



# Reference Guide



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## Overview

ADAPT is a software suite designed to simplify programming for Crestron residential control systems. The suite includes a set of SIMPL Windows modules that are built around a SIMPL# core. The SIMPL# core provides a rich set of built-in features and delivers a more responsive system that requires less processor overhead. The SIMPL Windows modules allow you to easily create a complete template program that can be customized within SIMPL Windows or configured within the ADAPT System Manager application. System Manager is a configuration tool that allows you to configure and customize an ADAPT program as it is running on a Crestron processor. Within System Manager you can add, remove, reorder, and rename rooms, sources, interfaces, and subsystems; customize the home page layout; define audio and video connections; rearrange dynamic lists; and more.

This document details the type of SIMPL Windows modules provided in the ADAPT Software Suite. Within some sections there are additional modules included in the suite. These additional modules are specific to different hardware models. For example, we describe audio switcher modules but not the variations of each model specific module. In most cases the ADAPT modules for specific models match the hardware definitions in SIMPL Windows. In such cases, all that is needed is to connect the inputs and outputs of the Crestron hardware module to the respective outputs and inputs of the corresponding ADAPT control module.

The basic structure of an ADAPT program is simple and generally divided into four core parts: Bootup, Rooms, Devices, and User Interfaces. The Bootup logic and Room modules are primarily the connection method for linking the interface with the controlled device. Devices are the controlled hardware in the system. User Interfaces are, as the name implies, the interfaces that the end user will interact with to control the devices.

Each system requires elements from each of these groups. The Bootup logic consists of the Bootup module and the Global Scenes module. For each room in the system, a Room module is required (of which you can include up to 100). Devices require the corresponding module for each controlled device in the system. User Interfaces require at least one user interface module for each actual interface in the system.

However, building an ADAPT program in SIMPL Windows is only part of the equation. As you will notice, many elements of the program are not exposed in the SIMPL Windows modules - elements such as device and room name, input and output connections on switchers, and much more. These elements are stored in the ADAPT configuration file and configured using ADAPT System Manager. Thus, building the SIMPL Windows program is greatly simplified and customizing the program for a project can be done easily. For more details, refer to the example programs provided with the full ADAPT Software Suite.

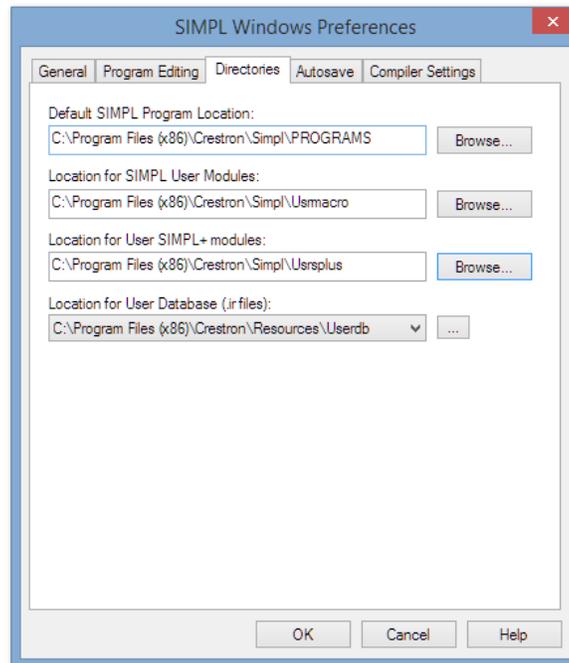


## Getting Started

### Installing SIMPL Windows Resources

In order to properly setup the example program, SIMPL Windows, Vision Tools Pro-e (VTPro-e), and other supporting Crestron software will need to be installed and properly configured before continuing. We recommend using Crestron Master Installer to ensure all of the necessary programs and updates are correctly installed. For assistance with Crestron Master Installer and the installation of related Crestron software, please contact Crestron at [www.crestron.com](http://www.crestron.com).

1. Install the ADAPT SIMPL Windows modules. In SIMPL Windows select “Options/Preferences” and locate your standard User Modules and Simpl+ modules directories (Figure-1: SIMPL Windows Preferences).
2. Copy the contents from the “Usrmacro” directory in the ADAPT Modules directory into the folder “Location for SIMPL User Modules”.
3. Copy the contents from the “Ursplus” directory in the ADAPT Modules directory into the folder “Location for User SIMPL+ modules”.

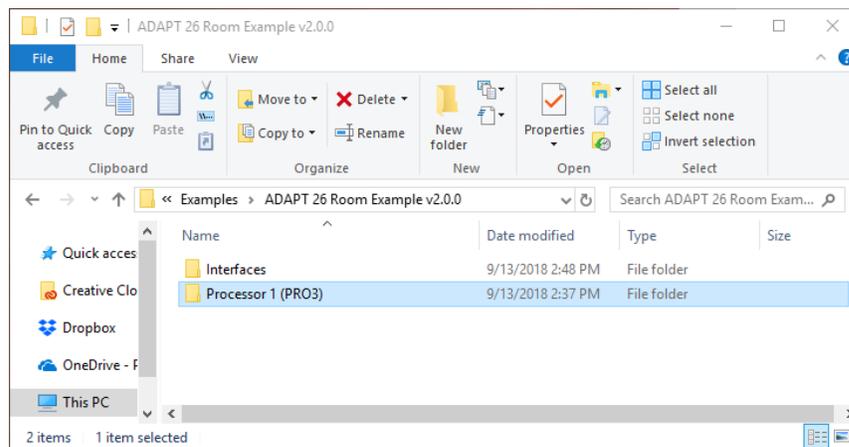


(Figure-1: SIMPL Windows Preferences)

## Installing Example Programs

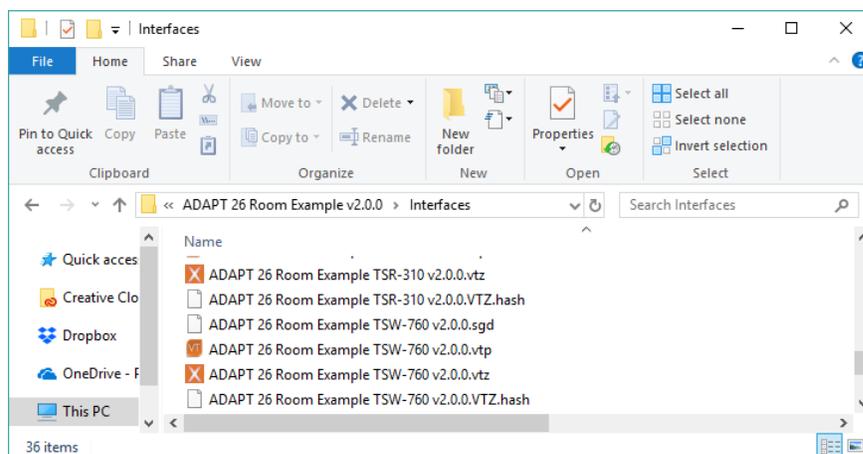
The next step is to create and copy the example programs into your new working directory. We recommend the following directory structures if you do not currently have one you typically use.

1. Project Directory (Figure-2: Project Directory). This is your project's working directory and it consists of an Interfaces folder which contains all of the interfaces used for your project and a Processor01 folder which contains the respective program files for the project (Note: additional processors and related program files would be added as Processor2 (type), type= target processor model number):



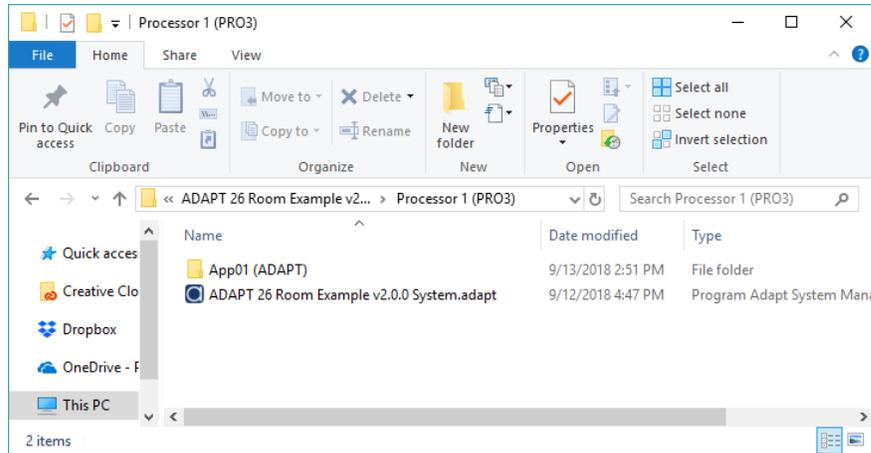
(Figure-2: Project Directory)

2. Interfaces Folder (Figure-3: Interfaces Directory). This is your working directory for all of the interfaces related to your project and contains the source files and related .sgd and .vtz compiled files:



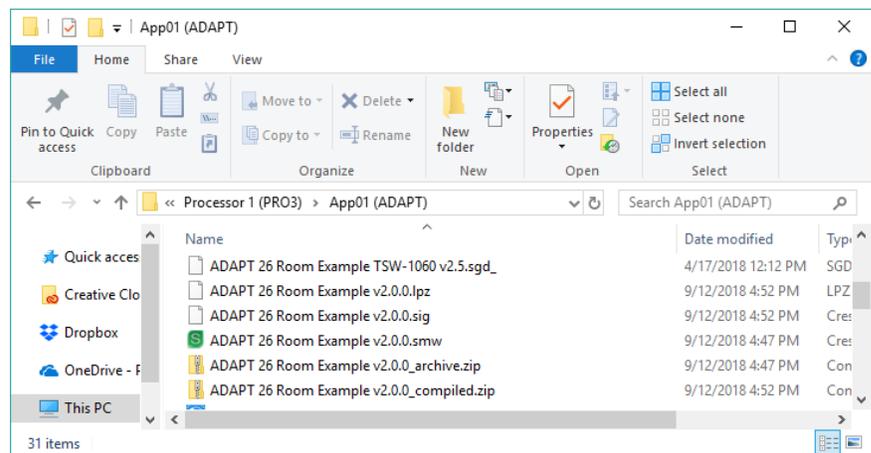
(Figure-3: Interfaces Folder)

- Processor Folder (Figure-4: Processor1). This folder contains the primary ADAPT configuration file and related program directories for each application processor program slot (Note: each is labeled as App0x (name) (x = program Slot number for each separate program that will run on the respective processor for the project.(name) is the Program ID tag selected in the SIMPL Windows program header):



(Figure-4: Processor Folder)

- Processor/App01 Folder (Figure-5: Processor/App01 Folder). This is the working directory for all SIMPL Windows program files and related .lpz, .sig and other compiled files for the processor application program slot (Note: For the example program, ensure that the .sgd files are copied into this directory):

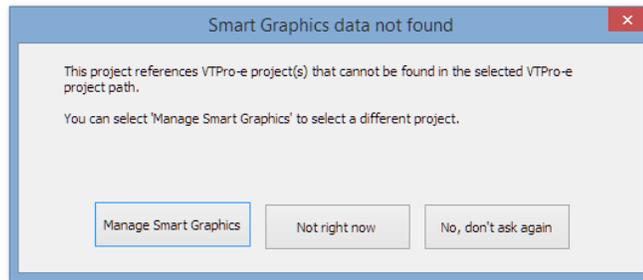


(Figure-5: Processor/App01 Folder)

## Working with Example Programs

The next step is to launch SIMPL Windows and load the demo program, make any necessary processor type changes and compile to prepare to load to your system.

1. Using SIMPL Windows, load the example program (Note: Upon first loading you will see a prompt Figure-6: "Smart Graphics data not found". Be sure to select "No, don't ask again" to keep SIMPL from wanting you to re-manage the Smart Graphics extensions).



(Figure-6: Smart Graphics data not found)

2. If you need to change the processor for your demo, now is the time to go to SIMPL Windows Configure and redefine your processor, make any necessary changes and save the project.
3. Compile the program.

For interfaces included with your sample program/demo:

1. TSW-1060: The .vtz can be loaded directly to the panel or run as an XPanel to demonstrate the functionality of the TSW-1060 (IP ID: 11 is used for the panel/XPanel). No additional changes are required prior to loading.
2. Crestron App (iPad): The included App project can be loaded directly to an iPad running the full version of the Crestron App (IP ID: 12 is used for the iPad). (Note: The demo will NOT run on the free version).
3. Crestron App (iPhone): The included App project can be loaded directly to an iPhone running the full version of the Crestron App (IP ID: 13 is used for the iPhone). (Note: The demo will NOT run on the free version).
4. TSW-760: The .vtz can be loaded directly to the panel or run as an XPanel to demonstrate the functionality of the TSW-760 (IP ID: 14 is used for the panel/XPanel). No additional changes are required prior to loading.



5. TS-1542-C: The .vtz can be loaded directly to the panel or run as an XPanel to demonstrate the functionality of the TS-1542-C (IP ID: 15 is used for the panel/XPanel). No additional changes are required prior to loading.
6. TSR-310: The .vtz can be loaded directly to the panel. As of this writing, Crestron does not support running the TSR-310 as an XPanel. (IP ID: 17 is used for the panel). No additional changes are required prior to loading.
7. TSR-302: The .vtz can be loaded directly to the panel. We have included an XPanel simulator in the Example program (IP ID: 16 is used for the XPanel simulator). Note: The RF Gateway for the actual TSR-302 is set to IP ID: D0 and the TSR-302 is RF ID: 11. No additional changes are required prior to loading.
8. MLX-3. The included .vtz can be sent directly to the MLX-3. (Note: The RF Gateway is set to IP ID: D0 and the MLX-3 is RF ID: 05).



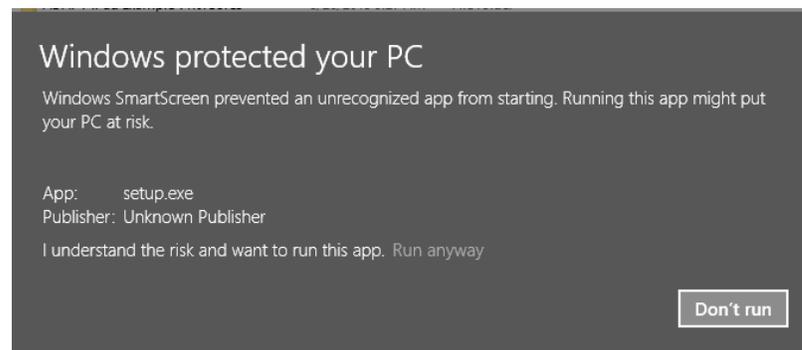
## Installing System Manager

The last step to getting your sample program ready involves installing the ADAPT System Manager Application. Prior to installing System Manager, please ensure the following:

1. System running Atom quad-core processor, 2gb memory, 64gb storage and a monitor with minimum 1280x768 resolution (1920x1080 preferred).
2. Current login is an Administrator level account.
3. Install on Windows 7 or higher with the latest service packs and updates installed.
4. Temporarily suspend anti-virus programs or be prepared to allow/approve any exceptions while installing System Manager.

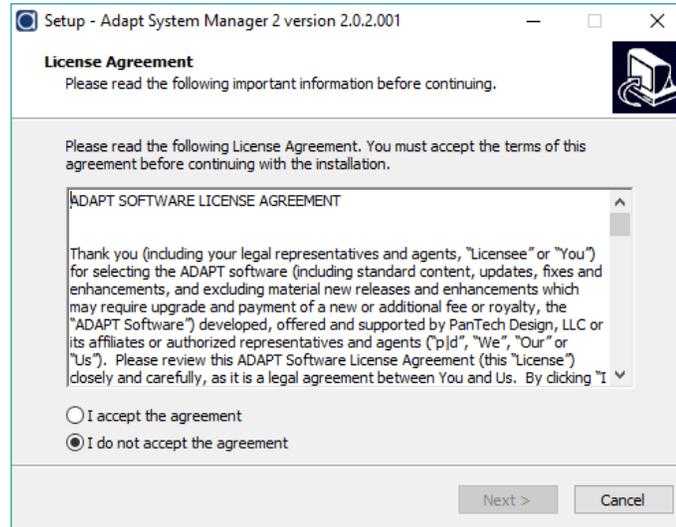
To install ADAPT System Manager on you PC or Tablet;

1. Locate the setup.exe file and run it (Note: Depending on the configuration of version of Windows you might receive a notice that the application is not signed (Figure-7: Windows Protected your PC). This is not to be concerned with and select "Run Anyway".



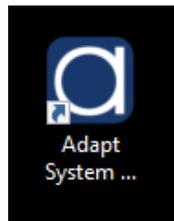
(Figure-7: Windows Protected you PC)

2. Next step, proceed with the installation following the Setup Wizard (Figure-2: PD ADAPT System Manager Setup Wizard).



(Figure-2: PD ADAPT System Manager Setup Wizard)

3. After the installation is complete, select the System Manager icon to launch the ADAPT System Manager (Figure-3: PD ADAPT System Manager Icon).



(Figure-3: PD ADAPT System Manager Icon)

For additional instructions on the use and operation of ADAPT System Manager, refer to the "Help" page in System Manager or visit <https://www.pdadapt.com> for the latest manual and instructions.



## Understanding Processor Activation

As of the February 2016 release of the Adapt Suite, all Crestron processors running an ADAPT program require a Processor Key to function properly. Systems without a Key will be allowed to run in “demo mode” for one hour for testing purposes. After the one-hour timeout, the program will cease to function properly, requiring a reset. This time period lets the programmer load, test and configure the system without actually having to activate the processor they are working with. The Processor Key should be put into System Manager and loaded to the processor when the system is ready to be delivered to site.

The processor activation scheme in ADAPT uses Elliptic Curve Cryptography to generate, validate and activate keys. The generation of Processor Keys is done by the ADAPT Dealer Portal. Please login to the Dealer Portal at [www.pdadapt.com](http://www.pdadapt.com) to purchase Processor Keys. When we generate your Processor Keys, we use your ADAPT License (e.g. 2018101817-1234-12-1) given to you by pdadapt.com. This is the same number you need to enter in the “Adapt License” Bootup module parameter of all of your programs. The generated Processor Keys have your ADAPT License number embedded in them, locking them to your ADAPT License so that no one else can use them. The following is an example of what a Processor Key looks like: RQ2NB-5MLSU-U2HC5-ZBYXK-NR9JV. When you are ready to load your program into the processor that will be installed on site, open the current System.adapt file in System Manager and enter the Processor Key on the Configuration->Activation page. At this point, you can either use the “Online Activate” button next to the Processor Key field (if you are not already connected the button will say “Connect to Controller”), or you can send the configuration. If you choose the latter method, make sure you manually re-extract the configuration file from the processor after loading because the Activation Key that gets generated during the Activation process will be on the processor, but not on your local copy. If you use the Activate button, System Manager will automatically receive and save the Activation Key for you. During the update process, the processor will check that the Processor Key is valid by making sure your ADAPT License number (from the Bootup module) is embedded in it. As long as it is valid, the processor will then activate the Processor Key with our server – locking the physical MAC address of the processor to the Processor Key so that no other processors can use that same Processor Key. The server returns an Activation Key to the processor which gets stored in the configuration file. As long as the Activation Key is in the file when the processor reboots or the program is updated, the processor does not have to re-activate with our server, it does it internally based on the Activation Key.

Generally, it is recommended that a processor be connected to the internet when activation occurs. If internet access is not available at the time of activation, it can be activated manually while offline. Contact PanTech Design with your ADAPT License, Processor Key, and processor MAC address. We can generate and provide an Activation Key which can be entered into System Manager to activate the processor.



