

DC25 / UB25

Linear DC Welding Controls

Precision Control For High Reliability Micro Welding

The DC25 Linear DC welding control is ideal for **micro welding** applications which require exceptional control, fast rise times, and highest quality throughput. DC25 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 which is extremely important when welding heat sensitive parts such as miniature battery cells or sensitive electronic devices.

The UB25 provides unsurpassed levels of control for micro-miniature resistance welding. Requiring only single phase power, UB25 is a 1000 amp linear DC control with three feedback modes designed to adapt to part and process variables. This power supply 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 UB25's precision low energy control.



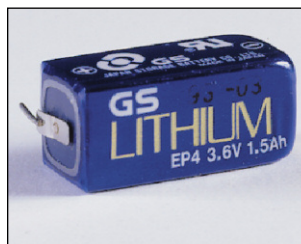
UB25, 50-1000A output. Superior low energy control for micro welding.

DC25, 4000A maximum output. Versatile and accurate performance from a single phase power supply.

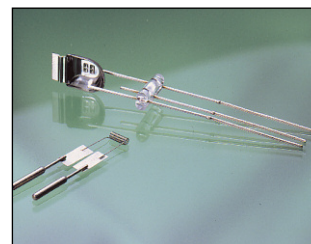
KEY FEATURES

- Ultra-fast closed-loop hybrid control provides extremely stable output waveforms in constant current, voltage and power modes
- Exceptionally fast rise time permits shorter weld times, less part deformation, longer electrode life, and greater weld strength with more part ductility
- Single phase operation permits easy installation and versatility of use
- Built-in monitor supports process logging and data collection for SPC purposes
- Graphical monitor screen provides visual trace of energy over time for easy weld parameter optimization

TYPICAL APPLICATIONS



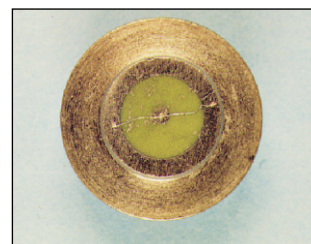
Battery tab to lithium ion cell



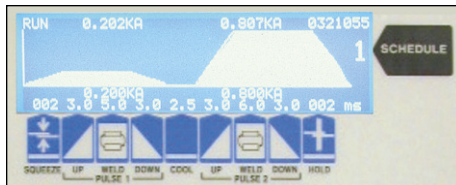
Halogen lamp filaments



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 μ sec 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: (green dotted line)

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

Monitor current

Constant Power: - - - - - (orange dashed line)

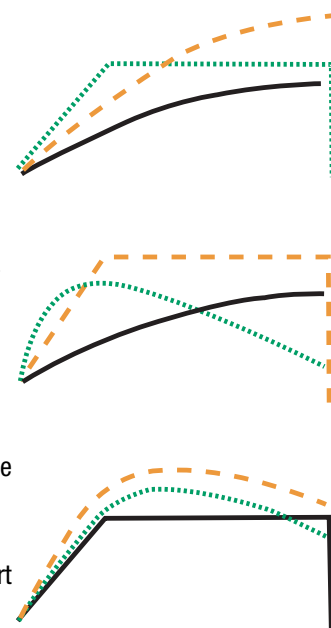
- Varies current and voltage for consistent energy
- Breaks up surface oxides and plating
- Ideal for automation to extend electrode life

Monitor current or voltage

Constant Current: ————— (black solid line)

- 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



EFFECTIVE WELD MONITORING AND PROCESS TOOLS



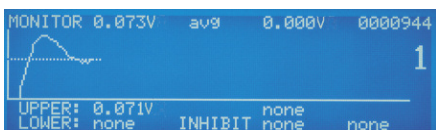
Run Screen – Shows that 2nd Pulse was inhibited from firing.



