

View Dashboard

Dashboards are used to display information from the system and to control equipment. Each dashboard is custom designed for a site, so help for a specific dashboard is not available.

Pop-up Menu

To access the options available while viewing a dashboard, right-click the mouse on the dashboard.

Edit Mode - Click to enter edit mode. Edit mode allows adding, deleting and modifying dashboard gadgets. Edit mode is only available to users with permissions set to allow dashboard editing.

Close - Closes the dashboard. Clicking the "X" in the upper-right corner will also close the dashboard.

Menu
Introduction
Toolbar
Device Tree
User Groups
Users
Templates
Points
Tutorial
Dashboards
Viewing
Editing
Gadgets
Graphics
Viewing
Editing
Gadgets
Schedules
View/Edit
Trends
View/Edit
Alarms
Viewing
Editing
Runtimes
Viewing
Editing
Calculations
View/Edit
Programs
View/Edit
Links
View/Edit

Revision History

Version 2.00e

- Initial public release.

Menu
[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards
[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics
[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules
[View/Edit](#)

Trends
[View/Edit](#)

Alarms
[Viewing](#)
[Editing](#)

Runtimes
[Viewing](#)
[Editing](#)

Calculations
[View/Edit](#)

Programs
[View/Edit](#)

Links
[View/Edit](#)

GSM-2000-SMP Help

Version 2.04b ([revision history](#))

Introduction

GSM-2000-SMP is a stand-alone, embedded, web-based graphical interface for building automation and process/access control systems. The user interface utilizes HTML5 to allow for platform-independence, supporting both desktop and mobile devices.

Supported drivers include:

Some of the features include animated graphic screens, scheduling, historical trending, runtime accumulation and alarm monitoring. All of these features are supported even with devices that do not natively support them. GSM-2000-SMP will automatically toggle outputs and change setpoints on schedule, collect runtime and trend data, and monitor alarm conditions.

GSM-2000-SMP uses flash memory for internal storage. It contains no hard disk or other moving parts. The Linux operating system is used for enhanced security and stability. GSM-2000-SMP is totally self-contained. All set up and user interactions are performed via a web browser. No dedicated PC or external applications are required.

No knowledge of HTML5, XML, JavaScript or any other programming language is required to set up or use GSM-2000-SMP (Program objects use a simple Python scripting language).

Features

- Animated graphics
- Internally maintained schedules
- Trend collection, display and export
- Runtime accumulation with email notification
- Alarm condition monitoring with email notification
- Calculated point values (average, min, max, etc)
- Database of up to 100 users and 100 user groups
- Multiple simultaneous users
- Activity log for tracking important user actions
- Template system for quickly cloning points, graphics, devices or entire networks
- Support for custom OEM templates that include all points, graphics, schedules, etc. for any device
- Flexible point addressing system allows access to most proprietary structures, bit fields and objects
- Calculations may be performed on data points when read and/or written (e.g. Deg. F to Deg. C or scaling)

Menu

[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards

[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics

[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules

[View/Edit](#)

Trends

[View/Edit](#)

Alarms

[Viewing](#)
[Editing](#)

Runtimes

[Viewing](#)
[Editing](#)

Calculations

[View/Edit](#)

Programs

[View/Edit](#)

Links

[View/Edit](#)

Toolbar

Along the bottom of the screen there are several button available for easy access to common features:

-  - Open the [System Menu](#).
-  - Logout of the system and return to the login screen.
-  - Display the [Alarm Report](#). This button will flash red if new alarms are available. It will be solid read if any active alarms are detected.
-  - Display the [Runtime Log](#). This button will flash yellow if new runtime notifications are available. It will be solid yellow if any active notifications are detected.
-  - Display help on the currently opened screen (dashboard, trend, schedule, etc.)
-  - Maximize button. Maximize mode hides the device tree and status bars so the currently opened screen takes up all available space. Users can swipe the screen left or right to move between opened screens.

The maximize button is semi-transparent and located just above the status bar, in the bottom right corner of the screen.

Menu
Introduction
Toolbar
Device Tree
User Groups
Users
Templates
Points
Tutorial
Dashboards
Viewing
Editing
Gadgets
Graphics
Viewing
Editing
Gadgets
Schedules
View/Edit
Trends
View/Edit
Alarms
Viewing
Editing
Runtimes
Viewing
Editing
Calculations
View/Edit
Programs
View/Edit
Links
View/Edit

GSM-2000-SMP Help

Version 2.04b ([revision history](#))

Device Tree

The device tree appears on the left side of the main window. It displays all interactive items in the system. Each type of item is represented by one of the following icons:

-  [Alarms](#) - Monitors specified conditions and generates an alarm message and optional email alerts.
-  [Calculations](#) - Reads the value of one or more points and performs a calculation on them. For example, averaging several temperatures.
-  [Devices](#) - Any physical device, panel or I/O unit in the system.
-  [Dashboards](#) - Used to display information from the system and to control equipment. Dashboards are mobile-friendly and adapt to any screen size.
-  [Drivers](#) - A physical network or logical grouping of devices based on the protocol they use. For example, an entire ModBus network is a single driver.
-  [Folders](#) - Used to help organize other items. Folders may contain other folders.
-  [Graphics](#) - Used to display information from the system and to control equipment. Graphics are useful for floor plans or animating control systems. They can be embedded in dashboards.
-  [Links](#) - Used to access other units, web pages or other web content.
-  [Points](#) - Any physical or logical control point on a device. Inputs, outputs, setpoints and variables on a device are all considered "points".
-  [Programs](#) - Allows simple programs to be written to control setpoints, outputs and other points.
-  [Runtimes](#) - Monitors specified conditions and accumulates the amount of time the conditions are true, and generates a message and optional email alerts when a limit is reached.
-  [Schedules](#) - Allows for control of several points based on the time of day.
-  [Trends](#) - Automatically records point values at specified intervals to allow for later viewing.

Navigating the Device Tree

Drivers, devices and folders may contain other items. Click the item to open it and display any sub-items.

Clicking any other item will display a viewing/editing screen for the item. Click a dashboard to view it, click a point to display and control the value, etc.

The following buttons are available at the top of the device tree:

Menu

[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards

[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics

[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules

[View/Edit](#)

Trends

[View/Edit](#)

Alarms

[Viewing](#)
[Editing](#)

Runtimes

[Viewing](#)
[Editing](#)

Calculations

[View/Edit](#)

Programs

[View/Edit](#)

Links

[View/Edit](#)

 - Return to the root of device tree. Basically, a "Home" button.

 - Go back one level in the device tree.

 - Toggles select mode. This allows selecting multiple items in the tree for deleting or moving.

Adding Items

Right-clicking in the device tree will display a pop-up menu with a "Create New Item" option. The items available for creation will depend on the type of item currently being viewed in the tree (driver, device or folder.)

Editing Items

Right-click any item and select "Edit <item>" to edit that item. An editor screen specific to that item will be displayed.

Deleting Items

Right-click any item and select "Delete <item>" to remove it from the tree.

 **Deleting an item will also delete all sub-items beneath it in the tree.**

Moving Items

Right click any item and select "Move Item" to move it to a new location. Note that there are several restrictions on where items may be moved. Generally, items under a device may only be moved to a folder under that same device. Devices under a driver may only be moved to folders under the same driver. Items can never be moved from one device or driver to another device or driver.

If an item needs to be moved outside of these restrictions, right-click the item, save it as a template, delete it and then recreate it from the template at the new location. Note that the points attached to items using this method may need to be re-attached

Multiple items may be moved or deleted at the same time. Click the  button at the top to enter select mode, then click all of the items that are to be moved. Note that the restrictions explained above still apply when moving multiple items.

Save as Template

Right-click any item and select "Save as Template" to save the item, and all sub-items beneath it as a single template. This template may then be restored later to clone the items. See [Templates](#) for more information.

Edit Group

User access is controlled by a system of Groups and Users. Groups are defined with certain permissions, and then users are added to those groups. Users must belong to at least one group to be able to access the system at all.

Group Name

This is the descriptive name for the group that will appear in the list, and on other screens that require selection of groups.

Home Screen

The home screen is the dashboard, trend or schedule that will be automatically loaded and displayed every time a user in this group logs in.

Group Access

This is the list of functions available to users. Check each function this group of users should be able to access.

Menu
Introduction
Toolbar
Device Tree
User Groups
Users
Templates
Points
Tutorial
Dashboards
Viewing
Editing
Gadgets
Graphics
Viewing
Editing
Gadgets
Schedules
View/Edit
Trends
View/Edit
Alarms
Viewing
Editing
Runtimes
Viewing
Editing
Calculations
View/Edit
Programs
View/Edit
Links
View/Edit

Edit User

User access is controlled by a system of Groups and Users. Groups are defined with certain permissions, and then users are added to those groups. Users must belong to at least one group to be able to access the system at all.

Full Name

This is the full name of the user.

Username

This is the username used to log in to the system.

Password/Re-enter Password

This is the password used to log in to the system.

⚠ For security reasons, passwords are not stored as text and are not recoverable. If a user forgets their password, a new password must be entered here.

Suspended

If checked, this user will be blocked from logging in.

Email Address

This is the email address of the user. This must be accurate for this user to receive email from the system.

Contact Information

This can be any contact information desired for this user.

Group Membership

This is the list of groups to which this user belongs. The user will be able to access all functions that all groups they belong to can access.

Check each group to which this users should belong.

⚠ The Administrator always has access to all functions and belongs to all groups. His group membership can not be changed.

Menu

- [Introduction](#)
- [Toolbar](#)
- [Device Tree](#)
- [User Groups](#)
- [Users](#)
- [Templates](#)
- [Points](#)
- [Tutorial](#)

Dashboards

- [Viewing](#)
- [Editing](#)
- [Gadgets](#)

Graphics

- [Viewing](#)
- [Editing](#)
- [Gadgets](#)

Schedules

- [View/Edit](#)

Trends

- [View/Edit](#)

Alarms

- [Viewing](#)
- [Editing](#)

Runtimes

- [Viewing](#)
- [Editing](#)

Calculations

- [View/Edit](#)

Programs

- [View/Edit](#)

Links

- [View/Edit](#)

GSM-2000-SMP Help

Version 2.04b ([revision history](#))

Templates

Templates are a very powerful tool to make system setup easier. Any item in the device tree may be right-clicked and saved as a template. That item can then be quickly recreated without worrying about the details.

For example, a temperature setpoint for the first floor may be defined, including a label, description, modify limits and calculations to convert from Fahrenheit to Celsius. It may then be right-clicked and saved as a template.

To create a similar setpoint for the second floor, select "New Point" from the device tree and click the "Template" button. Select the saved template to recreate it and change the name if desired. Right-click the new point and change the address to match the address of the setpoint on the device and it is done.

Saving a driver, device or folder as a template will save all sub-items beneath it in the tree as a single template. It may then be restored to quickly duplicate it.

For example, if a network has 20 VAV box devices, set one of them up, including all points, dashboards, schedules, alarms, etc. and save it as a template. Then right-click while viewing the driver in the tree and select "New Device" and then click the "Template" button on the device editor screen. Select the saved template to fully recreate a second VAV box device. Only the address of the device will need to be changed for it to be fully functional.

⚠ When an item is created from a template, it uses the template as it exists at that time. Changing a template later will have no effect on items previously created from it. For this reason, it is important to fully test an item before duplicating it with templates. Otherwise, the duplicated items will have to be deleted and re-created to reflect changes made to a template.

Menu

[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards

[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics

[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules

[View/Edit](#)

Trends

[View/Edit](#)

Alarms

[Viewing](#)
[Editing](#)

Runtimes

[Viewing](#)
[Editing](#)

Calculations

[View/Edit](#)

Programs

[View/Edit](#)

Links

[View/Edit](#)

GSM-2000-SMP Help

Version 2.04b ([revision history](#))

Edit Point

A Control Point, usually referred to as just a "point", is any input, output, variable or property on a device that a value can be read from, and possibly allows a new value to be written to it.

At least one point is required for the unit to do anything useful. Most systems will have dozens or hundreds of points.

Label

Label is the name of the item as displayed in the device tree.

✓ All items in the device tree are sorted alphabetically by label. Folders may be used to organize items.

Description

Description is optional text that describes the item. It can be any descriptive text or be left blank.

Address

The address is the name, number or combination of the two that specifies how to access and interpret this point. Addressing is different for different types of devices (ModBus, BACnet etc.) See [Point Addressing](#) for information on how to specify the address.

Virtual Point

Check this box to declare this point as "virtual". Virtual points hold a value but are not read or written to a device so they do not require an address. Their value is maintained internally and can be used anywhere a normal point can be used. They are normally used with program or calculation objects for smart setpoint logic or to hold user specified values.

Point Type

The Point Type specifies how the value should be treated and displayed once it has been read from the device.

The available point types are:

- **Analog** - The value can be any numeric value. Digital values are converted to 0 for OFF and 1 for ON.
- **Digital** - The value is treated as ON or OFF. Any non-zero value is considered ON.
- **Multi-State** - The value will be one of a limited set of numeric values such as 1 through 4, or -2 through 15.
- **String** - The value is a string of ASCII characters.
- **DateTime** - The value is a packed binary date, time or combined date/time value.

✓ Although the point type should usually be set to match the actual type of point, it is sometimes useful to use a different setting. For example, an analog input could be set to a point type of Digital so that any value other than 0 would be displayed as ON or Active.

Point Class

Menu

[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards

[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics

[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules

[View/Edit](#)

Trends

[View/Edit](#)

Alarms

[Viewing](#)
[Editing](#)

Runtimes

[Viewing](#)
[Editing](#)

Calculations

[View/Edit](#)

Programs

[View/Edit](#)

Links

[View/Edit](#)

The Point Class is currently used only for informational purposes and has no real affect on how the value will be treated or displayed. It may be used for more in a future version so it is recommended that it always be set to the proper value.

The available point classes are:

- **Input** - The point is a physical input of any type.
- **Output** - The point is a physical output of any type.
- **Variable** - The point is a logical point in the device such as a setpoint, programming variable or flag.
- **Object** - The point is an object or other logical data structure.

Display Settings

[Edit settings that affect the way the point value is displayed.](#)

Modification Settings

[Edit settings that affect the way the point value can be modified by users.](#)

Group Access

[Edit user groups that can access this item.](#)

Advanced

[Edit the advanced options.](#)

Copyright 2017, Custom Software Engineering

Tutorial

This tutorial is designed to help get a system up and running quickly. It will walk you through the steps necessary to:

- [Connect to a Network](#)
- [Add Devices to the Device Tree](#)
- [Add Points to a Device](#)
- [Make a Simple Dashboard](#)

[Next >>](#)

Menu
Introduction
Toolbar
Device Tree
User Groups
Users
Templates
Points
Tutorial
Dashboards
Viewing
Editing
Gadgets
Graphics
Viewing
Editing
Gadgets
Schedules
View/Edit
Trends
View/Edit
Alarms
Viewing
Editing
Runtimes
Viewing
Editing
Calculations
View/Edit
Programs
View/Edit
Links
View/Edit

View Dashboard

Dashboards are used to display information from the system and to control equipment. Each dashboard is custom designed for a site, so help for a specific dashboard is not available.

Pop-up Menu

To access the options available while viewing a dashboard, right-click the mouse on the dashboard.

Edit Mode - Click to enter edit mode. Edit mode allows adding, deleting and modifying dashboard gadgets. Edit mode is only available to users with permissions set to allow dashboard editing.

Close - Closes the dashboard. Clicking the "X" in the upper-right corner will also close the dashboard.

Menu
Introduction
Toolbar
Device Tree
User Groups
Users
Templates
Points
Tutorial
Dashboards
Viewing
Editing
Gadgets
Graphics
Viewing
Editing
Gadgets
Schedules
View/Edit
Trends
View/Edit
Alarms
Viewing
Editing
Runtimes
Viewing
Editing
Calculations
View/Edit
Programs
View/Edit
Links
View/Edit

GSM-2000-SMP Help

Version 2.04b ([revision history](#))

Editing Dashboards

Edit mode allows adding, deleting and changing properties of dashboard gadgets. A "gadget" is any visual item on a dashboard screen. Several gadgets are available including text labels, check boxes, animations, etc. Dashboards may also contain embedded graphic screens, schedules, trends and even remote HTML objects such as maps and video feeds.

Dashboards are based on panels that may contain other gadgets. Panels may be set to organize the gadgets they contain either vertically or horizontally. A dashboard always has at least one panel, called the "base" panel. A panel may also contain other panels to allow for more complex arrangements.

The main advantage dashboards have over graphic screens, is that they organize and resize themselves to fit the screen they are being viewed on. Graphic screens can only scale to the current screen size, which will often make them illegible on mobile devices.

To allow this flexibility, gadgets can not be told exactly where to appear, or what size they should be. With some gadgets, minimum or maximum sizes may be specified, but panels will always organize themselves to fit the screen within those limits.

