



***WX-I210+c***  
***WiMAX SmartMeter by GE***

---

*Basic Manual*

DRAFT

# Contents

<b>1. Product Description .....</b>	<b>1</b>
<b>2. Installation Instructions .....</b>	<b>2</b>
<b>3. Labels and Display Information .....</b>	<b>3</b>
3.1 Nameplate Information and Labels .....	3
3.2 Liquid Crystal Display Information.....	4
3.2.1 Display Examples .....	5
<b>4. Service and Repair .....</b>	<b>7</b>
4.1 Service.....	7
4.2 Repair.....	7
4.3 Returning a Meter .....	7

# 1. Product Description

The WiMAX SmartMeter by GE (WX-I210+c) is an electronic, single-phase electricity meter intended for residential metering and demand response applications. The meter can be operated in demand / load profile (DMD / LP), or time-of-use / load profile (TOU / LP) mode, thereby providing support for a broad range of advanced metering and demand response requirements.

The WX-I210+c is a new class of meter that contains an integrated WiMAX<sup>1</sup> / HomePlug<sup>2</sup> router, which provides open standards-based communications network interfaces for both remote meter communications and meter-to-home area network (HAN) communications over premise electric wiring.



**Figure 1-1: WX-I210+c: WiMAX SmartMeter by GE**

The WX-I210+c incorporates a wide range of additional advanced metering features including: an extended range of software-configurable metrology capabilities (soft-switches); accurate timekeeping via a harmonic clock with an oscillating crystal and battery backup power source, to accurately maintain time during power outage conditions; enhanced energy, demand, and time-of-use billing measures; load profile recording; self-read capability; demand reset support; test mode; real-time pricing functionality; demand response and load limiting functionality with the presence of optional relay switch; authorized local connect / disconnect switch control; and rolling status and rolling billing period functions.

<sup>1</sup> IEEE 802.16.e Air Interface for Fixed and Mobile Broadband Wireless Access Systems (WiMAX)

<sup>2</sup> HomePlug Powerline Alliance, HomePlug version 1.0

## 2. Installation Instructions

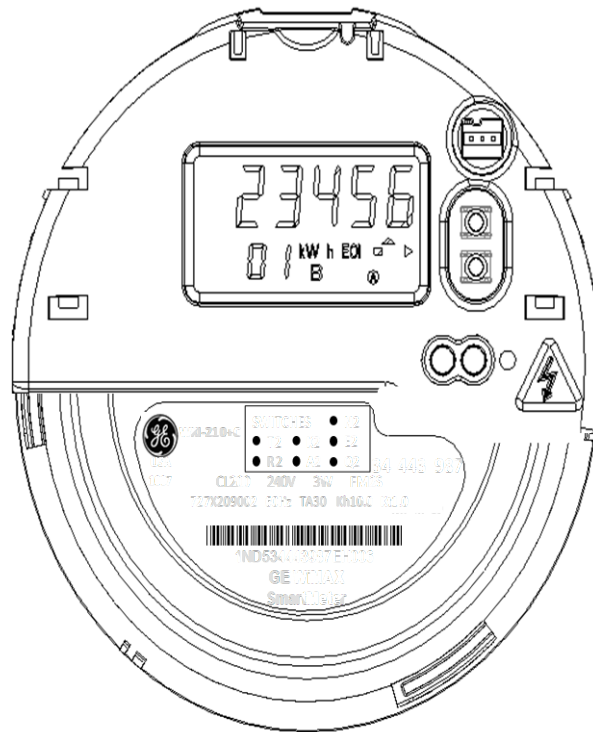
To install the meter, make sure that the following installation steps are performed:

1. Take the last meter read on the existing meter.
2. Remove existing meter's tamper indication seal.
3. Remove existing meter from socket.
4. Replace new meter into socket.
5. Install new tamper indication seal.
6. Re-energize the circuits to the meter.

### 3. Labels and Display Information

#### 3.1 Nameplate Information and Labels

See Figure 3-1 for a graphic representation of the meter nameplate. The meter nameplate is found on the front of the meter.



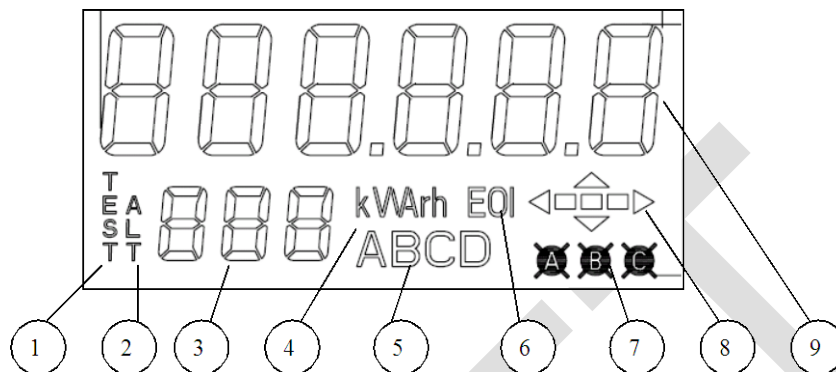
**Figure 3-1 Meter Nameplate**

The nameplate provides the following information

- Meter type
- Utility information and bar code area
- Meter serial number
- Operating frequency
- Test ampere value
- Watt-hour and test constants
- Current and voltage rating
- Wiring configuration, ANSI form factor
- Available softswitches

### 3.2 Liquid Crystal Display Information

The liquid crystal display (LCD) is shown. The numbered list coincides with the numbers in Figure 3-2.



