Water Sub-Meter Operations and Maintenance—Cardinal Point

- **Cardinal Point**: The equipment is developed by ConService and comprised of **NextCentury** meters and electronics.
- **NextCentury** Contact Information:
  a. Email: support@nextcenturymeters.com
  b. Phone: (844) -538-8203 and use ext. #2

### 1) Sub-meter

**Location**: Cold water meter are within each unit’s water heater closet

**Submeter Maintenance:**

1. Perform the **Bucket Test** to make sure the meter is currently recording the correct water usage.
   a. The meter is equipped with a leak detection wheel (it is a dial located in the center of the water meter face).
   b. Make sure it is not moving by turning off all the faucets and water sources in the home before you start the Bucket Test.
2. **Check the connection between the meter and transmitter**. If a meter is showing abnormal usage for a unit, there could be a problem with the meter, transmitter, or connection between them.
   a. Open the transmitter by pressing on the end where the cable is connected. Once opened, you will see a blue connection box on the cable.
   b. Remove the blue connection box by pulling it straight out. Ensure the connection box is tightly clamped onto each wire. Tighten the screws if needed.
   c. Connect the box by pushing down on the prongs.
   d. Once the meter and transmitter are connected, reattach the transmitter lid.
3. If these don’t work, ask your property manager to schedule a maintenance technician to come out and inspect the submeter.
2) Gateway aka the Data Collector

Pin to unlock screen: 1234
Location: Within the Leasing Office Communication Room

1.1 - GW-201 Hardware

**Figure 1 GW-201 Hardware**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Indicator</td>
<td>RF Signal Indicator</td>
<td>Ethernet Port</td>
<td>3rd Party Port</td>
<td>USB Port</td>
<td>SD Card Port</td>
<td>12 Volt Power</td>
<td>Mounting Plate</td>
</tr>
<tr>
<td>I</td>
<td>LCD Screen</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Connecting to the NextCentury Cloud via WiFi:
1. Enter the Network Settings page by pressing the settings icon and then the Network Settings icon.
2. Press the WiFi settings icon.
3. Press the WiFi Network icon.
4. Choose the preferred WiFi network.
5. Press the Connect icon.
6. Enter the Password (if necessary) and press done. The Gateway will connect to the WiFi network and then to the NextCentury Cloud.

Guide to use the LED lights to confirm that the Gateway is functioning properly

**Power Indicator**

<table>
<thead>
<tr>
<th>LED Pattern</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid Red</td>
<td>Loss of Power</td>
</tr>
<tr>
<td>Blinking Red</td>
<td>Gateway is Resetting (Self-Healing)</td>
</tr>
<tr>
<td>Solid Green</td>
<td>Powered On but not connected to NextCentury Cloud</td>
</tr>
<tr>
<td>Solid Blue</td>
<td>Powered On and connected to NextCentury Cloud</td>
</tr>
<tr>
<td>Blinking Blue</td>
<td>Powered On and Property Programming being performed from website</td>
</tr>
</tbody>
</table>

**Figure 4 Power Indicator LED Table**

**RF Indicator**

<table>
<thead>
<tr>
<th>LED Pattern</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1x Fast Red Blinks</td>
<td>Sending/Receiving 3rd Party Message</td>
</tr>
<tr>
<td>1x Fast Green Blinks</td>
<td>Sending/Receiving RF-201 Repeater or TR-201 Transceiver Message</td>
</tr>
</tbody>
</table>

**Figure 5 RF Indicator LED Table**

3.2 - Connect Gateway to NextCentury Cloud
Connecting to the NextCentury Cloud via Ethernet:
1. Plug Ethernet cable into the Ethernet port (Figure 3-A).
2. Plug Power Supply into the 12 Volt Power (Figure 3-B).

Note: The Gateway does not require a static IP address. It can be placed on either a WAN or LAN network and use a DHCP address.

**Figure 3 Connect Gateway to NextCentury Cloud**

A | B
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethernet Port</td>
<td>Power Supply Port</td>
</tr>
</tbody>
</table>
Gateway Maintenance:

1. **Make sure the gateway is connected to the NextCentury cloud.**
   
a. If it’s connected via the Ethernet port to the cloud, plug the Ethernet cable into the Ethernet port and then plug the power supply into the 12 Volt Power.
   
b. On most networks the gateway will automatically connect to the NextCentury Cloud. If the gateway does not connect:
      - Make sure the network does not require additional server information and can directly connect to the internet
   
c. If the screen does not respond:
      - Try power cycling the gateway. Turn it off for 30 seconds and make sure all the lights are off before you turn the device back on.
      - Unlock the gateway by inputting the pin – 1234
      - If the pin doesn’t work then the pin number was changed while the internet connection was down. Call the Sustainability Director for the new pin number.
      - If the gateway is still not connected to the network, then under settings, select the network tab and choose the network that’s available then put in the password, f0undc0m.
   
d. If the property has enabled a new firewall, changed anything on the network, has a new internet provider, the gateway will need to be made aware of these changes.

