1. Crestron Module Information

Partner: Yamaha Corporation

Model: DME7

Device Type: Digital Signal Processor

2. General Information

SIMPL Windows Name: Yamaha_Dme7_V.1.0

Category: Mixer

Summary: This module controls a Yamaha DME7 DSP Device via Ethernet connection.

3. General Notes:

This module is designed to control a Yamaha DME7 via a Crestron Control System via Ethernet connection.

Because the core routines are written in SIMPL# it only runs on Crestron System3 or System4 devices!

The archive contains the following files:

Yamaha_Dme7_V.1.0.usp	The SIMPL+ module as a wrapper for the SIMPL# module
Yamaha_Dme7_V.1.0.0.clz	The SIMPL# module as an interface for DME7
Sample App Dme7.smw	Sample Application for controlling DME7 via Ethernet
Dme7SampleUI.vtp	XPanel UI for DME7 Sample
AnalogOn.umc	Helper module to convert a Digital 0/1 to an analog value as it's needed for the module (see chapter 8)
DmeCreston.mtx	Sample File for DME7 consistent with the Crestron project

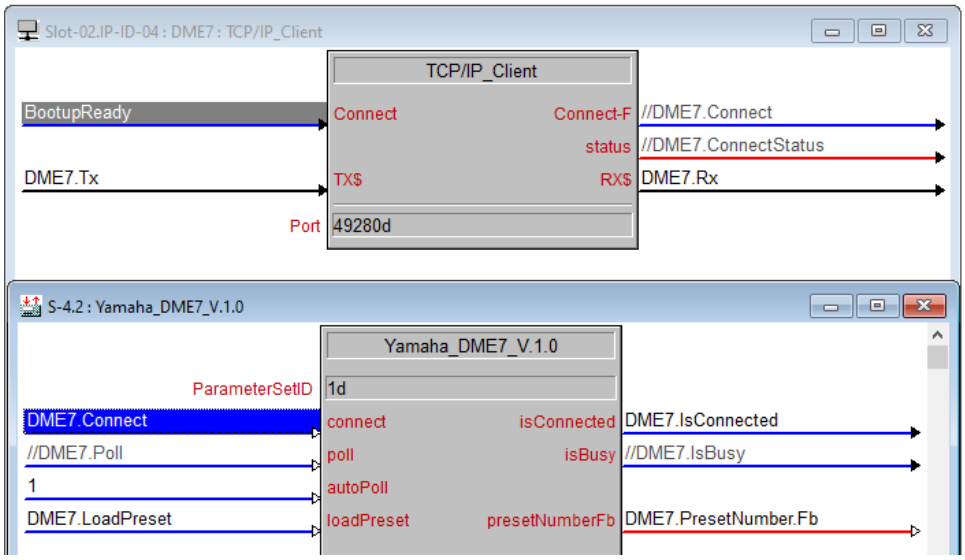
4. Tested software versions

- Crestron SIMPL Windows 4.28
- Crestron SIMPL+ 4.06
- Crestron Cross Compiler 1.3
- Crestron Database 222.05
- Crestron Device Database 200.320
- Crestron VT-Pro-e 6.2.02
- Crestron Smart Graphics Controls 2.19.00.09
- Yamaha DME7 Firmware 1.0.2
- Yamaha DME7 Protocol Version 1.4
- Yamaha DME7 Parameter-Set Version 1.0.0

