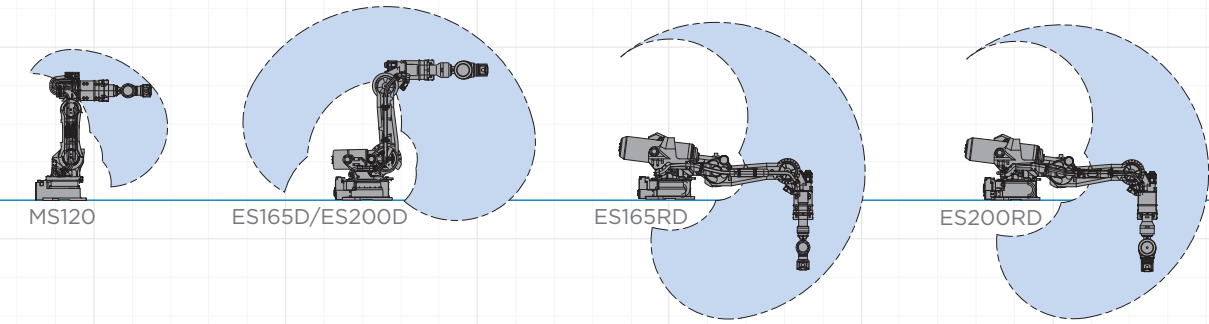
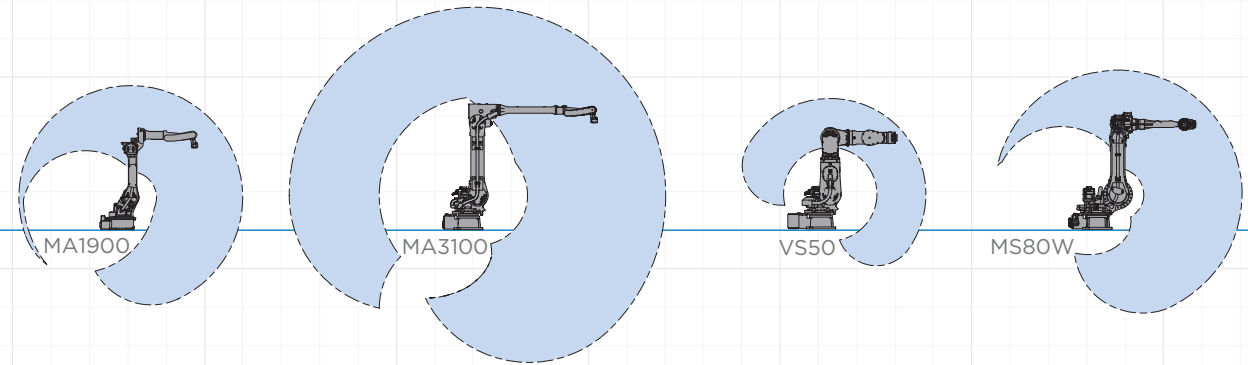


MOTOMAN[®]

OVER 270,000 ROBOTS...OVER 10 MILLION SERVOS...OVER
18 MILLION INVERTER DRIVES. YASKAWA IS THE GLOBAL
LEADER IN AUTOMATION PRODUCTS AND SOLUTIONS.

ROBOTS



ACTUATOR-BASED ROBOTS

HIGHLY OPTIMIZED APPLICATION-SPECIFIC ROBOTS

Application								
Models	SDA5 *	SDA10 *	SDA20 *	SIA5	SIA10	SIA20	SIA30D	SIA50D
Controller <small>DX100, DXM100, FS100, MLX100, NX100</small>	DX, FS	DX, FS	DX, FS	DX, FS	DX, FS	DX, FS	DX	DX
XP <small>ENVIRONMENTALLY HARDENED</small>		✓	✓		✓	✓	✓	✓
Mounting	F, C	F, C	F, C	F, W, C	F, W, C	F, W, C	F, W, C	F, C
Degrees of Freedom	15	15	15	7	7	7	7	7
Payload	5 kg per arm 11 lb per arm	10 kg per arm 22.1 lb per arm	20 kg per arm 44.1 lb per arm	5 kg 11 lb	10 kg 22.1 lb	20 kg 44.1 lb	30 kg 66.2 lb	50 kg 110.3 lb
Vertical Reach	1,118 mm 44"	1,440 mm 56.7"	1,820 mm 71.7"	1,007 mm 39.6"	1,203 mm 47.4"	1,498 mm 59"	2,597 mm 102.2"	2,597 mm 102.2"
Horizontal Reach	845 mm per arm 33.3" per arm	720 mm per arm 28.3" per arm	910 mm per arm 35.8" per arm	559 mm 22"	720 mm 28.3"	910 mm 35.8"	1,485 mm 58.5"	1,630 mm 64.2"
Repeatability	±0.06 mm 0.003"	±0.1 mm 0.004"	±0.1 mm 0.004"	±0.06 mm 0.002"	±0.1 mm 0.004"	±0.1 mm 0.004"	±0.1 mm 0.004"	±0.1 mm 0.004"
Maximum Motion Range								
S-Axis (Turning/Sweep)	+270°/-90° (Lift)	±180° (Lift)	±180° (Lift)	±180°	±180°	±180°	±180°	±180°
S-Axis (Wall Mount)	n/a	n/a	n/a	±180°	±180°	±180°	±180°	n/a
L-Axis (Lower Arm)	±110°	±110°	±110°	±110°	±110°	±110°	±125°	+125°/-60°
U-Axis (Upper Arm)	+115°/-90°	±130°	±130°	+115°/-90°	+135°	+130°	+110°	+215°/-35°
R-Axis (Wrist Roll)	±180°	±180°	±180°	±180°	±180°	±180°	±170°	±170°
B-Axis (Bend/Pitch/Yaw)	±110°	±110°	±110°	±110°	±110°	±110°	±110°	±125°
T-Axis (Wrist Twist)	±180°	±180°	±180°	±180°	±180°	±180°	±180°	±180°
7th-Axis	Elbow: ±170°	Elbow: ±170°	Elbow: ±170°	Elbow: ±170°	Elbow: ±170°	Elbow: ±170°	Elbow: ±170°	Elbow: ±170°
Other	Rotation: ±170°	Rotation: ±170°	Rotation: ±180°	n/a	n/a	n/a	n/a	n/a
Maximum Speed								
S-Axis	200°/s (Lift)	170°/s (Lift)	130°/s (Lift)	200°/s	170°/s	130°/s	130°/s	170°/s
L-Axis	200°/s	170°/s	130°/s	200°/s	170°/s	130°/s	130°/s	130°/s
U-Axis	200°/s	170°/s	170°/s	200°/s	170°/s	170°/s	130°/s	130°/s
R-Axis	200°/s	200°/s	200°/s	200°/s	200°/s	200°/s	170°/s	130°/s
B-Axis	230°/s	200°/s	200°/s	230°/s	200°/s	200°/s	170°/s	130°/s
T-Axis	350°/s	400°/s	400°/s	350°/s	400°/s	400°/s	200°/s	200°/s
7th-Axis	Elbow: 200°/s	Elbow: 170°/s	Elbow: 170°/s	Elbow: 200°/s	Elbow: 170°/s	Elbow: 170°/s	Elbow: 130°/s	Elbow: 130°/s
Other	Rotation: 180°/s	Rotation: 130°/s	Rotation: 125°/s	n/a	n/a	n/a	n/a	n/a
Approximate Mass	110 kg 242.6 lb	220 kg 485.1 lb	380 kg 837.9 lb	30 kg 66.2 lb	60 kg 132.3 lb	120 kg 264.6 lb	345 kg 760.7 lb	640 kg 1,411.2 lb
Power Rating	1.4 kVA	2.7 kVA	4.4 kVA	1 kVA	1.5 kVA	2.2 kVA	3 kVA	8.7 kVA
Allowable Moment								
R-Axis	14.7 N·m	31.4 N·m	58.8 N·m	14.7 N·m	31.4 N·m	58.8 N·m	117.6 N·m	377 N·m
B-Axis	14.7 N·m	31.4 N·m	58.8 N·m	14.7 N·m	31.4 N·m	58.8 N·m	117.6 N·m	377 N·m
T-Axis	7.35 N·m	19.6 N·m	29.4 N·m	7.35 N·m	19.6 N·m	29.4 N·m	58.8 N·m	147 N·m
Allowable Moment of Inertia								
R-Axis	0.45 kg·m ²	1 kg·m ²	4 kg·m ²	0.45 kg·m ²	1 kg·m ²	4 kg·m ²	6 kg·m ²	29.6 kg·m ²
B-Axis	0.45 kg·m ²	1 kg·m ²	4 kg·m ²	0.45 kg·m ²	1 kg·m ²	4 kg·m ²	6 kg·m ²	29.6 kg·m ²
T-Axis	0.11 kg·m ²	0.4 kg·m ²	2 kg·m ²	0.11 kg·m ²	0.4 kg·m ²	2 kg·m ²	3 kg·m ²	12.5 kg·m ²

