YOKOGAWA

Insulation Testers

Battery Powered Insulation Testers

● **Analog Models**

3213A	Single range
2406E	2 and 3 ranges
MY10	Single range

● **Digital Models**

2426A	3 ranges
2406D	Single and 2 ranges
MY40	4 ranges

ISO9001

Head Office/Moroyama Factory
ISO14001

Yokogawa M&C Corporation

Bulletin MY-E

What Is Insulation Resistance?

Insulation resistance represents the state of insulation of electric equipment or circuits. It is one of the important measurement parameters in terms of safety and security. Methods of examining the state of insulation include using a clamp-on leakage tester for live circuits. Under normal circumstances, however, such electric equipment or circuits are shut down temporarily and their insulation is tested with an insulation tester.

Classification of Applications

Applications are roughly classified into low-voltage, high-voltage and ultra-high-voltage circuits. The table below summarizes examples of using rated test voltages. A tester with the rated test voltage of 500 V or 100 V/250 V is used for low-voltage circuits.

Rated test voltage	General Electric Equipment	Electric Installations/Circuits
	Insulation testing at safe voltage levels	–
25V	For telephone network equipment	–
50	Insulation testing of control equipment	Insulation testing for maintaining low-voltage circuits or equipment handling 100 V or lower levels
100V	Insulation testing of control equipment	
125V 250V	Insulation testing of control equipment	Insulation testing for maintaining low-voltage circuiats or equipment handling 200 V or lower levels
500V	Insulation testing of circuits or equipment handling 300 V or lower levels (general equipment)	Insulation testing for maintaining low-voltage circuits or equipment handling 400 V or lower levels Insulation testing of 100 V, 200 V or 440 V circuits or equipment upon completion of installation
1000V	Insulation testing of circuits or equipment handling levels higher than 300 V (general equipment)	Insulation testing of circuits or equipment handling constantly high operating voltages (e.g., high-tension cables, high-voltage electric equipment, and communications equipment handling high voltages)

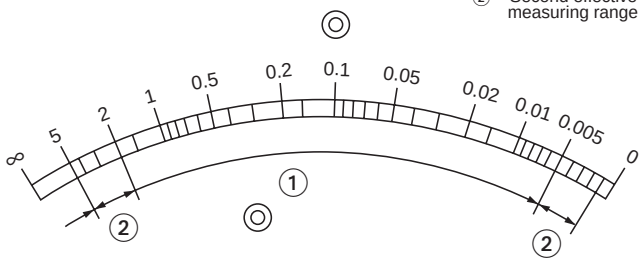
Test Methods for Low-voltage Circuits

Insulation resistance between cables of a low-voltage circuit and between the circuit and ground is tested for each circuit that can be separated by a switch or overcurrent breaker installed as specified by the electrotechnical equipment standards.
The low-voltage circuit is shut down by opening the switch and insulation between cables of the circuit and between the circuit and ground is tested. If the measured value is below the rated resistance, all shunt switches of a trunk line are opened and insulation is tested separately for each shunt circuit.
The comparator function of the MY40 or 2426A series insulation tester allows for smooth judgment when checking the insulation of electric circuits.

Methods of Scaling the 1st and 2nd Effective Measuring Ranges of Moving-pointer Insulation Testers

Rated test voltage: 25 V
Maximum effective reading: 5 MΩ

① = First effective measuring range
② = Second effective measuring range



Maximum effective reading:
The maximum reading that is indicated on the insulation tester and falls within the range with which the accuracy of the insulation tester is guaranteed.

Effective test range:
A test range or ranges, among those of the insulation tester, over which accuracy specified in the standards is guaranteed. In moving-pointer insulation testers, the range from a resistance value one-thousandth (1/1000) the maximum effective reading to the resistance value that is nearest to half (1/2) the maximum effective reading and equal to the maximum effective reading multiplied by 1, 2 or 5 or by any of these values multiplied by ten (10) raised to a whole-number power, shall be referred to as a first effective measuring range. In addition, the range from the upper limit of the first effective measuring range to the maximum effective reading and the range from the lower limit of the first effective measuring range to the zero (0) reading shall be referred to as second effective measuring ranges (see the figure above). In digital insulation testers, the first and second effective measuring ranges shall be those indicated on the insulation tester (Excerpt from JIS C1302-1994).

Points on How to Choose an Insulation Tester

1 Type
Two choices:
Choose an analog model if visual recognition is of utmost importance, or a digital model if precise numeric recognition is of utmost importance.

2 Ratings
A wide choice of voltage/resistance ratings, from 25 V/5 MΩ to 1000 V/2000 MΩ
Some models have two or three ranges; thus, you need not take more than one instrument to the site.

3 Functionality
Each series includes a model or models with a backlight for working in dark places. Multifunctional models capable of, for example, AC voltage measurement, are also available.

4 Accessories
Optional test probes and probe tips are available for a variety of test environments.

• General and Common Specifications

Effect of inclination (analog type): A change in the infinite scale value (∞) must be no more than 2% of the scale length when the tester is inclined 30° forward or backward and leftward or rightward from the horizontal position.
Effect of temperature (digital type): A change in the reading at an ambient temperature of 20°C must be no more than 2.5% at each of the maximum, minimum and central scale values of the first effective measuring range when the temperature is changed by ±20°C from 20°C.
Effect of temperature (analog type): A change in the reading at an ambient temperature of 20°C must be no more than 5% at the central scale value and no more than 0.7% of the scale length at either the infinite scale value or the zero scale value when the temperature is changed by ±20°C from 20°C.
Effect of humidity: A change in the reading must be within the specified tolerance range when the tester is left to stand for one hour under the relative humidity of 90%.
Effect of AC voltage component applied to test terminals: A change in the reading must be no more than 10% when a resistance corresponding to the central scale value is connected to the tester and then a capacitance of 5 μF ±10% is connected in parallel across the resistance.
Overrange input protection: No failure must be present when a 50 Hz or 60 Hz AC voltage with an amplitude 1.2 times the rated test range is applied for ten seconds across the test terminals.
Operating temperature/humidity range:-10°C to 50°C/90% RH maximum (no condensation)
Storage temperature/humidity range:-20°C to 60°C/70% RH maximum (no condensation—batteries should be removed)

