

RTMS Product Specifications

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Neurosys

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Introduction

- FCC Statement*
- Introduction*
- Safety Precautions*
- Product Features*

FCC Statement

Caution : Any changes or modifications in construction of this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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.

NOTE: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

NOTE: 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.

FCC Statement

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.

Introduction

- This product and user guide are protected under copyright law. Without the prior written consent of Neurosys inc. it is not lawful to copy, reproduce, duplicate, translate or transform to machine language all or any part of the product or user guide.
- First, read the **safety precautions** and use the product accordingly.
- The actual pictures and screens may be different from those depicted in the user guide.
- The user guide may be different based upon the product's software version and the circumstances of Neurosys Inc. The user guide may also change without prior written notice to the users. For the user guide for the most recent software version please reference www.ineurosyst.com.
- The program and functionalities provided by the product may be different based upon national or product specifications. The company assumes no responsibility for problems arising outside of the provided program.
- As a registered business software system, we aim for its commercial use and the product may be used in all regions.

SAFETY PRECAUTIONS

●WARNING

- Do not touch the product or the electrical plug with wet hands.
 - ◆ You may suffer an electrical shock.
- Do not place the product, it's adaptor etc. near heat sources.
(Space Heater, Gas Range, etc.)
 - ◆ This may cause the product to change, explode or catch fire.

●CAUTION:

- Do not allow external shocks or drop the product.
 - ◆ The screen or appearance can be damaged, and the internal parts can break.
- As the user, do not rebuild, take apart or repair the product.
 - ◆ You may be suffer electrical shock.
 - ◆ If rebuilt, taken apart, or repaired by the user, you may not get it repaired free of charge.

PRODUCT FEATURES:

- ◆ Real-time Temperature Monitoring System
- ◆ Real time temperature measurement through the SIZM
- ◆ Monitoring through real time graphing.
- ◆ Wireless communication between the PIZM and the SIZM.
(ZigBee Standard Compliance)
- ◆ The PIZM provides 1 GB Memory to store a maximum of 3 years of temperature data storage.
- ◆ High and low temperature values and time period setup
- ◆ Warning generation when in excess of preset time periods or preset temperature values.
- ◆ SMS characters for mobile phone number setup
- ◆ Automatic warning text sent to the preset mobile phone when warnings occur.

PREPARATIONS

- Confirm Contents*
- PIZM Setup Instructions*
- SIZM Setup Instructions*

CONFIRMING CONTENTS:

- ◆ The Product is made up of the following items.
 - PIZM
 - ✓ Basic Contents: 1 unit or set, electrical adaptor, and usb connector cable for PC.
 - SIZM ⇒ When necessary, the contents may be increased to include up to 4 sets.
 - ✓ Basic Contents: one unit, electrical adaptor
 - ✓ Optional Selection Situation: Fridge/Freezer connector cable, temperature sensor (up to 2)
⇒ Refrigerator/freezer connection cable capable model:

Turbo Air Products. (Manufactured products: After 2011)

- Multiple User Situations
 - ✓ Wall brackets: quantity as needed
 - ✓ 1 RTMS Application Program setup cd

PIZM Setup Instructions

- ◆ Install the bracket
- ◆ Connect the adaptor
- ◆ Connect the USB cable to the PC

SIZM Setup Instructions

- ◆ Install the bracket
- ◆ Connect the Adaptor
- ◆ Connect to the refrigerator/freezer
- ◆ Connecting the temperature sensor and temperature sensor installation.
(After connecting to the Turbo Air Freezer/refrigerator with the cable
you won't have to use the enclosed temperature sensor. : Turbo Air
Products.

(Manufactured products: After 2011))

Basic Configuration

- System configuration diagram*
- Components provided and features*

System Configuration Diagram

- ◆ RTMS Application Program
- ◆ PIZM(PC Interface ZigBee Module) : 1 Set
- ◆ SIZM(Sensor Interface ZigBee Module) : Maximum 4 sets



Application Program



PIZM



SIZM



SIZM



SIZM



SIZM

Component Specific Specs and Features

◆ PIZM

➤ Specifications:

- ✓ Size :
- ✓ Weight :
- ✓ Power : 100-240V Adapter
- ✓ Operational Temperature : 0~50°C
- ✓ Storage Temperature : -10~70°C
- ✓ Operational Humidity : 0~90%

➤ Features

- ✓ PC connection via USB cable
- ✓ Wireless and wired activity notification: green and yellow LED
- ✓ Wireless communication between the SIZM (ZigBee Standard Compliance)
- ✓ 1 GB internal memory for a maximum 3 years of temperature data storage
- ✓ 5V adapter for use with 100-240V input



Component Specific Specs and Features

◆SIZM

➤ Specifications

- ✓ Size :
- ✓ Weight :
- ✓ Power : 100-240V Adapter
- ✓ Operational Temperature : 0~50°C
- ✓ Storage Temperature : -10~70°C
- ✓ Operational Humidity : 0~90%



➤ Features

- ✓ Reception of the freezer/refrigerator's temperature related information through wired communication with the freezer/refrigerator's controls.
 - Useable Model : Turbo Air Products (Manufactured products: After 2011)
- ✓ Temperature Sensor Capable: Measuring range – - 40°F~140°F
- ✓ Periodic transmission of refrigerator/freezer information and temperature measurement values.
- ✓ Graphic LCD display of temperature measurement values
- ✓ 5V adapter for use with 100-240V input

Component Specific Specs and Features

◆ Common Standards

➤ Wireless Standard:

- ✓ Frequency Range : 2.4~2.4835GHz
- ✓ RF Tx Power : Max. 17dBm
- ✓ RF Rx Sensitivity : -95dBm
- ✓ PHY & MAC Layer : Compliant to IEEE802.15.4
- ✓ Network & Application Layer : Compliant to ZigBee Standard

➤ Antenna

- ✓ 3dBi gain
- ✓ Swivel Joint, SMA connector
- ✓ Omni-directional radiation pattern
- ✓ Size (Length & Diameter) : 102.8 x 11 (mm)
- ✓ Weight : 12.5g



RTMS Application Program

- *Recommended Computer Specifications*
- *Important Features*
- *Program Installation*
- *Starting Up*
- *Feature Specific Screen Explanations*

Recommended Computer Specifications (Minimum Recommended System Requirements)

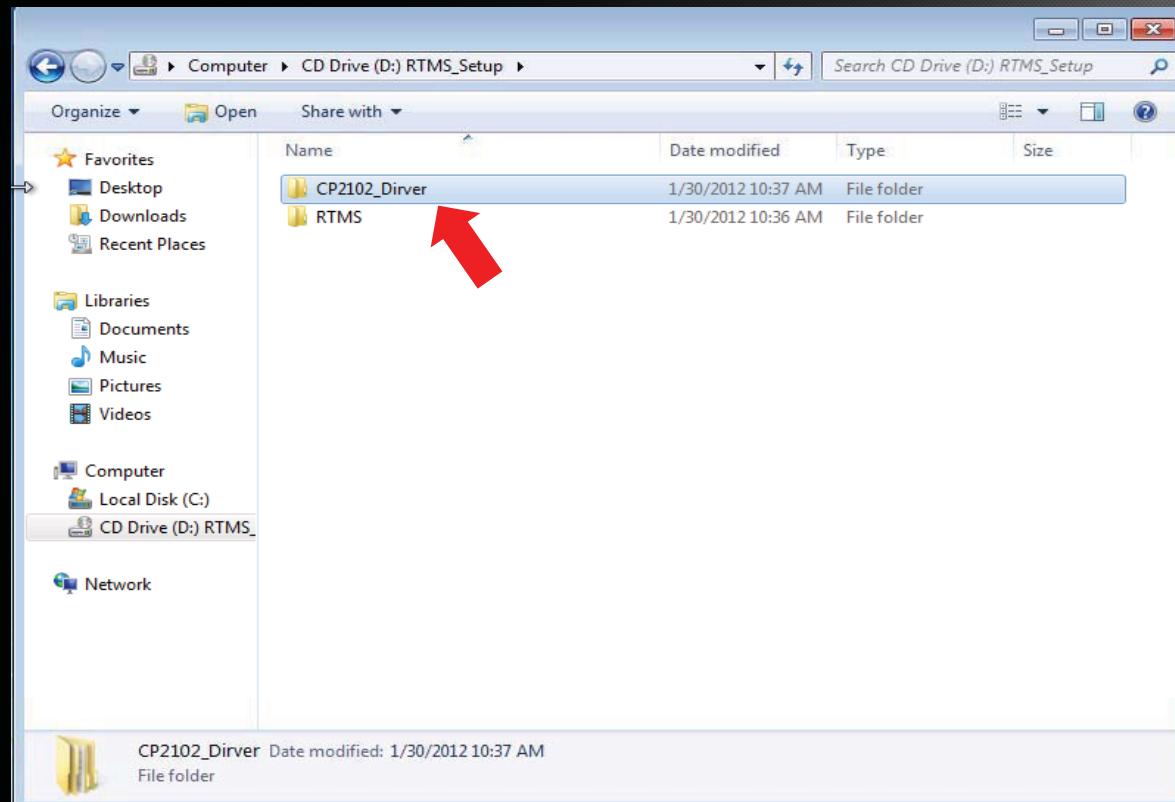
- OS : Microsoft Windows XP SP3 or higher
- CPU : Intel Pentium 4 – 2GHz processor or more
- RAM : 1GB or more
- HDD : 250GB or more
- LAN : 100M/B or more
- USB : 1EA or more
- Monitor Display Resolution : 1280 x 768 or more

Important Features

- ◆ Real-time Temperature Monitoring System
- ◆ Display of information received from the SIZM : Temperatures, etc.
- ◆ Temperature monitoring through real time graphing
- ◆ Use refrigerator/freezer specifications input and management
- ◆ High and low temperature values and durations setup
- ◆ Alarm generation when temperatures or durations exceed setup values
- ◆ Cell phone number setup for sms text messaging
- ◆ Automatic alert text messages to the setup cell phone when alarms occur
- ◆ Viewable stored temperature history file
- ◆ Detailed view of alarm history(occurrence time, alarm contents etc.)
- ◆ Remote freezer/refrigerator temperature level setup (some models only)

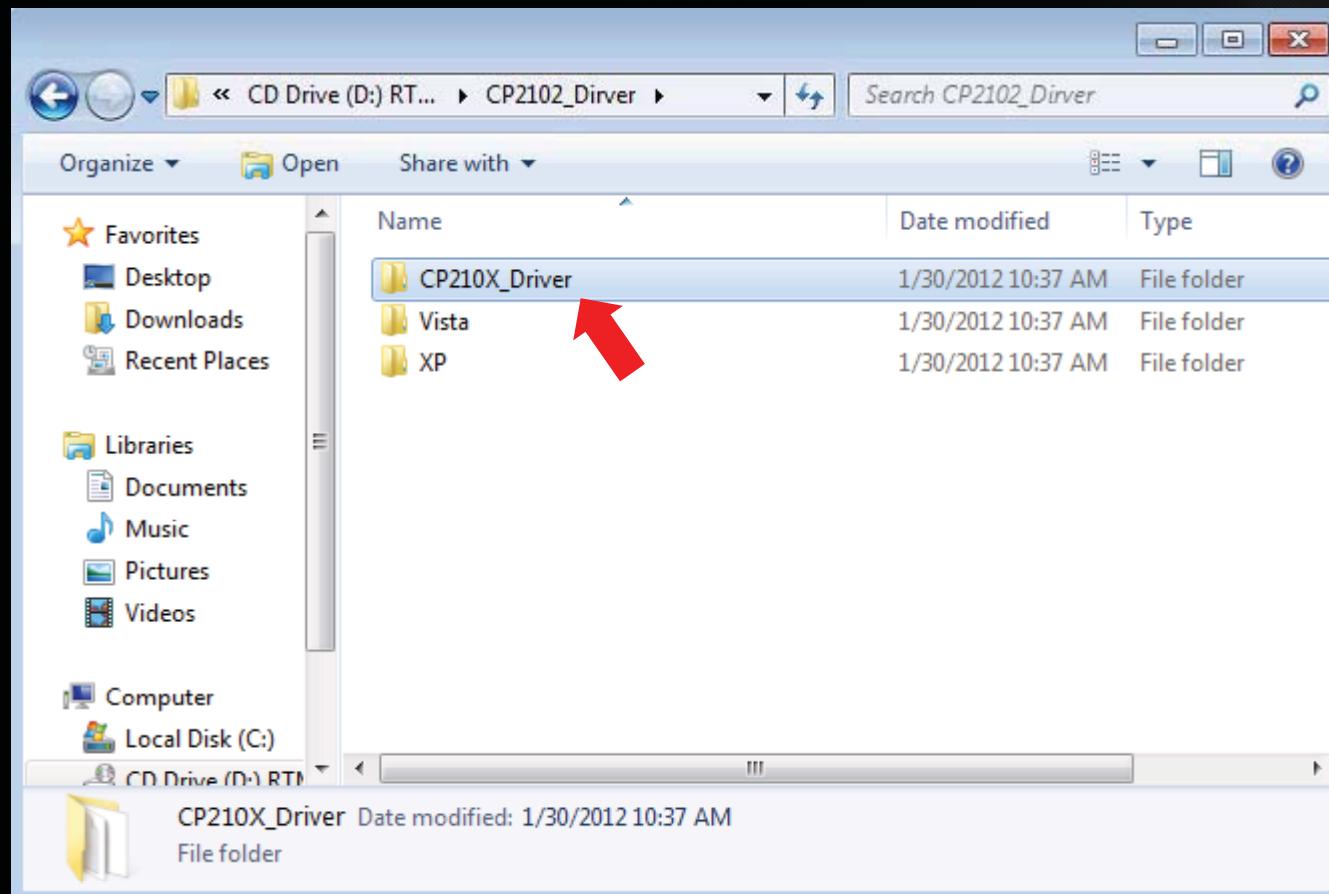
Program Installation

- ◆ Installation of the driver program for USB connection
 - If you load the enclosed CD, the following files should appear.
 - This portion of the installation should be completed before connecting the PIZM's USB cable.



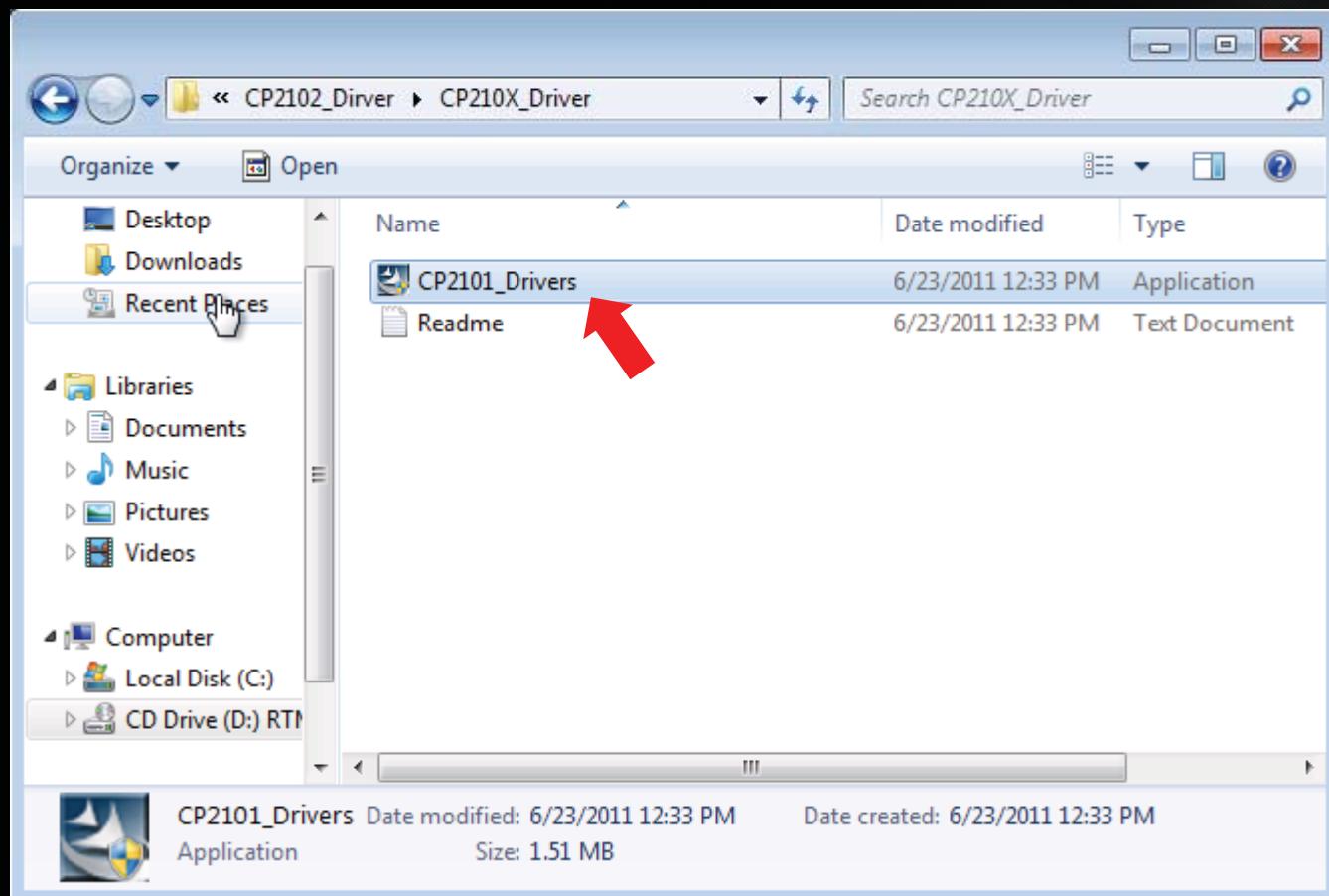
Program Installation

- Among these files, open the “CP210x_Driver” folder.



