Sensor Selection Guide

Frequently Asked Questions

- Q1. What is a robotic sensor?
- A1. A robotic sensor is a system that detects variations in parts and compensates for the variation by shifting the robotic programs.
- Q2. When is it effective and/or applicable?
- A2. A sensor is effective when it is difficult to keep programmed points in consistent locations and there are part accuracy problems requiring the operator to frequently adjust taught robot points. When this occurs, sensors can be used to automatically shift the welding points.

Note: Sensors cannot create teaching programs - it can only shift the current programs. Teaching an initial program is always required.

- Q3. How can we determine which sensor is best?
- A3. DAIHEN can provide various types of sensors for almost any situation. Please refer to the chart below to find the best sensor for your application.



Giving you the best choice from a wide selection... ... for the best welding results and quality!





OTC DAIHEN INC. (Headquarters) 1400 Blauser Dr., Tipp City, OH 45371 Ph: 937-667-0800 • Fax: 937-667-0885 Branch Offices:

Atlanta, Georgia Charlotte, North Carolina Monterrey, Mexico Novi, Michigan









Going beyond your expectations...



Laser Search Sensor

- Unique sensing functions with lower costs.
- · Designed for arc welding applications.
- Full operation from teaching pendant.

- applications.



CAT. NO. 466B ADVANCED WELDING & ROBOTIC SYSTEMS

Sensing Solutions – Seam Tracking / Laser Search / Laser Tracking / Arc Sensor

Through the Arc Seam Tracking

- Simple & Easy operation. · No additional torch components for easy maintenance.
- Most popular sensor worldwide.
- High-reliability and versatility.

FD-SFH

Laser Search Sensor

- High Speed and High Accuracy Laser Line Beam Sensor.
- Robot Teaching Assist Function that decreases teaching time.
- Full operation from teaching pendant.

High-end technology for high-end

• Designed for arc welding environments. Relatively compact and low maintenance.



FD-WD (H) **Touch Sensor**

- Conventional sensing with modern functions.
- · Simple and easy to use maintenance.

Leading Sensing Technology... ... from the Leading Company in Welding Innovations



Basic Sensors

Conventional Concepts with improved Functionality and Operation

OTC makes welding equipment, OTC knows "what is welding", and OTC knows "what we need to do" to ensure the highest possible quality of welding.

FD-AR ARC SENSOR

Real-time Seam Tracking Sensor using Through-Arc Tracking



eeneer deing m	iough / io huohingi	_	
Deviation Detection	NO (use with FD-WD / FD-QD / FD-SFH)	Applicatio	on Examples
Material	Mild Steel, Stainless (Solid or Cored Wire)		
Applicable Range	Fillet Joints, Lap Joints (3mm or more), V-groove (First path)		02050
Welding Methods	CO2, MAG, MAG Pulse	6	Ship Structure
Welding Machine	DM350, DP400, DP500	Motorcvcle Parts	
Welding Torch	DAIHEN CO ₂ / MAG Torch (Air Cooled / Water Cooled)	PP 2	
Accuracy	±1mm (0.04")		
Remarks	Weaving motion is required.		

- Ideal for mid to thick plate Mild Steel and Stainless applications.
- Settings and controls in the teaching pendant are in a dedicated, user-friendly menu.
- Easy to understand & easy to use.

FD-WD (WD-H) WIRE DETECTION TOUCH SENSING

Deviation finding using the welding wire.

1			1
		4	S
	1		11
1	9/	11	
	1	1	- 32
	1		and the second

Real-time Tracking	NO (use with FD-AR / FD-TR)
Material	Mild Steel, Stainless (Not recommended for Aluminum)
Applicable Range	Lap Joints (3mm or more), Most other joints
Accuracy	±1mm (0.04")
Welding Machine	All OTC DAIHEN machines
Welding Torch	DAIHEN CO ₂ / MAG Torch (Air Cooled / Water Cooled)
Combination	FD-AR2 / FD-TR2 (with probe)

- Simple vet guite versatile.
- Various functions for many applications.
- · Dedicated designed menu in teaching pendant.
- Programmable command can increase range of usability.

