

MOTOMAN-MPL Series

Robot Optimized for Palletizing

Технические характеристики



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Эл. почта ykw@nt-rt.ru || Сайт: <https://yaskawa.nt-rt.ru/>

Complete Lineup to Help Build Optimum Palletizing System



Higher Productivity

Performance, design, and specialized software are optimized for palletizing and increase productivity.

Manipulator

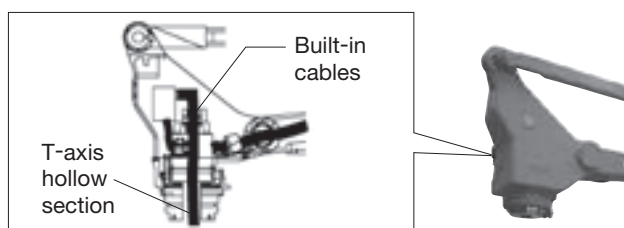
Improve productivity with high-speed motion and wider range of motion.

Low inertia AC servomotor with high-speed and high-speed motion brought by cutting-edge control technology have achieved reduced cycle time. Optimum length ratio of the L-arm and U-arm realizes the maximum stacking space in its class.

Eliminate Cable Problems with Hollow Wrist*1

The cables for the end-of-arm tool can be stored inside the hollow-shaft of the wrist (T-axis). This prevents wiring from becoming tangled and interfering with the tool or peripherals.

*1 : Excluding MOTOMAN-MPL80II, MPL100II.



MOTOPAL: Specially Designed Software for Palletizing

Optional

MOTOPAL is a software program that runs on the programming pendant and is designed to provide technical support for palletizing. MOTOPAL helps to reduce setup time and increase work efficiency because it can:

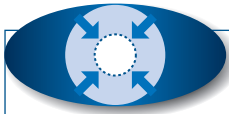
- Generate palletizing programs automatically.
- Make it easy to check stacking conditions.
- Make it easy to select and switch tasks.



Lineup of Robots Optimized for Palletizing

MOTOMAN-	MPL80II	MPL100II	MPL160II	MPL300II	MPL500II	MPL800II
Payload	80 kg	100 kg	160 kg	300 kg	500 kg	800 kg
Maximum Reach	2061 mm	2150 mm	3159 mm			
Handling Capacity*2 (Motion Patterns and Load Mass)	800 cycles/hour	1570 cycles/hour	1650 cycles/hour	1200 cycles/hour	750 cycles/hour	710 cycles/hour
● Motion Patterns 			● Transferable Weight Condition: Mass of transferred workpieces is equal to maximum payload.			
Maximum Stacking Height	1740 mm (on a pallet of 1100 mm × 1100 mm)	2440 mm (on a pallet of 1219 mm × 1219 mm)	2363 mm (on a pallet of 1600 mm × 1600 mm)			

*2 : Cycle time is different according to conditions such as work, hand, layout, etc.



Smaller Space

High-performance controller with optional functions reduces space required.

Robot Controller DX200

The DX200 is a low-floor robot controller developed with Yaskawa's expertise acquired through the development of products for various applications. The amplifier for three external axes and other options that previously required attachment tools can now be housed inside a standard cabinet, reducing the required space for installation by up to 50%. The safety functions have been strengthened by improving the safety performance of the speed limiting function and tool switching monitoring function.

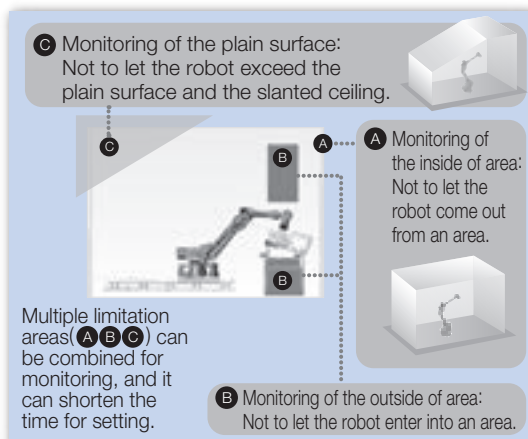
Installation space for the controller is reduced by **50%**.



