

LR Mate® Series and R-J3iB™ Mate Controller

Basic Description

The LR Mate series is FANUC Robotics' latest-generation, electric servo-driven family of mini robots designed to perform a wide variety of tasks in a broad range of working environments. The series' tabletop size, dexterity and high speed make it the perfect solution for countless industrial and commercial applications.

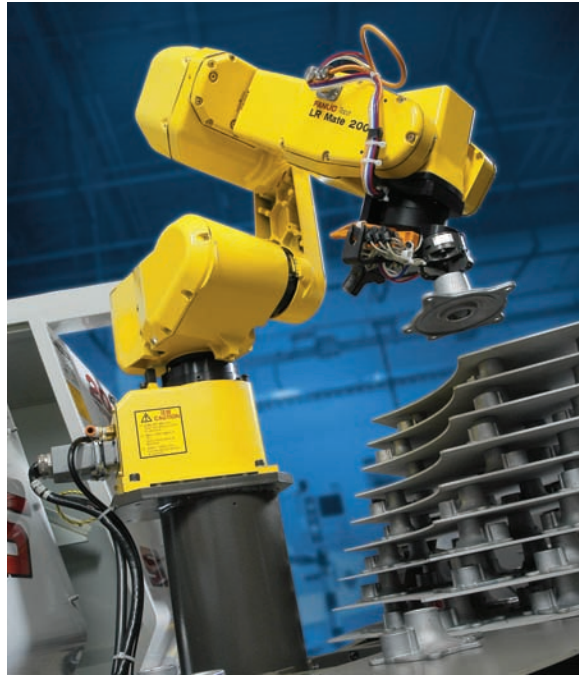
LR Mate Series, the Solution for:

- Machine tending
- Material handling
- Assembly
- Picking and packing
- Part washing
- Material removal
- Cleanroom operations
- Testing and sampling
- Education and entertainment

Robot Features and Benefits

- 5 or 6 degrees of freedom
- ±0.04 mm repeatability
- Up to 5 kg payload at wrist
- Large wrist moments and inertias for real-world EOATs and workpieces
- Supplementary payload mounting on J3 casting
- Pneumatic and electrical (6 DI) connections for EOAT on J4
- Two, double-acting solenoid valves integrated in forearm simplify EOAT dressout
- Tabletop size, slim wrist, and small footprint permit operation in tight work spaces
- Upright, angle, wall, or invert mounting increases installation flexibility
- Robot can flip over backwards for a larger work envelope
- Hollow joint construction encloses all cables and hoses to eliminate snagging
- High joint speeds maximize throughput
- Absolute encoder positioning eliminates homing at power-up
- Same footprint and wrist bolt pattern as previous generation for easy upgrades

Note: LR Mate is a registered trademark of FANUC LTD.



Robot Reliability

- The latest generation of a proven design
- Sealed bearings and brushless AC motors
- Gear and/or harmonic drivetrains (no belts, chains, pulleys, etc.)
- Standard "D" size batteries for encoder backup
- Grease fittings on all lubrication points for quick and easy maintenance

R-J3iB Mate Controller Features

- Small size yet factory-hardened
- RIA 15.06-1999 compliant
- Integrated 24 VDC I/O: (20) inputs and (20) outputs
- Serial RS-232-C port and PC card slot

Robot and Controller Options

- Standard, six-axis (LR Mate 200iB)
- Class 100/ISO Class 5 cleanroom (LR Mate 200iB/5C; see *Cleanroom Robots* datasheet)
- Industrial washing (LR Mate 200iB/5WP)
- Food-grade (LR Mate 200iB/5WP-Food; see *Food-Grade Robots* datasheet)

- Longer reach (LR Mate 200iB/3L)
- Five-axis (LR Mate 100iB)
- Motor cooling fans for sustained high-duty operation.
- 110-120 VAC single phase or 200-220 VAC single or three phase input voltage
- Fail-safe mechanical brakes on all joints
- Color, graphical, network-ready teach *iPendant*
- Machine vision for guidance and inspection
- Auxiliary axes (up to 2)
- Extended communications capabilities: Ethernet, FTP, serial, DeviceNet, A/B RIO, Profibus, FANUC Model A I/O rack, FANUC I/O link cable to FANUC CNC, CC-Link
- Linear or circular conveyor tracking
- CE-Mark
- 7 m or 14 m controller-to-robot cables

