

iQ Series

ULTRASONIC PRESS SYSTEM

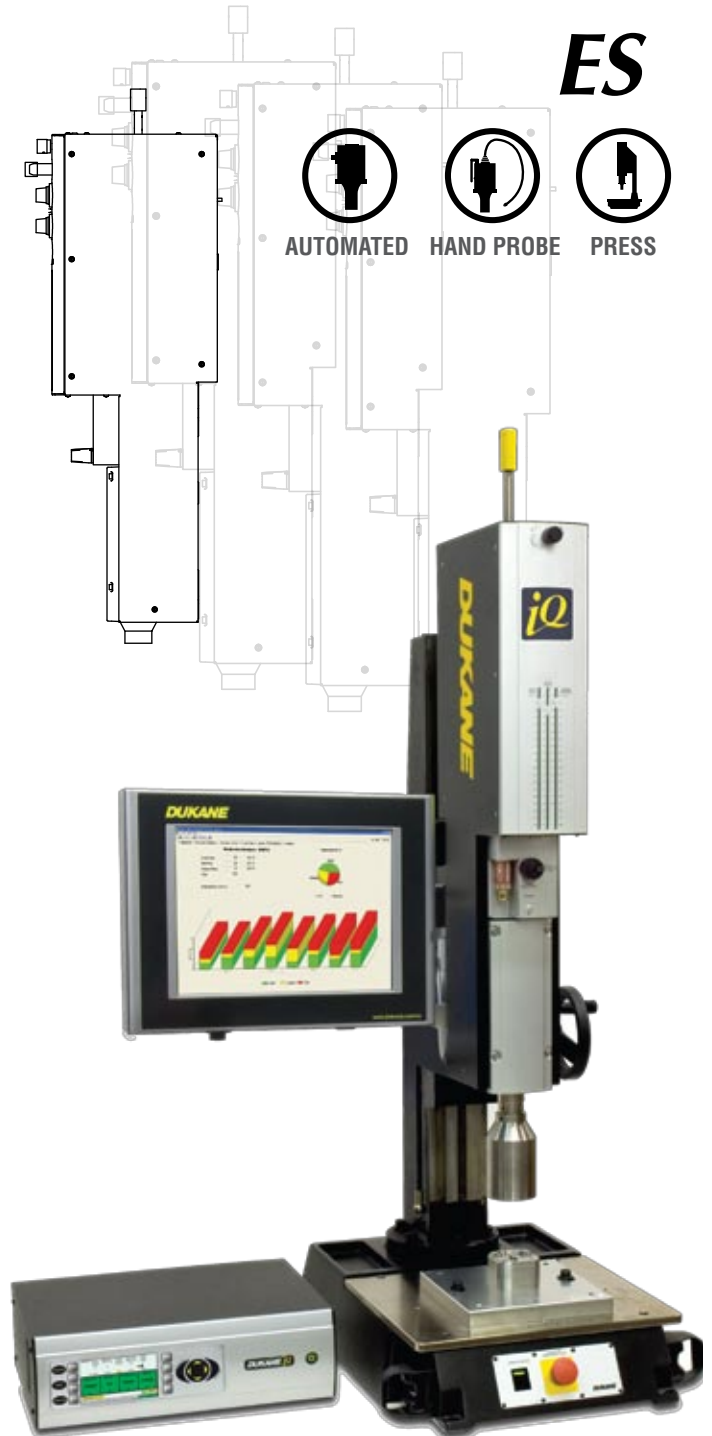
ES

System Features

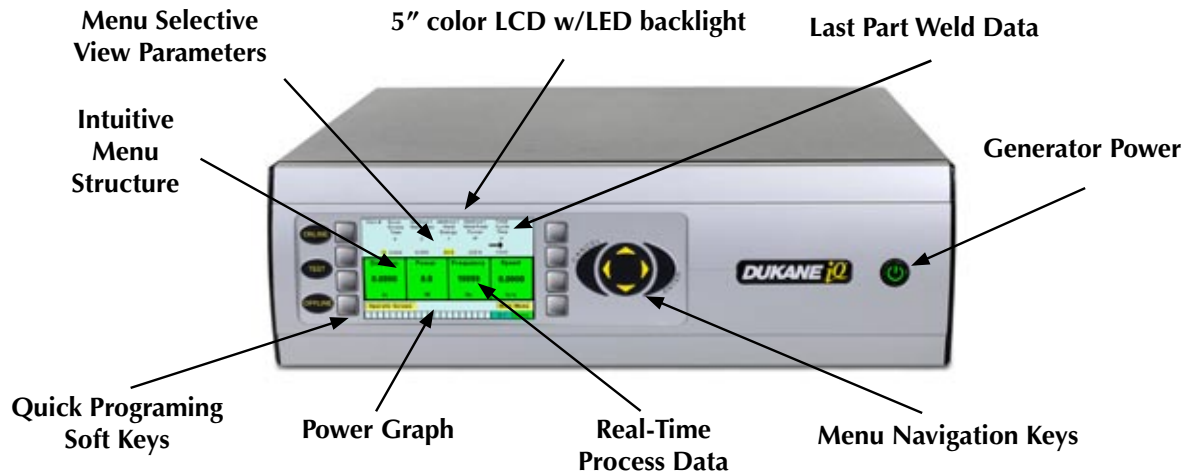
The most technologically advanced ultrasonic welding control features available today are found in Dukane's *iQ* Series equipment. Our patented, 100% digitally-controlled generator, ultra-rigid press, coupled with the *iQ* Explorer user-interface provide superior accuracy and ease of use. The generators have new multi-core processor technology that allows them to operate at a processing rate of .5 milliseconds.

iQ Explorer's intuitive touch-screen graphical menu structure incorporates a one-page setup screen that makes welder operation easy to learn and program. Ethernet connectivity, wireless networking, and multiple USB ports are all options for weld and graph data storage. Over 25 programmable upper and lower process limits along with reference, weld graph logic are available for weld diagnostics and process consistency.

- The **Generator Interface** incorporates a true color, 5" WVGA LCD screen, with 800 x 480 pixel resolution, and it is backlit by LEDs. The *unique quick stroke menu navigation keys* are consistent with the entire *iQ* generator product line. Additionally **Eight soft keys** border the screen and enhance intuitive menu navigation while maintaining the entire screen's usefulness.
- **Welder setup parameters** are all digitally controlled and can be calibrated to meet FDA and ISO requirements.
- **Multi-level password** options eliminate unauthorized changes to weld program, assuring part quality and consistency.
- **Weld by time, energy, distance, absolute distance, peak power** and **ground detect**.
- **15, 20, 30, 40, 50 kHz** frequencies available.
- **180 – 4800 watt** versions, true RMS power.



iQ Generator/Power Supply Features



Digital Features

- **100% digital control** of all power supply functions and parameters allows for unique configurations and future up-grades 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.
- **Digi-Trac tuning** automatically tracks the resonant frequency digitally. Adjust the output frequency to match the acoustic stack (sonotrode, booster, and transducer) this is done for 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.
- **Line voltage regulation** compensates for line fluctuations assuring consistent amplitude.
- **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.
- **Linear ramp soft-start** 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.
- **Load regulation** provides constant ultrasound amplitude automatically regardless of the power draw. The ultrasonic output amplitude level is held to within 1 %, to provide weld process consistency and reduced weld cycle times.

