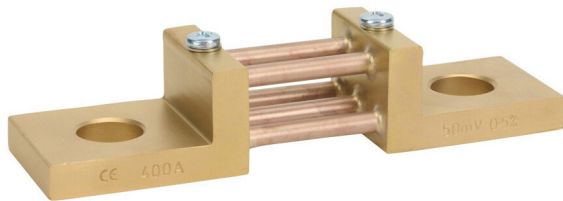


Sifam Tinsley B4 Measuring Shunts



YN01-06505WL2000ST



YN01-24505WS2000ST

Sifam Tinsley B4 measuring shunts safely extend the range of traditional ammeters by representing high DC currents as millivolt signals. These signals are read by shunt-rated ammeters with matching current ranges, allowing accurate measurement without directly exposing the meter to high DC current. The 20 A DC-rated shunt includes an isolating base and cover suitable for 35 mm DIN rail mounting. Shunts rated at 75 A DC to 500 A DC are designed for mounting directly to copper busbars. All shunts offer an accuracy class of 0.5.

These UL-recognized shunts are available up to 500 A and comply with EN/IEC 60051-1:2016 and EN/IEC 60051-8:2017 requirements.

Features

- Extension of DC current measuring ranges of moving-coil ammeters
- 20 A shunt includes isolating base and cover which is suitable for 35 mm DIN rail mounting
- 0.5 accuracy class
- Resistance elements made from Manganin™ alloy combine precision with a very low Temperature Coefficient of Resistance (TCR)
- Riveted and brazed construction

Applications

- Battery systems
- Renewable energy: solar/wind
- DC power supplies
- Welding
- Railway systems
- DC motor monitoring/control
- Electroplating

Sifam Tinsley B4 Measuring Shunts Selection Guide

Part Number	Price	Rated Current	Output	Input Terminals			Output Terminals			Drawing
				Type	Size	Torque	Type	Size	Torque	
<u>YN01-06505WL2000ST¹</u>	\$22.50	20 A DC	0-50 mV DC	Phillips head bolt	M5x12 with 5.5 mm washers and M5 nuts	32.7 lb•in [3.7 N•m]	Cylindrical head screw PZ / slotted	M4x8 with 4.7 mm washer	12.39 lb•in [1.4 N•m]	PDF
<u>YN01-15505WL2000ST</u>	\$22.50	75 A DC	0-50 mV DC	Hex head bolt	M8x16 with 8.5 mm washers and M8 nuts	141.6 lb•in [16 N•m]				
<u>YN01-17505WL2000ST</u>	\$22.50	100 A DC	0-50 mV DC							
<u>YN01-19505WL2000ST</u>	\$22.50	150 A DC	0-50 mV DC							
<u>YN01-21505WL2000ST</u>	\$34.00	200 A DC	0-50 mV DC		M12x40 with 13 mm washers and M12 nuts	477.9 lb•in [54 N•m]	Pan head screw Phillips	M5x8 with 5.5 mm washer	14.1 lb•in [1.6 N•m]	
<u>YN01-24505WS2000ST</u>	\$43.00	400 A DC	0-50 mV DC		M16x45 with 17 mm washers and M16 nuts	1150.5 lb•in [130 N•m]				
<u>YN01-25505WL2000ST</u>	\$43.00	500 A DC	0-50 mV DC							

1: Includes insulating base and cover for 35mm DIN rail mounting.

Sifam Tinsley B4 Measuring Shunts



Shunt Basics

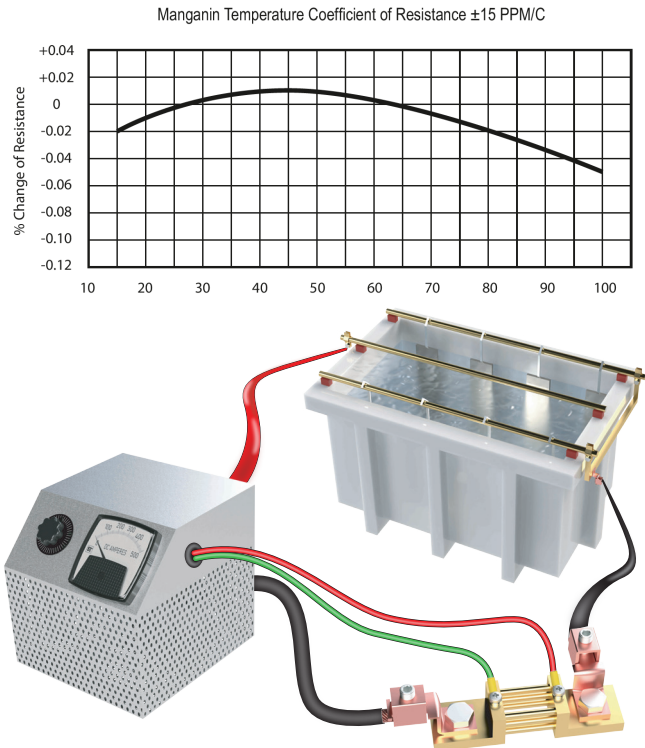
Per EN/IEC 60051-1:2016, a shunt is defined as a “resistor connected in parallel with a measuring circuit of a measuring instrument.”

A shunt is used to produce a voltage proportional to the measured DC current and is installed in series with the load. As current flows through the shunt, a small voltage drop occurs across the device according to Ohms Law ($V=I \cdot R$). This voltage drop is proportional to the current being measured since the shunt's resistance is a constant value.

Shunts are commonly used to safely measure high DC currents and are typically integrated into DC battery chargers, DC motor monitoring circuits, and other industrial and commercial DC power applications. Instrumentation grade DC measuring shunts are designed with a very low resistance to minimize power loss as a result of heat generation.

Sifam Tinsley B4 measuring shunts are comprised of pure copper connection plates brazed to resistive elements. The resistive element is made of Manganin™, a copper-manganese-nickel alloy that exhibits a very low temperature coefficient of resistance. This means its resistance varies very little as the temperature of the Manganin alloy changes.

Manganin also generates a very low thermal electromotive force (EMF) when subject to a thermal gradient or when bonded with copper. Thermal EMFs generate unwanted noise in measuring circuits.



Example of shunt being used for DC current measurement in an electroplating application.

Installation Guidelines for Shunts

- 1) Use a flat copper busbar with a current density of 1.55 A/mm² or lower, depending on the specific requirements of the application.
- 2) Where possible, all shunts should be mounted on the ground side of the circuit. For circuits above 750 VDC, shunts must be mounted on the ground side.
- 3) Shunts should be mounted in a way that isolates them from mechanical stresses caused by thermal expansion of the busbars or high forces generated during a short-circuit. Flexible wiring may be required in high pulse current, high vibration, or high temperature applications.
- 4) Shunts should be mounted with their manganin resistive blades in a vertical position to promote natural air convection. If vertical mounting is not possible, forced air cooling or heat sinks can be used to reduce the operating temperature. The manganin blades must not exceed 140 °C [284 °F], as this may result in permanent changes to resistance.
- 5) For continuous operation, it is recommended that shunts are not run at more than two thirds (2/3) the rated current.

CAUTION: SHUNTS ARE NOT INSULATED, AND PROTECTION AGAINST ACCIDENTAL CONTACT MAY BE NECESSARY IN ORDER TO COMPLY WITH HEALTH AND SAFETY REGULATIONS.