INSTRUCTION MANUAL

DIGITAL RCD TESTERS

MODEL KMP 5404DL、KMP 5406DL

ROBIN

Contents

1. WARNING

1.1 This instrument must only be used by a competent, trained person and operated in strict accordance with the instructions. Robin Electronics will not accept liability for any damage or injury caused by misuse or non-compliance with the instructions or safety procedures.

1.2 It is essential to read and understand the safety rules contained in the instructions. They must always be observed when using the instrument.

1.3 This meter has been designed with your safety in mind. However, no design can completely protect against incorrect use. Electrical circuits can be dangerous and/or lethal when lack of caution or poor safety practice is used.

1.4 Read this instruction manual carefully and completely.

1.5 Double check all switch settings and lead connections before making any measurements. DO NOT TOUCH exposed wiring, connections or other "LIVE" parts of an electrical circuit.

1.6 This instrument is intended to be used on live installations rated at 230V ±10%. Under **No** circumstances must it be connected to higher voltage or phase to phase.

1.7 Never open the instrument case. There are no user servicable parts inside.

1.8 Always inspect the unit and test leads for any signs of abnormality or damage. If abnormal conditions exist (e.g. broken lead, cracked case, faulty display, inconsistent reading etc.), do not attempt to take any measurements and return the unit to Robin Electronics for rectification.

1.9 If the unit does not poer up, inspect your leads for damage or a blown fuse. (NEVER ASSUME THE INSTALLATION IS NOT LIVE).

1.10 If at anytime during testing there is a momentary degradation of reading, this may be due to excessive transients or discharges on the system or local area. Should this be observed, the test should be repeated to obtain a correct reading. If in doubt always contact Robin Electronics.

1.11 For safety reasons always only use accessories (e.g. leads, probes, fuses, cases etc) recommend by Robin as they are designed to work with the tester. The use of any other items is prohibited as they may not have the same safety features built in.

1-12 Always keep your hands and fingers behind all finger guards on test leads used with this instruments.

2. Features

- LED mains status indication
- Digital readout of tripping time
- Model KMP5406DL uses constant current circuitry ensuring mains voltage variations do not affect test current
- 0° and 180° phase shift button.
- Model KMP5406DL with DC test function for testing DC sensitive RCD's

3. Introduction

3.1 Your KMP 5406DL and KMP 5404DL RCD Testers use the latest state of the Art Microprocessor Technology to give the best possible performance and accuracy.

3.2 **Independent Constant Current Control***

Constant current circuitry permits accurate and consistent readings even when the voltage fluctuates by 230 V ±10%.

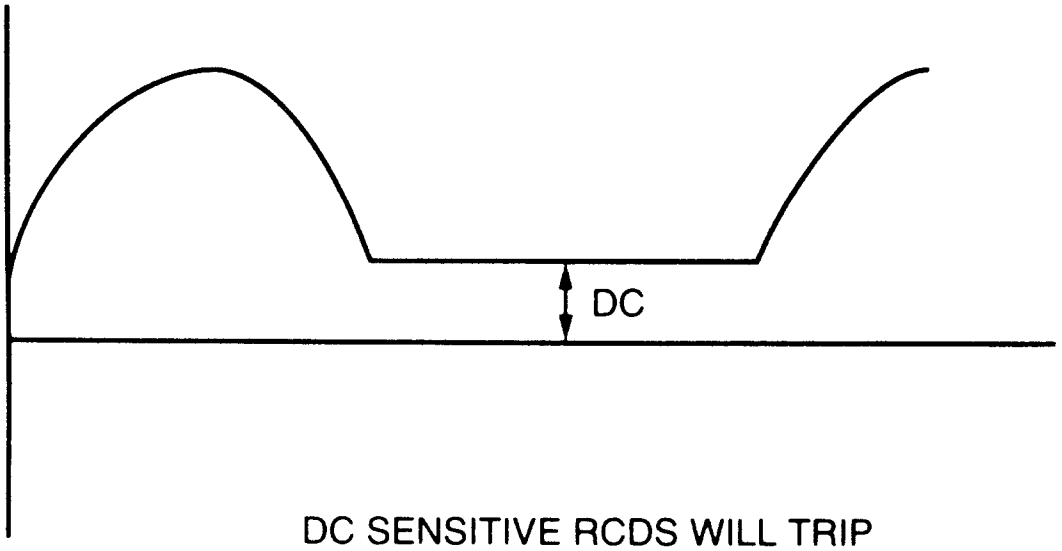
3.3 **DC Sensitive Breakers***

When the KMP 5406DL is switched to the DC mode it will test 30 mA DC sensitive breakers.

