HIOKI

IM3523, IM3533, IM3533-01
LCR Testers

HIOKI E. E. CORPORATION

Product Line Up

HIOKI

Fast

0.5ms

2ms

5ms

6ms

Slow

Low freq.

High freq.

1kHz

100kHz

1MHz

10MHz

100MHz

1GHz

IM3523
40Hz~200kHz

IM3533
IM3590
(coming soon -1mHz~200kHz)

IM3570
(4Hz-5MHz)

LCR meter
Impedance analyzer

3511-50
(120Hz,1kHz)

3522-50
(1mHz-100kHz)

3532-50
(42Hz-5MHz)

3535
(100kHz-120MHz)

Main Features

1. Simple Operation
2. Increase test quantity = Fast measurement
3. Accurate and reliable measurement
4. Compact design

IM3523: Simple use for production lines

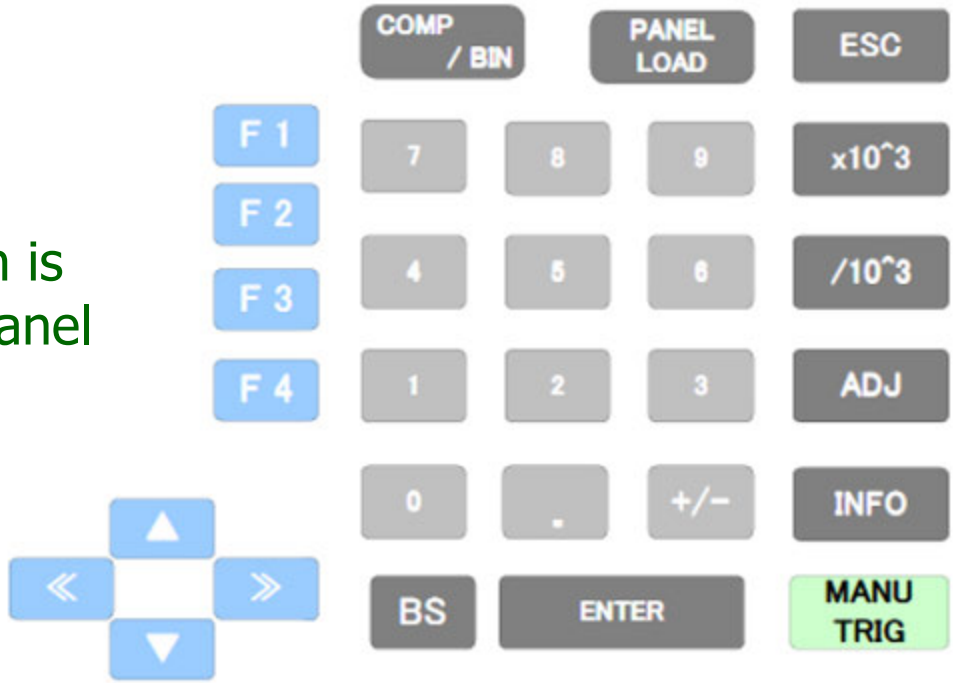
IM3533: Transformer parameters

IM3533-01: Sweep function

Easy Operation (IM3523)

- 10-key pad for inputting limit values
- Range is automatically set according to the limit values
- Measurement conditions are independently set to each range

Keys for basic operation is available on the front panel



Easy Operation (IM3533 and IM3533-01)

- Touch screen operation
- Range is automatically set according to the limit values
- Measurement conditions are independently set to each range

