



Sonata™ 3.0 Software Manual
for
iFlex/MAP DSP Mixers

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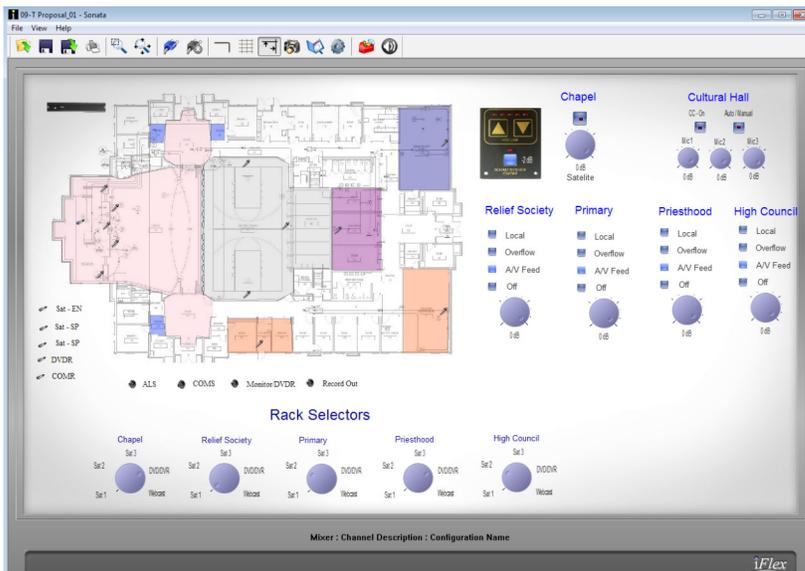
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Layout Screen

In Sonata™, the layout screen is not simply a place to put icons in some logical order. In Sonata™, the layout screen is a window into the system, and can be used for a number of purposes beyond just creating logic. By expanding the capabilities of the graphical elements, and by including feedback from the hardware, this screen can be used to do everything from sophisticated marketing presentations of potential systems to customers, to diagnostics of errors in programming or installation for new systems. The detail in graphical representation is up to the system designer, but even basic designs will have a level of graphical simulation to the system unseen in other software packages.



Background Image

The first example of the graphical difference between Sonata™ and its competitors, is the layout background image. This image is loaded into the background to make the layout space familiar to the user. Images of working drawings, plan views, designer logos, custom graphic renderings, even satellite photos are imported in any of the following formats: BMP, GIF, ICO, CUR, JBG, JPG, JPC, JP2, PCX, PGX, PNG, PNM, RAS, SKA, TGA, TIF, WBMP, WMF, RAW, CRW, NEF, CR2, DNG, ORF, ARW, ERF, 3FR, DCR, X3F, MEF, RAF, MRW, PEF, SR2. The load background icon (or the 'view, display properties, load background' menu selection) is used to select the file to be used as the background.

Background images are loaded into the layout space as top-left justified, and with the same dimensions, colors, and resolution as the original image. Any changes to the image that are needed, such as additional whitespace around edges, should be made in a graphics manipulation package before being imported into Sonata™. To clear the background

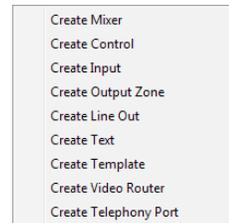
select 'view, display properties, clear background' from the main menu.

Placing Layout Elements

On starting up Sonata™ for the first time, the user sees a white desktop, with a grid overlay. This is the layout screen where all the elements of the system will be placed, connected, defined, animated, and tested. The layout screen has element placement aids, such as the grid, and snap-to-grid features available on the toolbar. These aids can be turned off and on by the click of a button.



To place any element type, right-click in the grid area to view the selection pop-up menu, and select the element to be placed. Currently, the elements that can be placed are mixers, controls, inputs, output zones, line outputs, text, control templates, video routers, and telephony ports.



Some graphical elements can be copied or pasted using standard Windows convention (ctrl-c, and ctrl-v). This applies to inputs, input/output lines, and controls.

Most graphical elements on the screen can also be moved and resized. To move an element, click and drag to a new location. To resize, click and drag corner control points. By resizing and then using the copy/paste functions, series or arrays of graphical elements can be created quickly with a common appearance. In the case of a control, which always has 3 possible elements (a pot, a switch, an LED, and Text), a shift-click will allow the user to move the elements as one.

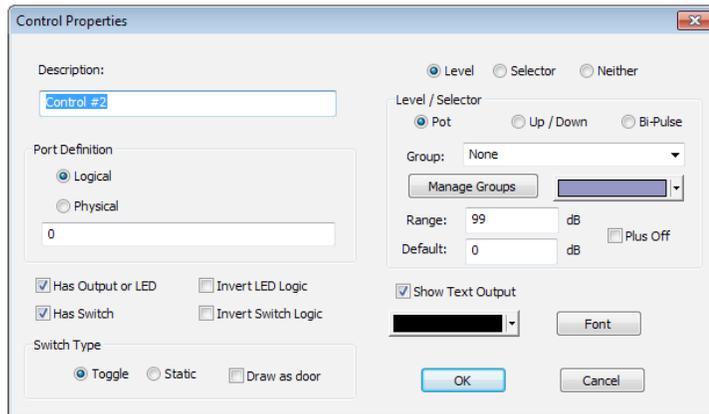
Mixers

To place a mixer element on the layout area, right click where the mixer is to be placed, and select 'Create Mixer. A mixer icon will now show up on the layout. It is through this icon that the user accesses the screens for modes, associations, routing, processing, triggers, and networking. The navigation and use of these screens are covered in later sections of this manual.



Controls

The controls dialog is accessed by right-clicking in the layout area, and selecting 'Create Control'. This dialog is used to place controls such as switches, levels, and selectors onto the layout area, as well as configuring the parameters of each control type.



1. Description - Assigns a user-defined name to the control. This helps the user to recognize the control when making associations, assigning level groups, defining logic, etc..
2. Port Definition - Logical ports are associated with smart controls that have internal id numbers, description names, setup parameters, etc. Physical ports are associated with controls that are hard-wired to a specific port.
3. Output or LED - Determines whether the control has an LED.
4. Switch - Determines whether the control has a switch.
5. Invert LED logic - LED will light when the switch is open instead of closed
6. Invert Switch Logic - Switch is considered on when the contacts are open instead of closed.
7. Switch Type - Identifies the switch type as a toggle, static or door. Note - doors are defined logically as static switches in the system, but have a unique icon and display method.
8. Level/Selector/Neither - Determines whether the control has a level, selector or neither.
9. Pot/UP/Down/Bi-Pulse - Determines whether the level is a pot, or bi-pulse encoder.
10. Group - Assigns a group name to a level for

linking purposes.

11. Manage Groups - Allows the user to create and manage group names.
12. Color - Sets the color of the currently named group.
13. Range - Sets the range of a level control.
14. Plus Off - Sets the level to off as the level hits the bottom of it's range.
15. Show Text Output - Allows the user to place text on the layout area that is associated with a control.
16. Font - Sets the font of the text to be placed.
17. Color - Sets the color of the text for the control.

Doors

The display method for doors is different than other placement elements. The door icon is a smart icon that orients the door vertically or horizontally depending on how the user sizes the icon. If the horizontal length is greater than the vertical length, the door orientation will be horizontal. The best method for learning how to orient doors is to practice resizing the icon, and view how the door orientation responds.



A note on iFlex™/Sonata™ controls

The iFlex hardware and firmware treat each control as having three elements - a level, a switch, and an output or LED. For every logic/IO port on the back of an iFlex mixer, 1 pot, 1 switch, and 1 LED can be hardwired.

To accommodate a larger number of controls, iFlex uses the RS485 protocol and Smart Controls™ to multiply the number of controls allowed in a system. Communicating digitally, each iFlex mixer allows up to 128 sets of 3 controls (1 switch, 1 level, and one output/led). The RMPC line of control boards is used to expand the number of controls, and to provide a single CAT5 connection to the mixer.

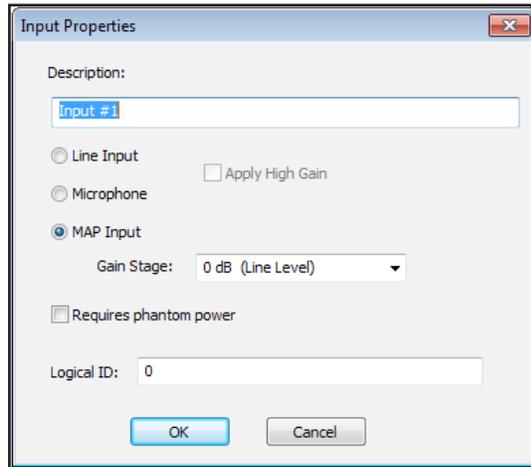


Input

To place an input, right-click in the layout area, and select 'Create Input'. An icon of a line jack will be placed at the current mouse location. To change the properties of the input, right-click on the icon, and select 'Properties'.



The properties dialog box will allow the user to configure the gain settings of the input (Line Input, Microphone, and High Gain are for legacy iFlex mixers.), configure for phantom power, and to assign an ID. ID's can be manually set, or if left at '0', will be automatically assigned when the



input is connected to a mixer in the layout screen.

Output Zone

Output zones are created in Sonata™ as colored polygonal regions. To create an output zone, right-click anywhere on the layout area and select ‘Create Output Zone’. The mouse cursor will change to a crosshair, ready to place the first polygon point. As points are placed the shaded region will begin to take shape. When the desired region is complete, a single right-click will end point placement.

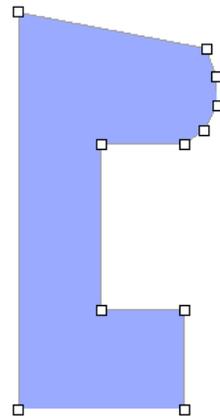
Output zones are used to simulate system logic on the layout screen. Zones will change colors based on mode changes during the simulation. This makes it possible to design and debug complex logic before ever connecting to the mixer in the field.

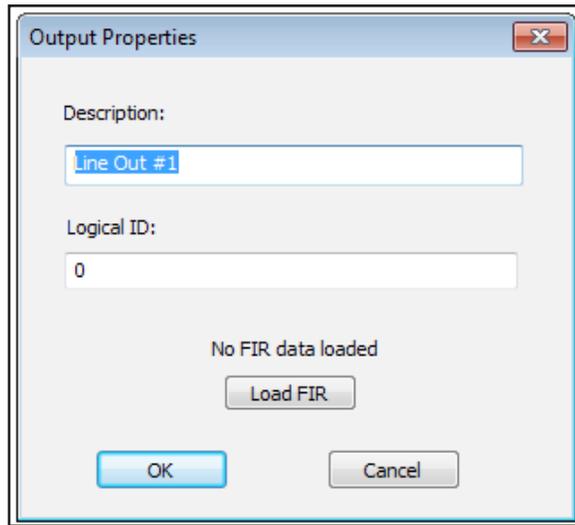
The shape of the output zone can be modified by clicking on the shaded region. The anchor points will show as square markers, and can be moved by dragging them to a new location. It may be helpful to turn off snap-to-grid in order to create arc shapes, or turn on the snap-to-grid to create square sections.

Like other controls, right-clicking will allow changes to the properties of the zone, such as name, and port type.

Line Out

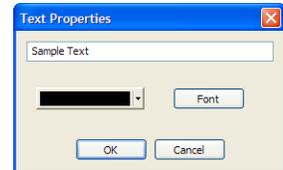
To place a line out control, right-click anywhere in the layout area and select ‘Create Line Output’. Properties available for the line output are a user-defined description, ID, and the option to load FIR data for an FIR output module.





Text

To place text on the layout area, right-click anywhere in the layout area and select 'Create Text'. The text properties dialog will appear. Type in the text you wish to show on the layout area, select a color and font for the text, and select 'OK'.



Unlike other placed elements, text cannot be resized by clicking and dragging on the element itself. To resize text, right-click on the text and select 'Properties'. Click the font button and change the font size in the font dialog box. Click 'OK' twice, and the change to the text size will show up on the layout area.

