Partner: BOSE
Model: SoundTouch
Device Type: Network Audio System

GENERAL INFORMATION:

SIMPLWINDOWS NAME:	Bose_SoundTouch_Demo
CATEGORY:	Network Audio System
VERSION:	1.00
SUMMARY:	This module will control Bose SoundTouch devices, via TCP/IP. The following main features are supported: • Device discovery • Device selection • Transport and volume control • Discrete preset selection • Multiroom control (grouping)
GENERAL NOTES:	The driver consists of two different modules: **BoseSoundTouch Communication** This module is responsible for all communication between the Bose system and Crestron. It controls routing of commands and feedback between the correct devices as well as the automatic discovery of the Bose devices on the network. Only one instance of this module is required. **BoseSoundTouch TouchPanel** An instance of this module is required for control of each Crestron touch panel. It is used to send commands and receive feedback from the Bose system, via the Communication module.
CRESTRON HARDWARE REQUIRED:	Only Crestron 3-series control processors are currently supported.
SETUP OF CRESTRON HARDWARE:	Ensure the Crestron processor is connected to the same Subnet as the Bose devices. The driver uses the Crestron Processor's NVRAM to store vital configuration information. It is therefore necessary to enable NVRAM in order for the driver to function effectively: • Open Crestron Toolbox. • Go to Tools > System Info and choose your processor, ensuring it connects. • Next, go to Functions > NVRAM Disk... • Check Enable and click Apply. The modules should be incorporated into your project, with as many instances of the Touch Panel module as are required. A demonstration file has been included in .smw format to aid with integration into your existing project. Additionally, a number of touch panel designs have been created to mimic the Bose Soundtouch application; these can used for demonstration purposes, or directly integrated into your project. As per the below example, each touch panel module must be linked with the Communication module by connecting the INTER_MODULE_COMMS inputs in the Communication module with the INTER_COMMS_COMMAND output in each touch panel module. Additionally, the INTER_MODULE_COMMS outputs in the Communication module must be linked to the INTER_COMMS_FEEDBACK input in the touch panel modules.

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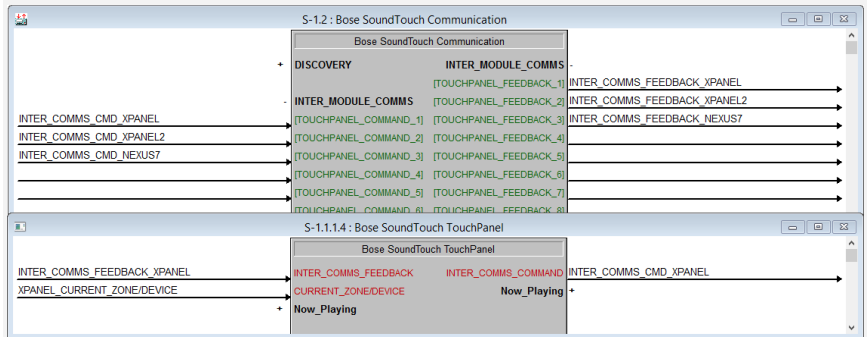
At start up, the Communication module will automatically discover all compatible Bose devices connected to the same subnet. If the Crestron system is to be multi-zone, the only additional configuration required, is to define zone names in Crestron in the communication module, similar to the below example:
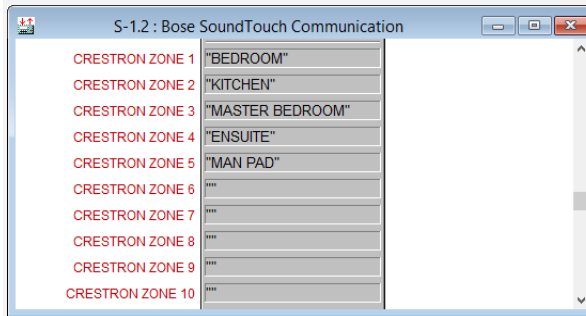
 If these names are the similar to the device names configured in the Bose system, (note that casing and spaces are ignored) an automatic link is created after discovery.   If the names do not match, Bose devices will be assigned to Crestron zones at random. The ZONE_x_DISCOVERY_ANOTHER_BOSE_DEVICE command can be used to cycle through discovered devices, so that the correct device can be assigned to the correct zone.

