Using RTI and other Universal Remotes to Control DigiLinX

In DigiLinX Dealer Setup 2.3, NetStreams has introduced a new method of controlling DigiLinX from a 3rd party control system called Serial2Command (S2C). S2C allows external control systems to communicate with and control DigiLinX, enabling dealers to offer a more flexible solution for control to end users.

The S2C driver runs on a ControLinX, or on a MediaLinX Pro slot configured as a ControLinX. S2C changes the ControLinX from a device that controls other 3rd party sub-systems, to one that listens for commands from other systems and directs DigiLinX to perform various actions such as selecting a zone, selecting a source, adjusting audio volume, or triggering a macro. This capability also allows dealers to use external clocks, such as the RTI XP-8 processor, to fire time and event based macros inside DigiLinX. This topic will be discussed in-depth in a different application note.

For the purpose of this application note, we have designed a simple DigiLinX and RTI network to illustrate the examples. This network diagram shows the key equipment:
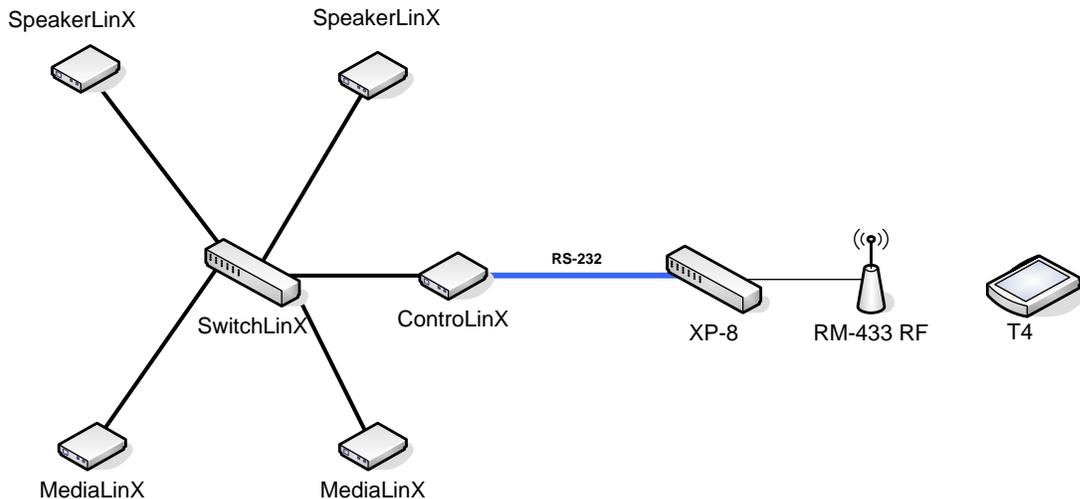
In this example, the DigiLinX system consists of 2 SpeakerLinX, 2 MediaLinX, and 1 ControLinX connected to a SwitchLinX. The ControLinX is connected via RS-232 to the RTI XP-8, and the XP-8 is connected to a RM-433 RF. You will need o use a Null Modem adapter or cable for RTI Processors. In this application, you can use any RF-capable RTI remote, such as a T4.

-Cont'd-

DigiLinX™ Application Note

To enable control of DigiLinX from the RTI remote, first load the Serial2Command driver onto the ControLinX. Open DigiLinX Dealer Setup project file and select your matched ControLinX. Click the IR/RS-232 tab, then select the driver dropdown and select SerialToCommand.lua.

Send configurations to all devices, and DigiLinX will be ready to receive commands through the ControLinX.

On the RTI side, the XP-8 must be trained to send commands that DigiLinX understands, and the remote must contain a GUI that the user can use to control DigiLinX. To configure the RTI processor and remote, open RTI Integration Designer.

DigiLinX uses commands called ASCII to communicate. ASCII commands are text-based and can be written by hand, or copied and pasted from DigiLinX Dealer Setup (recommended method). For a full list of DigiLinX ASCII commands, please refer to the manual "Programming for 3rd Party Control."