## Dynamic IR Drivers for Displays and AV Receivers

In December 2016, the ability to use run-time loadable IR Drivers (.ir files) for Displays and AV Receivers was introduced. Dynamic IR makes programming these devices easier, and can save quite a bit of time during commissioning and troubleshooting. You are no longer required to add IR drivers to specific ports on the Hardware Definitions in the program or spend the time to connect all the control signals to the driver. In addition, testing different functions is as easy as editing the driver in Toolbox and updating the configuration using System Manager – no program re-compile required.

### SIMPL Windows Programming

The latest Display and AvReceiver modules now have a serial output called [Packet\_TX]. When using Dynamic IR, this is the only signal you need. This signal gets connected to a Packet Transmission Device Extender, and is used to transmit the IR command data to the control system device's IR ports. Add the Packet Transmission Device Extender to the overall IR Slot of wherever the IR emitter is connected (either on the control processor itself, or ancillary controls points like DM endpoints), and connect the [Packet\_TX] signal. You can expand the number of inputs on the Packet Transmission extender (Alt+) to have multiple device modules using Dynamic IR on the same piece of control system equipment. Note that the **"in-X\$"** signal designator does NOT determine which actual IR port the device is connected to. The port number is actually included in the formatted data sent in the [Packet\_TX] signal. Define which specific IR port the device is connected to in System Manager and the program will include that number in the packet transmission data. You must have the **Special Symbol Set** enabled in your SIMPL Windows preferences in order to be able to add the Packet Transmission Device Extender. You can still utilize traditional IR with Packet Transmission – even on the same IR port, Devices, like Sources can still be programmed the old way.

### IR Drivers / Toolbox Device Learner

The Button labels in the .ir file are the key to mapping the driver IR functions to the standard ADAPT Display/Receiver functions. The Labels must match the function names listed below **exactly** in order to work. (Note that if you don't have the discrete commands for power and mute, the toggle function is used (if present)). It is not necessary to have all of the input functions in the driver ("IN\_X") unless a source has been assigned to one, or tie-lines from another device have been defined. There is no limit to the functions in the driver, however, the program only looks for functions listed below.

To convert an existing Display or AV Receiver IR driver to be compatible with ADAPT, the following steps are recommended:

1. Open the .ir file in Toolbox using the Device Learner tool.



2. Perform a "Save As" of the file and give the new file name the prefix of ADAPT (e.g. Samsung UN Series.ir -> ADAPT Samsung UN Series.ir). Adding the ADAPT prefix is not a requirement, but helps denote that the driver is known to be compatible with ADAPT. We recommend you save the file into the \Program Files (x86)\Adapt – System Manager\DynamicIR directory so the System Manager File Transfer tool is always up to date if the file is edited at a later time.
3. To avoid confusion, change the Manufacturer field to ADAPT. This ensures any drivers being used from a UserDB location will not appear in SIMPL Windows under the original manufacturer twice.
4. Rename the appropriate functions for the power, volume, and mute commands to match those listed below exactly. (e.g. PowerOn to POWER\_ON).
5. Find the function to be used as Input1 (as defined in System Manager), copy/paste within the file and rename the copy (e.g. Hdmi1(Copy) to IN\_1). This will ensure that the original function is still present and labeled correctly, and the program will use the function you have re-labeled.
6. Repeat step 3 as needed (up to 10 standard inputs are allowed)

After loading, if you find that a function for an input doesn't work correctly, simply edit the name of a different function to "re-assign" it. For example, if you used Hdmi1 as IN\_1, but you actually need the device to go to Hdmi2, delete the current function for IN\_1, copy the Hdmi2 function, rename it IN\_1, and perform a System Manager update. If your driver doesn't contain all the functions needed, open a second instance of Toolbox and open another driver that contains the missing functions. This allows copy and paste of individual functions. The Standard Command drop-down list in Toolbox can be ignored, as the program does not look for this information.

## Standard IR Function Names

POWER\_ON  
POWER\_OFF  
POWER  
VOL+  
VOL-  
MUTE\_ON  
MUTE\_OFF  
MUTE  
IN\_1 thru IN\_10



## System Manager / Loading IR Drivers

The checkbox under the Commands->User Ir radio button in Displays and Receivers for "Use Dynamic IR" brings up a file selection field to search for the driver needed and includes a drop-down list to specify the which IR port number the device is connected to. Once a driver is selected, System Manager will copy that file from the location specified into the \Program Files (x86)\Adapt – System Manager\DynamicIR folder. Copies are filed to this central location to aid in the file transfer process. If updates are made to the file in the original location, the file must be re-selected using the Select IR File button, otherwise the updated file may not be transferred. All .ir files used must reside in the NVRAM\IrDrivers folder on the processor running the ADAPT program. These files can be manually transferred using any FTP client, however using System Manager simplifies this process. Once connected to the processor, go to Tools->File Transfer and click the Dynamic IR tab. This will show the list of the files selected for various Displays and Receivers. If the status is "Not Found" the file cannot be found. If this occurs navigate back to the device page and re-select. If the files appear correctly, simply press "Send IR Files to Control System". The files will be transferred to the correct directory on the processor. Once the driver files are transferred, click the Send button on either the Configuration File tab or the File page to trigger an update. The program will re-read the configuration data and any specified IR drivers.

### Minimum version required for Dynamic IR

ADAPT Display Generic and ADAPT AvReceiver Generic modules v1.2.2

System Manager v1.21.10

AdaptCore.clz 1.1.6198.23836

You can check the core version by typing **ucmd "coreversion"** in a console window while the Adapt program is running.



## Resources

### Logic

#### Logic: Bootup

Symbol Name: ADAPT Bootup

The Bootup module must be defined as the very last symbol in the program. It handles the program bootup sequence and initializes the core SIMPL# logic and all other ADAPT modules. It also defines the file location on the processor for the ADAPT data files. Understanding the bootup sequence is very important – especially as programs become very processing intensive. As soon as the program is loaded into the processor, the core logic is initialized and the ADAPT data files are reviewed. If the file specified by the **JOB Number** parameter doesn't exist a blank file is created. The core then delays for the number of seconds specified by the **Startup Delay Seconds** parameter before continuing the initialization process. This delay is in place to allow the processor to make its connections to hardware (such as devices defined in the IP Table), and to allow third-party SIMPL+ modules, and any program logic driven by logical 1's to complete. Once the delay expires, the Bootup module drives the **INIT** signal high, triggering all ADAPT modules to begin their initialization sequence which is a processor-intensive operation. In large programs it is highly recommended to increase this startup delay which allows the processor to "stabilize" before initializing the ADAPT modules. Upon **INIT** latching high, each module will register with the core and read its data from the data files. If a module's data doesn't exist it will be added to the file with default values. This entire process can take anywhere from 30 seconds to several minutes depending on the size of the program and the startup delay value. Once all modules have finished initializing, the **PROGRAM\_IS\_READY** signal latches high. This signal is intended to let other parts of the program know that the bootup sequence is complete. It is highly recommended that this signal be connected to **ProgramInitComplete** on the processor's SYSTEMMONITOR hardware definition, preventing the next program slot from running during the bootup sequence. Where possible, **PROGRAM\_IS\_READY** should also be used to start any device connection routines – especially when there is continuous polling involved.

#### Parameters

Name	Description	Notes/Examples
JOB Name	String parameter that is used to specify the name of the ADAPT data files.	<i>The value placed in this parameter is prepended to actual data file names (e.g. JOB-XXXX System.adapt). It is recommended that each project be given a unique number or value in order to keep track various ADAPT system data files. It is also recommended to not change this parameter once the program has been</i>



		<i>loaded. If this parameter is changed after the program has already been loaded, the core logic will now look for the new file name – it will most likely not exist, and a new file will be created.</i>
Dealer Name	String parameter indicating your company name.	
Adapt License	String parameter indicating the ADAPT Suite License Number purchased from pdadapt.com.	<i>This parameter is very important. It is used when generating Processor Keys. This field must match the ADAPT License number used to generate the keys by PanTech Design. If not, the Processor Key will be invalid and the processor running this program will not Activate properly forcing it to remain in demo mode.</i>
Processor Name	String parameter that gives the processor that this program will be running on a description.	
Processor IP Address	The IP Address of the processor that this program will ultimately reside on.	<i>This parameter is used by System Manager to aid in loading and configuring a processor.</i>
File Location	Drop-down parameter that tells the program where to look for the ADAPT files on the processor. Valid locations include the root of the internal NVRAM folder and the root of removable media drives.	<i>If this parameter is changed after the program has already been loaded, the new location must already contain the ADAPT data files. Otherwise, the program may create new ones in the new location.</i>
Startup Delay Seconds	Specifies the number of seconds the bootup sequence will delay after the program is loaded, before sending the INIT signal high.	<i>This parameter is intentionally specified as digital (not seconds).</i>

### Signals: Digital Outputs

Name	Description	Notes/Examples
INIT	Latches high once the program initialization sequence has begun. This occurs after the number of seconds specified by the startup delay have elapsed.	<i>Must be connected to all ADAPT modules in order for them to initialize.</i>
PROGRAM_IS_READY	Latches high once the all ADAPT modules have completed their initialization routines, indicating that the program is ready and the system is able to be used.	<i>Should be connected to the ProgramInitComplete signal on the processor's SYSTEMMONITOR hardware definition. Some ADAPT modules may require this signal to complete their initialization sequence.</i>



[Loading_Files]	Optional signal that goes high while the core is performing file system operations. It goes low when the file operations are complete.	
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**Signals: Serial Outputs**

Name	Description	Notes/Examples
[Core_Messages]	Optional signal that outputs serial messages during the bootup sequence. The messages give an indication as to what step the bootup sequence is currently performing.	<i>The serial messages from this output are similar to those seen in console during the bootup sequence.</i>

## Logic: Global Scenes

Symbol Name: ADAPT Global Scenes

The Global Scenes module must be present in the program, and must receive the **INIT** signal from the Bootup module. It is responsible for storing the data for whole-house AV scenes and channel presets. The maximum number of scenes in a program is 24. Scenes are typically created and saved at run-time from a user interface, but can be created and edited in System Manager. This module provides scene recall triggers and scene name feedback. These signals are optional and typically only used in special situations where custom logic is required – the touch panel module includes all required functionality for storing and recalling scenes. Care must be taken when using these optional triggers because the list of scenes is dynamic, and a scene must exist in the data file in order the triggers to work.

Note that when saved, AV scenes store the source and volume level of all rooms that are on. It will ignore any rooms that are off. When a scene is recalled, it will force the rooms that were recorded in the scene to go to the stored source and volume levels. It will not affect any rooms that were off when the scene was saved. Therefore, if you don't want a room to be affected by a scene, make sure it is off when the scene is created or updated.

**Signals: Digital Inputs**

Name	Description	Notes/Examples
INIT	Digital input that triggers the module to initialize and read its data from the core.	<i>Must connect to the Bootup module's INIT digital output.</i>
[All_Off_Scene]	Digital input that sends a Room AV Off command to ALL rooms in the system.	<i>This signal differs from the All_Rooms_Off_Btn on the Touch Panel modules in that the Touch</i>



		<i>Panel will only affect the Rooms in its Rooms List defined in the configuration. This signal affects ALL Rooms.</i>
[Scene{1-24}_Recall]	Optional signals that trigger the recall of scenes with the given number if they exist.	<i>Only used if special custom AV scene recall logic is required.</i>

**Signals: Serial Outputs**

Name	Description	Notes/Examples
[Scene{1-24}_Name]	Optional signals that provide the names of scenes with the given number if they exist.	<i>Only used if special custom AV scene logic is required.</i>

**Signals: Digital Outputs**

Name	Description	Notes/Examples
[All_Off_Scene_Recalling]	Output signal that momentarily goes high, indicating that the All_Off_Scene is currently being recalled.	<i>It is recommended that you use the trailing edge of the Recalling signals to trigger additional logic since this indicates that the scene is done recalling.</i>
[Scene{1-24}_Recalling]	Output signal that momentarily goes high, indicating that the corresponding scene is currently being recalled.	<i>Useful for tying custom logic to accompany the recall of AV scenes. Larger scenes take longer to recall so the timing of these signals should not be relied upon.</i>

## Logic: Room

Symbol Name: ADAPT Room

In ADAPT, a Room is a key logical construct that acts as a “container” of devices. User interfaces connect themselves to rooms, and often trigger the room to perform functions that affect devices, rather than the user interface affecting the devices directly. There must be at least one Room module in the program and a maximum of 100 Rooms are allowed. The Room module must receive the **INIT** signal from the Bootup module. It must be given a unique numeric identifier (different from all other Room modules) in its Room Number parameter. The module has several optional inputs and outputs that provide AV and environmental triggers and feedback. These signals are typically only used for custom logic.

**Parameters**

Name	Description	Notes/Examples
Room Number	Integer parameter that identifies this Room.	<i>Must be a different number from all other Room modules.</i>



### Header Signals: Digital Inputs

Name	Description	Notes/Examples
INIT	Digital input that triggers the module to initialize and read its data from the core.	<i>Must connect to the Bootup module's INIT digital output.</i>

### Header Signals: Digital Outputs

Name	Description	Notes/Examples
[Busy]	Latches high while devices that the Room is logically connected to are busy.	<i>This signal indicates that a device, such as a display or AV Receiver, is busy performing a function. For example, if a display in the room has an Off Delay set to 10 seconds, this signal will go high for 10 seconds when the display is turned off, and will then go low once all devices in the room are no longer busy.</i>

### AV Controls: Digital Inputs

Name	Description	Notes/Examples
[Room_AV_On]	Pulse to send a power on trigger to Audio Zones and Displays that the room is logically connected to.	<i>When a room is told to turn on (as opposed to being sent a Direct Source), it will turn the room on with the source it was previously on before being turned off.</i>
[Room_AV_Off]	Pulse to send a power off trigger to Audio Zones and Displays that the room is logically connected to.	
[Room_AV_Toggle]	Pulse to send a "power toggle" trigger to Audio Zones and Displays that the room is logically connected to.	<i>If the room is considered to be on, an off trigger is sent and vice-versa. If this input triggers an on command, the room will turn on with the source it was previously on before being turned off.</i>
[Room_AV_Vol+]	Momentary input that passes a volume up command to the selected audio device that the room is logically connected to.	<i>The downstream logic determines where to send the volume command. For instance, if the room is using a display to listen to audio, the display will be sent the volume command. If it is listening to speakers from an Audio Switcher, the Audio Zone will be sent the volume command. This applies to all volume and mute commands.</i>
[Room_AV_Vol-]	Momentary input that passes a volume down command to the	



	selected audio device that the room is logically connected to.	
[Room_AV_Mute_On]	Pulse to send a mute on command to the selected audio device that the room is logically connected to.	
[Room_AV_Mute_Off]	Pulse to send a mute off command to the selected audio device that the room is logically connected to.	
[Room_AV_Mute_Toggle]	Pulse to send a mute toggle command to the selected audio device that the room is logically connected to.	
[Disable_Doorbells]	Latch this input high to block any defined doorbell events from affecting the AV in the Room.	
[Use_Display_Audio]	Pulse to switch the Room's audio endpoint over to the Display (if there is one). The default Audio Zone will turn off and the Display volume will ramp up. Volume controls will now affect the Display instead of the Audio Zone.	
[Use_Zone_Audio]	Pulse to switch the Room's audio endpoint over to the Audio Zone (if there is one). The Display's volume will ramp down and the Audio Zone's volume will ramp up. Volume controls will now affect the Audio Zones defined for the Room in the configuration.	

### AV Controls: Analog Inputs

Name	Description	Notes/Examples
[Room_AV_Volume]	Sends an analog volume value to the selected audio device that the room is logically connected to.	<i>Value range (0%-100% or 0d-65535d). The downstream logic determines where to send the volume command. For instance, if the room is using a display to listen to audio, the display will be sent the volume command. If it is listening to speakers from an Audio Switcher, the Audio Zone will be sent the volume command. This applies to all volume and mute commands.</i>
[Room_AV_Direct_Source]	Triggers the room and its connected AV devices to switch to	<i>The value of this signal needs to correspond to the ID parameter that the desired source was given. If a</i>



	the given logical source number. If the room is off, it will be turned on.	<i>source number that does not exist, or is not allowed in the room is sent, the room will do nothing.</i>
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### AV Controls: Digital Outputs

Name	Description	Notes/Examples
[Room_AV_On_FB]	Latches high to indicate that the room is considered to be on.	
[Room_AV_Off_FB]	Latches high to indicate that the room is considered to be off.	
[Room_AV_Mute_On_FB]	Latches high to indicate that the room is currently muted.	

### AV Controls: Analog Outputs

Name	Description	Notes/Examples
[Room_AV_Volume_FB]	Reports the analog volume value of the room.	<i>Value range (0%-100% or 0d-65535d).</i>
[Room_AV_Direct_Source_FB]	Triggers the room and its connected AV devices to switch to the given logical source number. If the room is off, it will be turned on.	<i>The value of this signal needs to correspond to the ID parameter that the desired source was given. If a source number that does not exist, or is not allowed in the room is sent, the room will do nothing.</i>

### AV Controls: Serial Outputs

Name	Description	Notes/Examples
[Room_AV_Source_Name]	Optional signal that provides the name of the Room's currently selected source.	

### Lighting Quick Controls: Digital Inputs

Name	Description	Notes/Examples
[Quick_Lighting_Btn{1-12}]	Digital inputs for triggering the Room's Quick Lighting functions if a Lighting Zone is defined for the Room, and the lighting function exists for that zone.	

### Lighting Quick Controls: Digital Outputs

Name	Description	Notes/Examples
[Quick_Lighting_FB{1-12}]	Digital feedback signals from the Room's associated Lighting Zone, if a Lighting Zone is defined for the Room and the lighting function exists for that zone.	



### Lighting Quick Controls: Serial Outputs

Name	Description	Notes/Examples
[Quick_Lighting_Text{1-12}]	Optional serial signals that provides the names of the Room's Lighting Zone functions.	<i>These are the names of the buttons defined in the settings of the Lighting Zone in System Manager.</i>

### Climate Quick Controls: Digital Inputs

Name	Description	Notes/Examples
[Quick_Climate_Single_Setpoint+]	Raises the single TSTAT set point for the Room's associated thermostat.	<i>Only available if the TSTAT is reporting that it is in Single Setpoint mode.</i>
[Quick_Climate_Single_Setpoint-]	Lowers the single TSTAT set point for the Room's associated thermostat.	<i>Only available if the TSTAT is reporting that it is in Single Setpoint mode.</i>
[Quick_Climate_Dual_Setpoint{1-2}]	Raises the dual TSTAT set point for the Room's associated thermostat.	<i>Only available if the TSTAT is reporting that it is in Dual Setpoint mode.</i>
[Quick_Climate_Dual_Setpoint{1-2}]	Lowers the dual TSTAT set point for the Room's associated thermostat.	<i>Only available if the TSTAT is reporting that it is in Dual Setpoint mode.</i>

### Climate Quick Controls: Digital Outputs

Name	Description	Notes/Examples
[Quick_Climate_Heat_Call_FB]	Digital feedback signal indicating that the Room's associated TSTAT is performing a Heat Call.	
[Quick_Climate_Cool_Call_FB]	Digital feedback signal indicating that the Room's associated TSTAT is performing a Cool Call.	
[Quick_Climate_Fan_Call_FB]	Digital feedback signal indicating that the Room's associated TSTAT is performing a Fan Call.	
[Quick_Climate_Use_Single_Setpoint_FB]	Digital feedback signal indicating that the Room's associated TSTAT is set to use a single auto set point.	
[Quick_Climate_Use_Dual_Setpoints_FB]	Digital feedback signal indicating that the Room's associated TSTAT is set to use individual heat and cool set points.	

