DS Music Players

Crestron Driver User Guide

Introduction

This driver has been designed to provide two-way control of Linn DS, DSM and pre-amplifier products, via TCP/IP. At the time of writing, the following models are supported: Klimax DS, Klimax DSM, KlimaxKontrol, Akurate DS, Akurate DSM, AkurateKontrol, Majik DS, Majik DS, Majik DS-I, MajikKontrol, Majik-I, Sneaky Music DS, Sneaky Music DSM, Sekrit DSM, Sekrit DS-I, Kinos, Kisto, RoomAmp2, Unidisk SC, Classik Movie, Classik Music.

The package includes a demonstration file in smw format to aid with integration into a Crestron project. Additionally, touch panel designs have been created to mimic the Linn Kazoo application; these can be used for demonstration purposes, or directly integrated into your project.

Linn Configuration

The Linn system should be installed and configured by a suitably qualified engineer, according to Linn documentation, prior to integration with this driver. Any subsequent changes to the configuration of the Linn system may require additional re-configuration of the Crestron modules. Note also that all authentication information required by online music services should be configured in the Linn system and tested to confirm their accuracy.

This Crestron module will only work with Linn Kazoo server v4.7 and above.

Module Definitions

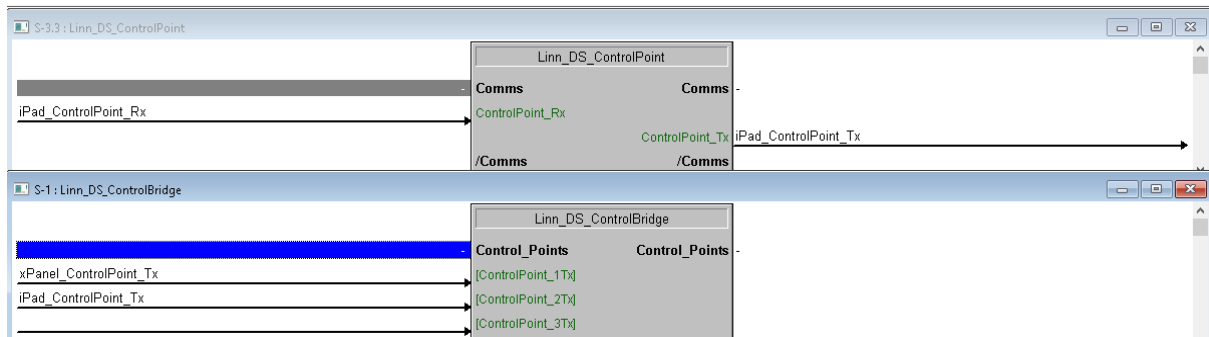### Linn_DS_V*x_xx*_ControlBridge.umc

The Control Bridge module handles the initial discovery of the Linn players and manages which player is controlled by which Control Point module. Only one instance of the Control Bridge module is required in your program and once the signals are connected, no further configuration is required. Note that the Control bridge module can handle a maximum of 50 Control Point modules, and discovery begins 30 seconds after the program has loaded.

Signal Group: **Control_Points**

Signal Name	Type	Description
[ControlPoint_1Tx] *to* [ControlPoint_50Tx]	Input	Signal FROM Control Point module
[ControlPoint_1Rx] *to* [ControlPoint_50Rx]	Output	Signal TO Control Point module

Linn_DS_V*x_xx*_ControlPoint.umc

The Control point module handles all communication to and from the Linn players. One instance of the Control Point module is required for each Linn player in the system. As per the below example, each Control Point module must be linked with the Control Bridge module by connecting the ControlPoint_TX inputs in the Bridge module with the ControlPoint_TX output in each Control Point module. Additionally, the ControlPoint_RX outputs in the Bridge module must be linked to the ControlPoint_RX input in the Control Point modules.

Signal Group: **Comms**
This group handles gateway communications.