ARC WELDING					SPOT WELDING						
VA1400 †	MA1400 †	MA1800 †	MA1900 †	MA3100 †	VS50	MS80W †	MS120 †	ES165D †	ES165RD †	ES200D †	ES200RD †
DX	DX	DX	DX	DX	DX	DX	DX	DX	DX	DX	DX
F, W, C	F, W, C	F, W, C	F, W, C	F, W, C	F	F	F	F	S	F	S
7	6	6	6	6	7	6	6	6	6	6	6
3 kg 6.6 lb	3 kg 6.6 lb	15 kg 33.1 lb	3 kg 6.6 lb	3 kg 6.6 lb	50 kg 110.3 lb	72 kg 158.8 lb	106.5 kg 234.8 lb	151.5 kg 344.1 lb	151.5 kg 344.1 lb	186.5 kg 411.2 lb	186.5 kg 411.2 lb
2,475 mm 97.4"	2,511 mm 98.9"	3,243 mm 127.7"	3,437 mm 135.3"	5,615 mm 221.1"	2,597 mm 102.2"	3,751 mm 147.7"	2,163 mm 85.2"	3,372 mm 132.8"	4,782 mm 188.3"	3,372 mm 132.8"	4,782 mm 188.3"
1,434 mm 56.5"	1,434 mm 56.5"	1,807 mm 71.1"	1,904 mm 75"	3,121 mm 122.9"	1,630 mm 64.2"	2,236 mm 88"	1,623 mm 63.9"	2,651 mm 104.4"	3,140 mm 123.6"	2,651 mm 104.4"	3,140 mm 123.6"
±0.08 mm 0.003"	±0.08 mm 0.003"	±0.08 mm 0.003"	±0.08 mm 0.003"	±0.15 mm 0.006"	±0.1 mm 0.004"	±0.07 mm 0.003"	±0.2 mm 0.008"	±0.2 mm 0.008"	±0.2 mm 0.008"	±0.2 mm 0.008"	±0.2 mm 0.008"
±170°	±170°	±180°	±180°	±180°	±180°	±180°	±150°	±180°	±180°	±180°	±180°
±30°	±30°	±30°	±30°	±30°	n/a	n/a	n/a	n/a	n/a	n/a	n/a
+148°/-70°	+155°/-90°	+155°/-100°	+155°/-110°	+135°/-90°	+125°/-60°	+155°/-90°	+50°/-60°	+76°/-60°	+80°/-130°	+76°/-60°	+80°/-130°
+150°/-175°	+190°/-175°	+210°/-175°	+220°/-165°	+251°/-160°	+215°/-35°	+160°/-185°	+72°/-105°	+230°/-142.5°	+208°/-112°	+230°/-142.5°	+208°/-107°
±150°	±150°	±175°	±150°	±150°	±170°	±205°	±205°	±205°	±205°	±205°	±205°
+180°/-45°	+180°/-45°	+180°/-45°	+180°/-45°	+180°/-45°	±125°	±120°	±115°	±120°	±120°	±120°	±120°
±200°	±200°	±200°	±200°	±200°	±180°	±180°	±180°	±180°	±180°	±180°	±180°
Elbow: ±90°	n/a	n/a	n/a	n/a	Elbow: ±170°	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
220°/s	200°/s	195°/s	197°/s	180°/s	170°/s	170°/s	130°/s	110°/s	105°/s	95°/s	95°/s
200°/s	200°/s	175°/s	175°/s	178°/s	130°/s	140°/s	110°/s	110°/s	105°/s	90°/s	90°/s
220°/s	220°/s	190°/s	185°/s	178°/s	130°/s	160°/s	130°/s	110°/s	105°/s	95°/s	95°/s
410°/s	410°/s	380°/s	410°/s	400°/s	130°/s	230°/s	215°/s	175°/s	175°/s	120°/s	120°/s
410°/s	410°/s	340°/s	410°/s	410°/s	130°/s	230°/s	180°/s	150°/s	150°/s	120°/s	120°/s
610°/s	610°/s	560°/s	610°/s	610°/s	200°/s	350°/s	300°/s	240°/s	240°/s	190°/s	190°/s
Elbow: 220°/s	n/a	n/a	n/a	n/a	Elbow: 130°/s	n/a	n/a	n/a	n/a	n/a	n/a
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
150 kg 330.8 lb	130 kg 286.7 lb	380 kg 837.9 lb	280 kg 617.4 lb	501 kg 1,104.7 lb	640 kg 1,411.2 lb	580 kg 1,278.9 lb	950 kg 2,094.8 lb	1,100 kg 2,425.5 lb	1,540 kg 3,395.7 lb	1,130 kg 2,491.7 lb	1,570 kg 3,461.9 lb
1.5 kVA	1.5 kVA	5 kVA	2.8 kVA	2.5 kVA	8.7 kVA	4 kVA	7.5 kVA	5 kVA	10 kVA	5 kVA	10 kVA
8.8 N·m	8.8 N·m	38.6 N·m	8.8 N·m	8.8 N·m	377 N·m	372 N·m	539 N·m	868 N·m	868 N·m	1,291 N·m	1,291 N·m
8.8 N·m	8.8 N·m	38.6 N·m	8.8 N·m	8.8 N·m	377 N·m	372 N·m	539 N·m	868 N·m	868 N·m	1,291 N·m	1,291 N·m
2.9 N·m	2.9 N·m	7.35 N·m	2.9 N·m	2.9 N·m	147 N·m	191 N·m	392 N·m	490 N·m	490 N·m	715 N·m	715 N·m
0.27 kg·m ²	0.27 kg·m ²	1.04 kg·m ²	0.27 kg·m ²	0.27 kg·m ²	29.6 kg·m ²	26 kg·m ²	33 kg·m ²	83 kg·m ²	85 kg·m ²	141 kg·m ²	118 kg·m ²
0.27 kg·m ²	0.27 kg·m ²	1.04 kg·m ²	0.27 kg·m ²	0.27 kg·m ²	29.6 kg·m ²	26 kg·m ²	33 kg·m ²	83 kg·m ²	85 kg·m ²	141 kg·m ²	118 kg·m ²
0.03 kg·m ²	0.03 kg·m ²	0.04 kg·m ²	0.03 kg·m ²	0.03 kg·m ²	12.5 kg·m ²	10.3 kg·m ²	14.5 kg·m ²	45 kg·m ²	45 kg·m ²	80 kg·m ²	80 kg·m ²

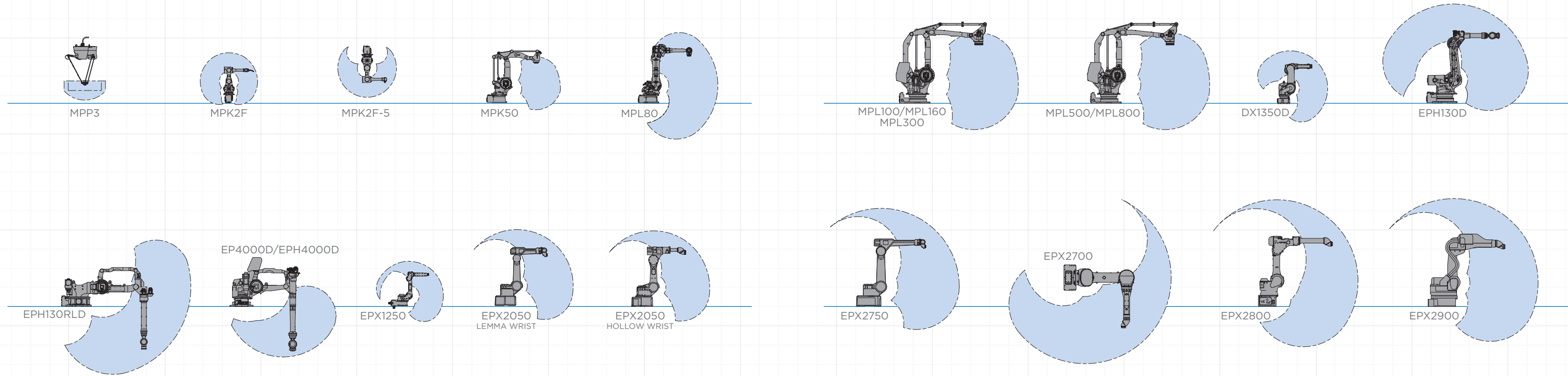
† CEILING-MOUNT MODELS (VA1400T, MA1400T, MA1800T, MA1900T AND MA3100T) ALSO AVAILABLE; CONTACT YASKAWA MOTOMAN FOR SPECIFICATIONS