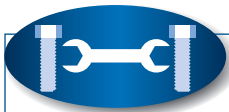
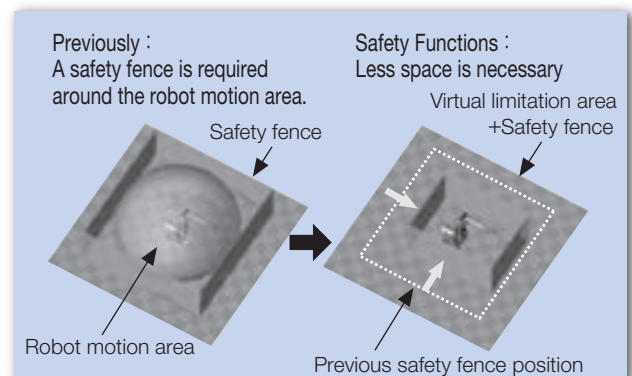
Minimized Safety Fence

Optional

Movements of the robot can be limited within an optimal range for the attached tool by monitoring positions of the robot and tool with the functional safety module equipped with two CPUs. With this function, the safety fence can be installed for an area that is smaller than the motion range of the robot, which reduces the required installation space for production equipment.



*3: Contact your Yaskawa representative for details on compatible models.

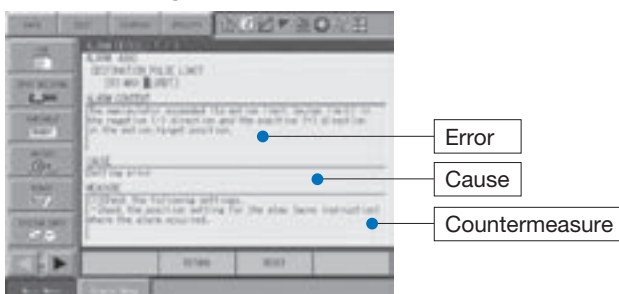


Quicker Maintenance

MOTOMAN continually strives to improve monitoring, troubleshooting, and design to reduce maintenance and recovery time from failures.

Troubleshooting

When an alarm occurs, the detail, cause, and countermeasure of the error are displayed on the Programming Pendant to provide measures for troubleshooting.



Reduced Replacement Time for Parts

We have reduced the time required to replace Controller parts to shorten recovery time when troubles do occur. (Required time for replacement: from 10 to 8 minutes: reduced by 20%) The encoder can be replaced with standard tools since it employs a unit style and thus the required time for replacement is reduced.

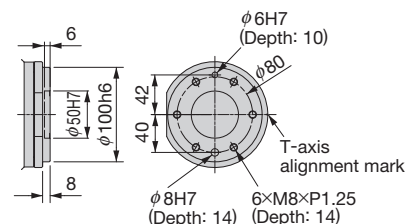
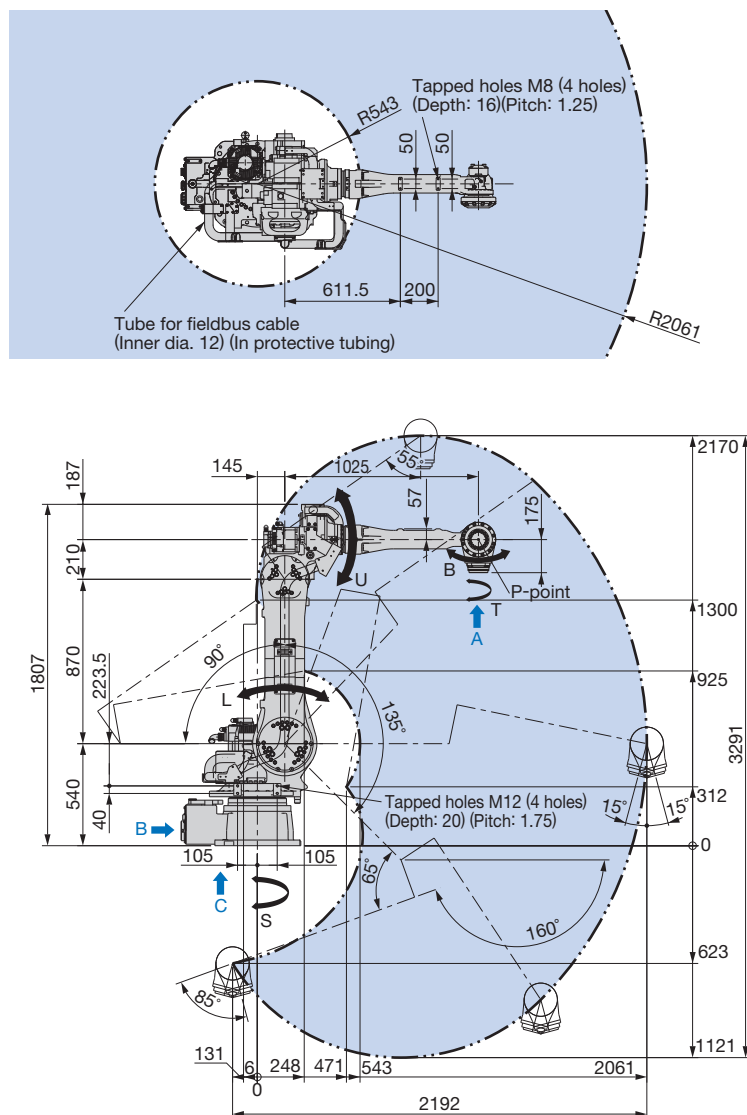
An optional zeroing function can be used to accurately and quickly reset the home position after replacing the motor or encoder.