Selection Guide

Type		Series/ Model	Suffix Code & Backlight	Rating	AC Test Voltage Range	Display	Additional Function	External View	Page
Digital insulation testers	4 ranges	MY40 CE	01 (EL-illuminated)	125V/200MΩ 250V/200MΩ 500V/2000MΩ 1000V/2000MΩ	0–600V	3 1/2-digit LCD	Automatic discharge Conductor resistance measurement Comparator function Memory function		P.3
	3 ranges	2426A	05 (LED-illuminated)	250V/200MΩ 500V/2000MΩ 1000V/2000MΩ	0–300V	3 1/2-digit LCD	Continuity check Comparator function		P.4
			07 (EL-illuminated) CE						
			06 (LED-illuminated)	100V/200MΩ 250V/200MΩ 500V/200MΩ	0–300V				
			08 (EL-illuminated) CE						
			09 (LED-illuminated)	125V/200MΩ 250V/200MΩ 500V/200MΩ	0–300V				
			10 (EL-illuminated)						
			15 (EL-illuminated)	25V/200MΩ 50V/200MΩ 125V/200MΩ	0–150V				
	Single & 2 ranges	2406D CE	51 (N/A)	125V/200MΩ 250V/200MΩ	0–300V	3 1/2-digit LCD	Automatic discharge		P.5
			61 (LED-illuminated)						
			52 (N/A)	125V/200MΩ	0–300V				
			62 (LED-illuminated)						
			53 (N/A)	250V/200MΩ	0–300V				
			63 (LED-illuminated)						
			54 (N/A)	500V/200MΩ	0–600V				
			64 (LED-illuminated)						
			55 (N/A)	1000V/2000MΩ	0–600V				
			65 (LED-illuminated)						
			57 (N/A)	500V/2000MΩ	0–600V				
			67 (LED-illuminated)						
Analog insulation testers	2 & 3 ranges	2406E CE	31 (N/A)	25V/5MΩ 50V/10MΩ 125V/20MΩ	0–300V	Analog	Automatic discharge Battery check		P.6
			41 (EL-illuminated)						
			32 (N/A)	125V/20MΩ 250V/50MΩ	0–300V				
			42 (EL-illuminated)						
			33 (N/A)	125V/20MΩ 250V/50MΩ 500V/100MΩ	0–600V				
			43 (EL-illuminated)						
			34 (N/A)	250V/50MΩ 500V/100MΩ 1000V/2000MΩ	0–600V				
			44 (EL-illuminated)						
			35 (N/A)	250V/500MΩ 500V/1000MΩ 1000V/2000MΩ	0–600V				
			45 (EL-illuminated)						
			83 (EL-illuminated) - Double-action model	125V/20MΩ 250V/50MΩ 500V/100MΩ	0–600V				
			84 (EL-illuminated) - Double-action model	125V/20MΩ 250V/50MΩ 1000V/2000MΩ	0–600V				
	Single range	MY10 CE	01 (afterglow-illuminated)	125V/20MΩ	0–250V	Analog	Automatic discharge Battery check		P.7
			02 (afterglow-illuminated)	250V/50MΩ	0–300V				
			03 (afterglow-illuminated)	500V/100MΩ	0–500V				
			04 (afterglow-illuminated)	500V/1000MΩ	0–500V				
			05 (afterglow-illuminated)	1000V/2000MΩ	0–500V				
	Single range	3213A	41 (N/A)	100V/20MΩ	0–150V	Analog	Battery check		P.8
			42 (N/A)	250V/50MΩ	0–250V				
			43 (N/A)	500V/100MΩ	0–300V				
			44 (N/A)	500V/1000MΩ	0–300V				
			45 (N/A)	1000V/2000MΩ	0–300V				
			46 (N/A)	125V/20MΩ	0–250V				

MY40 Digital Insulation Tester

MY40 SERIES

- **Digital model with 4 voltage/resistance ratings**
- **Multifunction**
  Insulation resistance, AC voltage and conductor resistance measurement
  Insulation test mode: Comparator, memory, auto-hold and discharge functions
  All test modes: Live-line alarm (excluding AC voltage measurement), battery check and automatic power-off
- **Easy-to-view, fluctuation-free display**
- **Double-action safety mechanism**

Protection against inadvertent setting of rotary switch to 1000 V rating

Testing Performance Specifications

Model	Rating	Range Option	Resolution	Measuring Range	Tolerance	Lower Limit of measured Ω	Rated Current	Central Scale Value
MY40-01	125V/200MΩ	.4000	.1kΩ	0–.0199MΩ	± (5%of rdg+6dgt)	0.125MΩ	1mA	5MΩ
		4.000	1kΩ	.0200–20.00MΩ*	± (2%of rdg+6dgt)			
		40.00	10kΩ	20.01–200.0MΩ	± 5%of rdg			
		200.0	100kΩ					
	250V/200MΩ	.4000	.1kΩ	0–.0499MΩ	± (5%of rdg+6dgt)	0.25MΩ	1mA	5MΩ
		4.000	1kΩ	.0500–20.00MΩ*	± (2%of rdg+6dgt)			
		40.00	10kΩ	20.01–200.0MΩ	± 5%of rdg			
		200.0	100kΩ					
	500V/2000MΩ	4.000	1kΩ	0–0.999MΩ	± (5%of rdg+6dgt)	0.5MΩ	1mA	50MΩ
		40.00	10kΩ	1.000–500MΩ*	± (2%of rdg+6dgt)			
		400.0	100kΩ	501–2000MΩ	± 5%of rdg			
		2000	1MΩ					
	1000V/2000MΩ	4.000	1kΩ	0–1.999MΩ	± (5%of rdg+6dgt)	2MΩ	0.5mA	50MΩ
		40.00	10kΩ	2.000–1000MΩ*	± (2%of rdg+6dgt)			
		400.0	100kΩ	1001–2000MΩ	± 5%of rdg			
		2000	1MΩ					

* First effective measuring range; ** The minimum value at which the rated voltage can be maintained

Standard test conditions
Ambient temperature/humidity ranges: 23 ±5℃/45-75% RH

Tolerances under the above-mentioned conditions:

Deviation from zero scale value: 6 digits maximum

Indication of ∞ mark on bar graph: Approx. 4000 MΩ min. (500 V/1000 V)
Approx. 400 MΩ min. (125 V/250 V)

No-load voltage: 130% max. of rated voltage

Rated measuring current: 1 mA (0 to 20%) when in first effective measuring range
Short-circuit Current: 2 mA max.

AC voltage measurement (45-400 Hz)

Model	Range	Resolution	Accuracy	Input Impedance
MY40-01	600V	1V	±(2% of rdg + 6dgt)	Approx. 2 MΩ

Conductor resistance measurement

Model	Range	Resolution	Accuracy	Open-circuit Voltage
MY40-01	400Ω	0.1Ω	±(2% of rdg + 8dgt)	Buzzer sound resistance: <40Ω.

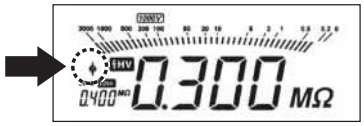
General Specifications

Display: 3 1/2-digit LCD; 4000 count; backlight-illuminated; logarithmic bar graph; extension bar graph–no fluctuations, as the display shows the digits of a reading in the order in which each digit settles.

