

مولتی فانکشن تستر

(ویژه مهندسين سازمان نظام مهندسي)

زمان برگزاری وینار

شنبه ۸ مهر
ساعت ۱۷

جناب آقای دکتر کاظم نهبندانیان

عضو کمیته منتخب کشوری وزارت علوم
در تدوین سرفصل دروس رشته مهندسی
برق (قدرت) حرفه ای

با حضور:



شرکت تجهیزات اندازه گیری وابزار دقیق بهروز

MULTI-FUNCTION TESTER



کاربرد دستگاه اندازه گیری Multi Function Tester

1- Continuity tester

2- Insulation resistance tester

3- Loop impedance tester

4- Prospective short circuit current tester

5- RCD tester

6- Voltage tester

7- Phase rotation tester

8- Earth tester

۱- تست پیوستگی و اندازه گیری مقاومت

۲- تست اندازه گیری مقاومت عایقی

۳- تست اندازه گیری امپدانس حلقه

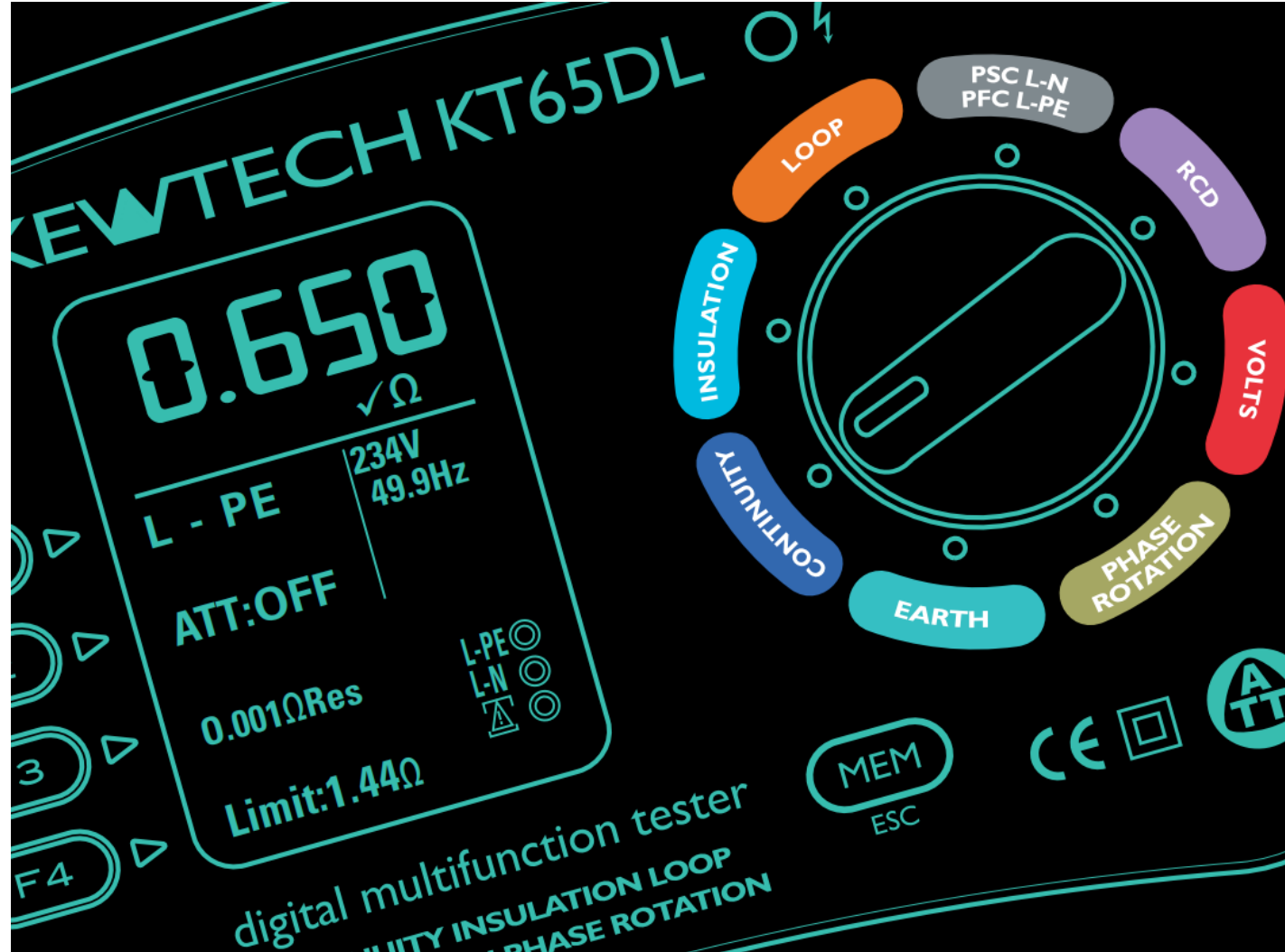
۴- تست اندازه گیری جریان اتصال کوتاه

۵- تست کلیدهای RCD

۶- تست و اندازه گیری ولتاژ

۷- تست جابجایی و چرخش و توالی فازها

۸- تست و اندازه گیری مقاومت زمین

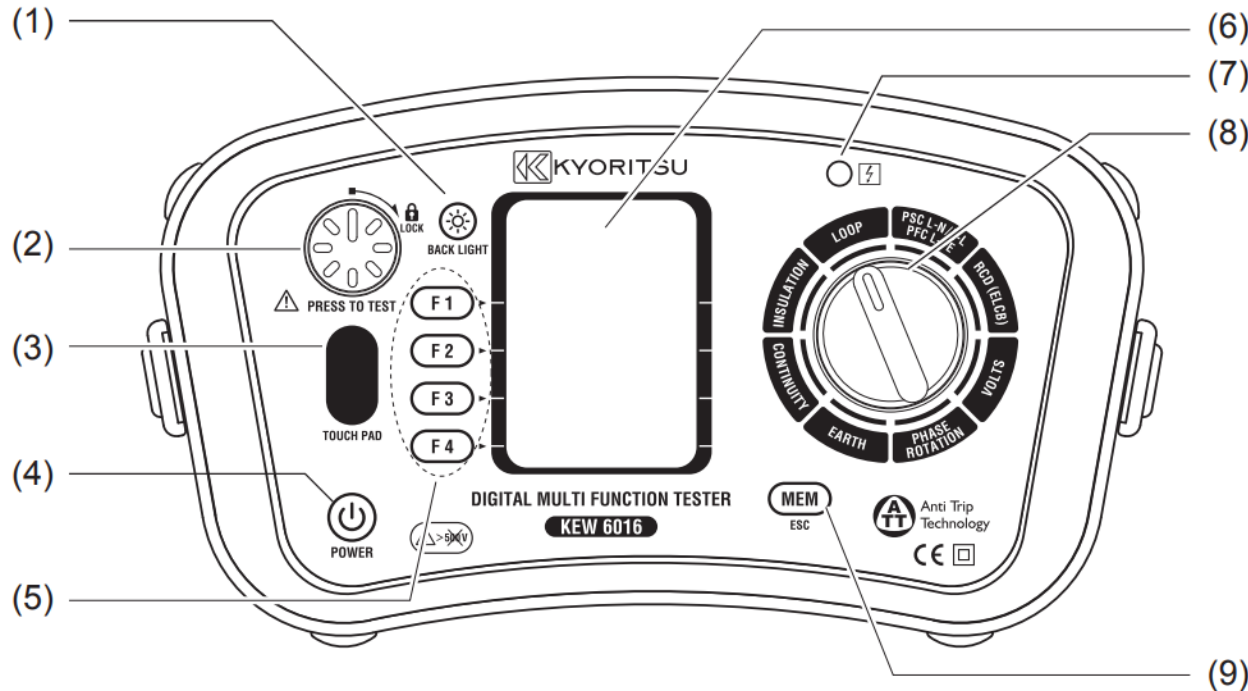


MULTI-FUNCTION TESTER

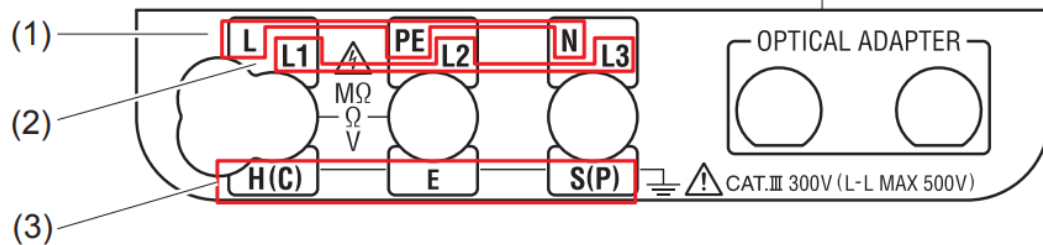
KEW 6016

KYORITSU ELECTRICAL INSTRUMENTS WORKS, LTD.

اجزای یک دستگاه Multi Function Tester



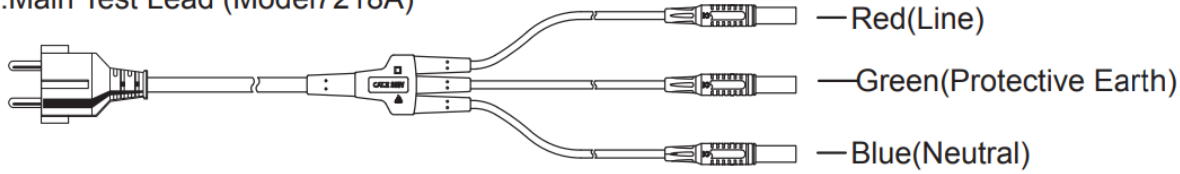
Name	Operation
(1) Back Light Button	Switches on/off the Backlight of the Display(LCD)
(2) Test Button	Starts measurements. (press and rotate for lock down feature)
(3) Touch Pad	Checks the electrical potential at the PE terminal
(4) Power Switch	Power Switch
(5) Function Switch	Function setting (F1 ~ F4)
(6) Display (LCD)	Dot Matrix LCD 160(W)X240(H)
(7) Insulation resistance LED	Alerts that the test voltage is being output
(8) Rotary Switch	Selects measurement functions.
(9) MEM (ESC) Button	Activates Memory Function, or ESC Key



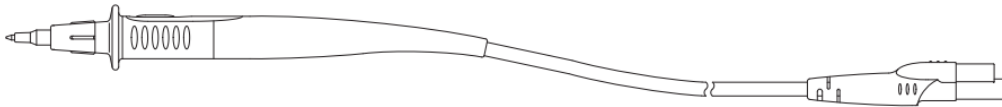
	Function	Terminal
(1)	Terminal Names for : INSULATION, CONTINUITY LOOP, PFC/PSC, RCD, VOLTS	L : Line PE : Protective Earth N : Neutral (for LOOP,PSC/PFC, RCD)
(2)	Terminal Name for PHASE ROTATION	L1 : Line1 L2 : Line2 L3 : Line3
(3)	Terminal Name for EARTH	H(C) : Terminal for auxiliary earth spike (current) E : Terminal for the earth under test S(P) : Terminal for auxiliary earth spike (potential)
(4)	Optical Adapter	Communication port for Model8212USB

