DEPARTMENT OF

TRADE AND COMMERCE
CANADA

S-EA-452 - AMENDED
Cancelling and Replacing
S-EA-452 of May 26, 1960

STANDARDS BRANCH

OTTAWA July 21, 1960.

TYPE APPROVAL

KENT "MULTELEC MARK III M/MV/S"
SINGLE POINT, STRIP CHART POTENTIOMETER RECORDER

The apparatus specified and illustrated herein has been duly approved by the Standards Branch under the provisions of the Electricity Inspection Act, Chapter 94, R.S. 1952, and may be admitted to verification in Canada.

Apparatus Approved: "Multelec Mark III M/MV/S" Single Point, Strip Chart Potentiometer Recorder, manufactured by George Kent Ltd., Luton and London, England, and distributed in Canada by George Kent (Canada) Ltd., Toronto 14, Ontario.

Rating of Apparatus:

Millivolt Input*	Ranges from 0-2 mv. to 0-2000 mv. D.C.
Record	Continuous line
Current Standardization	Automatic current regulation
Chart	9-7/8"
Scale	9-7/8" and 10" calibrated width
Response Time	2 seconds
Chart Speeds	(i) 1, 2, 4, 15, 30, 60 inches per hour
	(ii) 2, 4, 8, 30, 60, 120 inches per hour
	(iii) 4, 8, 16, 60, 120, 240 inches per hour
Supply Voltage	110-115 volts or 200-250 volts
Supply Frequency	60, 50 or 25 cycles

* Note: The kilowatts, megawatts, or other power function which the millivolts represent shall be shown on the nameplate or scale.

Description: The "Multelec Mark III M/MV/S" is a single point indicating and recording potentiometric instrument having a minimum millivolt range of 2 mv. D.C. and a maximum range of 2 volts D.C. It can be used to measure and record the output of any approved type of thermal converter or the total output of a number of converters. The instrument can be arranged for left-hand zero, centre zero, or 2% raised zero. In the type designation the 'M/MV' denotes an instrument which measures millivolts and the 'S' denotes a single point recorder. Provided that the type designation includes the letters 'M/MV/S' as the first part, the following additional

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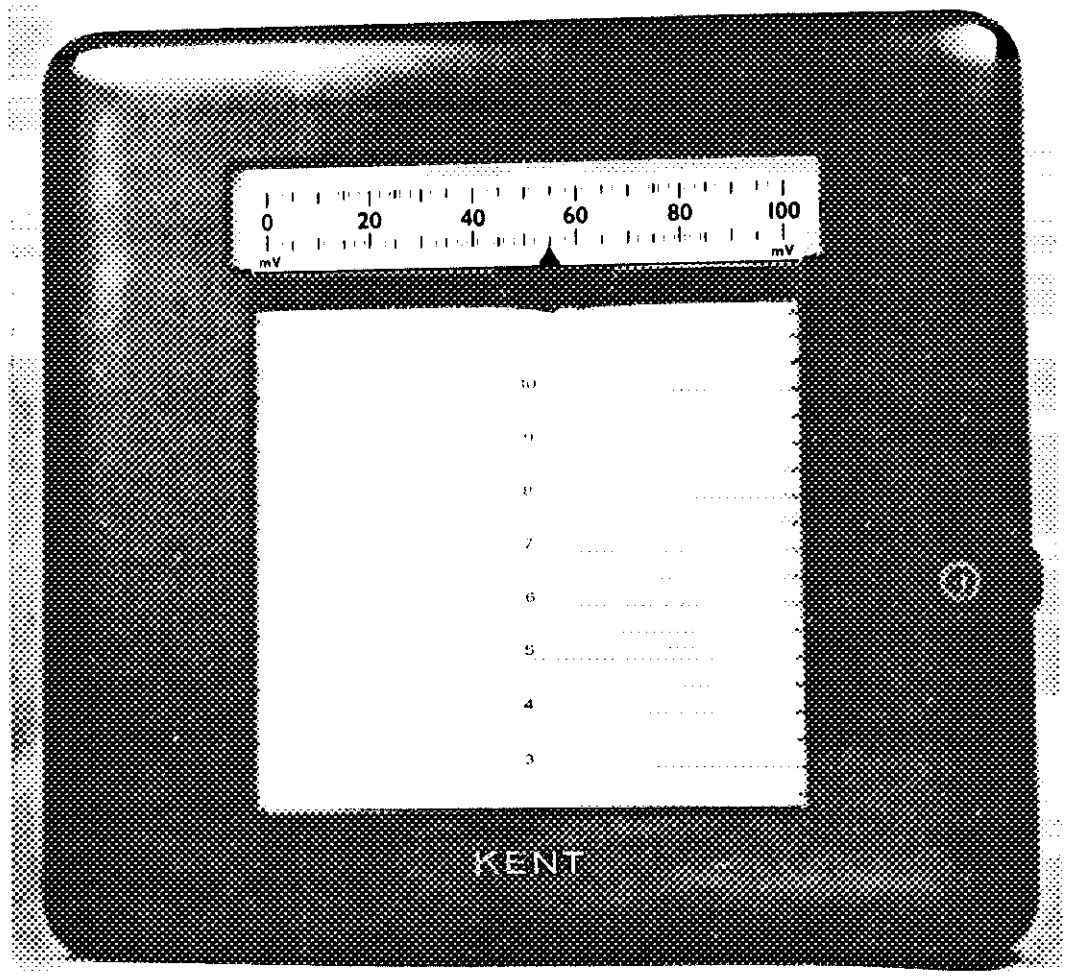
(suffixes

