Department of consumer and corporate affairs / Ministère de la consommation et des corporations

STANDARDS BRANCH - DIRECTION DES NORMES

NOTICE OF APPROVAL
AVIS D'APPROBATION

E - 125

OTTAWA September 12, 1973

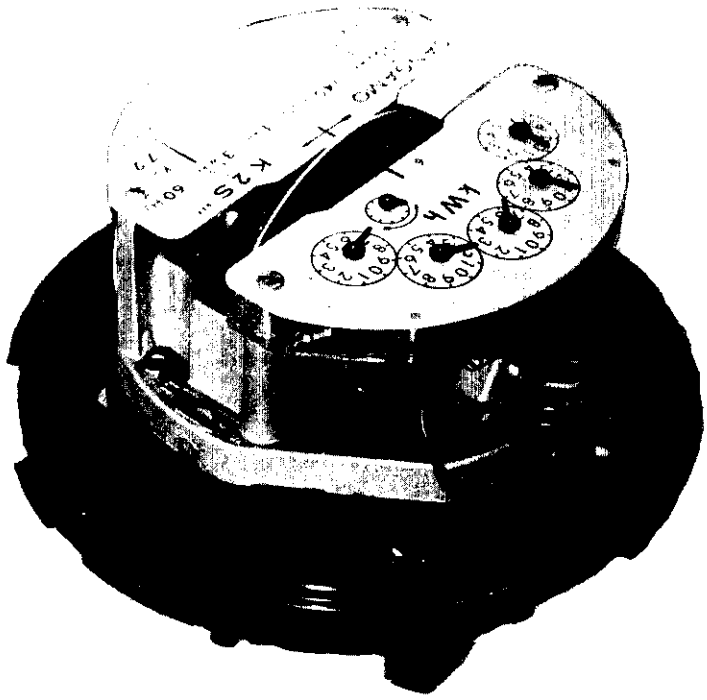
SANGAMO TYPE "ED" REMOTE REGISTER SYSTEM

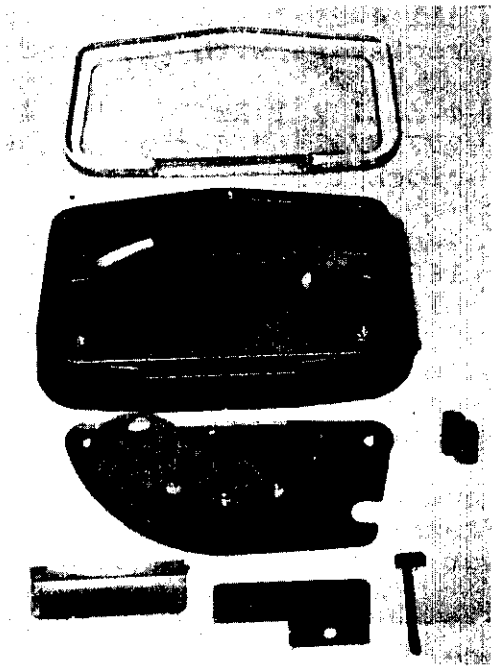
Watthour Meters on which Transmitting Registers may be installed

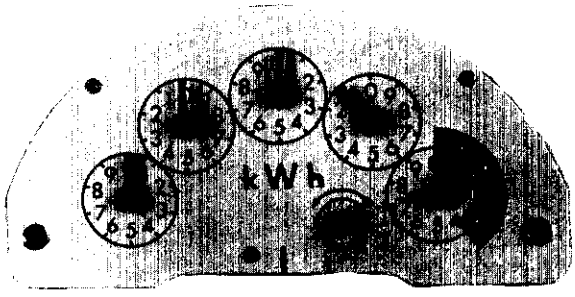
Meter Type	Registers
K2A, K2S①	All 4-dial x 1, 4-dial x 10 and 5-dial x 1 clock registers with register ratios listed under E-121
KYA, KYP, KYS①	All 4-dial x 1, 4-dial x 10 and 5-dial x 1 clock registers with register ratios listed under E-60
KA②	4-dial x 1 Rr 27 7/9, 4-dial x 10 Rr 138 8/9 and 277 7/9 and 5-dial x 1 Rr 13 8/9 and 27 7/9, all clock type
CJA, CJ3A②	4-dial x 1 Rr 16 2/3, 4-dial x 10 Rr 83 1/3 and 166 2/3 and 5-dial x 1 Rr 8 1/3 and 16 2/3, all clock type

① Will be installed on new meters at the factory.
② Will be supplied as a kit comprising a new transmitting register, power transformer and remote register.

