

# INTELLIGENT SOCKET TESTER KEW 4506

## Perfect socket tester that finds out the difficult-to-detect N-E Reverse connection!

- Easy measurement by simply plugging into a socket outlet and pressing the test button.
- In only 1 second you will check voltage, correct wiring and polarity of Line, Neutral and Earth of a socket outlet.
- KEW 4506 can be used on TT earth system and combined with KEW 8343, also on TN-S.  
(See measurement principle).
- Low test current measurement method for avoiding tripping of RCDs.



**SIGNAL SOURCE  
FOR INTELLIGENT SOCKET TESTER  
KEW 8343**



**INTELLIGENT SOCKET TESTER  
KEW 4506**

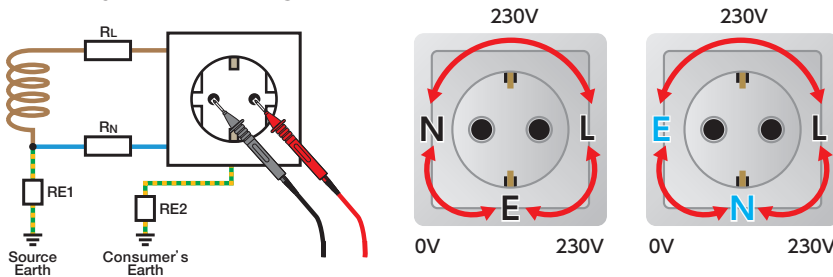
# Why is Neutral-Earth Reverse connection a problem?

If a socket outlet is used without realizing there is mistake of N-E reverse connection, the upstream RCD will trip causing a power shutdown.

But if the circuit is not protected by RCD, large load current flows in the Earth conductor, causing an electric shock and a fire hazard.

## Judgement by a multimeter

When measuring with a multimeter, even if N and E are connected in reverse, the voltage will be the same as when they are connected correctly, and miswiring cannot be found.



Our intelligent socket tester, KEW 4506, can solve those problems!

## Measurement principle

### For TT system

If the Earth system is TT and the circuit is protected by an RCD with rated current of 30mA or more, N-E Reverse can be detected by KEW 4506 alone.

In this case, to check if the N-E wiring is correct, KEW 4506 measures the resistance between L-N and the resistance between L-E respectively.

Normally in TT system, the L-N resistance is mainly due to the wiring conductors resistance only. On the other hand, the L-E resistance includes also the consumer earth resistance (RE1 and RE2), so the L-E resistance is higher than just the L-N resistance.

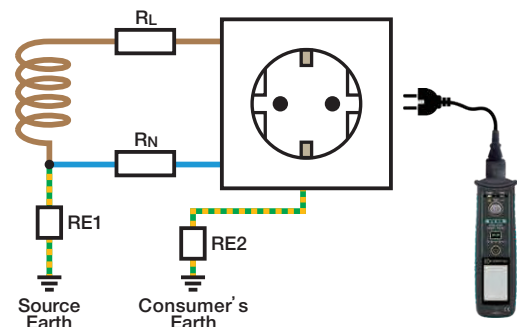
$$R_L + R_N < R_L + (R_{E1} + R_{E2})$$

KEW 4506 detects N-E Reverse checking the difference of these resistance values.

Therefore, if the L-E resistance is extremely low, the Reverse connection of N-E may not be detected.

Also, a 10mA RCD may trip because a test current around 10mA is used to measure the resistance.

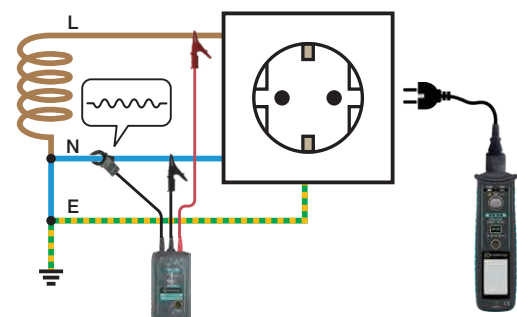
In above cases, we suggest to use KEW 8343 (Signal source) together with KEW 4506. It will not be effected by the extremely low L-E resistance and any RCDs will not trip as the test current flowing between N-E is less than 1μA.



