DUKANE

Intelligent Assembly Solutions

DPC III

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

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DUKANE

DPC III DYNAMIC PROCESS CONTROLLER™

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.

DYNAMIC PROCESS CONTROL

- **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

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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

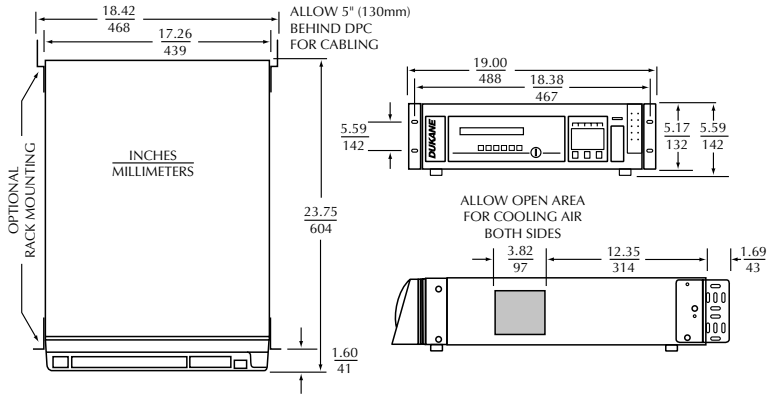
FRONT PANEL INTERFACE

- **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



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 encode**r 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

DUKANE

DPC III DYNAMIC PROCESS CONTROLLER™

Linear Ramp Soft-Start

AUTO-TRAC tuning

Line Regulation

Load Regulation

Overload Protection

Complete Dukane compatibility

... and much more!

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

MODELS

POWER / FREQUENCY	100 W	150 W	350 W	500 W	700 W	1000 W	1200 W	1500 W	1700 W	2200 W
20 kHz				2050			2120		2170	2200
30 kHz								3150		
40 kHz			4035		4070	4100				
50 kHz		5015								
70 kHz	7010									

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

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