



Specifications

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Specifications for Approval of Type of Electronic Meters - Net Metering

1.0 Scope

These specifications apply to all electronic energy meters submitted for type approval of net metering.

2.0 Authority

These specifications are issued under the authority of section 12 of the *Electricity and Gas Inspection Regulations*.

3.0 References

3.1 *Electricity and Gas Inspection Act* (R.S. 1985, c. E-4), s. 12.

3.2 *Electricity and Gas Inspection Regulations* (SOR/86-131), ss. 3(1), s. 19.

3.3 Measurement Canada, LMB-EG-07(1986): *Specification for the Approval of Type of Electricity Meters, Instrument Transformers and Auxiliary Devices*.

3.4 Bulletin E-20, Test Provision for Electronic Meters.

4.0 Terminology

Bi-directional meter

A bi-directional meter is a meter that has the capacity to meter delivered energy or received energy and to record them in separate registers.

Delivered Energy

Delivered energy is the energy measured when current flows through the meter from the electricity grid to the load.

Net Metering

Net metering is the ability to measure delivered and received energy and to register the difference (net) between the two. If received energy exceeds delivered energy the net value is negative. If delivered energy exceeds received energy the net value is positive.

Net meter

A net meter is a meter that is used to perform net metering.

Net Register

A net register is a register, which records the difference (net) between the value of the delivered and of the received energy quantities measured by the meter.

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Received Energy

Received energy is the energy measured when current flows through the meter from the load side of the service back to the electricity grid.

Registered Contractor

A registered contractor is an organization registered pursuant to Section 6 of the *Electricity and Gas Inspection Act*.

5.0 Technical and Metrological Requirements

5.1 General

Electronic energy meters capable of net metering shall comply with all of the applicable requirements of LMB-EG-07, and the additional requirements contained in this specification.

5.2 LMB-EG-07 Section 3: Additional Requirements

5.2.1 3-2.8 Displays. For net metering, where the received energy exceeds the total delivered energy, the energy display shall be equipped with a net direction indicator/annunciator to indicate the negative (received) energy.

5.2.2 3-5.4 Reverse Operation. This requirement is not required or applicable to net metering. If a net meter is equipped with pulse outputs, provisions shall be provided to determine pulses emitted in the delivered direction and pulses emitted in the received direction.

5.3 LMB EG-07 Section 6: General and Additional Requirements

5.3.1 6-1 Scope. These specifications apply to electronic energy meters and shall also be applicable to net metering.

5.3.2 6-2.2 Testing. (Reference Bulletin E-20 for additional clarification on test provision for electronic meters). A meter with net metering shall provide provisions for testing the delivered and received energy quantities.

5.3.3 6-3 Marking. The word "Net Meter" shall be indelibly and distinctly marked or electronically displayed on the meter.

5.3.4 6-4.2 Adjustments Prior to Tests. For net metering, before commencing performance tests, the meter shall be adjusted for minimum errors in forward and reverse direction at the following test points:

- i) 25% I_{max} at unity power factor.
- ii) 25% I_{max} at 0.5 power factor.
- iii) 2.5% I_{max} at unity power factor.

In addition, polyphase net meters shall be adjusted such that the difference in error between any two elements is minimal at 25% I_{max} .

5.3.5 6-4.4 Load Performance. For net metering, with all circuits energized the meter shall be tested for accuracy with variation in load current and power factor in the forward and reverse directions. The percentage errors shall not exceed those set out in Table 15 for the accuracy of the meter in the forward direction, as well as the reverse direction.

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The percentage error of the registration of the net register is required to be within the tolerance of TABLE 15 at any value from min. to max. current at 1.0 and 0.5 (lag or lead) Pf.

Table 15

Allowable Limits of Error

Current	Power Factor	Percentage Error Limit
Any value from min. to max.	1.0	±0.5
Any value from min. to max.	0.5 lag or lead	±0.75

5.3.6

6-4.5 Performance of Individual Current Circuits

6-4.5.1 Single-Phase Meters, Equality of Current Circuits. For 3-wire meters the percentage registration shall be determined with each current circuit energized separately in turn. The test points shall be 5% I_{max} , 50% I_{max} and 50% I_{max} Pf. The difference between the values of percentage registration for each circuit obtained at any one test point shall not exceed 1.0%. For net metering this requirement and tolerance shall be applicable for both forward and reverse flow of energy.

6-4.5.2 Polyphase Meters, Equality of Current Circuits. The difference between the registration for any one current circuit and that for any other current circuit shall not exceed 0.5% at any current from 2.5% I_{max} to 50% I_{max} inclusive. This limit shall apply after correcting for the unbalance observed when the meter was adjusted, if required, prior to testing, at 50% I_{max} (clause 6-4.2). For net metering this requirement and tolerance shall be applicable for both forward and reverse flow of energy.

6-4.5.3 Polyphase Meters, Variation of Load. The percentage registration shall be determined for each current circuit energized separately in turn. The test points shall be as set forth in Table 16 except that the test current shall, under no circumstances exceed 150 A. For 2-element and 3-element meters, the percentage errors shall not exceed those stated in Table 16. For net metering this requirement and tolerance shall be applicable for both forward and reverse flow of energy.

Table 16

Allowable Limits of Error

**Polyphase Meters - Individual Elements
Voltage Circuits in Parallel**

Any Current	Power Factor of the Element Under Test	Percentage Error Limit
Any Current from Min. to Max.	1.0	±0.75
Any Current from Min. to Max.	0.5 lag	±1.0

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5.3.7 6-4.6 *Polyphase Energization*. For net metering the requirement shall be applicable for both forward and reverse flow of energy.

5.3.8 6-4.8 *Starting*. For net metering the requirement shall be applicable for both forward and reverse flow of energy.

6.0 Administrative Requirement - Notice of Approval

A notice of approval established for a meter with a net metering function shall state that the net metering function has been approved for the purpose of net metering, and indicate any applicable conditions or limitations.

7.0 Additional Information

For additional information regarding this provisional specification, please contact the Senior Program Officer responsible for electricity measurement. Further information regarding Measurement Canada and its programs can be found on the Measurement Canada web site at <http://mc.ic.gc.ca>.

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