Manufacturer: BSS Audio
Model: BLU Series
Device Type: Audio DSP

GENERAL INFORMATION

SIMPLWINDOWS NAME:	BSS BLU Level Control Module v1.0
CATEGORY:	Audio DSP
VERSION:	v1.0
SUMMARY:	This module is a control module for a suite of modules. The suite of modules utilizes the SIMPL# technology and will only work on the 3-Series Controller. The control modules are responsible for providing the actual control interface in SIMPL. With the SIMPL# technology, the Control modules no longer need to be physically "connected" to the command processor. They register themselves automatically behind the scenes. Each of the control modules also have a command processor ID parameter that you assign to the instance of the command processor to which they report to. You can virtually have an unlimited number of control modules report to a single instance of a command processor. The command processor must be initialized in order for this module to operate properly. Please see the BSS BLU Command Processor and BSS BLU RS232 Command Processor modules help files. This control module can control a bunch of different types of DSP control points. Assigning what type is controlled is handled by the "ControlType" module parameter field. Here is the list of Control Types. Analog: Input [A] Gain AEC: Input [A] Gain Mixer: Input [A] Gain Mixer: Input [A] Pan Mixer: Input [A] Aux [B] Mixer: Master Gain Left Mixer: Master Gain Right Gain: Gain N-Gain: Gain [A] N-Gain: Master Gain Matrix Mixer: XPoint Output [A] Input [B] Room Combine: Source Gain Room [A] Room Combine: BGM Gain Room [A] Room Combine: Master Gain Room [A] Analog Dialer: TX Gain Analog Dialer: RX Gain Analog Dialer: DTMF Level Analog Dialer: Ring Level Analog Dialer: Dial Tone Level VoIP Dialer: Line [A] TX Gain VoIP Dialer: Line [A] RX Gain VoIP Dialer: Line [A] DTMF Level VoIP Dialer: Line [A] Ring Level VoIP Dialer: Line [A] Dial Tone Level You will notice in the list above, that some of the items have "[A]" and some also

have "[B]" in the description fields. This is an indication that additionally the [A] and [B] module parameters need to be set to make that selection work.

Utilizing these values saves you from hunting down even more data from the Audio Architect DSP Program. These values become obvious when you understand that they are based on what Input, Output, Line Number that you are controlling.

In example: "Matrix Mixer: XPoint Output [A] Input [B]" Selection
The [A] Value is what Output you wish to control, whereas the [B] Value is what input you wish to control. So if you want to control Output 10 and Input 3 cross point. Your [A] Value is 10d and your [B] Value is 3d.

If the description of your selection does not contain [A] or [B], then the [A] and [B] parameters should be set to 0d. If only [A] exists in your description then the [B] value would be 0d and the [A] parameter value would be set to Input, Output or Line you wish to control..

Control Type	[A]	[B]
Analog: Input [A] Gain	>= 1d (Input)	0d
AEC: Input [A] Gain	>= 1d (Input)	0d
Mixer: Input [A] Gain	>= 1d (Input)	0d
Mixer: Input [A] Pan	>= 1d (Input)	0d
Mixer: Master Gain Left	0d	0d
Mixer: Master Gain Right	0d	0d
Gain: Gain	0d	0d
N-Gain: Gain [A]	>= 1d (Input)	0d
N-Gain: Master Gain	0d	0d
MatrixMixer: XPoint Output [A] Input [B]	>= 1d (Output)	>= 1d (Input)
RoomCombine: Source Gain Room [A]	>= 1d (Room)	0d
RoomCombine: BGM Gain Room [A]	>= 1d (Room)	0d
RoomCombine: Master Gain Room [A]	>= 1d (Room)	0d
AnalogDialer: TX Gain	0d	0d
AnalogDialer: RX Gain	0d	0d
AnalogDialer: DTMF Level	0d	0d
AnalogDialer: Ring Level	0d	0d
AnalogDialer: Dial Tone Level	0d	0d
VoIPDialer: Line [A] TX Gain	1d or 2d (Line)	0d
VoIPDialer: Line [A] RX Gain	1d or 2d (Line)	0d
VoIPDialer: Line [A] DTMF Level	1d or 2d (Line)	0d
VoIPDialer: Line [A] Ring Level	1d or 2d (Line)	0d
VoIPDialer: Line [A] Dial Tone Level	1d or 2d (Line)	0d

GENERAL NOTES:

CRESTRON HARDWARE REQUIRED: 3-Series Controller

SETUP OF CRESTRON HARDWARE: N/A

VENDOR FIRMWARE: This module was tested using BSS BLU Firmware Version: 86.02.02

VENDOR SETUP: The SIMPL Demo program provided works with the also include BSS DSP

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	Programming File: "BSS Crestron Demo.audioarchitect"
CABLE DIAGRAM:	This module does not communicate directly with the BSS DSP. Please see the BSS BLU Command Processor and BSS BLU RS232 Command Processor modules help files for connection information.

