The purpose of this document is to provide an understanding of operation and configuration of the two different String Output modules available within SymNet Composer. The two different types or modules are the String Output and Network String Output.

These control modules send out an ASCII (text) or hexadecimal (binary) string every time its control input changes from low (less than 49%) to high (greater than 51%). These modules can be used to send commands to control a variety of third party devices, e.g., turn on a projector, change projector source, change a camera position, change channel of a media device, etc.

**Note:** The string is only sent from the communication port of the device where the DSP module resides. Strings may be up to 63 characters or bytes long.

Enter the string exactly as it should be sent out. To obtain an exact list of string commands or control protocol for the third party device, refer to the device user’s guide or contact the manufacturer.

In ASCII mode, in addition to standard text characters, the following special characters are supported:

<table>
<thead>
<tr>
<th>Name</th>
<th>Hex Code</th>
<th>Displayed or typed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carriage Return</td>
<td>0x0D</td>
<td>\r</td>
</tr>
<tr>
<td>New Line</td>
<td>0x0A</td>
<td>\n</td>
</tr>
<tr>
<td>Tab</td>
<td>0x09</td>
<td>\t</td>
</tr>
<tr>
<td>Bell</td>
<td>0x07</td>
<td>\a</td>
</tr>
<tr>
<td>Backspace</td>
<td>0x08</td>
<td>\b</td>
</tr>
<tr>
<td>Backslash</td>
<td>0x5C</td>
<td>\</td>
</tr>
<tr>
<td>Any Hex Character</td>
<td>0xnn</td>
<td>\xnn</td>
</tr>
</tbody>
</table>

**Note:** In binary mode, data is entered as sequences of bytes in hexadecimal separated by commas. For example, to send out an incrementing sequence of 12 values starting at 7, enter: 7, 8, 9, A, B, C, D, E, F, 10, 11, 12.
3. Select Configure Remote Control Ports...

4. Select the RS-232 Port tab

5. Then select the radio button for the desired baud rate (1200-230400)

Note: The default baud rate is 57600. The baud rate should be set to match what is expected by the connected device.
UDP:
Uses UDP port 48631; only 1 controller can communicate with this port at a time.

TCP:
Uses TCP port 48631; up to 4 controllers can communicate with this port simultaneously.

These are the steps to add a String Output module to your design:
1. From the Toolkit drag in a String Output module (Control Modules>Control Outputs)
2. The Sting Output Properties windows will open automatically
3. First select the unit that will be transmitting the sting command
4. Next select the remote control port the string will be sent out (RS-232, UDP, or TCP)
5. Click OK
6. Double click the String Output module
7. Select the string to output mode (ASCII or Binary)
8. Then add the string command to the module

Here is an example using multiple String Output modules to change camera positions. This example uses 4 PPT (Push to Talk) microphone and 4 cameras. When a particular microphone is being used, the camera assigned to that microphone needs to be active. A 4 button processor Super-Module is used to set the function of the microphone to PTT.

This is an example using an ASCII command:

When the microphone button is pressed it will trigger the green or On LED. The String Output module is wired to the green LED.

Whenever the green LED is lit for a particular microphone it will tell the camera assigned to that microphone to activate.
This is an example using a Binary command:

![Network String Output Module](image)

The Network String Output module can be used to send control command to any device connected to the same network. This includes but is not limited to other DSPs. Commands can be sent over UDP or TCP ports.

**UDP:**
Uses UDP port 48631; only 1 controller can communicate with this port at a time.

**TCP:**
Uses TCP port 48631; up to 4 controllers can communicate with this port simultaneously.

These are the steps to add a Network String Output module to your design:
1. From the Toolkit drag in a Network String Output module (Control Modules>Control Outputs)
2. Double click the Network String Output module
3. Select the string to output mode (ASCII or Binary)
4. Select the communication port (UDP or TCP)
5. Next enter in the IP address and network port of the device receiving the string command from the DSP
6. Then add the string command to the module

Here is an example that uses multiple Network String Output modules to send a load configuration command to multiple DSPs in the system.

For this example a control screen was created to give the end user easy operation of this procedure.

When the “ON” button is pressed the control signal goes high and sends out the string command.
A delay module is also wired to the latched button. The delay logic module sends a control signal to the preset trigger to reset the "ON" button.

This is an example using an ASCII command:

```
String to Output: (maximum 255 characters or bytes)
IC 1 r

ASCII  Binary  UDP  TCP

Trigger Input Level: 0.0%  IP Address: 192.168.10.24
Force Trigger  Network Port: 48630
```

To obtain further details on the operation of this example and to get a copy of the super-module please contact Symetrix Support (support@symetrix.co)