VENDOR FIRMWARE:	This driver has been written and tested using the following device types: • SoundTouch 20 (SW v.7.2.37) • Wave Music System III (SW v.7.2.37) • SoundTouch SA-4 (SW v.7.2.37) • Crestron MC3 (FW v.1.011.0023, Compiler v. 3103)
VENDOR SETUP:	It is recommended that the Bose system be installed, configured and tested by a suitably qualified engineer, according to Bose documentation, prior to integration with this driver. No specific configuration steps are required to integrate with this driver, other than to ensure there is a single system on the same subnet as the Crestron processor, with all devices registered to the same account. The installer should note that the end user will require access to the Bose SoundTouch application (running on a PC, Mac, iOS or Android device) in order to browse music sources, or to save new presets.
CABLE DIAGRAM:	N/A

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CONTROL (COMMUNICATION MODULE):

START_DISCOVERY	D	Used for discovery of Bose devices connected to the network. This command runs automatically at start up.
TOUCHPANEL_COMMAND_x	S	Connects to the INTER_COMMS_COMMAND signal output in the touch panel module.
ZONE_x_DISCOVERY_	D	Cycles through the discovered devices, so that the correct device can be linked to the Crestron zone.

PARAMETERS (COMMUNICATION MODULE):

CRESTRON ZONE x	S	The name of the zone. Where possible, this should match the name of the device as defined in the Bose Soundtouch application.

FEEDBACK (COMMUNICATION MODULE):

TOUCHPANEL_FEEDBACK_x	S	Connects to the INTER_COMMS_FEEDBACK signal input in the touch panel module.
STATUS_ANALOG	A	An analogue signal describing the current connection status (0 = Disconnected, 1 = Ready, 2 = Busy, 3 = Error).
STATUS_DESCRIPTION	S	A text string providing a description of the connection status (e.g. "disconnected", "ready").
CRESTRON_ZONE_x_ BOSE_NAME	S	The name of the Crestron zone.
CRESTRON_ZONE_x_IP	S	The IP address of the Bose device assigned to the Crestron zone.
CRESTRON_ZONE_x_MAC	S	The MAC address of the Bose device assigned to the Crestron zone.
NUMBER_OF_DEVICES	A	The number of Bose devices discovered on the network.
BOSE_NAME_DEVICE_x	S	The name of the Bose device.

CONTROL (TOUCHPANEL MODULE):

INTER_COMMS_FEEDBACK	S	Connects to the TOUCHPANEL_FEEDBACK_x signal input in the communication module.
CURRENT_ZONE/DEVICE	S	The currently selected Crestron zone/Bose device. You can select a Bose device either by device name (B=[device name]), or device index within discovered devices (B[index]). Similarly, for Crestron zones using C=[zone name] or C[index].
POWER_OFF	D	Sends a discrete power off to the Bose device.

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PLAY_PAUSE	D	Toggle between play and pause.
PREV_TRACK	D	"Skip" back to the previous track.
NEXT_TRACK	D	"Skip" forward to the next track.
THUMBS_UP	D	Send a "thumbs up" command to Bose (this is supported by some streaming music services, such as Pandora).
THUMBS_DOWN	D	Send a "thumbs down" command to Bose (this is supported by some streaming music services, such as Pandora).
REPEAT	D	Toggle the current Repeat status.
SHUFFLE	D	Toggle the current Shuffle status.
SELECT_PRESET_x	D	Select one of the 6 presets as defined in the Bose Soundtouch application.
SELECT_AUX_x	D	Select local AUX input. Availability depends on model. Wave Soundtouch = Not Available Soundtouch 20 Series II = AUX1 Available Soundtouch 30 Series II = AUX1 Available Soundtouch SA-5 Amplifier = AUX1-3 Available Soundtouch SA-4 Amplifier = Not Available
PLAY_EVERYWHERE	D	Toggle add/remove all devices to/from the current group.
ADD_SELECTED	D	Add the selected device(s) to the current group.
REMOVE_SELECTED	D	Remove the selected device(s) from the current group.
GROUP_SCROLL_UP	D	Scroll up the list of devices in the current group.
GROUP_SCROLL_DOWN	D	Scroll down the list of devices in the current group.
GROUP_SELECT_MASTER	D	Select the current group's master device, ready for disbanding.
SLAVE_x_SELECT	D	Select a slave device in the current group, ready for removal.
GROUP_MASTER_MUTE	D	Toggle the mute status of the current group master.
SLAVE_x_MUTE	D	Toggle the mute status of a slave device in the current group.
GROUP_MASTER_VOLUME	A	Set the volume level of the group master.
SLAVE_x_VOLUME	A	Set the volume level of a slave device in the current group.
DEVICE_SCROLL_UP	D	Scroll up the list of devices available to add to the current group.