Example of Extension Bar Indicator View

The data value is changing.

The data value is fixed.



Comparator function: The MY40 alerts you by turning on the LOW symbol and sounding the buzzer if the measured value is smaller than the reference value. You can allocate as many as three user-defined reference values to each rating. The factory-set defaults are 0.1 MΩ, 0.2 MΩ and 0.4 MΩ.

Memory function: For each rating, you can save as many as 20 measurements at desired memory address numbers.

Automatic discharge function: The MY40 automatically begins discharge when you turn off the MEAS switch. You can monitor the state of discharge by checking the bar graph and make sure discharge is complete by checking that the segment bar disappear.

High-voltage indicators: The high-voltage symbol and LED lamp come on to alert you when the MY40 is in insulation testing mode or if any voltage remains to be discharged.

Live-line alarm: If you apply an AC voltage of approximately 40 V or higher across the input terminals, the MY40 alerts you by blinking the LED lamp and sounding the buzzer.

Overrange input alarm: If the voltage being measured exceeds 600 V during AC voltage measurement, the MY40 alerts you by flashing the Maximum Value indicator and sounding the buzzer.

Auto-hold function: The tester retains the measured resistance for approximately 5 seconds after the MEAS switch is turned off.

Dimensions: 125 (W) × 103 (H) × 53 (D) (mm), excluding protrusions

Weight: 420 g (main unit and batteries only, excluding accessories)

Batteries: Four AA (R6P) batteries

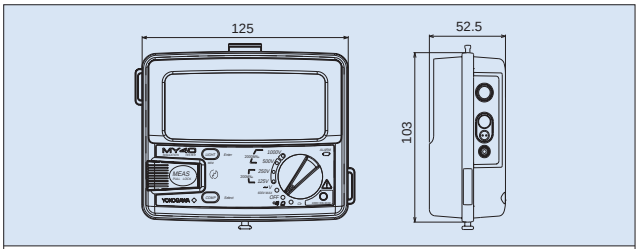
Note: See the list of accessories on the backside of this bulletin for more information on accessories such as spare probe tips.

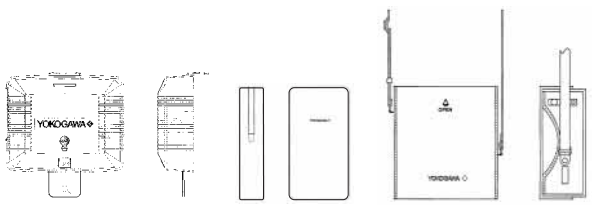
Standard Accessories

Product	Part Number	Qty
Protection cover	93013	1
Shoulder strap	99005	1
Line probe	98001	1
Earth probe	98002	1
User's manual	–	1
Batteries	–	4

External Dimensions

Unit: mm





93013
Protection cover

B9108XA
Accessory-housing case

93015
Carrying case
(case for housing both the main unit and accessories)

2426A Series of Digital Insulation Testers

2426A SERIES

CE

CE marking only for 2426 07 and 2426 08

- **Digital models with 3 ratings**
- **AC voltage measurement**
- **EL backlight**
- **Fast-response bar graph**
- **Digital readings with minimal fluctuations**
- **Sound-signaled comparator function**
- **One-touch key operation**
- **Can be suspended from your neck while in use**
- **High accuracy: ±(2% of reading + 1 digit)**

242605/242606/242609 (LED backlight):
242607/242608/242610/242615 (EL backlight):

Testing Performance Specifications

Model	Rating	Range Option	Resolution	Measuring Range	Tolerance	Lower Limit of measured Ω	Rated Current	Central Scale Value
2426 05 2426 07	250V/ 200MΩ	.4000 4.000 40.00 200.0	.1kΩ 1kΩ 10kΩ 100kΩ	0–.0499MΩ .0500–20.00MΩ* 20.01–200.0MΩ	±(5% of rdg+6dgt) ±(2% of rdg+1dgt) ±5% of rdg	0.25MΩ	1mA	5MΩ
	500V/ 2000MΩ	4.000 40.00 400.0 2000	1kΩ 10kΩ 100kΩ 1MΩ	0–0.999MΩ 1.000–500MΩ* 501–2000MΩ	±(5% of rdg+6dgt) ±(2% of rdg+1dgt) ±5% of rdg	0.5MΩ	1mA*	50MΩ
	1000V/ 2000MΩ	4.000 40.00 400.0 2000	1kΩ 10kΩ 100kΩ 1MΩ	0–1.999MΩ 2.000–1000MΩ* 1001–2000MΩ	±(5% of rdg+6dgt) ±(2% of rdg+1dgt) ±5% of rdg	1MΩ	1mA*	50MΩ
2426 06 2426 08	100V/ 200MΩ	.4000 4.000 40.00 200.0	.1kΩ 1kΩ 10kΩ 100kΩ	0–.0199MΩ .0200–10.00MΩ* 10.01–200.0MΩ	±(5% of rdg+6dgt) ±(2% of rdg+1dgt) ±5% of rdg	0.1MΩ	1mA	5MΩ
	250V/ 200MΩ	.4000 4.000 40.00 200.0	.1kΩ 1kΩ 10kΩ 100kΩ	0–0.499MΩ .0500–20.00MΩ* 20.01–200.0MΩ	±(5% of rdg+6dgt) ±(2% of rdg+1dgt) ±5% of rdg	0.25MΩ	1mA	5MΩ
	500V/ 200MΩ	.4000 4.000 40.00 200.0	.1kΩ 1kΩ 10kΩ 100kΩ	0–.0999MΩ .1000–50.0MΩ* 50.1–200.0MΩ	±(5% of rdg+6dgt) ±(2% of rdg+1dgt) ±5% of rdg	0.5MΩ	1mA	5MΩ
2426 09 2426 10	125V/ 200MΩ	.4000 4.000 40.00 200.0	.1kΩ 1kΩ 10kΩ 100kΩ	0–.0199MΩ .0200–10.00MΩ* 10.01–200.0MΩ	±(5% of rdg+6dgt) ±(2% of rdg+1dgt) ±5% of rdg	0.125MΩ	1mA	5MΩ
	250V/ 200MΩ	.4000 4.000 40.00 200.0	.1kΩ 1kΩ 10kΩ 100kΩ	0–0.0499MΩ .0500–20.00MΩ* 20.01–200.0MΩ	±(5% of rdg+6dgt) ±(2% of rdg+1dgt) ±5% of rdg	0.25MΩ	1mA	5MΩ
	500V/ 200MΩ	.4000 4.000 40.00 200.0	.1kΩ 1kΩ 10kΩ 100kΩ	0–0.0999MΩ .1000–50.0MΩ* 50.1–200.0MΩ	±(5% of rdg+6dgt) ±(2% of rdg+1dgt) ±5% of rdg	0.5MΩ	1mA	5MΩ
2426 15	25V/ 200MΩ	.4000 4.000 40.00 200.0	.1kΩ 1kΩ 10kΩ 100kΩ	0–.0499MΩ .0500–20.0MΩ* 20.01–200.0MΩ	±(5% of rdg+6dgt) ±(2% of rdg+1dgt) ±5% of rdg	0.025MΩ	1mA*	5MΩ
	50V/ 200MΩ	.4000 4.000 40.00 200.0	.1kΩ 1kΩ 10kΩ 100kΩ	0–.0999MΩ .1000–50.0MΩ* 50.1–200.0MΩ	±(5% of rdg+6dgt) ±(2% of rdg+1dgt) ±5% of rdg	0.05MΩ	1mA*	5MΩ
	125V/ 200MΩ	.4000 4.000 40.00 200.0	.1kΩ 1kΩ 10kΩ 100kΩ	0–.0199MΩ .0200–10.0MΩ* 10.01–200.0MΩ	±(5% of rdg+6dgt) ±(2% of rdg+1dgt) ±5% of rdg	0.125MΩ	1mA	5MΩ

