



UB29: 5-500 Amp output designed with high resolution for precise control for micro welding

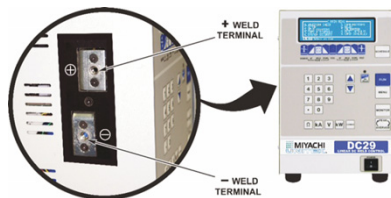
DC29: 200-4000 Amp output, versatile energy range with excellent control

DC29 / UB29 Linear DC Welding Controls

- Advanced closed-loop analog control yields repeatable and stable programmable waveforms
- Extremely fast rise times permits 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



Straight forward rear panel I/O connections

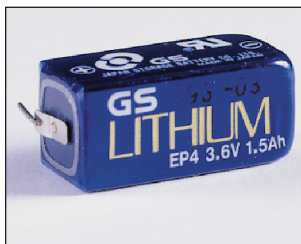


PRECISION CONTROL FOR HIGH RELIABILITY WELDING OF MINIATURE AND MICRO-MINIATURE PARTS

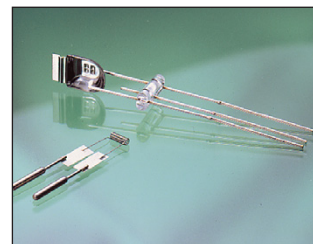
The DC29 Linear DC welding control is ideal for applications which require exceptional control, fast rise times, and high quality throughput. The DC29 requires only single phase input power and can output up to 4000 Amps. Ultra-fast rise times permit short overall weld times, resulting in less part deformation 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 micro-miniature resistance welding. Requiring only single phase power, UB29 is a 500 Amp Linear DC control with 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 UB29's precision low energy control.

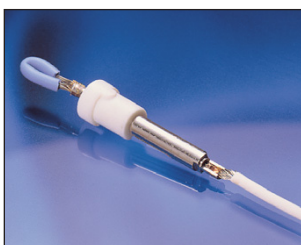
TYPICAL APPLICATIONS



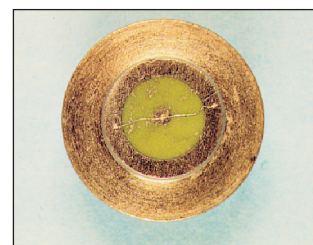
Battery tab to lithium ion cell



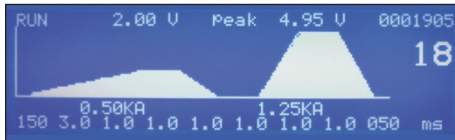
Halogen lamp filaments



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 usec 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

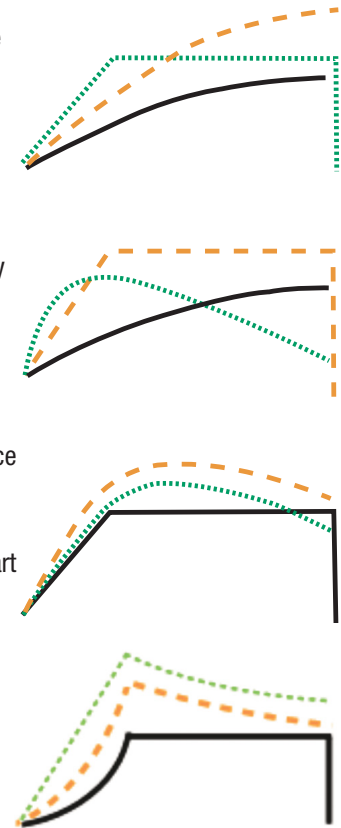
Constant Current: _____

- 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



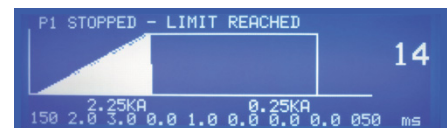
EFFECTIVE WELD MONITORING AND PROCESS TOOLS



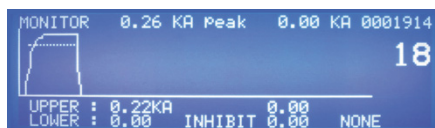
Run Screen – Shows that 2nd Pulse was inhibited from firing.



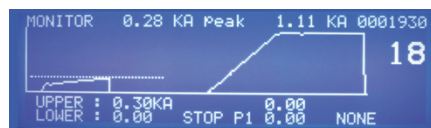
Run Screen – Constant power first pulse breaks through oxides.



