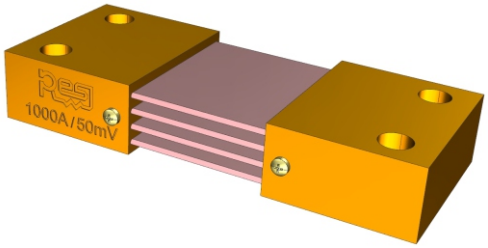
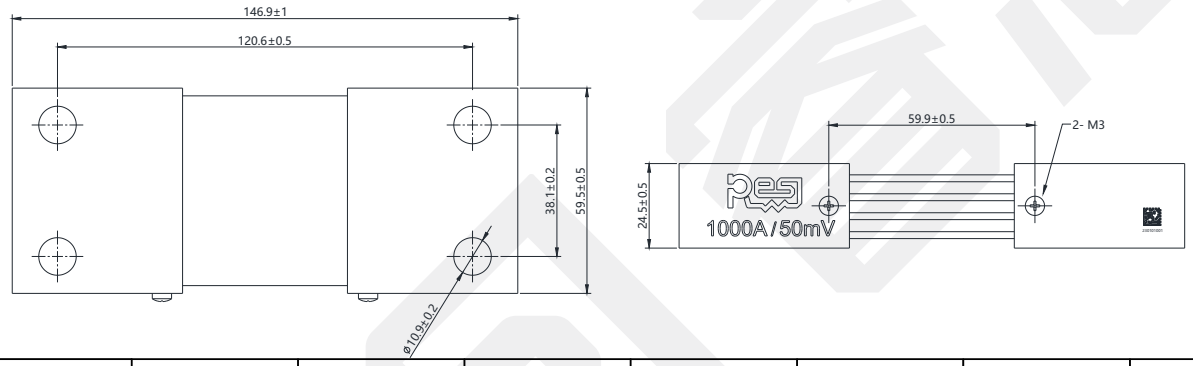
Precision Shunt, Rated Current 1000A, Standard Tolerance 0.1%
Low Thermal EMF, TCR ±20ppm/℃

Shunt works at very high current, so the temperature of surface rises sharply which will cause the change of resistance. For precision measurement, we must choose shunts which are with low TCR, low PCR and low Thermal EMF.

Resi launched the precision shunt series which can reach 0.1% 10% to 100% of rated current. The maximum TCR is ±20ppm/℃ in the range of -20℃ to +120℃. Besides, the shunt has extremely stability with low PCR and low Thermal EMF
tolerance from



Dimensions (mm)



Model	Resistance	Tolerance	TCR	Output Voltage	Rated Current	Max. Current	Weight
RTCS1000B050Z00	50μΩ	±0.1%	±20ppm/℃	50mV	1000A	1200A	1.38±0.5kg

Performance

Test	Test Method	Standard
Optimum Surface Temperature	Measured at the center of metal strip	+30℃~+90℃
Operating Temperature Range	Measured at the center of metal strip	- 40℃~+140℃
Maximum Surface Temperature	Measured at the center of metal strip	+140℃
Thermal EMF	When reach heat balance, disconnect the circuit and test EMF	＜0.05 μV/℃
TCR	Measured temperature range of -25℃ to +120℃, +25℃ Ref.	≤±20ppm/℃
Current Coefficient	10%-100% Rated Current Test	≤±5ppm/A
Short Time Overload	2.25 rated voltage for 5 seconds	△R≤±0.05%
Long Time Overload	1.2 rated voltage for 2 hours, +25°C	△R≤±0.1%
Thermal Equilibrium Time	Measured at the center of metal strip when resistance won't change	＜5min

Part Number Information

Example:RTCS1000B050Z00 (RTCS 1000A ±0.1% 50mV Identification Code)

R	T	C	S	1	0	0	0	B	0	5	0	Z	0	0

- Series: RTCS
- Rated Current: 1000=1000A
- Tolerance: B=±0.1%
- Output Volatge: 050=50mV
- Identification Code

*60mV, 100mV can be customized.

Custom Service for Your Application (CTS Service)

Each shunt requires precise trimming of value. The main challenge in the trimming process is to reach tight tolerance both at 10% of rated current and 100% rated current. It is known that the temperature curve of Manganin material is not linear, so to adjust the surface temperature of metal strip to the optimum surface temperature is the only way to achieve tight tolerance .

CTS is a free customized trimming service. It will estimate customer's working condition and the average surface temperature of the shunt, and then provides the best resistance for precision measurement. CTS can significantly improve the tolerance. Each CTS product will be assigned with a unique identification code.

We will provide test reports for every CTS product for free.

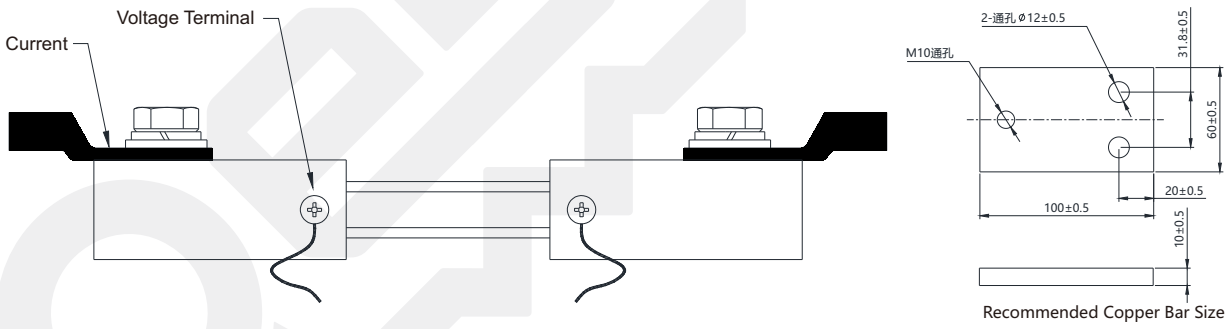
If you are interested in CTS service, please contact our sales engineers with below required information.