The default panel orientation is horizontal. This will lay out gadgets in a left-to-right order. The panel will fit as many gadgets as possible on a single row, then drop down to a new row and continue the layout. When viewed on a small mobile device, gadgets in a horizontal panel may actually appear in a vertical column if it is necessary to ensure all gadgets are visible (with scrolling) and legible. Setting a panel to a vertical orientation does the same thing as horizontal, but in top-to-bottom order.

Here is a simple panel with three gadgets in a horizontal layout:



Here is the same panel on a smaller screen:

Menu

[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards

[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics

[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules

[View/Edit](#)

Trends

[View/Edit](#)

Alarms

[Viewing](#)
[Editing](#)

Runtimes

[Viewing](#)
[Editing](#)

Calculations

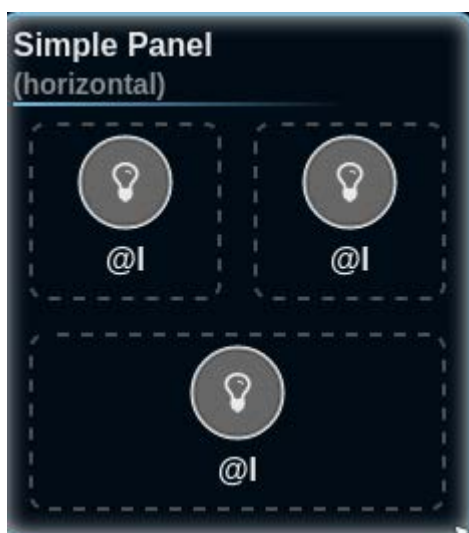
[View/Edit](#)

Programs

[View/Edit](#)

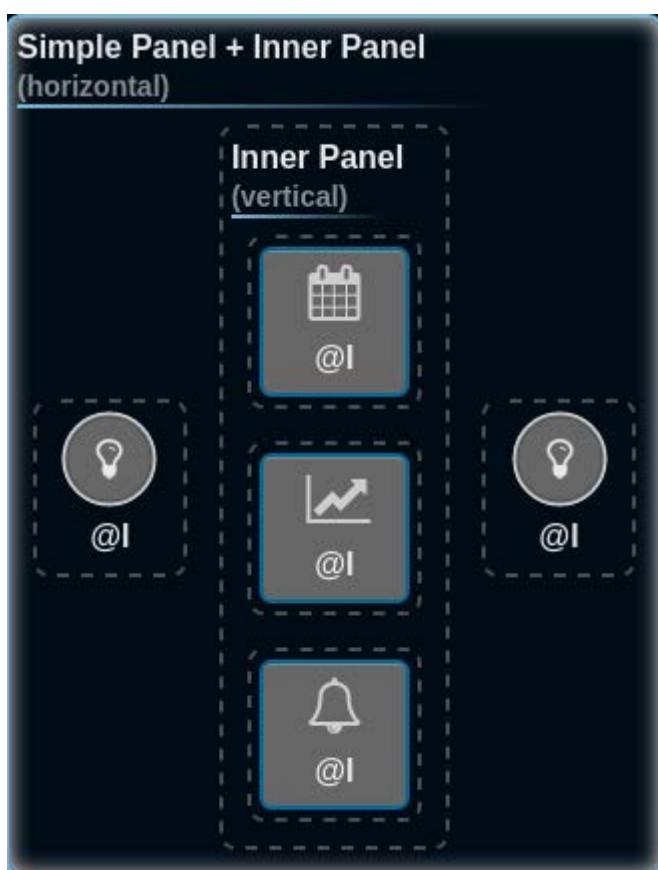
Links

[View/Edit](#)



For simple dashboards, the above is all that is needed. Add as many gadgets as needed to the base panel and they will arrange themselves properly. For more complex layouts, panels may contain other panels, and each panel may have a different orientation.

Here is a horizontal panel that also contains an inner panel that is set to vertical and contains three buttons:



Notice that the three gadgets in the base panel are laid out horizontally but the middle gadget (a panel) lays out the three gadgets it contains vertically. This vertical panel may also contain another panel that lays out even more gadgets either horizontally or vertically. Obviously, it can start to get complex if many embedded panels are used, and on smaller screens they may organize themselves in a way that loses some of the visual correlations of the original layout. Simpler is usually better when working with dashboards.

Adding Gadgets

To add new gadgets to the dashboard, drag an item from the device tree and drop it on the

dashboard. A gadget selection dialog will be displayed allowing selection of a gadget to use for the item.

Alternately, click the **+** button to display the gadgets dialog that allows adding gadgets that are not attached to device tree items. The gadget will be added to the end of the currently active panel.

✓ Holding down the Ctrl key as an item is dropped on a dashboard will automatically use the same gadget as the last one added.

When dropping a device tree item on to a panel (and not on top of another gadget), a check mark will be displayed. This indicates that the gadget will be placed at the end of the panel (right side for horizontal layouts, bottom for vertical.)

When dropping a device tree item on top of an existing non-panel gadget, several indicators will be displayed to indicate what will happen:

Check mark - Indicates that the device tree item attached to the existing gadget will be replaced with the dropped item.

Left Arrow - Indicates that the gadget will be placed to the left of the existing gadget.

Right Arrow - Indicates that the gadget will be placed to the right of the existing gadget.

Which indicator appears depends on where the item is hovered. Hover over the left, middle or right sides (top and bottom for vertical layouts) to force the panel to place it in the desired position.

Selecting Gadgets

Most editor functions require a gadget to be selected. Click a gadget to select it and a highlight will appear around it. It is not possible to select multiple gadgets at the same time.

Moving Gadgets

Gadgets may be dragged and dropped to new positions on the dashboard. They may even be moved between panels. When moving gadgets, the left/right/top/bottom arrow indicators work just as described above.

Editing Gadgets

Right-click a gadget and select "Edit Gadget" to edit the settings of a gadget.

To change the point attached to a gadget, drag the new point from the device tree and drop it on the gadget.

Pop-up Menu

Right-click a gadget to display the pop-up menu. The available menu selections will change depending on the type of gadget and other factors. Here is a complete list of all possible selections:

Edit Gadget - Edit the properties of the selected gadget.

Delete Gadget - Delete the selected gadget.

Copy Gadget - Copy the selected gadget to the clipboard.

Paste Gadget - Paste a copied gadget from the clipboard in to the active panel.

Edit Points - Edit the points attached to the gadget.

Save Gadget - Save the gadget as a template so it can be reused later.

Save Dashboard - Save all changes made to the dashboard.

View Mode - Switch to view mode so changes can be seen with live data.

Close - Close the dashboard. A save prompt will be given if there are unsaved changes.

⚠ Gadgets may be copied and pasted between dashboards but keep in mind that the points attached to the pasted gadgets may have to be manually re-attached if the dashboards are not under the same device and points with the same names do not exist on the second device.

Toolbar Buttons

👁 View Mode - Return to View mode. (keyboard shortcut: **V**)

💾 Save Dashboard - Save changes made to this dashboard. (keyboard shortcut: **S**)

↶ Undo - Undo the last action. May be used up to the last 25 actions. (keyboard shortcut: **Ctrl-Z**)

↷ Redo - Redo the last undone action. (keyboard shortcut: **Ctrl-Shift-Z**)

✚ Add Gadget - Add a gadget to the dashboard that is not connected to a device tree item. (keyboard shortcut: **Insert**)

✖ Delete Gadget - Delete the selected gadget. (keyboard shortcut: **Delete**)

🔧 Edit Gadget - Edit the properties of the selected gadget. (**keyboard shortcut: E**)

Other keyboard shortcuts:

P - Edit the points connected to the selected gadget.

A - Save the selected gadget as a template.

Ctrl-C - Copy the selected gadget to the clipboard.

Ctrl-V - Paste the gadget in the clipboard to the dashboard.

Copyright 2017, Custom Software Engineering

GSM-2000-SMP Help

Version 2.04b ([revision history](#))

Dashboard Gadgets

Below is a list of gadgets available for use on dashboards. The links may be clicked for a short description and help on the settings of each component.

Display Only

"Display Only" components display the state or value of points but do not allow changing the value.

[Animation](#) - Displays one of two .GIF animations to indicate a points status.

[ChartBar](#) - Displays a bar chart of up to 6 points.

[ChartPie](#) - Displays a pie chart of up to 6 points.

[ChartStrip](#) - Displays a strip chart of up to 6 points.

[GaugeArc](#) - Displays an arc-shaped gauge representing a point value.

[GaugeBar](#) - Displays a bar gauge representing a point value.

[GaugePercent](#) - Displays a circular gauge representing 0 - 100%.

[IndicatorIcon](#) - Displays one of three icons to indicate a points status.

[Image](#) - Displays one of three images to indicate a points status. Can also be used to display static images.

[Label](#) - Displays a block of text with embedded point information.

[PointGrid](#) - Displays up to 8 points in a grid.

Display and Control

"Display and Control" gadgets display the state or value of a point and allow changing the value.

[MultiStateList](#) - Displays a list of values for a multi-state point and allows the user to change the value.

[MultiStateSelector](#) - Displays a multi-state point value in a drop-down box and allows the user to change the value.

[SliderBar](#) - User-adjustable setpoint slider.

[SwitchRound](#) - A round switch used to toggle a digital point.

[SwitchSlide](#) - A sliding switch used to toggle a digital point.

Misc. Components

"Misc. Gadgets" are utility gadgets that do not directly control point values.

[ButtonIcon](#) - Button with optional icon that displays a point, schedule, trend, etc. when clicked.

[GraphicContainer](#) - Used to embed a graphic display in a dashboard.

Menu

[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards

[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics

[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules

[View/Edit](#)

Trends

[View/Edit](#)

Alarms

[Viewing](#)
[Editing](#)

Runtimes

[Viewing](#)
[Editing](#)

Calculations

[View/Edit](#)

Programs

[View/Edit](#)

Links

[View/Edit](#)

[HTMLContent](#) - Used to embed remote HTML content.

[Panel](#) - Used to hold and arrange other gadgets.

[ScheduleContainer](#) - Used to embed a schedule in a dashboard.

[TrendContainer](#) - Used to embed a trend in a dashboard.

Copyright 2017, Custom Software Engineering

View Graphic Display

Graphic Displays are used to display information from the system and to control equipment. Each graphic is custom designed for a site, so help for a specific graphic is not available.

Pop-up Menu

To access the options available while viewing a graphic, right-click the mouse on the graphic.

Edit Mode - Click to enter edit mode. Edit mode allows adding, deleting and modifying graphic gadgets. Edit mode is only available to users with permissions set to allow graphic editing.

Close - Closes the graphic. Clicking the "X" in the upper-right corner will also close the graphic.

Menu
Introduction
Toolbar
Device Tree
User Groups
Users
Templates
Points
Tutorial
Dashboards
Viewing
Editing
Gadgets
Graphics
Viewing
Editing
Gadgets
Schedules
View/Edit
Trends
View/Edit
Alarms
Viewing
Editing
Runtimes
Viewing
Editing
Calculations
View/Edit
Programs
View/Edit
Links
View/Edit

GSM-2000-SMP Help

Version 2.04b ([revision history](#))

Edit Graphic Display

Edit mode allows adding, deleting and changing properties of graphic gadgets. A "gadget" is any visual item on a graphic display. [Several Gadgets](#) are available for use on graphic displays.

Since graphic displays do not scale well on smaller (mobile) screens, [dashboards](#) are the recommended way to display most information to the user. Graphic displays are still useful for traditional floor plans and animated equipment diagrams and may be embedded in dashboards as well as viewed separately.

Adding Gadgets

To add new gadgets to the graphic, drag an item from the device tree and drop it on the graphic. A gadget selection dialog will be displayed allowing selection of a gadget to use for the item.

Alternately, click the  button to display the gadgets dialog that allows adding gadgets that are not attached to device tree items.

✓ Holding down the Ctrl key as you drop an item on a graphic will automatically use the last gadget selected.

Selecting Gadgets

Most editor functions require one or more gadgets to be selected. Click a gadget to select it. Multiple gadgets may be selected by holding down the Ctrl key while clicking.

Select Mode

To enter select mode, click the  button. Multiple gadgets may then be selected by clicking them, or drawing a box around the desired gadgets. Click anywhere on the background of the graphic (not on a gadget) and hold the left button down while dragging the mouse. All gadgets that touch or are within the box will be selected.

Click the  again to leave select mode.

Positioning Gadgets

With one or more gadgets selected, click on one of the selected gadgets and while holding the left button down, drag the gadgets anywhere on the graphic display.

While dragging gadgets, the Shift key may be held down to restrict the gadgets to only vertical movement. Hold the Ctrl key down to restrict them to only horizontal movement.

Editing Gadgets

Right-click a gadget and select "Edit Gadget" to edit the settings of a gadget. Click the "Apply" button to apply and see the changes. Click the "Ok" button when done making changes.

To change the point attached to a gadget, drag the new point from the device tree and drop it on the gadget.

Menu

[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards

[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics

[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules

[View/Edit](#)

Trends

[View/Edit](#)

Alarms

[Viewing](#)
[Editing](#)

Runtimes

[Viewing](#)
[Editing](#)

Calculations

[View/Edit](#)

Programs

[View/Edit](#)

Links

[View/Edit](#)

Pop-up Menu

Right-click a gadget to display the pop-up menu. The available menu selections will change depending on the type of gadget and other factors. Here is a complete list of all possible selections:

Edit Gadget - Edit the properties of the selected gadget.

Delete Gadget - Delete the selected gadgets.

Copy Gadgets - Copy the selected gadgets to the clipboard.

Paste Gadgets - Paste copied gadgets from the clipboard in to the graphic display.

Send to Back - Move the selected gadgets to the back of the display so they will appear to be behind other gadgets.

Bring to Front - Move the selected gadgets to the front of the display so they will appear to be in front of other gadgets.

Edit Points - Edit the points attached to the gadget.

Save Gadget - Save the gadget as a template so it can be reused later.

Save Graphic - Save all changes made to the graphic.

View Mode - Switch to view mode so changes can be seen with live data.

Close - Close the graphic. A save prompt will be given if there are unsaved changes.

⚠ Gadgets may be copied and pasted between graphic displays but keep in mind that the points attached to the pasted gadgets may have to be manually re-attached if the graphic displays are not under the same device and points with the same names do not exist on the second device.

Toolbar Buttons

 **View Mode** - Return to View mode. (keyboard shortcut: **V**)

 **Save Graphic** - Save changes made to this graphic. (keyboard shortcut: **S**)

 **Edit Graphic Properties** - Edit the properties of the graphic, such as background image and size.

 **Undo** - Undo the last action. May be used up to the last 25 actions. (keyboard shortcut: **Ctrl-Z**)

 **Redo** - Redo the last undone action. (keyboard shortcut: **Ctrl-Shift-Z**)

 **Add Gadget** - Add a gadget to the graphic that is not connected to a device tree item. (keyboard shortcut: **Insert**)

 **Delete Gadget** - Delete the selected gadget. (keyboard shortcut: **Delete**)

 **Edit Gadget** - Edit the properties of the selected gadget. (**keyboard shortcut: E**)

 **Select Mode** - Toggle "Select Mode", which allows selecting multiple gadgets.

Grid Snap - Click to cycle through the possible grid snap options. The choice are "Off", 8, 16 or 32 pixels.

Other keyboard shortcuts:

P - Edit the points connected to the selected gadget.

A - Save the selected gadget as a template.

Ctrl-C - Copy the selected gadgets to the clipboard.

Ctrl-V - Paste the gadgets in the clipboard to the graphic.

Graphic Display Gadgets

Below is a list of gadgets available for use on graphic displays. The links may be clicked for a short description and help on the settings of each component.

[Animation](#) - Displays one of two .GIF animations to indicate a points status.

[Image](#) - Displays one of three images to indicate a points status. Can also be used to display static images.

[Label](#) - Displays a block of text with embedded point information.

[ButtonIcon](#) - Button with optional icon that displays a point, schedule, trend, etc. when clicked.

- Menu**
 - [Introduction](#)
 - [Toolbar](#)
 - [Device Tree](#)
 - [User Groups](#)
 - [Users](#)
 - [Templates](#)
 - [Points](#)
 - [Tutorial](#)

- Dashboards**
 - [Viewing](#)
 - [Editing](#)
 - [Gadgets](#)

- Graphics**
 - [Viewing](#)
 - [Editing](#)
 - [Gadgets](#)

- Schedules**
 - [View/Edit](#)

- Trends**
 - [View/Edit](#)

- Alarms**
 - [Viewing](#)
 - [Editing](#)

- Runtimes**
 - [Viewing](#)
 - [Editing](#)

- Calculations**
 - [View/Edit](#)

- Programs**
 - [View/Edit](#)

- Links**
 - [View/Edit](#)

GSM-2000-SMP Help

Version 2.04b ([revision history](#))

Schedules

Schedules allow for control of several points based on the time of day. Schedules are either active or inactive. Active means the current time of day falls within one of the specified time periods.

Up to 32 points can be controlled by each schedule. An active and inactive value may be defined for each point. For example, the schedule is active from 8am to 6pm and a setpoint is modified to 72 during active periods and to 78 during inactive periods.