Accessories

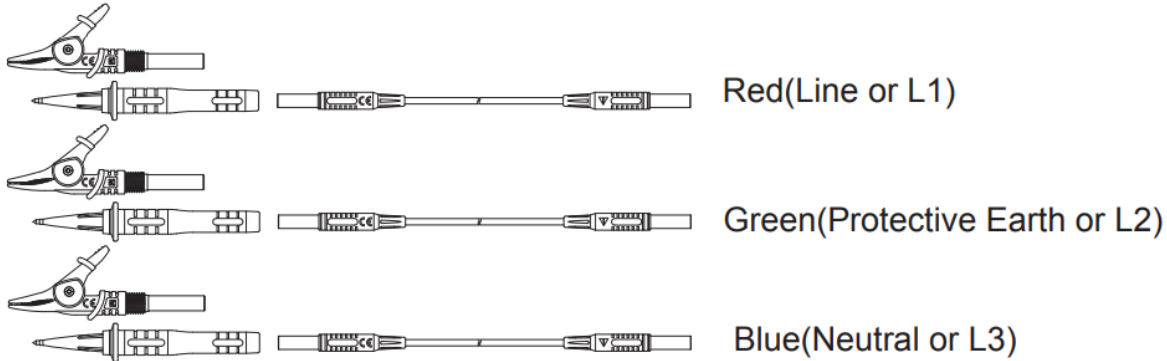
1. Main Test Lead (Model7218A)



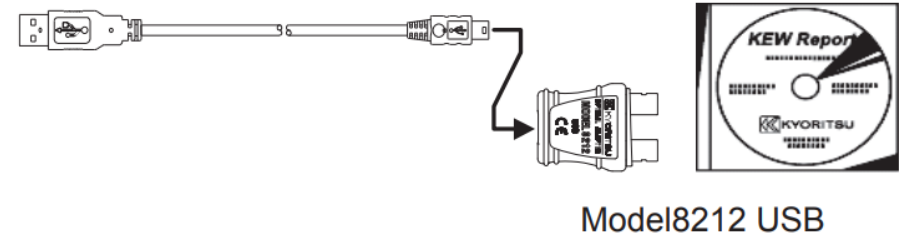
2. Remote Test Lead (Model 7196A)



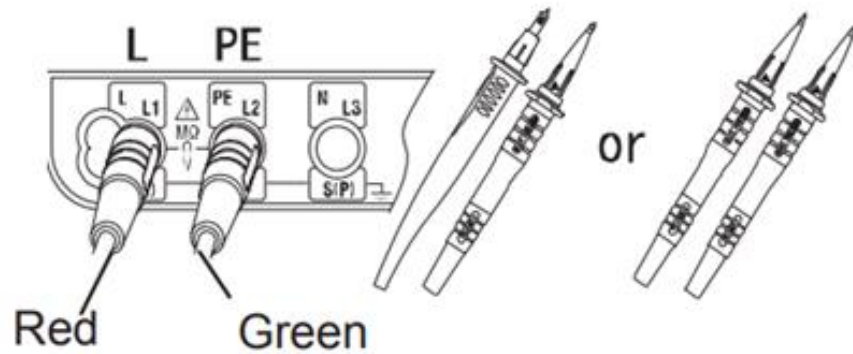
3. Distribution Board fused test lead (Model7188A)
(Fuse: 10A/600V fast acting ceramic)



4. Earth Tests Lead(Model7228A) and Auxiliary Earth Spikes



CONTINUITY (RESISTANCE) TESTS

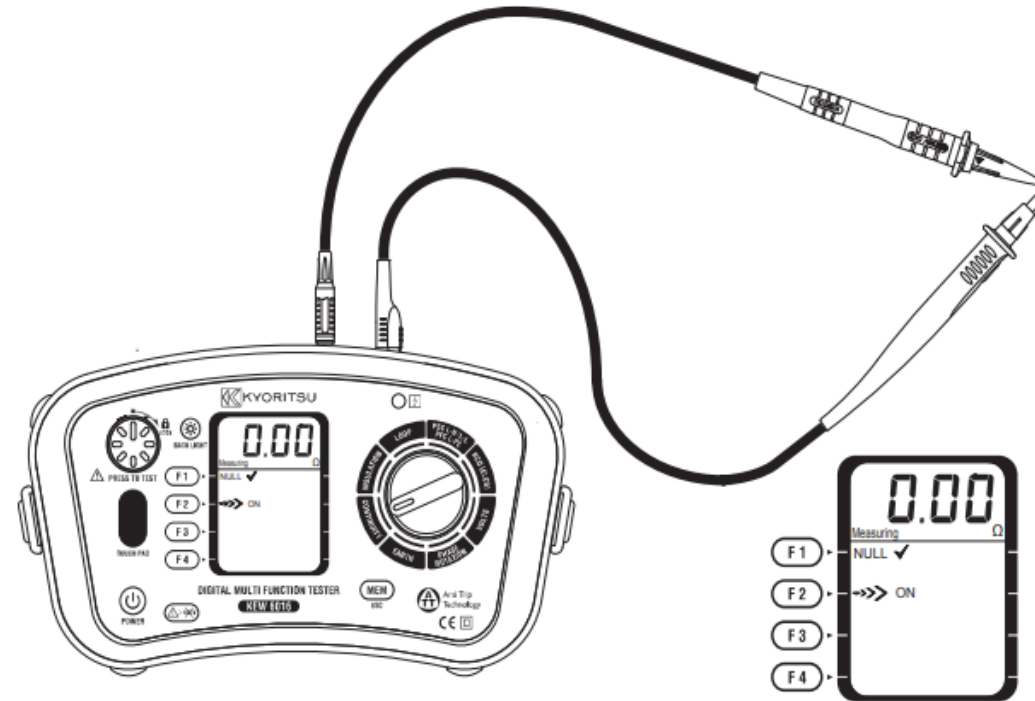


L terminal

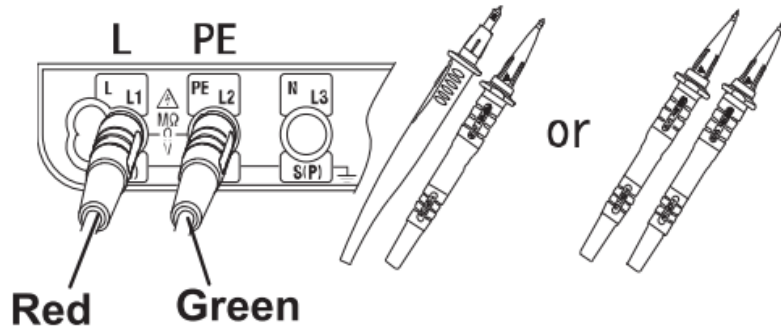
Red cord of Model7188A, or
Model7196A Remote Test Lead

PE terminal

Green cord of Model7188A



INSULATION TESTS

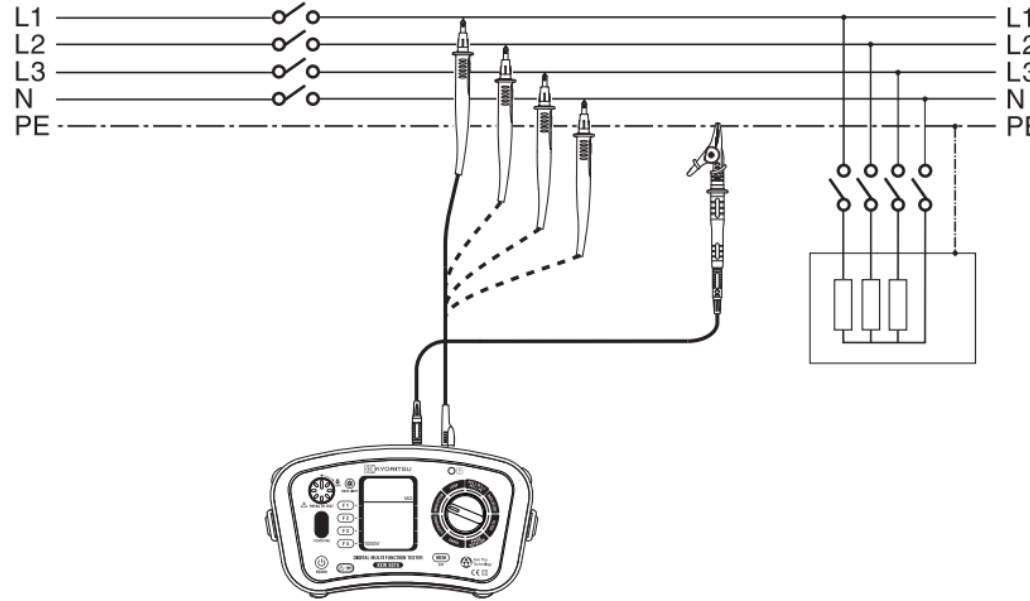


L terminal

Red cord of Model7188A, or
Model7196A Remote Test Lead

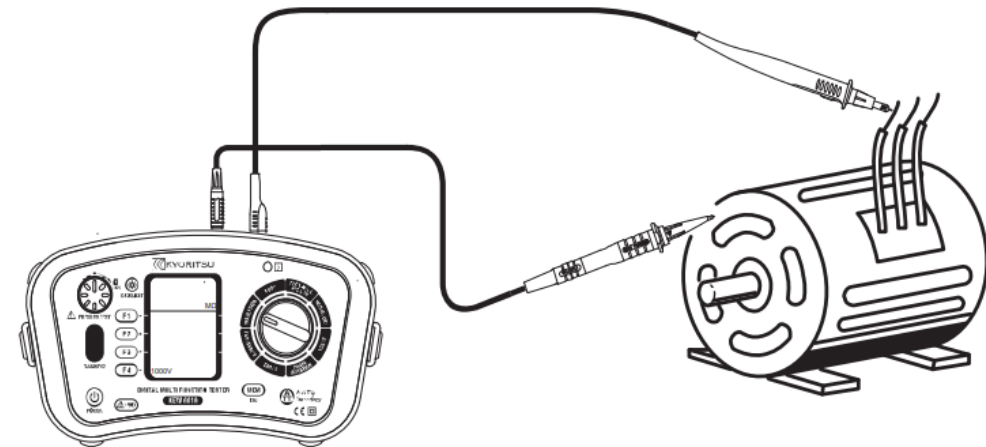
PE terminal

Green cord of Model7188A



Example of Insulation resistance test on 4 wire-3 phase system.

