

NOTICE TECHNIQUE DU MULTIMÈTRE-ÉLECTROMÈTRE KEITHLEY 610C

FICHE N° 3723

PRÉSERVER
SAUVEGARDER
VALORISER

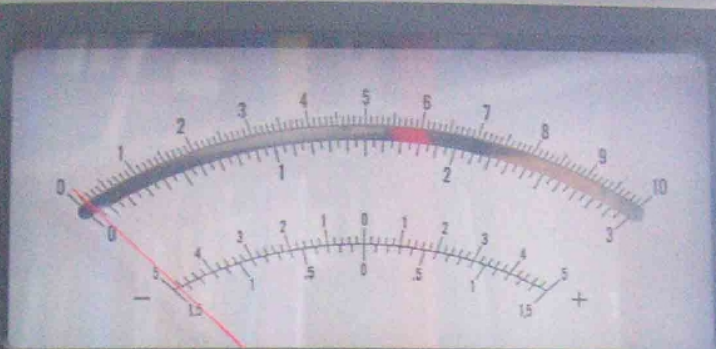
Période de fabrication : 1950-1974
Fabricant : Keithley
Domaines : Physique
Sous-domaines : Electronique, Electricité
Organisme : Université de Rennes
Ville : Rennes
Modèle : Documentation
Matériaux :

Description

Cette notice technique décrit la constitution et le fonctionnement du multimètre/électromètre Keithley 610C.

Utilisation

Le multimètre-électromètre KEITHLEY est un appareil très performant encore utilisé dans les laboratoires et en travaux pratiques à la faculté des sciences de Rennes. Il permet en particulier de mesurer des quantités de charges électriques très faibles (unités = coulombs) avec une impédance d'entrée très élevée. Cet appareil de mesure très performant (excellente stabilité du zéro) était destiné aux laboratoires de recherche et aux milieux professionnels de l'électronique et à l'enseignement.



610C SOLID STATE ELECTROMETER



KEITHLEY INSTRUMENTS

ZERO
FINE •
MEDIUM ○



INPUT



ZERO
CHECK



FAST NORMAL
FEEDBACK



TO OPERATE: SET LINE SWITCH TO 117 OR 234, **METER SWITCH** TO **POWER OFF**, AND CONNECT LINE CORD. LOCK **ZERO CHECK**, SET THE RANGE SWITCH TO **VOLTS**, AND SET THE MULTIPLIER SWITCH TO 1.0. TURN **METER SWITCH** TO **CENTER ZERO**. METER SHOULD READ NEAR THE CENTER ZERO. IF NOT, ADJUST **COARSE**, **MEDIUM**, AND **FINE ZERO** CONTROLS WHILE INCREASING VOLTAGE SENSITIVITY WITH THE MULTIPLIER SWITCH. SET **METER SWITCH** TO +, -, OR **CENTER ZERO** AS REQUIRED.

INPUT CONNECTION: NORMALLY, INPUT LEADS SHOULD BE POLYETHYLENE OR TEFLON COAX. INPUT CONNECTOR IS TEFLON-INSULATED UHF TYPE. THE MODEL 6101B SHIELDED TEST PROBE IS USEFUL FOR MOST MEASUREMENTS.

VOLTAGE MEASUREMENT: SET RANGE SWITCH TO **VOLTS** FOR 10^{14} OHM INPUT RESISTANCE. SET **FEEDBACK** SWITCH TO **NORMAL**. SET FULL SCALE VOLTAGE RANGE WITH MULTIPLIER SWITCH. CONNECT INPUT AND UNLOCK **ZERO CHECK** SWITCH. (ROTATING RANGE SWITCH TO **AMPERES** POSITION GIVES AN INPUT RESISTANCE EQUAL TO THE RECIPROCAL OF **AMPERES** FULL SCALE RANGE.)