Fast Measurement

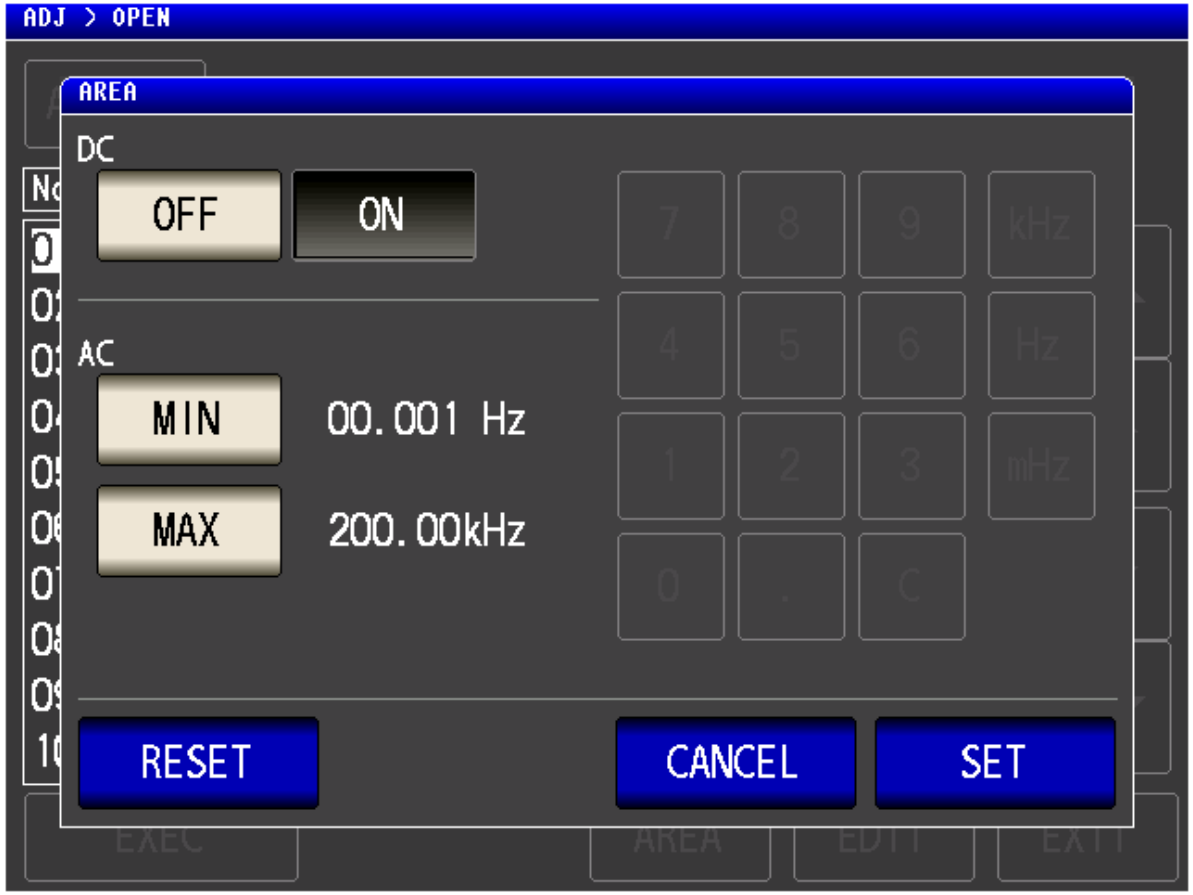
- Test speed: 2ms fastest (basic value)

- Shorter period for compensation
  - Faster OPEN/SHORT compensation
  - Range is automatically set according to the limit values

OPEN/SHORT Compensation

Specify the frequency range to compensate

Lower frequency = faster compensation



Accurate and Reliable Measurement

- Improved accuracy on ALL models

  +/-0.05%rdg.

  (Z measurement)

- Improved reliability using the contact check function

- More resistant against residual charge

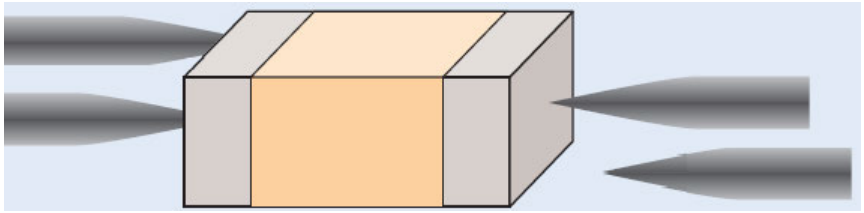
  (when measuring after withstanding/insulation resistance test)

Contact Check Function

- 4–terminal measurement

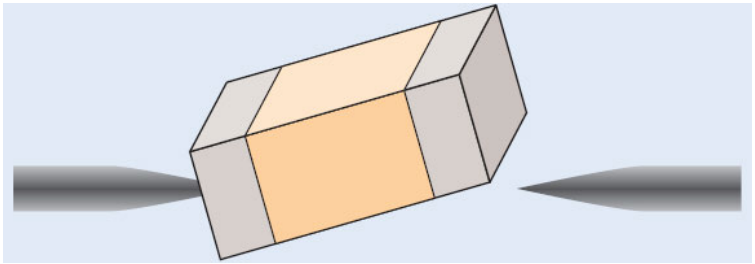
  Check by contact resistance

  Contact resistance limit can be modified



2-terminal measurement

Hi-Z reject



Improved Residual Charge Protection

More resistant when measuring charged components

3532-50

$V = \sqrt{(1/C)}$ (400V max.)

