DISTECH CONTROLS™

ECx-Display and ECB & ECL 50 Series Controllers

User Guide

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Document Revision History

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   - Added information for the ECx-Display
   - Updated User Interface Access Rights
5. Version 1.3 – Add Favorites limit note and layout and formatting updates – May 2023

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CHAPTER 1
Introduction

In this chapter, the ECx-Display and ECB & ECL 50 Series Controllers are introduced with their main functions and characteristics.

Unless otherwise specified, the ECx-Display and ECB & ECL 50 Series Controllers will collectively be referred to in this guide as the **Operator Interface**.

About This User Guide

Purpose of the User Guide

This user guide is intended to provide information to show you how to use and operate a Distech Controls' ECx-Display, or ECB & ECL 50 Series Controllers equipped with a display.

Intended Audience

This user guide is intended to be used by control system technicians, system building managers, and building owners.

Introduction to the Operator Interface

ECB & ECL 50 Series Controllers

A Distech Controls' ECB & ECL 50 Series Controller is equipped with a color operator interface and is available with the following models:

Controller Series	LonWorks	BACnet (BACnet Profile)
203 Series	ECL-253	ECB-253 (B-ASC)
300 Series	ECL-350	ECB-350 (B-AAC)
400 Series	ECL-450	ECB-450 (B-AAC)
	ECL-453	ECB-453 (B-AAC)
600 Series	ECL-650	ECB-650 (B-AAC)

ECx-Display

The ECx-Display is a color operator interface that can be panel-mounted, DIN-rail mounted, or used as a temporary hand-held, portable device. It is compatible with the following Distech Controls controller models:

Controller Series	ECB/ECL-203	ECB/ECL-300	ECB/ECL-400	ECB/ECL-600	Eclypse™ Connected Controllers
ECx-Display	■	■	■	■	■

Overview

Once some code has been created in EC-*gfx*Program and then synchronized with the controller, various objects (points, schedules, PID loops, and so on) used in the code become visible through this operator interface. Object values can be viewed and, in many cases, modified or overridden.

Configuration of this operator interface is done in EC-*gfx*Program in the **LCD Screen** block when the controller is programmed. The following items can be configured:

- The title of the main screen can be set.
- The **About** menu content can be configured.
- The passwords can be set for multiple users according to their role.
- The operator interface languages can be set.

Refer the EC-*gfx*Program User Guide for more information.

Figure 1: (Left) Front Panel of a Typical ECB & ECL 50 Series Controller, (Right) Front Panel of an ECx-Display

The display offers many features such as:

- Large color display to clearly show information.
- Bright display makes information easily viewable in dark environments such as a mechanical room.
- Information is color-coded so that an object's status can be recognized at a glance (for example In Alarm or In Override).
- Real-time access to monitored values, setpoints, and status of controlled equipment.
- View and modify calendar and schedules. Changes are synchronized with an EC-BOSAX when connected to the controller's network.
- Alarm management and acknowledgement (when supported).
- View current weather conditions.
- Multi-user access management.

Acronyms and Abbreviations Used in this Document

AI	**A**nalog **I**nput
AO	**A**nalog **O**utput
AV	**A**nalog **V**alue
B-AAC	**B**ACnet **A**dvanced **A**pplication **C**ontroller
B-ASC	**B**ACnet **A**pplication **S**pecific **C**ontroller
BC	**B**oolean **C**onstant
BI	**B**inary **I**nput / **B**oolean **I**nput (BACnet / LONWORKS)
BO	**B**inary **O**utput / **B**oolean **O**utput (BACnet / LONWORKS)
BV	**B**inary **V**alue / **B**oolean **V**alue (BACnet / LONWORKS)
CAL	**C**alendars
COM	ComSensor Inputs
EC	**E**numeration **C**onstant
EV	**E**numeration **V**ariable
DIP	**D**ual **I**nline **P**ackage
DST	**D**aylight **S**avings **T**ime
HVAC	**H**eating, **V**entilation, and **A**ir **C**onditioning
HWI	**H**ard**w**are **I**nput
HWO	**H**ard**w**are **O**utput
ID	**Id**entity
LCD	**L**iquid **C**rystal **D**isplay
MAC	**M**edia **A**ccess **C**ontrol
MSI	**M**ulti **S**tate **I**nput
MS/TP	**M**aster-**S**lave/**T**oken-**P**assing
MSV	**M**ulti **S**tate **V**alue
NC	**N**umeric **C**onstant
NV	**N**umeric **V**alue
NVI	**N**etwork **V**ariable **I**nput
NVO	**N**etwork **V**ariable **O**utput
PID	**P**roportional **I**ntegral **D**erivative **C**ontrol
SCH	**Sch**edules
WLI	**W**ireless **I**nputs

CHAPTER 2
Interface Description

This chapter presents the operator interface.

Main Screen

Feature Availability

Some icons shown below may not be available, or they may be greyed-out and inaccessible on your controller's LCD screen due to the following reasons:

- Not all controllers support all features shown here.
- The **LCD Screen** block was not previously programmed or configured in EC-*gfx*Program. For example, schedules or favorites.
- The weather feature has not been previously configured with EC-NetAX, or the weather information is not available.
- No alarms have been previously configured in the controller's code for one or more points.
- No PID loops have been used in the controller's code.
- At present, there is no content available to be shown in the menu. For example, this may occur when:
  - No points are currently overridden.
  - No points are currently in alarm.

We recommend that the controller be programmed with EC-*gfx*Program prior to using the menus.

Main Screen Menu Description

This section shows the main screen and its components. If the access to the interface requires a password, see *Unlocking a Password-Protected Interface*.

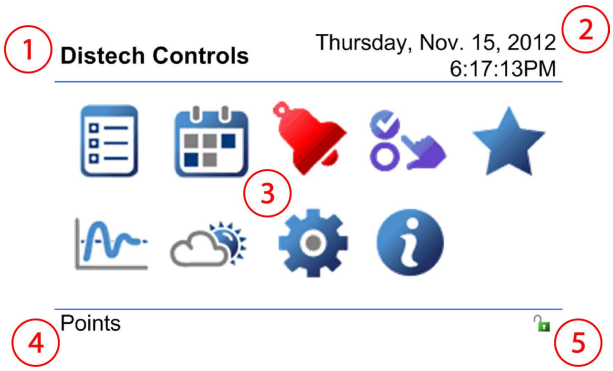


Figure 2: Main Screen Overview

When the controller's *Jog Dial* has not been touched for 5 minutes, the display appears blank due to the display's backlight turning off. Restore the display operation by rotating the *Jog Dial*. To learn more about how to use the *Jog Dial*, see *Using the Jog Dial*.

Item		Description
1	Company Name	A user-defined company name. This is set in EC-*gfx*Program, in the **LCD Screen** block, when the controller is programmed.
2	Date	The current controller date.
	Time	The current controller time. Format: 12 hour / 24 hour.
3		The **Points** menu is used to display inputs, setpoints, values, outputs values, and so on. See *Points Menu*.
3		The **Schedules and Calendars** menu is used to view and modify the schedules and calendars. See *Schedules and Calendars Menu*.
3	 	This menu is only available on controller models that support alarms. The **Alarms** menu shows the active alarms. The alarms can be acknowledged if the controller supports this functionality. See *Alarm Menu (LonWorks)* or *Alarm Menu (BACnet)*. The alarm icon will be blue when no alarms are active. The alarm icon will be red when an alarm is active.
3	 	The **Manual Overrides** menu allows a user to remove an override, or change the override value of any hardware input, hardware output, value, variable, and so on. See *Overrides Menu*. The override icon will be purple when there are one or more active overrides in the controller.
3		The **Favorites** menu allows the user to view favorite screens that have been bookmarked. See *Favorites Menu*.
3		The **PID Loops** menu allows the user to tune the controller's PIDs. See *PID Loops Menu*.
3		The **Weather** menu allows the user to view the current weather conditions. See *Weather Menu*.

	Item	Description
3		The **Settings** menu allows the user to view and configure the controller's settings. See *Settings Menu*.
3		The **About** menu can be customized to show a graphic (for example, a company logo) and textual information (for example, contact information about the integrator). This menu also allows the user to view the controller and operator interface software/bootloader versions. See *About Menu*.
4	Current selection	When on the main screen, this shows the menu option currently selected by rotating the *Jog Dial*. See *Using the Jog Dial*.
5	 Interface is Locked  Interface is Unlocked	This locks the interface from unauthorized use. To learn how to unlock the interface, see *Unlocking a Password-Protected Interface*.

Menu Tree

A typical menu tree for a BACnet Controller (ECB and ECY Series) is shown below.

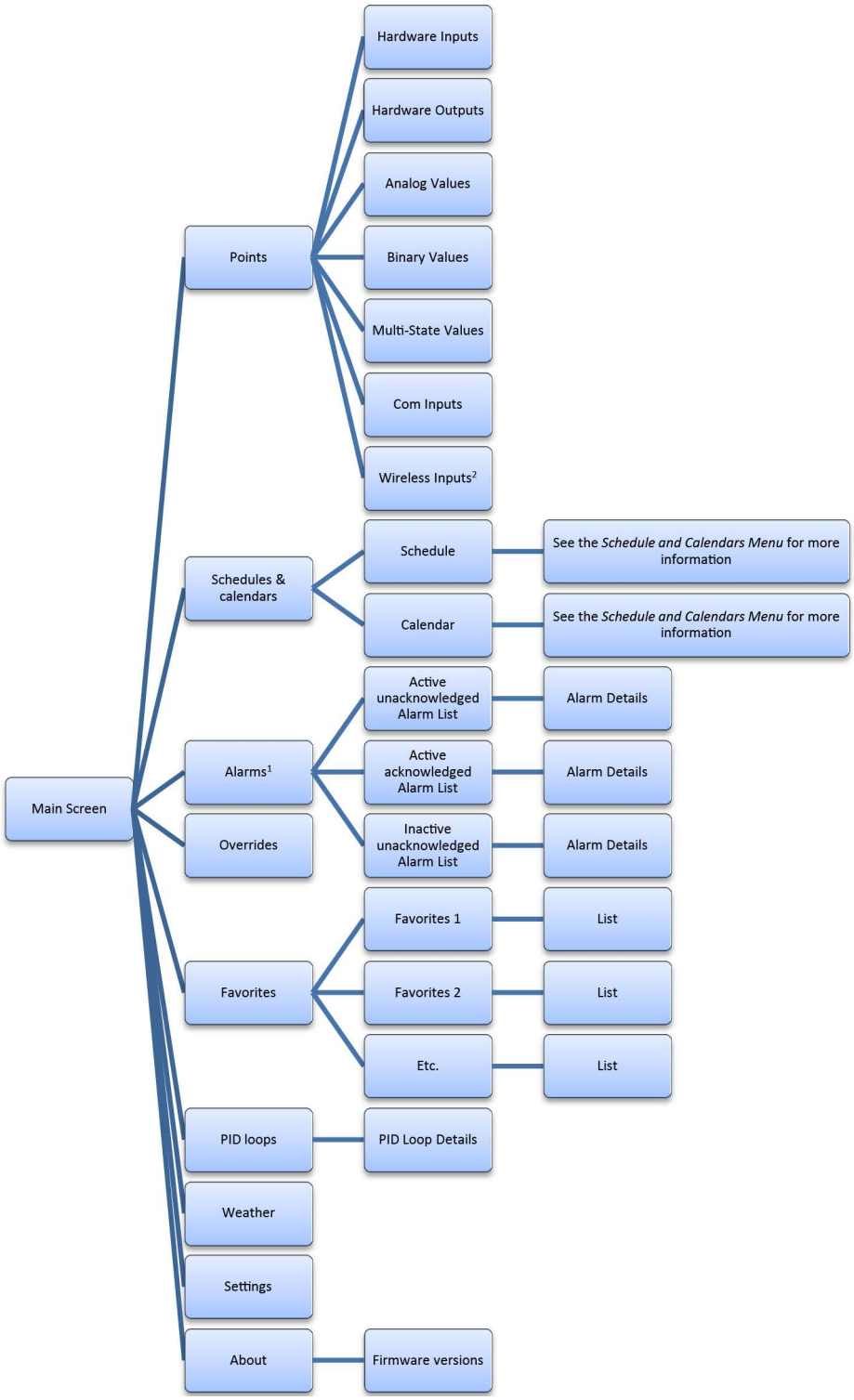


Figure 3: Typical Menu Tree for a BACnet Controller (ECB or ECY Series)

1. Not available with the ECB B-ASC models (see *Introduction to the Operator Interface*).
2. Not available with ECLYPSE Connected Controllers.

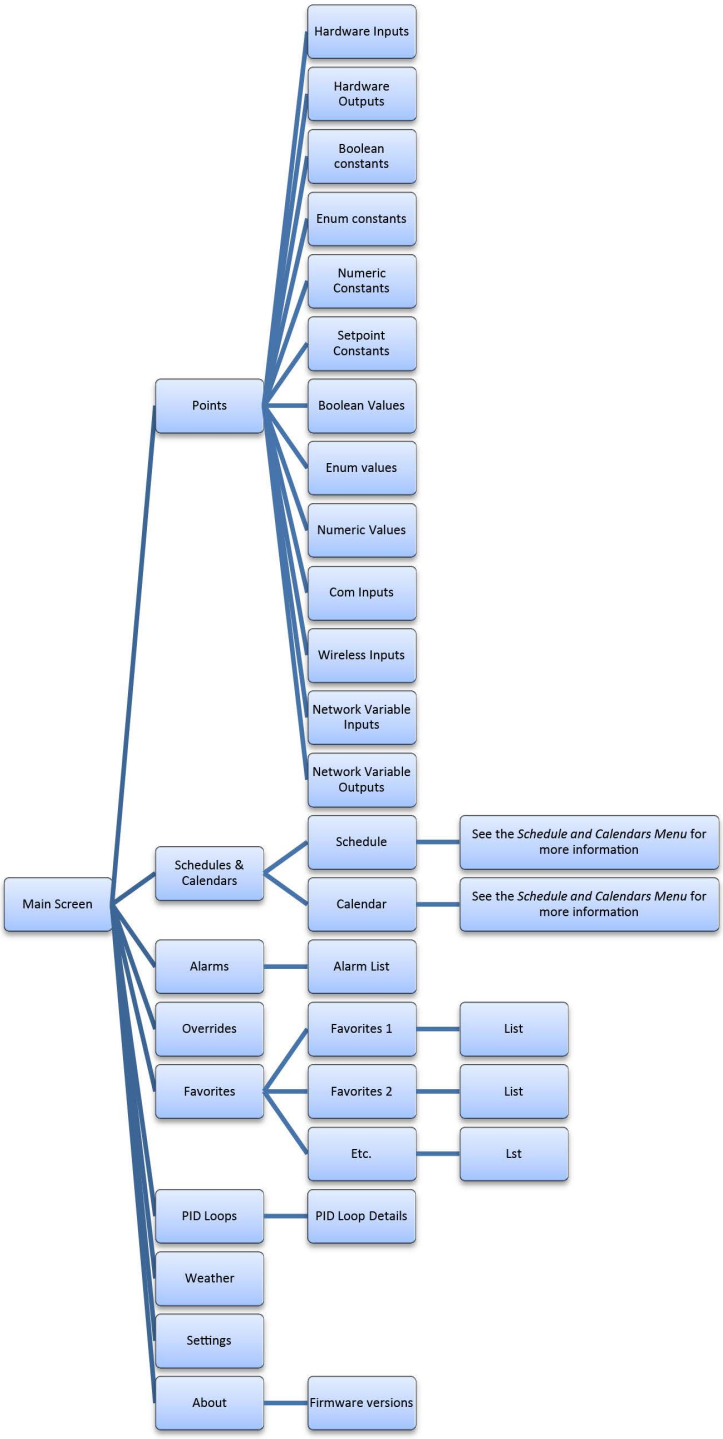


Figure 4: Typical Menu Tree for a LONWORKS Controller

Navigation

Navigating throughout the operator interface is easy by using the *Jog Dial* and the **EXIT** button:

- By turning the *Jog Dial*, you can highlight screen icons, context menu options, or change a parameter's value.
- By pressing the *Jog Dial*, you can select the current icon to enter a menu, select a context menu option, or to enter the current parameter's value.
- By pressing the **EXIT** button, you can navigate back to the previous menu or item while cancelling any changes that have been made.

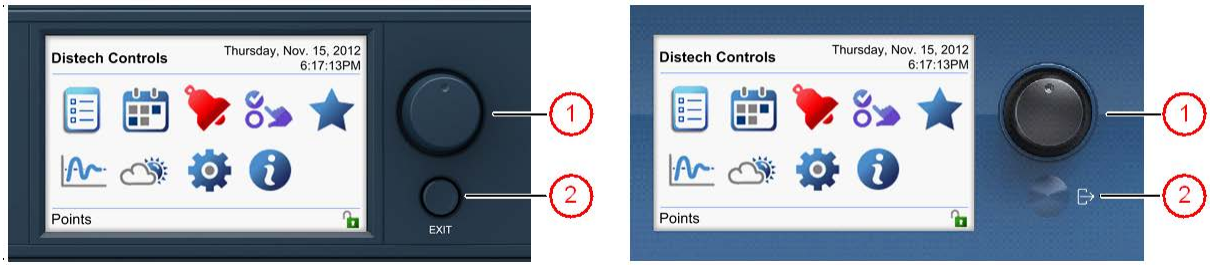


Figure 5: (Left) Typical Interface of an ECB & ECL 50 Series Controller. (Right) Interface of an ECx-Display

	Item	Description
1	*Jog Dial*	The *Jog Dial* is operated by turning it so as to select (or highlight) one of the available options, and then by pressing it in order to activate the currently selected option. See *Using the Jog Dial*.
2	EXIT button	Use this button to cancel the current action or menu and to go back to the previous menu.

Using the Jog Dial

The *Jog Dial* is operated as follows:

- By turning or rotating it between your thumb and forefinger to select (or highlight) a menu item or set a value shown on the display.

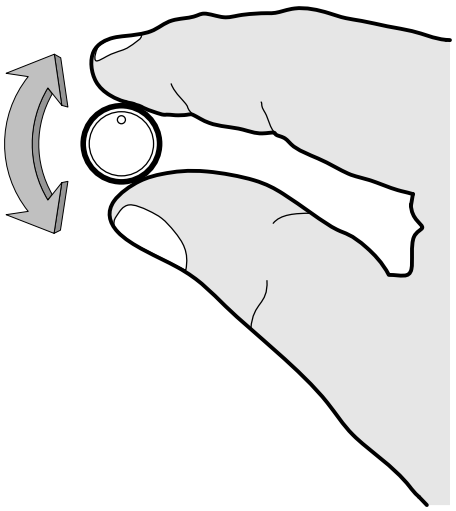


Figure 6: Rotate the Jog Dial to Select a Menu Item or Set a Value

- Press the *Jog Dial* to activate or accept the currently selected menu item or value shown on the display.

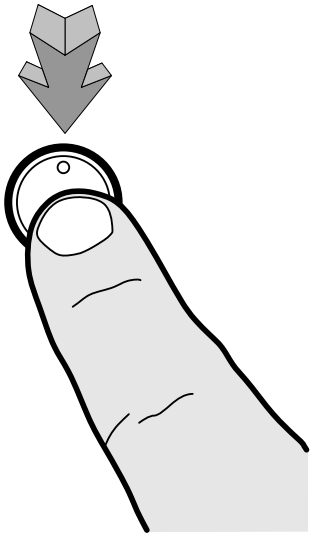


Figure 7: Press the Jog Dial to Activate or Accept the Currently Selected Menu Item or Value

- Use the **EXIT** button to cancel the current action or menu and to go back to the previous menu.

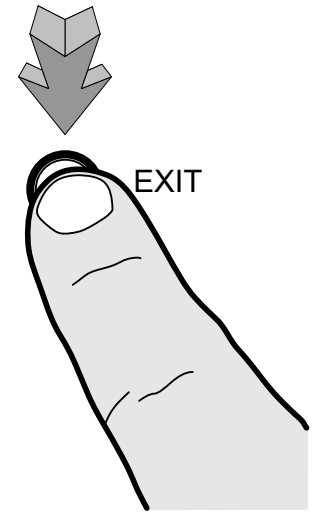


Figure 8: Press the EXIT Button to Cancel the Current Action or Menu and Go Back

Operator Interface

The operator interface has common features throughout, e.g. the use of the jog dial and of the EXIT button to navigate through the interface and to select and edit values. The following sections will show you how to select items, edit values, interpret the different menu colors and icons you will come across while working with the operator interface, and unlocking the password protected interface.

Selecting an Action

An action allows you to perform a specific action on a selected menu item. A list of actions is available within each list of context menu items. The available actions will change according to the type of menu you selected. Select an action as follows:

1. Rotate the *Jog Dial* to highlight a menu item.

2. Press the *Jog Dial* to activate a list of the currently available actions (context menu). In the example below, the available actions are **Override**, **Auto**, and **Alarm Details**.

Figure 9: Activating a Context Menu for a List of Actions

3. Rotate the *Jog Dial* to highlight one of the available actions and press the *Jog Dial* to perform the action.

Selecting and Editing a Numeric Value

When a value has been selected, the interface provides two ways of editing it.

- By scrolling to a value. Rotate the *Jog Dial* to increase or decrease the current value. This is ideal for relatively small value changes. See *Scrolling to a Numeric Value*.
- By editing the value. Use the *Jog Dial* to 'build' the number, one digit at a time, including decimal places, negative signs, and exponents. This is ideal to make large changes to the current value or to create values with exponents. See *Editing a Numeric Value*.

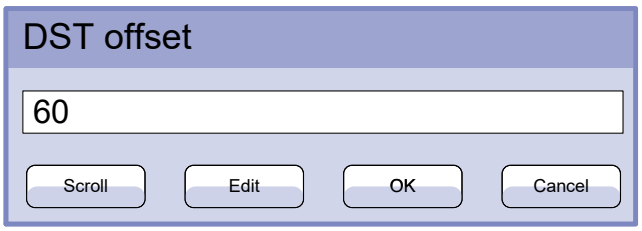


Figure 10: Popup Window for Editing a Numeric Value

Button	Description
Scroll	Edit the value by rotating the *Jog Dial* to increase or decrease the current value. See *Scrolling to a Numeric Value*.
Edit	Edit the value by using the *Jog Dial* to 'build' the number, one digit at a time. See *Editing a Numeric Value*.
OK	Accepts the currently shown value (once the value has been edited by using a *Scroll* or *Edit* operation) and closes the popup window.
Cancel	Cancels the current action (rejects any change made to the value) and closes the popup window. This maintains the previous value.

Scrolling to a Numeric Value

When scrolling, the default step size adjusts according to the magnitude of the value being edited as follows: the step size is the closest base 10 unit to 1% of the current value (for example, 1% of 1200 is 12, so the closest base 10 unit is 10; 1% of 22 is 0.22, so the closest base 10 unit is 0.1). However, the step size can be adjusted so that you can scroll faster to a value. See *How to Set the Scroll Step Size* below.

How to Scroll

Scroll a value as follows:

1. Rotate the *Jog Dial* to select the numeric menu item.
2. Press the *Jog Dial* to open the edit screen.
3. Rotate the *Jog Dial* to select **Scroll**.
4. Press the *Jog Dial*. Rotate the *Jog Dial* clockwise to increase the value. Rotate the *Jog Dial* counterclockwise to decrease the value. The *Jog Dial* step size can be set so you can advance by steps of 1, 10, or 100 to quickly advance to the correct value. See *How to Set the Scroll Step Size* below.
5. Once you have adjusted the number to the correct value, press the *Jog Dial* to accept the value.
6. Rotate the *Jog Dial* to select **OK**.
7. Press the *Jog Dial* to exit the value editing screen.