5. Wiring:

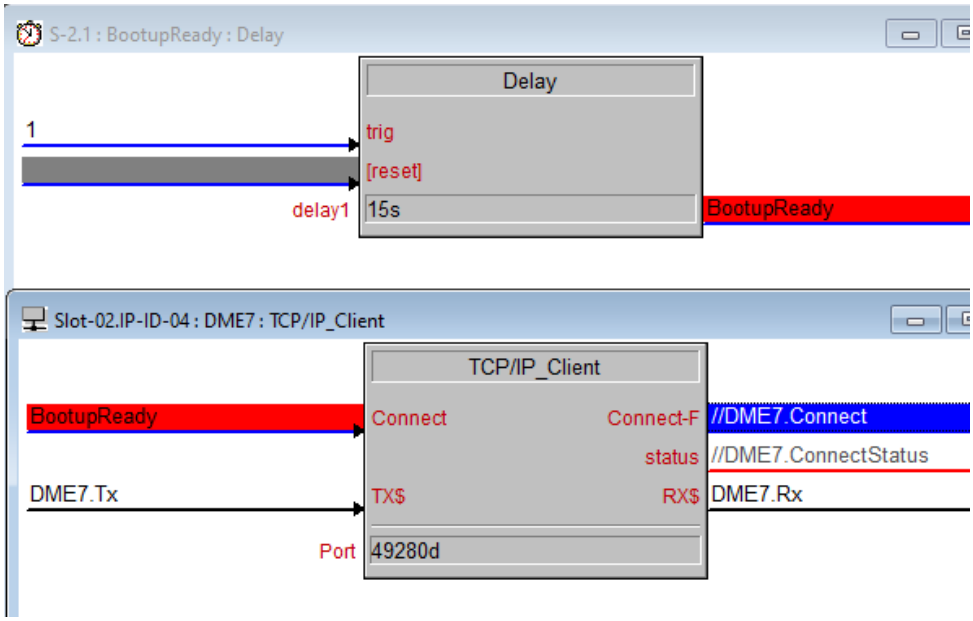
The following remarks should be noted:

We recommend using the “Connect-F” signal (feedback if TCP/IP connection is successful) as an input for the connect signal of the module:
(in the sample app we use a manual connect/disconnect just for demo purposes)



It is not recommended to use a “1” signal at the “Connect”-input of the TCP/IP-Client module. Because of the heavy workload for the Crestron-CPU during the boot-up phase, some signals may not have a consistent state.

Use a small delay instead (approx. 10-30s):

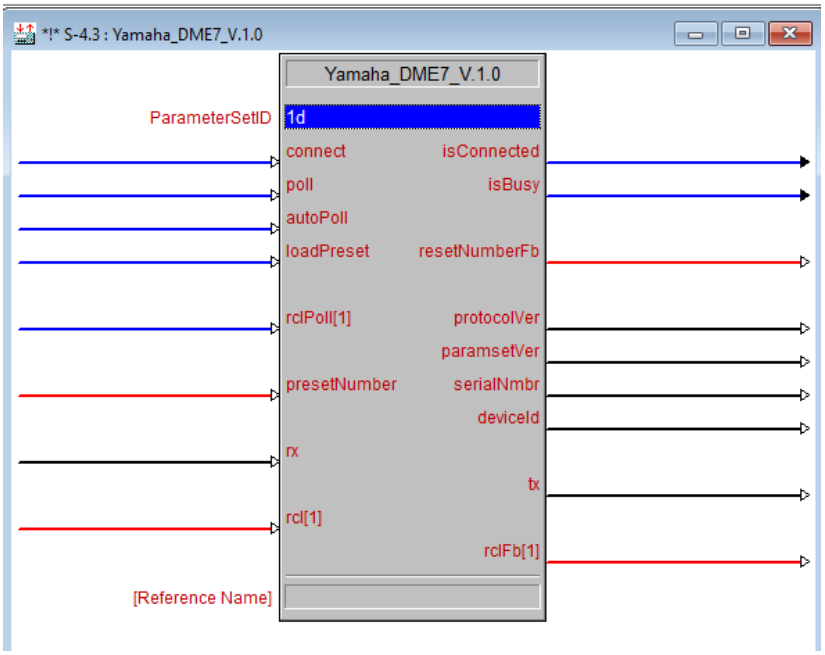


The default TCP/IP Port Number of the DME is “49280”