* First effective measuring range; ** The minimum value at which the rated voltage can be maintained; *** 0.55 mA in the case of the first effective measuring range

LED-backlit EL-backlit

Standard test conditions: Ambient temperature/humidity ranges: 23 ±5℃/45-75% RH

No-load voltage: 130% max. of rated voltage (120% max. of rated voltage for Model 242615)
Rated measuring current: 1 mA (0 to 20%) when in first effective measuring range
Short-circuit current: 12 mA max.

AC voltage measurement (48-200 Hz)

Model	Range	Resolution	Accuracy	Input Impedance
2426 05/07	300V	1V	±(1.5% of rdg + 6dgt)	Approx. 20 MΩ
2426 06/08	300V	1V	±(1.5% of rdg + 6dgt)	Approx. 12 MΩ
2426 09/10	300V	1V	±(1.5% of rdg + 6dgt)	Approx. 12 MΩ
2426 15	150V	1V	±(1.5% of rdg + 6dgt)	Approx. 2 MΩ

Continuity check:

The buzzer sounds for threshold resistance levels lower than 50 ± 15Ω at the open-circuit voltage of approximately 4 V.

General Specifications

Measuring functions: Insulation resistance measurement (MΩ), AC voltage measurement (ACV) and continuity check (>))))

Display: 3 1/2-digit LCD; 4000 count maximum; 42-segment, logarithmic bar graph; overrange input indicator—the OL symbol comes on if the measured value exceeds 2000 count (200.0 range).
MΩ range selection: Fully automatic ranging
Range step-up: The tester shifts the range one step upward for input levels higher than 4000 count.
Range step-down: The tester shifts the range one step downward for input levels lower than 360 count.
ACV measurement and continuity check: One range

Automatic power-down: The reading begins to blink approximately 10 minutes after the last operation and the tester enters power-down mode.

High-voltage LED indicator: The LED lamp comes on when the tester generates high voltages, except for a case when the grounding and line terminals are short-circuited.

Live-line alarm: The live-line alarm lamp comes on if you apply an AC voltage of approximately 40 V or higher (20 V or higher for Model 242615) across the test terminals.

Comparator function: The tester alerts you by turning on the LOW symbol and sounding the buzzer if the measured value is smaller than 0.1 MΩ, 0.2 MΩ, 0.4 MΩ or any other user-defined reference value.

Reading	Hysteresis
0-99 digits	0 digit
100-199 digits	±5 digits
200-4000 digits	±10 digits

Fuse: 0.25 A/250 V; size: 5ø × 20 mm; built in the main unit

Dimensions: Approx. 105 × 170 × 50 (65 max.) (mm)

Weight: Approx. 700 g (main unit and batteries only)

Batteries: Eight AA (R6P) batteries

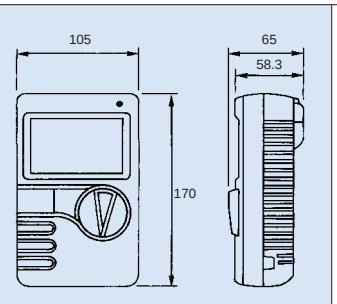
Low-battery alarm: The battery symbol on the LCD comes on for a battery voltage level of 9 ±0.5 V or lower.
Note: See the list of accessories on the backside of this bulletin for more information on accessories such as spare probe tips.

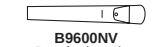
Standard Accessories

Product	Part Number	Qty
Line probe	B9204FT	1
Earth probe	B9204FW	1
Carrying case	B9204BP	1
User's manual	–	1
Batteries	–	8

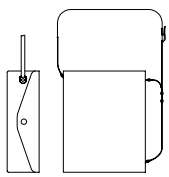
External Dimensions

Unit: mm





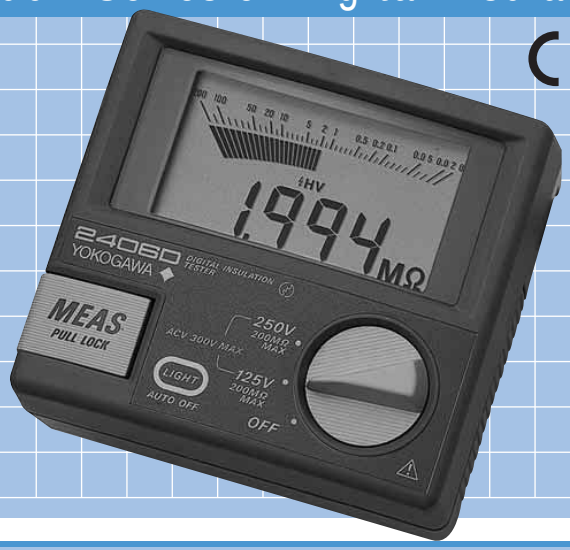
B9600NV
Bag for housing spare probe tips



B9204BP
Carrying case

2406D Series of Digital Insulation Testers

2406D SERIES



2406 51 2406 52 2406 53 2406 54 2406 55 2406 57
2406 61 2406 62 2406 63 2406 64 2406 65 2406 67

- **Digital models with single and two ratings**
- **AC voltage measurement**
- **Automatic discharge**
- **EL backlight**
- **Addition of 500 V/2000 MΩ model**
- **Excellent tolerance: 2% of reading + 1 digit (first effective measuring range)**

