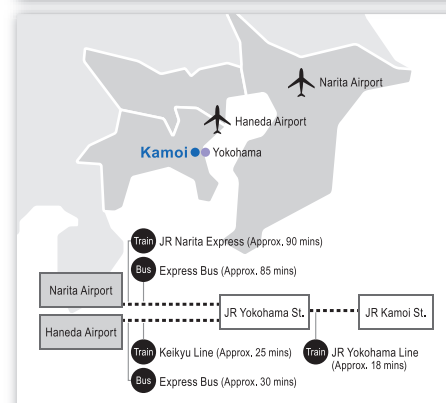
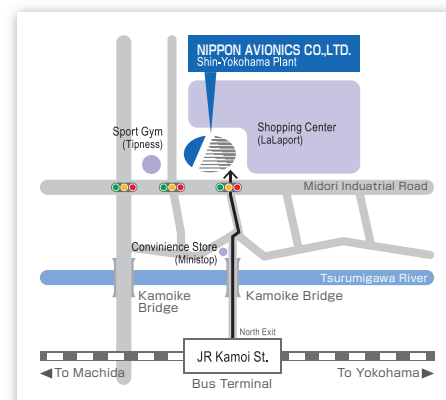


# Information on Sample Test



We will be pleased to test your sample with our proposed joining method, and return it with a report.

## Shin-Yokohama Plant



### Evaluation Laboratory

Nippon Avionics Co., Ltd. Shin-Yokohama Plant  
Address: 4206, Ikonobe-cho, Tsuzuki-ku, Yokohama,  
Kanagawa 224-0053, Japan

### Direction

7 minutes on foot from JR Kamoi Station

\*Office building was moved to a separate location nearby from Aug. 2018.

### CAUTION

To operate a unit correctly, read the operation manual carefully. The unit should be situated away from the place filled with water, moisture, steam, dust or soot, which may cause a fire, an electric shock, troubles etc.

The appearance and specifications are subject to change without notice.

## NIPPON AVIONICS CO.,LTD.

Overseas Sales Department  
Industrial Electronic Products Sales Division

4475, Ikonobe-cho, Yokohama, 224-0053, Japan

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E-mail : [product-irc-e@ml.avio.co.jp](mailto:product-irc-e@ml.avio.co.jp)

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



FSC

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# Micro-Joining Products General Brochure

