LR Mate® 200iC Series & R-30iA™ Mate Controller

Basic Description
The new LR Mate 200iC Series is FANUC Robotics’ next generation, electric servo-driven mini-robot series offering best-in-class performance in a light, efficient, accurate and nimble (LEAN) package. The new LR Mate 200iC’s tabletop size, slimmer arm profile, lighter weight, highest dexterity, faster sustained speed and superior positioning accuracies make it the perfect solution for countless industrial and commercial applications.

LR Mate 200iC, the Solution for:
- Machine tending
- Material handling
- Assembly
- Picking and packing
- Part washing
- Material removal
- Dispensing
- Testing and sampling
- Education and entertainment

Features and Benefits
- 5 or 6 degrees of freedom
- ±0.02 mm (200iC & 200iC/5H) and ±0.03 mm (200iC/5L) repeatability at full payload and full speed within entire robot work envelope
- Up to 5 kg payload at wrist
- Best-in-class wrist moment and inertias for real-world EOATs and workpieces
- Pneumatic and electrical (6 RDI) connections for EOAT conveniently located on J4
- Two, double-acting solenoid valves integrated in forearm simplify EOAT dressout
- Higher rigidity and the most advanced servo technology enable smooth motion without vibration in high speed operation
- Advanced communication capabilities via standard Ethernet and serial connections
- Integrated PMC provides ladder-logic control for peripheral devices
- Lighter and more compact than its predecessor
- The arm profile cross-section area is 42% smaller than the previous generation LR Mate 200iB
- Same footprint and wrist bolt pattern as previous generation for easy upgrades
- Available R-30iA Mate rack mount compact controller fits in standard 19” electronics rack and is ideal for climate controlled applications such as food, lab, pharmaceutical, medical and education
- iPendant™, a color, Internet-ready teach pendant for even easier programming and custom cell user interface design
- Extended networked I/O capabilities: I/O Link, DeviceNet, Profinet
- Supports a variety of intelligent functions including iRVision® (built-in vision-ready controller) and force sensing
- Available IP67 rating for the entire robot allows it to withstand harsh environments
- 7 m or 14 m controller-to-robot connection cables
- Available Class 100 and Class 10 clean-room option on 200iC/5C and 200iC/5LC
- Available 200iC/5F food grade robot for primary and secondary food handling

Robot Reliability
- The latest generation of a proven design
- Sealed bearings and brushless AC motors
- Standard “C” size batteries for encoder backup
- Grease fittings on all lubrication points for quick and easy preventive maintenance

Robot and Controller Options
- 110 VAC single phase input voltage
- 360-degree J1 axis rotation
- Fail-safe mechanical brakes on all joints

Unique Software Options
- Patented real-time singularity avoidance
- Collision protection
- Internet connectivity
- KAREL® programming language
- Many more software solutions for control, communication, and motion

Note: LR Mate® and iRVision® are registered trademark of FANUC LTD.
Dimensions
LR Mate 200iC, /5H, /5WP, /5C, /5F and /5HS

Top

Side
LR Mate 200iC/5L, /5LC

Front

LR Mate 200iC Isometric

Footprint (All models)

Wrist (All models)

LR Mate 200iC/5L Isometric

Note: The dimensions in parentheses are applicable to LR Mate 200iC/5F model only. Dimensions are shown in millimeters. Detailed CAD data are available upon request.
LR Mate 200iC Series Robot Specifications

<table>
<thead>
<tr>
<th>Items</th>
<th>LR Mate 200/C</th>
<th>LR Mate 200iC/SP</th>
<th>LR Mate 200iC/SW</th>
<th>LR Mate 200iC/SH</th>
<th>LR Mate 200iC/SF</th>
<th>LR Mate 200iC/SFS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload - wrist (kg)</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Reach (mm)</td>
<td>704</td>
<td>704</td>
<td>892</td>
<td>711 (5F) / 704 (5FS)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interference Radius (mm)</td>
<td>±181</td>
<td>±181</td>
<td>±181</td>
<td>±181</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motion speed (degrees/s)</td>
<td>J1 5</td>
<td>J2 2</td>
<td>J3 1.2</td>
<td>J4 1.2</td>
<td>J5 1.2</td>
<td>J6 2</td>
</tr>
<tr>
<td>Interference Radius (mm)</td>
<td>±181</td>
<td>±181</td>
<td>±181</td>
<td>±181</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wrist moments Nm (kg.m)</td>
<td>J4 11.9 (1.21) J5 11.9 (1.21) J6 6.7 (0.68)</td>
<td>J4 11.9 (1.21) J5 11.9 (1.21) J6 6.7 (0.68)</td>
<td>J4 11.9 (1.21) J5 11.9 (1.21) J6 6.7 (0.68)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wrist load inertia (kg.m)</td>
<td>J4 0.3</td>
<td>J5 0.3</td>
<td>J6 0.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanical brakes</td>
<td>All axes</td>
<td>J1, J2 &amp; J3</td>
<td>All axes</td>
<td>J1, J2 &amp; J3</td>
<td>J1, J2 &amp; J3</td>
<td>J1, J2 &amp; J3</td>
</tr>
<tr>
<td>Mechanical weight (kg)</td>
<td>27</td>
<td>26</td>
<td>29</td>
<td>26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mounting method</td>
<td>Floor, ceiling, angle and wall</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Installation environment</td>
<td>Temperature (°C)</td>
<td>0 to 45</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humidity</td>
<td>Normally: 75% or less</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vibration</td>
<td>0.5 or less</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IP Rating(s)</td>
<td>IP 67 entire robot (option)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note:
(1) J1 and J2 axes motion range will be limited for angle and wall mount installations.
(2) LR Mate 200iC/SC and /5LC are rated for Class 100 clean-room environment. Clean-room Class 10 is available as an option.