-Cont'd-

After you have added the remote and processor in Integration Designer, click on the remote, and a window will open showing the current GUI.
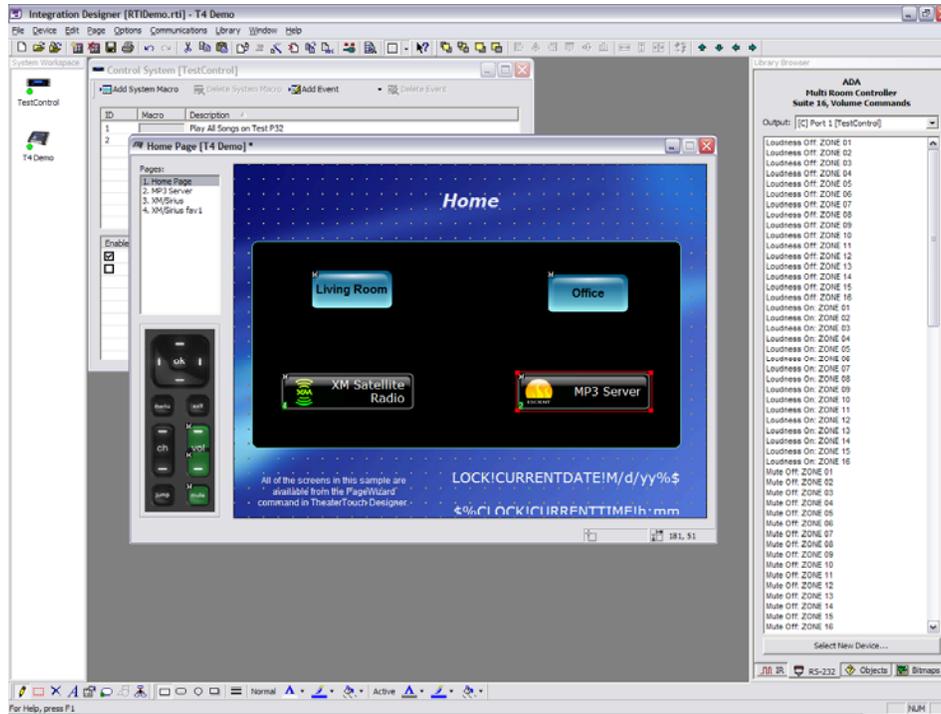
In this example, we have created a 2-zone system with control of a Living Room and an Office, and 2 sources: XM Satellite Radio, and an MP3 server, as well as control of the RTI T4's physical buttons to create actions in DigiLinX. Open the project file XXXXXXXXX if you would like to follow along.

Since the T4 is a wireless RF remote, and can be located anywhere, the user must tell the remote which zone they would like to control. The user will first press the zone they want to control, then select the source they want to listen to in that zone. For example, they might select the Office zone, then choose the XM Radio source. RTI will handle routing the commands and variables we are about to set so that the correct DigiLinX commands are routed to the correct zones, based on what RTI calls "flags."

-Cont'd-

To see and change the commands for any button, right click on the button and choose "Edit Macro."
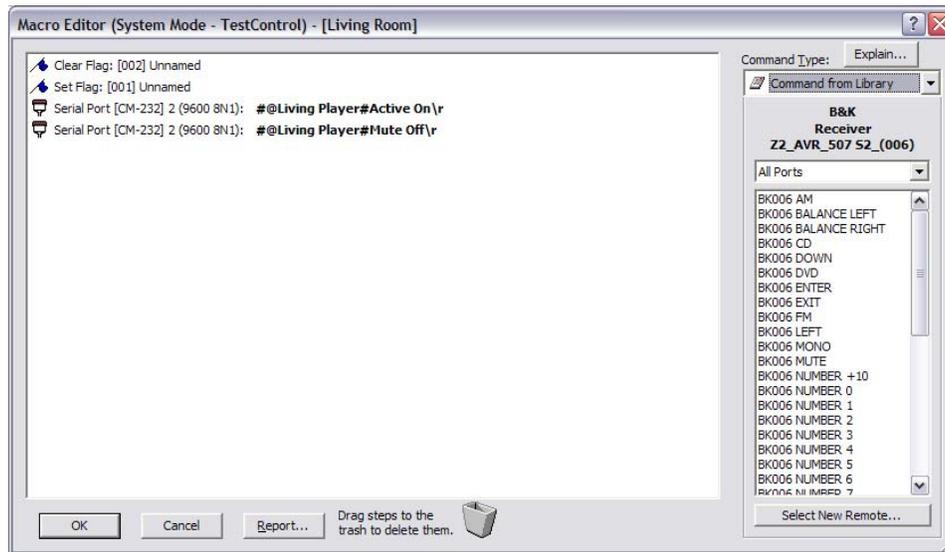
A new window will pop up for that button that details the different macro commands associated to that button in the RTI GUI. Choose "RS-232 Command" from the drop down list.