Equivalent to 0.5J

IM3523, IM3533, IM3533-01

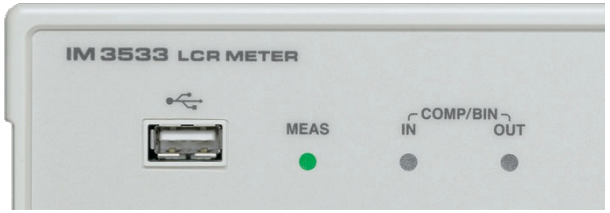
$V = \sqrt{(10/C)}$ (400V max.)

Equivalent to 5J

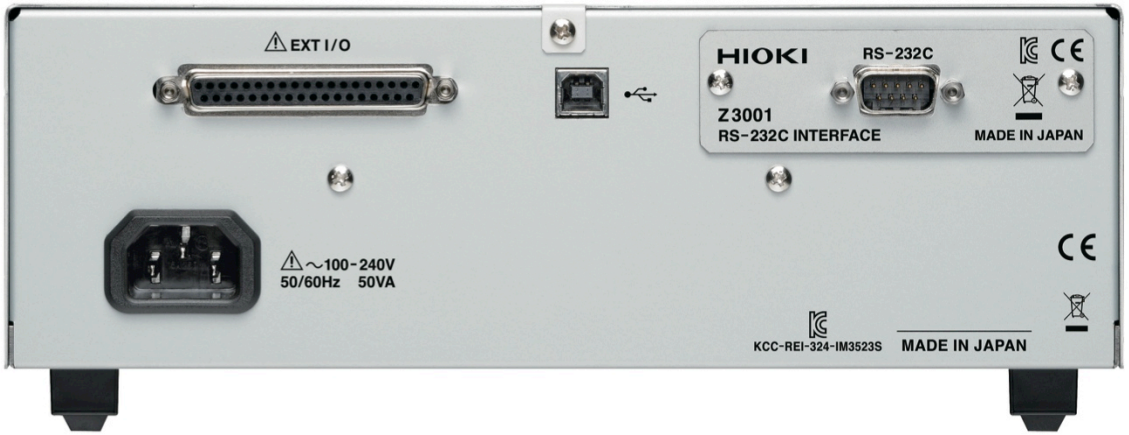
However, discharging before measurement is still recommended.

Interfaces

- Standard
  - External I/O
  - USB data port
  - USB memory port (IM3533 and IM3533-01 only)



- Option (select one)
  - RS-232C
  - GP-IB
  - LAN

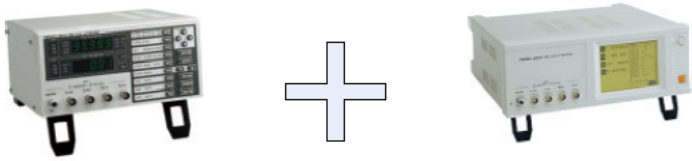


Basic Specifications

Model		IM3523	IM3533	IM3533-01	3522-50
Measurement items	Z, Phase, Rs, Rp, Cs, Cp, Ls, Lp, Y, X, G, B, Q, D	Yes	Yes	Yes	Yes
	DCR	Yes	Yes (with temperature compensation)		Yes
	Transformer	---	N, M, Delta-L		---
	Temperature	---	Yes		---
Basic accuracy		0.05%rdg.			0.08%rdg.
Measurement frequency		40Hz to 200kHz	1mHz to 200kHz		1mHz to 100kHz
Test voltage (V/CV)		5mV to 5V	5mV to 5V/2.5V		10mV to 5V
Output impedance		100-ohm	100-ohm / 25-ohm (low Z range)		50-ohm
Fastest speed		2ms	2ms		5ms
Comparator		HI/IN/LO (ABS/%/Delta %) 2 items	HI/IN/LO (ABS/%/Delta %) 2 items		HI/IN/LO (ABS/%/Delta %) 2 items
BIN		Main item: 10 BINs Sub item: 1 BIN	Main item: 10 BINs Sub item: 10 BINs		---
Cable length compensation		0m/1m	0m/1m	0m/1m/2m/4m	0m/1m
Contact check		4-terminal check, Hi-Z reject	4-terminal check, Hi-Z reject		---
Built-in DC bias		---	-5V to 5V		---
Sweep measurement		---	---	Frequency sweep 2 to 801 points	---
Display		B/W LCD	Color 5.7-inch LCD, touch panel		B/W LCD, touch panel
Interfaces	Standard	EXT I/O	EXT I/O, USB, USB memory device		EXT I/O
	Option	RS-232C, GP-IB, LAN	RS-232C, GP-IB, LAN		RS-232C, GP-IB