Unique Software Options

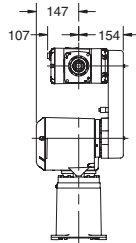
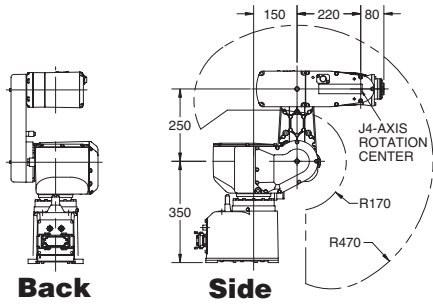
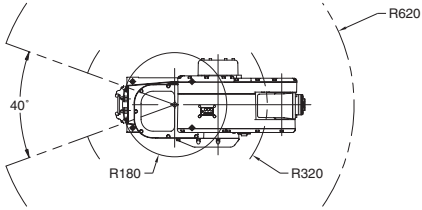
- Singularity avoidance
- Collision protection
- Internet connectivity
- KAREL programming language
- Over 40 other powerful software solutions

FANUC
Robotics

Dimensions

LR Mate 100iB

Top



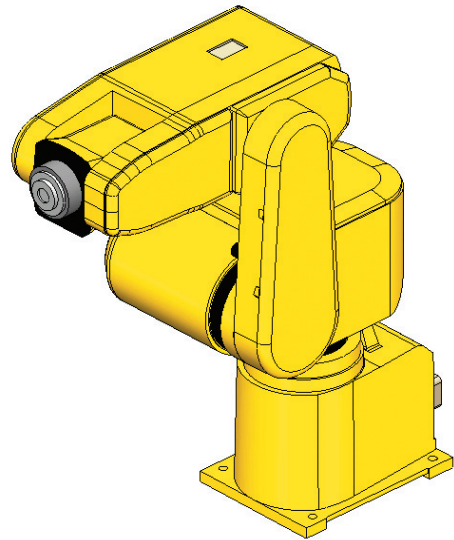
Back

Side

Front

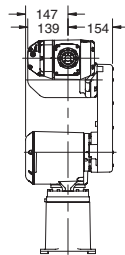
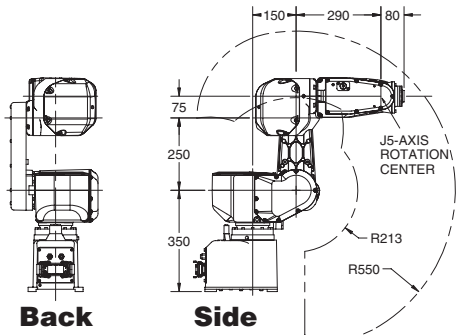
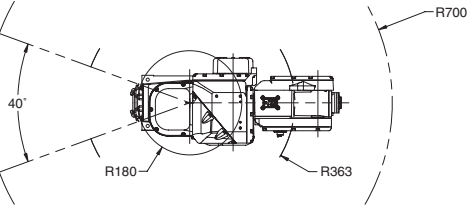
Isometrics