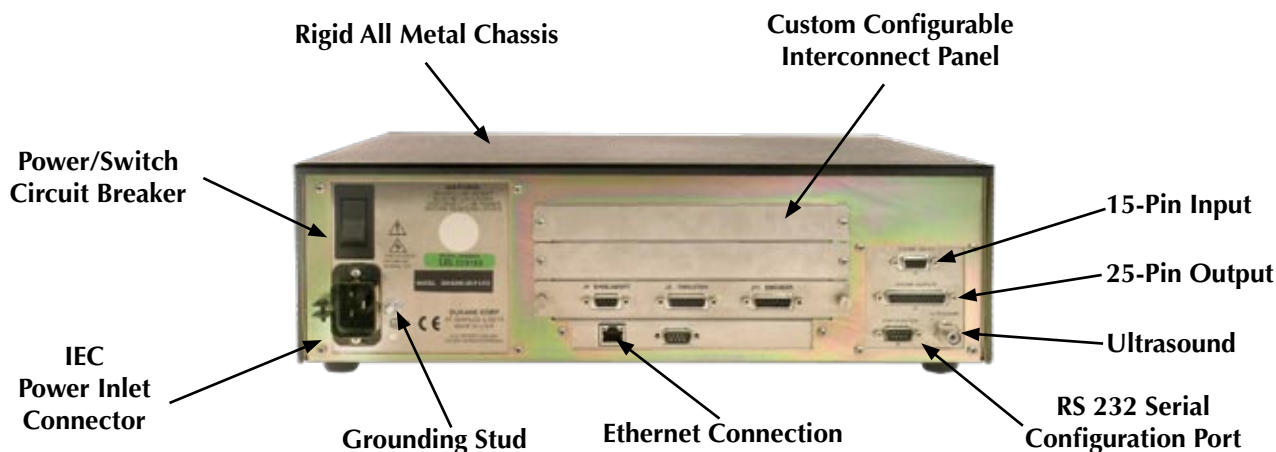
Mechanical Features

- **Flow through cooling** tunnel 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. Low and high profile configurations available.
- **RS232 serial configuration port** is used for field software upgrades, troubleshooting and advanced hardware setup with optional PC based **iQ** configurator.
- **Advanced I/O is standard** with 25-pin output, and 15-pin input, user configurable from the utility menu.
- Unique **patented modular hardware design** incorporates motherboard/interconnect of internal components. Reduces internal cabling while increasing reliability and performance.
- **Rear panel expansion** slot is available to allow for custom configurations for OEM and cost effective designed solutions.

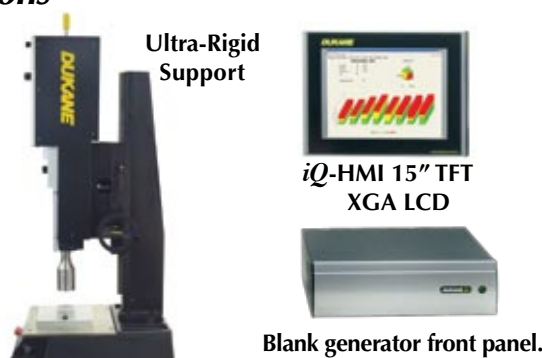
iQ Press/Power Supply Features



Features

- **Compact, single-rail linear ball slide assembly system** offers accurate positioning, stable movement, and friction-free travel.
- **Dual pressure** increases clamp force to improve melt during the weld cycle, or to provide tighter assembly during the hold cycle.
- **7" (178mm) stroke** with mechanical bottom stop adjustable in .001" (.025mm) increments.
- **Top-of-stroke limit switch** for automation application
- **All controls are accessible from the front** for convenient set-up and operation.
- **Easy-to-use front panel position indicators** with universal icons instantly show settings of position and bottom stop, and optional slow speed, pre-trigger, and end-of-weld switches.
- **Titanium boosters** are standard.
- **Internally mounted optional linear encoder** saves space in multihead and automated installations.
- **OSHA-required lockout for air supply** is standard.
- **Ergonomic base and opto-touch cycle activation switches** reduce operator fatigue.
- **Status indicators in base** for Power, In Cycle, and Abort clearly communicate system conditions.
- **Twist-release emergency stop switch** meets international safety standards.
- **Press/thruster design provides system flexibility and upgradeability**, reducing equipment investment.

Options



- **Ultra-Rigid** support provides reduced deflection for superior weld consistency. Column crank and gas strut assist ensures easy setup. Column can be locked to eliminate unauthorized adjustments. Standard style support columns available.
- **Programmable pressure profiling** and force by interface with the electronic pressure regulator, pressure transducer, and load cell press options offer increased control, repeatability and consistency.
- **iQ-HMI industrial PC 15" TFT XGA LCD** touch screen, Supports six USB 2.0 ports, Dual Gigabit Ethernet.
- **iQ-Explorer II** intuitive Windows based graphical user interface
- **Hydraulic speed control** offers precision hydraulic control of the melt velocity. This is critical to achieve maximum weld strength in staking, inserting and shear joint applications.
- **Magnum transducer** provides a 25% boost in amplitude. Consult Dukane about suitability/application of this option.
- **Patented resonant mount booster.**
- **Longer press columns** to increase part load area height.
- **Custom air cylinder** 1.50" (38mm), or 2.00" (51mm) and 3.00" (76mm) diameters.
- **19" (483mm) Rack or Press-mounted** generator option.

