Features

Dukane iQ LS Ultrasonic Power Supplies were designed specifically for automated ultrasonic systems for the automotive, aerospace, packaging, textile, and food industries. Available in bench top or panel mount.

The iQ series generators are all built around our patented digital design. Compact in size, they provide the highest power density in the smallest package, while incorporating our exclusive flow through cooling. These generators are designed to handle the toughest applications and environments, capable of operating either in continuous duty or high-speed automation. Our industry leading 0.5 millisecond multi-core processing speed provides the highest level of accuracy and repeatability. The unique modular design allows for custom configurations and ultimate flexibility.

Digital Features

- **100% digital control** of all power supply functions and parameters allows for unique configurations and future upgrades or requirements. Includes digital frequency synthesis.
- **Industry leading data acquisition rate speed of .5 ms** due to advanced multi-core architecture. Increased weld accuracy and repeatability.
- **Three step system safe power up sequence** include: 1) AC line in-rush current protection, 2) Supervisory System Monitor, 3) Plug and Play configuration ID.
- **Digi-Trac tuning** automatically tracks the resonant frequency digitally. Adjusts the output frequency to match the acoustic stack (sonotrode, booster, and transducer) during every weld cycle and eliminates the need to manually tune the generator.
- **Ultrasonic overload protection**, with status indicator for ease of troubleshooting. The overload power limit is based on true RMS power output level.
- **Temperature Drift Compensation** allows for seamless acoustic stack operation, and automatically compensates for acoustic stack temperature changes.
- **Patented Pulse-Width Modulation** design delivers power more efficiently with substantially less stress on the electrical and acoustic components for superior performance, reliability and extended life.
- **Selectable Frequency Lock and Hold** feature ignores diigi-trac automatic tuning and locks to startup stack frequency - this helps in difficult applications where the stack couples with a product.
- **Programmable frequency bandwidth**, three selectable factory settings or user programmable windows for unique acoustic stacks and applications.
- **User-accessible programmable advanced hardware** settings allows changes to Free Run Frequency, Frequency Lock/Hold and Frequency Limits - providing advance settings for difficult acoustic stacks.
Digital Features. . .continued from cover page.

- **Integrated Digital Frequency Readout** accurately displays operating frequency of the acoustic stack. This is perfect for acoustic stack diagnostics.

- **Amplitude adjustment** in 1% increments from 100% to 20%, through front panel or remotely (Optional 4-20mA analog, Profibus, EtherNet I/P or RS 232).

- **Line and Load Regulation amplitude** is maintained independent of load force and incoming line voltage variations. Through a closed-loop amplitude control, the amplitude regulation maintains output amplitude be correcting for fluctuations in line voltage and output power loading. Maintained within 1% to provide weld process consistency and shorter cycle times.

- **Programmable Digital Linear Ramp Up** algorithm allows the acoustic stack to be brought to operating amplitude smoothly, minimizing start-up surges and abnormal stress to the stack and power supply. This can be shortened to accommodate faster cycle times and lengthened to accommodate larger sonotrodes/horns.

- **Programmable Digital Linear Ramp Down** allows the acoustic stack amplitude to be brought down from operating amplitude to zero in a controlled manner. Eliminates unpredictable acoustical ring down for better weld quality, longer stack life and potentially faster cycle times.

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**Trigger by Power** (U.S. Patent 7,475,801)

Provides more consistent welds by providing a sufficient and repeatable amount of pressure/force to be applied to the part before the weld cycle starts. Trigger by Power is a cost effective alternative to Trigger by Force. However, unlike Trigger by Force, Trigger by Power does not require additional, expensive components such as a load cell, amplifier board and cabling.

In effect, the system uses the ultrasonic stack as a load cell. When the ultrasound is activated, the amplitude is ramped up to the Trigger Amplitude setting and held there until enough force is applied to the part to reach the Trigger Power setting. At that point the weld cycle begins and will continue until the weld control parameter (Time, Energy or Power) is reached.
**Panel Mount Generators**

**Mechanical Features**

- **Flow Through Cooling** channel with a matched high performance heat sink and thermostatically controlled fan reduces thermal gradients, minimizes dirt infiltration and increases component life.

- **Highest power density** per unit of volume. Most power in the smallest package at highest duty cycle.

- **Patented modular hardware design** incorporates motherboard/interconnect of internal components. Reduces internal cabling while increasing reliability and performance.

- **Advanced I/O is standard** with 25-pin output, and 15-pin input, user configurable from the utility menu.

- **Standard 19” (48cm) Rack** mountable for easy system integration at minimal cost.

- **Compatibility** with all Dukane standard transducers, helps reduce inventory requirements and provides interchangeability with your existing DPC or Ultra series components.

Visit: [www.dukane.com/us](http://www.dukane.com/us) go to downloads/application notes for your plastic assembly needs.

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**iQ LinQ™ EtherNet/IP Module**

Dukane’s iQ LinQ™ gives integrators the most versatility, when interfacing power supplies with automated systems.

**Control Parameters available via EtherNet/IP**

1. Set weld method to Time, Energy, or Peak Power. Set associated value in seconds, joules, or watts.

2. Set Amplitude, Ramp Up Time, and Ramp Down Time.

3. Enable and set Trigger by Power parameters.

4. Enable and set Hold time.

5. Enable and set Afterburst delay and duration.

6. Enable checking for Suspect Parts. Set maximum and minimum values for Time, Power and/or Energy.

7. Enable checking for Bad Parts. Set maximum and minimum values for Time, Power and/or Energy.

8. Configure advanced hardware settings including Phase, Free Run Frequency, Frequency Lock and Hold, and Frequency limits.

**Parameters that can be obtained via EtherNet/IP**

1. All parameters that are configured via EtherNet/IP.

2. Real time data which includes welder state (ultrasound active or not), frequency, power, and amplitude.

3. Weld cycle data from previous weld which includes: Cycle Count; Good, Bad, and Suspect Part information; Process Limit setting exceeded or not reached if Bad or Suspect Part checking is enabled; Weld Time; Weld Energy; Peak Power.
MODELS

<table>
<thead>
<tr>
<th>Power / Frequency / Profile</th>
<th>600 W</th>
<th>900 W</th>
<th>1200 W</th>
<th>1800 W</th>
<th>2400 W</th>
<th>3600 W</th>
<th>4800 W</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 kHz</td>
<td></td>
<td></td>
<td>H/L</td>
<td>H</td>
<td>H</td>
<td>H</td>
<td>H</td>
</tr>
<tr>
<td>20 kHz</td>
<td></td>
<td></td>
<td>H/L</td>
<td>H</td>
<td>H</td>
<td>H</td>
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<tr>
<td>30 kHz</td>
<td>H/L</td>
<td>H/L</td>
<td>H</td>
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<td>H</td>
<td>H</td>
<td>H</td>
</tr>
<tr>
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<td>H</td>
</tr>
<tr>
<td>Max. current:</td>
<td>10 amps</td>
<td>10 amps</td>
<td>15 amps</td>
<td>15 amps</td>
<td>15 amps</td>
<td>25 amps</td>
<td>30 amps</td>
</tr>
</tbody>
</table>

L = Low Profile Chassis  
(H only available in 200-240 VAC, 50/60 Hz)

H = High Profile Chassis  
(IH less than 1200 W fixed cord 100-120 VAC)

Note: All specifications are subject to change without notice. Please consult Dukane for any updated information.