### For TN system

To test wiring systems with low resistances such as TN, building structure, and common earth systems, connect KEW 8343 to the location close to the branch circuit breaker to which 3P outlet under test is wired and apply test voltage.

N-E Reverse can be detected by applying a test voltage from KEW 8343 into the neutral line and examining the direction of the signal.



\*KEW 4506 and KEW 8343 cannot be used on TN-C or IT systems.

\*Signal Source KEW 8343 is sold separately.

# All test results and PASS/FAIL in a clear display screen



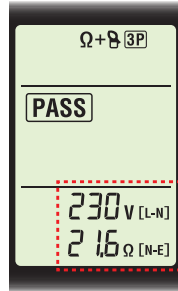
Easy measurement by simply plugging into a socket outlet and pressing the test button.



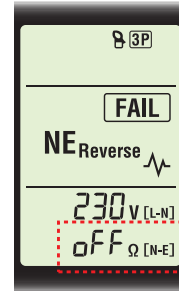
LCD backlight automatically turns on at the dark place.

\*It is possible to disable backlight

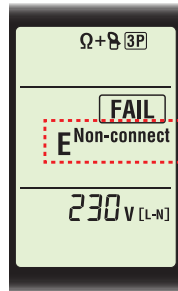
## Wiring check with the live circuit condition



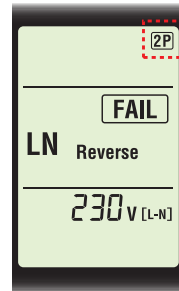
L-N voltage and N-E resistance at TT system can be displayed.



KEW 4506 has a mode which can detect the wiring connection avoiding any RCD tripping. \*resistance measurement OFF



Non-connect can be also displayed.



Wiring check for 2P(no earth) outlet is also available by selecting the 2P setting. \*2P conversion adapter which is required to connect with 2P outlet, isn't supplied.

## Where to use and limitations

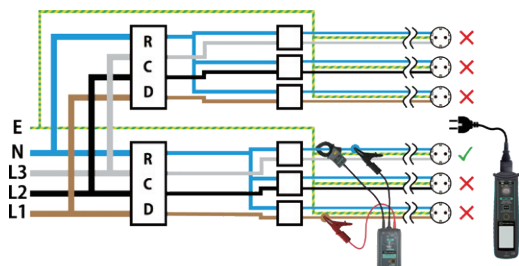
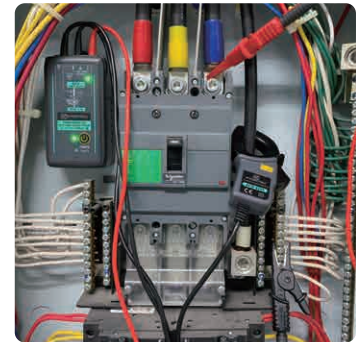
KEW 4506 can test the wiring connection including the N-E Reverse of single-phase socket outlets.

This tester can test single phase socket outlets wired to Three-phase 4-Wire, Single-phase 3-Wire, Single-phase 2-Wire supply systems.

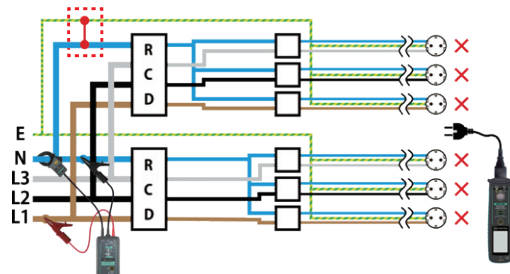
\*KEW 4506 cannot be used for checking three-phase socket outlets and testing the RCD.

For use in a general TN system circuit, N-E Reverse can be determined only at socket outlets connected downstream of the N conductor where KEW 8343 is clamped.

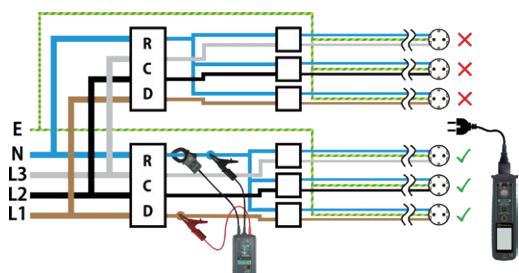
For checking Ring Circuit socket outlets, KEW 8343 must be connected to the upstream of the N conductor which supplies the ring circuit.



