SINGLE SOURCE ADVANTAGE

Our single source approach is simple: we provide all the equipment needed for robotic or manual arc welding. One call solves it all!

- Seamless digital integration for maximum control
- Reduced maintenance time for greater uptime and productivity
- Expert service from experienced support staff

ROBOT, WELDING POWER SOURCE,
WIRE FEEDER, TORCH—WE PROVIDE IT ALL.

SEAMLESS SOLUTIONS

Our cells can provide arc welding solutions for a range of parts from small to large size, with minimal operator movement required and little to no part positioning. The compact designs reduce required manufacturing floor space. All cells include an arc welding robot, a robot controller, a teach pendant and a positioner.

FD Friendly series

COMPLETE ROBOTIC ARC WELDING SYSTEMS

888-OTC-ROBO www.daihen-usa.com

FD-B4 | **FD-B4L** | **FD-V6** | **FD-V6L** | **FD-V20** | **FD-H5**

North American Corporation Headquarters
1400 Blauser Dr, Tipp City, Ohio 45371 / Phone: (937) 667-0800

Demonstation Centers
Novi, MI Branch Office
Davenport, IA Branch Office
Atlanta, GA Branch Office
Charlotte, NC Branch Office
Monterrey, Mexico Branch Office
Leon, Mexico Branch Office

DAIHEN
Member of DAIHEN Group

DAIHEN Inc. www.daihen-usa.com

OTC CREATING METAL ARTISTS

FD *Friendly series*

CHANGING THE FUTURE OF MANUFACTURING

OPTIMUM TEACHING

Easy teaching, even for a two-electrode torch.

FD-B4 **FD-B4L** **FD-V6** **FD-V6L** **FD-V20** **FD-H5**

Our arc welding robots are ideal for many welding and air plasma cutting applications. They can be used for mild steel, stainless steel, aluminum, titanium and other exotic metals. While some models feature a compact design, robots can handle a variety of jobs ranging from small to large in size. All arc welding robots include an FD11 robot controller and a teach pendant.

THE IDEAL SOLUTION FOR AUTOMATION OF WELDING

EASY

Intuitive Operation
Touch panel and jog dial ensure easy operation.

QUALITY

Quality Control Functions
Easy quantitative management of welding procedures.

ECOLOGY

Compact and Eco-Friendly
Space-saving design with reduced standby power consumption.

FD-B4

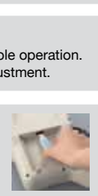
The FD-B4 arc welding robot's streamlined, through-arm coaxial cable increases mobility in tight workspaces and improves wire feeding for better overall weld quality. Compact design makes it simple and easy to weld in confined spaces or complicated fixtures.

SMOOTH OPERATION
TEACH PENDANT

Compact and light weight
27% lighter than previous model, making teaching sessions easier.
40% smaller than previous model, making it easier to handle in tight spaces.

Smooth teaching
Touch panel provides simple operation.
Jog dial allows simple adjustment.

Smooth backups
USB memory slot
makes data saving and reading easy.



SMART CONTROLLER
FD11

Electric conservation
Up to 50% reduction in power consumption using the power conservation mode (energy conservation timer function and external servo OFF function).

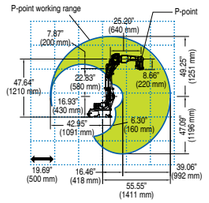
Minimal maintenance
Addition of axes is simple and fast.
30% fewer parts.

Space conservation
20% less volume than previous model.
Additional clearance above the controller.

FD TEACHING PENDANT
- Welding condition guide function helps you find better welding conditions with one-touch operation.
- Jog dial can scroll through teaching programs, adjust wire aiming position, do wire inching and retract movement, and can provide intuitive operation for multiple items.
- One-touch access with the touch panel reduces the number of times keys are pressed.
- Improved display increases readability.
- Iconified operation buttons increases readability.

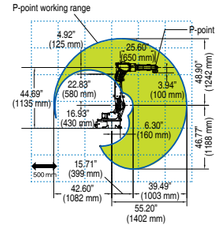
FD11 Robot Controller
- Windows XP based open architecture
- Large memory capacity and 40 Input / 40 Output control signals
- Advanced PLC functions allow for ladder diagram editing directly through the teaching pendant
- Network capabilities – connects to Ethernet, DeviceNet, and PROFIBUS connections (may require additional hardware)
- Improved operability with corrective teaching quickly improves welding quality.
- Improved movement performance by increasing the robot response speed to weld start signals. Arc start failures are reduced and high quality bead appearance is achieved. By greatly reducing residual vibrations, high-speed approaches are possible.
- Improved space utilization by reducing the height of the controller.
- Increased reliability with easy troubleshooting reduces downtime. Data is backed up when a welding error occurs to troubleshoot and find the problem. Traceability can be done by connecting a computer.

