1. Crestron® Module Information

Partner: Yamaha Corporation

Model: TF-X, QL-X, CL-X

Device Type: Mixer

2. General Information

SIMPL Windows Name: Yamaha Mixer XXX V.X.X.X

Category: Mixer

Summary: This module controls one or more Yamaha Mixers of the series TF, QL or CL via Ethernet connection.

3. General Notes:

This module is designed to control the Mixers via a Crestron® Control System.

!!

The V.1.3- modules are optimized for System-3 Control System® devices,

for System-4 Control System® devices use V.2.0- modules!

!!

The archive contains the following files:

Yamaha Mixer Main vXXX.usp	The SIMPL+ module as a wrapper for the SIMPL# module
Yamaha Mixer XXX v.XXX.usp	The SIMPL+ modules for the specific functionality where XXX is: Input, MixSend, MtxSend, MixBus, MtxBus, Master, Mutegroup, Scene
YamahaMixerV.XXX.clz	The SIMPL# module as an interface for the mixers
YamahaMixerDemo.smw	Sample Application
MixerSampleUI.vtp	XPanel UI for Sample Application
ToggleWithFeedback.umc	Usermacro for Toggle Function with real feedback

4. Tested software versions

- Crestron Simple Windows 4.20
- Crestron Simple+ 4.06
- Crestron Cross Compiler 1.3
- Crestron Database 212
- Crestron Device Database 200.180
- Crestron VT-Pro-e 6.2.02
- Crestron Smart Graphics Controls 2.17.01.01

5. Wiring:

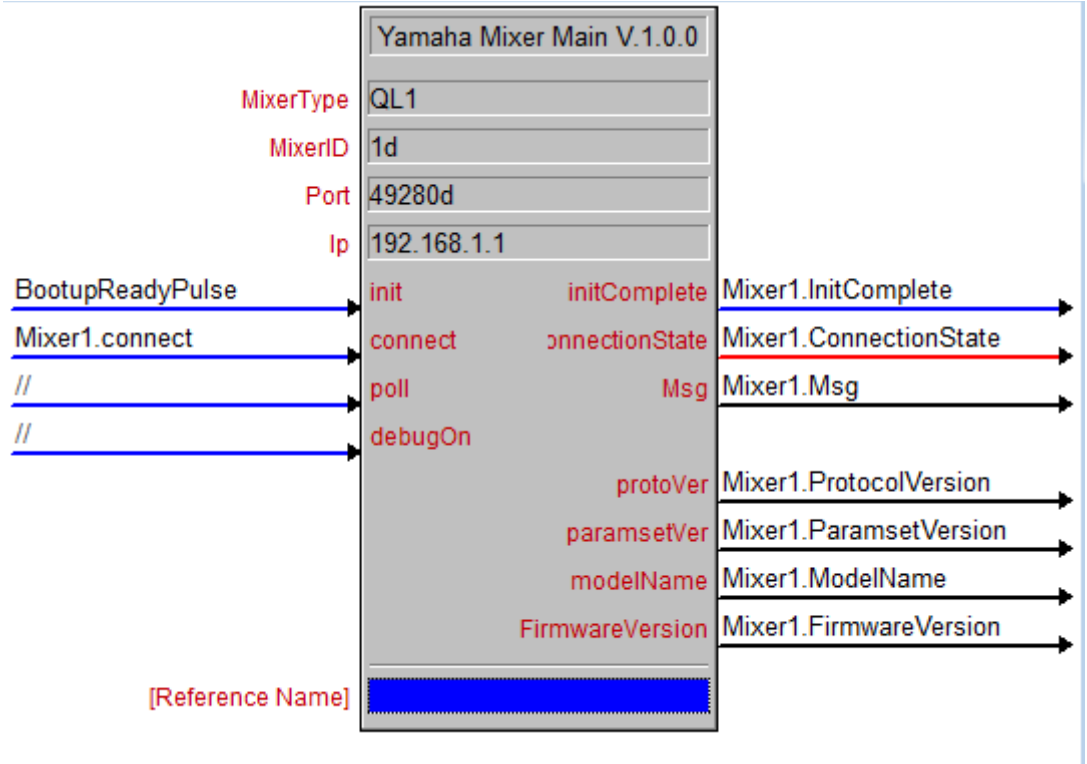
For every mixer you want to control you need a main module (Yamaha Mixer Main vX.X.X) and some function modules depending on your needs (e.g. Yamaha Mixer Mutegroup v.X.X.X).
You can use more than one mixer in your Crestron® program, with different functionality distinguished by the Mixer-ID)

There are function modules for several mixer capabilities:

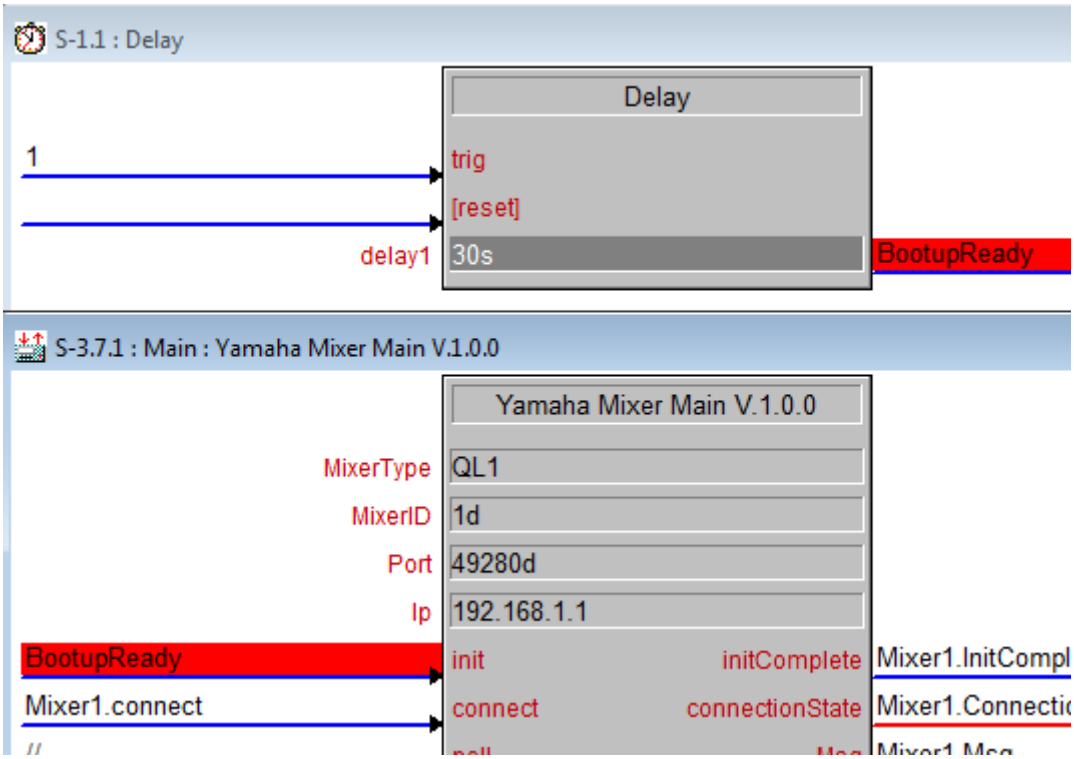
- Input Level/On
- Mix Send Level/On
- Matrix Send Level/On
- Mix Bus Level/On
- Matrix Bus Level/On
- Master Bus Level/On
- DCA Level/On
- Mutegroups
- Scene

a. Main Module

The Main module is the same for every mixer type regardless of it's functionality.
You need one and only one Main module for every mixer in your program:



Parameter		
Mixertype	A dropdown menu with all the available mixer types (TF1, TF3, TF5, TF-Rack, QL1, QL5, CL1, CL3, CL5)	
MixerID	An ID to allocate the function modules (Input, MixSend, Mutegroups, etc) to the Main module. Important: This ID has nothing in common with the ID set up in your real Mixer. It is only used inside your Crestron® program to connect the main module to the respective function modules !!	
Port	The TCP-Port for controlling the mixer. Default is 49280.	
Ip	The IP-Address of the mixer	
Controls		
init	digital	1: initialize the module on the underlying SIMPL# Layer. 0: without function: There is no “de-init” here! If the module is initialized, it stays initialized as long as your program is running. It is not recommended to use a “1” signal here. Because of the heavy work load for the Crestron®-CPU during the boot-up phase, some signal may not have a consistent state. Use a short Delay (about 20s-30s) for initializing the module right after the boot-up. (see next picture)
connect	digital	1: the module starts connecting the corresponding mixer. If it’s unable to connect, it repeats about every 20s. 0: the module disconnects from the mixer or stops trying to connect. If your mixer is always on, you can put a “1” here or use the “initComplete” signal. If your mixer is powered on only sometimes, you should evaluate the power state and use this for connect, otherwise you will get hundreds and hundreds of “unable to connect” messages in your log file.
poll	digital	It triggers a polling of all parameters of all connected function blocks on the rising edge of the input. **Usually you will not need this signal because the module triggers a poll automatically if it connects to the mixer or a preset reload is recognized.**
debug	digital	This is for testing purposes only. If debug is “0” you will only get error messages. If debug is “1” you will also get some info messages.
Feedback		
initComplete	digital	This signal is high if the initialization process in the underlaying SIMPL# Layer is finished. Use this signal to start the initialization of the function modules connected to this mixer (all with the same ID)!
Msg	serial	Messages/Errors from the mixer
protocolVer	serial	The protocol version of the connected device
protoVer	serial	The protocol version of the connected device
paramsetVer	serial	The parameter set version of the connected device
modelName	serial	The device name (the mixer type)
firmwareVersion	serial	The firmware version of the connected device



