Information on Sample Test

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

Micro-Joining Products General Brochure

Evaluation Laboratory
Nippon Avionics Co., Ltd. Shin-Yokohama Plant
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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 snow, which may cause a fire, an electric shock, troubles etc.
The appearance and specifications are subject to change without notice.

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Four Different Solutions in Micro Joining
We offer the “best answer” as the one-stop solution provider

1 Pulse Heat
2 Ultrasonic Welding
3 Resistance Welding
4 Laser

![Diagram of solutions](image)

**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.**

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**Application Examples of Joining**

- **Automobile**
  - **Motor**
    - Fusing, Terminal Welding
    - Vacuum Sealing
  - **Bumper, Emblem**
    - Laser Welding
    - Ultrasonic Welding
  - **Sensor, Device**
    - Laser Welding
    - Pulse Welding
  - **Harness**
    - Pulse Welding
    - Laser Welding

- **Door Trim**
  - Insulator Welding
  - Plastic Fusing

- **Lamp**
  - Organic Welding
  - Nut Bolt Insert

- **Battery**
  - Pulse Heat Welding
  - TAB Bonding

- **Seat, Floor Mat**
  - Laser Welding
  - Wire Joining, Compacting

**Information Equipment**

- **Resistance Welding**
  - Laser Welding
  - Pulse Welding
  - Ultrasonic Welding
  - Thinner Body and Lighter Weight

- **IoT**
  - Longer Life
  - Higher Speed
  - Larger Capacity
Pulse Heat

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

Ultrasonic Welding

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

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 surpassing 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.

Pressure
Hold

Pressure

Pressure

Horizontal Vibration

Horn

Metal Work A
Metal Work B
Anvil

Metal

Plastics

Pressure

Vertical Vibration

Plastic Work A
Plastic Work B
Anvil

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 surpassing brittle intermetallic compound which occurs during fusion bonding.

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 Ø2mm boss caulking to over 1000mm welding.

A cloth is desired to be cut with sharp edge.

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

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.

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.

LINE UP

- Pulse Heat Unit
- Rework Head
- Heater Tip / Tool
- Displacement Control Model
- General Purpose Model
- Large Capacity Model
- Ultrasonic Welder
- Ultrasonic Plastic Welder
- High-Frequency Induction Heater
- Ultrasonic Metal Welder
- Ultrasonic Horn
- Anvil

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

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 inclugign customization.

LINE UP
- Welding Power Supply
- Welding Head
- Electrode

Inverter Type  Transistor Type  DC Type  Welding Monitor  Full line-up of products to offer a solution suitable to your weldment.