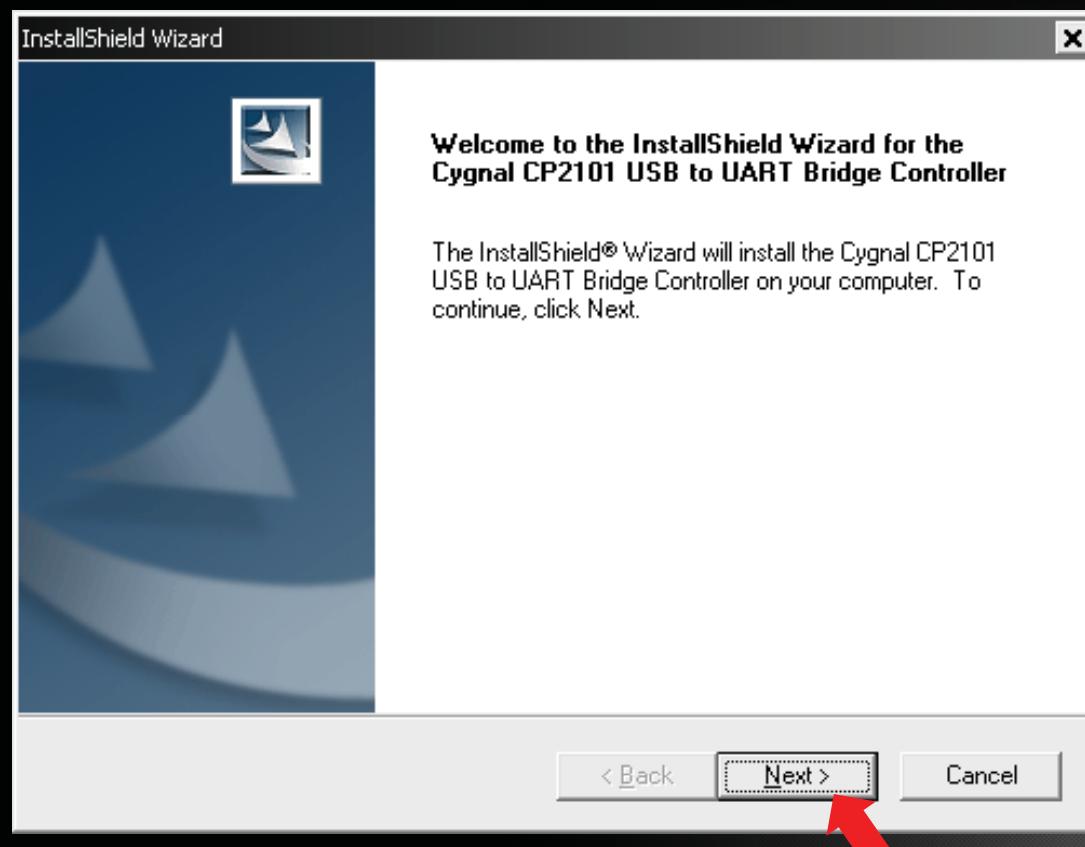
Program Installation

- Double click to run the CP2101_Driver.exe file



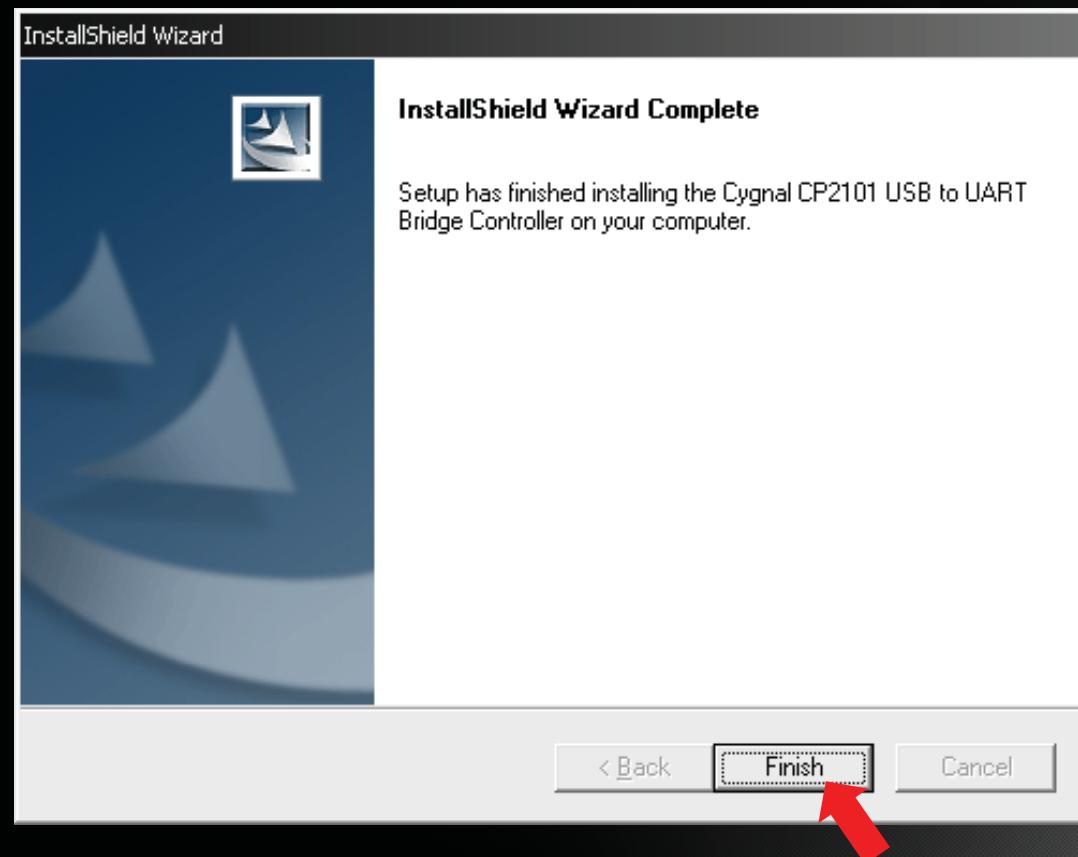
Program Installation

- The installation should continue with the appearance of the following screen.
- Just continue by clicking "Next" and "Yes"



Program Installation

When the following screen appears, driver installation is complete.

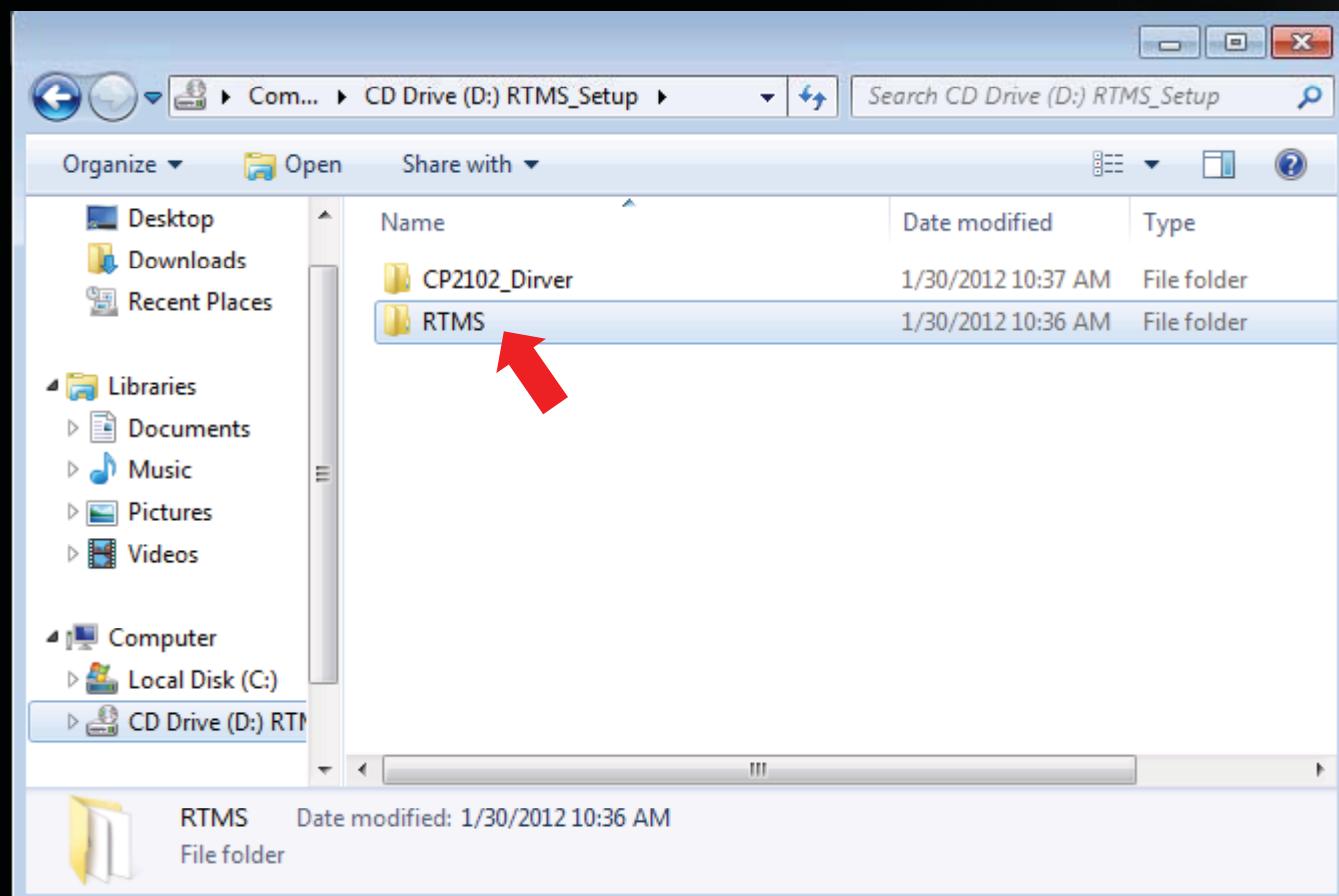


Program Installation

- Next, connect the USB cable to the powered on PIZM.
- Connect the USB cable to the PC
- The "Found New Hardware" window should appear

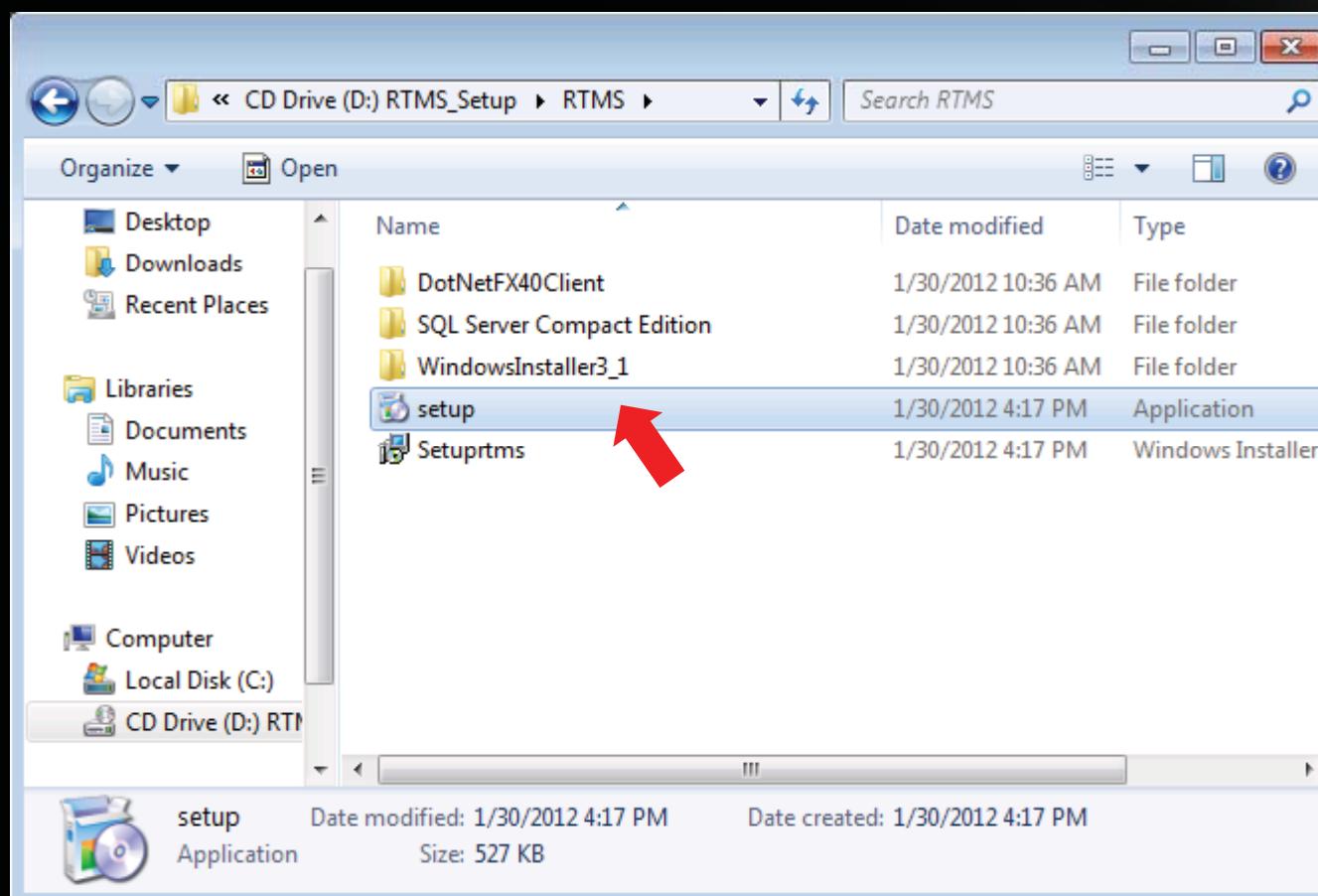
Program Installation

- ◆ RTMS Application Program Installation
- ◆ Copy the "RTMS" folder to the desired location.