How to Set the Scroll Step Size

When scrolling to a value (see above), the scroll step size can be set so you can advance by steps of 0.001, 0.01, 0.1, 1, 10, 100, or 1000 when turning the *Jog Dial* to quickly advance to the correct value. Set the *Jog Dial* step size as follows:

1. Press and rotate the *Jog Dial* at the same time to select 0.001, 0.01, 0.1, 1, 10, 100, or 1000 to advance in steps of 0.001, 0.01, 0.1, 1, 10, 100, or 1000.

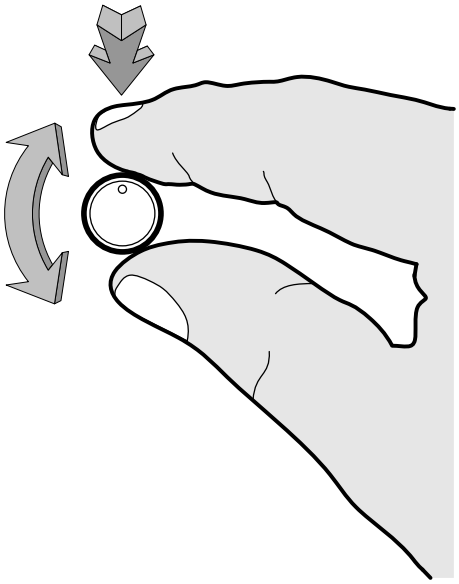


Figure 11: Press and Rotate the Jog Dial at the Same Time to Set the Scroll Step Size

2. Once a step value has been selected, release the *Jog Dial*.

Figure 12: Setting the Scroll Step Size to 10

3. Now rotate the *Jog Dial* to scroll to a value.

Each time you enter a value edit popup, the step size resets to the default value, according to the magnitude of the value being edited.

Editing a Numeric Value

A value can be constructed, one digit at a time. Negative numbers and exponents can be created. Edit a value as follows:

1. Rotate the *Jog Dial* to select the numeric menu item.
2. Press the *Jog Dial* to open the edit screen.
3. Rotate the *Jog Dial* to select **Edit**.
4. Press the *Jog Dial*.
5. Edit the value, one digit at a time. According to the cursor's position, rotating the *Jog Dial* allows you to select different components to construct a number.

- Negative sign (-); available when the cursor is in the left most position or after the exponent 'E' symbol.
- Clear any digits to the right of the current cursor position.
- Exponent (E). The number that follows this symbol is the base 10 exponent. For example, 6.4E03 is 6400 in decimal.

- Digits, 0 to 9.
- Decimal place (.).

When a number is shown, the cursor can be positioned among the digits by pressing and rotating the *Jog Dial* at the same time. See figure *Press and Rotate the Jog Dial at the Same Time to Set the Scroll Step Size*.

6. Press the *Jog Dial* to accept the current digit and to move to the next digit.
7. Once you have adjusted the number to the correct value (you have no more digits to create), press the *Jog Dial* a second time to accept the value.
8. Rotate the *Jog Dial* to select **OK**.
9. Press the *Jog Dial* to exit the value editing screen.

Selecting a State Value

A state value is used to set the status for a selected item. The available state values will change according to the type of menu item you have selected. Select a state value as follows:

1. Rotate the *Jog Dial* to highlight a menu item.
2. Press the *Jog Dial* to activate a list of the currently available values. In this example, the state value options are English and French:

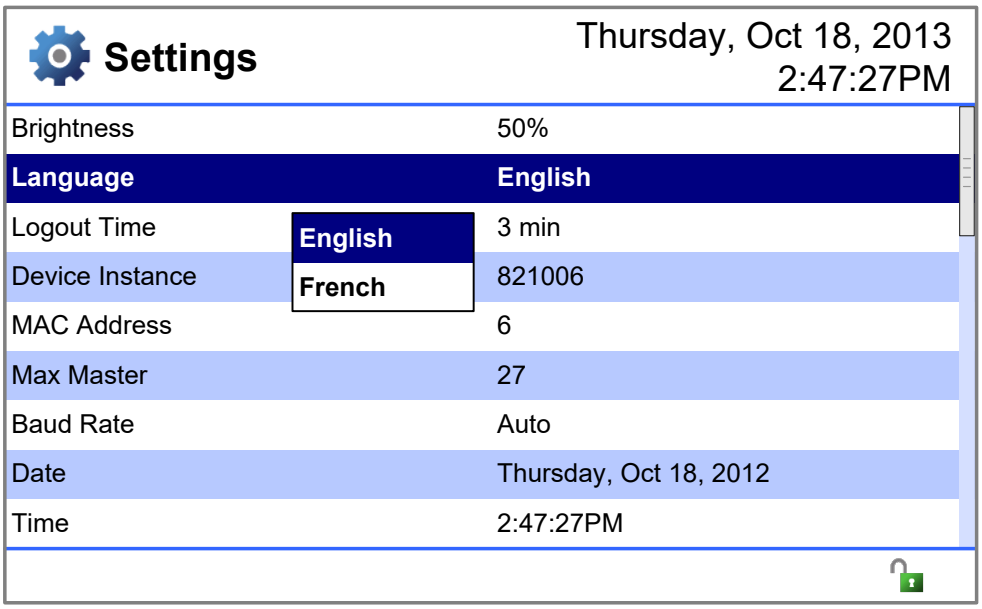


Figure 13: Activating a Selection Wheel for a List of State Values

3. Rotate the *Jog Dial* to highlight one of the available values and press the *Jog Dial* to select the state value.

Interpreting Row Colors and Alarm Icons

The color of a row can change according to its current state. When an alarm has been configured, an alarm icon is shown. This is described below.

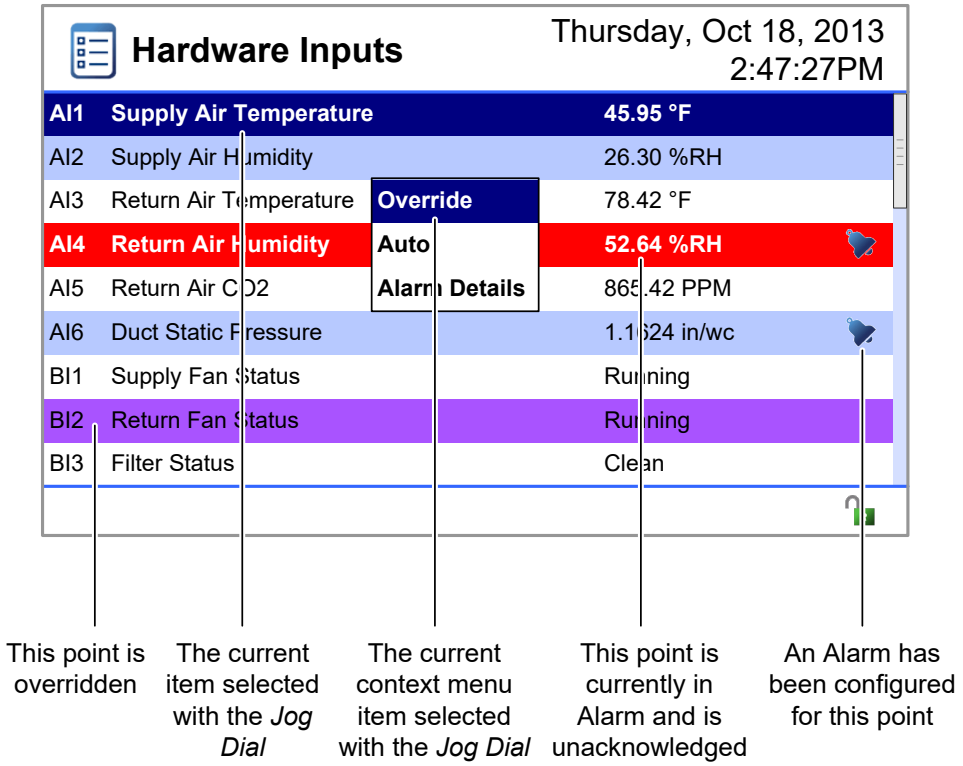


Figure 14: Row Color Interpretation

Row Color	Description
Light blue and white	This default banding is a visual aid to help you read tabular data with greater ease.
Navy blue	The row or item selected by rotating the *Jog Dial*.
Red	The point has an active alarm that is unacknowledged. See *Alarm Menu (LonWorks)* or *Alarm Menu (BACnet)*.
Violet	The point is overridden. See *Overrides Menu*.

Unlocking a Password-Protected Interface

The operator interface can be password-protected by setting a password in EC-*gfx*Program, on the **LCD Screen** block. This section will explain the different user access rights and how to unlock a password protected interface.

User Interface Access Rights

In EC-*gfx*Program, up to four passwords can be configured for the four different user access levels: Administrator, Manager, Operator, and Guest. When password protection is set, your privileges to use the interface or certain menus in the interface will depend on the access level. For example, you may be able to override a value depending on the point type and your access level. For information on how to configure the operator interface passwords, refer to the EC-*gfx*Program User Guide.

Menu Items	Access Level			
	Administrator	Manager	Operator	Guest
Points (Points, Overrides)	RW	RW	N/A	N/A
Favorites List	RW	RW	Configurable with EC-*gfx*Program[1]	
Schedule	RW	RW	RW	N/A
Alarms (when available)	RW	RW	N/A	N/A
PID Parameters	RW	R	N/A	N/A
Trends	R	R	R	N/A
Time / Date	RW	RW	RW	R
Daylight Saving Time	RW	RW	RW	R
Language	RW	RW	RW	R
Device Commissioning: MAC Address, Baud Rate, etc. (BACnet models only)	RW	R	R	R

Where: R = Read, W = Write, edit, override, or acknowledge, N/A = No Access

[1]In EC-gfxProgram, groups can be created in the favorites list. Points that are added to these groups can be shared with Operator and Guest access.

How to Unlock the Operator Interface

1. When the interface is locked, press the *Jog Dial* to open the password menu. The **Enter password** window opens.

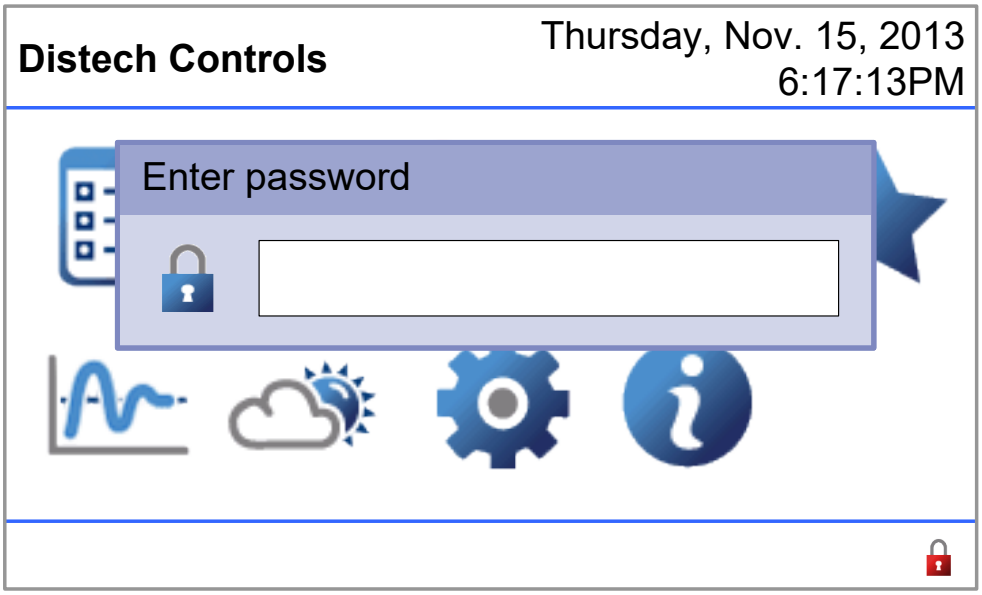


Figure 15: Unlocking a Password-Protected Interface

2. Rotate and press the *Jog Dial* to enter your password (see figures *Rotate the Jog Dial to Select a Menu Item or Set a Value* and *Press the Jog Dial to Activate or Accept the Currently Selected Menu Item or Value*), one alphanumeric character at a time to select different components to construct your password.

- Letters, A to Z.
- Digits, 0 to 9.

The cursor can be moved to the left by pressing and rotating the *Jog Dial* at the same time to clear any previously entered alphanumeric characters. See figure *Press and Rotate the Jog Dial at the Same Time to Set the Scroll Step Size*.

3. Press the *Jog Dial* to accept the current alphanumeric character and to move to the next alphanumeric character of your password.
4. Once you have entered your password (you have no more alphanumeric characters to add), press the *Jog Dial* a second time to accept your password and unlock the interface. The main menu is now available.

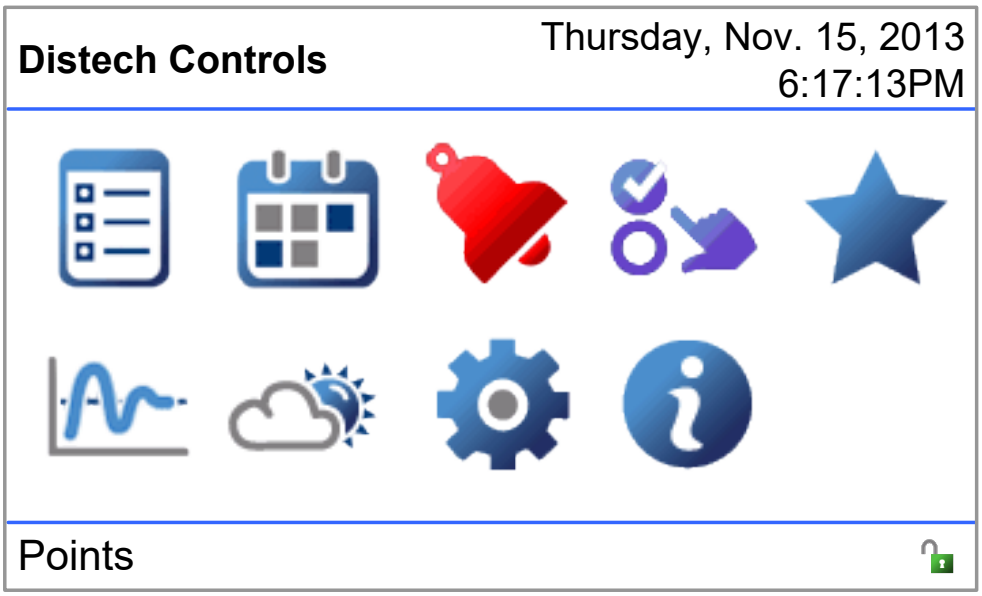


Figure 16: Unlocked Interface

5. Rotate the *Jog Dial* to select a menu item and press the *Jog Dial* to enter the selected menu.

The interface returns to the lock mode by default after 5 minutes of inactivity. This auto log-off delay is configurable in **Logout Time** in the *Settings Menu*.

CHAPTER 3
Menu Description

This chapter describes the Operator Interface menus.

Points Menu

The **Points** menu is used to display, set, and override inputs, outputs, setpoints, and values. It is also used to view alarm details for points that are in alarm.

This menu may be greyed-out (is inaccessible) on your controller's LCD screen. See *Feature Availability*.

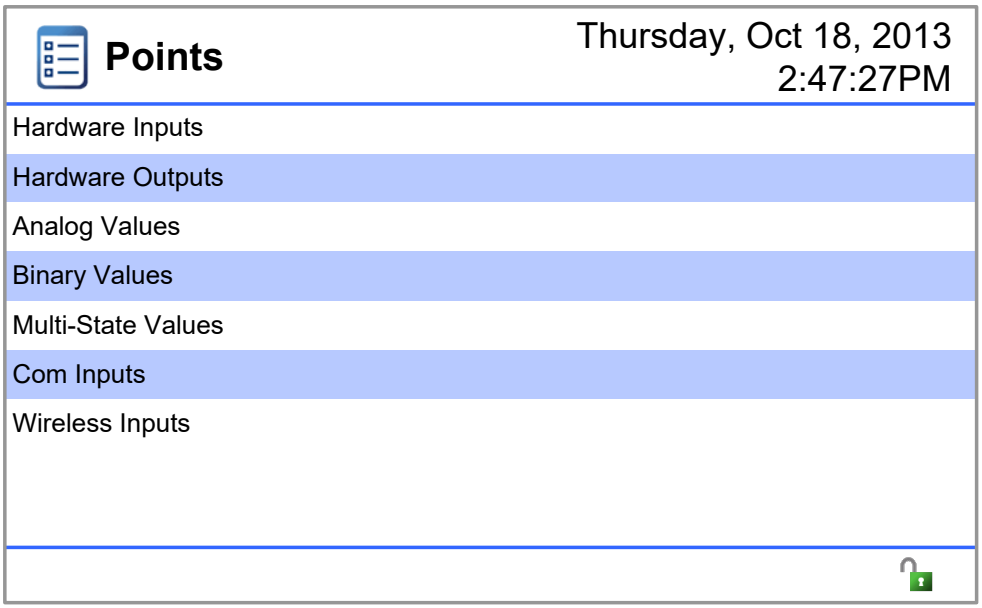


Figure 17: Typical Points Menu

The following points are available in the **Points** menu screen.

Points Detail Screen

When selecting a point from the **Points** menu, the following type of screen is displayed. This screen displays the point identifier, point name, point values, and color-coded rows and icons to identify points in alarm or overridden.

See *Interpreting Row Colors and Alarm Icons* for how to interpret the color code used in the interface.

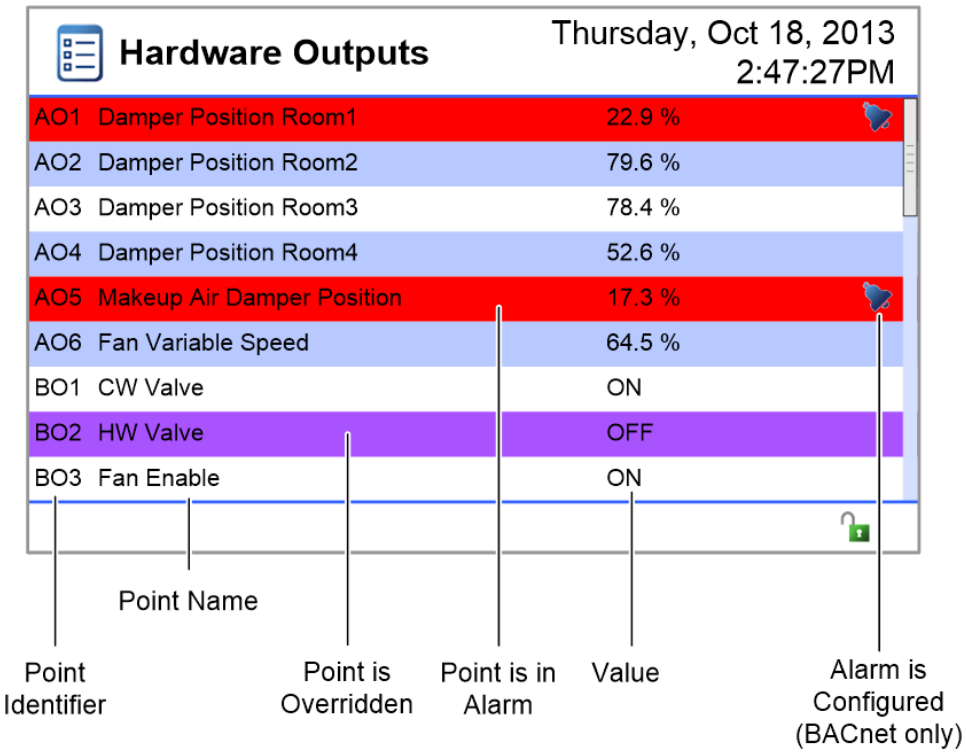


Figure 18: Typical points screen

The point identifier column shows the configuration type. The number corresponds to the EC-*gfx*Program's block number set in the **Properties** pane. The configuration type of the inputs, outputs, values, constants or variables is configured with EC *gfx*Program.

The following objects are available according to the controller's network type:

LonWorks Controllers		BACnet Controllers	
Inputs/Outputs:		**Inputs/Outputs:**	
HWI	Hardware Input	AI	Analog Hardware Input
HWO	Hardware Output	BI	Binary Hardware Input
COM	ComSensor Input	AO	Analog Hardware Output
WRI	Wireless Sensor Input	BO	Binary Hardware Output
NVI	Network Variable Input	MSI	Multi-State Input
NVO	Network Variable Output (read only)	AI	Analog Hardware Input
Constants:		**Values:**	
NC	Numeric Constant	AV	Analog Value
BC	Boolean Constant	BV	Binary Value
EC	Enumeration Constant	MSV	Multi-State Value
SC	Setpoint Constant		
Values:			
NV	Numeric Value		
BV	Boolean Value		
EV	Enumeration Value		

Overriding Points and Options

Points can be overridden by selecting the point and pressing the *Jog Dial* to view the available options. The following override actions may be available according to the type of point selected. To select an action, see *Selecting an Action*.

Override	LonWorks Controllers	BACnet Controllers	Description
Emergency override		■	Forces a point to assume a user-set value at priority level 1.
Emergency auto		■	Clears an **Emergency Override** value at priority level 1.
Override	■	■	Forces the point to assume a user-set value as its present value (at priority level 8 for BACnet controllers).
Auto	■	■	Clears an Override value.
Set value	■	■	Forces a point to assume a user-set value.
Alarm details	■	■	Shows any currently associated alarms.

Viewing Point Alarm Details (LonWorks models)

For LonWorks controllers only, you can view the alarm details for the associated inputs and outputs in the **Points** menu. Select the point that is in alarm (highlighted in red) and select **Alarm Details**. See *Interpreting Row Colors and Alarm Icons*.