‡ WORKING RANGE WITH HARNESS SHOWN FOR R-, B- AND T-AXIS MAXIMUM MOTION RANGE

N/A = NOT APPLICABLE

TECHNICAL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

MOUNTING: F = FLOOR; W = WALL; C = CEILING; S = SHELF
* CEILING-MOUNTING AVAILABLE WITH APPLICATION APPROVAL



HIGHLY OPTIMIZED APPLICATION-SPECIFIC ROBOTS

Application	PICKING, PACKING, PALLETIZING											MATERIAL REMOVAL	PRESS TENDING				PAINT							
	MPP3	MPK2F	MPK2F-5 *	MPK50 †	MPL80 †	MPL100	MPL160 †	MPL300 †	MPL500	MPL800	DX1350D		EPH130D	EPH130RLD	EP4000D	EPH4000D	EPX1250 STRAIGHT WRIST	EPX2050 LEMMA WRIST	EPX2050 HOLLOW WRIST	EPX2750 LEMMA WRIST	EPX2700 † HOLLOW WRIST	EPX2800 § HOLLOW WRIST	EPX2900 HOLLOW WRIST	
Models																								
Controller	DX100, DXM100, FS100, MLX100, NX100	FS	FS	FS	DX, MLX	DX, MLX	DX	DX, MLX	DX, MLX	DX	DX	DX	DX	DX	DX	DX	DX	DX	DX	DX	DX	DX	DX	DX
XP ENVIRONMENTALLY HARDENED	IP65 STANDARD	IP67 w/ OPTIONAL COVERS	IP67 w/ OPTIONAL COVERS																					
Mounting	C	F, W, C	F, C	F	F	F	F	F	F	F	F, W, C	F	S	S	S	F, W, C	F, W, C	F, W	F	W	F	F	F	
Degrees of Freedom	4	5	5	4	5	4	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	
Payload	3 kg 6.6 lb	2 kg 4.4 lb	5 kg 11 lb	50 kg 110.3 lb	80 kg 176.4 lb	100 kg 220.5 lb	160 kg 352.8 lb	300 kg 661.5 lb	500 kg 1,102.5 lb	800 kg 1,764 lb	35 kg 77.2 lb	130 kg 286.7 lb	130 kg 286.7 lb	200 kg 441 lb	200 kg 441 lb	5 kg 11 lb	10 kg 22.1 lb	15 kg 33.1 lb	10 kg 22.1 lb	15 kg 33.1 lb	20 kg 44.1 lb	20 kg 44.1 lb	20 kg 44.1 lb	
Vertical Reach	Up to 600 mm 23.6"	1,625 mm 64"	1,551 mm 61"	1,668 mm 65.7"	3,291 mm 129.6"	3,024 mm 119.1"	3,024 mm 119.1"	3,024 mm 119.1"	3,024 mm 119.1"	3,024 mm 119.1"	2,201 mm 86.7"	3,372 mm 132.8"	4,151 mm 163.4"	2,614 mm 103"	2,629 mm 103.5"	1,852 mm 72.9"	2,767 mm 108.9"	2,806 mm 110.5"	3,758 mm 148"	5,147 mm 202.6"	4,582 mm 180.4"	4,410 mm 173.6"	4,410 mm 173.6"	
Horizontal Reach	1,300 mm 51.2"	900 mm 35.4"	900 mm 35.4"	1,893 mm 74.5"	2,061 mm 81.1"	3,159 mm 124.4"	3,159 mm 124.4"	3,159 mm 124.4"	3,159 mm 124.4"	3,159 mm 124.4"	1,355 mm 53.3"	2,651 mm 104.4"	3,474 mm 136.8"	3,505 mm 138"	3,505 mm 138"	1,256 mm 49.4"	2,035 mm 80.1"	2,054 mm 80.9"	2,729 mm 107.4"	2,700 mm 106.3"	2,778 mm 109.4"	2,900 mm 114.2"	2,900 mm 114.2"	
Repeatability	±0.1 mm 0.004"	±0.5 mm 0.02"	±0.5 mm 0.02"	±0.5 mm 0.02"	±0.07 mm 0.003"	±0.5 mm 0.02"	±0.5 mm 0.02"	±0.5 mm 0.02"	±0.5 mm 0.02"	±0.5 mm 0.02"	±0.06 mm 0.002"	±0.2 mm 0.008"	±0.3 mm 0.01"	±0.5 mm 0.02"	±0.5 mm 0.02"	±0.15 mm 0.006"	±0.5 mm 0.02"	±0.5 mm 0.02"	±0.5 mm 0.02"	±0.15 mm 0.006"	±0.5 mm 0.02"	±0.5 mm 0.02"	±0.5 mm 0.02"	
Maximum Motion Range																								
S-Axis (Turning/Sweep)	n/a	±170°	±170°	±180°	±180°	±180°	±180°	±180°	±180°	±180°	±180°	±180°	±180°	±180°	±150°	±150°	±170°	±90°	±90°	±150°	n/a	±150°	±150°	
S-Axis (Wall Mount)	n/a	±30°	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	±30°	n/a	n/a	n/a	n/a	±60°	±27.5°	±20°	n/a	+125°/-25° (RH)	n/a	n/a	n/a	
L-Axis (Lower Arm)	n/a	±120°	±120°	+80°/-35°	+135°/-90°	+90°/-45°	+90°/-45°	+90°/-45°	+90°/-45°	+90°/-45°	+145°/-50°	+76°/-60°	+70°/-130°	+25°/-122°	+25°/-122°	+120°/-65°	+100°/-50°	+100°/-50°	+90°/-40°	+140°/-65°	+120°/-45°	+110°/-50°	+110°/-50°	
U-Axis (Upper Arm)	n/a	+282°/-102°	+60°/-102°	+15°/-105°	+251°/-170°	+15.5°/-120°	+15.5°/-120°	+15.5°/-120°	+15.5°/-120°	+15.5°/-120°	+220°/-140°	+230°/-137.5°	+95°/-70°	+53°/-70°	+53°/-70°	+205°/-165°	+5°/+163°	+5°/+163°	+168°/-10°	+205°/-65°	+90°/-85°	+90°/-70°	+90°/-70°	
R-Axis (Wrist Roll)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	±200°	±360°	±360°	±360°	±360°	±190°	±260°	±360°	±260°	±720°	±360°	±360°	±360°	