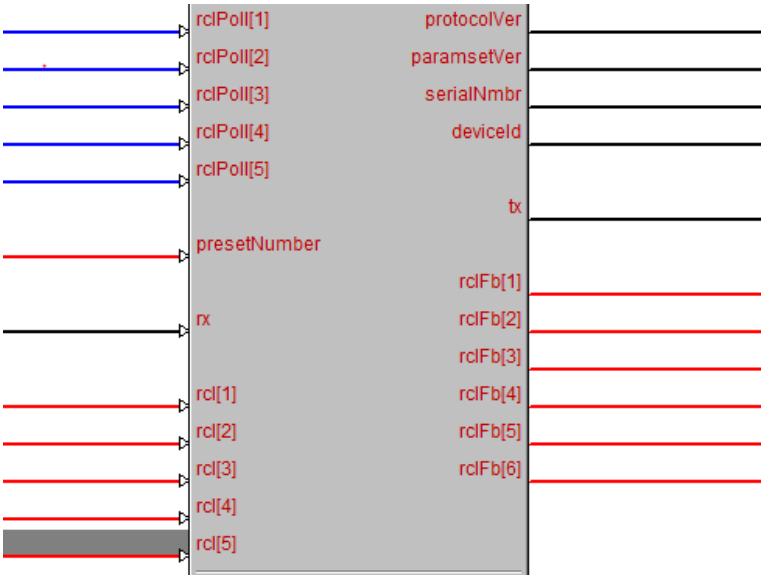
The module uses the keep-alive function of the DME7. The time period is about 10s. If there is no answer after that time, the Crestron CPU assumes a broken connection and tries to re-connect.

Signals:

The following picture shows the DME7 module:



Depending on the number of entries in the “Remote Control List” in ProVisionaire Design, you can expand the signals “rcl” and the corresponding signals “rclPoll” and “rclFb” up to 1000:



Parameter		
ParameterSetID	analog	1 … 65534. Corresponds to the ID of the parameter set in the ProVisionaire design that is to be used for the Crestron controller. Default = 1
Controls		
connect	digital	1: causes the module to connect to the MTX 0: causes disconnect
poll	digital	Manually triggers a polling of all parameters where polling is enabled
autoPoll	digital	If "1" after a detected preset recall, all parameters where polling is enabled will be polled
loadPreset	digital	A pulse performs a preset recall of the specified preset number
rclPoll[1] .. [1000]	digital	Enable the poll of the parameter in some cases (see below)
presetNumber	analog	0..50: preselection of preset-number to Recall
rx	serial	Rx-Data (usually connected to the RX Signal of the TCP/IP-Client Module or the Serial-Driver Module)
rcl[1] .. [1000]	analog	Set a new value to a parameter in the remote control list (range 0 … 65534)
Feedback		
isConnected	digital	"1" if the module is successfully connected to the MTX
isBusy	digital	Indicates that the Device is busy (i.e. re-polling all parameters after a preset recall)
presetNumberFb	analog	0..50: shows the current preset number
protocolVer	serial	The protocol version of the connected device
paramSetVer	serial	The parameter set version of the connected device
serialNmbr	serial	The serial number of the connected device
deviceId	serial	The device ID of the connected device
tx	serial	TX-Data (usually connected to the TX signal of the TCP/IP-Client nodule or the serial-driver module)
rclFb[1] .. [1000]	analog	The current value of a parameter in the remote control list (range 0 … 65534)

If rclPoll[x] is high, it causes a polling of the related parameter in the following three cases:

1. A pulse on "poll"
2. The DME7 is connected and autoPoll is true ("1")
3. A preset recall is detected and "autoPoll" is true ("1")

