Universal Translator Installation Instructions v1.0

Thank you for purchasing the Universal Translator. We hope it will help to simplify the operation of your system while at the same time expanding the setup possibilities.

This will help guide you through the setup of the Universal Translator. If you have questions on any material in this guide please feel free to e-mail us at support@switch-box.com.

Operation of the Universal Translator

The way the Universal Translator (UT) works is by watching RS-232 messages from a pre-pro and looking for specific messages that give updates on the input selected on the pro-pro and power on or off. Upon receiving these messages the UT will in turn send a command to the connected video scaler or video switch to have it change to the appropriate input.

For this to work the UT must be told what messages to look for from the pre-pro and what message to send in response. Optionally the UT can also be set to periodically ask the pre-pro what input it is set to and when it changes send the appropriate command to the scaler or video switch.

Preliminary Setup Information

To setup the UT for your system there are basically three things that need to be known.

1) The messages, called strings, from your pre-pro and the command strings for your scaler or video switch and converting them to hexadecimal if needed.

2) The RS-232 baud rate and communications parameters your pre-pro and scaler or video switch uses.

3) If the RS-232 port on your pre-pro and scaler or video switch is DTE or DCE.

The next few sections will walk you through determining this information. At the end of this document is a Setup Worksheet as an aid in gathering this information.

Determining Setup Strings

The UT offers 20 input messages to look for and 20 output messages to send in response. They are mapped one to one. If the UT receives Input String # 1 it will send Output String # 1. If it receives Input String # 4 it sends Output String # 4. You control what

input is selected on your scaler or video switch by mapping the input/output messages as needed in your system. If you don't need all 20 strings you simply configure the number of strings you need.

The strings needed are typically available from manufacturers in RS-232 Serial Control protocol documents. One important point, the strings must be entered into the UT in hexadecimal. This is to avoid confusing with protocols that use non printable characters and control characters in their protocols. If the RS232 protocol for the device in question is in ASCII it needs to be converted to HEX to be entered into the UT. This sounds difficult but is actually very easy to do with a lookup table. A good table to use is at:

http://www.lookuptables.com/

To convert from ASCII to HEX you simply look up the character you need in the red CHR (ASCII) column and use the value listed in the HX (Hex) column.

For example a character "1" is equal to 31 as a Hex byte.
"A" is equal to 41 as a Hex byte.

If a piece of equipment sends a message in ASCII of:

1 2 3 4 5 6

converted to HEX would be

31 32 33 34 35 36

The other piece of information needed to setup the UT is the number of bytes in a string. This is simply however many characters there are in the ASCII string. So for the above example the string (in both ASCII and HEX) is considered 6 bytes long.

That is all there is to it in converting from ASCII to HEX.

If the RS232 protocol is already specified in Hex bytes you can use this directly.

Preliminary Setup

Before actually configuring the Universal Translator you should work out the Input/Output String relationship. At the end of this document is a worksheet to use in gathering the information needed to setup the Universal Translator.

To configure the Universal Translator it needs to be connected to a computer.

> NOTE: The Universal Translator ships with the INPUT Side configured as DCE and the Output Side configured as DTE. A computer is DTE. When connecting DTE to DCE a straight through serial cable is used. To connect DTE to DTE or DCE to DCE a null modem cable is used. So as it ships from the factory to connect the Input on the Universal Translator (DCE) to a computer (DTE) a straight through serial cable is used. If only a null modem cable is available then internally the Universal Translator can have its INPUT, or output, changed to DTE to allow the null modem cable to work. To change an input or output from DTE to DCE or vice versa the Universal Translator must be opened up. Make sure the unit is unplugged from the power cable. Remove the four screws on the bottom of the Universal Translator to remove the top cover. After the cover is removed look at the box so that the INPUT is on the Left and the Output is on the Right. There are a pair of jumpers near the input and another pair of jumpers near the output. These control DCE or DTE. Note their position from the factory. The Input jumpers are on the left two pins setting the Input to DCE. The output jumpers are on the right two pins settings the output to DTE. To switch from DCE to DTE or vice versa moves the two jumpers for input or output to the other two pins. So to change the Input from DCE to DTE you would move the two Input jumpers from the left two pins to the right two pins for each Input Jumper.

After the serial cable is connected from the INPUT on the Universal Translator to the computer a terminal program must be run on the computer. Some Windows installations ship with HyperTerminal which would work fine. Another good terminal program is called ZOC and is available from:

http://www.emtec.com/zoc/

Any terminal program desired should work though. The terminal program should be configured to whatever com port you have the Universal Translator plugged into and set it to 4800 Baud, No parity, 8 data bits, 1 stop bits. In other words 4800 8N1.