Burden of Power Transformer	1.7 w 2.6 va
Voltage of Power Transformer	same as that of the meter
Connections to Power Transformer	Internal, across voltage source of potential coil; LH potential coil of polyphase watthour meters
Max. Line Resistance	50 ohms
Remote Register	5-dial clock type only






kWh

Description

The Sangamo Type ED Remote Register System comprises 3 units - a transmitting register, a power transformer and a remote register.

Transmitting Register

This register is available in 4-dial x 1, 4-dial x 10 and 5-dial x 1 clock registers in all the register ratios listed on page 1 of this notice.

All these registers are physically interchangeable with the corresponding standard registers.

They differ from the standard registers in that a rotary switch has been installed on the shaft of the first reading dial directly below the gear.

A series of 10 small threaded gold-plated screws are attached to a sheet of insulating material arranged on the circumference of a circle with the shaft as centre.

A small flat stainless steel spring is attached to the shaft of the first reading dial so that as the shaft rotates, the spring makes contact with one screw after the other.

The spring is so designed that the register may be rotated backward without damage to the spring.

The screws are connected together alternately and to the gates of two SCR's (silicon controlled rectifiers) of opposite polarity, so that as the shaft rotates, the SCR's are triggered alternately into conduction. The gate current is very small so that there is no burning or arcing of the contact.

Two of the illustrations on page 2 show some of the details of the rotary switch.

Power Transformer

This is a small transformer having a low voltage secondary winding and a primary winding of meter voltage.

These transformers may be installed in various locations on the meter frame according to the type as shown in the illustrations on page 6.

