



# *Almega Friendly series II* Laser Tracking Sensor **FD-QTS**

Automatically adjusts  
the torch position  
during welding!

Compact  
Wider field-of-view  
Ultra-High-Speed Tracking



# Automatically adjusts the torch position during welding!

# FD-QTS

## ■ Improved welding quality

During welding, torch position, angle and welding conditions can be adjusted automatically based on the detected welding position and gap, to prevent faulty welding.

## ■ Ultra-high speed tracking

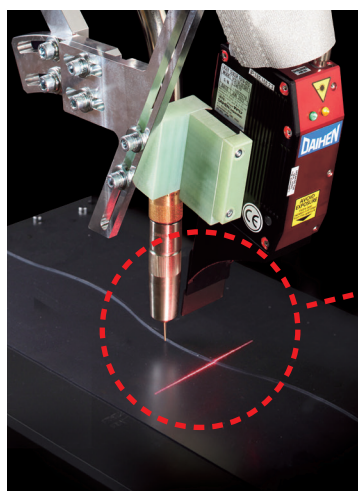
Tracking speed up to 393 inches/minute!

Ideal for high-speed weld tracking required for advanced welding processes like Synchro-feed and laser-hybrid.

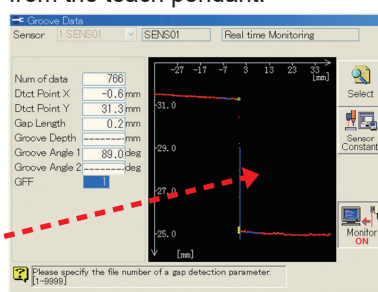
## ■ Easy teaching

All operations can be performed from the teach pendant.

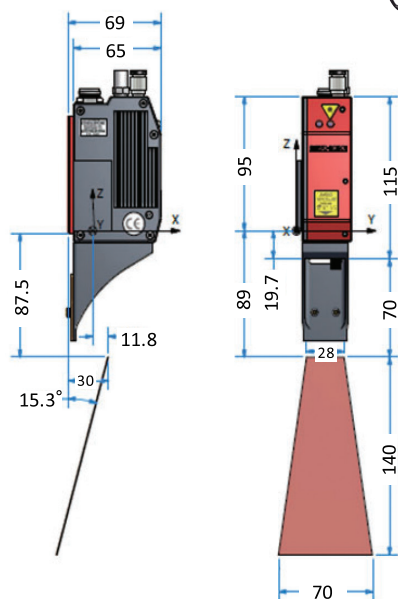
A PC is not required.



Detection status can be monitored from the teach pendant!

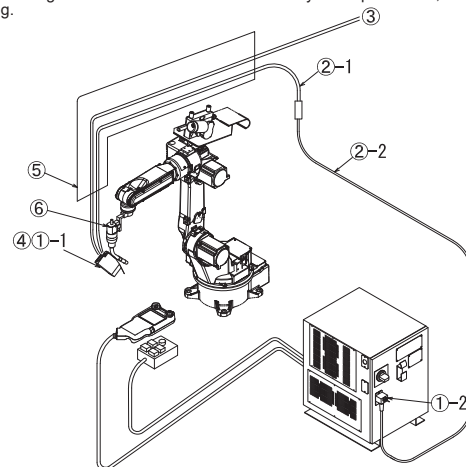


Outline drawing of **FD-QTS**



Standard Configuration of **FD-QTS**

| No. | Items                         |
|-----|-------------------------------|
| ①   | Laser sensor FD19-QTS         |
| ①-1 | Sensor head                   |
| ①-2 | Sensor I/F kit Relay cable    |
| ①-3 | Sensor I/F kit SOL power unit |
| ②   | Sensor cable                  |
| ②-1 | Sensor cable                  |
| ②-2 | Extension cable               |
| ③   | Sensor head air tube          |
| ④   | Sensor bracket ASSY           |
| ⑤   | Cable cover ASSY              |
| ⑥   | Shock sensor                  |
| ⑦   | Laser sensor function         |
|     | *Option Software              |



[Basic Specifications (Sensor Head)]

| Items                           | FD-QTS                                                                                                                           |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Measurement method              | Synchronized laser triangulation                                                                                                 |
| Max. tracking speed*1           | 393 inches/minute (1000 cm/min)                                                                                                  |
| Tracking accuracy*2,3           | ±0.016in (0.4mm)                                                                                                                 |
| Maximum Tracking Capability     | 20°*3 (Within the field of view of the sensor)                                                                                   |
| Measurement range               | Height 5.5in (140mm)                                                                                                             |
|                                 | Width Near: 1.1 in(28mm) Far: 2.76in(70mm)                                                                                       |
|                                 | Height Resolution 0.060–0.230mm                                                                                                  |
|                                 | Width Resolution 0.030–0.070mm                                                                                                   |
| External dimensions (W × D × H) | 4.5 x 1.6 x 2.7in (115 × 41 × 69mm) (Excluding the protrusion)                                                                   |
| Weight                          | About 1.1lbs. (0.5kg)                                                                                                            |
| Shape of seam                   | Straight line, circular arc*3,4<br>Free curve (with obtuse angles larger than 135 degrees and with radius larger than 50 mm*5,6) |
| Applicable groove*7             | Fillet, lap, double lap, flare, V-groove or butt joint and others                                                                |
| Applicable plate thickness      | 0.039–0.39in (1.0–10mm) (lap joint)                                                                                              |
| Work size                       | Not limited, within robot operation area*8                                                                                       |
| Applicable welding method       | CO <sub>2</sub> , MAG, MIG, TIG (Available also for other use than welding)                                                      |
| Tracking control method         | Full 6D (6-dimension) tracking                                                                                                   |
| Tracking offset                 | Possible                                                                                                                         |
| Welding angle control           | Possible (specify previously in a figure)                                                                                        |
| Synchro-system                  | Possible*9                                                                                                                       |
| Laser source                    | Red visible laser diode / Class 3B Laser Product                                                                                 |
| Ambient temperature             | 32 to +122°F (0 to +50°C)                                                                                                        |
| Ambient humidity                | 10 to 90%RH (No condensation)                                                                                                    |

\*1 Tracking speed may be available even out of this range depending on conditions. Confirm it in the prior experiment.

\*2 Tracking accuracy is the standard value by FD-V8. For other robots, extra prior evaluation is necessary.

\*3 The Tracking accuracy, the available minimum radius for tracking and maximum tracking capability is affected by the installation of sensor (height and look ahead distance), the groove to be welded, and the processing conditions (welding speed, with or without weaving, the conditions if with weaving). It must be confirmed in the customer's operating environment beforehand.

\*4 For a circumference welding, more than twice the radius of the "Look ahead distance of sensor" is preferable.

\*5 It is difficult to apply the system to a curved seam smaller than 135° (especially, when the posture control is used).

\*6 Sufficient tracking accuracy may not be obtained in a corner area.

\*7 There are some cases the groove not described in this document may be applicable. For details, contact our sales office when you consider installing this product.

\*8 Determine the robot operation area so that the sensor goes ahead of the torch along the seam in an actual welding posture. The effective area can be smaller than the P point moving area depending on the welding posture or the sensor mounting direction.

\*9 Synchro motion option software is required.

\*10 The upper specifications are applied to welding without weaving. Weaving can cause poor accuracy.

\*11 Ask for pretesting to make sure this sensor can meet your requirements, before purchasing.

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