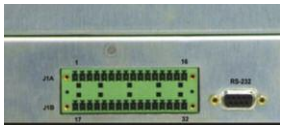
DC29/UB29/UB29A

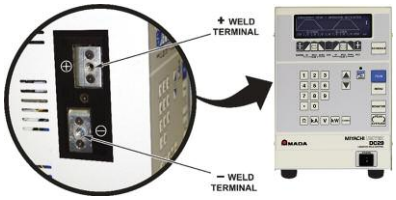
Linear DC Welding Controls

DC29: 200-4000 amp output, versatile energy range with excellent control

UB29: 5-500 amp output. UB29A: 15-1500 amp output designed with high resolution for precise control for micro welding



Straight forward rear panel I/O connections



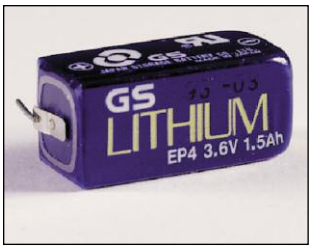
The DC29 Linear DC welding control is ideal for applications which require exceptional control, fast rise times, and high quality throughput. DC29 requires only single phase input power and can output up to 4000 amps. Ultra-fast rise times permit short overall weld times, resulting in less part deformation and stronger welds. This is extremely important when welding heat sensitive parts such as battery cells or sensitive electronic devices.

UB29 provides unsurpassed levels of control for resistance micro welding. Requiring only single phase power, UB29 (5-500 amps), and UB29A (15-1500 amps) are Linear DC controls with feedback modes designed to adapt to part and process variables. These power supplies should be used for smaller applications where closed-loop feedback control and fast response times are required. Safety critical applications such as those found in the medical and automotive markets will benefit from UB29's precision low energy control.

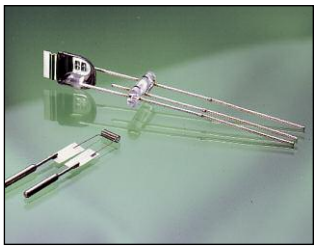
KEY FEATURES

- Advanced closed-loop analog control yields repeatable and stable programmable waveforms
- Extremely fast rise times permit shorter weld times, less part deformation, longer electrode life, and greater weld strength with more part ductility
- Built-in monitor with graphical screen shows visual trace of energy over time, aiding in weld parameter optimization
- Side mounted weld cables and compact unit size increase installation options
- Single phase power input and simple I/O allows for easy setup and versatility of use

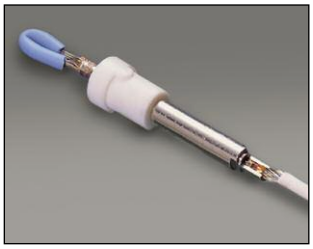
TYPICAL APPLICATIONS



Battery tab to lithium ion cell

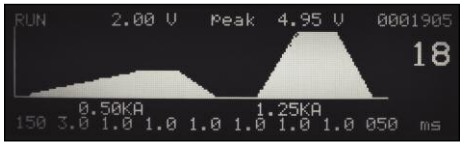


Halogen lamp filaments



Catheter guide wire assembly

Air bag detonator module (squib wire)



INTUITIVE, EASY-TO-USE PROGRAMMING

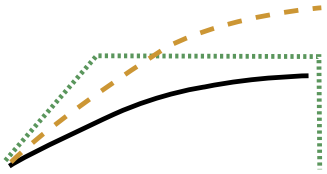
- Intuitive graphical user interface
- Dual pulse waveforms programmed in current, voltage, or power control modes
- Programming times to 100 µsec increments provides ultimate control
- Accurate, built-in monitor displays the graphical "trace" of weld current, voltage, power and resistance, along with numerical peak and average values
- Easy-to-set limits establish process window for acceptable quality
- User programmable relays can be used in conjunction with visual and audible signals for operators and automation interface

CURRENT, VOLTAGE AND POWER FEEDBACK MODES:

Constant Voltage:

- Compensates for parts misplacement and force problems
- Reduces weld splash
- Ideal for round (non-flat) parts

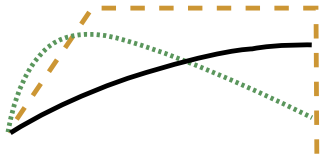
Monitor current



Constant Power:

- Varies current and voltage for consistent energy
- Breaks up surface oxides and plating
- Ideal for automation to extend electrode life