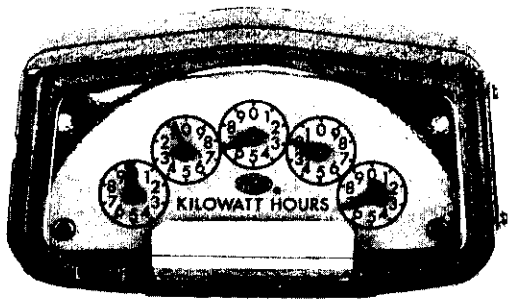


FIG. 1

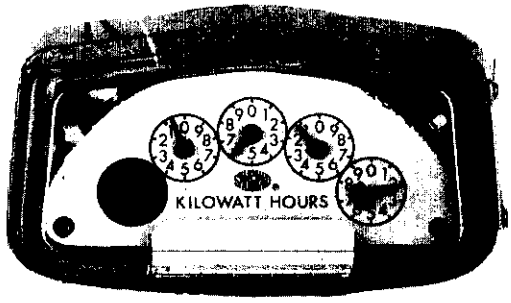


FIG. 2

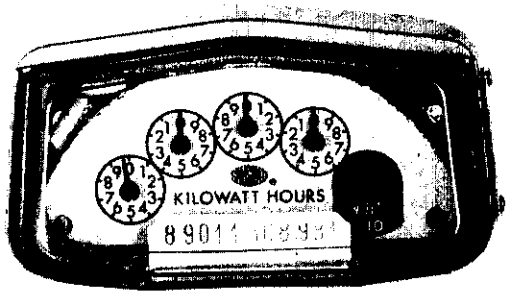


FIG. 3

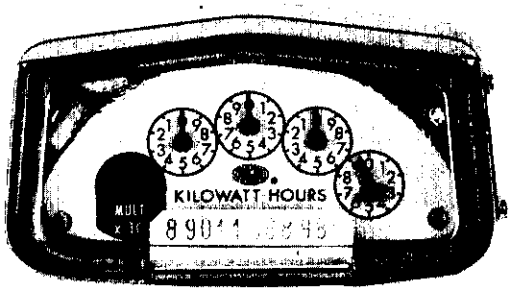


FIG. 4

For use with 4-Dial x 10 Register on Watthour Meter

The secondary of this transformer is connected in series with the SCR's and the external remote register circuit, so that as the shaft of the first reading dial revolves, the SCR's are triggered alternately into conduction, producing in the 2-wire external circuit, a current that reverses in direction as the first reading dial hand moves from one digit to the next. The reversal of current does not necessarily occur precisely as the hand reaches the next digit, since, it depends on the position of the dial hand relative to the contacts of the rotary switch.

The 2-wire output can be taken from the meter in a number of ways.

i K2S "Y" and "Z" terminals on the back of the meter base opposite the seal pan.

ii 'A' base single phase, and KYA polyphase network meters 2 leads extending from the terminal block.

iii KYS polyphase socket base
5 to 8 terminal design - "Y" and "Z" terminals at the back of the base adjacent to the seal pan

13 terminal design - 2 of the 7 potential terminals will be marked "Y" and "Z".

iv KYP polyphase bottom connected base - "Y" and "Z" terminals.

The illustrations on page 6 show some of these connections.

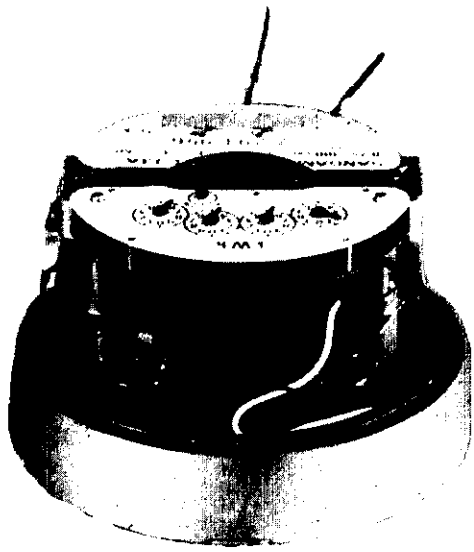
Remote Register

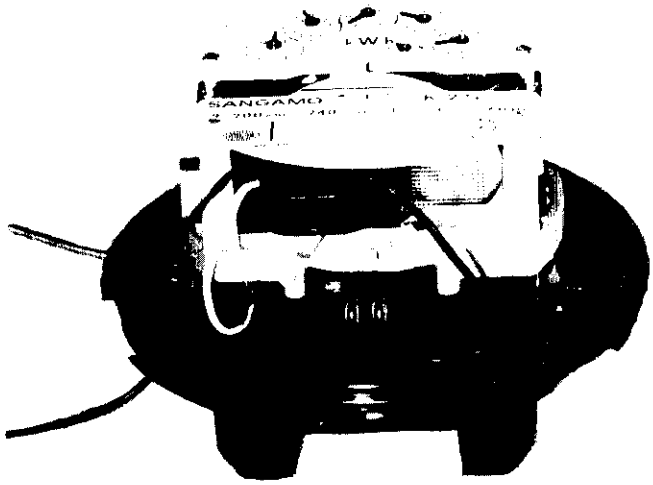
The driving force in this register is a small permanent magnet stepping motor that causes the first reading dial hand to advance one digit every time the current through its coil reverses and thus keeps in step with the lowest reading dial hand on the transmitting register, the other four pointers are driven through the conventional gear train.

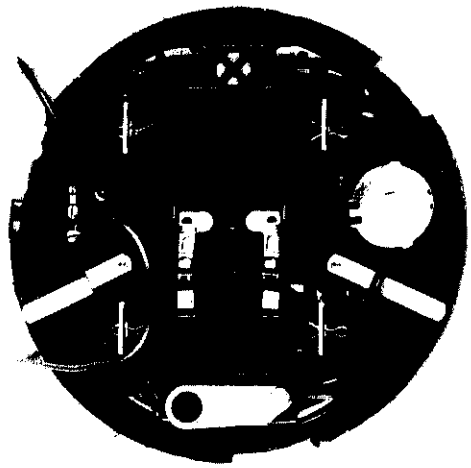
This register is produced only in the 5-dial version and the centre illustration on page 2 shows an exploded view of the components.