### Climate Quick Controls: Serial Outputs

Name	Description	Notes/Examples
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[Quick_Climate_Current_Temp]	Serial signal for displaying the current temperature of the Room's associated TSTAT.	
[Quick_Climate_Single_Setpoint]	Serial signal for displaying the current single (auto) set point of the Room's associated TSTAT.	
[Quick_Climate_Dual_Setpoint1]	Serial signal for displaying the current heat set point of the Room's associated TSTAT.	
[Quick_Climate_Dual_Setpoint2]	Serial signal for displaying the current cool set point of the Room's associated TSTAT.	

**Doorlocks Quick Controls: Digital Inputs**

Name	Description	Notes/Examples
[Quick_Doorlocks_Lock_Btn]	Sends the lock signal to all of the Room's associated door locks.	
[Quick_Doorlocks_Unlock_Btn]	Sends the unlock signal to all of the Room's associated door locks.	

**Doorlocks Quick Controls: Digital Outputs**

Name	Description	Notes/Examples
[Quick_Doorlocks_Locked_FB]	Digital signal indicating that all of the Room's associated door locks are reporting as being locked.	
[Quick_Doorlocks_Unlocked_FB]	Digital signal indicating that all of the Room's associated door locks are reporting as being unlocked.	

**Doorlocks Quick Controls: Serial Outputs**

Name	Description	Notes/Examples
[Quick_Doorlock_Status]	Serial signal for displaying the last status update from the Room's default door lock.	
[Quick_Doorlock_Event]	Serial signal for displaying the last event notice from the Room's default door lock.	

**Windows Quick Controls: Digital Inputs**

Name	Description	Notes/Examples
[Quick_Windows_Btn{1-12}]	Digital inputs for triggering the Room's Quick Windows functions if a Windows Zone is defined for the Room, and the windows function exists for that zone.	

**Windows Quick Controls: Digital Outputs**

Name	Description	Notes/Examples
[Quick_Windows_FB{1-12}]	Digital feedback signals from the Room's associated Windows Zone, if a Windows	



	Zone is defined for the Room and the windows function exists for that zone.	
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### Windows Quick Controls: Serial Outputs

Name	Description	Notes/Examples
[Quick_Windows_Text{1-12}]	Optional serial signals that provides the names of the Room's Windows Zone functions.	<i>These are the names of the buttons defined in the settings of the Windows Zone in System Manager.</i>

### Room Info: Digital Outputs

Name	Description	Notes/Examples
[Has_Audio_Zone]	Indicates the Room has at least one Audio Zone associated to it.	
[Has_Display]	Indicates the Room has at least one Display associated to it.	
[Has_Lighting]	Indicates the Room has a Lighting Zone associated to it.	
[Has_Climate]	Indicates the Room has a TSTAT associated to it.	
[Has_Doorlocks]	Indicates the Room has at least one TSTAT associated to it.	
[Has_Windows]	Indicates the Room has a Windows Zone associated to it.	

### Room Info: Serial Outputs

Name	Description	Notes/Examples
[Room_Name]	Optional serial signal containing the Room Name.	

## User Interfaces

### User Interfaces: Touch Panel

Symbol Name: ADAPT Touch Panel

The Touch Panel module is the most complicated and easily misconfigured module in the ADAPT Suite. Behavior of a Touch Panel in ADAPT is determined by the data configured in System Manager. It is highly recommended that you start by implementing one Touch Panel module completely, compile to make sure all signals are correctly connected, and then use the quick duplication functions in SIMPL Windows to create multiple instances.

Each Touch Panel module in the program must be given a unique Touch Panel Number parameter. The module is broken up into signal groups that represent the various connections to Smart Objects,



standard joins, and optional signals. The signal lists below are presented in top-down order as shown on the module itself.

Begin the process of adding a Touch Panel to the program by first assigning it a VTPro-e project via the Smart Graphics Management screen. The Example projects included in the ADAPT Suite are authored with all of their standard Smart Objects numbered in the order in which they appear on the module. It may be necessary to use the "Sort Smart Graphics Extenders" option in the right-click menu to force the Objects to appear in numeric order.

Fill out the **INIT** signal and assign the module a unique Touch Panel number parameter (typically starting at 001d). The Standard\_Joins section of the module can be completed quickly by using the Auto-Import feature in SIMPL Windows. In the Program View, right-click and drag from the Touch Panel module symbol to the hardware definition and select "Import User Interface Connection Logic". Once selected all standard ADAPT digital, analog, and serial joins are completed automatically. Next, add an "Ethernet Offline Manager" Device Extender to your hardware definition. Fill out the Offline and Update-Request signals and connect them to the corresponding signals at the top of the module. If this module is to be connected to an instance of the Crestron App, add the "Crestron App Ethernet Reserved Joins" Device Extender to the hardware definition and connect the two **Connected\_To\_AddressX** signals. If it is desired to have the panel wake up whenever a doorbell or intercom event occurs, connect the **[Wake\_Panel]** signal to the wake input of a Touch Panel Sleep/Wake Manager Device Extender. Next, add a VOIP Reserved Joins extender and connect the appropriate signals in the VoIP\_Reserved\_Joins section of the module if RAVA intercom functionality is desired.

Now, expand and connect each of the module's signal groups to the corresponding Smart Object in the hardware definition. This step must be performed manually and is susceptible to mistakes, so take care when defining and attaching these signals. To keep your place, it is recommended that you open a signal group, define and attach its signals, then use Alt-F11 to collapse all signal groups again before proceeding to the next group. The signals on the module that connect to Smart Objects have been given descriptive names to aid this process. Pay close attention to the signal names in order to connect them to the correct spot on the Smart Object. For instance, the Navigation List uses the "List\_ItemX\_Enabled" digitals, while other lists do not. The recommended process for connecting these signals is to highlight the top signal in a given group of signals with the same name (e.g. "Navigation\_List\_Item1\_Selected"). Press the Enter key twice to auto-name the signal. Highlight it again and press F9. Rename the "S-X.X.X.X" portion of the signal name with your desired prefix for this Touch Panel (e.g. rename "S-3.1.1.1" to "tp001"). Then highlight the signals beneath the one you have defined through the end of the block of signals with sequential names and press F4 to auto-increment the block of signals. Then copy and paste the entire block onto the Smart Object's corresponding signal block. For convenience, none of the List Objects utilize any serial signals – only digital and analog signals. The



serial signals for these Lists are part of the Standards Joins group and get connected automatically during the Auto-Import process.

Note that the signals in the Source\_List group should be connected to both the Vertical and Horizontal Source List Objects. Additionally, be aware that the signals on the Controls List also exist as part of the Standard Joins. This means after using the auto-import function, these signals will already be defined on the module. Do not forget to also connect these to the Controls List Smart Object, along with the Number\_Of\_Items analog.

There is a section at the bottom of the module for Optional Controls. Optional Controls are typically only used for custom programming logic with one exception – Crestron’s Media Player. Use of Crestron’s Media Player Smart Object automatically includes an instance of the Media Server Object Router module into your program when assigned to a Touch Panel. This Router module should be placed in the Touch Panel folder. In order for the Media Player to function properly, this module must be filled out correctly and attached to the Smart Object hardware definition. The **Device\_Select** signal on the Router module also must be defined. Connect this signal to both the **[Source\_To\_Control]** and **[AV\_Direct\_Room\_Source\_FB]** signals on the Touch Panel module (in the Optional Controls group). The most efficient way to handle this is to define the Server Connection CRPC signals and Offline signals on the Device number line that corresponds to the Source Number assigned your source. For instance, if a Source CEN-NSP-1 defined at Source Number 7, attach its CRPC and Offline signals to the line marked as Device\_7. If the Source Number is greater than 24 or you cannot line the Source Number up to match the Router module’s Device scheme, equate both of the above signals to the Source Number that have been assigned (e.g. 7d), then use the equate outputs to initialize the **Device\_Select** signal to the correct Device number. For example, if you have a CEN-NSP-1 defined as Source Number 7, and the CRPC and Offline signals are connected to Device\_1 on the Router module, use one analog equate symbol connected to **[Source\_To\_Control]** and one connected to **[AV\_Direct\_Room\_Source\_FB]** – both looking for the value 7d. Connect the digital outputs of both of the equate symbols to a single analog initialize symbol. Both inputs should set the output to 1d (matching the Device signals used on the Router module). The output of the analog INIT symbol can be connected to the **Device\_Select** on the Router module.

**Parameters**

Name	Description	Notes/Examples
TouchPanel Number	Integer parameter that identifies this Touch Panel.	<i>Must be a different number from all other Touch Panel modules.</i>

**Header Signals: Digital Inputs**

Name	Description	Notes/Examples
INIT	Digital input that triggers the module to initialize and read its data from the core.	<i>Must connect to the Bootup module’s INIT digital output.</i>



Offline	Connect from Ethernet Offline Manager Device Extender.	
Touch_Activity_fb	Connect from Touch Detection Device Extender.	<i>Used for timing out to default Rooms and Pages.</i>

#### Header Signals: Digital Outputs

Name	Description	Notes/Examples
Update_Request	Connect to Ethernet Offline Manager Device Extender.	
[Wake_Panel]	Connect to Touch Panel Sleep/Wake Manager.	<i>Optional signal that should be connected if it desired to always wake the touch panel upon a doorbell or intercom event.</i>

#### Header Signals: Analog Outputs

Name	Description	Notes/Examples
Touch_Activity_Time	Connect to the Touch Detection Device Extender on the Hardware Definition.	

#### VoIP Reserved Joins: Digital Inputs

Name	Description	Notes/Examples
[Intercom_Call_Active_fb]	Connect to VOIP Reserved Joins Device Extender CallActive_fb signal.	
[Intercom_Incoming_Call_fb]	Connect to VOIP Reserved Joins Device Extender Incoming_fb signal.	
[Intercom_Do_Not_Disturb_fb]	Connect to VOIP Reserved Joins Device Extender Do_Not_Disturb_fb signal.	
[Intercom_Auto_Answer_fb]	Connect to VOIP Reserved Joins Device Extender Auto_Answer_fb signal.	

#### VoIP Reserved Joins: Serial Inputs

Name	Description	Notes/Examples
[Intercom_My_Uri_fb]	Connect to VOIP Reserved Joins Device Extender My_URI_fb signal.	
[Intercom_Incoming_URI_fb]	Connect to VOIP Reserved Joins Device Extender Incoming_URI_fb signal.	

#### VoIP Reserved Joins: Digital Outputs

Name	Description	Notes/Examples
[Intercom_Answer]	Connect to VOIP Reserved Joins Device Extender Answer signal.	
[Intercom_Hangup]	Connect to VOIP Reserved Joins Device Extender Hangup signal.	



### VoIP Reserved Joins: Serial Outputs

Name	Description	Notes/Examples
[Intercom_String_To_Dial]	Connect to VOIP Reserved Joins Device Extender String_To_Dial signal.	

### Navigation List: Analog Inputs

Name	Description	Notes/Examples
Navigation_List_Item_Clicked	Navigates to the selected item. The functionality of Navigation List items is defined in System Manager.	Connect to the Item Clicked analog signal on the output of the Navigation List Smart Object.

### Navigation List: Digital Outputs

Name	Description	Notes/Examples
Navigation_List_Item{1-50}_Selected	Digital feedback for highlighting Navigation List items.	Connect this block of signals to the Item Selected inputs in the <b>Press</b> group on the Navigation List Smart Object.
Navigation_List_Item{1-50}_Enabled	Digital signals that enable/disable Navigation List items.	Connect this block of signals to the Item Enabled inputs in the <b>Enable</b> group on the Navigation List Smart Object.
Navigation_List_Item{1-50}_Visible	Digital signals that show/hide Navigation items.	Connect this block of signals to the Item Visible inputs in the <b>Visible</b> group on the Navigation List Smart Object.

### Navigation List: Analog Outputs

Name	Description	Notes/Examples
Navigation_List_Number_Of_Items	Defines the length of the Navigation List.	Connect to the Set Number of Items analog input on the Navigation List Smart Object.
Navigation_List_Item{1-50}_Icon	Analog signals that set the icons for the Navigation List items.	Connect this block of signals to the Set Item Icon Analog inputs in the <b>Item Icons</b> group on the Navigation List Smart Object.

### Room List: Analog Inputs

Name	Description	Notes/Examples
Room_List_Item_Clicked	Connects the Touch Panel to the selected Room. The Rooms List is defined in System Manager.	Connect to the Item Clicked analog signal on the output of the Room List Smart Object.

### Room List: Digital Outputs

Name	Description	Notes/Examples
Room_List_Item{1-100}_Selected	Digital feedback for highlighting Rooms List items.	Connect this block of signals to the Item Selected inputs in the <b>Press</b>



		<i>group on the Navigation List Smart Object.</i>
Room_List_Item{1-100}_Enabled	Digital output for enabling/disabling Rooms List selection items.	<i>These outputs only go low if the touch panel selects an Area in which there is a Room that is not in the Touch Panel's Allowed Rooms list.</i>

**Room List: Analog Outputs**

Name	Description	Notes/Examples
Room_List_Number_Of_Items	Defines the length of the Rooms List.	<i>Connect to the Set Number of Items analog input on the Room List Smart Object.</i>

**Source List: Analog Inputs**

Name	Description	Notes/Examples
Source_List_Item_Clicked	Sets the current Room's Source to the selected item.	<i>Connect to the Item Clicked analog signal on the output of the Source List Smart Object. There are typically 2 separate Smart Objects defined for the Source List due to the fact that having one scroll vertically and one horizontally requires unique Smart Object ID's for each in VTPro-e. These two objects are functionally identical and share the same signals.</i>

**Source List: Digital Outputs**

Name	Description	Notes/Examples
Source_List_Item{1-36}_Selected	Digital feedback for highlighting Source List items.	<i>Connect this block of signals to the Item Selected inputs in the <b>Press</b> group on the Source List Smart Object.</i>
Source_List_Item{1-36}_Visible	Digital signals that show/hide Source List items.	<i>Connect this block of signals to the Item Visible inputs in the <b>Visible</b> group on the Source List Smart Object.</i>

**Source List: Analog Outputs**

Name	Description	Notes/Examples
Source_List_Number_Of_Items	Defines the length of the Source List.	<i>Connect to the Set Number of Items analog input on the Source List Smart Object.</i>
Source_List_Item{1-36}_Icon	Analog signals that set the icons for the Source List items.	<i>Connect this block of signals to the Set Item Icon Analog inputs in the <b>Item Icons</b> group on the Source List Smart Object.</i>



### Controls List: Digital Inputs

Name	Description	Notes/Examples
Control_List_Item{1-100}_*	Device List Control inputs.	Connect this block of signals to the Item Pressed outputs in the <b>Press</b> group on the Source List Smart Object. Note that the first 50 signals have join number suffixes. This is because they are also attached by default to the normal press joins of the touch panel hardware definition to give flexibility in case they need to be used as actual buttons instead of a list.

### Controls List: Digital Outputs

Name	Description	Notes/Examples
Control_List_Item{1-100}_FB*	Feedback for Device List Control.	Connect this block of signals to the Item Selected inputs in the <b>Press</b> group on the Source List Smart Object. Note that the first 50 signals have join number suffixes. This is because they are also attached by default to the normal press joins of the touch panel hardware definition to give flexibility in case they need to be used as actual buttons instead of a list.

### Controls List: Analog Outputs

Name	Description	Notes/Examples
Control_List_Number_Of_Items	Defines the length of the Control List.	Connect to the Set Number of Items analog input on the Controls List Smart Object.

### Device UDLR: Digital Inputs

Name	Description	Notes/Examples
Device_UDLR_{Up, Down, Left, Right, OK}_Btn	These signals activate Standard digital joins 141-145, respectively.	Connect this block of signals to the corresponding outputs on the Device UDLR Smart Object.

### Scenes List: Analog Inputs

Name	Description	Notes/Examples
Multiroom_Scene_List_Item_Clicked	Recalls selected scene.	Connect to the Item Clicked analog signal on the output of the Scenes List Smart Object.



Multiroom_Scene_List_Item_Held	Edits selected scene.	Connect to the Item Held analog signal on the output of the Scenes List Smart Object.
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### Scenes List: Analog Outputs

Name	Description	Notes/Examples
Multiroom_Scenes_List_Num_Lines	Defines the length of the Scenes List.	Connect to the Set Number of Items analog input on the Scenes List Smart Object.

### Multiroom Rooms List: Digital Inputs

Name	Description	Notes/Examples
Multiroom_Room{1-100}_Select	Digital selections from the Multiroom Rooms List.	Connect this block of signals to the Item Pressed outputs in the <b>Press</b> group on the Multiroom Rooms List Smart Object.

### Multiroom Rooms List: Digital Outputs

Name	Description	Notes/Examples
Multiroom_Room{1-100}_Selected	Digital feedback for highlighting or checkboxing items in the Multiroom Rooms List.	Connect this block of signals to the Item Selected inputs in the <b>Press</b> group on the Multiroom Rooms List Smart Object.
Multiroom_Room{1-100}_Enabled	Digital output for enabling/disabling Multiroom Rooms List selection items.	These outputs only go low if the touch panel selects an Area in which there is a Room that is not in the Touch Panel's Allowed Rooms list.

### Multiroom Rooms List: Analog Outputs

Name	Description	Notes/Examples
Multiroom_List_Number_of_Items	Defines the length of the Multiroom Rooms List.	Connect to the Set Number of Items analog input on the Multiroom Rooms List Smart Object.
Multiroom_Room{1-100}_Icon	Analog value representing the icon state of the Multiroom Rooms List Item.	Connect to the Set Item Icon Analog inputs on the Multiroom Rooms List Smart Object.

### Multiroom Source List: Analog Inputs

Name	Description	Notes/Examples
Multiroom_Source_List_Item_Clicked	Sets one or more Rooms' Source to the selected item.	Connect to the Item Clicked analog signal on the output of the Multiroom Source List Smart Object. The Multiroom Source List is defined in System Manager in Global Settings.



### Multiroom Source List: Digital Outputs

Name	Description	Notes/Examples
Multiroom_Source_List_Item{1-36}_Selected	Digital feedback for highlighting Multiroom Source List items.	Connect this block of signals to the <i>Item Selected</i> inputs in the <b>Press</b> group on the Multiroom Source List Smart Object.
Multiroom_Source_List_Item{1-36}_Visible	Digital signals that show/hide Multiroom Source List items.	Connect this block of signals to the <i>Item Visible</i> inputs in the <b>Visible</b> group on the Multiroom Source List Smart Object.

### Multiroom Source List: Analog Outputs

Name	Description	Notes/Examples
Multiroom_Source_List_Num_Lines	Defines the length of the Multiroom Source List.	Connect to the <i>Set Number of Items</i> analog input on the Multiroom Source List Smart Object.
Multiroom_Source_List_Icon{1-36}	Analog signals that set the icons for the Multiroom Source List items.	Connect this block of signals to the <i>Set Item Icon</i> Analog inputs in the <b>Item Icons</b> group on the Multiroom Source List Smart Object.

### Camera List: Analog Inputs

Name	Description	Notes/Examples
[Camera_List_Item_Clicked]	Set the selected camera as the active camera for viewing and controlling from the Touch Panel.	Connect to the <i>Item Clicked</i> analog signal on the output of the Camera List Smart Object.

### Camera List: Digital Outputs

Name	Description	Notes/Examples
[Camera_List_Item{1-100}_Selected]	Digital feedback for highlighting Camera List items.	Connect this block of signals to the <i>Item Selected</i> inputs in the <b>Press</b> group on the Camera List Smart Object.