Example of Insulation resistance test on
Electrical Motor



LOOP/ PSC/PFC Test

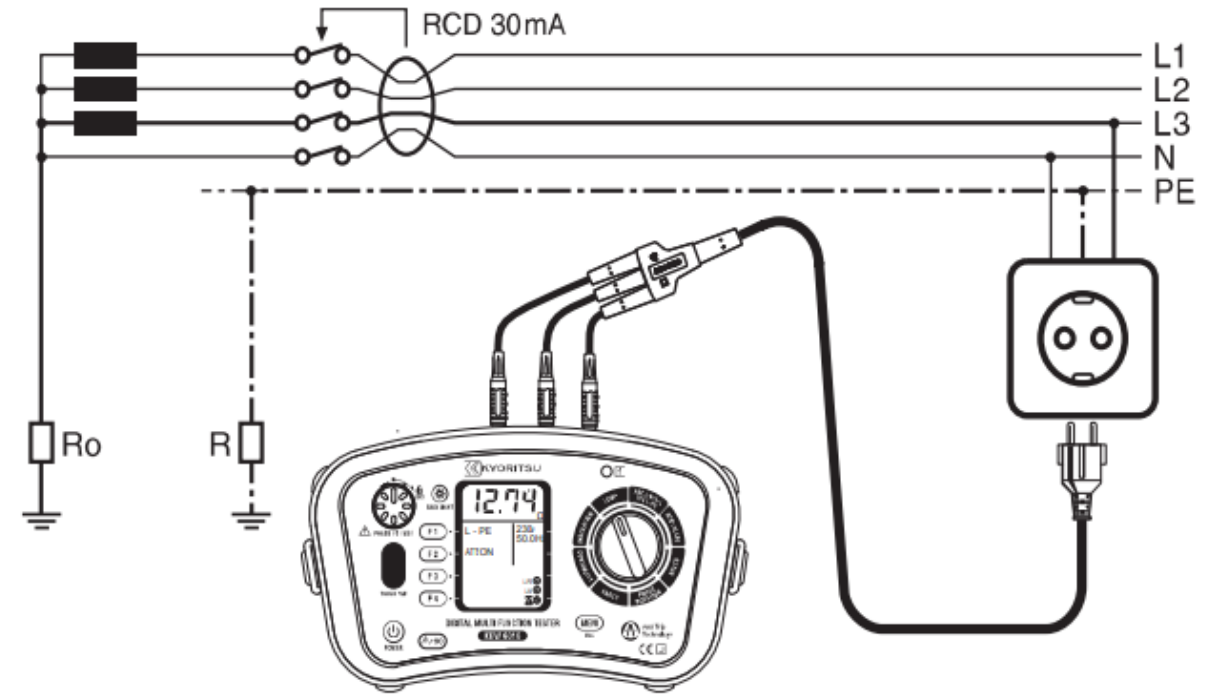
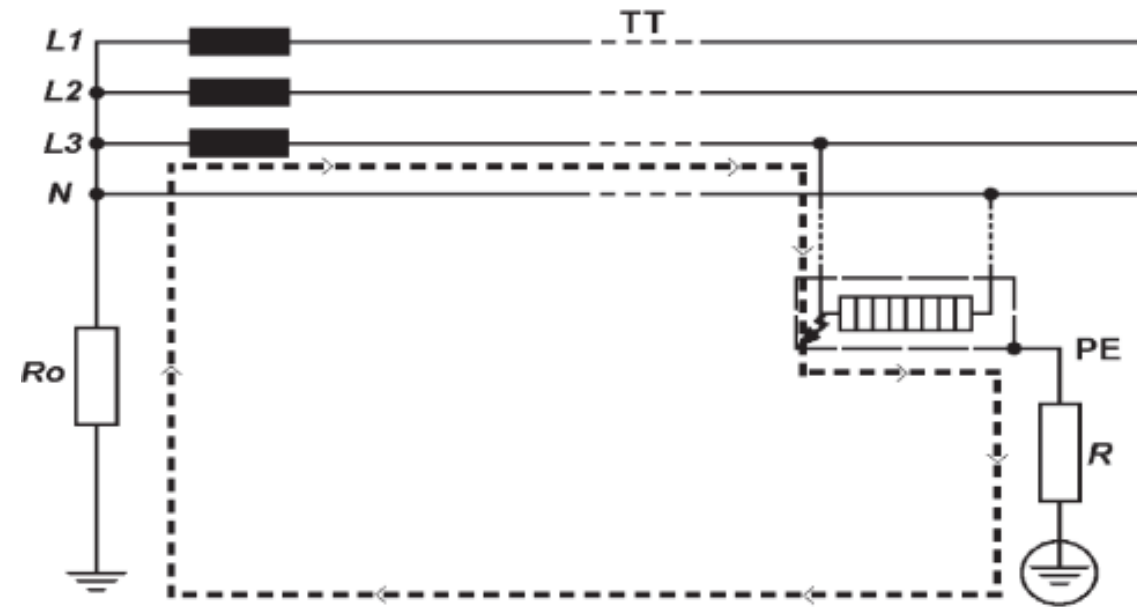
در سیستم های الکتریکی بعد از طراحی و اجرای شبکه ،جهت تست تجهیزات حفاظتی (فیوزها، کلیدهای حفاظت جان و...) در مقابل جریان اتصال کوتاه، اضافه بار و اتصال به زمین باید تست اندازه گیری امپدانس حلقه (Loop) ،تست جریان اتصال کوتاه و اضافه بار (PSC) و تست جریان جریان خطای اتصال به زمین (PFC) را انجام دهیم.

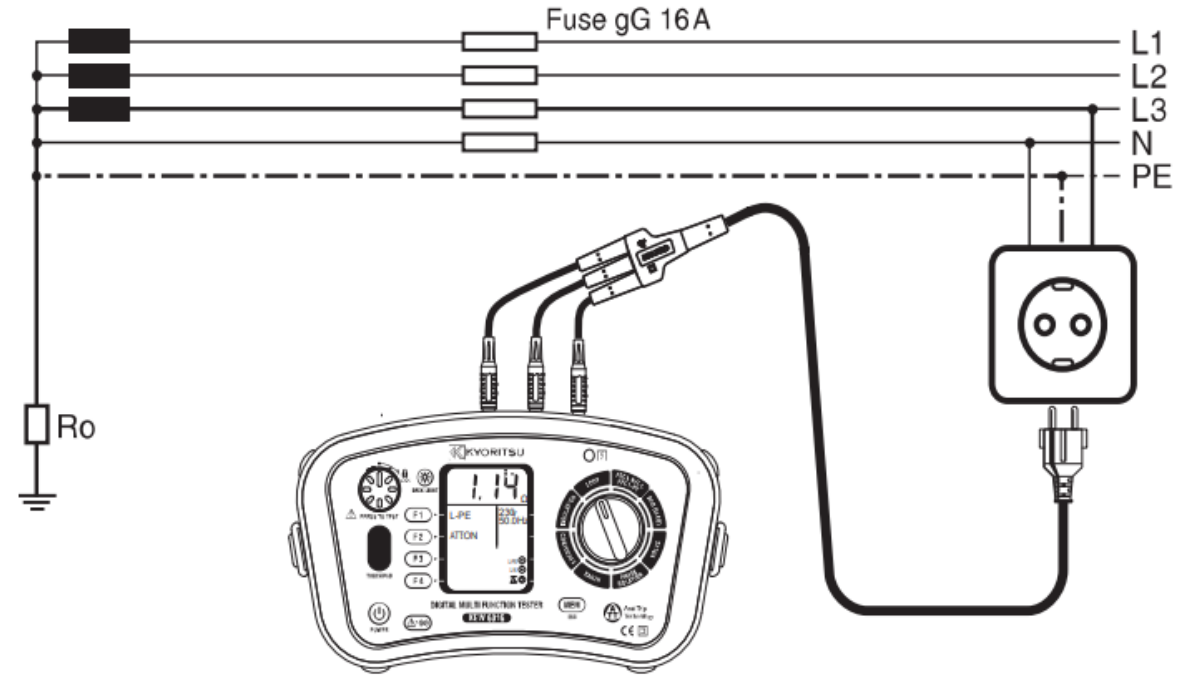
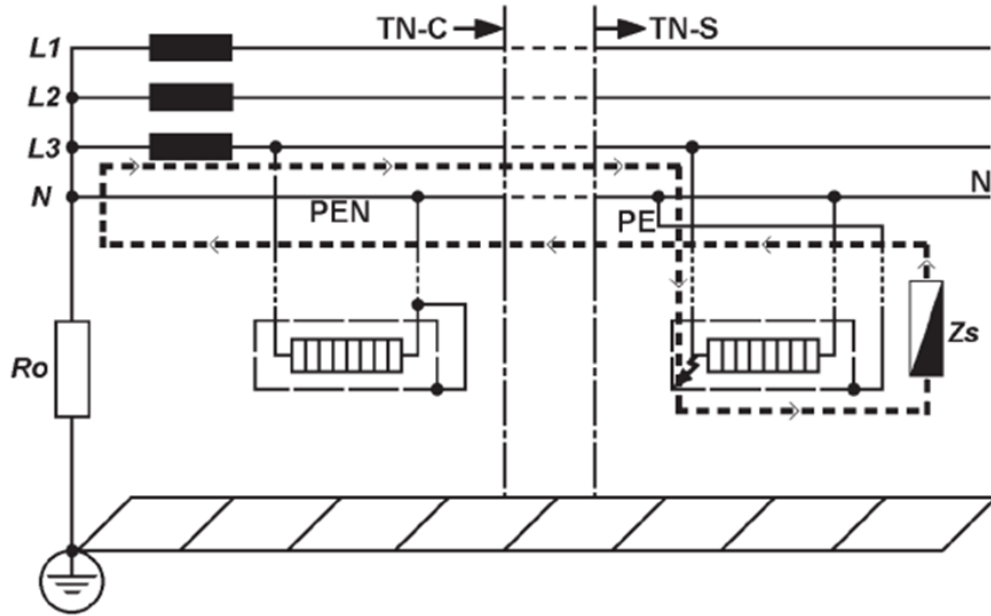
Prospective Short Circuit (PSC)

Prospective Fault Current (PFC)