If the fault current to earth is not a pure sine wave but has a DC current component, it is possible that the breaker will not trip at its rated tripping current. It is only those breakers that are also sensitive to DC fault current that will trip with this type of fault current.

The Robin KMP 5406DL is capable of testing these breakers by introducing a DC fault current.

FLUCTUATING DC WAVEFORM



DC SENSITIVE RCDS WILL TRIP

To check whether a DC sensitive RCD is functioning a DC fault is injected with the above waveshape (reference IEC1008).

* KMP 5406DL only

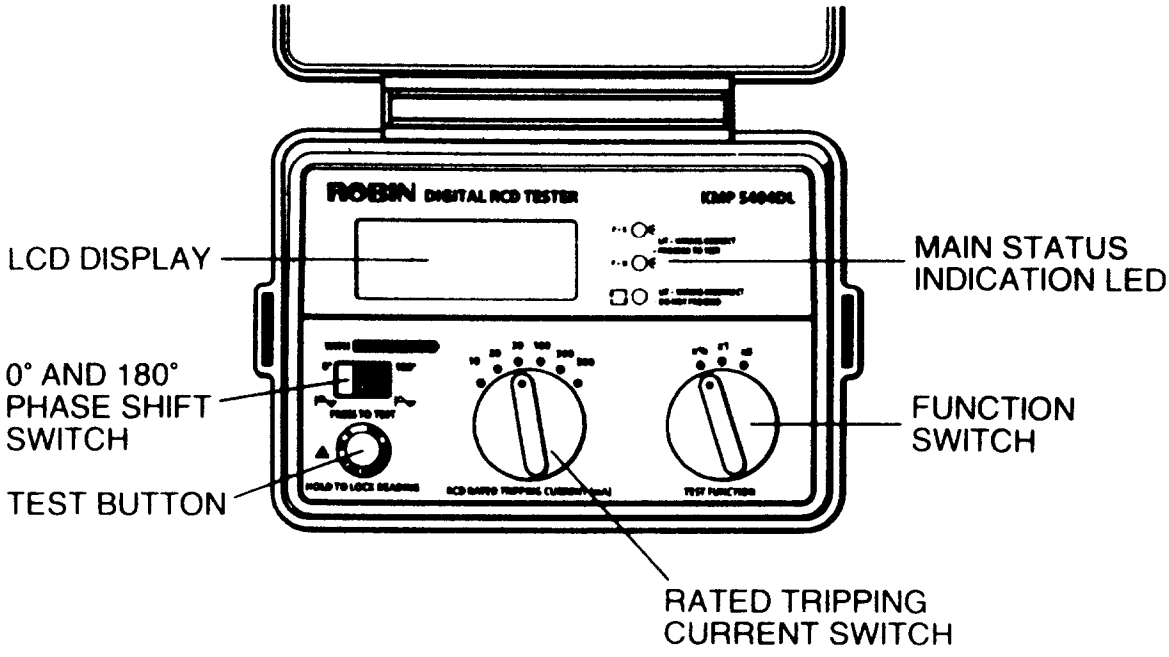
4. Specifications for Model KMP 5404DL, 5406DL

		KMP 5404DL	KMP 5406DL
Trip Current Settings		10, 20, 30, 100, 300, 500 mA	
Test Current Factors		×1/2, ×1, ×5	×1/2, ×1, ×5, DC
Fault Trip Time		1000 ms	
Operational Voltage		230 V ±10%, 50 Hz	230 V ±10%, 50 Hz
On Line Power Consumption		Less than 2W	
Maximum Input Voltage		370 V peak	
AC Current Test (Accuracy) at 230 V	×1/2	±3%	+0%/-5%
	×1	±3%	* ±2.5%
	×5		
DC Current Test (Pulsed) at 230 V	Test Current (Half Wave)	—	±2.5%
	DC Bias Current (6 mA)	—	±3%
Trip Time		±(1% rdg +2 d)	±(0.6% rdg +2 d)
Display Hold Time		Grater than 10s on loss of power	
Over Range Indication		"1" and " " in display	
Over Temperature Indication		"1" in display	"1" and " " in display
Operating Temperature Range		0°C—40°C	
Storage Temperature Range		-20°C—60°C	
Operating Humidity		85% maximum	
Storage Humidity		85% maximum	
Dimensions		175 × 115 × 85.7 mm approx.	
Weight		440g approx.	
Accessories		Test Lead with IEC Connector, Carrying Pouch for Leads	