RANGE OF MOTION MANIPULATOR WORKING RANGE / SPECIFICATIONS



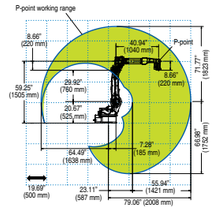
FD-B4 Standard

Reach	1411mm
Payload	4 kg
Axes	6
Repeatability	± 0.08 mm



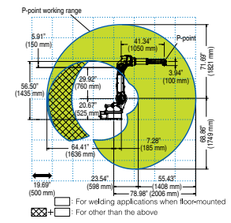
FD-V6 Standard

Reach	1402mm
Payload	6kg
Axes	6
Repeatability	± 0.08 mm



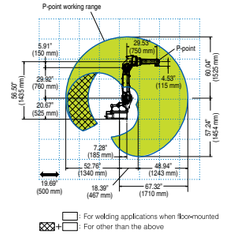
FD-B4L Long Reach

Reach	2008mm
Payload	4 kg
Axes	6
Repeatability	± 0.08 mm



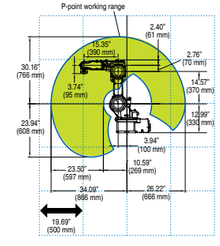
FD-V6L Long Reach

Reach	2006mm
Payload	6kg
Axes	6
Repeatability	± 0.08 mm



FD-V20 Standard

Reach	1710mm
Payload	20 kg
Axes	6
Repeatability	± 0.07 mm



FD-H5 Compact

Reach	866mm
Payload	5 kg
Axes	6
Repeatability	± 0.05 mm

SPECIFICATIONS MANIPULATOR

			FD-B4	FD-B4L	FD-V6	FD-V6L	FD-V20	FD-H5
Model			NB4	NB4L	NV6	NV6L	NV20	NH5
Number of axes			6					
Maximum capacity			8.82 lbs (4 kg)	8.82 lbs (4 kg)	13.23 lbs (6 kg)	13.23 lbs (6 kg)	44.09 lbs (20 kg)	11.02 lbs (5 kg)
Positional repeatability			±0.003" (±0.08 mm)(1)	±0.003" (±0.08 mm)(1)	±0.003" (±0.08 mm)(1)	±0.003" (±0.08 mm)(1)	±0.003" (±0.07 mm)(1)	±0.002" (±0.05 mm)(1)
Horizontal Reach			55.55" (1411 mm)	79.06" (2008 mm)	55.29" (1402 mm)	78.98" (2006 mm)	67.32" (1710 mm)	34.09" (866 mm)
Vertical Reach			96.34" (2447 mm)	138.75" (3575 mm)	90.67" (2430 mm)	140.55" (3570 mm)	117.28" (2979 mm)	54.1" (1374 mm)
Driving capacity			2550 W	4650 W	2600 W	5000 W	5600 W	1440 W
Working Range	Arm	**J1 (Rotation)**	±170° (±50°)(2)	±170° (±50°)(2)	±170° (±50°)(2)	±170° (±50°)(2)	±170° (±50°)(2)	±170° (±50°)(2)
		J2 (Lower arm)	-155° to +90°	-155° to +100° (3)	-155° to +90°	-155° to +100°(3)	-155° to +100°	-125° to +90°
		J3 (Upper arm)	-170° to +180°	-170° to +190°	-170° to +190°	-170° to +260°(4)	-170° to +260°(4)	-140° to +245°
	Wrist	**J4 (Swing)**	±155°	±155°	±180°	±180°	±180°	±190°
		J5 (Bending)	-45° to +225°(5)	-45° to +225°(5)	-50° to +230°	-50° to +230°	-50° to +230°	-30° to +210°
		J6 (Twist)	±205°(5)	±205°(5)	±360°	±360°	±360°	±360°
Motion speed	Arm	**J1 (Rotation)**	3.66 rad/s (210°/s) 3.32 rad/s (190°/s)(2)	3.40 rad/s (195°/s) 3.05 rad/s (175°/s)(2)	3.66 rad/s (210°/s) 3.32 rad/s (190°/s)(2)	3.40 rad/s (195°/s) 3.05 rad/s (175°/s)(2)	3.40 rad/s (195°/s) 3.05 rad/s (175°/s)(2)	3.49 rad/s (200°/s) 2.79 rad/s (160°/s)(2)
		J2 (Lower arm)	3.66 rad/s (210°/s)	3.49 rad/s (200°/s)	3.66 rad/s (210°/s)	3.49 rad/s (200°/s)	3.32 rad/s (190°/s)	3.49 rad/s (200°/s)
		J3 (Upper arm)	3.66 rad/s (210°/s)	3.49 rad/s (200°/s)	3.66 rad/s (210°/s)	3.49 rad/s (200°/s)	3.14 rad/s (180°/s)	4.54 rad/s (260°/s)
	Wrist	**J4 (Swing)**	7.33 rad/s (420°/s)	7.33 rad/s (420°/s)	7.33 rad/s (420°/s)	7.33 rad/s (420°/s)	6.98 rad/s (400°/s)	6.63 rad/s (380°/s)
		J5 (Bending)	7.33 rad/s (420°/s)	7.33 rad/s (420°/s)	7.33 rad/s (420°/s)	7.33 rad/s (420°/s)	6.98 rad/s (400°/s)	6.63 rad/s (380°/s)
		J6 (Twist)	10.5 rad/s (600°/s)	10.5 rad/s (600°/s)	10.82 rad/s (620°/s)	10.82 rad/s (620°/s)	10.5 rad/s (600°/s)	8.95 rad/s (510°/s)
Wrist allowable load	Allowable moment	**J4 (Swing)**	10.1 N•m	10.1 N•m	11.8 N•m	11.8 N•m	43.7 N•m	11.9 N•m
		J5 (Bending)	10.1 N•m	10.1 N•m	9.8 N•m	9.8 N•m	43.7 N•m	11.9 N•m
		J6 (Twist)	2.94 N•m	2.94 N•m	5.9 N•m	5.9 N•m	19.6 N•m	5.21 N•m
	Allowable moment of inertia	**J4 (Swing)**	0.38 kg•m²	0.38 kg•m²	0.30 kg•m²	0.30 kg•m²	1.09 kg•m²	0.303 kg•m²
		J5 (Bending)	0.38 kg•m²	0.38 kg•m²	0.25 kg•m²	0.25 kg•m²	1.09 kg•m²	0.303 kg•m²
		J6 (Twist)	0.03 kg•m²	0.03 kg•m²	0.06 kg•m²	0.06 kg•m²	0.24 kg•m²	0.061 kg•m²
Arm cross-sectional area			2.94 m² x 340°	6.37 m² x 340°	3.14 m² x 340°	7.48 m² x 340°	5.27 m² x 340°	1.22 m² x 340°
Environmental conditions			32 to 113° F (0 to 45° C), 20 to 80% RH (no condensation)					
Mass / weight			340 lbs (154 kg)	611 lbs (277 kg)	317 lbs (144 kg)	602 lbs (273 kg)	613 lbs (278 kg)	128 lbs (58 kg)
Maximum load of upper arm			22.05 lbs (10 kg)(6)	44.09 lbs (20 kg)(6)	22.05 lbs (10 kg)(6)	44.09 lbs (20 kg)(6)	44.09 lbs (20 kg)(6)	2.2 lbs (1 kg)(6)
Installation method			Floor/Ceiling/Wall					
Paint color			White (Munsell notation 10GY 9/1)					