Signal Name	Type	Description
ControlPoint_Rx	Input	Signal FROM Control Bridge module
ControlPoint_Tx	Output	Signal TO Control Bridge module

Note: to force the Control Point on to a particular module you can send **Gateway –connectTo <IP>:<PORT>** to the **'ControlPoint_Rx'** input. To discover the Linn gateway currently connected to Crestron, send **Gateway –status** to the **'ControlPoint_Rx'** input.

Signal Group: **Select_Linn**
This group handles gateway selection.

Signal Name	Type	Description
RoomSelect	Input	Selects a room to control by name. If the Room text is incorrect, or the module hasn't discovered the requested player, 'Notification_Subpage' will be pulsed with a notification message If the selection fails, the module will remain on the previously selected Linn player
LinnDevices_IsAvailable	Output	Value is 0 if no Linn devices are discovered
Current_Linn_Device	Output	Name of currently selected Linn player
DeviceList_NumberOfItems	Output	The number of Linn devices that have been

		discovered
DEVICE_NAME_1 *to* DEVICE_NAME_50	Output	String Array[50] list of discovered names (Note that only names that fall into the range of 'DeviceList_NumberOfItems' are valid)

Signal Group: **Power**

This group controls Linn standby features.

Signal Name	Type	Description
RoomOff	Input	Turns the current Linn device to **Standby**
RoomOn	Input	Turns the current Linn device **On**
HouseOff	Input	Turns all Linn devices to **Standby**
RoomIsOn	Output	Indicates if a Linn device is currently on

Signal Group: **Select_Sources**

This group is for control of the sources available for the currently selected Linn device.

Signal Name	Type	Description
SourceSelect	Input	Selects a source. If the source text is incorrect or the Linn device hasn't discovered the source, 'Notification_Subpage' will be pulsed with a notification message If the selection fails, the module will remain on the previous source
SelectTidal	Input	Selects Tidal to browse
SelectQuobus	Input	Selects Quobus to browse
SelectTuneIn	Input	Selects TuneIn to browse
SelectUpnp	Input	Selects Upnp to browse
SelectUpnpFavourite	Input	Selects Upnp favourite to browse
SelectPlaylist	Input	Selects a playlist to browse
SelectRadio	Input	Selects Radio to browse
SourceList_NumberOfItems	Output	The number of Linn sources found for the current Linn device
Sources_IsAvailable	Output	Value is 0 if no sources are discovered
CurrentSource	Output	Name of the currently selected source
SelectTidalIsAvailable	Output	Enable/disable the availability of Tidal
SelectQuobusIsAvailable	Output	Enable/disable the availability of Quobus
SelectTuneInIsAvailable	Output	Enable/disable the availability of TuneIn
SelectUpnpIsAvailable	Output	Enable/disable the availability of Upnp
SelectUpnpFavouriteIsAvailable	Output	Enable/disable the availability of UpnpFavourite
SelectPlaylistIsAvailable	Output	Enable/disable the availability of Playlist
SelectRadioIsAvailable	Output	Enable/disable the availability of Radio

Note: It is important that sources that require login information are correctly configured. Failure to do so may lead to them being unavailable in to Crestron.

Signal Group: **Sources_List**
This group details the available sources for the currently selected device.

Signal Name	Type	Description
SourceName1 *to* SourceName50	Output	String Array[50] list of available sources for the current Linn device (note that only names that fall into the range of 'SourceList_NumberOfItems' are valid)

Signal Group: **Create_Upnp_Favourite**
This group allows a particular UPnP source to be designated as the favourite source.

Signal Name	Type	Description
Select_UPnP_1_As_Favourite *to* Select_UPnP_50_As_Favourite	Input	Save A UPnP item as a favorite index by 'UPnP_1_Name *to* UPnP_50_Name'
Current_Favourite_UPnP	Output	Currently selected Upnp favourite
UpnpList_IsAvailable	Output	Value is 0 if no UPNP devices are discovered
UPnP_NumberOfItems	Output	The number of My Music sources for currently selected device
UpnP_1_Name *to* UpnP_50_Name	Output	String Array[50] list of available My Music Sources for currently selected device. Note that only Names that fall into the range of 'UpnP_NumberOfItems are valid.