Program Installation

- ◆ Open the “RTMS” folder.
- ◆ Double click to run the “setup.exe” file



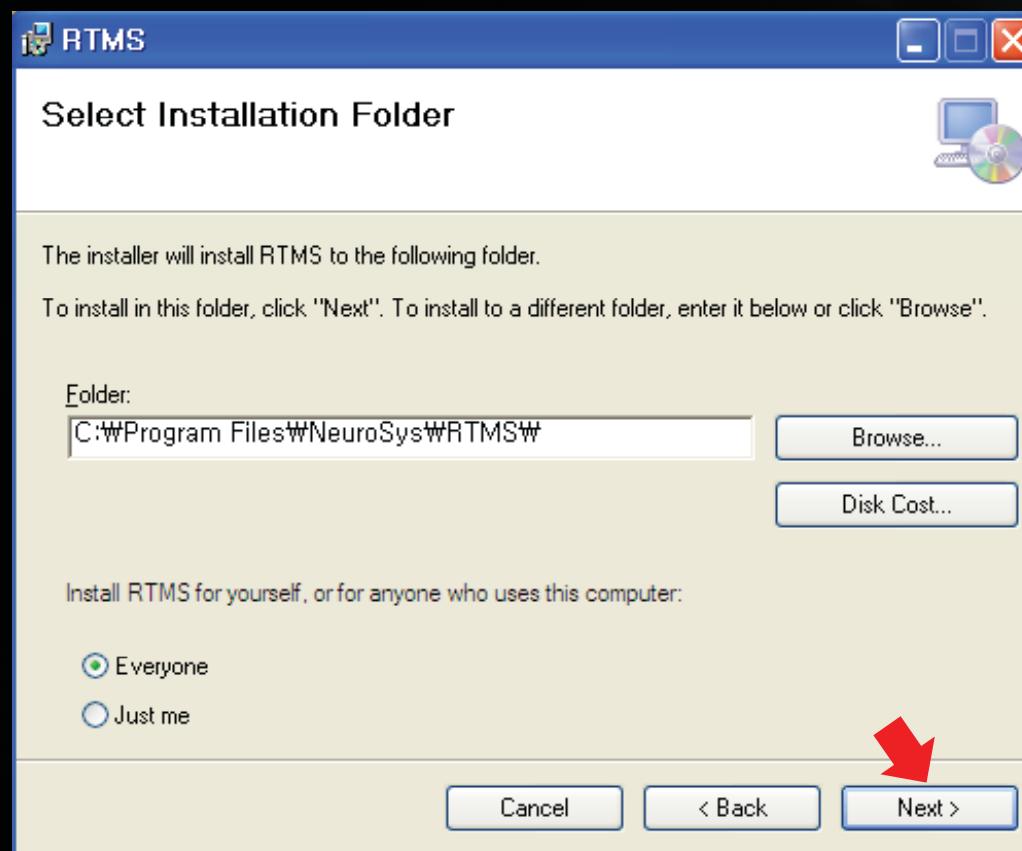
Program Installation

- ◆ The installation program automatically installs the necessary components.
- ◆ When the following screen appears, just continue by clicking "Next"



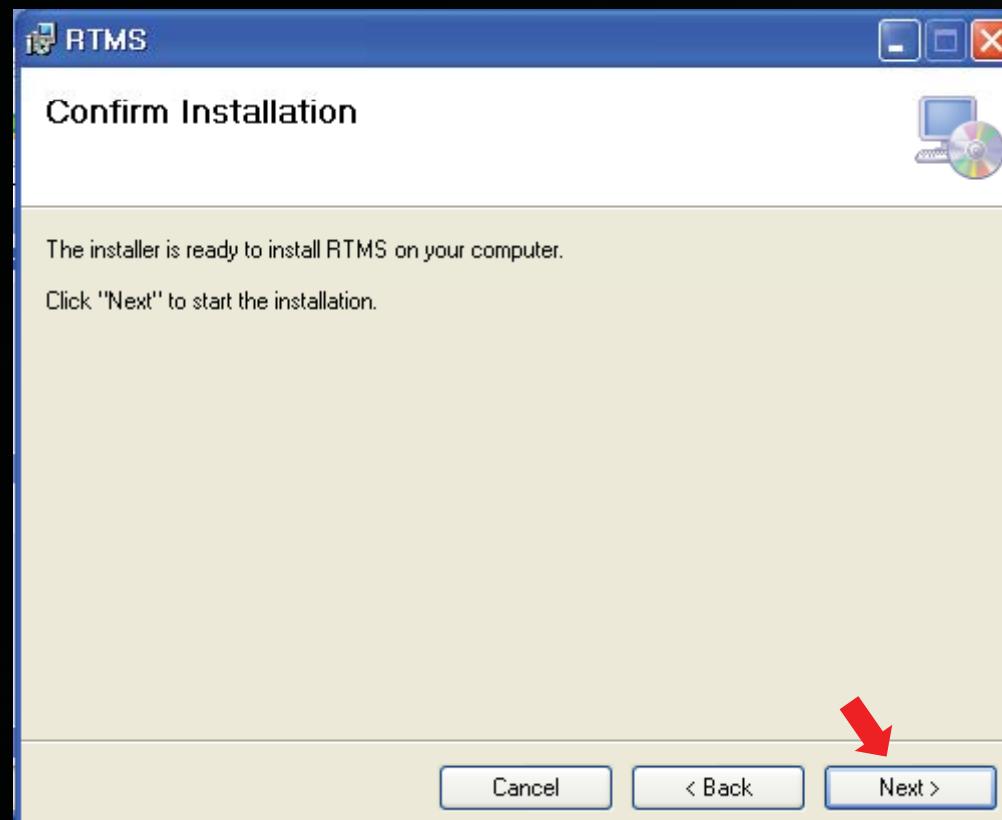
Program Installation

- ◆ When the following screen appears, just continue by clicking "Next"



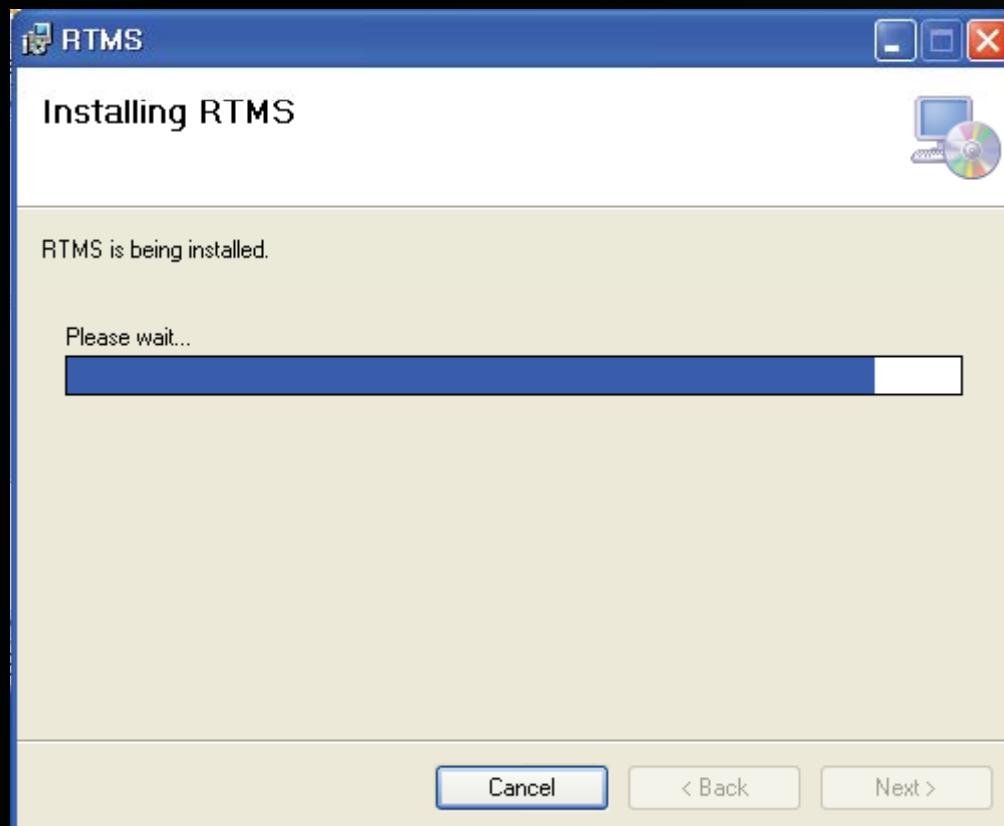
Program Installation

- ◆ When the following screen appears, just continue by clicking "Next"



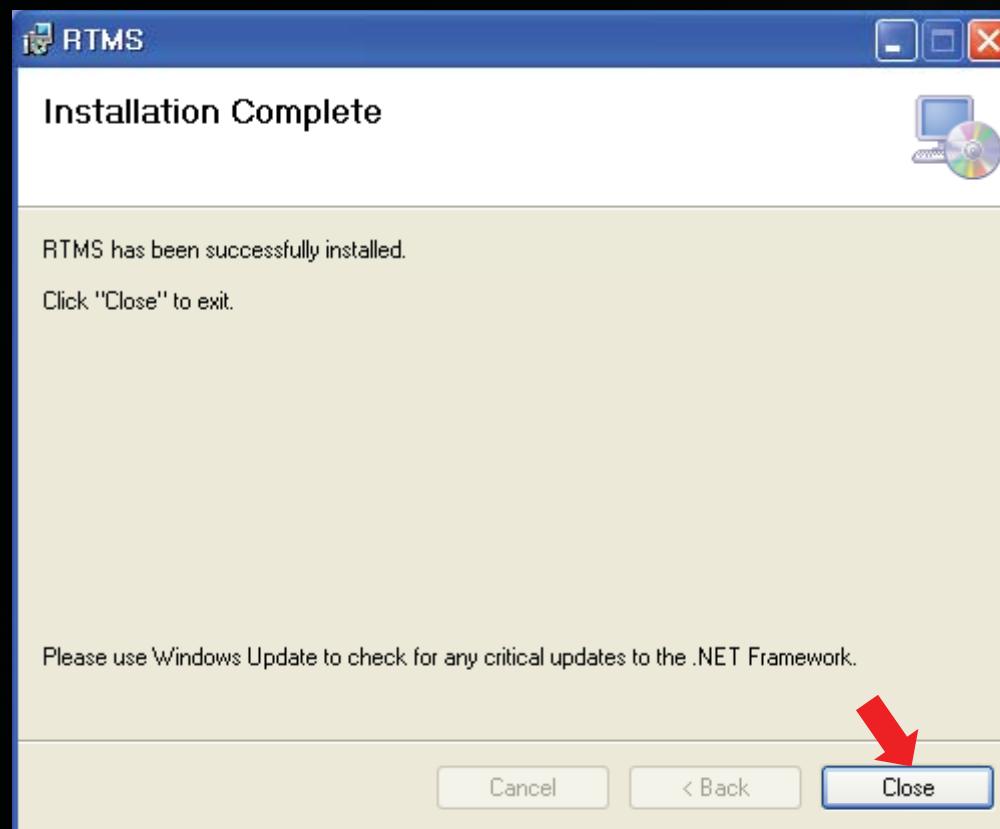
Program Installation

- ◆ Installation will proceed as shown below.



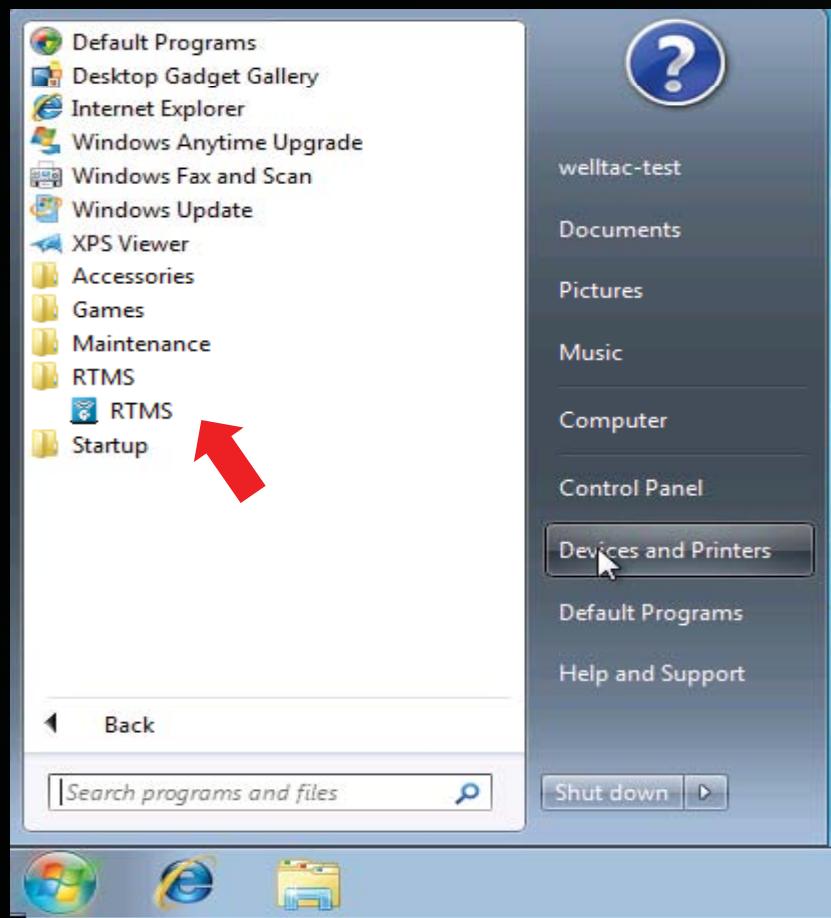
Program Installation

- ◆ When the following screen appears, program installation is complete.
- ◆ Click the “close” to exit.



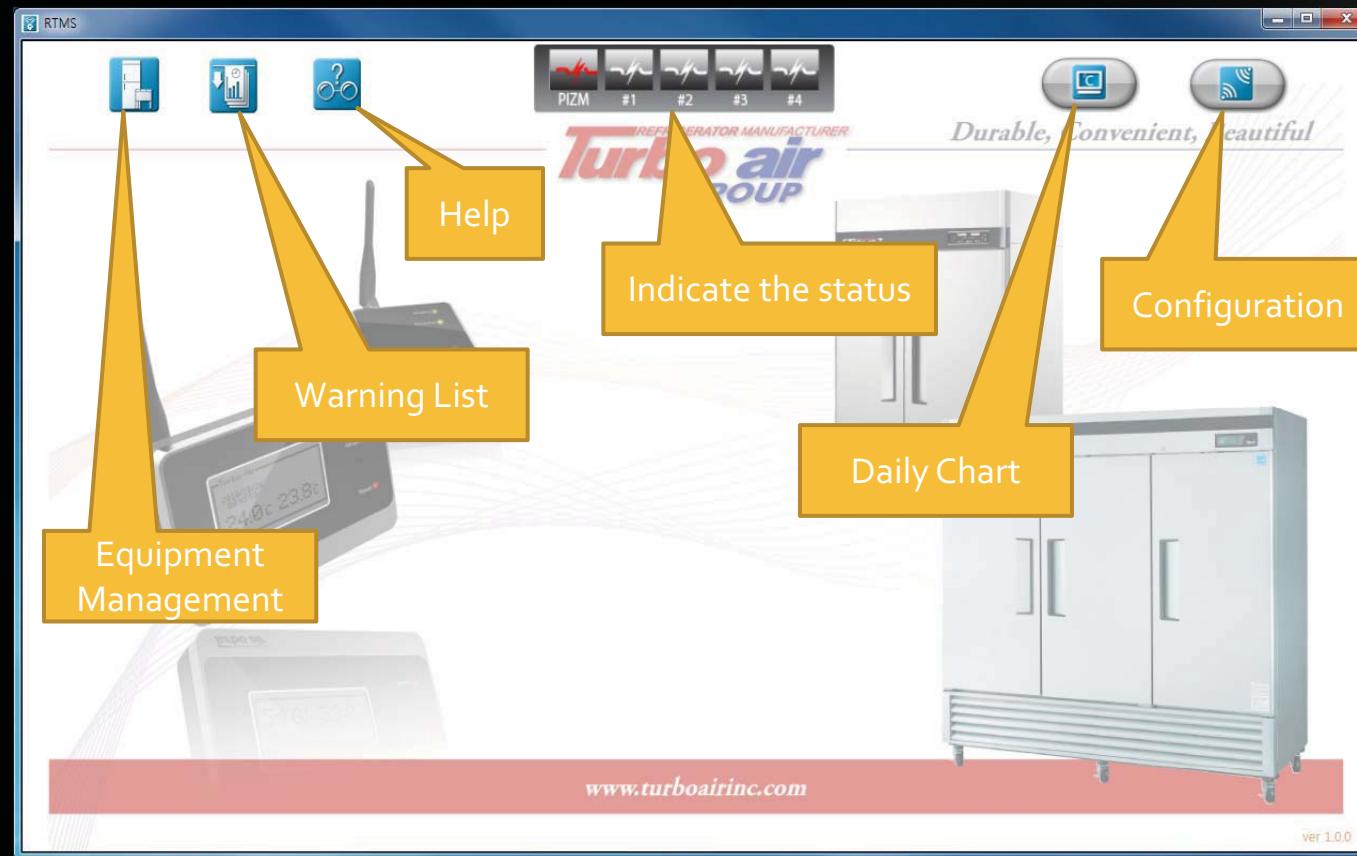
Starting Up

- ◆ Click "All Programs" menu in the Start menu and go to the RTMS program folder and click on the "RTMS" icon to run it. .