✓ Judgeable ✗ Unjudgeable



If N and E are connected each other in the circuit downstream to KEW 8343, KEW 4506 cannot work properly.



## ● KEW 4506 Specification

Socket test*1			
Measurable range of power supply voltage	80V rms to 290V rms (50/60Hz) *The tester gives voltage warning if 253V or higher voltage is detected but it can perform socket test.		
Socket type	3 Pole                      2 Pole		
Judgement	PASS	PASS	
	FAIL	L-N Reverse	L-N Reverse
		L-E Reverse	Abnormal voltage
		N-E Reverse	-
		E Not connected	-
		N Not connected	-
		N-E unjudgeable	-
Abnormal voltage	-		
AC V (L-N)			
Range	80 to 290V rms (50/60Hz)		
Accuracy	±2%rdg±4dgt		
Loop resistance (N-E)			
Range (Auto-ranging)	200Ω: 0.0 to 199.9Ω 2000Ω: 200 to 1999Ω		
Test current	200Ω: 5mA (5.3 Hz) 2000Ω: 1mA (5.3 Hz)		
Accuracy	±3%rdg±5dgt		
Applicable Standards	IEC 61010-1, 61010-2-030 CAT II 300V, Pollution degree 2, IEC 60529(IP40)		
Operating Temp. & humidity range	-10 to 50°C, RH 85% or less		
Storage Temp. & humidity range	-20 to 60°C, RH 85% or less		
Power source	LR6 (AA)(1.5V) × 2		
Dimensions	212(L) × 56(W) × 39(D) mm		
Weight	Approx. 250g (including batteries)		
Accessories	Test lead with IEC connector 9161 (Carrying case)		
Optional	LR6 (AA) × 2, Instruction manual 8343(Signal Source for Intelligent Socket Tester)		

\*1 If N-E resistance measurement function is turned off\*2, test is performed with a test voltage applied from an optional signal source only: current flows between N-E is less than 1μA.

\*2 If the function is disabled, KEW 4506 doesn't show resistance between N-E.

## ● KEW 8343 Specification

Conductor size	φ24mm max.
Test voltage	Freq.                      Approx. 1.8kHz
	TRMS                      Approx. 20mV rms
Allowable input range	300V AC (50/60Hz) continuous 30A AC (50/60Hz) continuous
Operating Temp. & humidity range	-10 to 50°C, RH 85% or less
Storage Temp. & humidity range	-20 to 60°C, RH 85% or less
Power source	LR6 (AA)(1.5V) × 6
Applicable Standards	IEC 61010-1, 61010-031, 61010-2-032 CAT III 300V, Pollution degree 2, IEC 60529(IP40)
Dimensions	Unit: 112(L) × 61(W) × 42(D) mm
	Test voltage injection clamp: 100(L) × 60(W) × 26(D) mm
	Cable length: Approx. 1.5m
Weight	Approx. 520g (including batteries)
Accessories	7157B (Alligator clips) 9096 (Carrying case) LR6 (AA) × 6, Instruction manual

## ● Accessories for KEW 4506

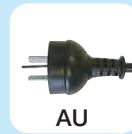


**KAMP10 or 7284**  
Test lead with IEC connector  
KAMP10: 1,500mm  
7284: 720mm



**9161**  
Carrying case

**Applicable to the socket outlet types of each country**



**AU**



**EU**



**UK**



**US**



**KAMP 10(AU):** Australian plug  
**KAMP 10(EU):** European SCHUKO plug  
**KAMP 10(UK):** British plug(13A)  
**7284:** American(NEMA)plug

## ● Accessories for KEW 8343



**7157B**  
Alligator clips



**9096**  
Carrying case



## **Safety Warnings :**

Please read the "Safety Warnings" in the instruction manual supplied with the instrument thoroughly and completely for correct use. Failure to follow the safety rules can cause fire, trouble, electrical shock, etc. Therefore, make sure to operate the instrument on a correct power supply and voltage rating marked on each instrument.

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