

Two-pole change-over switch 1018439

Instruction manual

11/14 MH/UD



1. Safety instructions

The two-pole change-over (DPDT – double-pole, double-throw) switch conforms to safety regulations for electrical measurement, control and laboratory equipment as per DIN EN 61010 part 1 and is built to safety category II.

Safe operation of the equipment is guaranteed as long as it is used as specified. Safety cannot, however, be assured if the lead or the rods are not used correctly or are treated without due care.

If it is suspected that the equipment can no longer be operated safely (e.g. when there is visible damage, when it is possible to touch live components), the equipment must be taken out of use immediately.

- Use the equipment solely in dry, dust-free surroundings where there is no risk of explosion.
- Take into account the maximum electrical loading as specified in step 2. Observe the technical data and the information sticker on the rear of the device.
- Be especially careful when measuring voltages above 33 V AC (RMS) or 70 V DC. Only use safety measuring leads which conform to at least CAT II.

- Be careful when switching inductors as very high induced voltages can arise.
- Do not wire up the device when it is under power.

2. Technical data

Maximum electrical load:	250 VAC/10 A 250 VDC/4 A
Connectors:	4-mm safety sockets
Protection category:	IP20
Degree of contamination:	2
Ambient temperature:	5°C...40°C
Storage temperature:	-20...70°C
Relative humidity:	< 85% without condensation
Dimensions:	112x62x45 mm approx.
Weight:	95 g approx.

3. Description

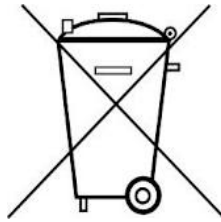
The two-pole change-over (DPDT) switch (switch settings: ON/ON) allows two galvanically isolated circuits to be turned on from one switch. Connection is made via 4-mm safety sockets.

4. Operation

Set up the two-pole change-over (DPDT) switch on a firm surface and wire it up in accordance with the circuit to be measured or tested, making sure that the power is off first.

5. Storage, cleaning, and disposal

- Keep the apparatus in a clean, dry, dust-free place.
- Do not use aggressive cleaning agents or solvents to clean the apparatus.
- In order to clean the equipment, use a soft, damp cloth.
- The packaging should be disposed at local recycling centres.
- If the equipment itself is to be disposed of, it must not be included with normal household waste. It should be placed in the relevant containers for electrical refuse. Local regulations are to be obeyed.



6. Sample experiment

Measurements on a transformer with a load

Required equipment:

1 Two-pole change-over switch	1018439
2 Low-voltage coils D	1000985
1 Transformer core D	1000976
1 AC/DC power supply, 15 V, 10 A (@230 V)	1008691
or	
1 AC/DC power supply, 15 V, 10 A (@115 V)	1008690
3 Digital multimeter P3340	1002785
1 Rheostat, 10 Ω	1003064
1 Set of 15 safety experiment leads, 2.5 mm ²	1002843

- Assemble the transformer from the transformer core and two low-voltage coils with 72 windings, as shown in Fig. 1.
- Connect one digital multimeter, with its measuring range set to 10 A AC, in series between the primary coil, the rheostat and the power supply.
- Connect the two-pole change-over switch with the primary and secondary coils in order to measure the primary and secondary voltages simply by switching between the coils.
- Connect the second digital multimeter to the output of the two-pole change-over (DPDT) switch and set the measuring range to automatically measure V AC.
- Connect a third multimeter to the secondary coil to measure its current and set the measuring range to 10 A AC.
- Set up a load voltage $R_L = 2 \Omega$ using the rheostat.

This set-up allows for experimental testing of the following relationship:

$$\frac{U_2}{U_1} = \frac{N_2}{N_1} = \frac{I_1}{I_2}$$

This is achieved by measuring the following characteristics:

1. Measurement of secondary current I_2 as a function of primary current I_1 .
2. Measurement of secondary current I_2 as a function of the number of windings N_1 in the primary coil.
3. Measurement of secondary current I_2 as a function of the number of windings N_2 in the secondary coil.
4. Measurement of secondary voltage U_2 as a function of primary voltage U_1 .
5. Measurement of secondary voltage U_2 as a function of the number of windings N_1 in the primary coil.
6. Measurement of secondary voltage U_2 as a function of the number of windings N_2 in the secondary coil.

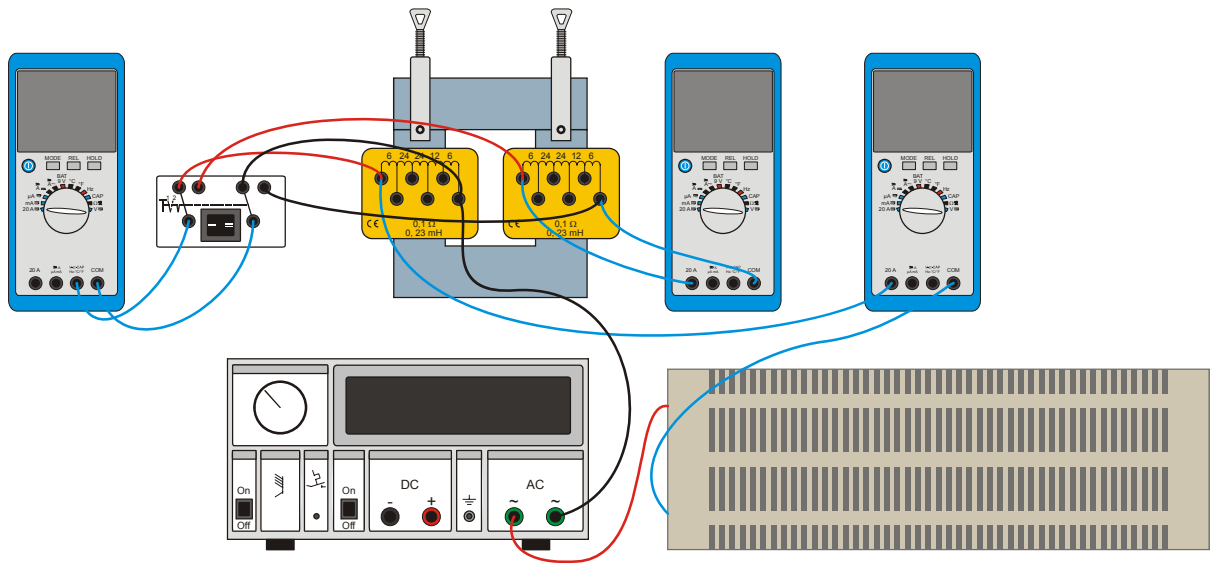


Fig. 1: Experiment set-up.