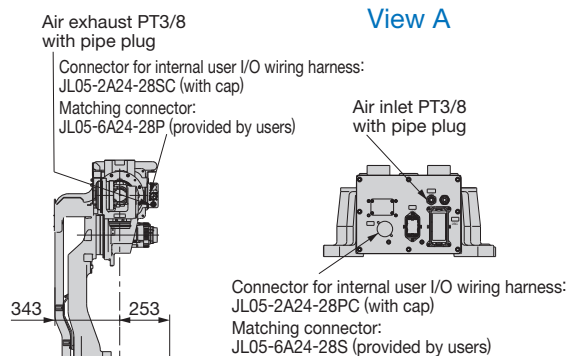
MOTOMAN-MPL80II

80 kg payload, R2061 mm maximum reach

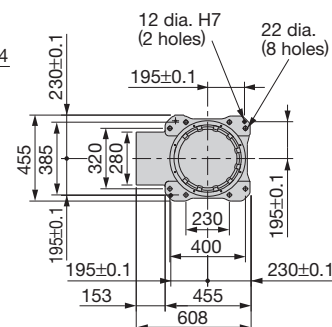
■ **Dimensions** Units : mm  : P-point Maximum Envelope



View A



View B



View C

■ Manipulator Specifications

Model		MOTOMAN-MPL80II
Type		YR-MPL0080-J00
Controlled Axis		5 (Vertically articulated)
Payload		80 kg
Repeatability*1		±0.07 mm
Range of Motion	S-axis (turning)	- 180° - +180°
	L-axis (lower arm)	- 90° - +135°
	U-axis (upper arm)	- 160° - +35°
	B-axis (wrist pitch/yaw)	- 15° - +15° *3
	T-axis (wrist twist)	- 360° - +360°
Maximum Speed	S-axis (turning)	2.97 rad/s, 170°/s
	L-axis (lower arm)	2.97 rad/s, 170°/s
	U-axis (upper arm)	2.97 rad/s, 170°/s
	B-axis (wrist pitch/yaw)	2.97 rad/s, 170°/s
	T-axis (wrist twist)	6.11 rad/s, 350°/s

Allowable Moment	B-axis (wrist pitch/yaw)	78.4 N·m
	T-axis (wrist twist)	20.5 N·m
Allowable Inertia (GD ² /4)	B-axis (wrist pitch/yaw)	16 kg·m ²
	T-axis (wrist twist)	6.1 kg·m ²
Mass		550 kg
Ambient Conditions	Temperature	0°C to +45°C
	Humidity	20% to 80%RH (non-condensing)
	Vibration	4.9 m/s ² or less
	Others	• Free from corrosive gas or liquid, or explosive gas or liquid
		• Free from exposure to water, oil, or dust
• Free from excessive electrical noise (plasma)		
Power Requirements*2		4.0 kVA

*1 : Conforms to ISO 9283.

*2 : Varies in accordance with applications and motion patterns.