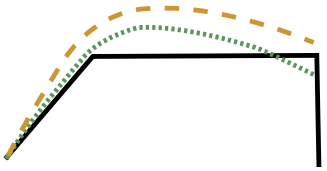
Monitor current or voltage



Constant Current:

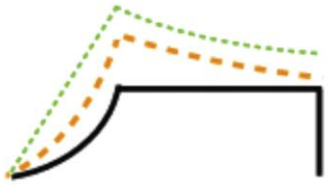
- Delivers same current regardless of resistance changes
- Compensates for part thickness changes
- Ideal for flat parts with consistent electrode to part fit-up

Monitor voltage

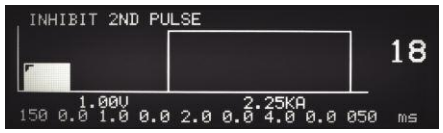


Combo:

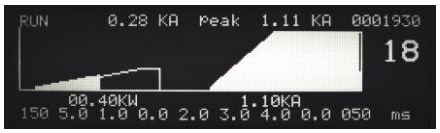
- Ramp up in voltage mode and then switch to constant current
- Prevents sparks during energy ramp up
- Ideal for non-flat parts, inconsistent surfaces



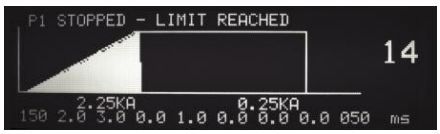
EFFECTIVE WELD MONITORING AND PROCESS TOOLS



Run Screen – Shows that 2nd Pulse was inhibited from firing.

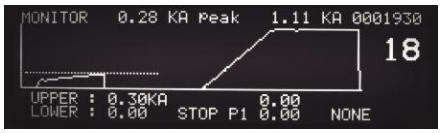


Run Screen – Constant power first pulse breaks through oxides.



Run Screen – Shows termination of weld current during weld pulse.

Monitor Screen – Shows 1st Pulse weld current exceeded limit.



Monitor Screen – First pulse time automatically compensates for varying levels of oxides.

Monitor Screen – Shows weld current exceeding limit.

PRE-WELD FUNCTION

Sends an initial short, low energy pulse through the assembly, tests key electrical parameters against pre-set limits, and inhibits operation if limits are exceeded.

Advantages

- Prevents unacceptable welds
- Prevents electrode damage
- Alerts operator to weld fault
- Relay outputs can signal automation

ACTIVE PART CONDITIONER (APC)

First pulse adapts weld time to displace oxides then terminates allowing a second pulse with upslope to complete the weld thus avoiding weld splash.

Advantages

- Brings each part to the same resistance prior to application of welding current
- Provides for consistent welding of difficult-to-weld oxidized parts
- Prevents weld splash
- Increases process yields

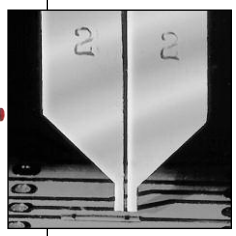
WELD STOP

Terminates the weld energy during the welding process if pre-set weld current or voltage limits are exceeded.

Advantages

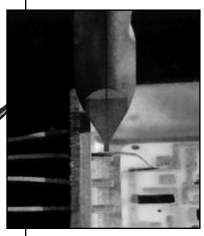
- Prevents blow-outs and parts damage
- Prevents electrode damage
- Alerts operator to weld fault
- Relay outputs can signal automation

FULL RANGE OF WELD HEADS FOR THE COMPLETE WELDING SYSTEM



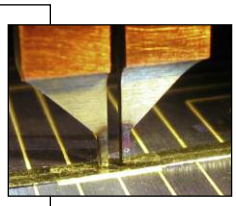
86A/EZ Precision Parallel Gap Weld Head

The Model 86 weld head with either foot or patented EZ-Air® actuation provides precision control for parallel gap welding applications from<0.001 inch (25 microns) to 0.005 inch (0.127mm) in diameter or thickness. The force range of the 86A/EZ is 0.5 to 20 lbs. (2.2-89 Newtons). EZ-Air technology prevents overforce and guarantees force repeatability. The Model 86 is normally matched with the UB29 or UB29A power supply.



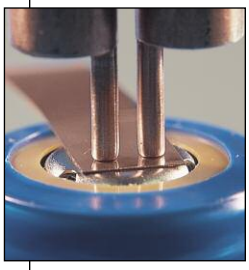
Model 50 Light Force Weld Head

The 50 Series weld heads with either foot or air actuation provide accurate levels of precision required for welding fine ribbons and wires to substrates. The force range of the 50F is 40-1000 gram-force (0.39 - 9.8 Newtons), continuously adjustable with no overforce. Holder options for either Unitip or Unibond electrodes are available. Model 50 is normally matched with the UB29 or UB29A power supply.