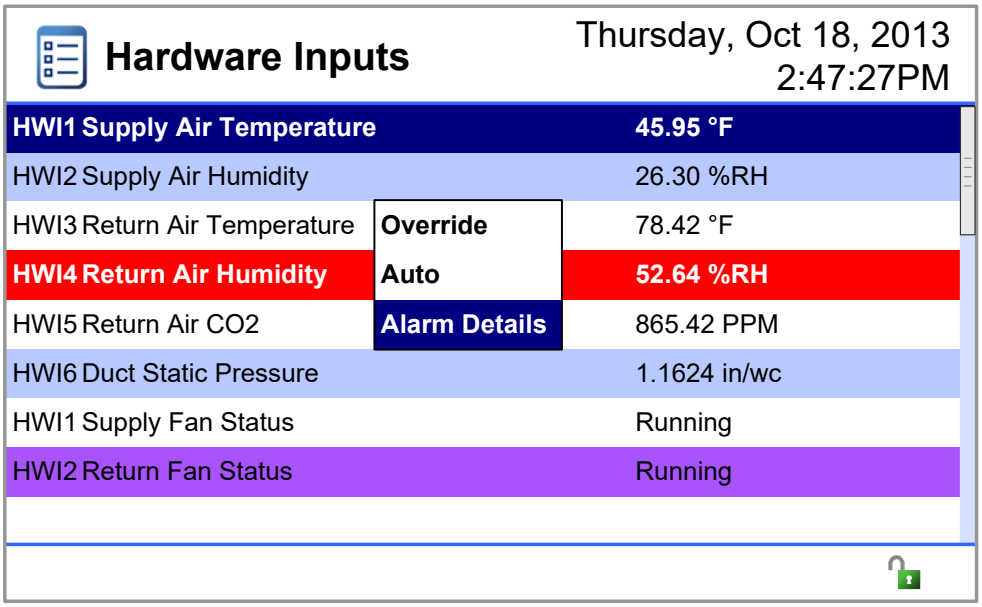


Figure 19: Alarm Details (for LonWorks Controller)

The alarms details screen for the associated item in alarm is displayed:

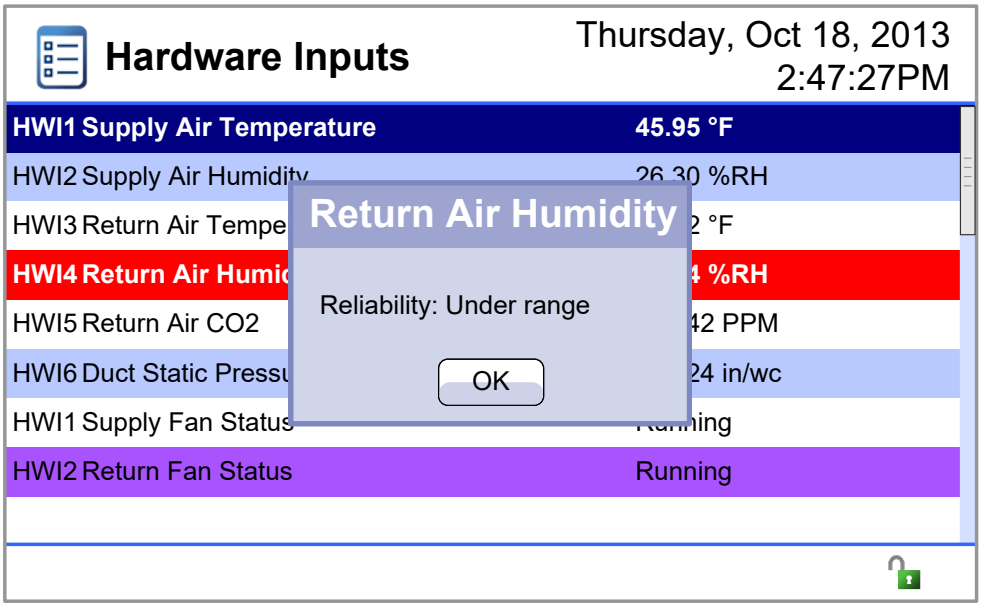


Figure 20: Alarm Details Screen (for LonWorks Controller)

Viewing Point Alarm Details (BACnet models)

For BACnet ECB B-AAC profile controllers only (see *Introduction to the Operator Interface*), you can view the alarm details for the associated inputs, outputs, and values in the Points menu. Select the point that is in alarm (highlighted in red) and select **Alarm Details**. See *Interpreting Row Colors and Alarm Icons*.

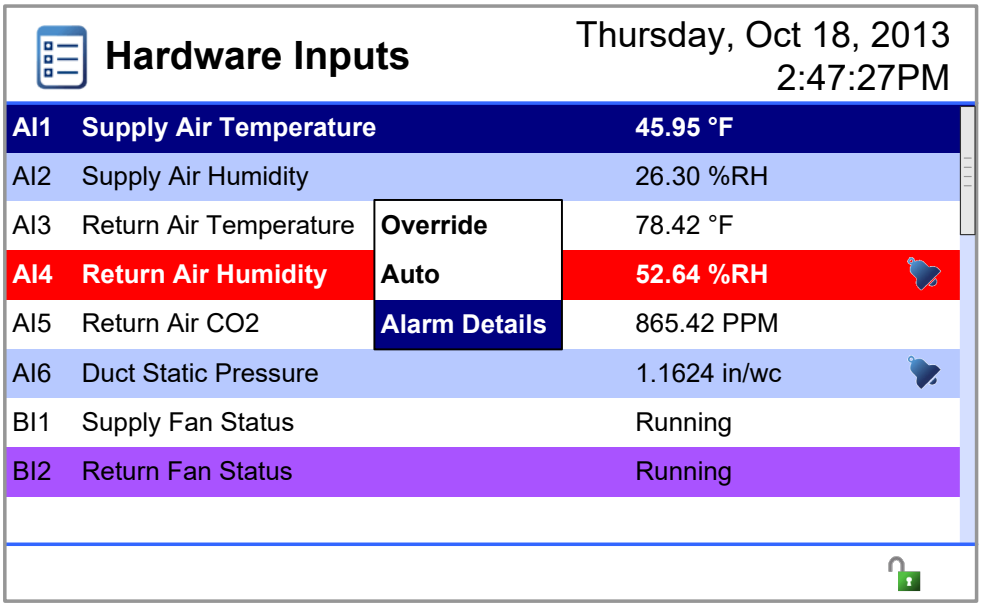


Figure 21: Alarm Details (for BACnet B-AAC Profile Controller)

The alarms details screen for the associated item in alarm is displayed:

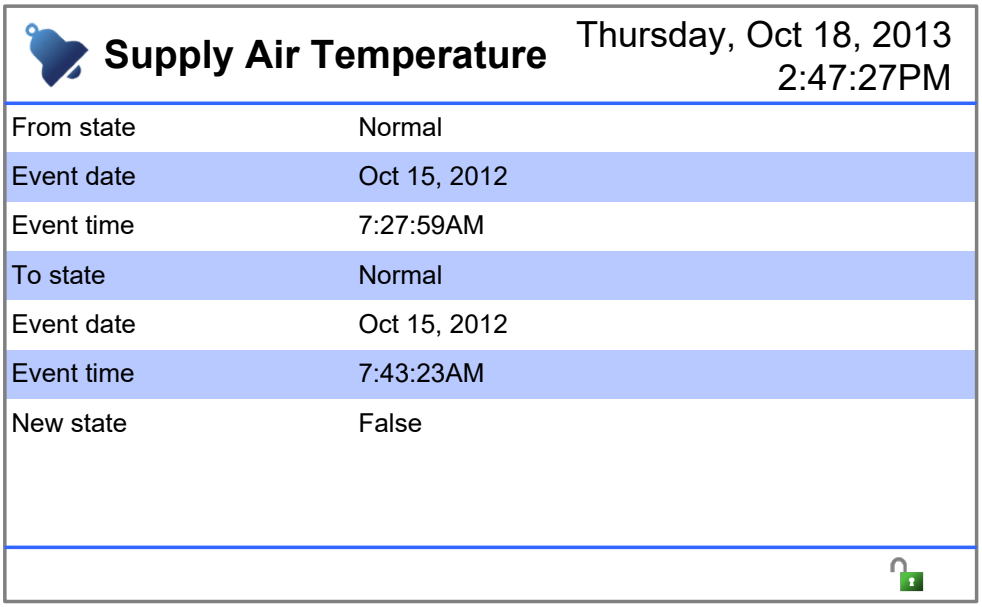


Figure 22: Alarm Details Screen (for BACnet B-AAC Profile Controller)

Schedules and Calendars Menu

The **Schedules & Calendars** menu is used to view and modify schedules (**SCH**), and calendars (**CAL**) currently available in the controller. You can also create time-of-day and special events.

When the 50 Series controller or a controller with an ECx-Display is connected to a building controller running EC-Net^{AX} and is part of a **BcpLonNetwork** or **BcpBacnetNetwork**, changes to the schedule will be synchronized with the building controller's schedules.

This menu may be greyed-out (is inaccessible) or there may be no schedules available on your controller's LCD screen. See *Feature Availability*.

Using Schedules and Calendars

Schedules are typically used to define a weekly schedule. The work week can be defined as Monday through Friday, with working hours from 8:00 a.m. to 5:00 p.m. Schedules also have special events that take priority over the weekly schedule. A special event can be a reference to a calendar.

Calendars on the other hand let you globally specify holidays and other special days in one place. A calendar can then be referenced in multiple schedules, allowing you to create recurring holidays only one time that will change the behavior of many schedules. This is shown below.

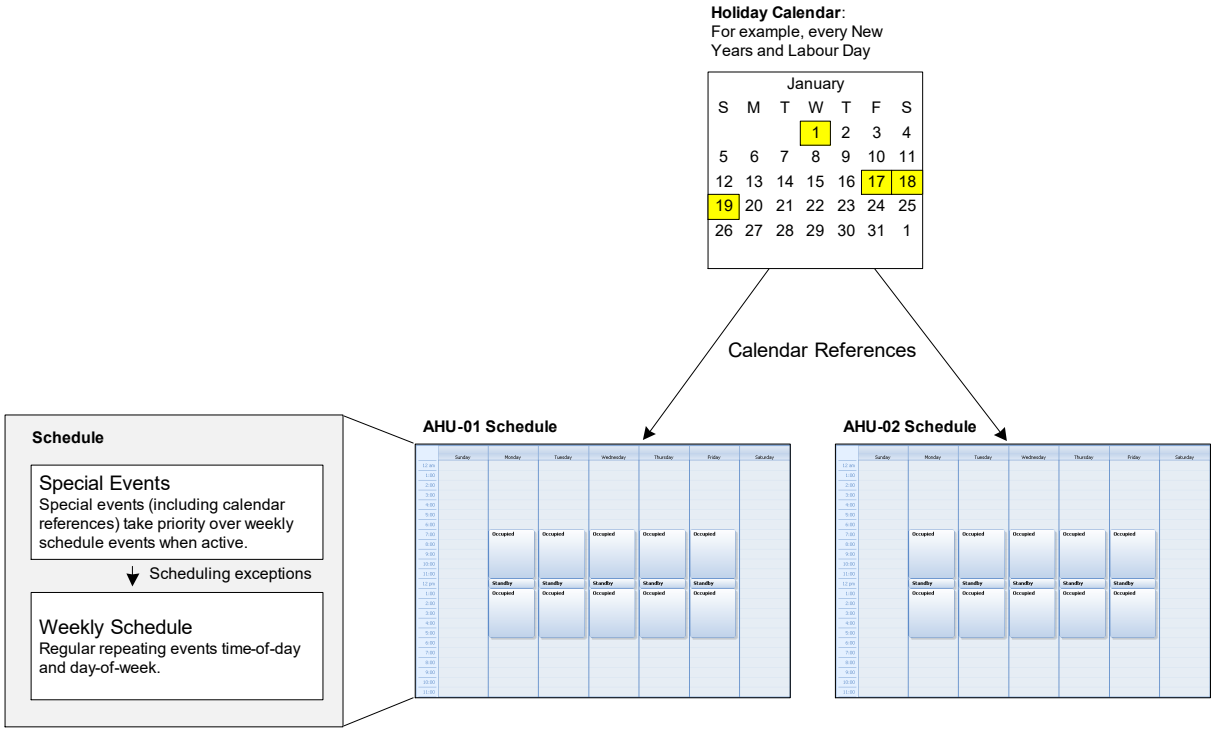


Figure 23: Inter-relation between Schedules and Calendars

A Calendar has more calendar events available than a Schedule has “special events”. Using calendars increases the total number of “special events” a controller can manage. See the controller’s respective Datasheet for details on amounts of Calendar and Schedule objects.

Schedule and Calendars Main Screen Overview

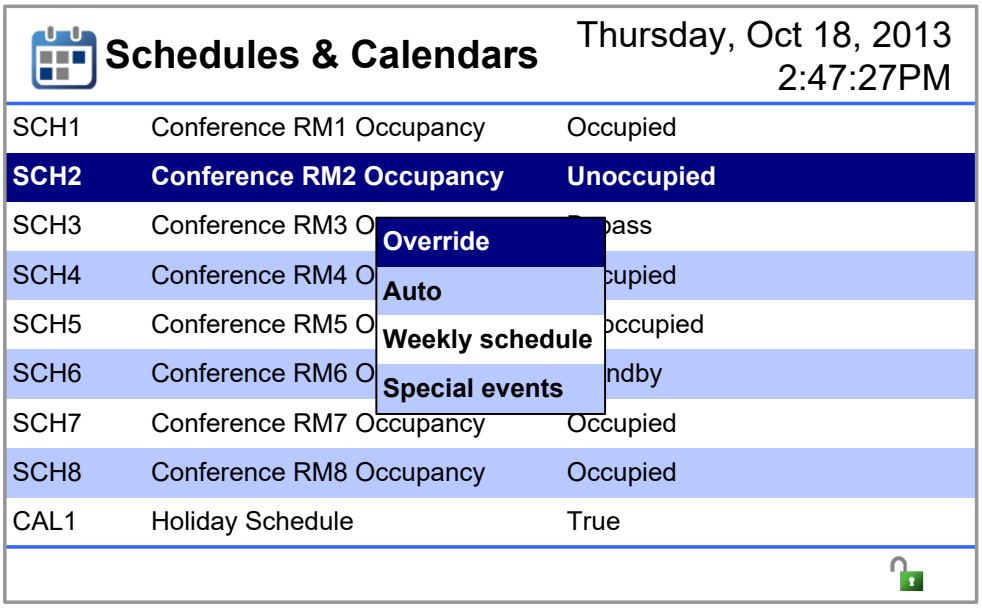


Figure 24: Schedules and Calendars Menu

For BACnet models only, schedules can be overridden by selecting the schedule and pressing the *Jog Dial* to view the available actions. To select an action, see *Selecting an Action*.

Menu Option	Description
Override (BACnet models only)	Forces the current schedule to assume a user-set fixed value as its present value (at priority level 8).
Auto (BACnet models only)	Clears an Override value.
Weekly schedule	View and modify a weekly schedule. See *Viewing a Weekly Schedule* and *Modifying or Deleting a Weekly Schedule Event*.
Special events	View and modify a special event.

Saving Changes to Calendars and Schedules

When you modify a calendar or schedule and you exit the configuration, you have the following options.

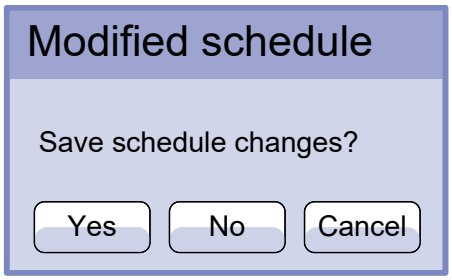


Figure 25: Options when Exiting the Configuration

Option	Description
Yes	Accept the changes you have made to the calendar or schedule and exit the configuration.
No	Reject the changes you have made to the calendar or schedule and exit the configuration.
Cancel	Stay in the calendar and schedule menus to continue with your modifications.

Schedule Hierarchy

There are three types of schedule priority levels assigned to events, in case there is any conflict among them. The current highest-level schedule event will have precedence over any lower-priority schedule event.

Type	Priority	Description
Special Events	1 (highest)	Special Events define a number of "Special Days" in the currently selected schedule instance. Within Special Events, the priority of Special Events is set by the order in which they are listed.
Weekly Schedule	2	Weekly schedules define regular, repeating, events by "time-of-day" and "day-of-week".
Default value	3 (lowest)	When no schedule event is active, the default value becomes active.

Schedules and Calendars Menu Tree

The following menu trees show the options available according to the type of controller.

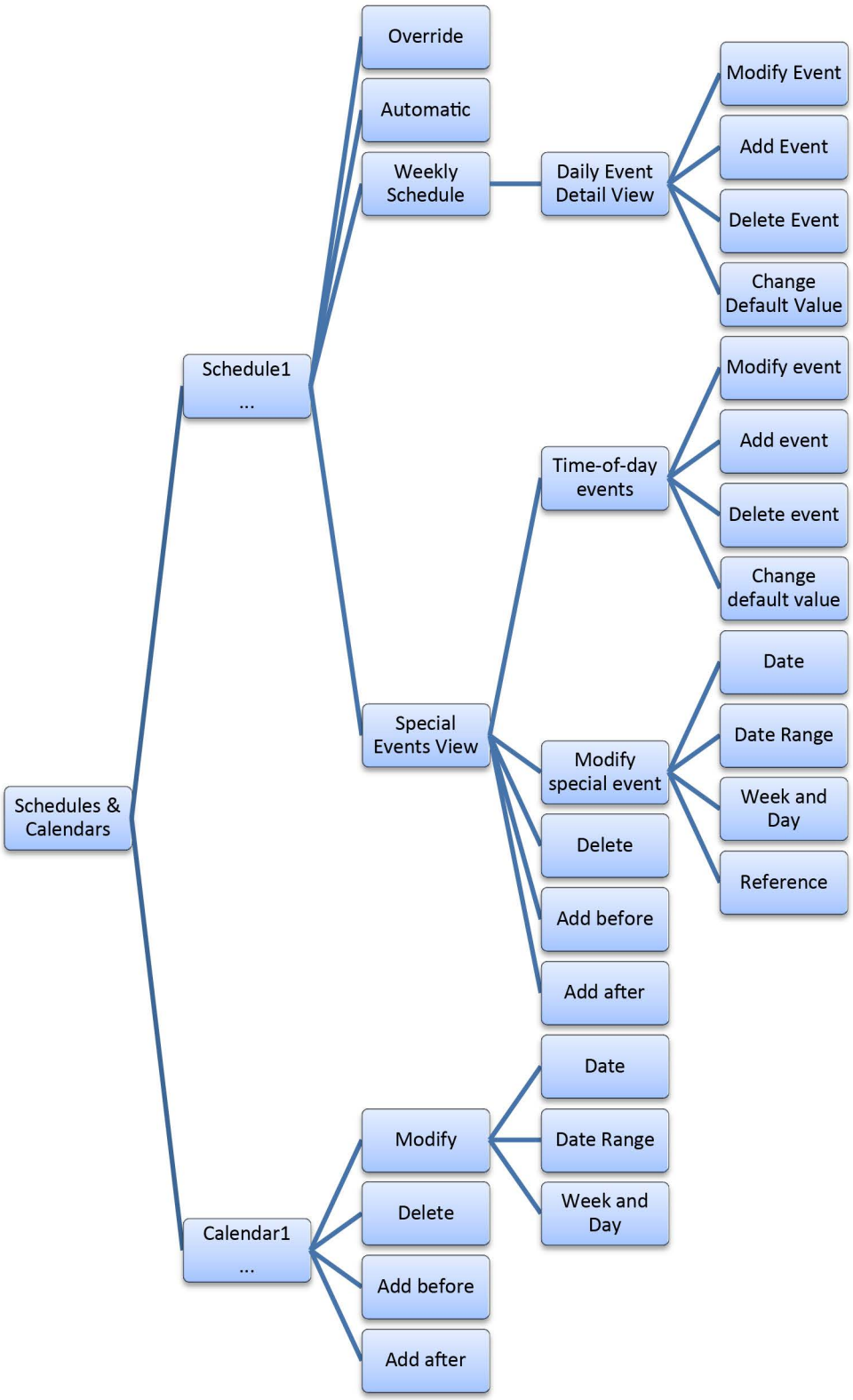


Figure 26: Calendar and Schedule Actions for BACnet Controllers (ECB and ECY Series)

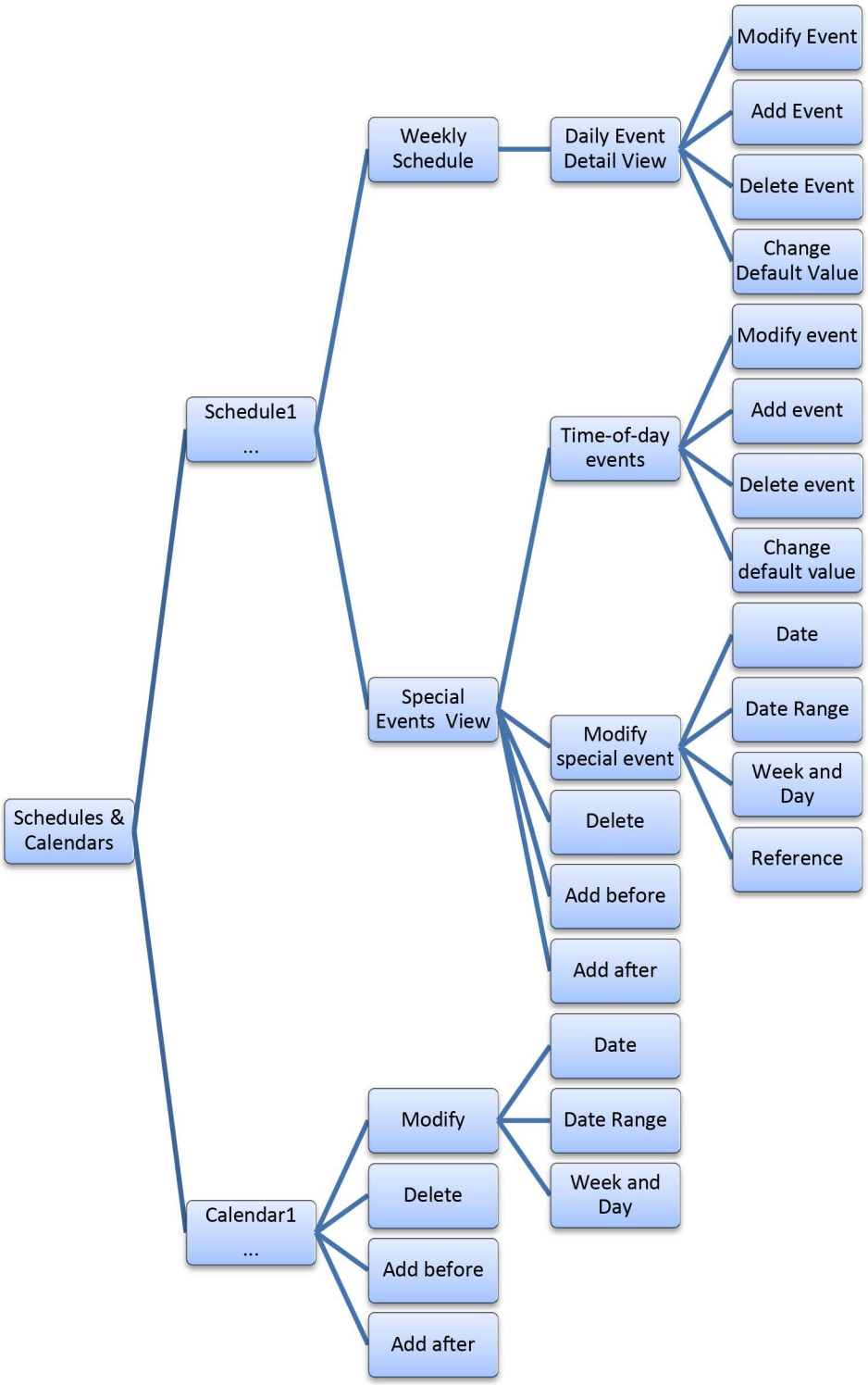


Figure 27: Calendar and Schedule Actions for a LonWorks Controller

The following actions can be taken with the Schedule and Calendars menu:

Action	See
View a weekly schedule	*Viewing a Weekly Schedule*
Modify a schedule's event	*Modifying or Deleting a Weekly Schedule Event*
Delete an event from a schedule	
Set the schedule's default value (the value the calendar provides when no event is scheduled)	*Creating a Weekly Schedule Event or Setting a Schedule's Default Value*
Add an event to a schedule	
Force the current schedule to assume a user-set fixed value as its present value at priority level 8 (BACnet models only)	*Overriding a Schedule (BACnet models only)*
Revert the operation of a calendar or schedule operation to automatic when it has been overridden (BACnet models only)	*Reverting a Schedule's Operation to Automatic (BACnet models only)*
View a special event's time-of-day events	*Viewing a Weekly Schedule*
Delete a special event	
Modify a special event's time-of-day event' properties	*Modifying a Special Event's Properties*
Modify a special event's time-of-day event	*Modifying or Deleting a Time-of-Day Event*
Delete a special event's time-of-day event	
Add a time-of-day event to a special event	*Creating a Special Event's Time-of-Day Event or Setting a Schedule's Default Value*
Select a calendar that will override this schedule (reference)	*Using a Calendar as a 'Special Event Reference' in a Schedule*
Add a special event	*Adding a Special Event*
Modify a calendar	*Modifying a Calendar Event's Properties*
Delete a calendar event	*Viewing Calendar Events*
Add a calendar event	*Adding a Calendar Event*

Viewing a Weekly Schedule

Weekly schedules define regular, repeating, events by "time-of-day" and "day-of-week." At a minimum, up to three distinct events can be configured for each day. Special Events have priority over the Weekly Schedule – see *Schedule Hierarchy*. A default value is configured that will be effective when there is no active event for this calendar instance.

