

## **MOTOMAN ROBOTICS**



INTERNALLY ROUTED CABLES AND HOSES



FAMILIAR PROGRAMMING INTERFACE



FS100 CONTROLLER

### TOP REASONS TO BUY

- High-speed robot with best-in-class axis speeds
- Energy saving design does not require expensive compressed air for cooling
- Washdown-ready robot (optional) for food and other applications where cleanliness is important
- Ready for food applications with NSF-H1 certified food-grade grease
- Hollow wrist with through-arm cabling reduces interference and improves system reliability



# MPK2F MPK2F-5

PICKING • PACKING

Payloads: 2 kg (MPK2F) 5 kg (MPK2F-5)

The MPK2F and MPK2F-5 are high-performance 5-axis robots designed for high-speed picking and case-packing applications. Ideal for placing product into a deep case. The FS100 is a powerful controller with unmatched open software architecture.

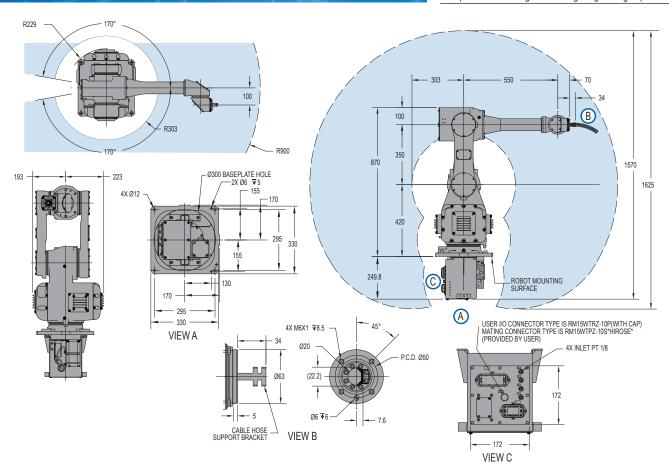
# Fast, Flexible and Compact

- Ideal for high-speed picking, kitting and cartoning of food and consumer goods.
- 900 mm horizontal reach provides largest work envelope in its class.
- Payload capacity for the MPK2F is 2 kg, the MPK2F-5 is 5 kg. Both models have ±0.5 mm repeatability.
- Compact, slim arm design allows reach into confined spaces, improving system productivity. Deep work envelope provides flexibility for a range of applications.
- Hollow arm design allows cables and hoses to be run internally throughout entire robot from base to wrist which improves reliability.
- Wrist speed of 2,000 degrees per second provides maximum productivity, even when parts need to be rotated.
- IP67 robot. Rated for washdown cleaning (when optional covers are installed), even with certain caustic cleaners.
- Ready for food applications with National Sanitation Foundation (NSF-H1) certified food-grade grease.
- MPK2F: floor-, ceiling- or wall-mounted;
   MPK2F-5: floor- or ceiling-mounted.

# FS100 Controller

- Small, compact controller.
- 470 mm wide, 200 mm high, 420 mm deep.
- Designed for packaging and small parts handling robots with payloads of 20 kg and under.
- Compatible with integrated MotoSight<sup>™</sup> 2D vision and conveyor tracking (optional).
- Improved communication speeds and functionality.
- High-speed I/O response and highresolution timers.
- Open architecture enables software customization in widely accepted environments such as C, C++, C# and .NET.
- Uses same programming pendant hardware as DX100 controller, providing a consistent programming interface with current products.
- Enabled for MotoPick<sup>™</sup> scheduling software.

All dimensions are metric (mm) and for reference only. Please request detail drawings for all design/engineering requirements.