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

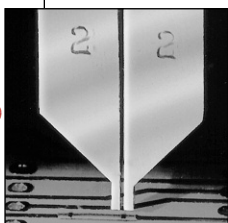
FULL RANGE OF WELD HEADS FOR THE COMPLETE WELDING SYSTEM



86A/EZ PRECISION PARALLEL GAP WELD HEAD

The Model 86 weld head with either foot

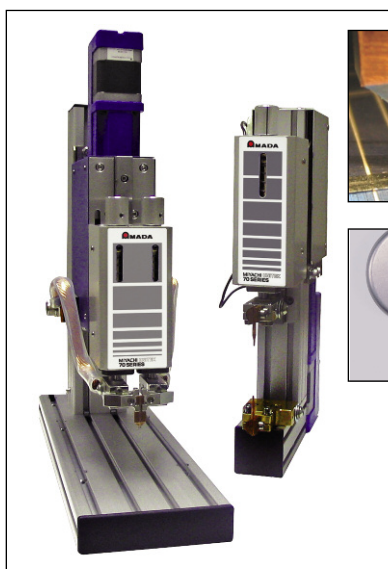
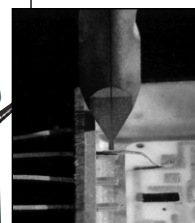
or patented EZ-Air® actuation provides precision control for parallel gap welding applications from <0.001 in (25 microns) to 0.005 in (0.12 mm) in diameter or thickness. The force range of the 86A/EZ is 0.5 to 20 lbs. (2.2-89 Newtons). EZ-Air technology prevents overforce and guarantees force repeatability. The Model 86 is normally matched with the UB25 power supply.



MODEL 50 LIGHT FORCE WELD HEAD

The 50 Series weld heads with either foot or air actuation provide accurate levels of

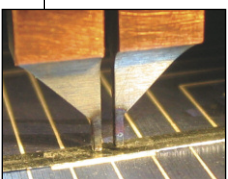
precision required for welding fine ribbons and wires to substrates. The force range of the 50F is 40-1000 gram-force (0.39 - 9.8 Newtons), continuously adjustable with no overforce. Holder options for either Unitip or Unibond electrodes are available. Model 50 is normally matched with the UB25 power supply.



70 SERIES WELD HEAD

The Servomotor driven 70 Series weld head

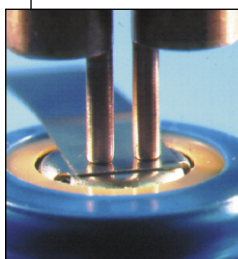
with overforce protection and soft-touch part clamping provides superior force control from 0.5-15 lbs. with excellent follow-up. The 70 Series, available in both opposed and parallel gap can store 32 motion control schedules for position and speed. The heads are ideal for automation and delicate or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



88A/EZ PRECISION WELD HEAD

The fast rise time and precision control of the

DC25 make it ideal for battery pack welding. The model 88 weld head, with either foot of patented EZ-Air actuation provide fine levels of precision control required for microjoining applications from <0.001 in (25 microns) to 0.04 in (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	DC25 115 VAC 50/60 Hz +15% / -10%	DC25/230 230 VAC 50/60 Hz +15% / -10%	UB25 115 VAC 50/60 Hz +15% / -10%	UB25/230 230 VAC 50/60 Hz +15% / -10%
Repetition rate	20 kW @ 1 weld/sec for 10 msec (per weld)		5 kW @ 1 weld/sec for 10 msec (per weld)	
Setting ranges Current Voltage Power	100 A - 4000 A 0.1 V - 9.9 V 0.1 kW - 9.9 kW		5 A - 1000 A 0.01 V - 4.9 V 0.01 kW - 4.9 kW	
Peak Current Voltage Power	4000 amps 15 V 40 kW		1000 amps 9 V 10 kW	
Output regulation versus line voltage variance	2%		2%	
Output regulation versus load resistance variance	2%		2%	
Output repeatability current, voltage, power \pm of setting	2%		2%	
Weld period ranges First / second pulse (msec.) – ranges scale	Ranges 0.01 - 0.99 / 1.0 - 9.9	Resolution (steps) 0.01 / 0.1	Ranges 0.01-0.99 / 1.0-9.9 / 10-99	Resolution (steps) 0.01 / 0.1 / 1
Upslope / downslope periods (msec.) – ranges scale	0.01 - 0.99 / 1.0 - 9.9	0.01 / 0.1	0.01-0.99 / 1.0-9.9 / 10-99	0.01 / 0.1 / 1
Output accuracy	+/-2% of setting plus 2 A, .05 V or 20 W			