Minimum Operating Current		Minimum Ambient Temperature	
Maximum Operating Current		Maximum Ambient Temperature	
Working Current Curve		Ambient Temperature Curve	
Final Product		Installation Method	
Final Product Working Condition		Heat Dissipation Condition	
Design Lifetime		Installation Notes or Picture	
Note			

Reverse Installation Advice

(1) During the installation of the shunt, it shall be ensured that the copper head is in close contact with the bus bar, and the contact area between the copper head and the bus bar shall be as large as possible. If conditions permit, the size of the bus bar shall be as large as possible and the bus bar shall be clean.

Reverse Installation Example



(2) According to the IEEE standards, the operating current should not be higher than 2/3 of the rated current under the normal conditions.
(3) Derating is required when the ambient temperature is higher than 40 °C to avoid damaging the shunt.
(4) Air cooling, water cooling, increased physical size, and installation of heat sinks can be used to reduce operating temperature.
(5) It is recommended to wear gloves when installing the shunt to prevent oil contamination.
(6) The surface of the copper bar used for inst-
alling the shunt shall be smooth and clean. It is recommended that the surface be plated with nickel or tin to reduce the contact resistance.
(7) Recommended Installation Torque

No.	Bolt Size	Recommended Torque (N.m)
1	M3	0.4~0.8
2	M8	10~15

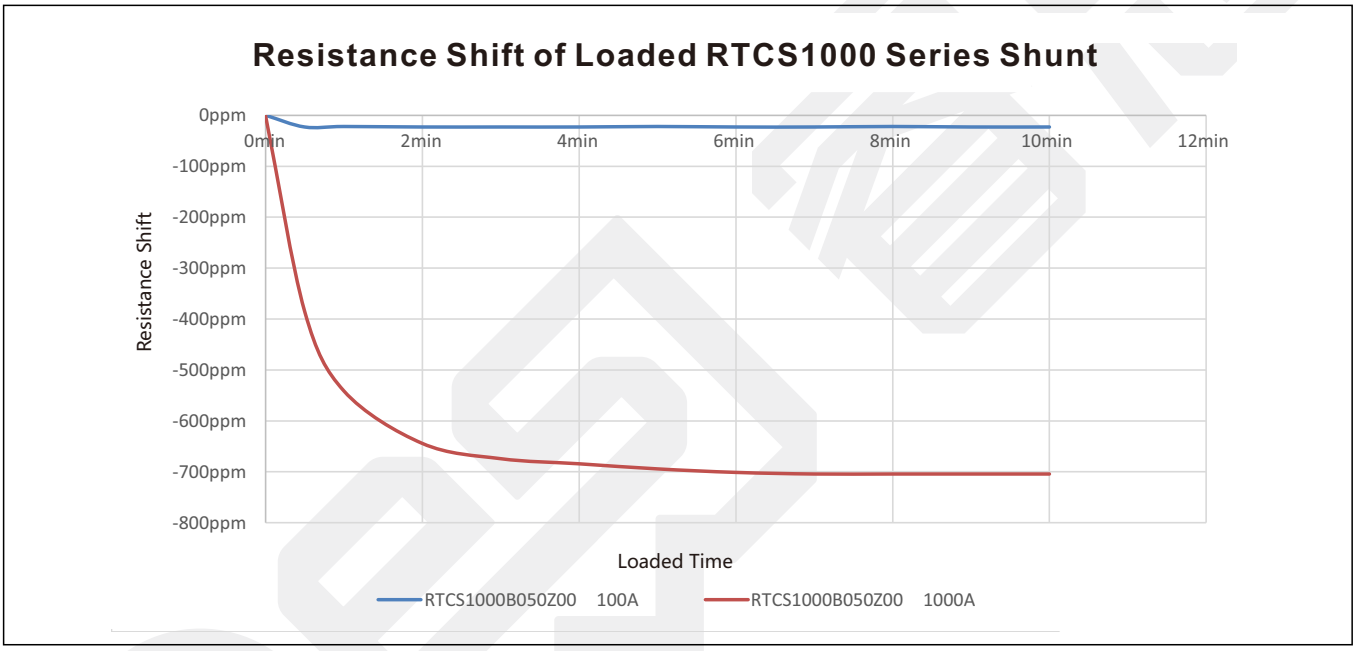
Storage Instructions

(1) The shunt shall be stored at a temperature of 5 to 35 ° C, humidity < 60% RH, and the humidity shall be kept at a low level;
(2) The shunt shall be protected from direct sunlight;
(3) The shunt shall be stored in a clean and dry environment, free of harmful gases (hydrogen chloride, sulfuric acid, hydrogen sulfide, etc.);
(4) Special gloves shall be worn for storage and handling to reduce the risk of surface oxidation;
(5) Under the above conditions, the shunt can be stored for at least 1 year.

Packaging Instructions

(1) The minimum package is 1 piece;
(2) The inner part is sealed and the outer part is customized packing box.

Curve of the Resistance of Loaded Shunt



*Under different heat dissipation conditions and different applied copper bar sizes, there will be some differences in the change of shunt on resistance. The above operating conditions are under normal temperature with 200mm² copper wire;For customized test, please contact us to provide detailed operating conditions.