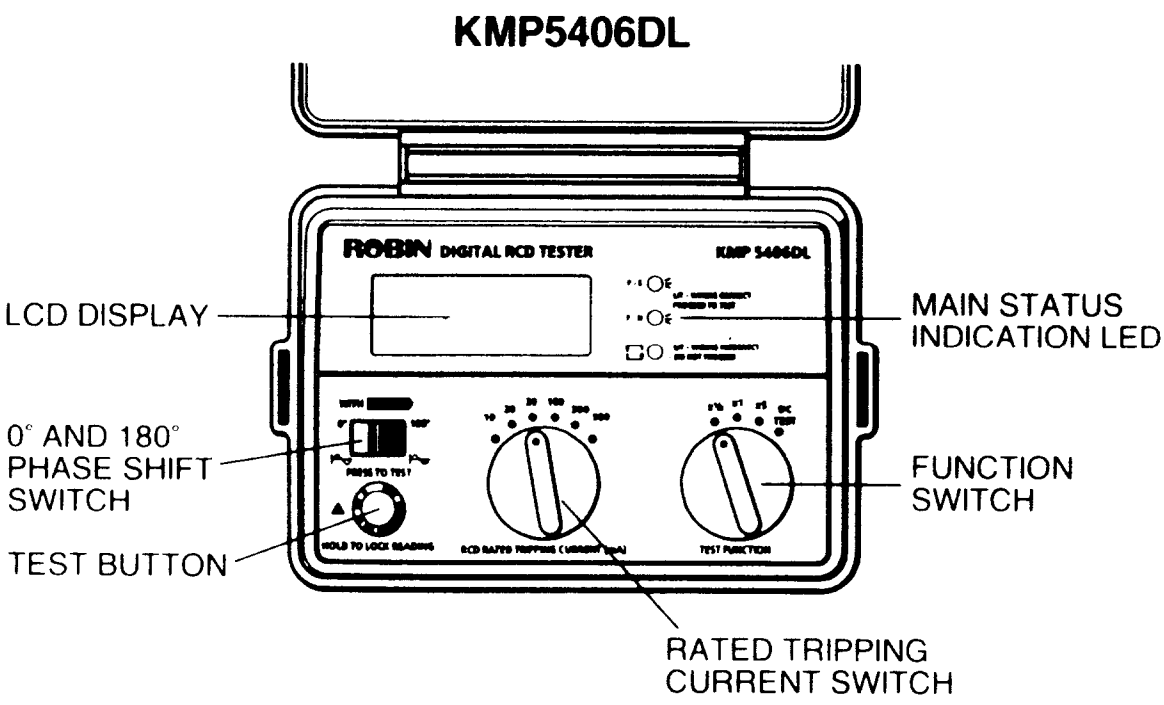
* AC current test accuracy at 300 mA ×5 and 500 mA ×5 ranges for KMP 5406DL is ±3.0% of test current at 230V.

5. Instrument Layout

KMP 5404DL

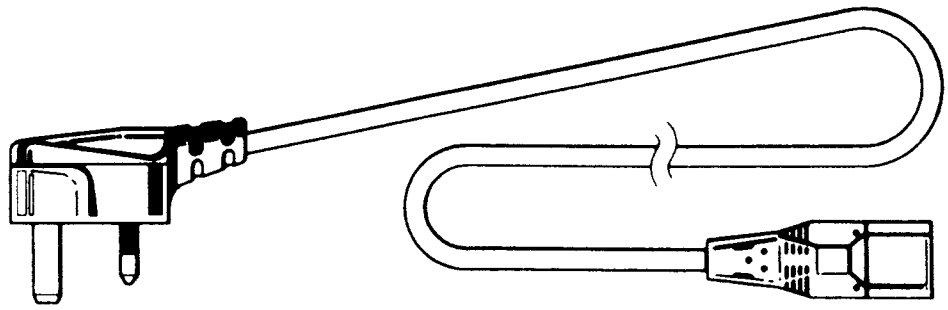


KMP5406DL

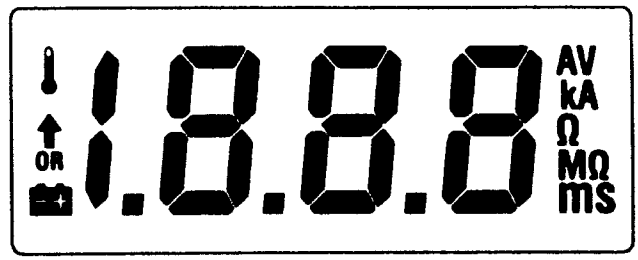


TEST LEAD

KAM10



LCD DISPLAY



6. Operating Instructions

To ensure safe and proper use of this instrument, the following instruction must be followed: —

6-1 WARNING—INITIAL CHECKS TO BE CARRIED OUT BEFORE ANY TESTING.

a) Always inspect your instrument before use for abnormality or damage. If abnormal conditions exist, do not proceed.

b) Before pressing the test button, always check the mains status LED's for the following sequence: —

P-E Red LED must be ON

P-N Red LED must be ON

 Red LED must be OFF

If the above sequence is not displayed or the Red LED is ON for any reason, do not proceed as there may be incorrect wiring. The cause must be rectified before proceeding.

c) If other loads are connected to the test circuit, these may cause erroneous readings. To make the most accurate readings, loads on the circuit should be disconnected.

d) Use only the leads supplied with instrument or Robin approved equivalents.