HIGH VOLTAGE MEASUREMENT: MODEL 6102A 10:1 DIVIDER EXTENDS THE RANGE TO 1000 V, 3% ACCURACY OVERALL, 10^{10} OHMS INPUT. MODEL 6103A 1000:1 DIVIDER EXTENDS THE RANGE TO 30 KV, 5% ACCURACY OVERALL, 10^{12} OHMS INPUT. USE DIVIDERS WITH RANGE SWITCH AT **VOLTS**. **VOLTS** FULL SCALE EQUALS DIVIDER RATIO TIMES MULTIPLIER SETTING.

RESISTANCE MEASUREMENT: SET RANGE SWITCH TO **OHMS**, **METER SWITCH** TO +, **FEEDBACK** to **NORMAL**, MULTIPLIER TO HIGHEST SETTING POSSIBLE AND LOCK **ZERO CHECK**. CONNECT UNKNOWN AND RELEASE **ZERO CHECK**. MULTIPLIER TIMES **OHMS** RANGE IS FULL SCALE RANGE. SHIELD INPUT IF RESISTANCE EXCEEDS 1 MEGOHM. MODEL 6104 TEST SHIELD IS SUGGESTED. SEE MANUAL FOR GUARDED MEASUREMENTS.

CURRENT MEASUREMENT WITH SHUNT RESISTOR: SET RANGE SWITCH TO **AMPERES**, **FEEDBACK** TO **NORMAL**, MULTIPLIER TO SMALLEST SETTING POSSIBLE AND UNLOCK **ZERO CHECK**. MULTIPLIER TIMES **AMPERES** RANGE IS FULL-SCALE RANGE. MULTIPLIER SETTING IS FULL-SCALE INPUT VOLTAGE DROP. (SEE INSTRUCTION MANUAL FOR EFFECT OF INPUT VOLTAGE DROP ON MEASUREMENT.) OBSERVE MAXIMUM VOLTAGE LIMITS ON RANGE SWITCH. BELOW 10^{-13} AMPERE, SUBTRACT OFFSET CURRENT FROM READING.

CURRENT MEASUREMENT WITH REDUCED VOLTAGE DROP AND INCREASED SPEED: BELOW 10^{-5} AMPERE, NEGATIVE **FEEDBACK** DECREASES INPUT VOLTAGE DROP AND INCREASES RESPONSE SPEED. SET **FEEDBACK** TO **FAST**, MULTIPLIER TO 1.0 IF POSSIBLE. OPERATE AS ABOVE. DO NOT USE IN THIS POSITION TO MEASURE CAPACITOR LEAKAGE. NEITHER SIDE OF 3 V OR 1 MA OUTPUT IS GROUNDED IN **FAST** POSITION.

CHARGE MEASUREMENT: SET RANGE SWITCH TO **COULOMBS**, **FEEDBACK** TO **FAST**, AND UNLOCK **ZERO CHECK**. MULTIPLIER TIMES **COULOMBS** RANGE IS FULL-SCALE RANGE. OFFSET CURRENT ADDS A MAXIMUM OF 5×10^{-15} COULOMBS PER SECOND.

RECORDER OUTPUT: AMPHENOL 80-MC2M CONNECTOR FITS OUTPUT. FOR 1 MA RECORDER, SET SWITCH AT 1 MA AND ADJUST 1 MA CAL FOR FULL SCALE RECORDER DEFLECTION WHEN METER READS FULL SCALE. WITH SWITCH AT 3 V, OUTPUT IS 3 VOLTS FOR FULL SCALE METER DEFLECTION. SWITCH MUST BE AT 3 V WHEN RECORDER IS NOT ATTACHED.

CAUTION: ALWAYS TURN **METER SWITCH** TO **OFF** BEFORE DISCONNECTING LINE CORD OR POWER.

KEITHLEY

Model 610C, 610CR Solid-State Electrometers

Instruction Manual

A GREATER MEASURE OF CONFIDENCE

KEITHLEY

Model 610C, 610CR Solid-State Electrometers

Instruction Manual

A GREATER MEASURE OF CONFIDENCE

Pour nous citer :

Base de la Mission nationale de sauvegarde et de valorisation du patrimoine scientifique et technique contemporain, PATSTEC, Notice technique du multimètre-électromètre Keithley 610C (Keithley), <https://www.patstec.fr/ressources/objets/detail?id=15741>, consulté le 2026-07-28