Once the serial cable is connected and the terminal program is configured and running plug the AC cable into the Universal Translator. In about 2 seconds the following message will appear in the Terminal

“M for menu”

When that message appears press “M” on your keyboard quickly. You have roughly 2 seconds to hit “M” to get into the setup menu. If you don’t press “M” in time or hit a different key the Universal Translator will go into its normal run mode. To try again to get into the setup menu unplug the Universal Translator and plug it in again. If you do not see this message verify the settings in the terminal program and the cabling between the Universal Translator and the computer..

Once you get into the setup menu you will be presented with the following menu:

Main Menu:
1: Baud Rate IN Configure
2: Baud Rate OUT Configure
3: Input String Configure
4: Output String Configure
5: Output String Test
6: Pre-Pro Setup String Configure
7: Polling Mode Setup
0: Exit

Each option will be described below.

Main Menu Items 1 and 2
Are used to setup the baud rate and communication parameters of the input and output of the Universal Translator. As the name implies Option 1 configures the Input and Option 2 configures the Output. After choosing either 1 or 2 you will be presented with a list of baud rates to choose from. Pick the rate that matches the baud rate of the equipment you are connecting on the input or output. After selecting the baud rate you select the communications parameters of either 8N1 or 7E1. Again select whichever your equipment uses. Most equipment uses 8N1. After that is selected you will be returned to the main menu. Be sure to set the baud rate for both the input and output.

> NOTE: In the case of Lexicon equipment they use 8O1 but select 8N1 for the input. The Universal Translator ignores the parity bit from the Lexicon and is still able to receive from it.

Main Menu Items 3
Is used to configure the input strings that the Universal Translator will watch for. You will be presented with the following menu options.

> **Input String Menu**
> **1: To Review String**
> **2: To Edit String**
> **3: Read/polling timer**
> **0: Main Menu**

Option 1

This will allow you to see what a string is currently configured for. After pressing 1 the Universal Translator will ask what string you want to review. (1-20) After entering the string number it will display the string and ask what string you want to review. To return to the Input String Menu enter 0 for the string to review.

Option 2

Allows you to edit an input string. The Universal Translator will then ask you which string you want to enter. After you enter the input string number (1-20) it will then ask you how many bytes long the string is. As an example if your hex string is:

02 4F 5A 31 34

This is 5 bytes long. After you enter the length it will have you enter the string. Put a space between each byte and when you enter the last byte hit space and it will show you the string entered, save it and return you to the Edit String menu where you can enter another string to edit or hit 0 to return to the Input String Menu. If you make a mistake while typing the string just complete entering the string and re-edit it. To CLEAR a string edit it and for the number of bytes in the string enter 0 and this will clear that string out.

NOTE: STRING 1 should be the ON message from the Pre-Pro and string 2 should be the OFF message. This needs to be set this way for the Polling mode to track status properly and reset its tracking on power on/off from the pre-pro.

Option 3

Is something of an advanced menu in that it allows you to adjust how the Universal Translator reads from the input side. It allows the user to adjust the read timeout on the input side. This also adjusts how often the polling mode sends the Query message to the pre-pro. Normally this does not need to be adjusted.

Option 0

Returns to the Main Menu

Main Menu Option 4

Is for setting up the output strings.

Output String Menu
1: To Review String
2: To Edit String
3: Output Delay
0: Main Menu

These are set the same way as the input strings so refer to their instructions above. The only difference is Option 3 is used to configure an Output Delay between strings to the scaler or video switch. This defaults to no delay. If you configure multiple in/out strings to the same message from a pre-pro to send multiple commands to the scaler/vide switch it may need some delay between each command. Option 3 will allow you to add a delay between multiple matches on one received message from the pre-pro.

Main Menu Option 5
Output String Test. This is useful in debugging a configuration to verify that the output setup is valid. This includes baud rate, communications parameters, cabling and the output strings themselves are proper. If the Universal Translator's Output is connected to the video switch or scaler the Output String Test menu will let you select which output string you want to send. If the scaler or video switch responds to the command appropriately you know that string and the communications settings and cabling is proper. It is a good idea to verify all output strings to make sure they are all set properly. If no strings are working but appear to be entered correctly check the output baud rate settings and the output cabling, the output may need to be reconfigured as DCE or DTE as needed. See earlier information on how to change from DCE to DTE or vice versa.

Main Menu Option 6
Pre-Pro Setup String Configure. This is where the user can configure the setup string to send to the pre-pro when the Universal Translator is powered on. The String entry is the same as the Input/Output String configure in that you enter the length of the string in bytes then enter the bytes in hex. A length of 0 will clear the string.

Main Menu Option 7
Polling Mode Setup. This is where the polling mode is configured. The polling mode sets the Universal Translator to send a message to the Pro-Pro periodically to query the status of the system which can then be used for the Input match strings. When in Polling Mode the Universal Translator also tracks which string was last matched. It will only send the corresponding Output String when the matched Input String changes. This is to avoid sending the same command to the scaler or video switch over and over again. For pre-pro's that don't automatically send status messages on input changes polling mode must be used.

