

Transmille offer a set of current shunts enabling measurement of current from 1mA through to 100A. Each shunt develops 0.7V at nominal full scale, enabling a wide range of multimeters to be used without loss of resolution due to changing range.

The AC/DC current shunts provide excellent DC value stability, but also a wide range in frequency allowing measurements from DC up to and beyond 30kHz. The coaxial design of these shunts reduce inductive and capacitive effects, while an open design improves heat dissipation to minimize power co-efficients. The coaxial design offers superior accuracy and low electromagnet influences, ensuring a liner and predictable frequency response. Each shunt has a type N output connector to ensure low noise when measuring at high frequencies providing easy connections from the shunt to the measuring device.

The set of AC/DC current shunts has been designed to enable fast and efficient calibration of multiproduct calibrators and current sources under a laboratory environment. Using the AC/DC current shunts in conjunction with an 8000 series multimeter the 3000A, 4000 and 9000A multiproduct calibrators can be efficiently maintained internally, as well as supporting other manufacturers products.

- **AC/DC differences from 1PPM**
- **Superior accuracy compared to Wilkinson standard AC/DC resistors, minimising the use of correction factors for frequency response**
- **Shunt values for measurements between 1mA to 100A**
- **From DC to 30Khz & above**
- **Low inductance & capacitance flat frequency response**
- **Simplifies precision calibration of calibrators and current sources**
- **Can be used with a precision multimeter, or an AC measurement standard**

Transmille offer a total of 14 high precision shunts each with an output value of 0.7V against nominal input. These shunts come in various input values between 1ma up to 100A.

Electrical Specifications

Resistance

Shunt Nominal Current	Nominal Resistance (ohms)	Maximum deviation from nominal ($\pm \mu\Omega/\Omega$) ^[1]	Maximum deviation from nominal %	12- month stability ($\pm$ PPM)	Temperature Coefficient ($\pm$ ppm /°C)
1 mA	714	0.714 Ω	0.1	20	2
10 mA	71.4	0.0714 Ω	0.1	20	2
20 mA	35	0.035 Ω	0.1	20	2
50 mA	14	0.014 Ω	0.1	20	2
100 mA	7.14	0.00714 Ω	0.1	20	2
200 mA	3.5	0.0035 Ω	0.1	20	2
500 mA	1.4	0.0014 Ω	0.1	20	2
1 A	0.714	714 $\mu\Omega$	0.1	20	2
2 A	0.35	350 $\mu\Omega$	0.1	20	2
5 A	0.14	140 $\mu\Omega$	0.1	20	2
10 A	0.0714	17.4 $\mu\Omega$	0.1	20	2
20 A	0.035	35 $\mu\Omega$	0.1	20	2
50 A	0.014	70 $\mu\Omega$	0.5	30	4
100 A	0.0071	35 $\mu\Omega$	0.5	30	4

Maximum AC-DC Difference

Shunt Nominal Current	Maximum AC-DC Difference ($\pm$ ppm)					
	23 Hz	1KHz	5 KHz	10 KHz	30 KHz	100 KHz
1 mA	80	55	62	75	75	
10 mA	28	22	22	24	24	
20 mA	26	20	21	21	23	
50 mA	22	15	15	21	17	
100 mA	24	18	18	19	17	30
200 mA	22	18	19	20	21	23
500 mA	20	18	19	20	20	20
1 A	20	18	20	20	24	26
2 A	28	18	21	22	22	45
5 A	30	25	21	22	36	70
10 A	30	25	23	26	60	100
20 A	45	40	54	56	83	160
50 A	58	50	65	78	80	180
100 A	68	62	75	91	122	290

Maximum overload current

Shunt Nominal Current	Maximum current ^{[1] [2]}	Maximum sustained current
1 mA	3 mA	2 mA
10 mA	13 mA	11 mA
20 mA	36 mA	22 mA
50 mA	65 mA	55 mA
100 mA	130 mA	110 mA
200 mA	360 mA	220 mA
500 mA	650 mA	550 mA
1 A	1.3 A	1.1 A
2 A	3.6 A	2.2 A
5 A	6.5 A	5.5 A
10 A	13 A	11 A
20 A	36 A	22 A
50 A	65 A	65 A
100 A	130 A	110A

[1] Longer than 7 seconds can cause permanent damage to the shunt. The output voltage during high levels of input of can significantly cause higher outputs.

[2] Exceeding the maximum sustained current may cause resistance value changes

Dimensions

Shunt Value	Height mm	Width mm	Length mm	Weight
1 mA – 50 mA	65	65	110	0.2 Kg
100mA -5A	115	110	158	0.4 Kg
50A – 100 A	224	222	320	2.7 Kg