California Type Evaluation Program
Certificate of Approval
Weighing and Measuring Devices

For:
Watt-Hour Meter
Panelboard Monitoring System
Model: i-meter®45

Voltage Rating: 120/208/240 VAC
Class (CL): 100 (100 Amps Max.) TA: 15 Amps
Class (CL): 200 (200 Amps Max.) TA: 30 Amps
Watt-Hour Test Constant (Kt): 5 Wh or 0.005 kWh

Submitted By:
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Standard Features and Options

Standard Features:

- Class (CL): 100 (100 Amps Max.) TA: 15 Amps
- Class (CL): 200 (200 Amps Max.) TA: 30 Amps

Current Transformer (CT) Models: The CTs come in a rail style (multiple CT holes) or single CTs.

- WEGO/PTSI, Type: INT-CT108-A-21 (21 CT holes), 100:0.08A ratio, Accuracy: 0.3, B0.005 and is class 100
- PTSI/ICI, Type: INT-CT201-9 (9 CT holes), 200:0.1A ratio, Accuracy: 0.3, B0.005 and is class 200
- PTSI/ICI, Type: INT-CT201-12 (12 CT holes), 200:0.1A ratio, Accuracy: 0.3, B0.005 and is class 200
- PTSI/ICI, Type: INT-CT201-21 (21 CT holes), 200:0.1A ratio, Accuracy: 0.3, B0.005 and is class 200

- ICI Model: INT-CT108-B – The CT is square in shape and has a ratio of 100:0.08A, Accuracy: 0.3, and is a class 100
- ICI Model: INT-BT201S-WT – The CT is round in shape and has a ratio of 200:0.1A, Accuracy: 0.3, and is a class 200

Internal Indicator:

- i-meter45 Metering Display Unit (MDU) has either a two-line Liquid Crystal Display (LCD) in kWh (one of which is the kWh) or a four-line LCD in kWh (two of which is the kWh) indication. The other line or lines are for voltage and current.

Note: When the smaller class 100 single or rail-style CT are used, the manufacturer shall supply special smaller load wire cables for testing due to the smaller holes on the CTs.

This device was evaluated under the California Type Evaluation Program (CTEP) and was found to comply with the applicable 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.

Kristin J. Macey, Director
Effective Date: December 13, 2016

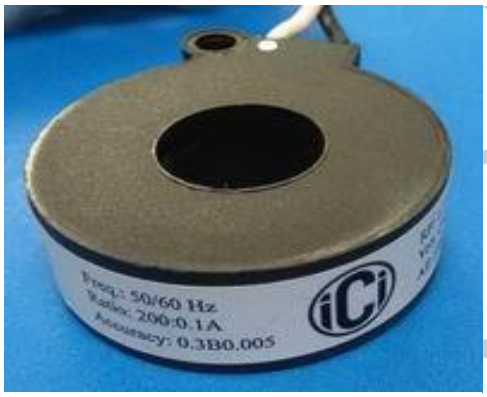
Intellimeter Canada Inc.
Watt-Hour Meter / i-meter 45

Application: For use as a watt-hour metering system in legal sub-metered electric service applications.

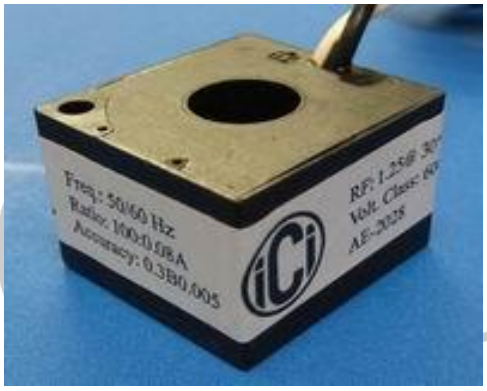
Identification: The main meter identification (ID) information is on the face of the meter panel cover. The serial number is located on the meter printed circuit board (PCB) behind the sealed cover and matches the door main ID badge. The serial number for the CT rail style is located on the CT rail PCB. See photos below for examples of the main meter ID and serial numbers on the meter PCB and the CT rail PCB.

S/N Example Located on the Meter PCB

S/N Example Located on the CT Rail PCB



ICI Model: INT- BT201S-WT



ICI Model: INT- CT108-B

SINGLE CT IDENTIFICATION LOCATIONS

Sealing: The system has a Category 1 wire security sealing provision for the terminal block and a Category 2 for the remote adjustment mechanism.