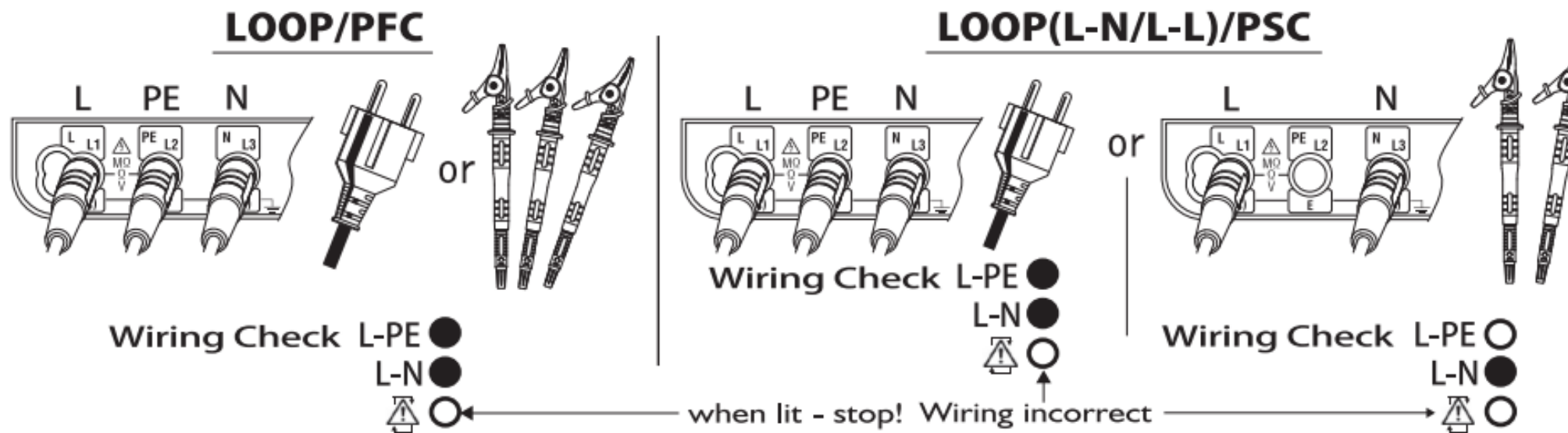
Loop Impedance

Loop Impedance test

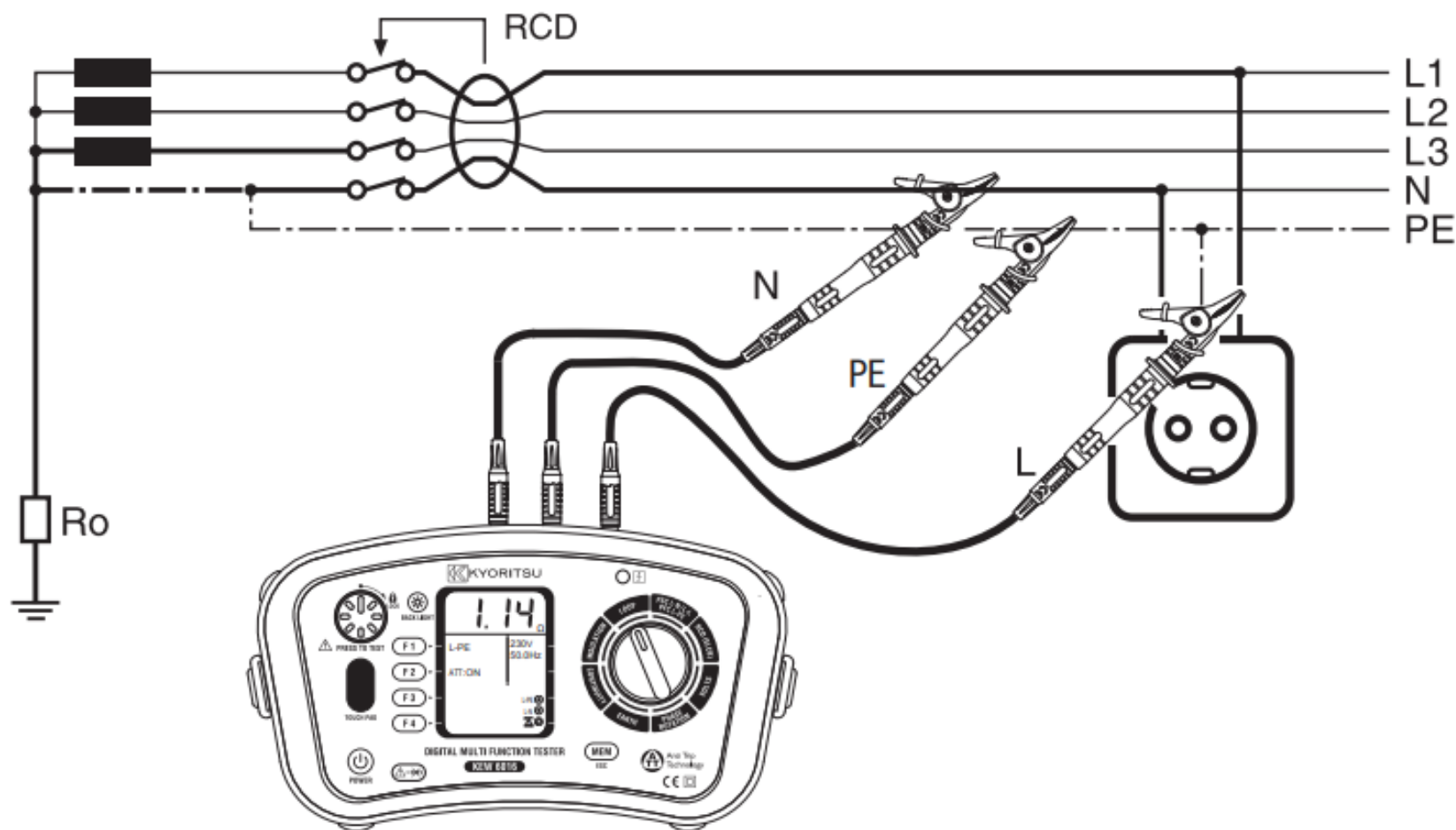




PSC/PFC Test

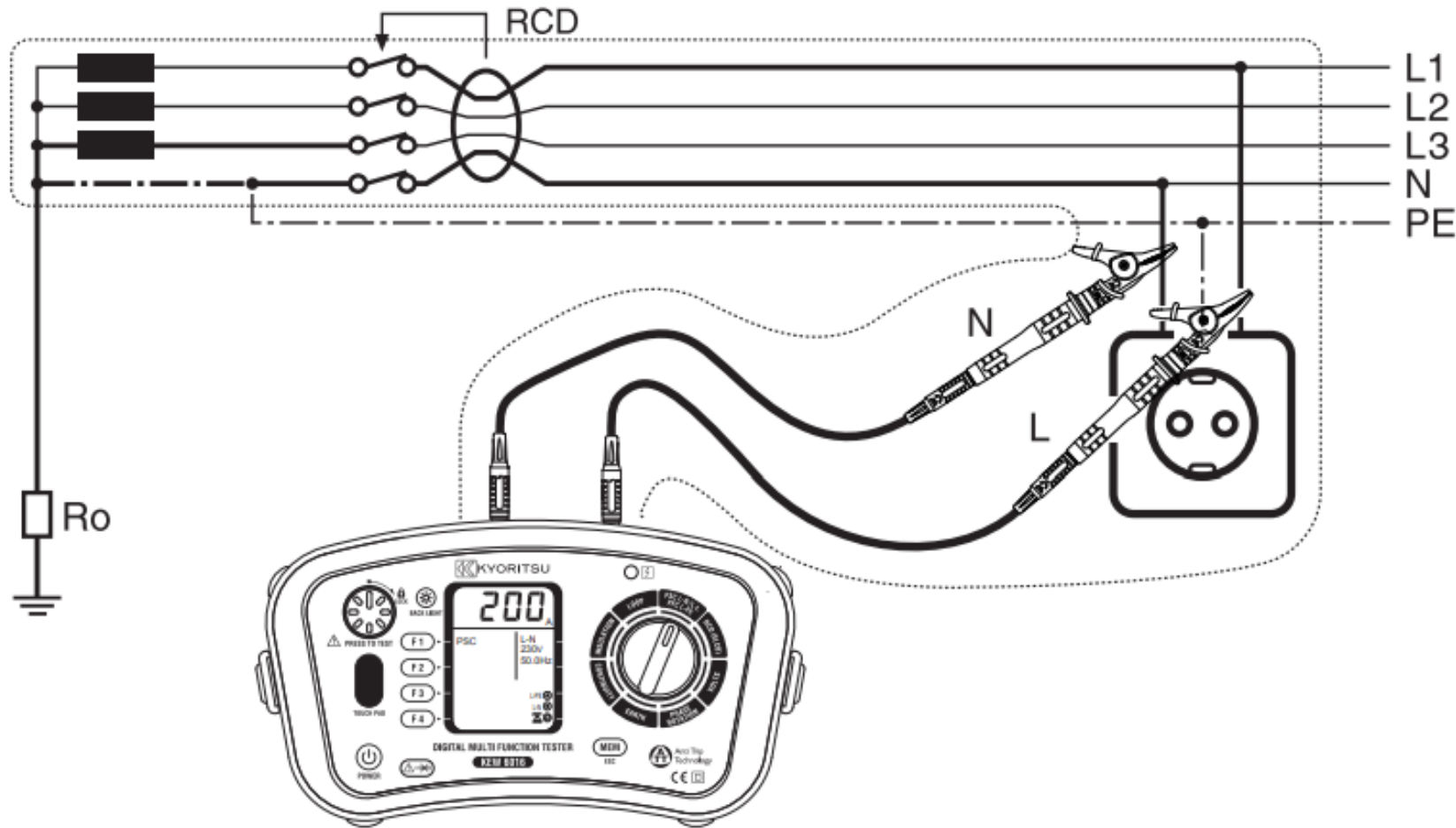


PFC Test



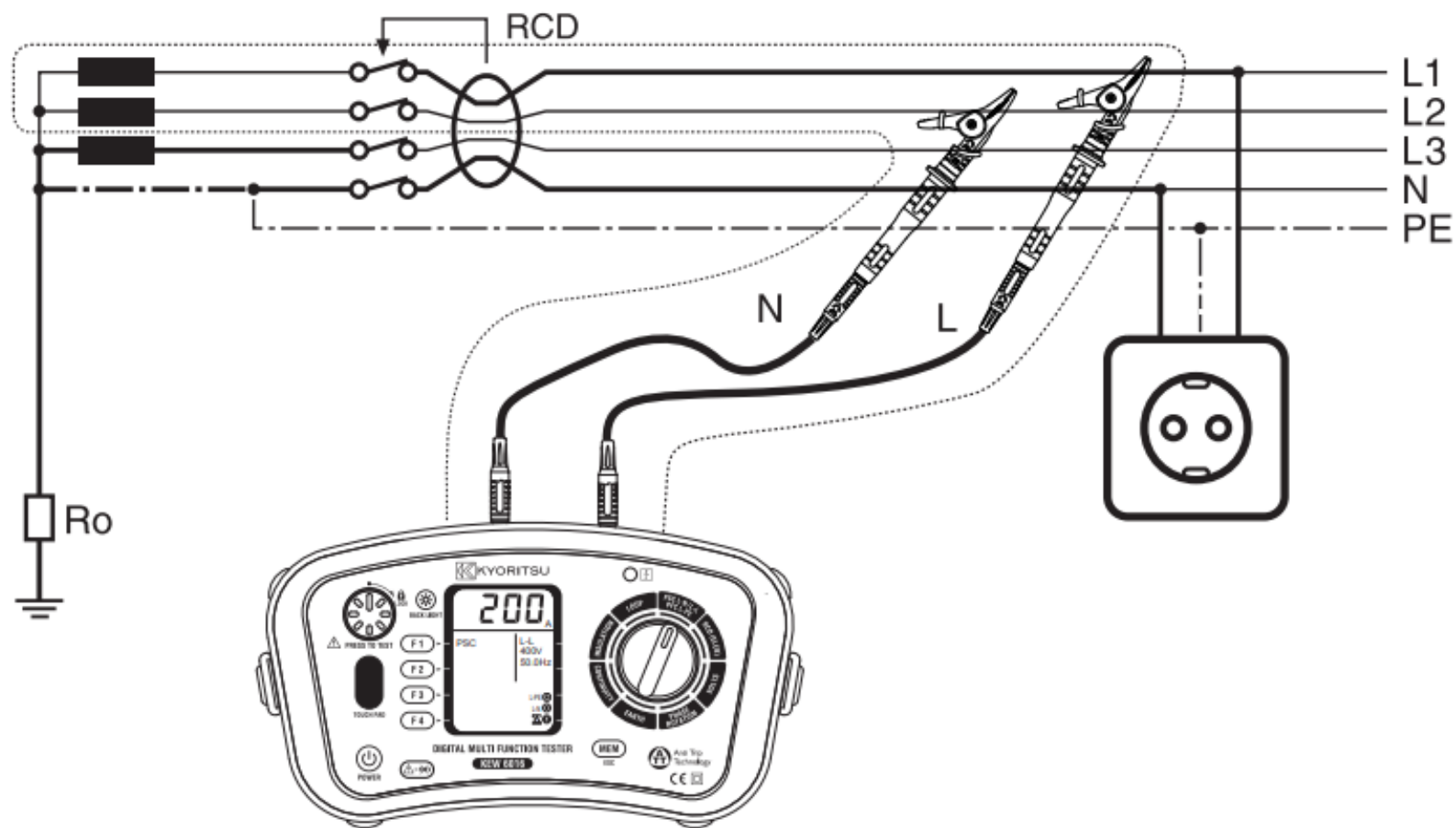
Connection for distribution

PSC Test



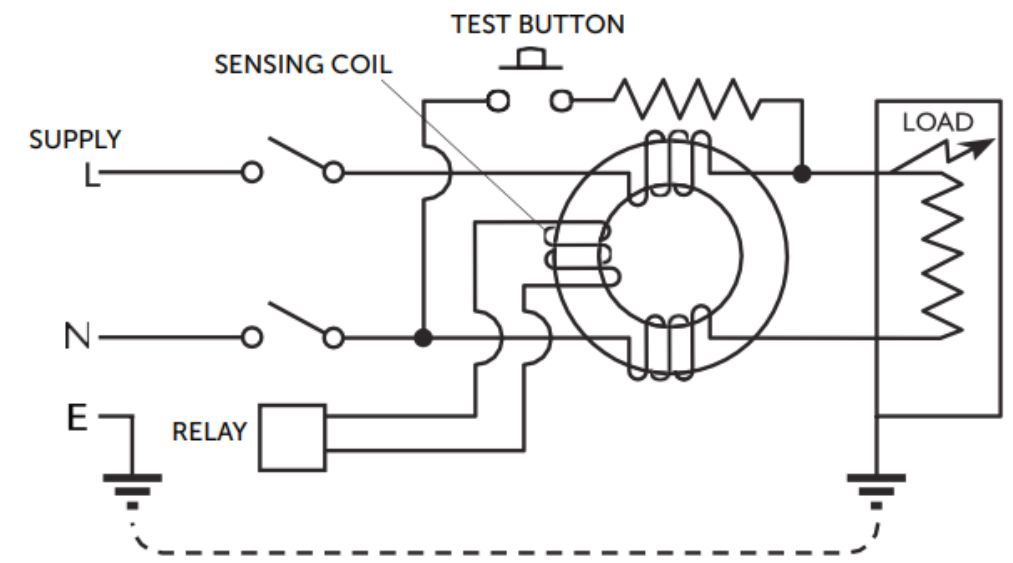
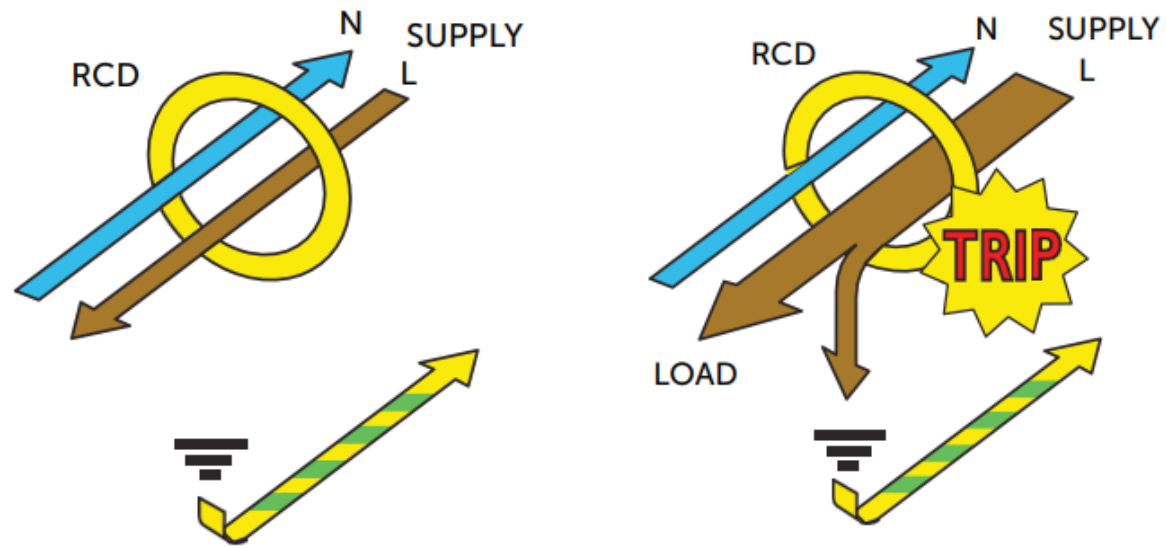
Connection for Line – Neutral measurement

