DEPARTMENT OF TRADE AND COMMERCE

STANDARDS BRANCH

E - 8

OTTAWA May 6, 1965

NOTICE OF APPROVAL

FOR

FERRANTI TYPE "PE" ELECTRONIC SUMMATOR

Apparatus

Rating:		
Maximum Impulse Rate		10 per second to counters whether check registers or totals.
Type of Input	1.	050 card S.P.D.T. switch with -15V to -50V connected to centre blade
	2.	057 card - from photo-electric transmitter on meter or any other electronic device which alternately connects the two impulsing leads to zero potential. Zero level must be maintained within 0.3 volt. Input impedance 18000 ohms.
Number of Input Channels		2 to 16 arranged in any combination
Number of Registers		18 maximum (e.g. 16 inputs and 2 totals or any other combination. Maximum demand indicator unit occupies space of 6 registers but contains its own total units register.
Ratio of Input Pulse value to Output Pulse value		Any whole number. Inputs can have different values one to the other.
Output Pulses		Electronic switches giving
	(a)	062 card - alternate closure to zero volts line. Two such output circuits driven from either side of the totalizer flip-flop give effect of S.P.D.T. switch with centre blade earthed. Capacity 150 ma 50V maximum
	(b)	063 card - each pulse causes the output lead to be connected to the zero volts line (ground) for 60 milliseconds. Capacity 150 ma 50V maximum.

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Apparatus (con'd.)

Power Supplies	15-0-15 volts maximum drain 180 ma per channel (including meter transmitter) on negative line; 10 ma per division stage and 32 ma per total stage. Positive line drain - less than 200 ma total. DC/DC converter to supply 3.5A at -15V and 300 ma at +15V stabilized from 45-56V battery source.
Logical Circuit Cards	
050	Input channel for mechanical type S.P.D.T. switch on meter
051, 052	Scanning cards, to sequentially scan up to 16 input channels.
053	Total drive card, for driving a totalizing register - up to 3 circuits per card.
054	Division card; divides pulse rate by a factor of 2. Up to 3 circuits per card.
055, 056	Universal divider cards. By suitable strapping divides pulse rate by any whole number between 2 and 32.
057	Input channel for meters fitted with photo-electric transmitters.
058, 059	Subtraction set. Bi-directional store which produces the net differences either positive or negative between two pulse trains. Storage capacity of 3 impulses.
062	"Relay Drive" card. Provides a power output to drive external equipment as described under "output pulses" above.
063	"Pulse Output" card. Provides a 60 millisecond pulse to drive external equipment as described under "output pulses" above.
064	Subtraction card. Similar to the 058, 059 combination in function but with a storage capacity of a single pulse
065	Direction sensing card. From net import and export totals it produces a single output pulse train proportional to the magnitude of the power flow and a second output (on/off) indicative of direction (import or export).
066	Division card. Divides pulse rate by factors of 3, 5 or 6 depending on connections.

Description

The type PE electronic summators is a solid state device that will accept pulses originating from a number of transmitting meters, and will add, subtract and divide in a large variety of combinations depending on

Description (Con'd.)

the circuit cards used.

The outputs can be used to drive indicating registers, maximum demand indicators, printers, etc., reading any of the input or output values.

The logical circuit cards are in the form of printed circuits with all the components mounted on the card and numbered as to their function. They slide into numbered grooves where they plug into receptacles at the back to which the external connections are made. The grooves are colour coded to match the coding on the card.

A summator may have up to 29 grooves or locations for circuit cards. 1 to 16 are always inputs so that up to 16 inputs can be handled, 17 and 18 are for scanner circuits, and the remaining 11 locations will have various other function and output cards.

A swing-out plate or plates in front of the cards carries the various registers with their attached stepping motors.

The case has a glass front and is arranged for switchboard mounting.

Approval is granted to: Ferranti-Packard Electric Limited,
St. Catharines, Ontario.

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Ref: SL-100-105.

FERRANTI TYPE "E" ELECTRONIC SUMMATOR