SD-EA.38

CANADA

DEPARTMENT OF TRADE AND COMMERCE

STANDARDS DIVISION

OTTAWA, September 18, 1950.

NOTIFICATION OF TYPE APPROVAL

The apparatus specified herein has been duly approved by the Standards Division under the provisions of The Electricity Inspection Act, Chapter 22, 1928, as amended, and may be admitted to verification in Canada.

Apparatus Approved: Thermal Converters, manufactured by the Sangamo Company Limited, Leaside, Ontario, under the following type designations which distinguish the various time periods:

Type A 1 S - 1 second	Type B - 3-1/3 minutes
Type A 6 S - 6 seconds	Type C 10 M - 10 minutes
Type A 15 S - 15 seconds	Type C 15 M - 15 minutes

Rating of Apparatus: Converters of all types may be arranged as:- ammeters for AC or DC; voltmeters for AC; single element, single phase wattmeters; or 2-, 2½-, or 3-element polyphase wattmeters. The 2-element form may be arranged as a KVA meter in a similar manner to the 4L demand-energy meter.

Rated amperes ... 2½, 5, 10, 15, 25
Rated voltage ... 115, 230, 460, 575
Frequency ..... 25, 50, 60 cycles
DC Output .....

1 second	1 KW = 100 millivolts, maximum
6 seconds	1 KW = 30 millivolts, maximum
15 seconds	1 KW = 50 millivolts, maximum
3-1/3 minutes ..	1 KW = 40 millivolts, maximum
10 minutes	1 KW = 20 millivolts, maximum
15 minutes	1 KW = 20 millivolts, maximum

Description: The Sangamo Thermal Converter is essentially a thermal instrument which, instead of indicating by means of a pointer on a scale, produces a DC voltage proportional to the input electrical quantity. When functioning as a voltmeter or ammeter, the DC voltage varies according to the square of the voltage or current; as a wattmeter, the DC voltage varies directly with the watts input. From the foregoing, a separate indicating or recording instrument must always be used with a converter. This instrument need not be at the same location as the converter or converters; hence, one of the main applications is in telemetering. Where watts are measured, the output voltages of a number of converters can be connected in series for obtaining values of totalized loads, and by reversing polarity of output of a converter, subtraction may be performed. In any case, converters may be at widely scattered locations.

..... Adjustments

(OVER)

Adjustments: The adjustments provided on thermal converters of wattmeter type are voltage balance, calibration and current balance. The adjustments used in the various types of converters are as follows:

(a) One second -

Potential balance	- by shunting one heater
Current balance	- by moving centre tap of transformer secondary
Calibration	- by tapping couples for coarse adjustment and by varying circulating current for fine adjustment.

(b) Six second, 15 second, and 3-1/3 minute -

Potential balance	- by shunting one heater
Current balance	- by moving centre tap between two heaters
Calibration	- by adjustable shunt across the current terminals plus fixed shunts if required.

(c) Ten minute, and 15 minute -

Potential balance	- by introducing a neutralizing e.m.f. from special purpose couples
Current balance	- by introducing a neutralizing e.m.f.
Calibration	- by selection of couples at terminals on a small sub-panel and by a potentiometer across a group of couples for fine adjustment.

Limitations:

(1) Converters may only be used for billing purposes with approved self-balancing potentiometer recorders.

(2) Districts will later be advised regarding verification and re-verification procedure.

E. F. Power

E. F. Power,
Assistant Director (E.& C.),
Standards Division.

R. W. Maclean

R. W. Maclean
Director,
Standards Division.

E.W. Power

SD-EA.39

CANADA

DEPARTMENT OF TRADE AND COMMERCE

STANDARDS DIVISION

OTTAWA, November 13, 1950.

NOTIFICATION OF SPECIAL APPROVAL

The apparatus specified and illustrated herein has been granted special approval by the Standards Division under the provisions of The Electricity Inspection Act, Chap. 22, 1928, as amended, and may be admitted to verification in Canada subject to the limiting conditions below:

Apparatus Approved: Totalizing Metering Installations using the following equipment, manufactured by the Canadian Westinghouse Company, Limited, Hamilton, Ontario:-
Type "WRA" Duplex Recording Totalizing Demand Meters
Type "RT" Totalizing Relays
Type "CA-2" Polyphase Watthour Meters with Type "CD-3" Contact Devices
Type "K-3" Reactive Component Compensators
Any other device for which general approval has been granted or is subsequently granted.

Limiting Conditions: Before such an installation may be put into service for billing purposes, the Canadian Westinghouse Company Limited shall obtain written authorization from the Director of Standards for that particular installation. Copies of the authorization shall also be sent to the Utility Company involved and to the District Inspector in whose district the equipment is to be installed. Such authorization will define the components to be used in the installations and their ratings.

Sealing: The type "WRA" duplex recording meter, the type "RT" totalizing relays, and the type "K-3" reactive component compensators are authorized for use unsealed. The "CA-2" watthour meters shall be sealed in the usual way.

Description: In this system of totalized metering, each watthour meter (type "CA-2") is equipped with a contact device (type "CD-3") which transmits impulses at a rate corresponding to the energy being measured. Each impulse indicates a definite block of energy. The impulses from three meters may be totalized by the impulse totalizing relay (type "RT") which also records the number of impulses from each meter on a separate counter. The impulses received, or a proportion of them, are then transmitted by the relay. The latter impulses are received by the recording meter (type "WRA") which is capable of totalizing two circuits in each of its two sections. One section of the recording meter provides:- (a) a graphic record (on a roll chart) of the integrated block interval kilowatt demand from which the maximum demand and its time of occurrence for any billing period may be obtained; (b) a record on a clock-type register of the totalized integrated energy; (c) a cyclometer dial record of the total number of impulses received in each circuit. The second section provides a similar record of the integrated block interval reactive kilovolt ampere demand, the totalized integrated reactive kilovolt amperehours, and the reactive kilovolt amperehour impulses. The impulses which supply this second section originate in type "CA-2" meters equipped with type "K-3" compensators so that they measure reactive kilovolt amperehours. The impulses of these meters are transmitted, totalized and re-transmitted through type "RT" relays in a similar manner to those of the kilowatthour meters. The use of type "RT" relays is only necessary where more than two circuits are being totalized by each section of the type "WRA" meter.

Authorization Given To:	Date	District
British Columbia Electric Railway Company, Ltd.	Nov. 10, 1950	Vancouver

R. W. MacLean,
Director,
Standards Division.

W.J.S. Fraser
for E. F. Power,
Assistant Director (E.& G.),
Standards Division.

WESTINGHOUSE TYPE "WRA" IMPULSE DEMAND METER