

## **ULTRA**

### **ULTRA-COM ULTRASONIC PROCESS CONTROL AND MONITORING SYSTEM**

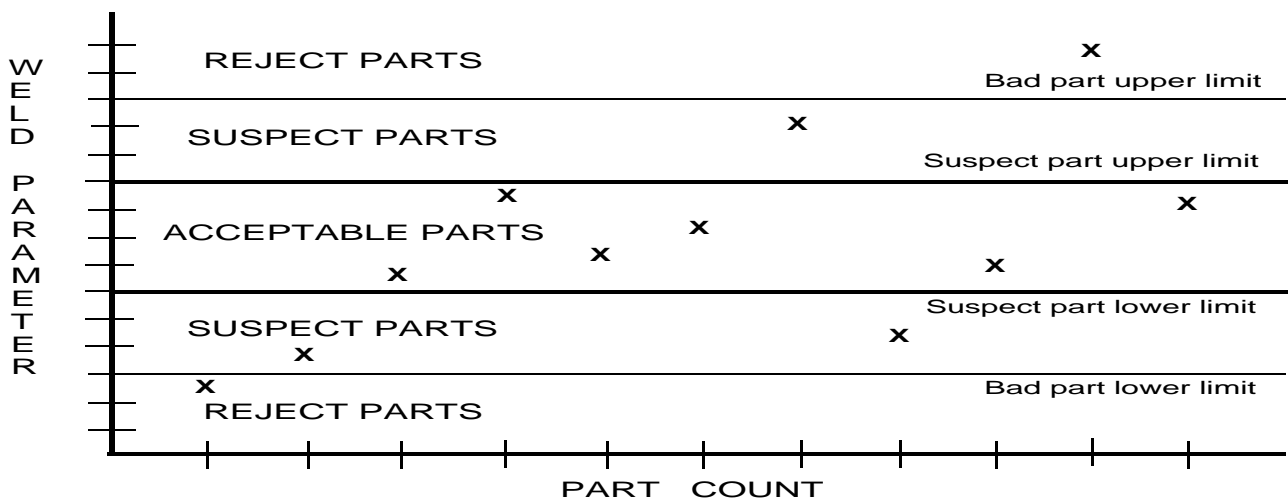


- Field upgradeable for quick, simple installation of new software incorporating any future improvements or new features
- Field retrofits to many existing ultrasonic welders can add the benefits of computer control and monitoring to applications already in production
- Modular design concept gives maximum product flexibility and cost effectiveness by allowing the selection of just the control and user interface features necessary for the application
- Future adaptability allows quick, simple field installation of control and/or user interface features not originally included



### Ultra-Com Process Controller/Monitor

- High performance 16-bit 11 MHz microprocessor addresses more data in less time for superior performance
- Real-time, multi-tasking operating system simultaneously controls and monitors multiple process parameters
- One millisecond sample rate samples cycle parameters one thousand times per second for excellent precision and repeatability
- Dual pressure weld mode increases the pressure during the weld cycle for a better melt and stronger joint
- Built-in RS232 serial port provides communications to a printer for permanent documentation, a terminal for full-screen display, or another computer for process analysis or data storage
- 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 the display showing which parameters were out of the tolerance windows
- Bad part audible alarm alerts the operator to any reject parts without looking at a display
- Separate suspect part alarm tells the operator to set the part aside for inspection
- Auxiliary outputs provide automation ready, in dwell, bad part, and suspect part signals through the auxiliary connector, leaving the RS232 serial port free for more sophisticated data communications
- On board memory for 1000 process parameters allows storage of critical process data
- Data sampling mode allows the user to select sample sizes and sample intervals for internal memory storage and/or downloading
- User friendly step-by-step setup makes programming and setup fast and easy to learn
- Self-diagnostic error messages simplify troubleshooting and correcting setup and programming mistakes
- Nonvolatile setup memory stores eight setups to eliminate repetitive setup procedures
- Primary *and* secondary control functions offer total flexibility in process control while reducing rejects and increasing part consistency

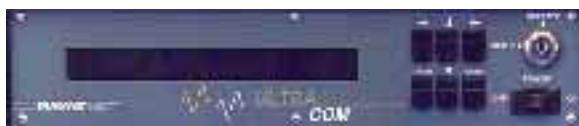


**FIGURE 1**  
Dual Upper and Lower Limits for Suspect and Reject Parts



### Advanced Programmer Interface

- Full-size computer CRT monitor continuously displays the process parameters for multiple parts and provides tutorial, menu-driven setup functions
- Full-size, 82-key computer keyboard provides direct parameter entry for faster setup and allows entry of notations and process memos into the nonvolatile Ultra-Com memory for permanent storage with the setup information, giving the user greater detail and flexibility