### Camera List: Analog Outputs

Name	Description	Notes/Examples
[Camera_List_Num_Lines]	Defines the length of the Cameras List.	Connect to the <i>Set Number of Items</i> analog input on the Camera List Smart Object.

### Displays List: Analog Inputs

Name	Description	Notes/Examples
[Room_Display_List_Item_Clicked]	Sets the selection as the current Display to control in the connected Room.	Connect to the <i>Item Clicked</i> analog signal on the output of the Displays List Smart Object.



### Displays List: Digital Outputs

Name	Description	Notes/Examples
[Room_Display_List_Item{1-6}_Selected]	Digital feedback for highlighting Display List items.	Connect this block of signals to the <i>Item Selected</i> inputs in the <b>Press</b> group on the Displays List Smart Object.

### Displays List: Analog Outputs

Name	Description	Notes/Examples
[Room_Display_List_Num_Lines]	Defines the length of the Display List.	Connect to the <i>Set Number of Items</i> analog input on the Displays List Smart Object.

### Intercom List: Analog Inputs

Name	Description	Notes/Examples
[Intercom_List_Item_Clicked]	Selects a Touch Panel to initiate an intercom call to from the Intercom List.	Connect to the <i>Item Clicked</i> analog signal on the output of the Intercom List Smart Object.

### Intercom List: Digital Outputs

Name	Description	Notes/Examples
[Intercom_List_Item{1-50}_Enabled]	Digital feedback for enabling/disabling selections in the Intercom List. Panels will be disabled when they are in an active call, if they have their Do Not Disturb feedback high, or if this is the panel we're calling from (panels cannot call themselves).	Connect this block of signals to the <i>Item Enabled</i> inputs in the <b>Enable</b> group on the Displays List Smart Object.
[Intercom_List_Item{1-50}_Visible]	Digital feedback for showing/hiding items in the Intercom List. Only panels that are Online are visible.	Connect this block of signals to the <i>Item Visible</i> inputs in the <b>Visible</b> group on the Displays List Smart Object.

### Standard Joins: Digital Inputs

Name	Description	Notes/Examples
Room_AV_Off_Btn	Turns the currently connected Room off.	<i>This signal always propagates the OFF logic even if the Room is considered to already be off.</i>
Other_Rooms_Off_Btn	Turns all but the currently connected Room off.	<i>Only affects Rooms that are in this Touch Panel's Rooms List in the System Manager data.</i>
All_Room_Off_Btn	Turns all Rooms off, including the current Room.	<i>Only affects Rooms that are in this Touch Panel's Rooms List in the System Manager data.</i>
Room_Vol+_Btn	Momentary input to raise the volume in the current Room.	



Room_Vol-_Btn	Momentary input to lower the volume in the current Room.	
Room_Vol_Mute_Btn	Toggles the volume mute state of the current room.	<i>The mute state is set to unmute if muted while Vol+/- are pressed. It also reverts to unmute after the room is turned off.</i>
Area_Off_Btn	Turns the Rooms off in the currently selected Area.	
Home_Btn	Navigates to the Home Page and logically disconnects from the controls of any connected devices.	<i>The Home Page number (1-12) that appears on the Touch Panel is determined by the System Manager data.</i>
Back_Btn	Navigate to the previous page or subpage until the Home Page is reached.	<i>The Back button will cycle back through a device's control subpages before page-flipping to the previous page.</i>
Room_List_Btn	Shows/hides the Room List popup page.	<i>Only available if Roaming is enabled in System Manager for this Touch Panel.</i>
Source_Select_Btn	Shows/hides the Sources List popup page.	
Source_List_Close_Btn	Closes the Sources List popup page.	
Local_Device_Btn	Connects the Touch Panel to the current Room's device controls for the given context. Not available if the Room is not associated with a local device of the current device type in System Manager.	<i>Applies to Lighting, Climate, Windows, and Doors.</i>
Global_Device_Btn	Connects the Touch Panel to the Global device of a given type. Only available if the Touch Panel is allow to see the Global of the current device type in System manager.	<i>Applies to Lighting, Climate, Windows, and Doors.</i>
Media_Page_Btn	Navigates to the Media Page.	<i>The connected Room's current Source controls are displayed. If the Room is OFF, the Source List is displayed.</i>
Lights_Page_Btn	Navigates to the Lighting Page.	<i>Displays the controls for the Lighting Zone associated with the current Room. If there isn't one associated, and the Touch Panel is set to be allowed to see Global Lighting in System Manager, the Lighting System controls are displayed.</i>
Climate_Page_Btn	Navigates to the Climate Page.	<i>Displays the controls for the TSTAT associated with the</i>



		<i>current Room. If there isn't one associated, and the Touch Panel is set to be allowed to see Global Climate, the Global Climate controls are displayed.</i>
Security_Page_Btn	Navigates to the Security Page.	
Cameras_Page_Btn	Navigates to the Cameras Page.	
Windows_Page_Btn	Navigates to the Windows Page.	<i>Displays the controls for the Windows Zone associated with the current Room. If there isn't one associated, and the Touch Panel is set to be allowed to see Global Windows, the Windows System controls are displayed.</i>
Doors_Page_Btn	Navigates to the Doors Page.	<i>Displays the controls for the Doorlock associated with the current Room. If there isn't one associated, and the Touch Panel is set to be allowed to see Global Doors, the Doorlock System controls are displayed.</i>
Weather_Page_Btn	Navigates to the Weather Page.	
Intercom_Page_Btn	Navigates to the Intercom Page.	
Doorbell_Page_Btn	Navigates to the Doorbell Page.	
Page15_Btn	Navigates to miscellaneous Page 15.	
Page16_Btn	Navigates to miscellaneous Page 16.	
Page17_Btn	Navigates to miscellaneous Page 17.	
Page18_Btn	Navigates to miscellaneous Page 18.	
Page19_Btn	Navigates to miscellaneous Page 19.	
Page20_Btn	Navigates to miscellaneous Page 20.	
Multiroom_Vol+_Btn	Momentary input to raise the volume in the current Multiroom UI context.	<i>Affects the Rooms currently selected on the Multiroom page.</i>
Multiroom_Vol-_Btn	Momentary input to lower the volume in the current Multiroom UI context.	<i>Affects the Rooms currently selected on the Multiroom page.</i>
Multiroom_Zones_Off_Btn	Turns off Rooms in the current Multiroom UI context.	<i>Affects the Room currently selected on the Multiroom page.</i>
Multiroom_Clear_Btn	Clears the current Room selections on the Multiroom Rooms Checkbox List.	
Multiroom_Selected_All_Btn	Selects all Rooms on the Multiroom Rooms Checkbox List.	<i>If a source is selected before pressing this button, all Rooms will go to that source.</i>



Multiroom_Control_Source_Btn	Navigates and connects to the controls of the currently selected Multiroom source.	<i>Visibility is dependent upon a source being selected.</i>
Multiroom_Multi_Mode_Btn	Sets the current Multiroom UI logic to Multiple Rooms, allowing multiple Rooms' AV to be controlled together.	<i>The list of sources available in this mode is defined in System Manager.</i>
Multiroom_Single_Mode_Btn	Sets the current Multiroom UI logic to Individual Rooms.	<i>The list of sources available in this mode are defined by the selected Room's Sources Allowed List in System Manager.</i>
Multiroom_Scenes_Btn	Sets the current Multiroom UI logic to Scenes, displaying the Scenes controls for adding and editing.	
Area_Select_Next_Btn	Selects the next Area to populate the Rooms List with.	<i>The Touch Panel must have the option enabled for using Areas in System Manager.</i>
Area_Select_Prev_Btn	Selects the previous Area to populate the Rooms List with.	<i>The Touch Panel must have the option enabled for using Areas in System Manager.</i>
Room_Display_List_Btn	Shows/hides the Display Selection List.	<i>Only visible if the current Room has more than one Display associated with it.</i>
Share_Btn	Shows_hides the Share List allowing the connected Room's current source to be sent to other Rooms in the list.	<i>Only appears if the Room's current Source is defined in the Multiroom Sources List in System Manager.</i>
Doorbell_Room_Cancel_Btn	Cancels a doorbell event in the currently connected Room, reverting the source and volume level back to where they were before the doorbell event.	
Doorbell_All_Cancel_Btn	Cancels a doorbell event globally, reverting all Rooms' source and volume level back to where they were before the doorbell event.	
Doorbell_Intercom_Answer_Btn	Causes the panel to create an intercom connection to the doorbell logic's associated doorstation intercom address. Ends the doorbell event for all other touch panels.	
Doorbell_Intercom_End_Call_Btn	Ends an intercom call to a doorstation.	
Page1_Home_Type{0-11}_Page_FB*	Page feedback from the Touch Panel that lets the system know which page the Touch Panel is actually displaying.	<i>The Home Page Type for a Touch Panel is defined in System Manager.</i>
Page{2-20}_*_Page_FB*	Page feedback from the Touch Panel that lets the system know which page the Touch Panel is actually displaying.	



Device_Subpage{1-10}_Btn*	Displays the selected subpage within the current device controls.	<i>Device Subpages are mutually exclusive, and each Touch Panel keeps track of which subpage it is viewing.</i>
Device_Btn{121-420}	Standard digital inputs for controlling devices when a Touch Panel is directly connected to that device. Since the joins are reused across all devices, the device module itself is where the functionality for these buttons is defined.	
Quick_Source_Btn{421-470}	Quick digital inputs for controlling Sources. These signals actually flow through the Room logic to the Source device, allowing handheld interfaces like the TSR-302 to have their hard keys always control the Room's current source regardless of which page the Touch Panel is displaying.	<i>These quick controls can appear on any or all pages of the UI, allowing constant access to basic controls of the selected Room's current source.</i>
Quick_Lighting_Btn{471-482}	Quick digital inputs for controlling the lights in the current Room.	<i>These quick controls can appear on any or all pages of the UI, allowing constant access to basic controls of the selected Room's lights.</i>
Quick_Climate_Single_Setpoint+_Btn483	Raises the single TSTAT set point for the current room.	<i>Only available if the TSTAT is reporting that it is in Single Setpoint mode.</i>
Quick_Climate_Single_Setpoint-_Btn484	Lowers the single TSTAT set point for the current room.	<i>Only available if the TSTAT is reporting that it is in Single Setpoint mode.</i>
Quick_Climate_Dual_Setpoint{1-2}+_Btn*	Raises the dual TSTAT set point for the current room.	<i>Only available if the TSTAT is reporting that it is in Dual Setpoint mode.</i>
Quick_Climate_Dual_Setpoint{1-2}-_Btn*	Lowers the dual TSTAT set point for the current room.	<i>Only available if the TSTAT is reporting that it is in Dual Setpoint mode.</i>
Quick_Doorlock_Lock_Btn495	Sends all doorlocks associated with the current Room a Lock command.	
Quick_Doorlock_Unlock_Btn496	Sends all doorlocks associated with the current Room an Unlock command.	
Quick_Windows_Btn{497-508}	Quick digital inputs for controlling the window treatments in the current room.	
Local_Device{1-20}_Select_Btn*	Displays the full controls of a specific device from that device's global controls page.	



Set_Current_Room_To_Default_Btn	Settings button that tells the Touch Panel that the currently selected Room should be its default Room.	<i>If the Default Room Timeout is greater than 0, the Touch Panel will automatically re-select the Default Room after the specified period of inactivity.</i>
Default_Room_Timeout+_Btn	Increases the Default Room Timeout by one minute with each rising edge.	
Default_Room_Timeout-_Btn	Decreases the Default Room Timeout by one minute with each rising edge.	
Default_Page_Timeout+_Btn	Increases the Default Page Timeout by one minute with each rising edge.	
Default_Page_Timeout-_Btn	Decreases the Default Page Timeout by one minute with each rising edge.	
Default_Page_*_Btn	Settings button that tells the Touch Panel that the selected page should be its default page.	<i>If the Default Page Timeout is greater than 0, the Touch Panel will automatically navigate to the Default Page after the specified period of inactivity.</i>
Multiroom_New_Scene_Btn	Shows the Scene Name Keyboard Popup for creating a new scene.	<i>Only visible if there are 24 scenes or less.</i>
Multiroom_Replace_Scene_Btn	Shows the Scene Name Keyboard for updating the currently selected scene with the latest system state.	<i>Scenes are selected for replacement/deletion by holding an item in the list for 2 seconds.</i>
Multiroom_Delete_Scene_Btn	Deletes the currently selected scene.	
Multiroom_Keyboard_Save_Btn	Commits the changes made to a scene (either new or updated).	
Multiroom_Keyboard_Cancel_Btn	Cancels the operation of adding or updating a scene.	
Multiroom_Keyboard_*_btn	Keyboard inputs for naming scenes.	
Multiroom_Scene{1-24} Recall_Btn	Recalls the given scene number if it exists.	<i>Press-and-hold functionality does not affect these signals for replacement/deletion.</i>

### Standard Joins: Analog Inputs

Name	Description	Notes/Examples
Room_Volume_Slider	Directly sets the connected Room's volume level.	<i>Value range (0%-100% or 0d-65535d).</i>
Background_Select_FB	Feedback from the Touch Panel project's Background Selector Object.	<i>If a Touch Panel goes offline, the program holds this value and resends it once the panel comes back on line. Does not persist through a program reset/reboot.</i>
Device_Act{21-40}	Standard analog inputs for controlling device when a Touch Panel is directly connected to that device. Since the joins are reused across all devices, the device	



	module itself is where the functionality for these signals is defined.	
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**Standard Joins: Digital Outputs**

Name	Description	Notes/Examples
Room_AV_Off_FB	Indicates that the currently connected Room is off.	
Room_AV_On_FB	Indicates that the currently connected Room is on.	
Show_Volume_Feedback	Sets visibility of the volume % indicator on the touch panel.	<i>This signal is based on whether the connected Room's current audio endpoint (i.e. AvReceiver or Display) is set to USE IR in System Manager.</i>
Room_Vol_Mute_On_FB	Indicates that the currently connected Room is muted.	<i>If the Room's volume device is an AvReceiver or Display being controlled via IR, this signal will not latch high.</i>
Panel_Busy	Indicates that the Touch Panel is performing an operation that may take long enough to warrant notifying the user.	<i>Typically this signal drives a simple popup page that momentarily blocks all other user controls.</i>
Room_Busy	Indicates that devices in the currently connected Room are busy performing operations.	<i>Power sequencing of Displays and AvReceivers, and recalling channel presets from a Source IR Channel Presets are examples of events that drive this signal high.</i>
Demo_Expired	Indicates that the system has not been activated and that the one hour demo mode has expired.	
Show_Room_List_Popup	Indicates that the Rooms List Popup should be displayed.	<i>It is not necessary for the Rooms List to be on a popup, but if the Room_List_Btn is pressed, this signal will toggle.</i>
Source_Select_FB	Digital signal for highlighting the Source_Select_Btn.	
Show_Source_List_Popup	Indicates that the Source List Popup should be displayed.	<i>It is not necessary for the Source List to be on a popup, but if the Source_Select_Btn is pressed, this signal will toggle.</i>
Local_Device_FB	Digital signal for highlighting the Local_Device_Btn.	<i>This signal is mutually exclusive with Global_Device_FB.</i>
Global_Device_FB	Digital signal for highlighting the Global_Device_Btn.	<i>This signal is mutually exclusive with Global_Device_FB.</i>



Allow_Roaming	Digital signal used to show/hide the Room_List_Btn.	<i>The System Manager data determines whether a Touch Panel is allowed to connect to different Rooms ("Roam").</i>
Allow_Global_Lights	Digital signal used to show/hide the Global_Device_Btn on the Lights Page.	<i>The System Manager data determines whether a Touch Panel is allowed to control the Lighting System.</i>
Allow_Global_Climate	Digital signal used to show/hide the Global_Device_Btn on the Climate Page.	<i>The System Manager data determines whether a Touch Panel is allowed to control Global Climate.</i>
Allow_Global_Security	Digital signal used to show/hide the Global_Device_Btn on the Security Page.	<i>As of ADAPT's initial release, this signal is not used as there is no distinction between local and global security controls.</i>
Allow_Global_Cameras	Digital signal used to show/hide the Global_Device_Btn on the Cameras Page.	<i>As of ADAPT's initial release, this signal is not used as there is no distinction between local and global camera controls.</i>
Allow_Global_Windows	Digital signal used to show/hide the Global_Device_Btn on the Windows Page.	<i>The System Manager data determines whether a Touch Panel is allowed to control the Windows System.</i>
Allow_Global_Doors	Digital signal used to show/hide the Global_Device_Btn on the Doors Page.	<i>The System Manager data determines whether a Touch Panel is allowed to control the Doorlock System.</i>
Room_Has_Media	Indicates that the current Room has at least one AudioZone, AvReceiver, or Display associated with it.	<i>Room Audio and Display associations are determined by the System Manager data.</i>
Room_Has_Audio	Indicates that the current Room has at least one AudioZone or AvReceiver associated with it.	<i>Room Audio associations are determined by the System Manager data.</i>
Room_Has_Display	Indicates that the current Room has at least one Display associated with it.	<i>Room Display associations are determined by the System Manager data.</i>
Room_Has_Lighting	Indicates that the current Room has a Lighting Zone associated with it. Used to display the Lighting Quick Controls subpage.	<i>Room Lighting Zone associations are determined by the System Manager data.</i>
Room_Has_Climate	Indicates that the current Room has a TSTAT associated with it. Used to display the Climate Quick Controls subpage.	<i>Room TSTAT associations are determined by the System Manager data.</i>
Room_Has_Security	Indicates that the current Room has a Security Zone associated with it.	<i>As of ADAPT's initial release, this signal is not used as there</i>



		<i>is no distinction between local and global security controls.</i>
Room_Has_Cameras	Indicates that the current Room has a Camera associated with it. Used to display the Camera Quick Controls subpage.	<i>Room Camera associations are determined by the System Manager data.</i>
Room_Has_Windows	Indicates that the current Room has a Windows Zone associated with it. Used to display the Windows Quick Controls subpage.	<i>Room Windows Zone associations are determined by the System Manager data.</i>
Room_Has_Doors	Indicates that the current Room has at least one Doorlock associated with it.	<i>Room Doorlock associations are determined by the System Manager data.</i>
Multiroom_Show_List_Subpage	Visibility join for the Multiroom List subpage on the touch panel	<i>This signal goes low when Scenes are selected from the Multiroom page.</i>
Multiroom_Show_Source_List	Digital visibility signal used to show/hide the Multiroom Source List.	<i>Goes high when the Multiroom UI context has a Room selected.</i>
Multiroom_Show_Control_Now	Digital visibility signal used to show/hide the Multiroom_Control_Source_Btn.	<i>Goes high when the Multiroom UI context has a Source selected.</i>
Multiroom_Multi_Mode_FB	Digital signal used to highlight the Multiroom_Multi_Mode_Btn.	<i>Mutually exclusive with Multiroom_Single_Mode_FB and Multiroom_Scenes_FB.</i>
Multiroom_Single_Mode_FB	Digital signal used to highlight the Multiroom_Single_Mode_Btn.	<i>Mutually exclusive with Multiroom_Multi_Mode_FB and Multiroom_Scenes_FB.</i>
Multiroom_Scenes_FB	Digital signal used to highlight the Multiroom_Scenes_Btn.	<i>Mutually exclusive with Multiroom_Multi_Mode_FB and Multiroom_Single_Mode_FB. Scenes mode is the default Multiroom UI context at bootup.</i>
Show_Area_Controls	Visibility flag for showing the Area Next and Previous buttons.	<i>Based on the Area selection being enabled in the Global Controls section of the Touch Panel Settings in System Manager.</i>
Room_Has_Multiple_Displays	Digital signal used to show/hide the Room_Display_List_Btn. Indicates that the current Room has more than one Display associated with it.	<i>Room Display associations are determined by the System Manager data.</i>
Show_Display_List_Popup	Digital visibility signal used to show/hide the Display List Popup.	
Show_Share_Popup	Digital visibility signal used to show/hide the Share List.	<i>The Share List is a copy of the Multiroom Rooms List1 Smart</i>