Starting Up

- ◆ Next, as the window opens up, it prepares for service.
(If the PIZM is not yet connected, the PIZM state is displayed as shown below.)



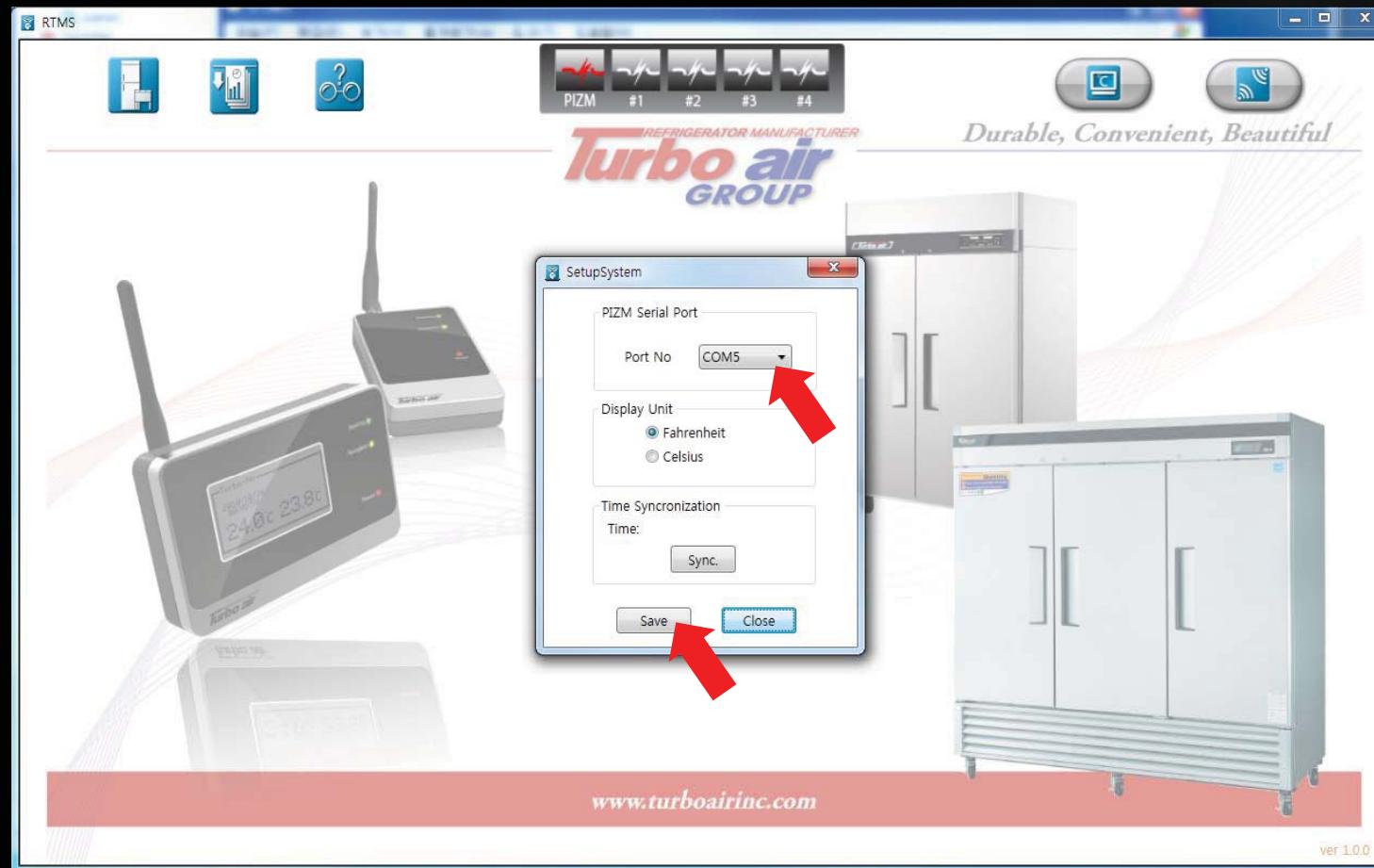
Starting Up

- ◆ After clicking ( with left/right Mouse button) the button in the upper right area of the window, click "System Setup" in the pop-up screen.



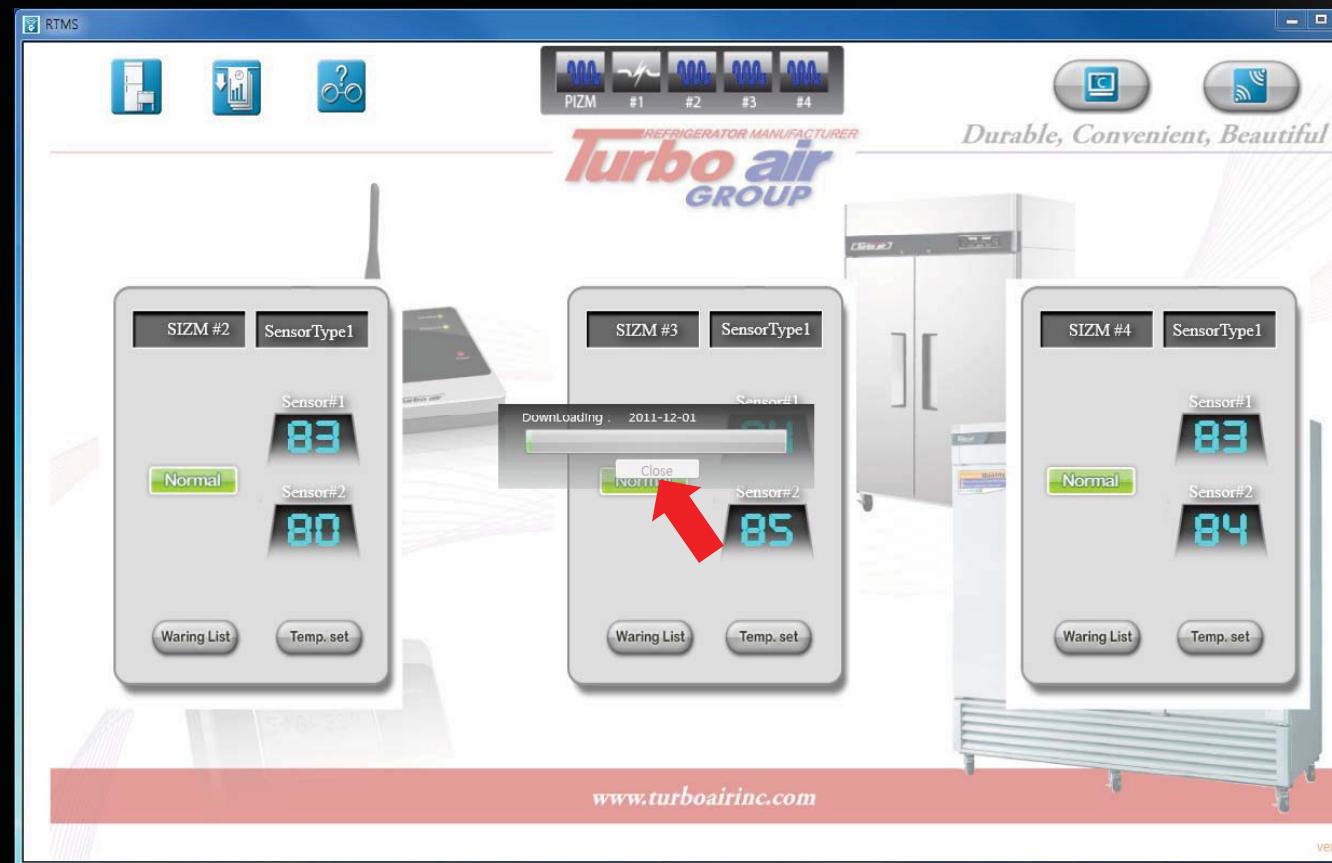
Starting Up

- ◆ Confirm the connected com port number and click "Save".



Starting Up

- ◆ When the PIZM and PC are connected at the right port by the USB cable, the day's data is automatically downloaded. Service preparations terminate and full services begin.



Feature Specific Screen Notes

- ◆ The day's temperature related data download screen



Feature Specific Screen Notes

- ◆ The beginning Service Screen
 - ◆ The beginning service screen has 3 service buttons, "Equipment Management", "Alarm History" and "Help" and two speed buttons, the "Graph view" and "system setup" buttons in the upper area of the window.
 - ◆ Also, there is a window that displays the real time temperature data from the SIZM.



Feature Specific Screen Notes

- ◆ The Beginning Service Screen
 - ◆ This is the window that displays real time temperature data from the SIZM .
 - ◆ "SIZM #2" : The SIZM's access code appears.
 - ◆ "SensorType1" : The name of the SIZM type displays as "Refrigerator" , "SensorType1", "Freezer", "ICE", "TGF-23F"
 - ◆ "Normal": Displays the refrigerator's current status. When an alert occurs, a red "Warning" message will be displayed.
 - ◆ "63": The refrigerator's current temperature will be displayed.
 - ◆ "Warning List" button: Provides device-specific alarm history views.
 - ◆ "Temp. Set" button : This is the button to setup temperature levels with the SIZM and its connected equipment.



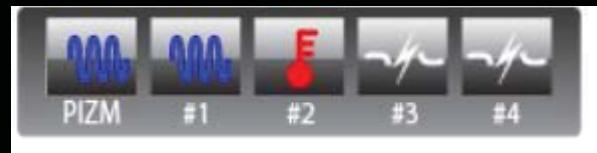
Feature Specific Screen Notes

- ◆ The beginning service screen
 - ◆ This window displays high alert temperatures in red and low alert temperatures in yellow.
 - ◆ When an alert occurs, "Warning" will be displayed in red.
 - ◆ If you don't have a SIZM, the status screen, high alarms/communication errors/low alarms/and normal states will be shown in the form of an icon.

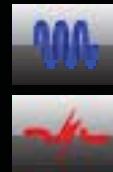


Feature Specific Screen Notes

- ◆ The beginning service screen
- ◆ The PIZM/SIZM's status is displayed as icons.



PIZM



Normal communication status(RTMS ↔ PIZM)



Poor communication status(RTMS ↔ PIZM)

SIZM



Normal communication status(SIZM ↔ PIZM)



SIZM's Power failure



Poor communication status(SIZM ↔ PIZM)



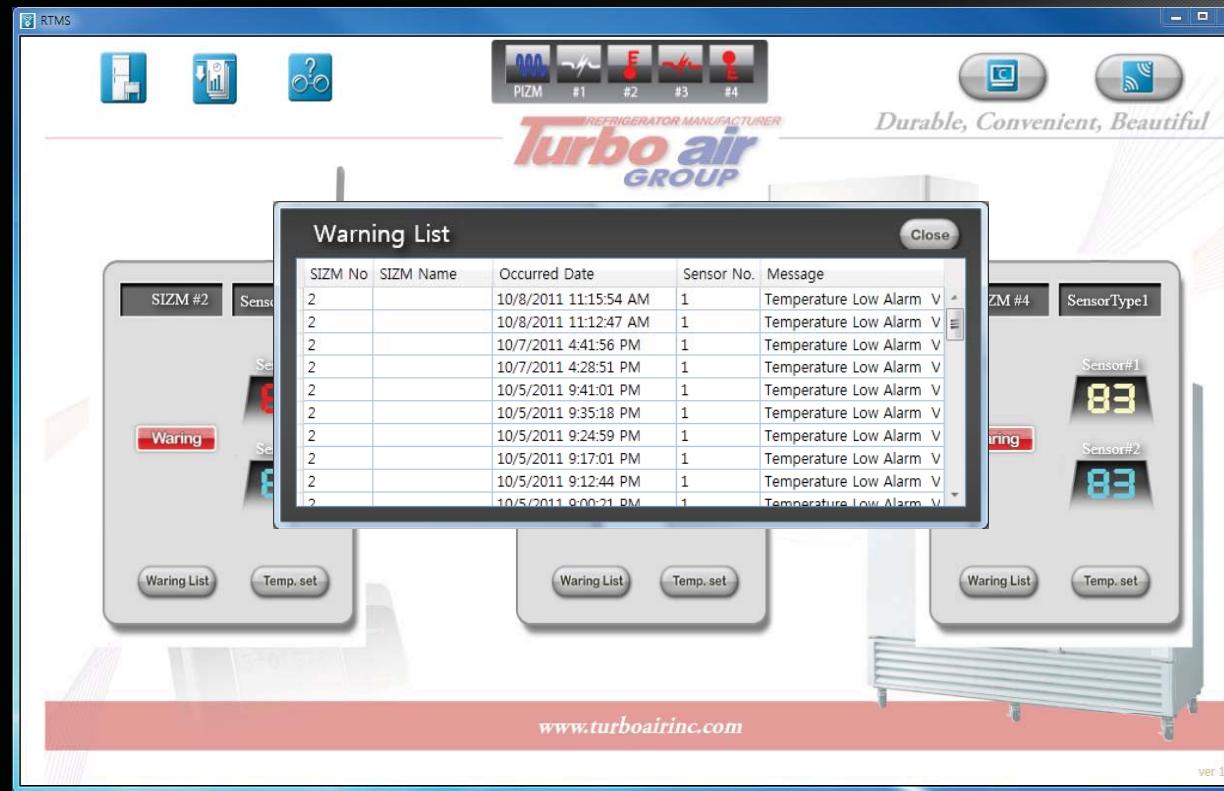
High temperature alarm occurs



Low temperature alarm occurs

Feature Specific Screen Notes

- ◆ The beginning service screen
 - ◆ The window that displays the real time temperature data from the SIZM
 - ◆ If you click the "Warning List" button, the alert contents window opens up.
 - ◆ This alert's incident status list is registered.



Feature Specific Screen Notes

- ◆ The Beginning Service Screen
 - ◆ This is the window that displays the real time temperature data from the SIZM.
 - ◆ If you click the "Temp. Set" button, the SIZM and connected equipment panel window opens.
 - ◆ Through the panel window, you can confirm the status of the temperature of the SIZM's connected equipment, the temperature setup, the fan, the door etc.



