

## Portable DC Ammeters and Voltmeters

# 2011, 2012

Models **2011** and **2012** are moving coil type instruments using a taut-band suspension system. The suspension system provides excellent reproducibility without friction, and strong resistance to shock impact. These precision instruments combine a magnetic circuit (sandwich mechanism) that blocks the effects of external magnetic fields, and a superior temperature compensation circuit.

### Features

- Taut-band suspension system eliminates friction and provides strong resistance to shock impact.
- Stable performance ensures that changes over time are negligible.
- Quick response and easy-to-read scale
- Superior temperature compensation circuit reduces external temperature effects.
- Magnetic circuit (sandwich mechanism) reduces the effects of external magnetic fields.



2011 33



2012 00

### Specifications

Operating principle : Permanent moving coil  
 Class : JIS C 1102, equivalent to Class 0.5 (Notes1.)  
 Operating position : Horizontal  
 Scale length : Approximately 135 mm (deflection angle: 85°)  
 Scale divisions : 100/150  
 Operating temperature and humidity ranges : 0 to 40°C, 25 to 80%RH  
 Storage temperature and humidity ranges : -10 to 50°C, 25 to 80%RH  
 Insulation test : Between electrical circuit and the case DC 500 V/More than 10 MΩ  
 Voltage test : Between electrical circuit and the case AC 3000 V for 5 seconds

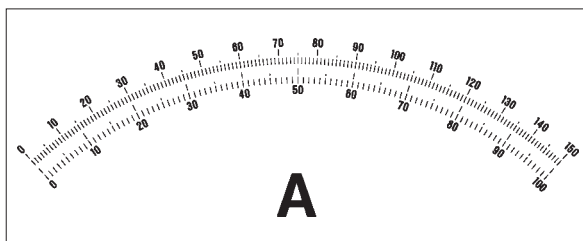
External dimensions and weight:  
 2011 Approximately 197 × 181 × 92 mm, approximately 1.7 kg  
 2012 Approximately 260 × 180 × 120 mm, approximately 2.8 kg  
 Standard accessories : Instruction Manual (1)  
 Shunt cable (2011 41, 2012 00 only)  
 Optional accessories (sold separately) : 2291 01 Carrying case for 2011 (page 10)  
 2292 01 Carrying case for 2012 (page 10)

Model	Maximum scale value	Approximate internal resistance and consumed power																										
2011	31 * 3/10/30/100 $\mu$ A	5.1/18.3/7.7/2.5 kΩ																										
	32 * 10/30/100/300 $\mu$ A	6.8/6.8/2.5/0.88 kΩ																										
	33 0.1/0.3/1/3 mA	750/750/278/97.5 Ω																										
	34 1/3/10/30 mA	23/14/4.7/1.6 Ω																										
	35 10/30/100/300 mA	Voltage drop 50 mV																										
	36 0.1/0.3/1/3 A																											
	37 1/3/10/30 A																											
	38 0.3/1/3/10 V	1 mA (1000 Ω/V)																										
	39 3/10/30/100 V																											
	40 30/100/300/1000 V																											
41 (50 mV)																												
42 (1 mA)	93 Ω																											
2012	00 3/10/30/100/300/1000 V 1/3/10/30/100/300 mA 1/3/10/30 A/50 mV (17 different measurement ranges)	Voltage measurement range Approximately 1 mA (1000 Ω/V)																										
		Current measurement range <table border="1"> <thead> <tr> <th>&lt;Range&gt;</th> <th>&lt;Voltage drop&gt;</th> <th>&lt;Range&gt;</th> <th>&lt;Voltage drop&gt;</th> </tr> </thead> <tbody> <tr> <td>1 mA</td> <td>24 mV</td> <td>1 A</td> <td>53 mV</td> </tr> <tr> <td>3 mA</td> <td>41 mV</td> <td>3 A</td> <td>56 mV</td> </tr> <tr> <td>10 mA</td> <td>47 mV</td> <td>10 A</td> <td>75 mV</td> </tr> <tr> <td>30 mA</td> <td>49 mV</td> <td>30 A</td> <td>100 mV</td> </tr> <tr> <td>100 mA</td> <td>50 mV</td> <td>50 mV</td> <td>59 Ω</td> </tr> <tr> <td>300 mA</td> <td>51 mV</td> <td></td> <td></td> </tr> </tbody> </table>	<Range>	<Voltage drop>	<Range>	<Voltage drop>	1 mA	24 mV	1 A	53 mV	3 mA	41 mV	3 A	56 mV	10 mA	47 mV	10 A	75 mV	30 mA	49 mV	30 A	100 mV	100 mA	50 mV	50 mV	59 Ω	300 mA	51 mV
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### Notes

1. 201131 and 201132 are equivalent to Class 1.0.
2. For ranges higher than 30 A, externally connect a shunt 2215-2217 (page 10) to the 50 mV terminal on 2011 41 (50 mV instrument) or 2012, 2011 41 (50 mV instrument) and 2012 both come with a set of shunt cables (two 1.5-meter cables with 0.025 Ω resistance). Different cables may be used if the cable resistance is 0.1 Ω or less.
3. For ranges higher than 1000 V, use 2011 42 (1 mA instrument) or externally connect external multiplier 2222 or 2223 (page 10) to the 3 V terminal on 2011 or 2012.

### Scale



### ● 2011 41 50 mV instrument and 2011 42 1 mA instrument

The scale for the 50 mV instrument has 100 and 150 divisions. A 50 mV current transformer may be combined with any rated current instrument to read measurements through a simple conversion process. DC scales (single scale or dual scale) are also available by special order.

Scale on 2011 41 50 mV instrument