		<i>Object that lives on a popup page on the Home Page.</i>
Allow_Share	Digital signal indicating that the connected Room's current source is part of the Multiroom Source List.	<i>The Multiroom Source List is defined in System Manager.</i>
Show_Doorbell_Camera	Digital visibility signal used to show/hide the camera window on the doorbell page.	
Show_Doorbell_Intercom	Digital visibility signal used to show/hide the intercom controls on the doorbell page.	
Doorbell{1-4}_Chime	Pulses when the Touch Panel receives a Doorbell event. The Chime number that gets pulsed is determined by the System Manager data.	<i>Doorbell events and chimes are set up per Touch Panel in System Manager.</i>
Show_Doorbell_Controls	Digital visibility signal used to show/hide the doorbell controls on the doorbell page.	
Show_Source_Select_On_Media_Page	Digital signal that indicates the Touch Panel is on the Media Page but no source is currently selected, so the panel should display the Source Select subpage.	
Page1_Home_Type{0-11}_Pageflip*	These signals drive Touch Panel Page Flips to the Home Page. If the Home_Btn is pressed, one of these outputs will go high until the Touch Panel has returned Page Feedback indicating it is actually on the correct page.	<i>The Home Page Type for a Touch Panel is defined in System Manager.</i>
Page{2-20}_*_Pageflip*	These signals drive Touch Panel Page Flips to the corresponding Page. These outputs will go high until the Touch Panel has returned Page Feedback indicating it is actually on the correct page.	
Show_Device_Subpage{1-10}_*	Digital signals used to show/hide the selected subpage within the current device controls.	<i>Device Subpages are mutually exclusive, and each Touch Panel keeps track of which subpage it is viewing.</i>
Device_FB{121-420}	Standard digital outputs for providing feedback from devices when a Touch Panel is directly connected to that device. Since the joins are reused across all devices, the device module itself is where	



	the functionality for these buttons is defined.	
Quick_Source_FB{421-470}	Quick digital outputs for providing feedback from Sources for the Quick_Source_Btn's. These signals flow through the Room logic from the Source device.	<i>These signals are reused across all Sources, so the Source Module itself defines what feedback is shown.</i>
Quick_Lighting_FB{471-482}	Quick digital outputs for providing feedback from the lights in the current Room for the Quick_Lighting_Btn's.	
Quick_Climate_Heat_Call_FB489	Quick digital output for providing feedback that the TSTAT associated with the current Room is performing a Heat Call.	
Quick_Climate_Cool_Call_FB490	Quick digital output for providing feedback that the TSTAT associated with the current Room is performing a Cool Call.	
Quick_Climate_Fan_Call_FB491	Quick digital output for providing feedback that the TSTAT associated with the current Room is performing a Fan Call.	
Quick_Climate_Single_Setpoint_FB492	Quick digital output used to show/hide the current Room's TSTAT single set point controls and feedback.	
Quick_Climate_Dual_Setpoint_FB493	Quick digital output used to show/hide the current Room's TSTAT dual set point controls and feedback.	
Quick_Doorlock_Locked_FB495	Quick digital output indicating that all Doorlocks associated with the current Room are Locked.	
Quick_Doorlock_Unlocked_FB496	Quick digital output indicating that all Doorlocks associated with the current Room are Unlocked.	
Quick_Windows_FB{497-508}	Quick digital outputs for providing feedback from the window treatments in the current Room for the Quick_Windows_Btn's.	
Device/Source{1-36}_Subpage{1-10}_*	Digital signals used to show/hide device control subpages for Sources and OtherDevices. This join scheme applies to the Media and OtherDevices Pages in VPro-e project.	<i>All of these outputs are mutually exclusive.</i>



Local_Device_Subpage{1-10}_*	Digital signals used to show/hide device control subpages for local Lighting, Climate, Security, Cameras, Windows, and Doors.	<i>These and the Global_Device_Subpage outputs are all mutually exclusive.</i>
Global_Device_Subpage{1-10}_*	Digital signals used to show/hide device control subpages for global Lighting, Climate, Security, Cameras, Windows, and Doors.	<i>These and the Local_Device_Subpage outputs are all mutually exclusive.</i>
Show_Quick_Source{1-36}_Popup*	Used to display the connected Room's current Source Quick Controls subpage.	
Default_Page_*_FB	Digital feedback highlighting the settings buttons that tell the Touch Panel that the selected page should be its default page.	<i>This feedback is determined by the System Manager data and represents the Page that the Touch Panel will automatically flip to after the Default Page Timeout has expired.</i>
Multiroom_Allow_New_Scene	Shows/hides the Multiroom_Save_New_Scene_Btn.	<i>This signal is high until there are 24 scenes saved.</i>
Multiroom_Scene_Edit_Popup	Shows/hides the Scene popup that prompts the user whether they would like to update or delete the selected scene.	
Multiroom_Scene_Keyboard_Popup	Shows/hides the Scene naming keyboard.	
Multiroom_Keyboard_Caps_Lock_FB	Indicates that the Scene naming keyboard has Caps Lock enabled.	
Multiroom_Keyboard_Shift_FB	Indicates that the Scene naming keyboard has Shift enabled.	
Source_List_In_Use{1201-1236}	Digital signals indicating that the corresponding source number is in use.	<i>1201 represents source 1, 1222 represents source 22, etc.</i>

### Standard Joins: Analog Outputs

Name	Description	Notes/Examples
Room_Volume	Feedback signal indicating the connected Room's current volume level.	<i>Value range (0%-100% or 0d-65535d).</i>
Multiroom_Volume	Feedback signal indicating the Touch Panel's Multiroom UI context volume level.	<i>Value range (0%-100% or 0d-65535d).</i>
Background_Select	Sets the Touch Panel project's Background Selector Object to the last value received at Background_Select_FB when the Touch Panel comes online.	<i>Value does not persist through a program restart.</i>



Camera_Video_Type	Sets the Touch Panel project's Camera Embedded Video Window to either Streaming Video or MJPEG.	Values are 252 for Streaming Video and 253 for MJPEG.
Default_Room_Timeout_FB	Feedback signal indicating the number of minutes of inactivity it should take the Touch Panel to revert to its default Room.	A value of zero indicates that the Touch Panel will not automatically revert to its default Room.
Default_Page_Timeout_FB	Feedback signal indicating the number of minutes of inactivity it should take the Touch Panel to revert to its default Page.	A value of zero indicates that the Touch Panel will not automatically revert to its default Page.
Multiroom_Keyboard_Shift_Mode	Changes the button mode for the Multiroom Keyboard subpage while using Shift/Caps Lock.	
Device_A_FB{21-120}	Standard analog outputs for providing feedback from a device when a Touch Panel is directly connected to that device. Since the joins are reused across all devices, the device module itself is where the functionality for these signals is defined.	

**Standard Joins: Serial Outputs**

Name	Description	Notes/Examples
Current_Room_Name	Indicates the name of the Room that the Touch Panel is currently connected to.	
Current_Room_Source_Name	Indicates the name of the connected Room's current Source.	If the Room is OFF, this signal has the value, "Room is Off".
Current_Device_Name	Indicates the name of the Device that the Touch Panel is currently directly connected to (showing the full device controls page).	
Home_Page_Title	Displays the title of the Home Page.	This signal can exist on any/all pages and is defined in the System Manager data.
Doorbell_Message	Displays the message associated with the current Doorbell event when one occurs.	Doorbell messages are configured in System Manager.
Default_Room_Name	Indicates the name of the Touch Panel's default Room – which it will revert to after the Default Timeout has elapsed with no activity.	
Multiroom_Source_Name	Indicates the name of the current Multiroom UI context's selected source.	



Multiroom_Keyboard_Text	Feedback from the text entered via the Multiroom Keyboard.	
Selected_Display_Name	Indicates the name of the currently selected Display in the Display List.	<i>If an individual display is not selected, the value of this signal will be, "All TV's".</i>
Intercom_Incoming_Name	Indicates the name of the panel that the current panel is calling or connected to via intercom.	
Current_Area_Name	Indicates the name of the currently selected Area that is populating the Rooms List, and thus the only Rooms the panel will affect when using Share or Multiroom Controls.	<i>Note that only the Rooms in the currently selected Area are affected by the All Rooms Off button.</i>
Device_S_FB{21-120}	Standard serial outputs for providing feedback from a device when the Touch Panel is directly connected to that device. Since the joins are reused across all devices, the device module itself is where the functionality for these signals is defined.	
Navigation_List_Item{1-50}_Text*	Serial feedback signals for displaying the names of the items in this Touch Panel's Navigation List.	<i>Navigation List item names are defined in System Manager.</i>
Source_List_Item{1-36}_Text*	Serial feedback signals for displaying the names of the Sources in this Touch Panel's Source List.	<i>Source names and the order of each Room's Source List are defined in System Manager.</i>
Multiroom_Scene{1-24}_Name*	Serial feedback signals for displaying the names of the Scenes in the Scenes List.	<i>These strings are empty until a Scene is created.</i>
Multiroom_Source_List_Item{1-36}_Text*	Serial feedback signals for displaying the names of the available Multiroom Sources in the Multiroom Sources List.	<i>In Individual Rooms mode, these names will match the selected Room's Source List. In Multiple Rooms mode, these names come from the Multiroom Source List defined in System Manager.</i>
Quick_Source_Text{401-450}	Quick serial outputs that provide feedback from Sources for their corresponding Quick Source page.	<i>These signals are reused across all Sources, so the Source Module itself defines the data contained in these strings.</i>
Quick_Lights_Text{451-462}	Quick serial outputs that provide the names of the Quick Lighting functions for the current Room's associated Lighting Zone.	<i>These names are defined in the Settings per Lighting Zone in System Manager.</i>



Quick_Climate_Current_Temp_463	Quick serial output indicating the current temperature of the connected Room's associated TSTAT.	
Quick_Climate_Single_Setpoint_464	Quick serial output indicating the single set point of the connected Room's associated TSTAT.	
Quick_Climate_Dual_Setpoint{1-2}_*	Quick serial outputs indicating the dual set points of the connected Room's associated TSTAT.	
Quick_Doorlock_Status_467	Quick serial output indicating the status of the current Room's associated Doorlocks.	<i>Since multiple Doorlocks can be associated with a Room, the last Doorlock to report its status will be reported by this signal.</i>
Quick_Doorlock_Event_468	Quick serial output indicating the last event noticed received from the current Room's associated Doorlocks.	
Quick_Camera_Url_469	Quick serial output that sets the streaming URL for the Quick Camera Embedded Video Window.	
Quick_Windows_Text{471-482}	Quick serial outputs that provide the names of the Quick Windows functions for the current Room's associated Windows Zone.	<i>These name are defined in the Settings per Windows Zone in System Manager.</i>
Room_Display{1-6}_Name*	Serial feedback signals for displaying the names of the Displays in the Displays_List.	<i>Display names are defined in System Manager. This list is only available if the current Room has more than one display associated to it.</i>
Control_List_Item{1-100}_Text*	Serial feedback signals for displaying Control List feedback from the currently connected device.	<i>These list signals are reused across all devices, so the device module itself defines the strings that appear at these outputs.</i>
Room_List_Item{1-100}_Text*	Serial feedback signals for displaying the names of the Rooms in this Touch Panel's Rooms List.	<i>Room Names and the order of each Touch Panel's Rooms List are defined in System Manager.</i>
Intercom{1-50}_Name*	Serial feedback signals for displaying Intercom List names.	<i>These are the names of the Touch Panels defined in System Manager that are included in the Global Settings Intercom List.</i>
Camera{1-100}_Name*	Serial feedback signals for displaying the names of the Cameras in the Camera_List.	<i>Camera name are defined in System Manager.</i>

### Optional Controls: Digital Inputs

Name	Description	Notes/Examples
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[Save_Settings]	Pulse to force the Touch Panel to save its current settings to the data file.	<i>This signal is not necessary unless custom logic is required. The Touch Panel will automatically save its settings upon leaving the Settings Page. Care should be taken when using this signal to ensure that it is not pressed during the bootup sequence.</i>
[Room_AV_On_Btn]	Turns the currently connected Room on.	
[Room_AV_Toggle_Btn]	Toggle the currently connected Room on and off.	
[Room_Vol_Mute_On_Btn]	Mutes the currently connected Room.	
[Room_Vol_Mute_Off_Btn]	Unmutes the currently connected Room.	

**Optional Controls: Analog Inputs**

Name	Description	Notes/Examples
[Room_Direct_Select]	Forces the panel to connect to the Room number that this signal is set to.	<i>This signal ignores the panel's Allowed Rooms List defined in System Manager and will force a connection to the specified Room number as long as it exists.</i>
[Area_Direct_Select]	Forces the panel to choose the specified Area number as defined in System Manager.	
[Room_AV_Direct_Source]	Sets the currently connected Room to the source number that the signal is set to.	<i>If the Room is off, it will turn on first.</i>
[Direct_OtherDevice_Select]	Forces the panel to connect to the OtherDevice number that the signal is set to.	<i>An OtherDevice with the number that the value is set to must exist in the program for this signal to work properly.</i>
[Throw_Page]	Forces the Touch Panel to do a "raw" page flip to Page at the number that the signal is set to.	<i>Value range (1-20d). This signal does not force any device connection logic and is really only intended for sending the panel to the pages outside of the standard ones indicated in the Example project file (i.e. Page13-20). If a page flip to one of the standard pages is desired, use the Page Buttons at digital joins 28-35.</i>

**Optional Controls: Analog Outputs**

Name	Description	Notes/Examples
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[Current_Room_Number]	Indicates the ID of the currently connected Room.	
[Quick_Source_Num_Lines]	Indicates how many Quick Controls are defined for the connected Room's current Source.	<i>If it is desired to put the current Source Quick Controls in a list, this signal should be used to determine how many items that list should have.</i>
[Quick_Lights_Num_Lines]	Indicates how many Quick Controls are defined for the connected Room's associated Lighting Zone.	<i>If it is desired to put the Lighting Quick Controls in a list, this signal should be used to determine how many items that list should have.</i>
[Quick_Windows_Num_Lines]	Indicates how many Quick Controls are defined for the connected Room's associated Windows Zone.	<i>If it is desired to put the Windows Quick Controls in a list, this signal should be used to determine how many items that list should have.</i>
[Source_To_Control]	Indicates the Source Number that the Touch Panel connected to last.	<i>Only changes values when the Touch Panel connects to a new Source.</i>
[AV_Direct_Room_Source_FB]	Indicates the current Source Number for the connected Room.	
[Current_Page]	Indicates the page number that the Touch Panel was last told to flip to.	

## User Interfaces: Keypads

Symbol Name: ADAPT Keypad

The Keypad module represents a simple single-room user interface. It is flexible to allow for many possible button configurations. If individual Source Selection buttons are needed, use either the **[Room\_AV\_Direct\_Source]** signal to set the Room's source number, or use the Custom Source buttons and define their associated source selection in System Manager. If a single On/Source Cycle button is needed, the **[Room\_AV\_Source\_Cycle]** cycles through the Room's Source list with subsequent presses.

### Parameters

Name	Description	Notes/Examples
Keypad Number	Integer parameter that identifies this Keypad.	<i>Must be a different number from all other Keypad modules.</i>

### Header Signals: Digital Inputs

Name	Description	Notes/Examples
INIT	Digital input that triggers the module to initialize and read its data from the core.	<i>Must connect to the Bootup modules's INIT digital output.</i>



### Header Signals: Digital Outputs

Name	Description	Notes/Examples
[Busy]	Latches high while devices that the current Room is logically connected to are busy.	

### Room AV Controls: Digital Inputs

Name	Description	Notes/Examples
[Room_AV_On]	Turns the Room on.	
[Room_AV_Off]	Turns the Room off.	
[Rooms_AV_Toggle]	Toggles the Room on and off.	
[Room_AV_Vol+]	Momentary input to raise the Room's volume level.	
[Room_AV_Vol-]	Momentary input to lower the Room's volume level.	
[Room_AV_Mute_On]	Mutes the Room.	
[Room_AV_Mute_Off]	Unmutes the Room.	
[Room_AV_Mute_Toggle]	Mutes and unmutes the Room.	
[Room_AV_Source_Cycle]	Cycles through all Sources that are allowed in the Room. From an off state, the first press turns the Room on and selects the first source in the Source List as defined in System Manager.	<i>There is a debounce time of 1 second on this button so that it can be pressed rapidly to get to a source that is not at the top of the list without affecting the Room immediately.</i>

### Room AV Controls: Analog Inputs

Name	Description	Notes/Examples
[Room_AV_Volume]	Sets the Room's volume level to the value of the input.	<i>Value range (0%-100% or 0d – 65535d).</i>
[Room_AV_Direct_Source]	Sets the Room to the number that the signal is set to.	<i>If the Room is off, it will turn on first. The value given to this signal must match the Source Number of a Source module that exists in the program.</i>

### Room AV Controls: Digital Outputs

Name	Description	Notes/Examples
[Room_AV_On_FB]	Indicates the Room is on.	
[Room_AV_Off_FB]	Indicates the Room is off.	
[Room_AV_Mute_On_FB]	Indicates the Room is muted.	

### Room AV Controls: Analog Outputs

Name	Description	Notes/Examples
[Room_AV_Volume_FB]	Indicates the Room's volume level.	<i>Value range (0%-100% or 0d – 65535d).</i>



[Room_AV_Direct_Source_FB]	Indicates the Room's current source number.	
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### Source Buttons: Digital Inputs

Name	Description	Notes/Examples
[Custom_Source_Button{1-12}]	These input signals are intended to come from the keypad's source selection buttons.	<i>The source these buttons actually select are defined in System Manager.</i>

### Source Buttons: Digital Outputs

Name	Description	Notes/Examples
[Custom_Source_FB{1-12}]	Indicate that the Room is currently on the Source defined for the corresponding custom source button.	

### Source QuickControls: Digital Inputs

Name	Description	Notes/Examples
[[Menu-Next_Preset]]	These input signals are intended to come from the hard keys on the keypad. These signals propagate through to the current Source module's Quick Controls.	<i>It may be necessary to adjust the Quick Controls on the Source module to get all functions to work properly with a particular keypad's hard key layout.</i>

### Source QuickControls: Digital Outputs

Name	Description	Notes/Examples
[AV_QuickControl{421-470}_FB]	These output signals are intended to light up LED feedback on the keypad when Source functions are active (such as preset or playing indicators). These signals propagate through from the current Source module's Quick Controls.	

### Lighting QuickControls: Digital Inputs

Name	Description	Notes/Examples
[Lights_QuickControl{1-12}]	These signals propagate through to the Room's Lighting Zone Quick Controls.	<i>If the Room that this keypad is controlling does not have a Lighting Zone associated to it, these controls do nothing.</i>

### Lighting QuickControls: Digital Outputs

Name	Description	Notes/Examples
[Lights_QuickControl{1-12}_FB]	Digital outputs indicating the feedback of the corresponding QuickControl.	



## User Interfaces: Handhelds

Symbol Name: ADAPT Handheld Generic

The Handheld modules represent a simple single-room remote control. The Generic version of the module can be used with older, discontinued, or even third-party remote controls.