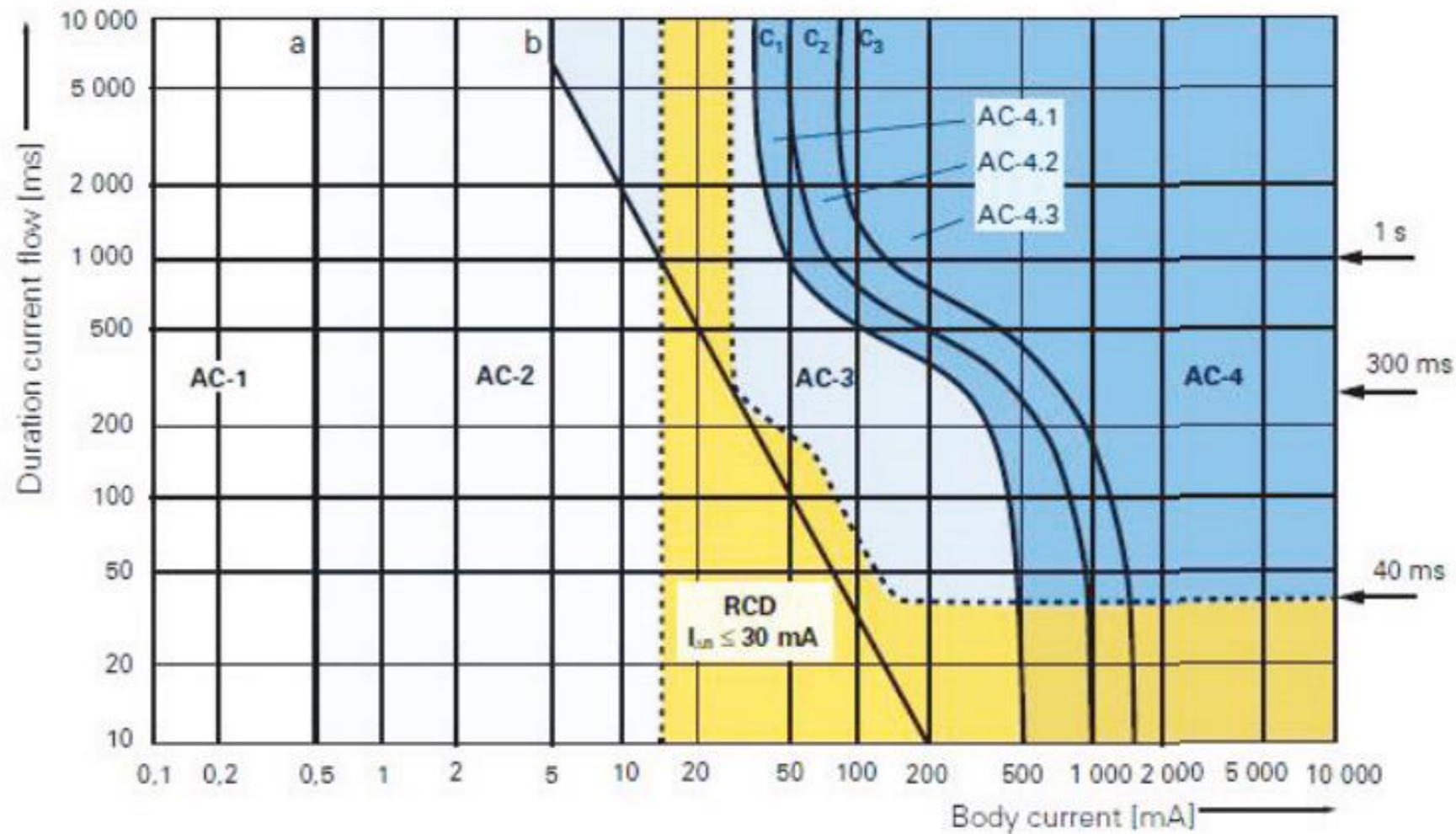
PSC Test

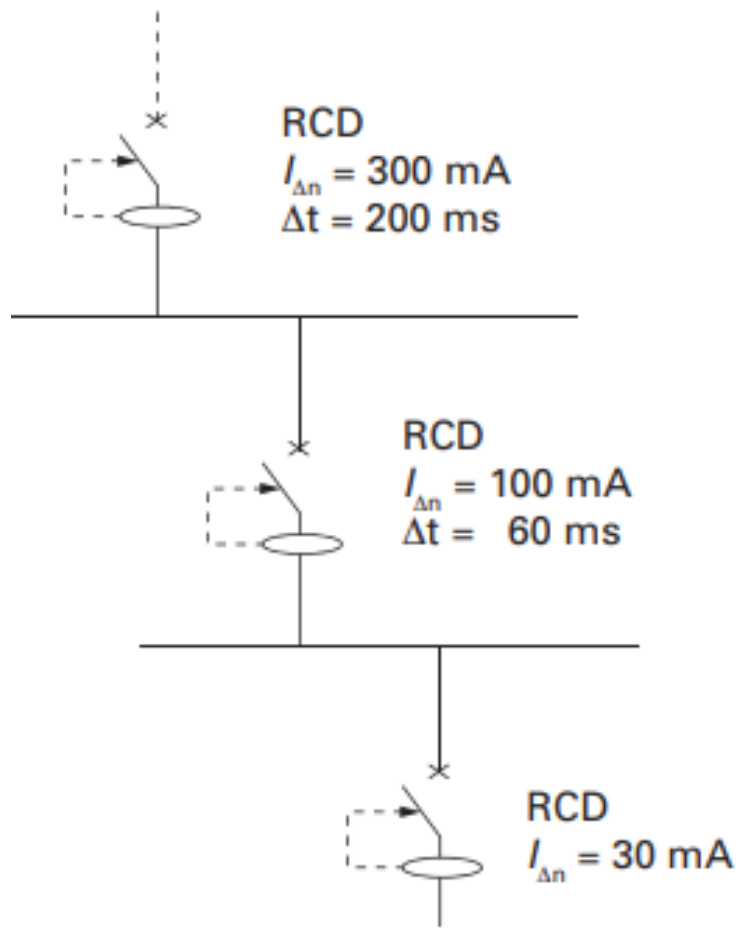


Connection for Line – Line measurement

PRINCIPLES OF RCD OPERATION



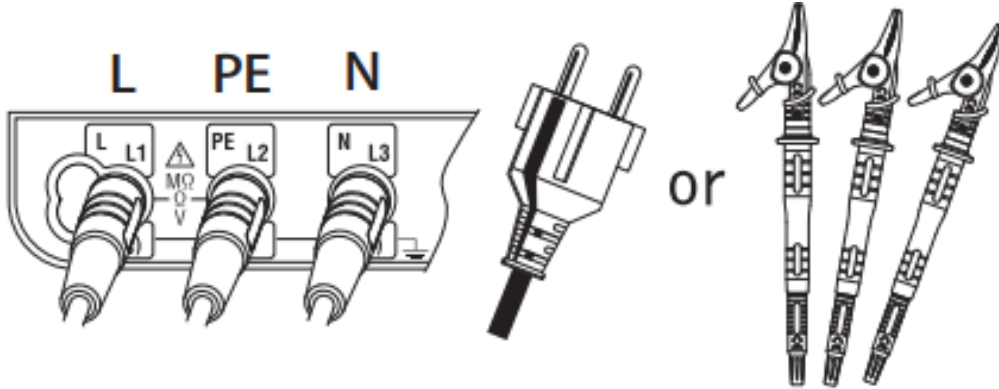




Test Leakage Current	Tripping Times
$I_{\Delta n} 30\text{mA}$	$\leq 300\text{mS}$
$I_{\Delta n} 60\text{mA}$	$\leq 150\text{mS}$
$I_{\Delta n} 150\text{mA}$	$\leq 40\text{ms}$