Note: this is selected at run time; if nothing is selected 'SelectUpnpFavouriteIsAvailable' signal will be low.

Signal Group: **Transports**
This group contains controls for the currently playing item.

Signal Name	Type	Description
PlayPause	Input	Toggle between play and (pause/stop), depending on the source
Play	Input	Begin playback
Pause	Input	Pause playback
Stop	Input	Stop playback
FastForward	Input	Scan forwards
Rewind	Input	Scan backwards
SkipForward	Input	Skip forward to the next track
SkipBackward	Input	Skip backward to the previous track
Favourite	Input	Set current track to favourite (if the source allows this)

Shuffle	Input	Randomise playback
Repeat	Input	Repeat playback
PlayPause_state	Output	Feedback indicating which button should be displayed in screen footer (0=play, 1=pause, 2=stop)
Buffering	Output	Indicates if playback is buffering
Waiting	Output	Indicates if playback is busy
Playing	Output	Indicates if something is playing
Paused	Output	Indicates if playback is paused
Stopped	Output	Indicates if playback is stopped
FavouriteSelected	Output	Indicates currently playing item is a favourite
Shuffled	Output	Indicates if playback is shuffled
Repeating	Output	Indicates if playback is set to repeat

Signal Group: **Transports_Available_Controls**
This group controls output signals used to indicate the availability of transport controls for the currently selected source.

Signal Name	Type	Description
PlayPauseIsAvailable	Output	Indicates the availability of Play/Pause for the selected source
PlayIsAvailable	Output	Indicates the availability of Play for the selected source
PauseIsAvailable	Output	Indicates the availability of Pause for the selected source
StopIsAvailable	Output	Indicates the availability of Stop for the selected source
SkipForwardIsAvailable	Output	Indicates the availability of Skip Forward for the selected source
SkipBackwardIsAvailable	Output	Indicates the availability of Skip Backward for the selected source
SkipTrackForwardIsAvailable	Output	Indicates the availability of Skip Track Forward for the selected source
SkipTrackBackwardIsAvailable	Output	Indicates the availability of Skip Track Backward for the selected source
ShuffleIsAvailable	Output	Indicates the availability of Shuffle for the selected source
RepeatIsAvailable	Output	Indicates the availability of Repeat for the selected source

Signal Group: **GroupVolume**

This group is responsible for management of group volume.

Signal Name	Type	Description
GroupVolumeUp	Input	Increases the group volume
GroupVolumeDown	Input	Decreases the group volume
GroupMuteOn	Input	Enables mute for the group
GroupMuteOff	Input	Disables mute for the group
GroupMuteToggle	Input	Enables or disables mute for the group
GroupCurrentVolume	Output	Reports the current group volume level (0-100)
GroupMuteIsOn	Output	Indicates if the group volume mute is on

Signal Group: **DeviceVolume**

This group is responsible for management of the currently selected device volume.

Signal Name	Type	Description
DeviceVolumeUp	Input	Increases the device volume
DeviceVolumeDown	Input	Decreases the device volume
DeviceMuteOn	Input	Enables device volume mute
DeviceMuteOff	Input	Disables device volume mute
DeviceMuteToggle	Input	Enables or disables device volume mute
DeviceCurrentVolume	Output	Reports the current device volume level (0-100)
DeviceMuteIsOn	Output	Indicates if the device volume mute is on

Signal Group: **Now_Playing**

This group handles Now Playing metadata.

Signal Name	Type	Description
NowPlaying_SeekAbsoluteSet	Input	Move to a position in the currently playing track (0-100)
NowPlaying_IsFavouriteAvailable	Output	Indicates the availability of the **Add to Favourites** button
NowPlaying_CoverArtIsAvailable	Output	Indicates the availability of cover art for the currently playing item
NowPlaying_GoTo	Output	Suggested Page (go to now playing)
NowPlaying_CoverArt	Output	Art Work for currently playing item
NowPlaying_MetaData1 *to* NowPlaying_MetaData6	Output	The metadata fields for the currently playing item
NowPlaying_MetaText1 *to* NowPlaying_MetaText6	Output	N/A
NowPlaying_CurrentProgress	Output	Progress of the currently playing track (0-100)
NowPlaying_Time	Output	Currently playing track total time
NowPlaying_Duration	Output	Currently playing track current time

Signal Group: **Multiroom_Commands**

This signal group controls the addition and removal of devices to/from a group.