✓ The clock button on the toolbar shows the current status of the schedule. It will be green (default theme) when active and red when inactive. If an exception is active, the status will be shown on the exception button instead.

Clicking the  button will put the schedule in to edit mode, if the users access permissions allow it.

⚠ Clicking the  button will save all changes on all tabs of the schedule.

Normal Hours Tab

Normal hours are the default times for each day of the week. Special exception dates may be defined on the "Exceptions" tab (see below).

Each day of the week has a horizontal bar where time periods are displayed and can be changed if the current users access permits it.

Adding Time Periods

To add a new time period, click the  button on the desired day.

A time editor dialog will be displayed for the start time, followed by the stop time. There are three options for setting times:

- **Time** - Sets an exact time.
- **Sunrise** - The time follows sunrise, with an optional offset.
- **Sunset** - The time follows sunset, with an optional offset.

Setting the start time to sunrise with an offset of -30 will make the schedule active 30 minutes before sunrise, regardless of the time of year. Note that the longitude and latitude in the Site Settings selection of the system menu must be correct for the sunrise/sunset times to be accurate.

Times that use sunrise or sunset will have a sun/moon icon and the time will be in parenthesis to indicate that they are calculated times.

When entering times, keep in mind that 12:00am means the beginning of the day when used as a start time, and the end of the day when used as a stop time. To have the schedule active all day, use 12:00am for both the start and stop times. To have the schedule stay active overnight, use a stop time of 12:00am on the first day and a start time of 12:00am on the second day.

✓ Adding a new time, or editing an existing active period so that it overlaps another time period will merge the two active periods.

Menu

[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards

[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics

[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules

[View/Edit](#)

Trends

[View/Edit](#)

Alarms

[Viewing](#)
[Editing](#)

Runtimes

[Viewing](#)
[Editing](#)

Calculations

[View/Edit](#)

Programs

[View/Edit](#)

Links

[View/Edit](#)

Editing Time Periods

To edit an existing time period, click the start or stop time itself.

Deleting Time Periods

To delete a time period, click the  button within the time period box. To clear all time periods for a day, click the  next to the day name on the left.

Copying Time Periods

To copy all the time periods from one day to one of more other days, click the  button.

Exceptions Tab

An exception is a single date or a range of dates where the desired active periods differ from the normal schedule. Examples of exceptions would be holidays or special events. Up to 32 exceptions may be defined on each schedule.

Click the  button to add a new new exception. A date editor dialog will be displayed and either "Single Date" or "Date Range" may be selected, followed by dialogs for the date(s).

Exception time periods are created and edited the same way as normal time periods. See above for more information.

 An exception with no times defined is considered a "closed" period. The schedule will remain inactive all day.

Points

The points list displays all points affected by this schedule, the active/inactive values of each point and the number of seconds by which to offset the changing of this point.

Offsets allow points to be staggered on or off to minimize demand spikes. Please note that offsets can not cross midnight in either direction. With an inactive time of 11:59pm and an offset of +120 seconds, the point will follow the next days schedule at 12:00am and not honor the offset of the previous day. Also note that offsets that cause an overlap with another active period may not have the expected results.

Offsets are also useful for simplifying schedules. A single schedule can be set to the open and close time and the offsets used to turn on the fans 60 minutes before opening (-3600 seconds), the lights at open time (0 seconds) and change the setpoint 2 hours later (+7200 seconds).

Click the  button to add a new point slot, then drag a point from the device tree and drop it on the new point slot. A dialog will be displayed that allows changing the active/inactive values and offsets.

To edit the active/inactive values and offsets, click the  button for that point.

Refresh

The refresh option will resend the point values of all points at the specified interval. This can be useful to automatically refresh setpoints that users may have changed and other similar circumstances. Setting the interval to 0 will disable refreshes.

Highlight Active Period

This option will display the current day (or currently active exception period) in a highlighted color. It will also display this active period when the schedule is first opened, even if it is an exception

period.

⚠ Refreshing many points at small intervals can bog the network down. Be careful how this option is used.

Copyright 2017, Custom Software Engineering

GSM-2000-SMP Help

Version 2.04b ([revision history](#))

Trends

Trends automatically record point values at specified intervals to allow for later viewing. Both a graphical line chart and a tabular text view are available.

Chart View

Depending on the way it is configured, the chart displays either one or two scales overlaid on the same chart. The chart normally displays analog values such as temperatures using the scale on the left. The right scale is used for digital (On/Off) values, and values with low, small ranges such as equipment modes (Off/Heating/Cooling) or status (Off/On/Auto). This allows easily viewing the on/off state of digital points along with related analog values.

Chart lines with round markers use the left scale, while square markers are used for the right scale.

✔ It is generally best to use a line type of "Step Area" for digital and multi-state points. This makes it easier to see their change of states.

Along the bottom of a chart is the time scale. Both value and time scales are automatically adjusted to fit the data currently displayed.

The oldest reading currently in view is to the left, with more recent times to the right. Hover the mouse over any of the value markers to display information about the value at that time.

The chart legend can optionally be displayed along the bottom of the chart. The individual points in the legend may be clicked to toggle their visibility in the chart.

Chart Navigation

The chart displays a set number of readings. The number of readings displayed at one time is adjustable in the trend settings screen (see below). There are four navigation buttons along the top of the chart to move to the oldest reading in the database, one screen back in time, one screen forward in time, and to the most recent reading.

Zooming and Scrolling

Click the left mouse button and drag to zoom in on a given section of the chart. Once zoomed in, buttons become available in the top-right corner of the chart to scroll through the currently loaded records, zoom back out and print or save an image of the current chart view.

Note that scrolling only scrolls through the currently loaded readings. The navigation buttons must still be used to load different readings.

Pop-up Menu

Right-clicking the chart displays a pop-up menu with the following options:

- **Edit Settings** - Go to edit mode (see below).
- **Select Date/Time** - Select a specific date and time to view in the chart.
- **Export Data** - Export data to a CSV file that can be saved on the local hard drive.
- **Close** - Close the trend.

Menu

[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards

[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics

[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules

[View/Edit](#)

Trends

[View/Edit](#)

Alarms

[Viewing](#)
[Editing](#)

Runtimes

[Viewing](#)
[Editing](#)

Calculations

[View/Edit](#)

Programs

[View/Edit](#)

Links

[View/Edit](#)

Data View

[View the currently loaded readings as a table of text values.](#)

Edit Mode

[Edit the settings of this trend.](#)

Copyright 2017, Custom Software Engineering

Alarm Log

The alarm log allows viewing of past alarm messages. Both active and optional clear messages are stored in the log.

Several options are available to help limit the messages seen:

- **Refresh Button** - Refresh the list of alarms from the server.
- **Clear Search Settings** - Reset all of the search options.
- **Month Selection** - Select a month from the list to display only messages from that month.
- **Message Type** - Select from this list to display all messages, only activation messages or only clear messages.
- **Search Phrases** - Type one or more words or phrases on separate lines and click "refresh" to display only messages that contain any of those words or phrases.

Additionally, the "Time", "Type" and "Message" headers may be clicked to sort the list by that field. Clicking the header a second time will reverse the sort order.

Clicking the alarm message itself will display the [Alarm Editor](#) window if the users access permits it.

Menu

[Introduction](#)

[Toolbar](#)

[Device Tree](#)

[User Groups](#)

[Users](#)

[Templates](#)

[Points](#)

[Tutorial](#)

Dashboards

[Viewing](#)

[Editing](#)

[Gadgets](#)

Graphics

[Viewing](#)

[Editing](#)

[Gadgets](#)

Schedules

[View/Edit](#)

Trends

[View/Edit](#)

Alarms

[Viewing](#)

[Editing](#)

Runtimes

[Viewing](#)

[Editing](#)

Calculations

[View/Edit](#)

Programs

[View/Edit](#)

Links

[View/Edit](#)

GSM-2000-SMP Help

Version 2.04b ([revision history](#))

Alarm Editor

The alarm editor allows editing of alarm conditions, messages and email recipients.

Status Tab

The status tab contains:

- The current active/inactive status of the alarm.
- The date and time of the last change of state of the alarm.
- The last message generated by the alarm.
- A refresh button to update the status on the screen.
- A disable selection to completely disable the alarm.

Conditions Tab

This is where the alarm conditions are specified.

Alarms must always have "active conditions". Optionally, "clear conditions" may be used to fine-tune the behavior. The logic used for alarms is different depending on if clear conditions are present:

If clear conditions are not present:

- Alarm is active if the active conditions are true for x minutes.
- Alarm becomes inactive if the active conditions are false for the same x minutes.

If clear conditions are present:

- Alarm is active if the active conditions are true for x minutes.
- Alarm is cleared if the active conditions are not true, and the clear conditions are true for x minutes.
- Active conditions take precedence over clear conditions. If both are true, the alarm is active.
- If neither active nor clear conditions are true, the alarm remains in its current state.

Example:

Conditions:

Active if temp > 78

Clear if temp < 74

Behavior:

If temp goes up to 79, the alarm becomes active.

If temp goes down to 75, the alarm remains active.

If temp goes down to 73, the alarm is cleared.

There are two modes for the conditions:

- **All conditions are true** - The alarm will be active/cleared if every condition evaluates to true.
- **Any condition is true** - The alarm will be active/cleared if any one of the conditions

Menu

[Introduction](#)

[Toolbar](#)

[Device Tree](#)

[User Groups](#)

[Users](#)

[Templates](#)

[Points](#)

[Tutorial](#)

Dashboards

[Viewing](#)

[Editing](#)

[Gadgets](#)

Graphics

[Viewing](#)

[Editing](#)

[Gadgets](#)

Schedules

[View/Edit](#)

Trends

[View/Edit](#)

Alarms

[Viewing](#)

[Editing](#)

Runtimes

[Viewing](#)

[Editing](#)

Calculations

[View/Edit](#)

Programs

[View/Edit](#)

Links

[View/Edit](#)

evaluates to true.

The condition(s) must be true for at least the number of minutes specified to be considered active/cleared. If any/all of the conditions become false for the same number of minutes, the alarm will become active/cleared.

Up to six conditions may be entered. Click the "+" or "X" buttons to add or delete conditions. Each condition contains the following fields:

- **Point** - A point must be dragged from the device tree and dropped here. The value of this point is what will be tested.
- **Comparison** - This is the comparison that will be performed.
- **Comparison Value** - This is what the point value will be compared with.

The comparison value can be any one of the following:

- **Numerical Value** - Type any valid numerical value.
- **Another Point** - Drag a point from the tree to compare with its current value. For digital and multi-state points, click the drop-down list to display the valid values.
- **Value Range** - For the "in/out of range" comparisons, type the low value and the high value separated by a comma (eg: 50,100)
- **Value List** - For the "is/is not in list" comparisons, type a list of values separated by commas (e.g. 1,2,3,5,85,1000).

⚠ Floating point values (e.g. 72.5) are valid, but will not always give the desired results. What displays on the screen as 72.5 may actually be 72.499854 because of the way computers round numbers. Testing a point value for equality with 72.5 will most likely always be false. Use "greater than", "less than" or a value range instead.

Messages Tab

Active Message

This is the message that is saved to the database and emailed when the alarm becomes active. The following codes may be embedded in both the active or clear message.

These codes always refer to the point on the left side of the condition:

- **@Ax** = point address
- **@Ux** = point units
- **@Lx** = point label
- **@Dx** = point description
- **@Ox** = point low limit
- **@Hx** = point high limit
- **@Sx** = point status
- **@Px** - The label of the device the point is on.
- **@Vx** - The value of the point.

To display the value on the right side of the comparison, use:

- **@Cx** - The comparison value (the point or value on the right side).

"x" in all codes above is the condition number (1-6)

Example:

"Temperature is too high (@V1)." will be recorded as "Temperature is too high (77.4)."

Example:

"Temperature (@V1) is greater than setpoint (@C1)." will be recorded as "Temperature (76.3) is

greater than setpoint (74.5)."

"@" codes in the active message refer to the points and values in the active conditions. "@" codes in the clear message refer to the points and values in the clear conditions.

Clear Message

This is the optional message that is saved to the database and emailed when the alarm is cleared (becomes inactive). It can contain all of the embedded codes shown above.

Notifications Tab

Email to Groups

Select the list of user groups that should receive this alarms messages. Every person in the group that has an email address in the user database will receive both active and clear messages.

Additional Email Addresses

Any additional email addresses that should receive the messages may be typed here.

Copyright 2017, Custom Software Engineering

Runtime Log

The runtime log allows viewing of runtime status and accumulated hours.

Several options are available to help limit the runtimes seen in the report:

- **Refresh Button** - Refresh the list of runtimes from the server.
- **Clear Search Settings** - Reset all of the search options.
- **Runtimes to Show** - Select "All", "Near Limit" or "Over Limit" to filter the report.
- **Search Phrases** - Type one or more words or phrases on separate lines and click "refresh" to display only runtimes that contain any of those words or phrases.

Additionally, the table headers of the report may be clicked to sort the list by that field. Clicking the header a second time will reverse the sort order.

Clicking any runtime line will display the [Runtime Editor](#) if the users access permits it.

Menu
[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards
[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics
[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules
[View/Edit](#)

Trends
[View/Edit](#)

Alarms
[Viewing](#)
[Editing](#)

Runtimes
[Viewing](#)
[Editing](#)

Calculations
[View/Edit](#)

Programs
[View/Edit](#)

Links
[View/Edit](#)

GSM-2000-SMP Help

Version 2.04b ([revision history](#))

Runtime Editor

The runtime editor allows editing of runtime conditions, messages and email recipients.

Status Tab

The status tab contains:

- The current runtime hours and status of the runtime.
- The last message generated by the runtime.
- A refresh button to update the status on the screen.
- A button to clear the accumulated run time.

Conditions Tab

This is where the runtime conditions are specified.

There are two modes for the conditions:

- **All conditions are true** - Runtime will be accumulated if every condition evaluates to true.
- **Any condition is true** - Runtime will be accumulated if any one of the conditions evaluates to true.

Up to six conditions may be entered. Click the "+" or "X" buttons to add or delete conditions. Each condition contains the following fields:

- **Point** - A point must be dragged from the device tree and dropped here. The value of this point is what will be tested.
- **Comparison** - This is the comparison that will be performed.
- **Comparison Value** - This is what the point value will be compared with.

The comparison value can be any one of the following:

- **Numerical Value** - Type any valid numerical value.
- **Another Point** - Drag a point from the tree to compare with its current value. For digital and multi-state points, click the drop-down list to display the valid values.
- **Value Range** - For the in/out of range comparisons, type the low value and the high value separated by a comma (eg: 50,100)
- **Value List** - For the is/is not in list comparisons, type a list of values separated by commas (e.g. 1,2,3,5,85,1000).

⚠ Floating point values (e.g. 72.5) are valid, but will not always give the desired results. What displays on the screen as 72.5 may actually be 72.499854 because of the way computers round numbers. Testing a point value for equality with 72.5 will most likely always be false. Use "greater than", "less than" or a value range instead.

Runtime Limit

This is the number of hours considered the limit for this runtime. Email alerts may be sent at specified percentages of this limit. See the Notifications tab for more information.

Menu

[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards

[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics

[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules

[View/Edit](#)

Trends

[View/Edit](#)

Alarms

[Viewing](#)
[Editing](#)

Runtimes

[Viewing](#)
[Editing](#)

Calculations

[View/Edit](#)

Programs

[View/Edit](#)

Links

[View/Edit](#)

Message Tab

Notification Message

This is the message that is saved to the database and emailed when the runtime is exceeded, or at specified intervals. The message may contain the following codes to embed information within the text.

These codes always refer to the point on the left side of the condition:

- **@Ax** = point address
- **@Nx** = point name
- **@Ux** = point units
- **@Lx** = point label
- **@Dx** = point description
- **@Ox** = point low limit
- **@Hx** = point high limit
- **@Sx** = point status
- **@Px** - The label of the device the point is on.
- **@Vx** - The value of the point.

To display the value on the right side of the comparison, use:

- **@Cx** - The comparison value (the point or value on the right side).

"x" in all cases above is the condition number (1-6)

To display information about the runtime itself, use:

- **@R** - The current runtime, in hours.
- **@L** - The runtime limit specified on the conditions tab.

Example:

"@L1 filter on @P1 needs cleaned." will be recorded as "Fan1 filter on First Floor needs cleaned". (@P1 is the device name for the point.)

Example:

"@L1 has accumulated @R hours of runtime." will be recorded as "Fan1 has accumulated 114.35 hour of runtime."

Notifications Tab

Notify at...

This is the percentage of limit to record the first message. For example, with a limit of 1,000 hours and this value set to 90%, the first message recorded would be at 900 hours.

Notify again every...

This is the percentage of limit to record messages after the first. Using the above example, and this value set to 5%, a message would be recorded at 90%, 95%, 100%, 105%, etc.

Email to Groups

Select the list of user groups that should receive runtime messages. Every person in the group that has an email address in the user database will receive the messages.

Additional Email Addresses

Any additional email addresses that should receive the messages may be typed here.