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

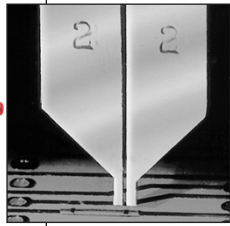
WELD STOP

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

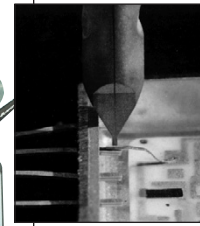
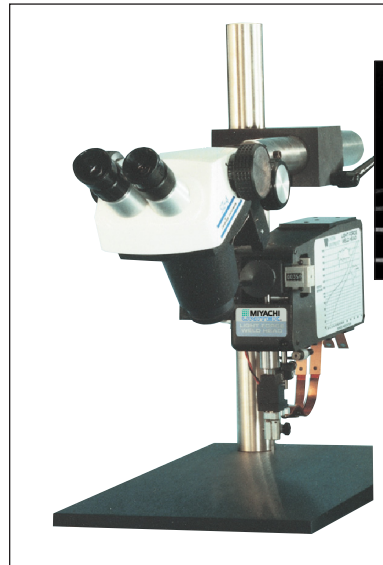
FULL RANGE OF WELD HEADS FOR THE COMPLETE WELDING SYSTEM



86A/EZ Precision Parallel Gap Weld Head

The Model 86 weld head with either foot or patented EZ-Air®

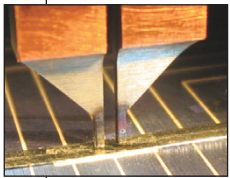
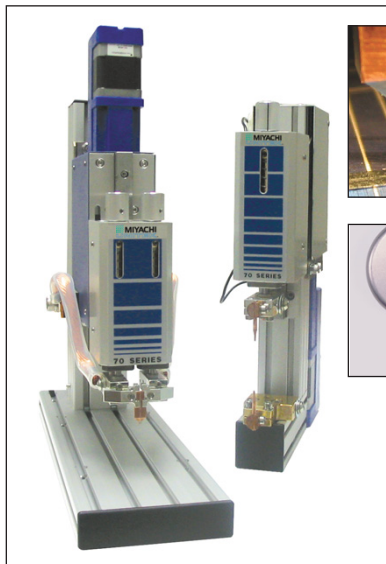
actuation provides precision control for parallel gap welding applications from <math><0.001</math> inch (25 microns) to 0.005 inch (0.127mm) in diameter or thickness. The force range of the 86A/EZ is 0.5 to 20 lbs. (2.2-89 Newtons). EZ-Air technology prevents overforce and guarantees force repeatability.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



Model 50 Light Force Weld Head

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

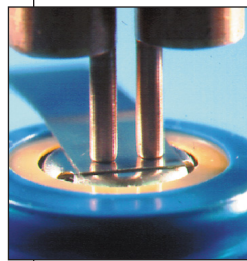
precision required for welding fine ribbons and wires to substrates. The force range of the 50F is 40-1000 gram-force (0.39 - 9.8 Newtons), continuously adjustable with no overforce. Holder options for either Unitip or Unibond electrodes are available. Model 50 is normally matched with the UB29 power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

DC29 make it ideal for battery pack welding. The Miyachi Unitek 88 weld head, with either foot of patented EZ-Air actuation provides fine levels of precision control required for microjoining applications from <math><0.001</math> 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.

SPECIFICATIONS

| MODEL NUMBER | DC29 | UB29 |
|---|---|---|
| Nominal Line Voltages (Single Phase) | 88-264 VAC 47-63 Hz | 88-264 VAC 47-63 Hz |
| Repetition Rate | 20kW @ 1 weld/sec for 10 msec (per weld) | 5kW @ 1 weld/sec for 10 msec (per weld) |
| Setting Ranges: | 200A - 4000A 10 Amp/Step 0.1V - 9.9V 10 mV/Step 0.1kW - 25.0kW 10 Watt/Step | 5A - 500A 1 Amp/Step 0.01V - 9.9V 10 mV/Step 0.05kW - 4.99kW 10 Watt/Step |
| Peak: | 4000A 10V 25.0kW | 500A 10V 4.9kW |
| Output Regulation versus Line Voltage Variance | 2% | 2% |
| Output Regulation versus Load Resistance Variance | 2% | 2% |
| Weld Period Ranges | Ranges (msec) | Ranges (msec) |
| First / Second Pulse, Up/Downslope and Cool Periods | 0 - 99.9 | 0 - 99.9 |
| Squeeze/Hold Periods | 0 - 999 | 0 - 999 |
| Output Accuracy | ±2% or 10A ±2% or 0.05V ±5% or 50W | ±2% or 2.5A ±2% or 0.05V ±5% or 12W |
| PHYSICAL CHARACTERISTICS | | |
| Dimensions L x W x H Inches (mm) | 15 x 8.4 x 12 (381 x 213 x 305) | |
| Weight Lbs (Kg) | 49 (22) | |