Signal Name	Type	Description
AddToGroup	Input	Adds the 'Select_AvailableList_Item_[]' high signals to the current group
RemoveFromGroup	Input	Removes the GroupList_[]_Selected high signals from the current group
AddToGroupIsAvailable	Output	Signal is high if any Select_AvailableList_Item_[] signals are currently high
RemoveFromGroupIsAvailable	Output	Signal is high if any GroupList_[]_Selected signals are currently high

Signal Group: **GroupList_Select**

These signals are for management of devices in a group

Signal Name	Type	Description
Select_GroupList_Item_1 to Select_GroupList_Item_50	Input	Selects devices for removal from the group (pulse to toggle between selected and deselected)
GroupList_1_Selected to GroupList_50_Selected	Output	Feedback indicating devices to remove
GroupList_NumberOfItems	Output	The number of devices in the group
GroupList_1_Name to GroupList_50_Name	Output	A string array, containing the names of the devices in the group (note that only names that fall into the range of 'GroupList_NumberOfItems' are valid)

Signal Group: **GroupList_Volume**

This group is responsible for the independent volume management of grouped devices.

Signal Name	Type	Description
GroupList_1_MuteToggle to GroupList_50_MuteToggle	Input	Enables or disables mute for a grouped device (pulse to select and deselect)
GroupList_1_VolumeUp to GroupList_50_VolumeUp	Input	Increases the volume of a grouped device
GroupList_1_VolumeDown to GroupList_50_VolumeDown	Input	Decreases the volume of a grouped device
GroupList_1_CurrentVolume to GroupList_50_CurrentVolume	Output	The current volume level of a grouped device

Signal Group: **AvailableRoom_Select**

These signals are for management of devices not currently grouped.

Signal Name	Type	Description
Select_AvailableList_Item_1 to Select_AvailableList_Item_50	Input	Select devices for addition to a group (pulse to toggle between selected and deselected)

AvailableList_1_Selected *to* AvailableList_50_Selected	Output	Feedback indicating devices to add
AvailableRoomLIst_IsAvailable	Output	Value is 0 if no rooms are available
AvailableList_NumberOfItems	Output	The number of devices not currently grouped
AvailableList_1_Name *to* AvailableList_50_Name	Output	A string array, containing the names of the devices available for grouping (note that only names that fall into the range of 'GroupList_NumberOfItems' are valid)

Signal Group: **Browse**
This group is concerned with browsing sources.

Signal Name	Type	Description
Browse_Back	Input	Request data for the previous browse level in the hierarchy
Browse_ToRoot	Input	Request data for the top browse level in the hierarchy
Browse_Main_Actions	Input	'**Action_ShowSubpage'** will be set to high and '**Select_Action_Item_[x]'** will be populated with available actions for the current browse list
Browse_Back_IsAvailable	Output	Signal is high when the current browse list is not the top level in the hierarchy
Browse_ToRoot_IsAvailable	Output	Signal is high when the current browse list is one set from the top level in the hierarchy
Browse_Main_Actions_IsAvailable	Output	Signal is high when there are actions available for the current browse list
Select_Browse_Item_1 *to* Select_Browse_Item_50	Input	Selects an item in the browse list and performs its default action. Default action is usually **Browse** next level down or **Play now**
Get_Action_For_Browse_Item_1 *to* Get_Action_For_Browse_Item_50	Input	'**Action_ShowSubpage'** will be set to high and '**Select_Action_Item_[x]'** will be populated with available actions for the selected browse item
Browse_GoToIndex	Output	Controls list position
Source_Has_Browse	Output	Signal is high when the currently selected source can be browsed
MediaList_Title	Output	Text header of current browse level
Browse_NumberOfItems	Output	The number of items in the current browse list
Browse_Item_1Title *to* Browse_Item_200Title	Output	Main text for browse entries*
Browse_Item_1Subtitle *to*	Output	Main subtext for browse entries*

