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NOTICE OF APPROVAL
AVIS D'APPROBATION

E-136

Ottawa, February 18, 1976

LANDIS & GYR TYPE FEE IMPULSE RECEIVER

Rating of Apparatus

#Maximum impulse rate per input channel	s1, 5 pulses per second s2,s3, 10 pulses per second
Supply voltage	115 volts 60 Hz
Stepping Motor operating voltage	115 volts ± 20%, 60 Hz
°Demand intervals	10, 15, 20, 30, 60 minutes
Nominal duration of timing impulse	1% ± 0.3% of demand period.

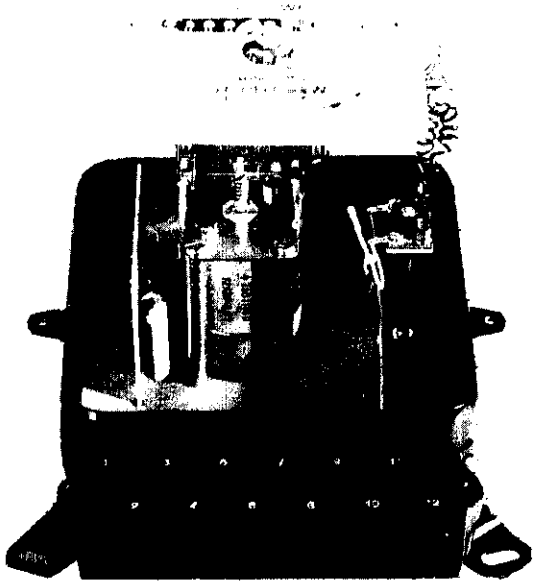
#Variations of input circuits with the receiving stepping motors "AMA1" and "AMA2" and their rating are given separately under Variations of input circuits for stepping motor of receiver on page 3.

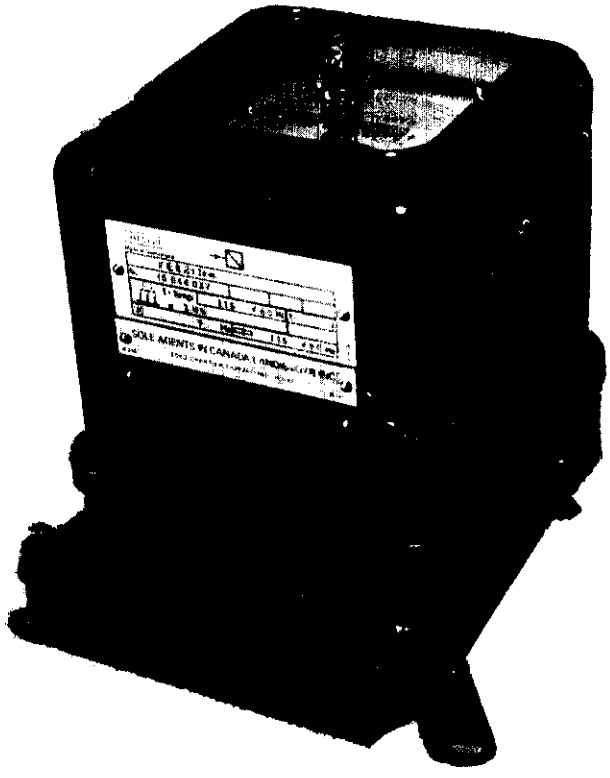
°May be controlled by an external timer or by an internal synchronous motor. Shown in the type designation.

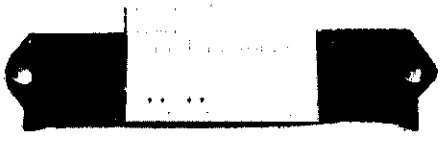
Register ratio will vary with the kI but will be marked on the register face.