*3 : Motion range of the B-axis is the angle of the B-axis to the ground.

In some postures, the motion range of the B-axis may be limited depending on the relative angle to the upper arm.

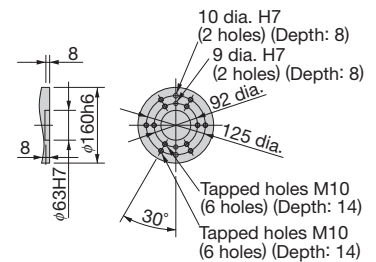
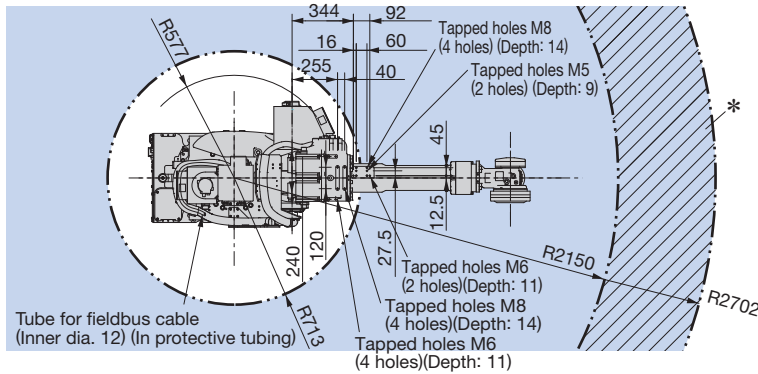
Note : SI units are used for the specifications.



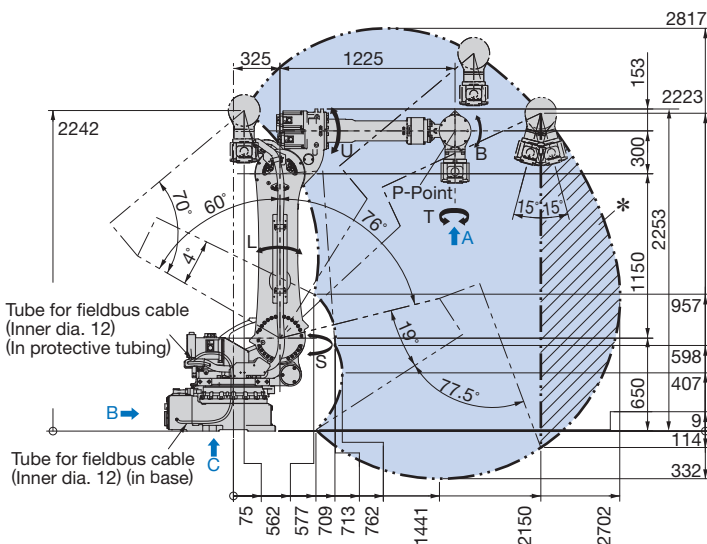
MOTOMAN-MPL100II

100 kg payload, R2150 mm maximum reach

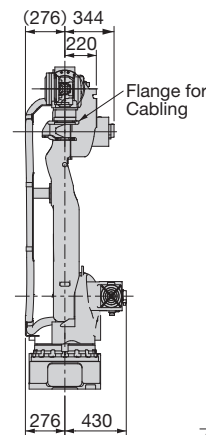
■ Dimensions Units : mm : T-point Maximum Envelope



View A

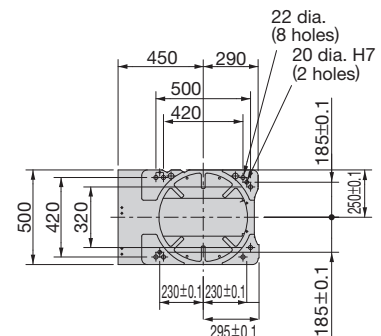


* : The effective working envelope of 70kg (Weight containing flange for cabling) or less of payload.



