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# **DIRECT**

## **Electronics Tech.**

### **(FLW)**

# **Electron Beam Welding Shunts**

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**▶ Product Introduction****Electron Beam Welded Shunts (FLW) serves precision measurement and battery applications in a new age.****Features :**

- High precision, Low TCR (Temperature Coefficient of Resistance Value).
- Low resistance, low inductance, Low watt loss, and Long-term stability.
- High power electron beam welding technology

**Applications :**

- Electric power distribution, battery management frequency convertors, load test.
- Applied for current limiting, current balance or sampling test of power supply.
- Applied for functional low inductance power supply applications.

Increasing pressure from the international produce higher-quality competition at lower prices In a shorter period of time resulting in the use of specialized process, whenever possible to detect an advantage. Adapting this philosophy to electron beam welding (EBW), Direct Electronics announced the release of a new and enhanced bus bar shunt of blade terminal in (FLW) series producing by the new generation of load-lock machines fulfilling all these requirements in the area of EB welding.



This is a new Bus-Bar Battery Shunt resistor that has rated voltage drop 75 mV capability with 1.5 mΩ to 0.075 mΩ. Specifically, it is possible to output 75 mV from the voltage terminal with a current from 50 A to 1000 A with precision  $\pm 0.5\%$  and  $\pm 1\%$  tolerance in option.

(FLW) large current shunt resistor is using complete electron beam welding technology, ease assembly, mechanically strong, vibration resistance, and reliable operation in long term. Featuring low inductance values, shunts (FLW) is suitable for energy meters Invertors, AC/DC convertors, UPS, battery management, frequency convertors, and power modules low inductance applications.

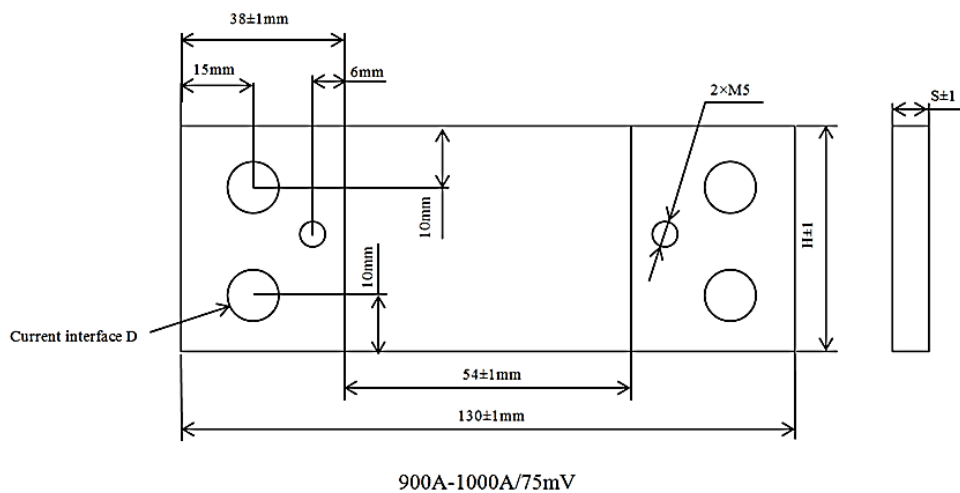
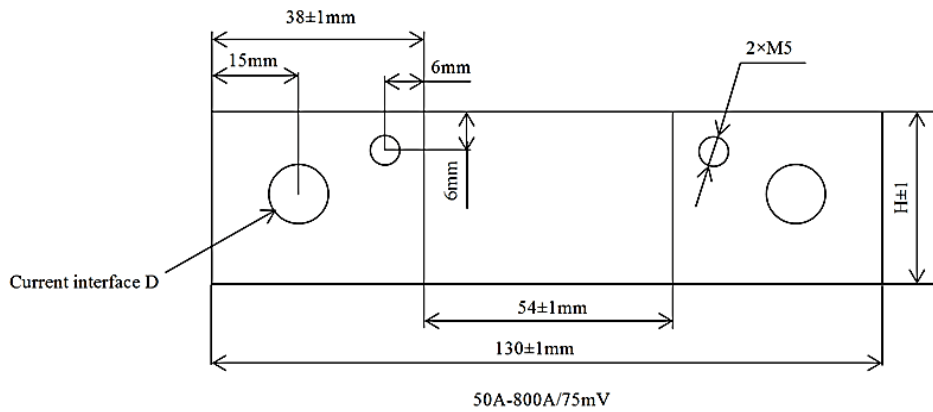
The shape and size of these (FLW) series can be customised and is available in bulk packaging with RoHS compliant and lead free. Direct engineers will work together with the client to create designs and develop products to meet their specific needs. For non-standard technical requirements and special applications, contact us with your specific needs., or link to Direct official website "[Current Sensing Resistors](http://www.direct-token.com)" for more information.