-Cont'd-

main +1 512.977-9393 / fax +1 512.977.9398 3600 W. Parmer Lane, Ste. 100; Austin, TX 78727
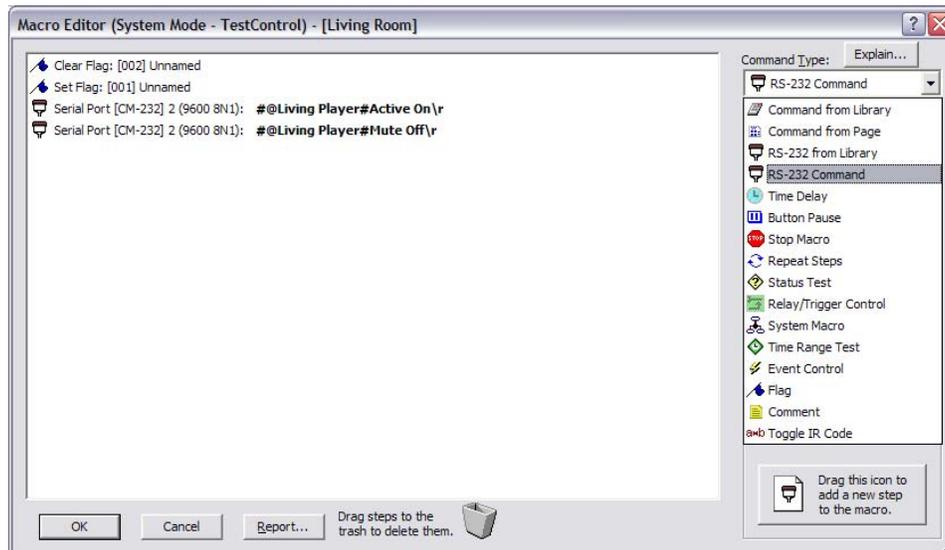
This is the screen that will allow you to enter DigiLinX RS-232 control codes into RTI.
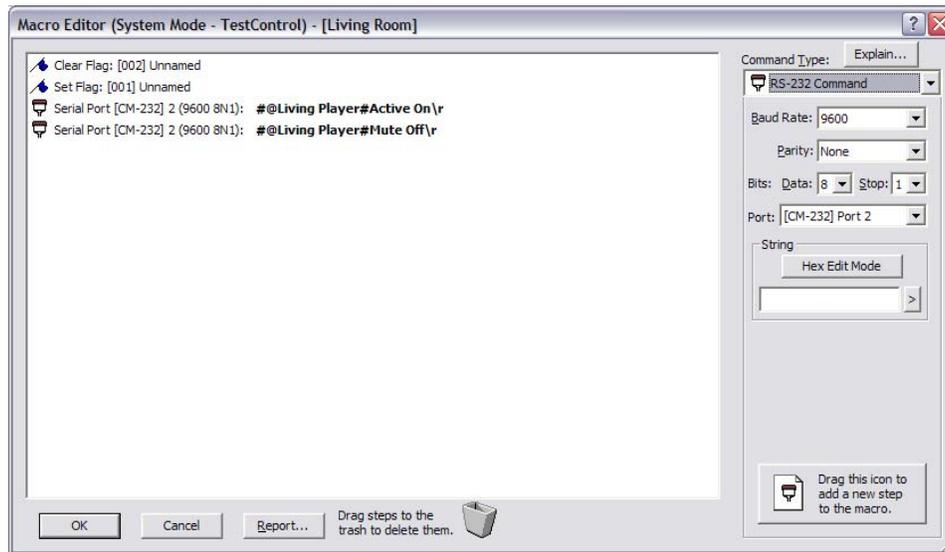
You should always set Baud Rate to 9600, Parity to None, Data Bits to 8 and Stop Bits to 1. The port will depend on the output port from your RTI processor; just make sure to match the output port selection in Integration Designer to the physical output port that your RS-232 cable is plugged into.

In our example, we are using RTI's "flag" feature to set variables representing each zone. If Flag 001 is set, RTI knows that commands to follow are destined for the Living room zone. If Flag 002 is set, RTI knows that commands to follow are destined for the Office zone. If you add additional zones, assign them their own flags, and be sure to clear all flags before you set the flag for this zone. You'll see that the first step is to clear Flag 002 and set flag 001.

Once the flags are set, you can send the RS-232 command. To enter the command, change the baud rate, parity, and bits settings as seen above. Then enter the command in the "string" text field at the bottom.

DigiLinX ASCII commands start with a "#" then use an "@" to designate the zone or service being addressed. In this case, we are addressing the Player in the Living zone. "#" and the specific command addressed to this service, in this case "Active On" turns on the zone. Finally, the command must be finished with a carriage return, or "\r".

