

# Insulation Testers

## Battery Powered Insulation Testers

● Analog Models

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

● Digital Models

- 2406D** Single and 2 ranges
- MY40** 4 ranges



3213A  
(110x180x60mm)

2406E  
(120x110x60mm)





MY10  
(125x103x53mm)

2406D  
(120x110x60mm)

MY40  
(125x103x53mm)

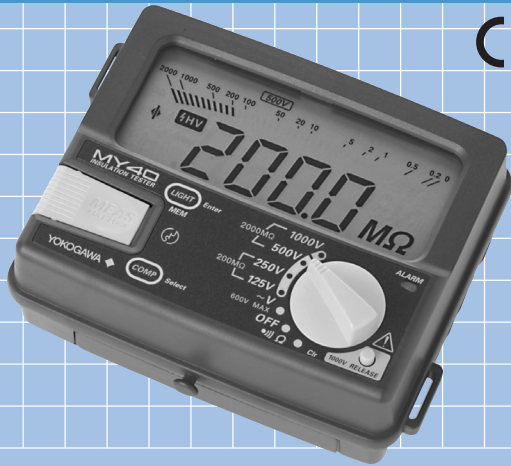


# Selection Guide

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
			Single & 2 ranges	2406D CE	51 (N/A)	125V/200MΩ	0-300V	3 1/2-digit LCD	Automatic discharge
	61 (LED-illuminated)	250V/200MΩ							
	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)									
Analog Insulation testers	2 & 3 ranges	2406E CE	31 (N/A)	25V/5MΩ	0-300V	Analog	Automatic discharge Battery check		P.5
			41 (EL-illuminated)	50V/10MΩ 125V/20MΩ					
			32 (N/A)	125V/20MΩ	0-300V				
			42 (EL-illuminated)	250V/50MΩ					
			33 (N/A)	125V/20MΩ	0-600V				
			43 (EL-illuminated)	250V/50MΩ 500V/100MΩ					
			34 (N/A)	250V/50MΩ	0-600V				
			44 (EL-illuminated)	500V/100MΩ 1000V/2000MΩ					
	35 (N/A)	250V/500MΩ	0-600V						
	45 (EL-illuminated)	500V/1000MΩ 1000V/2000MΩ							
	Single range	MY10 CE	01 (afterglow-illuminated)	125V/20MΩ	0-250V	Analog	Automatic discharge Battery check		P.6
			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.7	
		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

## Testing Performance Specifications

Model	Rating	Range Option	Resolution	Measuring Range	Tolerance	Lower Limit of measured $\Omega$	Rated Current	Central Scale Value
MY40-01	125V/200M $\Omega$	4.000	.1k $\Omega$	0--0.199M $\Omega$	$\pm$ (5% of rdg+6dgt)	0.125M $\Omega$	1mA	5M $\Omega$
		4.000	1k $\Omega$	.0200--20.00M $\Omega$ *	$\pm$ (2% of rdg+6dgt)			
		40.00	10k $\Omega$	20.01--200.0M $\Omega$	$\pm$ 5% of rdg			
		200.0	100k $\Omega$					
	250V/200M $\Omega$	4.000	.1k $\Omega$	0--0.499M $\Omega$	$\pm$ (5% of rdg+6dgt)	0.25M $\Omega$	1mA	5M $\Omega$
		4.000	1k $\Omega$	.0500--20.00M $\Omega$ *	$\pm$ (2% of rdg+6dgt)			
		40.00	10k $\Omega$	20.01--200.0M $\Omega$	$\pm$ 5% of rdg			
		200.0	100k $\Omega$					
	500V/2000M $\Omega$	4.000	1k $\Omega$	0--0.999M $\Omega$	$\pm$ (5% of rdg+6dgt)	0.5M $\Omega$	1mA	50M $\Omega$
		40.00	10k $\Omega$	1.000--500M $\Omega$ *	$\pm$ (2% of rdg+6dgt)			
		400.0	100k $\Omega$	501--2000M $\Omega$	$\pm$ 5% of rdg			
		2000	1M $\Omega$					
	1000V/2000M $\Omega$	4.000	1k $\Omega$	0--1.999M $\Omega$	$\pm$ (5% of rdg+6dgt)	2M $\Omega$	0.5mA	50M $\Omega$
		40.00	10k $\Omega$	2.000--1000M $\Omega$ *	$\pm$ (2% of rdg+6dgt)			
		400.0	100k $\Omega$	1001--2000M $\Omega$	$\pm$ 5% of rdg			
		2000	1M $\Omega$					

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

### Standard test conditions

Ambient temperature/humidity ranges: 23  $\pm$  5  $^{\circ}$ C/45-75% RH

### Tolerances under the above-mentioned conditions:

Deviation from zero scale value: 6 digits maximum

Indication of  $\infty$  mark on bar graph: Approx. 4000 M $\Omega$  min. (500 V/1000 V)  
Approx. 400 M $\Omega$  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	$\pm$ (2% of rdg + 6dgt)	Approx. 2 M $\Omega$

