USER GUIDE COVER PAGE

Table of Contents

Welcome

Thank you for purchasing the PowerCost Monitor™ AMI™ for Elster EnergyAxis™ from Blue Line Innovations.

Your PowerCost Monitor AMI gives you the advantage of real-time feedback. Tests have proven that households where real-time feedback is put to good use can reduce their electricity needs by as much as 5% to 20%. Learning how to use all the functions of your PowerCost Monitor AMI will help you reduce your electricity bill considerably.

Real-time feedback means being able to see at a glance:

- how much energy your home is using, in 30-second slices.
- the effect of turning on or off various electrical devices in your home.

It is important to remember that the PowerCost Monitor AMI is just a tool. You remain in total control of the amount of savings you realize. By striving to keep the values shown on the Display as low as possible, you can achieve:

- Real savings on your monthly electricity bill
- Reduced green-house gas emissions
- Reduced demand on the power grid

Your PowerCost Monitor AMI™ has an easy to read screen that can display:

- Your current electricity consumption in dollars and cents per hour and kilowatts.
- Your total cost of energy consumed in dollars and cents and kilowatt-hours.
- A statistical view of your energy consumption based on the rates you pay.
- The outdoor temperature in Celsius and Fahrenheit.
- The current time and day of the week.

You will find relatively inexpensive and effective tips at www.save-electricity.ca to help you maximize energy savings. When used in conjunction with the PowerCost Monitor AMI, these tips will help you attain your conservation goals.

The PowerCost Monitor AMI is straightforward and easy to use. Should you happen to experience any difficulties with your system, please use the following resources in the order listed below:

1. The troubleshooting section at the end of this manual.
2. If the problem persist or you have a question that remains unanswered, additional information is available online at www.bluelineinnovations.com.
3. If none of the above resources contains the solution to your problem, please feel free to dial our toll free line at 1-866-607-2583. One of our customer support staff will be happy to assist you.

Safety Instructions

This device does not interfere with your utility meter readings in any way. After the PowerCost Monitor AMI is installed, utility company personnel will still be able to access your readings normally.

Please read, understand and apply the safety instructions below and read the rest of the User Manual thoroughly before using this product. These instructions must be followed at all times.

- Do not attempt to repair the PowerCost Monitor AMI yourself. If you experience any difficulties please refer to the troubleshooting section of this manual or visit www.bluelineinnovations.com for assistance. If you are still having difficulty please feel free to call our customer support department toll-free at (866) 607-2583.
- Take precautions when handling batteries. They can cause injuries, burns, and/or property damage as a result of contact with metal objects, heat, and corrosive materials.
- A damaged LCD display may leak fluids that can be harmful to your health. If any fluid leaks from the Display Unit after you drop it accidentally, immediately wash the unit and any part of your body or clothes that came in contact with the liquid with soap and water.

Care and Maintenance

To ensure your PowerCost Monitor AMI provides trouble-free service, please read the following tips and the rest of the User Manual thoroughly before using the system.

- Do not immerse the PowerCost Monitor AMI in any liquid.
- Do not use the Display Unit in high moisture areas such as a bathroom.
- Place the Display Unit indoors only. Placing the Display Unit outdoors can result in damage to the product and will void the warranty.
- Keep this product away from heat sources such as stoves and heaters.
- Do not drop the PowerCost Monitor AMI or cause any sudden impact to it.
- If disposing of this product, do so in accordance with your local waste disposal regulations.

HOW TO USE THIS MANUAL

This manual contains important safety and care information, and provides step-by-step instructions for using this product. Please read this manual thoroughly, and keep it in a safe place in case you need to refer to it later.

This manual is designed as a reference and it contains all the information you require for the ongoing use of your PowerCost Monitor AMI.

The contents are also laid out in a logical sequence, from unpacking your box and verifying all the contents to interpreting the values that show on your Display.

Please note that immediately after unpacking, you must follow a precise sequence of steps to bring your Display to full operational status, as described in the section entitled *Starting Your PowerCost Monitor AMI the first time*.

After your Display is operational, you should get familiar with your LCD screen as described in *Understanding Your Display*. Among other things, this section will help you understand which parameters you may need to configure manually.

The *Configuration Mode – How To Program Your Display* section describes all the configuration parameters that you may need or want to modify.

Finally, *Using Your Display* gives you examples of what you can expect your Display to show when you perform certain actions, with the appropriate explanations.

If you are not familiar with electricity rates, *Appendix A* shows you how to determine the rate structure that is being applied to your account by your electricity supplier.

1 - Unpacking and Installing Your PowerCost Monitor AMI

Verify that your box contains all the following components:

- Display Unit
- 6 AA Alkaline batteries
- AC Power Adaptor
- Outdoor Temperature Sensor
- Configuration Module (installed in the Display)
- User Guide

After you unpack your PowerCost Monitor™, keep all the packing materials in a safe place.

ILLUSTRATION OF PCM AMI CONTENTS

The PowerCost Monitor AMI Display Unit

ILLUSTRATION – Display Elements

1 – AC ADAPTOR – Standard AC adaptor to power up your Display.

2 – CONFIGURATION MODULE – The Configuration Module stores all the data that you may have to program into your Display. It should remain inserted into its slot at all times. In the future, your electricity company may send you a different pre-programmed configuration unit, which you simply will have to insert in the slot.

3 – ANTENNA – This antenna enables your Display to receive signals from your meter's radio.

4 – LCD screen – This screen displays all your power consumption data, as explained in this guide.

5 – BATTERY COMPARTMENT - for 4 AA Alkaline batteries

6 – Status LED - When the Display is turned on and communicating with your meter, the Status LED flashes regularly every 5 seconds. It flashes green if the signal received is of good quality and red if it is low quality. In addition to this regular flashing, every signal received from the meter causes an extra flash.

Powering Up Your Display

1 - Find an appropriate location for your Display. It must be an indoor location 60 meters (200 ft.) or less from your home's electricity meter. Note that each wall separating your Display and your meter may reduce the distance by up to 5 meters (15 ft).