RCD TESTS



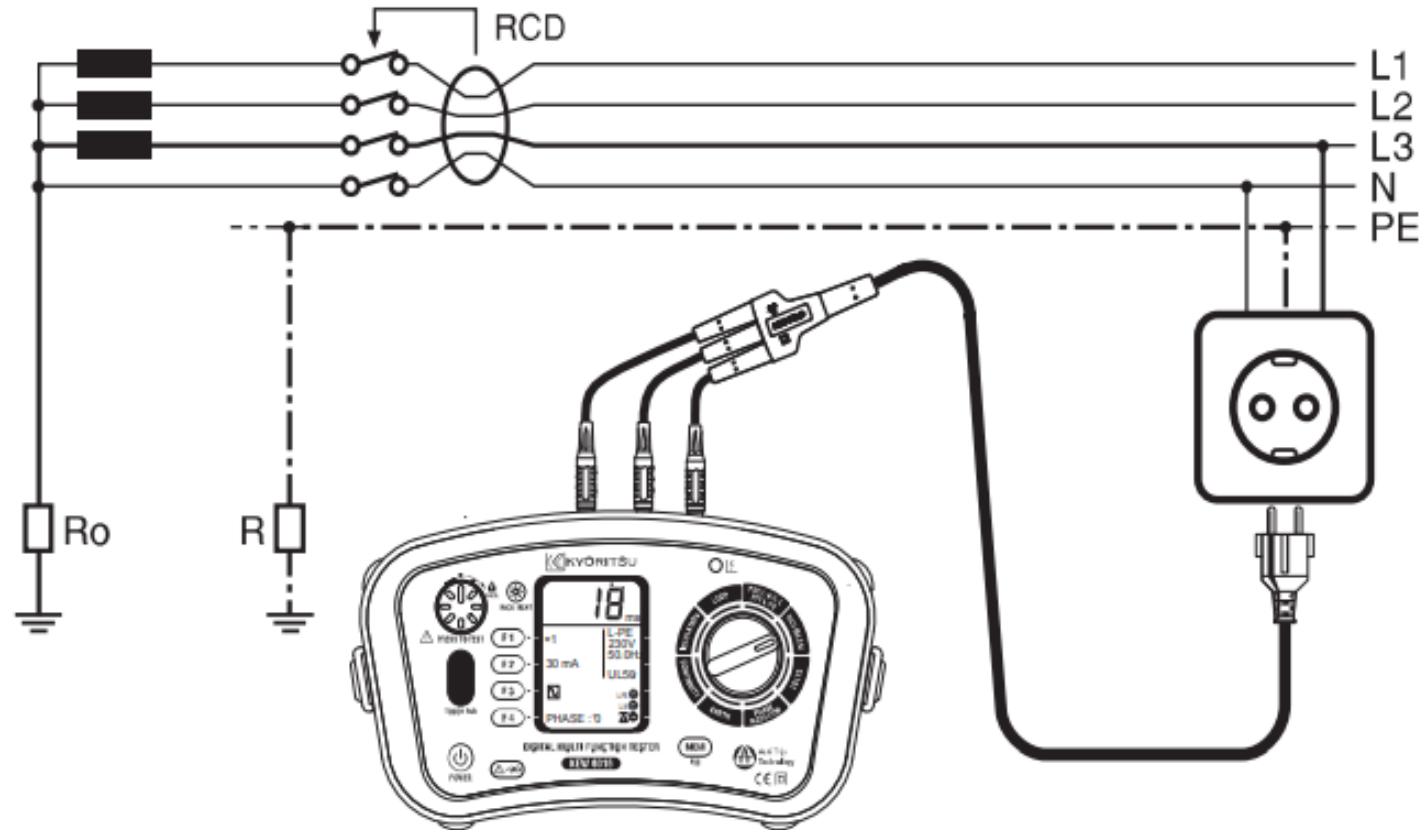
Wiring Check L-PE ●

L-N ●

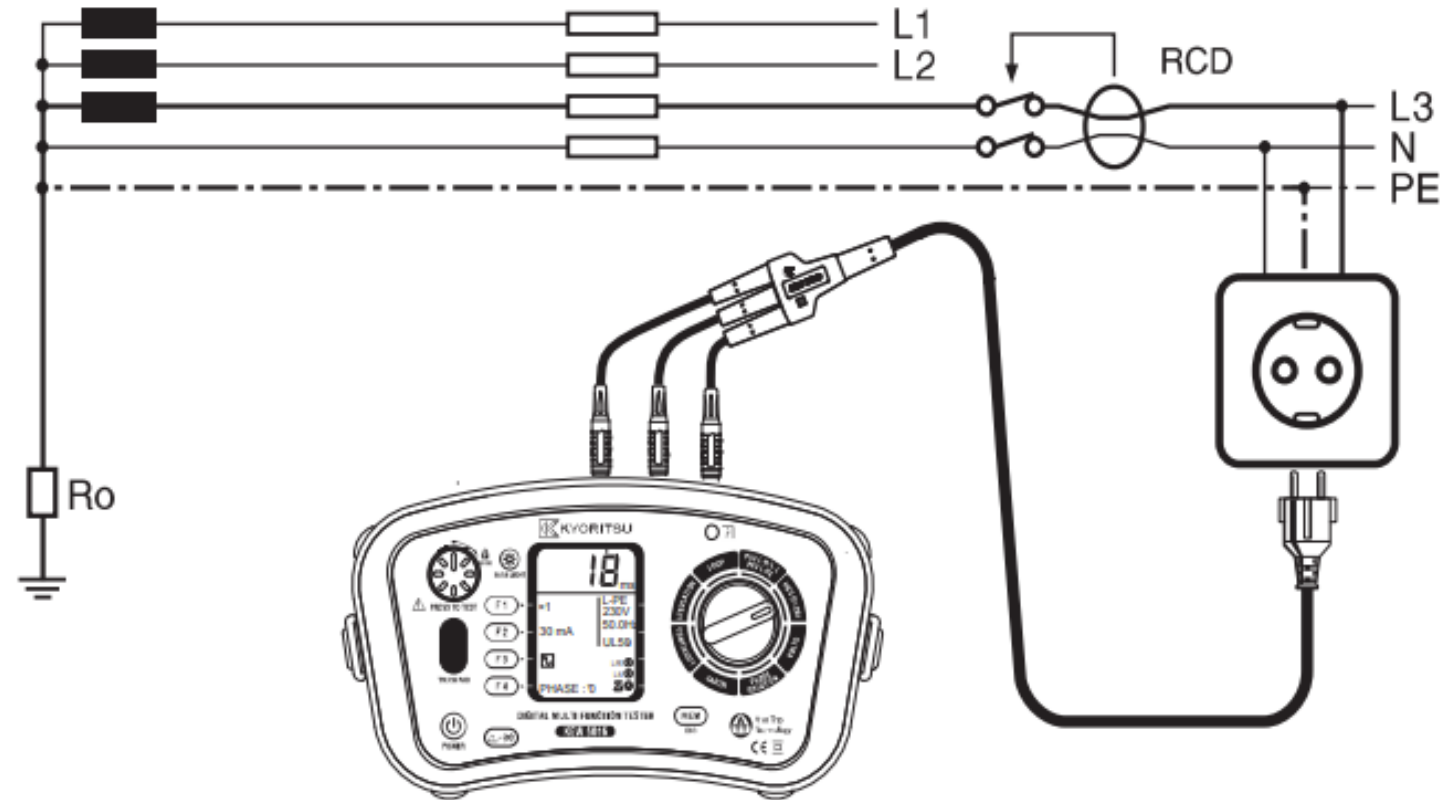
⚠ ○

← when lit - stop! Wiring incorrect

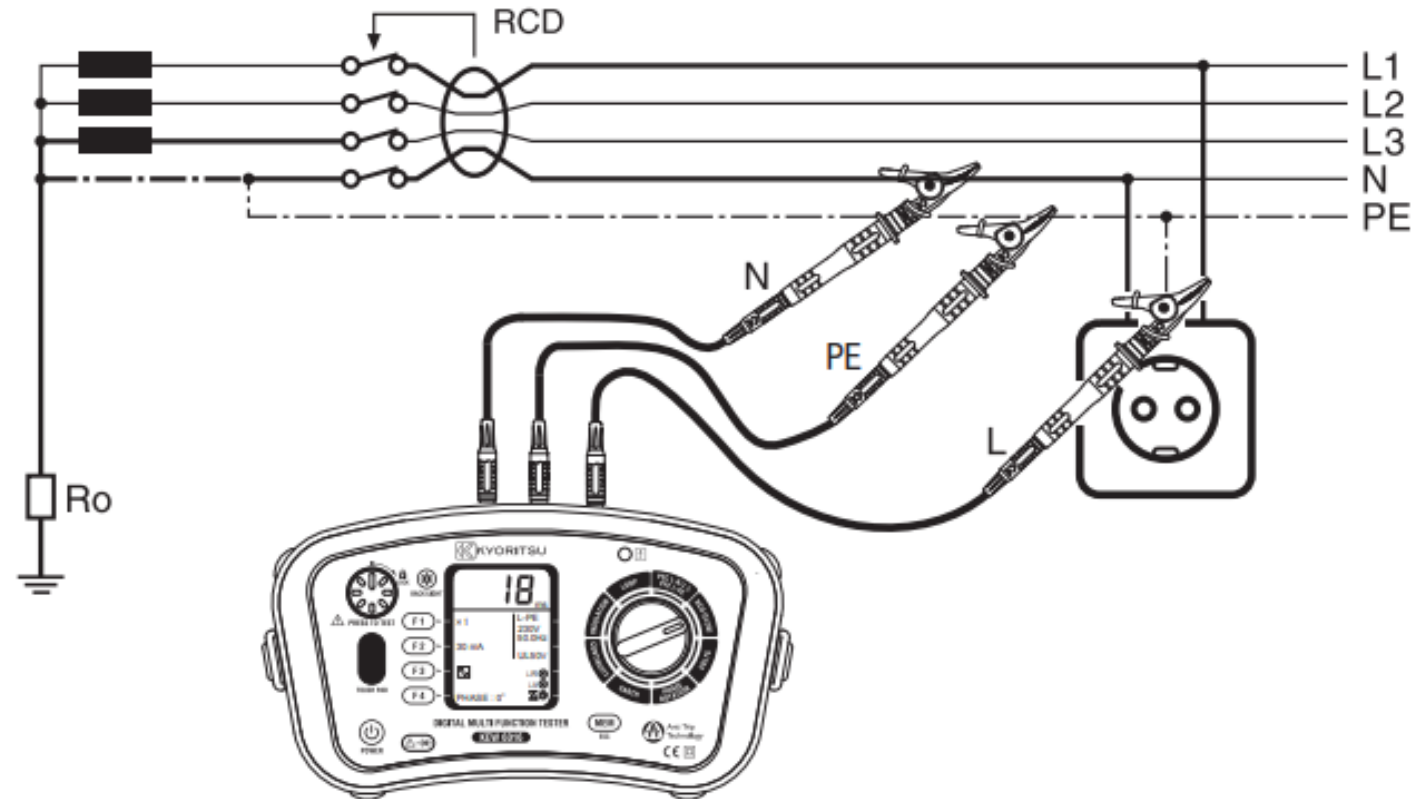
Practical example of 3-phase + neutral RCD test in a TT system.