GSM-2000-SMP Help

Version 2.04b ([revision history](#))

Calculation Editor

Calculations read points from one or more devices and performs a calculation on them, such as average, minimum or maximum. Custom calculations may also be used.

Calculations may be used on dashboards, trends, alarms and even other calculations just like physical points.

Points must be dragged from the device tree and dropped in the points list. Drop every point that will be part of the calculation. The order of the points is generally not important unless a custom function is used.

Function

Select the function to perform on the points in the point list. For example, to average three temperatures, drag the three temperature points to the point list and select "Average".

Custom functions are also supported by selecting "Custom" and entering a calculation in the "Post-function Calculation" below.

Post-function Calculation

The post-function calculation is used to perform an additional calculation on the result of the function, or to specify a custom function.

Example: To have this Calculation point equal the average of three temperatures, but converted from Fahrenheit to Celsius, add the three points to the list, select "Average" and enter the following in the post-function calculation:

$(@R-32)/1.8$

The result of the calculation function selected above (the average temperature in this example) will be inserted in to the post-function calculation where the @R code is located.

To use a completely custom function, select "Custom" as the function and then enter a post-function calculation with @Vx codes where the point values from the list should appear. @V1 is the value of the first point in the list, @V2 the second point, etc.

Example: To get the sum total of three points and subtract 100 from it, enter the following in the post-function calculation:

$(@V1+@V2+@V3)-100$

Several built-in sub-functions are available to call from within the post-function calculation:

- **min** - Returns the minimum of a list of values: $\text{min}(@V1,@V2,@V3)$.
- **max** - Returns the maximum of a list of values: $\text{max}(@V1,@V2,@V3)$.
- **CtoF** - Convert a value from Celsius to Fahrenheit: $\text{CtoF}(@V1)$
- **FtoC** - Convert a value from Fahrenheit to Celsius: $\text{FtoC}(@V1)$

Example: To get the lowest of three temperatures and then convert it from Celsius to Fahrenheit, add the three points to the list, select "Custom" and enter the following in the post-function

Menu

[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards

[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics

[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules

[View/Edit](#)

Trends

[View/Edit](#)

Alarms

[Viewing](#)
[Editing](#)

Runtimes

[Viewing](#)
[Editing](#)

Calculations

[View/Edit](#)

Programs

[View/Edit](#)

Links

[View/Edit](#)

calculation:

CtoF(min(@V1,@V2,@V3))

Refresh Button

The refresh button will update the value and status shown on the screen. If changes have been made, they must first be saved by clicking the "Apply" button.

Units

This is the engineering units to display for this Calculation when used on dashboards.

Precision

This is the number of digits to the right of the decimal point to display for this Calculation when used on dashboards.

Copyright 2017, Custom Software Engineering

Program Editor

Programs allows simple programs to be written to control setpoints, outputs and other points.

⚠ Every effort has been made to minimize the effects of user programming errors, but it is not possible to protect against every programming error that may be made by users. Erroneous programs could have undesired effects on equipment and devices, including but not limited to short-cycling of outputs, setting of point values to invalid values, etc. The accuracy and proper operation of user programming is the responsibility of the user and not the dealer, supplier or manufacturer of GSM-2000-SMP . Use of the programming feature is entirely at your own risk.

For more information about how to write programs and the built-in functions available, see [Programming Reference](#)

Edit Tab

The edit tab is where the program options are set and the actual programming is entered.

Enable Execution Every x Seconds

Select "Enabled" to enable the program for execution. Selecting "Disabled" prevents the program from automatically executing. If the program is enabled, the seconds to wait between executions of the program may be specified. It is recommended that the seconds be set to the highest value possible that will allow for proper operation.

Keep in mind that it may take several seconds for all point values to be read, so executing a program more often than every 5 seconds would usually be an unnecessary burden on the system. Also, temperatures and some other types of points do not usually change very quickly so programs that depend on their values may only need to execute every 30 or 60 seconds.

On Demand

If "On Demand" is selected it is only executed when a user clicks a button that is linked to this program on a dashboard or graphic screen. To link a dashboard or graphic button to a program, drag the program node from the tree to a dashboard and select a ButtonIcon control.

Status

This displays the current status of the program. If an error is displayed, see the debug screen for more information.

Point Table

The point table lists up to 16 points that the program can use. Because the labels of points could possibly be invalid variable names in Python, points are accessed in the program by a name called the Reference Name.

Menu
Introduction
Toolbar
Device Tree
User Groups
Users
Templates
Points
Tutorial
Dashboards
Viewing
Editing
Gadgets
Graphics
Viewing
Editing
Gadgets
Schedules
View/Edit
Trends
View/Edit
Alarms
Viewing
Editing
Runtimes
Viewing
Editing
Calculations
View/Edit
Programs
View/Edit
Links
View/Edit

Any time a reference name is used in a program, it must be prefixed with an "@" so the system knows a point is being referenced rather than a local variable.

For example, a point called "Unoccupied Cool Setpoint #1" in the tree, would have a reference name of "Unoccupied_Cool_Setpoint_1".

Rename a Point Reference

A reference name may be changed by clicking on that row of the table. This allows the reference name to be simplified even more, for example to UnOccCool or anything that easier to remember and type.

Deleting a Point Reference

Right click a row in the table and select "Remove Point" to remove a point reference from the table.

Edit Program

Check this box to enable editing of the program code.

Code Editor

The code editor is a simple text editor where the program code may be entered and modified.

Debug Tab

The debug tab is where debug messages are displayed. The left side displays the current value of all points used by the program as well as the value of the timer for this program and a few other items that may be useful for debugging a program.

The right side displays error messages and debug messages generated by a program by calling the debug("my message") function.

Auto-Refresh

Uncheck this box to prevent the debug screen from updating. This will allow more time to read debug messages that may quickly scroll off the screen. Check the box to re-enable updating.

Copyright 2017, Custom Software Engineering

Edit Link

Links are used to access other units, web pages or other web content.

Label

Label is the name of the item as displayed in the device tree.

✔ All items in the device tree are sorted alphabetically by label. Folders may be used to organize items.

Description

Description is optional text that describes the item. It can be any descriptive text or be left blank.

URL

The URL of the link. Enter a complete URL including http:// if necessary. For links to other units, use the format http://192.168.0.50:8651.

Display Node

The node ID of a graphic, schedule or trend to display on the linked unit. The node ID may be found on the advanced tab of the nodes properties dialog on the target unit. Use 0 to display the default screen.

Open in new window

Opens the link in a new browser window.

Auto Login

Automatically log in to another unit using the current users name and password. The user must exist on the linked unit and have the same name and password. This option should only be selected when linking to other units, otherwise the link will not work properly.

Group Access

[Edit user groups that can access this item.](#)

Advanced

Node ID

The internal reference ID of this node (read-only)

Menu

- [Introduction](#)
- [Toolbar](#)
- [Device Tree](#)
- [User Groups](#)
- [Users](#)
- [Templates](#)
- [Points](#)
- [Tutorial](#)

Dashboards

- [Viewing](#)
- [Editing](#)
- [Gadgets](#)

Graphics

- [Viewing](#)
- [Editing](#)
- [Gadgets](#)

Schedules

- [View/Edit](#)

Trends

- [View/Edit](#)

Alarms

- [Viewing](#)
- [Editing](#)

Runtimes

- [Viewing](#)
- [Editing](#)

Calculations

- [View/Edit](#)

Programs

- [View/Edit](#)

Links

- [View/Edit](#)

System Menu

- [Help & Support](#)
- [Edit Settings](#)
- [Users and Groups](#)
- [Logs and Status](#)
- [Managers](#)
- [Server Functions](#)

- Menu**
 - [Introduction](#)
 - [Toolbar](#)
 - [Device Tree](#)
 - [User Groups](#)
 - [Users](#)
 - [Templates](#)
 - [Points](#)
 - [Tutorial](#)
- Dashboards**
 - [Viewing](#)
 - [Editing](#)
 - [Gadgets](#)
- Graphics**
 - [Viewing](#)
 - [Editing](#)
 - [Gadgets](#)
- Schedules**
 - [View/Edit](#)
- Trends**
 - [View/Edit](#)
- Alarms**
 - [Viewing](#)
 - [Editing](#)
- Runtimes**
 - [Viewing](#)
 - [Editing](#)
- Calculations**
 - [View/Edit](#)
- Programs**
 - [View/Edit](#)
- Links**
 - [View/Edit](#)

Devices

A device is any physical device, panel or I/O unit in the system.

Supported devices include:

Menu
Introduction
Toolbar
Device Tree
User Groups
Users
Templates
Points
Tutorial
Dashboards
Viewing
Editing
Gadgets
Graphics
Viewing
Editing
Gadgets
Schedules
View/Edit
Trends
View/Edit
Alarms
Viewing
Editing
Runtimes
Viewing
Editing
Calculations
View/Edit
Programs
View/Edit
Links
View/Edit

Drivers

A driver is a physical network or logical grouping of devices based on the protocol they use. For example, an entire ModBus network is a single driver.

Supported drivers include:

Menu
Introduction
Toolbar
Device Tree
User Groups
Users
Templates
Points
Tutorial
Dashboards
Viewing
Editing
Gadgets
Graphics
Viewing
Editing
Gadgets
Schedules
View/Edit
Trends
View/Edit
Alarms
Viewing
Editing
Runtimes
Viewing
Editing
Calculations
View/Edit
Programs
View/Edit
Links
View/Edit

Edit Folder

Folders are used to organize tree items. They are typically used to contain a single type of item, such as all points on a device, all schedules, or all devices in a specific area.

Any type of item may be placed inside a folder, including other folders. On a system with many items it is important to keep them organized for ease of use.

Label

Label is the name of the item as displayed in the device tree.

✔ All items in the device tree are sorted alphabetically by label. Folders may be used to organize items.

Description

Description is optional text that describes the item. It can be any descriptive text or be left blank.

Group Access

[Edit user groups that can access this item.](#)

Advanced

Node ID

The internal reference ID of this node (read-only)

Menu

- [Introduction](#)
- [Toolbar](#)
- [Device Tree](#)
- [User Groups](#)
- [Users](#)
- [Templates](#)
- [Points](#)
- [Tutorial](#)

Dashboards

- [Viewing](#)
- [Editing](#)
- [Gadgets](#)

Graphics

- [Viewing](#)
- [Editing](#)
- [Gadgets](#)

Schedules

- [View/Edit](#)

Trends

- [View/Edit](#)

Alarms

- [Viewing](#)
- [Editing](#)

Runtimes

- [Viewing](#)
- [Editing](#)

Calculations

- [View/Edit](#)

Programs

- [View/Edit](#)

Links

- [View/Edit](#)

GSM-2000-SMP Help

Version 2.04b ([revision history](#))

Edit Point

A Control Point, usually referred to as just a "point", is any input, output, variable or property on a device that a value can be read from, and possibly allows a new value to be written to it.

At least one point is required for the unit to do anything useful. Most systems will have dozens or hundreds of points.

Label

Label is the name of the item as displayed in the device tree.

✓ All items in the device tree are sorted alphabetically by label. Folders may be used to organize items.

Description

Description is optional text that describes the item. It can be any descriptive text or be left blank.

Address

The address is the name, number or combination of the two that specifies how to access and interpret this point. Addressing is different for different types of devices (ModBus, BACnet etc.) See [Point Addressing](#) for information on how to specify the address.

Virtual Point

Check this box to declare this point as "virtual". Virtual points hold a value but are not read or written to a device so they do not require an address. Their value is maintained internally and can be used anywhere a normal point can be used. They are normally used with program or calculation objects for smart setpoint logic or to hold user specified values.

Point Type

The Point Type specifies how the value should be treated and displayed once it has been read from the device.

The available point types are:

- **Analog** - The value can be any numeric value. Digital values are converted to 0 for OFF and 1 for ON.
- **Digital** - The value is treated as ON or OFF. Any non-zero value is considered ON.
- **Multi-State** - The value will be one of a limited set of numeric values such as 1 through 4, or -2 through 15.
- **String** - The value is a string of ASCII characters.
- **DateTime** - The value is a packed binary date, time or combined date/time value.

✓ Although the point type should usually be set to match the actual type of point, it is sometimes useful to use a different setting. For example, an analog input could be set to a point type of Digital so that any value other than 0 would be displayed as ON or Active.

Point Class

Menu

[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards

[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics

[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules

[View/Edit](#)

Trends

[View/Edit](#)

Alarms

[Viewing](#)
[Editing](#)

Runtimes

[Viewing](#)
[Editing](#)

Calculations

[View/Edit](#)

Programs

[View/Edit](#)

Links

[View/Edit](#)

The Point Class is currently used only for informational purposes and has no real affect on how the value will be treated or displayed. It may be used for more in a future version so it is recommended that it always be set to the proper value.

The available point classes are:

- **Input** - The point is a physical input of any type.
- **Output** - The point is a physical output of any type.
- **Variable** - The point is a logical point in the device such as a setpoint, programming variable or flag.
- **Object** - The point is an object or other logical data structure.

Display Settings

[Edit settings that affect the way the point value is displayed.](#)

Modification Settings

[Edit settings that affect the way the point value can be modified by users.](#)

Group Access

[Edit user groups that can access this item.](#)

Advanced

[Edit the advanced options.](#)

Point Addressing

Each protocol requires a different point addressing system. Select one of the following for more details.

Drivers not listed here do not need manual entry of point addresses because all available points are automatically imported.

Menu
[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards
[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics
[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules
[View/Edit](#)

Trends
[View/Edit](#)

Alarms
[Viewing](#)
[Editing](#)

Runtimes
[Viewing](#)
[Editing](#)

Calculations
[View/Edit](#)

Programs
[View/Edit](#)

Links
[View/Edit](#)

Point Display Settings

The display settings for points are somewhat different depending on the type of point.

Analog Points

Engineering Units

The engineering units can be set to specify the units of measure or physical characteristics of the analog value. Common engineering units would include Degrees F, Amps and Volts.

Type any text or select from a list of common units by clicking the "Select..." button.

Digital Points

Value Labels

The digital text setting allows the point to be displayed as something other than ON or OFF.

Several preset pairs of digital text labels are available by clicking the "Select..." button. Any custom labels may also be used by typing directly in the editing area.

The format for digital text labels is:

0:Normal
1:Alarm

The 0 label (Normal) will be displayed when the point is OFF (or zero). The 1 label (Alarm) is used when the the point is ON (or any non-zero value). There should be no extra spaces anywhere except in the text label itself.

Multi-state Points

Value Labels

The multi-state text setting allows the point to be displayed as something other than numbers.

Several preset pairs of multi-state text labels are available by clicking the "Select..." button. Any custom labels may also be used by typing directly in the editing area.

The format for multi-state text labels is:

0:Off
1:Low
2:Medium
3:High

With the above example, if the value of the point is exactly 0,1,2 or 3, the corresponding word will

Menu

[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards

[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics

[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules

[View/Edit](#)

Trends

[View/Edit](#)

Alarms

[Viewing](#)
[Editing](#)

Runtimes

[Viewing](#)
[Editing](#)

Calculations

[View/Edit](#)

Programs

[View/Edit](#)

Links

[View/Edit](#)

be displayed. If the value is less than zero, greater than 3, or not a whole number (for example, 2.5), the point will display the exact numerical value.

 **Multi-state text works only with whole numbers (integers). 2.5:Medium is not valid.**

Copyright 2017, Custom Software Engineering

Point Modification Settings

These settings control if and how the point can be modified by the user.

All Point Types

Allow Modify

This checkbox must be selected for the point to be modifiable by the user.

Analog Points Only

Increment

Increment controls how the value can be changed by the user. It should normally be set to the increment supported by the point in the device. A value of 1 allows the value to be changed in steps of 1 (74, 75, 76, etc). A value of 0.1 allows steps of 0.1 (74.1, 74.2, 74.3, etc)

Precision

Precision controls how the value is displayed. A value of 2 will display values with 2 digits to the right of the decimal point (74.25). A value of 0 will truncate the decimal value and not display a decimal point at all (74).

Low Limit

This is the lowest value to which the user will be allowed to modify the value. If left blank, any value valid for the data type of the point will be allowed.

High Limit

This is the highest value to which the user will be allowed to modify the value. If left blank, any value valid for the data type of the point will be allowed.

Menu
[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards
[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics
[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules
[View/Edit](#)

Trends
[View/Edit](#)

Alarms
[Viewing](#)
[Editing](#)

Runtimes
[Viewing](#)
[Editing](#)

Calculations
[View/Edit](#)

Programs
[View/Edit](#)

Links
[View/Edit](#)

Edit Group Access

The group settings are used to determine which user groups can see this item in the tree. The default setting is "Everyone". Unchecking "Allow Everyone" enables selecting individual groups.

If a user group is not allowed to see an item, that group will also not be able to see any items under it in the tree.

Menu
Introduction
Toolbar
Device Tree
User Groups
Users
Templates
Points
Tutorial
Dashboards
Viewing
Editing
Gadgets
Graphics
Viewing
Editing
Gadgets
Schedules
View/Edit
Trends
View/Edit
Alarms
Viewing
Editing
Runtimes
Viewing
Editing
Calculations
View/Edit
Programs
View/Edit
Links
View/Edit

GSM-2000-SMP Help

Version 2.04b ([revision history](#))

Advanced Options

These are advanced options for control points.