Reflow-  
Soldering

Plastic  
Welding

Metal  
Welding

Fusing

Hermetic  
Sealing

Pulse Heat

Ultrasonic Welding

Resistance Welding

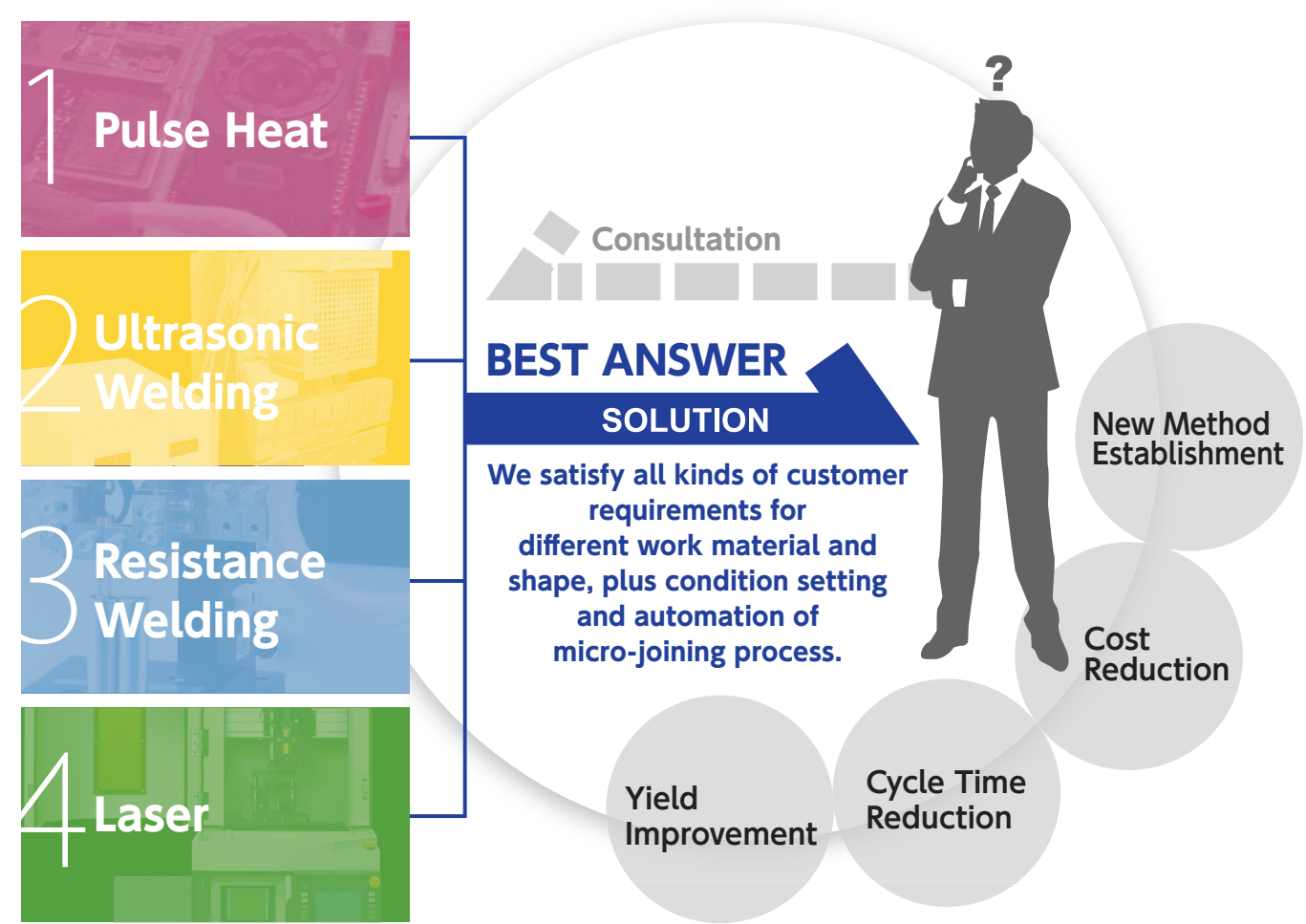
Laser

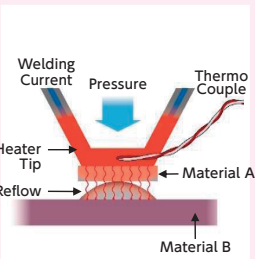
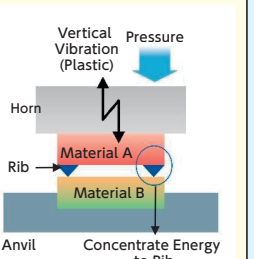
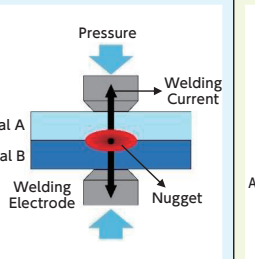
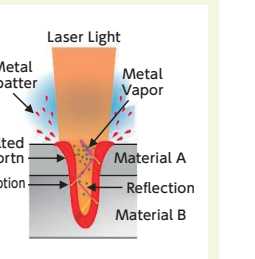




NIPPON AVIONICS CO.,LTD.



# Four Different Solutions in Micro Joining

We offer the “best answer” as the one-stop solution provider



Method		Pulse Heat	Ultrasonic Welding	Resistance Welding	Laser
Technical Principle		Thermo-compression bonding and reflow-soldering by resistance heating element.	Plastic welding by friction heating, metal welding by breaking oxidized film.	Metal welding by resistance heating of the base material.	Welding and soldering by laser beam.
					