Templates

To place a pre-defined control template, right-click anywhere in the layout area and select 'Create Template'. A windows file open dialog box will allow the user to navigate to defined control template files. Select the file that contains the control template and click 'OK'. The control template will appear in the layout area.

Level Groups

In the control dialog, items 10 and 11 listed on page 3 indicate a group level functionality. Group levels are used to both set a name that multiple controls can use for a common level, and to link logical controls with physical controls.

Group levels are created through the 'Manage Groups' button on the control dialog, and on the processing element for level/trim. Once a group name is created, level controls in the layout will need to be assigned a

group level name in order to be linked as a group.

All level controls in the layout will need a group name, regardless if a group name is given to a single level control, or to multiple level controls. Any level control that has no group level name assigned has no attachment to any physical input or output.

In the processing screen, the group names are assigned to the modes of inputs or outputs through the level/trim processing elements. This matches the logical level names with physical inputs or outputs in specific modes.

Template Editor

The template editor is accessed by the main menu (View - Template Editor), the template editor icon on the main toolbar, or by right-clicking on any control template that has been placed on the layout area and selecting 'Properties'.



The template editor is used to combine control elements and background graphics into custom controls. Similar to the layout area, the editor allows importing of custom graphics. Combining a graphic background with a specific layout and selection of control elements, provides controls on the layout screen that simulates real life controls.

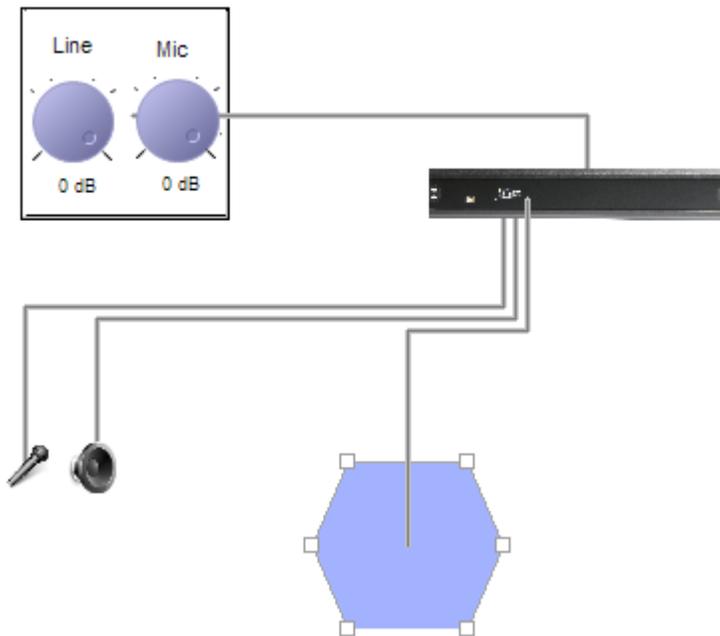
The user interface for the editor is the same as that for the layout screen. Controls are placed onto the editor layout area, properties of controls are set, a background image can be loaded, text is added, etc.. To save a control template, select 'Save' or 'Save As' from the main menu. Template files are saved with an .sct file type (Sonata Control Template).

When a control template has been created and placed into the layout area, right-clicking on the control template and selecting 'Add Prefix' will allow the user to create a name that is common to all the controls in the template. This common name will be added as a prefix to each of the names of the individual controls in the template. This will be useful later on in identifying individual controls.

When placed on the layout area, a control template is moved as a single element. It cannot be resized, and is modified by right-clicking on the control template, and selecting 'Properties'. This will take the user to the template editor screen. All modifications to the control template are made in the editor. To return to the layout area, click the template editor icon.

Connecting Elements

All elements on the layout area must be connected to a mixer. The logic for handling elements is done mixer-by-mixer, so elements that need to work together should be connected to the same mixer. In cases where channel counts or proximity make this difficult, network channels and controls are used, but this should be kept to a minimum to prevent overloading network resources.



To connect placement elements to a mixer, right-click on the element to be connected, and select 'Connect'. The cursor will change to a crosshair, and the software is placed into a polyline mode, ready for the first point in the polyline. Place points sequentially from the element to the mixer, and a line will appear as the points are placed. The initial point is by default on the placement element, with the first mouse click, the user places the second point in the line. The final point must always be somewhere on the mixer icon. When the final point is placed on a mixer icon, the software exits polyline mode, and the mouse cursor becomes a pointer again.



Properties
Delete
Connect

Panning/Zooming

To pan the view of the layout area, left-click in an open space within the layout and drag the view to the desired position.



The view can be zoomed using three methods:

1. Use the mouse wheel to zoom in and out in fixed increments.
2. Left-click on the zoom window icon and drag a rectangular area to zoom



3. Left-click on the zoom extents icon to zoom out to the extent of placed elements

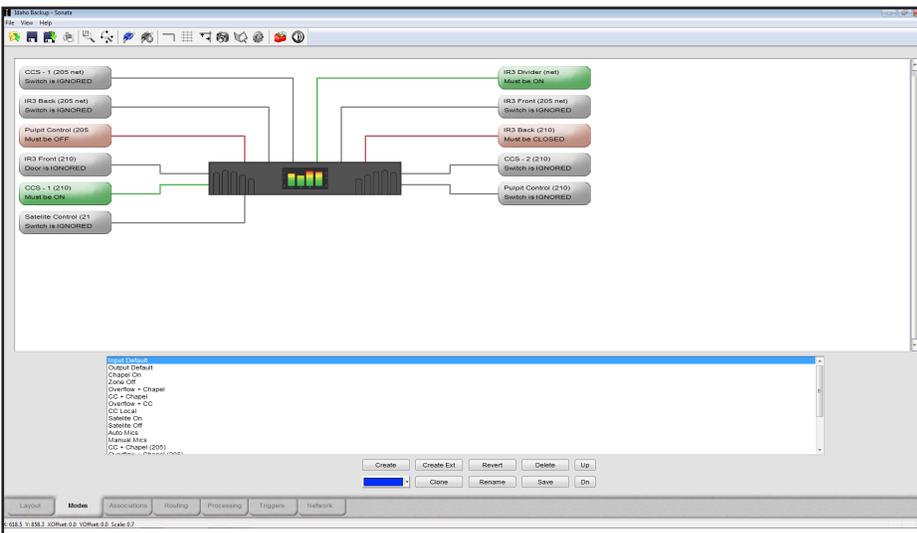
Programming Mixers

Mixers are programmed individually in Sonata™. After all layout elements are placed on the layout view and connected to a mixer, each mixer will need to be programmed.

To begin programming a mixer, double-click on the mixer icon. A series of tabs will appear at the bottom of the screen. These tabs represent the programming steps typical to any iFlex™ installation, and should be completed sequentially. The first tab will appear after double-clicking on the mixer icon, and is labeled ‘Modes’.

Modes

The heart of the programming process within Sonata™ is based on the concept of input and output “Modes”. Within Sonata™ modes provide the flexibility to create complex systems, without creating an infinite number of combinations, or requiring complex boolean logic. Modes also assist the designer in programming the system by approaching the programming in a way that is more familiar in its approach to accomplishing the task than traditional programming.



The mode concept centers around inputs and outputs, and the number of different “modes” that input or output can experience. Focusing on a specific input or output in the system, the user can define the number of different mode possibilities as a function of the possible

switch combinations that can affect that input. The number of possible combinations that affect the specific input or output is much less than the total number of combinations for the system. In this case the user only defines the combinations that have true meaning in the system.

It's also helpful to imagine a set of incoming data streams that converge at the mixer, and an outgoing set of data streams leaving the mixer. For each incoming or outgoing data stream in Sonata™ there must be a mode defined. Nothing moves or is processed in Sonata™ without being associated with a mode.

There are two sections to the modes page, one for defining switch conditions, and the other for creating, modifying, and viewing modes. The first thing the user should check on this page is that all switches connected to the mixer being programmed should show up in the upper section. If a switch doesn't show up, click on the layout tab to return to the layout area, and check to see if there is a connection line between the switch and the mixer.

Switches

There are currently three types of switches that show up in the upper section of this page:

1. Switches
2. Doors
3. Selectors

These are all technically switches, but each has a different user input or nomenclature, such as doors - which are labeled open or closed, not on or off. Selectors also need extra information, such as how many positions, and how to select the position.

Switches are the most straightforward, and have simply and on, off, or ignored state. These states are selected by clicking on the switch button in the upper section of the window. The color of the switch will change from red (off), to green (on), to gray (ignored), and then cycle through again with continued button clicks. The door switch will act the same, but the label will be 'closed' instead of 'off', and 'open' instead of 'on'.

The selector switch is a little different. It only has the condition 'ignored', or selected position. To change the selector, left-click on the selector button, and a selector dialog will appear. Choose whether the selector is 'ignored' or not. If the selector is to be used, type in the selector position number, and click 'OK'. The selector will show the position number, and will change to the color green.



Control #8
Must be OFF

Control #9
Must be OPEN

Control #7
Select pos: 3

Selector Setting

Ignore This Selector

Selector State: 3

OK Cancel

Creating

Left-clicking the 'Create Text' button in the lower window section of the modes page will create a new mode. The user is prompted to type in a new name for the mode, and then set the switches in the upper window to the proper state for the mode. When all the switches are set the mode should be saved before creating a new mode.

Other options for working with modes in the list are:

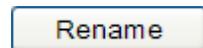
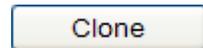
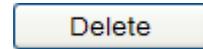
Revert – Discards changes since last save of the highlighted mode.

Delete – Deletes highlighted mode.

Clone – Copies the highlighted mode and adds 'clone' to the new name.

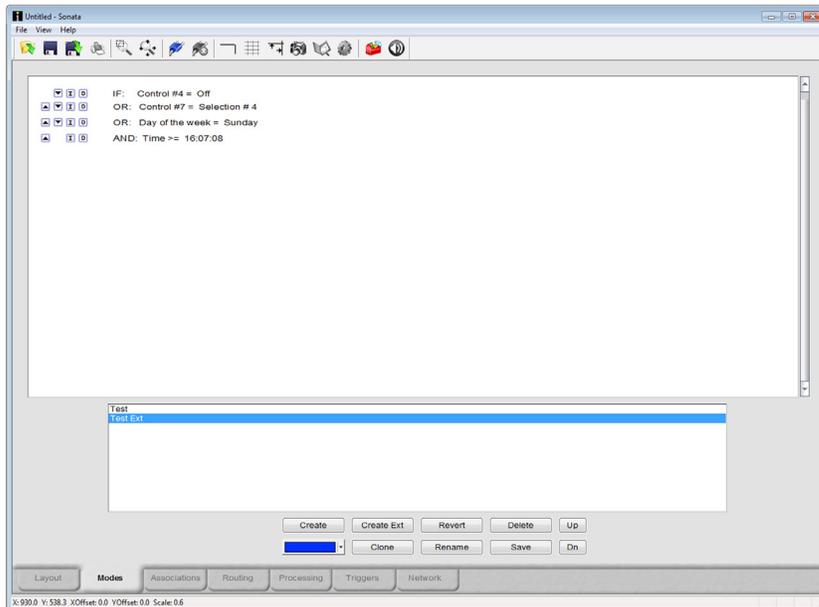
Rename – Renames the highlighted mode.

Color is also an important attribute of any mode associated with an output zone, and can be set with the pull down menu option. Output zones will change color during system simulation depending on the current mode, and the color assignments made to the modes in this page.



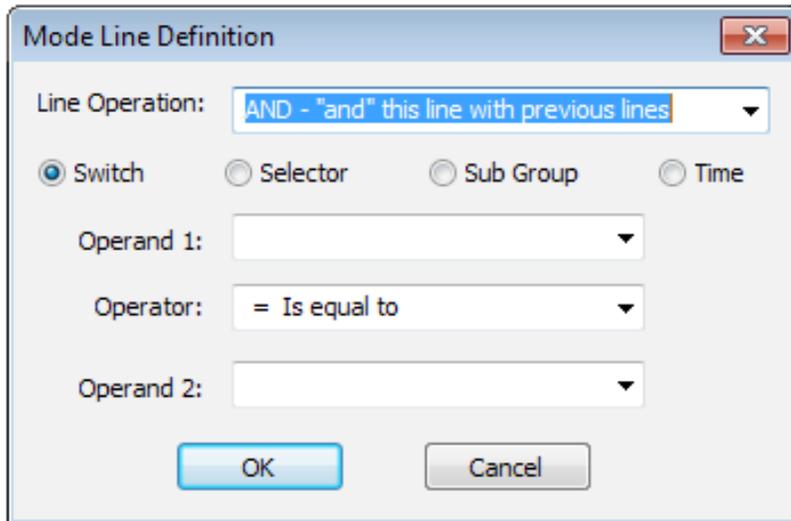
Creating Extended Modes

Left-clicking on the 'create ext' button in the lower window section of the modes page will allow a mode to be created using a more extended set of commands.