FEATURES

WELD HEAT PROFILE CONTROL		DC25	DC25/230	UB25	UB25/230
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, and power on each pulse. Back-lit LCD displays programmed and actual weld current, voltage, or power, and upper and lower limits. Peak or average.			
Current measurement range/accuracy Voltage measurement range/accuracy Power measurement range/accuracy		0.1 – 4.0 kA, ±2% of setting ±2 A 0.1 – 9.9 V, ±2% of setting ±0.05 V 0.1 – 9.9 kW, ±5% of setting ±20 W		0.005 – 1.00 kA, ±2% of setting ±2 A 0.01 – 4.9 V, ±2% of setting ±0.05 V 0.01 – 4.9 kW, ±5% of setting ±20 W	
Alarms Programmable weld energy limit Weld pre-check Active part conditioner		Display alert, four user programmable AC/DC relays; audio alarm. Terminates weld energy when exceeding user defined current, voltage, or power limits. Inhibit 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 RS485 Electrode voltage	All inputs and outputs are fully isolated. Selectable: +5 V, +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. Change weld schedules and individual parameters. Change weld schedules and individual weld parameters; "Daisy Chain" unit to unit, unit(s) to host computer. Weld voltage signal for voltage feedback operation (0 to 10 V peak).			
Output	Monitor Weld head air valve driver Alarm relays	RS232/485 Weld data out 24 VAC, 1A; timing controlled by DC25 or UB25. Four user-programmable mechanical relays; programmable normally open or normally closed contacts: 250 VAC at 5 A; 30 VDC at 5 A. Conditions: weld, end of weld, alarm, out of limits.			

WEIGHT & DIMENSIONS

Dimensions (L x W x H)	20.5 in x 9.25 in x 12.75 in (521 mm x 235 mm x 324 mm)
Weight	52 lbs (24 kg)



1820 S. Myrtle Ave. • Monrovia, CA 91016 US
T: (626) 303-5676 • F: (626) 358-8048
info@amadamiyachi.com • www.amadamiyachi.com
ISO 9001 Certified Company • 24/7 Repair Service: 1-866-751-7378

MIYACHI | MIYACHI | MIYACHI
UNITEK | PECO | EAPRO

AMERICAS
Amada Miyachi
America Midwest
Wixom, MI 48393
T: (248) 313-3078
midwestsales@amadamiyachi.com

Amada Miyachi do
Brasil Ltda.
Sao Paulo, Brasil
T: +55-11-4193-3607
antonio.ruiz@amadamiyachi.com

EUROPE
Amada Miyachi
Europe GmbH
Puchheim, Germany
T: +49 (0) 89 83 94 030
info@amadamiyachi.eu

ASIA
Amada Miyachi Co., Ltd.
Noda, 278-0016 Japan
T: +81-4-7125-6177
sales@miyachi.com

Amada Miyachi
Shanghai, Co., Ltd.
Shanghai, China
T: +86-21-6448-6000
zqzhang@msc.miyachi.com

Amada Miyachi
Korea Co., Ltd.
Gyeonggi-do, Korea
T: +82-31-8015-6810
dykim@mkc.miyachi.com

Amada Miyachi
Taiwan Co., Ltd.
Taipei, Taiwan R.O.C.
T: 886-2-2397-4778
keigaku@miyachi.com

Amada Miyachi
(Thailand) Co., Ltd.
Samutprakarn, Thailand
T: +66-2751-9337-8
info@mtl.miyachi.com

Amada Miyachi
Vietnam Co., Ltd.
Ho Chi Minh City, Vietnam
T: +84-8-3771-7972

Amada Miyachi
India Pvt., Ltd.
Bangalore, Karnataka
T: 080-4092-1749 & 3549
info@miyachiindia.com

Amada Miyachi
America Mexico
El Paso, TX 79925
T: (915) 881-8765
mxsales@amadamiyachi.com

Specifications subject to change without notice. Copyright© 2015 Amada Miyachi America, Inc. The material contained herein cannot be reproduced or used in any other way without the express written permission of Amada Miyachi America, Inc. All rights reserved.