B-Axis (Bend/Pitch/Yaw)	n/a	±150°	±15°	n/a	±15°	n/a	n/a	n/a	n/a	n/a	±125°	±130°	±130°	±120°	±120°	±145°	±270°	±360°	±270°	±720°	±360°	±360°	±360°	
T-Axis (Wrist Twist)	±360°	±270°	±270°	±350°	±360°	±360°	±360°	±360°	±360°	±360°	±360°	±360°	±360°	±360°	±360°	±260°	±360°	±360°	±260°	±720°	±360°	±360°	±360°	
7th-Axis	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Other	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Maximum Speed																								
S-Axis	n/a	320°/s	320°/s	185°/s [176°/s]	170°/s	140°/s	140°/s [112°/s]	90°/s	85°/s	65°/s	170°/s	130°/s	110°/s	90°/s	90°/s	185°/s	123.5°/s	120°/s	124°/s	100°/s	150°/s	155°/s	155°/s	
L-Axis	n/a	330°/s	330°/s	215°/s [172°/s]	170°/s [131°/s]	140°/s	136°/s [116°/s]	100°/s	85°/s	65°/s	170°/s	130°/s	110°/s	90°/s	90°/s	185°/s	120°/s	120°/s	127°/s	100°/s	120°/s	125°/s	125°/s	
U-Axis	n/a	330°/s	330°/s	215°/s [172°/s]	170°/s [153°/s]	140°/s	136°/s [116°/s]	110°/s	85°/s	65°/s	170°/s	130°/s	110°/s	90°/s	90°/s	185°/s	123.5°/s	125°/s	112°/s	110°/s	155°/s	155°/s	155°/s	
R-Axis	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	270°/s	215°/s	215°/s	80°/s	80°/s	360°/s	360°/s	360°/s	360°/s	450°/s	360°/s	450°/s	450°/s	
B-Axis	n/a	380°/s	380°/s	n/a	170°/s	n/a	n/a	n/a	n/a	n/a	270°/s	180°/s	180°/s	80°/s	80°/s	410°/s	360°/s	360°/s	360°/s	450°/s	360°/s	550°/s	550°/s	
T-Axis	1,200°/s	2,000°/s	2,000°/s	374°/s [336°/s]	350°/s	305°/s	305°/s [275°/s]	195°/s	195°/s	125°/s	460°/s	300°/s	300°/s	160°/s	160°/s	500°/s	360°/s	360°/s	360°/s	550°/s	360°/s	650°/s	650°/s	
7th-Axis	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Other	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Approximate Mass	115 kg 253.6 lb	72 kg 158.8 lb	72 kg 158.8 lb	670 kg 1,477.4 lb	550 kg 1,212.8 lb	1,700 kg 3,748.5 lb	1,700 kg 3,748.5 lb	1,820 kg 4,013.1 lb	2,300 kg 5,071.5 lb	2,550 kg 5,622.8 lb	275 kg 606.4 lb	1,495 kg 3,296.5 lb	1,445 kg 3,186.2 lb	3,100 kg 6,835.5 lb	3,050 kg 6,725.3 lb	110 kg 242.6 lb	370 kg 815.9 lb	540 kg 1,190.7 lb	560 kg 1,234.8 lb	590 kg 1,301 lb	650 kg 1,433.3 lb	1,030 kg 2,271.2 lb	1,030 kg 2,271.2 lb	
Power Rating	1.5 kVA	2 kVA	2 kVA	4 [6] kVA	4 kVA	9.5 kVA	9.5 [10] kVA	9.5 [10] kVA	9.5 kVA	10 kVA	5 kVA	7.5 kVA	7.5 kVA	22 kVA	22 kVA	1.5 kVA	5 kVA	5 kVA	5 kVA	5 kVA	5 kVA	5 kVA	5 kVA	
Allowable Moment																								
R-Axis	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	82 N•m	735 N•m	735 N•m	1,274 N•m	1,274 N•m	8.0 N•m	30.4 N•m	45.8 N•m	30.4 N•m	45.8 N•m	77.4 N•m	72 N•m	72 N•m	
B-Axis	n/a	3.5 N•m	2.26 N•m	n/a	78.4 N•m	n/a	n/a	n/a	n/a	n/a	82 N•m	735 N•m	735 N•m	2,156 N•m	2,156 N•m	8.0 N•m	19.6 N•m	33.8 N•m	19.6 N•m	33.8 N•m	49.9 N•m	51.5 N•m	51.5 N•m	
T-Axis	0.167 N•m	1.5 N•m	0 N•m	n/a	20.5 N•m	n/a	n/a	n/a	n/a	n/a	41 N•m	421 N•m	421 N•m	0 N•m	0 N•m	3.0 N•m	9.8 N•m	10.8 N•m	9.8 N•m	10.8 N•m	19.6 N•m	19.6 N•m	19.6 N•m	
Allowable Moment of Inertia																								
R-Axis	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2 kg•m ²	45 kg•m ²	45 kg•m ²	84.5 kg•m ²	84.5 kg•m ²	0.20 kg•m ²	0.97 kg•m ²	1.45 kg•m ²	0.97 kg•m ²	1.45 kg•m ²	2.45 kg•m ²	2.45 kg•m ²	2.45 kg•m ²	
B-Axis	n/a	0.065 kg•m ²	0.065 kg•m ²	n/a	16 kg•m ²	n/a	n/a	n/a	n/a	n/a	2 kg•m ²	45 kg•m ²	45 kg•m ²	84.5 kg•m ²	84.5 kg•m ²	0.20 kg•m ²	0.97 kg•m ²	1.45 kg•m ²	0.97 kg•m ²	1.45 kg•m ²	2.45 kg•m ²	2.45 kg•m ²	2.45 kg•m ²	
T-Axis	0.017 kg•m ²	0.012 kg•m ²	0.012 kg•m ²	5.5 kg•m ²	6.1 kg•m ²	80 kg•m ²	80 kg•m ²	140 kg•m ²	200 kg•m ²	550 kg•m ²	0.5 kg•m ²	15 kg•m ²	15 kg•m ²	80 kg•m ²	80 kg•m ²	0.07 kg•m ²	0.10 kg•m ²	0.10 kg•m ²	0.10 kg•m ²	0.10 kg•m ²	0.20 kg•m ²	0.20 kg•m ²	0.20 kg•m ²	

