DEPARTMENT OF

TRADE AND COMMERCE
CANADA

S-EA.564

STANDARDS BRANCH

OTTAWA September 27, 1962.

TYPE APPROVAL

GENERAL ELECTRIC TYPE "TF-9" TELEMETER TRANSMITTER
AND TYPE "TF-10" TELEMETER RECEIVER

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: Type "TF-9" Telemeter Transmitter and Type "TF-10" Telemeter Receiver, manufactured by the General Electric Company, West Lynn, Mass., U.S.A., and distributed in Canada by the Canadian General Electric Company Limited, 1130 Boulevard Charest, Quebec 8, P.Q.

Rating of Apparatus:

TELEMETER TRANSMITTER TYPE "TF-9"

(1) Millivolt Input ..... 10 mv to 1000 mv in selected spans

(2) Milliampere Input ..... 1 ma to 100 ma in selected spans

(3) Zero ..... LH zero or any point up to half scale

(4) Output Frequency:
Relay Mode ..... 5 to 15 c.p.s. or 6 to 27 c.p.s.
Tone Mode ..... 18 tones in steps of 170 c.p.s. between 425 c.p.s. and 3315 c.p.s.; and 22 tones in steps of 120 c.p.s. between 420 c.p.s. and 2940 c.p.s.

Power Input ..... 120 volts, 60 cycles

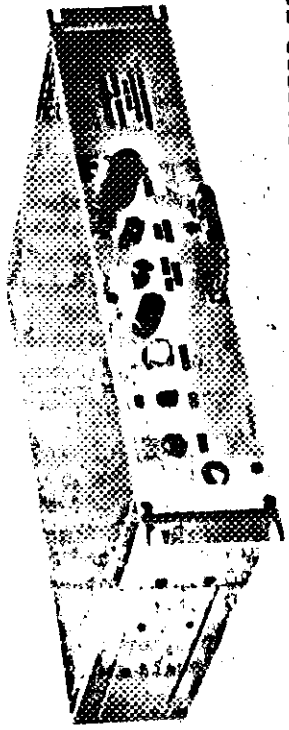
TELEMETER RECEIVER TYPE "TF-10"

(5) Inputs:
Relay Mode ..... 5 to 15 c.p.s. or 6 to 27 c.p.s.
Tone Mode ..... 18 tones in steps of 170 c.p.s. between 425 c.p.s. and 3315 c.p.s.; and 22 tones in steps of 120 c.p.s. between 420 c.p.s. and 2940 c.p.s.

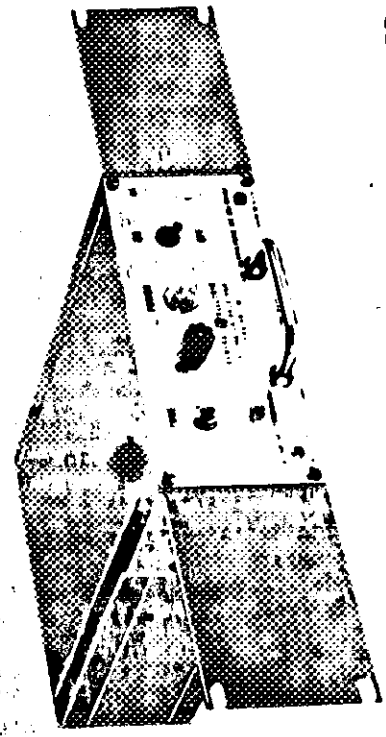
(6) Output ..... 0-1 milliampere DC full span, or 10 millivolts to 800 millivolts full span

(7) Zero ..... LH, 1/5, 1/4, 1/3 or 1/2 of output signal span

.....(Maximum/2



TYPE TF-9 TELEMETER TRANSMITTER



TYPE TF-10 TELEMETER RECEIVER

Maximum External Resistance ... 3000 ohms including resistance of internal millivolt range resistor
Power Input to Receiver ..... 120 volts, 60 cycle

Notes:

(1) For a millivolt input, the leads are connected to terminals No.1 and No.2 on the terminal strip at the back of the cabinet.