-Cont'd-

main +1 512.977-9393 / fax +1 512.977.9398 3600 W. Parmer Lane, Ste. 100; Austin, TX 78727

DigiLinX™ Application Note

ASCII commands can be hand written if you know the syntax. However, the easiest way to generate ASCII commands is to use the macro tool in DigiLinX Dealer Setup! To open the macro tool, click "Macros" at the top left corner in DigiLinX Dealer Setup.

-Cont'd-

Next, name the macro and click the "Edit Macro" button:
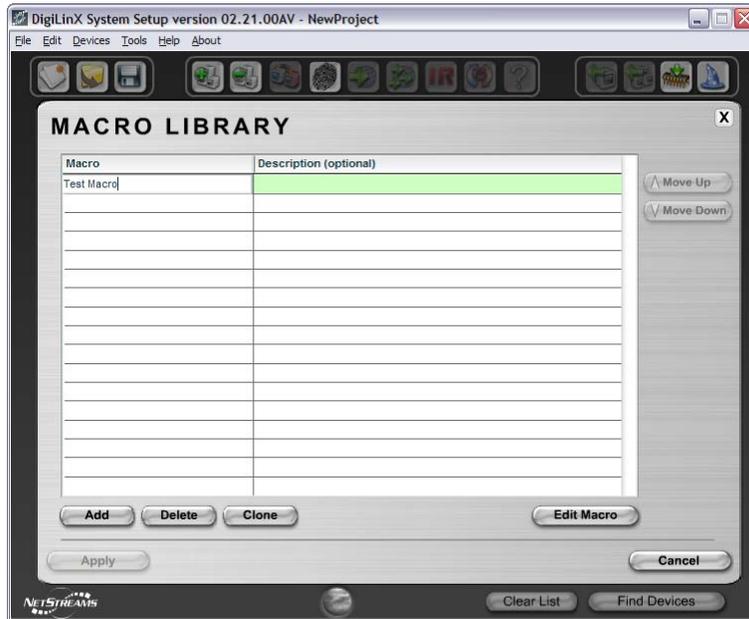
Next, you will build a macro to do something in DigiLinX. In this case, we will build a simple macro that turns on the Living room zone.

First, choose "Audio/Video Player Services" from the Category drop down list. Next, pick "Living Player" from the Service list. Finally, select "Set Active On" in the Action list. Last, click "Add Step."

-Cont'd-

Next, change the Macro View at the top right hand corner from Basic to Advanced.

Highlight the text, and copy it using CTRL+C. Return to RTI Integration Designer and paste the RS-232 string into the HEX edit field:
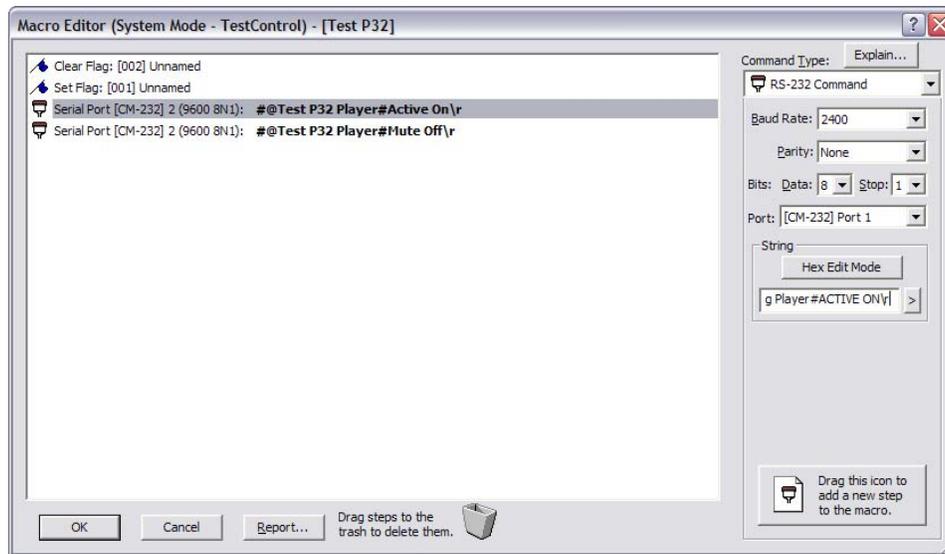
Then click and drag the icon at the bottom right into the window to add the step.   Don't forget to add "\r" at the end of the string.

-Cont'd-

Note that when you turn a SpeakerLinX on (using Active On), by default it turns on muted. Use the Muto Off command to un-mute the zone.

