

# Brief instructions for the decade crank link MLkt

(More detailed information in the EM 39 operating instructions)

Adjustment of fixed resistance at direct current on standstill of the galvanometer

Alignment of liquid resistances to the minimum of the zero indicator (e.g. headphones)

resistance measurement. Normal DC circuit: Connection of *PrDFiingon* 4th bow between cl. 7 and Terminals 3 and

8 as well as 9 and 10. Before starting up, lock the galvanometer in place by pulling up on the push-button shaft 16 eliminate. 1st test piece smaller than 0.1 MQ, then only use the built-in 4.5 V battery; if the specimen is larger than 0.1 MQ, then add a 20 V battery to terminal 7 and 8 (remove bow !) connect. 1, the other three decades

A bg I eich : thousand decade of MeBwiderstondes R, on  
Zero. Toggle switch van 11 after 12 (rough adjustment).

Ratio resistance  $R_x/R$ , (white numbers on the left crank) from 0.001 to increasing values until the galvanometer deflection reverses. Keep digging with thousands and hundreds decade compare.

Adjust finely with tens and units decade with switch position 13.

*me13result ebnis* :  $R_x$  " ratio resistance times measuring resistance

Check for thermal or polarization voltages: press button 14 (toggle switch to stick!) *Closes pointer off*, such 1.2 voltages are present. The deflection of the pointer now counts as the new zero point in the case of subsequent fine adjustment.

The lead resistance is eliminated if the additional

compensating resistance box R, is connected (containing a Dig- and a fine control resistor) Choose the for (relative resistance); The free resistance ratio applicable to the examinee left crank Short-circuit the ends of the leads that decades R, on Zero. Switch on and determine the lead resistance at the compensating resistor box R. The cranks of the additional box R, and the chosen one *arrest resistance* now leave it unchanged! Grab and r .n comparison with the decades as with normal Shaj- tion.

Switching with alternating current: DUT at terminals 3 and 4. Buzzer (B) at terminals 1 and 8, zero indicator e.g. B. Kapfhorer (H) to terminals 2 and 4. Install a pushbutton switch (T) in the buzzer circuit. Battery and galvanometer circuit is switched off, so toggle switch 11-12-13 must not be operated! Pull up the Schaller 16! Compare with measuring and ratio resistances as before, but now to the minimum of the zero indicator (e.g. tanminin1'Um in Kapfhorer).

Determining the location of the fault: faulty wire on terminal 2, good wire on. Kl. 4. To Kl. 7 (clamp between Kl. 7 and 8 far away!) or if an additional battery *used* is grounded at its minus pole. thousand decade to 1; Branch resistance R, (red numbers and guessing arrow on the left crank) starting with 1 to higher values until the pointer deflects *when printing* of the toggle switch reverses to 12. fine tuning.

R4

meBer 9 ebn is : X''' -- --2 L (L'= in the one used for the cable lengths

LCingenmaB).

R1 + R4

Other galvanometer: push button switch 16 in. At Kl. 2 and 4 a light mark or

Connect mirror galvanometer with speaking protective resistor.

Tap the built-in galvanometer for another purpose at terminals 2 and 4, pull up the push-button switch 16.  
protective resistor for