iQ Specifications



**15-20 kHz
High Power
Press System
w/ultra Rigid
Support**

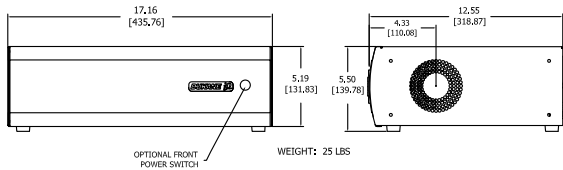


**Standard
20-30-40kHz
Press System
w/ultra Rigid
support**



**Standard
20-30-40-50kHz
Mini Press
System**

iQ Power Supply

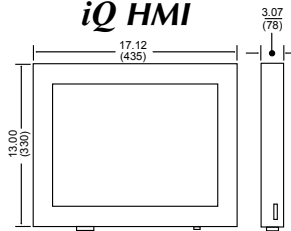


System Requirements

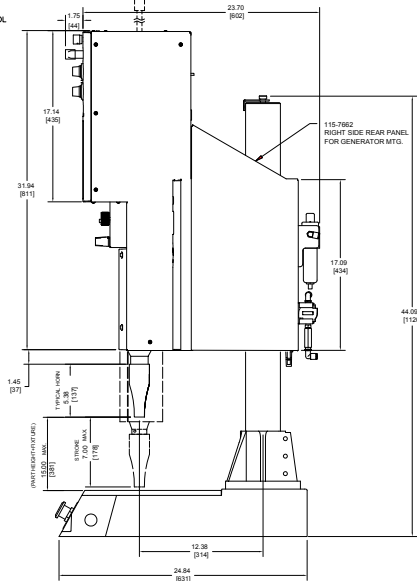
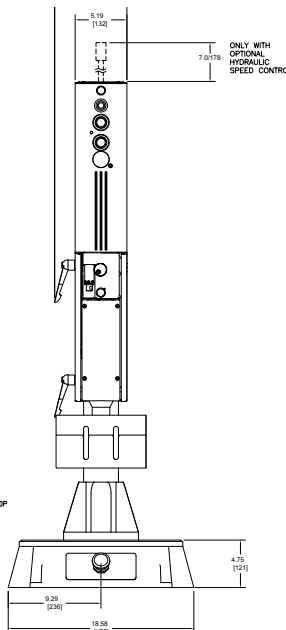
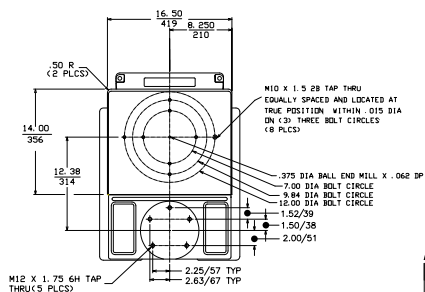
Pneumatic requirements: 80-110 psi max. clean, dry air

Allow 5.00" (130mm) behind the press/thruster for air line and cable connections

Optional iQ HMI



ES Generator



20kHz Standard Support

DIMENSIONS

Typical 20 kHz system listed.

Visit http://www.dukane.com/us/DL_DrawingsLayout.asp to download files of other Dukane systems

Press Dimensions	Standard	Ultra Rigid	Thruster Dimensions	
Base Width	18.58" (472mm)	18.58" (472mm)	Housing Height	31.90" (810mm)
Base Depth	24.83" (631mm)	24.83" (631mm)	Housing Width	5.19" (132mm)
Column Height	39.00" (991mm)	40.00" (1002mm)	Housing Depth	11.00" (280mm) Max.
Column Diameter	3.50" (89mm)	6.0" x 3.0" (152 x 76mm)	Weight	40.00 Lbs. (18 Kg)
Maximun Height	57.00" (1450mm)	61.00" (1550mm)		
Housing Width	5.19" (132mm)	5.19" (132mm)	iQ HMI Dimensions	
Column CL to Horn CL	12.38" (314mm)	12.38" (314mm)	Height	13" (330mm)
Useable Throat	8.00" (200mm)	8.38" (212mm)	Width	17.13" (435mm)
Stroke	7.00" (178mm)	7.00" (178mm)	Depth	3.07" (78mm)
Weight	170.00 Lbs (77Kg)	240.00 Lbs (109 Kg)	LCD Diagonal	15" (381mm)

MODELS

Power / Frequency	600W	900 W	1200 W	1800 W	2400 W	3600 W	4800 W
15 kHz						X	X
20 kHz		X	X	X	X	X	X
30 kHz	X	X	X	X			X
40 kHz	X	X	X				
AC Line Max. Current:	10 amps	10 amps	15 amps	15 amps	15 amps	30 amps	

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