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DEVICE_SCROLL_DOWN	D	Scroll down the list of devices available to add to the current group.
DEVICE_LIST_x_SELECT	D	Select a device ready for adding to the current group.
DEVICE_LIST_x_MUTE	D	Toggle the mute status of the device.
DEVICE_LIST_x_VOLUME	A	Set the volume level of the device.
MASTER_VOLUME	A	Set the relative volume level for all devices in the current group.
MASTER_MUTE	D	Toggle the mute status for all devices in the current group.

PARAMETERS (TOUCHPANEL MODULE):

Items in Group list	S	The number of items to be displayed at any one time in the "In Group" list.
Items in Device Group list	S	The number of items to be displayed at any one time in the "Out of Group" list.

FEEDBACK (TOUCHPANEL MODULE):

INTER_COMMS_COMMAND	S	Connects to the TOUCHPANEL_COMMAND_x signal input in the communication module.
PLAY_DISPLAY	D	Controls visibility of the Play/Pause transport button (except when Pandora or iHeart Radio is the current source).
PANDORA_PLAY_DISPLAY	D	Controls visibility of the Play/Pause transport button when Pandora or iHeart Radio is the current source.
PREV_TRACK_DISPLAY	D	Controls visibility of the Skip Back transport button.
NEXT_TRACK_DISPLAY	D	Controls visibility of the Skip Forward transport button.
THUMBS_UP_DISPLAY	D	Controls visibility of the Thumbs Up button.
THUMBS_DOWN_DISPLAY	D	Controls visibility of the Thumbs Down button.
REPEAT_DISPLAY	D	Controls visibility of the Repeat button.
SHUFFLE_DISPLAY	D	Controls visibility of the Shuffle button.
SKIP_ENABLE	D	Enables or disables functionality of Skip Forward button.
SKIP_PREV_ENABLE	D	Enables or disables functionality of Skip Back button.
THUMBS_ENABLE	D	Enables or disables functionality of Thumbs Up/Down buttons.

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ART_WORK_ENABLE	D	Controls visibility of the art work.
TRACK	S	The name of the track currently playing.
ALBUM	S	The name of the album for the currently playing track.
DESCRIPTION	S	A description of the currently playing track.
STATION_NAME	S	The name of the radio station currently playing.
STATION_LOCATION	S	The location of the radio station currently playing.
ART_WORK	S	The URL for the art work associated with the currently playing track or station.
ARTIST	S	The name of the artist for the currently playing track.
SOURCE	S	The type of source currently playing.
SONG_PROGRESS	A	An analogue signal indicating the progress of the currently playing track.
PLAY_STATUS	A	Feedback of the current play status (0 = Stopped, 1 = Playing, 2 = Paused).
REPEAT_STATUS	A	Feedback of the current repeat status (0 = Off, 1 = Repeat All, 2 = Repeat Track).
SHUFFLE_FB	D	Feedback of the current shuffle status.
THUMB_DOWN_FB	D	Feedback of the current Thumbs Down status.
THUMB_UP_FB	D	Feedback of the current Thumbs Up status.
NEXT_TRACK_STATUS	A	Controls the type of icon used for the Next Track button (0 = Standard Skip Fwd Icon, 1 = "SCAN" icon, for iHeart Radio only).
PRESET_LABEL_x	S	The name of the Preset.
PLAY_EVERYWHERE_ENABLE	D	Controls the availability of the PLAY_EVERYWHERE command (allowing a Group to be created containing all players).
ADD_SELECTED_ENABLE	D	Controls the availability of the ADD_SELECTED command (allowing a selected device to be added to an existing group).
REMOVE_SELECTED_ENABLE	D	Controls the availability of the REMOVE_SELECTED command (allowing a selected device to be removed from an existing group).
GROUP_SCROLL_VALUE_FB	A	Indicates current scroll position of "In Group" list (0-100)
GROUP_LIST_SCROLL_UP_ ENABLE	D	Controls the ability to scroll up the "In Group" list.

