

DUKANE

Dukane *iQ Auto-Plus MPC* Ultrasonic Systems

Dukane *iQ Auto-Plus* Ultrasonic power supplies are automation ready systems with patented Dukane Multi Probe Controller built into one convenient unit. This robust and compact unit is perfectly designed for automotive industry multi probe automated systems.

The *iQ Auto-Plus* systems incorporate Dukane's patented digital design. Our industry leading 0.5 milli-second multi-core processing speed provides extreme accuracy and repeatability. Integrating the *iQ Auto-Plus* and *MPC* modules reduces cabling and simplifies integration.

iQ Auto-Plus MPC is available in 600 or 1200 watt power levels and these panel mount units include an Ethernet/IP port for data acquisition and process control.

Features

- **100% digital control** of all power supply functions and parameters allows for unique configurations and future upgrades. Control includes digital frequency synthesis.
- **Industry leading data acquisition rate speed of 0.5 ms** due to advanced multi-core architecture provides for increased weld accuracy and repeatability.
- **EtherNet/IP or Modbus standard**
- **Optional Profibus, PowerLink, Profinet, EtherCAT, CC-Link, or Modbus TCP protocols** allow for flexibility in remote data acquisition and process control. A USB port is included for connection to the PC Interface software program "*iQ Commander*".
- **Digi-Trac** tuning automatically tracks the resonant frequency digitally. Adjusts the output frequency to match the acoustic stack (horn, booster, and transducer). This is done for every weld cycle and eliminates the need to manually tune the generator.
- **Ultrasonic Overload Protection**, with detailed fault description for ease of troubleshooting. The overload power limit is based on true RMS power output level.
- **Line and Load Amplitude Regulation** is maintained independent of load force and incoming line voltage variations. Through a closed-loop amplitude control, the amplitude regulation maintains output amplitude by correcting for fluctuations in line voltage and output power loading. Maintained within 1% to provide weld process consistency and shorter cycle times.
- **Highly efficient** (> 92%) power conversion with PFC
- **Universal AC power input** (240 VAC required for power level over 600 W)

iQ Series

ULTRASONIC POWER SUPPLIES

iQ Auto-Plus MPC



AUTOMATED



HAND PROBE



PRESS



20, 30, 35, and 40 kHz models available at 600 watts; 30 and 35 kHz at 1200 watts.