NOTES:
(1) The value of the positional repeatability is at the tool center point (TCP) in compliance with ISO 9283.
(2) The value in parentheses indicates wall mounted.
(3) Working range of J2 axis may be restricted when wall mounted.
(4) The operation range of the J3 axis is restricted to -170° to +205°) when floor based welding is applied.
(5) Working range of the J6 axis may be restricted by the position of the J5 axis.
(6) When loading, the maximum payload as the end effector.
(7) This value changes according to placement and load conditions of the wrist.

SPECIFICATIONS CONTROLLER / TEACH PENDANT

	FD11 Controller
Dimensions	Inches: 22.83 W x 21.34 D x 25.59 H mm: 580 W x 542 D x 650 H
Mass	Approximately 137 lbs (62 kg)
Ambient temperature range	32 to 113° F (0 to 45° C)
Ambient relative humidity range	20 to 80% RH (non condensing)
Power supply	3-phase 480/240 VAC ±10%, 50/60 Hz with integrated transformer
"General purpose physical I/O"	40 inputs, 40 outputs
Memory capacity	160,000 instructions by PTP instruction in a single mechanism
Number of task programs	9,999
External memory	USB (Robot Control: 1 slot, Teach Pendant: 1 slot)
Color	Munsell notation 10GY 9/1

	Teach Pendant
Dimensions	Inches: 6.89 W x 12.83 D x3.19 H mm: 175 W x 326 D x 81 H
Mass	Approximately 2.4 lbs (1.08 kg)
Operation device	Axis keys, TP selector switch, jog dial, enable switch, operation ready ON key, emergency stop button, USB memory slot (1 slot)
Display	5.7 inches, 640x480 pixels, 65536 colors, touch panel, LED backlit
Cable length	26.25 ft (8 m) standard 49.21 ft (15 m) optional