(2) For a milliampere input, the leads are connected to the same two terminals but, in addition, a precision resistor is connected to terminals 2 and 3 on a duplicate terminal block inside the cabinet and terminals 3 and 4 are joined by a jumper. In this connection the transmitter measures the millivolt drop across the resistor, the value of which should be such as to give 50 millivolts drop.
Note: The millivolts or milliamperes input must be pure DC with no trace of ripple.

(3) The millivolt range unit is available as a plug-in unit for either 5 to 15 c.p.s. or 6 to 27 c.p.s. and in either case may be arranged for a LH zero or a centre zero.

(4) The output from the transmitter may be either in the form of contact closures or as a variable audio frequency. The contact closures in conjunction with an available 50 v 5 ma internal power supply, or alternatively an external battery, will, through a metallic transmission line, energize the coil of a relay built into the receiver at a rate between the design limits (5-15 c.p.s. or 6-27 c.p.s.) that is proportional to the value of the input.
If transmission over telephone lines, carrier current, or microwave is desired the output can be in the form of an audio frequency that varies in frequency between the limits of each step at a rate that is also proportional to the value of the input.

(5) The "TF-10" receiver will accept any of the signals generated by the "TF-9" transmitter.

(6) The output is in the form of a small DC with a maximum of 1 milliampere full scale. This current is converted to millivolts DC, within the limits of 10 mv to 800 mv full span, by passing it through a precision resistor mounted on a duplicate terminal block inside the receiver, and applying the drop across it to a recording potentiometer.
Note: The output of the receiver does not necessarily have to have the same value as the input to the transmitter.
This output signal contains traces of the telemetering frequency, so that it must be filtered before it can be read on a portable potentiometer when verifying, or applied to certain recording potentiometers. The Company produces a filter for this purpose and, if not available when verifying, special instructions will be issued by headquarters.

(7) Another precision resistor can be mounted on other terminals of the terminal block inside the receiver, the function of which when installed is to provide a zero millivolt output corresponding to a zero position of 1/5, 1/4, 1/3 or 1/2 of full scale. This resistor does not change the range but merely changes the position of the zero so that a 0 to 50 mv range can become -25 to +25 millivolts. This connection is approved for use only with those recording potentiometers that have been granted approval with a raised zero.

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Description: The "TF-9" telemeter transmitter and the "TF-10" telemeter receiver are two pieces of apparatus that can be separated by distances of several miles, and are so designed that a millivolt input into the transmitter reappears as a millivolt output from the receiver, even though the two units are not necessarily electrically connected, where it can be applied to a recording potentiometer as a close reproduction of the input.

In the relay mode of operation, the contacts inside the transmitter vibrate continuously so that if the range is 5 to 15 c.p.s., the relay is vibrating at 5 c.p.s. for zero input, 10 c.p.s. for 50% input and 15 c.p.s. for 100% input, and proportionately for other input values. The relay in the receiver takes these frequencies and converts them to DC millivolts which can be applied to a potentiometer recorder. There is a similar process in the case of transmission at audio frequencies.

The transmitter has a 6-position switch on the front panel which can be used for checking the overall operation of the system. Position 1 is for normal operation and is the position at which the switch should be set when verifying; position 2 simulates a zero input; position 3 a 10% input; position 4 a 90% input; position 5 a 100% input; and position 6 is for full scale adjustment. Moving the switch to positions 2, 3, 4 and 5 in turn should cause the recorder to indicate 0, 10%, 90% and 100% of the full scale millivolts.

No adjustments of any kind should be attempted by inspection personnel. Aligning these two pieces of apparatus is a job requiring special equipment and should be done by factory-trained personnel only.

When verifying, the fact that the connecting link between the transmitter and receiver is in the form of a variable frequency should be ignored and the testing confined to the relationship of the output millivolts to the input millivolts. Without special equipment it is not possible to verify either the transmitter or the receiver separately. Two potentiometers will be required when verifying, one to measure the input millivolts and the other to measure the output millivolts.

This apparatus is approved for use unsealed.

E. F. Power

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Ref: A-969