					
Appli cation	Metal		○	○	○
	Plastic	○	○		○
	Reflow	○	Fair (High-Frequency Induction Heating)	Fair (Resistance Brazing)	○

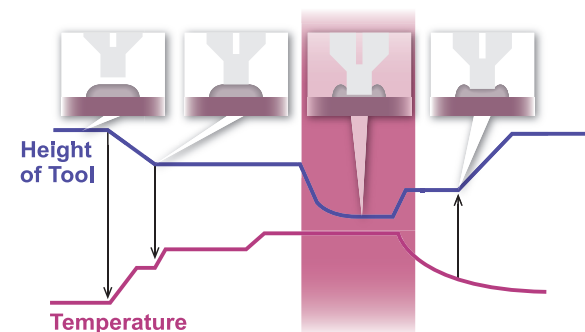
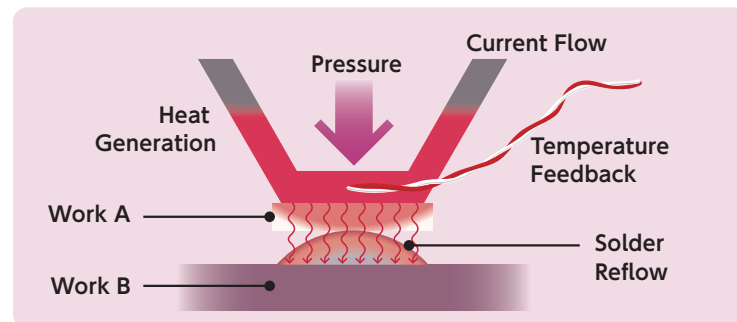
# Application Examples of Joining





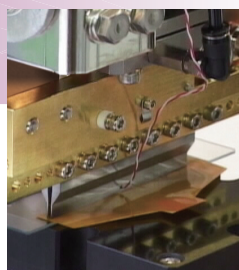
# Pulse Heat

Spot heating and temperature control to minimize heat impact to components.



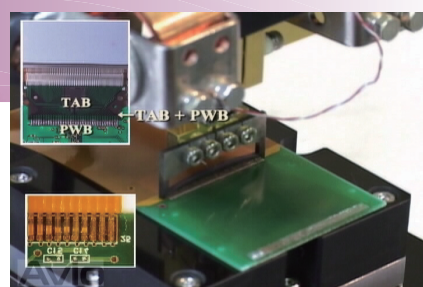
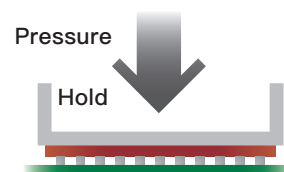
Reduction of unevenness by worker and uniformity are required.

Stable amount of heat is constantly supplied by highly repeatable temperature control and time management. Stable joining result is achieved regardless of skill level of worker and environmental change, which contributes to improve yield.



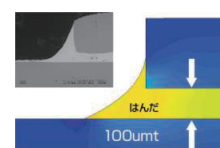
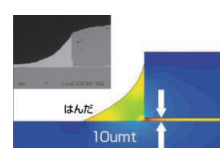
Stringiness, lifting and misalignment need to be minimized.

Head pressure is maintained during cooling process until solder is solidified, which contributes to improve yield by suppressing cobwebbing and position shift of work.



No connection (insufficient melting) or bridge needs to be avoided.

Displacement control (melting amount control, joining gap control) achieves high reliability joining with no excess and no deficiency.



Displacement Control Profile

## LINE UP

- Pulse Heat Unit
- Reflow Head
- Heater Tip / Tool



Displacement Control Model



General Purpose Model



Large Capacity Model

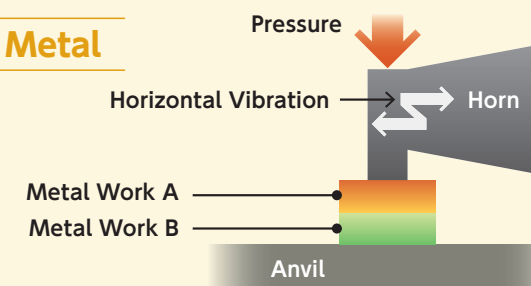


Full line-up of models to satisfy different kinds of micro-joining requirements.

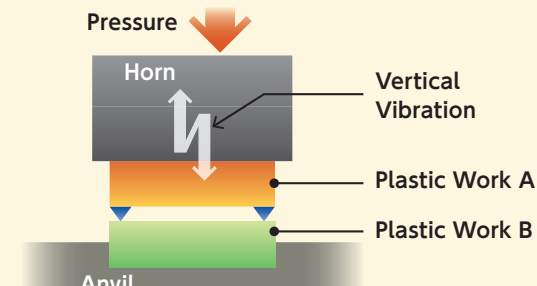
# Ultrasonic Welding

Avio's unique control system and wide variety of control functions for high precision and fast joining.