The terminal block (T1 & T2) cover has a Category 1 method of sealing and is secured by using wire security seals which provide evidence that the terminal block cover has been accessed (see Figure 1). Each allows provision allows a sealing wire to pass through the screws on the meter terminal cover raised area or the terminal block cover screw raised areas.

The i-meter®45 meter PCB cover (M1 & M2) has a Category 2 remote adjustment provision that requires two wire security seals for the electronic sealing provision (see Figure 1). Each sealing provision allows a sealing wire to pass through the screws and the raised area on the meter terminal cover or the PCB cover screw raised areas. The J10 jack is utilized for connection to the software to adjust the configuration. To enable the remote software, the JP4 jack and the J10 communications port require a wire jumper connection to that JP4 jack. Ensure there is not a wire connection to any of the four pins on the JP4 jack and no wire connection to the J10 communications port prior to sealing the M1 and M2 wire security provisions (see Figure 2 for the location of the JP4 jack and J10 communications port).

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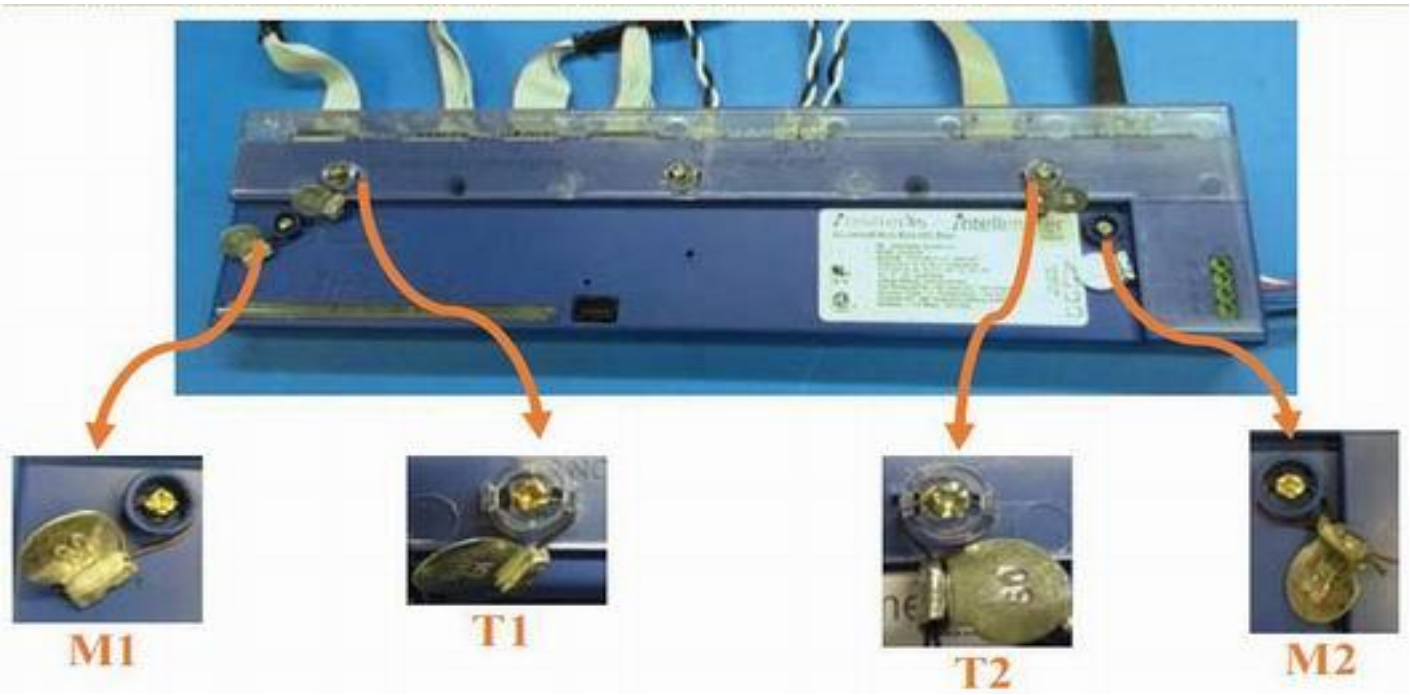

Figure 1. Wire Security Sealing Provision Locations
Terminal Block (T1 & T2) Cover and Meter PCB Cover (M1 & M2)