KENT "MULTELEC MARK III M/MV/S"
SINGLE POINT, STRIP CHART POTENTIOMETER RECORDER



AMENDED

suffixes do not invalidate the approval:

/G for Pneumatic control function
/N for Pneumatic retransmission
/E for Electrical retransmission
/F for Front setting control/alarm contacts
/B for Back setting control/alarm contacts.

The Mark VII Recorder is essentially a D.C. potentiometer of the self-balancing electronic type. The slide wire consists of a pre-determined-value resistance wire wound on a circular disc. This disc is stationary, but about which rotates the slide wire contacts, these contacts being attached to a central ball-bearing and shaft. The central shaft is driven, along with pointer and pen, through reduction gearing and stainless steel pen cord from a phase-sensitive motor. The position which the slide wire contacts occupy is determined by the D.C. millivoltage input. Should there be an out-of-balance voltage (error signal), this signal is fed to a high-gain amplifier and the output of the amplifier drives the phase-sensitive motor. The direction of rotation of the motor depends upon the polarity of the error signal. Therefore, through reduction gearing, the motor re-positions the slide wire contacts and the measuring circuit is then balanced.

The D.C. millivolt input to the instrument is converted to A.C. by a synchronous vibrating reed "chopper" before being fed to the amplifier.

There is no standard cell involved; the standard current to the slide wire is maintained constant by a regulated D.C. power supply of the Zener Diode variety.

There are three approved blocks of chart speeds, viz:

1, 2, 4, 15, 30, 60 inches per hour
2, 4, 8, 30, 60, 120 inches per hour
4, 8, 16, 60, 120, 240 inches per hour.

An instrument may be fitted with any one of these three blocks. Variation of speed within the range of the block is obtained by moving a pointer knob on the front panel, the three highest speeds requiring also reversal of a gear behind the chart plate.

This recorder is approved for use unsealed.

It should be noted that some instruments have a 9-7/8" calibrated width for the rated millivolt range whereas others have a calibrated width of 10" although the physical scale travel of the latter is limited to 9-7/8".

Approval includes instruments incorporating a retransmission slide-wire.

E. F. Power

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Ref: A-8/9