



# FS03N Robot with D76 Controller



## **Kawasaki FS03N Compact High Speed Industrial Robot**

The FS03N is a compact multi-purpose robot from the Kawasaki F-Series. Weighing just 20 kg, it is designed as a portable model at the smaller end of the range. Despite its size, the FS03N is an advanced 6-axis arm boasting the highest speed in its class.

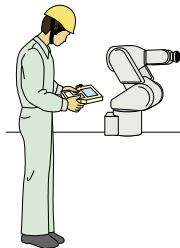
Whether placed on the floor, suspended from the ceiling or mounted on the wall (Option), the FS03N exhibits excellent freedom of movement, tailoring its acceleration and deceleration speeds to both load weight and robot position for optimum performance in all situations.

The FS03N is an ideal robot for demanding tasks such as assembly, handling and inspection of small components, and is also suitable for research and educational applications. Standard equipment includes AS high-level robot language and the ultra-compact D76 fully digital controller. The FS03N brings robot technology one step closer to humankind.

### **Key Features:**

#### **1 Compact Design with a Large Working Envelope**

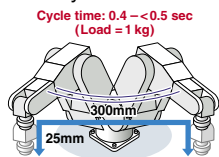
The FS03N Robots are the smallest and lightest robots in their class. The space saving design has a small 17x21.5cm footprint, while offering a wide operating range. This fully articulating arm weighs a mere 20 kg which allows for easy portability and a variety of installation configurations including table top mounting.



#### **2 Fast, Accurate and Robust**

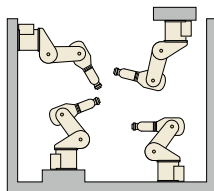
This 6-Axis Robot, with speeds up to 6.0 meters per second, boasts some of the highest speeds in its class. Production cycle times as low as 0.4 -0.5 seconds can be achieved. \*The FS03N, as well as all the F-Series robots, have the ability to flip over backwards which can contribute to reduced cycle times by limiting Joint One motion. Reliability and accuracy have been optimized through the use of precision absolute encoders coupled with a robust arm construction, ensuring years of low maintenance operation.

\* based on a 1 kg load moving up/down vertically 25mm and horizontally 300mm (see diagram)



#### **3 Improved Mounting Freedom**

Ideal for a variety of operating spaces; floor mount, wall mount or ceiling mount. All wiring and conduits for tool sensors are built inside the arm for easy operation and installation.



#### **4 Maintains Position When Power is Turned Off**

There is no need to worry about gravity induced interference as with other equipment. When the power is turned off or interrupted, brakes are applied to all 6 axes. In addition, absolute encoders eliminate the need to zero the unit when powering up.

### **Standard Features:**

- Six-Axis Articulated Arm
- Payload Capacity 3 kg (6.6 lbs)
- Electric AC Servo Drive Motors/Encoders
- D Controller
- Flexible Working Envelope
- Heavy-Duty Cycle
  - High wrist torque and inertia capacity
  - Maximum payload capacity rated at full speed and full reach
- Space Saving Design
  - Small footprint
  - Slim arm construction
  - Integrated pneumatic lines and signal harness
- Minimal dead zones
- Production Advantages
  - High speed operation
  - Rapid and adaptive acceleration and deceleration rates
- Low-Cost Maintenance
  - Greater than 80,000 hours MTBF
  - 5,000 hour maintenance intervals
  - Modular components for quick repairs
- Programming
  - Simplified "Block Step" teaching
  - Advanced Kawasaki "AS Language"
  - RS-232 port for PC communication
  - Menu driven software
  - Technically advanced D Controller
  - On-screen diagnostics
- Safety
  - E-stop button on controller and teach pendant
  - Hard stops and software limits
  - UL approved