Browse_Item_50Subtitle		
Browse_Item_1CoverArt *to* Browse_Item_50CoverArt	Output	Art work for browse entries*
Browse_Item_1MoreActionIsAvailable *to* Browse_Item_50MoreActionIsAvailable	Output	Signal is high when there are actions available for the current browse item
Browse_Item_1CoverArtIsAvailable *to* Browse_Item_50CoverArtIsAvailable	Output	Signal is high when there is a cover art URL available for the current browse item

* Only Names that fall into the range of 'Browse_NumberOfItems are valid.

Note: each browse list can display a maximum of 50 entries (pagination is required to see more entries). Crestron can handle a maximum of 5000 browse entries using browse pagination.

Signal Group: **Browse_Pagination**
This group handles the pagination of browse lists containing more than 50 items.

Signal Name	Type	Description
Select_Browse_Pagination_Item_1 *to* Select_Browse_Pagination_Item_100	Input	Request Browse items for that page.
Browse_Pagination_IsAvailable	Output	Signal is high when there are more than 50 entries for the current browse list
Browse_Pagination_NumberOfItems	Output	The number of pages
Browse_Pagination_Item_Selected	Output	The number of the selected page
Browse_Pagination_Item_1_Text *to* Browse_Pagination_Item_1000_Text	Output	The page names

Signal Group: **PlayQueue**
This group is for management of the play queue

Signal Name	Type	Description
PlayQueue_Main_Actions	Input	'**Action_ShowSubpage'** will be set to high and '**Select_Action_Item_[x]**' will be populated with the available actions for PlayQueue list
Select_PlayQueue_Item_1 *to* Select_PlayQueue_Item_50	Input	Selects an item in the PlayQueue list and performs its default action. Default action is usually **Play now**
Get_Action_For_PlayQueue_Item_1 *to* Get_Action_For_PlayQueue_Item_50	Input	'**Action_ShowSubpage'** will be set to high and '**Select_Action_Item_[x]**' will be populated with available action for PlayQueue item

PlayQueue _GoToIndex	Output	Controls list position
PlayQueue_NumberOfItems	Output	Number of PlayQueue items on the current Page
Show_PlayQueue	Output	Signal is high when there are one or more items in the PlayQueue
Queue_Main_Actions_IsAvailable	Output	Signal is high when there are actions available for the PlayQueue
PlayQueue_Item_1_MetaText1 *to* PlayQueue_Item_50_MetaText1	Output	Main Text for PlayQueue items*
PlayQueue_Item_1_MetaText2 *to* PlayQueue_Item_50_MetaText2	Output	Main Subtext for PlayQueue items*
PlayQueue_Item_1_MetaText3 *to* PlayQueue_Item_50_MetaText3	Output	Main Subtext for PlayQueue items*
PlayQueue_Item_1_CoverArt *to* PlayQueue_Item_50_CoverArt	Output	Art Work for PlayQueue items
PlayQueue_Item_1_CoverArtIsAvailable *to* PlayQueue_Item_50_CoverArtIsAvailable	Output	Signal is high when there is a cover art URL available for the current PlayQueue item
PlayQueue_Item_1_Selected *to* PlayQueue_Item_50_Selected	Output	Signal is high when a PlayQueue item is playing or waiting to be played
PlayQueue_Item_1_MoreActionIsAvailable *to* PlayQueue_Item_50_MoreActionIsAvailable	Output	Signal is high when there are actions for the current PlayQueue item

*Only Names that fall into the range of PlayQueue_NumberOfItems are valid.

Signal Group: **PlayQueue_Pagination**
This group handles the pagination of the PlayQueue.