A schedule's configuration can be viewed for each day of the week. Once you have viewed a weekly schedule, you can optionally modify it (see *Modifying or Deleting a Weekly Schedule Event*). View a weekly schedule as follows:

1. Use the *Jog Dial* to select any schedule in the **Schedules & Calendars** menu and activate a list of the currently available actions.
2. Select **Weekly Schedule** and press the *Jog Dial* to accept the selected value.

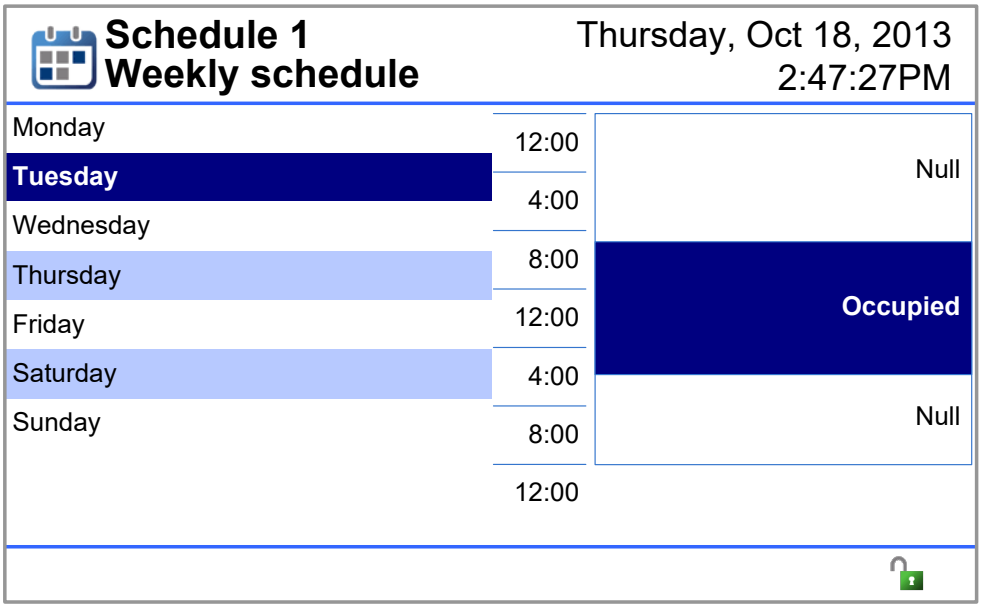


Figure 28: Schedule Weekly View

3. Use the *Jog Dial* to select a day of the week. A graphic representation of the schedule events for that day is shown on the right.
4. To view more details about the schedule events for the selected day of the week, press the *Jog Dial*.

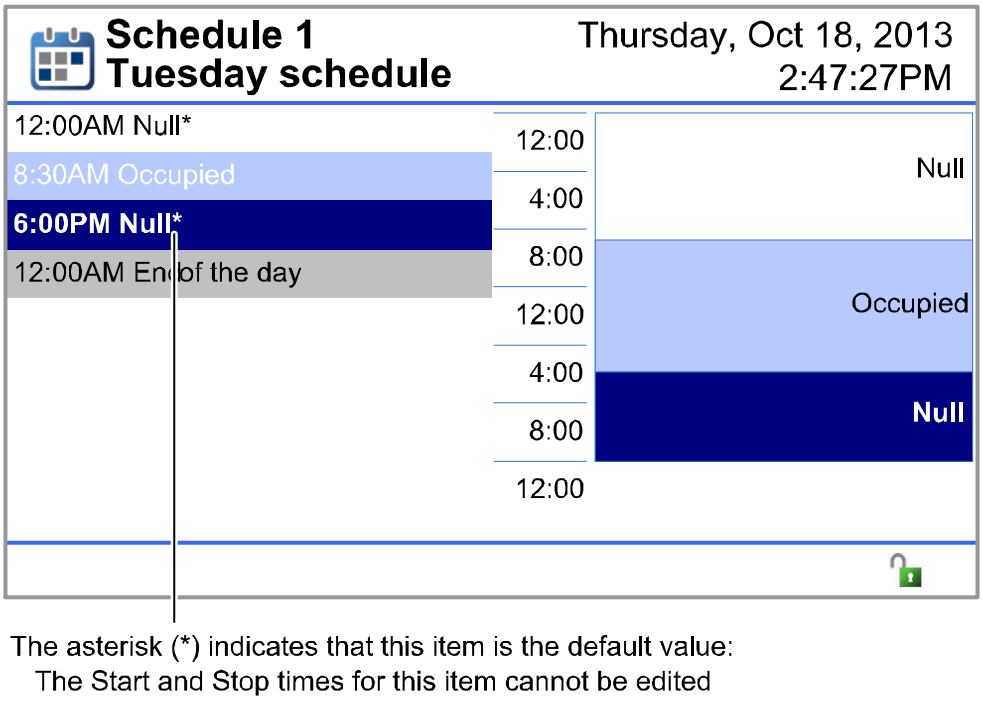


Figure 29: Schedule Daily Event View Details

When an item is marked with an asterisk (*), this indicates the time period during which the default value is effective: the Start and Stop times for this item cannot be edited as this is a non-event. Selecting this item allows you to add an event or to change the default value.

5. Use the *Jog Dial* to select a schedule event. The corresponding event is highlighted in the graphic on the right.

See the following procedure to modify the selected event.

Modifying or Deleting a Weekly Schedule Event

Once in a schedule's daily view details screen, you can modify or delete the selected event. See *Viewing a Weekly Schedule* for the procedure to get to this screen.

To do so, proceed as follows:

1. Use the *Jog Dial* to select a schedule event. The corresponding event is highlighted in the graphic on the right.

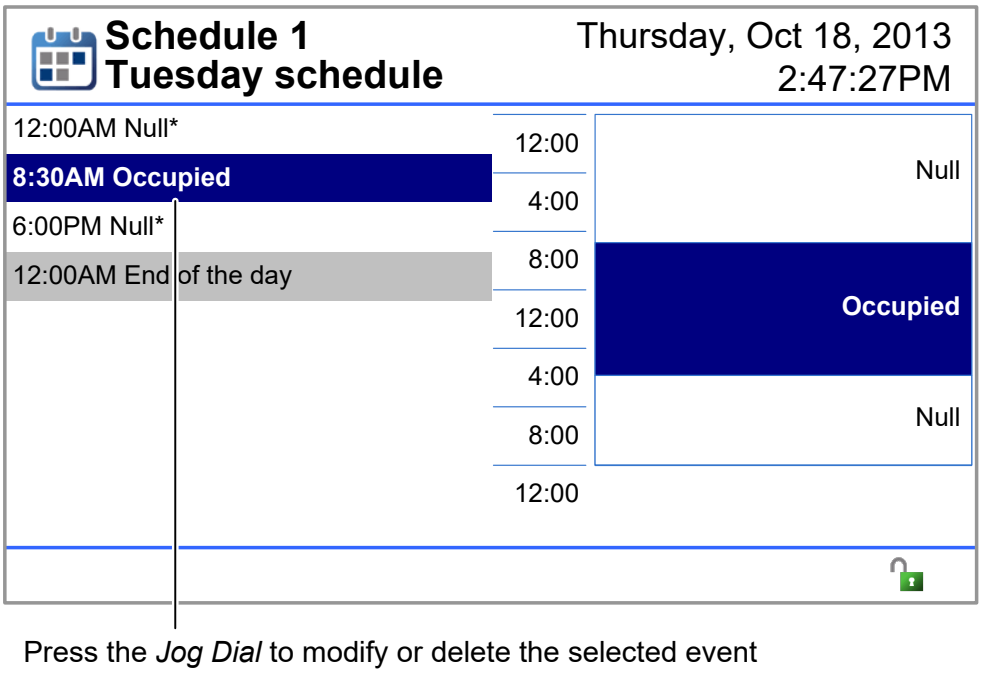


Figure 30: Schedule Daily Events

2. Select **Modify Event** to change the selected event's value, start, and stop time or select **Delete Event** to remove the selected event. Press the *Jog Dial* to accept your choice

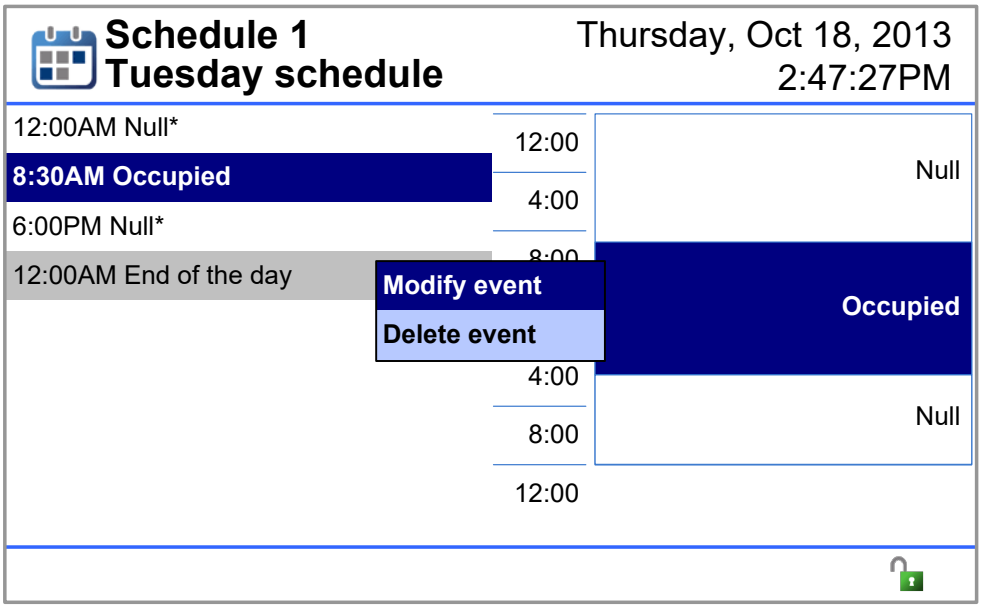


Figure 31: Modify or Delete the Selected Event

3. If you chose **Modify Event**, use the *Jog Dial* to select an event's value, start, or stop time.

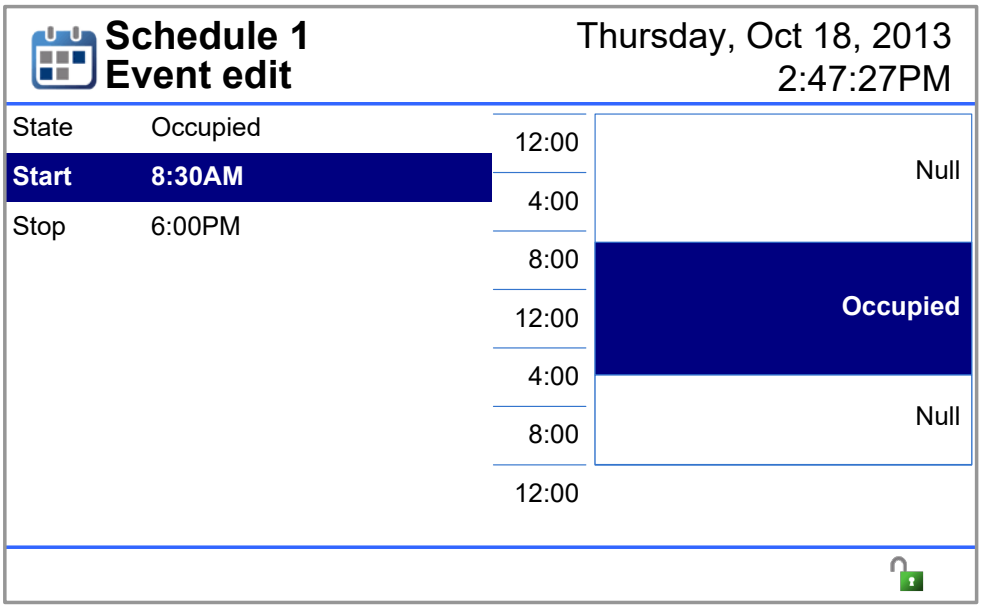


Figure 32: Schedule Event's Value, Start, and Stop Times

4. Use the *Jog Dial* to change the event's value, start or stop time. The event's start or stop time can be set in ten-minute increments (press and rotate the jog-dial at the same time for one-minute increments (see figure *Press and Rotate the Jog Dial at the Same Time to Set the Scroll Step Size*). The graphic on the right updates accordingly.

Creating a Weekly Schedule Event or Setting a Schedule's Default Value

Once in a schedule's daily view details screen, you can:

- Add an event to the weekly schedule for the selected day.
- Set the schedule's default value. The schedule's default value will be effective when there is no active event for this calendar instance. For a schedule instance, the same default value is used for both the weekly schedule and the special events.

See *Viewing a Weekly Schedule* for the procedure to get to this screen.

To do so, proceed as follows:

1. Use the *Jog Dial* to select any default value item (marked with an asterisk (*)). See figure *Schedule Daily Event View Details*. To create a weekly schedule event, select a default value after which you want to create the event. Press the *Jog Dial* to activate a list of the currently available actions.

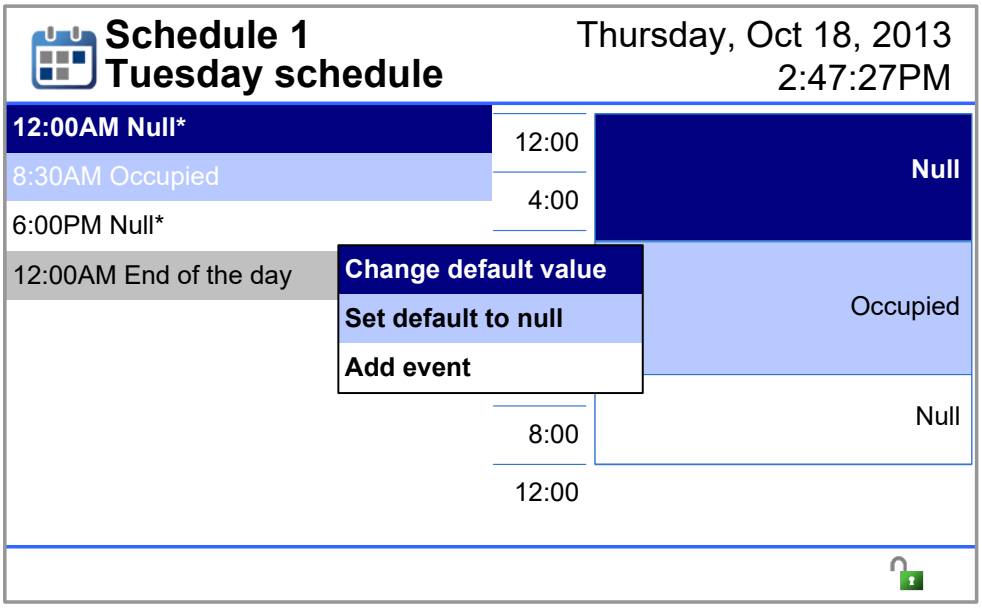


Figure 33: Schedule Event Start and Stop Times

Menu Option	Description
Change default value	Change a schedule's default value. Select the value from the list.
Set default to null	Change a schedule's default value to null.
Add event	Add a weekly schedule event after the selected default value. An event can only be added outside of currently configured events (that is, where the default value is active).

Proceed below when adding an event:

2. Select **Add Event**.

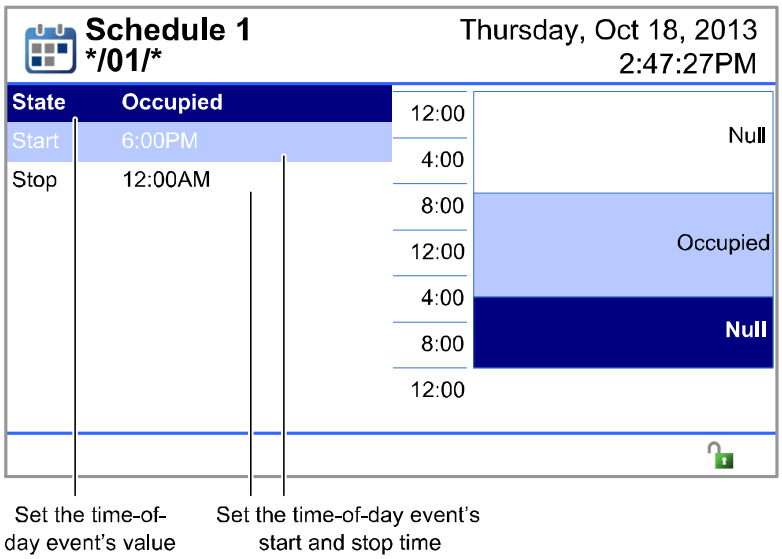


Figure 34: Schedule Daily Event View Details

3. Use the *Jog Dial* to set the event's value (shown as **State**), start, and stop times. The event's start or stop time can be set in ten-minute increments (press and rotate the jog-dial at the same time for one-minute increments - see figure *Press and Rotate the Jog Dial at the Same Time to Set the Scroll Step Size*). The graphic on the right updates accordingly.

Resolving Event Errors

When the maximum number of events per day has been exceeded in a Weekly Schedule, a configuration error is shown: the last event of the day turns red.

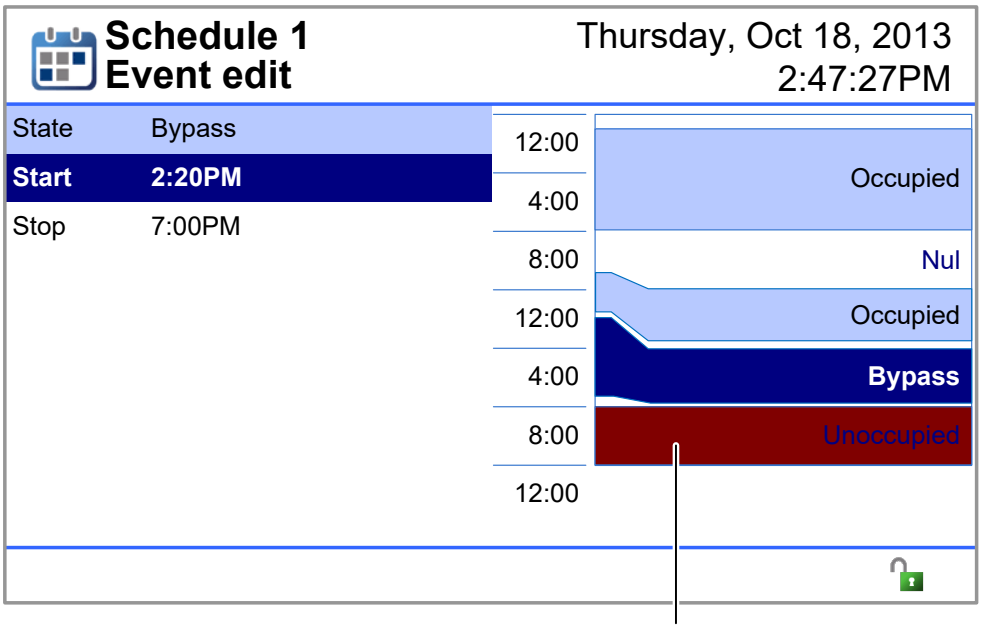


Figure 35: Event error: the last event of the day is shown in red

When this error is shown, reduce the number of events in that day. No more than three distinct events per day can be configured, however when adjacent events are added, it is possible to make a valid configuration with up to six adjacent events per day.

If you accept a configuration change while this error is active, the event(s) shown in red will be deleted from the current configuration.

Overriding a Schedule (BACnet models only)

A schedule's current value can be overridden (for example, for maintenance purposes, or to respond to an exceptional event on the fly). Proceed as follows:

1. Use the *Jog Dial* to select any schedule in the **Schedules & Calendars** menu and activate a list of the currently available actions (see figure *Schedules and Calendars Menu*).
2. Select **Override** and press the *Jog Dial* to accept the selected value.
3. Set the override value. See *Operator Interface*.

Reverting a Schedule's Operation to Automatic (BACnet models only)

When a schedule's current value has been overridden, automatic operation can be restored as follows:

1. Use the *Jog Dial* to select any overridden schedule in the **Schedules & Calendars** menu and activate a list of the currently available actions (see figure *Schedules and Calendars Menu*).
2. Select **Auto** and press the *Jog Dial* to accept the selected value. The Schedule's Operation is restored to automatic.

Viewing a Special Event

Special events define several "Special Days" in the currently selected schedule instance. Typically, you use them to define days with scheduling exceptions (for example, holidays). Special events have priority over the Weekly Schedule – see *Schedule Hierarchy*. A special Event can reference a previously configured Calendar Event.

Once a special event's configuration is viewed, you can optionally modify it or create a new one. View a special event as follows:

1. Use the *Jog Dial* to select any schedule in the **Schedules & Calendars** menu and activate a list of the currently available actions (see figure Schedules and Calendars Menu).
2. Select **Special Event** and press the *Jog Dial* to accept the selected value.

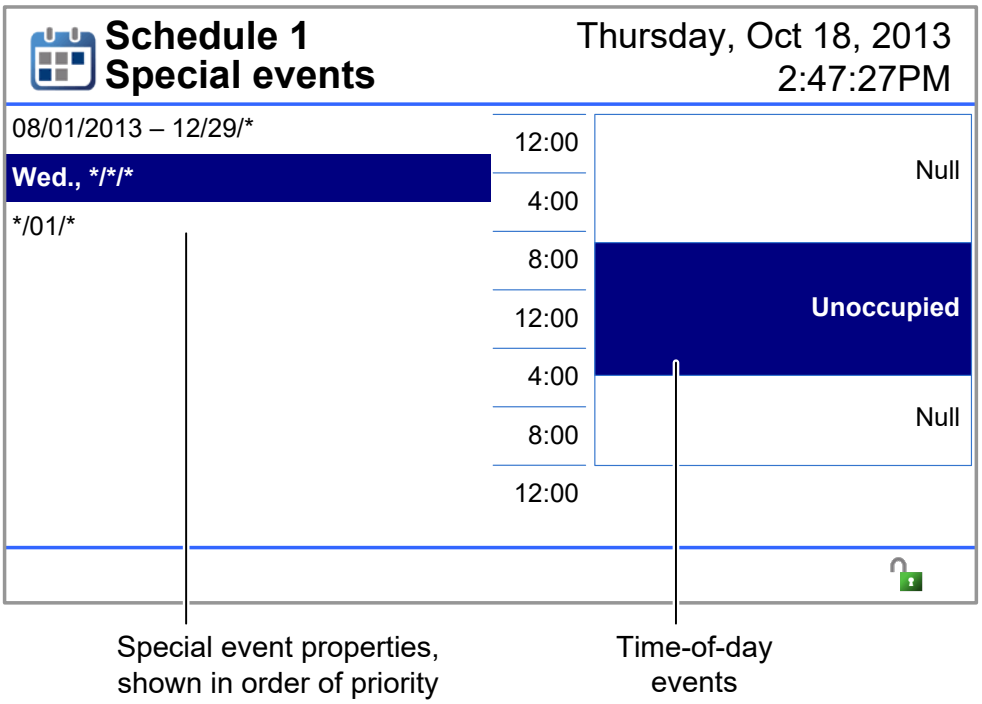


Figure 36: Special Event View

3. Use the *Jog Dial* to select a special event. The time-of-day events for this special event are shown graphically on the right.
4. To view the options for a special event, press the *Jog Dial*.

