



August 5, 2014

Nippon Avionics Co., Ltd.

<http://www.avio.co.jp/english/>

The industry's first air-cooled, single-mode fiber laser welder to feature high speed digital feedback control of optical power! (\*)

## Fiber Laser Welder LW-F300

Ideally suited for welding of ultra-thin metallic foil and high reflection material (aluminum and copper)



Nippon Avionics Co., Ltd. (Head office in Tokyo, Japan; hereinafter referred to as Avio), a subsidiary of NEC Corporation, is proud to announce today's release of **Fiber Laser Welder LW-F300**, which enables non-contact micro welding of metallic materials and is suitable for use in manufacturing smart phones and other information equipment. It is also suitable for use in the manufacturing process of electronic components, rechargeable batteries, and fuel batteries for the automobiles which are becoming lighter and more computerized to meet the increasing demand for Eco-friendly car.

Avio is the only comprehensive manufacturer of micro joining products in the world (\*) offering four (4) types of welding solutions, including "resistance welding", "laser welding", "pulse heat (hot bar/reflow) soldering" and "ultrasonic welding". Avio provides the most suitable joining solution to meet the customer's needs by proposing the proper welding method according to the demands of weld geometry, size, strength, external factors, etc.

Among laser welders whose demand has increased in recent years, fiber laser welders, such as Avio's new Model LW-F300, have become popular because of their narrow beam diameter and high energy density features that enable high-quality welding of micro work pieces and highly reflective material such as aluminum and copper.

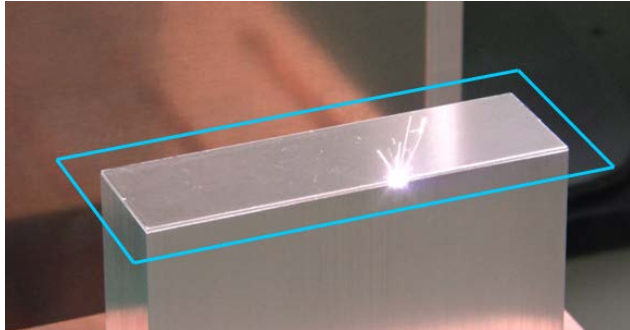
The new Fiber Laser Welder LW-F300 offers excellent stability and weldability by using a unique optical power high-speed digital feedback control function (control cycle 2  $\mu$ sec). This is an industry first (\*) for single mode fiber laser welders with an air cooling structure.

\* As of August 2014, according to our own research.

<Benefits of Welding Applications by Using Avio's New Fiber Laser Welder Model LW-F300>

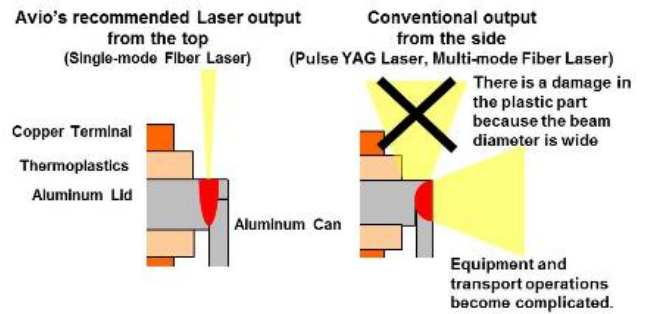
Sealing of aluminum cases

- Rechargeable battery aluminum can × aluminum lid



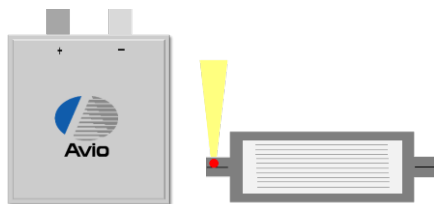
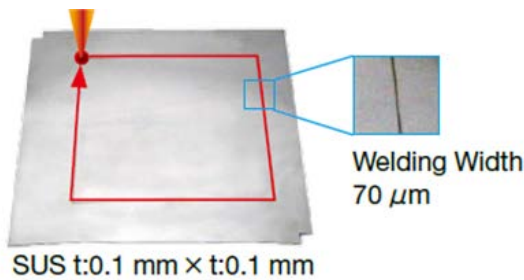
[Benefits]

- The use of aluminum material produces a reduction in battery weight.
- Improved productivity and weld quality while reducing overall system price.

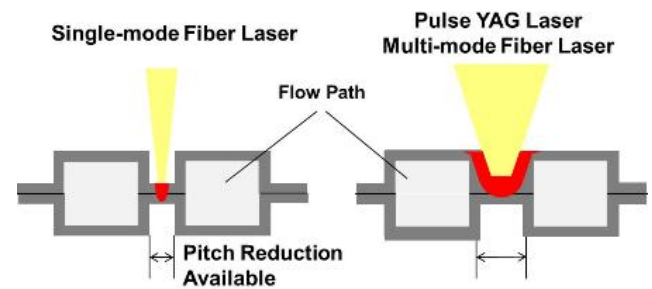


Welding of thin plates

- Rechargeable battery laminate (stainless steel foil)



- Fuel cell metal separator



[Benefits]

- Downsizing and saving space by narrow weld widths for fine welding.
- Corresponds to fuel cell design which requires high density.