Air inlet Rc3/8 with pipe plug
Connector for internal user I/O wiring harness (Base side): JL05-2A24-28PC (with cap)
Matching connector: JL05-6A24-28S (provided by users)

View B



View C

■ Manipulator Specifications

Model	MOTOMAN-MPL100II	
Type	YR-MPL0100-J00	
Controlled Axis	5 (Vertically articulated)	
Payload	115 kg (100 kg)* ³	
Repeatability* ¹	±0.2 mm	
Range of Motion	S-axis (turning)	-180° - +180°
	L-axis (lower arm)	-60° - +76°
	U-axis (upper arm)	-147° - +40°
	B-axis (wrist pitch/yaw)	-15° - +15°* ⁴
	T-axis (wrist twist)	-360° - +360° (-210° - +210° kg)* ³
Maximum Speed	S-axis (turning)	2.18 rad/s, 125°/s
	L-axis (lower arm)	1.53 rad/s, 88°/s
	U-axis (upper arm)	2.18 rad/s, 125°/s
	B-axis (wrist pitch/yaw)	3.05 rad/s, 175°/s
	T-axis (wrist twist)	4.63 rad/s, 265°/s
Allowable Moment	B-axis (wrist pitch/yaw)	196 N·m
	T-axis (wrist twist)	0 N·m
Allowable Inertia (GD ² /4)	B-axis (wrist pitch/yaw)	90 kg·m ² (88 kg·m ²)* ³
	T-axis (wrist twist)	55 kg·m ²
Mass	950 kg	
Ambient Conditions	Temperature	0°C to +45°C
	Humidity	20% to 80%RH (non-condensing)
	Vibration	4.9 m/s ² or less
	Others	- Free from corrosive gas or liquid, or explosive gas or liquid - Free from exposure to water, oil, or dust - Free from excessive electrical noise(plasma)
	Power Requirements* ²	8.0 kVA

*1 : Conforms to ISO 9283.

*2 : Varies in accordance with applications and motion patterns.

*3 : The value in the parenthesis is when a flange for cables is installed on the robot.

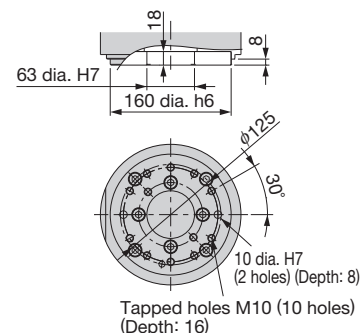
*4 : Motion range of the B-axis is the angle of the B-axis to the ground.

In some postures, the motion range of the B-axis may be limited depending on the relative angle to the upper arm.

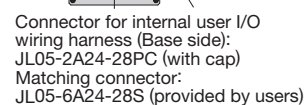
Note : SI units are used for the specifications.



■ **Dimensions** Units : mm : T-point Maximum Envelope

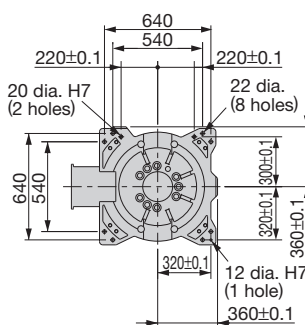


Tube for fieldbus cable
(inner dia. 12) (In base)



Technical drawing of a robotic arm (Figure 1) showing dimensions and joint types. The drawing includes a side view and a top view. Key dimensions and features are labeled:

- Dimensions:**
 - Overall width: 2776
 - Overall height: 2529
 - Base width: 614
 - Base height: 880
 - Arm length (horizontal): 2162
 - Arm length (vertical): 1400
 - Arm length (diagonal): 250
 - Arm length (diagonal): 300
 - Arm length (diagonal): 1241
 - Arm length (diagonal): 625
 - Arm length (diagonal): 1037
 - Arm length (diagonal): 3159
 - Arm length (diagonal): 2204
 - Arm length (diagonal): 2363
 - Arm length (diagonal): 2624
 - Arm length (diagonal): 820
- Joint Types:**
 - R:** Revolute joint (indicated by a curved arrow).
 - T:** Translational joint (indicated by a blue arrow).
 - S:** Revolute joint (indicated by a curved arrow).
- Angles:**
 - 45°
 - 90°
 - 120°
 - 15.5°
- Other Labels:**
 - R1124 (Radius)
 - P-point (Point)
 - T-point (Point)
 - A (Arrow)
 - B (Arrow)
 - C (Arrow)