This method of mode creation allows the user to incorporate multiple conditionals at the same time, and even time itself as one of the conditionals, to create more complex mode definitions.

The beginning of an extended mode is the statement 'IF: Always'. To begin editing the statement, left-click on the word 'Always', and options for creating the logic of the extended mode will appear.



The first line of the definition will ignore the Line Operation, and the user can ignore this setting during the creation of the first line of logic. To define the first line of logic, the user selects whether the definition uses a switch, selector, Sub Group, or Time as the target of the 'IF:' statement.

Operand 1 will always be a pull down selection of the type of the target. 'Operator:' and 'Operand 2:' may be either pull down selections based on 'Operand 1:', or text entry fields, depending on the type of 'Operand 1:', and the kind of data required to complete the definition.

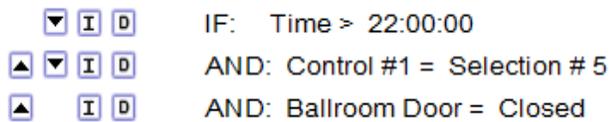
The exception to this is the target 'Sub Group'. If 'Sub Group' is selected all other fields are left blank, and the user left-clicks on the 'OK' button to complete the line of the definition. If 'Sub Group' was selected as the first line of the definition, the mode definition would look like this:

I IF: The combined result of...

Sonata keeps a running result value of the logic, and compares that value with the value of the next line of logic. The result will always be 'True', or 'False', and becomes the new result. In the case of sub groups, the running result value is compared to the result of the entire section of

the subgroup, instead of just the next line. This function is similar to a parenthesis in a mathematical statement. What is inside the parenthesis is evaluated before continuing the evaluation of the rest of the statement. And just as parenthesis can be nested in a mathematical statement, the subgroup can also be nested in an extended mode statement.

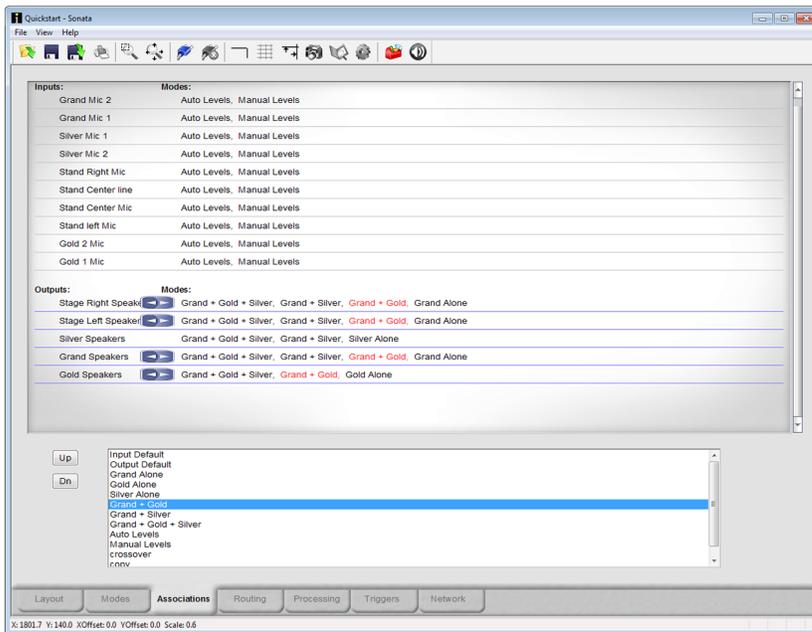
To create the next line of logic, left-click on the 'I' button to the left of the 'IF:' statement. Using the same dialog as the first line, this time choose a 'Line Operation:', and continue as before. Using the 'I' button, the 'D' button, and the up and down arrow buttons, new lines of logic can be inserted, deleted, or moved up and down in the list.



When the modes for each input and output are fully defined, left-click on the associations tab to continue.



Associations



The associations page is also divided into two sections. The upper window section is a scrollable list of every input and output. Inputs are

grouped first, and then outputs, with the default input and output modes already associated. The lower window section is a scrollable list of all the modes created in the modes page. The intent of the associations page is to assign the modes to the inputs and outputs.

If the modes were created by mentally listing each input and output, and what mode that input or output could see in operation, then this page is an exercise in documenting that process. Modes are selected in the lower window section, and associated with an input or output by left-clicking to the right of that input/output. The newly associated mode will show up in red.

When a mode is selected in the lower window section, all associations that have been made with that mode will show up in red to the right of the inputs and outputs. This helps to organize the placement of associations for a given mode. To delete an association, a mode must first be selected in the lower window section. All inputs or outputs with that mode association will highlight the mode in red to the right of the input/output list. To delete the association, right-click to the right of the input/output in question. The highlighted mode no longer appears in the list for that input/output.

In addition to associating modes and inputs/outputs, the mode associations can have a priority of operation assigned. When multiple modes are assigned to an input or output, the priority of operation is left to right. The first mode will have the highest priority, the second mode the next highest, etc..

To change the order of modes in the list, select the mode to be changed in the lower window section and notice the highlighted text in the mode list for a given input or output. Click on the left blue arrow next to the input or output name, and the mode will shift to the left one position in the list. Continue to click the blue left-right arrows until the mode has the desired priority position.



Assigning priorities is often useful if an output has multiple modes, and the simulation shows the output in an unexpected mode condition. Changing the priorities can resolve the mode selection.

When all associations have been made, left-click on the routing tab to continue.

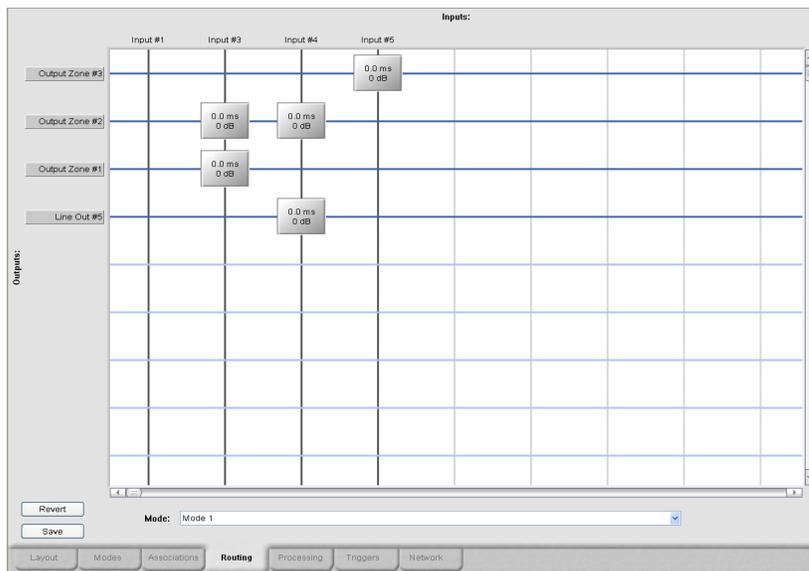
Note: The user may wish to alter the order in which inputs and outputs are listed. This is done in the Associations page. To change the order in which an input or output is listed, click to the left of the input or output

you wish to shift, and a “push pin” will appear, showing that the desired line is selected. Now click on the up or down buttons to the left of the Modes list to move the line up or down.

The order of the inputs and outputs in the Association page is also reflected in the Routing and Processing pages.

Routing

The routing screen is a matrix with all inputs for a given mixer listed on the x-axis, and the outputs of a given mode as the y-axis. The y-axis will change depending on the mode selection of the pull down menu in the bottom center of the page. After selecting a mode from the pull down menu, the y-axis will populate with the outputs for that mode. Only output modes are listed in the pull down menu.



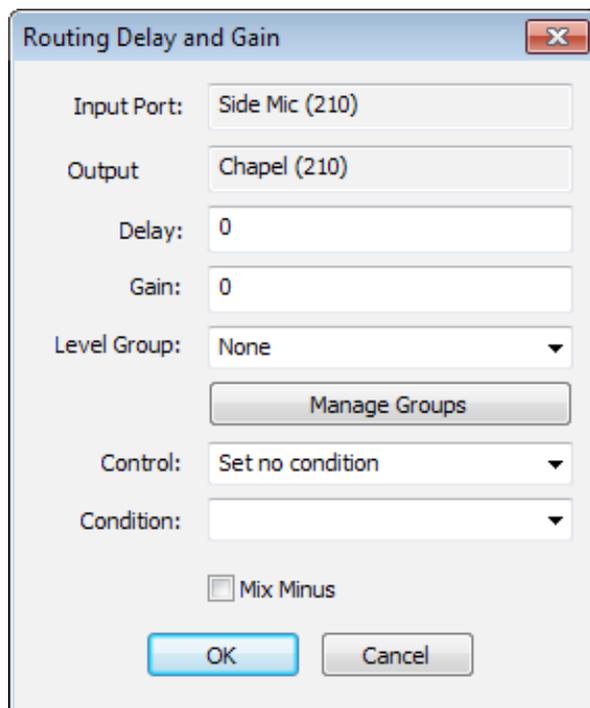
Note: Routing is done by mode. Only the outputs associated with the selected mode appear on the Y axis. To add or remove outputs for a mode, go back to the associations page.

When a mode has been selected, and the y-axis populated with outputs, the grid is ready for a full cross-point routing matrix for that mode. To place a routing point, left-click on any cross-point, and the point will appear. To remove the point, left-click the point again, and it will disappear.

Crosspoint Properties

Routing points contain information that control how a single input contributes to the combined signal on an output. To access this

information, right-click on the routing point and the routing point dialog will appear. At the top of the dialog is the name of the input port and the name of the output to which it contributes. The input fields in this dialog are:



Delay

Next is a field for the crosspoint delay. Each input can be individually delayed in the mix to create the desired effect.

Gain

After delay is a field for crosspoint gain. Each crosspoint has a fully functional level and trim adjustment. Similar to a level / trim processing node, the gain is equal to the combination of level and trim. In the crosspoint dialog, the gain field corresponds to trim.

Level Group

The next field is a combo box that allows the user to associate this crosspoint with a level group. This performs the same function as the level field and group in a level/trim dialog.

Control and Condition

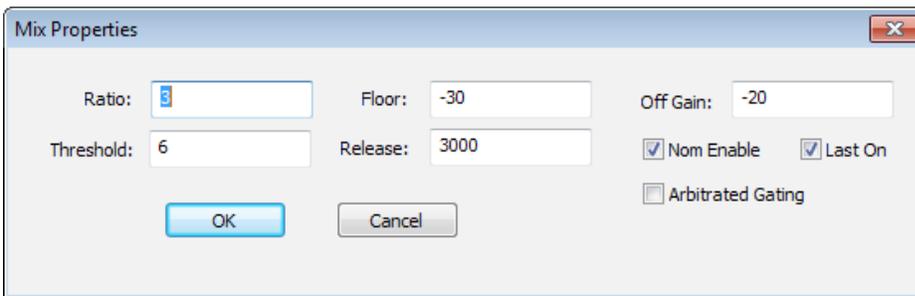
Finally, the last two fields in this dialog allow the user to set up a specific condition in which the input will be included in the mixed output. If a

condition is set, and not true, the input will not be included. A condition is specified as one control in a specific condition.

After completing the routing points for a given mode, push the 'save' button in the lower left corner of the page, and continue to the next mode in the pull down menu. If at any time during routing point placement changes need to be discarded, left-click on the 'Revert' button in the lower left corner of the page, and the mode routing points will revert to the state of the last saved change for that mode.