70 Series Weld Head

The servomotor driven 70 Series weld head with overforce protection and soft-touch part clamping provides superior force control from 0.5-15 lbs. with excellent follow-up. The 70 Series, available in both opposed and parallel gap can store 32 motion control schedules for position and speed. The heads are ideal for automation and delicate or critical parts welding and work well with either the UB29 or UB29A.



88A/EZ Precision Weld Head

The fast rise time and precision control of the DC29 make it ideal for battery pack welding. The 88 weld head, with either foot of patented EZ-Air actuation provides fine levels of precision control required for microjoining applications from <0.001 inch (25 microns) to 0.04 inch (1mm) in diameter or thickness. EZ-Air prevents overforce and guarantees force repeatability. The EZ-Clean feature permits easy electrode set-up and maintenance.

TECHNICAL SPECIFICATIONS

MODEL NUMBER		DC29	UB29	UB29A
Nominal line voltages (single phase)		88-264 VAC 47-63 Hz	88-264 VAC 47-63 Hz	88-264 VAC 47-63 Hz
Repetition rate		2000 A @ 1 weld/sec for 10ms	500 A @ 3 weld/sec for 10 ms	1500 A @ 1 weld/sec for 10 ms
Setting ranges:	Current Voltage Power	200 A - 4000 A 10 amp/step 0.1 V - 9.9 V 10 mV/step 0.1 kW - 25.0 kW 10 Watt/step	5A – 500 A 1 amp/step 0.01 V – 9.9 V 10 mV/step 0.05 kW – 4.99 kW 10 Watt/step	15A – 1500 A 1 amp/step 0.01 V – 9.9 V 10 mV/step 0.1 kW – 9.9 kW 10 Watt/step
Peak:	Current Voltage Power	4000 A 10 V 25.0 kW	500 A 10 V 4.9 kW	1500 A 10 V 9.9 kW
Output regulation versus line voltage variance Output regulation versus load resistance variance		2% 2%		
Weld Period Ranges First / second pulse, up/downslope and cool periods Squeeze/hold periods		Ranges (ms) 0 - 99.9 0 - 999	Resolution (steps) .1(0 - 9.9), 1(10 - 99) 1	
Output accuracy	Current Voltage Power	±2% or 10 A ±2% or 0.05 V ±5% or 50 W	±2% or 2.5 A ±2% or 0.05 V ±5% or 12 W	±2% or 7 A ±2% or 0.05 V ±5% or 40 W

FEATURES				
WELD HEAT PROFILE CONTROL		DC29	UB29	UB29A
Weld pulse control Programmable weld pulse segments 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 99 different weld schedules, protected from unauthorized changes Allows automatic linking of weld schedule sequence		
BUILT-IN WELD MONITOR FUNCTIONS				
Measurement parameters Graphic display Measurement selection		Current, voltage, power, resistance on each pulse. Back-lit LCD displays programmed and actual weld current, voltage, power, or resistance and upper and lower limits Peak or average		
Current measurement range/accuracy Voltage measurement range/accuracy Power measurement range/accuracy		0 – 4.0 kA, ±2% of setting ±20 A 0 – 9.99 V, ±2% of setting ±0.05 V 0 – 25.0 kW, ±5% of setting ±50 W	0 – 500 A, ±2% of setting ±5 A 0 – 9.99 V, ±2% of setting ±0.05 V 0 – 4.99 kW, ±5% of setting ±10 W	0 – 1500 A, ±2% of setting ±10 A 0 – 9.99 V, ±2% of setting ±0.05 V 0 – 9.99 kW, ±5% of setting ±40 W
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 Remote control RS232 Electrode voltage	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 Remote weld schedule select, process inhibit, emergency stop, alarm reset Change weld schedules and individual parameters Weld voltage signal for voltage feedback operation (0 to 10 V peak)		
Output	Monitor Weld head air valve driver Alarm relays	RS232 weld data out 24 VAC, 0.5 A; timing controlled by DC29 or UB29 Five user-programmable opto isolated relays; programmable normally open or normally closed contacts: 30 VDC at 0.5 A Conditions: weld, end of weld, alarm, out of limits, ready, weld counter		

WEIGHT & DIMENSIONS

Dimensions (L x W x H)	15 in x 8.4 in x 12 in (381 mm x 213 mm x 305 mm)
Weight	49 lb (22 kg)

CE CCC*

**Note: CCC for UB29A pending approval.*

01/17