View C

Model		MOTOMAN-MPL160II
Type		YR-MPL0160-J00
Controlled Axis		4 (Vertically articulated)
Payload		160 kg
Repeatability*1		±0.5 mm
Range of Motion	S-axis (turning)	-180° - +180°
	L-axis (lower arm)	-45° - +90°
	U-axis (upper arm)	-120° - +15.5°
	T-axis (wrist twist)	-360° - +360°
Maximum Speed	S-axis (turning)	2.44 rad/s, 140°/s
	L-axis (lower arm)	2.44 rad/s, 140°/s
	U-axis (upper arm)	2.44 rad/s, 140°/s
	T-axis (wrist twist)	5.32 rad/s, 305°/s

Allowable Inertia (GD ² /4)	T-axis (wrist twist)	80 kg·m ²
Mass		1700 kg
Ambient Conditions	Temperature	0°C to +45°C
	Humidity	20% to 80%RH (non-condensing)
	Vibration	4.9 m/s ² or less
	Others	• Free from corrosive gas or liquid, or explosive gas or liquid • Free from exposure to water, oil, or dust • Free from excessive electrical noise (plasma)
Power Requirements*2		8.0 kVA

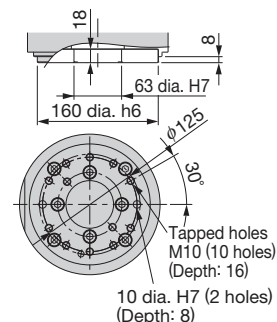
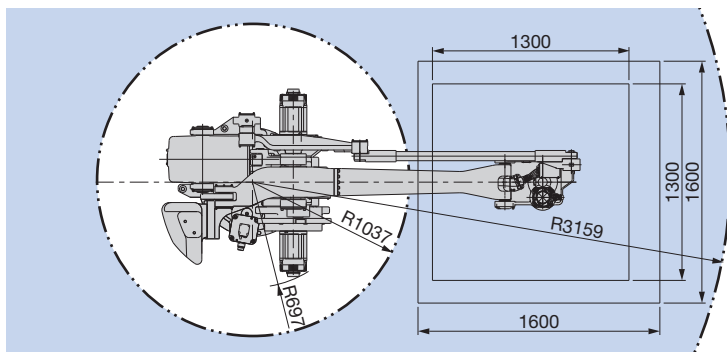
Note : SI units are used for the specifications.



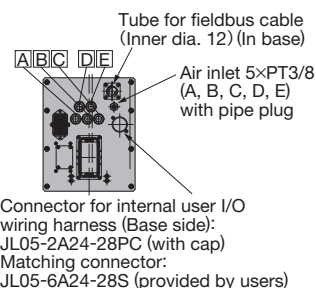
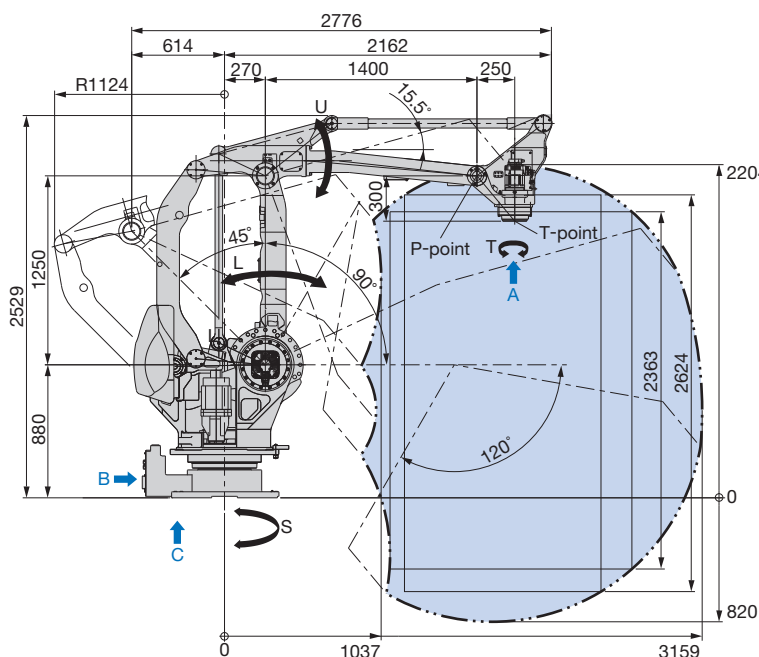
MOTOMAN-MPL300II