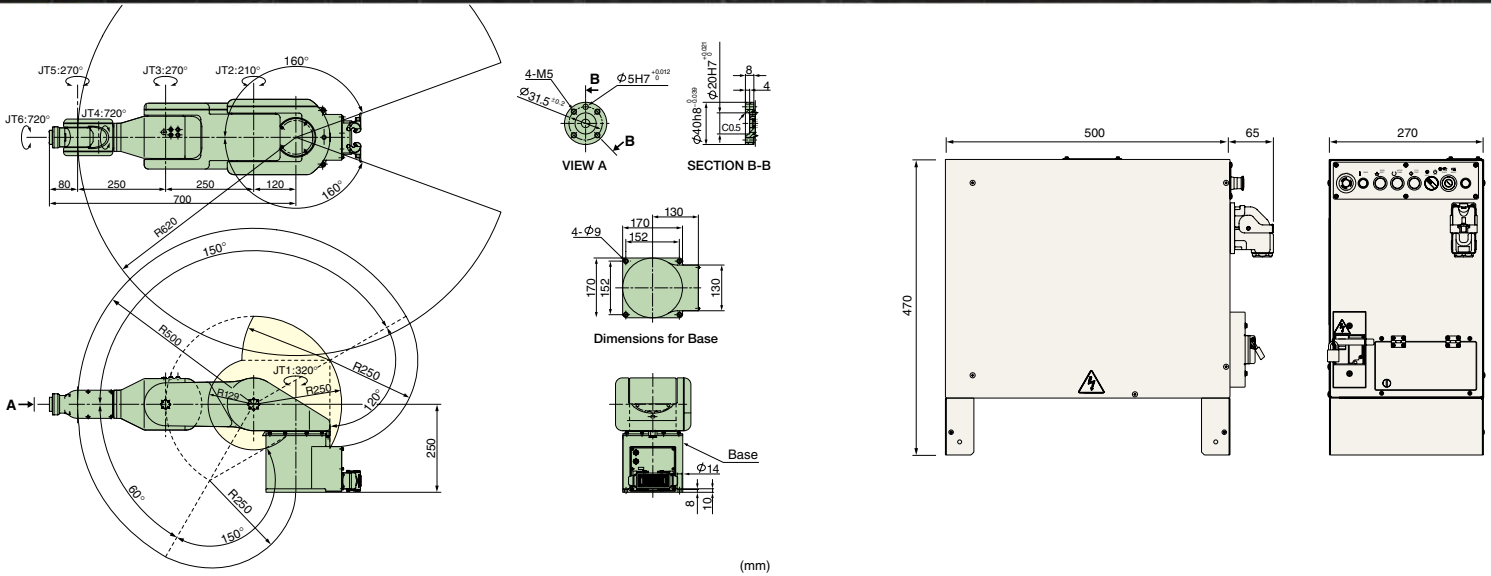
### **D76 Controller**

- Ultra Compact Design
- User-Friendly Teach Pendant with Large LCD Touch Screen
- PCMCIA Card Slot for External Memory
- Numerous Communication Protocols (optional)
- Kawasaki's Advanced AS Language Programming
- All of the same Advanced Features of the Full Size D Controller

\*See Kawasaki's D Controller Brochure or go to [www.kawasakirobotics.com](http://www.kawasakirobotics.com) for complete details and specifications.



# FS03N Robot with D76 Controller



(mm)

Type		FS03N
<b>Specifications</b>		
<b>Payload (lbs)</b>		3 kg (6.6 lbs)
<b>Axes</b>		6
<b>Range of Motion</b>	JT1	±160°
	JT2	+150° ~ - 60°
	JT3	+120° ~ - 150°
	JT4	±360°
	JT5	±135°
	JT6	±360°
<b>Max Speed</b>	JT1	360°/sec
	JT2	250°/sec
	JT3	225°/sec
	JT4	540°/sec
	JT5	225°/sec
	JT6	540°/sec
<b>Wrist Rated Torque</b>	JT4	5.8 Nm
	JT5	5.8 Nm
	JT6	2.9 Nm
<b>Wrist Rated Moment of Inertia</b>	JT4	0.12 kg·m·s <sup>2</sup>
	JT5	0.12 kg·m·s <sup>2</sup>
	JT6	0.03 kg·m·s <sup>2</sup>
<b>Vertical Reach</b>		830 mm
<b>Horizontal Reach</b>		700 mm
<b>Repeatability</b>		±0.05 mm (At wrist flange surface)
<b>Weight</b>		20 kg (excluding options)
<b>Positioning Feedback</b>		Absolute Encoder
<b>Drive Motors</b>		Brushless AC Servo Motor
<b>Options</b>		Wall Mounting (Max. Payload: 2kg) Restriction of motion range (mechanical): JT1 (45 pitch) External sensor harness (4 circuits)

D76 Controller	STANDARD	OPTIONAL
<b>Number of Controlled Axes</b>	6 Axes	
<b>Servo Control and Drive System</b>	Full Digital Servo System	
<b>Type of Control</b>	Teach Mode	Joint, Base, Tool Mode
	Repeat Mode	Joint, Linear Interpolation   Circular Interpolation
<b>Teaching Method</b>	Block Step programming or AS Language Programming	
<b>Teach Pendant</b>	6.4" Color LCD with Touch Panel Robot Stop Switch, Teach Lock Switch, Trigger Switch	
<b>Memory Capacity</b>	1 MB (approx. 5,000 steps)	4 MB (approx. 35,000 steps)
<b>External Storage</b>	PCMCIA with Card	
<b>General Purpose Signals</b>	External Operation Signals	External Motor Power Off, External Hold
	Input Signals	32 Channels (Include Dedicated Signals)   64, 96 Channels (Include Ded. Sig.)
	Output Signals	32 Channels (Include Dedicated Signals)   64, 96 Channels (Include Ded. Sig.)
<b>Operation Panel</b>	Basic Operation Switches (Motor Power On, Emergency Stop, Etc.)	
<b>Cable Length</b>	Power/Signal Cable (Arm/Controller), Teach Pendant Cable	
	5 m	10 m, 15 m
<b>Construction</b>	Self-Standing main Enclosure with heat Exchanger	
<b>Weight</b>	30 kg (add transformer unit 15 kg)	
<b>Ambient Temp.</b>	0-45°C for Controller	
<b>Relative Humidity</b>	35%~85% (non-condensing)	
<b>Power Requirements</b>	AC200-240V +/-10%, 50/60Hz, 1-phase, 1.5kVA Robot dedicated grounding, Leakage current :100 mA	AC100-115V +/-10%, 50/60Hz, 1 -phase, 1.5kVA
	<b>Options</b>	
Contact Kawasaki Robotics for available options.		

For More Information Please Call Kawasaki Robotics (USA), Inc.

1 mm = 0.0394 in.      1 kg·m = 7.23 ft·lb  
1 kg = 2.20 lbs.      1 kg·m·s<sup>2</sup> = 7.23 ft·lb·s<sup>2</sup>

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