**Dimensions & Electrical Specifications**

**Dimensions (Unit: mm) & Electrical Specifications**

Type	Rated Current (A)	Normal Resistance (mΩ)	Rated Voltage Drop (mV)	Tolerance Range (%)	T.C.R. (X10 <sup>-6</sup> )	Dimensions (mm)		
						S	H	ΦD
FLW	50	1.5	75	± 0.5(D) ± 1(F)	± 20 ± 50	1.5	9	Φ6.5x2
	100	0.75				2.0	16.5	
	150	0.5				2.5	20	
	200	0.375				2.5	26	Φ8.5x2
	300	0.25				3.2	30	
	400	0.1875				4.0	33	
	500	0.15				5.0	33	Φ10.5x2
	600	0.125				6.0	33	
	700	0.1014				6.0	40	
	800	0.0938				6.5	40	Φ10.5x4
	900	0.0833				6.5	45	
	1000	0.075				6.5	50	

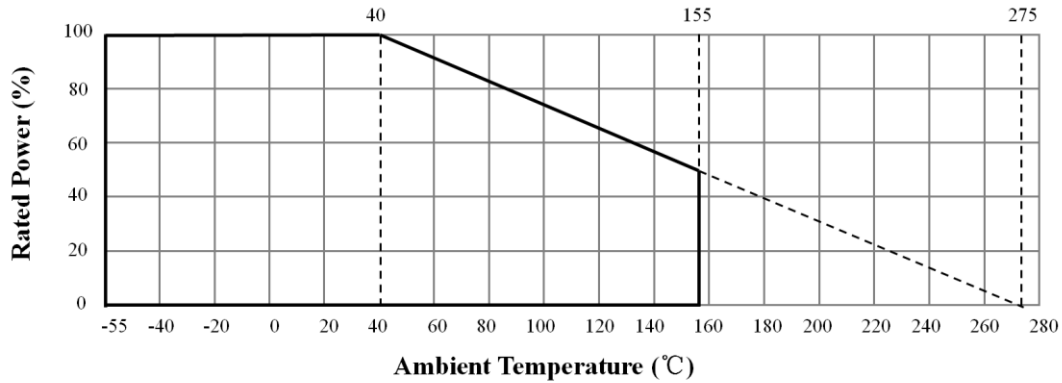


**Electron Beam Welding Precision Shunt Dimensions (Unit: mm)**



## Derating Curve

### Derating Curve (FLW)



## Environmental Characs.

### Characteristic Specification (FLW)

Test Items	Specifications	Test Conditions
Short time overload	$\leq \pm(1\%+0.05\Omega)$	$10P_R \cdot 5S$
Shock	$\leq \pm(1\%+0.05\Omega)$	$1000m/S^2 \cdot 6mS$
Vibration	$\leq \pm(1\%+0.05\Omega)$	$10-1000Hz \cdot 0.75mm \cdot 98m/S^2$
Durability at room temperature	$\leq \pm(2\%+0.05\Omega)$	$25^\circ C \cdot P_R \cdot 1000h$

## Order Codes

### Order Codes (FL)

FLW	-	50A	75mV	F	p
Part Number		Rating Current (A)	Voltage Drop (mV)	Accuracy Class (%)	Package-Code
FLW		50A   50A	75mV   75 mV	F   ±1%	P   Bulk
		100A   100A		D   ±0.5%	
		700A   700 A			
		1000A   1000 A			

## ► General Information

### Your Current Options - Direct Current Sense

As the world becomes more and more technology-driven, the uses for current sensing components will continue to increase. The need for even lower resistance value ranges is already becoming evident, as is the need for these resistors to handle more power. The industry-wide trend is the emergence of smaller and smaller products.

Direct Electronics offers a wide variety of current sensing products from the industry to military standards, such as current sense in Thin-Film / Thick-Film Technology, Bare Element Resistors, and Open Air Shunts. This enables Direct to present an astounding number of possible solutions for any circuit design needs.

### Applications of Current Detecting Components

Direct's TCS and CS Series unique form factor provides automotive designers with several advantages. Both TCS and CS Series are ideal for applications involving window lift motors, fuel pump systems, seat belt pretensioners, and pulse width modulator feedback.

The wider resistive element and lower resistance enables higher current to pass through the device. Direct's LRC ultra low Ohmic metal strip chip series provides the inherent ability to flex slightly and offers stress relief during extreme temperature cycling on typical or metal substrates. This LRC series is suitable for switch power supply applications (DC-DC Converter, Charger, and Adaptor) and power management of monitor.

The open air design of bare element resistor LRA and LRB Series provide a far cooler operation by allowing more air flow under the resistive element to keep excess heat from being transmitted to the PC board. They are suitable for high power AC/DC detection of power supply circuit.

Direct axial moulded BWL series provides power rating up to 10 watts and lower resistance  $0.005\Omega$ , is ideal for all types of current sensing applications including switching and linear power supplies, instruments and power amplifiers.

Direct standard current sensing components can be replacement for Vishay, IRC, Ohmite, KOA, Yageo devices with fast delivery and more competitive price. Contact us with your specific needs.