Mix Properties

Outputs listed on the y-axis of the routing page are buttons that will allow the user to define properties associated with the routing of those outputs. The fields in the mix properties dialog are:



The screenshot shows a 'Mix Properties' dialog box with the following fields and controls:

- Ratio: 3
- Floor: -30
- Off Gain: -20
- Threshold: 6
- Release: 3000
- Checked checkboxes: Nom Enable, Last On
- Unchecked checkbox: Arbitrated Gating
- Buttons: OK, Cancel

Note: Crosspoint properties are specific to individual modes. The same crosspoint in one mode will not carry the crosspoint properties from another mode, unless so programmed. The user can copy and paste information from all crosspoints on a single output from one mode to another or from one output to another.

Ratio

The attenuation, in db, applied to the mixed output for each doubling of the number of inputs included in the mix. For example: if the ratio is 3 and only one mic is active, then no attenuation is applied. But if two mics are active then there is 3db of attenuation. For four mics there would be an additional 3db for a total of six.

Threshold

The signal level in db above the average of all inputs that an input must have in order to be gated on and included in the mix.

Floor

A base signal level below which an input is never gated. Also used in VOX.

Release

The time after which an input will no longer be gated after it no longer qualifies for inclusion in the mix.

Off Gain

The attenuation applied, in db, to inputs that are not considered to qualify for the mix.

NOM Enable

A switch that turns on and off the NOM evaluation. When off – all inputs are mixed without evaluation or attenuation.

Last On

Instructs the mix to always keep the last qualifying input on and active. If this switch is off, then all inputs can be gated off.

Arbitrated Gating

In arbitrated gating, only one input can ever be gated on at a time. The input to be gated is determined by the threshold above other inputs, and the release time of the currently gated input.

Routing Copy/Paste

When there are multiple modes that use the same or similar routing of inputs and outputs, defining the routing for each mode can become time consuming. In order to speed up the routing definitions, there are functions available for copy/paste in the routing screen. To access these copy/paste functions, right-click on any output. The functions available are Select All, Unselect All, Copy, Paste, and Set Control.

Select All

Places routing points at all inputs for the selected output.

Unselect All

Removes all routing points for a selected output.

Copy

Copys the routing points for a selected output

Paste

Pastes the routing points in the copy buffer to the selected output

Set Control

One of the powerful features contained in the routing screen is the ability to use crosspoint conditionals. The use of crosspoint conditionals can

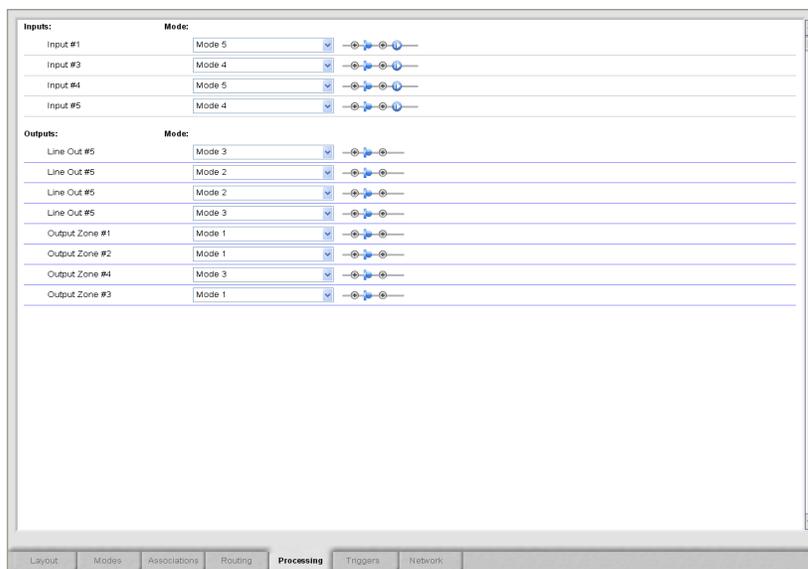


dramatically reduce the number of modes that may need to be defined. The 'Set Control' function helps to speed the definition of crosspoint conditionals by allowing all the crosspoint conditionals of a given output to accept a new control as the logic input of the conditional with a single command. The 'Set Control' command will allow the user to select a new control, and then paste that control as the control to be used for all of the crosspoint conditionals of that output.

When all modes have been routed and saved, left-click on the processing tab to continue.

Processing

The processing page contains a scrollable list of inputs, outputs, modes, and processing element assignments. For each input or output, there is a pull down list of all the modes associated to that input or output. For each mode in the pull down list there is a set of processing elements that have been assigned to that mode and input/output. This allows for a set of processing elements for every mode associated to every input or output. When opening the processing page, the current mode of the mixer is displayed.



To start making processing assignments, select a mode for an input or output from the pull down menu next to that input or output. When a mode is selected, any other input or output that also has that mode association will automatically change to that mode as well. This helps the programmer to view and make processing assignments to all the inputs

and outputs associated with a given mode.

Processing assignments are made by modifying the set of processing elements to the far right of the input or output. Each input mode has by default a level/trim and gating processing element, each output has a level/trim element. These elements are represented by the level/trim, and input gate properties icons.



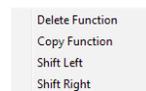
Note* - There can only be one processing element of a given type in a set of processing elements. Only 1 PEQ processing element is permitted, one ALC, one Comp Limit, etc..

The processing elements currently available in Sonata™ are:

1. Level/Trim
1. PEQ
2. Third Octave
3. ALC
4. Comp Limit
5. Delay
6. High Shelf / Cut
7. Low Shelf / Cut
8. Signal Generator
9. Tap Destination
10. Tap Source
11. Crossover
12. VU Meter
13. Ambient Level
14. Ducker



To add a processing element, left-click the plus icon to the left or right of the default level/trim icon, and select a processing element from the list. The new element will show up to the left or right of the level/trim icon depending on which plus icon was selected. To modify the location of a processing element, or to delete an element, right-click on the element and select 'Shift Right, Shift Left, or Delete'.



To modify processing element parameters, left-click on the element, and an associated dialog box will appear. For information on the user-interface for individual processing element dialogs, refer to the corresponding sections below.

Processing Copy/Paste

Both individual processing elements, and blocks of processing elements can be copied and pasted to speed the programming process. To copy a single processing element, right-click on the element to be copied and select 'copy function' from the list. Navigate to the desired processing string, right-click and select 'paste function' from the list. The method for copying a string of processing elements is the same, but position the mouse cursor over the grey line that forms the backbone of the string, and select 'copy string', and 'paste string'.



- Copy String
- Delete String
- Paste String
- Paste String All

It is also possible to copy either a single processing element or a string of elements to all modes for a given input or output. Use the method above for copying the element or string of elements, but select 'paste function all' or 'paste string all' at the desired location. This will copy the processing element or string to all modes associated with that input or output.

Note* - If a level/trim processing element is pasted over an existing level/trim element, the group name information is unchanged. Only the level/trim values will be overwritten.

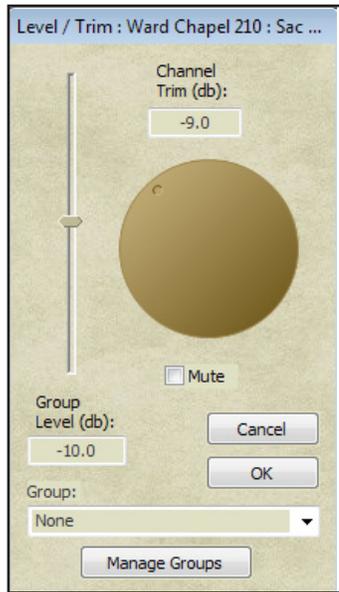
Level/Trim

The Level/Trim dialog allows the user to define the level (or group level), and trim, to mute the channel, and to set and manage the channel group. The slider bar on the left side of the dialog will set the level (or group level if one is defined). A number between -120 and 0 can also be typed into the text field below the slider bar.

The trim can be set by entering the number into the text field above the knob, or by rotating the knob to the desired level.

The channel can be muted by selecting the 'Mute' checkbox.

The level for this input or output can be added to a named group, such that any level that has the same name, is linked. All levels that are linked with change as one. Groups are created and named using the 'Manage Groups' button.



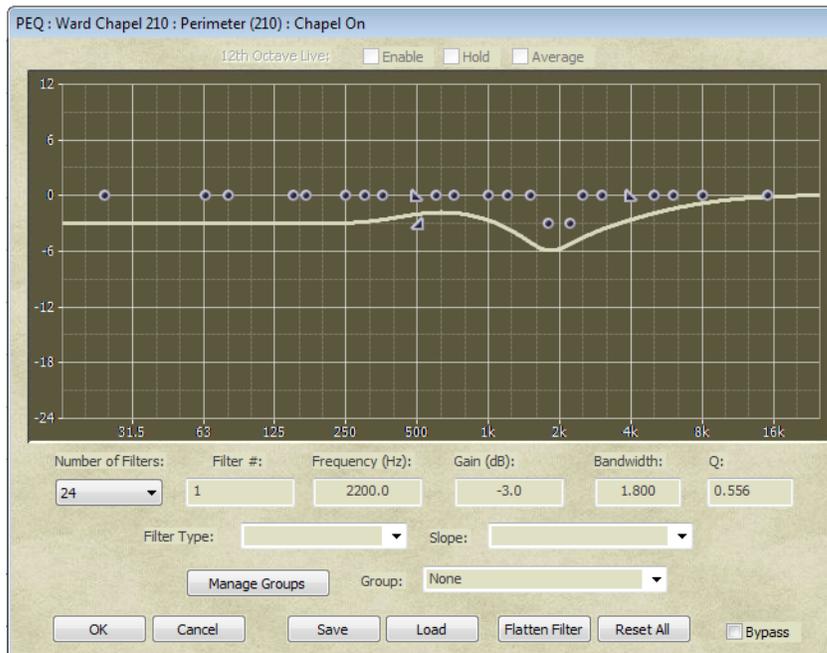
PEQ

The PEQ filter is a user-definable filter from 1 to 48 filters. The number of filters is determined from a pull down menu to the left of the dialog. Each filter can be entered using text or GUI elements, and filters can be saved and loaded to speed the programming process.



To make changes to a filter with the mouse, position the pointer over a filter point and drag to a desired location in both frequency (x-axis), and gain (y-axis). After placing the filter point, adjust the bandwidth/Q by dragging the wing tool to the left or right of the point. The dialog will display text information on the parameters of the point during the manipulation process.

It is also possible to enter the filter point information directly, as opposed to manipulating a point graphically. The same text boxes that displayed point information during manipulation will accept text input to define the point. As point information is entered into the text boxes, the graph will



show the updated shape.

Options for the Filter Type pull down menu are:

1. PEQ
2. High Shelf
3. High Cut
4. Low Shelf
5. Low Cut

Options for the Filter Shape pull down menu are:

1. 6 dB LR
2. 12 dB Butterworth
3. 12 dB Bessel
4. 12 dB LR
5. 18 dB Butterworth
6. 18 dB Bessel
7. 24 dB Butterworth
8. 24 dB Bessel
9. 24 dB LR

The PEQ dialog has associated hot keys to speed data entry. The hot key assignments are as follows:

- TAB - Tabs through filter value fields
- Ctrl-c - Copies the gain and bandwidth settings a filter
- Ctrl-v - Paste the gain and bandwidth to a new filter
- “” - Move to the next unassigned filter number
- Left/Right arrow keys - shift selected filter frequency
- Up/Down arrow keys - shift selected filter gain
- Pg Up/Pg Dn - Next or previous filter

Note: the “” key is lower case ~

Some additional tools in the dialog are:

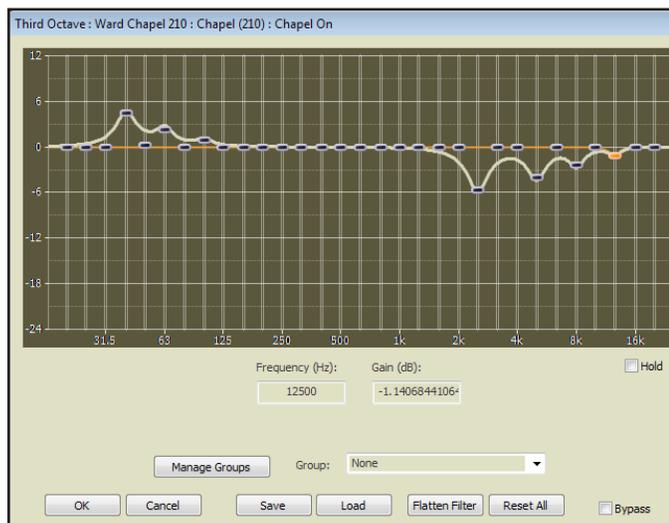
1. Flatten a single filter
2. Reset all filters
3. Bypass the PEQ

PEQ's can also be assigned to named groups. Any change made to a PEQ that is part of a named group will affect all PEQ's with that group name.