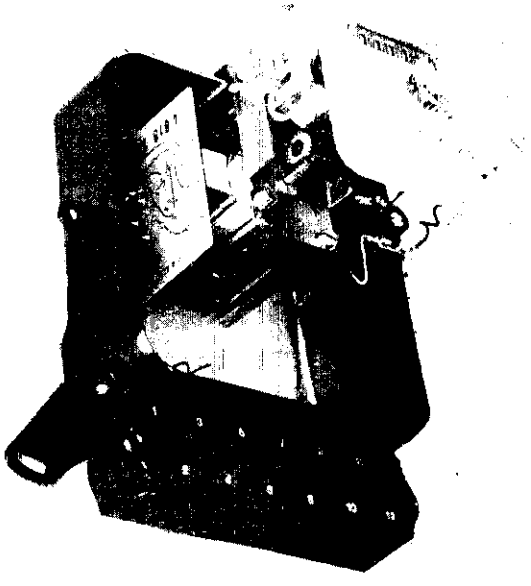
Description

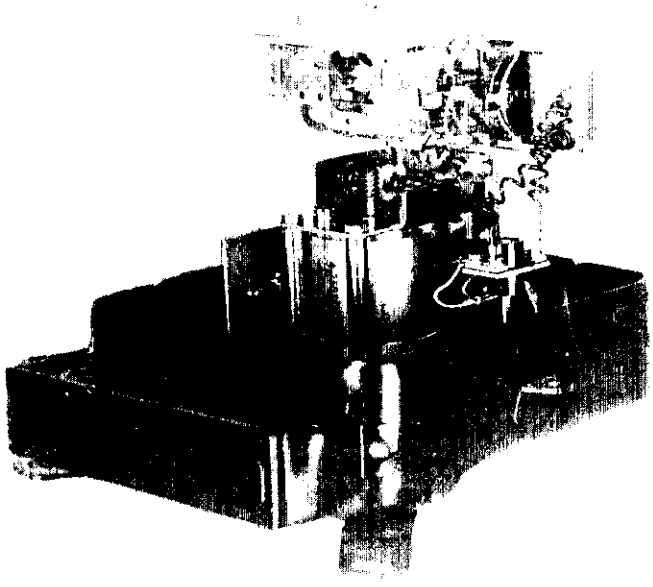
The "FEE2" is an impulse controlled receiving device which can be equipped with any of the previously approved Landis & Gyr Tariff Registers. The "FEE2" is employed in telecounting installations for the measurement of electrical energy. It is used in conjunction with Transmitting meters which provide an impulse value corresponding to a certain quantity of electrical energy. The ratio gears of the "FEE2" can be changed to adapt to any impulse value required. If the ratio gears are altered, the "FEE2" must be verified and resealed.











VARIATION OF INPUT CIRCUITS FOR STEPPING MOTOR RECEIVER

Input circuits

The input circuit s1 is based on the AMA1 impulse stepping motor. With the receipt of an impulse signal, the motor makes an exactly-defined half step. The step is then completed during the impulse interval.

Input circuit s2 contains the AMA2 double-current stepping motor which turns through a complete, exactly-defined step per impulse signal. A negative impulse signal must follow each positive one (positive direction of current). This circuit is particularly suited for use in conjunction with heavily-bouncing transmitting change-over contacts, as a receiving step is only initiated when the contact changes from one position to the other. The impulse interval can be any length, as the stepping motor remains in a defined position.

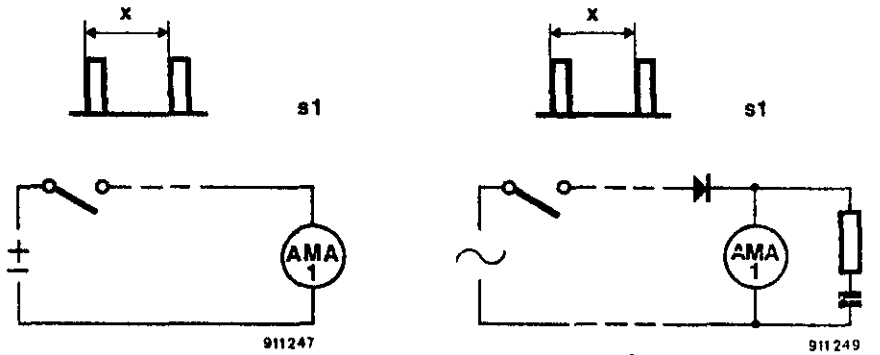
The three-wire input circuit s3 is practically identical to the double-current input circuit s2. A double-current source is not required on the transmission side however, as the diodes, built into the receiver, produce the respective half-wave-signals.