LR Mate 100iB



LR Mate 200iB/5P, /5WP & /5WP-Food

Top

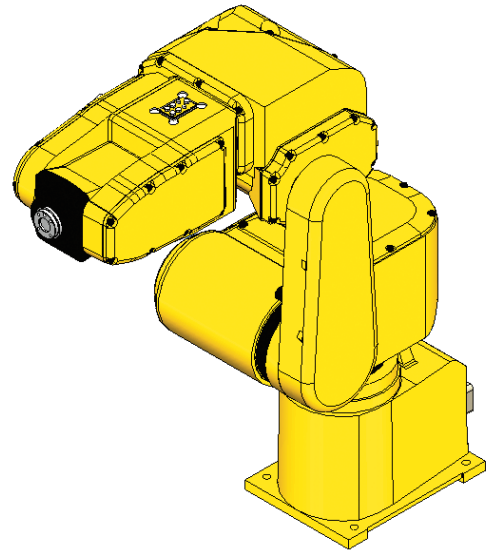


Back

Side

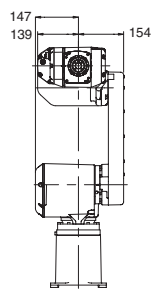
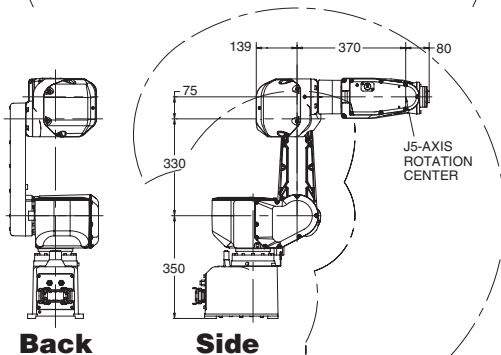
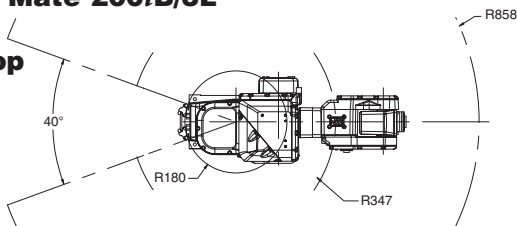
Front

LR Mate 200iB/5P



LR Mate 200iB/3L

Top

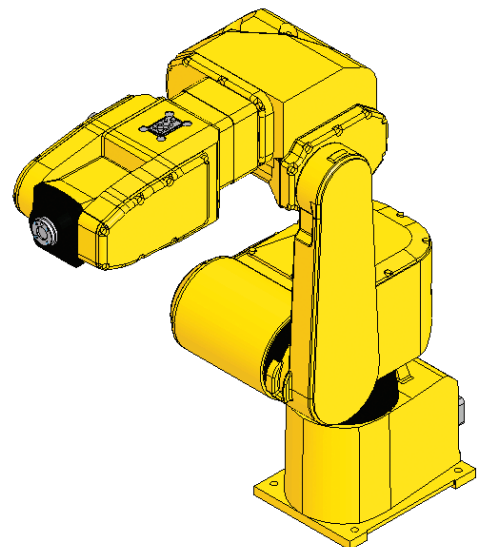


Back

Side

Front

LR Mate 200iB/3L



All dimensions are shown in millimeters.
Detailed CAD data are available upon request.

LR Mate Series Robot Specifications

Item	100iB	200iB/5P	200iB/3L Long Arm	200iB/5C Cleanroom	200iB/5WP 200iB/5WP-Food	
Axes	5	6	6	6	6	
Payload at wrist ¹ (kg)	5	5	3	5	5	
Reach (mm)	620	700	858	700	700	
Repeatability (mm)	±0.04	±0.04	±0.04	±0.04	±0.04	
Interference radius (mm)	180	180	180	180	180	
Motion range (degrees)	J1	320	320	320	320	
	J2	185	185	185	185	
	J3	365	315	340	315	315
	J4	240	380	380	380	380
	J5	720	240	240	240	240
	J6	--	720	720	720	720
Motion speed ² (degrees/s)	J1	240	180	140	180	180
	J2	270	180	150	180	180
	J3	270	225	160	225	225
	J4	330	400	400	400	400
	J5	480	330	330	330	330
	J6	--	480	480	480	480
Wrist moment (kgf-cm)	J4	74	74	74	74	74
	J5	53.1	74	74	74	74
	J6	--	53.1	53.1	53.1	53.1
Wrist inertia (kgf-cm-s ²)	J4	1.4	1.4	1.4	1.4	1.4
	J5	0.72	1.4	1.4	1.4	1.4
	J6	--	0.72	0.72	0.72	0.72
Fail-safe brakes ³	J2, J3	J2, J3	J2, J3	J2, J3	J2, J3	
Mass (kg)	38	45	47	45	45	
Mounting positions ⁴	Floor, inverted	Floor, angle, wall, inverted	Floor, angle, wall, inverted	Floor, angle, wall, inverted	Floor, angle, wall, inverted	
Ambient Temperature (°C)	0 to 45	0 to 45	0 to 45	0 to 45	0 to 45	
Ambient Humidity	Normally: ≤ 75% RH. Short term: (≤ one month): ≤ 95% RH. No condensation (dew or frost).	Normally: ≤ 75% RH. Short term: (≤ one month): ≤ 95% RH. No condensation (dew or frost).	Normally: ≤ 75% RH. Short term: (≤ one month): ≤ 95% RH. No condensation (dew or frost).	Normally: ≤ 75% RH. Short term: (≤ one month): ≤ 95% RH. No condensation (dew or frost).	No frost	
Vibration (m/s ²)	≤ 4.9 (≤ 0.5G)	≤ 4.9 (≤ 0.5G)	≤ 4.9 (≤ 0.5G)	≤ 4.9 (≤ 0.5G)	≤ 4.9 (≤ 0.5G)	
Special Application Environments ⁵	IP50 forearm and wrist, IP50 body	IP67 forearm and wrist, IP65 body	IP67 forearm and wrist, IP65 body	ISO Class 5 (Class 100 per U.S. Federal Standard 209E)	IP67 entire robot (Additional differences between Washdown & Food-Grade variants)	
Noise Level (dB)	≤70	≤70	≤70	≤70	≤70	

