**Dynamic Process Controller™ (DPC)**

**INTEGRATED PROCESS CONTROL SYSTEM**

**DESIGN**

- **Integrated power supply and process controller** saves space, and simplifies setup and operation.

- **Modular component design** maximizes product flexibility and cost effectiveness by allowing the selection of various power levels and process control features.

- **System upgradeability** allows quick installation of control and/or user interface features not originally selected.

- **Retrofittable to existing ultrasonic press systems** to bring precise process control and monitoring features to applications already in production (20 kHz, 30 kHz, & 40 kHz systems only).

- **Standard 19" (48cm) rack mountable unit** available for easy system integration at minimal cost.

- **Universal IEC 320 power cord receptacle** accommodates most worldwide power requirements.

- **User interface option** available for full-screen process parameter display.

- **Compatible with current Dukane presses, thrusters, and probes**.

- **Modular design concept** gives maximum product flexibility and cost effectiveness by allowing selection of just the control and/or user interface features necessary for the application.
DPC III DYNAMIC PROCESS CONTROLLER™

- High performance 16-bit microprocessor addresses more data in less time for superior performance
- Real-time, multitasking operating system simultaneously controls and monitors process parameters
- One millisecond sample rate samples cycle parameters one thousand times per second on a cycle-by-cycle basis for greater accuracy, consistency, and control
- Primary and secondary control functions offer total flexibility in process control, reducing rejects and increasing part consistency
- Unique Dual Pressure mode increases the clamp force for a better melt during the weld cycle, or a tighter assembly during the hold cycle
- For parts requiring more than one assembly operation and more than one set of process parameters, Sequencing mode automatically changes setups after a user-defined number of process cycles
- Data sampling mode allows user-selectable sample sizes and intervals for downloading or internal storage of up to 1,000 characteristics
- Nonvolatile setup memory stores 8 setups to eliminate repetitive setup procedures and conveniently accommodate multiple projects
- Built-in RS-232 serial communications port for real-time interfacing to external devices such as a printer for permanent documentation, an optional user interface for full-screen display, or another computer for additional data storage or statistical process control (SPC) analysis
- Self-diagnostic error messages simplify troubleshooting and correcting setup and programming mistakes
- Auxiliary outputs provide automation-ready, in dwell, bad part and suspect part signals through the auxiliary connector, leaving the RS-232 serial port free for more sophisticated data communications
- Programmable bad part limits indicate all parameters outside the tolerance established for an acceptable part
- Programmable suspect part limits indicate parameters in a range that would cause a part to be suspect
- User-activated limit indicators label bad and suspect parts on printouts and an optional user interface showing out-of-tolerance parameters
- Bad part audible and/or electronic alarm alerts the operator to any reject parts without having to look at the user interface
- Separate suspect part audible and/or electronic alarm tells the operator to set the part aside for inspection
- Power display for checking and monitoring acoustic stack characteristics
- Optional remote setup switching allows setup selection in response to a keyed fixture or a PLC signal, minimizing changeover time and increasing productivity
- Programmable pressure and force by interface with the electronic pressure regulator, pressure transducer, and load cell press options offer increased control, repeatability, and consistency

The DPC III

All of the advanced features and benefits of Dynamic Process Control technology combined with the familiar, user-friendly interface of our Ultra-Com.
INTEGRATED PROCESS CONTROL SYSTEM

**OPTIONAL USER INTERFACE**

- **Full-size monitor** displays process parameters for multiple parts and provides tutorial, menu-driven setup functions
- **Full-size, 82-key keyboard** provides direct parameter entry for faster setup and allows entry of notations and process memos for permanent storage with setup information

**DISTANCE MODULE and LINEAR ENCODER**

- **Weld by distance mode** controls the melt collapse distance to insure that the same volume of material melts on each part so that the finished joint strength is consistent
- **Weld by absolute distance mode** controls the finished part height to yield uniform assemblies
- All distance parameters (downstroke, trigger delay, weld, hold, absolute weld, total weld, and total stroke distances) are monitored, with upper and lower limits for bad and suspect parts to verify quality and consistency
- **High quality linear optical encoder** with a one-micron resolution for excellent precision and repeatability
- **Graphing capability** for plotting a Distance vs. Time curve on every weld, either on an optional user interface or a serial or parallel printer

**POWER and ENERGY MODULE**

- **Weld by peak power mode** terminates ultrasound when the available joint material is completely melted, compensating for variations in the molded part
- **Weld by energy mode** delivers a specific amount of energy to the work to enhance process control
- Monitors all power and energy parameters with upper and lower limits for bad and suspect parts
- **Graphing capability** for plotting a Power vs. Time curve on every weld, either on an optional user interface or a serial printer

**FRONT PANEL INTERFACE**

- **One line by thirty-two character LCD display** shows cycle data and setup information using terms that are easy to understand
- **Six-button keypad** makes programming and parameter entry, selection, or modification fast and easy
- **System power output** indicates normal or possible overload operating condition during the weld cycle
- **System status panel** displays any of six self-diagnostic messages, including Fault, Input Test, Overload, On Line, Overtemperature or Off Line

**Dimensions**

Monitor: 13” H x 13” W x 13” D  
330mm H x 330mm W x 330mm D

Keyboard: 1.5” H x 13.63” W x 6.5” D  
38mm H x 344mm W x 165mm D

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**GENERATOR**

- **Patented Pulse-Width Modulation** design delivers power more efficiently with substantially less stress on the electrical components for superior performance, reliability, and extended service life.

- **Unique Linear Ramp Soft Start** accelerates the transducer and tooling up to operating amplitude eliminating mechanical and electrical starting stress.

- **AUTO-TRAC tuning** using phase lock loop technology automatically locks the generator to the resonant frequency of the transducer and tooling even under varying conditions of temperature and loading.

- **Dukane exclusive FLOW-THROUGH COOLING** provides on-demand thermostatically controlled cooling system that separates electronic components from the cooling air flow chamber.

- **Electronic overload protection** prevents component failure, reducing costly downtime.

- **Advanced transformer and inductor designs** increase efficiency and reliability of electronic components.

- **Line regulation** compensates for line fluctuations assuring consistent amplitude.

- **Load regulation** assures constant amplitude at various loads improving assembly consistency.

- **Adjustable amplitude** 100% to 40%, allows for fine tuning of the weld process.

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**MODELS**

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<th>100 W</th>
<th>150 W</th>
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<th>1000 W</th>
<th>1200 W</th>
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Note: All specifications are subject to change without notice. Please consult Dukane Ultrasonics for any updated information.

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