To exit the PEQ dialog, select 'OK'. To exit without saving changes, select 'Cancel'.

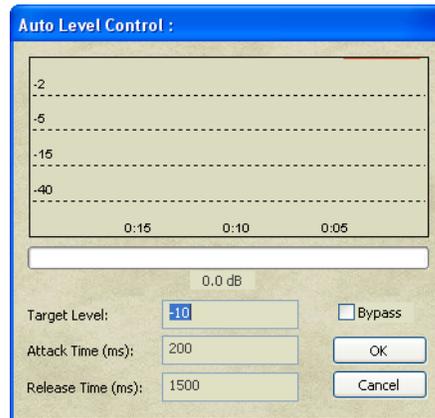
1/3 Octave

The 1/3 Octave filter is similar to the PEQ filter, but the frequencies and filter are specified by the 1/3 octave standard, and only gain is editable.



ALC

The ALC (Auto Level Control) dialog has three inputs – target level, attack time, and release time. Like other processing elements, it also has a bypass check box. When connected, the stripchart will show a history of the level of compression, while the bar beneath the chart will show the current compression level.



Comp Limit

The compression limit processing block has input parameters for limit threshold, compression threshold, ratio, attack time, and release time. Like other processing block dialogs, numbers can be entered



through the keyboard, or points can be move by dragging with the mouse. When connected, the bar beneath the graph will show the current level of compression.

The limits for input values are as follows:

Limit Threshold : -30 to 20

Compression Threshold : -30 to 20

Ratio: - 1 to 100

Attack and release time units are in milliseconds, and have no realistic limits.

The comp limiter can also be assigned a group name, and allow the definition of the function to be applied to multiple comp limiters on different channels and modes at the same time.

Delay

The delay processing block is configured by selecting the desired units of milliseconds, feet, or meters, and then inputting the value. The total delay is calculated by adding the delays for each individual channel. Like other processing block dialogs, delay can be bypassed by checking the bypass



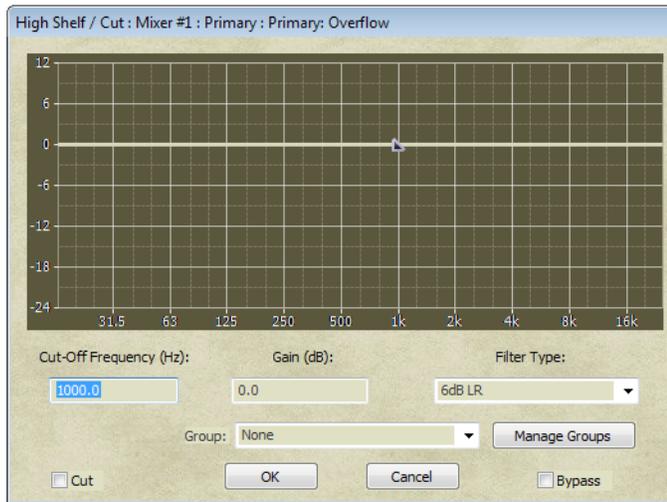
check box.

High Shelf / Cut

The high shelf / cut processing block has input parameters for frequency, gain, and filter type. Frequency and gain can be entered through the keyboard, and filter type through a pull down menu. These values can also be input by dragging the shelf point with the mouse, and using the wing tool.



Use the cut checkbox in the lower-left corner of the dialog to select cut v.s. shelf filtering. As with other dialogs, the user can bypass the processing block with the bypass check box, and the High Shelf/Cut can be added to a group for use in multiple channels or modes at once.



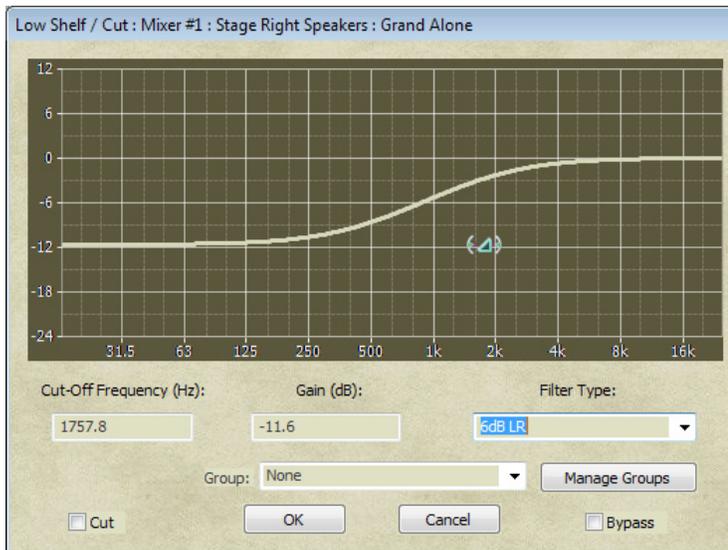
The filter types available for this processing block are:

- 6dB LR
- 12dB Butterworth
- 12dB Bessel
- 12dB LR
- 18dB Butterworth
- 18dB Bessel
- 24dB Butterworth
- 24dB Bessel
- 24dB LR

Low Shelf / Cut

The low shelf / cut processing block is similar to the High shelf / cut. Both high and low shelf / cut dialogs include the 'Manage Groups' button. This allows multiple blocks to use the same parameter settings. By creating a group name, and then assigning that name to a group of blocks - any

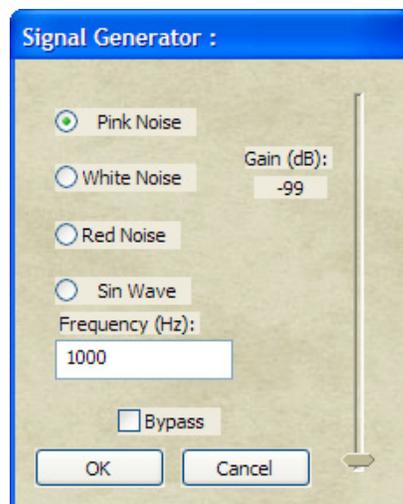




block can be edited, and all blocks will receive the change. Simply use the ‘Group’ pulldown selection to pick the group name to associate with the block. If no group names exist, use the ‘Manage Groups’ button to create a group name.

Signal Generator

The signal generator processing block has input parameters for white, pink, and red noise, as well as a sine wave generator and frequency. Gain is set with a slider bar, and like other processing blocks, there is a bypass check box.



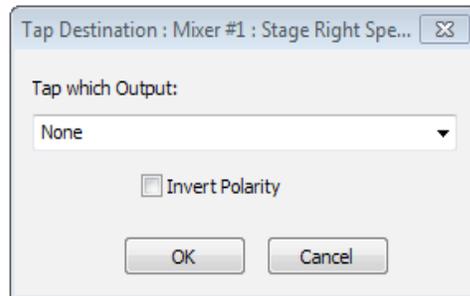
Tap Source

Tap sources and destinations are used to redirect audio streams from a given point in an output processing string, to point on the output processing stream of a different output. The source is placed in one output string, and the destination in another. The source will have whatever processing is defined by the blocks prior to the tap source block. Only one tap source processing block may be placed in a given output string.



Tap Destination

Tap destinations are placed in an output string. Any processing prior to the tap destination will be ignored. The output should not have any routing defined, as all taps are handled after the mix. Any routing defined for an output that has a tap destination block in the string will be ignored.

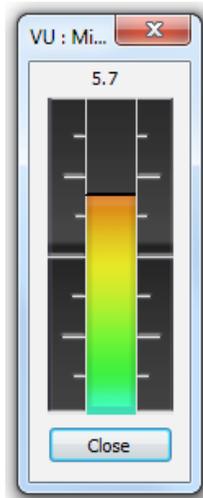


After placing the tap destination in the output string, left-click on the tap destination block to open the tap destination dialog box, and define which tap to use as the source for this destination. There can be many tap destinations for a single tap source.

VU Meter

VU meters have no parameters or settings, but simply provide a visual indicator of signal level on inputs or outputs. Place a VU meter processing block on any input or output, and it can be accessed when the user is connected to the mixer via the Sonata software. This allows the user to have multiple visual indicators of signal level in real time for various inputs and outputs.





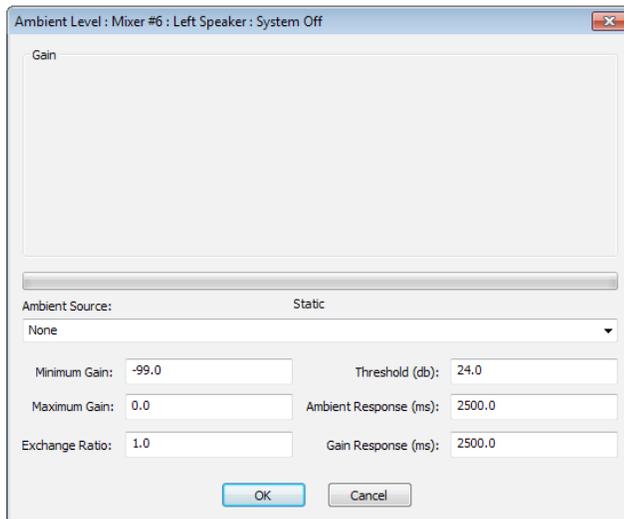
Ambient Source

The ambient source in a system is an input that is used to determine the ambient level of the system at any given time. This ambient source can be used with an ambient level processing block to automatically adjust the gain in an output according to some pre-defined rules. Ambient source processing blocks are only used on input strings, and only one source is allowed per string



Ambient Level

The ambient level processing block is placed in an output string, and is used to control the gain of the level by referencing the level of the ambient source. The gain is defined by left-clicking on the ambient level processing block, and entering the data in the ambient level dialog box.



The upper half of the dialog is the moving graph of the applied gain. The

lower half of the dialog contain the parameters that determine the gain.

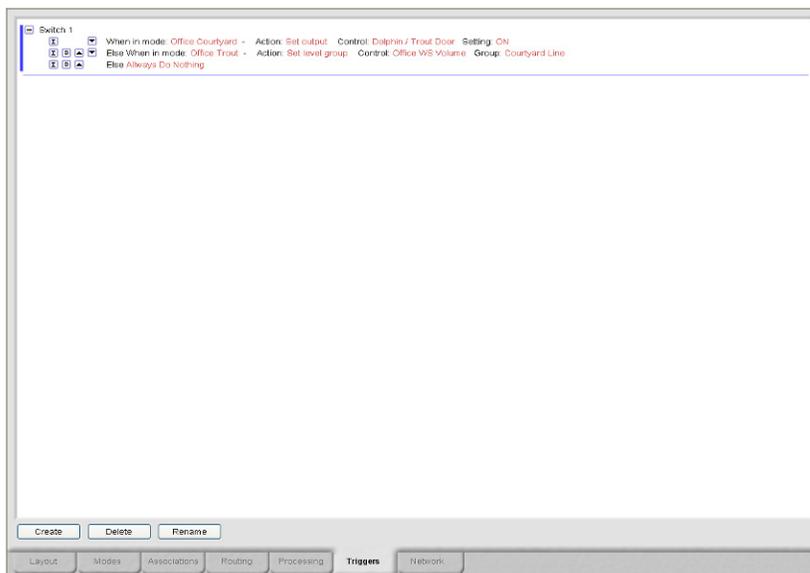
First, the user selects the ambient source from a pull down selection box. Then the maximum and minimum allowed gain is entered. The ‘Exchange Ratio:’ is the ratio of applied gain for each dB of increased level at the ambient source. A ratio of 1.0 would apply 1 dB of gain for each dB of level increase at the ambient source.

