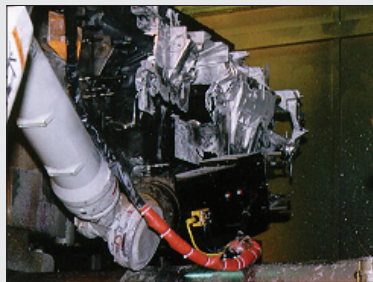**YASKAWA**

MOTOMAN ROBOTICS

MATERIAL HANDLING

DIECAST MACHINE TENDING

CONVENIENT UPPER ARM WIRING

ES165D ES200D

MATERIAL HANDLING • MACHINE TENDING • PRESS TENDING

Payloads:
165 kg (ES165D); 200 kg (ES200D)

Mounting Options:
Shelf (ES165RD & ES200RD)
Ceiling (ES200TD)

The flexible, six-axis ES165D and ES200D robots provide superior performance for a variety of handling applications. Fast axial speeds and acceleration reduce cycle times and increase production output.

TOP REASONS TO BUY

■ Versatile, high-performance robot for heavy-payload machine or press tending and other handling tasks

■ Powerful DX100 controller provides fast Ethernet communication and can deliver significant cost savings by eliminating costly PLCs or HMIs for cell control

■ Windows® CE programming pendant with full-color touch screen and USB interface

Fast, Flexible and Powerful

■ High-speed, six-axis ES165D and ES200D robots set standard for versatility in large robot market.

■ 165 kg payload (ES165D) and 200 kg payload (ES200D) versions. Both models feature 3,372 mm vertical reach; 2,651 mm horizontal reach; ±0.2 mm repeatability.

■ Large work envelope and high moment of inertia ratings.

■ Compact, slim design allows robots to reduce cycle time and reach into confined spaces, improving system productivity.

■ Pre-wired for servo gripper use which allows a wider range of product handling.

■ Standard ES165D and ES200D models are floor-mounted. Shelf-mounted versions (ES165RD and ES200RD) and a ceiling-mounted version (ES200TD) are also available.

DX100 Controller

■ Patented multiple robot control supports up to 8 robots/72 axes.

■ Windows® CE programming pendant with color touch screen and USB interface.

■ Faster processing speeds for smoother interpolation. Quicker I/O response. Accelerated Ethernet communication.

■ Extensive I/O suite includes integral PLC and touch screen HMI, 2,048 I/O and graphical ladder editor.

■ Supports all major fieldbus networks, including EtherNet/IP, DeviceNet, Profibus-DP and many others.

■ Compliant to ANSI/RIA R15.06-1999 and other relevant ISO and CSA safety standards. Optional Category 3 functional safety unit.

■ Interface panel function allows the programming pendant to be configured as a system HMI.

ES165D/ES200D ROBOTS

ES200D robot shown. ES165D dimensions are same as ES200D except where noted. All dimensions are metric (mm) and for reference only. Please request detail drawings for all design/engineering requirements.

Note: Dimensions in parentheses are for ES165D

ROBOT SPECIFICATIONS

		ES165D	ES200D
Structure		Vertical jointed-arm type	Vertical jointed-arm type
Controlled Axes		6	6
Payload		165 kg (363.8 lbs)	200 kg (441 lbs)
Vertical Reach		3,372 mm (132.8")	3,372 mm (132.8")
Horizontal Reach		2,651 mm (104.4")	2,651 mm (104.4")
Repeatability		±0.2 mm (0.008")	±0.2 mm (0.008")
Maximum Motion Range	S-Axis (Turning/Sweep)	±180°	±180°
	L-Axis (Lower Arm)	+76°/-60°	+76°/-60°
	U-Axis (Upper Arm)	+230°/-142.5°	+230°/-142.5°
	R-Axis (Wrist Roll)	±360°	±360°
	B-Axis (Bend/Pitch/Yaw)	±130°	±125°
	T-Axis (Wrist Twist)	±360°	±360°
Maximum Speed	S-Axis	110°/s	95°/s
	L-Axis	110°/s	90°/s
	U-Axis	110°/s	95°/s
	R-Axis	175°/s	120°/s
	B-Axis	150°/s	120°/s
	T-Axis	240°/s	190°/s
Approximate Mass		1,100 kg (2,425.5 lbs)	1,130 kg (2,491.7 lbs)
Brakes		All axes	All axes
Power Consumption		5 kVA	5 kVA
Allowable Moment	R-Axis	921 N • m	1,344 N • m
	B-Axis	921 N • m	1,344 N • m
	T-Axis	490 N • m	715 N • m
Allowable Moment of Inertia	R-Axis	85 kg • m²	143 kg • m²
	B-Axis	85 kg • m²	143 kg • m²
	T-Axis	45 kg • m²	80 kg • m²
Internal User I/O Cable		18 conductors + ground	18 conductors + ground
Internal User Air Line		1 – 3/8" PT connection	1 – 3/8" PT connection

DX100 CONTROLLER SPECIFICATIONS**

Dimensions (mm)	800 (w) x 1,000 (h) x 650 (d) (31.5" x 39.4" x 25.6")
Approximate Mass	250 kg max. (551.3 lbs)
Cooling System	Indirect cooling
Ambient Temperature	During operation: 0° to 45° C (32° to 113° F) During transit and storage: -10° to 60° C (14° to 140° F)
Relative Humidity	90% max. non-condensing
Primary Power Requirements	3-phase, 240/480/575 VAC at 50/60 Hz
Digital I/O NPN-Standard PNP-Optional	Standard I/O: 40 inputs/40 outputs consisting of 16 system inputs/16 system outputs, 24 user inputs/24 user outputs 32 Transistor Outputs; 8 Relay Outputs Max. I/O (optional): 2,048 inputs and 2,048 outputs
Position Feedback	By absolute encoder
Program Memory	JOB: 200,000 steps, 10,000 instructions CIO Ladder Standard: 15,000 steps Expanded: 20,000 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 Buttons	Teach/Play/Remote Keyswitch selector Servo On, Start, Hold, and Emergency Stop Buttons
Programming Language	INFORM III, menu-driven programming
Maintenance Functions	Displays troubleshooting for alarms, predicts reducer wear
Number of Robots/Axes	Up to 8 robots, 72 axes
Multi Tasking	Up to 16 concurrent jobs, 4 system jobs
Fieldbus	DeviceNet Master/Slave, AB RIO, Profibus, Interbus-S, M-Net, CC Link, EtherNet IP/Slave
Ethernet	10 Base T/100 Base TX
Safety	Dual-channel Emergency Stop Pushbuttons, 3-position Enable Switch, Manual Brake Release Meets ANSI/RIA R15.06-1999, ANSI/RIA/ISO 10218-1-2007 and CSA Z434-03

**See DX100 Controller data sheet (DS-399) for complete specifications

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