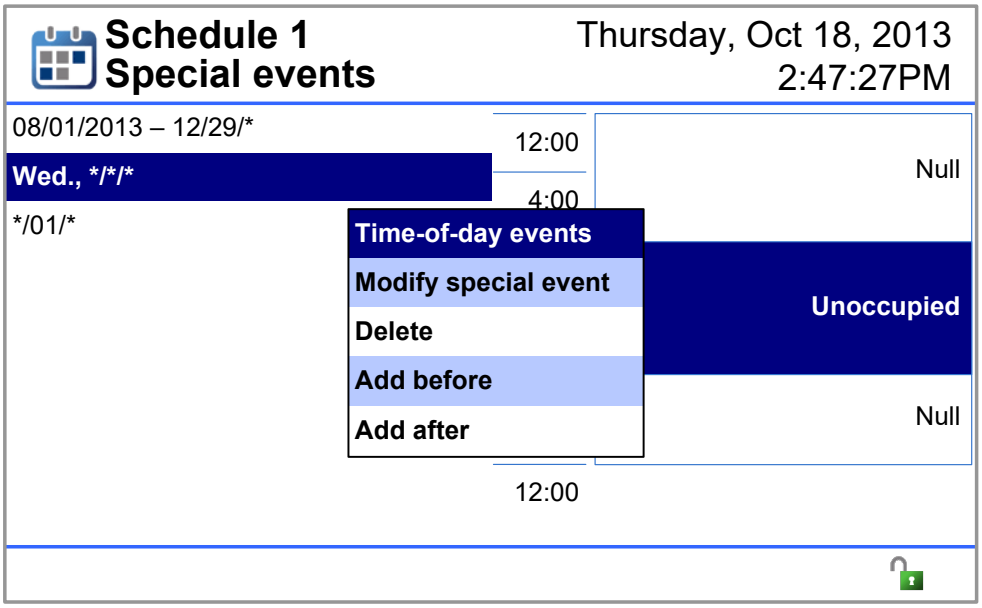


Figure 37: Special Events Daily Menu Options

Menu Option	Description	See
Time-of-day events	For the selected special event, create a time-of-day event or set the current schedule's default value.	*Creating a Special Event's Time-of-Day Event or Setting a Schedule's Default Value*
	For the selected special event, modify or delete a time-of-day event.	*Modifying or Deleting a Time-of-Day Event*
Modify special event	Configure the selected special event's properties (shown as the date range on the left).	*Modifying a Special Event's Properties*
Delete	Delete the selected special event.	-
Add before	Add a new special event before the selected special event (at a higher priority than the selected special event).	*Adding a Special Event*
Add after	Add a new special event after the selected special event (at a lower priority than the selected special event).	

Modifying a Special Event's Properties

Once in a schedule's special events details screen, you can modify a special event's properties. See *Viewing a Special Event* for the procedure to get to this screen. To modify a special event's properties, proceed as follows:

1. The screen displays the special event's type, start date, and, if available, stop date. Use the *Jog Dial* to select the special event's **Type**.

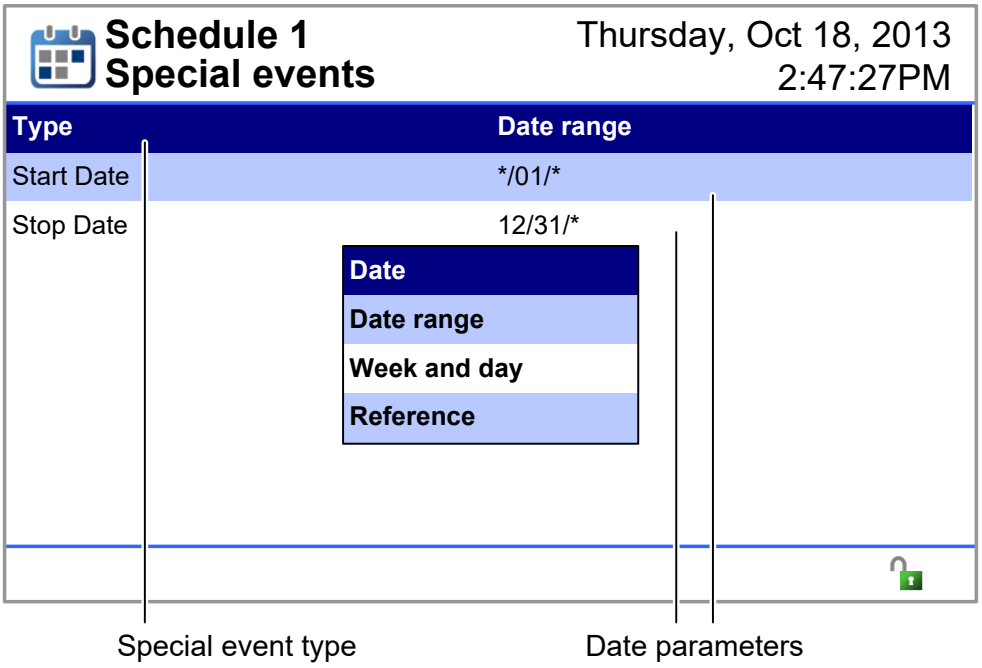
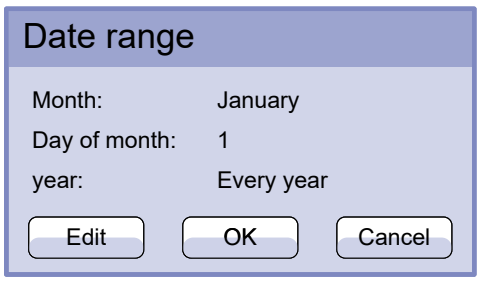
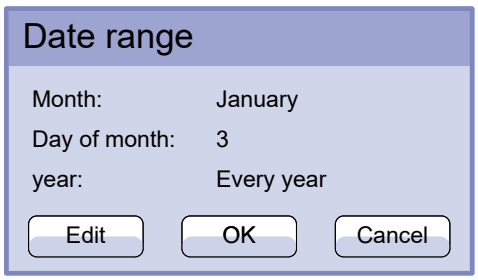
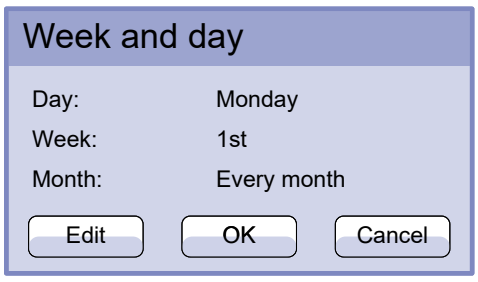


Figure 38: Setting the Special Event's Type

2. Use the Jog Dial to change the special event's properties.

Special Event Type	Description
Date	Selects a day or a series of weekdays, dates, months or years.  For example, the above setting selects every first day of the month as a Special Event.
Date range	Selects a range of days.   For example, the above setting selects the first three days of every year as a Special Event.
Week and day	Selects a series of weekdays, week in a calendar month, or months.  For example, the above setting selects the first Monday of every month as a Special Event.
Reference	Select a Calendar that will be used as a 'special event reference' in this Schedule. For more information, see *Using a Calendar as a 'Special Event Reference' in a Schedule*.

Special Selection Options

The number of days in a calendar month varies according to the month, and for February, according to whether it is a leap year. Due to this, there is the option in **Day** to select the last day of the month, which automatically selects the last day of the month, regardless of the month.

Also, for Month, there is the option to select all even months (February, April, June, August, October, December), or to select all odd months (January, March, May, July, September, and November).

Using a Calendar as a 'Special Event Reference' in a Schedule

A calendar is linked to a schedule so that the calendar can override the weekly schedule. See *Using Schedules and Calendars*. To view a calendar's events, see *Viewing Calendar Events*. Proceed as follows:

1. In the schedule's Special Event's Properties, select **Reference**. See *Modifying a Calendar Event's Properties*.
2. Link the schedule to a calendar by selecting a calendar from the list.

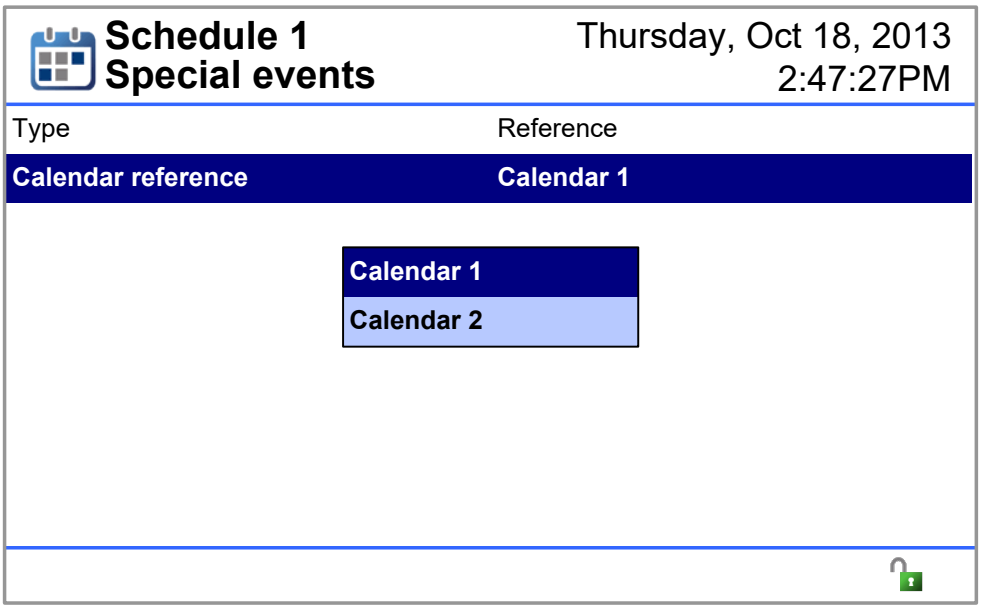


Figure 39: Selecting a Calendar that will override a Schedule

3. Modify the calendar event(s) or add a calendar event if necessary. See *Modifying a Calendar Event's Properties* and *Adding a Calendar Event*.

Modifying or Deleting a Time-of-Day Event

Once in a schedule's Special Event time-of-day details screen, you can modify or delete the selected time-of-day event. See *Viewing a Special Event* for the procedure to get to this screen. To do so, proceed as follows:

1. Use the *Jog Dial* to select the time-of-day details event to modify or delete in the schedule's daily view details screen.

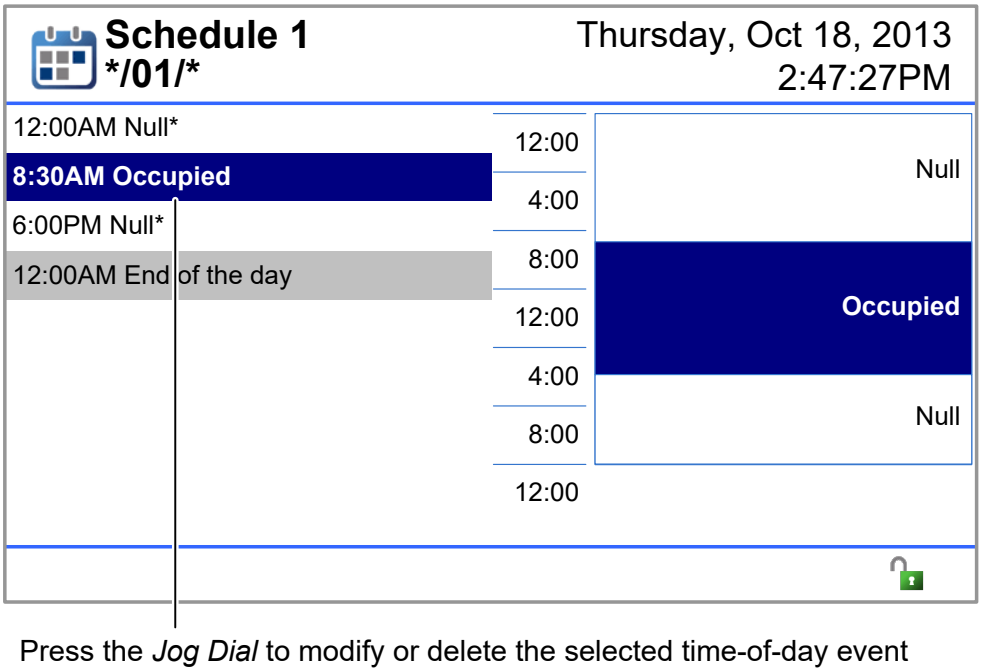


Figure 40: Time-of-day events

2. Select **Modify event** to change the selected time-of-day event's value, start, and stop time or select **Delete event** to remove the selected time-of-day event. Press the *Jog Dial* to accept your choice.

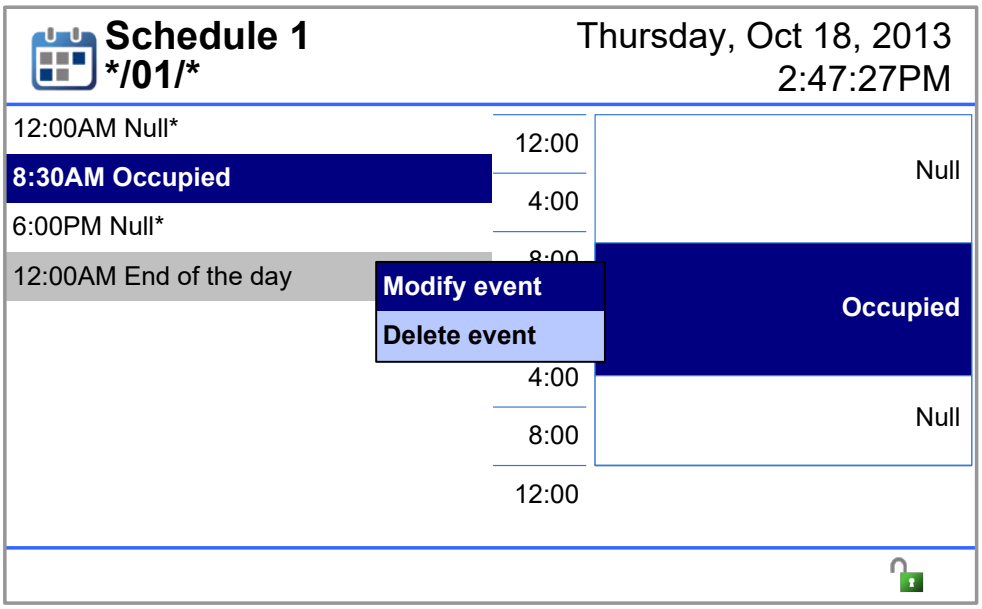


Figure 41: Modify or Delete the Selected Time-of-day Event

3. If you chose **Modify event**, use the *Jog Dial* to select a time-of-day event's value, start, or stop time.

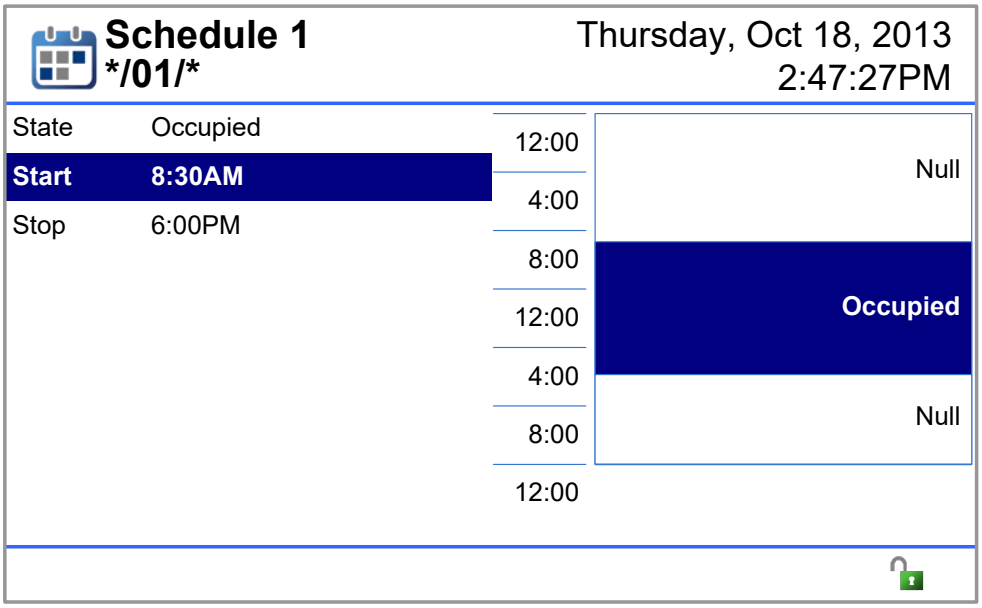


Figure 42: Time-of-day Event's Value, Start, and Stop Times

4. Use the *Jog Dial* to change the time-of-day event's value, start or stop time. The time-of-day event's start or stop time can be set in ten-minute increments (press and rotate the jog-dial at the same time for one-minute increments – see figure *Press and Rotate the Jog Dial at the Same Time to Set the Scroll Step Size*). The graphic on the right updates accordingly.

Creating a Special Event's Time-of-Day Event or Setting a Schedule's Default Value

Once in a schedule's Special Event Time-of-Day details screen, you can:

- Add a time-of-day event to the special event.
- Set the schedule's default value. The schedule's default value will be effective when there is no active event for this calendar instance. For a schedule instance, the same default value is used for both the weekly schedule and for the special events.

See *Viewing a Special Event* for the procedure to get to this screen. To do so, proceed as follows:

1. Use the *Jog Dial* to select any default value item (marked with an asterisk (*)). To create a weekly schedule event, select a default value after which you want to create the event. Press the *Jog Dial* to activate a list of the currently available actions.

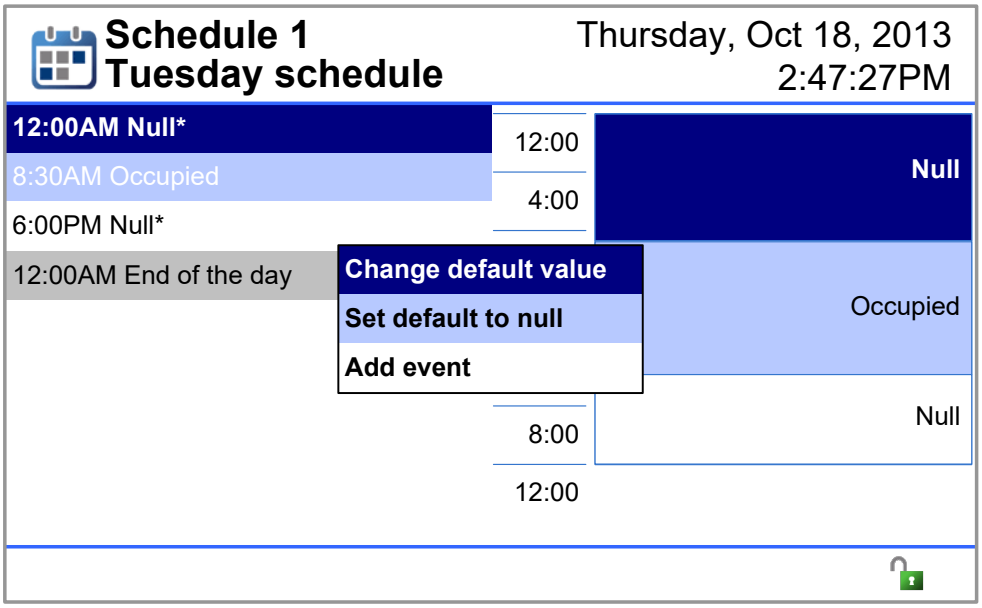


Figure 43: Schedule Event Start and Stop Times

Menu Option	Description
Change default value	Change a schedule's default value. Select the value from the list.
Set default to null	Change a schedule's default value to null.
Add event	Add a time-of-day event after the selected default value. A time-of-day can only be added outside of currently configured time-of-day events (that is, where the default value is active).

Proceed below when adding a time-of-day event:

2. Select **Add event**.

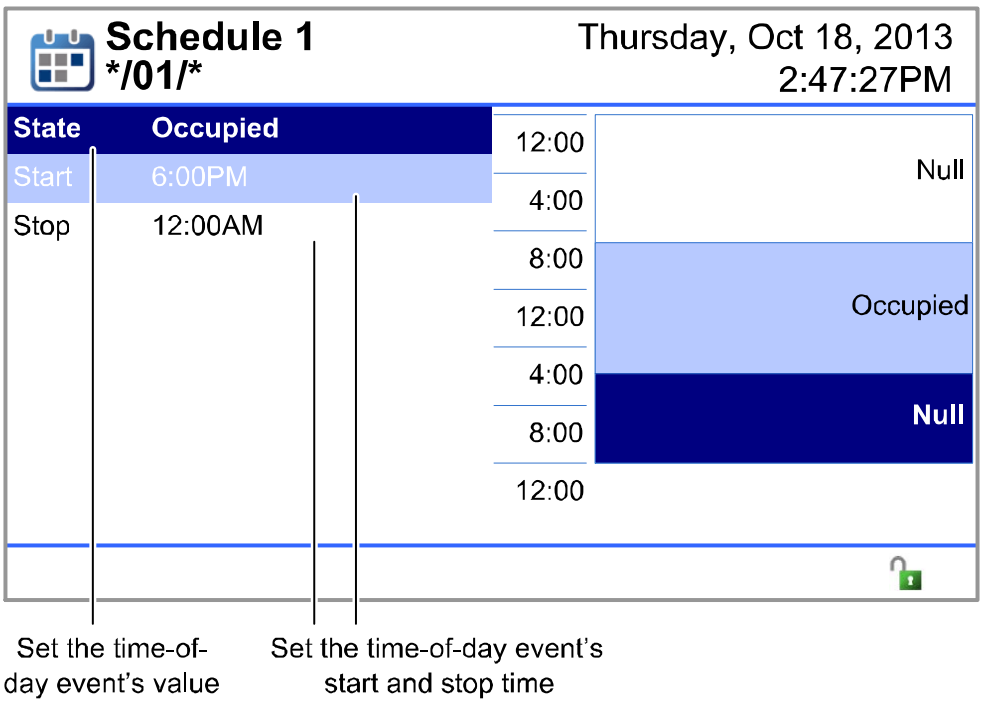


Figure 44: Schedule Daily Event View Details

3. Use the *Jog Dial* to set the event's value (shown as **State**), start, and stop times. The event's start or stop time can be set in ten-minute increments (press and rotate the jog-dial at the same time for one-minute increments – see figure *Press and Rotate the Jog Dial at the Same Time to Set the Scroll Step Size*). The graphic on the right updates accordingly.

