

# SONOBOND

## **SonoWeld® 1600** **Digital Metal Spot Welder Series**

*A computerized ultrasonic system that can perform spot welds, as well as wire-to-terminal and wire-to-wire welding in a single pulse. Designed for ease of operation, the system features a digital display that allows the selection of welding modes by time, total energy or final weld thickness. The SonoWeld series also allows the operator to input an acceptable range of settings to ensure automatic 100% quality monitoring.*



### **Features and Benefits**

- Outputs 1,500 or 2,500 watts of power to weld nonferrous similar or dissimilar metal assemblies, including copper to aluminum
- Joins up to 10 stranded wires from a flat flexible circuit to multi-connection terminals in a single pulse
- Power supply features a built-in microprocessor, which permits storage and recall of over 250 weld protocols
- Automatic frequency control and overload protection

### **General Description**

Sonobond's SonoWeld 1600 Series is an easy-to-use, micro-processor controlled metal welding system that offers multi-function capabilities never before incorporated in a single welder. The SonoWeld equipment can perform spot welds in a single pulse with repeatable accuracy. With additional tooling, it can also provide wire-to-terminal or wire-to-wire welding. It is the only ultrasonic welder that can join up to 10 stranded wires from a flat flexible circuit to multi-connection terminals in a single pulse.

With a microprocessor built into the power supply, Sonobond's SonoWeld equipment can store and recall up to 250 weld protocols from memory. Available in 1,500 and 2,500 watt models, each SonoWeld unit has an RS232 port to transfer weld data to a computer. Both models utilize automatic control monitoring that can detect when variables exceed preset power and time limits, or if a part height is different from that originally set. The SonoWeld can also detect and prevent wrong-part or no-part welding.

The SonoWeld series creates ultra-reliable, solid-state metallurgical bonds, and operates without the need of heat, current, fluxes or fillers. The welders feature a welding head, the exclusive Wedge-Reed system, and an easily removable and replaceable Taper Lock Tip. Sonobond custom-designs tooling to meet each customer's specific needs.

- Automatic recall and setup of weld parameters by time, total energy or final weld thickness
- Patented Wedge-Reed coupling system assures precise, dependable welds and can be mounted in a variety of orientations for special applications
- Heat-treated, tool steel Taper Lock Tips perform up to 300,000 welds and are easily removed and replaced
- Automatic quality control features detect variations from preset limits
- Minimal operating and training costs
- Easily incorporated into automated assembly equipment



*The FC2016 power supply utilizes a pulse width modulation amplifier with a feedback loop in the directional coupler to control output power. All weld parameters are adjusted, saved, and recalled from the front panel of the power supply.*

### Applications

The SonoWeld® series is ideal for electrical bus bar fabrication, lithium battery assembly, thin sheet metal welding of aluminum or copper, stranded wire to brass or copper terminals, including multi-connection terminals, and wire harness assembly for automotive applications.

### Theory of Operation

The SonoWeld MH-2016 uses Sonobond's patented Wedge-Reed coupling system of high vibratory force and low amplitude to ensure precise, dependable welds. The unit directs high frequency, ultrasonic energy via a welding tip to the surface between the metals to be welded. The vibratory energy disperses the oxides and surface films between the workpieces to create a true metallurgical bond without melting the materials.

An essential requirement for ultrasonic metal welding is that the direction of the vibration be in a shear mode parallel to the plane of the surface to be welded. The Wedge-Reed system is configured to provide the shear motion, while putting the line of force directly over the parts to be welded. This permits the high clamp force necessary to achieve a dependable weld, without bending stress or stalling.

### Specifications

<b>Input Power:</b>	208/240 VAC @ 15 amps 1 phase
<b>Air:</b>	100 psi @ 3 CFM clean dry air
<b>Output Power:</b>	1,500 or 2,500 watts RMS into a 50 ohm resistive load
<b>Databank:</b>	250 weld protocols
<b>Frequency Tuning:</b>	Automatic (internal to power supply)
<b>Weld Data Output:</b>	RS232 Port
<b>Distance Measurement:</b>	Linear voltage displacement transducer (LVDT)
<b>Weld Force:</b>	Electro/pneumatic proportional regulator with feedback loop
<b>Acoustic System:</b>	High force, low amplitude, Wedge-Reed with Taper Lock Tip
<b>Transducer:</b>	Piezo-electric
<b>Size (approx.):</b>	<b>Power Supply:</b> 8" high, 20" wide, 22" deep <b>Welding Head:</b> 28" high, 18" wide, 8" deep
<b>Weight (approx.):</b>	<b>Power Supply:</b> 90 pounds <b>Welding Head:</b> 120 pounds

### Operating Modes

<b>TIME:</b>	In the Time Mode, the operator sets a power level and weld time.
<b>ENERGY:</b>	In the Energy Mode, the operator sets a power level, total energy in joules, and a maximum weld time.
<b>HEIGHT:</b>	In the Height Mode, the weld is controlled by final weld thickness. The operator sets a weld thickness in millimeters, a power level and a maximum time.

### Materials

The SonoWeld MH-2016 can be used on:

Material	Alloy	Maximum Thickness	
		1,500 watts	2,500 watts
Aluminum	6000 Series	0.040"	0.080"
Aluminum	1100-H18	0.032"	0.064"
Copper	fi Hard	0.032"	0.064"
Copper Wire	Stranded	AWG 8	AWG 4
Copper Braided Wire	—	0.125" dia.	0.188" dia.

Specifications are provided for information only and are believed to be accurate. However, no responsibility is assumed by Sonobond Ultrasonics for their use. Ongoing product development and improvement may cause changes without notice.

**SONOBOND®**  
ULTRASONICS

**INDUCTOTHERM INDUSTRIES, INC.**

**SONOBOND ULTRASONICS**

1191 McDermott Drive • West Chester, PA 19380

**Phone:** 800-323-1269 • 610-696-4710 • **Fax:** 610-692-0674

**Internet:** www.SonobondUltrasonic.com

**Email:** Sales@SonobondUltrasonic.com