

BRANSON

2000 SERIES

Low Power Ultrasonic Systems

2000 LPt/LPe

GENERAL DESCRIPTION

The 2000LP family of low power systems are Branson's latest offering for applications with power requirements of 500 Watts or less. The 2000LP utilizes Branson's patented circuitry with closed loop amplitude control to provide maximum process control.

The 2000LP units can be used with their appropriate hand-held devices or can be connected directly to a converter/booster/horn stack for use in automation. Two control levels are available: the LPt model provides *continuous* and *time* welding modes; the LPe model provides *continuous*, *time*, and *energy* welding modes. Both models are available with an optional factory-installed *ground detect*. Three frequencies are available: 20 kHz at 150 and 500 Watts; 30 kHz at 500 Watts, and 40 kHz at 150 and 500 Watts.

KEY FEATURES

User Interface/Process Controls

- **Digital parameter entry** for precise, easy setup.
- **1 ms sampling rate** of all data provides superior performance.
- **Digital amplitude control** allows fine tuning for critical applications (ranges from 10% to 100% in 1% increments).
- **Optional ground detect** can be used to detect horn-to-anvil contact or can be utilized as an 'ultrasonic cut-off' signal/safety override in all available welding modes. (This option must be factory installed.)
- **Audible "end of cycle" tone** to alert the operator that the cycle has finished when using a hand-held device.
- **Self-diagnostics and monitoring** provide visual, audible, and logic output alarms.
- **Selectable Auto Reset conditions** for all alarms.



Power Supply

- **Line / Load Regulation** – Branson's patented closed-loop amplitude control corrects for variations due to power line fluctuations and varying load conditions. Output amplitude is maintained with a variation of only $\pm 2\%$ with line voltage fluctuations of $\pm 10\%$, regardless of load. It ensures constant power in welding, and provides greater weld consistency and reliability.
- **Autotune plus Memory (AT/M)** – Provides fully-automatic tuning in a range of ± 500 Hz centered around 19.950 kHz for 20 kHz horns, ± 750 at 30 kHz for 30 kHz horns, and ± 1000 around 39.900 kHz for 40 kHz horns, and stores horn frequency at the end of each weld.
- **Auto Seek** tracks the operating frequency when the system is idle. It automatically measures horn frequency by running the horn at a low-level amplitude (5%) to find and lock on to the horn operating frequency and store it in memory.
- **System Protection Monitor (SPM)** – Five levels of power supply protection are provided: 1) phasing, 2) over voltage, 3) over current, 4) over temperature, and 5) power. The benefits of this feature are to avoid equipment failures and to provide greater weld accuracy and repeatability.
- **Sequence of operation** is displayed in the digital LED window during the welding cycle.

- ✓ **Hand-Held Systems**
- ✓ **Automation Components**
- ✓ **Line Regulation**
- ✓ **Load Regulation**
- ✓ **Auto Seek with Memory**
- ✓ **System Protection Monitor with Autotune**
- ✓ **Multiple Welding Modes with Ground Detect Available**
- ✓ **CE and CSA Certified**

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welding • staking • swaging • forming • spot welding • degating • cutting & sealing

KEY FEATURES, continued

- **Visual and audible alarms, and external outputs** identify overload, machine faults and setup errors.
- **LED readouts display parameter settings** during setup and operation for easy reference and monitoring. LEDs are large and easy to read in most light conditions.
- **Nonvolatile storage of cycle parameters** provides storage of last-used cycle parameters even if the system is shut off or a power interruption occurs.
- **High Cycle Rate** – The power supply is capable of in excess of 200 welds per minute. Actual cycle rate is dependent upon the application and controls.
- **Real Power Measurement** – Power measurement includes both RF voltage and current, and is corrected for any amplitude setting. Seven-segment LEDs display the peak power achieved during the weld cycle.
- **Peak power reading** from the last welding cycle is available on the digital LED display by

depressing the “reset” switch. Similarly, power in the tuning mode is digitally displayed when the “test” switch is depressed.

- **User I/O interface** provided for direct hook-up with programmable controllers. Overload and Weld On outputs and external reset input are available for customer access, through 24V DC logic interfaces. External reset input available in +24V. (Requires J911 start cable.)

Hand-Held Welding Tools

The 2000 Series hand-held ultrasonic welders are compact, lightweight tools used to spot weld or stake large, complex parts and those with hard-to-reach joint areas.

With pistol grip models, the trigger switch is located on the grip; barrel grip models have the trigger switch located on the side of the barrel. All units may be operated in an untimed mode with the 2000LP power supply set for continuous operation, utilizing the trigger switch; or in a timed or energy mode using the 2000LP power supply controller. With time or energy modes, the trigger switch initiates the cycle, which is then controlled by the power supply.

