

California Type Evaluation Program

Certificate of Approval

Weighing and Measuring Devices

For:

Watt-hour Meter
Electronic Surface Mount
Models: AWXYZ/abcde

Voltage Rating: 120/208/240 VAC
Class: 200 (200 Amps Max.)
TA: 30 Amps
Kt: 10 Wh or (0.01 kWh)

Submitted By:

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Standard Features and Options

Standard Features

- Configurable to 1, 2, or 3 elements or Current Transformer (CT)
- Shall be installed in National Electrical Manufacturer Association (NEMA), switchboard or panelboard style, marina power pedestal type enclosure with a wire security provision
- 120, 208, or 240 Volts Alternating Current (VAC)
- Automatic Meter Reading (AMR) capability (not tested)

Certified CTs. See identification information on the certified CTs in the "Identification" section.

External Indicating Elements (Register). Electromechanical or electronic liquid crystal display (LCD) (12 VDC or 6 VDC indicating element). The value of the indicated registration is approved for 1 kWh, 0.1 kWh (100 Wh), or 0.01 kWh (10 Wh).

Note: The 1 kWh indicators will be one color and the 100 Wh indicators will have a different color on the least significant digit or a decimal point.

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 Macey, Director

Effective Date: December 11, 2018

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Electronic Watthour Surface Mount Meter / Model: AWXYZ

Application: For use in legal submetered electrical service applications. The watthour meters are not self-contained and must be mounted in a NEMA-enclosure and in an appropriate location to ensure a dry environment for the electronic module.

Identification: The meter identification is permanently laser engraved on the face of the meter or on a permanent label applied to the face of the meter (**Figure 1**). The Model EZ417-1 current transformer (CT) label is permanently laser engraved to the face of the CT. The two Davidge Controls meter models have a permanent sticker ID on the CTs (**Figures 2-3**). The label for the EZ Meter CT is marked directly on the CT (**Figure 4**).

METER MODEL DESIGNATION TABLE					
(AWXYZ/abcde e.g., A3136/E0271 or A4231/E)					
A = Base Unit	W = number of CTs or dual meter	X = one or two register outputs	Y	Z = AMR or not	/abcde = additional information
A = 120V to neutral	1 = 1 CTs	A = 120V to neutral	1 = 1 CTs	A = 120V to neutral	1 = 1 CTs
<p>*Additional /abcde details a position = CT model (see below) b position = 0 or blank for 1.0 kwh resolution or b = 1 for 0.1 kwh resolution cde = AMR options that are non-metrological (each position c, d, or e could be a 0 – 9 or a – z)</p>					
<p>Current Transformers (CT) Model Designation: a = E: EZ Meter, Model: EZ417-1, 417:1 CT Ratio, accuracy class 0.3, and in any color a = 0 or blank: Davidge Controls, Model: 4720/4, 400:1 CT Ratio, accuracy class 0.3, and in any color a = 3: Davidge Controls, Model: JD6W, 2500:1 CT Ratio, accuracy class 0.3, and in any color</p>					

Sealing: Category 2 adhesive tamper-evident sealing provision for the adjustment mechanism (lab weights and measure sealing provision) for calibration and configuration. The meter also has a Category 1 wire security sealing provision for the wire terminal blocks installation provision (**Figure 1**).

The adjustment mechanism (lab weights and measure sealing provision) is an adhesive tamper-evident security seal that shall be applied over the single screw on the back-plate cover of the meter for evidence of tampering (**Figure 5**). The programming and calibration is performed at the factory with firmware with an embedded firmware code. EZ meter provided documentation that the meter can never be programmed or calibrated outside of the factory.

The terminal blocks or installation provision is a wire security sealing provision for NEMA-enclosures, switchboards, panel board style enclosure, or marina power pedestal that contains the meter. Therefore, the NEMA enclosure, switchboard, panel board style enclosure, or marina power pedestal

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Electronic Watthour Surface Mount Meter / Model: AWXYZ

may need to be sealed on site by the Registered Service Agent or an official county weights and measures official.

Operation: The top red LED indicates power (120 volts to neutral) is on for element 1. That same LED will briefly flash (50 ms) for every 10 Wh (.01 kWh) measured. The meters should be tested one element at a time as the red LED flashes as each element reaches 10 Wh. The green display LED will briefly flash (50 ms) every time the external indicator increments (every 1 or 0.1 kWh registration). If the device is a dual meter, there will be two green LEDs and two external kWh indicators. Meters with RS232 or RS485 communication have a third red/green or yellow LED that flashes when communicating. The meters may have a second green LED that is unused on single output meters. If 0.5 power factor is tested instead of unity 1.0, the CTs become direction sensitive. When the CT direction is incorrectly installed, and power factor is below 0.8, the top red LED flashes on and off at one (1) second intervals. To correct this problem, reverse the direction of the CT. See **Figure 6** for an example of a typical indicator.

Test Conditions: This certificate supersedes Certificate of Approval 5674(a)-14 and is issued to change the make from Davidge Controls to EZ Meter Technologies based on documentation provided and to add a new EZ Meter Technologies CT Model EZ417-1. Documentation was also provided to explain the firmware Category 2 sealing provision. Meter Models A423/E and A3133/E0271 with an EZ Meter Model EZ417-1 CT were submitted for testing and subjected to a combined total of 16 tests ranging from 3 amps to 50 amps at both unity and 0.5 power factors. After a permanence period of 28 days and 943 kWh, the meters were retested.

Certificate of Approval Number 5674(a)-14: This certificate supersedes Certificate of Approval 5674-11 and is issued to add the new CT Model JD6W and an indicated registration of 100 Wh. A meter with the new Model JD6W CT was submitted for evaluation and testing at the Division of Measurement Standards laboratory. The meters were subjected to a combined total of 12 additional tests ranging from 3 amps to 50 amps at both unity and 0.5 power factors. In addition, photographs of the sealing provisions and label marking improvements were added to enhance understanding of registration, Kt, and indicated registration values.

Certificate of Approval Number 5674-11: Three meters with Model 4720/4 CTs, were submitted for evaluation. The meters were initially tested at the Division of Measurement Standards laboratory. After a permanence period of approximately 10 weeks, the meters were retested. The meters were subjected to a combined total of over 100 tests from 3 amps to 50 amps at both unity and 0.5 power factors.

Evaluated By: J. Roach (CA) 5674-11, 5674(a)-14 and 5674(b)-18

Type Evaluation Criteria Used: *California Code of Regulations, Title 4, Division 9, 2018 Edition.*

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

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Example(s) of Device:



Figure 1. Photo example of the meter ID in a NEMA-enclosure and the Category 1 wire terminal installation sealing provision.

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Figures 2, 3, and 4. Examples of the certified CT models.



Figure 5.



Figure 6. Example of a typical indicator. Any indicator that operates properly with the system is acceptable. The left counter indicates at 3.3 kWh and right counter indicates at 126 kWh.