Welding of the diode terminal



[Benefits]

- No damage in the plastic part because the beam diameter is narrow.

Rechargeable battery welding of secondary cell battery tab



[Benefits]

- Excellent maintainability saves time and effort.

Applications in other fields

Electronic components (Condenser, Coil, Connectors, Sensors, etc.), Automotive electrical equipment,

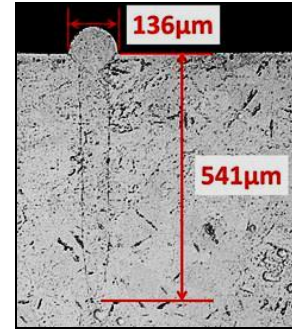
Medical electronic components

<New Product Features>

**1. 300W High-quality single-mode laser**

A high density, high-quality, steady single mode 12 μm beam diameter is output. Ultra-fine welding, narrow and deep welding are possible.

- High power density makes it ideal for welding of highly reflective material such as aluminum and copper.
- A long depth of focus makes it possible to weld even if the height of the work is changed.
- A long work distance makes it suitable for the unit to be integrated into machines. It also makes it easier to manufacture jigs.



Melting Example  
(Stainless Plate)

**2. Stable welding operation even when ambient temperature changes or immediately after laser start-up**

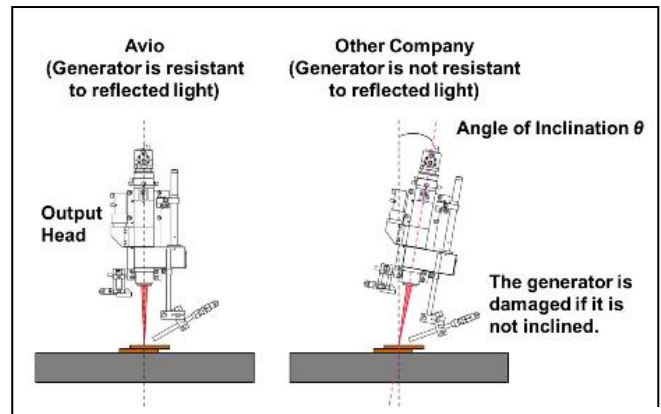
A stable output is obtained by applying the high-speed digital feedback control of optical power, which constantly monitors and corrects the output light at 2 μsec intervals.

**3. Air-cooled, Space-saving Desktop Design**

Cooling equipment such as a chiller are not required because of the air-cooled system which contributes to space-saving and also reduces maintenance costs and effort such as replacing cooling water.

**4. Normal incidence to the work is possible**

As the generator has a structure that is resistant to reflected light from the work, it prevents operation stop or failure caused by the reflected light.

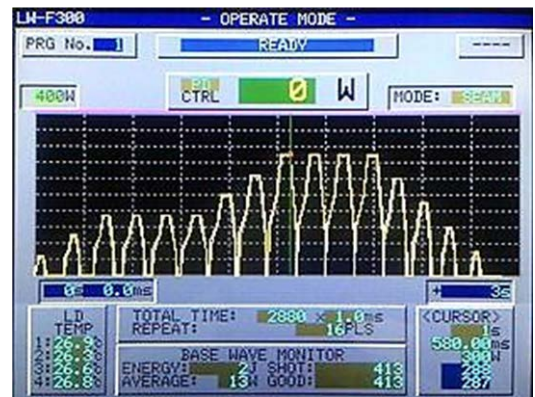


**5. Supports seam welding and high-speed welding**

The LW-F300 continuously irradiates an arbitrary waveform with high speed, which is suitable for seam welding of work such as sealing lithium-ion batteries.

**6. Energy-saving, low power consumption**

A long-life, single emitter laser diode is used in the design of the LW-F300 low-power consumption laser generator.



Waveform Control Screen

<Option>

Output Head with Camera

- Compact and lightweight design
- Combined with the observation system unit, the desired welding position can be easily done.
- Allows customizing welding as required by a variety of applications.



<Specifications>

Feature	Avio Model LW-F300 Specification
Wavelength	1,070 nm
Max Rated Power	300 W (Class 4)
Max Frequency	5,000 Hz
Output Mode	Arbitrary waveform (Single, Repeat, Seam), CW, Analog control
Monitor Display	Laser output(W), Laser energy(J), Average output(W)
Alarm Function	Laser output, Temperature, Electric current, Fiber breakage
Cooling Method	Air cooling
Power Source	AC 200-240 V $\pm$ 10%, 1 $\phi$ , 50/60 Hz
Max Power Consumption	2.6 kW or less
Dimension / Weight	W410 x D600 x H370 mm (excluding protrusion) Approx. 58 kg

<Free Sample Welding>

We are offering free sample welding so that the customer can verify the performance of this machine applied to their own sample. Please feel free to apply for this service.

For Questions Regarding the Above, Please Contact

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