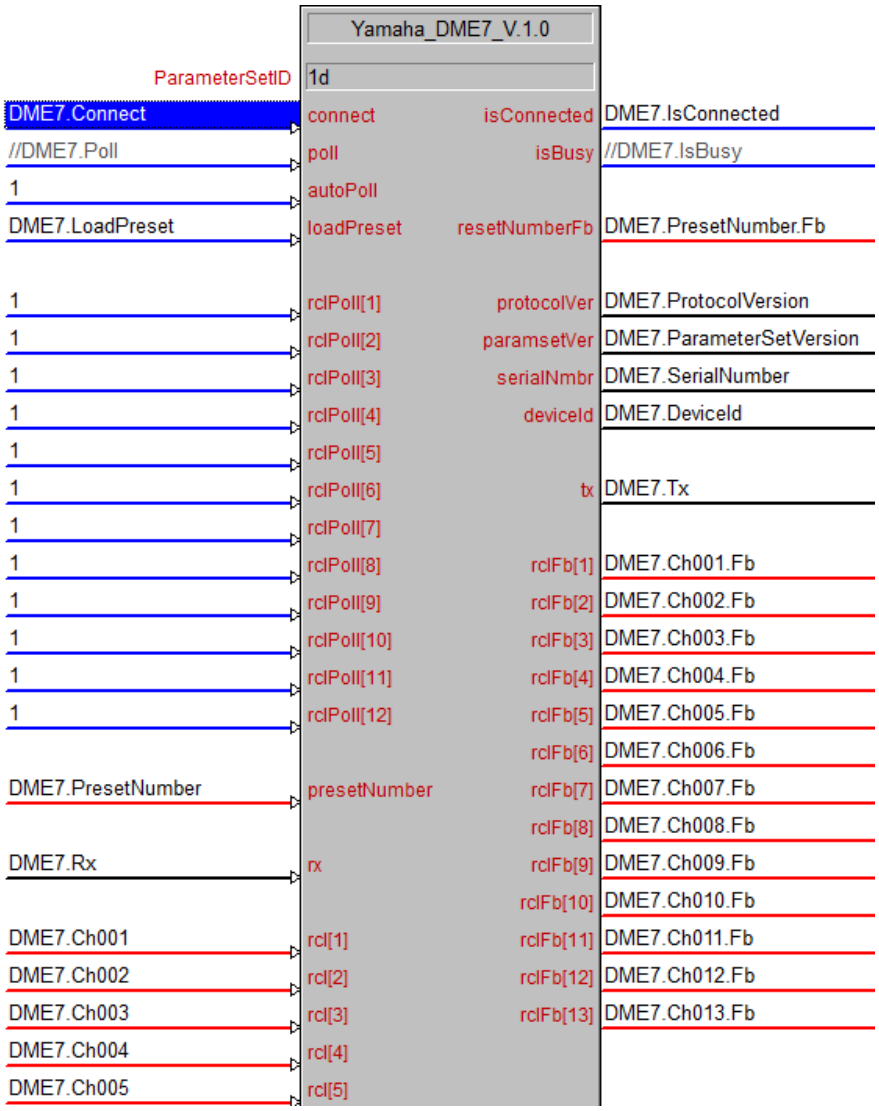
So the usual procedure would be to set autoPoll to "1" and set rclPoll[x] to "1" for all parameters where feedback is required.

6. Parameter Range:

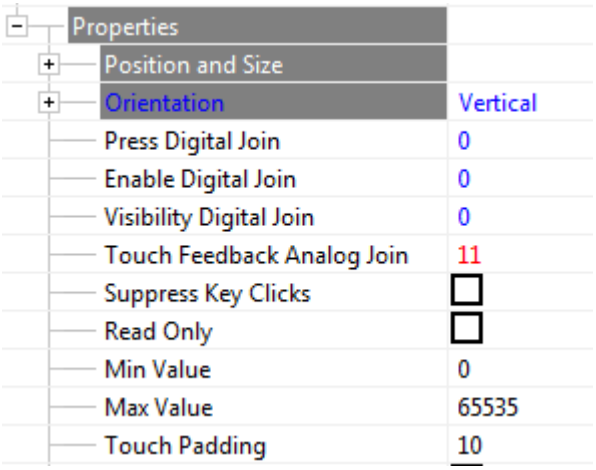
Because it is unknown which parameters will be controlled on the DME-7 (could be ON's, Mutes, Levels, Times, Frequencies, Routers or others) all Parameters are internally normalized to a range from 0 … 65534.
(Which is also the usual range for an analog parameter in the Crestron system)

The implications are as follow:

Analog parameters, such as a level, DCA, delay or frequency could be directly connected to a Touchpanel-Fader and the feedback to the Touchpanel-Feedback.



