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Legal Metrology Branch
Ottawa, Ontario
K1A 0C9

NOTICE OF APPROVAL
AVIS D'APPROBATION

E-165-1

Ottawa, July 17, 1980

SCIENTIFIC COLUMBUS SOLID STATE JOULE
ELECTRONIC METER (JEM) MULTIFUNCTION UNITS

This notice constitutes an addition to E-165 to include the electronic display register with or without demand, and the following models:

	1 el	2 el	2½ el	3 el
Ampere Squared Hour	161	162		163
Volt Ampere Demand		152	154	153
Watt hour/Volt Ampere Demand	351	352	354	353
± Watt hour/Volt Ampere Demand		632	634	633

The six digit electro-mechanical registers described in E-165 can be replaced with a single six digit light emitting diode (LED) read-out.

The model number will be followed by the letter "E", electronic display without demand, or "D" with demand.

Demand Intervals	15, 30, 60 minutes
Register Divide Constants	1, 10, 100, 200 (The constants do not divide the demand value except for 200 in which the demand value is divided by 2.)
Display Sequence	8 variations, including 1 to 4. Functions with or without demand.
Auxiliary Power	90 to 135 VAC 60 Hz 12 VA MAX (240V or 480V optional)

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DESCRIPTION

A microprocessor is used to process and store pulse inputs from the plug-in function cards, maintain an interval clock for demand calculations and control display information.

The display is controlled also by a three position toggle switch. In the RO (roll) position, the display is sequenced at approximately four second intervals. The appropriate LED function indicator is activated adjacent to the printed legend indicating the units of measurement for each step. To display any function continuously, the toggle switch is placed in the ST (Stop) position when the appropriate LED indicator is lit. To read cumulative demand, the display is stopped at the peak demand reading and the control switch is held in the CD (Cumulative Demand) position.

The demand reset, resets the peak demand reading and adds the data to the cumulative demand storage. The cumulative demand represents the total of all the peak demands for each reset. The demand reset function is "locked out" for two intervals following the reset action; this prevents accidental double resetting which would result in a false cumulative demand reading.

Time remaining in the current demand interval is displayed with four digits indicating minutes and seconds.

The demand time interval and register divide constants are field programmable with internal switches. Before the meter is sealed, it should be verified by the inspector that the information marked on the registers and nameplate for the multipliers and demand interval are correctly inscribed. (Note: Exclusive of the programmable multipliers, the demand register readings are automatically multiplied by 4, 2 or 1 for the demand intervals of 15, 30 or 60 minutes respectively.)

An output signal to indicate the end of a demand interval is available as a factory installed option.

A pair of shorting posts are located on the front centre of the register printed circuit board. By shorting the posts together, all register readings are set to zero and the demand interval count-down clock is reset. Three rocker switches are located on the display printed circuit board which can be used to change the data of a function to any desired value.

When auxiliary power is removed, a 3 volt, 1 ampere hour, lithium non-rechargeable cell is used to maintain data in the low power memory circuit. The demand interval clock ceases to function. Recommended replacement schedule is five to seven years.

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Meters with the volt-ampere function will have a VA multiplier plug-in subassembly in card positions 2 or 5 which is identified with a silver dot.

On Bi-Directional meters, the watt or volt-ampere demand is relative to "out" power measurements only.

JEM OPTIONS

02	10 Amp Current Coils
06	480 Volt Voltage Coils
07	240 Volt Voltage Coils
08	69 Volt Voltage Coils
10	Register Divider 10:1
11	Register Divider 100:1
12	Register Divider 200:1
B	Surface Mount (Back Connections)
C	Canadian (DCCA Approved)
D	Demand (Includes Electronic Register)
E	Electronic Register
F	Surface Mount (Front Connections)
P	Panel Mount (Semi-Flush)
W	Waist Mount
T	Time Pulse Output
U	Serial I/o Interface (ASCII)
X	OFFSET (Pulse Only)
R	Time Sync Input

Approval granted to: Scientific Columbus Division of
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