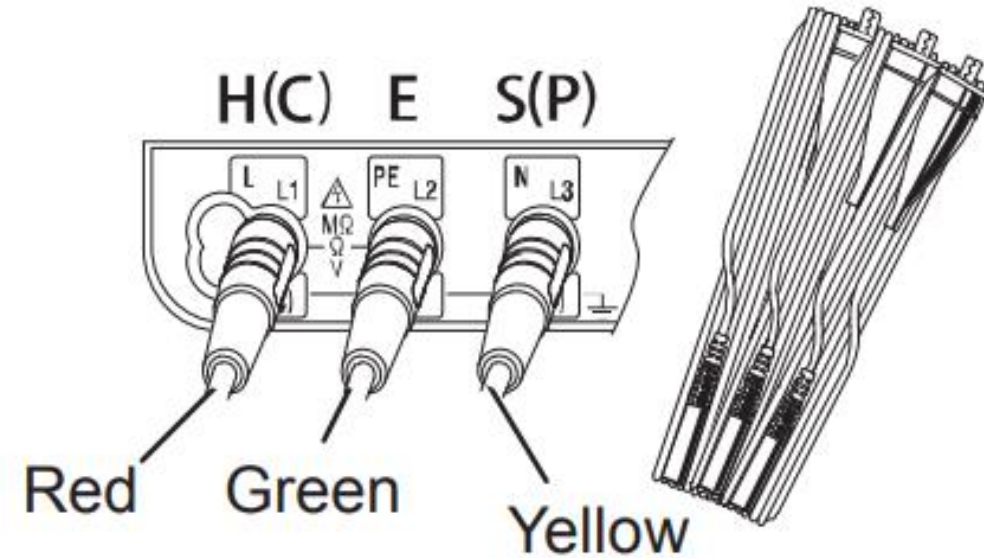
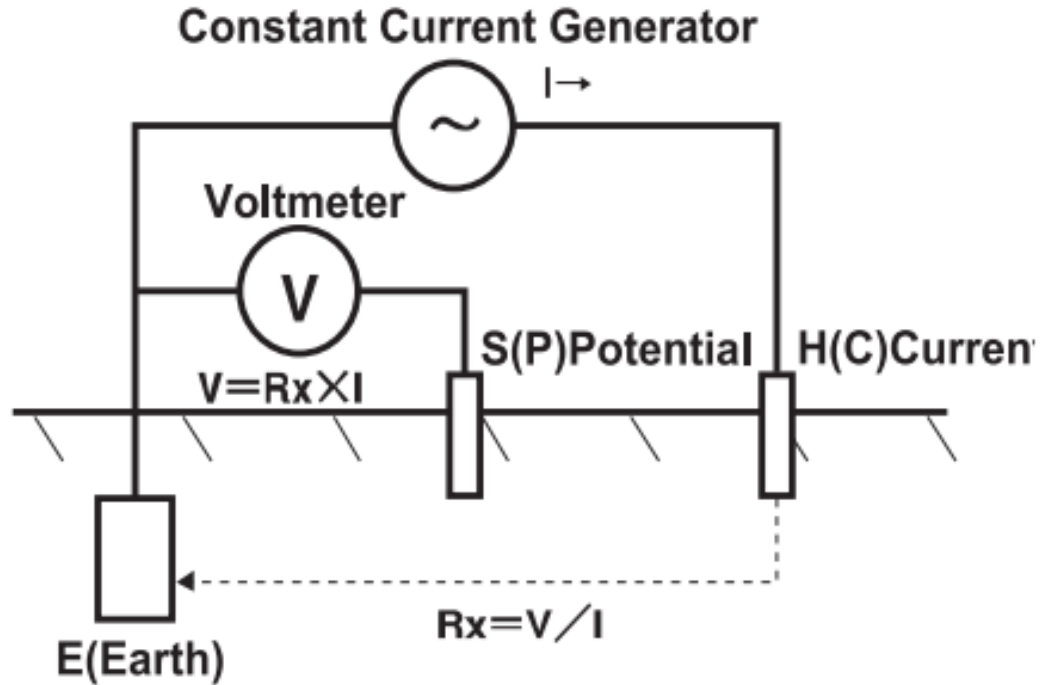
Practical example of single phase RCD test in a TN system.

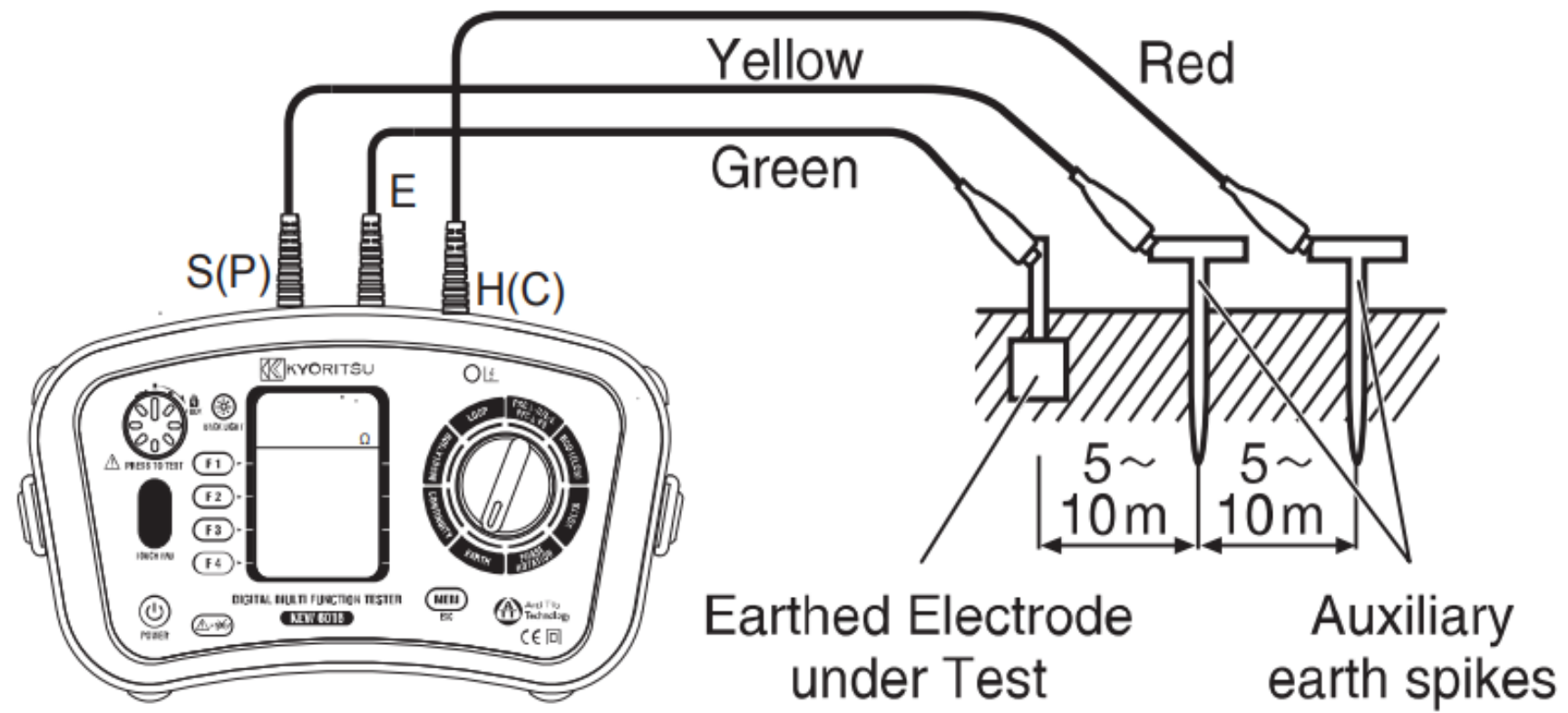


Practical example of RCD test with distribution leads.