Signal Name	Type	Description
Select_PlayQueue_Pagination_Item_1 *to* Select_PlayQueue_Pagination_Item_20	Input	Request browse items for that page.
Queue_Pagination_IsAvailable	Output	Signal is high when there are more than 50 entries for the current PlayQueue
PlayQueue_Pagination_NumberOfItems	Output	The number of pages
PlayQueue_Pagination_Item_Selected	Output	The number of the selected page
PlayQueue_Pagination_Item_1_Text *to* PlayQueue_Pagination_Item_20_Text	Output	The page names

Signal Group: **Actions**

This group handles the available actions for the currently selected item (see *Actions* section below).

Signal Name	Type	Description
ActionCancel	Input	Sets **Action_ShowSubpage** signal low
Select_Action_Item_1 *to* Select_Action_Item_50	Input	Perform action
Action_ShowSubpage	Output	High subpage appears, low subpage disappears
Actions_NumberOfItems	Output	Number of available actions
Select_Action_Item_1 *to* Select_Action_Item_50	Output	Action names

Note: after Action is performed '**Action_ShowSubpage'** will be set to low.

Signal Group: **Text_Entry**

This group handles text inputs for actions into the module.

Signal Name	Type	Description
TextEntry_String	Input	Input String **(MAX ENTRY of 255)**
TextEntry_Ok	Input	Performs action
TextEntry_Cancel	Input	Sets signal **'TextEntry_Subpage'** to low
TextEntry_Title	Output	Selected action name
TextEntry_Text	Output	"n/a"
TextEntry_Button	Output	Text of action (Search, Save or Ok)
TextEntry_Subpage	Output	High subpage appears, low subpage disappears

Note: If '**TextEntry_String'** is empty at the time of '**TextEntry_Ok'** going high, **Notification** will display a warning and the action will be cancelled.

Signal Group: **Notification**

Handles information about the current state and user direction for the module.

Signal Name	Type	Description
Notification_Ok	Input	Closes notification subpage
Notification_Title	Output	Title of notification
Notification_Text	Output	Text of notification
Notification_Subpage	Output	High subpage appears, low subpage disappears

Signal Group: **Loading**

Handles loading information.

Signal Name	Type	Description
Loading_ShowSubpage	Output	Signal is high when driver is loading entries

Parameters

The following parameters can be configured for the LINN device, in preference to using discovery.

Parameter Name	Description
GATEWAY IP	The IP address of the device
GATEWAY PORT	The port number used to communicate with the device
LINN DEVICE	The name of the device
LOCALE	The preferred language for the device

Actions

The following actions are dynamically displayed depending on the currently selected item in a browse list or PlayQueue.

Action Names	Description
Play Now	Play current item
Play Next	Add current item to the top of the PlayQueue
Play Later	Add current item to the bottom of the PlayQueue
Clear then Play Now	Clear PlayQueue and add current item
Favourite	Set current item as Favourite
Unfavourite	Unset current item as Favourite
Save playlist	**'TextEntry_Subpage'** will be set to high and **'TextEntry_Button'** will be set to **Save** Enter a Playlist name into '**TextEntry_String'** **'TextEntry_Ok** ' will save the current item with the name '**TextEntry_String'** then **'TextEntry_Subpage'** will be set to low **'TextEntry_Cancel** ' will set **'TextEntry_Subpage'** to low
Add to playlist	Actions list is populated with all available Playlists
Remove from playlist	Remove the current item from the Playlist
Clear playlist	Clears all tracks from the Playlist
Delete playlist	Remove Playlist
Move tracks to start of playlist	Move tracks to the top of the current item's Playlist
Move tracks to end of playlist	Move tracks to the bottom of the current item's Playlist
Move tracks in playlist	**'Select_Browse_Item_[]'** or **Select_PlayQueue_Item_[]** to move track in the Playlist
Search Albums	**'TextEntry_Subpage'** will be set to high and **'TextEntry_Button'** will be set to **Search**
Search Artists	
Search Classical	

Search Tracks	Enter a search string into '**TextEntry_String'**
Search Playlist	'**TextEntry_Ok** ' will search '**TextEntry_String'** in the selected item and display the results in the browse list, then '**TextEntry_Subpage'** signal will be set to low '**TextEntry_Cancel** ' will set '**TextEntry_Subpage'** signal to low