CONTROL:

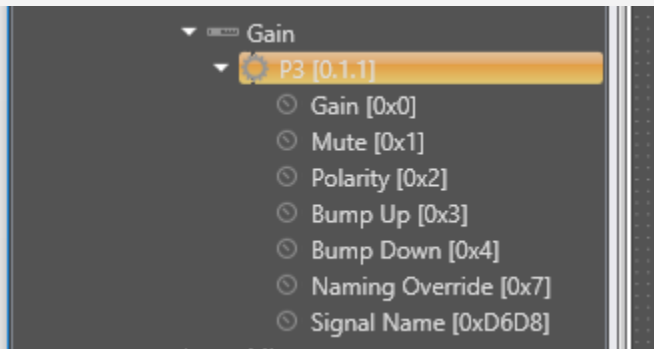| Signal/Function Name	D,S,A	Digital, Serial, Analog signal property definition.
RaiseLevel	D	While set to high will raise the level value until it reaches its max value.
LowerLevel	D	While set to high will lower the level value until it reaches it min value
SetValue	D	When pulsed will set the level value utilizing the analog signal "Value" assigned value. The value will be validated prior to sending to insure this value falls in the correct range
Value	A	Sets the Value to be set using SetValue. If the digital signal "SetValue" is high when this value changes, the module will automatically send the new value. The value will be validated prior to sending to insure this value falls in the correct range. When the module's "LevelType" parameter is set to "percentage" the value range is 0d-100d. When the "LevelType" parameter is set to "db", the value range is that of the DSP control point. In example, the "Gain" control point has a range of -80db to 10db. Setting this signal to -60d falls within that range and will get set. *This signal is of type signed integer.* Note: *A debounce value of 300ms has been added preventing this value to be reset to quickly, thus safe guarding communication queues. DO NOT BYPASS*

FEEDBACK:

Signal/Function Name	D,S,A	Digital, Serial, Analog signal property definition.
ActualValue	A	This signal will display the current level value. When the module's "LevelType" parameter is set to "percentage" the value range is 0d-100d. When the "LevelType" parameter is set to "db", the value range is that of the DSP control point. In example, the "Gain" control point has a range of -80db to 10db. -80d to 10d would be the valid range for this example *This signal is of type signed integer.*
Gauge	A	This signal will automatically be scaled based on the control point's actual range. The valid range for this signal is 0d to 65535d (0% to 100%).

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Device Type: Audio DSP

PARAMETERS:

CommandProcessorID	A	Set this value to match the value set on Command Processor module. This is how the control module registers itself for control.
ObjectID	S	Set this value to match the Object ID found in the BSS Audio Architect for the DSP object you wish to control. *This is a three byte hexadecimal value*. You can find this Object ID by looking in the BSS Audio Architect software with the DSP program file opened. In the venue explorer will be list of DSP controls under the associated Node, in this example "Gain". You will see the address in square brackets with three values separated by commas "[0,1,1]". This is the Object ID, and the correct way to assign this in the module parameter field would be \x00\x01\x01.
ControlType	A	This control module can control a bunch of different types of DSP control points. Assigning what type is controlled is handled by the "ControlType" module parameter field. Here is the list of Control Types. Analog: Input [A] Gain AEC: Input [A] Gain Mixer: Input [A] Gain Mixer: Input [A] Pan Mixer: Input [A] Aux [B] Mixer: Master Gain Left Mixer: Master Gain Right Gain: Gain N-Gain: Gain [A] N-Gain: Master Gain Matrix Mixer: XPoint Output [A] Input [B] Room Combine: Source Gain Room [A] Room Combine: BGM Gain Room [A] Room Combine: Master Gain Room [A] Analog Dialer: TX Gain Analog Dialer: RX Gain Analog Dialer: DTMF Level Analog Dialer: Ring Level

Manufacturer: BSS Audio
Model: BLU Series
Device Type: Audio DSP

Analog Dialer: Dial Tone Level
VoIP Dialer: Line [A] TX Gain
VoIP Dialer: Line [A] RX Gain
VoIP Dialer: Line [A] DTMF Level
VoIP Dialer: Line [A] Ring Level
VoIP Dialer: Line [A] Dial Tone Level

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AEC: Input [A] Gain	>= 1d (Input)	0d
Mixer: Input [A] Gain	>= 1d (Input)	0d
Mixer: Input [A] Pan	>= 1d (Input)	0d
Mixer: Master Gain Left	0d	0d
Mixer: Master Gain Right	0d	0d
Gain: Gain	0d	0d
N-Gain: Gain [A]	>= 1d (Input)	0d
N-Gain: Master Gain	0d	0d
MatrixMixer: XPoint Output [A] Input [B]	>= 1d (Output)	>= 1d (Input)
RoomCombine: Source Gain Room [A]	>= 1d (Room)	0d
RoomCombine: BGM Gain Room [A]	>= 1d (Room)	0d
RoomCombine: Master Gain Room [A]	>= 1d (Room)	0d
AnalogDialer: TX Gain	0d	0d
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VoIPDialer: Line [A] Ring Level	1d or 2d (Line)	0d
VoIPDialer: Line [A] Dial Tone Level	1d or 2d (Line)	0d

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LevelType	A	The parameter allows you to choose between using actual db values vs percentage values. When the module's "LevelType" parameter is set to "percentage" the value range is 0d-100d. When the "LevelType" parameter is set to "db", the value range is that of the DSP control point. In example, the "Gain" control point has a range of -80db to 10db. -80d to 10d would be the valid range for this example
[A]	A	Please see "ControlType" parameter above for information about setting this value.
[B]	A	Please see "ControlType" parameter above for information about setting this value.
StepValue	A	The value sets how the raise and lower signals will increase the level value. Valid Range 1d to 25d.

TESTING:

OPS USED FOR TESTING:	CP3 1.501.0025
SIMPL WINDOWS USED FOR TESTING:	4.05.03
DEVICE DB USED FOR TESTING:	79.05.002.00
CRES DB USED FOR TESTING:	59.00.002.00
SYMBOL LIBRARY USED FOR TESTING:	1012
SAMPLE PROGRAM:	BSS BLU v1.0 IP Demo.smw or BSS BLU v1.0 RS232 Demo.smw
REVISION HISTORY:	v1.0 – Initial Release