In the circuits s2 and s3, where the double-current stepping motor is used, the ratio of the impulse lengths (positive impulse : negative impulse) does not have to be 1. For example, they could also be controlled by means of an impulse contact change-over switch which closes briefly on one side and then stays closed on the opposite side for the remaining time. In this case, the different impulse value definitions have to be observed: the double-current motor makes one step for the impulse and one for the interval if the impulse value is defined for the impulse contact.

s1 IMPULSE CONTACT INPUT

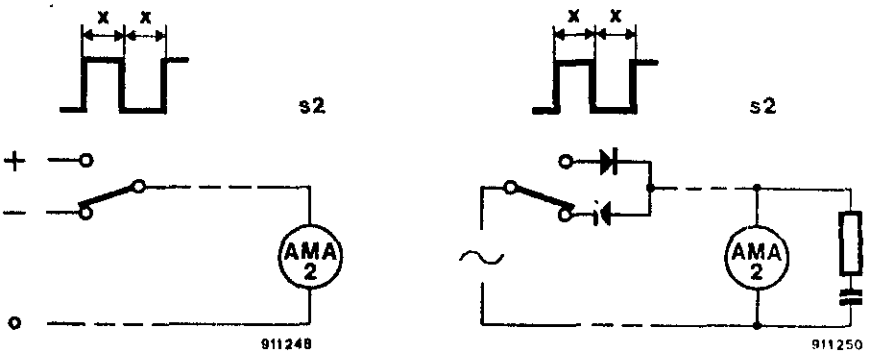
Impulse frequency	max. 5 imp/s
Impulse duration	min. 70 ms continuous impulse permissible
Impulse interval	min. 100 ms
Consumption approx. 3 W with impulse, 0 with interval	
d. c. operation:	
Receiver voltage	(±20 %) 24 36 48 60 105 V
a. c. operation, full or half-wave:	
Receiver voltage	(±20 %) 48 60 105 125 200 220 V

Circuits and impulse value definition X



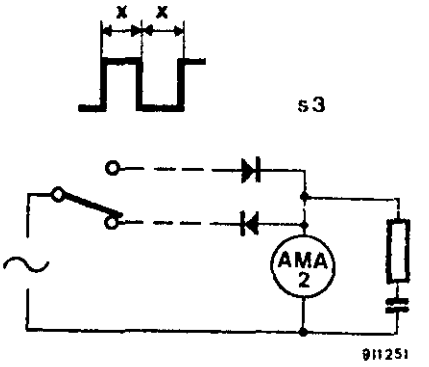
s2 DOUBLE-CURRENT INPUT

Impulse frequency	max. 10 imp/s
Impulse duration	min. 50 ms continuous impulse permissible
Impulse interval, i. e. without current, any length	
Consumption approx. 1 W with + and – impulses	
d. c. operation:	
Receiver voltage	(±20 %) ±24 ±36 ±48 ±60 V
a. c. operation, half-wave:	
Receiver voltage	(±20 %) 48 60 105 125 V



s3 THREE-WIRE INPUT

Impulse frequency	max. 10 imp/s
Impulse duration	min. 50 ms continuous impulse permissible
Impulse interval, i. e. transmitting contact open; any length	
Consumption approx. 1 W with transmitting contact closed	
a. c. operation:	
Receiver voltage	(±20 %) 48 60 105 125 V



NOTE: The broken lines indicate transmission lines.

Left of the transmission line are transmitting contacts on the primary meter.

Right of the transmission line are the receiver circuits in the receiver.

Various types of "FEE2" impulse receivers are available which differ in size according to the type of tariff register fitted. The majority of variants can be obtained in sheet metal cases or flush mounting switchboard pattern cases.

Type Summary

FEE2	-	impulse receiver with stepping motor
s1	-	impulse contact input
s2	-	double current input
s3	-	three-wire input
e	-	single-rate tariff
d	-	two-rate tariff
t	-	three-rate tariff (not approved in Canada)
m	-	maximum demand indicator maximum demand indicator with cumulative register
m1	-	hand resetting
m2	-	electrical resetting
m5	-	hand or electrical resetting
y	-	control of integration period by built-in synchronous motor
sy	-	load rate register with synchronous motor for basic load
sy1	-	as the sy but with coupling relay
f10	-	execution in flush-mounting switchboard pattern case.

Example of a complete type designation.

FEE2s1emf10 = impulse receiver with stepping motor, input circuit contact, maximum demand indicator with single rate tariff register in a flush mounting switchboard pattern case.

The stepping motor and register combinations are physically similar to those used with types GAA1, GAA2 and GAA3 impulse operated summators, Approval E-126 dated March 8, 1974.

Approval granted to: Landis & Gyr Limited,
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