Testing Performance Specifications

Model	Rating	Range Option	Resolution	Measuring Range	Tolerance	Lower Limit of measured Ω	Rated Current	Central Scale Value
2406 51 2406 61	125V/ 200MΩ	.4000 4.000 40.00 200.0	.1kΩ 1kΩ 10kΩ 100kΩ	0–.0199MΩ .0200–10.00MΩ* 10.01–200.0MΩ	±(5% of rdg + 6dgt) ±(2% of rdg + 1dgt) ±5% of rdg	0.125MΩ	1mA	5MΩ
	250V/ 200MΩ	.4000 4.000 40.00 200.0	.1kΩ 1kΩ 10kΩ 100kΩ	0–.0499MΩ .0500–20.00MΩ* 20.01–200.0MΩ	±(5% of rdg + 6dgt) ±(2% of rdg + 1dgt) ±5% of rdg	0.25MΩ	1mA	5MΩ
2406 52 2406 62	125V/ 200MΩ	.4000 4.000 40.00 200.0	.1kΩ 1kΩ 10kΩ 100kΩ	0–.0199MΩ .0200–10.00MΩ* 10.01–200.0MΩ	±(5% of rdg + 6dgt) ±(2% of rdg + 1dgt) ±5% of rdg	0.125MΩ	1mA	5MΩ
2406 53 2406 63	250V/ 200MΩ	.4000 4.000 40.00 200.0	.1kΩ 1kΩ 10kΩ 100kΩ	0–.0499MΩ .0500–20.00MΩ* 20.01–200.0MΩ	±(5% of rdg + 6dgt) ±(2% of rdg + 1dgt) ±5% of rdg	0.25MΩ	1mA	5MΩ
2406 54 2406 64	500V/ 200MΩ	.4000 4.000 40.00 200.0	.1kΩ 1kΩ 10kΩ 100kΩ	0–.0999MΩ .1000–50.0MΩ* 50.1–200.0MΩ	±(5% of rdg + 6dgt) ±(2% of rdg + 1dgt) ±5% of rdg	0.5MΩ	1mA	5MΩ
2406 55 2406 65	1000V/ 2000MΩ	4.000 40.00 400.0 2000	1kΩ 10kΩ 100kΩ 1MΩ	0–1.999MΩ 2.000–1000MΩ* 1001–2000MΩ	±(5% of rdg + 6dgt) ±(2% of rdg + 1dgt) ±5% of rdg	1MΩ	1mA***	50MΩ
2406 57 2406 67	500V/ 2000MΩ	4.000 40.00 400.0 2000	1kΩ 10kΩ 100kΩ 1MΩ	0–0.999MΩ 1.000–500MΩ* 501–2000MΩ	±(5% of rdg + 6dgt) ±(2% of rdg + 1dgt) ±5% of rdg	1MΩ	1mA	50MΩ

* First effective measuring range; ** The minimum value at which the rated voltage can be maintained;
*** 0.55 mA in the case of the lower limit of the first effective measuring range

Non-backlit LED-backlit

Standard test conditions:
Ambient temperature/humidity ranges: 23 ±5˚C/45-75% RH
Position of use: Unrestricted
Effect of geomagnetism: None
Low-battery alarm: The battery symbol on the LCD comes on for a battery voltage level of 7 V ±0.5 V or lower.
No-load voltage: 130% max. of rated voltage
Rated measuring current: 1 mA (0 to 20%) when in first effective measuring range
Short-circuit current: 12 mA max.

AC voltage measurement specifications

Model	Range	Resolution	Accuracy	Input Impedance
2406 51, 52, 53 2406 61, 62, 63	300V	1V	±(1.5% of rdg + 6dgt)	Approx. 1.5 MΩ
2406 54, 55, 57 2406 64, 65, 67	600V	1V	±(1.5% of rdg + 6dgt)	Approx. 1.5 MΩ

Large switch for better operation

General Specifications

Discharge function: The tester automatically discharge when you turn off the MEAS switch. The segment bar extends if there is any residual voltage in the circuit under test. You can make sure discharge is complete by checking that the segment bar disappears from the display. Under this condition, the tester is ready to enter voltage measurement mode.

AC voltage measurement: The tester enters AC voltage measurement mode when you turn on the power (rotary) switch.

Auto-hold function:
The tester retains the measured resistance for approximately 5 seconds after the MEAS switch is turned off.

Display: 3 1/2-digit LCD; 4000 count maximum; 42-segment, logarithmic bar graph; overrange input indicator—the OL symbol comes on if the measured value exceeds 2000 count (200.0 range).

MΩ range selection:
Fully automatic ranging

Range step-up:
The tester shifts the range one step upward for input levels higher than 4000 count.

Range step-down:
The tester shifts the range one step downward for input levels lower than 360 count.

Dimensions (main unit): Approx. 120 (W) × 110 (H) × 60 (D) (mm)

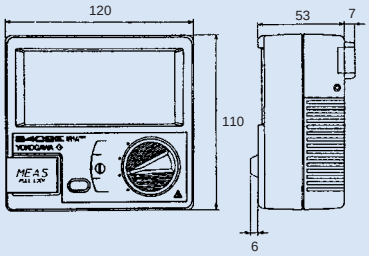
Weight: Approx. 500 g (including batteries)

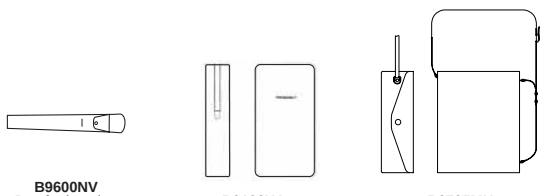
Batteries: Six AA (R6P) batteries

Note: See the list of accessories on the backside of this bulletin for information on accessories such as spare probe tips.

External Dimensions

Unit: mm





B9600NV
Bag for housing spare probe tips

B9108XA
Accessory-housing case

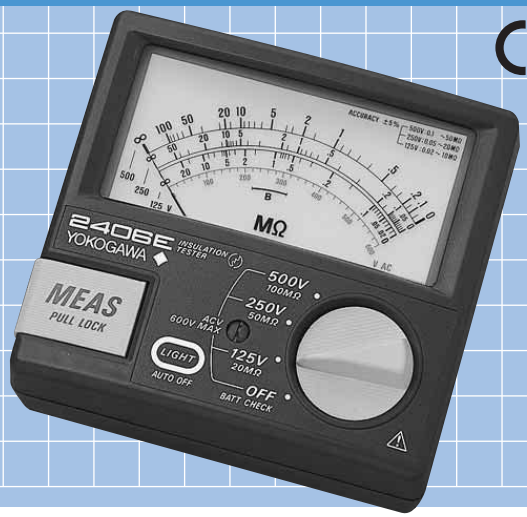
B9705MU
Hard case

Standard Accessories

Same as those of the 2406E series (except for Models 240683/240684).