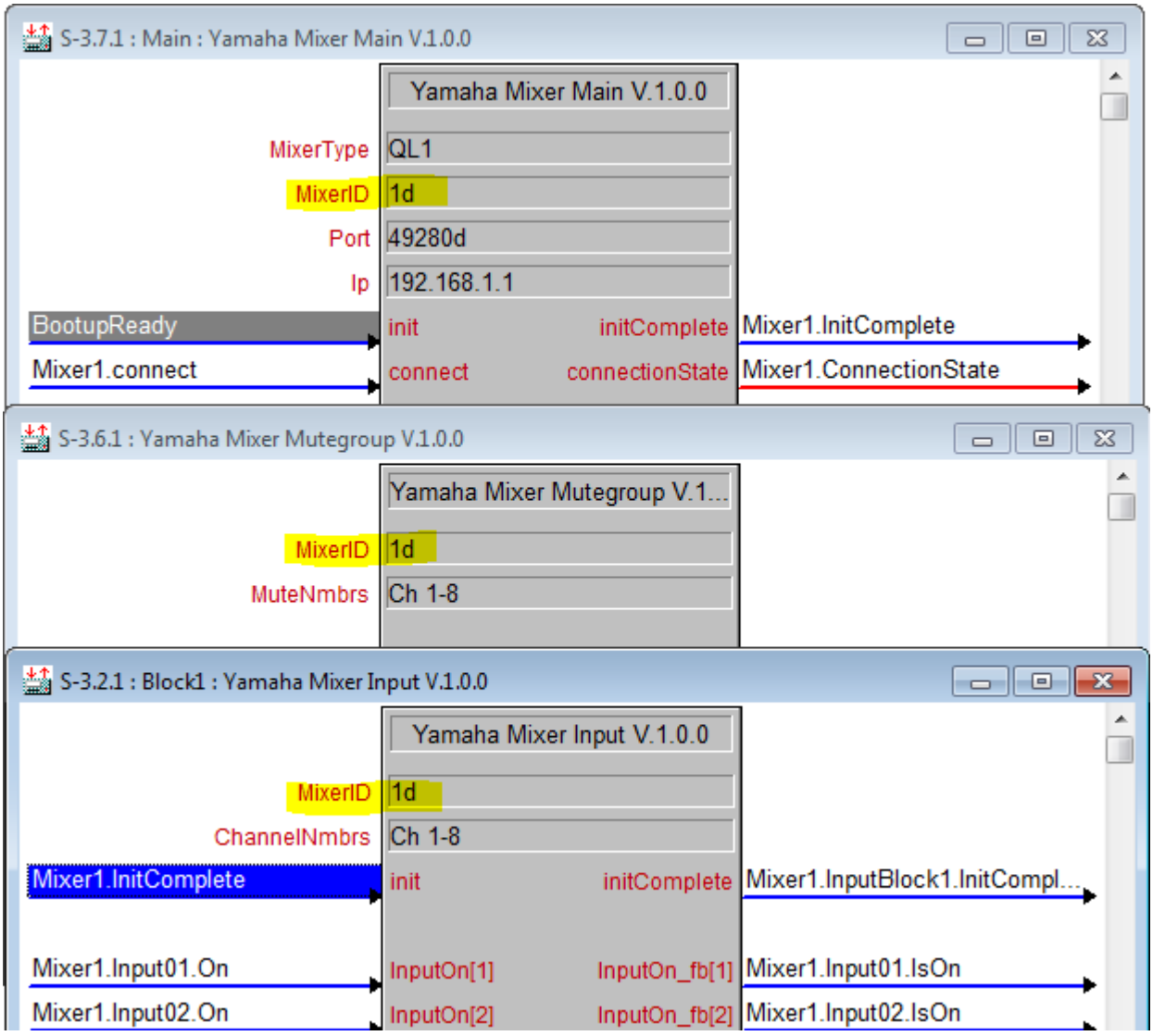
Use a Boot Delay, because the Crestron is very busy just after booting.
Give it a little bit extra time…

6. Function Modules:

The library consists of a bunch of modules for different functions. So you can choose exactly the modules for the scope you need without overwhelming the Crestron® control system with functionality you don't need.

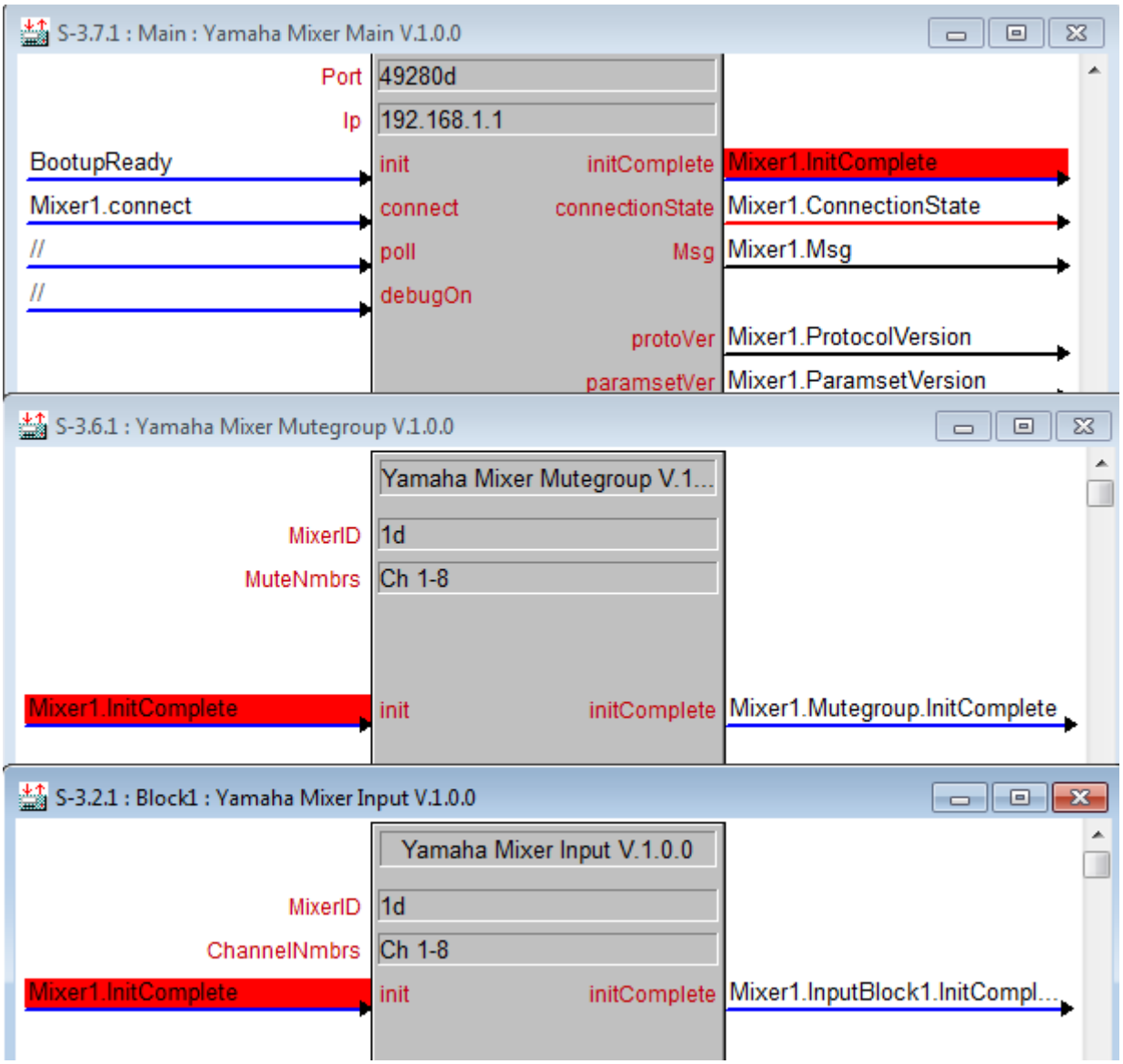
But you have to pay attention to some important things:

1. **Mixer-ID:**
   Functions for the same mixer need the same mixer-ID as the main module they belong to:



NOTE: The mixer-ID in this case is for your Crestron program only. It has nothing to do with the "Yamaha Mixer ID" adjusted in your console. The ID connects the main module with the function modules. Same mixer-ID -> means functions on the same mixer…

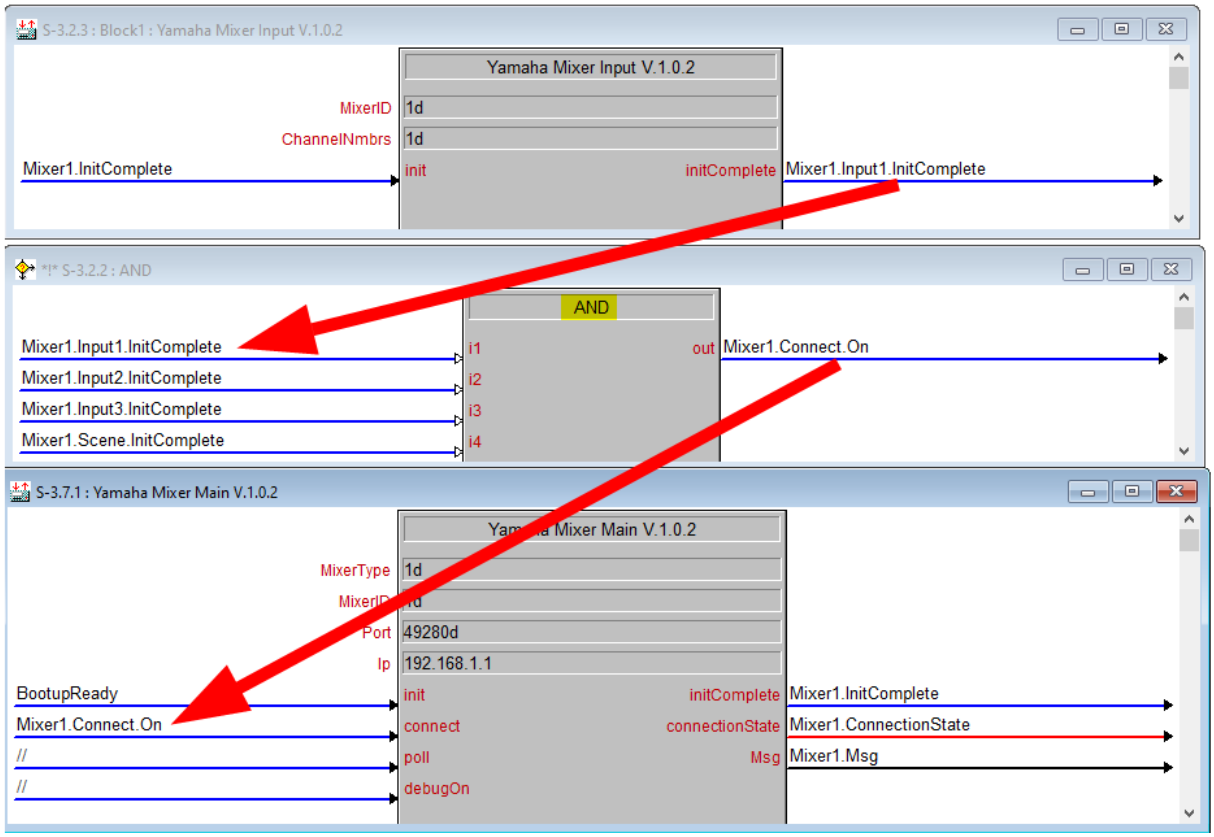
2. **InitComplete Signal:**
   All the init-signals of the function modules for the same mixer should be fed by the initComplete Signal of the main module they are associated with:



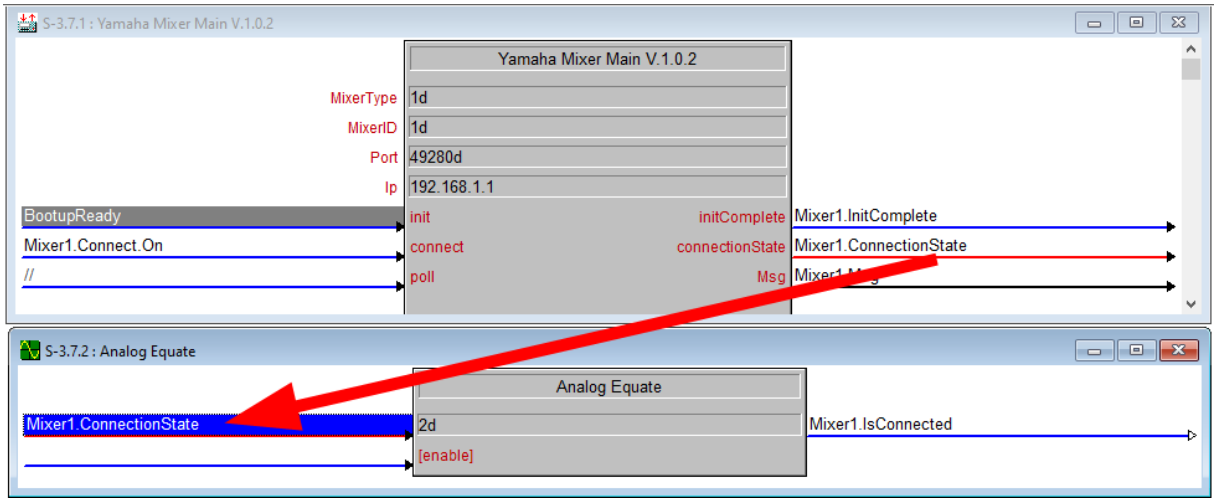
Do not try to initialize a function module before the main module is ready!

3. Connection:

Do not try to connect to the Mixer before all modules are initialized. (Use an AND module):

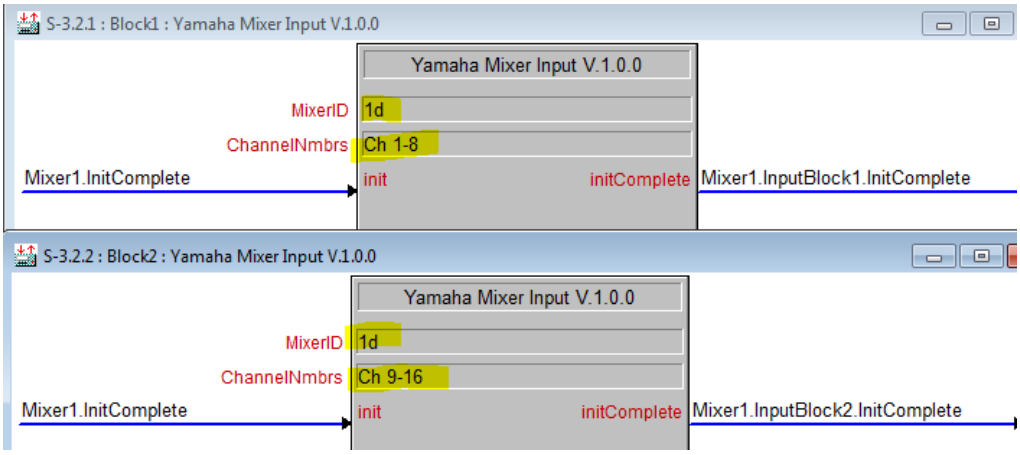


4. Do not send value to the Mixer before the connection is sucessfully (use a Analog Equate to check):

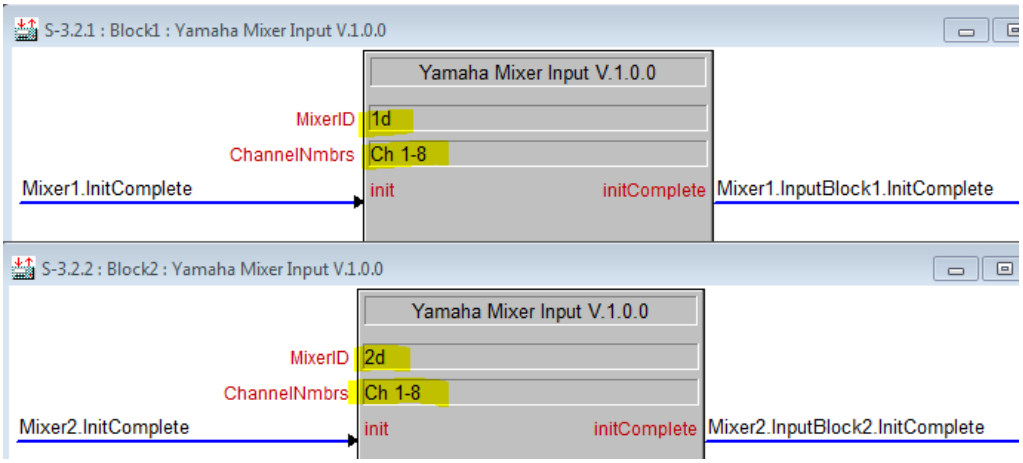


5. **Function range:**
   Function modules for the same functionality should not overlap their range on the same mixer:

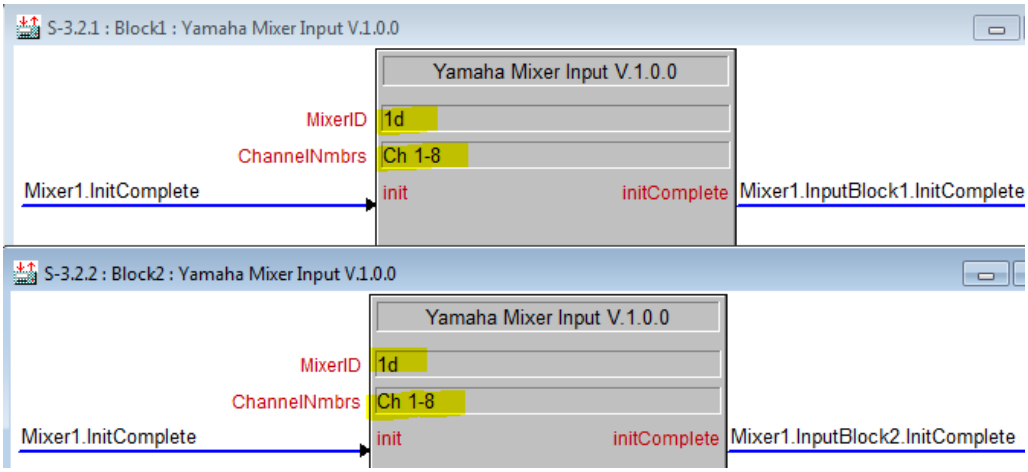
OK:



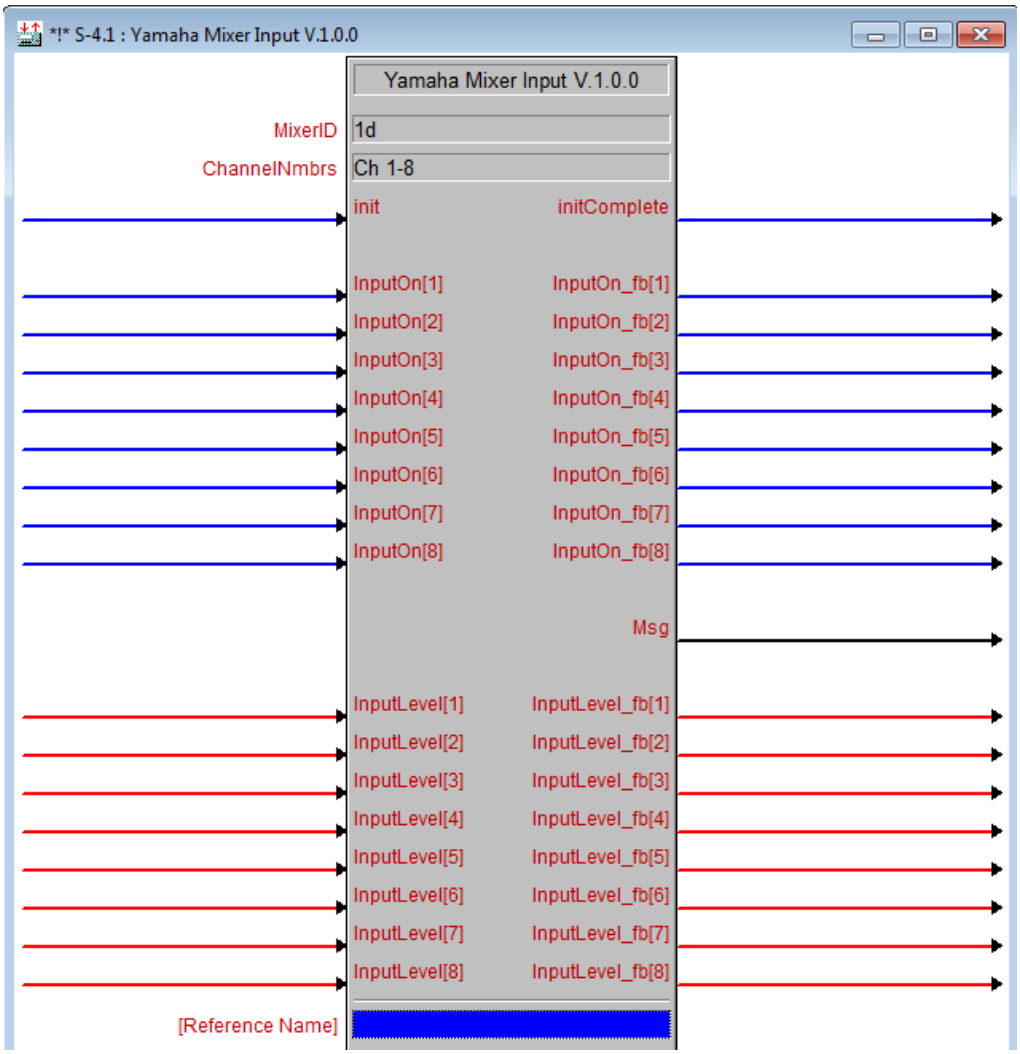
OK:



WRONG!!:

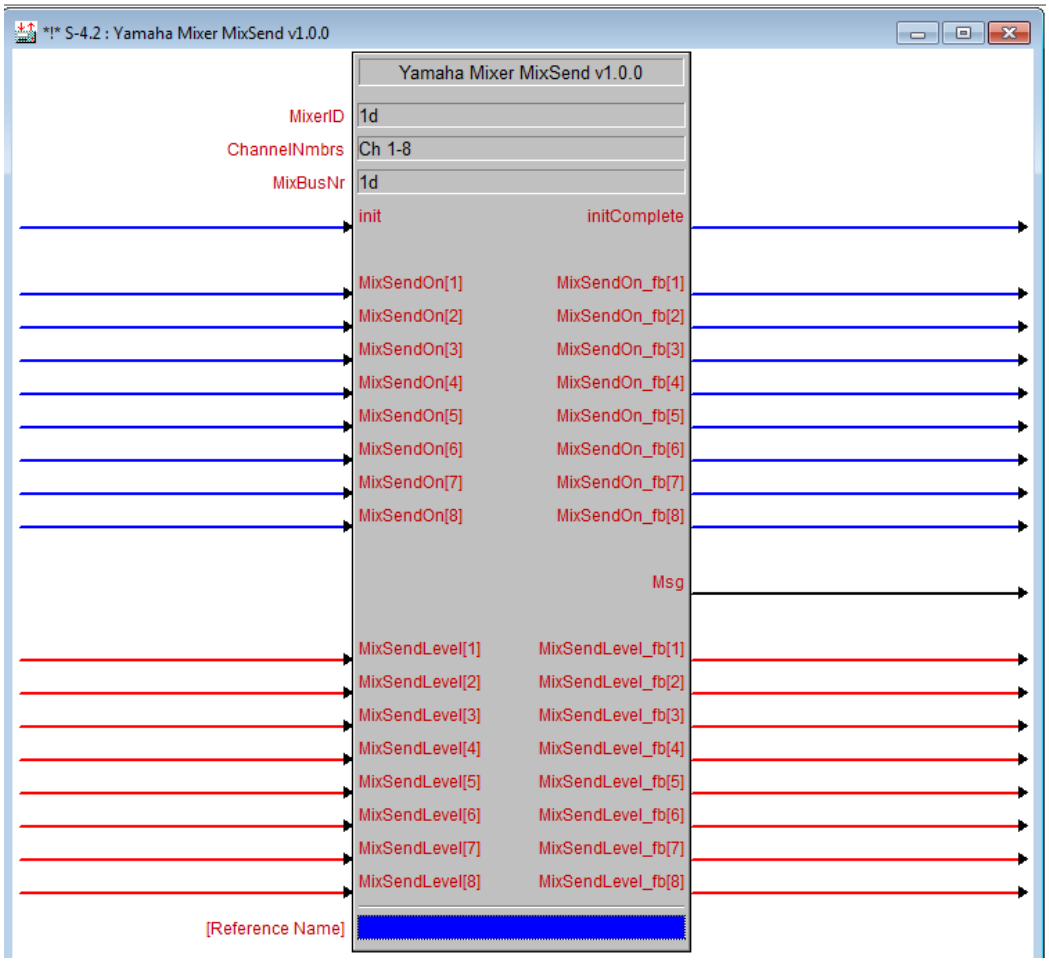


a. Input Module:



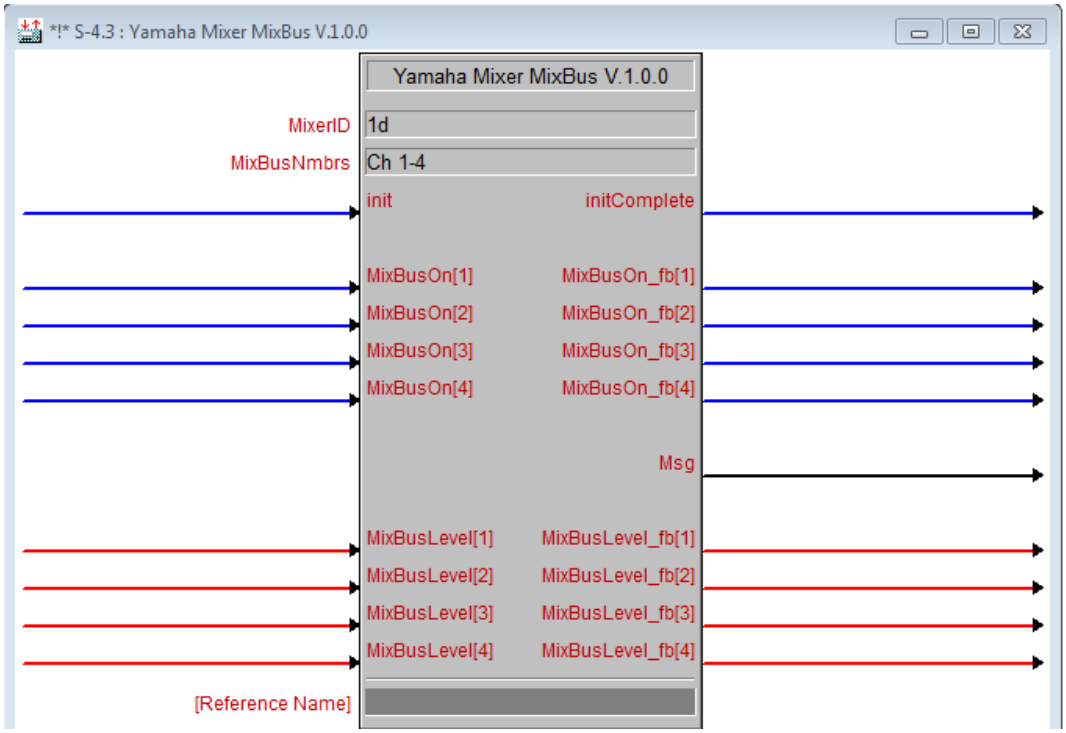
Parameter		
MixerID	The ID of the main module this module belongs to	
ChannelNmbrs	The range of the required channels in blocks of 8 channels	
Controls		
init	digital	Initialize the module
inputOn[x]	digital	Sets the corresponding channel On or Off
inputLevel[x]	analog	Sets the level of the corresponding channel. Range: -32768 (-327.68dB [OFF]) .. 1000 (10.00 dB)
Feedback		
initComplete	digital	Indicates the completion of the module initialization
inputOn_fb[x]	digital	Feedback of Channel On/Off from the mixer
inputLevel_fb[x]	analog	Feedback of Channel-Level
Msg	serial	Messages/Errors from the module

b. Mix Send Module:



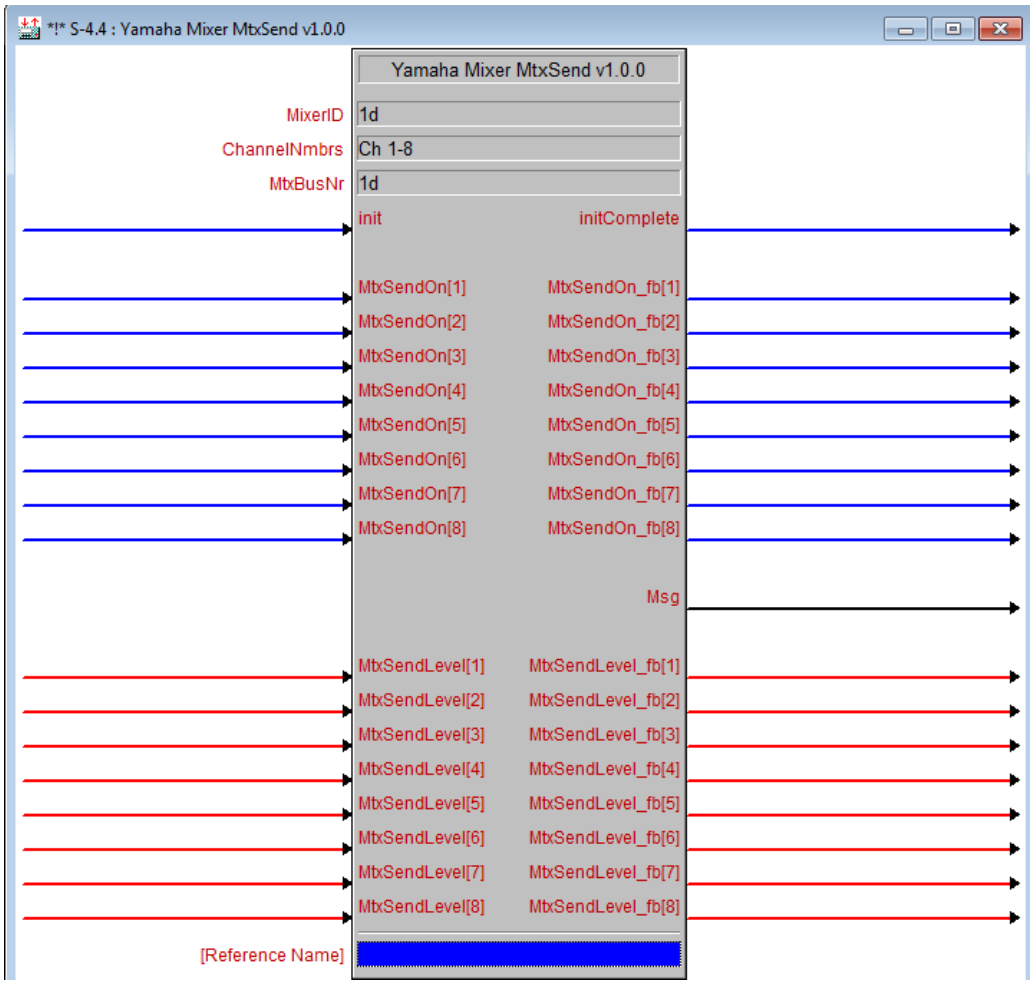
Parameter		
MixerID	The ID of the main module this module belongs to	
ChannelNmbrs	The range of the required channels in blocks of 8 channels	
MixBusNr	The MixBus Number of the MixSends this module is assigned to	
Controls		
init	digital	Initialize the module
MixSendOn[x]	digital	Sets the corresponding channel for the MixSend On or Off
MixSendLevel[x]	analog	Sets the level of the corresponding channel for the MixSend. Range: -32768 (-327.68dB [-∞]) .. 1000 (10.00 dB)
Feedback		
initComplete	digital	Indicates the completion of the module initialization
MixSendOn_fb[x]	digital	Feedback of Channel On/Off from the MixBus
MixSendLevel_fb[x]	analog	Feedback of Channel-Level from the MixBus
Msg	serial	Messages/Errors from the module

c. Mix Bus Module:



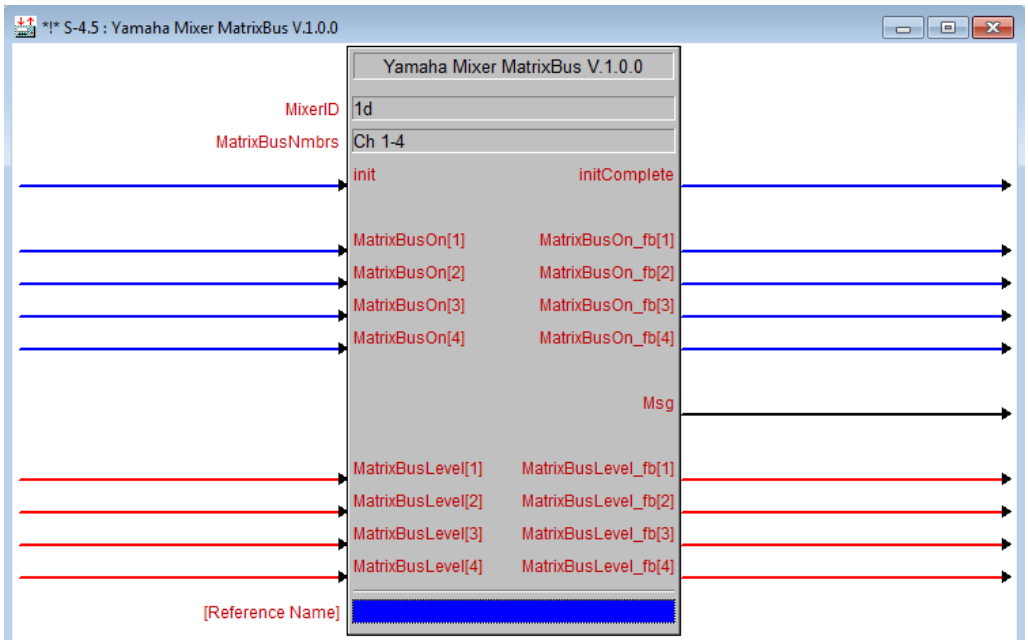
Parameter		
MixerID	The ID of the main module this module belongs to	
MixBusNmbrs	The range of the required mix busses in blocks of 4 channels	
Controls		
init	digital	Initialize the module
MixBusOn[x]	digital	Sets the corresponding channel for the MixBus On or Off
MixBusLevel[x]	analog	Sets the level of the corresponding channel for the MixBus. Range: -32768 (-327.68dB [-∞]) .. 1000 (10.00 dB)
Feedback		
initComplete	digital	Indicates the completion of the module initialization
MixBusOn_fb[x]	digital	Feedback of Channel On/Off from the MixBus
MixBusLevel_fb[x]	analog	Feedback of Channel-Level from the MixBus
Msg	serial	Messages/Errors from the module

d. Matrix Send Module:



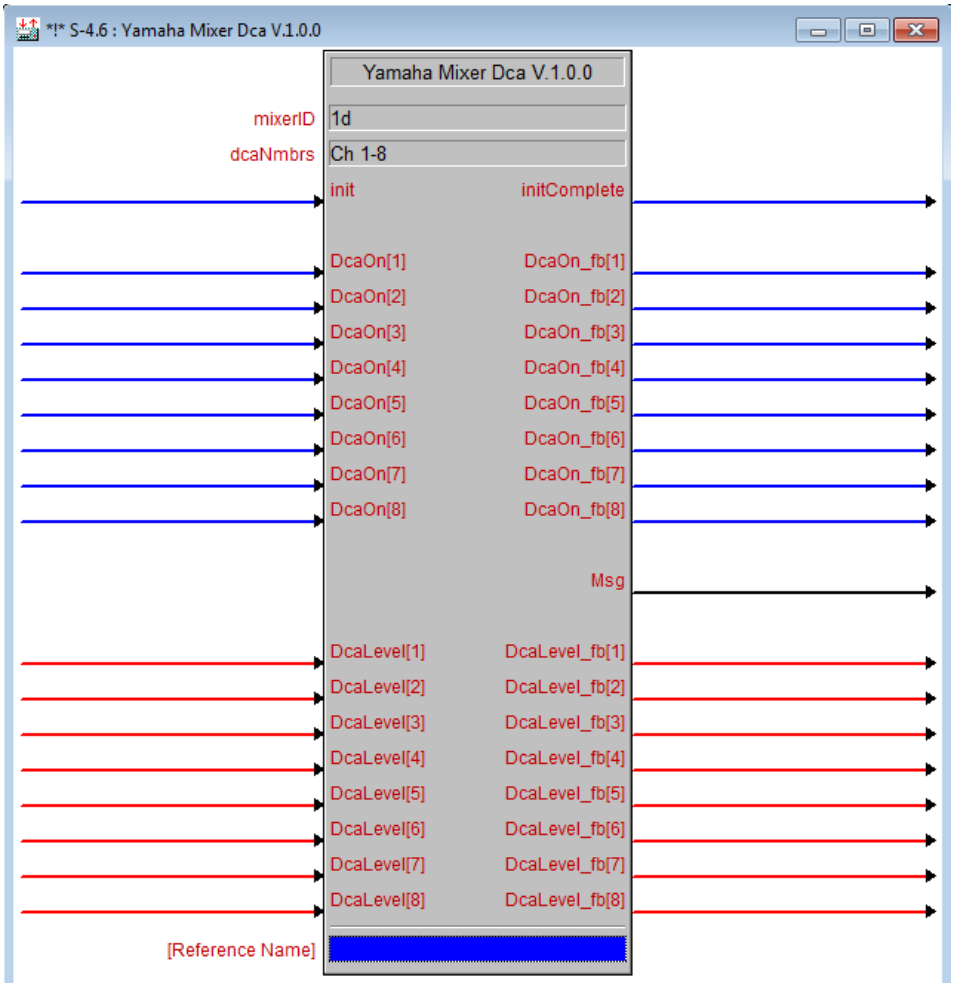
Parameter		
MixerID	The ID of the main module this module belongs to	
ChannelNmbrs	The range of the required channels in blocks of 8 channels	
MtxBusNr	The MatrixBus Number of the MatrixSends this module is assigned to	
Controls		
init	digital	Initialize the module
MtxSendOn[x]	digital	Sets the corresponding channel for the MatrixSend On or Off
MtxSendLevel[x]	analog	Sets the level of the corresponding channel for the MatrixSend. Range: -32768 (-327.68dB [-∞]) .. 1000 (10.00 dB)
Feedback		
initComplete	digital	Indicates the completion of the module initialization
MtxSendOn_fb[x]	digital	Feedback of Channel On/Off from the MatrixBus
MtxSendLevel_fb[x]	analog	Feedback of Channel-Level from the MatrixBus
Msg	serial	Messages/Errors from the module

e. Matrix Bus Module:



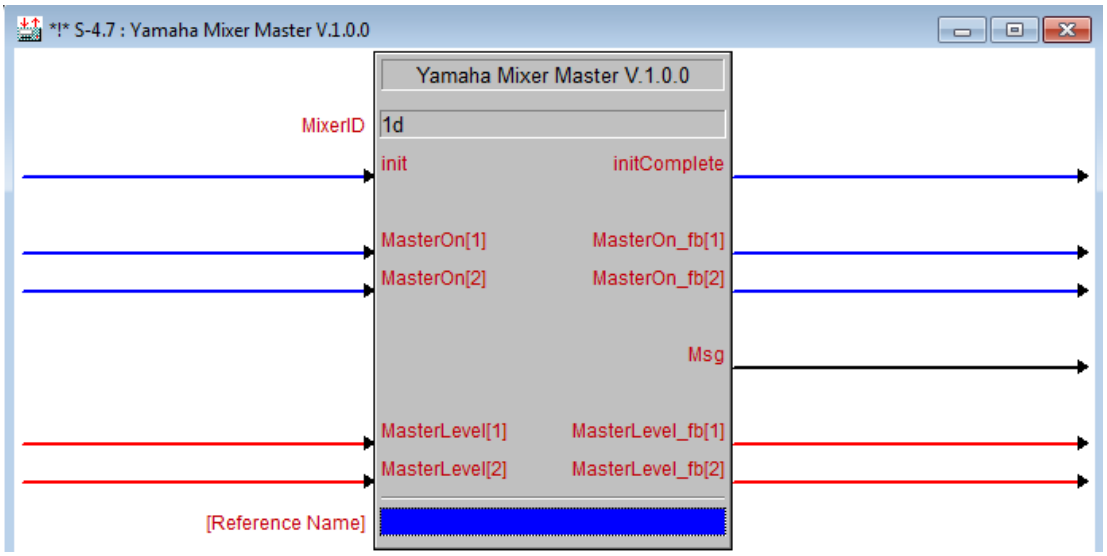
Parameter		
MixerID	The ID of the main module this module belongs to	
MatrixBusNmbrs	The range of the required mix busses in blocks of 4 channels	
Controls		
init	digital	Initialize the module
MatrixBusOn[x]	digital	Sets the corresponding channel for the MatrixBus On or Off
MatrixBusLevel[x]	analog	Sets the level of the corresponding channel for the MatrixBus. Range: -32768 (-327.68dB [-∞]) .. 1000 (10.00 dB)
Feedback		
initComplete	digital	Indicates the completion of the module initialization
MatrixBusOn_fb[x]	digital	Feedback of Channel On/Off from the MatrixBus
MatrixBusLevel_fb[x]	analog	Feedback of Channel-Level from the MatrixBus
Msg	serial	Messages/Errors from the module

f. DCA Module:



Parameter		
MixerID	The ID of the main module this module belongs to	
DcaNmbrs	The range of the required channels in blocks of 8 channels	
Controls		
init	digital	Initialize the module
DcaOn[x]	digital	Sets the corresponding channel On or Off
DcaLevel[x]	analog	Sets the level of the corresponding channel. Range: -32768 (-327.68dB [-∞]) .. 1000 (10.00 dB)
Feedback		
initComplete	digital	Indicates the completion of the module initialization
DcaOn_fb[x]	digital	Feedback of Channel On/Off from the mixer
DcaLevel_fb[x]	analog	Feedback of Channel-Level
Msg	serial	Messages/Errors from the module

g. Master Module:

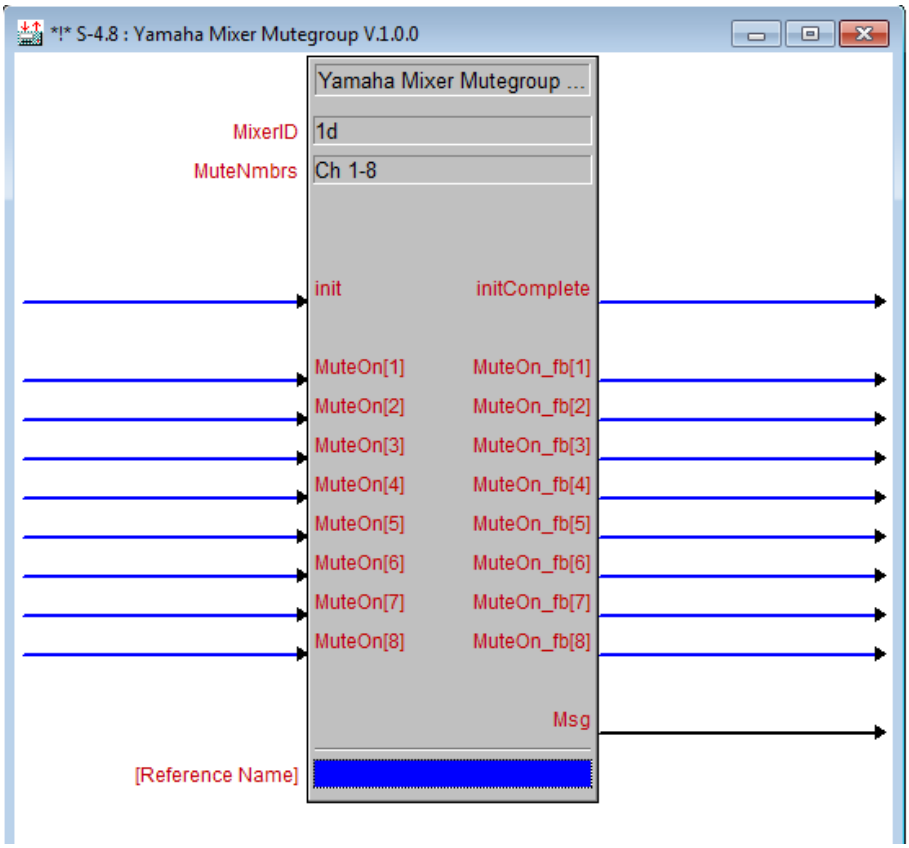


Parameter		
MixerID	The ID of the main module this module belongs to	
Controls		
init	digital	Initialize the module
MasterOn[x]	digital	Sets the corresponding master On or Off
MasterLevel[x]	analog	Sets the level of the corresponding master. Range: -32768 (-327.68dB [-∞]) .. 1000 (10.00 dB)
Feedback		
initComplete	digital	Indicates the completion of the module initialization
MasterOn_fb[x]	digital	Feedback of Channel On/Off from the mixer
MasterLevel_fb[x]	analog	Feedback of Channel-Level
Msg	serial	Messages/Errors from the module

Note:

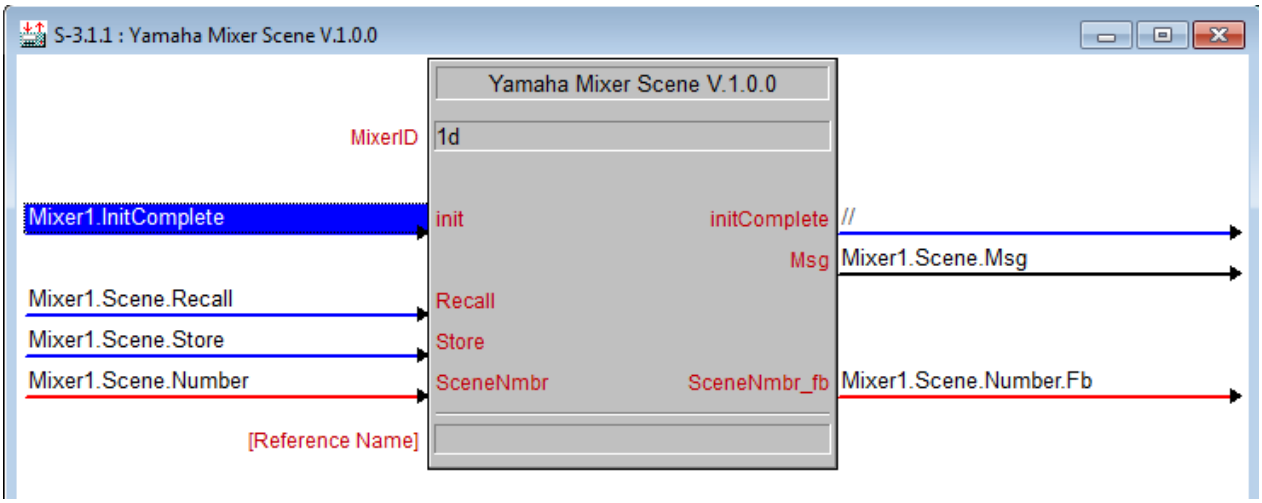
Master 1: Stereo Master
Master 2: Mono, Center or Sub Master

h. Mutegroup Module:



Parameter		
MixerID	The ID of the main module this module belongs to	
MuteNmbrs	The range of the required Mutegroups in blocks of 8	
Controls		
init	digital	Initialize the module
MuteOn[x]	digital	Sets the corresponding Mutegroup On or Off
Feedback		
initComplete	digital	Indicates the completion of the module initialization
MuteOn_fb[x]	digital	Feedback of Mutegroup On/Off from the mixer
Msg	serial	Messages/Errors from the module

i. Scene Module:



Parameter		
MixerID	The ID of the main module this module belongs to	
Controls		
init	digital	Initialize the module
Recall	digital	Recalls the Scene Memory as stated by “SceneNmbr”
Store	digital	Stores the Scene Memory as stated by “SceneNmbr”
SceneNmbr	analog	The Scene Number here will be stored or recalled
Feedback		
initComplete	digital	Indicates the completion of the module initialization
SceneNmbr_fb	analog	Shows the current scene number
Msg	serial	Messages/Errors from the module

Note:

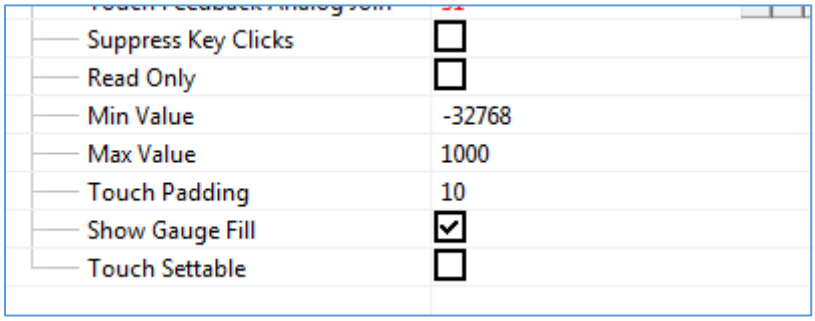
The Scene Library B (TF series) is not supported in the moment.

7. Parameter Range:

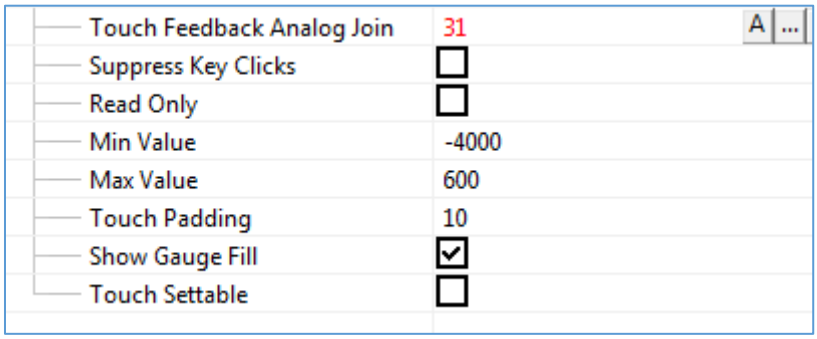
The level range uses Crestron® analog values (signed integer) in hundredths of dB.

So, unless otherwise stated, the level range is always:
-32768 (-327.68 db, which means -∞ in the mixing console) as the lower end and
1000 (-10dB) as the upper end.