| ROBOT SPECIFICATIONS        |  |  |  |
|-----------------------------|--|--|--|
|                             |  | MPK2F  | MPK2F-5  |
| Structure                   |  | Vertical articulated type                              | Vertical articulated type                              |
| Controlled Axes             |  | 5  | 5  |
| Payload                     |  | 2 kg (4.4 lbs)   | 5 kg (11 lbs)  |
| Vertical Reach              |  | 1,625 mm (64")   | 1,551 mm (61.1")                                       |
| Horizontal Reach            |  | 900 mm (35.4")   | 900 mm (35.4")   |
| Repeatability               |  | ±0.5 mm (0.02")  | ±0.5 mm (0.02")  |
| Maximum<br>Motion Range     | S-Axis (Lifting)<br>L-Axis (Lower Arm)<br>U-Axis (Upper Arm)<br>B-Axis (Wrist Pitch/Yaw)<br>T-Axis (Wrist Twist) | ±170°<br>±120°<br>+282°/-102°<br>±150°<br>±270°        | ±170°<br>±120°<br>+60°/-102° *<br>±15°<br>±270°        |
| Maximum Speed               | S-Axis<br>L-Axis<br>U-Axis<br>B-Axis<br>T-Axis   | 320°/s<br>330°/s<br>330°/s<br>380°/s<br>2000°/s        | 320°/s<br>330°/s<br>330°/s<br>380°/s<br>2000°/s        |
| Approximate Mass            |  | 72 kg (158.8 lbs)                                      | 72 kg (158.8 lbs)                                      |
| Brakes                      |  | All axes   | All axes   |
| Power Rating                |  | 2.0 kVA  | 2.0 kVA  |
| Allowable Moment            | B-Axis<br>T-Axis   | 3.5 N • m<br>1.5 N • m                                 | 2.26 N • m<br>0 N • m                                  |
| Allowable Moment of Inertia | B-Axis<br>T-Axis   | 0.065 kg • m <sup>2</sup><br>0.012 kg • m <sup>2</sup> | 0.065 kg • m <sup>2</sup><br>0.012 kg • m <sup>2</sup> |
| Internal User I/O Cable     |  | 6 conductors   | 6 conductors   |
| Internal User Air Line      |  | 2.5 mm ID (4)  | 2.5 mm ID (4)  |
| Protection Class            | Standard   | IP67**   | IP67**   |
|                             | XP Version† (option)   | N/A  | N/A  |

 $<sup>^*</sup>$  U-axis maximum motion range for ceiling-mounted MPK2F-5 is +240°/-60°  $^{**}$  With optional cleaning covers installed and wrist sealed

| FS100 CONTRO                                | LLER SPECIFICATIONS‡  |  |
|---|---|--|
| Dimensions (mm)                             | 470 (w) x 200 (h) x 420 (d) (18.5" x 7.9" x 16.5")  |  |
| Approximate Mass                            | 20 kg (44.1 lbs)  |  |
| Cooling System                              | Direct cooling  |  |
| Ambient Temperature                         | During operation: 0° to 40° C (32° to 104° F) During transit and storage: -10° to 60° C (14° to 140° F) |  |
| Relative Humidity                           | 90% max. non-condensing   |  |
| Primary Power<br>Requirements               | Single-phase or 3-phase power, 200/230 VAC at 50/60 Hz (MPP3, MPK2, MH6F, HP20F require 3-phase)        |  |
| External Transformer (optional)             | For 480/575 VAC installations   |  |
| Digital I/O<br>NPN-Standard<br>PNP-Optional | Standard I/O: 16 inputs/16 outputs<br>Max. I/O (optional): 168 inputs and 168 outputs                   |  |
| Position Feedback                           | Absolute encoder  |  |
| Program Memory                              | JOB: 10,000 steps, 1,000 instructions<br>CIO Ladder: 1,500 steps  |  |
| Pendant Dim. (mm)                           | 169 (w) x 314.5 (h) x 50 (d) (6.7" x 12.4" x 2")  |  |
| Pendant Weight                              | .998 kg (2.2 lbs)   |  |
| Interface                                   | One Compact Flash slot; One USB port (1.1)  |  |
| Pendant Playback<br>Buttons                 | Teach/Play/Remote Keyswitch selector Servo On, Start,<br>Hold, and Emergency Stop Buttons               |  |
| Programming Language                        | INFORM III, menu-driven programming,<br>MotoPlus SDK (C language) – optional                            |  |
| Maintenance Functions                       | Displays troubleshooting for alarms   |  |
| Number of Robots/Axes                       | Up to 2 robots, maximum 16 axes (requires 2 controllers)  |  |
| Multi Tasking                               | Up to 6 concurrent jobs, 1 system job   |  |
| Fieldbus                                    | All common networks supported   |  |
| Ethernet                                    | 10 Base T/100 Base TX   |  |
| Safety                                      | Dual-channel Emergency Stop Pushbuttons, 3-position Enable Switch, Manual Brake Release                 |  |

<sup>&</sup>lt;sup>‡</sup> See FS100 Controller data sheet (DS-509) for complete specifications





<sup>†</sup> XP Version: Yaskawa Motoman's eXtra Protection package