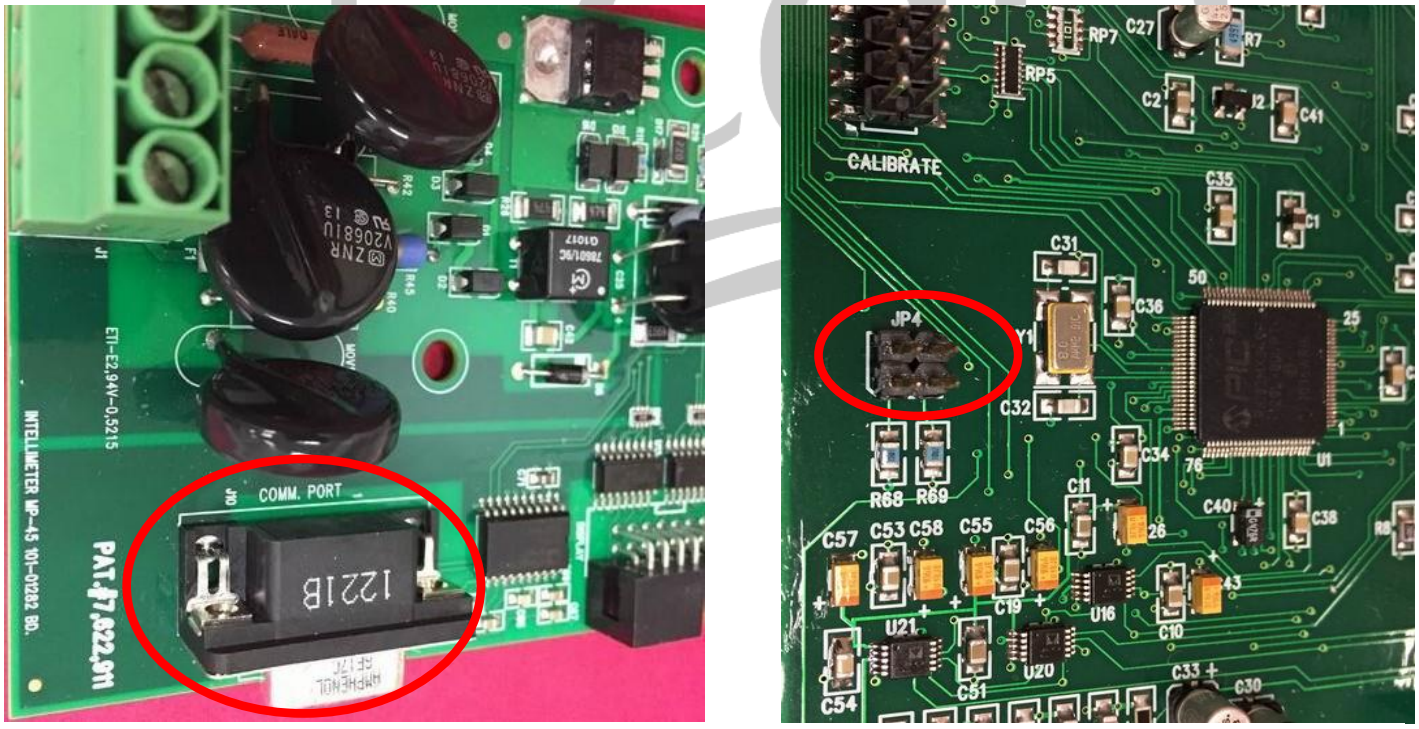

Figure 2. Location of the J10 Communications Port and the JP4 Jack

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Operation: The metering system has an external scrolling register for kWh display which is also used for registration purposes. There are two types of displays:

1. i-meter®45 Basic Display Unit (BDU) (16 x 2 character display)
   Press the "METER" button to select the meter you want to view then press the "SELECT" button to show the kWh of the meter; both screens will display the kWh. The i-meter®45 BDU does not display the customer information (e.g., apt. #222). The i-meter®45 software is used to read the customer information from the meter. Since this display unit does not display the tenant's customer information, there shall be a log stating which meter is associated with a particular apartment.

2. i-meter®45 Meter Display Unit (MDU) (20 x 4 character display)
   Press "SELECT" on the meter to choose the meter to view. Press "UP" or "DOWN" arrows on the meter to select screen 3. This screen will display the kWh and customer information (e.g., apt. #222). The i-meter®45 software is used to read the customer information from the meter. See Figure 3 for example of the i-meter®45 MDU (20 x 4 character display).