Adding a Special Event

Once in a schedule's Special Event Time-of-day details screen (See *Viewing a Special Event*), you can:

- Add a new special event before the selected special event (at a higher priority than the selected special event). To do so, select **Add before** from the menu.
- Add a new special event after the selected special event (at a lower priority than the selected special event). To do so, select **Add after** from the menu.

To do so, proceed as follows:

1. In the special events daily menu options (see *Viewing a Special Event*), select **Add before** or **Add after**.

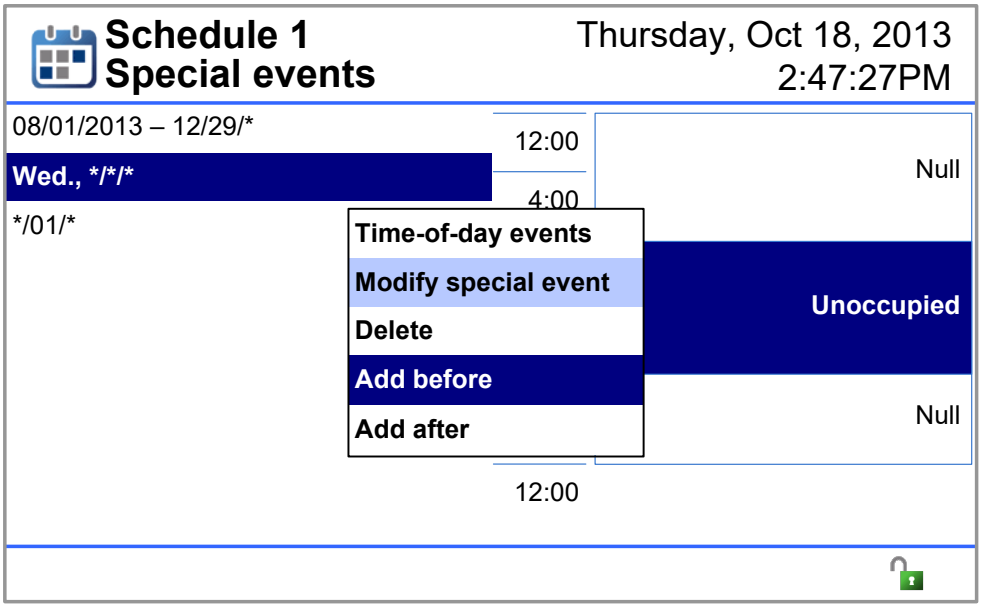


Figure 45: Select Add before or Add after

2. Use the *Jog Dial* to select the special event's **Type**. See *Modifying a Special Event's Properties* for more information about the **Type** parameter.

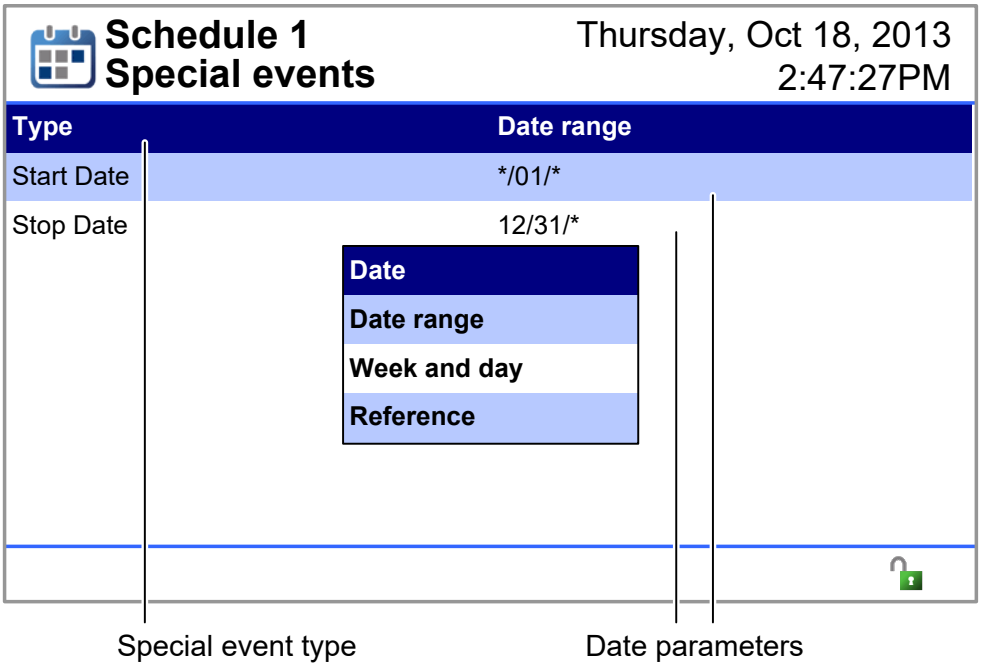


Figure 46: Setting the Special Event's Type

3. Use the *Jog Dial* to set the special event's start date, and if available, the stop date.
4. Use the *Jog Dial* to set the special event's time-of-day events. See *Modifying or Deleting a Time-of-day Event*.

Viewing Calendar Events

Calendar events define a number of "special event days" in the currently selected calendar instance. Typically, you use them to define days with scheduling exceptions (for example, holidays), and reference them in a schedule's **Reference** configuration. Calendars are shown in their order of priority. To view a calendar event, proceed as follows:

1. Use the *Jog Dial* to select any calendar instance in the **Schedules & Calendars** menu. See figure Schedules and Calendars Menu.
2. Select a calendar event from the list and press the *Jog Dial* to view the available options.

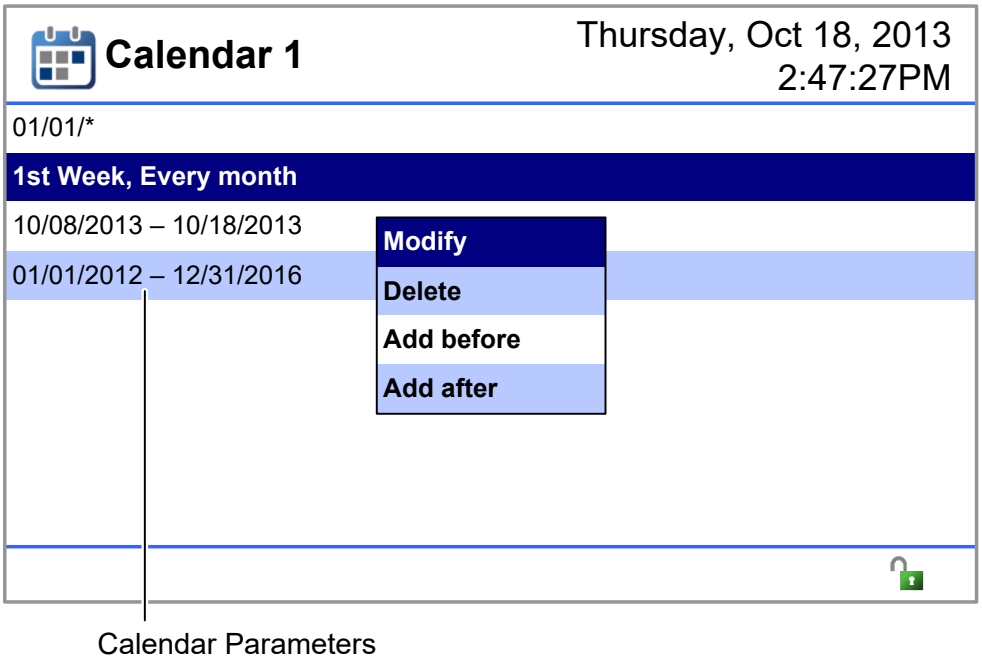


Figure 47: Calendar Event View

Menu Option	Description	See
Modify	Configure the selected calendar event's properties.	*Modifying a Calendar Event's Properties*
Delete	Delete the selected calendar event.	-
Add before	Add a new calendar event before the selected calendar event (at a higher priority than the selected calendar event).	*Adding a Calendar Event*
Add after	Add a new calendar event after the selected calendar event (at a lower priority than the selected calendar event).	

Modifying a Calendar Event's Properties

Once in a calendar's details screen, you can modify the selected calendar event. See *Viewing Calendar Events* for the procedure to get to this screen. To do so, proceed as follows:

1. The screen displays the calendar's type, start date, and, if available, stop date. Use the *Jog Dial* to select the calendar event's **Type**.

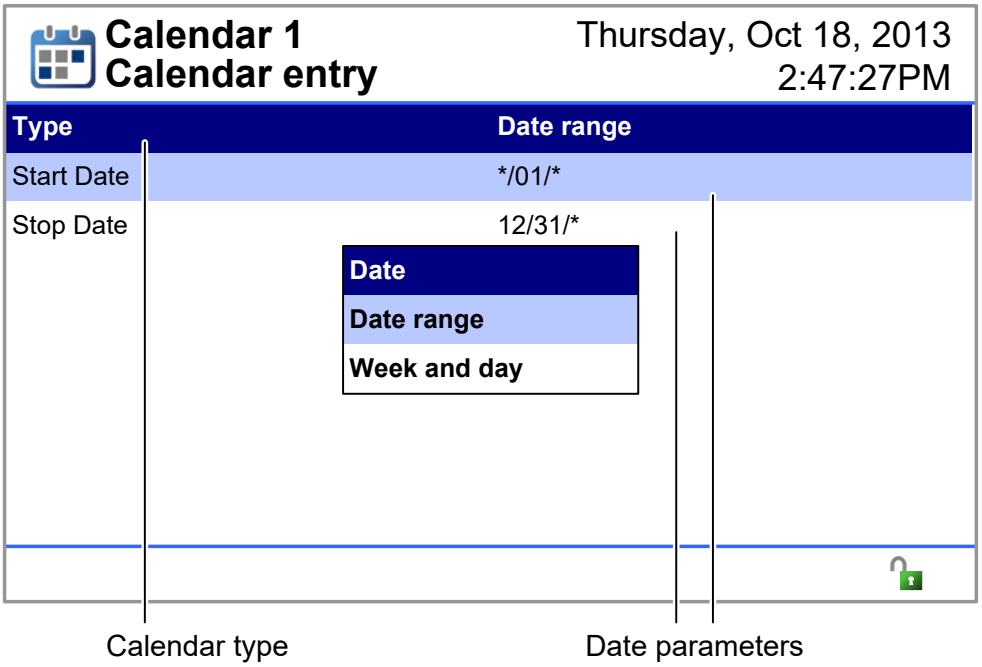
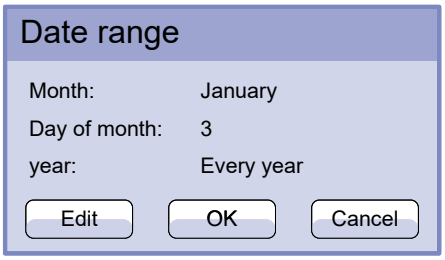
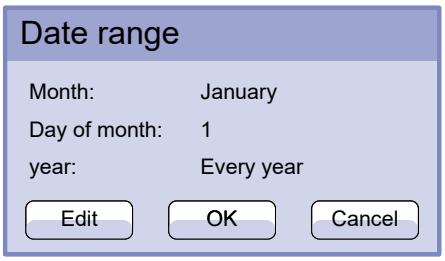
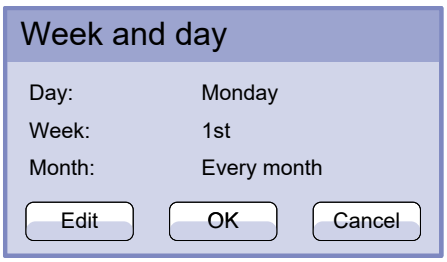


Figure 48: Setting the Calendar Event's Type

2. Use the *Jog Dial* to change the calendar's properties.

Special Event Type	Description
Date	Selects a day or a series of weekdays, dates, or months.  For example, the above setting selects every first day of the month as an event.
Date range	Selects a range of days.   For example, the above setting selects the first three days of every year as an event.
Week and day	Selects a series of weekdays, week in a calendar month, or months.  For example, the above setting selects the first Monday of every month as an event.

Adding a Calendar Event

Once in a calendar's details screen (see *Viewing Calendar Events*), you can:

- Add a new calendar event before the selected calendar event (at a higher priority than the selected calendar event). To do so, select **Add before** from the menu.
- Add a new calendar event after the selected calendar event (at a lower priority than the selected calendar event). To do so, select **Add after** from the menu.

To do so, proceed as follows:

1. In the calendar menu options (see *Viewing Calendar Events*), select **Add before** or **Add after**.

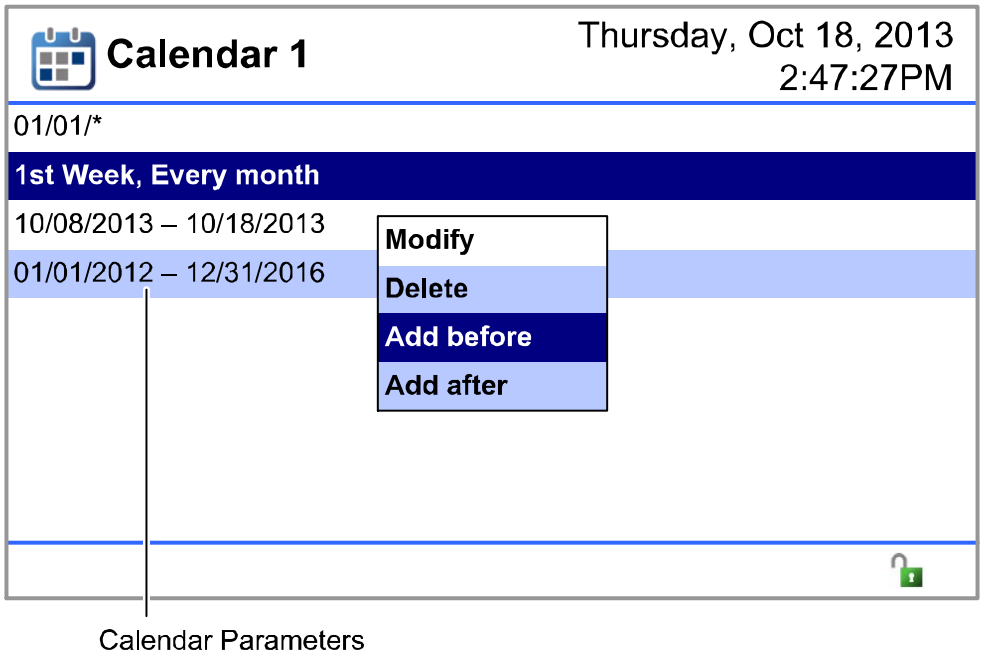


Figure 49: Select Add before or Add after

2. Use the *Jog Dial* to select the special event's **Type**. See *Modifying a Calendar Event's Properties* for more information about the **Type** parameter.

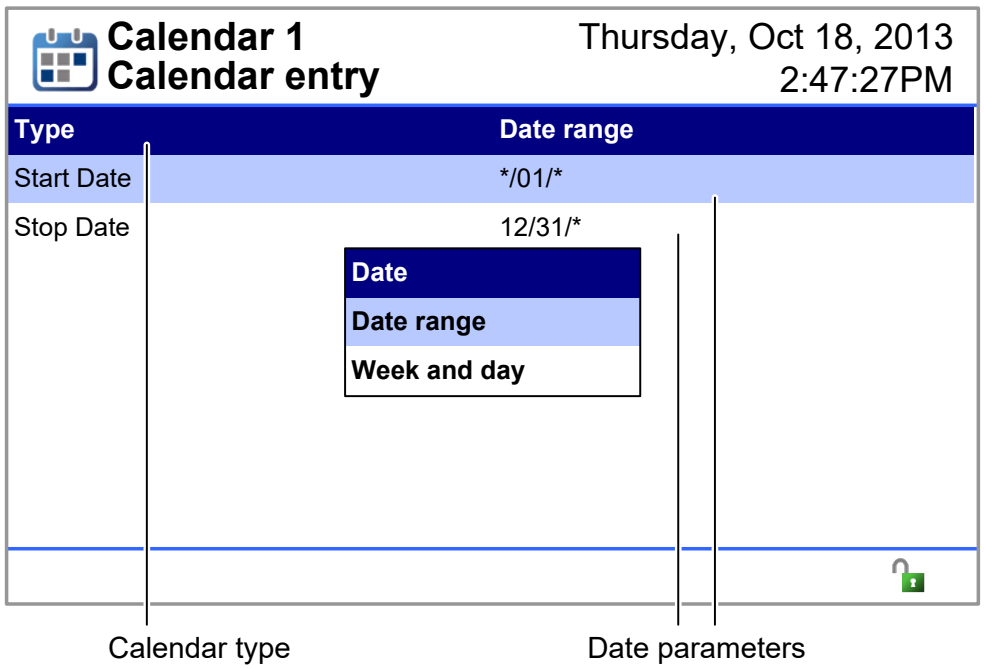


Figure 50: Setting the Calendar Event's Type

3. Use the *Jog Dial* to set the calendar event's start date, and if available, the stop date.

Alarm Menu (LonWorks)

The alarm menu shows the active alarms, displayed by priority. For LonWorks ECL controllers, alarms are triggered when the reliability of a point is other than **No fault detected (0)**. See *Reliability Property*. Points only include those that can be viewed in the *Points Menu* and also have a **Reliability** output port in EC-*gfx*Program such as **PID Loop, Hardware Input, Hardware Output, ComSensor, Wireless Sensor,** and **Schedule**.

This menu may be greyed-out (that is inaccessible) on your controller's LCD screen: see *Feature Availability*.

From this screen, you can view the list of active alarms:

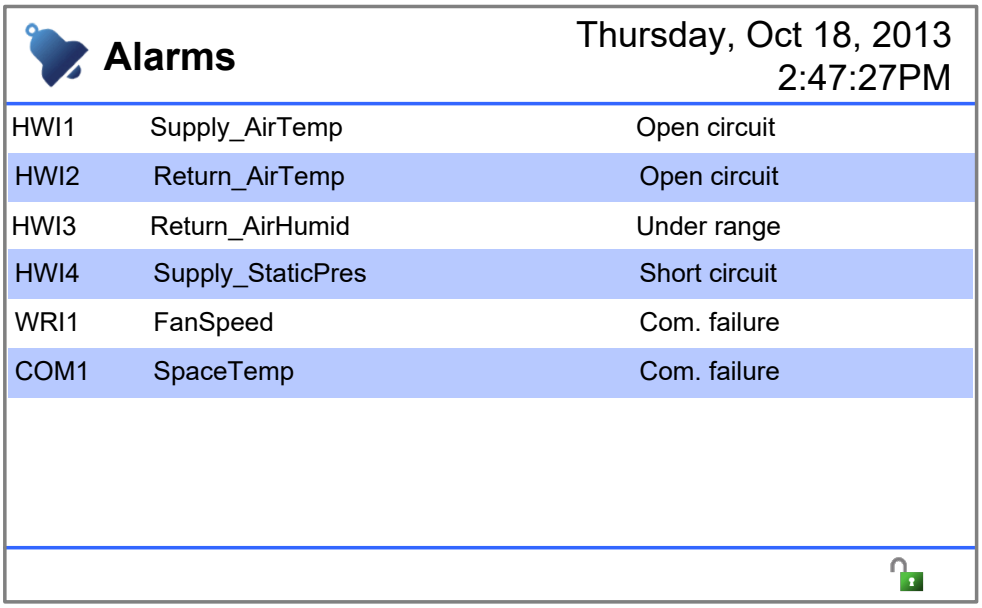


Figure 51: LonWorks Alarms Menu

Reliability Property

The reliability property is an enumeration that provides an indication of whether the current value or the operation of the physical input in question is reliable as far as the controller can determine and, if not, why. The reliability property supports the following enumeration values:

Enumeration	Description
NO_FAULT_DETECTED	The Present Value is reliable, as no other fault (enumerated below) has been detected.
NO_SENSOR	No sensor is connected to the Input object.
OVER_RANGE	The sensor connected to the Input is reading a value higher than the normal operating range as configured by the controller's programming.
UNDER_RANGE	The sensor connected to the Input is reading a value lower than the normal operating range as configured by the controller's programming.
OPEN_LOOP	The connection between the defined object and the physical device is providing a value indicating an open circuit condition.
SHORTED_LOOP	The connection between the defined object and the physical device is providing a value indicating a short circuit condition.
PROCESS_ERROR	A processing error was encountered.
MULTI_STATE_FAULT	The Present_Value of the Multi-state object is equal to one of the states in the Fault_Values property and no other fault has been detected. This fault may be sent by some controller models.
CONFIGURATION_ERROR	The object's properties are not in a consistent state.
COMMUNICATION_FAILURE	Proper operation of the object is dependent on communication with a remote sensor or device and communication with the remote sensor or device has been lost.
UNRELIABLE_OTHER	The controller has detected that the Present_Value is unreliable, but none of the other conditions describe the nature of the problem. A generic fault other than those listed above has been detected, for example, a Digital Input is not cycling as expected, or a schedule is empty (it has not yet been configured).

Alarm Menu (BACnet)

The alarm menu shows the active alarms, displayed by priority.

- For BACnet ECB B-ASC profile controllers (see *Introduction to the Operator Interface*), no alarms are supported. This feature is not available on these controllers.
- For BACnet ECB B-AAC profile controllers (see *Introduction to the Operator Interface*), points must have their alarms previously configured in the code downloaded into the controller for alarms to be active. Alarms are triggered when the reliability of a point is other than **No fault detected (0)**. See *Reliability Property*. Points include any EC-*gfx*Program block that has a **Reliability** output port such as **Analog Hardware Input**, **Binary Hardware Input**, **Multi State Input**, **Analog Value**, **Binary Value**, **Multi State Value**, **Analog Hardware Output**, **Binary Hardware Output**, **ComSensor**, **and Wireless Sensor**. Alarms can also be acknowledged.

This menu may be greyed-out (that is inaccessible) on your controller's LCD screen: see *Feature Availability*.

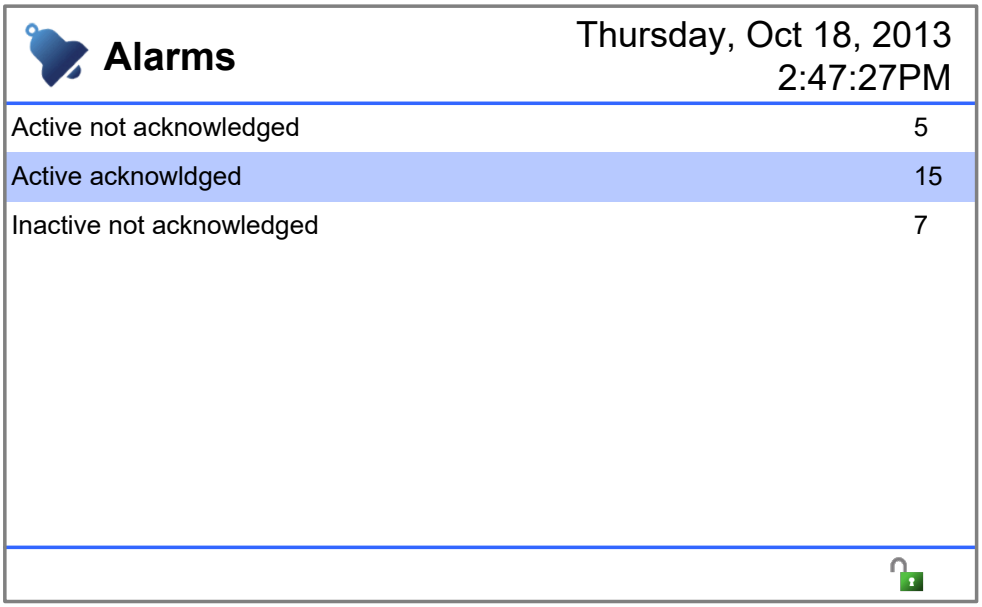


Figure 52: BACnet B-AAC Alarms Menu

Select the type of alarm you want to view.