**Figure 3-2: Liquid Crystal Display Information**

1. The “TEST” annunciator indicates the meter is in Test mode.
2. The “ALT” annunciator indicates the meter is in Alternate Display mode.
3. The three small digits are used to display the current display label or code. “CA” or “Er” appearing in this location indicates a Caution or Error message in the display.
4. These letters are used to display the units of measure for the quantity currently being displayed. For example, energy displays will have a “kWh” annunciator and Apparent Power will have a “kVA” annunciator.
5. The letters A through D indicate the time-of-use (TOU) rate that is in effect. Only one letter at a time is displayed when the meter is operating in TOU Mode. If no letters are lit, the meter is in a non-TOU rate.
6. This display indicates an end-of-interval (EOI) condition.
7. When displayed, the “A” annunciator indicates the A voltage is present at the meter. If this annunciator is blinking, phase-A voltage is low.

The “B” annunciator will only be displayed during an all-segments display.

When displayed, the “C” annunciator indicates the C voltage is present at the meter. If this annunciator is blinking, C voltage is low. (Network meters only)

8. The left-right arrows indicate watt hour direction of energy flow. The right arrow will be lit if the energy is delivered; the left arrow will be lit if the energy is received. The up-down arrows indicate VARh direction of quadergy flow. The up arrow will be lit if the quadergy is lagging; the down arrow will be lit if the quadergy is leading.

The meter’s magnitude indicator consists of three segments, used to simulate the rotation of the disk on an electromechanical meter. Each state change represents

Kt. One complete “revolution” represents ten state changes, which represent Kh watt-hours or var-hours. The meter illuminates the segments as follows:

State			
0	■	□	□
1	■	■	□
2	■	■	■
3	□	■	■
4	□	□	■
5	□	□	□
6	□	□	□
7	□	□	□
8	□	□	□
9	□	□	□
0	■	□	□
...			

If the Wh direction is delivered (or the VARh direction is lagging), the states change in increasing order with respect to the above illustration. If the Wh direction is received (or the VARh direction is leading), the states change in decreasing order.

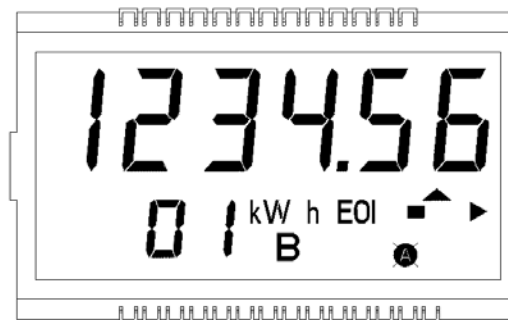
Note: If the calculated phasor VAh is below the programmed creep threshold, the meter will turn off the Wh and VARh direction arrows.

- These characters display the programmed metering quantities. There are three possible decimal point positions located between the four rightmost digits.

### 3.2.1 Display Examples

The following figures show examples of WiMAX SmartMeter displays.

#### 3.2.1.1 kWh Display



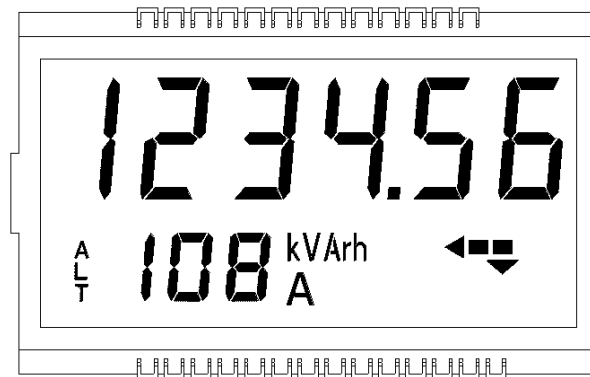
**Figure 3-3: kWh Display**

Figure 3-3 shows the following conditions:

- The Display Label is “01”.
- Six-digit display of energy (kWh).
- Phase A present and voltage exceeds the low voltage threshold.
- End-of-demand-interval indication. This indicator is lit at the end of each demand subinterval.

5. Displayed quantity is measured in kilowatt-hours.
6. Energy is being delivered to the load.
7. The one block indicates State 0 of the magnitude indicator.
8. Quadergy (kVArh) is lagging.
9. TOU rate B is in effect.

### 3.2.1.2 Alternate Display Mode



**Figure 3-4: Alternate Display**

Figure 3-4 shows the following conditions:

1. Meter is in Alternate Display mode.
2. Display label "108" is displayed.
3. Phase A and C voltages are present.
4. Six-digit display of quadergy kVArh.
5. Displayed quantity is measured in kVArh.
6. Meter is displaying previous season data.
7. The two blocks indicate State 1 of the magnitude indicator.
8. Quadergy (kVArh) is leading.
9. Energy is being received from the load.
10. TOU rate A is in effect.



## 4. Service and Repair

### 4.1 Service

The WX-I210+c meter is factory-calibrated and requires no routine or scheduled service by the user.

### 4.2 Repair

Factory repair or replacement service is offered when you cannot fix a problem. Because of the high density and integrated design, the repair of on-board components is not recommended. Instead, return the whole meter to General Electric as described in the following paragraph.

### 4.3 Returning a Meter

If you wish to return a meter, call your General Electric sales representative for a Returned Material Authorization (RMA). The entire meter should be returned with the GE-supplied Returned Material Authorization information form completed. Key information includes quantity, catalog number, serial number(s) and a complete description of the problem. Your General Electric sales representative will provide return instructions.