### Parameters

Name	Description	Notes/Examples
Handheld Number	Integer parameter that identifies this Handheld remote.	<i>Must be a different number from all other Handheld modules.</i>

### Header Signals: Digital Inputs

Name	Description	Notes/Examples
INIT	Digital input that triggers the module to initialize and read its data from the core.	<i>Must connect to the Bootup modules's INIT digital output.</i>

### Header Signals: Digital Outputs

Name	Description	Notes/Examples
[Busy]	Latches high while devices that the Room is logically connected to are busy.	

### Room AV Controls: Digital Inputs

Name	Description	Notes/Examples
[Room_AV_Off]	Turns the Room off.	
[Room_AV_Vol+]	Momentary input to raise the Room's volume level.	
[Room_AV_Vol-]	Momentary input to lower the Room's volume level.	
[Room_AV_Mute_Toggle]	Mutes and unmutes the Room.	

### Hardkeys/Source QuickControls: Digital Inputs

Name	Description	Notes/Examples
{{Menu-QuickControl470}}	These input signals are intended to come from the hard keys on the remote. These signals propagate through to the current Source module's Quick Controls.	<i>It may be necessary to adjust the Quick Controls on the Source module to get all functions to work properly with a particular remote's hard key layout.</i>

### Source\_Buttons: Digital Inputs

Name	Description	Notes/Examples
[Custom_Source_Button{1-50}]	These input signals are intended to come from the remote's source selection buttons.	<i>The source these buttons actually select are defined in System Manager.</i>



**Source List Controls: Digital Inputs**

Name	Description	Notes/Examples
[List_Control_Btn{1-40}]	These signals propagate through the current Source module's List Controls.	

**Lighting\_Quick\_Controls: Digital Inputs**

Name	Description	Notes/Examples
[Lighting_QuickControl{1-12}]	These signals propagate through to the Room's Lighting Zone Quick Controls.	<i>If the Room that this handheld remote is controlling does not have a Lighting Zone associated to it, these controls do nothing.</i>

**Climate\_Quick\_Controls: Digital Inputs**

Name	Description	Notes/Examples
[Climate_*_Setpoint+/-]	These signals propagate through to the Room's TSTAT Quick Controls.	<i>If the Room that this handheld remote is controlling does not have a TSTAT associated to it, these controls do nothing.</i>

**Doorlocks\_Quick\_Controls: Digital Inputs**

Name	Description	Notes/Examples
[Doorlocks_Lock/Unlock]	These signals propagate through to the Room's Door Lock Quick Controls.	<i>If the Room that this handheld remote is controlling does not have any Door Lock associated to it, these controls do nothing.</i>

**Windows\_Quick\_Controls: Digital Inputs**

Name	Description	Notes/Examples
[Windows_QuickControl{1-12}]	These signals propagate through to the Room's Windows Quick Controls.	<i>If the Room that this handheld remote is controlling does not have a Windows Zone associated to it, these controls do nothing.</i>

**Optional Controls: Digital Inputs**

Name	Description	Notes/Examples
[Room_AV_On]	Turns the Room on.	
[Rooms_AV_Toggle]	Toggles the Room on and off.	
[Room_AV_Mute_On]	Mutes the Room.	
[Room_AV_Mute_Off]	Unmutes the Room.	

**Optional Controls: Analog Inputs**

Name	Description	Notes/Examples
[Direct_Room_Select]	Sets the Room number that the handheld should connect to at runtime, effectively allowing it to roam between rooms.	



[Room_AV_Direct_Source]	Sets the Room to the number that the signal is set to.	<i>If the Room is off, it will turn on first. The value given to this signal must match the Source Number of a Source module that exists in the program.</i>
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**Optional Controls: Digital Outputs**

Name	Description	Notes/Examples
[Room_AV_On_FB]	Indicates the Room is on.	
[Room_AV_Off_FB]	Indicates the Room is off.	
[Room_AV_Mute_On_FB]	Indicates the Room is muted.	

**Optional Controls: Analog Outputs**

Name	Description	Notes/Examples
[Connected_Room_Number_FB]	Indicates the Room number the handheld is currently connected to.	
[Room_AV_Volume_FB]	Indicates the Room's volume level.	<i>Value range (0%-100% or 0d – 65535d).</i>
[Room_AV_Direct_Source_FB]	Indicates the Room's current source number.	

## User Interfaces: MLX-3

Symbol Name: ADAPT MLX-3

The MLX-3 module was authored in an attempt to streamline the process of programming the list-based handheld remotes. Similar to a Touch Panel, an MLX-3's behavior is dependent on how the data in System Manager is configured. The logic was designed with the idea that an MLX-3 is best used as a whole-house AV user interface, yet can be limited to a single room and can also control devices other than AV devices. The Home Page List acts much like the Touch Panel Navigation list where the items in the list can either: simply perform page navigation, or select sources for the current room. There are seven "standard" pages. The module definition is broken up into signal groups to define which signals land on which pages.

Implementing the first MLX-3 in a program can be a little daunting. However, after the first implementation is complete, others can be completed very quickly by using the "Duplicate Device Programming" function in SIMPL Windows. The first step is to add the standard pages to the hardware definition in the Configure View of SIMPL Windows. Refer to the ADAPT MLX-3 Example VTPro-e project for reference. Here is the list of standard pages and their type:



Page-03 Home Page	(Page Type: Home)
Page-04 Turn Off	(Page Type: Information With List)
Page-05 Device Full List	(Page Type: Full List)
Page-06 Device Info List	(Page Type: Information With List)
Page-07 Device Info Only	(Page Type: Information)
Page-08 Media	(Page Type: Full List)
Page-09 Rooms	(Page Type: Full List)

Once the pages have been added, begin connecting signals from each signal group to the appropriate page. The signal lists below are presented in top-down order as shown on the module itself. The first signal group should be connected to Page-01 Global Buttons and Pages in the hardware definition. The second signal group contains signals that are common to all other pages. Once these signals are properly connected to the first page, use the right-click Copy All Signals function to copy them to all other pages. The last two groups: Extra List Pages and Optional Controls are normally not used.

**Parameters**

Name	Description	Notes/Examples
Handheld Number	Integer parameter that identifies this MLX-3.	<i>Must be a different number from all other MLX-3 modules.</i>

**Global Buttons and Pages: Digital Inputs**

Name	Description	Notes/Examples
INIT	Digital input that triggers the module to initialize and read its data from the core.	<i>Must connect to the Bootup modules's INIT digital output.</i>
*_Hardkey	Digital inputs from the 48 tactile hard buttons on the unit.	<i>ScrollUp and Scroll Down from the hardware definition should not be connected to the module.</i>
Page_{3-24}_Active	Digital inputs from the Page Active signals on the hardware definition.	

**Global Buttons and Pages: Digital Outputs**

Name	Description	Notes/Examples
Show_Page_{3-24}	Digital outputs to perform page flips on the MLX-3	<i>Connect to Show_Page3-24 inputs on the hardware definition.</i>

**Common Signals: Digital Outputs**

Name	Description	Notes/Examples
ShowVolume_Subpage	Used to display the volume bar subpage on the MLX-3 display.	<i>Connect to ShowVolume_Subpage input on all pages in the hardware definition.</i>



ShowMute_Subpage	Used to display the mute subpage on the MLX-3 display.	Connect to ShowMuteSubpage input on all pages in the hardware definition.
ShowPageFooterText	Constant signal to force the MLX-3 to display its footer text on all pages.	Connect to ShowPageFooterText input on all pages in the hardware definition.

**Common Signals: Analog Outputs**

Name	Description	Notes/Examples
VolumeLevel	Indicates the volume level of the current Room.	Connect to the VolumeLevel input on all pages in the hardware definition. Value range (0%-100% or 0d – 65535d)

**Common Signals: Serial Outputs**

Name	Description	Notes/Examples
CurrentRoom	Indicates the name of the currently connected Room.	Connect to the CurrentRoom input on all pages in hardware definition. This signal also displays “Devices Busy...” when devices in the current Room are busy.
PageFooterText	Indicates the name of the current Source in the connected Room.	Connect to the PageFooterText input on all pages in the hardware definition. If the Room is OFF, this signal has the value, “Room is Off”.

**Home Page: Digital Inputs**

Name	Description	Notes/Examples
Home_Page_Item{1-24}_Select	Inputs from the Home Page list items.	Connect to the ListItemSelect outputs on Page-03 Home.

**Home Page: Analog Outputs**

Name	Description	Notes/Examples
Home_Page_NumberOfListItems	Analog value that defines the length of the Home Page List.	Connect to the NumberOfListItems input on Page-03 Home.

**Home Page: Serial Outputs**

Name	Description	Notes/Examples
Home_Page_Title	Serial output indicating the value of the Home Page Title	Connect to the PageTitle input on Page-03 Home. The Home Page Title is defined in System Manager.
Home_Page_Item{1-24}_Text	Serial outputs indicating the names of the items in the Home Page List.	Connect to the ListItemText inputs on Page-03 Home. The Home Page List items are defined in System Manager.



### Turn Off Page: Digital Inputs

Name	Description	Notes/Examples
Room_AV_Off	Turns the current Room off.	Connect to the ListItemSelect_1 output on Page-04 Turn Off.
Other_Rooms_Off	Turns all but the current Room Off.	Connect to the ListItemSelect_2 output on Page-04 Turn Off. Only affects the Rooms that are included in the MLX-3's Room List defined in System Manager.
All_Rooms_Off	Turns all Rooms off.	Connect to the ListItemSelect_3 output on Page-04 Turn Off. Only affects the Rooms that are included in the MLX-3's Room List defined in System Manager.

### Control Pages: Digital Inputs

Name	Description	Notes/Examples
Softkey{1-50}	Device List Control inputs.	Connect to the ListItemSelect outputs on Page-05 and Page-06.

### Control Pages: Digital Outputs

Name	Description	Notes/Examples
Softkey{1-50}_FB	Device List Control feedback output signals.	Connect to the ListItemActive inputs on Page-05 and Page-06.

### Control Pages: Analog Outputs

Name	Description	Notes/Examples
Controls_NumberOfListItems	Analog value that defines the length of the current Control Page List.	Connect to the NumberOfListItems input on Page-05 and Page-06.

### Control Pages: Serial Outputs

Name	Description	Notes/Examples
Controls_PageTitle	Indicates the name of the currently connected Device.	Connect to the PageTitle input on Page-05, Page-06 and Page-07
Info_Line{1-4}_Text	Indicates the Info Text for the currently connected Device.	Connect Lines 1-3 to Page-06. Connect Line 1-4 to Page-07.
Serial{1-50}_FB	Serial outputs providing List feedback from the currently connected device.	Connect to the ListItemText inputs on Page-05 and Page-06.

### Media Select Page: Digital Inputs

Name	Description	Notes/Examples
Room_AV_Source{1-36}_Select	Room Source List selection inputs.	Connect to the ListItemSelect outputs 1-36 on Page-08 Media. The Room Source List is defined per Room in System Manager.



### Media Select Page: Digital Outputs

Name	Description	Notes/Examples
Room_AV_Source{1-36}_Selected_FB	Room Source List selection feedback.	Connect to the ListItemActive inputs 1-36 on Page-08 Media.

### Media Select Page: Analog Outputs

Name	Description	Notes/Examples
Media_NumberOfListItems	Analog value that defines the length of the Media Page List.	Connect to the NumberOfListItems input on Page-08 Media.

### Media Select Page: Serial Outputs

Name	Description	Notes/Examples
Room_AV_Source{1-36}_Name_FB	Serial outputs indicating the names of the Sources in the current Room's Source List	Connect to the ListItemText inputs 1-36 on Page-08 Media.

### Room Select: Digital Inputs

Name	Description	Notes/Examples
Room{1-50}_Select	Selects the Room to connect this MLX-3 to.	Connect to the ListItemSelect outputs on Page-09 Rooms. The Rooms List is defined per MLX-3 in System Manager.

### Room Select: Digital Outputs

Name	Description	Notes/Examples
Room{1-50}_Selected_FB	Feedback for the current Room selection.	Connect to the ListItemActive inputs on Page-09 Rooms.

### Room Select: Analog Outputs

Name	Description	Notes/Examples
Rooms_NumberOfListItems	Analog value that defines the length of the Rooms Page List.	Connect to the NumberOfListItems input on Page-09 Rooms.

### Room Select: Serial Outputs

Name	Description	Notes/Examples
Room{1-50}_Name_FB	Serial outputs indicating the names of the Room in the Rooms List.	Connect to the ListItemText inputs on Page-09 Rooms.

### Extra List Pages: Digital Inputs

Name	Description	Notes/Examples
Extra_List_Page_Item{1-50}_Select	Inputs that perform Extra List Page functions as defined in System Manager.	Connect to the ListItemSelect outputs on any additional list pages you have defined in the hardware definition.



### Extra List Pages: Analog Outputs

Name	Description	Notes/Examples
Extra_List_Pages_NumberOfListItems	Analog value that defines the length of the Extra List Page List as defined in System Manager.	Connect to the NumberOfListItems input on any additional list pages you have defined in the hardware definition.

### Extra List Pages: Serial Outputs

Name	Description	Notes/Examples
Extra_List_Pages_Title	Indicates the name of the currently displayed Extra List Page.	Connect to the PageTitle input on any additional list pages you have defined in the hardware definition.
Extra_List_Pages_Item{1-50}_Text	Serial outputs providing List feedback for the displayed Extra List Page as defined in System Manager.	Connect to the ListItemText inputs on any additional list pages you have defined in the hardware definition.

### Optional Controls: Digital Inputs

Name	Description	Notes/Examples
[Room_AV_On_Btn]	Turns the currently connected Room on.	
[Room_AV_Off_Btn]	Toggle the currently connected Room on and off.	
[Room_Vol_Mute_On_Btn]	Mutes the currently connected Room.	
[Room_Vol_Mute_Off_Btn]	Unmutes the currently connected Room.	

### Optional Controls: Analog Inputs

Name	Description	Notes/Examples
[Room_AV_Direct_Source]	Sets the currently connected Room to the source number that the signal is set to.	If the Room is off, it will turn on first. The value given to this signal must match the Source Number of a Source module that exists in the program.
[Room_AV_Volume]	Set the currently connected Room's volume to the value of this input.	
[Go_To_Page]	Forces the MLX-3 to do a "raw" page flip to Page at the number that the signal is set to.	This signal does not force any device connection logic and is really only intended for sending the MLX-3 to the pages outside of the standard ones indicated in the Example project file.



### Optional Controls: Digital Outputs

Name	Description	Notes/Examples
[Room_AV_On_FB]	Indicates the currently connected Room is on.	
[Room_AV_Off_FB]	Indicates the currently connected Room is off.	

### Optional Controls: Analog Outputs

Name	Description	Notes/Examples
[AV_Direct_Room_Source_FB]	Indicates the current Source Number for the connected Room.	
[Connected_Room_Num_FB]	Indicates the ID of the currently connected Room.	

## Devices

### Devices: Audio Switchers

Symbol Name: ADAPT AudioSwitcher

The AudioSwitcher module represents an individual device in the system. There can be multiple AudioSwitchers in the program, however, they must have unique Switcher Number identifiers. The Zone signals from this module should connect directly to the Crestron hardware definition or third-party module for device control of the corresponding Zone. The associations of ADAPT Sources being connected to switcher inputs, and Rooms being connected to switcher outputs are performed in System Manager.

#### Parameters

Name	Description	Notes/Examples
Switcher Number	Integer parameter that identifies this AudioSwitcher.	<i>Must be a different number from all other AudioSwitcher modules.</i>
Number Of Inputs	Integer parameter that defines how many inputs this Audio Switcher has.	<i>Switcher inputs are assigned the Sources that are connected to them in System Manager.</i>
Volume HoldTime	Time parameter that defines how long a volume up/down signal is held before the analog volume output auto-adjusts.	<i>Once the hold time has elapsed, if the volume up/down signal is still held, the output will then auto-adjust at the rate specified by the Volume RepeatTime parameter.</i>
Volume RepeatTime	Time parameter that defines the interval at which the analog volume output will auto-adjust once the hold time has elapsed.	



### Header Signals: Digital Inputs

Name	Description	Notes/Examples
INIT	Digital input that triggers the module to initialize and read its data from the core.	<i>Must connect to the Bootup modules's INIT digital output.</i>
[Device_Offline]	Feedback from the hardware informing the module that the audio switcher is offline.	<i>This signal is only necessary if it is desired to utilize the [Use_Hardware_Feedback] signal.</i>
[Use_Hardware_Feedback]	Forces the module to use the feedback input signals to determine the state of an audio zone.	<i>Connect the INIT signal to this input if used. If the device is offline (as defined by the [Offline] signal, the program's logic will take over "faking" the feedback. This allows the programmer to test the program without having the actual device present.</i>

### Header Signals: Digital Outputs

Name	Description	Notes/Examples
[Busy]	Latches high while the device is busy performing an operation.	

### ZoneX Signals: Digital Inputs

Name	Description	Notes/Examples
[ZoneX_On_FB]	Digital feedback signal indicating that the Zone is on.	<i>Only necessary if [Use_Hardware_Feedback] is high.</i>
[ZoneX_Off_FB]	Digital feedback signal indicating that the Zone is off.	<i>Only necessary if [Use_Hardware_Feedback] is high.</i>
[ZoneX_Mute_On_FB]	Digital feedback signal indicating that the Zone is muted.	<i>Only necessary if [Use_Hardware_Feedback] is high.</i>

### ZoneX Signals: Analog Inputs

Name	Description	Notes/Examples
[ZoneX_Source_FB]	Analog feedback signal indicating which input number is currently routed to the Zone's output.	<i>The Source Number assigned to the various Source Modules in the program do not need to match the values of the switcher's inputs/sources. ADAPT Sources are assigned to switcher inputs in System Manager, and the program maps them accordingly. Only necessary if [Use_Hardware_Feedback] is high.</i>
[ZoneX_Volume_FB]	Analog feedback signal indicating the Zone's current volume level.	<i>Value Range (0%-100% or 0d – 65535d). Only necessary if [Use_Hardware_Feedback] is high.</i>



### ZoneX Signals: Digital Outputs

Name	Description	Notes/Examples
[ZoneX_On]	Pulses to turn the Zone on.	
[ZoneX_Off]	Pulses to turn the Zone off.	
[ZoneX_On/Off]	Pulses to toggle the Zone on and off.	
[ZoneX_Mute_On]	Pulses to mutes the Zone.	
[ZoneX_Mute_Off]	Pulses to unmute the Zone.	
[ZoneX_Mute_Toggle]	Pulses to toggle the mute state of the Zone.	
[ZoneX_Volume_Up]	Momentary signal to raise the volume level of the Zone.	<i>Follows the state of a vol+ button press on the user interface that is controlling this Zone.</i>
[ZoneX_Volume_Down]	Momentary signal to lower the volume level of the Zone.	<i>Follows the state of a vol- button press on the user interface that is controlling this Zone.</i>

### ZoneX Signals: Analog Outputs

Name	Description	Notes/Examples
ZoneX_Source	Tells the switcher which input to route to this Zone.	<i>The Source Number assigned to the various Source Modules in the program do not need to match the values of the switcher's inputs/sources. ADAPT Sources are assigned to switcher inputs in System Manager, and the program maps them accordingly.</i>
ZoneX_Volume	Sets the Zone's volume level.	<i>Value Range (0%-100% or 0d – 65535d.</i>

### Zone Names: Serial Outputs

Name	Description	Notes/Examples
[ZoneX_Name]	Indicates the name of the respective Audio Zone as defined in System Manager.	