2406E Series of Analog Insulation Testers

2406E SERIES



2406 31 2406 32 2406 33 2406 34 2406 35 2406 83
2406 41 2406 42 2406 43 2406 44 2406 45 2406 84

- **Analog models with two and three ratings**
- **AC voltage measurement**
- **Automatic discharge**
- **Sky blue EL backlight**
- **Increased safety (covered battery charger)**

Testing Performance Specifications

Model	Rating	Effective Measuring range	Central Scale Value	AC Voltage Measuring range	Lower limit of measured Ω	Rated Current
2406 31	25V/5MΩ	0.001–5MΩ	0.1MΩ	0–300V	0.025MΩ	1mA
2406 41	50V/10MΩ	0.005–10MΩ	0.2MΩ		0.05MΩ	1mA
	125V/20MΩ	0.01–20MΩ	0.5MΩ		0.125MΩ	1mA
2406 32	125V/20MΩ	0.01–20MΩ	0.5MΩ	0–300V	0.125MΩ	1mA
2406 42	250V/50MΩ	0.01–50MΩ	1MΩ		0.25MΩ	1mA
2406 33	125V/20MΩ	0.01–20MΩ	0.5MΩ	0–600V	0.125MΩ	1mA
2406 43	250V/50MΩ	0.01–50MΩ	1MΩ		0.25MΩ	1mA
	500V/100MΩ	0.05–100MΩ	2MΩ		0.5MΩ	1mA
2406 34	250V/50MΩ	0.01–50MΩ	1MΩ	0–600V	0.25MΩ	1mA
2406 44	500V/100MΩ	0.05–100MΩ	2MΩ		0.5MΩ	1mA
	1000V/2000MΩ	1–2000MΩ	50MΩ		1MΩ	1mA**
2406 35	250V/500MΩ	0.1–500MΩ	10MΩ	0–600V	0.25MΩ	1mA**
2406 45	500V/1000MΩ	0.5–1000MΩ	20MΩ		0.5MΩ	1mA**
	1000V/2000MΩ	1–2000MΩ	50MΩ		1MΩ	1mA**
2406 83	Double-action selection of 500 V range for safe operation Designed for diagnosis of electric circuits (corresponds to Models 240633/43)				Same as those of Models 240633/43.	
2406 84	125V/20MΩ	0.02–20MΩ	0.5MΩ	0–600V	0.125MΩ	1mA
	250V/50MΩ	0.05–50MΩ	1MΩ		0.25MΩ	1mA
	1000V/2000MΩ	2–2000MΩ	50MΩ		1MΩ	1mA**

EL-backlit Non-backlit

* The minimum value at which the rated voltage can be maintained;
** 0.55 mA in the case of the first effective measuring range

Standard test conditions:
Ambient temperature/humidity ranges: 23 ±5℃/45-75% RH
Position of use: Horizontal (5° max. of angle of inclination)
External magnetic fields: None
Battery voltage: Within effective voltage range
(The pointer must stay within the range indicated by the BAT symbol when the battery check is performed.)

Tolerances under the above-mentioned conditions:
Resistance measurement: First effective measuring range = ±5% of reading
Second effective measuring range = ±10% of reading
Infinite and zero scale values: 0.7% max. of scale length
AC voltage: ±10% of maximum scale value
No-load voltage: 130% max. of rated voltage
Rated measuring current: 1 mA (0 to 20%) when in first effective measuring range
Short-circuit current: 12 mA max.

Large switch for better operability and double-action safety mechanism (Models 240683/84 only)

The 500 V or 1000 V range can only be selected by pressing the SET button and operating the rotary switch. This safety mechanism is employed to prevent the object under test from being destroyed by inadvertently setting the rotary switch to the range. (Backlight interlocks with pressing the MEAS switch. All other models have LIGHT keys in place of the SET key.)

General Specifications

Scale length: Approx. 86 mm (outer scale)

Discharge function: The tester automatically begins discharge when you turn off the MEAS switch. The pointer swings if there is any residual voltage in the circuit under test. You can make sure discharge is complete by checking that the pointer swings back to the infinite (∞) scale value. Under this condition, the tester is ready to enter voltage measurement mode.

AC voltage measurement: AC voltage measurement is possible wherever the rotary switch is positioned.

Dimensions (main unit): Approx. 120 (W) × 110 (H) × 60 (D) (mm)

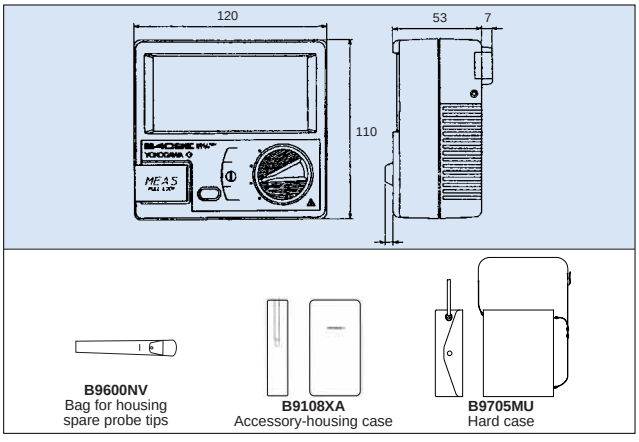
Weight: Approx. 500 g (including batteries)

Batteries: Six AA (R6P) batteries

Accessories: See the list of accessories on the backside of this bulletin for information on accessories such as spare probe tips.

External Dimensions

Unit: mm



Standard Accessories

All Models Except 240683/84

Product	Part Number	Qty	Remarks
Line probe	B9204FT	1	Vermilion; approx. 1 m long
Earth probe	B9204FW	1	Black; approx. 1 m long
Carrying case	B9075MU	1	w/probe-housing pocket and neck strap
User's manual	–	1	–
Batteries	–	6	–

Models 240683/84

	2406 83	2406 84
Batteries	6	6
Probe with switch	B9204FX	B9075TF
Spare probe tip	B9600NZ	–
Earth probe	B9204FW	B9075TG
Probe-tying band	B9075TD	–
Soft carrying case	B9075MV	–
Hard carrying case	–	B9075TX
User's manual	○	○
Accessory list	○	○

MY10 Series of Analog Insulation Testers

MY10 SERIES

- **Analog models with single rating**
  - **MY10-01:125V/20MΩ**
  - **MY10-02:250V/50MΩ**
  - **MY10-03:500V/100MΩ**
  - **MY10-04:500V/1000MΩ**
  - **MY10-05:1000V/2000MΩ**
- **AC voltage measurement**
- **Automatic discharge**
- **A wide choice of accessories –Designed for shared use with the MY40**

Testing Performance Specifications

Model	Rating	Effective Measuring Range	Central Scale Value	AC Voltage Measuring Range	Lower Limit of Measured Ω*	Rated Current
MY10-01	125V/20MΩ	0.01–20MΩ	0.5MΩ	0–250V	0.125MΩ	1–1.2mA
MY10-02	250V/50MΩ	0.01–50MΩ	1MΩ	0–300V	0.25MΩ	1–1.2mA
MY10-03	500V/100MΩ	0.05–100MΩ	2MΩ	0–500V	0.5MΩ	1–1.2mA
MY10-04	500V/1000MΩ	0.5–1000MΩ	20MΩ	0–500V	1MΩ	0.5–0.6mA
MY10-05	1000V/2000MΩ	1–2000MΩ	50MΩ	0–500V	2MΩ	0.5–0.6mA

* The minimum value at which the rated voltage can be maintained

Standard test conditions:
Ambient temperature/humidity ranges: 23 ±5℃/45-75% RH
Position of use: Horizontal (5° max. of angle of inclination)
Effect of geomagnetism: None
Battery voltage: Within effective voltage range
(The pointer must stay within the range indicated by the BAT symbol when the battery check is performed.)