FD-TR TIG ARC SENSOR

Real-time height tracking sensor for TIG applications.



Deviation Detection	NO (use with FD-WD)
Material	Mild Steel, Stainless, Aluminum (Other materials available)
Applicable Range	Fillet, Lap, Corner, Butt Welds
Accuracy	±0.5mm (0.02")
Welding Machine	All OTC DAIHEN TIG machines
Welding Torch	DAIHEN TIG Torch (Air Cooled / Water Cooled)
Combination	FD-WD (with probe)

- 100% control from the teaching pendant via a dedicated menu.
- Simple configuration that can be connected to any type of OTC DAIHEN TIG machine.
- Stable and accurate tracking.



New Sensing Possibilities with Laser Technologies

Got an application that requires the highest degree of accuracy? OTC DAIHEN's advanced laser technologies are the ultimate solution for ensuring the best weld quality & part consistency.

FD-SFH SUPER FAST LASER SEARCH

Extremely fast and accurate, stable deviation detector via laser beam.



Real-Time Tracking	NO (use
Material	Mild Ste
Applicable Range	Lap Joir and mar
Accuracy	±0.2mm
Welding Machine	All OTC
Welding Torch	350A Air (Other toro
Basic Functions	Laser Pr
Combination	FD-AR (1
Let a state all the state of the	

 Joint detection as low as .5 sec, reducing cycle time compared to the FD-QD. • Adaptive technology with gap recognition.

- production environment.

FD-QD QUICK DETECT LASER SEARCH

High-speed, stable deviation detector via laser beam.



Real-Time Tracking	NO (use	
Material	Mild Ste	
Applicable Range	Lap Joir and mar	
Accuracy	±1mm ((
Welding Machine	All OTC	
Welding Torch	350A Air (Other toro	
Basic Functions	Laser Pr	
Combination	FD-AR (
Unique concept sensing sy		

system with better versatility for deviation detection Simple usage: similar with wire touch sensor but obtains better results using laser technology. • Fully integrated functions developed by DAIHEN.

FD-LT LASER TRACKING

High-end laser with real-t



CRING		
ime seam trackin	ig sensor.	
Deviation Detection	Under Development (Ask for details)	
Material	Mild Steel, Stainless, Aluminum (Other materials available)	
Applicable Range	Lap Joints, (1mm or more), Fillet Joint, Corner Joint and many more. *Not applicable for mirrored surfaces.	
Accuracy	±0.5mm (0.02")	Adopt advanced 3D technologies
Welding Machine	All OTC Machines	(Make teaching easy and simple)
Welding Torch	350A Air Cooled MAG Torch (Other torches are available by special order)	Construction
Basic Functions	Start, End Point Search 3D Seam Tracking	Segments
Combination	FD-AR (for Tracking)	
e user-friendly and ea ologies can provide	asy to use operation. stable and accurate tracking resul	Lawn Mowing

- Dedicated menu can provide
- Advanced 3D tracking technologies
- Full support of equipment (Robot, Welder and sensor) from one company.



and lacking part accuracy

with FD-AR)

el, Stainless, Aluminum (Other materials available) nts, (1mm or more), Fillet Joint, Corner Joint ny more. *Not applicable for mirrored surfaces. (0.008")

Machines

r Cooled MAG Torch ches are available by special order)

robe, Groove Data Acquisitions

for Tracking)

Mounting position leaves much room for torch accessibility in the

with FD-AR)

el, Stainless, Aluminum (Other materials available) nts, (1mm or more), Fillet Joint, Corner Joint ny more. *Not applicable for mirrored surfaces. 0.04")

Machines

Cooled MAG Torch

hes are available by special order robe, Groove Data Acquisitions

for Tracking)

Laser **Application Examples**



Pressure Tank (Flair Lap)



Body Frame (Thin Plate Lap)



Gutter Plate (Inconsistent Fit-up)