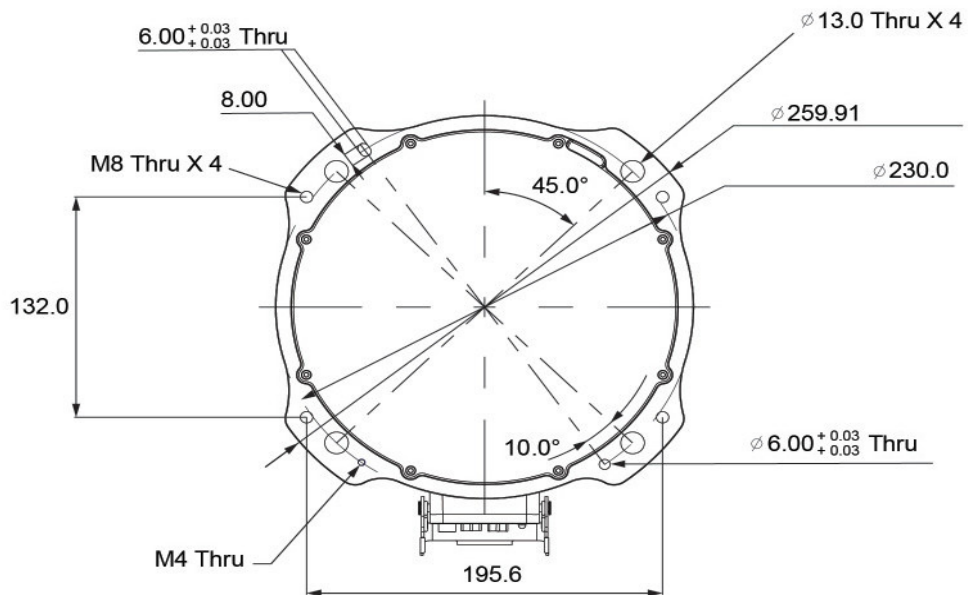
### Footprint (TM5S/7S Models)



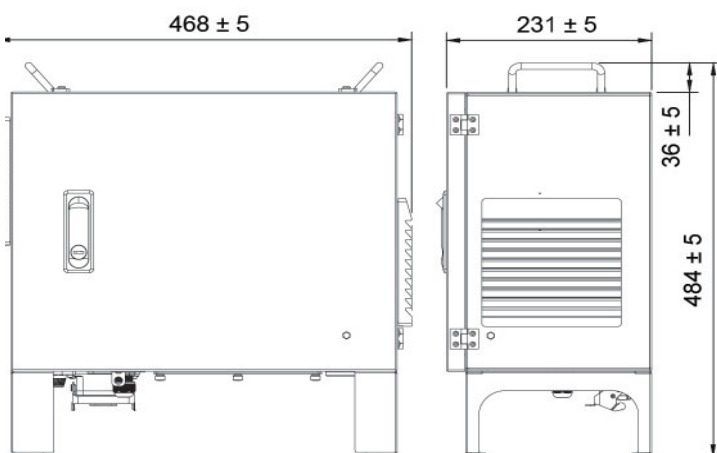
### Footprint (TM12S/14S Models)



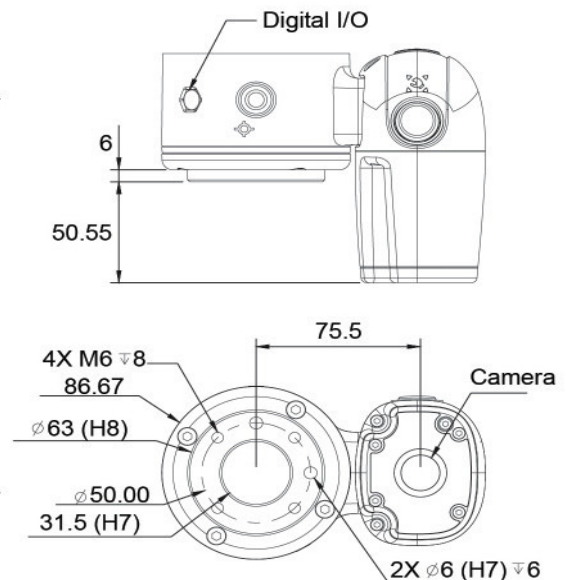
### Footprint (TM25S)