## Devices: Video Switchers

Symbol Name: ADAPT VideoSwitcher

The VideoSwitcher module represents an individual device in the system. There can be multiple VideoSwitchers in the program, but they must have unique Switcher Number identifiers. The Output signals from this module should connect directly to the Crestron hardware definition or third-party module for device control of the corresponding Output. The associations of ADAPT Sources being connected to switcher inputs, and Displays being connected to switcher outputs are performed in System Manager.

### Parameters

Name	Description	Notes/Examples
Switcher Number	Integer parameter that identifies this VideoSwitcher.	<i>Must be a different number from all other VideoSwitcher modules.</i>
Number Of Inputs	Integer parameter that defines how many inputs this Video Switcher has.	<i>Switcher inputs are assigned the Sources that are connected to them in System Manager.</i>

### Signals: Digital Inputs

Name	Description	Notes/Examples
INIT	Digital input that triggers the module to initialize and read its data from the core.	<i>Must connect to the Bootup modules's INIT digital output.</i>

### Signals: Digital Outputs

Name	Description	Notes/Examples
[Busy]	Latches high while the device is busy performing an operation.	

### ZoneX Signals: Analog Outputs

Name	Description	Notes/Examples
[OutputX_Video_Source]	Tells the switcher which video input to route to the Output.	<i>The Source Number assigned to the various Source Modules in the program do not need to match the values of the switcher's inputs/sources. ADAPT Sources are assigned to switcher inputs in System Manager, and the program maps them accordingly.</i>
[OutputX_Audio_Source]	Tells the switcher which audio input to route to the Output.	<i>Requires Audio Breakaway on the switcher. These signals are only used in ADAPT programs in conjunction with Sources that have multiple video window inputs (i.e. DVPHD).</i>



## Devices: AV Receivers

Symbol Name: ADAPT AvReceiver

The AvReceiver module represents an individual device in the system. There can be multiple AvReceivers in the program, but they must have unique AV Receiver Number identifiers. The control signals can be connected to a basic IR driver, a third-party control module, a Crestron hardware definition directly, or the serial commands to control the device can be defined in System Manager. AvReceivers are assigned to Rooms in System Manager like AudioZones from a switcher. Device operation timing, input tie-lines, serial commands, and IR Driver are also defined in System Manager.

### Parameters

Name	Description	Notes/Examples
AV Receiver Number	Integer parameter that identifies this AvReceiver.	<i>Must be a different number from all other AvReceiver modules.</i>

### Signals: Digital Inputs

Name	Description	Notes/Examples
INIT	Digital input that triggers the module to initialize and read its data from the core.	<i>Must connect to the Bootup modules's INIT digital output.</i>
[Device_Offline]	Feedback from the hardware informing the module that the audio switcher is offline.	<i>This signal is only necessary if it is desired to utilize the [Use_Hardware_Feedback] signal.</i>
[Use_Hardware_Feedback]	Forces the module to use the feedback input signals to determine the state of an audio zone.	<i>Connect the INIT signal to this input if used. If the device is offline (as defined by the [Offline] signal, the program's logic will take over "faking" the feedback. This allows the programmer to test the program without having the actual device present.</i>
[Power_On_FB]	Digital feedback input indicating that the device is on.	<i>Only necessary if [Use_Hardware_Feedback] is high.</i>
[Audio_Mute_On_FB]	Digital feedback input indicating that the AvReceiver is muted.	<i>Only necessary if [Use_Hardware_Feedback] is high.</i>

### Signals: Analog Inputs

Name	Description	Notes/Examples
[Audio_Volume_FB]	Analog feedback signal indicating the Zone's current volume level.	<i>Value Range (0%-100% or 0d – 65535d). Only necessary if [Use_Hardware_Feedback] is high.</i>
[Input_FB]	Analog feedback signal indicating which input number is currently selected on the device.	<i>Value Range (1d-10d) – must match corresponding input used as defined in System Manager. Only</i>



		necessary if [Use_Hardware_Feedback] is high.
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### Signals: Digital Outputs

Name	Description	Notes/Examples
[Busy]	Latches high while the device is busy performing an operation.	
[Power_On]	Pulses to turn the device on.	
[Power_Off]	Pulses to turn the device off.	
[Power_On/Off]	Pulses to toggle the device on and off.	Always pulses with the [Power_On] signal. Only pulses with the [Power_Off] signal if the device is considered to be off.
[Audio_Volume_Up]	Momentary signal to raise the volume level.	
[Audio_Volume_Down]	Momentary signal to lower the volume level.	
[Audio_Mute_On]	Pulses to mute the device.	Pulses with the [Audio_Mute_Toggle] signal if the device is considered to be unmuted.
[Audio_Mute_Off]	Pulses to unmute the device.	Pulses with the [Audio_Mute_Toggle] signal if the device is considered to be muted.
[Audio_Mute_Toggle]	Pulses to toggle the mute state of the device.	
[Input{1-10}_Pulse]	Pulsed outputs to select inputs on the device.	These signals pulse in conjunction with changes to the [Input] analog output.

### Signals: Analog Outputs

Name	Description	Notes/Examples
[Audio_Volume]	Sets the device's volume level.	Value Range (0%-100% or 0d – 65535d. Does not change if the "Use IR" setting in System Manager is selected.
[Input]	Tells the device or device module which input to select.	When this value changes, the corresponding [Input_Pulse] digital output will pulse.

### Signals: Serial Outputs

Name	Description	Notes/Examples
[Command_TX]	Commands to be sent to the device.	If the commands are defined in System Manager, this signal will change to the value of the command at the same time that the other output signals change (e.g. the



		<i>command for Power On will be sent as the [Power_On] signal pulses).</i>
[Packet_TX]	IR packet data to be connected to the Packet Transmission Device Extender on the program IR slot that the device will be controlled from.	<i>This signal only works when "Dynamic IR" is selected in System Manager. SIMPL Windows must be set to use the Special Symbol set in Options-&gt;Preferences.</i>

## Devices: Displays

Symbol Name: ADAPT Display

The Display module represents an individual device in the system. There can be multiple Displays in the program, but they must have unique Display Number identifiers. The control signals can be connected to a basic IR driver, a third-party control module, or the serial commands to control the device can be defined in System Manager. Displays are assigned to Rooms in System Manager. Device operation timing, input tie-lines, and even serial commands are also defined in System Manager.

### Parameters

Name	Description	Notes/Examples
Display Number	Integer parameter that identifies this Display.	<i>Must be a different number from all other Display modules.</i>

### Signals: Digital Inputs

Name	Description	Notes/Examples
INIT	Digital input that triggers the module to initialize and read its data from the core.	<i>Must connect to the Bootup modules's INIT digital output.</i>
[Device_Offline]	Feedback from the hardware informing the module that the audio switcher is offline.	<i>This signal is only necessary if it is desired to utilize the [Use_Hardware_Feedback] signal.</i>
[Use_Hardware_Feedback]	Forces the module to use the feedback input signals to determine the state of an audio zone.	<i>Connect the INIT signal to this input if used. If the device is offline (as defined by the [Offline] signal, the program's logic will take over "faking" the feedback. This allows the programmer to test the program without having the actual device present.</i>
[Power_Off_FB]	Digital feedback input indicating that the device is off.	<i>Only necessary if [Use_Hardware_Feedback] is high.</i>
[Audio_Mute_On_FB]	Digital feedback input indicating that the AvReceiver is muted.	<i>Only necessary if [Use_Hardware_Feedback] is high.</i>



### Signals: Analog Inputs

Name	Description	Notes/Examples
[Audio_Volume_FB]	Analog feedback signal indicating the Zone's current volume level.	<i>Value Range (0%-100% or 0d – 65535d). Only necessary if [Use_Hardware_Feedback] is high.</i>
[Input_FB]	Analog feedback signal indicating which input number is currently selected on the device.	<i>Value Range (1d-10d) – must match corresponding input used as defined in System Manager. Only necessary if [Use_Hardware_Feedback] is high.</i>

### Signals: Digital Outputs

Name	Description	Notes/Examples
[Busy]	Latches high while the device is busy performing an operation.	
[Power_On]	Pulses to turn the device on.	
[Power_Off]	Pulses to turn the device off.	
[Power_On/Off]	Pulses to toggle the device on and off.	<i>Always pulses with the [Power_On] signal. Only pulses with the [Power_Off] signal if the device is considered to be off.</i>
[Audio_Volume_Up]	Momentary signal to raise the volume level.	
[Audio_Volume_Down]	Momentary signal to lower the volume level.	
[Audio_Mute_On]	Pulses to mute the device.	<i>Pulses with the [Audio_Mute_Toggle] signal if the device is considered to be unmuted.</i>
[Audio_Mute_Off]	Pulses to unmute the device.	<i>Pulses with the [Audio_Mute_Toggle] signal if the device is considered to be muted.</i>
[Audio_Mute_Toggle]	Pulses to toggle the mute state of the device.	
[Input{1-10}_Pulse]	Pulsed outputs to select inputs on the device.	<i>These signals pulse in conjunction with changes to the [Input] analog output.</i>

### Signals: Analog Outputs

Name	Description	Notes/Examples
[Audio_Volume]	Sets the device's volume level.	<i>Value Range (0%-100% or 0d – 65535d). Does not change if the "Use IR" setting in System Manager is selected.</i>
[Input]	Tells the device or device module which input to select.	<i>When this value changes, the corresponding [Input_Pulse] digital output will pulse.</i>



### Signals: Serial Outputs

Name	Description	Notes/Examples
[Command_TX]	Commands to be sent to the device.	<i>If the commands are defined in System Manager, this signal will change to the value of the command at the same time that the other output signals change (e.g. the command for Power On will be sent as the [Power_On] signal pulses).</i>
[Packet_TX]	IR packet data to be connected to the Packet Transmission Device Extender on the program IR slot that the device will be controlled from.	<i>This signal only works when "Dynamic IR" is selected in System Manager. SIMPL Windows must be set to use the Special Symbol set in Options-&gt;Preferences.</i>

### Devices: Sources

Symbol Name: ADAPT Source Generic Full

#### Parameters

Name	Description	Notes/Examples
Source Number	Integer parameter that identifies this Source.	<i>Must be a different number from all other Source modules.</i>
Auto Play Delay	Drop-down parameter that defines the time the Source will wait before pulsing the [Auto_Play] output after [In_Use] goes high.	
Auto Stop Delay	Drop-down parameter that defines the time the Source will wait before pulsing the [Auto_Stop] output after [In_Use] goes low.	
Auto Off Delay	Drop-down parameter that defines the time the Source will wait before pulsing the [Auto_Power_Off] output after [In_Use] goes low.	

#### Header Signals: Digital Inputs

Name	Description	Notes/Examples
INIT	Digital input that triggers the module to initialize and read its data from the core.	<i>Must connect to the Bootup modules's INIT digital output.</i>



### Header Signals: Digital Outputs

Name	Description	Notes/Examples
[In_Use]	Latches high while any Room or User Interface is connected to the Source.	<i>Indicates that the Source is either being watched/listened to or being controlled.</i>

### Automatic Control: Digital Outputs

Name	Description	Notes/Examples
[Auto_Power_On]	Pulses as soon as [In_Use] goes high to turn the device on.	<i>Optional, but recommended to ensure that the Source device is powered on when selected.</i>
[Auto_Play]	Pulses after [In_Use] goes high and the time specified by the Auto Play Delay parameter has elapsed.	
[Auto_Stop]	Pulses after [In_Use] goes low and the time specified by the Auto Stop Delay parameter has elapsed.	
[Auto_Power_Off]	Pulses after [In_Use] goes low and the time specified by the Auto Off Delay parameter has elapsed.	

### Quick Controls: Digital Inputs

Name	Description	Notes/Examples
[[{421-470}_Quick_FB]	Digital feedback signals for highlighting the Quick Control Buttons.	

### Quick Controls: Serial Inputs

Name	Description	Notes/Examples
[[{401-450_Quick_S_FB]	Serial feedback signals for providing text to Quick Controls on Touch Panels.	

### Quick Controls: Digital Outputs

Name	Description	Notes/Examples
[*_{421-470}]	Digital outputs for controlling the Source device via Quick Controls.	<i>These signals are named to match the layout of the Quick Controls sections on User Interface modules. These signals are a subset of, and must be jammed with the outputs available in the Standard Digitals group in order for Handheld hard keys and Touch Panel Quick Control Source pages to function.</i>



### Quick Controls: Digital Inputs

Name	Description	Notes/Examples
[List_FB{1-50}]	List feedback signals for highlighting items in the Device Controls List.	<i>These signals affect the Touch Panel's Controls List, and are duplicated on Touch Panel standard joins 901-950.</i>

### Quick Controls: Serial Inputs

Name	Description	Notes/Examples
[List_Text{1-50}]	Serial feedback signals for providing text to the Device Controls List.	<i>These signals propagate through to Touch Panel standard joins 501-550.</i>

### Quick Controls: Digital Outputs

Name	Description	Notes/Examples
[List_Press{1-50}]	Digital outputs for controlling the Source device via List Controls.	<i>These signals originate from the Touch Panel's Controls List, and are duplicated on Touch Panel standard joins 901-950.</i>

### Standard Digitals: Digital Inputs

Name	Description	Notes/Examples
[[{121-420}_D_FB]	Digital feedback signals for highlighting standard joins on a device page.	<i>Many standard digital joins are given descriptive names to aid in Touch Panel page creation, and reuse of join numbers. (e.g. the Play function is join 121 on all Source device pages).</i>

### Standard Digitals: Digital Outputs

Name	Description	Notes/Examples
[*_{121-420}]	Digital output signals for controlling the device from the standard joins.	<i>Many standard digital joins are given descriptive names to aid in Touch Panel page creation, and reuse of join numbers. (e.g. the Play function is join 121 on all Source device pages).</i>

### Standard Analogs: Analog Inputs

Name	Description	Notes/Examples
[[{21-120}_*_FB]	Analog feedback signals for providing standard join values on a device page.	

### Standard Analogs: Analog Outputs

Name	Description	Notes/Examples
[Analog_Act_{21-40}]	Analog output signals for controlling the device from the standard joins.	



### Standard Serials: Serial Inputs

Name	Description	Notes/Examples
[[21-120]_*_FB]	Serial feedback signals for providing text to the device page from the standard joins.	Many standard digital joins are given descriptive names to aid in Touch Panel page creation, and reuse of join numbers. (e.g. the Current Cong Name is join 26 on all Source device pages).

## Devices: Climate System

Symbol Name: ADAPT Climate System

The Climate System module is used for whole-house climate control. There can only be one Climate System module in the program. None of the standard device joins on this module are exposed. They actually pass through to and from the various individual TSTAT modules in the program. Follow the Example Touch Panels to see the join scheme. To maintain backwards compatibility with previous versions of ADAPT, it is not necessary to add the Climate System module in order to have whole-house control. If the Climate System module is present, the system will operate using the list-based selection of individual TSTATs. If this module is not present, the system will operate with all basic TSTAT controls on one page.

### Parameters

Name	Description	Notes/Examples
System Name	The name that will appear on the user interfaces when Global Climate is selected.	<i>This field is not editable in System Manager.</i>

### Header Signals: Digital Inputs

Name	Description	Notes/Examples
INIT	Digital input that triggers the module to initialize and read its data from the core.	<i>Must connect to the Bootup modules's INIT digital output.</i>



## Devices: Climate

Symbol Name: ADAPT TSTAT

The TSTAT module represents an individual thermostat. In the case of a CHV-THSTAT, the module has auto-import capabilities. This means the unique TSTAT Number identifier and the header signals need to be completed manually.

### Parameters

Name	Description	Notes/Examples
TSTAT Number	Integer parameter that identifies this TSTAT.	<i>Must be a different number from all other TSTAT modules.</i>

### Header Signals: Digital Inputs

Name	Description	Notes/Examples
INIT	Digital input that triggers the module to initialize and read its data from the core.	<i>Must connect to the Bootup module's INIT digital output.</i>
PROGRAM_IS_READY	Digital input that allows the hardware module to finish its initialization sequence.	<i>Must connect to the Bootup module's PROGRAM_IS_READY digital output.</i>

## Devices: Lighting System

Symbol Name: ADAPT Lighting System

The Lighting System module is necessary if whole-house lighting functionality is desired. There can only be one Lighting System module in the program. The design intent is for this module to integrate with large D3Pro or third-party lighting systems, Pyn systems, or smaller systems with lighting hardware defined in the ADAPT program. Some standard device joins on this module are not exposed and actually pass through to and from the various Lighting Zone modules in the program. These signals are:

Digital 121-130	Lighting Load 1-10 Up/On
Digital 131-140	Lighting Load 1-10 Down/Off
Digital 141-150	Lighting Load 1-10 Visibility
Digital 151-160	Lighting Load 1-10 Slider Enable
Analog 21-30	Lighting Load 1-10 Slider Input/Feedback
Serial 21-30	Lighting Load 1-10 Name
Serial 31-42	Global Scene Names
Serial 43	Current Lighting Zone Name



### Header Signals: Digital Inputs

Name	Description	Notes/Examples
INIT	Digital input that triggers the module to initialize and read its data from the core.	<i>Must connect to the Bootup modules's INIT digital output.</i>

### Global Scenes (Joins161-172): Digital Inputs

Name	Description	Notes/Examples
[Scene_FB{1-12}]	Digital feedback signals for highlighting global lighting scene feedback buttons on joins 161-172.	<i>Typically connected to a D3Pro EISC, Pyng Trigger Actions module, or logic that controls all Lighting Loads in the system.</i>

### Global Scenes (Joins161-172): Digital Outputs

Name	Description	Notes/Examples
[Scene_Btn{1-12}]	Digital outputs signals for triggering global lighting scene functions on joins 161-172.	<i>Typically connected to a D3Pro EISC, Pyng Trigger Actions module, or logic that controls all Lighting Loads in the system.</i>

### Digitals (Joins 173-255): Digital Inputs

Name	Description	Notes/Examples
[D_FB{173-255}]	Digital feedback signals for highlighting standard join buttons on the Global Lighting device page.	<i>These signals can be used for additional Lighting System functionality, such as scheduling.</i>

### Digitals (Joins 173-255): Digital Outputs

Name	Description	Notes/Examples
[D_Btn{173-255}]	Digital outputs signals for controlling the Lighting System from the standard join buttons on the Global Lighting device page.	<i>These signals can be used for additional Lighting System functionality, such as scheduling.</i>

### Analog (Joins 31-40): Analog Inputs

Name	Description	Notes/Examples
[A_FB{31-40}]	Analog feedback signals for providing standard join values on the Global Lighting device page.	<i>These signals can be used for additional Lighting System functionality, such as scheduling or global lighting sliders.</i>

### Analog (Joins 31-40): Analog Outputs

Name	Description	Notes/Examples
[A_Out31-40]	Analog output signals for controlling the Lighting System	<i>These signals can be used for additional Lighting System</i>



	from the standard joins on the Global Lighting device page.	<i>functionality, such as scheduling or global lighting sliders.</i>
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**Serials (Joins 44-60): Serial Inputs**

<b>Name</b>	<b>Description</b>	<b>Notes/Examples</b>
[S_FB{44-60}]	Serial feedback signals for providing text to the Global Lighting device page from the standard joins.	<i>These signals can be used for additional Lighting System functionality, such as scheduling.</i>



## Devices: Lighting Zone

Symbol Name: ADAPT Lighting Zone

The Lighting Zone represents a group of Lighting Loads. A Lighting Zone can have up to 10 loads associated with it. Individual load control is available but not necessary. The Lighting Zone can be used to recall lighting presets for a given “area” of lights in a home. There can be multiple Lighting Zones in a program, but must each be given a unique Zone Number identifier.