Node ID

The internal reference ID of this node (read-only)

Analog and Multi-state Points Only

In/Out Calculations

In and out calculations are optionally used to convert raw point values from a device in to more usable values.

For example, it is fairly common for ModBus devices to represent a temperature as the actual temperature * 10. In this case, 75.5 degrees would be read from the device as 755.

To have this value treated properly, an In Calculation of @/10 would be used. The @ sign specifies where in the calculation to insert the raw value from the device.

So in this example, it would calculate 755 / 10 for a result of 75.5. This calculated value is then used everywhere else in the system instead of the 755, including on dashboards, trends and alarms.

If the point is modifiable by the user, the Out Calculation should be the opposite of the In Calculation. In this case it would be @*10.

If the user then changes the value of the point to 76.2, the calculation 76.2 * 10 would be executed and the value 762 sent to the device.

✓ Several common calculation presets, including F to C and C to F conversions, are available by clicking the "Select..." button.

✓ It is perfectly acceptable to have two separate points with the same address, but different calculations. This can be useful to show a temperature in both F and C.

Menu

[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards

[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics

[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules

[View/Edit](#)

Trends

[View/Edit](#)

Alarms

[Viewing](#)
[Editing](#)

Runtimes

[Viewing](#)
[Editing](#)

Calculations

[View/Edit](#)

Programs

[View/Edit](#)

Links

[View/Edit](#)

Tutorial: Connecting to a Network

The first thing to do when setting up a system is to add a [driver](#) to the [device tree](#). Each driver knows how to communicate with a particular type of network and each unique type of network requires a separate driver in the device tree.

1. Right click inside the device tree on the left side of the screen and select "Create New Item" then "New Driver".
2. Select the type of network from the list. Each item includes a short description.
3. Each type of driver will have different settings. Fill out the driver form and click "Ok". Click the help icon on the driver screen for more information on that type of driver.
4. The device tree should now contain a driver icon and the network should be connected and ready to go. This can be verified by selecting "System Message Log" from the System Menu. You should see "Connected: xxxx" near the top of the log. If not, right-click the driver in the tree and select "Edit Driver" to check your settings.

Click "Next" to add devices to the device tree.

[<< Back](#) [Next >>](#)

Menu
Introduction
Toolbar
Device Tree
User Groups
Users
Templates
Points
Tutorial
Dashboards
Viewing
Editing
Gadgets
Graphics
Viewing
Editing
Gadgets
Schedules
View/Edit
Trends
View/Edit
Alarms
Viewing
Editing
Runtimes
Viewing
Editing
Calculations
View/Edit
Programs
View/Edit
Links
View/Edit

GSM-2000-SMP Help

Version 2.04b ([revision history](#))

Tutorial: Adding Devices to the Device Tree

A [device](#) is any physical device, panel or I/O unit in the system. A typical system will consist of one to several dozen devices.

1. Click the driver in the device tree to view the items under that driver. It should currently be empty. Right-click in the device tree and select "Create New Item" then "New Device".

2. Each type of network will have different settings for devices. Fill out the device form and click "Ok". Click the help icon on the device screen for more information on that type of device.

✔ Depending on the type of network, there may be an option to scan the network for devices. This option will automatically search the entire network for devices and allow them to be easily added to the tree.

3. The device tree should now contain an icon for the new device. Be sure to read about [templates](#) to make duplicating devices easier.

Click "Next" to add points to the device tree.

[<< Back](#) [Next >>](#)

Menu

[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards

[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics

[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules

[View/Edit](#)

Trends

[View/Edit](#)

Alarms

[Viewing](#)
[Editing](#)

Runtimes

[Viewing](#)
[Editing](#)

Calculations

[View/Edit](#)

Programs

[View/Edit](#)

Links

[View/Edit](#)

GSM-2000-SMP Help

Version 2.04b ([revision history](#))

Tutorial: Adding Points to a Device

A [control point](#), or just a "point" is any physical or logical control point on a device. Inputs, outputs, setpoints and variables on a device are all considered "points".

1. Click the device in the device tree to view the items under that device. It should currently be empty. Right-click in the device tree and select "Create New Item" then "New Point".

2. Each type of point will have different settings. Fill out the point form and click "Ok". Click the help icon on the point screen for more information on that type of point.

✔ Depending on the type of network, there may be an option to scan the device for points. This option will automatically search the device for points and allow them to be easily added to the tree.

3. The device tree should now contain an icon for the new point. Clicking the point in the tree should display a window with the current value, and allow changing the value if the point settings allow it.

4. Repeat this process for each point needed. Be sure to read about [templates](#) to make duplicating points easier.

Click "Next" to create a simple graphic.

[<< Back](#) [Next >>](#)

Menu

[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards

[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics

[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules

[View/Edit](#)

Trends

[View/Edit](#)

Alarms

[Viewing](#)
[Editing](#)

Runtimes

[Viewing](#)
[Editing](#)

Calculations

[View/Edit](#)

Programs

[View/Edit](#)

Links

[View/Edit](#)

GSM-2000-SMP Help

Version 2.04b ([revision history](#))

Tutorial: Making a Simple Dashboard

Dashboards are used to display information from the system and to control equipment.

1. Click the  button at the top of the device tree to return to the root. Right-click in the device tree and select "Create New Item" then "New Dashboard". Normally, dashboards would be added under a device if it will only contain information about that device. Add a dashboard under the driver or site item if it will contain information from several devices, such as global temperature reports. This is only a suggestion; dashboards may be placed under any device, driver, folder or in the root of the device tree, as desired.
2. Type a label for the dashboard and click "Ok".
3. The device tree should now contain an icon for the new dashboard. Click the dashboard in the tree to open it.
4. Right-click inside the dashboard and select "Edit Mode".
5. The help button in the status bar may be clicked for help with edit mode, but for now just drag any point from the device tree and drop it on the dashboard. This will display the "Add a Gadget" dialog.
6. Scroll down and click on the "Label" folder. Click each item in that folder to see a preview of what it will look like on the dashboard. Select one and click "Ok".
7. Click the  button to save the dashboard.
8. Click the  button to leave edit mode. The dashboard should now start updating with the value of the point. If it does not, go back and check the settings of the point, especially the address.
9. Repeat this process for each point you want to add to the dashboard. Feel free to experiment with other [gadgets](#), but not all gadgets are appropriate for all types of points.

[<< Back](#)

Menu

[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards

[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics

[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules

[View/Edit](#)

Trends

[View/Edit](#)

Alarms

[Viewing](#)
[Editing](#)

Runtimes

[Viewing](#)
[Editing](#)

Calculations

[View/Edit](#)

Programs

[View/Edit](#)

Links

[View/Edit](#)

Copyright 2017, Custom Software Engineering

GSM-2000-SMP Help

Version 2.04b ([revision history](#))

"Animation" Gadget

The Animation gadget displays one of two animations depending on the status of a point value. It uses standard .GIF animations that can be found on the Internet, or created with any .GIF editor.

Properties

Animation

This is the animation to display when the animation control condition is true, or if it is the only animation used.

Off Animation

This is the the optional animation to display when the animation control condition is false.

Animation Size

The size of the animation, as a percentage of its original size. Use 100 for the original size, 50 for half size, etc.

Show Border

If checked, a border will be drawn around the gadget, in the border color of the selected theme.

Animation Control

This option specifies when the .GIF should animate. When not animating, it will display the first image in the animation, or the "Off Animation", if specified.

The choices are:

- **Always** - Always animate regardless of the point value, even if no point is attached.
- **Point is ON (or non-zero)** - Animate when the point is ON or has any non-zero value.
- **Point is OFF (or equals zero)** - Animate when the point is OFF or is equal to zero.
- **When point is below low limit** - Animate when the point value is less than the low limit.
- **When point is above high limit** - Animate when the point value is greater than the high limit.
- **When point is IN range** - Animate when the point value is greater than or equal to the low limit and less than or equal to the high limit.
- **When point is OUT of range** - Animate when the point value is less than the low limit or greater than the high limit.
- **<Convert value to frame>** - Instead of animating, this option will divide the number of frames in the animation in to the range specified in low limit and high limit and display a single frame based on the point value. For example, with a low/high range of 0-100 and an animation with 10 frames, a point value of 0-9 would display frame #0 (the first frame). A value of 10-19 would display frame #1, etc. A common use for this option would be to show damper or valve positions.

Caption

[The caption attached to the gadget.](#)

Menu

[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards

[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics

[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules

[View/Edit](#)

Trends

[View/Edit](#)

Alarms

[Viewing](#)
[Editing](#)

Runtimes

[Viewing](#)
[Editing](#)

Calculations

[View/Edit](#)

Programs

[View/Edit](#)

Links

[View/Edit](#)

Range

[The range settings of the gadget.](#)

Theme

[The theme colors of the gadget.](#)

Copyright 2017, Custom Software Engineering

"ChartBar" Gadget

The "ChartBar" gadget displays a bar chart of up to 6 points. The bars can be oriented vertically or horizontally. The mouse may be hovered over individual bars to display more information about that point.

Properties

Orientation

"Horizontal" displays bars on the left side that grow to the right. "Vertical" displays bars on the bottom that grow upwards.

Minimum Width

The minimum width of the gadget. This will prevent the gadget from becoming too small when it is being resized for smaller screens. Note that setting this too high can cause the gadget to overflow the edges of smaller screens.

Minimum Height

The minimum height of the gadget. This will prevent the gadget from becoming too small when it is being resized for smaller screens. Note that setting this too high can cause the gadget to overflow the edges of smaller screens.

Show Border

If checked, a border will be drawn around the gadget, in the border color of the selected theme.

Caption

[The caption attached to the gadget.](#)

Theme

[The theme colors of the gadget.](#)

Menu
Introduction
Toolbar
Device Tree
User Groups
Users
Templates
Points
Tutorial
Dashboards
Viewing
Editing
Gadgets
Graphics
Viewing
Editing
Gadgets
Schedules
View/Edit
Trends
View/Edit
Alarms
Viewing
Editing
Runtimes
Viewing
Editing
Calculations
View/Edit
Programs
View/Edit
Links
View/Edit

"ChartPie" Gadget

The "ChartPie" gadget displays a pie chart of up to 6 points. The mouse may be hovered over individual sections to display more information about that point.

Properties

Minimum Width

The minimum width of the gadget. This will prevent the gadget from becoming too small when it is being resized for smaller screens. Note that setting this too high can cause the gadget to overflow the edges of smaller screens.

Minimum Height

The minimum height of the gadget. This will prevent the gadget from becoming too small when it is being resized for smaller screens. Note that setting this too high can cause the gadget to overflow the edges of smaller screens.

Show Border

If checked, a border will be drawn around the gadget, in the border color of the selected theme.

Caption

[The caption attached to the gadget.](#)

Theme

[The theme colors of the gadget.](#)

Menu
Introduction
Toolbar
Device Tree
User Groups
Users
Templates
Points
Tutorial
Dashboards
Viewing
Editing
Gadgets
Graphics
Viewing
Editing
Gadgets
Schedules
View/Edit
Trends
View/Edit
Alarms
Viewing
Editing
Runtimes
Viewing
Editing
Calculations
View/Edit
Programs
View/Edit
Links
View/Edit

"ChartStrip" Gadget

The "ChartStrip" gadget displays a strip chart of up to 6 points. The mouse may be hovered over individual readings to display more information about that point.

Properties

Minimum Width

The minimum width of the gadget. This will prevent the gadget from becoming too small when it is being resized for smaller screens. Note that setting this too high can cause the gadget to overflow the edges of smaller screens.

Minimum Height

The minimum height of the gadget. This will prevent the gadget from becoming too small when it is being resized for smaller screens. Note that setting this too high can cause the gadget to overflow the edges of smaller screens.

Reading Interval

The number of seconds to wait between updates of the chart. Intervals of less than three seconds are not useful because of the timing of dashboard updates.

Maximum Readings

The maximum number of readings to display in the chart. Once the maximum number of readings has been reached, the oldest readings will begin to scroll off the edge of the chart.

Show Minute Changes

If checked, a vertical marker and time stamp will be displayed at each new minute.

Show Legend

If checked, a legend will be displayed under the chart, showing the point labels for each color.

Caption

[The caption attached to the gadget.](#)

Theme

[The theme colors of the gadget.](#)

Menu

- [Introduction](#)
- [Toolbar](#)
- [Device Tree](#)
- [User Groups](#)
- [Users](#)
- [Templates](#)
- [Points](#)
- [Tutorial](#)

Dashboards

- [Viewing](#)
- [Editing](#)
- [Gadgets](#)

Graphics

- [Viewing](#)
- [Editing](#)
- [Gadgets](#)

Schedules

- [View/Edit](#)

Trends

- [View/Edit](#)

Alarms

- [Viewing](#)
- [Editing](#)

Runtimes

- [Viewing](#)
- [Editing](#)

Calculations

- [View/Edit](#)

Programs

- [View/Edit](#)

Links

- [View/Edit](#)

"GaugeArc" Gadget

The GaugeArc gadget displays an arc-shaped gauge and fills it with color to represent a point value.

Properties

Arc Style

Two arc styles are available:

- **Show Range Segments** - Fills each range segment (low, normal and high) with their respective theme colors, up to the current point value.
- **Fill with Range Color** - Fills the entire gauge with the appropriate range color, up to the current point value.

Size

The overall size of the gadget, in pixels.

Minimum Value

The value for the low end of the gauge. The gauge will display as empty if the point value is equal to or less than this value.

Maximum Value

The value for the high end of the gauge. The gauge will display as full if the point value is equal to or greater than this value.

Icon

The optional icon to display. The relative size of the icon is fixed and controlled by the "Size" setting above.

Show Min/Max Labels

If checked, the minimum and maximum values will be displayed numerically at the ends of the gauge.

Show Range Labels

If checked, the low and high range values will be displayed numerically at the appropriate positions on the gauge.

Show Current Value

If checked, the current point value will be displayed numerically in the center of the gauge.

Show Units

If checked, the engineering units of the point will be displayed in the center of the gauge.

Show Outline

If checked, the arc will be outlined in the foreground color of the selected theme.

Caption

[The caption attached to the gadget.](#)

Range

Menu

[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards

[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics

[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules

[View/Edit](#)

Trends

[View/Edit](#)

Alarms

[Viewing](#)
[Editing](#)

Runtimes

[Viewing](#)
[Editing](#)

Calculations

[View/Edit](#)

Programs

[View/Edit](#)

Links

[View/Edit](#)

[The range settings of the gadget.](#)

Show Border

If checked, a border will be drawn around the gadget, in the border color of the selected theme.

Use Secondary Colors

If checked, the "secondary colors" of the current theme will be used. This allows the gadget to stand out from its surroundings without have to explicitly set a color.

Theme

[The theme colors of the gadget.](#)

Copyright 2017, Custom Software Engineering

"GaugeBar" Gadget

The GaugeBar gadget displays a bar gauge and fills it with color to represent a point value.

Properties

Orientation

"Horizontal" displays the lowest value on the left and the bar will grow to the right. Vertical orientation starts at the bottom and grows upwards.

Bar Style

Two bar styles are available:

- **Show Range Segments** - Fills each range segment (low, normal and high) with their respective theme colors, up to the current point value.
- **Fill with Range Color** - Fills the entire gauge with the appropriate range color, up to the current point value.

Thickness

The width of the gauge in vertical orientation or the height in horizontal orientation.

Minimum Length

The minimum length when the dashboard is resized to fit smaller screens. Setting this too high can result in the gadget not fitting on very small screens.

Minimum Value

The value for the low end of the gauge. The gauge will display as empty if the point value is equal to or less than this value.

Maximum Value

The value for the high end of the gauge. The gauge will display as full if the point value is equal to or greater than this value.

Icon

The optional icon to display. The relative size of the icon is fixed and controlled by the "Thickness" setting above.

Show Min/Max Labels

If checked, the minimum and maximum values will be displayed numerically at the ends of the gauge.

Show Range Labels

If checked, the low and high range values will be displayed numerically at the appropriate positions on the gauge.

Show Current Value

If checked, the current point value will be displayed numerically in the center of the gauge.

Show Outline

If checked, the arc will be outlined in the foreground color of the selected theme.

Menu

- [Introduction](#)
- [Toolbar](#)
- [Device Tree](#)
- [User Groups](#)
- [Users](#)
- [Templates](#)
- [Points](#)
- [Tutorial](#)

Dashboards

- [Viewing](#)
- [Editing](#)
- [Gadgets](#)

Graphics

- [Viewing](#)
- [Editing](#)
- [Gadgets](#)

Schedules

- [View/Edit](#)

Trends

- [View/Edit](#)

Alarms

- [Viewing](#)
- [Editing](#)

Runtimes

- [Viewing](#)
- [Editing](#)

Calculations

- [View/Edit](#)

Programs

- [View/Edit](#)

Links

- [View/Edit](#)

Caption

[The caption attached to the gadget.](#)

Range

[The range settings of the gadget.](#)

Show Border

If checked, a border will be drawn around the gadget, in the border color of the selected theme.