2. **Second, check the Power LED indicator (see A. in Figure 1) on the gateway.**
   
a. **RED:** If the Power LED indicator is solid red, the gateway has lost power. Make sure the gateway is plugged into its power source.
   
b. **GREEN:** If the Power LED indicator is solid green, the gateway is on, but is not connected to NextCentury Cloud.
      - Try power cycling the gateway.
      - Check that the Ethernet cable is plugged into the gateway.
      - If the Ethernet cable is faulty, try to use another Ethernet cord.
   
c. If it is plugged in, make sure it is connected via Wi-Fi - if it utilizes that method of connection
      - Make sure the Wi-Fi password hasn’t changed.
3) Repeater aka the Signal Promoter

The NextCentury RE-201 (Repeater) receives signals from the TR-201 Transceivers and routes the data to the GW-301 Gateway. The Repeater increases coverage by amplifying and repeating signals in the network.

Repeater Maintenance:

1. **Check the power status indicator** (see A. in Figure 1) on the NextCentury RE-201.
   a. RED: If the Power LED indicator is red, then the repeater has lost power. The repeater will switch to backup power and will allow enough time for a power loss alert to be sent to the gateway.
      - Make sure the device is plugged in.
   b. Green: If the Power LED indicator is green then power is supplied to the repeater, but it is not synced with the gateway.
      - The repeater may be experiencing interference from other devices such as being too close to power strips and three pronged outlets that paired with a Ground Fault Circuit Interrupter (GFCI) device (This protects us from receiving electric shocks from faults in the electrical devices).
      - Call NextCentury for assistance.

2. **Second, check the RF LED indicator** (see B. in Figure 1).
   a. If it is quickly, blinking red 8 times then the repeater is trying to send a message to the gateway, but it is currently searching for it.
      - Press the test button and this will manually send out a broadcast to the gateway to see if the transmission is being received.
      - If the signal is received, the RF LED indicator will blink green twice.
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4) Transceiver aka Transmitter:

1.1 - TR-201 Hardware

| A Battery | B Tamper Button | C Test Button | D Degson Connector (Blue) | E Signal Status LED | F Mounting Plate | G Plastic Release Tab |

Locations: Within each unit’s water heater closet

Transceiver Battery Replacement

2.4 Typical battery life:
- 6 years average

Note: Typical battery life assumes constant operating temperatures are between 70°F and 90°F. Battery life may be reduced with operation outside of this range.

4) Signal Status LED/ Test Button

The Signal Status LED (Figure 1-E) provides a way to easily check the status of each device. The following table (Figure 4) shows what the different LED patterns indicate.

<table>
<thead>
<tr>
<th>LED Pattern</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4x Slow Red Blinks</td>
<td>In Travel Mode (see sec. 3.3).</td>
</tr>
<tr>
<td>8x Fast Red Blinks</td>
<td>Sending message searching for the GW-301 Gateway it should Sync with.</td>
</tr>
<tr>
<td>8x Fast Blue Blinks</td>
<td>Sending message to the GW-301 Gateway that this device is Synced with.</td>
</tr>
<tr>
<td>2x Green Blinks</td>
<td>Message has been received successfully by its GW-301 Gateway.</td>
</tr>
</tbody>
</table>

Figure 4 Signal Status LED Table

Transceiver Maintenance:

1. First, if it is suspected that the transceiver has never functioned properly from:
   a. Being out of range to the gateway
   b. The serial number has been programmed incorrectly
      - Call NextCentury for assistance.
2. Second, if the transceiver is missing (sometimes this occurs with move-outs) from its location:
   a. Call NextCentury for assistance and let the property manager know.
3. Third, check the signal status LED (see E. in Figure 1).
   a. If the LED signal indicator is blinking red fast 8 times, it’s trying to send a message to the gateway, but it is currently searching for it.
      - Press the red test button and this will manually send out a transceiver transmission to the gateway.
      - If the signal is received, the LED signal indicator will blink green twice.
4. Fourth, try to replace the battery.
5. Fifth, check to ensure the transceiver is appropriately connected to the meter. See instructions in the sub-meter maintenance section.
6. Sixth, the repeater that broadcasts the signal of transceiver to the gateway may have lost power.
   a. Call NextCentury to find the repeater’s location so the power supply can be checked.
7. Seventh, there may be physical obstructions between the gateway and the transceiver.
   a. Call NextCentury to troubleshoot this issue.