### Parameters

Name	Description	Notes/Examples
Zone Number	Integer parameter that identifies this Lighting Zone.	<i>Must be a different number from all other Lighting Zone modules.</i>
Number Of Loads	Integer parameter that defines the number of Lighting Loads included in this Lighting Zone.	<i>There must be at least one Load in order for the module to function, even if it is not used.</i>

### Header Signals: Digital Inputs

Name	Description	Notes/Examples
INIT	Digital input that triggers the module to initialize and read its data from the core.	<i>Must connect to the Bootup modules's INIT digital output.</i>

### Scene Buttons: Digital Inputs

Name	Description	Notes/Examples
[Scene_FB{1-12}]	Digital feedback signals for highlighting local lighting scene feedback on the Control List.	<i>These signals represent the List Controls for this Lighting Zone. If Touch Panel buttons are desired over using the Control List, they can be assigned to joins 901-912.</i>

### Scene Buttons: Digital Outputs

Name	Description	Notes/Examples
[Scene_Btn{1-12}]	Digital outputs signals for triggering local lighting scene functions via the Control List.	<i>These signals represent the List Controls for this Lighting Zone. If Touch Panel buttons are desired over using the Control List, they can be assigned to joins 901-912.</i>

### Load Controls: Analog Inputs

Name	Description	Notes/Examples
[Load{1-10}_Level_FB]	Analog feedback signals for providing level feedback from an individual Lighting Load.	<i>Connect to slider feedback at analog joins 21-30.</i>

### Load Controls: Analog Outputs

Name	Description	Notes/Examples
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[Load{1-10}_Level]	Analog output signals for controlling the level of an individual Lighting Load.	Connect to slider at analog joins 21-30.
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### Load Controls: Digital Outputs

Name	Description	Notes/Examples
[Load{1-10}_Up/On]	Digital output signals for controlling individual Lighting Load raise (if dimmable) and on (if not).	These signals are joined at 121-130.
[Load{1-10}_Down/Off]	Digital output signals for controlling individual Lighting Load lower (if dimmable) and off (if not).	These signals are joined at 131-140.

## Devices: Security System

Symbol Name: ADAPT Security System

The Security System module represents the home's security system. Only one Security System module is allowed in the program. The names of the Security Zones associated with the Security System are defined in System Manager. There is a limit of 50 individual Security Zones. If additional zones are required, custom logic must be put in place to accommodate. The Security System module should still be used in order to keep the Touch Panel page logic intact.

### Parameters

Name	Description	Notes/Examples
Number Of Zones	Integer parameter that defines the number of Security Zones included in the Security System.	

### Header Signals: Digital Inputs

Name	Description	Notes/Examples
INIT	Digital input that triggers the module to initialize and read its data from the core.	Must connect to the Bootup modules's INIT digital output.

### Header Signals: Digital Outputs

Name	Description	Notes/Examples
[In_Use]	Digital output that latches high when a Touch Panel is viewing the Security System device page.	This optional signal is often useful when tied to polling logic – allowing the program to only poll the Security System device when the controls are being used.



### Controls: Digital Inputs

Name	Description	Notes/Examples
[D_In{121-420}]	Digital feedback signals for highlighting standard joins on the device page.	

### Controls: Analog Inputs

Name	Description	Notes/Examples
[A_In{21-120}]	Analog feedback signals for providing standard join values on a device page.	

### Controls: Serial Inputs

Name	Description	Notes/Examples
[S_In{21-120}]	Serial feedback signals for providing text to the device page from the standard joins.	

### Controls: Digital Outputs

Name	Description	Notes/Examples
[D_Out{121-420}]	Digital output signals for controlling the device from the standard joins.	

### Controls: Analog Outputs

Name	Description	Notes/Examples
[A_Out{21-120}]	Analog output signals for controlling the device from the standard joins.	

### Controls: Serial Outputs

Name	Description	Notes/Examples
[S_Out{21-120}]	Serial output signals for providing serial data to the device from the standard joins.	

### List: Digital Inputs

Name	Description	Notes/Examples
[List_D_In{1-50}]	List feedback signals for highlighting items in the Control List on the device page.	

### List: Analog Inputs

Name	Description	Notes/Examples
[List_A_In{1-50}]	Analog feedback signals for providing standard join values in the Control List on the device page.	

### List: Serial Inputs



Name	Description	Notes/Examples
[List_S_In{1-50}]	Serial feedback signals for providing text to the Control List on the device page.	

**List: Digital Outputs**

Name	Description	Notes/Examples
[List_D_Out{121-420}]	Digital output signals for controlling the device from the Control List on the device page.	

## Devices: Camera

Symbol Name: ADAPT Camera

The Camera module represents an individual security camera device. There can be up to 100 Camera modules in the program. Each Camera module must be given a unique Camera Number identifier. The module is designed around the concept of streaming video to Touch Panels. It can represent an individual IP camera that can be viewed or controlled on its own, or can represent a camera that is available for streaming and control through a central DVR/NVR.

**Parameters**

Name	Description	Notes/Examples
Camera Number	Integer parameter that identifies this Camera.	<i>Must be a different number from all other Camera modules.</i>

**Signals: Digital Inputs**

Name	Description	Notes/Examples
INIT	Digital input that triggers the module to initialize and read its data from the core.	<i>Must connect to the Bootup modules's INIT digital output.</i>

**Signals: Digital Outputs**

Name	Description	Notes/Examples
[Select_Camera]	Pulses when the camera is selected from a Touch Panel.	<i>This signal is typically used on an IR driver of a central DVR to select this Camera, if it is to be viewed through the DVR and not directly.</i>
[*_{121-144}]	Digital output signals for controlling the device from the standard joins.	



**Signals: Serial Outputs**

Name	Description	Notes/Examples
[Inside_URL]	Informational signal that represents the "Inside URL" string that has been associated in System Manager with this Camera.	<i>Not normally used.</i>
[Outside_URL]	Informational signal that represents the "Outside URL" string that has been associated in System Manager with this Camera.	<i>Not normally used.</i>

**Devices: Windows System**

Symbol Name: ADAPT Windows System

The Windows System module is necessary if whole-house shade control functionality is desired. There can only be one Windows System module in the program. The design intent for this module is to allow for integration with large D3Pro or third-party shading systems, Pyng systems, or even smaller systems with shade hardware defined in the ADAPT program. Some of the standard device joins on this module are not exposed and actually pass through to and from the various Windows Zone modules in the program. These signals are:

- Digital 121-130                      Shade 1-10 Raise
- Digital 131-140                      Shade 1-10 Lower
- Digital 141-150                      Shade 1-10 Open
- Digital 151-160                      Shade 1-10 Close
- Digital 161-170                      Shade 1-10 Stop
- Digital 171-180                      Shade Visibility
- Analog 21-30                         Shade 1-10 Slider Input/Feedback
- Serial 21-30                            Shade 1-10 Name
- Serial 31-42                            Global Scene Names
- Serial 43                                Current Windows Zone Name

**Header Signals: Digital Inputs**

Name	Description	Notes/Examples
INIT	Digital input that triggers the module to initialize and read its data from the core.	<i>Must connect to the Bootup modules' INIT digital output.</i>



**Global Scenes (Joins181-192): Digital Inputs**

Name	Description	Notes/Examples
[Scene_FB{1-12}]	Digital feedback signals for highlighting global shading scene feedback buttons on joins 161-172.	Typically connected to a D3Pro EISC, Pyng Trigger Actions module, or logic that controls all Window Controllers in the system.

**Global Scenes (Joins181-192): Digital Outputs**

Name	Description	Notes/Examples
[Scene_Btn{1-12}]	Digital outputs signals for triggering global shading scene functions on joins 161-172.	Typically connected to a D3Pro EISC, Pyng Trigger Actions module, or logic that controls all Window Controllers in the system.

**Digitals (Joins 193-255): Digital Inputs**

Name	Description	Notes/Examples
[D_FB{173-255}]	Digital feedback signals for highlighting standard join buttons on the Global Windows device page.	These signals can be used for additional Windows System functionality, such as scheduling.

**Digitals (Joins 193-255): Digital Outputs**

Name	Description	Notes/Examples
[D_Btn{173-255}]	Digital outputs signals for controlling the Windows System from the standard join buttons on the Global Windows device page.	These signals can be used for additional Windows System functionality, such as scheduling.

**Analog (Joins 31-40): Analog Inputs**

Name	Description	Notes/Examples
[A_FB{31-40}]	Analog feedback signals for providing standard join values on the Global Windows device page.	These signals can be used for additional Windows System functionality, such as scheduling or global shade sliders.

**Analog (Joins 31-40): Analog Outputs**

Name	Description	Notes/Examples
[A_Out{31-40}]	Analog output signals for controlling the Windows System from the standard joins on the Global Windows device page.	These signals can be used for additional Windows System functionality, such as scheduling or global shade sliders.

**Serials (Joins 44-60): Serial Inputs**

Name	Description	Notes/Examples
[S_FB{44-60}]	Serial feedback signals for providing text to the Global Windows device page from the standard joins.	These signals can be used for additional Windows System functionality, such as scheduling.



## Devices: Windows Zone

Symbol Name: ADAPT Windows Zone

The Windows Zone represents a group of Shade or Window Controllers. A Window Zone can have up to 10 controllers associated with it. Individual shade control is available but not necessary. The Windows Zone can simply be used to recall shading presets for a given “area” of window treatments in a home. There can be multiple Windows Zones in a program, but they must each be given a unique Zone Number identifier.

### Parameters

Name	Description	Notes/Examples
Zone Number	Integer parameter that identifies this Windows Zone.	<i>Must be a different number from all other Windows Zone modules.</i>
Number Of Windows	Integer parameter that defines the number of Window Controllers included in this Windows Zone.	<i>There must be at least one Window in order for the module to function, even if it is not used.</i>

### Header Signals: Digital Inputs

Name	Description	Notes/Examples
INIT	Digital input that triggers the module to initialize and read its data from the core.	<i>Must connect to the Bootup modules’s INIT digital output.</i>

### Scene Buttons: Digital Inputs

Name	Description	Notes/Examples
[Scene_FB{1-12}]	Digital feedback signals for highlighting local shading scene feedback on the Control List.	<i>These signals represent the List Controls for this Windows Zone. If Touch Panel buttons are desired over using the Control List, they can be assigned to joins 901-912.</i>

### Scene Buttons: Digital Outputs

Name	Description	Notes/Examples
[Scene_Btn{1-12}]	Digital outputs signals for triggering local shading scene functions via the Control List.	<i>These signals represent the List Controls for this Windows Zone. If Touch Panel buttons are desired over using the Control List, they can be assigned to joins 901-912.</i>

### Window Controls: Analog Inputs

Name	Description	Notes/Examples
[Window{1-10}_PositionI_FB]	Analog feedback signals for providing position feedback from an individual Window Controller.	<i>Connect to slider feedback at analog joins 21-30.</i>



### Window Controls: Digital Inputs

Name	Description	Notes/Examples
[Window{1-10}_Is_Raising]	Digital feedback signals for highlighting individual Window Controller buttons.	<i>These signals are joined at 121-130</i>
[Window{1-10}_Is_Lowering]	Digital feedback signals for highlighting individual Window Controller buttons.	<i>These signals are joined at 131-140</i>
[Window{1-10}_Is_Full_Open]	Digital feedback signals for highlighting individual Window Controller buttons.	<i>These signals are joined at 141-150</i>
[Window{1-10}_Is_Full_Closed]	Digital feedback signals for highlighting individual Window Controller buttons.	<i>These signals are joined at 151-160</i>
[Window{1-10}_Is_Stopped]	Digital feedback signals for highlighting individual Window Controller buttons.	<i>These signals are joined at 161-170</i>

### Window Controls: Analog Outputs

Name	Description	Notes/Examples
[Window{1-10}_Position_Set]	Analog output signals for controlling the position of an individual Window Controller.	<i>Connect to slider at analog joins 21-30.</i>

### Window Controls: Digital Outputs

Name	Description	Notes/Examples
[Window{1-10}_Raise]	Digital outputs signals for controlling individual Window Controllers from the standard join buttons on the Local Windows device page.	<i>These signals are joined at 121-130</i>
[Window{1-10}_Lower]	Digital outputs signals for controlling individual Window Controllers from the standard join buttons on the Local Windows device page.	<i>These signals are joined at 131-140</i>
[Window{1-10}_Open]	Digital outputs signals for controlling individual Window Controllers from the standard join buttons on the Local Windows device page.	<i>These signals are joined at 141-150</i>
[Window{1-10}_Close]	Digital outputs signals for controlling individual Window Controllers from the standard join buttons on the Local Windows device page.	<i>These signals are joined at 151-160</i>
[Window{1-10}_Stop]	Digital outputs signals for controlling individual Window	<i>These signals are joined at 161-170</i>



	Controllers from the standard join buttons on the Local Windows device page.	
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## Devices: Door lock System

Symbol Name: ADAPT Door Lock System

The Door Lock System module is necessary if whole-house door lock control functionality is desired. There can only be one Door Lock System module in the program. None of the standard device joins on this module are exposed. They actually pass through to and from the various individual Door Lock modules in the program. Follow the Example Touch Panels to see the join scheme.

### Header Signals: Digital Inputs

Name	Description	Notes/Examples
INIT	Digital input that triggers the module to initialize and read its data from the core.	<i>Must connect to the Bootup modules's INIT digital output.</i>

## Devices: Door Lock

Symbol Name: ADAPT Door Lock

The Door Lock module represents an individual door lock in the program. Multiple Door Lock modules can be added to the program, but they must each be given a unique Door Lock Number identifier. Most of the standard joins for this module are not exposed.

### Parameters

Name	Description	Notes/Examples
Door Lock Number	Integer parameter that identifies this Door Lock.	<i>Must be a different number from all other Door Lock modules.</i>

### Signals: Digital Inputs

Name	Description	Notes/Examples
INIT	Digital input that triggers the module to initialize and read its data from the core.	<i>Must connect to the Bootup modules's INIT digital output.</i>
[Lock]	Sends the lock command to the device.	<i>Optional signal that is typically only necessary is custom logic is required.</i>



[Unlock]	Send the unlock command to the device.	<i>Optional signal that is typically only necessary is custom logic is required.</i>
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**Signals: Digital Outputs**

Name	Description	Notes/Examples
[Locked_FB]	Indicates the device is locked.	<i>Optional signal that is typically only necessary is custom logic is required.</i>
[Unlocked_FB]	Indicates the device is unlocked.	<i>Optional signal that is typically only necessary is custom logic is required.</i>

## Devices: Doorbell Logic

Symbol Name: ADAPT Doorbell Logic

The Doorbell Logic module represents trigger from a doorbell input and the subsequent events that occur after the doorbell is triggered. Up to 4 Doorbell Logic modules can be added to the program, but they must each be given a unique Doorbell Number identifier. The Doorbell module itself is a Device, but typically does not get connected to through User Interfaces for direct control. Instead, Touch Panels and Rooms are assigned actions to take place when a doorbell event occurs in System Manager. If there is a dedicated audio source that plays audio in Rooms during a doorbell event, that audio device must be added as a Source in order for System Manager to be able to assign that audio source to Rooms.

**Parameters**

Name	Description	Notes/Examples
Doorbell Number	Integer parameter that identifies this Doorbell.	<i>Must be a different number from all other Doorbell Logic modules.</i>
I/O Debounce Time	Time parameter defining how long the Doorbell Input signal must remain high before triggering the doorbell event.	<i>This debounce is often necessary due to the sensitive nature of digital I/O ports on Crestron equipment when the doorbell cabling is installed using unshielded cable.</i>

**Signals: Digital Inputs**

Name	Description	Notes/Examples
INIT	Digital input that triggers the module to initialize and read its data from the core.	<i>Must connect to the Bootstrap modules's INIT digital output.</i>
Doorbell_Input	Starts the Doorbell event.	<i>Connect to a versiport or other input on a hardware definition.</i>



[Cancel_Doorbell]	Cancels the Doorbell event globally.	<i>Optional signal that is typically only necessary if custom logic is required.</i>
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**Signals: Digital Outputs**

Name	Description	Notes/Examples
[Play_Chime_Pulse]	Pulses when the Doorbell event is triggered. There is a timing setting in the System Manager data that allows this pulse to be delayed after the Doorbell event is triggered.	<i>This signal is intended to trigger a dedicated doorbell audio player to start playing its doorbell chime.</i>
[Select_Camera_Pulse]	Pulses when the Doorbell event is triggered to send a command to a central security camera DVR to select the camera that displays the physical doorbell location.	

## Devices: Other Devices

Symbol Name: ADAPT Other Device Full

The Other Device modules represents devices in the system that need to be controlled, but are not part of the standard set of Devices. Examples include Pool Controllers, Fireplaces, and Garage Doors. Since Other Devices are essentially generic, they can be used in a variety of ways to fit custom programming requirements. For instance, multiple physical device controls can be combined into a single Other Device.

**Parameters**

Name	Description	Notes/Examples
Device Number	Integer parameter that identifies this Device.	<i>Must be a different number from all other Other Device modules.</i>

**Header Signals: Digital Inputs**

Name	Description	Notes/Examples
INIT	Digital input that triggers the module to initialize and read its data from the core.	<i>Must connect to the Bootup modules's INIT digital output.</i>

**Header Signals: Digital Outputs**

Name	Description	Notes/Examples
[In_Use]	Latches high while any User Interface is connected to the Device.	



### List Digitals: Digital Inputs

Name	Description	Notes/Examples
[List_Item{1-50}_FB]	List feedback signals for highlighting items in the Control List on the device page.	

### List Digitals: Digital Outputs

Name	Description	Notes/Examples
[List_Item{1-50}_Press]	Digital output signals for controlling the device from the Control List on the device page.	

### List Serials: Serial Inputs

Name	Description	Notes/Examples
[List_Serial{1-50}_FB]	Serial feedback signals for providing text to the Control List on the device page.	

### Standard Digitals: Digital Inputs

Name	Description	Notes/Examples
[D_FB_{121-420}]	Digital feedback signals for highlighting standard joins on a device page.	

### Standard Digitals: Digital Outputs

Name	Description	Notes/Examples
[D_Press_{121-420}]	Digital output signals for controlling the device from the standard joins.	

### Standard Analogs: Analog Inputs

Name	Description	Notes/Examples
[A_FB_{21-120}]	Analog feedback signals for providing standard join values on a device page.	

### Standard Analogs: Analog Outputs

Name	Description	Notes/Examples
[A_Out_{21-40}]	Analog output signals for controlling the device from the standard joins.	

### Standard Serials: Serial Inputs

Name	Description	Notes/Examples
[S_FB_{21-120}]	Serial feedback signals for providing text to the device page from the standard joins.	



## Additional Notes

### Joins Numbers Not Exposed in SIMPL Windows

Symbol Name: ADAPT Kaleidescape OSD

#### QUICK CONTROL FUNCTIONS

Function	Join	Function	Join
Menu	421		440
Movie Covers	422	Movie Collections	441
Now Playing	423	Keypad 1	442
Up	424	Keypad 2	443
Down	425	Keypad 3	444
Left	426	Keypad 4	445
Right	427	Keypad 5	446
Select	428	Keypad 6	447
Page Up	429	Keypad 7	448
Page Down	430	Keypad 8	449
Cancel	431	Keypad 9	450
	432	Keypad 0	451
Play	433	Cancel	452
Stop	434	Select	453
Rewind	435	Intermission	454
Fast Forward	436	Alphabetize	455
Next	437	Shuffle Covers	456
Previous	438	Subtitles Next	457
Stop	439		