## Metal



## Plastics



Joint strength between Cu and Al needs to be increased.

By ultrasonic vibration, oxide film on surface is destroyed, and solid phase bonding is executed. Bonding strength is ensured by suppressing brittle intermetallic compound which occurs during fusion bonding.



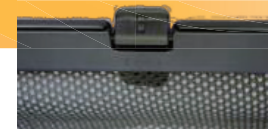
Aluminium x Copper



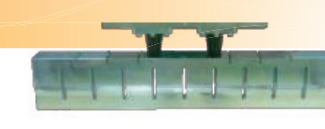
Junction Interface

Plastic needs to be welded in a short period of time.

Instantaneous joining is achieved by heating from work (resin) boundary surface from ultrasonic vibration and pressure. It is applicable from  $\phi 2\text{mm}$  boss caulking to over 1000mm welding.



Sunshade



Long Horn (Multiple Head)

A cloth is desired to be cut with sharp edge.

By applying ultrasonic, cutting quality is improved and faster and cleaner cutting becomes available.

Carpet (Cutting)



Cutting and welding are desired to be achieved simultaneously.

Cutting and welding are done simultaneously by use of fusion cutter, which contributes to reduce the process.



Tea Bag (Fusing)

Metal nut is desired to be press fit into plastic.

A metal nut is heated quickly by electromagnetic induction, and press fit of nut into plastic is easily realized.

Automotive Parts (High-Frequency Induction)



## LINE UP

- Ultrasonic Oscillator
- Ultrasonic Horn
- Anvil



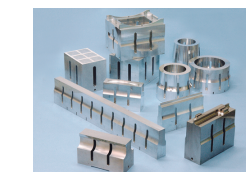
Ultrasonic Metal Welder



Ultrasonic Plastic Welder



High-Frequency Induction Heater



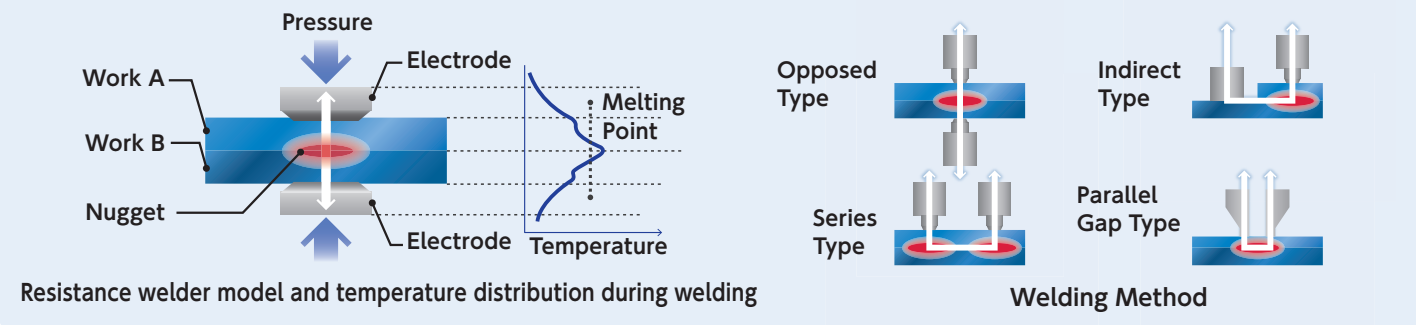
Ultrasonic Cutter

We propose the best solution suitable for your work.



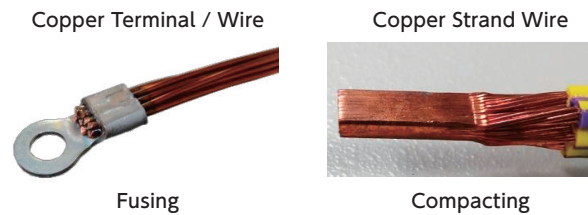
# Resistance Welding

Precision resistance welding solution realizing high quality and high reliability joining.



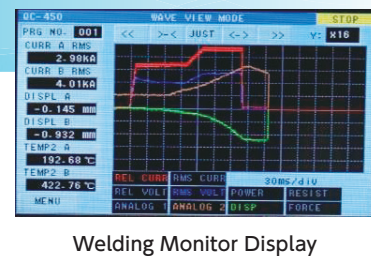
Improvement of resistance welding result is required, such as fusing for motor/coil, compacting of strand wire.