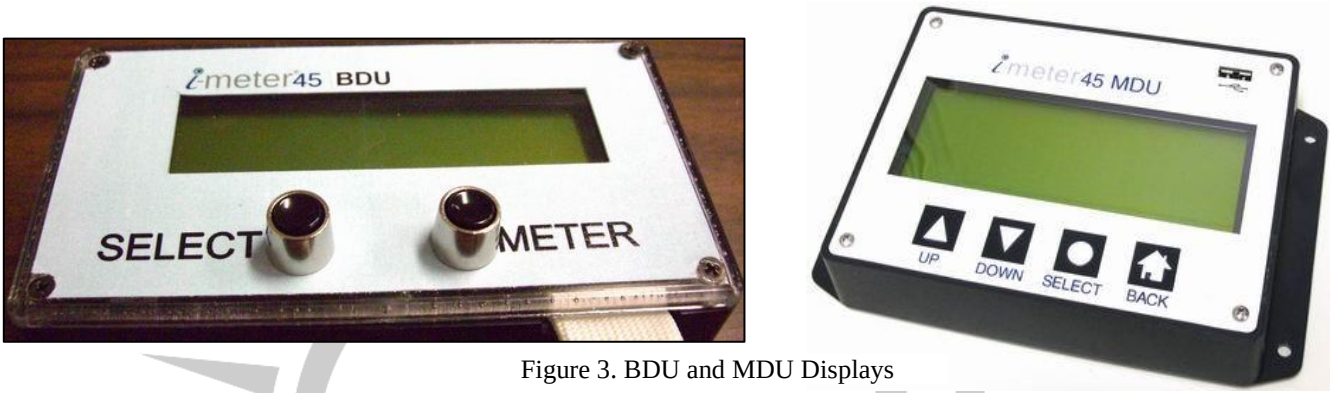

Figure 3. BDU and MDU Displays

For testing purposes, the meter PCB has an Light Emitting Diode (LED) display in which each change state off to on or on to off equals 5 Wh. Test LEDs are labeled CT 1-45 (see Figure 4).

There are three possible meter configurations:

1. A single CT meter configuration with a total of 45 meters equaling 45 CTs. All 45 LED indications would represent each meter and CT (e.g., a load on CT number 5 would have an LED indication on LED 5 on the PCB).

2. A double CT meter configuration with 22 meters (two CTs per meter) plus one extra single element CT meter for a total of 45 CTs. Therefore, LEDs 1 - 22 would indicate a load plus LED number 23 could be the lone LED indication for testing purposes. In this case, LEDs 24 through 45 are not used to indicate measurement of electrical usage. Electrical measurement by CT 1 and CT 2 will be represented by the LED 1 going through its change state of blinking on then off; CT 3 and CT 4

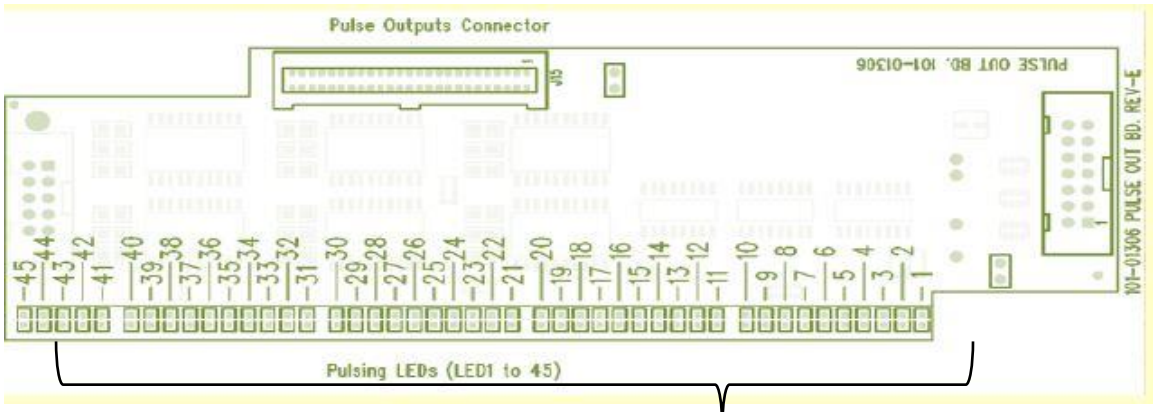

Figure 4. Test LEDs 1-45

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will be represented by LED 2, CT 5 and CT 6 will be represented by LED 3, etc. until you get to LED 22 which will represent electrical measurement of CT 43 and CT 44

3. A triple CT meter configuration has a total of 15 meters and each meter has 3 CTs, thus equaling a possible total of 45 CTs. Three CTs are represented by each of the 15 LEDs. For example,
   - CT 1, CT 2, and CT 3 are represented by LED 1.
   - CT 4, CT 5, and CT 6 are represented by LED 2.
   - CT 7, CT 8, and CT 9 are represented by LED 3.
   - And so on through CT 43, CT 44, and CT 45 represented by LED 15.