R-30i/A Mate Controller Specifications

<table>
<thead>
<tr>
<th>Items</th>
<th>R-30i/A Mate Controller Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>External Dimensions (mm)</strong></td>
<td>-470(W) x 320(D) x 400(H) for RIA</td>
</tr>
<tr>
<td><strong>Operating Environment</strong></td>
<td>Ambient temperature: 0 - 45 °C (R-30iA Mate)</td>
</tr>
<tr>
<td><strong>Power Supply</strong></td>
<td>200-230V AC single phase: 10%, 15%, 50/60 Hz ±1%</td>
</tr>
<tr>
<td><strong>Power Consumption</strong></td>
<td>0.5 KW, 1.23 KVA (maximum)</td>
</tr>
<tr>
<td><strong>CPU</strong></td>
<td>Multi-processor architecture (separate motion and communication)</td>
</tr>
<tr>
<td><strong>Controlled Axes</strong></td>
<td>24 (up to 5 motion groups for R-30iA Mate)</td>
</tr>
<tr>
<td><strong>Serial/host communications</strong></td>
<td>One 100 Base-TX/10 Base-T Ethernet port with RJ-45 connector</td>
</tr>
<tr>
<td><strong>Teach Pendant</strong></td>
<td>Color graphic Pendant™ with available touch screen option</td>
</tr>
<tr>
<td><strong>iRVision®</strong></td>
<td>Built-in camera interface for 2-D vision applications</td>
</tr>
<tr>
<td><strong>Built-In I/O</strong></td>
<td>Up to 28 digital inputs / 24 digital outputs 24VDC</td>
</tr>
<tr>
<td><strong>Safety Features</strong></td>
<td>Open frame, induction motor, mechanical safety</td>
</tr>
<tr>
<td><strong>Memory Card</strong></td>
<td>32MB SC card 2 interface: ATA flash disk (SanDisk compatible)</td>
</tr>
<tr>
<td><strong>Mass (kg)</strong></td>
<td>55 (R-30iA Mate RIA)</td>
</tr>
</tbody>
</table>

R-30i/A Mate Controller Options:

- **I/O sub-systems**: Model A I/O (remote mounted modular rack- 5 or 10 slots), Model B I/O (distributed DIN rail mounted)
- **Remote I/O sub-systems**: DeviceNet (slave up to single channel), Profibus DP slave/master, CC-Link (slave), Ethernet I/O (IEGD and EIP Adapter/Scanner)
- **Integrated PMC**: Ladder logic control for peripheral devices, including ladder monitor with hot edit on Pendant
- **iRVision®**: Remote mounted multiplexer to support up to four 2-D cameras and/or four 3-D laser units
- **Force Sensing**: FS-10A force sensor interface option, Rated load capacity: 10 kgf
- **Intelligent Parts Feeder**: Flexible turn-key feeder package driven off R-30iA Mate controller, includes auxiliary axis & iRVision2D vision package
- **Servo-Driven RTU Package**: Standard 0.5m and 1m linear ball-screw driven RTU with Aux. Axis
LR Mate 200iC – Ideal for variety of material handling and machine tending applications!!

Cleanroom LR Mate 200iC/5C - the right choice for semiconductors & pharmaceutical applications!

Food Grade LR Mate 200iC/5F - The rugged solution for wipe-down sanitization environment in primary & secondary food handling!

LR Mate 200iC picks & sorts multiple style parts through flexible feeder using built-in iRVision and available Aux. Axis option!

Intelligent Robot Solutions

FANUC Robotics America, Inc.
3900 W. Hamlin Road
Rochester Hills, MI 48309-3253
(704) 596-5121
(905) 812-2300

Chicago, IL
(847) 898-6000
(450) 492-9001

Cincinnati, OH
(513) 754-2400
(449) 922-8000

Los Angeles, CA
(949) 595-2700
(55) (11) 3619-0599

For sales or technical information, call: 1-800-Q-ROBOT

marketing@fanucrobotics.com
fanucrobotics.com

©2009 FANUC Robotics America, Inc. All rights reserved. FANUC ROBOTICS LITHO IN U.S.A. FRA-1/09