Applications (1) – Aluminum Electrolytic Capacitor

- Different conditions can be tested by a SINGLE unit
  - C-D measurement at 120Hz
  - ESR measurement at 100kHz



C-D at 120Hz

ESR at 100kHz

Continuous measurement for both!!

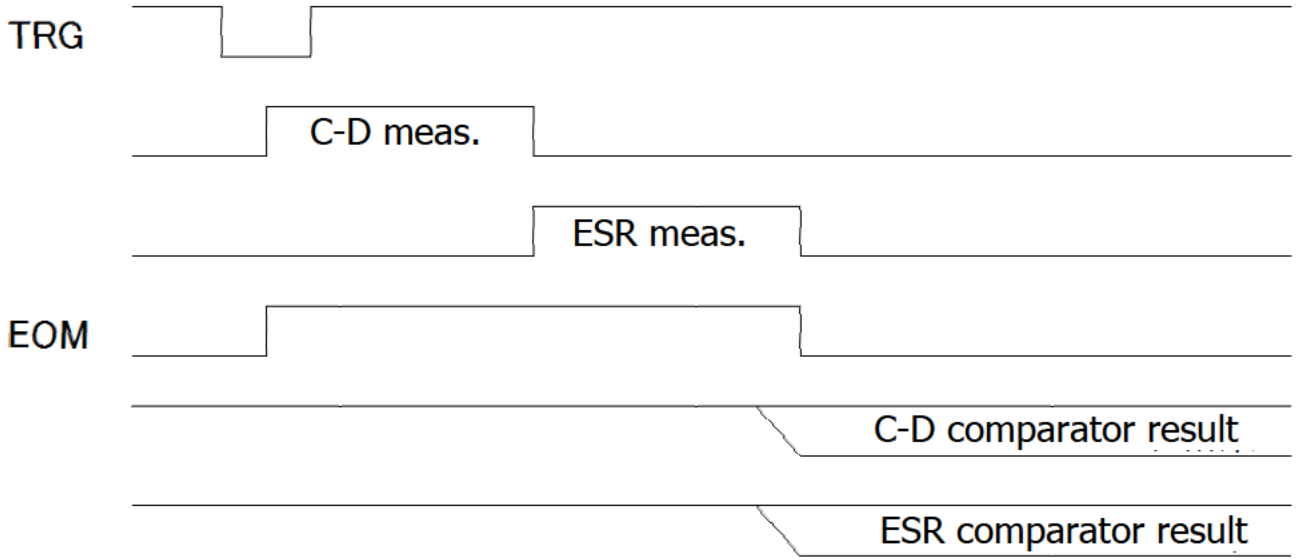
  - DCR measurement
  - L-Q measurement

Applications (1) – Aluminum Electrolytic Capacitor

- Independent comparator result output in continuous measurement

  Previously: AND result only

  New: Independent output
  (Can specify which is FAIL)