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GROUP_LIST_SCROLL_DOWN_ ENABLE	D	Controls the ability to scroll down the "In Group" list.
GROUP_LIST_SCROLL_ENABLE	D	Controls visibility of "In Group" list scroll bar.
SELECT_MASTER_FB	D	Indicates that the Master device has been selected from the "In Group" list for subsequent disbanding of the current group.
SLAVE_x_SELECTED_FB	D	Indicates that a slave device has been selected from the "In Group" list for subsequent removal from the current group.
GROUP_MASTER_MUTE_FB	D	Feedback of the group master device's mute status.
SLAVE_x_MUTE_FB	D	Feedback of a slave device's mute status.
SLAVE_x_DISPLAY_ITEM	D	Controls of the display of slave devices in the "in Group" list.
GROUP_MASTER_VOLUME_FB	A	Feedback of the group master device's volume level.
SLAVE_x_VOLUME_FB	A	Feedback of a slave device's volume level.
MASTER_DEVICE_TYPE_FB	A	Feedback of the master device type: 0 = Unknown 1 = Wave Soundtouch 2 = Soundtouch 20 Series II 3 = Soundtouch 30 Series II 4 = Soundtouch SA-4 Amplifier 5 = Soundtouch Portable Series II
SLAVE_x_DEVICE_TYPE_FB	A	Feedback of the slave device type: 0 = Unknown 1 = Wave Soundtouch 2 = Soundtouch 20 Series II 3 = Soundtouch 30 Series II 4 = Soundtouch SA-4 Amplifier 5 = Soundtouch Portable Series II 6 = Soundtouch SA-5 Amplifier
GROUP_MASTER_LABEL_FB	S	Feedback of the group master's name.
GROUP_LIST_SLAVE_x_ LABEL_FB	S	Feedback of a slave's name.
DEVICE_SCROLL_VALUE_FB	A	Indicates current scroll position of "Out of Group" list (0-100)
DEVICE_LIST_SCROLL_UP_ ENABLE	D	Controls the ability to scroll up the "Out of Group" list.
DEVICE_LIST_SCROLL_DOWN_ ENABLE	D	Controls the ability to scroll down the "Out of Group" list.

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DEVICE_LIST_SCROLL_ENABLE	D	Controls visibility of "Out of Group" list scroll bar.
DEVICE_LIST_x_SELECTED_FB	D	Indicates that a device has been selected from the "Out of Group" list for subsequent addition to the current group.
DEVICE_LIST_x_MUTE_FB	D	Feedback of a device's mute status in the "Out of Group" list.
DEVICE_LIST_x_DISPLAY_ITEM	D	Controls of the display of devices in the "Out of Group" list.
DEVICE_LIST_x_VOL_FB	A	Feedback of a device's volume level in the "Out of Group" list.
DEVICE_LIST_x_DEVICE_ TYPE_FB	A	Feedback of the device type: 0 = Unknown 1 = Wave Soundtouch 2 = Soundtouch 20 Series II 3 = Soundtouch 30 Series II 4 = Soundtouch SA-4 Amplifier 5 = Soundtouch Portable Series II 6 = Soundtouch SA-5 Amplifier
DEVICE_LIST_x_LABEL_FB	S	Feedback of a device name in the "Out of Group" list.
MASTER_VOL_FB	A	Feedback of the Master volume level (for Groups, this will always display the level of the device with the highest volume).
MASTER_MUTE_FB	D	Feedback of the Master mute status.
CURRENT_PRESET_FB	A	Analogue signal, providing feedback of the current preset number (1-6).
PRESET_x_FB	D	Indicates when a preset has been selected.
AUX_x_FB	D	Indicates when AUX input has been selected.
CURRENT_ZONE_NAME	S	The name of the currently selected device.
CURRENT_GROUP_NAME	S	The name of the currently selected group.
POPUP_MSG_BOX_ENABLE	D	Controls the display of the pop-up message window.
POPUP_MSG	S	The text to be displayed in the pop-up message window.

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TESTING:	
OPS USED FOR TESTING:	MC3 1.011.0023
SIMPL WINDOWS USED FOR TESTING:	4.03.20
CRESTRON DB USED FOR TESTING:	46.00.004.00
DEVICE DB USED FOR TESTING:	57.05.001.00
SAMPLE PROGRAM:	Bose_SoundTouch_Demo.smw
REVISION HISTORY:	V. 1.00 – initial release