Use Secondary Colors

If checked, the "secondary colors" of the current theme will be used. This allows the gadget to stand out from its surroundings without have to explicitly set a color.

Theme

[The theme colors of the gadget.](#)

Copyright 2017, Custom Software Engineering

"GaugePercent" Gadget

The GaugePercent gadget displays the percentage (0-100) where a point value falls within a set range. For example, with a range of 4 to 24, a value of 14 would display as 50%.

Properties

Size

The overall size of the gadget, in pixels.

Minimum Value

The value that corresponds with 0%. Point values equal to or less than this value will display as 0%.

Maximum Value

The value that corresponds with 100%. Point values equal to or greater than this value will display as 100%.

Icon

The optional icon to display. The relative size of the icon is fixed and controlled by the "Size" setting above.

Caption

[The caption attached to the gadget.](#)

Range

[The range settings of the gadget.](#)

Show Border

If checked, a border will be drawn around the gadget, in the border color of the selected theme.

Use Secondary Colors

If checked, the "secondary colors" of the current theme will be used. This allows the gadget to stand out from its surroundings without have to explicitly set a color.

Theme

[The theme colors of the gadget.](#)

Menu

- [Introduction](#)
- [Toolbar](#)
- [Device Tree](#)
- [User Groups](#)
- [Users](#)
- [Templates](#)
- [Points](#)
- [Tutorial](#)

Dashboards

- [Viewing](#)
- [Editing](#)
- [Gadgets](#)

Graphics

- [Viewing](#)
- [Editing](#)
- [Gadgets](#)

Schedules

- [View/Edit](#)

Trends

- [View/Edit](#)

Alarms

- [Viewing](#)
- [Editing](#)

Runtimes

- [Viewing](#)
- [Editing](#)

Calculations

- [View/Edit](#)

Programs

- [View/Edit](#)

Links

- [View/Edit](#)

"IndicatorIcon" Gadget

The IndicatorIcon gadget displays one of three icons, in one of three colors depending on the status of a point value (low, normal and high.)

Properties

On/Normal Icon

This is the icon to display when the point value is within the low/high limits, or when a digital point is ON. It is also used when only one icon is needed.

Off/Low Icon

This is the icon to display when the point value is below the low limit or when a digital point is OFF.

High Icon

This is the icon to display when the point value is above the high limit.

Icon Size

The size of the icon, in pixels.

Use Secondary Colors

If checked, the "secondary colors" of the current theme will be used. This allows the gadget to stand out from its surroundings without have to explicitly set a color.

Show Border

If checked, a border will be drawn around the gadget, in the border color of the selected theme.

Caption

[The caption attached to the gadget.](#)

Range

[The range settings of the gadget.](#)

Theme

[The theme colors of the gadget.](#)

Menu

- [Introduction](#)
- [Toolbar](#)
- [Device Tree](#)
- [User Groups](#)
- [Users](#)
- [Templates](#)
- [Points](#)
- [Tutorial](#)

Dashboards

- [Viewing](#)
- [Editing](#)
- [Gadgets](#)

Graphics

- [Viewing](#)
- [Editing](#)
- [Gadgets](#)

Schedules

- [View/Edit](#)

Trends

- [View/Edit](#)

Alarms

- [Viewing](#)
- [Editing](#)

Runtimes

- [Viewing](#)
- [Editing](#)

Calculations

- [View/Edit](#)

Programs

- [View/Edit](#)

Links

- [View/Edit](#)

"Image" Gadget

The Image gadget displays one of three images depending on the status of a point value (low, normal and high.)

Properties

On/Normal Image

This is the image to display when the point value is within the low/high limits, or when a digital point is ON. It is also used when only one image is needed.

Off/Low Image

This is the image to display when the point value is below the low limit or when a digital point is OFF.

High Image

This is the image to display when the point value is above the high limit.

Image Size

The size of the image, as a percentage of its original size. Use 100 for the original size, 50 for half size, etc.

Show Border

If checked, a border will be drawn around the gadget, in the border color of the selected theme.

Caption

[The caption attached to the gadget.](#)

Range

[The range settings of the gadget.](#)

Theme

[The theme colors of the gadget.](#)

Menu

- [Introduction](#)
- [Toolbar](#)
- [Device Tree](#)
- [User Groups](#)
- [Users](#)
- [Templates](#)
- [Points](#)
- [Tutorial](#)

Dashboards

- [Viewing](#)
- [Editing](#)
- [Gadgets](#)

Graphics

- [Viewing](#)
- [Editing](#)
- [Gadgets](#)

Schedules

- [View/Edit](#)

Trends

- [View/Edit](#)

Alarms

- [Viewing](#)
- [Editing](#)

Runtimes

- [Viewing](#)
- [Editing](#)

Calculations

- [View/Edit](#)

Programs

- [View/Edit](#)

Links

- [View/Edit](#)

GSM-2000-SMP Help

Version 2.04b ([revision history](#))

"Label" Gadget

The Label gadget displays a block of text, optionally including a points value or other information.

Properties

Text

The text to display in the label.

Several codes are available to embed point information in the text. For example, the text "Temperature = @V" will display as "Temperature = 74.3". The text "The @L is @V (@U)" will display as "The Outdoor Temperature is 81.4 (Deg.F)".

The available codes are:

- **@E** - Raw point value
- **@V** - Point value with padding on left
- **@A** - Point address
- **@L** - Point label
- **@U** - Units
- **@D** - Point description
- **@O** - Low modify/range limit
- **@H** - High modify/range limit
- **@T** - Point type (analog, digital, etc)
- **@C** - Point class (input, output, variable, object)
- **@F** - The device tree path to the point (the driver and device name.)
- **@S** - Status (1 = value is good, 0 = can't read and gave up for now, -1=unknown (still trying))
- **@Y** - Item title ("Point", "Schedule", etc.)
- **@_** - Force a blank space.
- **@:** - Force a carriage return (new line.)

Two sets of special code pairs are also available. These must be used in matching pairs:

- **@[your text here]@** - Display this text in the current range color. If used, the rest of the label text will be displayed in the normal foreground color.
- **@(your text here)@** - Display this text in bold.

Font Size

The size of the font used for the text, in pixels.

Alignment

The alignment of the text. Options are:

- **Left** - Aligns the text on the left side.
- **Right** - Aligns the text on the right side.
- **Center** - Centers the text in the available space.
- **Justify** - Justifies paragraphs so that each line is the same width.

Bold

If checked, the entire text will be displayed in bold font.

Menu

[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards

[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics

[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules

[View/Edit](#)

Trends

[View/Edit](#)

Alarms

[Viewing](#)
[Editing](#)

Runtimes

[Viewing](#)
[Editing](#)

Calculations

[View/Edit](#)

Programs

[View/Edit](#)

Links

[View/Edit](#)

Show Border

If checked, a border will be drawn around the gadget, in the border color of the selected theme.

Use Secondary Colors

If checked, the "secondary colors" of the current theme will be used. This allows the gadget to stand out from its surroundings without have to explicitly set a color.

View Node

This is the device tree item that will be displayed when the label is clicked. This allows the label to display the value of a point, but bring up a schedule, trend or another dashboard when clicked. If left blank, the item attached to the label will be displayed when the label is clicked.

Close on Click

If checked, the current dashboard will be closed when the label is clicked. This is useful to chain dashboards together without having to manually close them.

Range

[The range settings of the gadget.](#)

Theme

[The theme colors of the gadget.](#)

Copyright 2017, Custom Software Engineering

"PointGrid" Gadget

The PointGrid gadget displays up to 8 points in a grid.

Properties

Font Size

The size of the font used for the text, in pixels.

Bold

If checked, the grid text will be displayed in bold font.

Show Units

If checked, the engineering units of the points will be displayed in the grid.

Show Description

If checked, the description of the points will be displayed in the grid.

Caption

[The caption attached to the gadget.](#)

Theme

[The theme colors of the gadget.](#)

Menu
Introduction
Toolbar
Device Tree
User Groups
Users
Templates
Points
Tutorial
Dashboards
Viewing
Editing
Gadgets
Graphics
Viewing
Editing
Gadgets
Schedules
View/Edit
Trends
View/Edit
Alarms
Viewing
Editing
Runtimes
Viewing
Editing
Calculations
View/Edit
Programs
View/Edit
Links
View/Edit

"MultiStateList" Gadget

The MultiStateList gadget displays a list of values for a multi-state point and allows the user to change the value.

Properties

Orientation

"Horizontal" displays the list with the lowest value on the left and the highest value on the right. Vertical orientation starts at the top and grows downwards.

Font Size

The font size for the list text, in pixels.

Use Secondary Colors

If checked, the "secondary colors" of the current theme will be used. This allows the gadget to stand out from its surroundings without have to explicitly set a color.

Show Border

If checked, a border will be drawn around the gadget, in the border color of the selected theme.

Caption

[The caption attached to the gadget.](#)

Theme

[The theme colors of the gadget.](#)

Menu
[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards
[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics
[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules
[View/Edit](#)

Trends
[View/Edit](#)

Alarms
[Viewing](#)
[Editing](#)

Runtimes
[Viewing](#)
[Editing](#)

Calculations
[View/Edit](#)

Programs
[View/Edit](#)

Links
[View/Edit](#)

"MultiStateSelector" Gadget

The MultiStateSelector gadget displays a multi-state point value in a drop-down box and allows the user to change the value.

Properties

Font Size

The font size for the text, in pixels.

Use Secondary Colors

If checked, the "secondary colors" of the current theme will be used. This allows the gadget to stand out from its surroundings without have to explicitly set a color.

Show Border

If checked, a border will be drawn around the gadget, in the border color of the selected theme.

Caption

[The caption attached to the gadget.](#)

Theme

[The theme colors of the gadget.](#)

Menu

- [Introduction](#)
- [Toolbar](#)
- [Device Tree](#)
- [User Groups](#)
- [Users](#)
- [Templates](#)
- [Points](#)
- [Tutorial](#)

Dashboards

- [Viewing](#)
- [Editing](#)
- [Gadgets](#)

Graphics

- [Viewing](#)
- [Editing](#)
- [Gadgets](#)

Schedules

- [View/Edit](#)

Trends

- [View/Edit](#)

Alarms

- [Viewing](#)
- [Editing](#)

Runtimes

- [Viewing](#)
- [Editing](#)

Calculations

- [View/Edit](#)

Programs

- [View/Edit](#)

Links

- [View/Edit](#)

"SliderBar" Gadget

The SliderBar gadget is a user-adjustable slider that may be used to change setpoints or other variables. Both horizontal and vertical orientations are supported.

Properties

Orientation

"Horizontal" displays the lowest value on the left and the bar may be moved to the right to increase the value. Vertical orientation starts at the bottom and increase as it is moved upwards.

Thickness

The width of the slider in vertical orientation or the height in horizontal orientation.

Minimum Length

The minimum length when the dashboard is resized to fit smaller screens. Setting this too high can result in the slider not fitting on very small screens.

Icon

An optional icon to display on the gadget. The relative size of the icon is fixed and controlled by the "Thickness" setting above.

Show Scale Labels

If checked, the low and high scale values will be displayed numerically at the appropriate positions on the slider.

Show Current Value

If checked, the current point value will be displayed numerically at the top of the slider.

Caption

[The caption attached to the gadget.](#)

Scale

[The scale settings of the gadget.](#)

Show Border

If checked, a border will be drawn around the gadget, in the border color of the selected theme.

Use Secondary Colors

If checked, the "secondary colors" of the current theme will be used. This allows the gadget to stand out from its surroundings without have to explicitly set a color.

Theme

[The theme colors of the gadget.](#)

Menu

- [Introduction](#)
- [Toolbar](#)
- [Device Tree](#)
- [User Groups](#)
- [Users](#)
- [Templates](#)
- [Points](#)
- [Tutorial](#)

Dashboards

- [Viewing](#)
- [Editing](#)
- [Gadgets](#)

Graphics

- [Viewing](#)
- [Editing](#)
- [Gadgets](#)

Schedules

- [View/Edit](#)

Trends

- [View/Edit](#)

Alarms

- [Viewing](#)
- [Editing](#)

Runtimes

- [Viewing](#)
- [Editing](#)

Calculations

- [View/Edit](#)

Programs

- [View/Edit](#)

Links

- [View/Edit](#)

"SwitchRound" Gadget

The SwitchRound gadget displays a round switch that may be clicked to toggle a digital points value.

Properties

Size

The size of the switch, in pixels.

Icon

An optional icon to display. The relative size of the icon is fixed and controlled by the "Size" setting above.

Caption

[The caption attached to the gadget.](#)

Use Secondary Colors

If checked, the "secondary colors" of the current theme will be used. This allows the switch to stand out from its surroundings without have to explicitly set a color.

Show Border

If checked, a border will be drawn around the gadget, in the border color of the selected theme.

Theme

[The theme colors of the gadget.](#)

Menu

- [Introduction](#)
- [Toolbar](#)
- [Device Tree](#)
- [User Groups](#)
- [Users](#)
- [Templates](#)
- [Points](#)
- [Tutorial](#)

Dashboards

- [Viewing](#)
- [Editing](#)
- [Gadgets](#)

Graphics

- [Viewing](#)
- [Editing](#)
- [Gadgets](#)

Schedules

- [View/Edit](#)

Trends

- [View/Edit](#)

Alarms

- [Viewing](#)
- [Editing](#)

Runtimes

- [Viewing](#)
- [Editing](#)

Calculations

- [View/Edit](#)

Programs

- [View/Edit](#)

Links

- [View/Edit](#)

"SwitchSlide" Gadget

The SwitchSlide gadget displays a sliding switch that may be clicked to toggle a digital points value.

Properties

Size

The size of the switch, in pixels.

Caption

[The caption attached to the gadget.](#)

Use Secondary Colors

If checked, the "secondary colors" of the current theme will be used. This allows the switch to stand out from its surroundings without have to explicitly set a color.

Show Border

If checked, a border will be drawn around the gadget, in the border color of the selected theme.

Theme

[The theme colors of the gadget.](#)

Menu
Introduction
Toolbar
Device Tree
User Groups
Users
Templates
Points
Tutorial
Dashboards
Viewing
Editing
Gadgets
Graphics
Viewing
Editing
Gadgets
Schedules
View/Edit
Trends
View/Edit
Alarms
Viewing
Editing
Runtimes
Viewing
Editing
Calculations
View/Edit
Programs
View/Edit
Links
View/Edit

"ButtonIcon" Gadget

The ButtonIcon gadget will display the device tree item attached to it when it is clicked. This can be a schedule, trend, point, or any other device tree item.

Properties

Icon

An optional icon to display on the gadget.

Icon Size

The size of the icon, in pixels.

Use Secondary Colors

If checked, the "secondary colors" of the current theme will be used. This allows the button to stand out from its surroundings without have to explicitly set a color.

Close on Click

If checked, the current dashboard will be closed when the button is clicked. This is useful to chain dashboards together without having to manually close them.

Caption

[The caption attached to the gadget.](#)

Theme

[The theme colors of the gadget.](#)

Menu

- [Introduction](#)
- [Toolbar](#)
- [Device Tree](#)
- [User Groups](#)
- [Users](#)
- [Templates](#)
- [Points](#)
- [Tutorial](#)

Dashboards

- [Viewing](#)
- [Editing](#)
- [Gadgets](#)

Graphics

- [Viewing](#)
- [Editing](#)
- [Gadgets](#)

Schedules

- [View/Edit](#)

Trends

- [View/Edit](#)

Alarms

- [Viewing](#)
- [Editing](#)

Runtimes

- [Viewing](#)
- [Editing](#)

Calculations

- [View/Edit](#)

Programs

- [View/Edit](#)

Links

- [View/Edit](#)

"GraphicContainer" Gadget

The GraphicContainer gadget is used to embed a graphic display in a dashboard. The graphic display is fully functional while embedded and all gadgets are operational.

Properties

Scale Factor

This may be used to resize the graphic display on the dashboard. Setting it to "1" will leave the size unchanged, "2" will double the size, and "0.5" will display the graphic at half size. Because of the way graphics are scaled on smaller screens, it is generally best to make them as small as possible while still being legible.

Show Border

If checked, a border will be drawn around the gadget, in the border color of the selected theme.

Theme

[The theme colors of the gadget.](#)

Menu
Introduction
Toolbar
Device Tree
User Groups
Users
Templates
Points
Tutorial
Dashboards
Viewing
Editing
Gadgets
Graphics
Viewing
Editing
Gadgets
Schedules
View/Edit
Trends
View/Edit
Alarms
Viewing
Editing
Runtimes
Viewing
Editing
Calculations
View/Edit
Programs
View/Edit
Links
View/Edit

"HTMLContent" Gadget

The HTMLContent gadget is used to embed remote HTML content in a dashboard. The content will only display if the remote server allows the content to be embedded. Many web sites do not allow embedding of their content. The ones that do will usually provide a "share" link. It can also be used to embed live video from local cameras if the camera software is set to allow embedding.