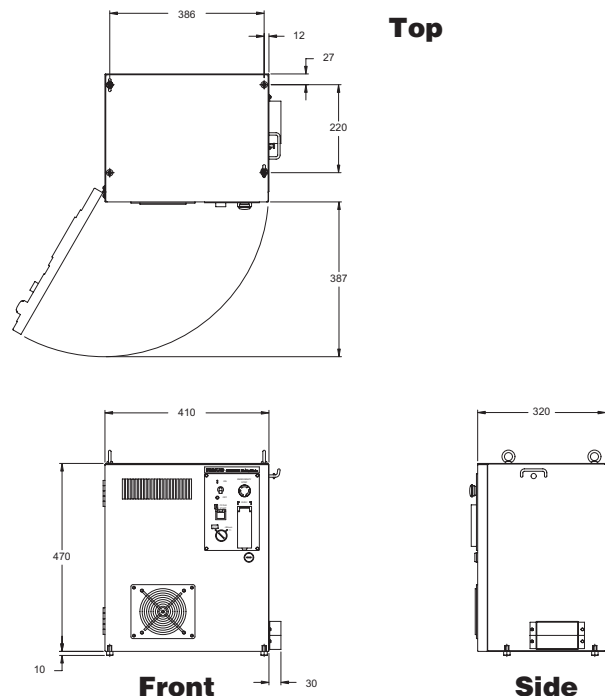
Notes:

- The wrist must face downward when LR Mate 100iB with 5 kg is over 600 mm reach or when LR Mate 200iB with 5 kg is over 650 mm reach.
- Higher sustained motion speeds available with High Duty option.
- Brakes on all axes optional.
- J1 motion range and speed de-rated when angle- or wall-mounted.
- IP67/65 optional on LR Mate 100iB. LR Mate 200iB/5WP or LR Mate 200iB/5WP-Food variants must be used for full IP67/IP67 protection. Organic solvents, acids, alkalis and chlorine/gasoline coolants, or any chemicals which may harm NBR (nitrile rubber) must not be used. See *Cleanroom Robots* and *Food-Grade Robots* datasheets for more information on those variants.