### Front Panel Interface

- Thirty-two character vacuum fluorescent display shows cycle data and setup information using terms that are easy to understand
- Six-button keypad makes programming, data entry or selection, and parameter modification fast and easy
- Locking key switch changes system between operate and setup modes and locks out unauthorized program modification

### Distance Module and Encoder

- High quality linear optical encoder with one micron resolution for excellent precision and repeatability
- Weld by distance mode controls melt collapse distance to insure that the same volume of material melts on each part so 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

### 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 can drive an optional chart recorder for graphing the power versus time curve on every weld, or print the graph of the last weld on a printer through the RS232 serial port

### Dimensions

#### Advanced Programmer Interface

- Monitor: 12" H x 12-9/16" W x 12-3/8" D  
305mm L x 319mm W x 314mm D
- Keyboard: 7/8" H x 11-1/2" W x 5-5/8" D  
22mm L x 292mm W x 143mm D

#### Ultra-Com Controller/Monitor

- Height: 3-1/2" (89mm)      Depth: 13" (330mm)  
Width: 14-1/2" (368mm)      Weight: 16 lbs (7.3Kg)

Allow at least 5.5" (140 mm) of clearance at rear of Ultra-Com for cable clearance.

Dimensions shown are for reference only.



### Series Network Controller and Interface

- Provides maximum utility for multi-head and automation systems by allowing up to eight Ultra-Com systems to communicate with a central multiplexer for setup or monitoring through a single Advanced Programmer Interface
- Choice of display modes shows process data from a single head or simultaneous data display from all heads

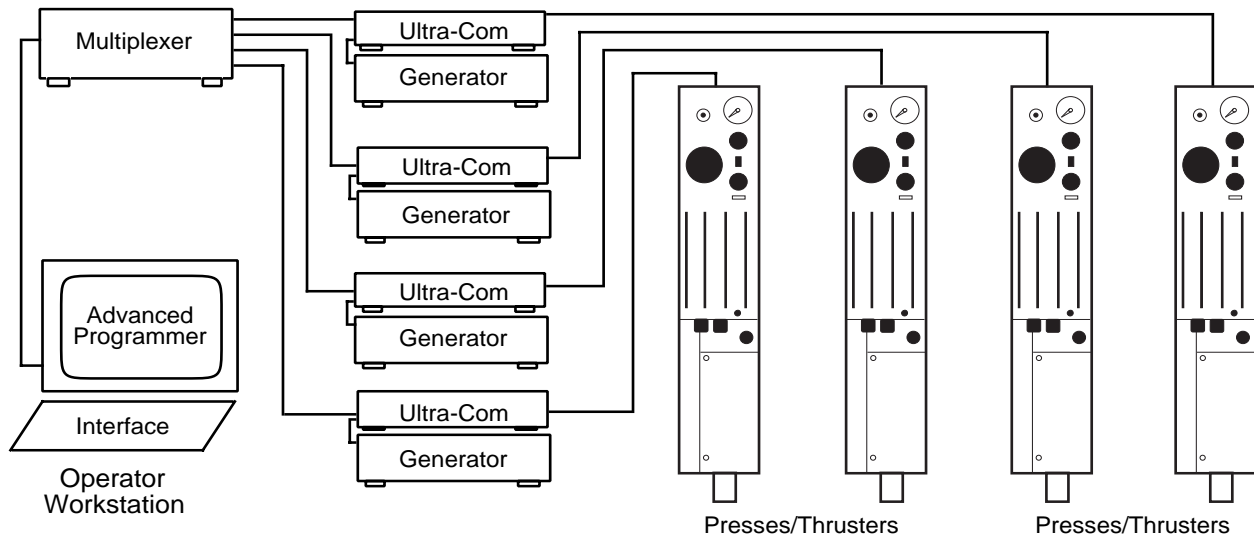
### Network Display Modes (example only)

#### Multi-Head Display Mode

Head Number	Part Count	Weld Time	Weld Distance	Weld Energy	Peak Power	Hold Time	Hold Distance
1	1	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
2	1	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
3	1	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
4	1	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
1	2	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
2	2	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
3	2	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
4	2	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX

#### Single Head Display Mode

Head Number	Part Count	Weld Time	Weld Distance	Weld Energy	Peak Power	Hold Time	Hold Distance
1	1	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
1	2	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
1	3	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
1	4	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
1	5	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
1	6	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
1	7	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
1	8	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX



Note: A minimum of one Advanced Programmer Interface must be used when a multiplexer is incorporated. Also an RS232 cable will be required for each Ultra-Com that is tied into the multiplexer.