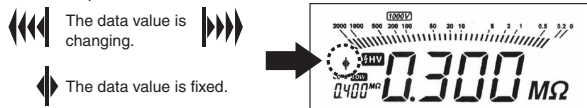
### Conductor resistance measurement

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

## 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



**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 M $\Omega$ , 0.2 M $\Omega$  and 0.4 M $\Omega$ .

**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

**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)  $\times$  103 (H)  $\times$  53 (D) (mm), excluding protrusions

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

**Batteries:** Four AA (R6P) batteries

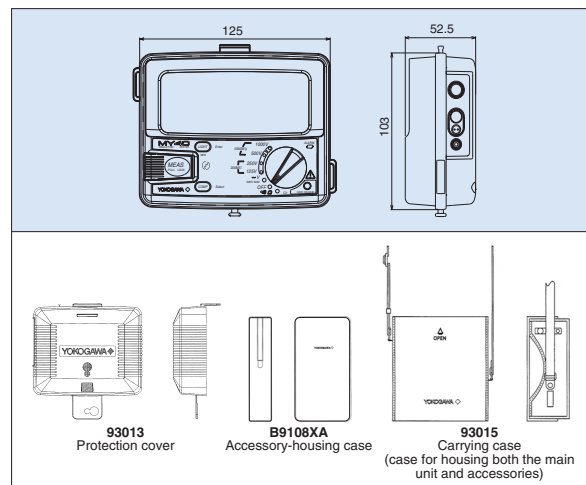
Note: See the list of accessories on the backside of this bulletin for more information on accessories.

## 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

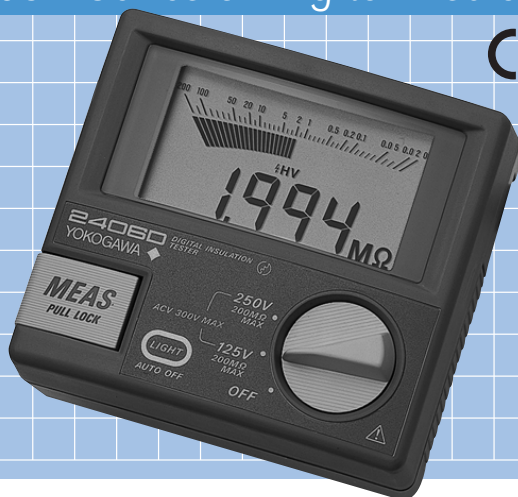
## External Dimensions

Unit: mm



# 2406D Series of Digital Insulation Testers

# 2406D SERIES



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

- 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--0.199MΩ .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--0.499MΩ .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--0.199MΩ .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--0.499MΩ .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--0.999MΩ .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

\* 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 2406 64, 65	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)

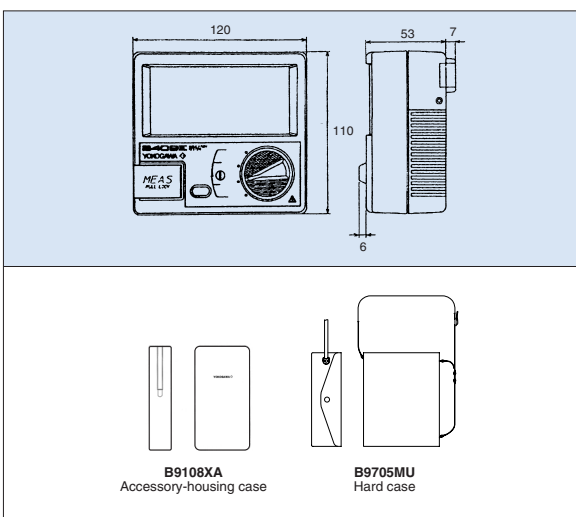
**Weight:** Approx. 500 g (including batteries)

**Batteries:** Six AA (R6P) batteries

Note: See the list of accessories on the backside of this bulletin for information on accessories.

## External Dimensions

Unit: mm

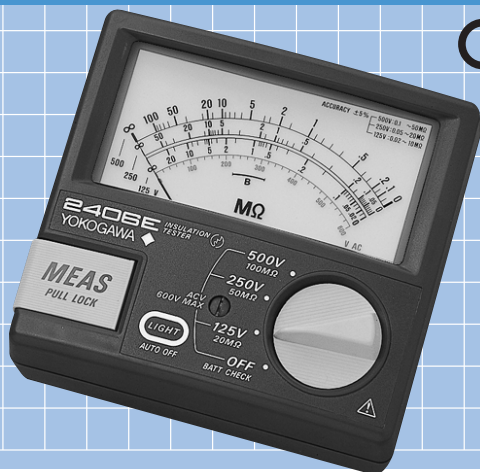


## Standard Accessories

Same as those of the 2406E series.