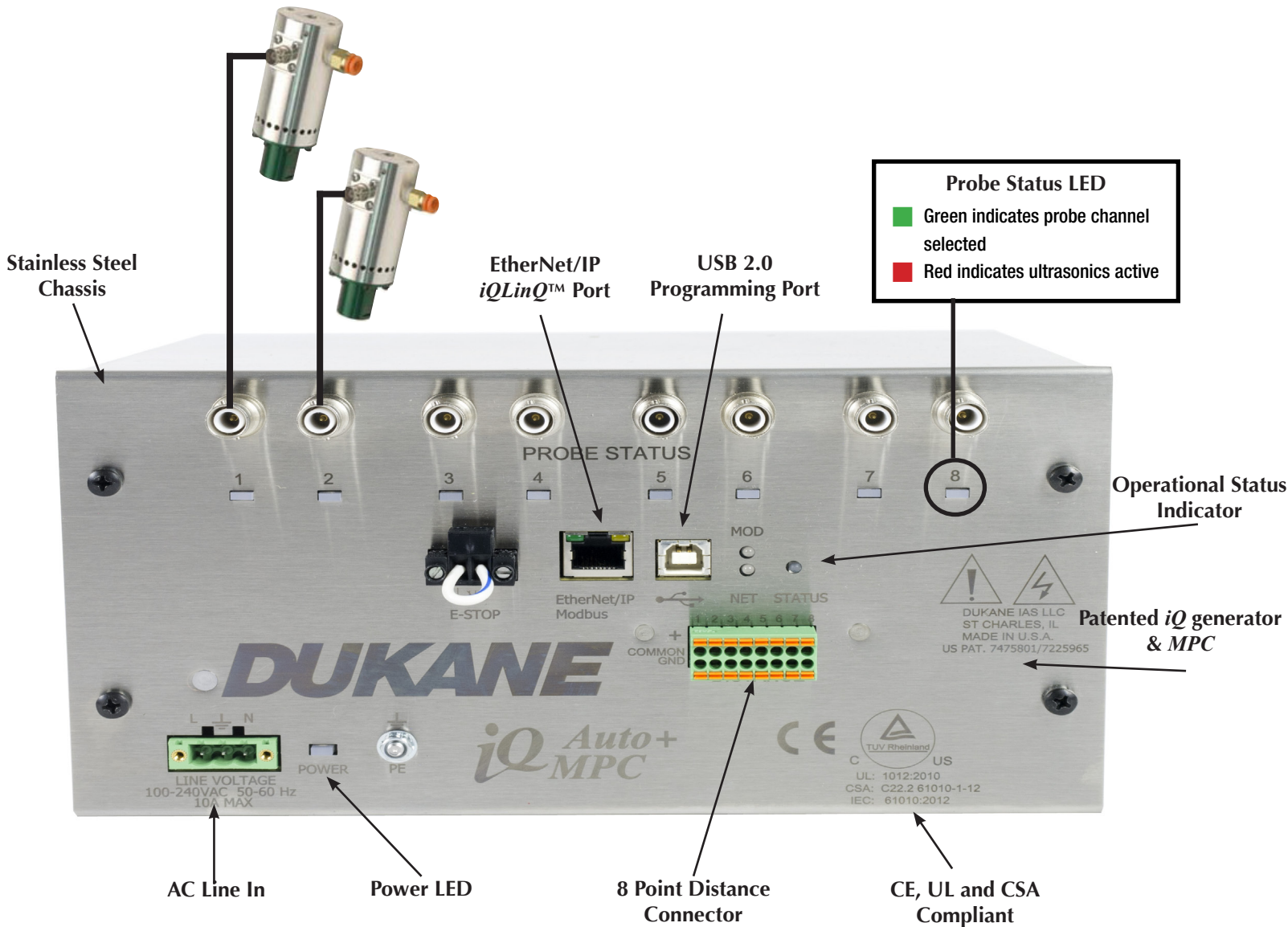
- **System Safe Power-up sequence:**
1) AC power inrush protection, 2) Supervisory System Monitor.
- **Optional weld by distance feature** to monitor up to eight analog 0-10 VDC encoders when used with patented MPC (requires customer supplied encoders).
- **Weld by Distance/Energy/Peak Power/Time Limits** for each parameter are monitored to ensure quality and consistency.
- **Patented Trigger by Power** allows for repeatable Weld by Energy, or Collapse Distance modes
- **Common Chassis for 600 watt or 1,200 watt units.** (1200 watt models include external heat sink)
- **User friendly cable connectivity**
- **Compatible with many current Dukane Probes/Transducers**

- Fully protected from improper programming and power line irregularities.
- Binary coded selection prevents selection of 2 probe relays.
- Logic interlocks prevent selection changes when ultrasound is on.

- Ring-down monitor allows relay switching only when voltage is off.
- Fault monitor detects a shorted relay coil driver and halts operation.
- Hold-up time of internal supplies - designed to ride-out any AC line disturbances.

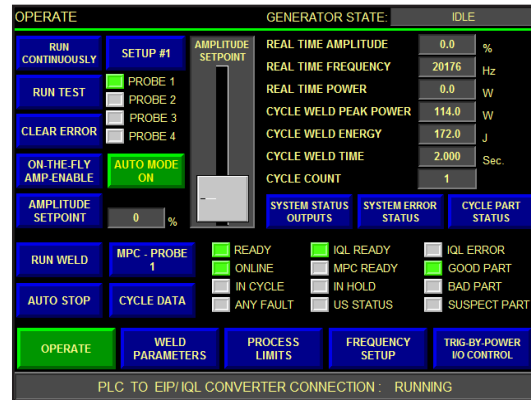
Dukane Patented MPC* Multi-Point Control

The *iQ Auto-Plus MPC* can sequence up to eight ultrasonic probes. Each probe is independently controlled and monitored allowing different process settings and independent suspect or bad part alarms for each weld point.

