Remote display

Benchtop (left) and Automation (right) models.

UB Series
Linear DC Welding Controls

The UB Series is our most advanced resistance welding power supply family to date, retaining the proven pulse-control architecture of earlier generations while introducing the **all-new Flex Pulse Mode** for virtually unrestricted pulse shaping.

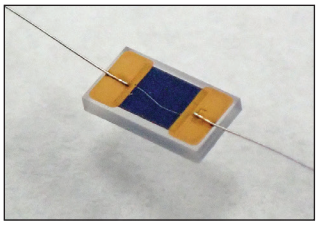
Closed-loop feedback control of current, voltage, or power enables these power supplies to deliver superior results for the kinds of precision welding applications commonly found in the medical device, aerospace, automotive, battery, and other industries.

Enhanced I/O and modern communication protocols like RESTAPI and MQTT make these welders ideal for automation as well as benchtop manufacturing.

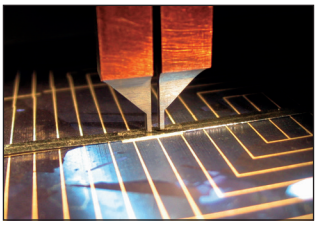
KEY FEATURES

- **Advanced Control:** Closed-loop control of current, voltage, or power, provides instantaneous changes to the weld pulse to compensate for variations in part resistance.
- **Process Compatibility:** Supports various weld modes including Single Pulse, Dual-Pulse, all new Flex Pulse, Upslope/Downslope, and Advanced Combo Mode.
- **Enhanced Stability:** Ultrafast rise time, enabling extremely short waveforms resulting in reduced part deformation.
- **High-Speed Monitoring:** Full waveform display of measured and calculated values, sampled at 40 kHz.
- **Modern HMI:** Built-in 10” high-resolution touchscreen display shows full waveforms of current, voltage, power, and resistance. Remote display optional.
- **Quality Assurance:** Aggregate and envelope monitoring of waveforms to support production assurance and early fault detection.
- **Connectivity and Automation:** Modern communication protocols for ease of integration into automated production lines.
- **Safety Controls:** Optional integrated weld head safety controller and secure login.
- **Network Security:** Data encryption to meet modern manufacturing standards.

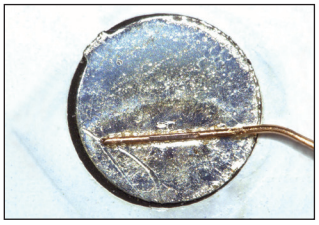
TYPICAL APPLICATIONS



Optical detector

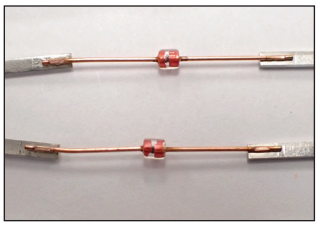


Solar panel



Reverse image recognition

Air bag detonator module (squib wire)



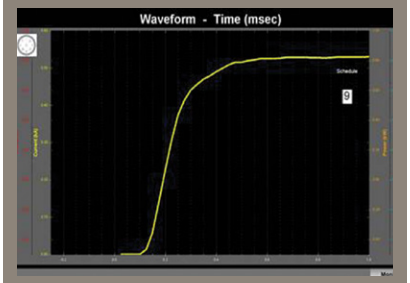
Lamp sensor

Electric heater

PRECISION WELDING CONTROL

The new UB Series extends our legacy weld-control architecture with enhanced performance and precision. It preserves closed-loop feedback monitored at 40 kHz for highly precise pulses and introduces several new features that improve performance and expand your options for process optimization.

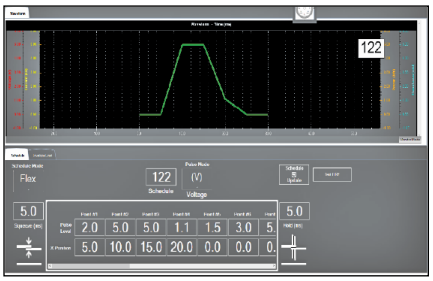
FAST RISETIME



With rise times < 200 microseconds, the UB Series reduces heat input and minimizes deformation on small parts.

WAVEFORM PROGRAMMING OPTIONS

CONVENTIONAL DUAL PULSE



FLEX PULSE (NEW!)

The UB Series provides two waveform-programming modes: Conventional and Flex. Conventional mode uses the established upslope, weld pulse, downslope, and cool-time parameters. Flex mode enables fully customizable waveform shaping with up to 20 points for enhanced process control.

BUILT-IN MONITORING

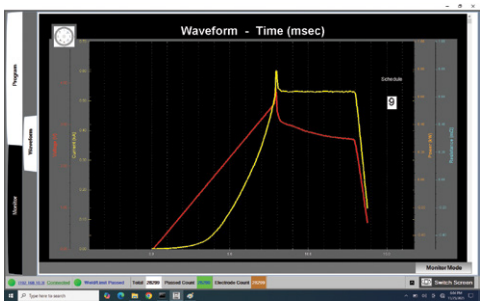
Current, voltage, power, and resistance are continuously measured and displayed in the GUI. With a 40 kHz sampling rate, the system delivers the exceptional stability and rapid response needed to meet precision welding requirements. **Envelope limits** can be applied to waveforms to trigger alerts whenever a parameter exceeds its defined threshold. Envelopes may be generated automatically through statistical analysis or created manually by the user. Only one parameter can be monitored at a time.

ADVANCED PROCESS OPTIONS

The UB Series offers unparalleled control of the process to meet complicated welding challenges.