On the HT-215 unit, the operator grips a sliding, spring-loaded sleeve, and by applying pressure against the parts to be welded, automatically triggers the ultrasonic welding cycle. Welding duration is controlled by the power supply either in time or energy welding modes. An adjustment screw is used to vary the force required before ultrasonic triggering occurs.

BASIC CONFIGURATIONS

| Automation Components | | | | |
|-----------------------|--------------|------------------------------|--------------------------|---------------------------|
| Power Supply | Power Output | Converter | RF cables | Start Cables |
| 20 kHz | | | | |
| 20:0.15.2CH | 150 Watts | 2CH1 2CH2 2CH3 | J934C (8') | J913 J911 (PLA* req'd) |
| | | TW-1 TW-2 TW-3 | J935 (8') | J913 J911 (PLA* req'd) |
| 20:0.50.902 | 500 Watts | 902R | J931 J931C | J913 J911 (PLA* req'd) |
| 30 kHz | | | | |
| 30:0.50.CR | 500 Watts | CR30 CH30 CS30 CP30 | J934C | J913 J911 (PLA* req'd) |
| 40 kHz | | | | |
| 40:0.15.4C | 150 Watts | 4C KTR | 8' built-in J936 (8') | J913 J911 (PLA* req'd) |
| 40:0.15.4T | 150 Watts | 4TR 4TH 4TP | J934 J934C J934C | J913 J911 (PLA* req'd) |
| 40:0.50.4T | 500 Watts | 4TR 4TH 4TP | J934 J934C | J913 J911 (PLA* req'd) |

*Product Liability Agreement required

| Hand Held Systems | | | | |
|-------------------|--------------|------------------|----------------------------|------------------|
| Power Supply | Power Output | Hand Held | Converter Required | Replaces |
| 20 kHz | | | | |
| 20:0.15.2CH | 150 Watts | HT-215 HK-215 | TW-1 TW-2 TW-3 | HG-152 |
| 20:0.50.902 | 500 Watts | PT-250 | 402 | GK-5 |
| 40 kHz | | | | |
| 40:0.15.4C | 150 Watts | HT-415 | KTJ | KG-1 |
| 40:0.15.4T | 150 Watts | PT-480 HT-480 | 8' built-in 8' built-in | GK-470 HG-470 |
| 40:0.50.4T | 500 Watts | PT-480 HT-480 | 8' built-in 8' built-in | GK-470 HG-470 |

WARRANTY

The Branson 2000LP Power Supplies carry a three-year warranty on materials or workmanship. Branson hand-held welders carry a one-year warranty on materials and workmanship. *Note:* This warranty applies to equipment purchased and operated in North America. For warranty information on units purchased and/or operated outside the U.S. contact your local representative.

2000LP

ORDERING INFORMATION

Note: All sales shall be subject to the Supplier's terms and conditions of sale as described in Branson's quotations and sales contracts.

All Branson 2000 LPt/LPe Series ultrasonic power supplies are CSA approved and FCC compliant. CE compliant models are indicated. Hand-held systems include an appropriate tool kit.

20 kHz, 150 Watt System Components

| Power Supplies | Branson EDP No. |
|-------------------------------|------------------------|
| LPt, 100-120 V | 100-132-931 |
| LPt, 200-240 V | 100-132-932 |
| LPt, 200-240 V, CE | 100-132-933 |
| LPe, 100-120 V | 100-132-928 |
| LPe, 200-240 V | 100-132-929 |
| LPe, 200-240 V, CE | 100-132-930 |
| Converters | |
| 2CH1 (33 μ), SHV, CE | 101-135-127 |
| 2CH2 (75 μ), SHV, CE | 101-135-128 |
| 2CH3 (125 μ), SHV, CE | 101-135-129 |
| TW-1 (75 μ), BNC | 101-135-015 |
| TW-2 (125 μ), BNC | 101-135-016 |
| TW-2 pinned (125 μ), BNC | 159-023-313 |
| TW-3 (33 μ), BNC | 101-135-031 |

| Hand-Held Welders (require TW-1, -2, or-3 converter) | |
|---|-------------|
| HT-215, barrel grip | 101-136-010 |
| HK-215, pistol grip (trim knife) | 159-136-009 |