2 - Remove the battery compartment cover, insert the supplied 4 alkaline batteries in the orientation indicated and replace the cover. The batteries provide backup power if you have to unplug the AC adaptor to move your Display to another location in your dwelling, or to go to a specific appliance to measure its consumption using the "Appliance" (APPL) feature.

3 – Plug the supplied AC adaptor in the adaptor socket on the side of the Display and into a wall outlet.

Mounting the Optional Temperature Sensor

ILLUSTRATION OF TEMPERATURE SENSOR

1 - Remove the four screws on the back of the temperature sensor.

2 - Remove the battery compartment cover.

3 - Install two AA batteries in the orientation indicated.

4 - Screw the battery compartment cover back on.

5 - Mount the Outdoor Temperature Sensor outside you house, in a continuously shaded area and away from heat sources such as dryer vents.

After you perform the first time use procedure described in the section 2, your Display should start displaying the temperature at your Temperature Sensor location.

2 – Starting Your PowerCost Monitor AMI the First Time

Before proceeding with the instructions below, retrieve a recent electricity bill and find out whether you are being changed on a Time of Use or Tiered rates basis. If you are not familiar with electricity billing modes, read Appendix A for complete explanations.

When you power up your unit for the first time (and each time you use the factory reset function), your Display goes through the following sequence.

- It briefly displays first the RADIO MODULE (RM) version, then the firmware (F/W) version;
- The prompt "BILLING MODE?" is displayed in the Text Area and the "TOU" indicator is flashing in the SPEEDO (the rainbow in the middle of the LCD screen).

1. Set your BILLING MODE

a. Press YES if you are billed on a Time of Use basis. If you are billed a Flat rate or on a Tiered rates basis, press ▼ or ▲ to change the indicator to "TIER", then press YES.

b. The prompt "ACTIVATION CODE?" is displayed in the Text Area in the bottom left corner of the Display. Proceed as follows:

2. Set your meter's ACTIVATION CODE

a. Retrieve the activation code that your electricity company has provided to you.

b. Press YES. Number "0" is flashing in the Text area at the bottom of the screen.

c. Press ▼ or ▲ to increase or decrease the value of the digit until the first digit of your activation code is displayed.

d. Press > to move the flashing pointer to the second digit. Repeat the process until all the digits of your activation code are correct. If you make a mistake, press the < character to erase the current digit and flash the previous digit. Press > to skip to the next digit.

e. When your activation code is correct, press YES to store it. The message "Connecting" is displayed. If you have entered the activation code correctly, it is followed by the prompt "Updating". When the update is done, the Display is in normal operating mode and it will start displaying your meter information after some time.

f. Go to step 3 below.

3. Synchronize your Outdoor Temperature Sensor with your Display:

a. Press MENU to enter configuration mode. The Text Area displays "TIME/DATE?".

b. Press NO until the text area displays "IHD SETTINGS?"

c. When "IHD SETTINGS?" is displayed, press NO until "SYNC SENSOR?" is displayed.

d. When "SYNC SENSOR? is displayed, press YES. The prompt "CONFIRM Y/N" is displayed.

e. Press YES. The Display flashes three dashes while synchronization is in progress. When synchronization is done, "SYNC COMPLETE" is displayed.

f. Press MENU to exit Configuration Mode.

3 – Your Display is now operational and it should be starting to display the data from your meter within a few minutes. Now read section *3 – Understanding Your Display*. It explains all the display elements as well as all the fields that you should see on your LCD, with the default values for each.

> ***NOTE***: Any field that displays dashes indicates that your meter is not providing that information. Therefore, you should modify the appropriate parameter by following the instructions in section *4 – Configuration Mode – How to Program Your Display*.

4 – If your rate information is not provided by your meter, and you are not familiar with electricity rate structures, read Appendix A -

3 - Your Display Basics

This section gives a brief overview of all the information that is displayed on your LCD. Section 5 gives detailed examples of real life situations with more in depth explanations.

As soon as you power up your PowerCost Monitor AMI, the following start-up screen is displayed:

ILLUSTRATION – Start-up Screen

Once your Display begins to receive power usage signals from your electricity meter, it automatically starts showing information after a short time.

> REMINDER: The first time you power up your Display information, the information presented may not be completely accurate, until your display is fully configured and receiving all the data required from your meter, such as your rates, the date and time of day, etc.
>
> For the purposes of this section, we are assuming that your Display is receiving all the required data from your meter. The next chapter explains how to configure any piece of information that you may be missing.

ILLUSTRATION – FUNCTIONING LCD

1 - Date & Time Indicator: displays the current day, date and time. If possible, these values are transmitted from your electricity provider; otherwise you set this information using the MENU button. You can select AM/PM or military (24-hour) time formats as well as day/month or month/day date formats.

2 - Temperature Indicator: displays the current temperature received from your external temperature sensor. You can select to display the temperature in degrees Celsius or Fahrenheit.

3 - Status Indicators: The antenna shows the quality of the signal, five bars representing the best possible signal quality. The battery icon appears when the internal batteries are low. The batteries act as a backup in case of a power outage and they also allow you to unplug the Display and move it around without powering down.

4 - Configuration buttons: The MENU,  and  buttons are touch-sensitive. They allow you to configure all the required parameters of your display or to cycle through available options.

5 – 16-character Text Area: This area can display up to 255 characters in scrolling mode. It can display prompts and network text messages. By default, the time remaining to your next rate change is displayed. For example “Increase in 03:45” or “Decrease in 00:23”. In addition, supplemental messages can be cycled through during normal operation.

In Configuration Mode, this area also is used as a numeric keypad. The actual operation of the keypad is explained in detail in section for each parameter where it is used.

