

# YASKAWA

## Robot for Biomedical Applications MOTOMAN-MH3BM

Application: Handling  
Payload: 3 kg

# *Ideal for sterile or hygienic environments*

By automating manual operations done in sterile or hygienic environments, such as isolators and safety cabinets, the quality of the manufacturing and the testing process can be improved.



MOTOMAN-MH3BM

### Features

#### Compact and lightweight robot, widest motion range in its class.

- Maximum reach: 532 mm
- Motion range of the S (turning)-axis:  $-180^{\circ}$  to  $+180^{\circ}$

#### Designed for sterile and hygienic environments

- Can be cleaned with hydrogen peroxide (wiping, gas, and mist).\*
- Can be exposed to ultraviolet radiation.\*
- Conforms to ISO clean class 5.
- Dust-proof and drip-proof structure: IP67 for the wrist axis and IP65 for the main axes.

\*Contact your Yaskawa representative for more details on design conditions.



FS100



# MOTOMAN-MH3BM

## Specifications

Items		Specifications
Model		MOTOMAN-MH3BM
Type		YR-MH003BM-A01
Controlled Axis		6 (Vertically articulated)
Payload		3 kg
Repeatability*1		0.03 mm
Range of Motion	S-axis (turning)	-180° - +180°
	L-axis (lower arm)	- 85° - + 90°
	U-axis (upper arm)	-105° - +260°
	R-axis (wrist roll)	-170° - +170°
	B-axis (wrist pitch/yaw)	-120° - +120°
	T-axis (wrist twist)	-360° - +360°
Maximum Speed*2	S-axis (turning)	5.41 rad/s, 310°/s
	L-axis (lower arm)	2.62 rad/s, 150°/s
	U-axis (upper arm)	3.32 rad/s, 190°/s
	R-axis (wrist roll)	5.24 rad/s, 300°/s
	B-axis (wrist pitch/yaw)	5.24 rad/s, 300°/s
	T-axis (wrist twist)	7.33 rad/s, 420°/s
Allowable Moment	R-axis (wrist roll)	5.39 N·m
	B-axis (wrist pitch/yaw)	5.39 N·m
	T-axis (wrist twist)	2.94 N·m
Allowable Inertia (GD <sup>2</sup> /4)	R-axis (wrist roll)	0.10 kg·m <sup>2</sup>
	B-axis (wrist pitch/yaw)	0.10 kg·m <sup>2</sup>
	T-axis (wrist twist)	0.03 kg·m <sup>2</sup>
Approx. Mass		31 kg
Clean Rating*3		ISO class 5
IEC Protection Class		Body: IP65, Wrist: IP67
Ambient Conditions	Temperature	During operation: 0°C to +40°C, During storage: -10°C to +60°C
	Humidity	20% to 80%RH (non-condensing)
	Vibration	4.9 m/s <sup>2</sup> (0.5 G) or less
Power Requirements*4		0.5 kVA
Mounting*5		Floor, ceiling, wall

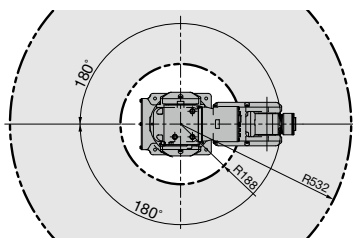
- \*1: Repeatability conforms to ISO 9283.
- \*2: The maximum speed in this table is the available maximum value and will vary depending on the load, posture, or range of motion.
- \*3: The clean rating conforms to ISO 14644.
- \*4: The power requirement value is obtained using Yaskawa's in-house measurement conditions and will vary depending on the load, motion pattern, or cycle time.
- \*5: When wall-mounted, the S-axis motion range is limited.
- \*6: FS100 has an open structure (IP20) and must be used in a clean environment (free from electrically-conductive dirt and dust) that meets the standard of pollution degree 2 specified in IEC 60664-1.

Items		Specifications
FS100 Controller	Configuration	Open structure IP20*6
	Dimensions	470 (W)×420 (D)×200 (H) mm (Protrusions are not included)
	Approx. Mass	20 kg (External axis amplifiers for up to two axes can be built in.)
	Cooling System	Direct cooling
	Ambient Temperature	During operation: 0°C to +40°C During storage: -10°C to +60°C
	Relative Humidity	90% max. (non-condensing)
	Power Supply	Single-phase 200/230 VAC (+10% to -15%), 50/60 Hz (±2%) Three-phase 200/220 VAC (+10% to -15%), 50/60 Hz (±2%)
	Grounding	Grounding resistance: 100 Ω or less
	Digital I/Os	Specialized signals: 10 inputs and 1 output General signals: 28 inputs and 28 outputs (28 transistor outputs)
	Positioning System	Serial communications (absolute encoder)
	Programming Capacity	JOB: 10,000 steps, 1,000 instructions CIO ladder: 1,500 steps max.
	Expansion Slots	MP2000 bus × 5 slots
	LAN (Connection to Host)	1 (10BASE-T/100BASE-TX)
	Interface	RS-232C: 1ch
Drive Units	SERVOPACK for AC servomotors	
Programming Pendant (optional)	Dimensions	169 (W)×50 (D)×314.5 (H) mm (Protrusions are not included)
	Approx. Mass	0.990 kg
	Material	Reinforced plastics
	Operation Device	Select keys, axis keys, numerical/application keys, mode switch with key (mode: teach, play, and remote), emergency stop button, enable switch, compact flash card interface device (compact flash is optional.), USB port (1 port)
	Display	640×480 pixels color LCD, touch panel (alphanumeric characters, Chinese characters, Japanese letters, and others)
	IEC Protection Class	IP65
Cable Length	Standard: 8 m, max.: 20 m (with optional extension cable)	

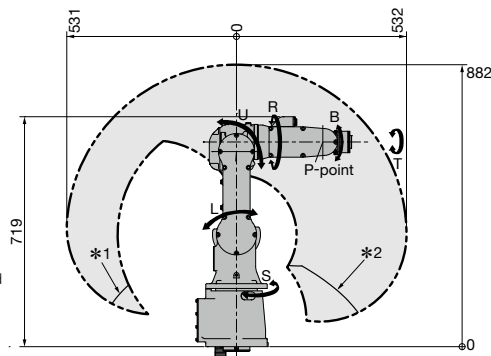
Note: A programming pendant or a dummy connector is required with this controller. (Sold separately.)

- **Programming pendant**  
The programming pendant for this controller is required. Different types of programming pendants cannot be connected to this controller because of differences in their specifications.
- **Dummy connector**  
The dummy connector must be inserted when the programming pendant is not connected or when a software pendant is used.

## Dimensions Units: mm P-point Maximum Envelope



- \*1: An alarm may occur if the S-axis is kept between -40° and +40° for an extensive period of time, even when the L- and U-axes are within their motion ranges.
- \*2: An alarm may occur if the S-axis is kept either between -180° and -125° or +125° and +180° for an extensive period of time, even when the L- and U-axes are within their motion ranges.



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# YASKAWA

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In the event that the end user of this product is to be the military and said product is to be employed in any weapons systems or the manufacture thereof, the export will fall under the relevant regulations as stipulated in the Foreign Exchange and Foreign Trade Regulations. Therefore, be sure to follow all procedures and submit all relevant documentation according to any and all rules, regulations and laws that may apply. Specifications are subject to change without notice for ongoing product modifications and improvements.

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