

**State of California**  
 Department of Food and Agriculture  
 Division of Measurement Standards

Certificate Number: 5361(b)-09  
 Page 1 of 3

***California Type Evaluation Program***  
***Certificate of Approval***  
***for Weighing and Measuring Devices***

**For:**  
 Electronic Watt-Hour Meter  
 Models: MM-X1202001-X-XXX  
 Generic Name: Mini Meter  
 Voltage Rating: 120/208/240 VAC  
 Class: 200 (200 Amps Max.)  
 TA: 30 Amps

**Submitted by:**  
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**Standard Features and Options**

**Model Designation:**

MM-	X	120	2001	-X	-XXX
MM = Mini Meter	<u>Element</u> D = Dual Element (3-wire)  S = Single Element (2-wire)	L1 to Neutral is 120 VAC  L1 to L2 is 208/240 VAC	<u>Current Transformer Ratio</u> 2001 = 200:0.1 Amps	<u>Kh Factor</u> T = 100  Blank = 1000	<u>Indicating Element</u> SCC = Self Contained Indicating Element  Blank = Requires an External Indicating Element

**Current Transformers (CT's) Model Designation:** (See Fig. 1 on Page 3)

CT	2001	24	XX	-A
Current Transformer	<u>CT Ratio</u> 200:0.1 Amps	Accuracy Class 0.3	BK = Black and White RD = Red and White BL = Blue and White	Blank = Old CT Model A = New CT Model

**External Indicating Elements:** (Examples on Page 2)

12VDC analog indicating element  
 Curtis Type 703ZR001N1248D2060A LCD [12 VDC liquid crystal display (LCD)]

This device was evaluated under the California Type Evaluation Program (CTEP) and was found to comply with the applicable technical requirements of California Code of Regulations for "Weighing and Measuring Devices." Evaluation results and device characteristics necessary for inspection and use in commerce are on the following pages.



Effective Date: January 5, 2009

Edmund E. Williams, Director

**Integrated Metering Systems, Inc.**  
**Electronic Watt-Hour Meter**  
**Model: MM-X1202001-X-XXX**

**Application:** For use in legally sub-metered service systems.

**Identification:** The watt-hour meter identification label is applied to the face of the meter.

**Sealing:** The Mini Meter (MM) model has three types of sealing provisions: factory, testing and installation provisions.

- **Factory Provision:** The manufacturer's supplied ID label is secured with two adhesive tamper evident security seals (factory seals) and epoxy cement covers all four of the label mounting screw heads (see Fig. 3). This prevents access to two metrologically adjustable components located under the plastic ID label (see Fig. 2). **Note: This is the new and old provision.**
- **Testing Provision:** After testing is completed, adhesive tamper evident security seals may be applied across the factory seals on the ID label or the side of the case (see Fig. 3). **Note: This is the new and old provision.**
- **Installation Provision: Old provision:** The hard clear plastic meter case cover and the black case have two drilled holes for two wire security seals on both sides to prevent terminal tampering after installation (see Fig.4). **New provision:** The clear plastic meter case cover and the black case have two pins with drilled holes for two wire security seals on both sides to prevent terminal tampering after installation (see Fig. 5). This provision seals the terminal block connection once installed by a service agent.

**Operation:** The "POWER" LED is illuminated whenever line voltage is present. The "LOAD" LED provides a visual display of KWh usage, with a pulse rate (Kt) of 10 (i.e., 5 watt-hours on, 5 watt-hours off). The load LED will not change states unless a load is applied.

The terminals labeled "L1 and N" are the AC voltage supply terminals for 120 VAC. The terminals labeled "CT1 (x1 and x2)" are the CT terminals for a single element (2-wire meter). The terminals labeled "L2 and CT2 (x1 and x2)" are used for the 208/240 VAC supply and dual element (3-wire meter).

**Test Conditions:** This certificate supersedes Certificate of Approval Number 5361(a)-03 and is issued to correct wording on page 1.