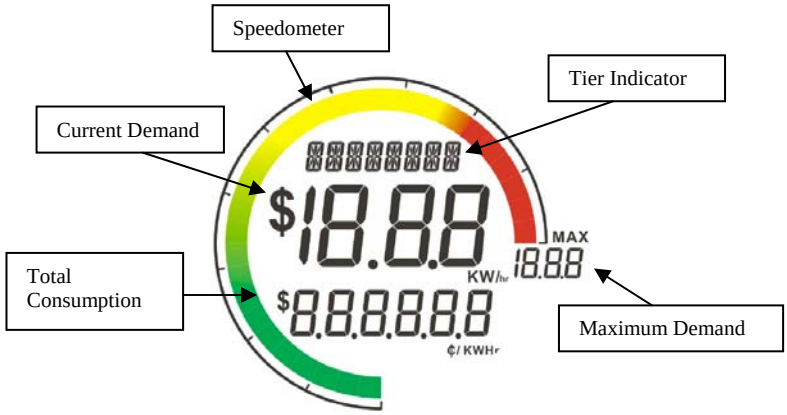
6 - User response buttons (YES and NO): These buttons allow you to respond to prompts displayed in the Text Area, including any prompts from your electricity company.

7 - Display Mode Control Buttons: These touch-sensitive buttons change the values shown in the Speedo and Consumption Ratio Indicator. Each button is a toggle. For example, if the display is currently showing amounts, the label “KW” appears on the first button, indicating that if you press it, the display will change to values in energy units (kilowatts and kilowatt-hours).

The table below explains the function of each button:

Current Button Label	***Description***
KW	The Display is in Dollar mode, meaning that all the values displayed in currency units. Pressing the button changes the label to $
$	The Display is in Kilowatt Mode, meaning that all the values displayed are energy units (kilowatts and kilowatt-hours). Pressing the button changes the label to KW
PREV	The Display is in NOW mode: all the values displayed are for the current billing period. NOW
NOW	The Display is in PREV mode: all the values displayed are for the previous billing period. Pressing the button changes the label to PREV
EST	The Display is in ACT mode: all the values displayed are actual consumption values. This function is only available if the display is in NOW mode. Pressing the button changes the label to ACT
ACT	The Display is in EST mode: all the values displayed are a calculated estimation of your consumption over the next 30 days. Pressing the button changes the label to EST
APPL	The Display is in normal operation mode: the APPL function is inactive. Pressing the button changes the label to
	The Display is in APPL mode. APPL allows you to measure the energy consumption of a single appliance. Pressing the button changes the label to APPL

8 – SPEEDO



The "SPEEDO" displays values representing your current electricity demand (in large numbers) as well as your total energy consumption (in smaller numbers). The speedometer (the tri-colour circular bar) illustrates your current demand as a percentage of the maximum demand you experienced in the current billing period. The maximum demand is the number shown at 3 o'clock on the speedometer and the large numbers are your current demand.

When in "PREV" mode, the current demand value is the average, and the Max value is the peak, for the last billing period. The small numbers are your total consumption for the last billing period.

In Configuration mode, the current demand and total consumption segments are used in conjunction with the Tier Indicator (see below) to set your electricity rates as well as your thresholds, if applicable.

In most cases, your Display will receive updated information every 30 seconds from your meter. However, some older meters only update their information hourly. You can force your Display to retrieve actual information anytime by touching the Speedo. In order to reduce communications congestion, your Display will only allow you to do this a maximum of 10 times per 5-minute period. Any attempt to force an update beyond this limit causes the display of a message to that effect in the text area and the information is not updated.

9 – Tier indicator: This field indicates the current pricing tier, according to the rate schedule that is either automatically provided by the meter or that you configured manually.

10 - Consumption Ratio Indicator

The Consumption Rate Indicator (CRI) displays your electricity consumption in three columns as percentages of least ($), more ($$) and most ($$$) expensive rates. If you have more than 3 different rates, the most expensive rates are combined under the red indicator bar labelled “$$$”.

These bars are touch-sensitive areas. If you touch a bar, the corresponding KW and $ value are displayed momentarily in the Text Area.

4 - Configuration Mode – How To Program Your Display

Ideally, your electricity supplier's network would provide your meter with all the required data. However, this is not always the case.

For the purposes of this section, we are assuming that your Display is receiving only electricity consumption information from your meter. This section explains how to configure all the data elements that are required by your Display to be able to show meaningful results.

Entering and Exiting Configuration Mode – the MENU button

Enter Configuration Mode by pressing MENU.

The following prompt is then displayed In the Text Area: ***TIME/DATE?*** which is the first option of the main menu.

NOTE: Appendix C illustrates the complete menu structure.

Main Menu

The main menu contains the following four options:

MAIN MENU OPTION	***ALLOWS YOU TO SET***
TIME/DATE?	1) the time display format 2) the current time 3) the date display format 4) the current day of the week 5) the current date
ENERGY RATES?	the rate(s) you are being charged by your electricity company
PREFERENCES?	1) the temperature display format (degrees Celsius of Fahrenheit) 2) the backlight timeout - you can select how many seconds of user inactivity cause the Display backlight to turn off.
IHD SETTINGS?	1) Your ACTIVATION CODE – This is code that your electricity company has supplied to you. 2) SYNC SENSOR – this procedure synchronizes the temperature sensor with the radio included in the Display to this end. You must perform this procedure each time you install fresh batteries in the temperature sensor. 3) FACTORY RESET – This procedure may be necessary in case of a meter upgrade or change.

Menu Navigation

Each one of the main menu items leads to a submenu. From there, each submenu item gives you access to a specific parameter you can modify.

These are the menu navigation rules that apply throughout the menu system:

- To accept a menu item, press the YES button.
- To display the next menu item, press the NO button. Pressing NO from the last item in the main menu or a submenu displays the first item in that menu.
- To go one level higher up the menu structure, press MENU. Press MENU in the main menu to exit Configuration mode.
- When changing the value of a parameter, press YES to store your change (or press NO to cancel).

Setting the Display Clock: The TIME/DATE? Submenu

Press YES when the **TIME/DATE?** main menu option is displayed. The first option of the **TIME/DATE?** submenu then appears in the Text Area.