‡ S-AXIS MAXIMUM MOTION RANGE FOR RIGHT OFFSET EPX2700 SHOWN; LEFT OFFSET S-AXIS MAXIMUM MOTION RANGE IS +25°/-125°

* CEILING-MOUNTED MPK2F-5 U-AXIS MAXIMUM MOTION RANGE IS +240°/-60°

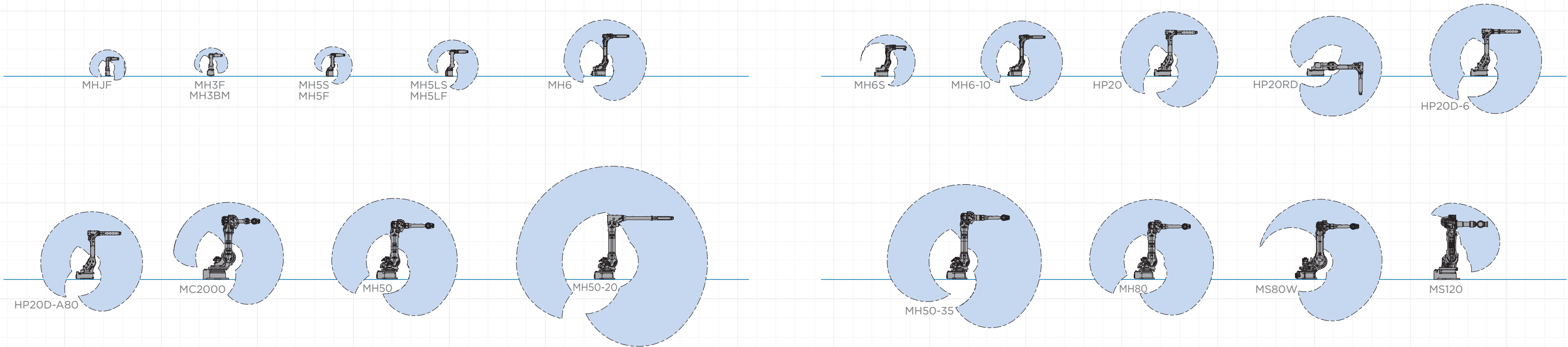
† SPECIFICATIONS IN BRACKETS ARE UNIQUE FOR MLX VERSION ROBOTS

‡ S-AXIS MAXIMUM MOTION RANGE FOR RIGHT OFFSET EPX2700 SHOWN; LEFT OFFSET S-AXIS MAXIMUM MOTION RANGE IS +25°/-125°

§ SHELF-MOUNT MODEL (EPX2800R) ALSO AVAILABLE; CONTACT YASKAWA MOTOMAN FOR SPECIFICATIONS

N/A = NOT APPLICABLE

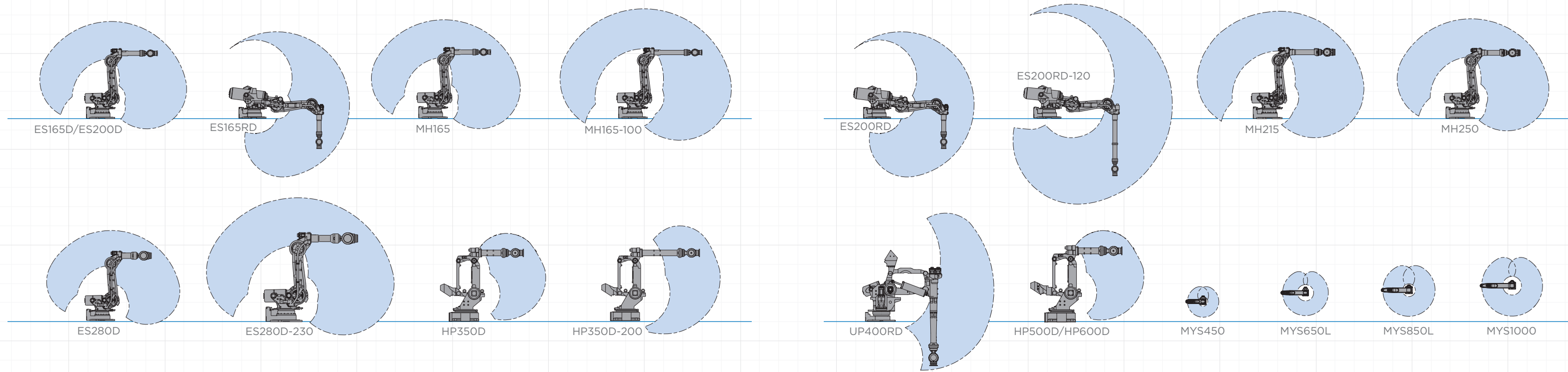
TECHNICAL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE



FLEXIBLE HIGH-PERFORMANCE ROBOTS

Application																		
Models	MHJF *	MH3F / MH3BM †	MH5S / MH5F ‡	MH5LS / MH5LF ‡	MH6	MH6S	MH6-10	HP20	HP20RD	HP20D-6	HP20D-A80 HIGH PATH ACCURACY	MC2000 HIGH PATH ACCURACY	MH50	MH50-20	MH50-35	MH80	MS80W	MS120
Controller	DX100, DXM100, FS100, MLX100, NX100	FS	FS	DXM, FS, MLX	DXM, FS, MLX	DX, FS	DX	DX, FS	DX	DX	DX	DX	DX	DX	DX	DX	DX	DX
XP ENVIRONMENTALLY HARDENED			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mounting	F, C	F, W, C	F, W, C	F, W, C	F, W, C	F, W, C	F, W, C	F, W, C	S	F, W, C	F, W, C	F	F, W, C	F, W, C	F, W, C	F, W, C	F, S	F
Degrees of Freedom	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Payload	1 [2] kg 2.2 [4.4] lb	3 kg 6.6 lb	5 kg 11 lb	5 kg 11 lb	6 kg 13.2 lb	6 kg 13.2 lb	10 kg 22.1 lb	20 kg 44.1 lb	20 kg 44.1 lb	6 kg 13.2 lb	20 kg 44.1 lb	50 kg 110.3 lb	50 kg 110.3 lb	20 kg 44.1 lb	35 kg 77.2 lb	80 kg 176.4 lb	80 kg 176.4 lb	120 kg 264.6 lb
Vertical Reach	909 mm 35.8"	804 mm 31.7"	1,193 mm 47"	1,560 mm 61.4"	2,486 mm 97.9"	1,597 mm 62.9"	2,486 mm 97.9"	3,063 mm 120.6"	3,134 mm 123.4"	3,459 mm 136.2"	3,063 mm 120.6"	3,164 mm 124.6"	3,578 mm 140.9"	5,585 mm 219.9"	4,448 mm 175.1"	3,578 mm 140.9"	3,751 mm 147.7"	2,163 mm 85.2"
Horizontal Reach	545 mm 21.5"	532 mm 20.9"	706 mm 27.8"	895 mm 35.2"	1,422 mm 56"	997 mm 39.3"	1,422 mm 56"	1,717 mm 67.6"	2,017 mm 79.4"	1,915 mm 75.4"	1,717 mm 67.6"	2,038 mm 80.2"	2,061 mm 81.1"	3,106 mm 122.3"	2,538 mm 100"	2,061 mm 81.1"	2,236 mm 88"	1,623 mm 63.9"
Repeatability	±0.03 mm 0.001"	±0.03 mm 0.001"	±0.02 mm 0.0008"	±0.03 mm 0.001"	±0.08 mm 0.003"	±0.08 mm 0.003"	±0.08 mm 0.003"	±0.06 mm 0.002"	±0.06 mm 0.002"	±0.06 mm 0.002"	±0.06 mm 0.002"	±0.07 mm 0.003"	±0.07 mm 0.003"	±0.15 mm 0.006"	±0.07 mm 0.003"	±0.07 mm 0.003"	±0.07 mm 0.003"	±0.2 mm 0.008"
Maximum Motion Range																		
S-Axis (Turning/Sweep)	±160°	±160° [±180°]	±170°	±170°	±170°	±170°	±170°	±180°	+125°/-110°	±180°	±180°	±180°	±180°	±180°	±180°	±180°	±180°	±150°
S-Axis (Wall Mount)	n/a	±25°	±30°	±30°	±30°	±30°	±30°	±30°	n/a	±30°	±30°	n/a	±30°	±30°	±30°	±30°	n/a	n/a
L-Axis (Lower Arm)	+110°/-90°	+90°/-85°	+150°/-65°	+150°/-65°	+155°/-90°	+133°/-80°	+155°/-90°	+155°/-100°	+105°/-130°	+155°/-100°	+155°/-110°	+135°/-60°	+135°/-90°	+135°/-90°	+135°/-90°	+135°/-90°	+155°/-90°	+50°/-60°
U-Axis (Upper Arm)	+105°/-290°	+260°/-105°	+255°/-136°	+255°/-138°	+250°/-175°	+165°/-130°	+250°/-175°	+255°/-165°	+310°/-115°	+255°/-165°	+255°/-165°	+235°/-157°	+251°/-170°	+251°/-160°	+296°/-160°	+251°/-170°	+160°/-185°	+72°/-105°