300 kg payload, R3159 mm maximum reach

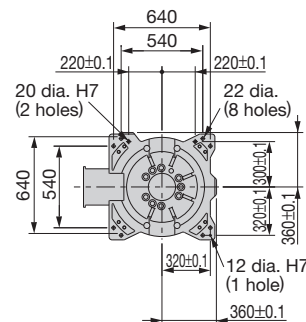
■ Dimensions Units : mm : T-point Maximum Envelope



View A



View B



View C

■ Manipulator Specifications

Model	MOTOMAN-MPL300II	
Type	YR-MPL0300-J00	
Controlled Axis	4 (Vertically articulated)	
Payload	300 kg	
Repeatability*1	±0.5 mm	
Range of Motion	S-axis (turning)	-180° - +180°
	L-axis (lower arm)	-45° - +90°
	U-axis (upper arm)	-120° - +15.5°
	T-axis (wrist twist)	-360° - +360°
Maximum Speed	S-axis (turning)	1.57 rad/s, 90°/s
	L-axis (lower arm)	1.75 rad/s, 100°/s
	U-axis (upper arm)	1.92 rad/s, 110°/s
	T-axis (wrist twist)	3.40 rad/s, 195°/s

Allowable Inertia (GD ² /4)	T-axis (wrist twist)	140 kg·m ²
Mass		1820 kg
Ambient Conditions	Temperature	0°C to +45°C
	Humidity	20% to 80%RH (non-condensing)
	Vibration	4.9 m/s ² or less
	Others	- Free from corrosive gas or liquid, or explosive gas or liquid - Free from exposure to water, oil, or dust - Free from excessive electrical noise (plasma)
Power Requirements*2		8.0 kVA

*1 : Conforms to ISO 9283.

*2 : Varies in accordance with applications and motion patterns.

Note : SI units are used for the specifications.

MOTOMAN-MPL Series

Robot Controller DX200 Specifications

Items	Specifications
Configuration	Dust proof IP54
Dimensions, Mass	MPL800II : 600 (W) × 520 (D) × 730 (H) mm* (Possible to control three external axes), 100 kg max.
	MPL1000II, MPL1600II, MPL3000II, MPL5000II : 600 (W) × 640 (D) × 730 (H) mm* (Possible to control three external axes), 110 kg max.
	MPL8000II : 600 (W) × 520 (D) × 1230 (H) mm* (Possible to control three external axes), 160 kg max.
Cooling System	Indirect cooling
Ambient Temperature	During operation : 0°C to +45°C During storage : -10°C to +60°C
Relative Humidity	90% max. (non-condensing)
Power Supply	Three-phase 200 VAC (+10%, -15%), 50/60 Hz (±2%) Three-phase 220 VAC (+10%, -15%), 60 Hz (±2%)
Grounding	Grounding resistance : 100 Ω or less
Digital I/Os	Specialized signals : 28 inputs and 7 outputs General signals : 40 inputs and 40 outputs Max. I/O (optional) : 4096 inputs and 4096 outputs
Positioning System	Serial communications (absolute encoder)
Programming Capacity	JOB : 200,000 steps, 10,000 instructions CIO ladder : 20,000 steps
Expansion Slots	PCI : 2 slots
LAN (Connection to Host)	1 (10BASE-T/100BASE-TX)
Interface	RS-232C : 1ch
Control Method	Software servo control
Drive Units	SERVOPACK for AC servomotors (can control up to 9 axes)

* : Dimensions of the controller only. Does not include any attachments.

Programming Pendant Specifications

Items	Specifications
Dimensions	169 (W)×50 (D)×314.5 (H) mm
Mass	0.990 kg
Material	Reinforced plastics
Operation Device	Select keys, axis keys, numerical/application keys, mode selector switch with keys (mode : teach, play, and remote), emergency stop button, enable switch, compact flash card interface device (compact flash is optional.), USB port (1 port)
Display	5.7-inch color LCD, touch panel 640×480 pixels (Alphanumeric characters, Chinese characters, Japanese letters, Others)
IEC Protection Class	IP65
Cable Length	Standard : 8 m, Max. : 36 m (with optional extension cable)

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