Tolerances under the above-mentioned conditions:
Resistance measurement: First effective measuring range = ±5% of reading
Second effective measuring range = ±10% of reading
Infinite and zero scale values: 0.7% max. of scale length
AC voltage: ±10% of maximum scale value
No-load voltage: 130% max. of rated voltage
Rated measuring current: 1 mA (0 to 20%) when in first effective measuring range
Short-circuit current: 12 mA max.

General Specifications

Overall scale length: Approx. 107 mm; afterglow-illuminated scale plate

AC voltage measurement: If any AC voltage is present across the test terminals, the tester lets you know by pointing to an AC voltage value and turning on the LED lamp. You can perform AC voltage measurement with the MEAS switch turned off.

Additional functions:

- Automatic discharge function
  - If the object under test remains electrified after the MEAS switch is turned off, the tester lets you know by turning on the LED lamp. If you leave the tester connected to the electrified object, the tester automatically begins to discharge electricity and then finishes discharging—the LED lamp comes on and then goes out.
  - When the object under test is capacitive and electrified, the tester lets you know by turning on the LED lamp. When left connected to the object, the tester automatically discharges electricity, thus preventing possible electric shock or spike noise at power-on.
- Battery check (BAT mark on the scale plate)

Battery life: Approx. 10 hours when continuously operated on manganese-oxide batteries with the pointer pointing to the central scale value.

Batteries: Four AA (R6P) batteries

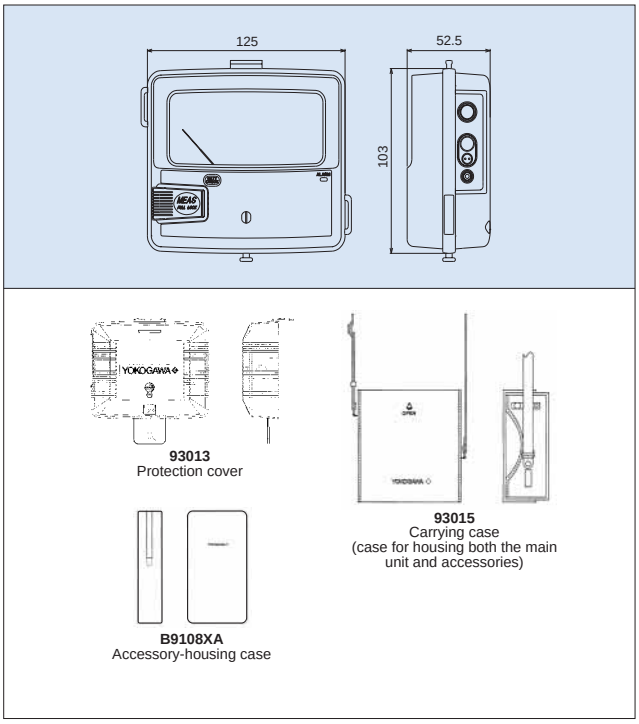
Dimensions: Approx. 125 (W) × 103 (H) × 53 (D) (mm), excluding protrusions

Weight: Approx. 500 g (main unit and batteries only, excluding accessories)

Compliance: EN61010-1:1993; EN61010-2-31:1995
(Overvoltage Category III, Pollution Degree 2 installations for indoor use)

External Dimensions

Unit: mm



Standard Accessories

Product	Part Number	Qty
Protection cover	93013	1
Shoulder strap	99005	1
Line probe	98001	1
Earth probe	98002	1
User's manual	–	1
Batteries	–	4

3213A Series of Analog Insulation Testers

3213A SERIES

- Analog models with single rating
- AC voltage measurement and check live lines such as motive power lines
- One-touch operation Press-and-lock switch for continuous measurement
- A wide choice of accessories to meet various testing requirements
- Vibration- and shock-resistant hand-held compact testers

Testing Performance Specifications

Model	Rating	Effective Measuring Range	Central Scale Value	AC Voltage Measuring Range	Lower Limit of measured Ω	Rated Current
321341	100V/20MΩ	0.02–20MΩ	0.5MΩ	0–150V	0.1MΩ	1mA
321342	250V/50MΩ	0.05–50MΩ	1MΩ	0–250V	0.25MΩ	1mA
321343	500V/100MΩ	0.1–100MΩ	2MΩ	0–300V	0.5MΩ	1mA
321344	500V/1000MΩ	1–1000MΩ	20MΩ	0–300V	0.5MΩ	1mA**
321345	1000V/2000MΩ	2–2000MΩ	50MΩ	0–300V	1MΩ	1mA**

* The minimum value at which the rated voltage can be maintained; ** 0.55 mA in the case of the first effective measuring range

Standard test conditions:
Ambient temperature/humidity ranges: 23 ±5°C/45-75% RH
Position of use: Horizontal (5° max. of angle of inclination)
Effect of geomagnetism: None
Battery voltage: Within effective voltage range
(The pointer must stay within the range indicated by the BAT symbol when the battery check is performed.)

Tolerances under the above-mentioned conditions:
Resistance measurement:
First effective measuring range = ±5% of reading
Second effective measuring range = ±10% of reading
Infinite and zero scale values: 0.7% max. of scale length
AC voltage: ±10% of maximum scale value
No-load voltage: 130% max. of rated voltage
Rated measuring current: 1 mA (0 to 20%) when in first effective measuring range
Short-circuit current: 12 mA max.

General Specifications

Scale length: Approx. 88 mm

Dimensions (main unit): Approx. 110 (W) × 180 (H) × 60 (D) (mm)

Weight: Approx. 700 g including batteries, or approx. 1.2 kg including hard case, handle, test leads and batteries

Batteries: Eight AA (R6P) batteries

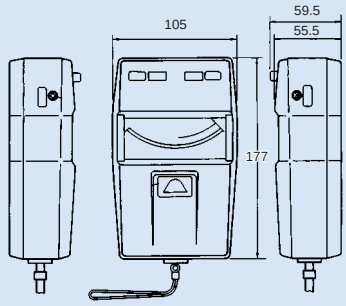
Accessories: See the list of accessories on the backside of this bulletin for information on accessories such as probes with a switch.