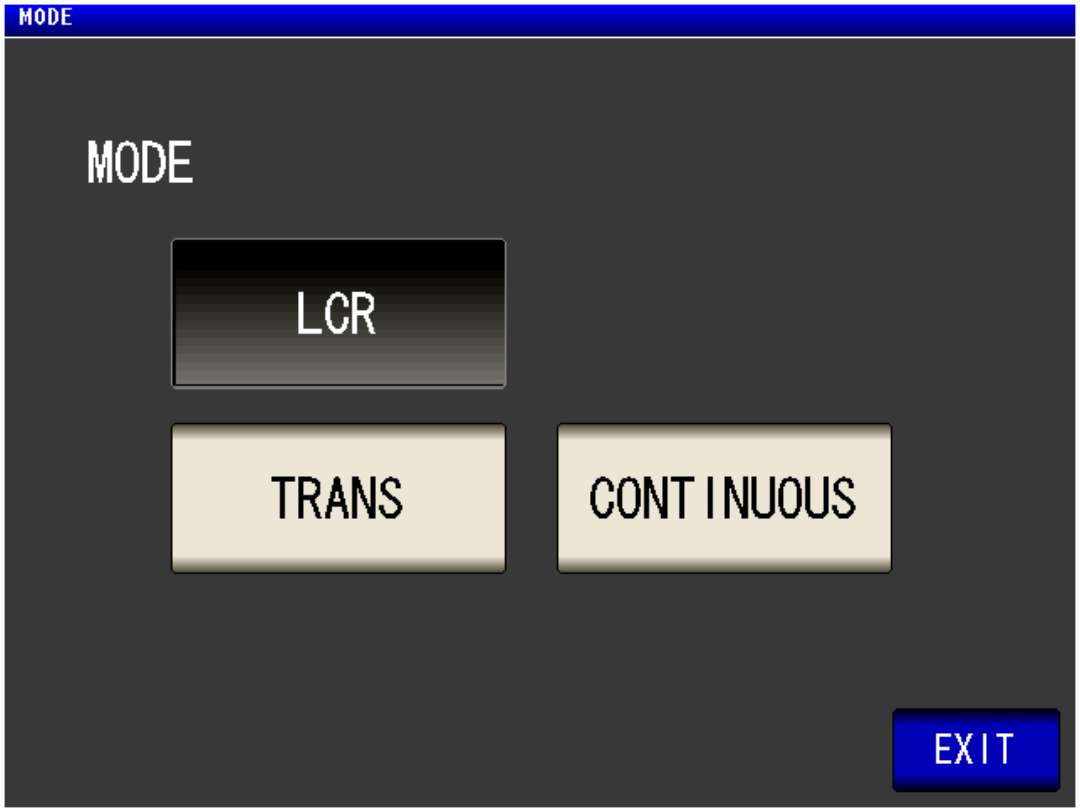
Applications (2) – Coil and Transformer

- Temperature compensation for DCR

  (IM3533 and IM3533-01 only)

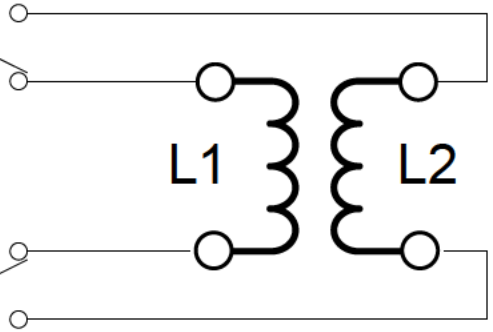
Applications (2) – Coil and Transformer

- TRANS mode: Transformer testing
  - N: Turn ratio
  - M: Mutual inductance
  - ΔL: Inductance difference



Applications (2) – Coil and Transformer

N: Turn ratio



(1) Measure L1 of primary
(2) Measure L2 of secondary
(3) Calculate N from L1 and L2

$N = \sqrt{(L1/L2)}$

Applications (2) – Coil and Transformer

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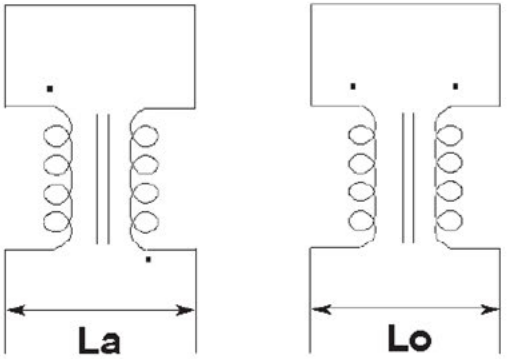
M: Mutual inductance

ΔL: Inductance difference

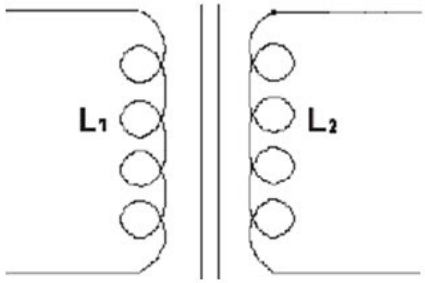
M: Relative inductance



(1) Measure La in-phase connection
(2) Measure Lb in reverse-phase connection
(3) Calculate M from La and Lb

$$M = (La - Lb) / 4$$

ΔL: Inductance difference



(1) Measure L1 on primary
(2) Measure L2 on secondary
(3) Calculate Delta-L from L1 and L2

$$\Delta L = L1 - L2$$

Output Impedance

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- Different output impedance