FEATURES

| WELD HEAT PROFILE CONTROL | DC29 | UB29 |
|--|--|--------------------------------------|
| Weld Pulse Control | Dual pulse with independent control of current, voltage or power on each pulse | |
| Programmable Weld Pulse Segments | Squeeze, upslope 1, weld 1, downslope 1, cool, upslope 2, weld 2, downslope 2, hold | |
| Weld Schedule Memory | Save up to 99 different weld schedules, protected from unauthorized changes | |
| Weld Schedule Chaining | Allows automatic linking of weld schedule sequence | |
| BUILT-IN WELD MONITOR FUNCTIONS | | |
| Measurement Parameters | Current, voltage, power, resistance on each pulse. | |
| Graphic Display | Back-lit LCD displays programmed and actual weld current, voltage, power, or resistance and upper and lower limits | |
| Measurement Selection | Peak or average | |
| Current Measurement Range/Accuracy | 0.1 - 4.0 kA, ±2% of setting ±20 A | 0.005 - 500 A, ±2% of setting ±5 A |
| Voltage Measurement Range/Accuracy | 0.1 - 9.9 V, ±2% of setting ±0.05 V | 0.01 - 9.9 V, ±2% of setting ±0.05 V |
| Power Measurement Range/Accuracy | 0.1 - 25.0 kW, ±5% of setting ±50W | 0.01 - 4.9 kW, ±5% of setting ±10W |
| Alarms | Display alert, five user programmable AC/DC relays; audio alarm | |
| Programmable Weld Energy Limit | Terminates weld energy when exceeding user defined current, voltage, or power limits | |
| Weld Pre-Check | Inhibit second weld pulse when first test pulse exceeds user programmed limits | |
| Active Part conditioner | First pulse current limit in constant power | |
| I/O AND DATA COMMUNICATIONS | | |
| Input | All inputs and outputs are fully isolated | |
| Input Isolation | +24V, sourcing or sinking inputs | |
| Control Voltages | 1-level foot switch, 2-level foot switch | |
| Foot Switch Initiation | Mechanical or opto firing switch | |
| Firing Switch Input | Remote weld schedule select, process inhibit, emergency stop, alarm reset | |
| Remote Control | Change weld schedules and individual parameters | |
| RS232 | Weld voltage signal for voltage feedback operation (0 to 10V peak) | |
| Electrode Voltage | RS232 weld data out | |
| Output | 24 VAC, 0.5A; timing controlled by DC29 or UB29 | |
| Monitor | Five user-programmable opto isolated relays; programmable normally open or normally closed contacts: | |
| Weld Head Air Valve Driver | 30 VDC at 0.5 A Conditions: weld, end of weld, alarm, out of limits, ready, weld counter | |
| Alarm Relays | | |

ORDERING GUIDE

| | |
|---|---|
| Included Accessories | Weld cable bolts, power cord, voltage sense cable, back panel connections, manual on CD |
| Required Accessories | Weld head (see previous page); air, electromagnetic or foot actuation |
| Optional accessories will include: | |
| 1. 10-242-01, FS2LNC, Foot switch, Two level, (No Connector) | |
| 2. 10-378-01, PWACA, Pre- Wired Adapter Cable Assembly, Includes cable adapters for standard MUC foot switch, firing switch and valve driver cables | |
| 3. 10-382-01, AVCA, Adapter, Air Valve cable | |
| 4. 10-383-01, FCA, Firing cable adapter | |
| 5. 10-384-01, FSCA, Foot switch cable adapter | |
| 6. 10-372-01, PWCAB, Pre-wired Metallic Caboose, Includes cable connections for standard MUC foot switch, firing switch and valve driver cables | |



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