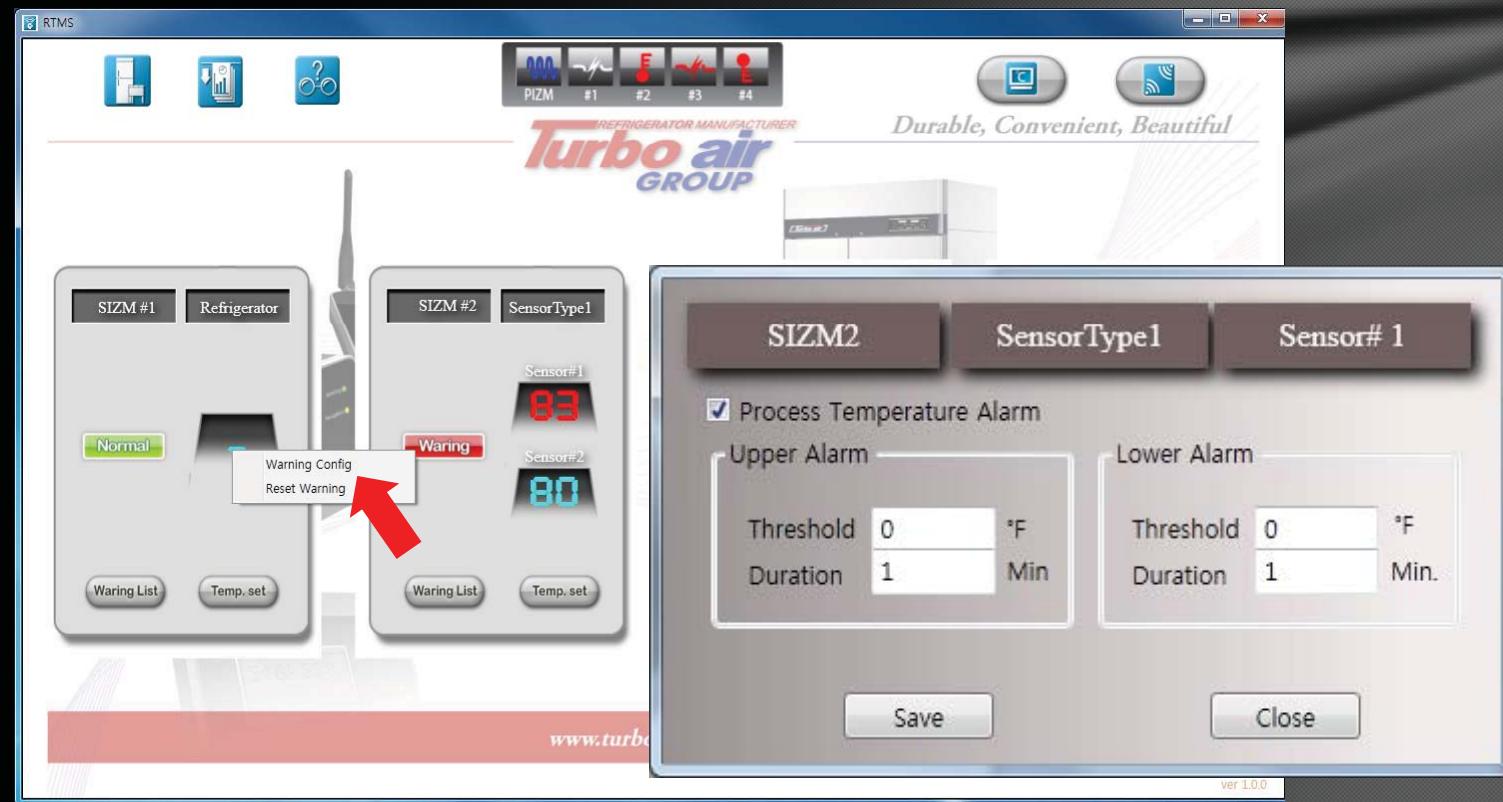
Feature Specific Screen Notes

- ◆ The Beginning Service Screen
 - ◆ This is the window that displays the real time temperature data from the SIZM
 - ◆ After adjusting the setup temperatures using the "Hi"/"Lo" button, you can set it by clicking the "Set" button in the upper right area of the screen.



Feature Specific Screen Notes

- ◆ The Beginning Service Screen
 - ◆ This is the window that displays the real time temperature data from the SIZM
 - ◆ If you right click in the warning temperature value setup box, a menu displays.
 - ◆ If you click the "Warning Config" button, configuration window opens.



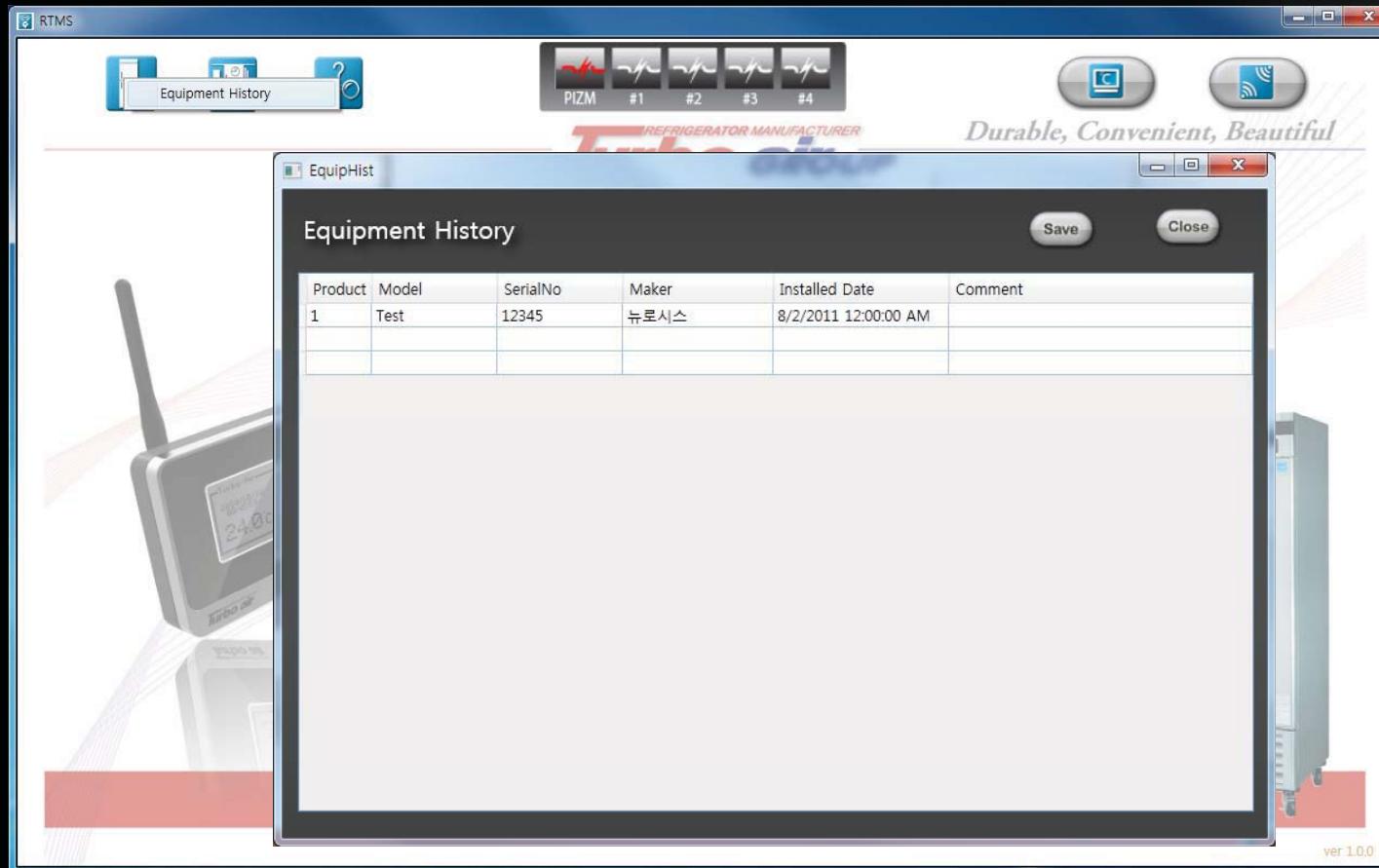
Feature Specific Screen Notes

- ◆ The Beginning Service Screen
 - ◆ "SIZM2" : The SIZM's access code.
 - ◆ "SensorType1" : The equipment connected to the SIZM
 - ◆ "Sensor#1": Temperature values for different types of SIZM up to four.
 - ◆ "Process Temperature Alarm": If checked, the alarm processing will be performed.
 - ◆ "Upper Alarm" : The alert is sent if the temperature goes above the upper alarm temperature for a period longer than the set duration.
 - ◆ "Lower Alarm" : An alarm will occur if a Temperature lower than "Threshold" temperature persists for longer than "Duration" time.
- ◆ "Save" button : You must definitely click the save button after you change the settings and have setup the temperatures and the times .
- ◆ "Close" button : This closes the basic temperature setup window. If you "Close" without Saving, the changed value is not stored.



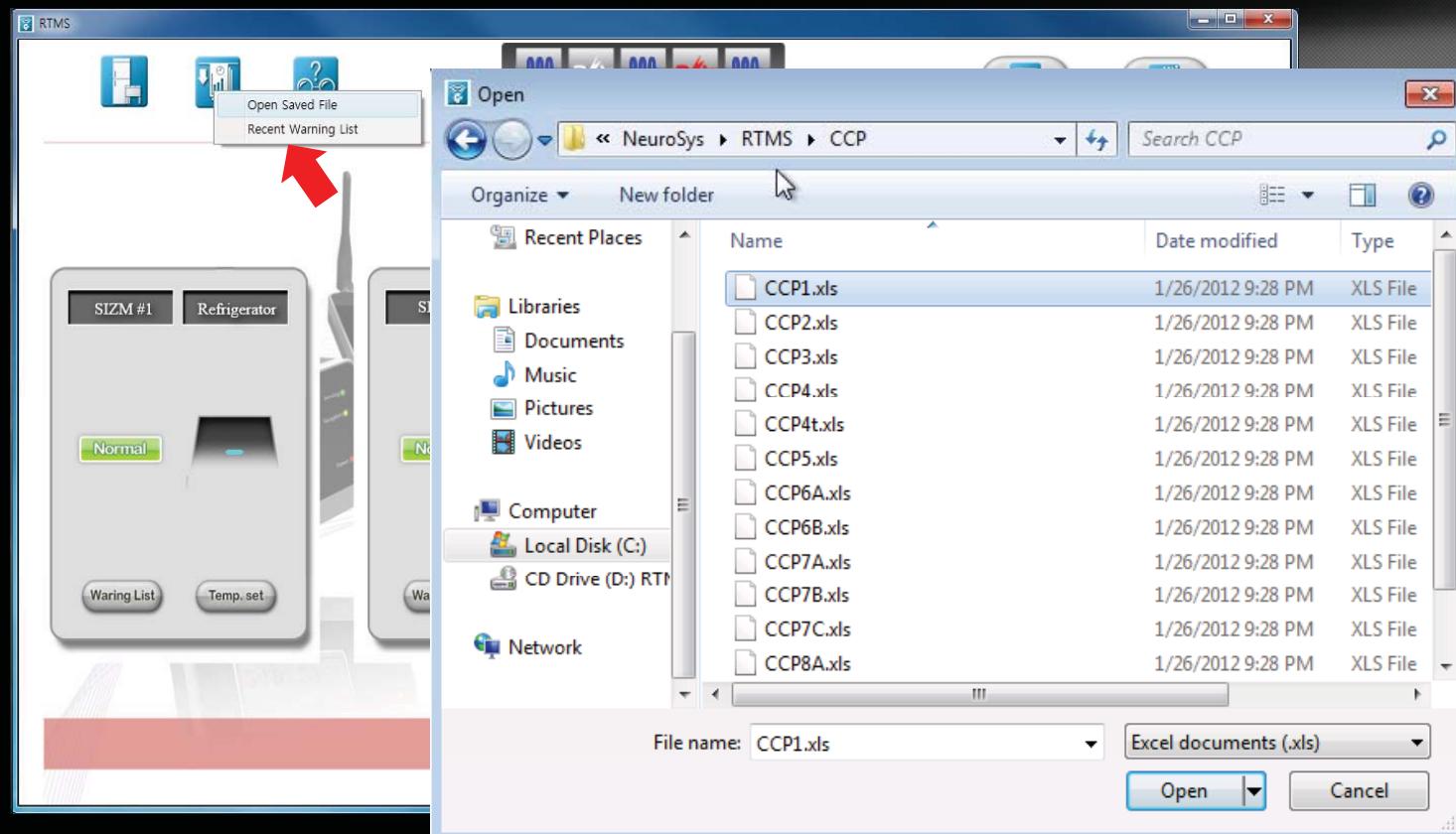
Feature Specific Screen Notes

- ◆ Equipment Management Window
 - ◆ “Equipment History Management”: This is a window where you can input and manage the refrigerator/freezer’s Equipment ID, Model, etc.



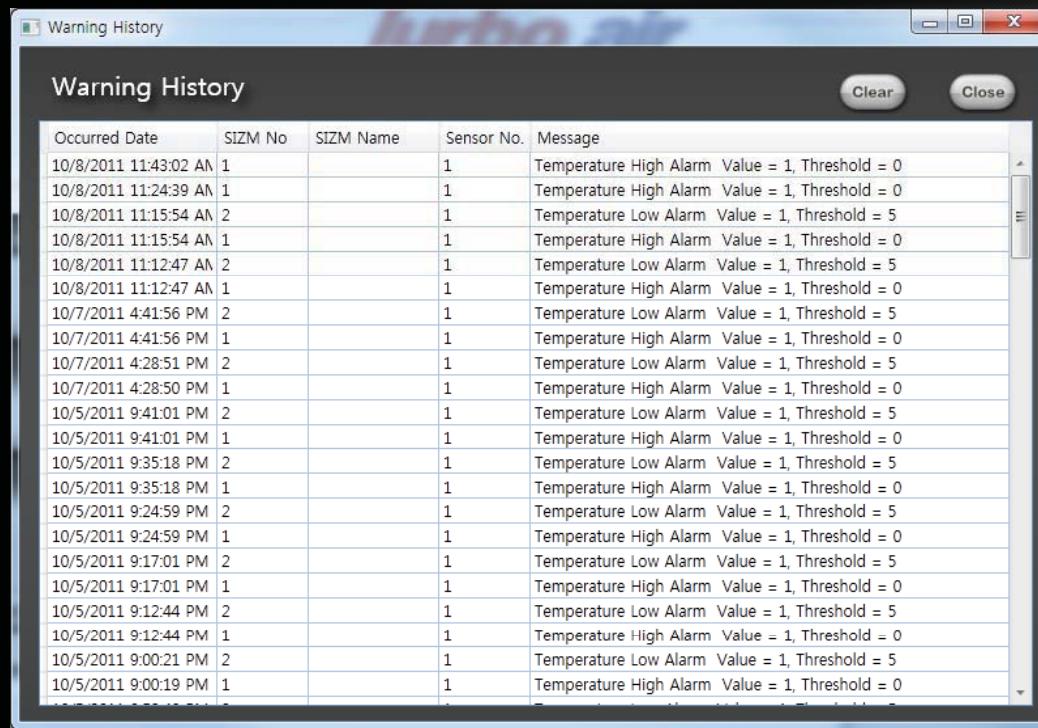
Feature Specific Screen Notes

- ◆ Excel form file
 - ◆ If you click the 2nd menu in the upper left hand area, the displayed option window allows you to open the education center's CCP information file.



Feature Specific Screen Notes

- ◆ Find the alarm history
 - ◆ “Alarm history”: You can see the current status of all sent alarms.
 - ◆ When you click the item’s header, it will sort and display values based on that columns information.
 - ◆ Press the “Clear” button will erase all the “alarm history”.

