Capacitive Discharge, Fine-Spot Resistance Welder

Data Sheet

CD100SP / CD200SP CD SPOT WELDER

- **Energy storage from 0.015 watt-seconds to 200 watt-seconds**
- **Infinitely adjustable pulse width (energy released)**
- **Peak weld currents of up to 6400A (1mOhm load)**
- **Minimum weld currents of 80A (1mOhm load or lower with increased load)**
- **Available in 100 and 200 watt-second versions**
- **Peak repetition rates of 166 welds/minute with external power supply**
- **Standard repetition rates of 30 or 13 welds / minute (100ws or 200ws, respectively, operating at max power)**
- **Simple and intuitive welder interface**
- **Up and running in minutes without any prior welding experience**

Sunstone Engineering Single Pulse Resistance Welders

Sunstone Single Pulse research and light production resistance welders are engineered to provide a wide range of welding flexibility. They can provide as little as a few milli-joules of energy for welding microscopic wires and parts, or can deliver up to 100 or 200 Joules for stronger welds. The Sunstone welder is versatile and easy to use. Its interface lets the user quickly select weld settings for a wide variety of welding projects. The welder is designed for use in a research laboratory or light production environment and can be operated up to 166 welds/minute. At Sunstone our goal is to provide quality resistance welding products at affordable prices for small and large businesses.

The Advantages of a CD Spot Welder

Capacitive resistance welders, also called capacitive discharge or CD welders, have many advantages over other welder types:

- Quick energy release for welding highly conductive metals such as copper
- Small heat affected weld zones
- Repeatable energy release independent of line voltage fluctuations
- Capable of extremely fine energy adjustment.

CD welders are one of the most cost-effective welding solutions for fine-spot resistance welding. Whether you are manufacturing battery packs or microscopic assemblies, Sunstone CD resistance welders are the most affordable, precision fine-spot resistance welders on the market.

Table 1: Energy storage in watts*seconds (Joules) as a function of weld voltage.

Model	Voltage (Volts) 0.2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	16.5
CD100SP	0.015	0.4	1.6	3.6	6.4	10	14.4	19.6	25.6	32.4	40	48.4	57.6	67.6	78.4	90	102	109
CD200SP	0.032	0.8	3.2	7.2	12.8	20	28.8	39.2	51.2	64.8	80	96.8	115	135	157	180	205	218

Table 2: Percent energy release as a function of weld cable gauge number (AWG) and Pulse dial setting. Four and eight AWG cabling are typically seen when using hand held attachments.

	CD100SP				CD200SP			
Pulse Width Dial Marker	Pulse Time (ms)	1 AWG (% discharge of energy setting)	4 AWG (% discharge of energy setting)	8 AWG (% discharge of energy setting)	Pulse Time (ms)	1 AWG (% discharge of energy setting)	4 AWG (% discharge of energy setting)	8 AWG (% discharge of energy setting)
1	0.26	27%	20%	12%	0.47	25%	19%	10%
1.5	0.28	29%	22%	12%	0.50	26%	20%	11%
2	0.45	42%	33%	19%	0.81	39%	30%	17%
2.5	0.59	51%	40%	24%	1.07	48%	37%	22%
3	0.75	60%	48%	29%	1.34	56%	44%	27%
3.5	0.90	67%	55%	35%	1.63	63%	51%	32%
4	1.06	72%	60%	39%	1.90	69%	56%	36%
4.5	1.43	82%	71%	49%	2.57	79%	67%	45%
5	2.23	93%	86%	65%	4.02	91%	83%	61%
5.5	3.54	99%	95%	81%	6.37	98%	94%	78%
6	4.80	100%	98%	89%	8.65	99%	98%	87%
6.5	5.51	100%	99%	92%	9.92	100%	99%	90%
7	5.54	100%	99%	93%	9.98	100%	99%	90%

Table 3: Peak weld current as a function of weld voltage and external cabling AWG gauge number (assumes 6 total feet of cabling). Four and eight AWG cabling are typically seen when using hand held attachments.

Voltage	1 AWG 0.8mΩ Load (Amps)	4 AWG 1.6mΩ Load (Amps)	8 AWG 4.0mΩ Load (Amps)	**Voltage (continued)**	1 AWG 0.8mΩ Load (Amps)	4 AWG 1.6mΩ Load (Amps)	8 AWG 4.0mΩ Load (Amps)
0.2	98	70	38	10	4878	3509	1905
1	488	351	190	15	7317	5263	2857
5	2439	1754	952	16.5	8049	5789	3143

Table 4: Weld speed in welds per minute at 100% energy discharge. Nominal repetition rate and increased repetition rate with PS25A power supply (PS) booster are given.

Energy Set-point (% of maximum energy)	NOMINAL Rep Rate CD100SP welds/min	NOMINAL Rep Rate CD200SP welds/min	PS BOOSTER Rep Rate CD100SP welds/min	PS BOOSTER Rep Rate CD200SP welds/min
100%	29 (100ws)	13 (200ws)	166* (100ws)	72* (200ws)
75%	33 (75ws)	15 (150ws)	166* (75ws)	98* (150ws)
50%	41 (50ws)	21 (100ws)	166* (50ws)	166* (100ws)
25%	45 (25ws)	23 (50ws)	166* (25ws)	166* (50ws)
MIN	9 (0.015ws)	7 (0.03ws)	NA w/ PS25A	NA w/ PS25A

*See Figures 9 and 10 for maximum continuous use periods and required cool-down periods.

Table 5: Weld pulse characteristics.

Model	Min and Max Energy Set-point	Pulse Width		Rise Time (to max voltage)	Min Pulse Height
CD100SP	0.015 ws - 100 ws	Min	0.26 ms	0.15 ms	0.2 V
		Max	5 ms		
CD200SP	0.03 ws - 200 ws	Min	0.47 ms	0.15 ms	0.2 V
		Max	10 ms		

Table 6: Sunstone Single Pulse welder physical characteristics.

	CD100SP		CD200SP	
	Inches	cm	Inches	cm
Height	8	20.3	8	20.3
Width	8.5	21.6	8.5	21.6
Depth	11	28	11	28
Weight	17 lbs	(8 kg)	19 lbs	(9 kg)

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