The **TIME/DATE?** submenu covers all the parameters that are used to set the Display internal clock. The following table shows the menu item list in the correct order with the result when you select each item.

SUBMENU ITEM	*Action*	*Result*
(1) **TIME FORMAT?**	Press **YES**	Starts the TIME FORMAT setup process
(2) **TIME?**	Press **YES**	Starts the TIME setup process, according to the format you selected in TIME FORMAT?
(3) **DATE FORMAT?**	Press **YES**	Starts the DATE FORMAT setup process.
(4) **DAY OF WEEK??**	Press **YES**	Starts the DAY OF WEEK setup process.
(5) **DATE?**	Press **YES**	Starts the DATE setup process, according to format set under DATE FORMAT?

SETTING THE TIME FORMAT

1. Navigate to the **TIME FORMAT?** submenu item and press YES.
2. The Text Area displays “AM/PM”.

ILLUSTRATION – AM/PM message

3. Press  or  to toggle between “AM/PM” (12-hour format) and “24-HOUR”.
4. Press YES to save the currently selected time format.
5. The **TIME?** sub-menu item is displayed. Navigate to the next parameter you want to configure.

SETTING THE CURRENT TIME

NOTE: If the displayed time is already correct (give or take a few minutes) then the display is receiving it from the meter and you do not need to set it.

1. Navigate to the **TIME?** submenu item and press YES.
2. The current or default time segments are flashing.

ILLUSTRATION – Time segments flashing

3. The Text Area is now a numeric keypad. Enter your current local time on the keypad by pressing the digits. The digits you press appear successively in the time field.
4. If you selected the AM/PM time format, the AM indicator is flashing. Press  or  to toggle the indicator between AM and PM.
4. Press YES to save the currently displayed time.
5. The **DATE FORMAT?** sub-menu item is displayed. Navigate to the next parameter you want to configure.

SETTING THE DATE FORMAT

1. Navigate to the **DATE FORMAT?** submenu item and press YES.
2. The current or default date format is displayed in the Text Area. The default is MM/DD.

ILLUSTRATION – Date format flashing

3. Press  or  to toggle DD/MM and MM/DD in the Text Area.
4. Press YES to save the currently selected date format.
5. The **DAY OF WEEK?** sub-menu item is displayed. Navigate to the next parameter you want to configure.

SETTING THE CURRENT DAY OF THE WEEK

NOTE: If the displayed day of the week is already correct then the display is receiving it from the meter and you do not need to set it.

1. Navigate to the **DAY OF WEEK?** submenu item and press YES.
2. The current or default day of week segment is flashing.

ILLUSTRATION – DOW segment flashing

3. Press  or  to cycle through all the segments and select the segment that corresponds to the current day of the week.
4. Press YES to save the currently selected day of the week.
5. The **DATE?** sub-menu item is displayed. Navigate to the next parameter you want to configure.

SETTING THE CURRENT DATE

NOTE: If the displayed date is already correct then the display is receiving it from the meter and you do not need to set it.

1. Navigate to the **DATE?** submenu item and press YES.
2. The current or default date is flashing.

ILLUSTRATION – Date segments flashing

3. The Text Area is now a numeric keypad. Enter the current date on the keypad by pressing the digits. The digits you press appear successively in the date field. NOTE: The digits you enter must conform to the date format currently selected under the **DATE FORMAT?** menu item.
4. Press YES to save the currently entered date.
5. The **TIME/DATE?** main menu item is displayed. Navigate to the next parameter you want to configure.

Setting Your Rates – The ENERGY RATES? Submenu

Press YES when the **ENERGY RATES?** main menu option is displayed. The first option of the **ENERGY RATES?** submenu then appears in the Text Area.

The **ENERGY RATES?** submenu covers the parameters required for setting the rates you are being charged. Your PowerCost Monitor AMI calculates the values it displays based on the entries in this submenu.

IMPORTANT: To understand this submenu, you must first determine:

a) the billing mode that is applied to your account;

b) the rates that you pay.

Retrieve a recent electricity bill and enter your rate information in the fields of this submenu.

If you are not familiar with electricity rate structures, go to Appendix A for complete explanations on how to proceed.

The following table shows the single item available in this menu.

SUBMENU ITEM	*Action*	*Result*
(1) **BILLING MODE?**	Press **YES**	Allows you to specify either TIERED or TIME OF USE billing mode.
(2) **RATES?**	Press **YES**	Allows you to enter all your rates. If your billing mode is Tiered rates, you will be asked to enter your consumption thresholds.

SETTING YOUR BILLING MODE

1. Navigate to the **BILLING MODE?** submenu item and press YES.

   The prompt "BILLING MODE?" is displayed in the Text Area and the "TOU" indicator is flashing in the SPEEDO (the rainbow in the middle of the LCD screen).

2. Press YES if you are billed on a Time of Use basis. If you are billed a Flat rate or on a Tiered rates basis, press ▼ or ▲ to change the indicator to "TIER", then press YES.

SETTING YOUR RATES (TIERED RATES BILLING MODE)

1. Navigate to the **RATES?** submenu item and press YES.

   The Tier Indicator displays ***TIER 1,*** the Current Demand field flashes the currently stored rate for TIER 1 (insert default value) and the ¢/kWh indicator. The Text Area is now a numeric keypad.

ILLUSTRATION – Tier 1 default

2. Enter the first rate that appears on your bill (usually the lowest) by pressing the digits on the keypad, including the decimal point. The digits you press appear successively in the Demand field in the Speedo.

3. Press YES to store your energy rate for Tier 1.

   The Tier Indicator now displays ***TRSHLD 1***

   The ¢/kWh indicator in the Current Demand field is replaced by the KW INDICATOR.

   The Total Consumption field flashes the current or default threshold value.

4. If you pay a single electricity rate, press MENU to exit Configuration mode. Otherwise, continue to step 5.

5. Enter the threshold at which you will start paying your second lowest rate by pressing the digits on the keypad. The digits you press appear successively in the Total Consumption field in the Speedo.