Properties

HTML Content

This is the HTML content to embed. It can be any valid HTML5 markup but will generally be a link that is from a web sites "share" option.

Minimum Width

The minimum width of the gadget. This will prevent the gadget from becoming too small when it is being resized for smaller screens. Note that setting this too high can cause the gadget to overflow the edges of smaller screens.

Minimum Height

The minimum height of the gadget. This will prevent the gadget from becoming too small when it is being resized for smaller screens. Note that setting this too high can cause the gadget to overflow the edges of smaller screens.

Show Border

If checked, a border will be drawn around the gadget, in the border color of the selected theme.

Caption

[The caption attached to the gadget.](#)

Theme

[The theme colors of the gadget.](#)

Menu
Introduction
Toolbar
Device Tree
User Groups
Users
Templates
Points
Tutorial
Dashboards
Viewing
Editing
Gadgets
Graphics
Viewing
Editing
Gadgets
Schedules
View/Edit
Trends
View/Edit
Alarms
Viewing
Editing
Runtimes
Viewing
Editing
Calculations
View/Edit
Programs
View/Edit
Links
View/Edit

"Panel" Gadget

The Panel gadget is used to hold other gadgets. It will automatically lay out gadgets it contains to fit the size and orientation of the screen on which it is being viewed. Gadget may be laid out either horizontally or vertically.

Properties

Orientation

"Horizontal" displays the gadgets in a left-to-right order. If there are more gadgets than will fit in a single row, it will drop down a line and continue laying out gadgets in the same direction. Vertical orientation lays out gadgets from top to bottom.

Title

This is an optional title to display in the upper-left corner of the panel.

Subtitle

This is an optional subtitle to display in a smaller font in the upper-left corner of the panel.

Show Title Bar

If checked, a thin accent bar will be displayed under the title/subtitle. It is purely decorative.

Show Border

If checked, a border will be drawn around the gadget, in the border color of the selected theme.

Use Secondary Colors

If checked, the "secondary colors" of the current theme will be used. This allows the gadget to stand out from its surroundings without have to explicitly set a color.

Theme

[The theme colors of the gadget.](#)

Menu

- [Introduction](#)
- [Toolbar](#)
- [Device Tree](#)
- [User Groups](#)
- [Users](#)
- [Templates](#)
- [Points](#)
- [Tutorial](#)

Dashboards

- [Viewing](#)
- [Editing](#)
- [Gadgets](#)

Graphics

- [Viewing](#)
- [Editing](#)
- [Gadgets](#)

Schedules

- [View/Edit](#)

Trends

- [View/Edit](#)

Alarms

- [Viewing](#)
- [Editing](#)

Runtimes

- [Viewing](#)
- [Editing](#)

Calculations

- [View/Edit](#)

Programs

- [View/Edit](#)

Links

- [View/Edit](#)

"ScheduleContainer" Gadget

The ScheduleContainer gadget is used to embed a schedule in a dashboard. The schedule is fully functional while embedded.

Properties

Minimum Width

The minimum width of the gadget. This will prevent the gadget from becoming too small when it is being resized for smaller screens. Note that setting this too high can cause the gadget to overflow the edges of smaller screens.

Minimum Height

The minimum height of the gadget. This will prevent the gadget from becoming too small when it is being resized for smaller screens. Note that setting this too high can cause the gadget to overflow the edges of smaller screens.

Theme

[The theme colors of the gadget.](#)

Menu
Introduction
Toolbar
Device Tree
User Groups
Users
Templates
Points
Tutorial
Dashboards
Viewing
Editing
Gadgets
Graphics
Viewing
Editing
Gadgets
Schedules
View/Edit
Trends
View/Edit
Alarms
Viewing
Editing
Runtimes
Viewing
Editing
Calculations
View/Edit
Programs
View/Edit
Links
View/Edit

"TrendContainer" Gadget

The TrendContainer gadget is used to embed a trend in a dashboard.

Properties

Minimum Width

The minimum width of the gadget. This will prevent the gadget from becoming too small when it is being resized for smaller screens. Note that setting this too high can cause the gadget to overflow the edges of smaller screens.

Minimum Height

The minimum height of the gadget. This will prevent the gadget from becoming too small when it is being resized for smaller screens. Note that setting this too high can cause the gadget to overflow the edges of smaller screens.

Theme

[The theme colors of the gadget.](#)

Menu
Introduction
Toolbar
Device Tree
User Groups
Users
Templates
Points
Tutorial
Dashboards
Viewing
Editing
Gadgets
Graphics
Viewing
Editing
Gadgets
Schedules
View/Edit
Trends
View/Edit
Alarms
Viewing
Editing
Runtimes
Viewing
Editing
Calculations
View/Edit
Programs
View/Edit
Links
View/Edit

Trend Data View

The data grid displays the same data as the chart, but in a tabular text format. The first column is the date/time of the reading. Each point is then listed in order, from left to right.

Any of the column headers may be clicked to sort the data by that field. Clicking the header a second time will reverse the sort order.

If there is more data than can fit on the screen, a scroll bar will appear to allow scrolling through the data. A mouse wheel may also be used to scroll.

Menu
[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards
[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics
[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules
[View/Edit](#)

Trends
[View/Edit](#)

Alarms
[Viewing](#)
[Editing](#)

Runtimes
[Viewing](#)
[Editing](#)

Calculations
[View/Edit](#)

Programs
[View/Edit](#)

Links
[View/Edit](#)

GSM-2000-SMP Help

Version 2.04b ([revision history](#))

Edit Trend Settings

This screen is used to configure the trend. Up to six point may be specified for a trend.

Points List

Drag a point from the device tree and drop it in one of the slots. Dropping a point on a slot already in use will replace the old point with the new point.

⚠ Changing or deleting points will erase any previously recorded data for that point that is stored with this chart. The recorded data for the same point on other charts will not be affected.

To clear the point assigned to a slot, click the **✖** button next to that slot.

Line Type

The type or style of the line used for each point may be customized. The options are:

- **Line** - A simple line is drawn between readings.
- **Area** - Like "Line", but the area below the line is filled in with a semi-transparent color.
- **Step Line** - Draws a horizontal line between reading, then vertically to the new value. This is a good choice for digital or multi-state points.
- **Step Area** - Like "Step Line", but the area below the line is filled in with a semi-transparent color.
- **Spline** - Draws a curved line between readings.
- **Spline Area** - Like "Spline", but the area below the line is filled in with a semi-transparent color.

Axis

Points may be forced to use either the left or right scale. Select "Auto" to have the trend automatically decide which scale it should appear in based on the values of the data. It will generally choose to use the right scale for digital and multi-state points, and the left scale for analog points.

Record Values Every

Click the drop-down list to select a recording interval. The list displays the recording interval as well as the time span that will be saved at that interval. When the recording limit is reached, older data is replaced with new data.

Records Per Page

This sets how many records will be displayed per chart page. It can be set between 8 and 1,500.

⚠ Displaying more than 100 records per page can be slow to read and viewing them may be sluggish on lower-end computers and mobile devices.

Show Title

If checked, the title of the chart will be displayed above the chart.

Show Date Range

If checked, the date range of the currently loaded readings will be displayed above the chart.

Menu

[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards

[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics

[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules

[View/Edit](#)

Trends

[View/Edit](#)

Alarms

[Viewing](#)
[Editing](#)

Runtimes

[Viewing](#)
[Editing](#)

Calculations

[View/Edit](#)

Programs

[View/Edit](#)

Links

[View/Edit](#)

Show Legend

If checked, a legend showing which point is represented by each line will be displayed under the chart.

Show Change of Date

If checked, a vertical marker and date stamp will be displayed at each new date.

Email Frequency

This selects how often to email a CSV file of trend data. The amount of data sent depends on the frequency and is indicated in the text below the selector.

Email to Groups

Select the list of user groups that should receive the CSV file. Every person in the group that has an email address in the user database will receive the CSV file.

Additional Email Addresses

Any additional email addresses that should receive the CSV file may be typed here.

Copyright 2017, Custom Software Engineering

GSM-2000-SMP Help

Version 2.04b ([revision history](#))

Programming Reference

The following is a reference guide on how to write programs for GSM-2000-SMP . For more information on setup and configuration of programming nodes in the tree, and an explanation of "reference names" see [Program Editor](#)

Overview

Programs for GSM-2000-SMP are written using a modified version of the [Python](#) programming language. Python is a very easy to learn language, but can scale up to more complicated tasks when necessary. GSM-2000-SMP itself makes extensive use of Python internally.

The following reference is designed to allow a new user to write simple programs. It is recommended that users new to programming also view at least one tutorial on the Python language. Several of them may be found on the Internet via [Google](#). It is not necessary to learn the more complicated aspects of Python, just the basics of structure and indentation, if/elif/else blocks and using simple functions.

The Python language used in GSM-2000-SMP has the following differences from normal Python:

- It is based on version 2.7 of Python.
- The "import" keyword has been disabled for security reasons.
- A double underscore "__" is not allowed anywhere in a program.

Basic Rules

The following are some basic rules for a Python program.

- Any text on a line after a # symbol is considered a comment and is ignored

Example:

```
bias = bias + 0.5 #This is a comment and ignored.
```

- Python uses indentation (spaces or tabs) to define structure, rather than brackets or begin/end keywords.

Example:

```
if setpoint > 65:      #note the required colon for if, elif and else
    bias = 0.5        #part of the "if" condition
elif setpoint > 75:    #elif means "else if"
    bias = 0.7        #part of the "elif" condition
else:
    bias = 0.2         #do this if the other conditions are false
    deadband = 2       #still part of the "else" condition
output = output + bias #not part of the if/elif/else block
```

Any number of spaces may be used for indentation, but it must be consistent for each block. It is recommended that a number be chosen and used throughout all programs (2 or 4 are popular choices).

Menu

[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards

[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics

[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules

[View/Edit](#)

Trends

[View/Edit](#)

Alarms

[Viewing](#)
[Editing](#)

Runtimes

[Viewing](#)
[Editing](#)

Calculations

[View/Edit](#)

Programs

[View/Edit](#)

Links

[View/Edit](#)

- Local variables do not need to be declared and can be of any data type, and the data type can be even changed.

Example:

```
myVariable = 50    #myVariable is created as an integer
myVariable = 6.5   #then changed to a floating point number
myVariable = "test" #then to a string
```

- All variables, functions and keywords are case-sensitive.

Example:

```
myVariable = myVariable +1 #increment myVariable
output = MyVariable        #Bug! "MyVariable" is undefined.
```

Program Execution

Before the program is executed for the first time (after it is edited and saved, or after a reboot), all of the points the program requires are read from the network and only then is the program executed. If one or more points could not be read properly, because of an offline device or other reason, the program will not be executed.

At each execution, the program is run from the top to the bottom and then ended. It does not loop back to the top on the next execution, rather it is completely restarted.

Local Python variables and their values are not maintained between each execution of the program. There is a way to remember variable values between executions. See "Saved Variables" below.

Each program is limited to a maximum of 3 seconds to fully execute and end. In practice, a program should never be written to take anywhere near 3 seconds to execute because it will bog down the rest of the system. Programs should never execute long "for" or "while" loops, or anything else that could take more than a few milliseconds.

The 3 second timeout is a failsafe to keep a program from hogging resources. If a program takes longer than 3 seconds, it will be shut down, flagged as disabled and not run again until it is modified and saved or the unit is rebooted.

Simple Example

```
if getValue(@mySwitch)>0:          #Is the switch being pressed?
    setValue(@myLights,1,3600)      #override myLights on for 1 hour
    overrideSchedule(@mySched,1,3600) #override schedule on for 1 hour
```

In the above example, the program will continually check the point "mySwitch" to see if it is being pressed. If it is being pressed (if its value is greater than 0), the point "myLights" will be turned ON (set to 1) for 3600 seconds (1 hour) and the schedule "mySchedule" will also be overridden ON for 1 hour.

Something to note about the above example is the way points are read and written using "getValue" and "setValue". Those functions are the only way to access points on the network.

getValue() will return the value of the point specified by the reference name. Note that the getValue function does not go out and read the value of the point from the network. It has already been read and stored before the program executed for the first time and it is continually updated in the background. On a busy network, the stored value could possibly be several seconds old at any given time.

setValue() will set the value of the point specified by the reference name to the value given as the second argument. An optional third argument may be used to set a timed override in seconds. If the override time is not supplied, the value will be set until something changes it. Note that the point must have the "Allow modifications" option checked in its properties screen for setValue to work.

Note that any time a point reference name is used, it **must** be prefixed with the @ symbol.

Saved Variables

Normal Python variables in programs lose their value every time the program completes a run and are undefined at the beginning of the next run. It is sometimes useful to be able to remember a value so it may be used on the next execution of a program. This is supported by the **setVariable** and **getVariable** functions.

```
setVariable("bias", 12.5)    #store the value of bias
myBias=getVariable("bias")  #get the value and store in myBias
```

Note the required quotes around the desired variable name ("bias"). These variables are local to this program only. The same variable names can be used in many programs. Each program may have up to 10 saved variables.

Calling getVariable with a variable name that has not been defined will always return zero.

If a variable is no longer needed, use removeVariable("myVariable") to remove it from the list of saved variables.

Here is an example that extends the override switch example above:

⚠ Do not use the following example before reading this entire section. It is potentially dangerous if not set up properly.

```
if getValue(@mySwitch)>0:          #Is the switch being pressed?
    isOverridden = getVariable("isOV")  #get stored value
    if isOverridden:                  #if it is already overridden
        release(@myLights)            #release myLights
        releaseSchedule(@mySched)     #release schedule
        setVariable("isOV",0)         #set isOV to 0
    else:                             #if it is not overridden
        setValue(@myLights,1,3600)    #override myLights
        overrideSchedule(@mySched,1,3600) #override schedule
        setVariable("isOV",1)         #set isOV to 1
```

The above example uses getVariable and setVariable to remember if the override is currently active. If it is not active and the switch is pressed it overrides the points. If the override is already active, it releases the points from program control. The points will then fall back to the value the rest of the system determines they should have (from a schedule, etc).

The effect of this to the user is that if he needs to stay late, he can press a switch to keep things running for 1 more hour. If he then wants to leave 20 minutes later, he can hit the switch again to release the points to their normally scheduled values.

The above example still has a potential problem. There is no check to see how long it has been since the last change of override state. This means that if a user holds the switch down for 10 seconds, it could override the points on then off several times before the user releases the switch.

This can be avoided by setting the program to execute every 10 seconds. But what if the user holds the button for 20 seconds or someone later changes the execution interval to 1 second?

The solution is to use the built in timer. Each program has its own timer that is continuously incremented in the background. It will always return a value equal to the number of seconds the program has been running (since it was saved, or since reboot), or since it was last cleared. Here is a safer example of the above program:

```

if timer() > 60*5:                                #Have 5 minutes passed?
    if getValue(@mySwitch)>0:                      #Is the switch being pressed?
        isOverridden = getVariable("isOV")        #get stored value
        if isOverridden:                          #if it is already overridden
            clearTimer()                          #reset timer to 0
            release(@myLights)                     #release myLights
            releaseSchedule(@mySched)              #release schedule
            setVariable("isOV",0)                  #set isOV to 0
        else:                                     #if it is not overridden
            clearTimer()                          #reset timer to 0
            setValue(@myLights,1,3600)             #override myLights
            overrideSchedule(@mySched,1,3600)       #override schedule
            setVariable("isOV",1)                  #set isOV to 1

```

In the above example, the timer is checked to see if it has been more than 5 minutes since the override state changed. If so, the program continues like in the previous example. If 5 minutes have not passed, the program exits and the switch is never looked at. The key to making this example work is to clear the timer every time the override state changes so it will stay that way for at least 5 minutes and not short-cycle the points.

Unfortunately, the program is still not perfect. If the user hits the override switch to override for 1 hour, then 4 minutes later decides he is done and wants to leave, pressing the switch will have no effect and the override will remain active for the full hour. This is a good example of the thought process necessary for writing a solid program. Every possibility must be taken in to account or the results may not be what is expected.

There really is no "best" solution for hitting the switch after 4 minutes. The timer check could be lowered to 2 minutes, but it will still ignore it if the user presses it after 1 minute 50 seconds. This is not likely to happen, and worst case the lights stay on 58 minutes longer than required. In this particular example it is not a major problem if the switch press is missed so you may decide that this program is sufficient.

Global Variables

Global variables can be used to share values between programs. They work exactly like saved variables except that there are maximum of 100 global variables and they are shared amongst all programs. If a program sets a global variable called "bias" to 50, all other programs can read and modify that value.

```
setGlobal("bias", 12.5)    #store the value of bias globally
```

A different program can then use:

```
myBias=getGlobal("bias")   #get the value and store in myBias
```

Calling getGlobal with a variable name that has not been defined will always return zero.

If a global variable is no longer needed, use `removeGlobal("myVariable")` to remove it from the list of global variables.