The range (Min Value & Max Value) of the corresponding gauge or slider in VT-Pro-e has to be set accordingly:



To limit the range of a control (for example a fader should not range from -138db to -10dB, but from -40dB to +6dB), there are two ways to do so:

1.: via the Remote Control Setup List of ProVisionaire Design. In this case -40dB is then 0 in Crestron and +6db is 65534.

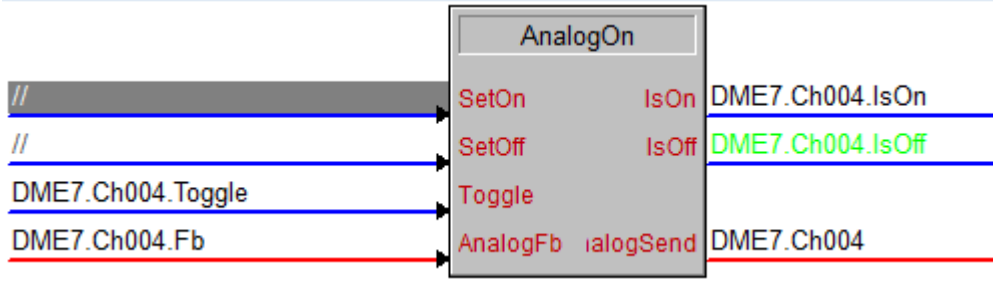
2.: via Crestron programming. In this case the Crestron Min value should be 14286 and the Max Value should be 60411 (see how to evaluate such values with the Crestron Debugger in chapter 9).

Please note that returning values may be rounded because of different resolutions in both systems, so please choose the method used depending on the situation.

7. ON's and OFF's:

In case of a digital signal (Channel ON, Mute or so), use an analog "0" or an analog "65534" to set these parameters. To make this a little bit easier, a helper macro is provided.
This macro is called "AnalogOn" because it translates the digital signal (on and off) to analog values as the module requires. You can use it for setting parameters on, off or for toggling.

In the sample application you can see and test how it works:

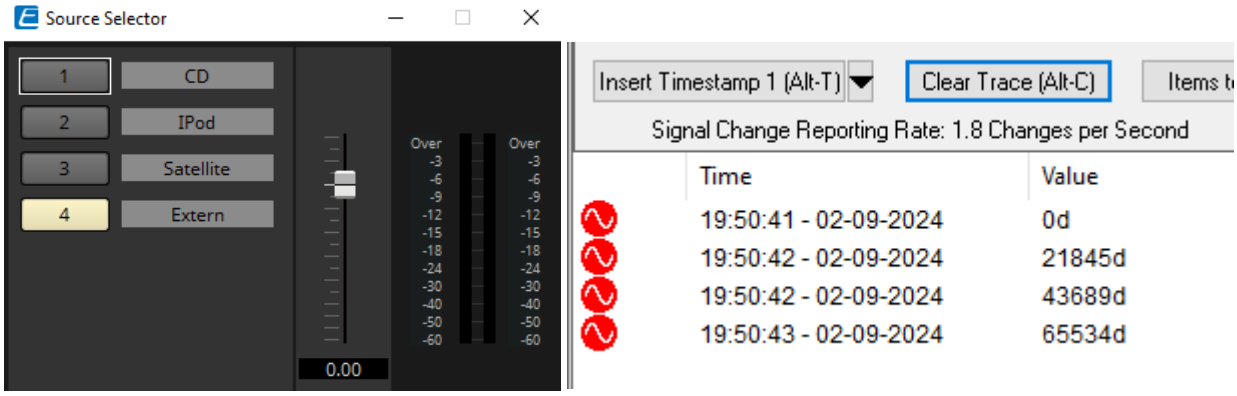


Please note: when using a MUTE function, ON means muted, OFF means umuted!