6. Press YES to store your threshold for Tier 1.

   The Tier Indicator now displays ***TIER 2,*** the Current Demand field flashes the currently stored rate for TIER 2 (insert default value) and the ¢/kWh indicator.

7. Repeat steps 2 through 4 until you have entered all your rates and thresholds.

8. When you are done, press MENU to exit Configuration mode.

SETTING YOUR RATES (TIME OF USE BILLING MODE)

NOTE: On your electricity bill, your different rates may be numbered (from lowest to highest rate) or each rate may have a specific name (such as OFF PEAK, ON PEAK, CRITICAL, etc.). These names will automatically appear on your Display when you program your rates.

1. Navigate to the **RATES?** submenu item and press YES.

   The Tier Indicator displays the label associated with your lowest rate, the Current Demand field flashes the current or default value of the lowest rate and the ¢/kWh indicator.

2. Enter your lowest rate by pressing the digits on the keypad, including the decimal point.

The digits you press appear successively in the Demand field in the Speedo The range of acceptable values is 0.01 to 99.99.

3. Press YES to store your lowest rate.

The Tier Indicator now displays the label associated with your second lowest rate, and the Current Demand field flashes the current or default value of the second lowest rate.

4. Enter your second lowest rate on the numeric keypad, including the decimal point, and press YES to store it.

5. The Tier Indicator may now display a third rate. If this is the case, repeat the procedure until you have entered all your rates, as they appear on your electricity bill.

6. When you have entered your last rate, press 

to exit Configuration mode.

Setting Your Viewing Preferences – The PREFERENCES? Submenu

Press YES when the **PREFERENCES?** main menu option is displayed. The first option of the **PREFERENCES?** submenu then appears in the Text Area.

The **PREFERENCES?** submenu covers parameters that you can set for your viewing convenience.

The following table shows the menu item list in the correct order with the result when you select each item.

SUBMENU ITEM	***Action***	***Result***
(1) **TEMP FORMAT?**	Press YES	Allows you to select the display of the temperature in degrees Celsius or Fahrenheit.
(2) **BACKLIGHT**	Press YES	Allows you to set the period of inactivity after which the backlight turns off .

SETTING THE TEMPERATURE DISPLAY FORMAT

1. Navigate to the **TEMP FORMAT?** submenu item and press YES.

   The current or default temperature indicator is flashing. The default is degrees Fahrenheit (°F).

2. Press  or  to toggle the indicator between degrees Celsius (°F) and degrees Fahrenheit (°F).
3. Press YES to store your selection.

   The **BACKLIGHT?** Submenu item is displayed in the Text Area.

4. Navigate to the next parameter you want to modify or press MENU twice to exit Configuration mode.

SETTING THE BACKLIGHT TIMEOUT

1. Navigate to the **BACKLIGHT?** submenu item and press YES.

   The current or default timeout value is flashing. The default is 60 seconds. The Text Area is a numeric keypad.

2. Enter the desired timeout value by pressing the digits on the keypad. The digits you press appear successively in the time field.
3. Press YES to store your backlight timeout value.

   The **PREFERENCES?** main menu item is displayed in the Text Area.

4. Navigate to the next parameter you want to modify or press MENU twice to exit Configuration mode.

Setting the Display's Operational Parameters – The IHD SETTINGS? Submenu

NOTE: The **IHD SETTINGS?** submenu covers the operational parameters for your PowerCost Monitor AMI. These are all settings that you should seldom change, if ever.

Press YES when the **IHD SETTINGS?** main menu option is displayed. The first option of the **IHD SETTINGS?** submenu then appears in the Text Area.

The following table shows the menu item list in the correct order with the result when you select each item.

SUBMENU ITEM	***Action***	***Result***
(2) A**CTIVATION CODE?**	Press YES	Allows you to set your meters network identifier. You must set this value when you start using the Display for the first time.
(3) **SYNC SENSOR?**	Press YES	Allows you to synchronize the Display with the optional temperature sensor. You must perform this operation when you first install the temperature and every time you install fresh batteries in the temperature sensor.
(5) **FACTORY RESET?**	Press YES	Allows you to reset the Display to its factory settings. CAUTION: performing this procedure erases all the date you may have entered manually.

SETTING THE ACTIVATION CODE

1. Retrieve the activation code that your electricity company has provided you.

2. Navigate to the **ACTIVATION CODE?** submenu item and press YES.

3. Press YES. Number "0" is flashing in the Text area at the bottom of the screen.

4. Press ▼ or ▲ to increase or decrease the value of the digit until the first digit of your activation code is displayed.

5. Press > to move the flashing pointer to the second digit and repeat the process until all the digits of your activation code are correct. If you make a mistake, press the < character to erase the current digit and flash the previous digit. Press > to skip to the next digit.

6. When your activation code is correct, press YES to store it. The message "Connecting" is displayed. If you have entered the activation code correctly, it is followed by the prompt "Updating". When the update is done, the Display is in normal operating mode and it will start displaying your meter information after some time.

7. Navigate to the next parameter you want to modify or press MENU twice to exit Configuration mode.

SYNCHRONIZING THE TEMPERATURE SENSOR

1. Navigate to the **SYNC SENSOR?** submenu item and press YES.

   The Text Area displays "CONFIRM Y/N"

2. Press YES to synchronise the temperature sensor.

   The Display flashes three dashes while synchronization is in progress. When synchronization is done, the "SYNC COMPLETE" message is displayed in the Text Area.

3. Press YES.

   The **IHD SETTINGS?** main menu item is displayed.

4 . Navigate to the next parameter you want to modify or press MENU to exit Configuration mode.

RESETTING THE DISPLAY TO ITS FACTORY SETTINGS

1. Navigate to the **FACTORY RESET?** submenu item and press YES.

   The Text Area first scrolls "WARNING: ALL YOUR DATA WILL BE LOST!" twice, then displays "CONFIRM Y/N"

2. Press YES to reset your Display to factory settings.

   The Display flashes three dashes while the operation is in progress. When the factory reset is done, the start-up screen is displayed.