Polling Mode Setup
1: To Review Query String
2: To Edit Query String
3: Polling Mode ON
4: Polling Mode OFF
0: Main Menu

Option 1
Is used to review the Query String.

Option 2
Is used to edit the Query String. Like all the other string setups you tell it the number of bytes in the string then enter the string in hex. Setting the number of Bytes to 0 will clear the string.

Option 3
Turns ON the Polling Mode. It is possible to turn Polling Mode ON without defining a Query String to have the Input/Output tracking turned ON without actually sending a Query String to the pre-pro.

Option 4
Turns OFF the Polling Mode.

Option 0
Returns to the Main Menu

Main Menu Option 0
Exits the Setup Menus and goes into normal run time mode.

Additional Debugging Tools

After going through the Setup Menus and configuring everything and verifying the Output Strings using the Output String Test if the Universal Translator is not switching the video processor of scaler in response to messages from the pre-pro the problem is likely the Input Setup Strings, the baud rate or communications parameters or the input side cabling. There is an additional menu available on the Output Side of the Universal Translator to help debug this. To use this menu the computer needs to be connected to the Output Side of the Universal Translator. With Output set at its default of DTE either a null modem cable must be used or the Output can be temporarily reconfigured to DCE as outlined earlier in the manual. If you change the Output from DTE to DCE be sure to set it back when you are finished to work with the video switch or scaler. Connect the INPUT on the Universal Translator to your pre-pro.

Next set the Terminal Program to 115,200 Baud 8N1. Now plug in the Universal Translator. If you are connected properly you should immediately see a

?

On the terminal program. Send a ! in response to enter the Debug Menu. This must be send within about 2 seconds of the ? appearing on the terminal. If you don't send the ! fast enough or hit the wrong key unplug the Universal Translator to try again.

If you don't receive the ? the cabling is incorrect or the baud rate is wrong in the terminal program.

Once you enter the DEBUG menu you will be presented with the following options.:

Service Menu:
1:DEBUG MODE
2:DEBUG MODE POLLING
0:Exit

Service Menu Option 1
Debug Mode. This mode will simply print any information received from the pre-pro in HEX on the Terminal window. The strings will be padded by 00 at the end of the strings. Those are not part of the message from the switch. This allows you to confirm that the input strings you have configured are actually what the pre-pro sends. Change inputs on the pre-pro and turn it on and off to see what strings it sends to the Universal Translator. Compare them against the strings you have configured to see if they match or not. If you are receiving strings that don't make any sense the input baud rate or communications parameters may be set wrong. If you receive nothing at all the input cabling is likely wrong, try changing the Input from DCE to DTE or vice versa. To exit this mode unplug the Universal Translator.

Service Menu Option 2
Debug Mode with Polling. This is the same as the Debug Mode above except that the Universal Translator will also send the Query Message to the pre-pro that is part of the Polling mode to verify that it is set correctly. If you don't change anything on the pre-pro you should still see a message from it every second or so. If that is occurring the Query Message is most likely working. You can also change inputs on the pre-pro and turn it on and off to verify every message it sends to the Universal Translator. Compare them against the strings you have configured to see if they match or not. To exit this mode unplug the Universal Translator.

Service Menu Option 0
To Exit the service menu.

String Worksheet

INPUT_____ OUTPUT_____

Make Model

Baud Rate: 1200 2400 4800 9600 19,200 38,400 57,600 115,200
Communications Parameters: 8N1 7E1
DTE____ DCE_____

Pre-Pro Setup String:

Polling Mode Query String”

String 1:
Number of Bytes:
String in HEX:

Note:

String 2:
Number of Bytes:
String in HEX:

Note:

String 3:
Number of Bytes:
String in HEX:

Note:

String 4:
Number of Bytes:
String in HEX:

Note:

String 5:
Number of Bytes:
String in HEX:

Note:

String 6:
Number of Bytes:
String in HEX:

Note:

String 7:
Number of Bytes:
String in HEX:

Note:

String 8:
Number of Bytes:
String in HEX:

Note:

String 9:
Number of Bytes:
String in HEX:

Note:

String 10:
Number of Bytes:
String in HEX:

Note:

String 11:
Number of Bytes:

String in HEX:

Note:

String 12:
Number of Bytes:
String in HEX:

Note:

String 13:
Number of Bytes:
String in HEX:

Note:

String 14:
Number of Bytes:
String in HEX:

Note:

String 15:
Number of Bytes:
String in HEX:

Note:

String 16:
Number of Bytes:
String in HEX:

Note:

String 17:
Number of Bytes:
String in HEX:

Note:

String 18:
Number of Bytes:
String in HEX:

Note:

String 19:
Number of Bytes:
String in HEX:

Note:

String 20:
Number of Bytes:
String in HEX:

Note: