# **SOLUTIONS IN MOTION®**





BIN LOADING AND UNLOADING



THRU-ARM CABLE AND HOSE ROUTING

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LADDER EDITOR

### **FEATURES & BENEFITS**

- Both robot arms can work together to accomplish intricate tasks
- Single NX100 robot controller directs movement of all axes of the robot
- Handles 10 kg (22.1 lb) payload per arm; 20 kg (44.1 lb) payload possible when using both arms
- Best-in-class wrist performance characteristics for your most demanding material handling tasks
- Repeatability: ±0.1 mm (±0.004")
- Reach: 1.100 mm (43.3") per arm from centerline of base rotation to tool mounting surface
- Opens up a wide range of applications to be performed by robots
- Thru-arm hose and cable routing



## High-Speed, Dual-Arm Robot with "Human-Like" Flexibility

The DIA10 robot provides highspeed motion with two seven-axis arms that provide enhanced, "humanlike" flexibility of movement. This revolutionary, innovative design makes the DIA10 robot ideally suited for a wide variety of assembly, packaging, part transfer, machine tending and other handling tasks that formerly could only be done by people. The unique DIA10 features 15 axes of motion (seven axes per arm, plus a single axis for base rotation).

The DIA10 robot has a 10 kg (22.1 lb) payload per arm, a 1,100 mm (43.3") reach per arm (from centerline of base rotation to tool mounting surface), and a repeatability of  $\pm 0.1 \text{ mm} (0.004'')$ .

Both robot arms can work together on one task to double the payload or handle unwieldy products. The two arms can also be used independently to perform tasks concurrently and improve productivity. The DIA10 robot can transfer a part from one of its arms to the other. One robot arm can hold the part while the other arm performs operations on the held part.

Motoman's revolutionary dual-arm DIA10 robot provides "human-like" flexibility of movement to meet your automation needs

> ASSEMBLY · PACKAGING · HANDLING **MACHINE TENDING • PART TRANSFER**

Payload: 10 kg/arm

#### Advanced NX100 Controller

The DIA10 robot is controlled by the Motoman NX100 robot controller that features a robust PC architecture, Windows® CE programming pendant, and easy-to-use INFORM III programming language.

The NX100 offers unmatched multiple axes control capability to maximize flexibility while minimizing cost of integration and eliminating risk of robot collisions. Dual-channel safety features include enhanced E-stop functionality, integrated speed monitoring, manual brake release switches, and compliance with both ANSI/RIA R1506-1999 and Canadian safety standards.

The NX100 controller offers unmatched connectivity through standard Ethernet and other network options, including: DeviceNet, ControlNet, Profibus-DP, and EtherNet/IP. The programming pendant features a color touch-screen display that can be configured as a custom HMI (Human Machine Interface) with buttons and status indicators.

# **DIA10 Robot**

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



### **DIA10 SPECIFICATIONS**

Structure		Articulated	Structure		
Mounting		Floor	Dimensions (mm)		
Controlled Axe	es	15 (7 axes per arm and 1 rotary axis)	Approximate Mass		
Payload		10 kg (22.1 lbs)/arm	Cooling System		
Horizontal Rea	ich per Arm	1,100 mm (43.3")	Ambient		
Vertical Reach		1,440 mm (56.7")	Temperature		
Repeatability		±0.1 mm (±0.004")	Relative Humidity		
	Rotation-Axis (Waist) S-Axis (Lifting)	±180° ±180°	Primary Power Requirements		
Maximum Motion	L-Axis (Lower Arm) 7th-Axis (Lower Arm Twist)	±120° ±180°	Grounding		
Range	U-Axis (Upper Arm) R-Axis (Upper Arm Twist) B-Axis (Wrist Pitch/Yaw) T Axis (Wrist Twict)	±130° ±180° ±100° ±190°	Digital I/O NPN-Standard PNP-Optional		
	Turning Avia	170%	Position Feedback		
	S-Axis	170 /s	Drive Units		
Maximum	L-Axis	170°/s	Accel/Decel		
Speed	/th-Axis	170°/s 170°/s 250°/s	Program Memory		
	R-Axis		Pendant Dim. (mm)		
	B-Axis T-Axis	250°/s 500°/s	Pendant Playback Buttons		
Approximate I	lass	220 kg (485.1 lbs)	Concurrent I/O Ladder		
Power Consur	nption	4.2 kVA	Multi Tasking		
Allowable Moment	R-Axis B-Axis T-Avis	31.4 N • m 31.4 N • m 19.6 N • m	Fieldbus		
Allowable	R-Avie	1 kg • m <sup>2</sup>	Ethernet		
Moment of	B-Axis	$1 \text{ kg} \cdot \text{m}^2$	E-Stop		
Inertia	T-Axis	0.4 kg • m <sup>2</sup>	Safety		

# NX100 CONTROLLER SPECIFICATIONS\*

Structure	Free-standing, enclosed type			
Dimensions (mm)	650 (w) x 1,200 (h) x 650 (d) (25.6" x 47.2" x 25.6")			
Approximate Mass	150-250 kg (330.8-551.3 lbs.)			
Cooling System	Indirect cooling			
Ambient Temperature	During operation: 0° C (32° F) to 45° C (113° F) During transmit and storage: -10° C (14° F) to +60° C (140° F)			
Relative Humidity	90% max. non-condensing			
Primary Power Requirements	3-phase, 240/480/575 VAC at 50/60 Hz			
Grounding	Grounding resistance: ≤100 ohms Separate ground required			
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 Enabled to 1,024 inputs/1,024 outputs			
Position Feedback	By absolute encoder			
Drive Units	Servo packs for AC servo motors			
Accel/Decel	Software servo control			
Program Memory	60,000 steps, 10,000 ladder instructions			
Pendant Dim. (mm)	199 (w) x 338 (h) x 60 (d) (7.8" x 13.3" x 2.4")			
Pendant Playback Buttons	Teach, Play, Remote, Servo On, Start, Hold, Emergency Stop, Edit Lock (Play Mode Enabled on Controller)			
Concurrent I/O Ladder	10,000 Instructions			
Multi Tasking	Up to 8 concurrent jobs			
Fieldbus	DeviceNet Master/Slave, AB RIO, Profibus, Interbus-S, M-Net, CC Link, EtherNet IP/Slave			
Ethernet	10 Base T/100 Base TX			
E-Stop	Controlled stop			
Safety	Dual-channel Emergency Stop Pushbuttons, 3-position Enable Switch, Manual Brake Release Meets ANSI/RIA R15.06-1999 and Canadian safety standards			
*See NX100 Controller data sheet (DS-232) for complete specifications				



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