3. If the activation code you entered is correct, your Display goes through the start-up, connection and update sequence and when the data update is completed, your Display is in normal operating mode.

5- Using Your Display

Using the Various Display Modes

Your Display provides you with four ways of viewing your consumption data, accessible by pressing the four touch-sensitive buttons in the Display Mode area at the bottom left of your LCD screen, immediately above the Text Area. The available Display Modes are:

- Values in currency or energy Units ($ or KW)
- Actual values or calculated estimated values for the next 30 days (ACT or EST)
- Values for the current or previous billing cycle (NOW or PREV)
- Energy consumption of a single appliance (APPL)

ILLUSTRATION – Display Mode buttons

Currency/Energy Display Mode

The Currency/Energy units display mode allows you to switch between values in currency or energy units.

The button that allows you to toggle between currency and energy units is the first in the Display Mode row. The label of this button toggles between $ and KW whenever you press it, and the current button label indicates the mode that will be displayed if you press the button.

NOW/PREV Mode

The NOW/PREV button allows you to toggle between values for the current (NOW mode) and the previous (PREV mode) billing periods.

This is the second button in the row of buttons in the lower left corner, right above the Text Area.

The label of this buttons toggles between NOW and PREV whenever you press it, and the current button label indicates the mode that will be displayed if you press the button.

ACT/EST Mode

The third button in the Display Modes area is labelled ACT/EST and it allows you to toggle between the actual amount of electricity you are consuming (ACT mode) and a calculated estimate of your consumption for the current month (EST mode).

This function is only available when the Display is also in NOW mode.

The label of this buttons toggles between ACT and EST whenever you press it, and the current button label indicates the mode that will be displayed if you press the button.

APPL Mode

The last fourth Display Mode button activates and deactivates the APPL function, which allows you to measure the quantity of electricity an individual appliance consumes.

To use the APPL function:

- Press the button when the APPL label is displayed. Your PowerCost Monitor then memorizes the current consumption values and sets the Current Demand value in the SPEEDO to zero.
- Turn an appliance on or off.
- After a few seconds, the value displayed in the Current Demand field is the quantity of electricity consumed by the appliance.
- When you are done, press the button again; the APPL label is displayed again and the Display returns to normal operating mode.

NOTE: The value displayed while APPL mode is active may vary depending on the operation of other appliances in your dwelling that switch on or off automatically. For example if you activate APPL mode to measure the amount of power your oven uses, a higher value may be displayed if you electric hot water heater turns on while you are measuring your oven.

Examples

Here are a few example of the display in Currency unit's mode:

ILLUSTRATION – Currency Units – NOW - ACT

ILLUSTRATION – Currency Units – NOW - EST

ILLUSTRATION – Energy Units – NOW - EST

ILLUSTRATION – Energy Units – PREV - ACT

The SPEEDO

In normal mode, the SPEEDO offers all the display modes and displays all the values discussed in the section entitled Your Display Basics.

The Consumption Ratio Indicator

The Consumption Ratio Indicator (CRI) displays your electricity consumption in three columns as percentages of least ($), more ($$) and most ($$$) expensive power. If you have more than 3 different rates, the most expensive rates are combined under the red indicator bar labelled "$$$".

These bars are touch-sensitive area. If you touch a bar, the corresponding KW and $ value are displayed momentarily in the Text Area.

Operation in Tiered rates mode – before first threshold

ILLUSTRATION – CRI – Flat

The illustration above is an example of the consumption reported by the CRI in tiered rate mode, before the first threshold has been reached.

The green bar shows the percentage of electricity consumed in the first available billing tier (until the 1st threshold is reached).

If you touch the bar, the actual value is displayed in the Speedo.

Operation in Tiered rate mode - after first threshold

ILLUSTRATION – CRI – Tiered

This illustration represents the consumption reported by the CRI after one threshold has been reached.

If you have only two rates and one threshold, the red bar starts increasing as soon as your consumption total exceeds the total for last month.

Over time, the green bar will decrease and the yellow bar increases (and then the red bar, if you have yet another threshold). The sum of the percentages displayed is always 100%.

Operation in Single (Flat) rate mode

If you pay a single (flat) rate, the green bar is always at 100%, because the electricity you consume is always at the same rate.

For budgeting purposes, you can set any number of consumption thresholds at the same rate. You can thus activate the yellow and red bars.

Operation in Time of Use mode

ILLUSTRATION – CRI – TOU

This illustration represents a typical Time of Use consumption pattern reported by the CRI. The yellow bar reports your consumption at your lowest rate usage, the yellow bar, your consumption at your second lowest rate usage and the red bar, the combined consumption at any higher rate.

> NOTE: If you pay only two rates (lower and higher), the yellow bar is inactive; then the sum of the green and red bar reports is always equal to 100%.

Over time, the green bar will decrease and the yellow and red bar will increase, depending on your consumption pattern. The sum of the percentages displayed is always 100%.

The Text Area

As seen previously, the Text Area displays all the prompts required during configuration.

In normal operating mode, the Text Area displays internal messages based on the current consumption situation. For example, in Time of Use billing mode, it might display the time remaining before the next rate change.

It also displays the selected Display mode briefly when you press a Display mode button.

Appendix A – How to Determine your Rates

> **IMPORTANT:** If you are still not able to determine your electricity rates after reading this section, please contact your electricity supplier directly for detailed information on your account.

What Am I Looking For?

In the past, utility companies charged a single rate for electricity, regardless of the quantity of electrical power (measured in kilowatt-hours – kWh) a household consumed. Some utilities still follow that ***Single (or Flat) Rate billing*** model.

Not so long ago, as the cost of electrical energy rose, utilities started implementing a ***Tiered Rates billing*** model, whereby the lowest rate is only applied to a fixed number of kilowatt-hours consumed. As soon as you pass a specified ***consumption threshold***, your rate becomes more expensive. Some utilities thus have implemented several tiers, each with its associated threshold and an increasingly higher rate. If you are billed on the tiered rates model, you should write down all your rates and their associated thresholds in the appropriate table below.