20 kHz, 500 Watt System Components

| Power Supplies | Branson EDP No. |
|--------------------------------|------------------------|
| LPt, 100-120 V | 149-132-1026 |
| LPt, 200-240 V | 149-132-1027 |
| LPt, 200-240 V, CE | 149-132-1028 |
| LPe, 100-120 V | 149-132-1023 |
| LPe, 200-240 V | 149-132-1024 |
| LPe, 200-240 V, CE | 149-132-1025 |
| Converters | |
| 402 (used in PT-250 Hand-held) | 101-135-014 |
| 902R (used in automation) | 101-135-048 |

| Hand-Held Welders (require 402 converter) | |
|--|-------------|
| PT-250, pistol grip | 101-136-014 |

30 kHz, 500 Watt System Components

| Power Supplies | Branson EDP No. |
|-----------------------|------------------------|
| LPt, 100-120 V | 149-132-979 |
| LPt, 200-240 V | 149-132-980 |
| LPt, 200-240 V, CE | 149-132-981 |
| LPe, 100-120 V | 149-132-976 |
| LPe, 200-240 V | 149-132-977 |
| LPe, 200-240 V, CE | 149-132-978 |

| Converters | |
|-------------------|-------------|
| CR30, SHV, CE | 101-135-081 |
| CH30, SHV, CE | 101-135-071 |
| CS30, SHV, CE | 159-135-110 |
| CP30, SHV, CE | 159-135-111 |



HT-215



HK-215



PT-250



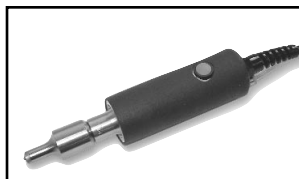
PT-415



HT-415



PT-480



HT-480

40 kHz, 150 Watt System Components

| Power Supplies | Branson EDP No. |
|-----------------------|------------------------|
| LPt, 100-120 V | 100-132-967 |
| LPt, 200-240 V | 100-132-968 |
| LPt, 200-240 V, CE | 100-132-969 |
| LPe, 100-120 V | 100-132-964 |
| LPe, 200-240 V | 100-132-965 |
| LPe, 200-240 V, CE | 100-132-966 |

| Converters | |
|------------------------------|-------------|
| 4C, 8' RF cable built-in, CE | 101-135-126 |
| KTR, MS connector | 101-135-045 |
| KTJ, acorn contact, CE | 101-135-046 |

| Hand-held Welders (require KTJ converter) | |
|--|-------------|
| HT-415, barrel grip, CE | 101-136-011 |
| PT-415, pistol grip, CE | 101-136-015 |

40 kHz, 150 & 500 Watt System Components

| Power Supplies | Branson EDP No. |
|---------------------------|------------------------|
| LPt, 150 W, 100-120 V | 149-132-943 |
| LPt, 150 W, 200-240 V | 149-132-944 |
| LPt, 150 W, 200-240 V, CE | 149-132-945 |
| LPe, 150 W, 100-120 V | 149-132-940 |
| LPe, 150 W, 200-240 V | 149-132-941 |
| LPe, 150 W, 200-240 V, CE | 149-132-942 |
| LPt, 500 W, 100-120 V | 149-132-955 |
| LPt, 500 W, 200-240 V | 149-132-956 |
| LPt, 500 W, 200-240 V, CE | 149-132-957 |
| LPe, 500 W, 100-120 V | 149-132-952 |
| LPe, 500 W, 200-240 V | 149-132-953 |
| LPe, 500 W, 200-240 V, CE | 149-132-954 |

| Converters | |
|------------------------|-------------|
| 4TR, MS connector | 101-135-042 |
| 4TH, SHV connector, CE | 101-135-067 |
| 4TP, SHV connector, CE | 101-135-068 |

| Hand-held Welders (converter built in) | |
|---|-------------|
| PT-480, pistol grip, CE | 159-135-133 |
| HT-480, barrel grip, CE | 159-135-134 |

| Cables | | |
|---|-----|--------------|
| RF, J934 (4TR converter) | 8' | 101-240-034 |
| | 15' | 101-240-035 |
| RF, J934C (for all SHV), CE | 8' | 101-240-179 |
| | 15' | 101-240-181 |
| RF, J935 (all TW converters) | 8' | 100-246-1218 |
| RF, J936 (KTR converter) | 8' | 100-246-1219 |
| Start, J911, 9-pin (requires product liability agreement) | 8' | 101-240-020 |
| | 15' | 101-240-015 |
| | 25' | 101-240-010 |
| Start, J913, 2-pin | 25' | 101-240-072 |

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ORDERING INFORMATION, continued

Accessories

| | |
|--|-------------|
| Ground Detect (must be factory installed) | 225-029-866 |
| Fan filter kit (for use in dusty environments) | 101-063-614 |

Boosters

Note: Boosters are not used with TW and 2CH converters.