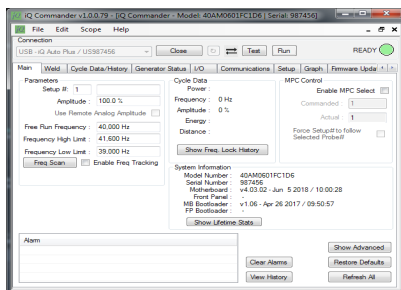


Trigger by Power (U.S. Patent 7,475,801)

The feature provides more consistent welds by requiring 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. 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 settings. At that point the weld cycle begins and continues until the weld control parameter (Time, Energy, or Power) is reached. For details see Dukane AN506 at: <http://www.dukane.com/us/Documents/AppNote/AN506.pdf>

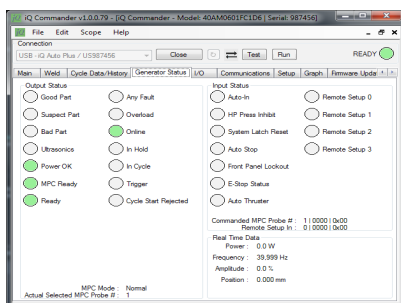


System Parameters



This window enables the user to set up Amplitude, Free Run Frequency and upper and lower Frequency limits.

System Status Monitor



This feature allows for quick troubleshooting and analysis of all system status in real time. Remote set up status used with Dukane's Patented MPC (Multi-Point Control) is also displayed.

iQ LinQ™ Connections

The built-in Ethernet/IP and Modbus TCP port allows the iQ generator to connect to a variety of networks.