Type	Description
Active unacknowledged	Alarms that are currently active and are unacknowledged.
Active acknowledged	Alarms that are currently active and have been acknowledged.
Inactive unacknowledged	Alarms that were active but are currently inactive (has returned to normal) and are unacknowledged.

The alarm list is shown below as an example of the **Active acknowledged** alarm type.

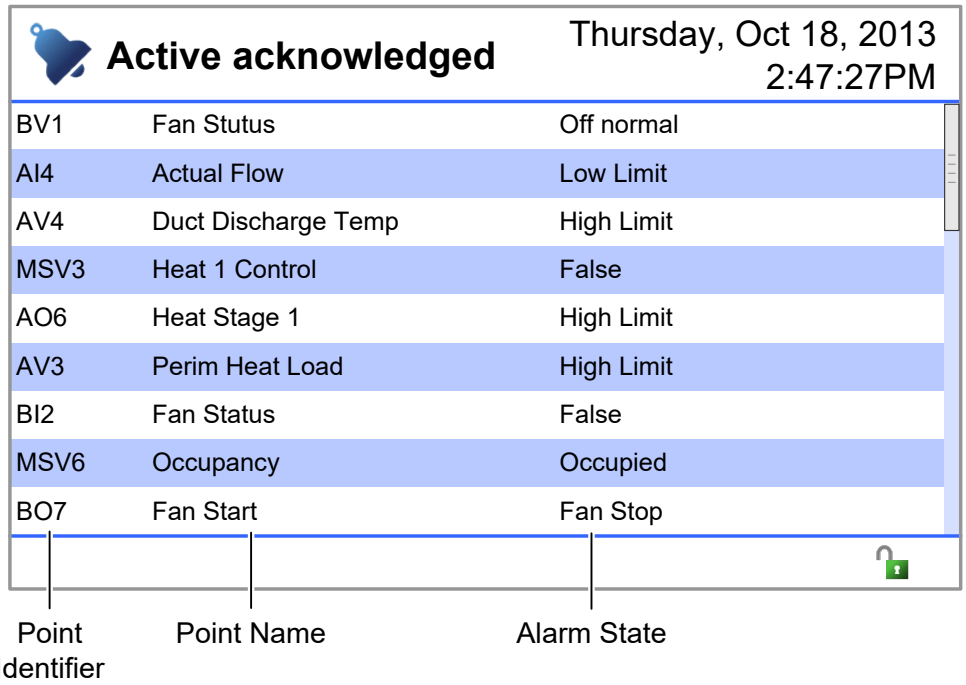


Figure 53: BACnet B-AAC Active Unacknowledged Alarm List

Viewing the Alarm Details Screen

From this screen, you can view the alarm details as follows:

1. Use the *Jog Dial* to select an alarm and go to the alarm detailed information screen.

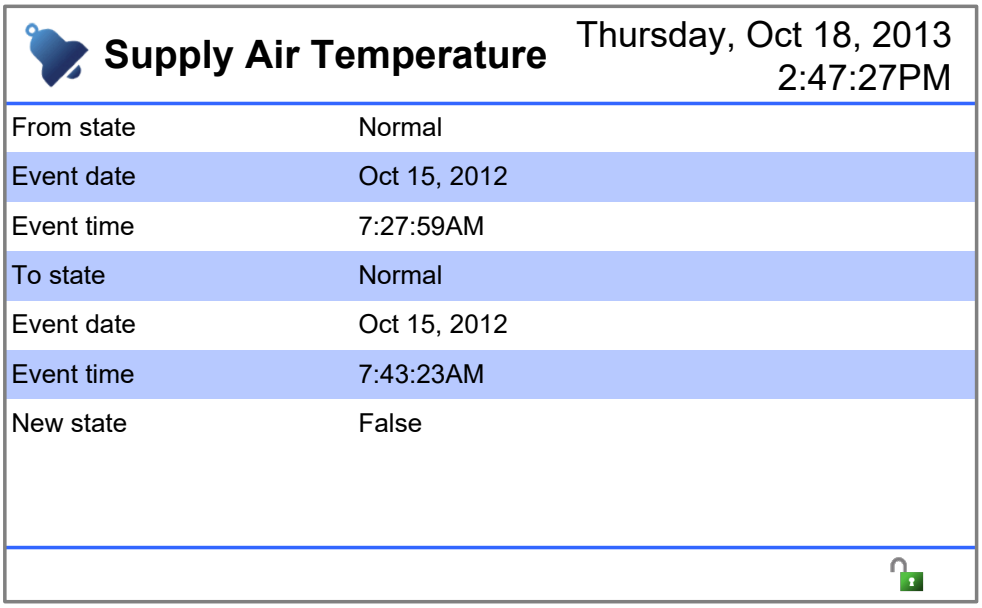


Figure 54: Typical Alarm Detailed Information Screen

Type	Description
From state	The point's alarm status prior to the alarm event.
To state	The point's alarm status at the moment of the alarm event.
New state	The point's current alarm status.
Event date	The date the event occurred.
Event time	The time the event occurred.
Exceeded limit	The alarm event threshold.
Exceeding value	The alarm event value.
Feedback	The value at the corresponding block's **Feedback** input. When this value is different from the corresponding block's present value, this triggers an alarm.
Reliability	This is the alarm point's reliability property, if available. See *Reliability Property*.

2. Press **EXIT** to return to the previous menu.

Acknowledging an Unacknowledged Alarm

For BACnet B-AAC Profile Controllers, **Active unacknowledged** and **Inactive unacknowledged** alarms can be acknowledged in the **Alarm Detailed Information** screen (*Typical Alarm Detailed Information Screen*) as follows:

1. Use the *Jog Dial* to select any item in the Alarm Detailed Information screen (see figure below) and activate a list of the currently available actions.

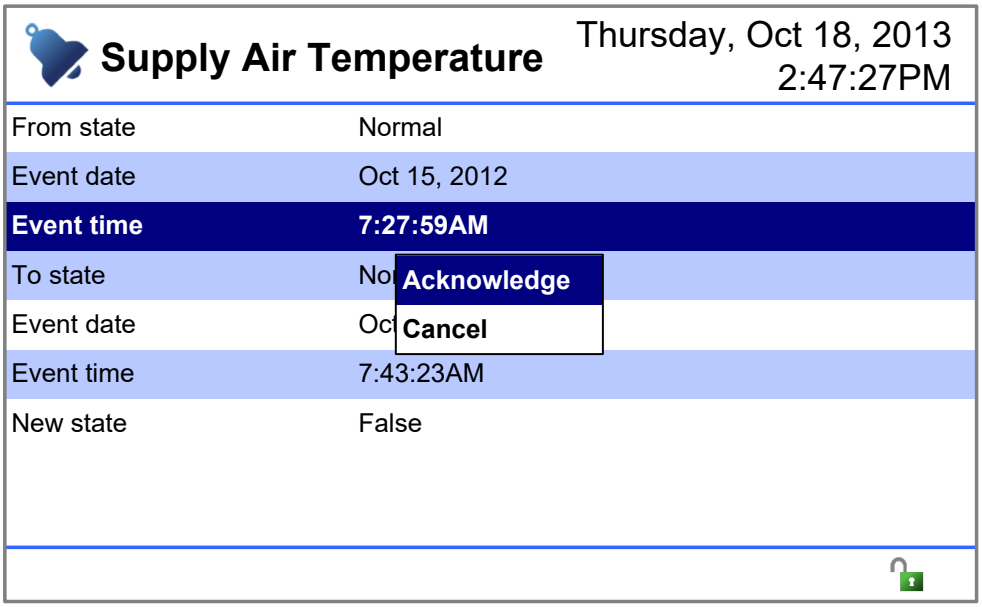


Figure 55: Typical Alarm Detailed Information Screen

2. Select **Acknowledge** and press the *Jog Dial* to accept the selected value.

Reliability Property

The reliability property is an enumeration that provides an indication of whether the current value or the operation of the physical input in question is reliable as far as the controller can determine and, if not, why. The reliability property supports the following enumeration values:

Enumeration	Description
NO_FAULT_DETECTED	The Present Value is reliable, as no other fault (enumerated below) has been detected.
NO_SENSOR	No sensor is connected to the Input object.
OVER_RANGE	The sensor connected to the Input is reading a value higher than the normal operating range as configured by the controller's programming.
UNDER_RANGE	The sensor connected to the Input is reading a value lower than the normal operating range as configured by the controller's programming.
OPEN_LOOP	The connection between the defined object and the physical device is providing a value indicating an open circuit condition.
SHORTED_LOOP	The connection between the defined object and the physical device is providing a value indicating a short circuit condition.
PROCESS_ERROR	A processing error was encountered.
MULTI_STATE_FAULT	The Present_Value of the Multi-state object is equal to one of the states in the Fault_Values property and no other fault has been detected. This fault may be sent by some controller models.
CONFIGURATION_ERROR	The object's properties are not in a consistent state.
COMMUNICATION_FAILURE	Proper operation of the object is dependent on communication with a remote sensor or device and communication with the remote sensor or device has been lost.
UNRELIABLE_OTHER	The controller has detected that the Present_Value is unreliable, but none of the other conditions describe the nature of the problem. A generic fault other than those listed above has been detected, for example, a Digital Input is not cycling as expected, or a schedule is empty (it has not yet been configured).

Overrides Menu

If any points are in override, the **Overrides** menu will allow a user to view the override value of any **Hardware Input**, **Hardware Output**, **Value**, **Constant**, or **Variable** that has been overridden and to change or remove an override. From this screen, you can view the list of overrides:

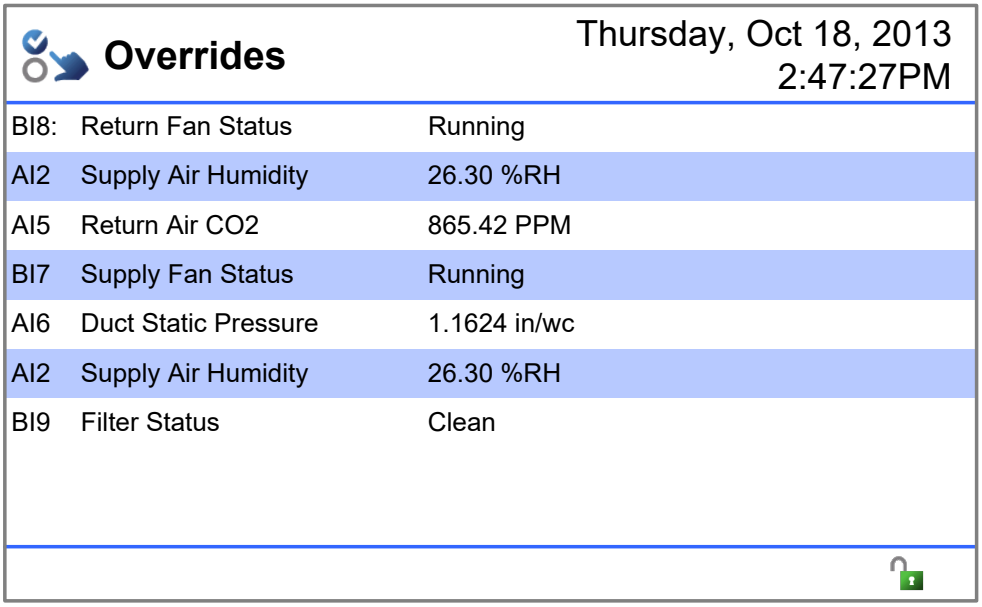


Figure 56: Overrides Menu Showing the Override Value of each Overridden Point

- A maximum of 50 points can be viewed in this screen at any time. ECLYPSE Connected Controllers may have a 'next page' menu option if there are more than 50 points available.

The following objects are available according to the controller's network type:

LonWorks Controllers		BACnet Controllers	
Inputs/Outputs:		Inputs/Outputs:	
HWI	Hardware Input	AI	Analog Hardware Input
HWO	Hardware Output	BI	Binary Hardware Input
COM	ComSensor Input	AO	Analog Hardware Output
WRI	Wireless Sensor Input	BO	Binary Hardware Output
NVI	Network Variable Input	MSI	Multi-State Input
NVO	Network Variable Output		
	Constants:	**Values:**	
NC	AV	AV	Analog Value
BC	BV	BV	Binary Value
EC	MSV	MSV	Multi-State Value
SC	Setpoint Constant		
	Values:		
NV	Numeric Value		
BV	Boolean Value		
EV	Enumeration Value		

Modifying an Overridden Point or Removing an Override

An overridden point can be modified, or the override can be removed by selecting the point and pressing the *Jog Dial* to view the available actions. To select an action, see *Selecting an Action*.

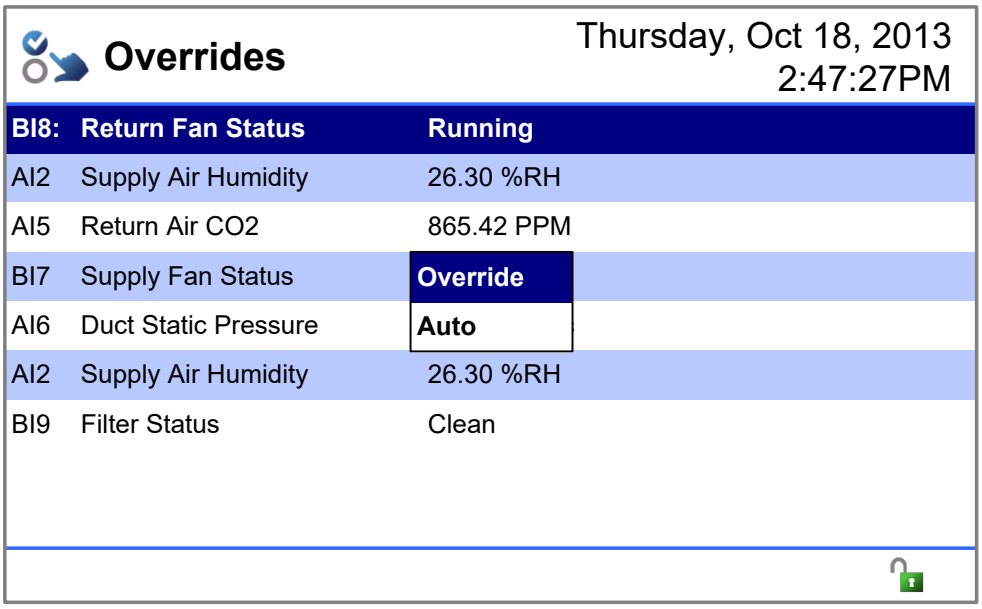


Figure 57: Changing a Point's Override Setting

The following override options may be available according to the type of point selected:

Override	LONWORKS Controller	BACnet Controller	Description
Emergency Override		■	Forces a point to assume a user-set value at priority level 1.
Emergency Auto		■	Clears an **Emergency Override** value at priority level 1.
Override	■	■	Forces the point to assume a user-set value as its present value (at priority level 8 for BACnet controllers).
Auto	■	■	Clears an Override value.
Alarm details	■	■	Shows any currently associated alarms. See *Viewing Point Alarm Details (LonWorks models)* or *Viewing Point Alarm Details (BACnet models)*.

Favorites Menu

The favorites menu allows the user to view the controller's favorites that have been bookmarked in EC-*gfx*Program through the **Resources Viewer** pane.

This menu may be greyed-out (that is inaccessible) on your operator interface screen when there are no favorites previously configured through EC-*gfx*Program for this controller. See *Feature Availability*.

The following screen shows the list of grouped favorites:

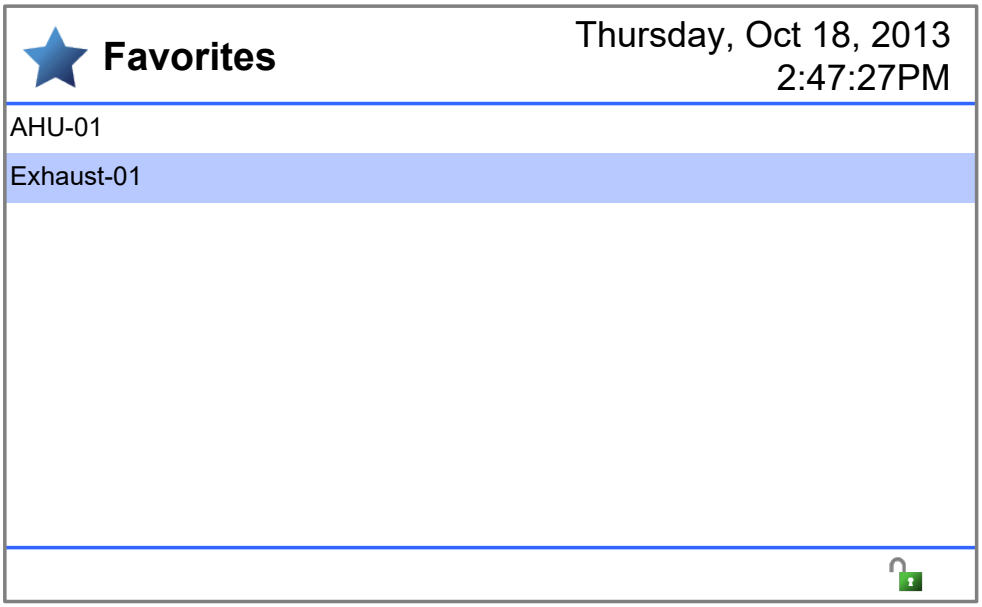


Figure 58: Favorites Menu Groups that have been Configured in EC-gfxProgram

Select a favorites group from the **Favorites** menu to view the details:

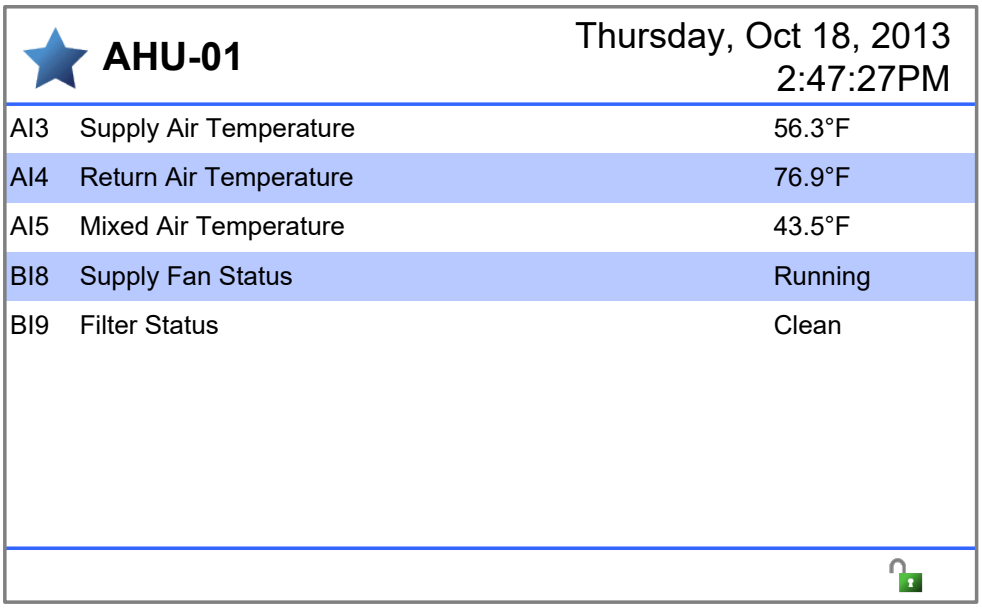


Figure 59: Selecting a Favorite

Important: The ECx-Display and x50 series Favorites Menu configuration defined in EC-*gfx*Program will not correctly display the list of favorited points on the displays if using more than 256 points of a single object type (Analog, Binary, or Multistate value). Beyond the 256th point, the following point's description (e,g. the 257th point) will revert to the first point's description on the ECx-Display or x50 Series displays. Keep this limitation in mind as multiple favorites are being defined in EC-*gfx*Program.

PID Loops Menu

The PID Loops menu allows the user to view, configure, and tune the controller's PID loop parameters, as well as to see a graph of the PID loop's performance.

The PID loop setpoint can also be temporarily overridden to help a system integrator to locally tune a PID loop. Once you have found the optimum PID loop values, the values can be applied to the controller's project code in EC-*gfx*Program. See *Uploading the PID Loop Values to the Controller's Code in EC-gfxProgram*.

This menu may be greyed-out (that is inaccessible) on your operator interface screen when there are no PID loops previously configured through EC-*gfx*Program for this controller. See *Feature Availability*.

In EC-*gfx*Program, PID loop values that are overridden from the operator interface are not shown during debugging.

