SIMPLWINDOWS NAME:	Lectrosonics 25 String Serial Send
CATEGORY:	Mixer
VERSION:	1.0
SUMMARY:	Allows 25 different serial strings to be sent using LecNet bus timing
GENERAL NOTES:	This module allows 25 different serial strings to be sent to the Lectrosonics Bus, using timing necessary to be sure that only one command is sent at a time. It is used similar to a STRINGIO symbol, where there is a digital input for each of the 25 strings to be sent, and there is a parameter field where the 25 strings are defined. When one of the the COMMAND-* inputs goes high, the corresponding string will be sent to the device using the LecNet bus timing. This means that it will wait until there is no other activity, then it will send the address, wait for a response from the Lectrosonics device, and then send the actual string defined. If multiple commands are activated simultaneously, the module will take care of sending out each command in turn, so as not to conflict with the LecNet timing.

This module provides a simple way to send user defined strings to any Lectrosonics device, while adhering to the timing requirements of the LecNet bus. If it is necessary to send more than 25 strings, multiple modules can be used.

Since multiple LecNet devices can be attached to a single Crestron com port, care must be taken to be sure that two commands are not sent simultaneously by the Crestron system, to two different LecNet devices. This module prevents this from happening by using a chaining feature.

Simply stated, the chaining feature allows multiple modules to be connected together in sequence, such that each module will only send out a command when it's turn comes around. If multiple modules have a command to send out at the same time, the chaining feature will sequence the commands such that each command is sent at the proper time. The chaining feature also operates within the module, such that if multiple inputs are activated simultaneously on a module, each requested function will be sent to the LecNet device in turn.

To implement the chaining feature, the CYCLE-START input, and the WAITING and CYCLE-DONE outputs are utilized, as well as a companion module called LECNET SEQUENCER. If, for example, there are five Lectrosonics modules in a program, you would connect the CYCLE-DONE output of the first module to the CYCLE-START input of the second module. Then connect the CYCLE-DONE output of the second module to the CYCLE-START input of the third module, and so on. When you get to the last LecNet module in the program, connect the CYCLE-DONE output to the DONE input of the LECNET SEQUENCER module. The CYCLE-START output of the LECNET SEQUENCER should now be connected to the CYCLE-START input of the first module. This forms a continuous loop through all modules and the LECNET SEQUENCER.

The theory of operation is that when any of the modules has a command to be sent, it will put it's WAITING output high. When the LECNET SEQUENCER sees that any of the WAITING lines are high, it will pulse it's CYCLE-START output which will ripple through all LecNet

modules in the program. Any modules which have a command to be sent will send the command when the ripple reaches their respective module. When the ripple returns to the LECNET SEQUENCER module at the DONE input, if any modules still have their WAITING output high, it will restart the ripple. Otherwise, it will stop.

To implement this, you must take the WAITING output of all Lectrosonics modules, and put them into an OR gate and a NOR gate. The outputs of these two gates should be connected to the WAITING and NOT-WAITING inputs of the LECNET SEQUENCER module.

See the sample program for and example of how this is all implemented.

Note that even if you are only using one module, you must still use the LECNET SEQUENCER module to activate your single module.

CRESTRON HARDWARE REQUIRED:	ST-COM, CNXCOM
SETUP OF CRESTRON HARDWARE:	Baud Rate - 9600 Parity - None Data Bits - 8 Stop Bits - 1
VENDOR FIRMWARE:	None
VENDOR SETUP:	The address of the Lectrosonics device must be set to match the address programmed in the Crestron system. This can be done using the Lectrosonics LecNet PC software.
CABLE NUMBER:	Use the cable included with the Lectrosonics device to connect the Crestron system to the LecNet bus

CONTROL:

ADDRESS	A	Address of the AM16. This should come from an INIT symbol.
COMMAND-1-25	D	Pulse to send the string corresponding to the command. The string will be sent in accordance with LecNet timing requirements
CYCLE-START	D	Start the processing of this module. After CYCLE-START has been pulsed, any commands which it has pending will be sent out
LECNET-RX$	S	Serial data signal to route to a 2-way RS232 port

FEEDBACK:

WAITING	D	High when this module is waiting for servicing (a command is waiting to be sent) Should be routed through an OR gate and a NOR gate, to a LECNET SEQUENCER module
CYCLE-DONE	D	Pulses when the module is finished sending out commands. Should be connected to the CYCLE-START input on the next module, or to the DONE input on the LECNET SEQUENCER module
LECNET-TX$	S	Should be connected to the CYCLE-START input of the first Lectrosonics control module

in the chain. Will pulse when the WAITING
input goes high

OPS USED FOR TESTING:	3.18.06, 5.01.29x
COMPILER USED FOR TESTING:	SimplWindows Version 1.30.01
SAMPLE PROGRAM:	LECTTSTE
REVISION HISTORY:	None