**Certificate of Approval Number 5361(a)-03:** This certificate supersedes Certificate of Approval Number 5361-03 and is issued to add a new sealing method to the Mini Meter series meter, a new wiring style (see Fig. 6) and a new CT (Model CT200124XX-A). New and old sealing meter model versions with new and old CT's Model CT200124XX (old), and CT200124XX-A (new) as well as five external indicating elements were submitted for evaluation. The emphasis of the evaluation was on the new sealing provisions and to insure the new and old CT's work with the new and old versions of the meter. The meters were tested at the Division of Measurement Standards lab. The meters were subjected to a combined total of over 90 tests from 3 amps to 60 amps at both unity and 0.5 power factors. Previous tests conditions are listed below for reference.

**Certificate of Approval Number 5361-03:** Samples of each model meter, current transformer, and register/counters were submitted for evaluation. The meters were initially tested at the Division of Measurement Standards (DMS) lab. The meters were then sealed and installed at a field location. After a permanence period of approximately 30 days the meters were returned to the DMS lab for retesting. The meters were subjected to a combined total of over 350 tests from 3 amps to 60 amps at both unity and 0.5 power factors. Results of the evaluations indicate the devices comply with applicable requirements.

**Type Evaluation Criteria Used:** Title 4, California Code of Regulations, 2006 Edition

**Tested By:** John Roach (CA) 5361-03; Sonia Munoz (CA) and John Roach (CA) 5361(a)-06, 5361(b)



Curtis LCD indicating element



Typical 12VDC analog external indicating element Kh = 100 wh



Typical 12VDC analog external indicating element Kh = 1 Kwh

**Integrated Metering Systems, Inc.**  
**Electronic Watt-Hour Meter**  
**Models: MM-X1202001-X-XXX**

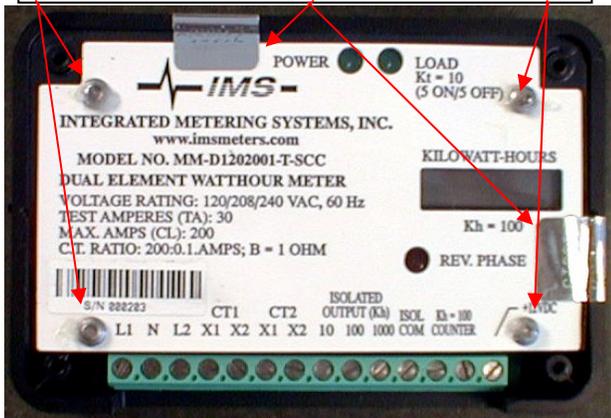
Fig. 1. Two types of the approved CT's.



(Fig. 2) Metrologically adjustable components behind the Mini Meter model factory sealed label.



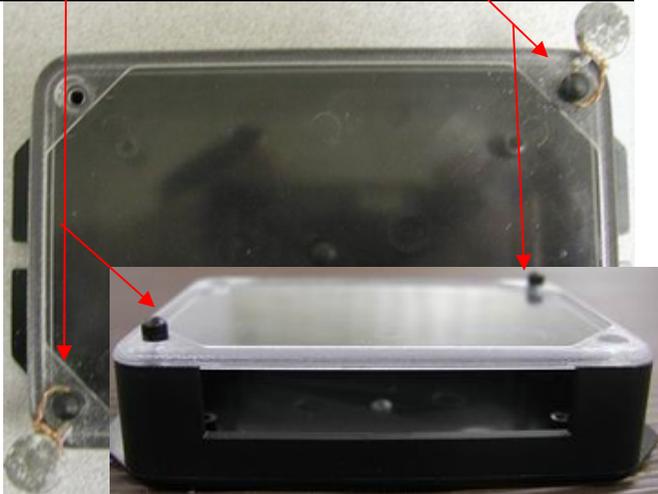
(Fig. 3) Factory sealing provisions for protection of metrologically adjustable components (2 factory seals and epoxy cement on all 4 mounting screws). In addition, adhesive tamper evident security seals may be applied across the factory seals on the ID label or the side of the case.



(Fig. 4) Old Provision: Two drilled out holes for two wire security seals on both sides to prevent terminal tampering after installation.



(Fig. 5) New Provision: Black case has two pins with drilled holes for two wire security seals on both sides.



(Fig. 6) The MM has an option to come with L1, N and L2 hard wired. However, it will still require the factory adhesive tamper evident sealing provision due to sealing the installation of the CT's and indicating element.