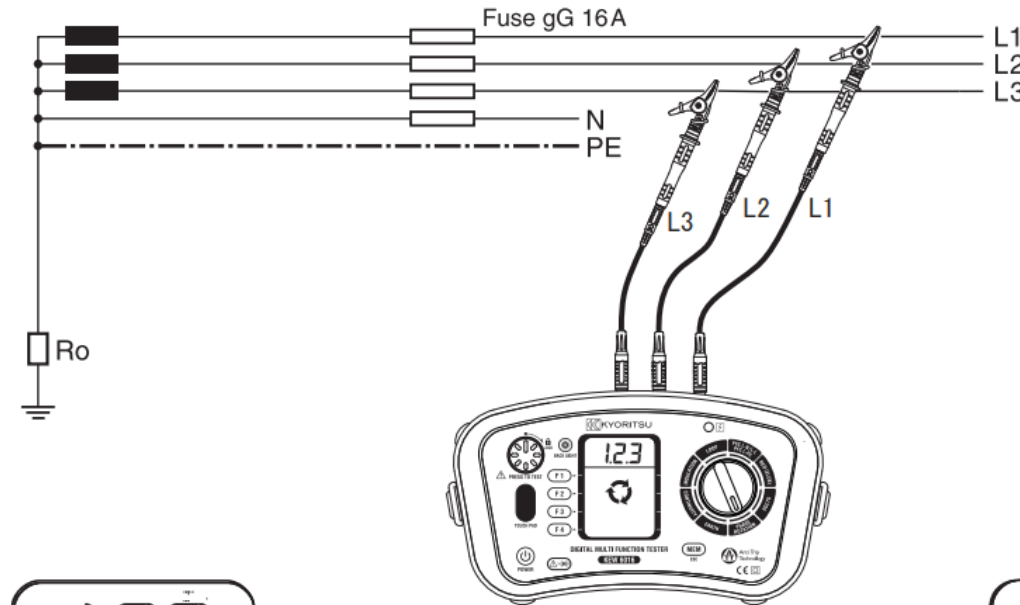
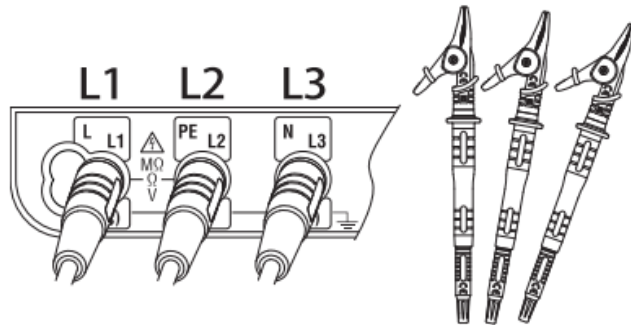
EARTH TESTS





PHASE ROTATION TESTS

Connect each test leads to a circuit.



Correct phase sequence

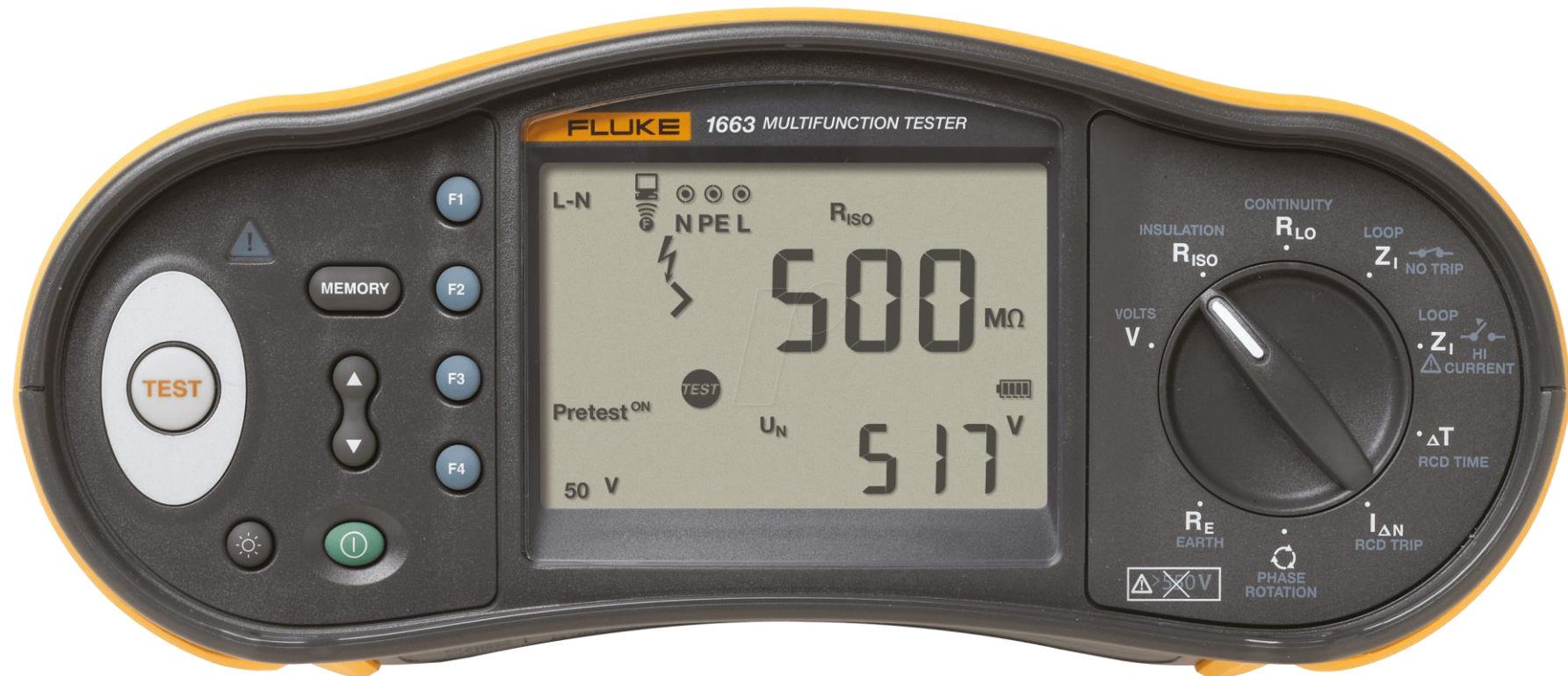


Reversed phase sequence

معرفی برندهای معروف و پر کاربرد

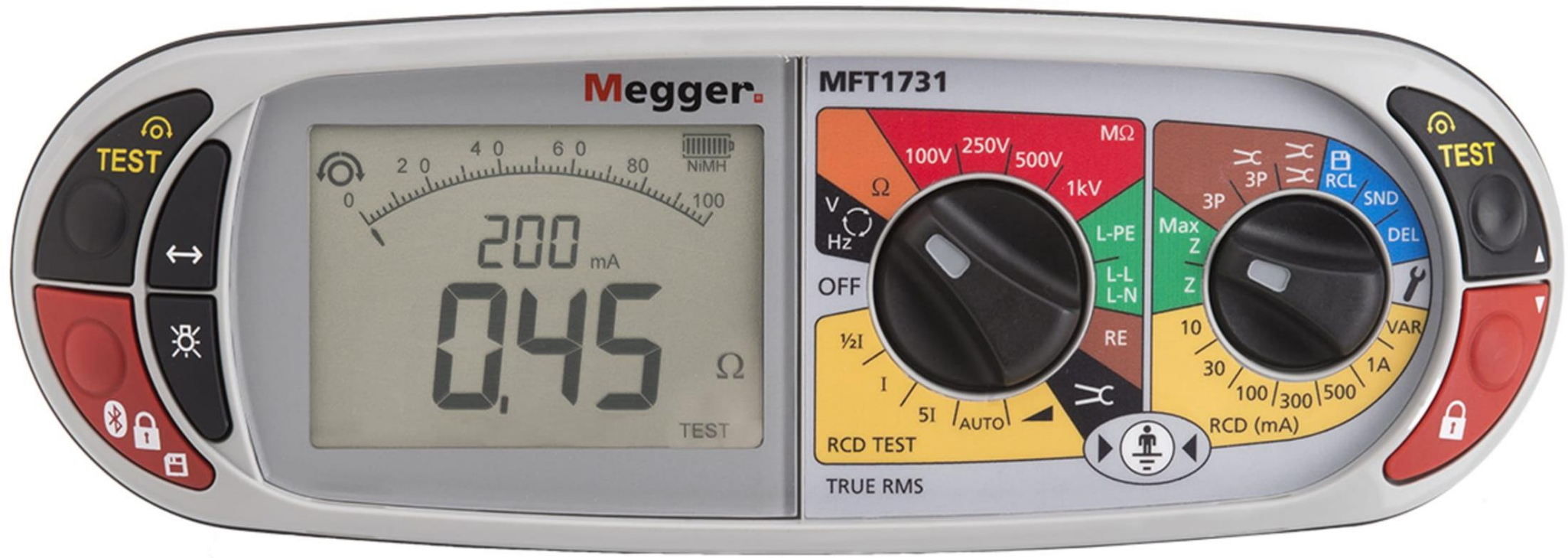
FLUKE®

Fluke 1663 Installation Multifunction Tester



Megger[®]

MFT1700 series Multifunction testers



KEW 6516BT



KEWTECH

KT63DL

Multifunction Installation Tester

BTM
Behrooz Tools Measuring



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شرکت تجهیزات اندازه گیری و ابزار دقیق بهروز



Metrel MI3100 S Eurotest Easi Multifunction Tester



Multi-function installation testers





PCE-ITE 50 Multifunction Tester





RS PRO MT-6600 1000V Multifunction Tester



UT590 Series Multifunction Installation Testers





Multifunction Tester (MFT) 5101