Finally, the most recent billing practice (and the one that is associated with "smart meters") calls for billing the consumer on the time of day when the energy is consumed rather by the quantity of power actually consumed. This is called the ***Time of Use*** billing model. Utilities are implementing this scheme because they need to reduce the consumption of electrical power during usage spikes. For example, these occur in the summer around mid-day, when everyone turns on their air conditioners simultaneously. If you are billed on the Time of Use model, you should write down your rates and the times of the day they are applied in the appropriate table below.

How Do I Do This?

First, retrieve your most recent electricity bill. The numbers that it shows should fall under one of the following three categories.

1 - Your bill shows a single value in cents per kilowatt-hour

You are charged a ***SINGLE (FLAT) RATE*** for electricity consumption.

Write down the value in cents per kilowatt-hour.

EXAMPLE: $0.063/kWh
$0.063 = 6.3 cents
KWh = kilowatt/hour

You are paying 6.3 cents per kilowatt/hour at all times.

INSERT TABLE AND INSTRUCTIONS FROM BLI-00301R001 – Step 5

2 - Your bill shows more than one rate in cents per kilowatt-hour. Each higher rate starts at a given higher number of kWh consumed.

You are charged a ***TIERED RATE*** for electricity consumption: you pay the first (the lowest) rate until you reach a stated threshold, then you start paying another (higher) rate until you reach yet another stated threshold and so on.

You may have two or more tiers, each tier consisting of a rate and a threshold. Write down all your rate tiers.

EXAMPLE: *1200 kWh @ $0.063/kWh and 1369 kWh @ $0.075 /kWh)*
$0.063 = 6.3 cents
$0.075 = 7.5 cents
KWh = kilowatt/hour

You are paying 6.3 cents per kilowatt/hour (the ***first rate***) for the first 1200 kilowatt/hours (the ***threshold***), and 7.5 cents per kilowatt/hour (the ***second rate***) thereafter.

In our example, you consumed 2,569 kilowatt/hours in total, of which the last 1,369 were charged the second rate (7.5 cents).

NOTE: Depending on the way your utility reports your power usage, you may have to perform some calculations to determine your threshold.

INSERT TABLE AND INSTRUCTIONS FROM BLI-00301R001 – Step 5

3 - Your bill shows different values according to various time periods during the day.

You are billed on a ***TIME OF USE*** basis: you pay different rates reflecting the overall demand your electricity provider must satisfy between given hours of the day. We call the lowest rate ***Off Peak*** and the highest ***On Peak***.

In addition to Off Peak and On Peak rates (which may be named differently on your bill), you may be charged an intermediary ***Mid Peak*** rate, as well as a ***Critical*** rate.

Your bill shows two or more rates associated with various times of day and days of the week. Study the example below carefully, and determine:

a) whether you are being charged on a two-rate basis, meaning that you are charged normal (OFF PEAK) and peak (ON PEAK) rates, or on a multiple-rate basis, where you also pay an intermediate rate (MID PEAK) and possibly a CRITICAL rate.

b) what your rates are;

c) at what time(s) of the day the rates change; and

d) whether your company charges you any other rate than OFF PEAK during weekends.

EXAMPLE:

➢ **OFF PEAK** 342 kWh @ $0.063/kWh

➢ **MID PEAK*** 399 kWh @ $0.069/kWh

➢ **ON PEAK**** 988 kWh @ $0.075 /kWh

MID/ON PEAK applies Mon to Fri.

** MID PEAK Periods: 9:30 AM to 4:20 PM and 7:00 PM to 11:00 PM*

*** ON PEAK Periods: 6:10 AM to 9:30 AM and 4:20 PM to 7:00 PM*

The information from this example is illustrated in the table below, indicating that from Monday through Friday only, you pay:

1) 7.5 ¢/kWh from 6:10 AM to 9:30 AM;
2) 6.9 ¢/kWh from 9:30 AM to 4:20 PM;
3) 7.5 ¢/kWh again from 4:20 PM to 7:00 PM;
4) 6.9 ¢/kWh again from 7:00 PM to 11:00 PM; and finally
5) 6.3 ¢/kWh from 11:00 PM until 6:10 AM the next day.

INSERT TABLE AND INSTRUCTIONS FROM BLI-00301R001 – Step 5

APPENDIX B - Troubleshooting

In the event that you are experiencing difficulty installing or using your PowerCost Monitor™ system, please refer to the information below to assist you in resolving the issue. If you do not see your problem listed here, or you are still unable to get your system working properly, more information is available at http://www.bluelineinnovations.com or you may send an email to support@bluelineinnovations.com describing the difficulty you are having. You may also call us toll-free at 1-866-607-2583.

Q. The temperature shown on the Display Unit does not match weather reports or appears to be incorrect.

A. The temperature shown on the Display Unit is the ambient temperature at your utility meter; it may vary from other sources, such as TV weather reports, because of distance and other factors. Also, if your utility meter is exposed to direct sunlight during any part of the day, then the reading will be higher than normal. The reading will return to the correct value when the utility meter is shaded.

Q. The consumption information shown on my Display Unit is not correct and it jumps randomly.

A. There are several things that can affect the accuracy of the information shown on your Display Unit and they all relate to interference.