To view the flags configuration, right click the XM Satellite Radio button in the RTI project, and choose "Edit Macro."
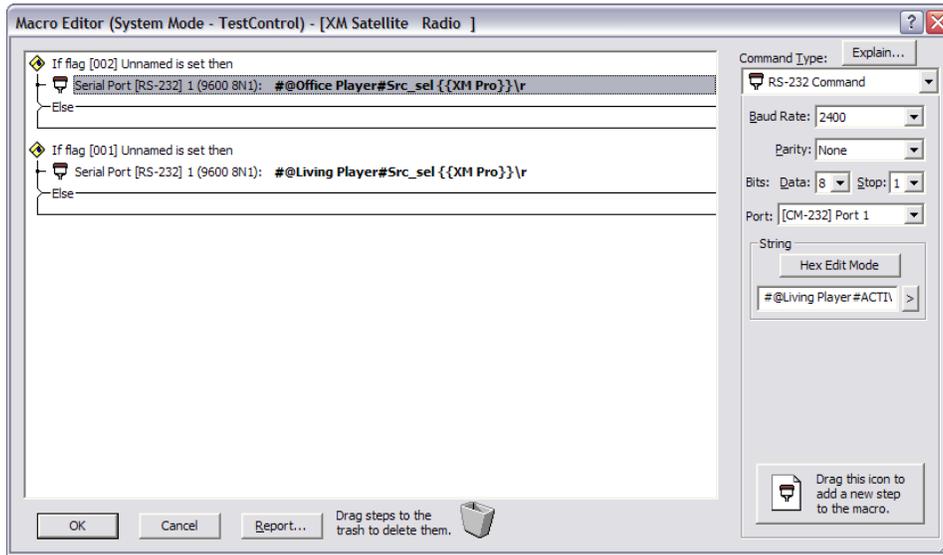
On this screen you will see that if Flag 002 is set, then the RTI processor sends the ASCII command to DigiLinX for the Office to select the XM source. If Flag 001 is set, it sends the ASCII command for the Living zone.

Finally, the physical buttons on the RTI remotes can also be mapped to DigiLinX commands.

-Cont'd-

Right click the button you would like to map and choose Edit Macro.
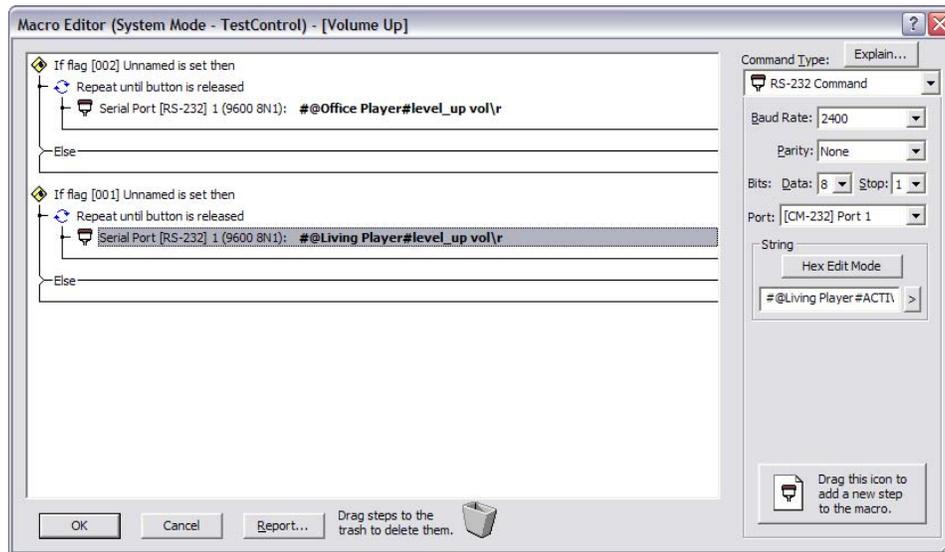
You will see commands that change the volume up and down, and in RTI the command is specified to repeat until the button is released – perfect for ramping volume up and down.

The SerialToCommand driver is a powerful tool that allows Custom Integrators to control DigiLinX from any RS-232 capable device. Another tool that *NetStreams* has built into DigiLinX is the ability for ASCII messages to be embedded into other drivers' control streams. This means that if you are using a Lutron driver to control a Lutron system from DigiLinX, DigiLinX will also listen to Lutron for control, so you can now use Lutron touch panels to control DigiLinX.

We hope that this tutorial was informative and helpful. Please email us at marketing@netstreams.com if you have feedback.