6-2 Preparation: —

a) Connect the instrument to the circuit to be tested (see following sections for procdure). Make sure the LED's are lit as per the initial checks.

b) If the sequence is not correct, disconnect the instrument and check the installation wiring for a possible fault.

6-3 Testing

a) **No Trip Test (×1/2)**

b) The No Trip Test is designed to ensure that the circuit breaker is operating within its specifications and is not too sensitive.

c) **Set test tripping current to ×1/2 range and the RCD rated tripping current to the rated trip current of the breaker under test.**

d) Press and release the "Press to Test" button. Half the rated tripping current selected will pass through the breaker. The breaker will not trip if it is functioning correctly.

e) **While the test is being conducted the meter display will be "ms".**

f) **If the "Press to Test" button is released the result will be displayed for 3s before reverting to zero. If the button is held down, the result will be displayed until the button is released.**

g) **If the breaker trips, the display will read the trip time. The display will be held for approx 10s.**

h) Reverse the phase angle switch and repeat above.

After repeated testing the unit may overheat. This is indicated by the over temperature sign. If this happens disconnect the unit from the mains and allow to cool down.

This applies to the No Trip Test, Trip Test, Fast Trip Test and DC Trip Test.

6-4 Trip Test (× 1)

a) Select the ×1 test tripping current.

b) Press the test button. The RCD should trip and the tripping time will be displayed on the instrument LCD in mS. While the test is being conducted the display will indicate "ms".

c) **Reset the breaker and reverse the phase angle switch. Press the "Press to Test" button and the breaker should trip.**

d) **Reset the breaker and reverse the phase angle switch again. Press the "Press to Test" button the breaker should trip.**

e) The readings obtained in 5-4-d and 5-4-c should both be within the trip time specified for the breaker at its rated tripping current.

f) **If the breaker does not trip there is a fault.**

g) **To hold the reading press and hold down the "Press to Test" button.**

6-5 Fast Trip Test

a) This is a special test required for a circuit breaker that is installed to reduce the risk associated with direct contact for breakers rated up to 30 mA.

b) Set the test tripping current function switch to the ×5 position.

c) Set the RCD rated tripping current switch to 30 mA.

d) Set the phase angle switch to the 0° position.

e) Press and release the Test button. The breaker should trip.

f) Reset the breaker. Change the phase angle switch to the 180° position and press the Test button.

g) Rest the RCD to 0° and press the lest button.

h) The trip times of the last two measurements should both be less than 40 ms. If the tripping times are greater than 40 ms the RCD may be faulty and must be re-checked.
TO AVOID OVERHEATING EFFECTS, KMP 5404DL HAS A CURRENT LIMITER ON THE 5 ×300mA AND 5 ×500mA RANGES.

Note: Test currents at ×5 function are restricted to 300mA and 500mA on the 300mA and 500mA ranges respectively for KMP 5404DL.

6-6 Testing DC sensitive RCD's — Model KMP5406DL

a) The following test is designed for those breakers which are sensitive to DC fault currents. It is primarily designed to test breakers of 30 mA rating.

b) Set the RCD rated tripping current switch to 30 mA.

c) Set the function switch to DC test.

d) Select 0° phase angle.

e) Press the "Press to Test" button, the breaker should trip with the trip time displayed in "ms".

f) Repeat steps 5-6-b—5-6-e but with the phase angle switch to 180°.

7. Servicing and Calibration

If this tester should fail to operate correctly, return it to Robin Electronics marked for the attention of the Service Department, stating exact nature of fault. Make sure that: —

a. operating instructions have been followed
b. leads have been inspected
c. the unit is returned with all accessories

Regular re-calibration is recommended for this instrument. We recommend that with normal use, the instrument is calibrated at least once in every 12 month interval. When this is due for re-calibration return it to Robin Electronics marked for the attention of the Calibration Department and be sure to include all accessory leads, as they are part of the calibration procedure.