The threshold setting determines the minimum threshold that must be seen at the ambient source before any gain is applied. The ambient response and gain response indicate the averaging time which is used to calculate the change in ambient level, and the change in gain.

When the processing strings are complete for each input and output, and their associated modes, advance to the trigger page by left-clicking on the ‘Trigger’ Tab at the bottom of the screen.

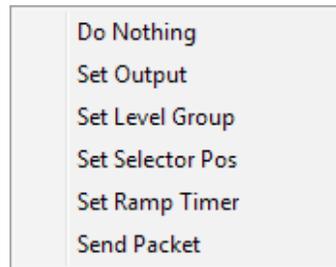
Triggers

Triggers allow the iFlex to react to conditions and stimulus within the audio environment. They provide functionality for actions based on combinations of control states or time specifications. A trigger is a list of modes, the same modes defined to control routing logic, with associated actions that should be taken when those modes are active. The lines are evaluated in order every 40 milliseconds. The first line of the trigger that evaluates to true causes it’s associated action to be executed. There are currently five action types. Set Output, Set Level Group, Set Selector Pos, Set Ramp Timer, and Send Packet.



To use the trigger page, left-click on the ‘create’ button at the bottom-left of the screen. After naming the new trigger, ‘Always Do Nothing’ will appear in red text to the right of the name of the trigger, and the minus and insert icons. The minus icon will collapse the trigger definition into a single line with a name, and a plus icon will replace the minus. To expand the definition, left-click on the plus icon, and the full definition will display.

To program the trigger, left-click on ‘Always’, and a list of defined modes for the mixer will appear. Triggers are always a function of a mode. Select a defined mode from the list, and the words ‘When in mode (your selected mode name here) Do Nothing’. Left-click on ‘Do Nothing’, and the available actions are displayed. When you choose an action, you will be guided through the process of entering the information needed for that action.



The logic for triggers is not limited to a single line. Additional lines of logic can be inserted by left-clicking on the ‘I’ icon. Lines of trigger logic can be deleted or re-ordered within the definition as well.

Triggers can be defined as either ‘S’ (state), or ‘E’ (edge) triggers. State triggers are constantly evaluated, whereas Edge triggers are only evaluated when the state of the mode or control changes.



Set Output and Set Selector Pos: As mentioned earlier, each control has three elements, a switch, a level, and an output. Additionally, the level may be configured as a selector. Triggers can be used to change a toggle switch setting on or off, select a selector position. In each of these actions you will be prompted to select the control that should be modified, and the setting for that control.

Set Level Group: Control levels are connected to input or output levels by Level Groups. By changing the Level Group of a control – you can change the input or output that the control is affecting. This action can be used to change the Level Group of a control. An example of this is the RMI-4. This control can be used to select multiple modes for a single

output zone, or to control the level in multiple output zones by selecting which zone the knob is associated with. Triggers are what make both possible.

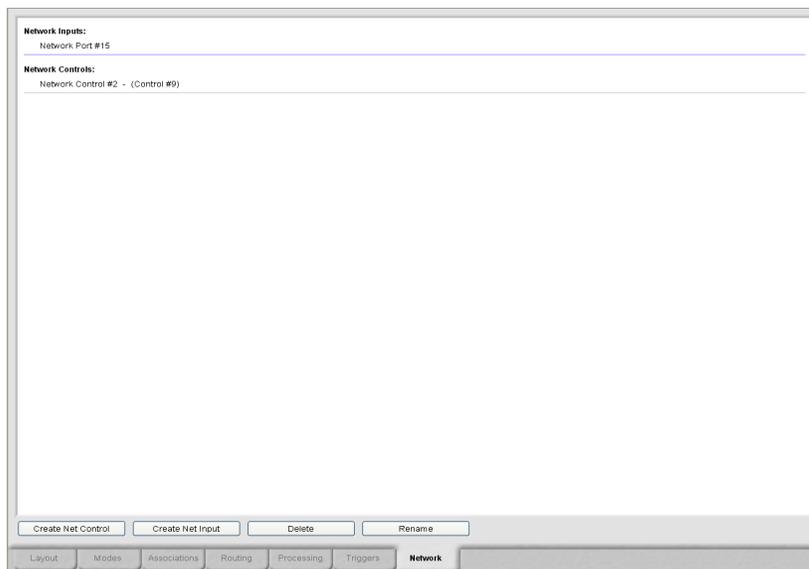
Set Ramp Timer: This action allows the user to set a timer and slowly modify the level of everything associated with a specific level group over time. In the dialog that defines a ramp timer you can set the target level, the duration of the timer, and what to do when the timer “goes off” or expires. This functionality is more completely explained in the Ramp Timer white paper.

Send Packet:

This action will send either an RS232, or an ethernet UDP packet when the trigger activates. This is useful for external third-party controls and accessories.

Networking

The network page contains a list of all network controls and network input channels, as well as a method for creating the same. Sonata™ uses a ‘pull’ system for creating network channels, meaning that mixers that require network channels from controls or inputs connected to other mixers ‘pull’ the channels from the other mixers as needed.



If the mixer currently being programmed requires control data from another mixer in the system, a network control channel is created from the other mixer to the current mixer through the networking page of the current mixer. To create the network control channel, left-click on the

‘Create Net Control’ button in the lower left corner of the networking page. The ‘Network Control Properties’ dialog will appear.

Enter a description for the new control in the description field. Next, select the source mixer that has the control data to be ‘pulled’. This identifies the mixer that has a real control connected, from which the data will be ‘pulled’ across the network. Finally, use the pull down menu to select the source control channel in the source mixer.

Now left-click on the ‘OK’ button to return to the networking page and view the addition to the network controls list. Network input channels are created in a similar fashion to the network control channels, but with the added step of mixing source input channels.

To create a network input channel, left-click on the ‘Create Net Input’ button, and the ‘Create Network Input’ dialog will appear. Enter a new name for the network input, and select the source mixer as before. Once the source mixer has been selected, all the inputs connected to the source mixer will be listed in the ‘Combine Inputs’ area of the dialog. Select any or all of the inputs to be mixed and then ‘pulled’ across the network to the current mixer.

Defined network controls and inputs can be renamed or deleted, but cannot be modified in any other way once created. If new channels need to be added to an existing network input, the existing definition must be deleted, and then re-created with the additional channels.

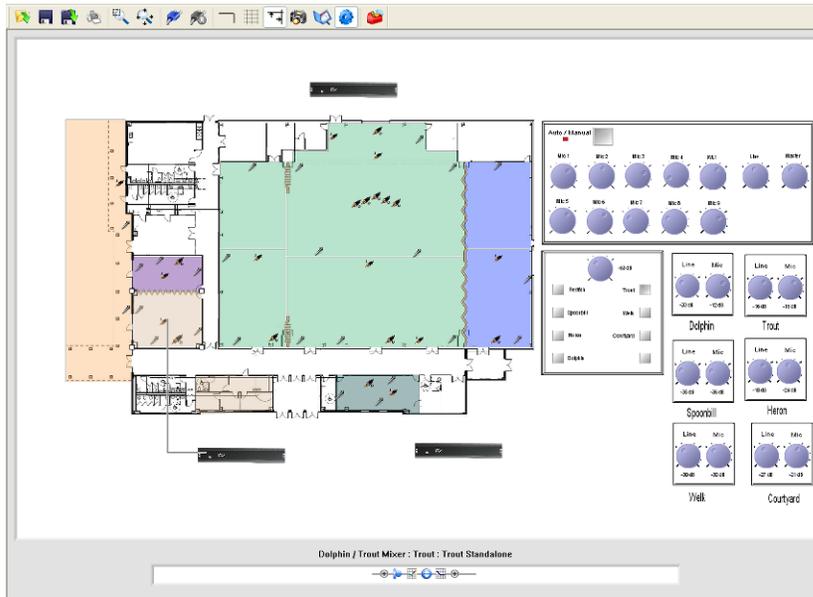
To view the number of network inputs for a given mixer, see the list in the network tab under ‘Network Inputs’. To see the number of network outputs for a given mixer, view the list of outputs on the processing tab. Network outputs will be listed as ‘Network Ports’.

Once a network control or network input has been created, it has exactly the same functionality as a standard control or input for programming purposes.

Run/Simulate

At any point in the process of creating layout files and associated programming, the user has the option of simulating existing logic using the graphical elements placed in the layout area. To view the execution of the logic, the user returns to the layout screen, and left-clicks on the ‘run/simulate’ icon on the main toolbar.

When the 'run/simulate' icon is clicked, the software executes the logic contained within the programming tab screens, and graphical elements such as knobs, doors, switches, output zones, etc.. will reflect the status of the system. Output zones will change to the color of the mode they reflect based on switch, selector, and door settings. Led's will reflect the status of switches and trigger programming, and levels will reflect their default settings, whether digital or analog.



In addition to reflecting the state of the system, the run/simulate feature also allows the user to manipulate elements of the system to test logic changes. Switches can be pressed, selectors actuated, doors opened and closed, and levels changed. With each user change, the system will evaluate logic changes and reflect those changes to the layout graphically.

It is also possible to evaluate the processing elements in play at any location or logic condition within the run/simulate execution. The lower center region of the layout area has a window with the label 'Mixer:Channel Description:Configuration Name'. This area always shows the processing blocks for the selected input or output.

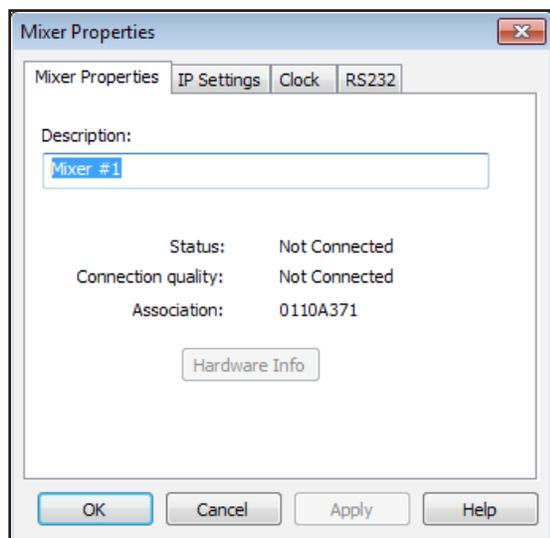
As logic executes through switch, selector, and door settings, the modes of the system will change. At any point of system manipulation, left-clicking on an input, output, or output zone will cause this window to display the name of the mixer, channel description, and mode name, as well as the processing elements currently programmed for that channel and mode combination. The processing elements are fully editable at this point, and any changes made at this point are the same as changes made in the processing screen.

If the Sonata™ software is connected to an iFlex™ mixer when executing a run/simulate command, the controls on screen will reflect the state of the physical controls connected to the mixer. Controls on the layout screen are continually updated with the status of the physical controls, and any changes to the physical system will be reflected immediately on the layout screen. The logic within the context file (see following section on context v.s. layout files) will determine mode settings, modes will display on screen, and the physical system will function as programmed.

Changes made to processing elements during simulation are permanent, but other changes, such as control state changes are only temporary. Control states, such as door states, switch states, and selector states can still be changed even though the software is simulating, but these changes are ‘virtual’ changes, and will revert to their actual state by any real-life control change in the system.