R-Axis (Wrist Roll)	±180°	±170°	±190°	±190°	±180°	±180°	±180°	±200°	±200°	±200°	±200°	±360°	±360°	±190°	±360°	±360°	±360°	±360°
B-Axis (Bend/Pitch/Yaw)	±130°	±120°	±135°	±135°	+225°/-45°	+225°/-45°	+225°/-45°	+230°/-50°	±140°	+230°/-50°	+230°/-50°	±125°	±125°	+230°/-50°	±125°	±125°	±125°	±130°
T-Axis (Wrist Twist)	±360°	±360°	±360°	±360°	±360°	±360°	±360°	±360°	±360°	±360°	±360°	±360°	±360°	±360°	±360°	±360°	±360°	±360°
7th-Axis	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Other	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Maximum Speed																		
S-Axis	160°/s	200°/s [310°/s]	376°/s	270°/s	220°/s	220°/s	140°/s	197°/s	180°/s	197°/s	197°/s	150°/s	180°/s	180°/s	180°/s	170°/s	170°/s	130°/s
L-Axis	130°/s	150°/s	350°/s	280°/s	200°/s	220°/s	130°/s	175°/s	175°/s	175°/s	175°/s	150°/s	178°/s	178°/s	140°/s	140°/s	140°/s	110°/s
U-Axis	200°/s	190°/s	400°/s	300°/s	220°/s	220°/s	135°/s	187°/s	187°/s	187°/s	187°/s	150°/s	178°/s	178°/s	178°/s	160°/s	160°/s	130°/s
R-Axis	300°/s	300°/s	450°/s	450°/s	410°/s	410°/s	270°/s	400°/s	400°/s	400°/s	400°/s	250°/s	250°/s	400°/s	250°/s	230°/s	230°/s	215°/s
B-Axis	400°/s	300°/s	450°/s	450°/s	410°/s	410°/s	270°/s	400°/s	400°/s	400°/s	400°/s	250°/s	250°/s	400°/s	250°/s	230°/s	230°/s	180°/s
T-Axis	500°/s	420°/s	720°/s	720°/s	610°/s	610°/s	400°/s	600°/s	600°/s	600°/s	600°/s	250°/s	360°/s	600°/s	360°/s	350°/s	350°/s	300°/s
7th-Axis	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Other	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Approximate Mass	15 kg 33.1 lb	27 kg 59.5 lb	27 kg 59.5 lb	29 kg 63.9 lb	130 kg 286.7 lb	120 kg 264.6 lb	130 kg 286.7 lb	268 kg 590.9 lb	293 kg 646.1 lb	273 kg 602 lb	268 kg 590.9 lb	845 kg 1,863.2 lb	550 kg 1,212.8 lb	495 kg 1,091.5 lb	570 kg 1,256.9 lb	555 kg 1,223.8 lb	580 kg 1,278.9 lb	950 kg 2,094.8 lb
Power Rating	0.5 kVA	0.5 kVA	1 kVA	1 kVA	1.5 kVA	1.5 kVA	1.5 kVA	2 kVA	2 kVA	2.8 kVA	2 kVA	3.5 kVA	4 kVA	3.5 kVA	4 kVA	4.5 kVA	4 kVA	7.5 kVA
Allowable Moment																		
R-Axis	3.33 N·m	5.39 N·m	12 N·m	12 N·m	11.8 N·m	11.8 N·m	12.2 N·m	39.2 N·m	39.2 N·m	11.8 N·m	39.2 N·m	110 N·m	216 N·m	39.2 N·m	147 N·m	392 N·m	392 N·m	588 N·m
B-Axis	3.33 N·m	5.39 N·m	12 N·m	12 N·m	9.8 N·m	9.8 N·m	14.2 N·m	39.2 N·m	39.2 N·m	9.8 N·m	39.2 N·m	110 N·m	216 N·m	39.2 N·m	147 N·m	392 N·m	392 N·m	588 N·m
T-Axis	0.98 N·m	2.94 N·m	7 N·m	7 N·m	5.9 N·m	5.9 N·m	7.3 N·m	19.6 N·m	19.6 N·m	5.9 N·m	19.6 N·m	55 N·m	147 N·m	19.6 N·m	78 N·m	196 N·m	196 N·m	392 N·m
Allowable Moment of Inertia																		
R-Axis	0.058 kg·m ²	0.1 kg·m ²	0.3 kg·m ²	0.3 kg·m ²	0.27 kg·m ²	0.27 kg·m ²	0.24 kg·m ²	1.05 kg·m ²	1.05 kg·m ²	0.24 kg·m ²	1.05 kg·m ²	7 kg·m ²	28 kg·m ²	1.05 kg·m ²	10 kg·m ²	28 kg·m ²	28 kg·m ²	35 kg·m ²
B-Axis	0.058 kg·m ²	0.1 kg·m ²	0.3 kg·m ²	0.3 kg·m ²	0.27 kg·m ²	0.27 kg·m ²	0.21 kg·m ²	1.05 kg·m ²	1.05 kg·m ²	0.17 kg·m ²	1.05 kg·m ²	7 kg·m ²	28 kg·m ²	1.05 kg·m ²	10 kg·m ²	28 kg·m ²	28 kg·m ²	35 kg·m ²
T-Axis	0.005 kg·m ²	0.03 kg·m ²	0.1 kg·m ²	0.1 kg·m ²	0.06 kg·m ²	0.06 kg·m ²	0.06 kg·m ²	0.75 kg·m ²	0.75 kg·m ²	0.06 kg·m ²	0.75 kg·m ²	1 kg·m ²	11 kg·m ²	0.75 kg·m ²	4 kg·m ²	11 kg·m ²	11 kg·m ²	14.5 kg·m ²

MOUNTING: F = FLOOR; W = WALL; C = CEILING; S = SHELF
 * MAXIMUM SPECIFICATIONS FOR MHJF IN BRACKETS
 † SPECIFICATIONS IN BRACKETS ARE UNIQUE FOR MH3BM
 ‡ CEILING MOUNT NOT SUPPORTED ON MLX100 ROBOT GATEWAY



FLEXIBLE HIGH-PERFORMANCE ROBOTS

Application																					
Models	ES165D *	ES165RD	MH165 *	MH165-100	ES200D †	ES200RD	ES200RD-120	MH215	MH250		ES280D	ES280D-230	HP350D	HP350D-200	UP400RD	HP500D	HP600D	MYS450 ‡ SCARA	MYS650L ‡ SCARA	MYS850L ‡ SCARA	MYS1000 ‡ SCARA
Controller	DX100, DXM100, FS100, MLX100, NX100																				
XP ENVIRONMENTALLY HARDENED		✓	✓	✓	✓			✓	✓												
Mounting	F	S	F	F	F	S	S	F	F		F	F	F	F	S	F	F	F	F	F	F
Degrees of Freedom	6	6	6	6	6	6	6	6	6		6	6	6	6	6	6	6	4	4	4	4
Payload	165 kg 363.8 lb	165 kg 363.8 lb	165 kg 363.8 lb	100 kg 220.5 lb	200 kg 441 lb	200 kg 441 lb	120 kg 264.6 lb	215 kg 474.1 lb	250 kg 551.3 lb		280 kg 617.4 lb	230 kg 507.2 lb	350 kg 771.8 lb	200 kg 441 lb	400 kg 882 lb	500 kg 1,102.5 lb	600 kg 1,323 lb	3 [6] kg 6.6 [13.2] lb	3 [6] kg 6.6 [13.2] lb	5 [10] kg 11 [22.1] lb	10 [20] kg 22.1 [44.1] lb
Vertical Reach	3,372 mm 132.8"	4,782 mm 188.3"	3,372 mm 132.8"	4,091 mm 161.1"	3,372 mm 132.8"	4,782 mm 188.3"	6,512 mm 256.4"	3,894 mm 153.3"	3,490 mm 137.4"		2,962 mm 116.6"	3,372 mm 132.8"	2,761 mm 108.7"	3,506 mm 138"	4,908 mm 193.2"	2,761 mm 108.7"	2,761 mm 108.7"	180 mm 7.1"	330 mm 13"	420 mm 16.5"	420 mm 16.5"
Horizontal Reach	2,651 mm 104.4"	3,140 mm 123.6"	2,651 mm 104.4"	3,010 mm 118.5"	2,651 mm 104.4"	3,140 mm 123.6"	4,004 mm 157.6"	2,912 mm 114.6"	2,710 mm 106.7"		2,446 mm 96.3"	2,651 mm 104.4"	2,542 mm 100.1"	3,036 mm 119.5"	3,518 mm 138.5"	2,542 mm 100.1"	2,542 mm 100.1"	450 mm radial 17.7"	650 mm radial 25.6"	850 mm radial 33.5"	1,000 mm radial 39.4"
Repeatability	±0.2 mm 0.008"	±0.2 mm 0.008"	±0.2 mm 0.008"	±0.2 mm 0.008"	±0.2 mm 0.008"	±0.2 mm 0.008"	±0.2 mm 0.008"	±0.2 mm 0.008"	±0.2 mm 0.008"		±0.2 mm 0.008"	±0.2 mm 0.008"	±0.5 mm 0.02"	±0.5 mm 0.02"	±0.5 mm 0.02"	±0.5 mm 0.02"	±0.5 mm 0.02"	±0.015 mm (S, L Axes) 0.0006"	±0.015 mm (S, L Axes) 0.0006"	±0.025 mm 0.001"	±0.025 mm (S, L Axes) 0.001"
Maximum Motion Range																					
S-Axis (Turning/Sweep)	±180°	±180°	±180°	±180°	±180°	±180°	±180°	±180°	±180°		±180°	±180°	±150°	±150°	±150°	±150°	±150°	+242°/-62°	+242°/-62°	+242°/-62°	+242°/-62°
S-Axis (Wall Mount)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
L-Axis (Lower Arm)	+76°/-60°	+80°/-130°	+76°/-60°	+76°/-60°	+76°/-60°	+80°/-130°	+80°/-130°	+76°/-60°	+76°/-60°		+76°/-60°	+76°/-60°	+61°/-55°	+61°/-55°	+20°/-122°	+61°/-55°	+61°/-55°	±147.5°	±147.5°	±152.5°	±152.5°
U-Axis (Upper Arm)	+230°/-142.5°	+208°/-112°	+230°/-142.5°	+230°/-142.5°	+230°/-142.5°	+280°/-107°	+190°/-107°	+230°/-142.5°	+230°/-142.5°		+230°/-142.5°	+230°/-142.5°	+30°/-113°	+30°/-113°	+120°/-9°	+30°/-113°	+30°/-113°	180 mm	330 mm	420 mm	420 mm
R-Axis (Wrist Roll)	±360°	±360°	±360°	±360°	±360°	±360°	±360°	±360°	±360°		±360°	±360°	±360°	±360°	±360°	±360°	±360°	±360°	±360°	±360°	±360°
B-Axis (Bend/Pitch/Yaw)	±130°	±130°	±130°	±130°	±125°	±125°	±130°	±125°	±125°		±125°	±125°	±125°	±125°	±120°	±125°	±125°	n/a	n/a	n/a	n/a
T-Axis (Wrist Twist)	±360°	±360°	±360°	±360°	±360°	±360°	±360°	±360°	±360°		±360°	±360°	±360°	±360°	±360°	±360°	±360°	n/a	n/a	n/a	n/a
7th-Axis	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Other	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Maximum Speed																					
S-Axis	110°/s	105°/s	110°/s	110°/s	95°/s	90°/s	90°/s	100°/s	100°/s		90°/s	80°/s	95°/s	95°/s	80°/s	80°/s	60°/s	420°/s	420°/s	424°/s	405°/s
L-Axis	110°/s	105°/s	110°/s	110°/s	90°/s	85°/s	85°/s	90°/s	90°/s		80°/s	70°/s	95°/s	95°/s	80°/s	80°/s	70°/s	720°/s	720°/s	678°/s	648°/s
U-Axis	110°/s	105°/s	110°/s	110°/s	95°/s	85°/s	85°/s	97°/s	97°/s		90°/s	80°/s	95°/s	95°/s	80°/s	80°/s	70°/s	1,083 mm/s	2,280 mm/s	2,350 mm/s	2,315 mm/s
R-Axis	175°/s	175°/s	175°/s	175°/s	120°/s	120°/s	175°/s	120°/s	120°/s		115°/s	115°/s	100°/s	100°/s	80°/s	100°/s	80°/s	2,400°/s	2,400°/s	2,415°/s	1,700°/s
B-Axis	150°/s	150°/s	150°/s	150°/s	120°/s	120°/s	150°/s	120°/s	120°/s		110°/s	110°/s	100°/s	100°/s	80°/s	100°/s	80°/s	n/a	n/a	n/a	n/a
T-Axis	240°/s	240°/s	240°/s	240°/s	190°/s	190°/s	240°/s	190°/s	190°/s		190°/s	190°/s	160°/s	160°/s	160°/s	160°/s	160°/s	n/a	n/a	n/a	n/a
7th-Axis	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Other	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Approximate Mass	1,100 kg 2,425.5 lb	1,540 kg 3,395.7 lb	1,100 kg 2,425.5 lb	1,120 kg 2,469.6 lb	1,130 kg 2,491.7 lb	1,570 kg 3,461.9 lb	1,560 kg 3,440 lb	1,140 kg 2,513.7 lb	1,130 kg 2,491.7 lb		1,120 kg 2,469.6 lb	1,130 kg 2,491.7 lb	2,200 kg 4,851 lb	2,250 kg 4,961.3 lb	3,600 kg 7,938 lb	2,350 kg 5,181.8 lb	2,400 kg 5,292 lb	27 kg 59.5 lb	28 kg 61.7 lb	48 kg 105.8 lb	48 kg 105.8 lb
Power Rating	5 kVA	10 kVA	5 kVA	5 kVA	5 kVA	10 kVA	5 kVA	6 kVA	6 kVA		10 kVA	10 kVA	5.5 kVA	5.5 kVA	12 kVA	10 kVA	13 kVA	1.25 kVA	1.25 kVA	1.25 kVA	1.25 kVA
Allowable Moment																					
R-Axis	921 N·m	921 N·m	921 N·m	833 N·m	1,344 N·m	1,344 N·m	833 N·m	1,176 N·m	1,344 N·m		1,333 N·m	1,333 N·m	1,960 N·m	1,666 N·m	1,960 N·m	1,960 N·m	2,450 N·m	n/a	n/a	n/a	n/a
B-Axis	921 N·m	921 N·m	921 N·m	833 N·m	1,344 N·m	1,344 N·m	833 N·m	1,176 N·m	1,344 N·m		1,333 N·m	1,333 N·m	1,960 N·m	1,666 N·m	1,960 N·m	1,960 N·m	2,450 N·m	n/a	n/a	n/a	n/a
T-Axis	490 N·m	490 N·m	490 N·m	490 N·m	715 N·m	715 N·m	490 N·m	710 N·m	735 N·m		706 N·m	706 N·m	823 N·m	686 N·m	833 N·m	823 N·m	823 N·m	n/a	n/a	n/a	n/a
Allowable Moment of Inertia																					
R-Axis	85 kg·m ²	85 kg·m ²	85 kg·m ²	75 kg·m ²	143 kg·m ²	143 kg·m ²	75 kg·m ²	317 kg·m ²	317 kg·m ²		142 kg·m ²	142 kg·m ²	150 kg·m ²	150 kg·m ²	150 kg·m ²	150 kg·m ²	200 kg·m ²	0.01 [0.12] kg·m ²	0.01 [0.12] kg·m ²	0.02 [0.25] kg·m ²	0.05 [0.45] kg·m ²
B-Axis	85 kg·m ²	85 kg·m ²	85 kg·m ²	75 kg·m ²	143 kg·m ²	143 kg·m ²	75 kg·m ²	317 kg·m ²	317 kg·m ²		142 kg·m ²	142 kg·m ²	150 kg·m ²	150 kg·m ²	150 kg·m ²	150 kg·m ²	200 kg·m ²	n/a	n/a	n/a	n/a
T-Axis	45 kg·m ²	45 kg·m ²	45 kg·m ²	25 kg·m ²	80 kg·m ²	80 kg·m ²	25 kg·m ²	200 kg·m ²	200 kg·m ²		79 kg·m ²	79 kg·m ²	90 kg·m ²	90 kg·m ²	50 kg·m ²	90 kg·m ²	90 kg·m ²	n/a	n/a	n/a	n/a

MOUNTING: F = FLOOR; W = WALL; C = CEILING; S = SHELF
 * ES165D HANDLING ROBOT HAS 19 CONDUCTORS/ONE AIR LINE THROUGH THE ROBOT ARM, WHILE THE MH165 HAS 24 CONDUCTORS/TWO AIR LINES
 † INVERT-MOUNT MODEL (ES200TD) ALSO AVAILABLE; CONTACT YASKAWA MOTOMAN FOR SPECIFICATIONS
 ‡ MAXIMUM SPECIFICATIONS IN BRACKETS; CONTACT YASKAWA MOTOMAN FOR U- AND R-AXIS REPEATABILITY
 N/A = NOT APPLICABLE
 TECHNICAL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE



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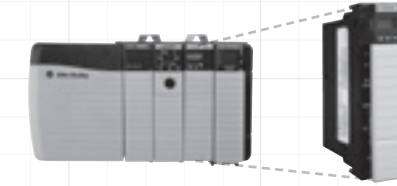
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CONTROLLERS						
Models	DX100	DXM100		FS100	MLX100 ROBOT GATEWAY	NX100 FACTORY MUTUAL
Dimensions	800 mm x 1,000 mm x 650 mm (31.5" x 39.4" x 25.6")	800 mm x 600 mm x 650 mm (31.5" x 23.6" x 25.6")		Single Controller: 470 mm x 200 mm x 420 mm (18.5" x 7.9" x 16.5") Dual Controller: 470 mm x 420 mm x 420 mm (18.5" x 16.5" x 16.5")	Drives panel supplied with robot; size dependant on robot selection	500 mm x 1,400 mm x 550 mm (19.7" x 55.1" x 21.7")
Approximate Mass	150-250 kg (330.8-551.3 lb)	150-250 kg (330.8-551.3 lb)		Single Controller: 20 kg (44.1 lb) Dual Controller: 48 kg (106 lb)	47 kg (103.6 lb)	120 kg (264.6 lb)
Ambient Temperature	During operation: 0° C (32° F) to 45° C (113° F) During transport and storage: -10° C (14° F) to +60° C (140° F)	During operation: 0° C (32° F) to 45° C (113° F) During transport and storage: -10° C (14° F) to +60° C (140° F)		During operation: 0° C (32° F) to 40° C (104° F) During transport and storage: -10° C (14° F) to +60° C (140° F)	During operation: 0° C (32° F) to 45° C (113° F)	During operation: 0° C (32° F) to 40° C (104° F) During transport and storage: -10° C (14° F) to +45° C (113° F)
Relative Humidity	90% max. non-condensing	90% max. non-condensing		90% max. non-condensing	85% non-condensing	90% max. non-condensing
Primary Power Requirements	3-phase, 240/480/575 VAC at 50/60 Hz	3-phase, 240/480/575 VAC at 50/60 Hz		Single-phase or 3-phase power, 200/230 VAC at 50/60 Hz Heavy duty cycle external axis use may require 3-phase power (MPP3, MPK2, MH6F, MH6F-10, HP20F require 3-phase)	230 VAC 3 PH 50/60 Hz	3-phase, 240/480/575 VAC at 50/60 Hz
I/O Options	Discrete I/O and Fieldbus connections available	Discrete I/O and Fieldbus connections available		Discrete I/O and Fieldbus connections available	ControlLogix® supported	Standard I/O: 40 inputs/40 outputs consisting of 16 system inputs/16 system outputs, 24 user inputs/24 user outputs Expandable to 1024 inputs/1024 outputs
Interface	Ethernet, RS-232C, DeviceNet, Remote I/O, EtherNet I/P, SPI Euromap 12, SPI Euromap 67, MNet	Ethernet, RS-232C, DeviceNet, Remote I/O, EtherNet I/P, SPI Euromap 12, SPI Euromap 67, MNet		Ethernet, RS-232C, DeviceNet, EtherNet I/P, Profibus, CC-Link, SPI Euromap 12, SPI Euromap 67	All options offered through Rockwell	Ethernet, RS-232C
Multiple Robot Control	Ability to control up to 8 robots/72 axes	Ability to control up to 8 robots/72 axes		Up to 2 robots, 16 axes maximum	2 robots	Dual, triple, and quad
Programming Language	INFORM III, menu-driven programming	INFORM III, menu-driven programming		INFORM III, menu-driven programming	Ladder logic entered using RSLogix 5000	INFORM II, menu-driven programming
Application Development Software	MotoPlus SDK (C language) - optional MotoCom SDK - optional	MotoPlus SDK (C language) - optional MotoCom SDK - optional		MotoPlus SDK (C language) - optional MotoCom SDK - optional	n/a	n/a
Target Applications	All	All		Assembly, Material Handling, Part Transfer, Pick and Place	Palletizing, Pick and Place	Paint; explosion proof rating
Safety Specs	Meets ANSI/RIA R15.06 and CSA Z434-03 safety standard	Meets ANSI/RIA R15.06 and CSA Z434-03 safety standard		Meets ANSI/RIA R15.06 and CSA Z434-03 safety standard	Meets ANSI/RIA R15.06 safety standard	Meets ANSI/RIA R15.06 and Canadian safety standard
Collision Avoidance	Collision avoidance zones and radial interference zones	Collision avoidance zones and radial interference zones		Collision avoidance zones and radial interference zones	Interference zones	Collision avoidance zones and radial interference zones
Collision Detection	Protects robot by monitoring torque levels on manipulator	Protects robot by monitoring torque levels on manipulator		Protects robot by monitoring torque levels on manipulator	External sensor required	Protects robot by monitoring torque levels on manipulator
Safety Interlock	Prevents robot operation while safety circuit is open	Prevents robot operation while safety circuit is open		Prevents robot operation while safety circuit is open	Prevents robot operation while safety circuit is open	Prevents robot operation while safety circuit is open
Pendant Dimensions	169 mm x 314.5 mm x 50 mm (6.7" x 12.4" x 2")	169 mm x 314.5 mm x 50 mm (6.7" x 12.4" x 2")		169 mm x 314.5 mm x 50 mm (6.7" x 12.4" x 2")	259 mm x 232 mm x 55 mm (10.2" x 9.1" x 2.2")	169 mm x 314.5 mm x 50 mm (6.7" x 12.4" x 2")
Pendant Display	5.7" full-color touch screen, 640 x 480 (VGA)	5.7" full-color touch screen, 640 x 480 (VGA)		5.7" full-color touch screen, 640 x 480 (VGA)	7.5" TFT color touch screen	6.5" full-color touch screen, 640 x 480 (VGA)
Pendant Weight	0.998 kg (2.2 lb)	0.998 kg (2.2 lb)		0.998 kg (2.2 lb)	1.2 kg (2.6 lb)	1.3 kg (2.9 lb)
Pendant O/S	Windows® CE	Windows CE		Windows CE	n/a	Windows CE
Pendant Interface	User-selectable touch-screen menu, multiple windows supported	User-selectable touch-screen menu, multiple windows supported		User-selectable touch-screen menu, multiple windows supported	n/a	User-selectable touch-screen menu
Backup Media	One Compact Flash slot; One USB port (1.1)	One Compact Flash slot; One USB port (1.1)		One Compact Flash slot; One USB port (1.1)	All ControlLogix PAC supported	Compact Flash slot for backup
Protection Rating	IP65	IP65		IP65	Custom enclosure designed to required IP rating	IP65
Self-Diagnostics	Classifies errors and major/minor alarms and displays data	Classifies errors and major/minor alarms and displays data		Classifies errors and major/minor alarms and displays data	Classifies errors and major/minor alarms and displays data	Classifies errors and major/minor alarms and displays data
Alarm Display	Displays alarm messages and history for robots and peripheral devices	Displays alarm messages and history for robots and peripheral devices		Displays alarm messages and history for robots and peripheral devices	Displays alarm messages and history for robots and peripheral devices	Displays alarm messages and history for robots and peripheral devices
Diagnostics	Permits simulated enabled/disabled input/output; torque level of each axis	Permits simulated enabled/disabled input/output; torque level of each axis		Permits simulated enabled/disabled input/output; torque level of each axis	n/a	Permits simulated enabled/disabled input/output; torque level of each axis
TCP Calibration	Automatically calibrates parameters for end-effectors, optional TCP recovery function	Automatically calibrates parameters for end-effectors, optional TCP recovery function		Automatically calibrates parameters for end-effectors, optional TCP recovery function	Provides screens for data input	Automatically calibrates parameters for end-effectors, optional TCP recovery function
Tool Weight Calibration	Automatically calibrates tool weight, center of gravity and inertia for peak performance	Automatically calibrates tool weight, center of gravity and inertia for peak performance		Automatically calibrates tool weight, center of gravity and inertia for peak performance	n/a	Automatically calibrates total weight, center of gravity and inertia for peak performance



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GLOBAL SUPPORT NETWORK

Yaskawa America, Inc.

Motoman Robotics
100 Automation Way
Miamisburg, OH 45342
937.847.6200 (HQ)

Yaskawa America, Inc.

Motoman Robotics
2050 Austin Avenue
Rochester Hills, MI 48309
248.668.8800

Yaskawa America, Inc.

Motoman Robotics
1701 Kaiser Avenue
Irvine, CA 92614
949.263.2640

Yaskawa Canada, Inc.

3530 Laird Road, Unit 3
Mississauga, Ontario L5L 5Z7
Canada
905.569.6686

Yaskawa Canada, Inc.

298 Labrosse
Pointe Claire, Quebec H9R 5L8
Canada
514.693.6770

Yaskawa México SA de CV

Circuito Aguascalientes Oriente 134C
Parque Industrial del Valle de Ags
San Francisco de los Romo, Ags 20358
México
52.449.973.1170

Yaskawa México SA de CV

Av. Regioparque 128
Regio Parque Industrial
Apodaca, Nuevo León 66633
México
52.81.8386.8113

Motoman Robótica do Brasil

Av. Dona Ida Cerati Magrini 936
Vila Oriental
Diadema - São Paulo
09951-260
Brazil
55.11.4352.3002

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