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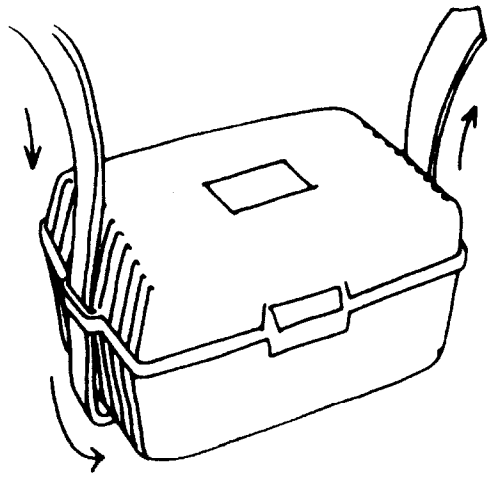
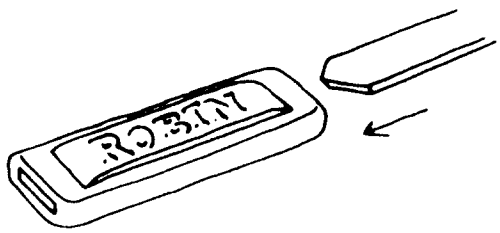
Robin reserve the right to change specifications and design without notice and without obligation.

CASE, STRAP, SHOULDER-PAD AND TEST-LEAD POUCH ASSEMBLY

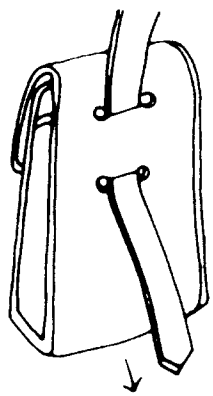
Assemble the shoulder strap through the case lugs and the test-lead pouch in the following sequence:



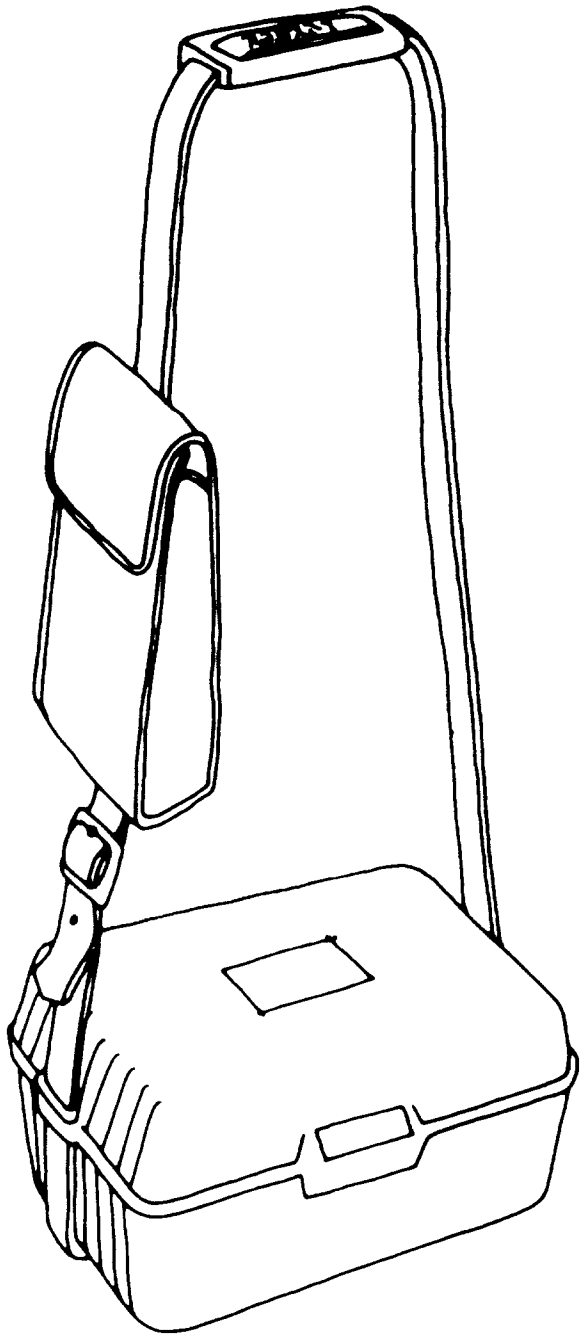
1 Pass the strap DOWN through the first case lug, under the case and UP through the other lug.



2 Slide the shoulder-pad onto the strap



3 Feed the strap DOWN through the slots in the back of the test-lead pouch



4 Pass the strap through the buckle, adjust the strap for length and secure.

Quality and reliability is our tradition

DISTRIBUTOR

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