

m31 SMART Series

High Performance DC Resistance Welding Power Supplies



The m31 SMART Series is a high performance resistance welding power supply system defined by an extremely wide operating range, high accuracy output and very fast process response rate. Machine variants are available as 6000A, 12000A and 18000 Amp with options for remote or integral control panel.

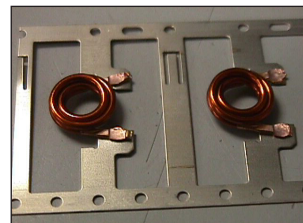
Integrating state of the art technologies, these units take the concept of real-time SPC process control to unsurpassed levels, allowing SMART welding database profiles to be stored, monitored and adjusted from anywhere in the world via TCP/IP Ethernet.

The internal database technology provides process and production engineers with a vast array of process control features by which to enhance production line quality control and monitoring methodologies.

KEY FEATURES

- High speed, ultra low ripple closed loop output control for consistent welding process definition and control.
- Constant current, voltage and power modes with programmable multi-pulse combinations. 1 amp steps to 18000A.
- Programmable part & weld checking coupled with optional displacement and force limit checking.
- Full TCP/IP Ethernet interfacing to internal and external SPC database systems.
- Associate and view PDF and text format work instructions and process manuals with weld schedules.
- Associate and view JPEG and BMP files with weld schedules for QC and process checking.
- 3 USB ports : USB memory stick transfer, mouse, keyboard, servo head drives, wireless etc.
- SMART weld head force control within weld schedules.
- High speed automation and communication ports with full remote control capability.

TYPICAL APPLICATIONS



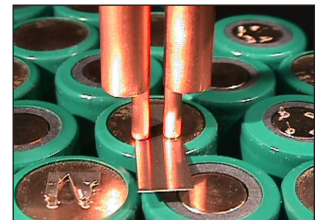
Coil attachment welding



Component welding to leadframe



Conductive Terminal



Welding tabs to batteries

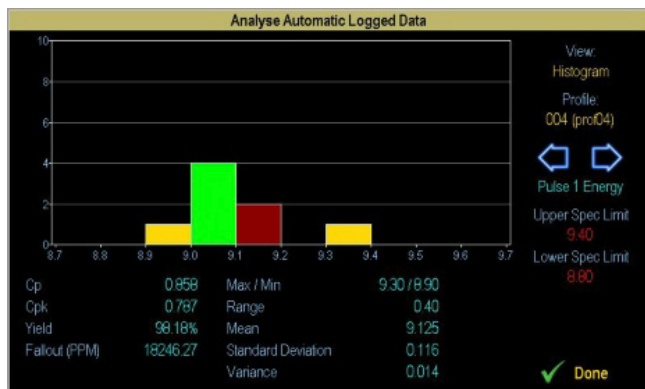
ADVANCED USER CONTROLS AND FEATURES

Built in PDF viewer: Link data files, work instructions, maintenance procedures, calibration data etc. Standard zoom, scroll and page functions via touch panel or mouse.

Built in media viewing: Link photos to weld schedules to enhance operator clarity.

USB & TCP/IP ports for visual pre and post weld inspection criteria.

Built in SPC & data logging: Finger tip configurable statistical process analysis with local and networked database storage capability. Off line load trend data and analysis to USB stick or via TCP/IP networks.



(Figure 1) Logging and analysis functions are easily setup and adjusted with the crystal clear intuitive graphical menu system

ADVANCED WELDING CONFIGURATIONS

Built in automatic part conditioning: Single and double pulse arrangements are easily set and viewed. An enhanced window tolerancing capability allows tight process limits to be applied anywhere within the weld cycle. The optional integral displacement monitor provides windowing and auto shutoff.

Built in distribution monitor: Automation and multi head applications can benefit from the unique MWS electrical distribution systems which allow multiple heads to share one power source. Logical relationships between process limits, welding schedules, multimedia are maintained throughout.

Built in weld head force control: Welding force is readily associated with each weld schedule and is available as a servo weld head command.



(Figure 2) Advanced part conditioning, single pulse, double pulses setups are easily viewed and adjusted.

M31 SERIES CONFIGURATION

All m31 series units feature the following items :

- 7 inch WVGA Full 262K colour Touch Panel LCD
- 1 x TCP/IP Ethernet RJ45 port
- 2 x Front and one rear panel USB ports
- 2 x 37 way optically isolated PLC interfacing port
- 1 x 15 way standard weld head control port
- 1 x 25 way optically isolated RS232 port

M31 OPTIONS

- Optically isolated analogue electrical channel monitoring
- Analogue channel output for external control of servo weld head.
- Version available with 1,3 or 6 channel weld displacement monitoring built in and combining dynamic weld cutoff
- SPC Data collection software with remote control operation and full SPC analysis capability via common database.

TECHNICAL SPECIFICATIONS

Models	m31-60	m31-120	m31-180
Maximum Output Current (A)	6000 Amps DC	12000 Amps DC	18000 Amps DC
Output Voltage at Full Load	5V DC	5 V DC	5V DC
Maximum Output Power	30KW	60KW	90KW
Full Output Duty Cycle :	5% @ 6000A	5% @ 12000A	5% @ 18000A
Control Modes	Current / Voltage / Power	Current / Voltage / Power	Current only
Output Accuracy of setting	± 1%	± 1%	± 1%
Ripple	< ± 1%	< ± 1%	< ± 1%

Programmed Timing Values	
Squeeze Time	0.1 – 999.9 ms
Upslope Time Pulse 1	0.1 – 999.9 ms
Peak Time Pulse 1	0.1 – 999.9 ms
Downslope Time Pulse 1	0.1 – 999.9 ms
Delay Time Between Pulses	0.1 – 999.9 ms
Upslope Time Pulse 2	0.1 – 999.9 ms
Peak Time Pulse 2	0.1 – 999.9 ms
Downslope Time Pulse 2	0.1 – 999.9 ms
Hold Time	0.1 – 999.9 ms

Process Monitor Limits	Current/Voltage//Displacement
No of waveforms averaged	User defined
Waveform Window limiting range	0 - 100%
Waveform Window tolerances	0 - 100%

Displacement Monitoring	Available on all units: LVDT or Encoder optional
Force Range	0 - 500N

Input Requirements	3 phase
Input Voltage	380 - 480VAC
Control I/O	Opto isolated
Serial Communications	Ethernet via TCP/IP, USB 2.0, RS232

WEIGHT & DIMENSIONS

Models	m31-60	m31-120	m31-180
Width		305 mm	
Height		335 mm	
Depth		400 mm	
Weight		46 kg	



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