Built-in Functions

The following is a list of the built-in functions and a short description of each.

getValue(@referenceName)

Get the value of a point specified by the `referenceName`.

setValue(@referenceName, value, overrideTime=0)

Set the value of a point specified by the `referenceName`, to the value given in the second argument. An optional override time in seconds may be given as a third argument. If the override time is not supplied, or set to 0, the point will retain the value indefinitely. Note that the point must have the "Allow modifications" option checked in its properties screen for `setValue` to work.

release(@referenceName)

Release the point specified by the `referenceName` from program control. The point will then fall back to the value the rest of the system determines it should have (from a schedule, etc).

resend(@referenceName)

Forces the current value of the point specified by `referenceName` to be resent to the device, effectively refreshing the point. Normally when a point is already ON, a second ON command will not resend the ON state to a device. This function forces the ON to be resent.

overrideSchedule(@referenceName, state, timer=0)

Override the schedule specified by `referenceName` to the state (0 or 1) given in argument 2. An optional override time in seconds may be given as a third argument. If the override time is not supplied, or set to 0, the schedule will remain overridden indefinitely.

releaseSchedule(@referenceName)

Release the schedule specified by the `referenceName` from program control. The schedule will then revert to normal operation.

overrideAlarm(@referenceName, state, timer=0)

Override the alarm specified by `referenceName` to the state (0 or 1) given in argument 2. An optional override time in seconds may be given as a third argument. Note that the timeout specified on the alarm screen is still in effect. If the alarm timeout is 2 minutes, the alarm must be overridden for at least 2 minutes to become active.

releaseAlarm(@referenceName)

Release the alarm specified by the `referenceName` from program control. The alarm will then revert to normal operation.

timer()

Returns the number of seconds the program has been running since it was saved, since reboot, or since it was last cleared. Each program has its own timer that is continuously incremented in the background.

clearTimer()

Clear the timer for this program to 0.

debug(msg)

Send a text message to the debug window on the debug tab of the Program Editor. Note that the message must be enclosed in quotes, for example: `debug("This is a debug message")`. To embed a numeric value in a debug message, use the built-in Python `str()` function. Example: `debug("Setpoint = " + str(getValue(@mySetpoint)))`.

getVariable("name")

Read a saved variable. See "Saved Variables" above for more information. Returns zero if a variable called "name" has not been previously set.

setVariable("name", value)

Set a saved variable. See "Saved Variables" above for more information.

removeVariable("name")

Remove a saved variable from the list. See "Saved Variables" above for more information.

getGlobal("name")

Read a global variable. See "Global Variables" above for more information. Returns zero if a variable called "name" has not been previously set.

setGlobal("name", value)

Set a global variable. See "Global Variables" above for more information.

removeGlobal("name")

Remove a global variable from the list. See "Global Variables" above for more information.

disable()

Disable this program. It will never execute again until it is manually enabled in the Program Editor.

year()

Return the current year as an integer (e.g. 2009).

month()

Return the current month as an integer (1-12).

day()

Return the current day of the month as an integer (1-31).

hour()

Return the current hour as an integer (0-23).

minute()

Return the current minute as an integer (0-59).

second()

Return the current second as an integer (0-59).

dayOfWeek()

Return the current day of week as an integer (Monday = 0).

dayOfYear()

Return the current day of the year as an integer (1-366).

time()

Returns the number of seconds since midnight on January 1st, 1970 as a floating point number.

clearRuntime(@referenceName)

Clear the accumulated runtime hours for the Runtime object specified by referenceName

firstRun()

Returns 1 if this is the first time the program has been executed since the last time it was edited and saved, or since the last reboot. It is useful for initializing saved variables:

if firstRun():

```
setVariable("Bias",50)
setVariable("myVariable",92.7)
```

A firstRun can also be simulated with the "restart()" function (see below).

restart()

Resets the internal firstRun flag so for the next execution of the program firstRun() will return 1. This is useful to reinitialize saved variables.

setDefaultValue(@referenceName, value, timer=0)

Set the default value for the point specified by referenceName. The default value is the value the point will have if nothing else is controlling it, such as a schedule or program. If a point is released from program control using the "release()" function and nothing else is controlling it, this default value will be sent to the point.

releaseDefault(@referenceName)

Clear the default value of the point specified by the referenceName. If a point is released using the "release()" function, nothing else is controlling it and it has no default value, it will retain the last value sent by the program indefinitely.

Copyright 2017, Custom Software Engineering

Help and Support

This displays the options for viewing help for the system, as well as site and service contacts.

Menu
[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards
[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics
[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules
[View/Edit](#)

Trends
[View/Edit](#)

Alarms
[Viewing](#)
[Editing](#)

Runtimes
[Viewing](#)
[Editing](#)

Calculations
[View/Edit](#)

Programs
[View/Edit](#)

Links
[View/Edit](#)

Edit Settings

- [Site Settings](#)
- [Time/Date Settings](#)
- [Network Settings](#)

Menu
Introduction
Toolbar
Device Tree
User Groups
Users
Templates
Points
Tutorial
Dashboards
Viewing
Editing
Gadgets
Graphics
Viewing
Editing
Gadgets
Schedules
View/Edit
Trends
View/Edit
Alarms
Viewing
Editing
Runtimes
Viewing
Editing
Calculations
View/Edit
Programs
View/Edit
Links
View/Edit

Users and Groups

User access is controlled by a system of Groups and Users. Groups are defined with certain permissions, and then users are added to those groups. Users must belong to at least one group to be able to access the system at all.

[Edit Users](#)
[Edit Groups](#)

Menu
Introduction
Toolbar
Device Tree
User Groups
Users
Templates
Points
Tutorial
Dashboards
Viewing
Editing
Gadgets
Graphics
Viewing
Editing
Gadgets
Schedules
View/Edit
Trends
View/Edit
Alarms
Viewing
Editing
Runtimes
Viewing
Editing
Calculations
View/Edit
Programs
View/Edit
Links
View/Edit

Logs and Status

The logs and status features may be used to view the current operational status of the units, as well as system and user activity logs.

System Status

This displays technical information and the current status of the unit, including free memory, storage space, number of tree nodes in use, etc.

System Message Log

This display the boot-up messages, as well as any error or warning messages from the unit.

User Activity Log

This displays important user activity such as setpoint changes, or deleting/modifying of device tree items.

Menu
Introduction
Toolbar
Device Tree
User Groups
Users
Templates
Points
Tutorial
Dashboards
Viewing
Editing
Gadgets
Graphics
Viewing
Editing
Gadgets
Schedules
View/Edit
Trends
View/Edit
Alarms
Viewing
Editing
Runtimes
Viewing
Editing
Calculations
View/Edit
Programs
View/Edit
Links
View/Edit

Node Managers

The Node Managers allows viewing the status of all tree nodes of a given type and in some cases enable or disable them. Only users with permission to manually modify points will be allowed to enable or disable nodes.

Menu
Introduction
Toolbar
Device Tree
User Groups
Users
Templates
Points
Tutorial
Dashboards
Viewing
Editing
Gadgets
Graphics
Viewing
Editing
Gadgets
Schedules
View/Edit
Trends
View/Edit
Alarms
Viewing
Editing
Runtimes
Viewing
Editing
Calculations
View/Edit
Programs
View/Edit
Links
View/Edit

Server Functions

The server functions are used to backup/restore the system database, update the firmware and reboot/shutdown the system.

Database Backup

This will allow saving a copy of the units database on a local hard drive. All device tree items, dashboards, schedules, etc. as well as all settings (except the network settings) are included in a backup file. A backup file can effectively be used to clone a site.

Database Restore

This is used to restore a database from a previous backup. Backup files can be used on any unit of the same type.

Reboot Server

This will reboot the unit. All users will be immediately logged out without warning and any unsaved changes they may have will be lost. Please allow 1-2 minutes for the unit to become operational again.

Shut Server Down

This will shut the unit down. All users will be immediately logged out without warning and any unsaved changes they may have will be lost. This is normally only used to transport the unit. The only way to restart it is to cycle power.

Firmware Update

This is used to update the version of the "firmware" (the internal software).

Enter Code

This is only used in special cases such as tech support issues.

Menu

- [Introduction](#)
- [Toolbar](#)
- [Device Tree](#)
- [User Groups](#)
- [Users](#)
- [Templates](#)
- [Points](#)
- [Tutorial](#)

Dashboards

- [Viewing](#)
- [Editing](#)
- [Gadgets](#)

Graphics

- [Viewing](#)
- [Editing](#)
- [Gadgets](#)

Schedules

- [View/Edit](#)

Trends

- [View/Edit](#)

Alarms

- [Viewing](#)
- [Editing](#)

Runtimes

- [Viewing](#)
- [Editing](#)

Calculations

- [View/Edit](#)

Programs

- [View/Edit](#)

Links

- [View/Edit](#)

GSM-2000-SMP Help

Version 2.04b ([revision history](#))

Caption

These settings affect the text attached to the gadget.

Text

The text to display in the gadget.

Several codes are available to embed point information in the text. For example, the text "Temperature = @V" will display as "Temperature = 74.3". The text "The @L is @V (@U)" will display as "The Outdoor Temperature is 81.4 (Deg.F)".

The available codes are:

- **@E** - Raw point value
- **@V** - Point value with padding on left
- **@A** - Point address
- **@L** - Point label
- **@U** - Units
- **@D** - Point description
- **@O** - Low modify/range limit
- **@H** - High modify/range limit
- **@T** - Point type (analog, digital, etc)
- **@C** - Point class (input, output, variable, object)
- **@F** - The device tree path to the point (the driver and device name.)
- **@S** - Status (1 = value is good, 0 = can't read and gave up for now, -1=unknown (still trying))
- **@Y** - Item title ("Point", "Schedule", etc.)
- **@_** - Force a blank space.
- **@:** - Force a carriage return (new line.)

Two sets of special code pairs are also available. These must be used in matching pairs:

- **@[your text here]@** - Display this text in the current range color. If used, the rest of the label text will be displayed in the normal foreground color.
- **@(your text here)@** - Display this text in bold.

Font Size

The size of the font used for the text.

Bold

If checked, the entire text will be displayed in bold font.

Position

Where to display the text. "Left" and "right" will justify the text to the opposite side to ease lining up columns of labels.

Menu

[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards

[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics

[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules

[View/Edit](#)

Trends

[View/Edit](#)

Alarms

[Viewing](#)
[Editing](#)

Runtimes

[Viewing](#)
[Editing](#)

Calculations

[View/Edit](#)

Programs

[View/Edit](#)

Links

[View/Edit](#)

GSM-2000-SMP Help

Version 2.04b ([revision history](#))

Range

These settings affect the range of the gadget. They allow the gadget to change colors, and optionally flash, if the calculated percentage falls outside of the given range.

Properties

Use Range Colors

If checked, the gadget (or certain parts of it) will be displayed in the themes "normal" color if the calculated percentage is within the low/high limits below, in the "low" color if it is below the low limit, or the "high" color if it is above the high limit.

Flash

If checked, the gadget (or certain parts of it) will flash if the calculated percentage is not within the low/high limits below.

Range Type

Three range types are available:

- **Default limits from point settings** - Uses the low/high limits assigned to the point in the points property settings. Edit the point from the device tree to change these limits. When this option is selected, the default low and high limits will be displayed below this property.
- **Custom values** - Uses hard-set custom values. When this option is selected, the desired range values must be typed in to the "Low Limit" and "High Limit" properties.
- **Values from points** - Uses the values of other points for the low/high limits. This allows the range to change with the value of a setpoint or other secondary point value. When this option is selected, a total of three points must be dropped on the gadget (point value, low limit point and high limit point.)

When using points for the low and high limits, the following options will be displayed:

Low Limit Calculation

This is an optional calculation to perform on the value of the point assigned as the low limit. Use "@" to represent the value from the point assigned to to the low limit (example: "@-10").

High Limit Calculation

This is an optional calculation to perform on the value of the point assigned as the high limit. Use "@" to represent the value from the point assigned to to the high limit (example: "@+10").

✔ Note that the low limit and high limit points may be the same point. Drop the point twice and assign it to both limits.

For example, to make the low limit 10 less than the value of a setpoint, drop the setpoint on the gadget and assign it to the low limit, then set the Low Limit Calculation to "@-10" (without quotes.)

To base both limits off of the same setpoint, drop the setpoint on the gadget twice and set the Low

Menu

[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards

[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics

[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules

[View/Edit](#)

Trends

[View/Edit](#)

Alarms

[Viewing](#)
[Editing](#)

Runtimes

[Viewing](#)
[Editing](#)

Calculations

[View/Edit](#)

Programs

[View/Edit](#)

Links

[View/Edit](#)

Limit Calculation to "@-5" and the High Limit Calculation to "@+15" (both without quotes.)

Copyright 2017, Custom Software Engineering

Theme

These settings affect the colors of the gadget. While colors may be manually changed to specific values, it is generally better to select a theme and use the default colors of that theme. If a color of an item is manually set to green and the user chooses a green theme, that item may be hard to read or even invisible.

Theme

Select one of the built-in themes, or "inherit" to use the theme settings of the panel, dashboard or graphic the gadget is in.

Colors

The effect each of the colors will have depends on the type of gadget. The gadget will update instantly when colors are changed and all changes can be canceled, so the best way to see the effect is to experiment.

Setting a color to "default" will set it to use the default color for the selected theme.

Menu
Introduction
Toolbar
Device Tree
User Groups
Users
Templates
Points
Tutorial
Dashboards
Viewing
Editing
Gadgets
Graphics
Viewing
Editing
Gadgets
Schedules
View/Edit
Trends
View/Edit
Alarms
Viewing
Editing
Runtimes
Viewing
Editing
Calculations
View/Edit
Programs
View/Edit
Links
View/Edit

Range

These settings affect the range of the gadget. They allow the gadget to change colors, and optionally flash, if the calculated percentage falls outside of the given range.

Use Range Colors

If checked, the gadget (or certain parts of it) will be displayed in the themes "normal" color if the calculated percentage is within the low/high limits below, in the "low" color if it is below the low limit, or the "high" color if it is above the high limit.

Flash

If checked, the gadget (or certain parts of it) will flash if the calculated percentage is not within the low/high limits below.

Low Limit

The lowest percentage considered normal.

High Limit

The highest percentage considered normal.

Menu
Introduction
Toolbar
Device Tree
User Groups
Users
Templates
Points
Tutorial
Dashboards
Viewing
Editing
Gadgets
Graphics
Viewing
Editing
Gadgets
Schedules
View/Edit
Trends
View/Edit
Alarms
Viewing
Editing
Runtimes
Viewing
Editing
Calculations
View/Edit
Programs
View/Edit
Links
View/Edit

GSM-2000-SMP Help

Version 2.04b ([revision history](#))

Scale

These settings affect the scale of the gadget. They define the lowest and highest values allowed.

Properties

Scale Type

Three scale types are available:

- **Default limits from point settings** - Uses the low/high limits assigned to the point in the points property settings. Edit the point from the device tree to change these limits. When this option is selected, the default low and high limits will be displayed below this property.
- **Custom values** - Uses hard-set custom values. When this option is selected, the desired scale values must be typed in to the "Low Limit" and "High Limit" properties.
- **Values from points** - Uses the values of other points for the low/high limits. This allows the scale to change with the value of a setpoint or other secondary point value. When this option is selected, a total of three points must be dropped on the gadget (point value, low limit point and high limit point.)

When using points for the low and high limits, the following options will be displayed:

Low Limit Calculation

This is an optional calculation to perform on the value of the point assigned as the low limit. Use "@" to represent the value from the point assigned to the low limit (example: "@-10").

High Limit Calculation

This is an optional calculation to perform on the value of the point assigned as the high limit. Use "@" to represent the value from the point assigned to the high limit (example: "@+10").

✔ Note that the low limit and high limit points may be the same point. Drop the point twice and assign it to both limits.

For example, to make the low limit 10 less than the value of a setpoint, drop the setpoint on the gadget and assign it to the low limit, then set the Low Limit Calculation to "@-10" (without quotes.)

To base both limits off of the same setpoint, drop the setpoint on the gadget twice and set the Low Limit Calculation to "@-5" and the High Limit Calculation to "@+15" (both without quotes.)

With scale types other than "Default limits from point settings", the following options will be displayed:

Increment

This is the amount to increment the value by when adjusted by the user. For example, if set to 0.5, the value will increase in half steps (72.0, 72.5, 73.0, etc.)

Precision

Menu

[Introduction](#)
[Toolbar](#)
[Device Tree](#)
[User Groups](#)
[Users](#)
[Templates](#)
[Points](#)
[Tutorial](#)

Dashboards

[Viewing](#)
[Editing](#)
[Gadgets](#)

Graphics

[Viewing](#)
[Editing](#)
[Gadgets](#)

Schedules

[View/Edit](#)

Trends

[View/Edit](#)

Alarms

[Viewing](#)
[Editing](#)

Runtimes

[Viewing](#)
[Editing](#)

Calculations

[View/Edit](#)

Programs

[View/Edit](#)

Links

[View/Edit](#)

This is the number of decimal places to display. For example, 0 will display as "72" and 2 will display as "72.00".

Copyright 2017, Custom Software Engineering