Connecting to a Mixer

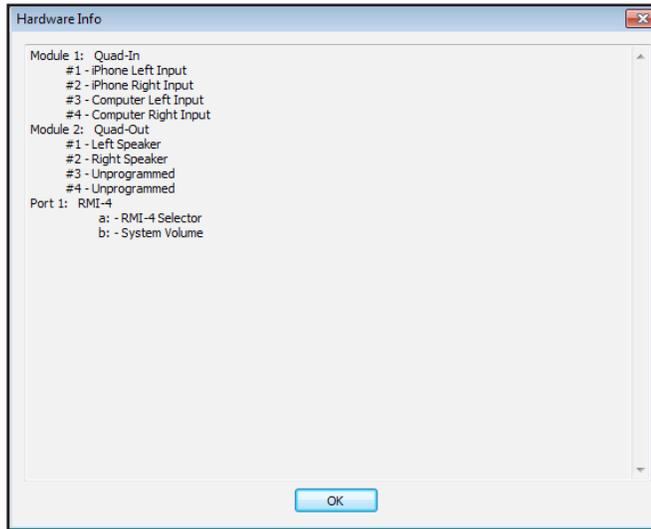
Connections to a single iFlex™ mixer are made via USB peripheral connector, or ethernet RJ45 jack on the rear panel. If you use the RJ45 jack you will need to configure your computer to use the correct network settings for the IP environment used. To set the network properties of the mixer, right-click on the mixer in the layout area, and select ‘Properties’. The mixer properties dialog has 4 tabbed sections - ‘Mixer Properties’, ‘IP Settings’, ‘Clock’, and ‘RS232’.



Mixer Properties

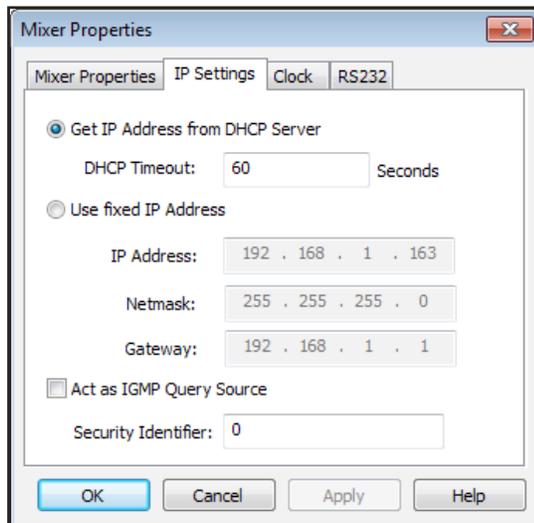
This section contains descriptive information, and connection status. If the software is connected to a mixer, the ‘Hardware Info’ button will bring

up information on input/output/control programming information.



IP Settings

The IP Settings dialog allows the user to specify the DHCP timeout setting, set the IP, Netmask, and Gateway addresses, Enable IGMP network coordination, and set a security code for UDP communications to the mixer.



If the mixer does not receive an IP address from a DHP server within the timeout period, the mixer will use the fixed IP address from this dialog.

Using an IGMP Router

iFlex mixers are capable of sending networked audio channels over standard Ethernet connections. If an IGMP router is used, iFlex mixers can also use standard Ethernet to route network audio to only the iFlex

mixers that use those channels. This removes the drain on network resources from audio being routed throughout the network where it is not needed. With IGMP routers, the network knows what channels are being routed where in the system, and does not bog down the network with audio data on unwanted ports.

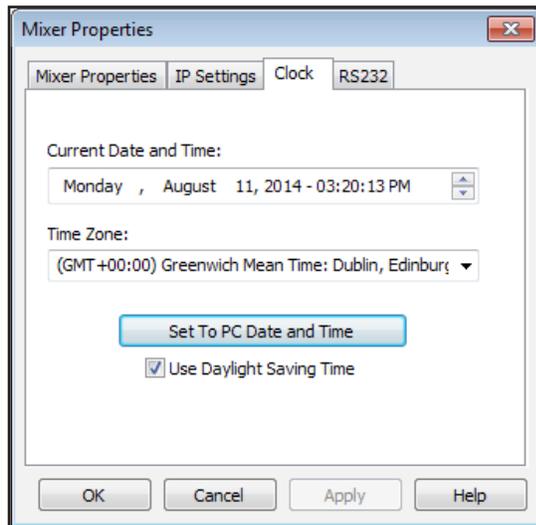
In IGMP systems, there is always at least one device that handles the coordination of other devices requesting information. The 'IGMP Query Source' box should be checked for one iFlex mixer in an IGMP networked environment.

The 'Security Identifier' is a code number that the mixer will use on incoming UDP packets to determine if the packet is authorized to make changes to the system. The security identifier code must be in the UDP packet header, or the system will ignore the incoming packet.

For multi-box systems, connection requires a switching router, with both the computer and the iFlex™ mixer connected to the router via CAT5e (or better) cables.

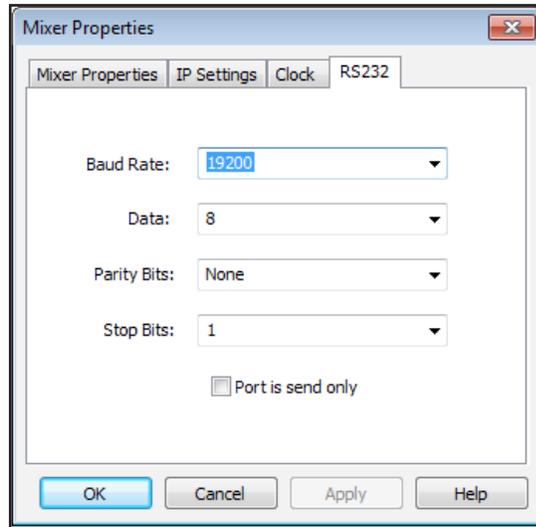
Clock

If connected to an iFlex mixer, the clock dialog will show the current time set in the mixer. The current mixer time is also shown on the mixer front panel info screen. To change this time, the user can either select elements of the displayed time, and edit the time with the up and down arrows, or use the 'Set to PC Date and Time' button. Daylight savings time can be set with a check box. The user will also need to set the time zone through a pull down list box.



RS232

The RS232 dialog allows the user to set the Baud Rate, Data (in Bytes), Parity Bits, and Stop Bits from pull down list boxes. If the 'Port is send only' check box is checked, then any responses from external devices are ignored. This is useful when responses on both the send and receive devices are automatic, and an infinite loop of communication is created. In this case the box is checked, and responses from other devices are ignored.



Contexts/Layouts

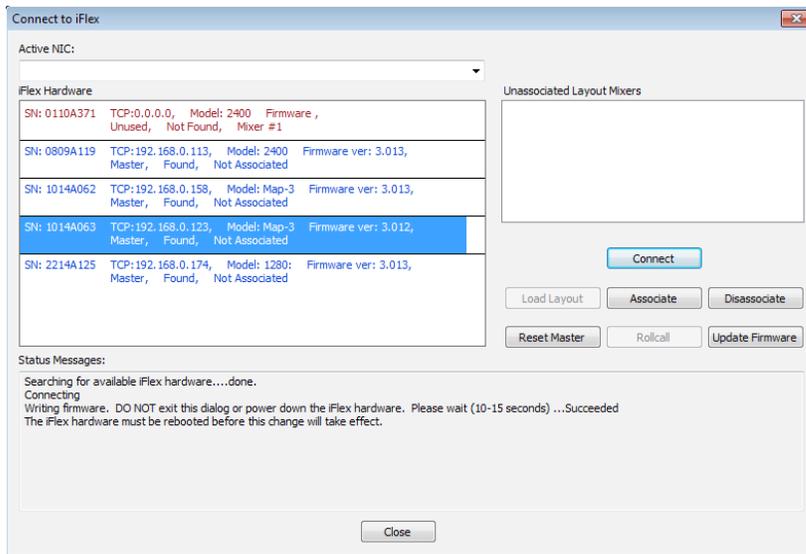
Two types of files are stored in an iFlex™ mixer, the context file, and the layout file. The context file is the set of programming instructions necessary to operate the mixer. The layout file is the Sonata™ file created by the user. In a multiple mixer system, the mixer that contains the layout file is considered the 'master' mixer.

Master mixers by definition contain the Sonata™ layout file that generated each of the contexts for every mixer in the system. This layout file is automatically downloaded to the Sonata™ application running on the PC when a connection is made to the master mixer.

A mixer that is used in a layout but does not have the master copy of the layout is designated as a 'slave' mixer in the system. If a connection is made to a mixer that is designated as a 'slave' mixer or an unused mixer, the Sonata™ layout file currently on the layout screen will be uploaded into the mixer, and the mixer will change its designation to 'master'.

To connect to a mixer, left-click on the 'connect' icon on the main toolbar. The connect dialog box will appear.





The upper-left pull down box labeled ‘Active NIC’ allows the user to select the Network Interface Connection that will be connected to the iFlex unit for communication. If the field is left blank by the user, the mixer will use the Windows default NIC.

The left window will display all iFlex mixers that respond to a request to identify from the software. All mixers connected to the Software both from USB and Ethernet will respond with their serial number IP address (or USB), model number, firmware revision, whether the unit is a master or a slave, whether the unit is found in the software layout, and whether the unit is associated or not. The software displays any iFlex™ mixers found by the network, as well as associated mixers not found.

The right window displays the mixers found in the current software layout file that aren’t associated. The lower-middle window provides status information on actions performed while in the connect dialog.

Associating/Disassociating Mixers

To associate a physical iFlex™ mixer to a defined layout mixer, select the physical mixer in the upper-left window and the layout mixer in the upper-right window, then left-click on the ‘associate’ button. Select the next available physical mixer, select the next available logical mixer, and left-click on the ‘associate’ button. Continue until all physical mixers are associated with logical mixers in the layout file.

To disassociate mixers, use the same method above, but left-click on the ‘disassociate’ button.

Load/Push Layout

There are two types of file loading in Sonata™. The first is that of loading a file into the layout screen, and the second is that of loading a layout file into an iFlex™ mixer. In the connect dialog, left-clicking on the ‘Load Layout’ button is the same as left-clicking on the ‘open file’ icon on the toolbar of the layout screen, or selecting the ‘file, open’ options from the main menu, and will load a new layout into software.

To upload a layout to the mixer, left-click on the ‘push layout’ button. Layouts on the layout screen are also automatically uploaded to the mixer when the ‘disconnect’ icon on the toolbar of the layout screen is selected.

*Note - Never close the software without disconnecting from the mixer first. Changes in context are sent frequently to the mixer, and if the software is closed without a disconnect (and a corresponding upload of the layout), the context and the layout within the same mixer may not match.

Resetting Mixers

To erase both the context file, layout file, and master/slave status of a mixer, select the physical mixer to be reset, and left-click on the ‘reset mixer’ button.

It is also possible in this dialog to manually query a physical mixer for controls and modules. Select a mixer from the mixer list and left-click on the ‘Rollcall’ button will check again for physical controls and modules found in a selected physical mixer.

Hardware Programmer

The hardware programmer is used to program input and output modules, and controls, and is accessed through the ‘view\hardware programmer’ main menu option (hot key: Ctrl-h). The hardware programmer dialog will appear as follows:

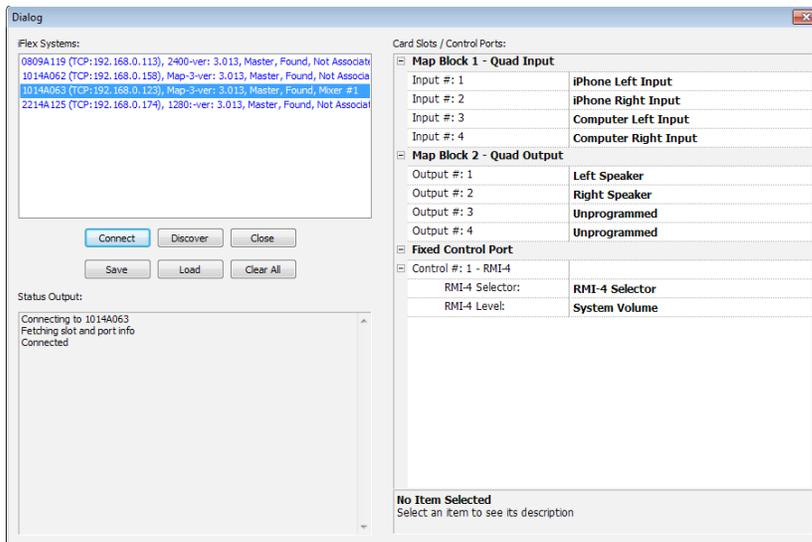
The upper-left window lists available physical mixers found by the software. Select an available mixer, and left-click on the ‘connect’ button. The software will connect to the selected mixer, and identify any input or output modules, and any controls plugged in to that mixer. The lower-left window will show the status of connections, and communications with modules and controls.