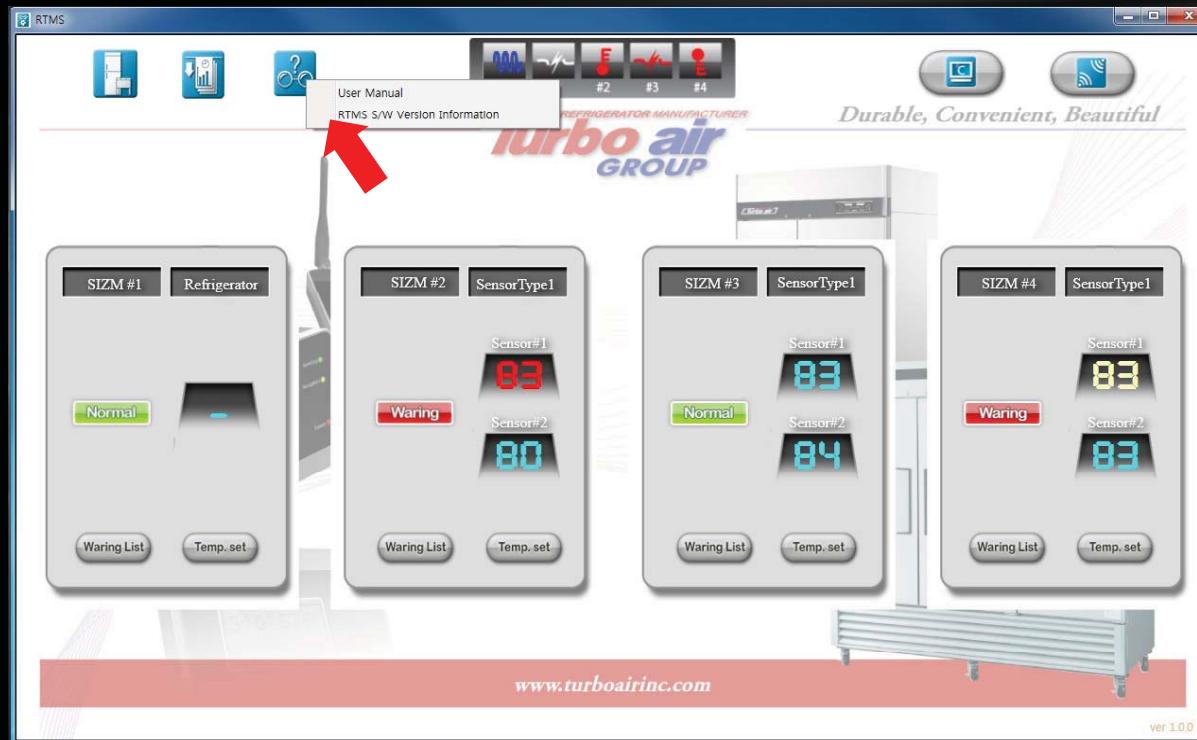


The screenshot shows a window titled "Warning History" with a "turbo air" logo in the background. The window contains a table with the following data:

Occurred Date	SIZM No	SIZM Name	Sensor No.	Message
10/8/2011 11:43:02 AM	1		1	Temperature High Alarm Value = 1, Threshold = 0
10/8/2011 11:24:39 AM	1		1	Temperature High Alarm Value = 1, Threshold = 0
10/8/2011 11:15:54 AM	2		1	Temperature Low Alarm Value = 1, Threshold = 5
10/8/2011 11:15:54 AM	1		1	Temperature High Alarm Value = 1, Threshold = 0
10/8/2011 11:12:47 AM	2		1	Temperature Low Alarm Value = 1, Threshold = 5
10/8/2011 11:12:47 AM	1		1	Temperature High Alarm Value = 1, Threshold = 0
10/7/2011 4:41:56 PM	2		1	Temperature Low Alarm Value = 1, Threshold = 5
10/7/2011 4:41:56 PM	1		1	Temperature High Alarm Value = 1, Threshold = 0
10/7/2011 4:28:51 PM	2		1	Temperature Low Alarm Value = 1, Threshold = 5
10/7/2011 4:28:50 PM	1		1	Temperature High Alarm Value = 1, Threshold = 0
10/5/2011 9:41:01 PM	2		1	Temperature Low Alarm Value = 1, Threshold = 5
10/5/2011 9:41:01 PM	1		1	Temperature High Alarm Value = 1, Threshold = 0
10/5/2011 9:35:18 PM	2		1	Temperature Low Alarm Value = 1, Threshold = 5
10/5/2011 9:35:18 PM	1		1	Temperature High Alarm Value = 1, Threshold = 0
10/5/2011 9:24:59 PM	2		1	Temperature Low Alarm Value = 1, Threshold = 5
10/5/2011 9:24:59 PM	1		1	Temperature High Alarm Value = 1, Threshold = 0
10/5/2011 9:17:01 PM	2		1	Temperature Low Alarm Value = 1, Threshold = 5
10/5/2011 9:17:01 PM	1		1	Temperature High Alarm Value = 1, Threshold = 0
10/5/2011 9:12:44 PM	2		1	Temperature Low Alarm Value = 1, Threshold = 5
10/5/2011 9:12:44 PM	1		1	Temperature High Alarm Value = 1, Threshold = 0
10/5/2011 9:00:21 PM	2		1	Temperature Low Alarm Value = 1, Threshold = 5
10/5/2011 9:00:19 PM	1		1	Temperature High Alarm Value = 1, Threshold = 0

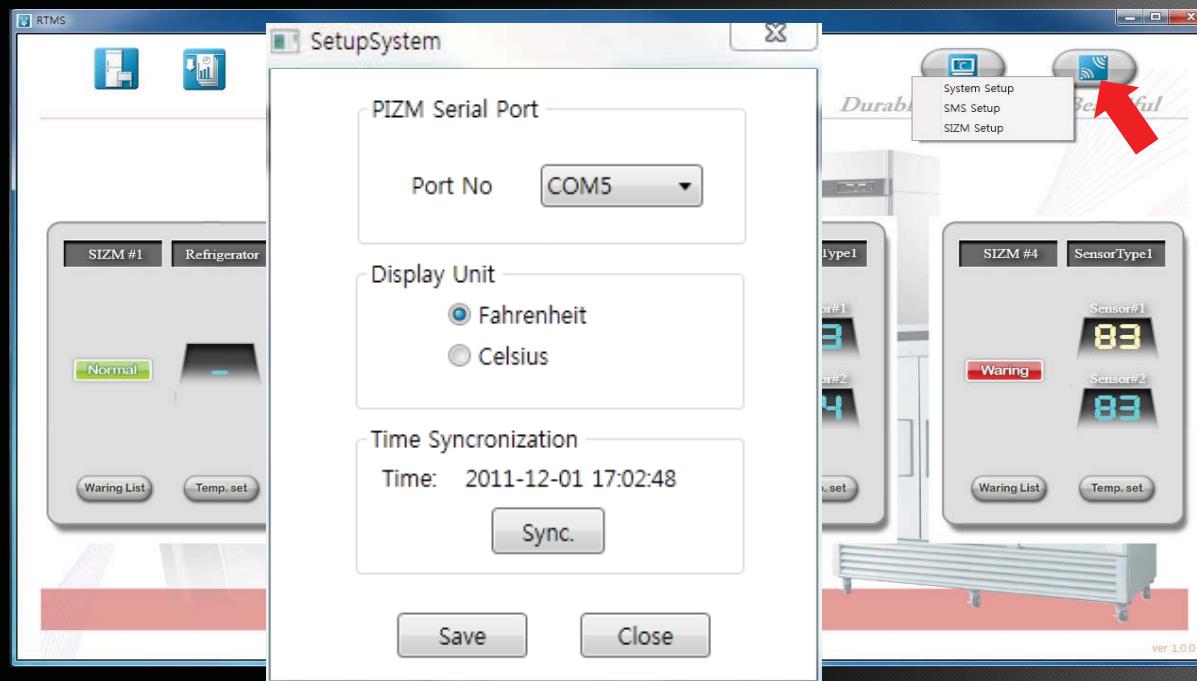
Feature Specific Screen Notes

- ◆ Help window
 - ◆ Used to display RTMS user's manual. (Required PDF Viewer)
 - ◆ Used to display RTMS version.



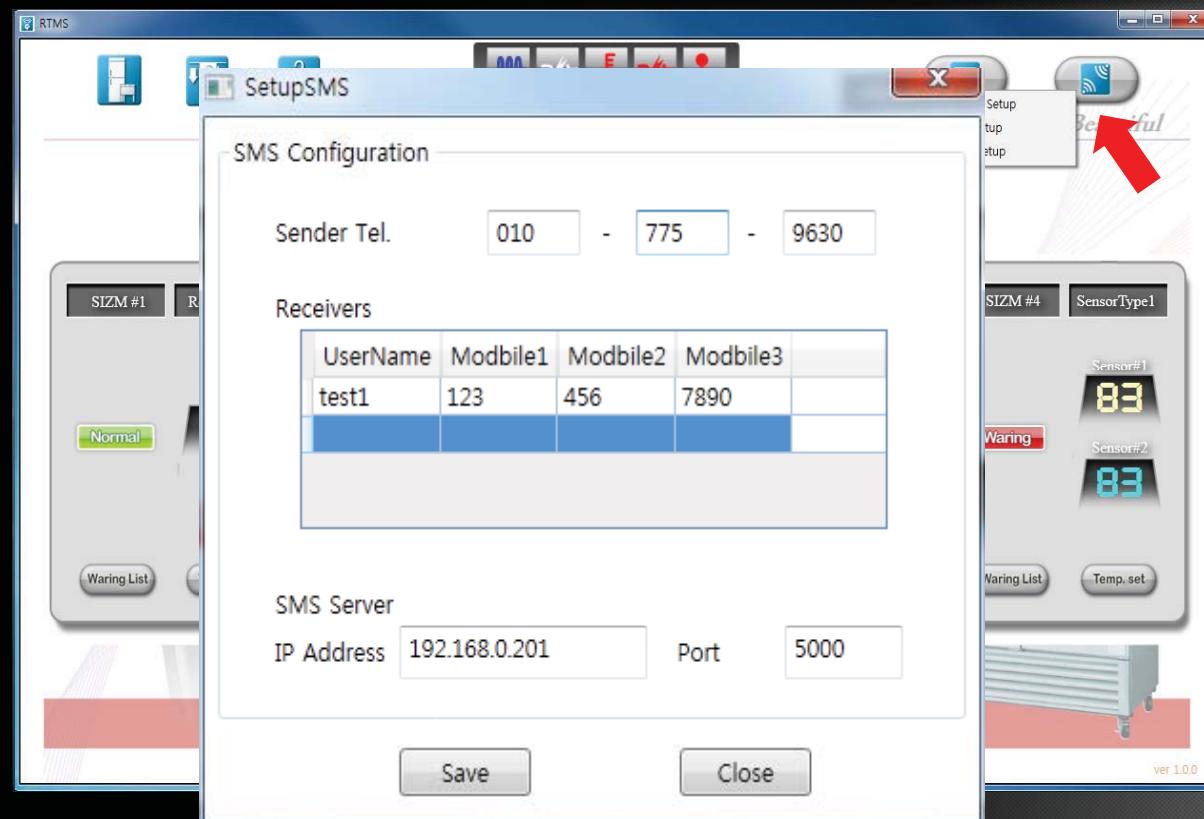
Feature Specific Screen Notes

- ◆ System Setup
 - ◆ To change the communication port described in the previous starting up section.
 - ◆ Set the temperature display unit.(Fahrenheit/Celsius)
 - ◆ Time synchronization : If the system is communicating with PIZM, the time is displayed. To synchronize the PIZM with PC time, click the "Sync" button.



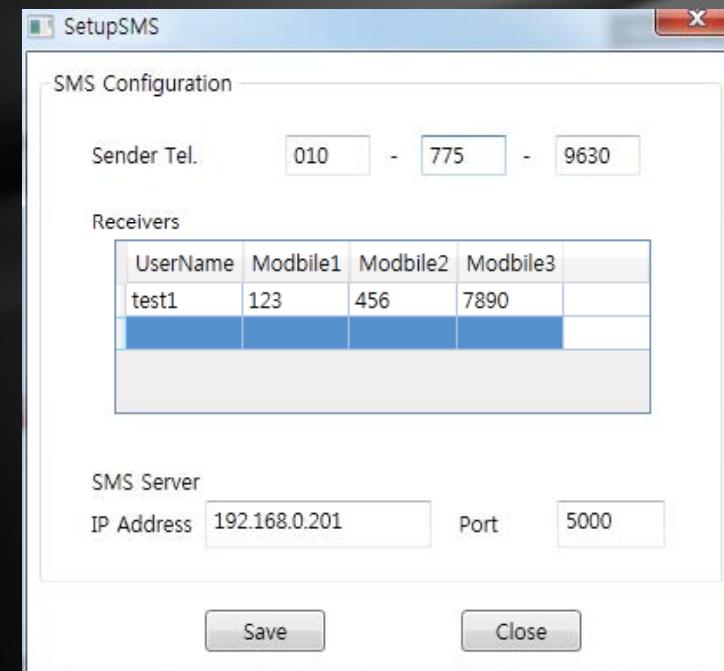
Feature Specific Screen Notes

- ◆ System Setup
 - ◆ “SMS Configuration” : This window is used for setting the SMS information.(incoming phone number, reply phone number and sms server information) SMS server information that is sent when an alarm occurs.



Feature Specific Screen Notes

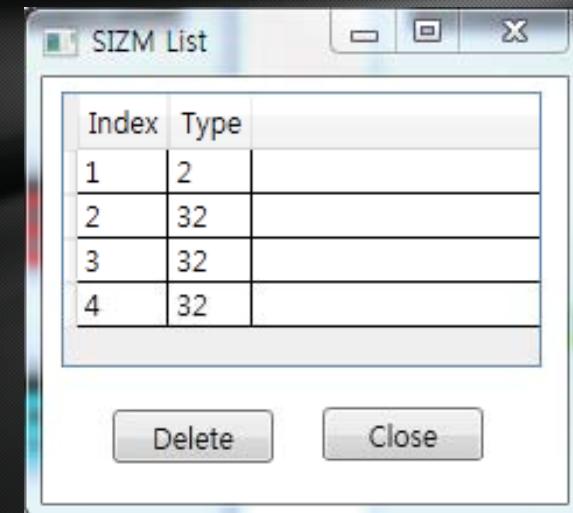
- ◆ System Setup
 - ◆ "Sender Tel" : Set the phone number for sending SMS responses. This will be the SMS transmission number.
 - ◆ "Receivers" : Set the user name and phone number to receive text messages. Enter the user's name and phone number here.
 - ◆ "SMS Server": Enter the server information for transmitting SMS.
(IP Address & Port)
 - ◆ The warning message window displays the alert to be sent.
 - ◆ "Save" button : This saves the Information that was entered.
 - ◆ "Close" button : This closes the SMS Configuration window.
 - ◆ Phone Numbers are entered in the 3+3+4 digit form.



Feature Specific Screen Notes

◆ System Setup

- ◆ In case of SIZM failure, the service screen will continue to be displayed.
- ◆ Click the "delete" button after selecting the appropriate number.
This SIZM will be deleted in the List and not be displayed on the "more views" window.
- ◆ When normal operation returns, the SIZM is automatically added to the List.
- ◆ Click the "Close" button to close the SIZM List.
- ◆ Type number : 0, 1, 2, 3, 4, 5, 6, 7, 32, 33 are the only equipment types that are currently supported.

