DEPARTMENT OF

TRADE AND COMMERCE
CANADA

S-EA.551

STANDARDS BRANCH

OTTAWA June 7, 1962.

TYPE APPROVAL

LANDIS & GYR TYPE "FF8/VA/FF8ø" 'TRIVECTOR'

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

Apparatus Approved: Type "FF8/VA/FF8ø" 'Trivector', manufactured by Landis & Gyr, Zug, Switzerland, and distributed in Canada by Landis & Gyr, Inc., 725 Decarie Blvd., Montreal 9, P. Q.

Rating of Apparatus:

Current Range	0.12-10 amperes
Voltage	115 and 600 volts
Phase	3
Wire	3
Elements	2
Frequency	60 cycles
Power Factor Range	1.0 to zero (lagging)

Description: The type "FF8/VA/FF8ø" Trivector consists of a 2-element type 'FF8' watthour meter and a 2-element type 'FF8ø' reactive energy meter at opposite ends of a common case. Each meter feeds through a take-off gear drive from its disc shaft into a centrally-located gear box made up of a system of differential gears and ratchets. The output of the gear box drives a register reading in kilovolt-amperehours. The two meters are connected together electrically so that the current coils are in series and the voltage coils are in parallel, the upper and lower elements being considered separately. The watthour meter type 'FF8' runs at its maximum speed at unity power factor when $\cos \theta = 1$ and stops at zero power factor when $\cos \theta = 0$. The reactive energy meter 'FF8ø' runs at its maximum speed at zero power factor when $\sin \theta = 1$ and stops at unity power factor when $\sin \theta = 0$. At a power factor of 0.707, both meters should run at the same speed because $\cos 45° = \sin 45°$. The Trivector gear box mechanism takes the speeds of the two disc shafts and converts them into KVA hours in accordance with the formula $KVAh = \sqrt{Kwh^2 + KVArh^2}$. There is a small error in the conversion process which varies according to the power factor, but this error will not exceed +1.5%. The Trivector is approved for use with any suitable approved attachments which, when incorporated, will appear in the type designation, e.g., FF8m/VAmye/FF8ømø, meaning that an integrating demand attachment 'm' is installed on each of the three sections, and that the Trivector mechanism 'VA' has a synchronous motor driven relay that sets all the maximum demand driving mechanisms to zero simultaneously. Special instructions for testing the Trivector will be issued by Headquarters to the Districts where these instruments are presented for verification.

R. W. MacLean,
Director,
Standards Branch.

E. F. Power,
Chief, Electricity & Gas Division,
Standards Branch.

(Ref: A-681C)

LANDIS & GYR 'TRIVECTOR'