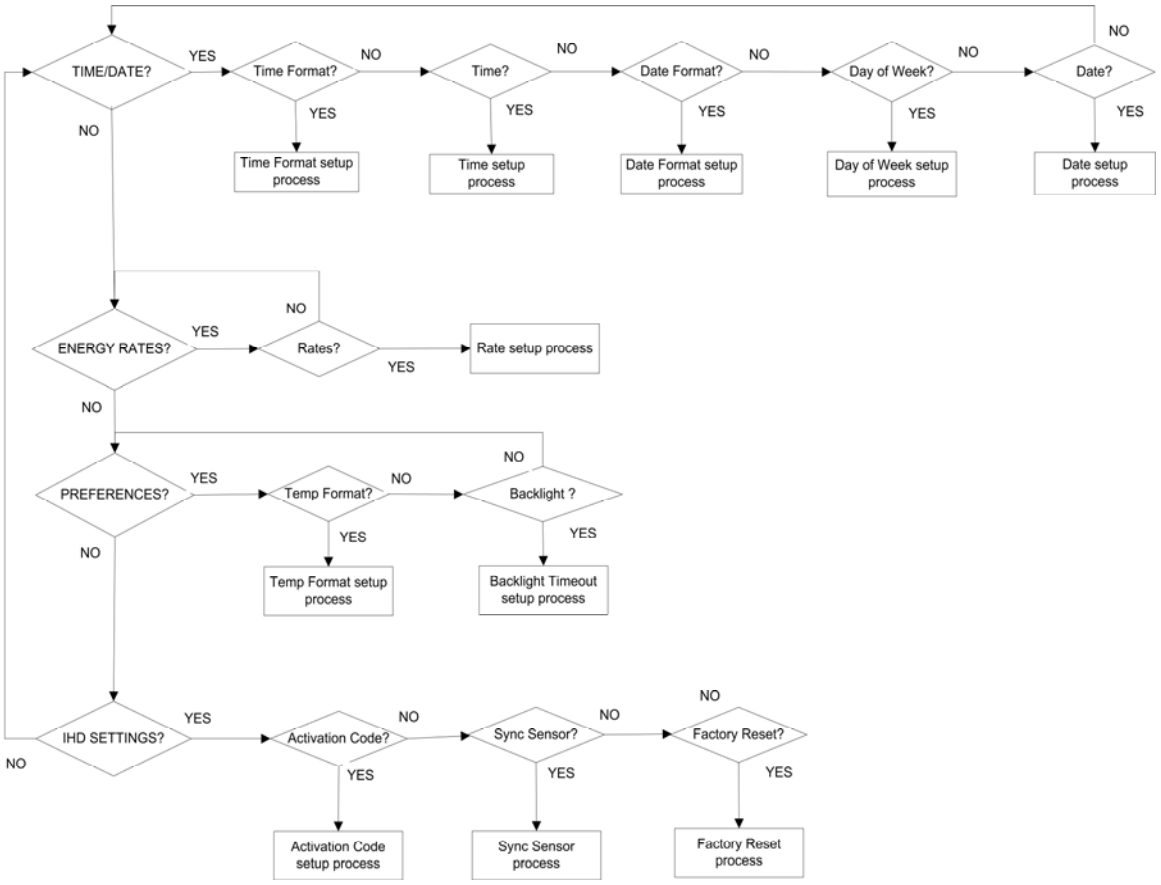
If your neighbour also has a PowerCost Monitor system you may be receive their information. In this case you need to change the Sensor Unit address and resynchronize the Display Unit. Follow the steps in Section 5.6, but press and hold the RESET button for five (5) seconds). The Sensor Unit then selects a new address randomly on which to base the synchronization.

Wireless devices, such as weather stations or old-style baby monitors and cordless phones, transmit information on frequencies similar to the PowerCost Monitor. If you have a wireless weather station try turning it off briefly and check to see if the PowerCost Monitor Display Unit returns to normal operation. If it does, then check to see if you can change the channel that your weather station operates on.

Q. The total shown on my Display Unit does not match the total shown on my electricity bill.

A. In order for the two totals to match, you would need to clear the totals on the Display Unit on the exact day and time the utility company reads your meter. The total amount shown on the PowerCost Monitor is accurate, but is really meant as a reference to indicate how much power you have consumed since you last cleared the totals. For example, if you clear the totals at the beginning of every month, then you can use the PowerCost Monitor to compare against your monthly budget.

APPENDIX C – Configuration Menu Tree



Warranty

LIMITED ONE YEAR WARRANTY

Blue Line Innovations warrants this product to be free from defects in materials and workmanship for a period of one year from the date of sale to the original user or consumer purchaser. Blue Line Innovation's exclusive obligation under this warranty shall be, at its option, (a) to supply, without charge, a replacement of the product or (b) to refund the purchase price in respect of any product that is found to be defective and that is returned, with its proof of purchase, to the original supplier.

This warranty excludes and does not cover defects, malfunctions, or failures caused by misuse, unauthorized repairs, modifications or accidental damage.

Note: This warranty does not apply to batteries or damage to the product caused by the use of faulty batteries.

This warranty is only applicable to a product purchased through a Blue Line Innovations authorized dealer.

In no event shall Blue Line Innovations be liable for consequential or incidental damages.

This warranty is in lieu of all other expressed warranties. The duration of any implied warranty is limited to the period of the expressed warranty set forth above.

MANUFACTURED IN CHINA

Blue Line Innovations Inc.
187 Kenmount Road
St. John's, NL Canada
A1B 3P9
Web Site: www.bluelineinnovations.com
E-Mail: pcm@bluelineinnovations.com
Toll Free: 1-866-607-2583

Specifications

Power	
Display	4 AA Alkaline Batteries (LR6 or equivalent)
Temperature Sensor	2 AA Alkaline Batteries (LR6 or equivalent)

Wireless Communications	
Frequency	900 MHz between meter and Display 433.92 MHz between Temperature Sensor and Display
Update Rate	Approximately every 30 minutes
Range	Up to 30m (100ft.) line-of-sight (Subtract 5m or 15 feet for each wall between Display and meter)

Operating Temperature Range	
Display	10°C to 45°C (50°F to 113°F) For indoor use only.
Temperature Sensor	-40°C to 60°C (-40°F to 140°F)

FCC Information

FCC Class B Part 15

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

Warning: Changes or modifications not expressly approved by Blue Line Innovations Inc. void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: To maintain compliance with the FCC's RF exposure guidelines, place the unit at least 20cm from nearby persons.

Industry Canada Certification

Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

187 Kenmount Road
St. John’s NL Canada
A1B 3P9
www.bluelineinnovations.com
Toll Free: (866) 607-2583

P/N: BLI-nnnR000