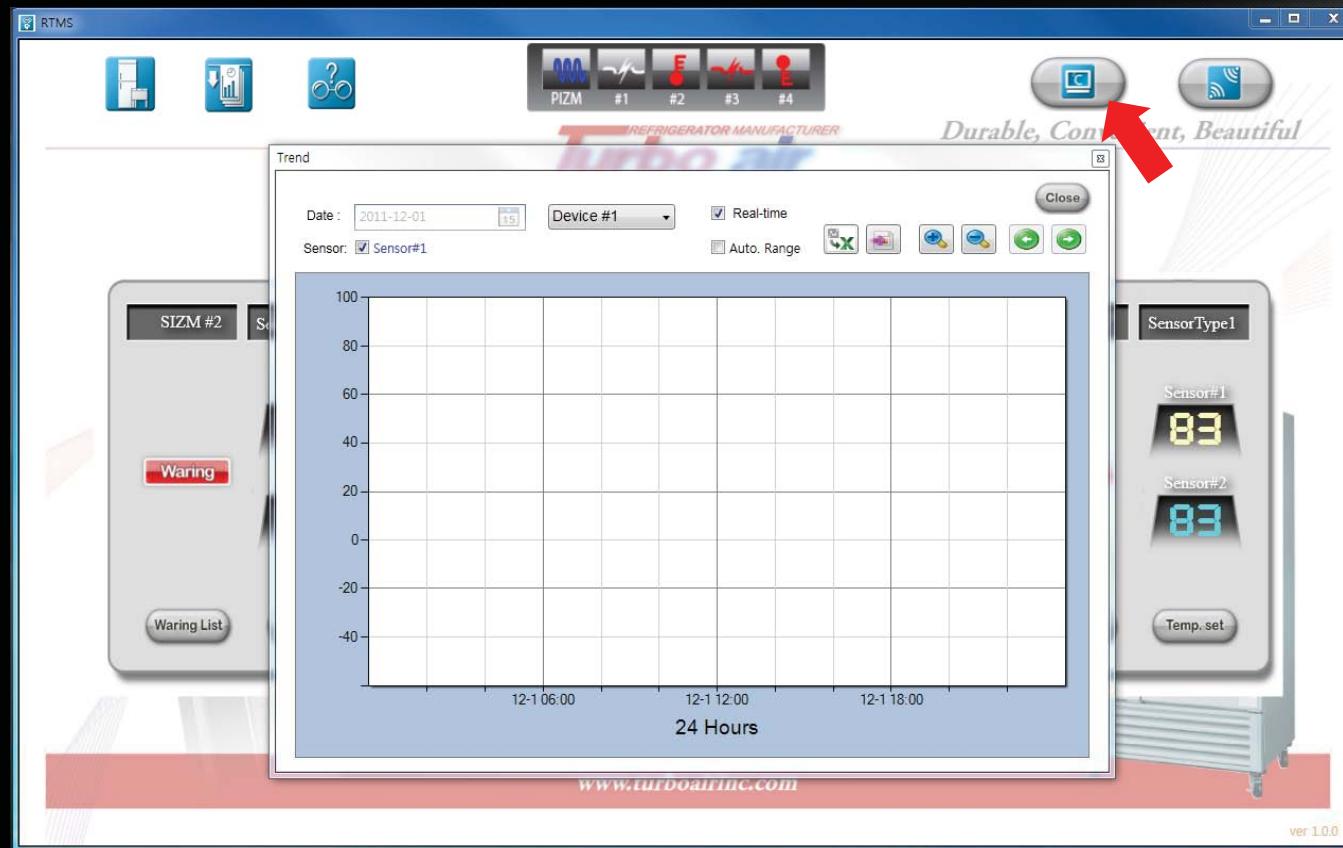


Index	Type	
1	2	
2	32	
3	32	
4	32	

Buttons: Delete, Close

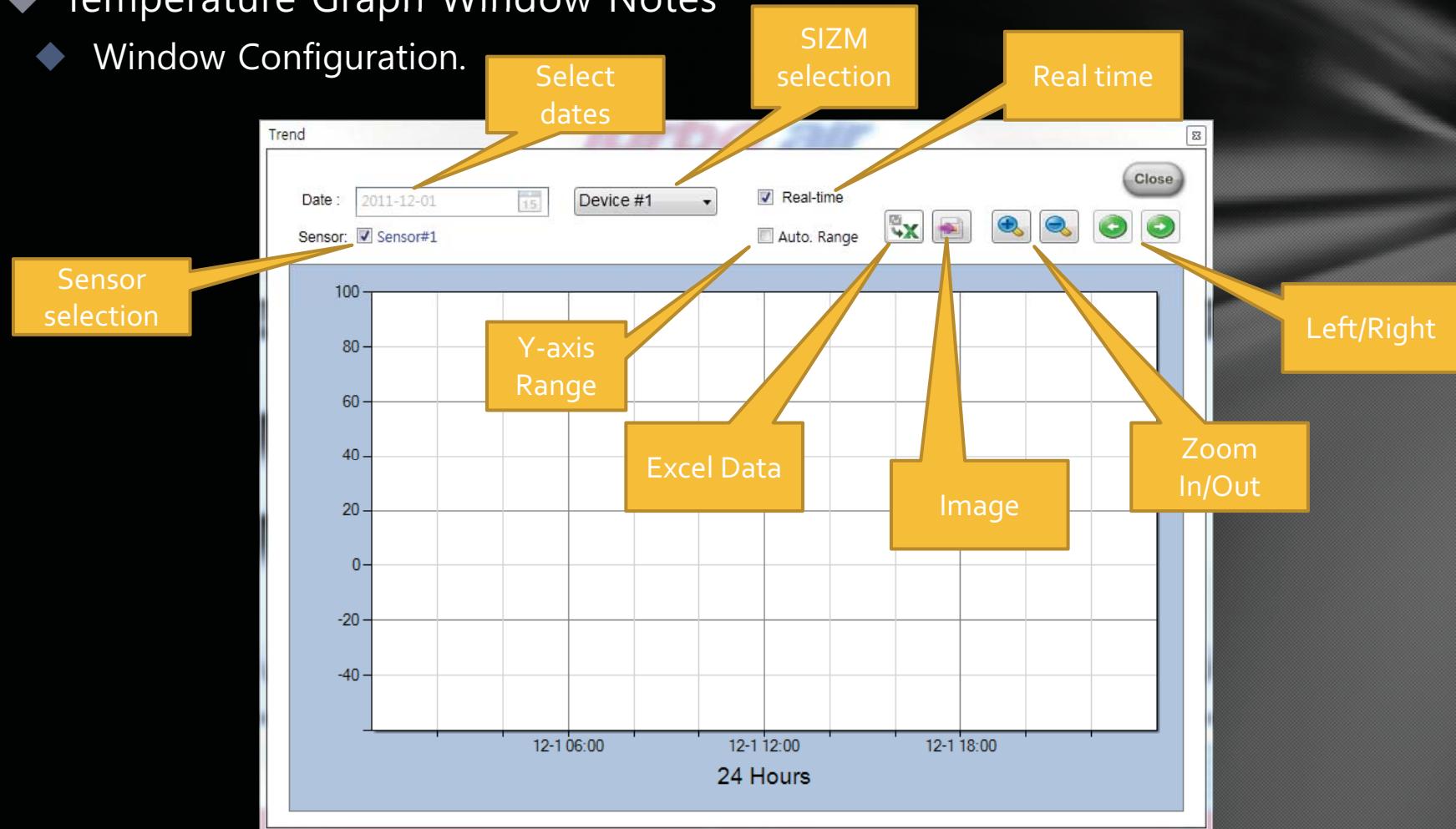
Feature Specific Screen Notes

- ◆ Temperature Graph Window Notes
 - ◆ Click the Speed Button () in the upper right of the screen.
 - ◆ The basic temperature screen will appear.



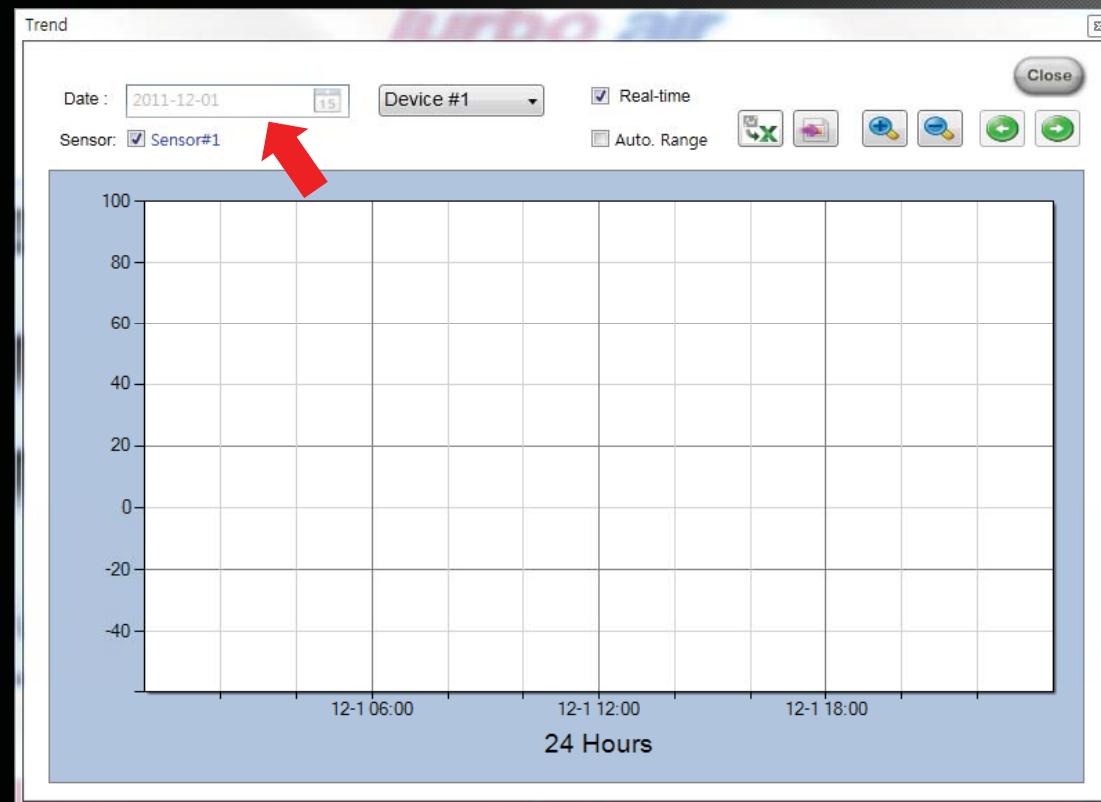
Feature Specific Screen Notes

- ◆ Temperature Graph Window Notes
- ◆ Window Configuration.



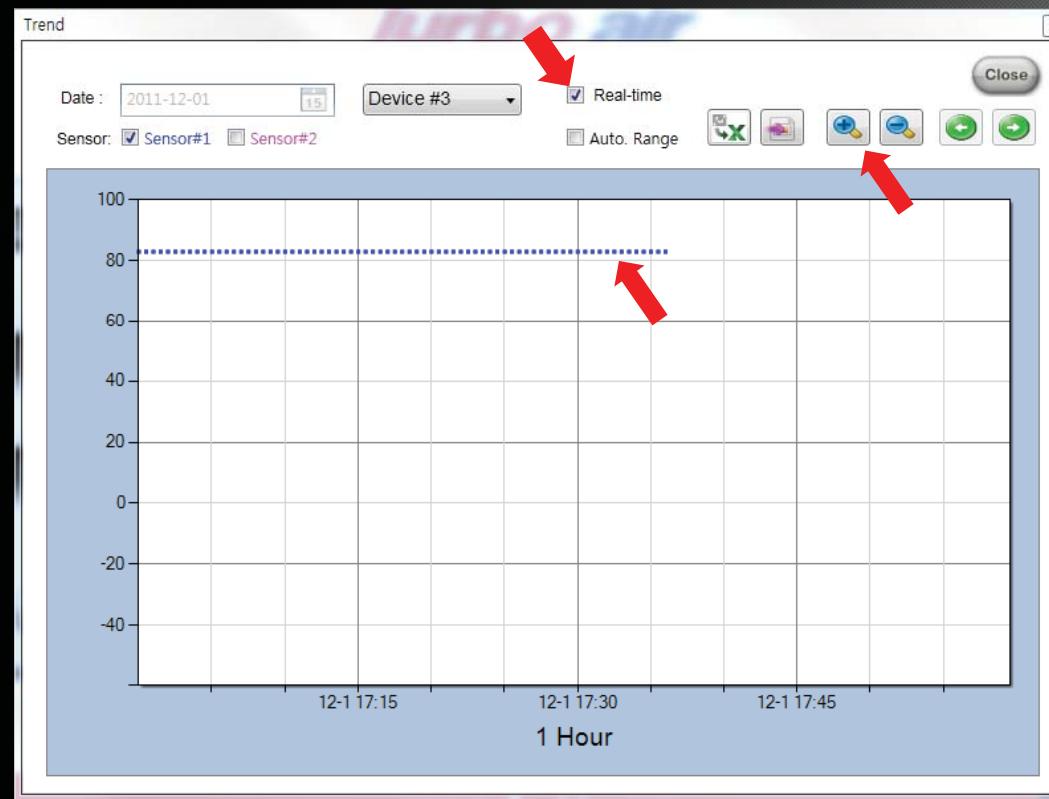
Feature Specific Screen Notes

- ◆ Temperature Graph Window Notes
 - ◆ When first opened the temperature graph window displays today's date.
 - ◆ The temperature can be read on the Y axis, °C, or °F, depending on the temperature unit setting being used.



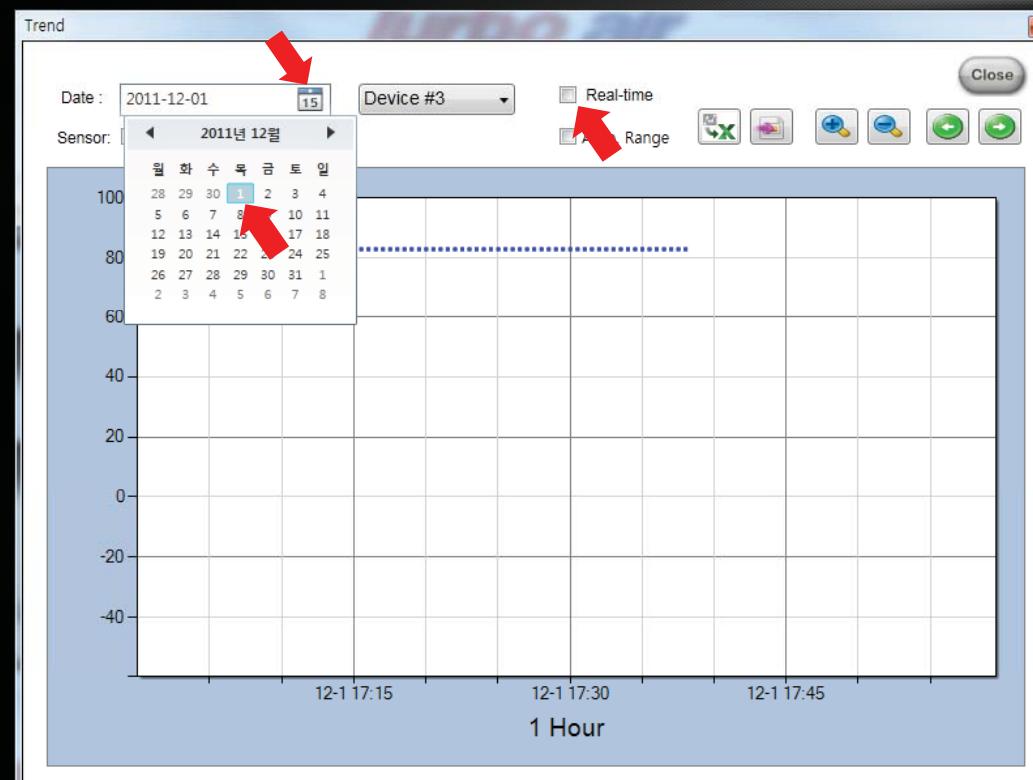
Feature Specific Screen Notes

- ◆ Temperature Graph Window Notes
 - ◆ If the Real-Time button is checked, Real-Time data displays and Zoom functions are available, but the time shift feature is not available.
 - ◆ Every 30 seconds, current data is added and displayed.