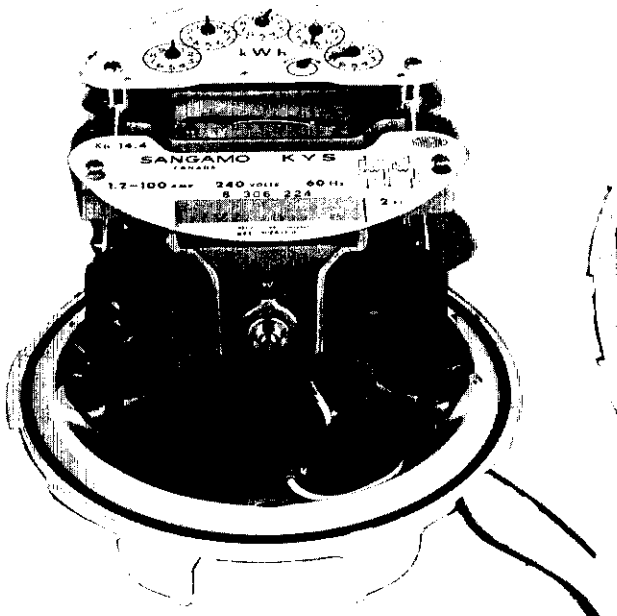
The register is to be connected to the external circuit by means of connectors.

The illustrations on page 4 show a number of ways that can be used to modify this remote register.








KWh
SANGAMO KYS

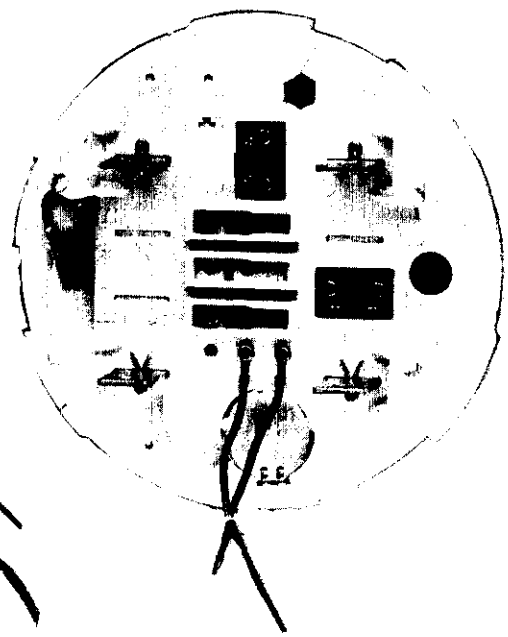


Fig. 1. Straight 5-dial x 1 register, driven by a watthour meter that requires a 5-dial x 1 register.

Fig. 2. 4-dial x 1 register, driven by a watthour meter that has a 4-dial x 1 register such as a 100/200 ampere meter with "100" tag in place. See E-16. Can also be driven by a 5-dial x 1 register on the watthour meter.

Fig. 3. 5-dial x 1 register converted to a 4-dial x 10 driven by a watthour meter that has a similar register. See E-38.

Fig. 4. 4-dial x 10 register, driven by a watthour meter that is equipped with a 4-dial x 10 register. It should be noted that the polarity reversals that arrive at this register each represent 10 kilowatthours, and the tag on the highest reading dial is a notation to this effect.

A single meter with a transmitting register can be used to verify a number of remote registers by connecting them in series.

A plate to attach a utility badge is incorporated in each remote register.

The registers illustrated may be used with any watthour meter having a corresponding register but the utility should mark the badge plate to pair up register and meter for installation purposes.

To prevent access to the interior of a remote register after it has been installed, provision is made for a utility seal.

Approval granted to:

Sanagamo Company Limited,
Toronto, Ontario.

W.J.S. Fraser,
Chief,
Electricity and Gas Division,
Standards Branch.

Chief,
Standards Laboratory,
Standards Branch.

Ref: GL 1145-57/52-887
G 1145-57/52-887