You can refresh the list of inputs, outputs, and controls at any time, by clicking on the ‘Discover’ button.

Input and output modules, and controls are pre-programmed at the factory

with a type designator. This designator is used to identify the type of module or control to be programmed, and is used to populate the list in the right window of the hardware programmer dialog box.

As with associating mixers, the hardware programming dialog matches physical modules and controls with logical modules and controls in the software layout screen. Inputs, outputs, and controls have names in the layout screen, and these names are accessed through the pulldown menu below the list of found modules and controls.



When a physical module or control is selected, a pull-down menu of modules or controls in the layout of that same type is listed. Selecting a name from the list to assign to the hardware is all that is required to fully program the module or control.

When a module or control is programmed, the list of found hardware will show the programmed name to the right of the hardware type.

RMPC Controls

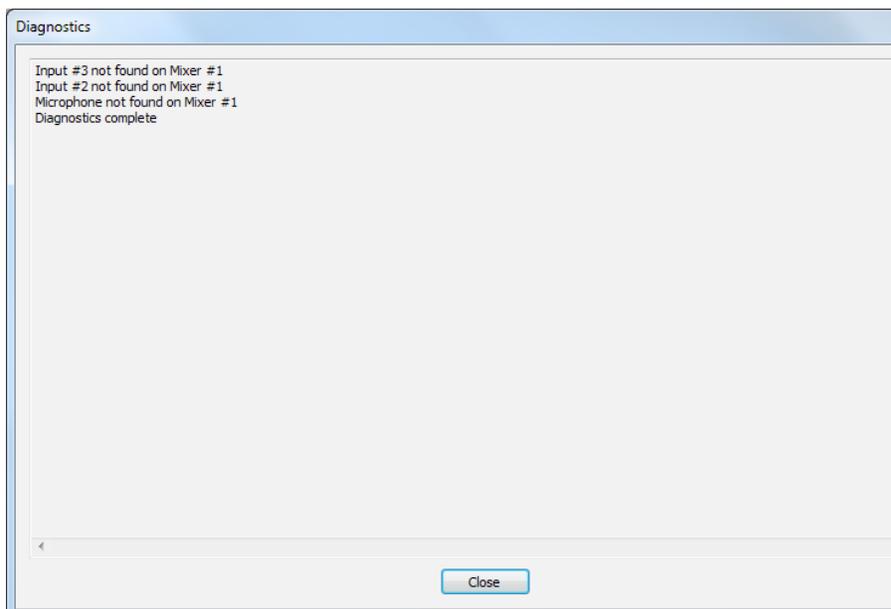
The RMPC line of PC board adapters convert custom analog control panels into smart controls over a single RS485 cable. Programming RMPC controls is similar to the matching process described above, but individual pots, led's, and switches must be hardwired to the RMPC board.

When an RMPC control is selected in the list of found modules and controls, a pulldown selection list for each wiring point will appear. To program the RMPC, select named controls from the list for each of the wiring points to program each point. When all points are named,

the RMPC is fully programmed (for unused RMPC ports, select 'Unprogrammed' from the drop-down list). For more detailed wiring information, see the Ivie RMPC datasheets.

Diagnostics

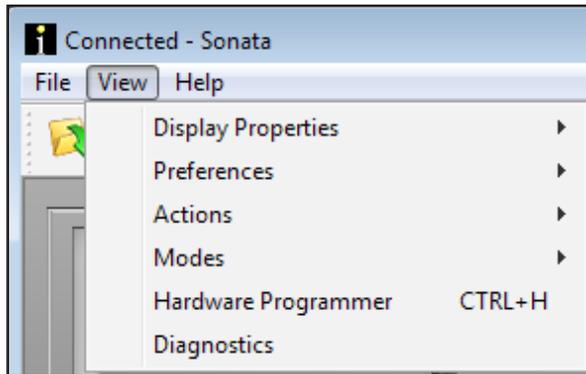
A diagnostics dialog is available for checking common problems experienced during the initial hardware/software configuration phase of a system build. To enter the diagnostic window, left-click on the 'diagnostics' icon on the main toolbar of the layout screen.



In the figure above, the diagnostics has found that three inputs (labeled Input #2, Input #3, and Microphone in the layout) are not programmed. The diagnostics window is very helpful when checking systems during the hardware connection and programming phase.

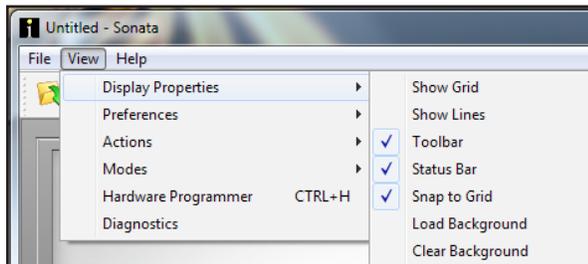
View Menu

The 'View' menu contains several important user functions to define or access system features. The menu has options for display properties, preferences, system actions, mode review, hardware programming and diagnostics. Hardware programming and diagnostic functions have been discussed in previous sections, but the remaining menu functions will be reviewed here.



View/Display Properties

The options available in the 'Display Properties menu are to toggle on or off the show grid, show lines, toolbar, status bar, and snap to grid features. The load and clear background feature allows the user to place background images into the layout as described in the 'Layout Screen' section of this document.



View/Preferences

The preferences menu allows the user to turn on or off the show layout save dialog, and automatic hardware file features; select network options for iFlex mixer discovery and communication, and change the user language.

The layout save dialog option is the automatic prompt to the user to save the layout file if the user attempts to exit without saving.

The automatic hardware file feature will append the hardware programming information to the Layout file. When the file is next opened, the software will prompt the user that there is hardware programming information available, and ask the user if that information should be loaded.

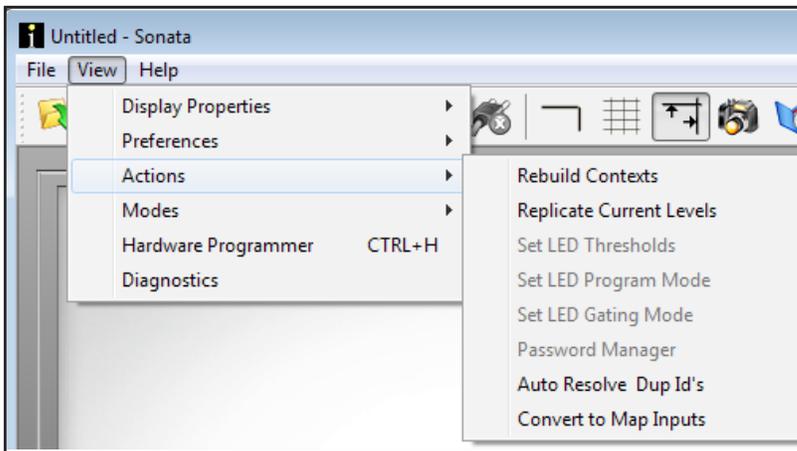
The select network options feature will open a dialog that allows the user to select the Network Interface card that is used by default to

communicate with iFlex mixers. The user will also have the option of UDP broadcast or IP subnet as the discovery method. Subnets can be created, modified and deleted here.

Sonata™ supports both English and Chinese language options. Additional languages will be added in future releases.

View/Actions

'Rebuild Context' is a debugging tool that sends the entire context to the iFlex mixer. The context is generally created a piece at a time, as a model is built or modified. This function sends the current context in it's entirety to the mixer.

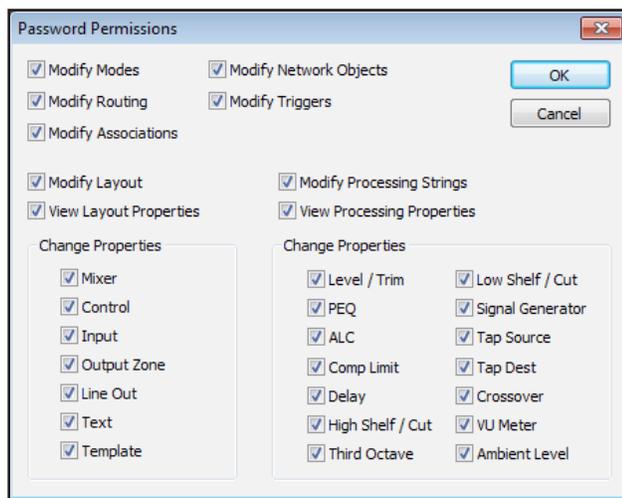


Password Manager

The password manager allows the user to set a master password for the iFlex mixer, assign user-specific passwords, and set permissions by user for the system.



To set permissions for users, assign a password using the ‘Set Password’ button next to the user number. After entering the new password, the ‘Set Permissions’ button will become available. The permissions dialog will allow the user to set permissions for system actions through check boxes. If the box is checked, then the user may modify the settings for these actions. Un-checked items may be viewed, but not modified.



Auto Resolve Duplicate ID's

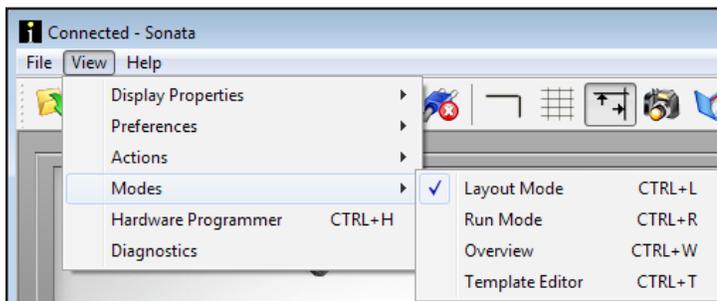
This function resolves any system ID conflicts, and assigns new, valid ID's where needed.

Convert to MAP inputs

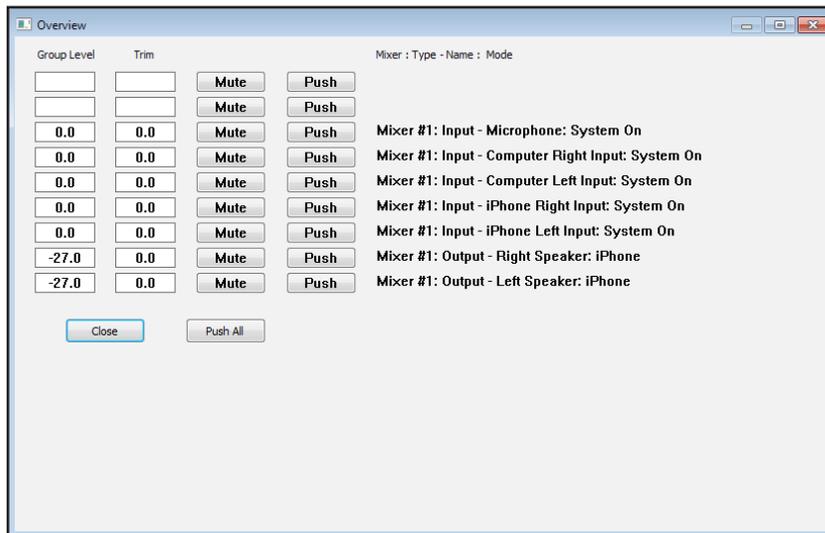
This function converts legacy iFlex mixer input gain settings to the appropriate MAP series gain settings for each input in the layout.

View/Modes

The modes menu has four options - Layout Mode, Run Mode, Overview, and Template Editor. The Layout Mode, Run Mode options simply toggle between editing in the layout mode, and simulating in the Run mode, and are analogous to clicking on the corresponding icons at the top of the layout screen. The Template Editor is the same, in that it just toggles into the template editor, as does the template editor icon at the top of the layout screen



The 'Overview' option brings up a dialog that allows the user to quickly see and set levels throughout the system. Both group levels and trim levels are shown for each input and output, but only for the current mode of that channel. A 'Mute' button is also provided for each channel (the overview window may be accessed by 'Ctrl-w').



The 'Push' button will push the current level down to all other modes possible for that channel as well. 'Push All' will push the levels of all channels down to the additional possible modes for those channels.