# 2406E Series of Analog Insulation Testers

# 2406E SERIES



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

- 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 $\Omega$	Rated Current
2406 31	25V/5M $\Omega$	0.001–5M $\Omega$	0.1M $\Omega$	0–300V	0.025M $\Omega$	1mA
2406 41	50V/10M $\Omega$	0.005–10M $\Omega$	0.2M $\Omega$		0.05M $\Omega$	1mA
	125V/20M $\Omega$	0.01–20M $\Omega$	0.5M $\Omega$		0.125M $\Omega$	1mA
2406 32	125V/20M $\Omega$	0.01–20M $\Omega$	0.5M $\Omega$	0–300V	0.125M $\Omega$	1mA
2406 42	250V/50M $\Omega$	0.01–50M $\Omega$	1M $\Omega$		0.25M $\Omega$	1mA
2406 33	125V/20M $\Omega$	0.01–20M $\Omega$	0.5M $\Omega$	0–600V	0.125M $\Omega$	1mA
2406 43	250V/50M $\Omega$	0.01–50M $\Omega$	1M $\Omega$		0.25M $\Omega$	1mA
	500V/100M $\Omega$	0.05–100M $\Omega$	2M $\Omega$		0.5M $\Omega$	1mA
2406 34	250V/50M $\Omega$	0.01–50M $\Omega$	1M $\Omega$	0–600V	0.25M $\Omega$	1mA
2406 44	500V/100M $\Omega$	0.05–100M $\Omega$	2M $\Omega$		0.5M $\Omega$	1mA
	1000V/200M $\Omega$	1–200M $\Omega$	50M $\Omega$		1M $\Omega$	1mA**
2406 35	250V/500M $\Omega$	0.1–500M $\Omega$	10M $\Omega$	0–600V	0.25M $\Omega$	1mA**
2406 45	500V/1000M $\Omega$	0.5–1000M $\Omega$	20M $\Omega$		0.5M $\Omega$	1mA**
	1000V/2000M $\Omega$	1–2000M $\Omega$	50M $\Omega$		1M $\Omega$	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  $\pm$  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 =  $\pm$ 5% of reading

Second effective measuring range =  $\pm$ 10% of reading

Infinite and zero scale values: 0.7% max. of scale length

AC voltage:  $\pm$ 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. 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 ( $\infty$ ) 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)  $\times$  110 (H)  $\times$  60 (D) (mm)

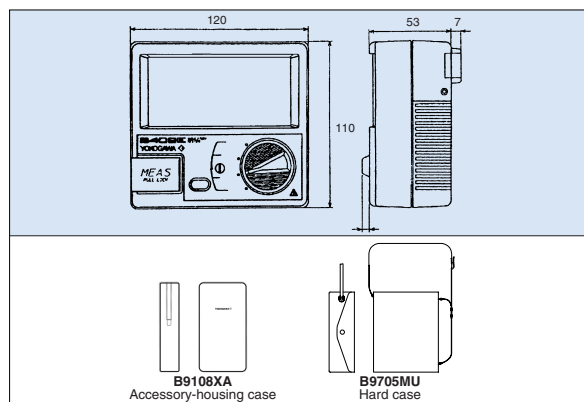
**Weight:** Approx. 500 g (including batteries)

**Batteries:** Six AA (R6P) batteries

**Accessories:** See the list of accessories on the backside of this bulletin for information on accessories.

## External Dimensions

Unit: mm



## Standard Accessories

Product	Part Number	Qty	Remarks
Earth and Line probes	98007	1	Earth probe(blake);approx. 1m long Line probe(vermillion);approx. 1m long
Carrying case	B9075MU	1	w/probe-housing pocket and neck strap
User's manual	–	1	–
Batteries	–	6	–

# 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)

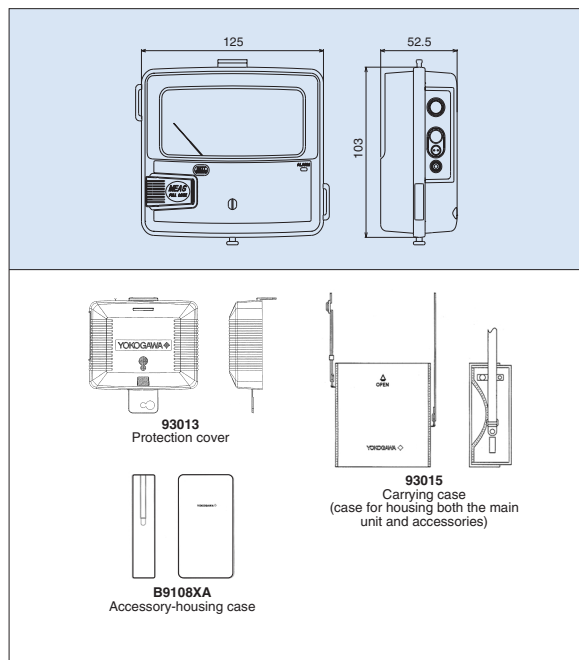
**Compliance:** EN61010-1:1993; EN61010-2-31:1995  
 (Overvoltage Category III, Pollution Degree 2 installations for indoor use)

## 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



# YOKOGAWA

Yokogawa M&C Corporation

World Wide Web site at  
<http://www.yokogawa.com/MCC>

 **NOTICE**

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

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MCK-ES9