8. Routers and Source-Selectors:

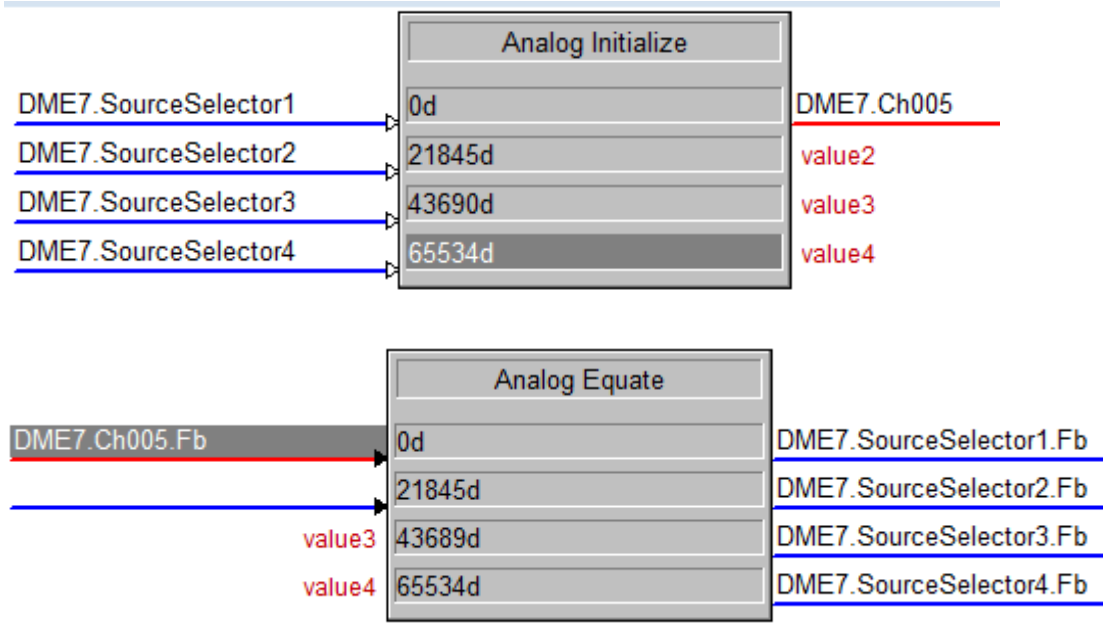
To set a Router, a Source Selector or something similar, you have to figure out which values correspond to the different functions.

For an example, see the Source Selector in the sample application. We want to control a Source Selector with 4 inputs here. The Source Selector is assigned to the Remote Control Setup List as No. 5.
Now we go online and step through the selector. In the SIMPL debugger you will see which values are corresponding to a certain input:



As you can see, when selecting a source the feedback on the corresponding parameter shows 0 (CD), 21845 (IPod), 43690 (Satellite) and 65534 (Extern).

Now we can use an “Analog Initialize” to control the source selector and an “Analog Equate” for the feedback on the Touchpanel:

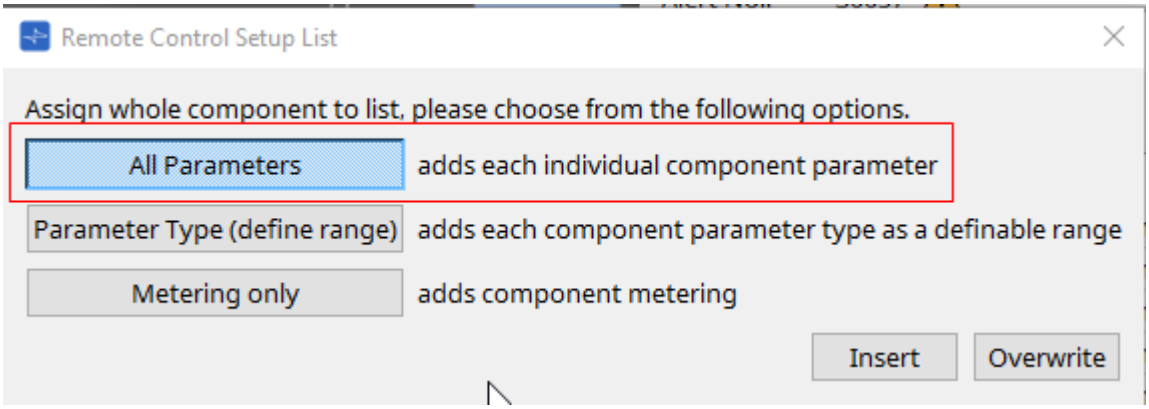


The upper and lower values are always 0 and 65534 but the values in-between depend on the number of steps in-between. As the steps are all equal, the values could also be calculated. But in some cases this

can cause some rounding errors which may result in feedback not working. So it is much safer to analyse the exact values using the SIMPL debugger.

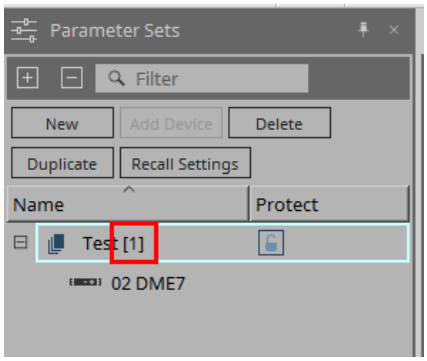
9. Known restrictions

- It is not possible to use multiple functions on one entry in the Remote Control Setup List. So if you move a component with multiple parameters (i.e. a Fader-Block), ProVisionaire Design asks for the insert method:

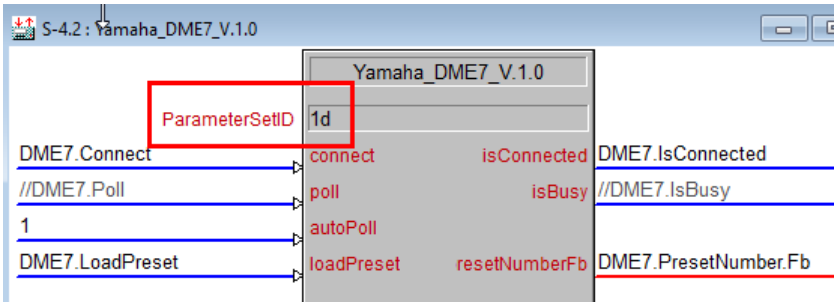


Be sure to always use “All Parameters“ (add each individual component parameters)!It is not possible to change the Parameter Set ID during runtime. So you can only use one Parameter Set for your Crestron Control.

- Make sure you have all the parameters you want to control by Crestron included in that Parameter Set (or the whole DME7) and insert the ID of that Parameter:



Set in the Yamaha_DME7 Crestron Module before compiling:



- Using an incorrect ID number (one that does not exist on DME7) will result in an error being displayed in debugger:

ABC	19:23:14 - 02-09-2024	sscurrent_ex 2\x0A	DME7.Tx
ABC	19:23:14 - 02-09-2024	OK devinfo protocolver "1.4.0"\x0A	DME7.Rx
ABC	19:23:14 - 02-09-2024	OK devinfo paramsetver "PROC:1.0.0"\x0AOK devinfo serialno "EE329▯"\x0AOK ...	DME7.Rx
↓	19:23:14 - 02-09-2024	0	DME7.DoConnect
ABC	19:23:14 - 02-09-2024	ERROR sscurrent_ex InvalidArgument\x0A	DME7.Rx