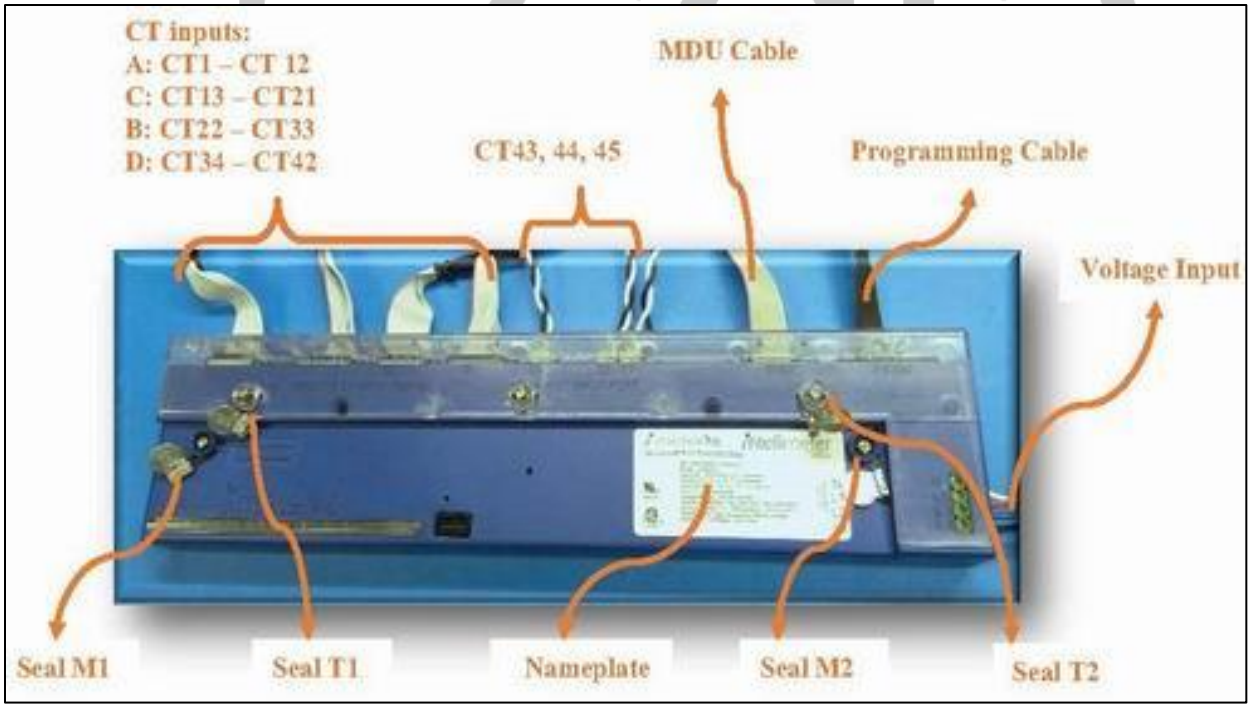
Test Conditions: Two i-meter®45 metering systems (a Class 100 and a Class 200) were submitted for evaluation. Meters were randomly selected and installed on a test bench with various loads for initial evaluation. The meters were retested for permanence after 34 days. The meters were subjected to accuracy tests from 1.5 amps to 50 amps at both unity and 0.5 power factors. Starting load and creep tests were also conducted. The rail and single CT type were both tested.

Evaluated By: D. Reiswig and J. Roach

Type Evaluation Criteria Used: *California Code of Regulations, Title 4, Division 9, Article 1. National Uniformity, Exceptions and Additions 2016 Edition*

Conclusion: The results of the evaluation and information provided by the manufacturer indicate the device complies with applicable requirements.

Example(s) of Device:



Example Main Meter Body with ID badge

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Side View of the 21 CT Rail Showing Current Load Holes

Top View of the 21 CT Rail