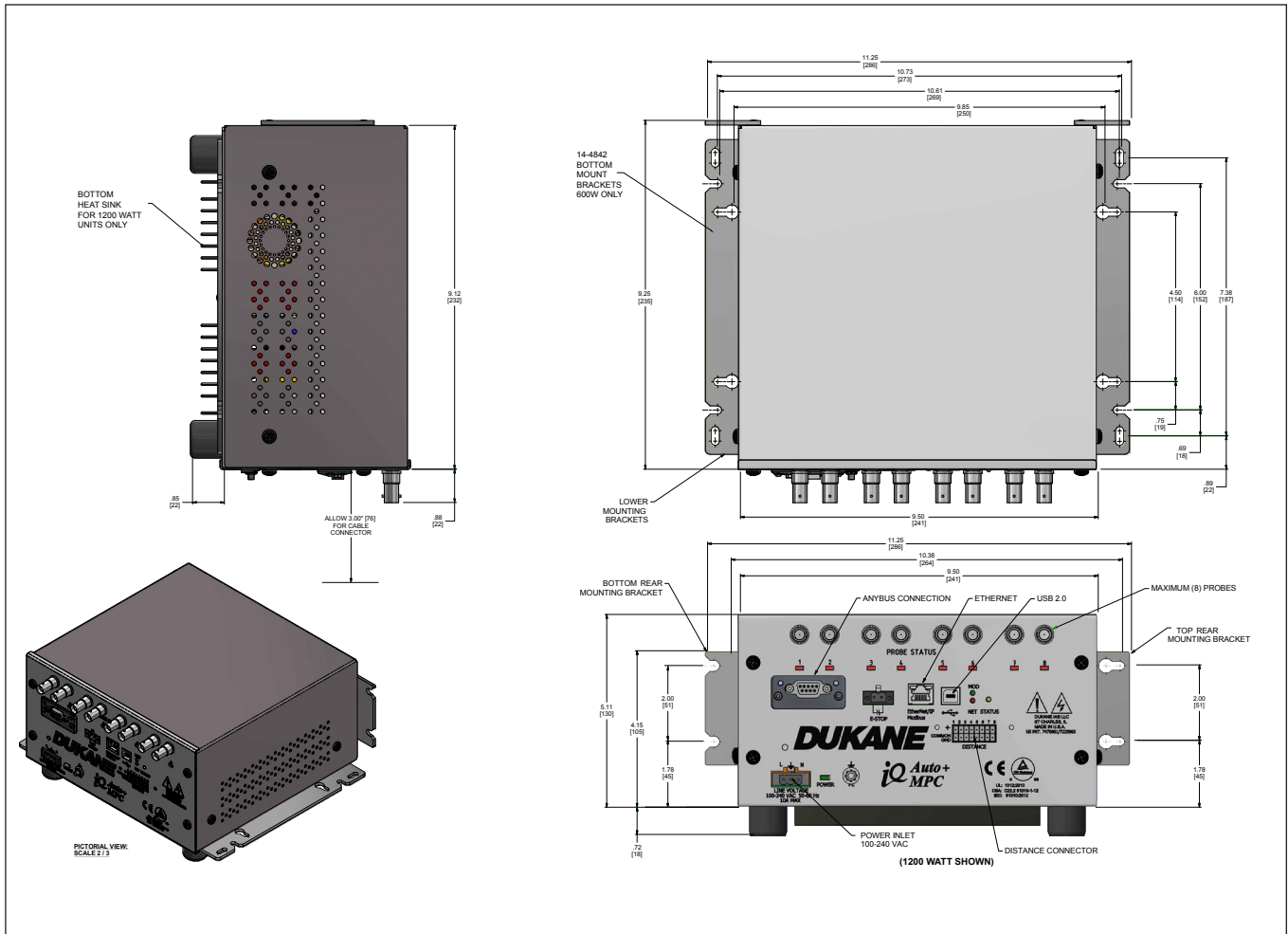
Control parameters available via iQ LinQ™

1. Set weld method to Time, Energy, Peak Power, or Distance. Set associated value in seconds, joules, watts, or mm/in.
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, Distance, and Peak Power and/or Energy.
7. Enable checking for Bad Parts. Set maximum and minimum values for Time, Peak Power and/or Energy.
8. Configure advanced hardware settings including, Free Run Frequency, Frequency Lock and Hold, and Frequency Limits.

Parameters that can be obtained via iQ LinQ™

1. All parameters that are configured via iQ LinQ™.
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 Weld Time; Weld Energy; Peak Power; Weld Distance.

Dimensions



<https://documents.dukane.com/layouts/400-2504.PDF>

MODELS

Operating Frequency	Generator Model Number	Overload Power Ratings (watts)	Input AC Power Requirements Nominal AC Volt @ Maximum RMS Current
20 kHz	20AM060-UX-CX-XX	600	100-240V 50/60 Hz @ 15 amps Max
30 kHz	30AM060-UX-CX-XX	600	100-240V 50/60 Hz @ 15 amps Max
30 kHz	30AM120-2X-CX-XX	1200	200-240V 50/60 Hz @ 15 amps Max
35 kHz	35AM060-UX-CX-XX	600	100-240V 50/60 Hz @ 15 amps Max
35 kHz	35AM120-2X-CX-XX	1200	200-240V 50/60 Hz @ 15 amps Max
40 kHz	40AM060-UX-CX-XX	600	100-240V 50/60 Hz @ 15 amps Max

Options

- **iQLinQ™:** Profibus, PowerLink, Profinet, EtherCAT, CC-Link, or Modbus TCP protocols
- **Eight point distance encoder module**



iQ Auto-Plus MPC easily mounts vertically or horizontally with the flexible mounting hardware. (1200 watt units must be mounted vertically for proper cooling)