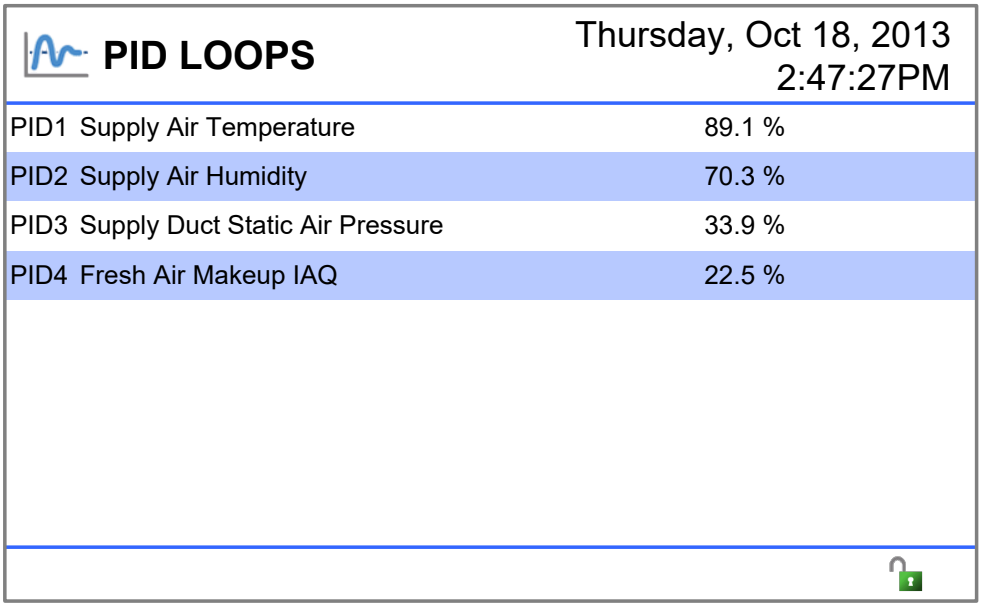


Figure 60: PID Loops Menu

Use the *Jog Dial* to select a PID loop and view its details. The response of the PID loop is shown as a graph:

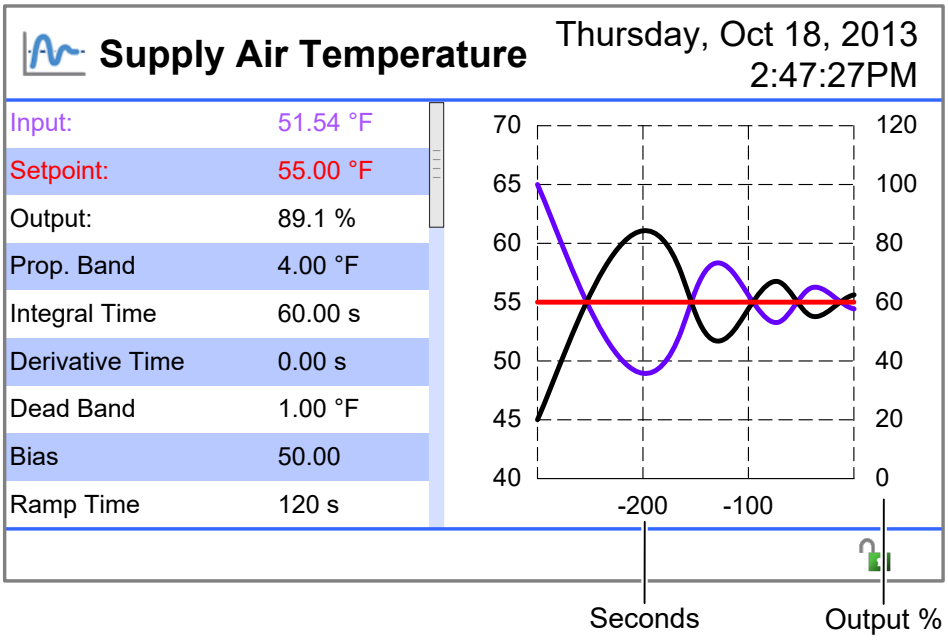
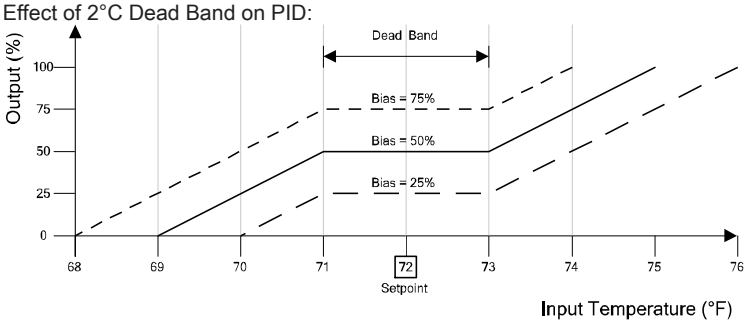
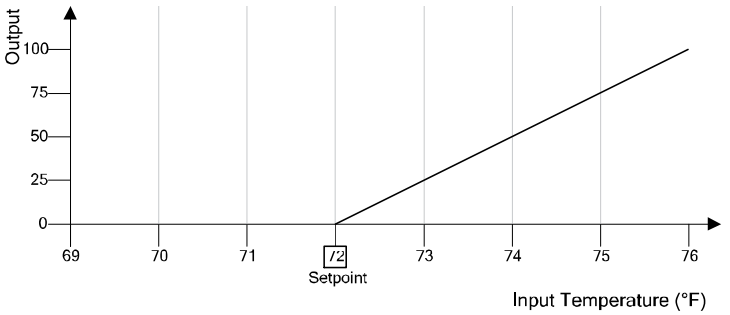
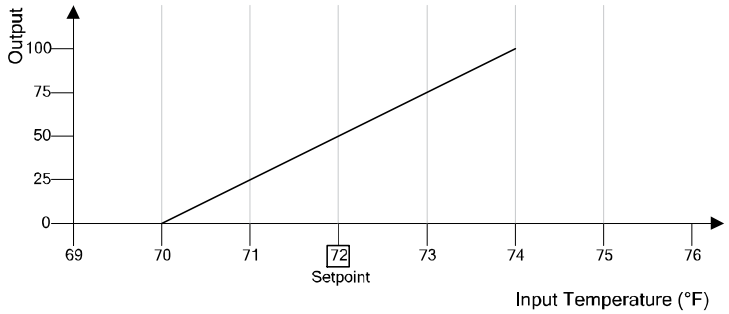
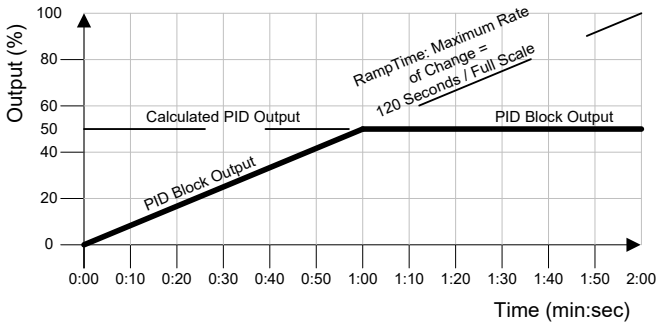


Figure 61: Typical PID Configuration Screen

The **Input**, **Setpoint**, and **Output** values are color-coded to correspond to the color of the lines shown in the graph.

Depending on how the PID loop was programmed in the controller, you may not be able to modify some PID loop parameters. For example, in the controller's code, if the PID loop's proportional band input is linked to an object, you will not be able to change the proportional band value through the LCD screen. The PID loop parameters are described as follows:

Parameter	Description
Input	The measured input (view only).
Setpoint	The PID loop setpoint.
Output	The PID loop output (for BACnet controllers, this value can be overridden).
Prop. Band	The proportional band is the error value that is necessary to span the extent of the output range, to move the output from 0 to 100%. The proportional gain is the instantaneous effect of the error on the output. The proportional gain and proportional band have the following relationship: proportional gain = 100/(proportional band). For example, If the proportional band is set to 2ºF, then a 2ºF error (deviation from the setpoint) will result in 100% output. The proportional band is sometimes referred to as a "throttling range" or "modulating range".
Integral Time	The integral time is a factor of the effect of the error (deviation from setpoint) over time. The integral time determines how quickly the system responds to a given error.
Derivative Time	The derivative time determines the effect of the derivative action on the system response. The derivative time is sometimes referred to as "rate time".
Dead band	The dead band is a range (centered on the setpoint) in which no corrective action is taken, that is, the output of the PID loop remains the same. For example, the graph below shows the effect of a 2°F dead band on a PID loop that has a proportional band of 4°F. The setpoint is 72°F. The dead band is 2°F centered on the setpoint and thus the output of the PID loop does not change when the input is between 71 and 73°F. No matter how the PID loop is configured (change to proportional, integral, derivative control, or bias represented by the dashed lines), the dead band remains centered on the setpoint. Effect of 2°C Dead Band on PID: 
Bias	The bias is the default percentage of output when there is no error (setpoint = Input). It is a constant value that is applied to the control loop to correct offsets. For example, the graph below shows the effect of a 50% bias on a PID loop that has a proportional band of 4°F. The setpoint is 72°F. The bias is 50% and thus the total output of the PID loop is increased by 50% so that previously a 72°F input temperature resulted in an output of 0% and now results in an output of 50%. 0% Bias on PID:  50% Bias on PID:

Parameter	Description
	
Ramp Time	Sets the maximum rate of change in seconds for the Output to go from 0% to 100%. For example, if this input is set to 120 seconds, and the **Enabled** input port changes from **False** to **True**, the block's Output will take at least 120 seconds to ramp up from 0% to 100%. As such, if the PID loop calculates a required Output of 50%, it will take the Output at least 60 seconds to go from 0% to 50%. This is shown below. Example: 50% Ramp Time Effect on PID Output 
Saturation Time	When this feature has been enabled in the controller's code, this sets the time delay after which the **SaturationStatus** flag will indicate that the PID loop has saturated.
Action	If set to **Direct**, the control loop acts directly. Thus, an increase in the error will be directly proportional to the output (the more positive the error, the more positive the output). When set to **Reverse**, the control loop acts in reverse. Thus, an increase in the error will be inversely proportional to the increase in the output (the more positive the error, the more negative the output).
Graph period	This is used to modify the PID loop plot scale to adapt, for example, your view to the PID loop's response time.

Tuning a PID Loop

To tune a PID loop, you need to subject the system to a change by modifying the setpoint to observe the system's response. For a detailed procedure on how to tune a PID Loop, refer the EC-*gfx*Program User Guide.

Depending on the screen's current logout time, you may not have enough time to view the graph's response time. If so, increase the screen's log out time in the *Settings Menu*.

1. In the PID configuration screen, use the *Jog Dial* to select and modify the **Setpoint** to a new value. See *Selecting and Editing a Numeric Value*.
2. Refer to the PID response graph to see how it will react to the new setpoint.

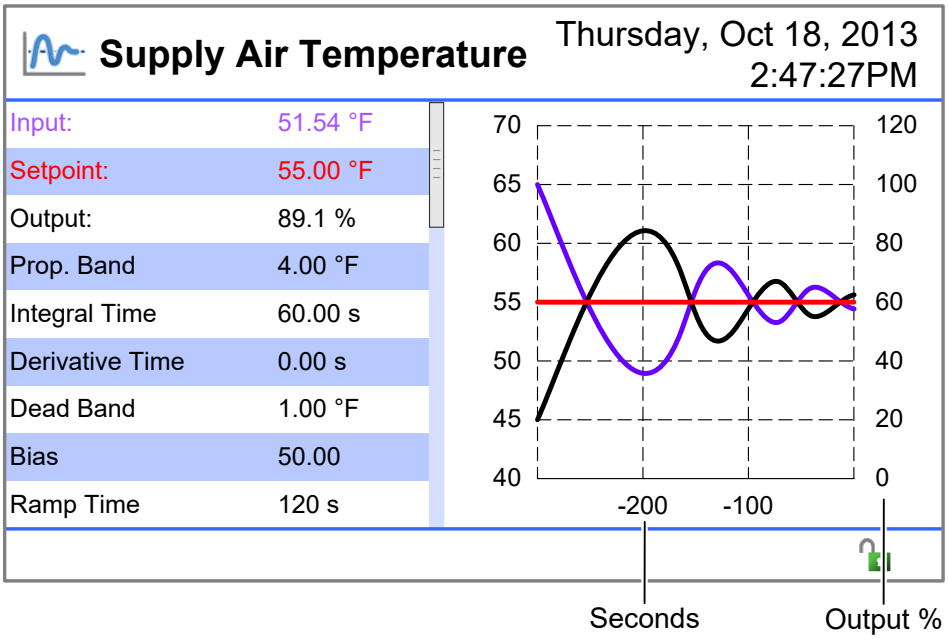


Figure 62: Typical PID Configuration Screen

3. Configure the rest of the PID loop parameters as needed.
4. Repeat these steps until the PID loop is adequately tuned.

- A setpoint override lasts only as long as you stay in the PID screens. Upon leaving the PID loops screens, the overridden setpoint will revert to automatic operation.
- Once you have found the optimum PID loop values, the values can be applied to the controller's project code in EC-*gfx*Program. See *Uploading the PID Loop Values to the Controller's Code in EC-gfxProgram*.

Uploading the PID Loop Values to the Controller's Code in EC-gfxProgram

The PID loop values can be uploaded to the controller's project in EC-*gfx*Program. To do so, once you have found the optimum PID loop values, open the controller's project in EC-*gfx*Program (the controller must be online), in the **Home** toolbar, select **Synchronize**, and upload the values from the device with the settings shown in the image below.

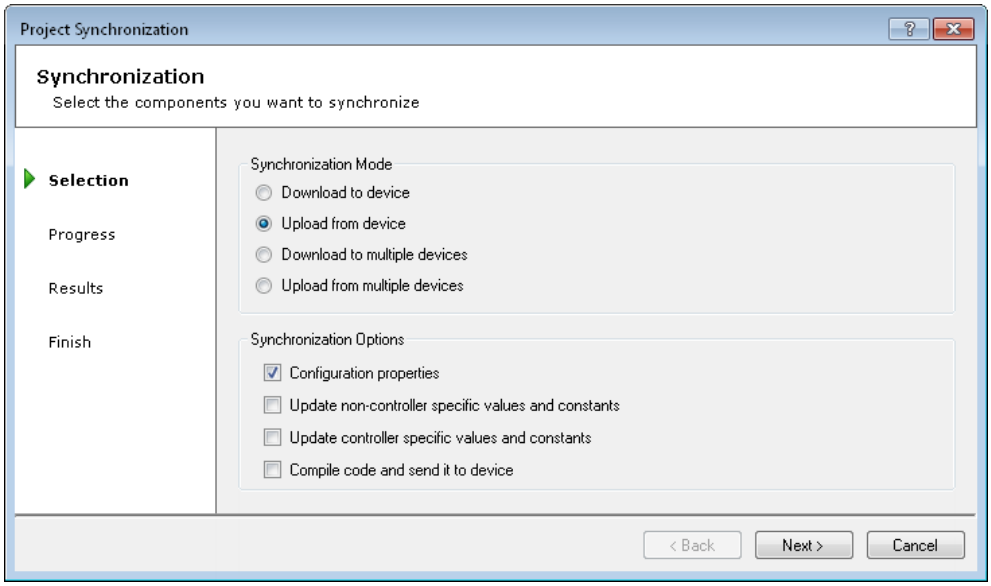


Figure 63: Uploading the Controller's PID Loop Configuration Values

Weather Menu

The weather menu allows the user to view the current weather conditions. The units can be set to either Metric or US Units in EC-*gfx*Program.

This menu may be greyed-out (that is inaccessible) on your controller's LCD screen when the weather menu feature has not been configured. Refer to the EC-*gfx*Program User Guide for more information on how to make weather information available on a controller. See also *Feature Availability*.

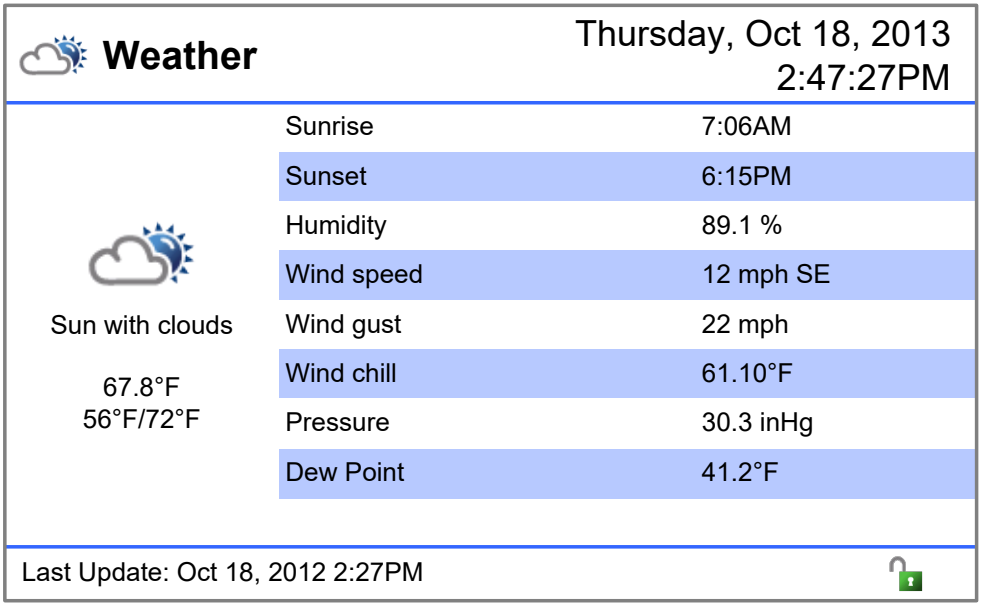


Figure 64: Weather Menu

Settings Menu

The settings menu allows the user to view and configure the controller's settings such as the time, MAC address (if applicable), device ID (if applicable), etc.

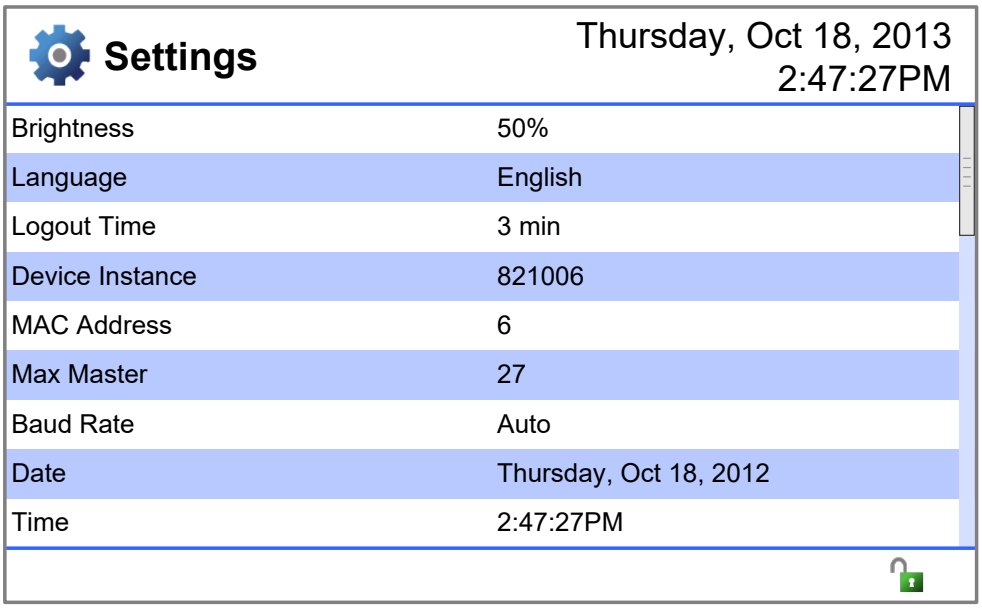


Figure 65: Typical Settings Menu

Settings	Description
Brightness	Sets the display's luminosity.
Language	Set the current user interface language. The user interface natively supports French and English. A third language can be loaded into the user interface through EC-*gfx*Program in the **LCD Screen** block.
Log out time	Sets the delay of user inactivity after which the interface goes to the main screen. If a user interface has password-protection enabled, it also becomes password-protected (locked). When set to 0, the auto-logout feature is disabled. See also *Unlocking a Password Protected Interface*.
Device instance (BACnet models only)	Set the controller's current device ID number.
MAC address (BACnet models only)	When the **MAC** DIP switches on the controller's faceplate are all set to off (all switches are to the left), this allows you to set the controller's MAC address through the operator interface.
Max master (maximum MAC Address) (BACnet models only)	The highest MAC Address number of any Master device connected to the BACnet MS/TP data bus. **Max Master** optimizes the efficiency of the token-passing data bus by ensuring that no attempt will be made to pass the token to inexistent devices above the highest Master device MAC Address on the connected BACnet MS/TP data bus.
Baud rate (BACnet models only)	Sets the controller's Baud rate for the BACnet MS/TP network.
Date	The current date. Depending on how this controller has been programmed and configured: ☐ Setting the time and date may set the time and date for other controllers on the network. ☐ When an EC-NetAX building controller is available on the network, it will normally be used to set the time and date for all controllers on the network. In this case, the time and date set here may be overwritten periodically by the EC-NetAX building controller's time and date.
Time	The current time. See **Date** above.
Time zone (BACnet models only)	The current controller's time zone.
DST enable	Enable / disable daylight savings time
DST start date	When daylight savings time is enabled, set the date of the year when daylight savings time starts.
DST start time	When daylight savings time is enabled, set the time of day the daylight savings time starts.
DST stop date	When daylight savings time is enabled, set the date of the year when daylight savings time ends.
DST stop date	When daylight savings time is enabled, set the time of day the daylight savings time ends.
DST Offset	When daylight savings time is enabled, set the amount of daylight savings time by which the controller's clock will be advanced.

About Menu

The **About** menu can be customized to show the user a graphic (for example, a company logo) and textual information (for example, the integrator's contact information). This screen is configured through EC-*gfx*Program in the **LCD Screen** block when the controller is programmed.

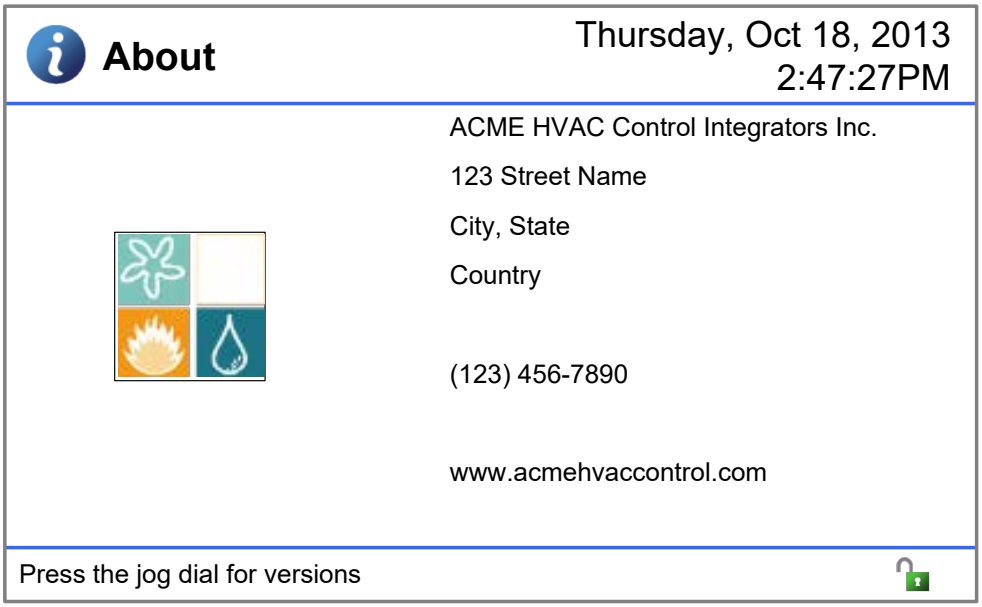


Figure 66: About Menu Example

Press the *Jog Dial* to view the controller's and operator interface's firmware and bootloader versions.

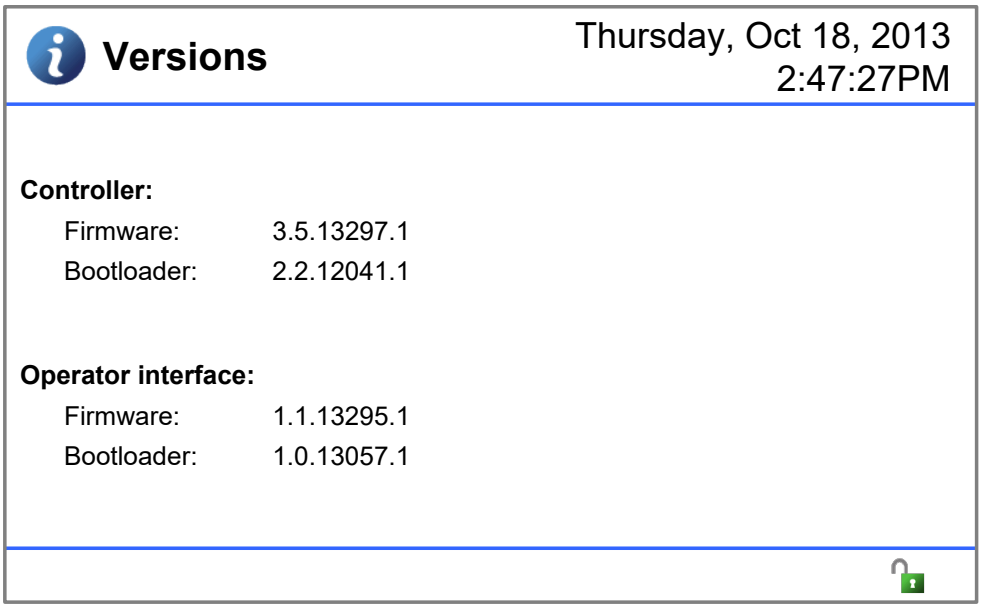


Figure 67: Firmware Versions

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