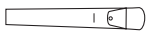
Standard Accessories

Product	Part Number	Qty
Test lead	B9205VA	1 (consist of earth/line terminal)
Hard case	B9600HA	1 (w/leads-housing case)
Handle	B9303XE	1
User's manual	–	1
Batteries	–	8

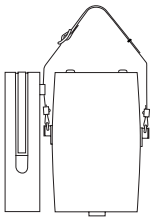
External Dimensions

Unit: mm





B9600NV
Bag for housing spare probe tips



B9600HA
Carrying case

Related Products

Generator-driven Insulation Tester

Model 2404: (including case)
Dimensions: Approx. 112 × 184 × 105 (mm)
Weight: Approx. 1.3 kg

Ground Resistance Meter

Model 3235: (including case)
Dimensions: Approx. 210 × 140 × 135 (mm)
Weight: Approx. 2.5 kg, including case

Automatic Power Distribution Tester

Model 3207: (with case)
Dimensions: Approx. 210 × 140 × 142 (mm)
Weight: Approx. 2.3 kg (main unit only)

Quick-reference Table of Accessories for Insulation Testers

Series/Model			2404	3213A	2426A	2406E	2406D	MY10	MY40
Spare probe tip	For breaker pins	99011						○	○
	General-purpose	B9600GN		○	○	○	○	○ *1	○ *1
	Hook-shaped	B9600NW		○	○	○	○	○ *1	○ *1
	Extended	B9600NX		○	○	○	○	○ *1	○ *1
	Sharp-pointed	B9600NZ		○	○	○	○	○ *1	○ *1
	Pickax-shaped	B9635JK		○	○	○	○	○ *1	○ *1
Probe	Line probe				B9204FT	B9204FT B9075TF*2	B9204FT	98001	98001
	Earth probe				B9204FW	B9204FW B9075TG*2	B9204FW	98002	98002
	Measuring Lead unit (Paired earth/line terminals)		B9634FA	B9205VA					
	Probe with switch			321802	B9204FX	B9204FX	B9204FX		
	Replaceable type line probe (Probe with replaceable tip)							98005	98005
Case *3	Bag for housing spare probe tips			B9600NV	B9600NV	B9600NV	B9600NV		
	Accessory-housing case			B9646CA		B9108XA	B9108XA	B9108XA	B9108XA
	Carrying case		B9634FF	B9600HA w/accessory-housing case	B9204BP Store main unit /accessories	B9075MU (hard case) B9075MV (soft case) Note: Includes an accessory-housing case.		93015 Store main unit /accessories	93015 Store main unit /accessories
Others	Protection cover							93013	93013
	Shoulder strap							99005	99005
	Handle			B9303XE					
	Lead for guard terminals			321803	321803	321803	321803		

○: **denotes "applicable."**
Note that the color of the plastic part of a probe tip may not always match that of the probe, depending on the combination.

*1 In the case of MY10 and MY40 testers, the spare probe tip always requires use of a 98005 Replaceable type line probe together with it.

*2 The B9075TF and B9075TG probes are designed for exclusive use with Model 240684.

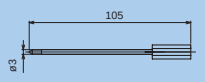
*3 Regarding external dimensions of cases, Pls refer to each product specification.

No.	Description	Remarks
①	Testing shank	Metal shank with ø6 screw
②	Fastening nut	ABS resin
③	PVC-clad	

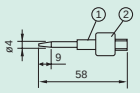
■ Spare Probe Tips

Unit: mm

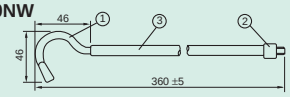
99011



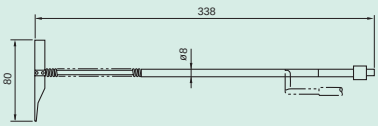
B9600GN



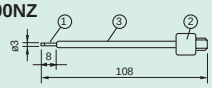
B9600NW



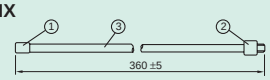
B9635JK



B9600NZ

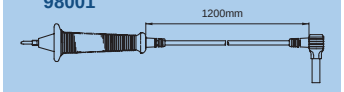


B9600NX

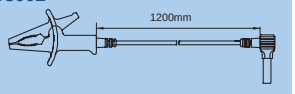


■ Probes

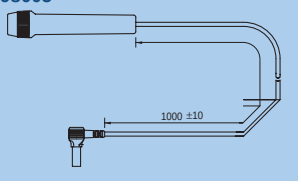
98001



98002



98005



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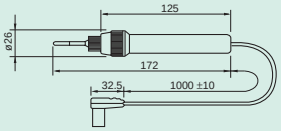

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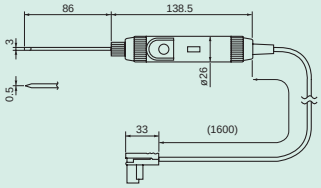

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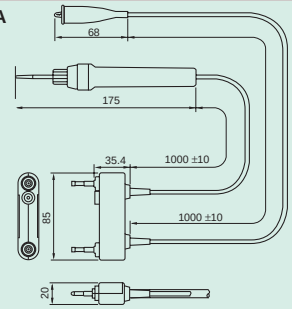

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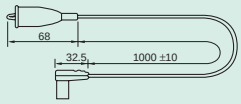

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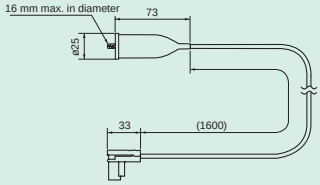

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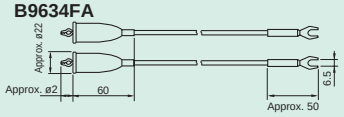
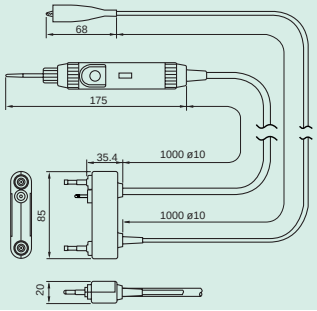


■ Probes with Switch

3218 02



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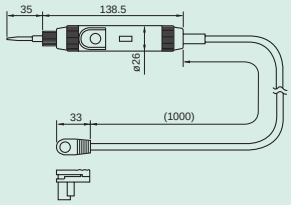

■ Others

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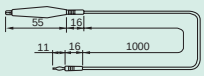

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⚠NOTICE
● Before using the product, read the instruction manual carefully to ensure proper and safe operation.

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[Ed: 01/b]
Printed in Japan: Jan 2001(C)/5,000(YG)