Uniformed joining result is achieved by applying optimum electric current from inverter type welding controller with displacement control, and switchable welding frequency (2kHz, 4kHz, 5kHz), maximum 127 STEP arbitrary welding.



Welding quality needs to be improved and variation among plants needs to be eliminated.

Ethernet compatible monitor enables easy accumulation of welding data, and uniformity by process improvement (analysis and feedback) and central control of traceability can be realized.



Judgement (test) of joining feasibility by resistance welding is required.

Avio product line-up and technology support from 20um ribbon wire welding to 80sq copper wire fusing. Best solution is available including customization.



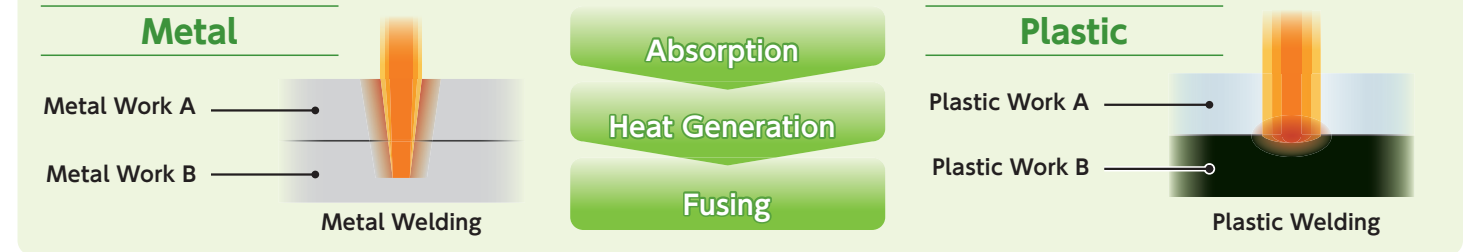
## LINE UP

- Welding Power Supply
- Welding Head
- Electrode



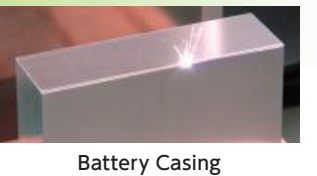
# Laser

Stable beam quality, Highly reliable non-contact joining



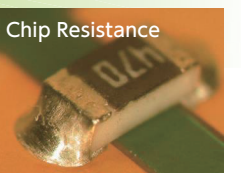
Hermetic sealing of metal case is required without using adhesive (blazing material).

Thin and deep penetration of single mode fiber laser allows all peripheral welding without gap.



Soldering of a component located in a place unreachable by a soldering iron or a fine component needs to be achieved.

By arbitrary setting of profile output for diode laser, soldering without overload is achieved for micro component which is located at complicated position.



## LINE UP

Semiconductor Laser



Fiber Laser



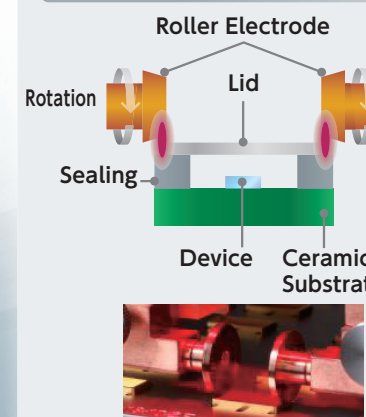
Galvano Scanner



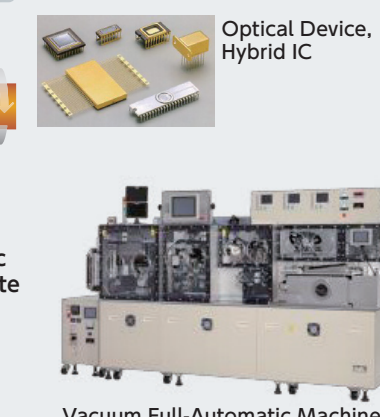
# Automated System

We offer an automated system tailored to your application.

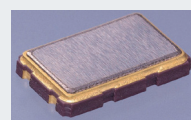
Vacuum Sealing, Ni Sealing



Seam Welder



Optical Device, Hybrid IC



Crystal Device

Other Equipment

