

## Miniature Portable Ammeters and Voltmeters

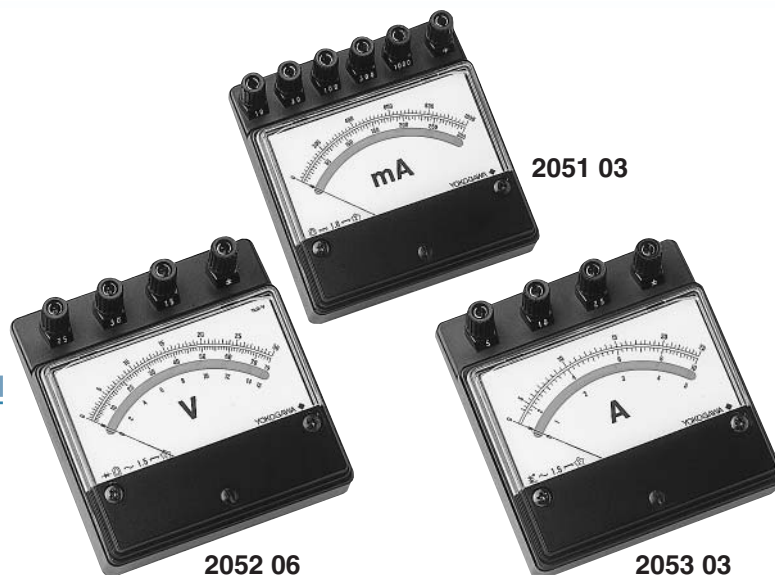
# 2051, 2052, 2053

The E series of miniature portable instruments consists of JIS C 1102-2 Class 1.0 and Class 1.5 instruments. The taut-band suspension system is used in the moving parts of Models 2051 and 2052 to eliminate friction and provide strong resistance to shock impact.

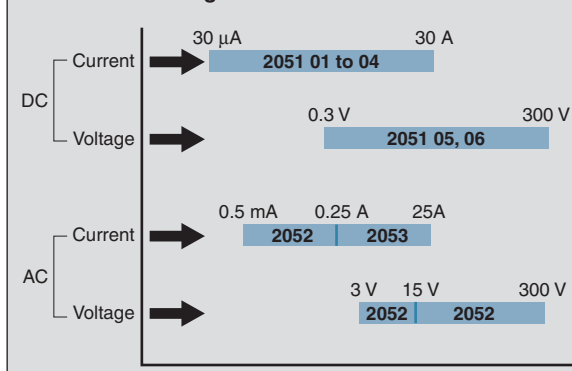
These instruments are functional and compact, making them suitable for labs at research centers and schools. They are also very useful for factory setups in which numerous instruments are arranged on a small tabletop area, and they are small enough to be carried for maintenance service use.

### Features

- Useful for both high-sensitivity and large-volume measurements  
DC: 30  $\mu$ A~30 A, 0.3 V~300 V  
AC: 500  $\mu$ A~25 A, 3 V~300 V
- Taut-band suspension system eliminates friction and provides strong resistance to shock impact.
- Small and lightweight, with easy-to-read mirrored scale



### Measurement ranges



### Specifications

Operating principle : 2051 Permanent magnet moving coil type  
2052 Rectifier type (approximating RMS rectifier type for 15~300 V)  
2053 Moving iron type

Class : JIS C 1102  
2051... Equivalent to Class 1.0, 2052, 2053...  
Equivalent to Class 1.5

Scale length : Approximately 88 mm (deflection angle: 90°)  
Needle : Bladed needle (red)

Operating position : Horizontal  
Rated Frequency : 50/60 Hz

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 500V/More than 10M $\Omega$   
Voltage test : Between electrical circuit and the case AC 2000 V for 5 seconds

External dimensions and weight :  
Approximately 113  $\times$  106  $\times$  46 mm Approximately 0.35 kg

Optional accessories (sold separately):  
2291 02 Carrying case for E series of miniature portable instruments  
A case (B9604WM) that can hold the instrument as well as leads and other accessories is also available. (page 10)

### Single deflecting meter

Model	Maximum scale value			Approximate internal resistance, consumed power	
2051	01	30/100/300/1000/3000	$\mu$ A DC	5/6.8/2.8/0.9/0.3	k $\Omega$
	02	0.3/1/3/10/30	mA DC	970/390/140/43/14	$\Omega$
	03	10/30/100/300/1000	mA DC	4/1.4/0.4/0.14/0.04	$\Omega$
	04	0.3/1/3/10/30	A DC	0.14/0.04/0.014/0.004/0.001	$\Omega$
	05	0.3/1/3/10/30	V DC	100 $\mu$ A (10 k $\Omega$ /V)	
	06	3/10/30/100/300	V DC		
2052	01	0.5/1/2.5	mA AC	3 V	
	02	2.5/5/10	mA AC		
	03	10/25/50	mA AC		
	04	50/100/250	mA AC		
	05	3/7.5/15	V AC	1 mA	
	06	15/30/75	V AC		
	07	75/150/300	V AC		
2053	01	0.25/0.5/1	A AC	1/1/1	VA
	02	1/2.5/5	A AC	0.9/0.8/0.7	VA
	03	5/10/25	A AC	0.6/0.9/2.3	VA

### Zero-Centimeter

Model	Maximum scale value			Approximate internal resistance, consumed power	
2051	11	$\pm$ 0.15/0.5/1.5/5/15	mA DC	970/390/140/43/14	$\Omega$
	12	$\pm$ 0.3/1/3/10/30	mA DC	1170/400/135/40/14	$\Omega$
	13	$\pm$ 5/15/50/150/500	mA DC	4/1.4/0.4/0.14/0.04	$\Omega$
	14	$\pm$ 10/30/100/300/1000	mA DC	4/1.5/0.4/0.15/0.04	$\Omega$
	15	$\pm$ 0.15/0.5/1.5/5/15	A DC	0.14/0.04/0.014/0.004/0.001	$\Omega$
	16	$\pm$ 0.3/1/3/10/30	A DC	0.15/0.14/0.11/0.004/0.001	$\Omega$
	17	$\pm$ 0.15/0.5/1.5/5/15	V DC	50 $\mu$ A (20 k $\Omega$ /V)	
	18	$\pm$ 0.3/1/3/10/30	V DC	100 $\mu$ A (10 k $\Omega$ /V)	
	19	$\pm$ 1.5/5/15/50/150	V DC	50 $\mu$ A (20 k $\Omega$ /V)	
	20	$\pm$ 3/10/30/100/300	V DC	100 $\mu$ A (10 k $\Omega$ /V)	