| Booster/Gain | 20 kHz | 30 kHz | 40 kHz |
|-------------------|-------------|-------------|-------------|
| Purple (Al) 1:0.6 | 101-149-055 | -- | 101-149-087 |
| Green (Al) 1:1 | 101-149-051 | -- | 101-149-079 |
| Gold (Al) 1:1.5 | 101-149-052 | -- | 101-149-080 |
| Silver (Al) 1:2 | 101-149-053 | -- | 101-149-081 |
| Black (Al) 1:2.5 | -- | -- | 101-149-082 |
| Purple (Ti) 1:0.6 | 101-149-060 | -- | -- |
| Green (Ti) 1:1 | 101-149-056 | 101-149-106 | 101-149-085 |
| Gold (Ti) 1:1.5 | 101-149-057 | 101-149-105 | 101-149-086 |
| Silver (Ti) 1:2 | 101-149-058 | 101-149-104 | 101-149-083 |
| Black (Ti) 1:2.5 | 101-149-059 | 101-149-103 | 101-149-084 |

REGIONAL TECHNICAL CENTERS

| | | |
|-----------------------|---|----------------------|
| Headquarters: | Toll free: 888-BUC-JOIN (888-282-5646) | |
| Boston: | 781-938-8168 | Fax: 781-935-0535 |
| Chicago: | 847-229-0800 | Fax: 847-229-0861 |
| Atlanta: | 770-962-2111 | Fax: 770-962-3720 |
| Los Angeles: | 909-305-2080 | Fax: 909-305-2060 |
| Dallas: | 972-484-9228 | Fax: 972-484-9976 |
| Detroit (automotive): | 248-299-0400 | Fax: 248-299-9343 |
| Rochester, NY: | 585-624-8000 | Fax: 585-624-1262 |
| Toronto, Canada: | 905-201-4633 | Fax: 905-201-4637 |
| Mexico City: | 52-555-670-4470 | Fax: 52-555-670-7885 |



SPECIFICATIONS

2000LP Power Supplies

| | 20:0.15.2CH | 20:0.50.902 | 40:0.15.4C | 40:0.15.4T | 40:0.50.4T | 30:0.5.CR |
|--|---|---|---|--|---|---|
| Electrical Specifications | | | | | | |
| Frequency: | 20 kHz | 20 kHz | 40 kHz | 40 kHz | 40 kHz | 30 kHz |
| Output power: | 150 watts | 500 watts | 150 watts | 150 watts | 500 watts | 500 watts |
| Line voltage: <i>FCC, CSA Certified</i> | 100-120 V AC, 50/60 Hz, 1 ph., 2 amps | 100-120 V AC, 50/60 Hz, 1 ph., 7 amps | 100-120 V AC, 50/60 Hz, 1 ph., 2 amps | 100-120 V AC, 50/60 Hz, 1 ph., 2 amps. | 100-120 V AC, 50/60 Hz, 1 ph., 7 amps | 100-120 V AC, 50/60 Hz, 1 ph., 7 amps |
| Line voltage: <i>FCC, CSA Certified</i> | 200-240 V AC, 50/60 Hz, 1 ph., 1 amp | 200-240 V AC, 50/60 Hz, 1 ph., 6 amps | 200-240 V AC, 50/60 Hz, 1 ph., 1 amp | 200-240 V AC, 50/60 Hz, 1 ph., 1 amp | 200-240V AC, 50/60 Hz, 1 ph., 6 amps | 200-240 V AC, 50/60 Hz, 1 ph., 6 amps |
| Line voltage: <i>CE Certified</i> | 200-240 V AC, 50/60 Hz, 1 ph., 1 amp | 200-240 V AC, 50/60 Hz, 1 ph., 6 amps | 200-240 V AC, 50/60 Hz, 1 ph., 1 amp | 200-240 V AC, 50/60 Hz, 1 ph., 1 amp | 200-240V AC, 50/60 Hz, 1 ph., 6 amps | 200-240 V AC, 50/60 Hz, 1 ph., 6 amps |
| Receptacle required: | 100-120 V AC models: NEMA 5-15R; 200-240V AC models: *NEMA 6-15R or equivalent; 200-240V AC, CE Certified: *CEE 7/7 | | | | | |
| Mechanical Specifications | | | | | | |
| Height: | 9" (229 mm) | | | | | |
| Width: | 7.75" (197 mm) | | | | | |
| Depth: | 13.3" (338 mm) (depth: plus 3" [76 mm] cable clearance) | | | | | |
| Weight: | 15.5 lbs. (7 kg) | | | | | |

*User must supply power cord ends for all 200-240 V systems.

The Branson 2000LPt/LPe Series ultrasonic power supplies comply with FCC rules and regulations governing radio frequency interference.

All specifications subject to change without notice.

All dimensions are nominal.

Branson

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