The range (Min Value & Max Value) of the corresponding gauge or slider in VT-Pro-e or your Ramp in SIMPL-Windows can be set to anything in between these values, so you can work with the full range:



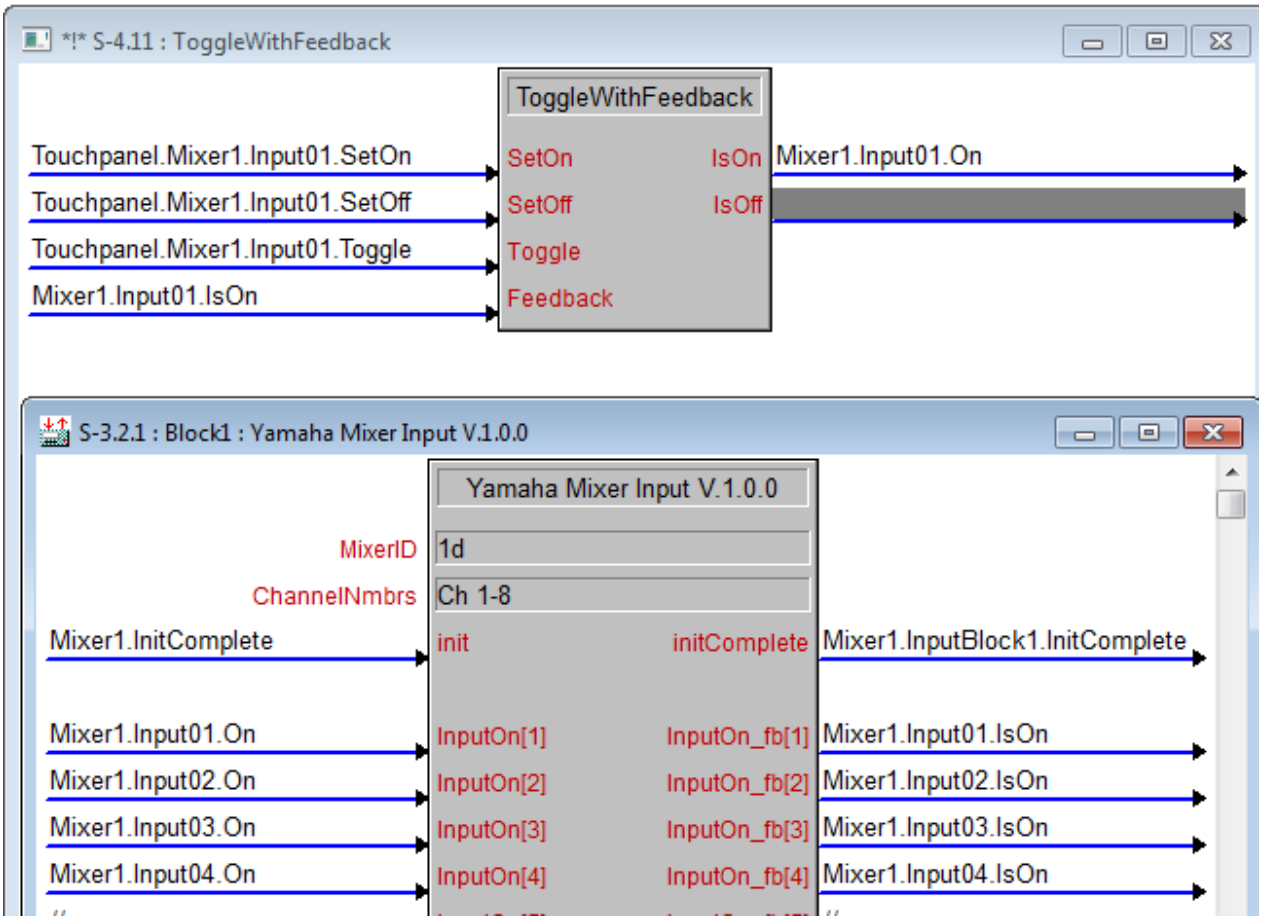
… or with a limited range, -40db to +6db in this example:



Values lower than -32768 are not possible inside the Crestron® system.
Values higher than 1000 will be limited to 1000 (+10dB) by the module.

8. ONs and OFFs

You can set every Channel or Mutegroup by setting the appropriate Crestron® Signal to ON or OFF.
If you want to use a toggle, you have to pay attention to the real status in the Mixer (feedback).
To make this easier, a small helper macro is included.
The macro is called “ToggleWithFeedback”.
It could be used for setting parameters on, off or just to toggle.
See this example:



9. Mixer capacity

The different mixers have different capacities in terms of number of Input Channels, Mix Busses etc. You have to take care not to overload their capacity (e.g: control input channel 65 on a TF3, when this console can only handle 48 input channels).

Here is a table of the mixer capacities:

	Input Channels	Mix Busses	Matrix Busses	DCA	Mute Groups
TF1	40	20	4	8	2*
TF3	48	20	4	8	2*
TF5	48	20	4	8	2*
TFRack	40	20	4	8	2*
QL1	48	16	8	16	8
QL5	80	16	8	16	8
CL1	64	24	8	16	8
CL3	80	24	8	16	8
CL5	88	24	8	16	8

*Fixed Mutegroups: 1 = All Input Channels, 2 = All FX

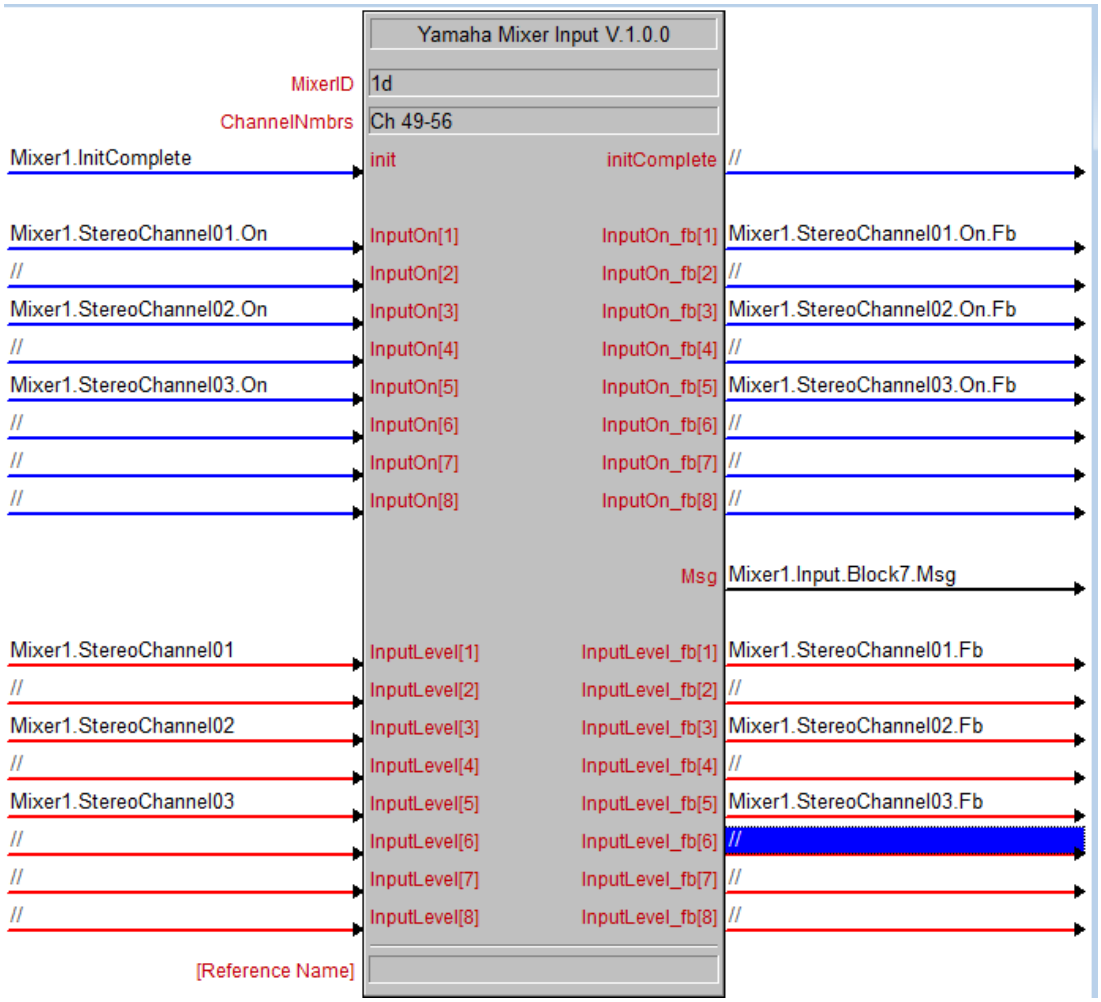
10. Mono/Stereo Input Channels

The Module is handling mono and stereo channels the same way. So depending on the number of mono channels and the number of stereo channels you have to note these numbering:

	1st Mono Input Ch-Nmbr	Last Mono Input Ch- Nmbr	1st Stereo Input Ch-Nmbr	Last Stereo Input Ch- Nmbr
TF1	1	32	33	40
TF3	1	40	41	48
TF5	1	40	41	48
TFRack	1	32	33	40
QL1	1	32	33	48
QL5	1	64	65	80
CL1	1	48	49	64
CL3	1	64	65	80
CL5	1	72	73	88

Example:

For handling the first 3 Stereo-Channels on a CL1 use the Input-Module
with the ChannelNmbrs Setting 49-56 (First Stereo Channel on CL1 is 49, because Mono channels ends on channel 48):



You only need control for one channel of every stereo pair, just ignore the other one.

This is applicable for the following modules

- Input (Stereo Input Channels)
- Mix Send (Stereo Input Channels to MixBus)
- Matrix Send (Stereo Input Channels to Matrix Bus)

11. Other Documents

In case you encounter any errors (you may see them on the Msg signal or as debug messages) please have a look at these other documents:

- latest release notes
- FAQ (if available)