FEEDBACK MODES

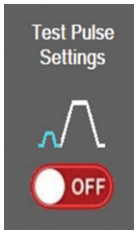
Select the mode best-suited for the welding geometry-round or flat – and to address and overcome production challenges including oxides, part variation, force issues.



Example of Combo Mode (current and voltage)

PROCESS CONTROL TOOLS

The UB Series carries forward many of the advanced pulse process capabilities of the previous generation. With compatible, connected weld heads, it can also execute "weld-to-displacement," terminating the weld current when the preset displacement value is achieved



Tools

- Test Pulse/ Pre-weld Function
- Active Part Conditioner
- Weld Stop
- Weld-to-Displacement **NEW!**

MODERN DESIGN

Completely reengineered inside and out, the UB Series now features flexible mounting options for automated systems and supports modern communication protocols.

INTEGRATED OR REMOTE DISPLAY

The integrated, high-resolution color touchscreen offers a familiar interface for pulse programming, making it ideal for benchtop applications requiring direct operator interaction.

Remote display capability lets the unit connect to a range of tablets and monitors, so the power supply can be mounted deep within a machine while the display remains accessible.

INDUSTRIAL COMMUNICATION AND AUTOMATION

- Industrial communication protocols – RESTAPI, MQTT (IoT) – to control and access data
- Legacy communication – RS-232 and Direct I/O
- I/O diagnostic screen for testing and automation troubleshooting
- High speed data handling for full waveform transmission of data
- Remote services are possible for diagnostics, software update, and maintenance.

SAFETY CONTROLS AND SECURITY

Consumer safety and cybersecurity are key priorities for AMADA WELD TECH. The UB Series incorporates controls that help our customers reduce risk in these areas.

SAFETY CONTROLS

The new UB Series offers models with an integrated safety controller designed to comply with International Standard ISO 13849-1. Compliance also requires the use of an appropriately rated weld head. This standard applies to all manufacturing machinery and uses a performance-level system to assess safety and reliability in relation to risk. When integrated correctly, a performance level of PL d can be achieved.

NETWORK SECURITY

Strong network security is critical to eliminating potential ingress points for cyber threats. The UB Series incorporates certificate-based authentication and TLS encryption through OpenSSL to safeguard data in connected manufacturing systems.

Note: Additional safety and security considerations should be reviewed and proper actions taken. This includes: implementation of safety guarding, protection from weld spatter, protection from electromagnetic hazards, and manufacturing floor network security.

TECHNICAL SPECIFICATIONS

MODEL NUMBER		UB-1500B	UB-4000B
Nominal line voltages (single phase)		100 – 240 VAC, 50/60 Hz	100 – 240 VAC, 50/60 Hz
Setting ranges:	**Current** **Voltage** **Power**	5 A – 1500 A 1 amp/step 0.01 V – 9.9 V 10 mV/step 0.08 kW – 9.9 kW 1 Watt/step	200 A - 4000 A 10 amp/step 0.1 V - 9.9 V 10 mV/step 0.1 kW - 25.0 kW 1 Watt/step
Weld Times (Range/Resolution) (First / second pulse, up/downslope and cool periods)		**Range:** 0.1 ms to 99.9 ms	**Resolution:** 0.1 ms steps for 0.1 to 9.9 ms 1 ms steps for 10 to 99 ms
Squeeze/hold times		**Range:** 0 to 999 ms	**Resolution:** 1 ms steps
Output accuracy:	**Current** **Voltage** **Power**	±2% or ±2.5 A ±2% or ±0.05 V ±5% or ±25 W	±2% or ±10 A ±2% or ±0.05 V ±5% or ±50 W

ADVANCED WELDING CONTROL

	UB-1500B	UB-4000B
Pulse Programming Options	Conventional Dual Pulse Flex Mode programming with 20 points	
Weld pulse control **Conventional programmable** **Weld schedule memory** **Weld schedule chaining**	Dual pulse with independent control of current, voltage or power on each pulse Squeeze, upslope 1, weld 1, downslope 1, cool, upslope 2, weld 2, downslope 2, hold Save up to 127 different weld schedules, protected from unauthorized changes Allows automatic linking of weld schedule sequence	

WELD MONITOR FUNCTIONS AND DATA HANDLING

Data and limit types	Aggregate or Waveform
Measurement parameters **Graphic display** **Measurement selection**	Current, voltage, power, resistance on each pulse. Displacement input from weld head. Color Touchscreen programmed and actual weld current, voltage, power, or resistance and upper and lower limits Peak, average, or waveform
Alarms **Programmable weld energy limit** **Weld pre-check** **Active part conditioner**	Display alert, five user- programmable AC/DC relays; audio alarm Terminates weld energy when exceeding user defined current, voltage, or power limits Inhibits second weld pulse when first test pulse exceeds user programmed limits First pulse current limit in constant power

I/O AND DATA COMMUNICATIONS

Input	**Input isolation** **Control voltages** **Foot switch initiation** **Firing switch input**	All inputs and outputs are fully isolated +24 V, sourcing or sinking inputs 1-level foot switch, 2-level foot switch Mechanical or opto firing switch
Output	**Monitor** **Weld head air valve driver** **Alarm relays**	RESTAPI, MQTT, RS-232 (EtherNet/IP optional) 24 VDC, 0.5 A; timing controlled by UB Series Power Supply User-programmable opto isolated relays 24 VDC at 0.5 A Conditions: weld, end of weld, alarm, out of limits, ready, weld counter
Data Communications		RESTAPI, MQTT, RS-232 , I/O (Ethernet IP Optional)

WEIGHT & DIMENSIONS

Dimensions (W x D x H)	10.3 in x 19.7 in x 14.6 in (262 mm x 500 mm x 371 mm)
Weight	49 lb (22 kg)

CE

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