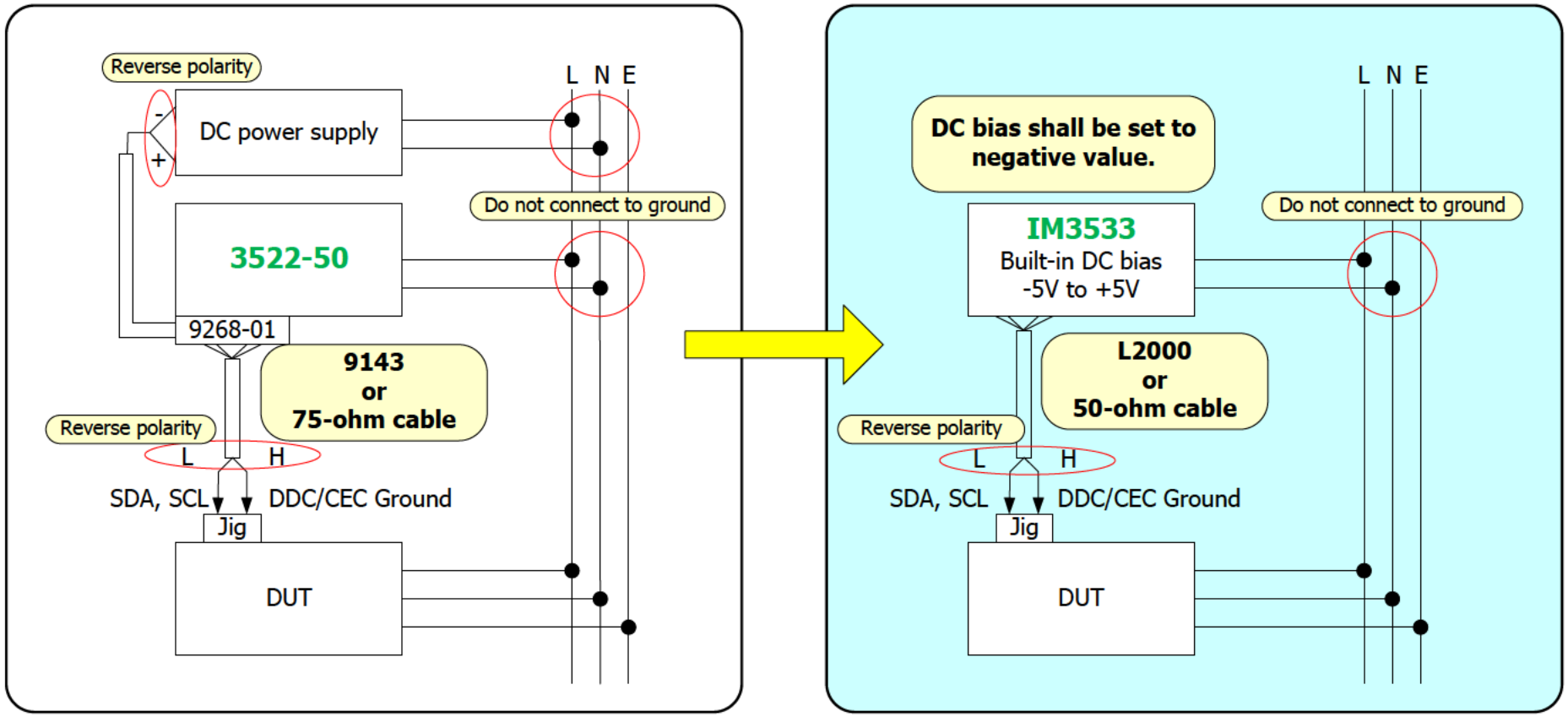
Important !!!

	New Models	3522-50
Output impedance	100-ohm	50-ohm
Recommended cable impedance	50-ohm	75-ohm
Compatible Probes and Fixtures		
9140 4-terminal Probe	No	OK
9143 Pincher Probe	No	OK
9261 Test Fixture	No	OK
L2000 4-Terminal Probe	OK	No
9262 Test Fixture	OK	OK
9263 SMD Test Fixture	OK	OK
9677 SMD Test Fixture	OK	OK
9699 SMD Test Fixture	OK	OK

The measurement result can differ depending on the cable impedance. Use the appropriate probes.

HDMI Measurement (IM3533)

- DC power supply and 9268-01 are no longer necessary using the built-in DC bias in Model IM3533



Reverse the polarity if the measurement value is unstable.

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