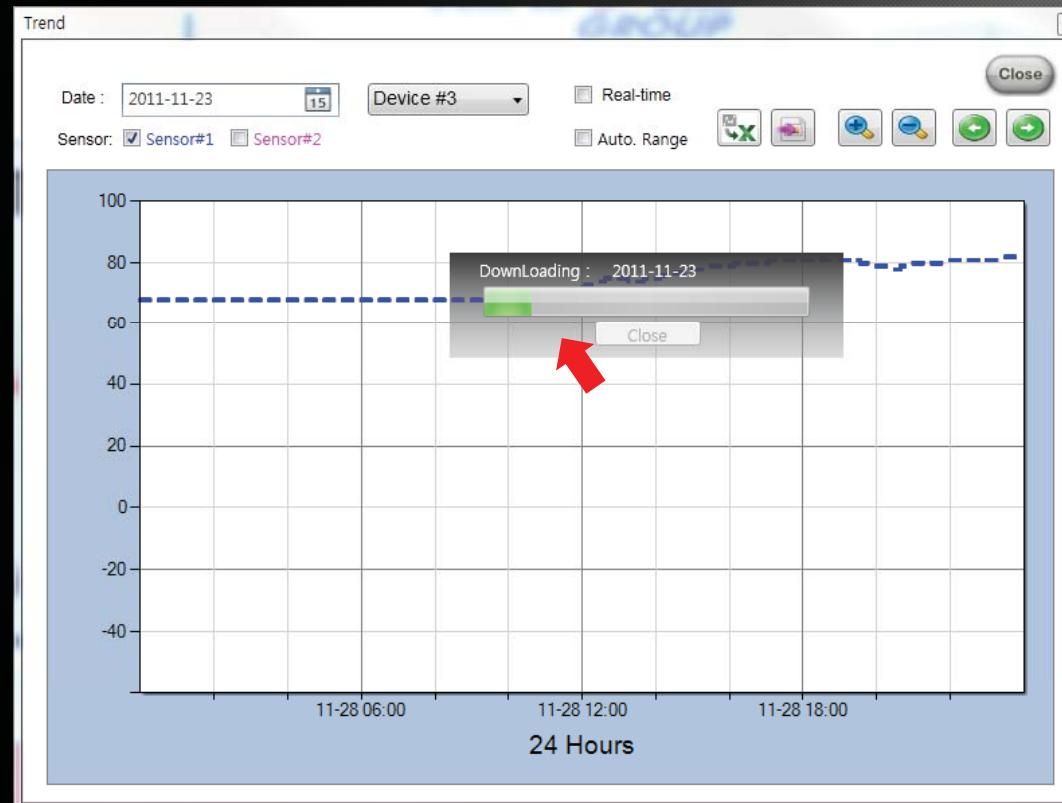
Feature Specific Screen Notes

- ◆ Temperature Graph Window Notes
 - ◆ If the Real-Time button is not checked, historical data can be retrieved.
 - ◆ Clicking the calendar icon allows you to easily enter the search date.
 - ◆ When you select the date, data from that date will automatically be displayed.



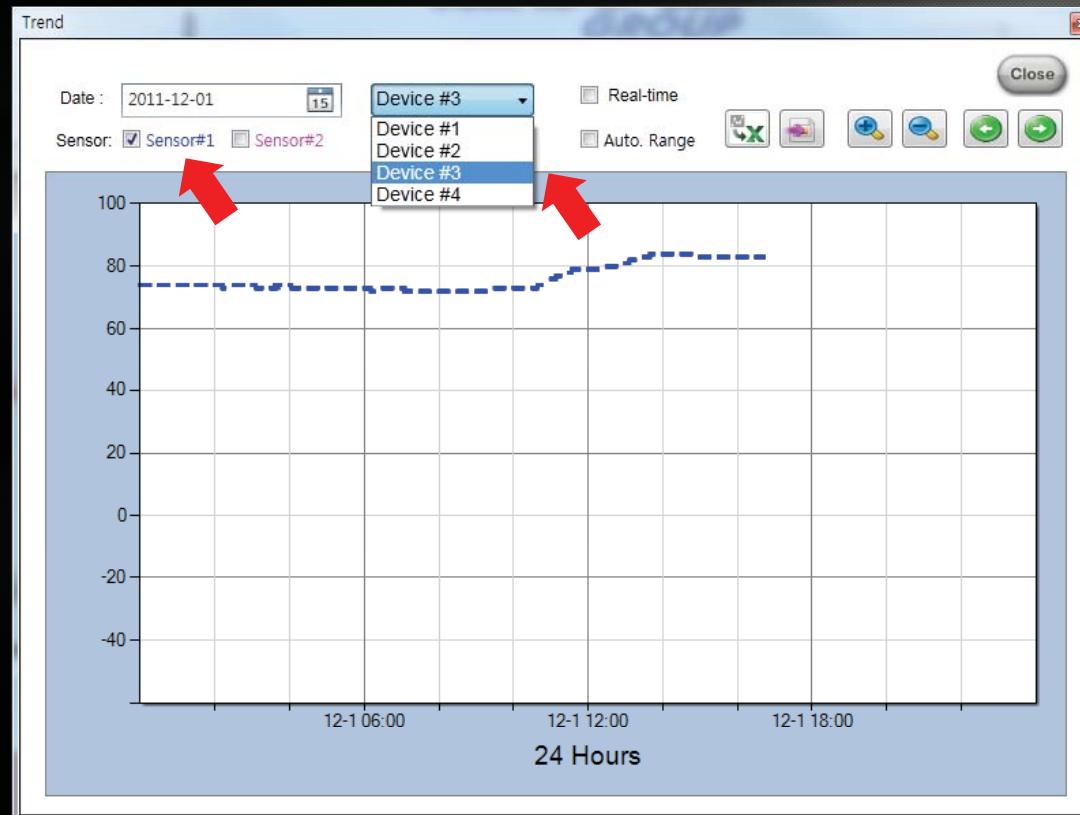
Feature Specific Screen Notes

- ◆ Temperature Graph Window Notes
 - ◆ When the reference date temperature data is on the PC, there is no separate download from the PIZM. (Storage area : My Documents\RTMSData)
 - ◆ When it is not in the PC, a download from the PIZM is received.



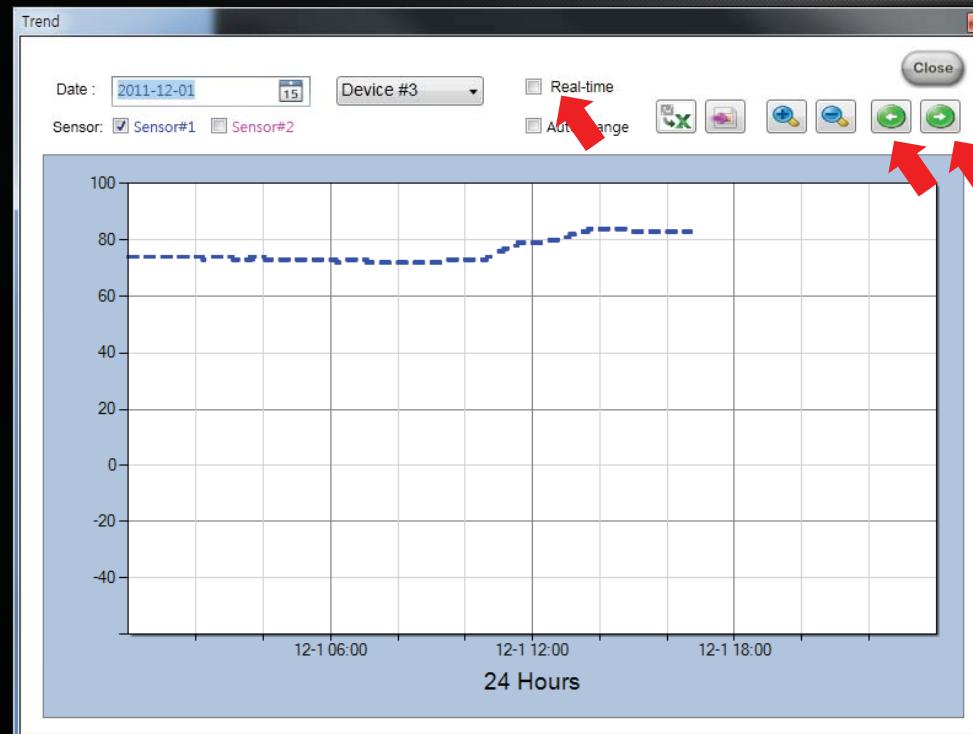
Feature Specific Screen Notes

- ◆ Temperature Graph Window Notes
 - ◆ The number of sensors are displayed differently depending on the type of device.
 - ◆ The number of graphs that appear in the graph can be adjusted by selecting or clearing the sensor.



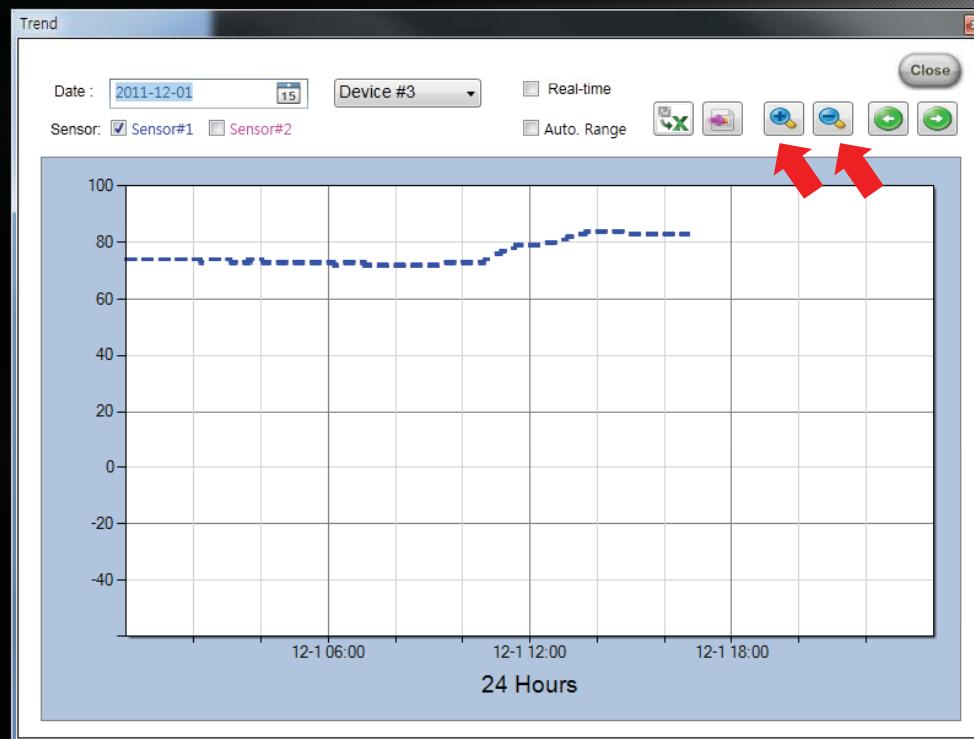
Feature Specific Screen Notes

- ◆ Temperature Graph Window Notes
 - ◆ Time shift button ( ), moves the start time of the graph in 25% increments. The Real-time view should be unchecked.
 - ◆ In a 24-hour display, the display can be moved 6 hours after or before the current display time.



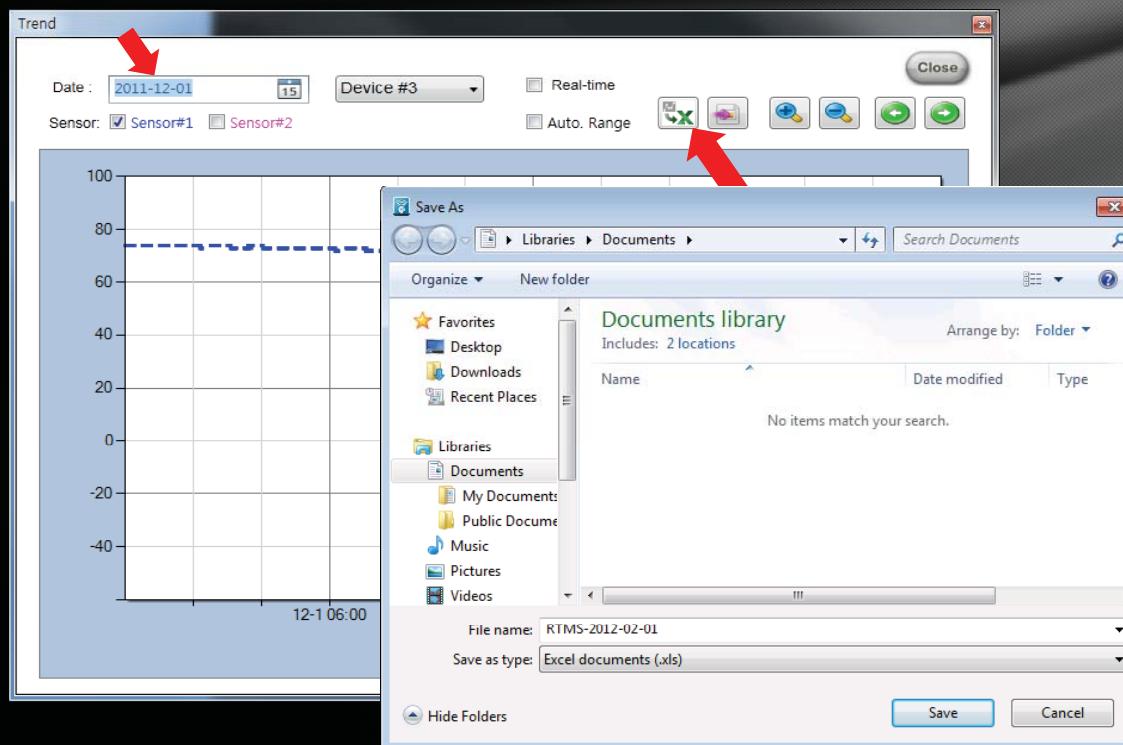
Feature Specific Screen Notes

- ◆ Temperature Graph Window Notes
 - ◆ The (+) button() has a zoom in function that will change a 24 hour display to a 12 hr display, a 12 hr display to a 6 hr display, and a 6 hr display to 1 hr display.
 - ◆ The (-) button() has a zoom out function that will change a 1 hour display to a 6 hr display, a 6 hr display to a 12 hr display, and a 12 hr display to 24 hr display.



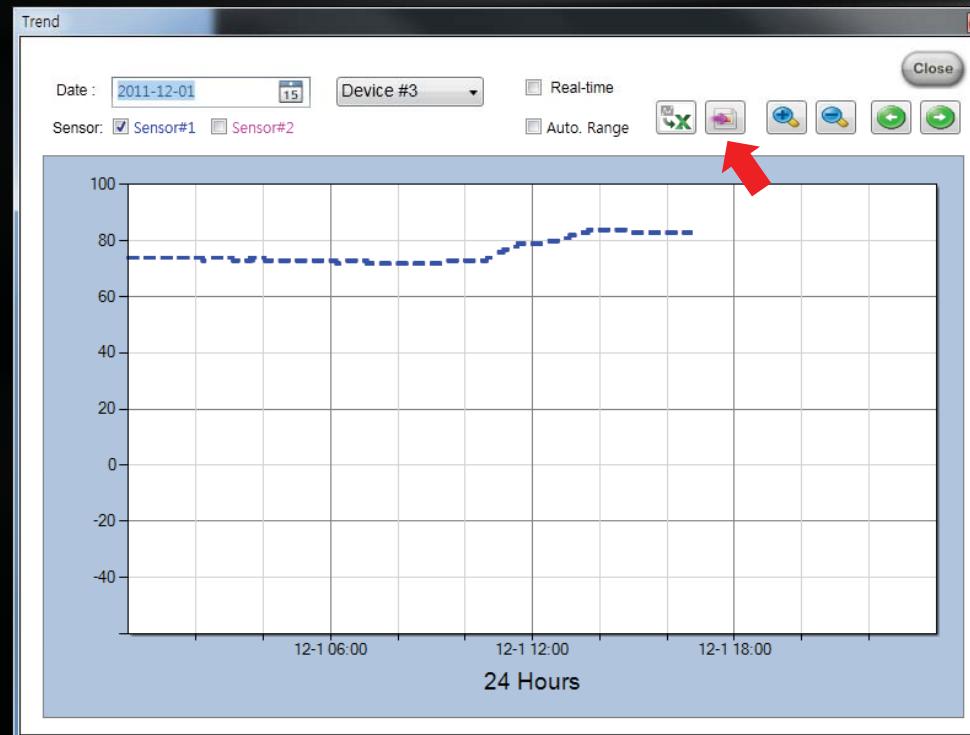
Feature Specific Screen Notes

- ◆ Temperature Graph Window Notes
 - ◆ When pressed the Excel convert button () , collects the current date's data and stores it as an Excel file.
 - ◆ If you see a file selection window, select a folder to save a file and enter the file name and click the save button. The file will be saved.



Feature Specific Screen Notes

- ◆ Temperature Graph Window Notes
 - ◆ Clicking the Image button () , will save the current graph to the clipboard.
 - ◆ This allows you to paste(Ctrl-v) graph images into Excel or Word documents.



Feature Specific Screen Notes

- ◆ Temperature Graph Window Notes
 - ◆ If the "Auto Range" button is checked , Min/Max temperature values are automatically calculated and displayed..
 - ◆ If unchecked the "Auto Range" button will show the graph's y-axis fixed at -60 to 100.