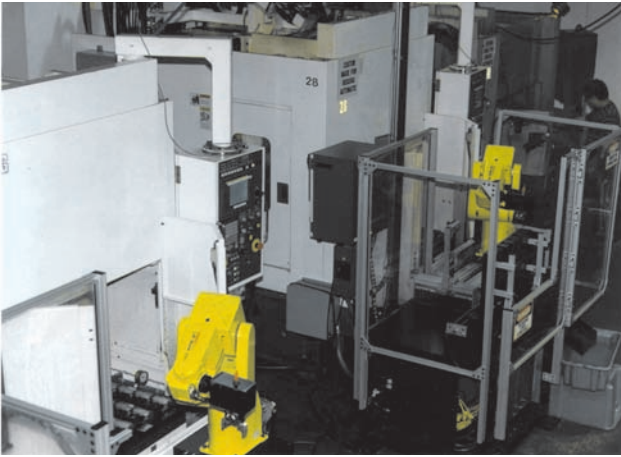
R-J3iB Mate Controller Specifications

Item	
External Dimensions (mm)	410(W) X 470(H) X 320(D) for RIA Optional: 530(W) X 470(H) X 320(D) for CE
Ambient Temperature (°C)	0 to 45°
Ambient Humidity	Normally: ≤75% RH Short term (less than one month): ≤95% RH No condensation (dew or frost)
Vibration (m/s ²)	≤4.9 (≤0.5G)
Power Supply	Single-phase 200-220 VAC +10%, -15%, 50/60Hz +/-1Hz Optional: single-phase 110 to 220 VAC Optional: three-phase 200 to 220 VAC.
Power Consumption	0.4 to 0.5 kW (average), 1 kVa (maximum)
CPU	Multi-processor architecture based on R-3iB (separate motion and communication) with real time clock-calendar
Controlled axes	5 (LR Mate 100iB) 6 (LR Mate 200iB, LR Mate 200iB/3L) Optional: 8 (including robot axes) using 8 axis control card; auxiliary axes available using mini-slot on CPU
I/O Connectivity	Digital I/O (20 input/20 output) FANUC I/O Link master mode (slave optional) Optional: Model A (modular rack mounted 5 or 10 slots – user must supply enclosure) Optional: Model B (distributed DIN rail mounted)
Mass (kg)	35 for RIA, Optional: 55 for CE
Remote I/O sub-systems	RS-232-C (one port) Optional: Ethernet, Profibus, DeviceNet
Teach pendant	Multi-function, large backlit monochrome LCD display Optional: Color, graphical, network-ready teach iPendant
Memory card slot	PC Card type 2 interface to ATA flash cards
Miscellaneous	Optional: line-tracking, machine vision, Karel and more

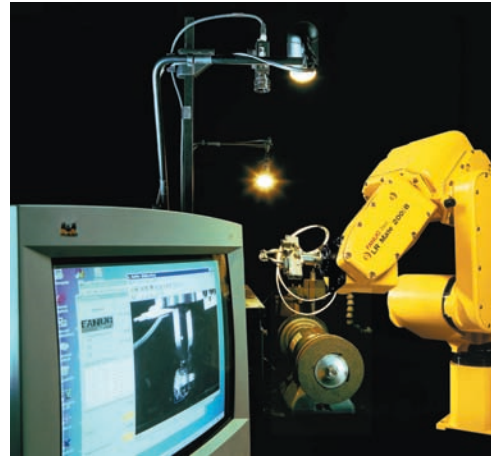
R-J3iB Mate Controller Dimensions



LR Mate Series Application Examples



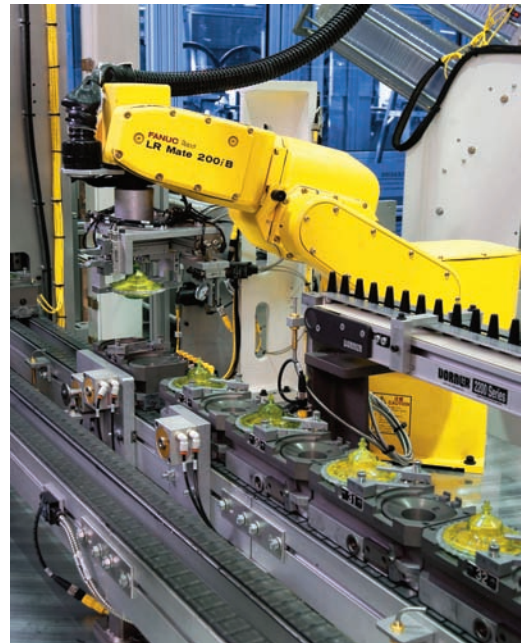
The LR Mate is the industry's leading mini robot for factory automation, machine tools and lab environments.



Precision jewelry polishing system with part shape recognition uses FANUC's V-500iA/2DV Vision System.



LR Mate 200iB/5WP with ingress protection is used for high-pressure washing of parts or for packing food.



LR Mate 200iB's high throughput and precision allow assembly of consumer products.



Cleanroom LR Mate 200iB/5C works best for customers looking for reliability in electronics and pharmaceuticals.

Intelligent Robot Solutions



FANUC Robotics America, Inc.
 3900 W. Hamlin Road
 Rochester Hills, MI 48309-3253
 (248) 377-7000
 Fax (248) 377-7362

Charlotte, NC
 (704) 596-5121

Chicago, IL
 (847) 898-6000

Cincinnati, OH
 (513) 754-2400

Los Angeles, CA
 (949) 595-2700

Toledo, OH
 (419) 866-0788

Toronto, Canada
 (905) 812-2300

Montréal, Canada
 (450) 492-9001

Aguascalientes, Mexico
 52 (449) 922-8000

Sao Paulo, Brazil
 (55) (11) 3619-0599

For sales or technical information, call:
1-800-iQ-ROBOT • 1-800-47-ROBOT

marketing@fanucrobotics.com
fanucrobotics.com