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



### Camera Flange

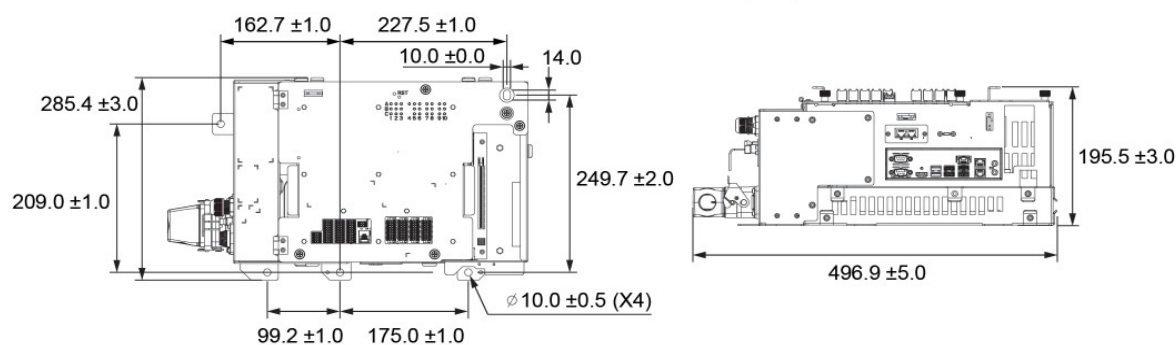


# OMRON TM Collaborative Robot, S Series

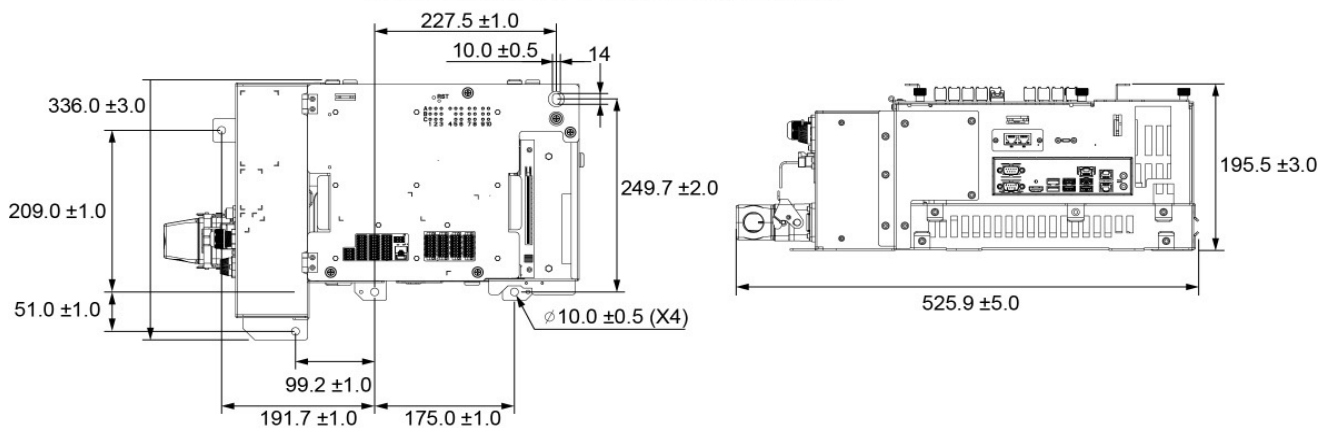
## Dimensions

(Units: mm)

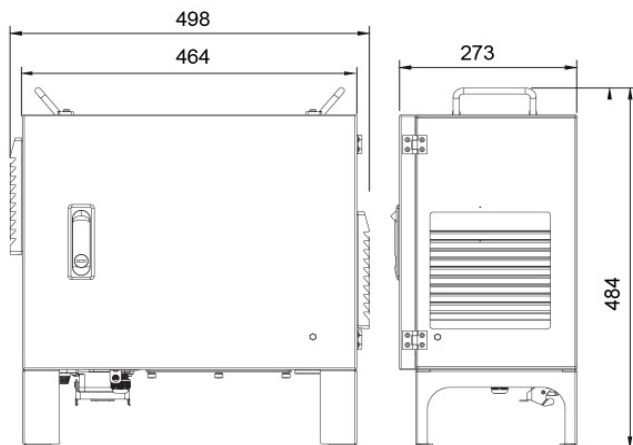
### TM5S/7S/12S/14S Control Box (DC)



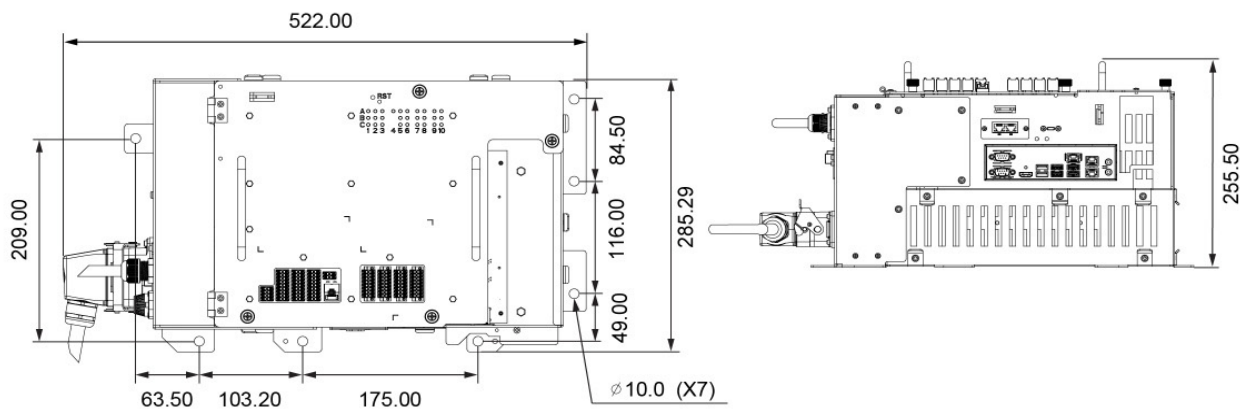
### TM5S/7S/12S/14S Control Box (DC SEMI)



### 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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Omron Companies shall not be responsible for the user's programming of a programmable Product, or any consequence thereof.

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