SIMPLWINDOWS NAME: Lectrosonics TH3

CATEGORY: Audio Conference

VERSION: 1.0

SUMMARY: Controls all standard functions on a Lectrosonics TH3 Digital Hybrid

GENERAL NOTES:

This module will control a Lectrosonics TH3 Digital Hybrid. This device operates on the Lectrosonics LecNet bus. Multiple Lectrosonics devices can be placed on this bus, including the AV62, MM8. AM8, AM16. TH2, and TH3. Each device on the LecNet bus must have a unique address. This address must be entered into the module at the ADDRESS input, using an external INIT symbol. Valid address values are 128-254 decimal, or 80-FE Hex. Using this addressing scheme, multiple Lectrosonics devices can be controlled by using only one Crestron Com port.

This module allows control of connect, privacy, and receive volume level, for both the telephone (2 wire) and codec (4 wire) interfaces. It also allows manual dialing of telephone numbers, and includes an address book with 10 presets.

The procedure for storing a phone number preset is:

1. Enter the phone number
2. Press PRESET-STORE. The PRESET-STORE-FB output goes high.
3. Press the PRESET-* to store the number into.

When the telephone is on hook (hung up), any key presses on the telephone keypad will be displayed at the PHONE-NUMBER$ output, for display on a touch panel. This allows a full number to be entered and modified before dialing it. When KEY-DIAL is pressed, the telephone will be taken off hook, and the number displayed will be dialed. While the telephone is off hook, any subsequent presses of the telephone keypad will cause that digit to be dialed immediately. This is primarily for use with voice mail systems.

This module has a POLL-ENABLE input. When high, this input will cause the module to poll the TH3 for status of all parameters, every two seconds. Typically, this would only need to be held high when a screen including the TH3 controls was displayed on the touchpanel. It could be low at other times.

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 TH3. This should come from an INIT symbol.
PHONE-CONNECT/DISC/TOG	D	Activate/deactivate the telephone (2 wire) interface. Actual status will be reflected at the -FB outputs

PHONE-PRIVACY-ON/OFF/TOG	D	Activate/deactivate the privacy feature of the telephone interface. This can be set up on the TH3 to mute either the outgoing or incoming audio
PHONE-RX-VOL-UP/DOWN	D	Adjust the received volume level. Note that this will not cover the full range of audio levels
CODEC-CONNECT/DISC/TOG	D	Activate/deactivate the codec (4 wire) interface. Actual status will be reflected at the -FB outputs
CODEC-PRIVACY-ON/OFF/TOG	D	Activate/deactivate the privacy feature of the codec interface. This can be set up on the TH3 to mute either the outgoing or incoming audio
CODEC-RX-VOL-UP/DOWN	D	Adjust the received volume level. Note that this will not cover the full range of audio levels
KEY-*	D	Standard telephone keypad functions
KEY-PAUSE	D	Insert a 1 second pause (represented as a ,) in the dial string
KEY-CLEAR	D	Clear the number currently displayed
KEY-BACK	D	Remove the last digit entered from the number
KEY-DIAL	D	Uses the phone line to be taken off hook, and the number displayed at the PHONE-NUMBER$ output to be dialed
PRESET-*	D	Recalls the number currently stored in the respective preset
PRESET-STORE	D	Activates store mode. After pressing store, press a PRESET-1-10 input to store the number currently being displayed at the PHONE-NUMBER$ output, to the preset selected
POLL-ENABLE	D	When high, the module will poll the TH3 for status every 2 seconds.
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
LENGTH<17	P	Maximum number of digits to allow for a telephone number to be displayed on the touchpanel. This must be a number less than 17d to conform to TH3 requirements

FEEDBACK:

PHONE-CONNECT/DISC-FB	A	Feedback indicating the state of the telephone interface
PHONE-PRIVACY-ON/OFF-FB	D	Feedback indicating the state of privacy for the telephone interface
PHONE-RX-LEVEL	A	Feedback indicating the receive volume level of the telephone interface. Typically routed to a bargraph display
CODEC-CONNECT/DISC-FB	D	Feedback indicating the state of the codec interface
CODEC-PRIVACY-ON/OFF-FB	D	Feedback indicating the state of privacy for the codec interface
CODEC-RX-LEVEL	A	Feedback indicating the receive volume level of the codec interface. Typically routed to a bargraph display

PHONE-NUMBER$	S	Serial signal containing the phone number to be dialed. Should be routed to the serial portion of a touchpanel definition
PRESET-STORE-FB	D	High when preset store mode is active. When in this mode, the number displayed at the PHONE-NUMBER$ output can be stored to one of the 10 presets
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	Serial data signal to be routed to a 2-way RS232 port

OPS USED FOR TESTING:	3.18.06, 5.09.07x
COMPILER USED FOR TESTING:	SimplWindows Version 1.30.01
SAMPLE PROGRAM:	LECTTSTF
REVISION HISTORY:	None