

Video Switch Interface Guide

Description

The Ventana embedded video switch is a 16x8 non-blocking cross point video switch, which allows any of its 16 inputs to be routed to any of its 8 outputs. The video switch is based on the Maxim 4355 16x16 cross point switch and a PIC16F87X microcontroller. The state of the video switch is stored in EEPROM every time a change is made thereby allowing the switch to return to its last state upon a power up. Control and monitoring of the video switch is done via an RS-232 port with a simple command response protocol.

Document Conventions

The following are conventions that are used through out this document.

- The notation <CR> and <LF> are used to denote carriage return and linefeed respectively.
- Serial input/output is displayed in the `courier` font, for example

```
S 4 2<CR>
RDY<CR>
```

- The notation [0,255] is used to denote a parameter range (e.g. $0 \leq \text{parameter} \leq 255$)
- The notation [A|B] is used to denote a parameter set (e.g. parameter A or B)

Serial Interface

The video switch serial interface uses a simple command response protocol. The video switch serial port is configured to run at 9600 baud, 8 data bits, 1 stop bit, and no parity. When a command is issued the video switch will attempt to execute that command. Upon successful execution the video switch will return the characters

```
RDY<CR>
```

This indicates that the video switch is ready for the next command. If the video switch is unable to execute a command successfully it will issue the characters

```
ERR ###<CR>
RDY<CR>
```

Where the '###' is a three digit error code. If the command is a request for information then the command will return the information requested followed by the characters

```
RDY<CR>
```

In all cases the video switch will terminate a transaction with the characters

```
RDY<CR>
```

at which point it is ready for another command to be issued.

Video Switch Command Summary

S	- set the destination and source of a video channel
I	- reinitialize the video switch from EEPROM
G	- return the current state of the video switch
V	- display the firmware version info
ECHO	- enable of disable console echo mode
RESET_EE	- clear the EEPROM and reinitialize the video switch to its default state
?	- show a help menu

Command Descriptions

S [DST] [SRC]

Description

The 'S' command allows a video source channel to be routed to any video destination channel. Valid source channels are [0,15] and valid destination channels are [0,15]. It is possible to route the same source channel to multiple destination channels.

Example

The following would route the video signal from source channel 3 to destination channel 4.

```
S 4 3<CR>
RDY<CR>
```

I

Description

The 'I' command will reinitialize the video switch from EEPROM. In practice this command should never be needed as the video switch stores its state to EEPROM every time a change is made and restores that state when the power is cycled. The command can be used to ensure that current video switch state matches what is stored in the EEPROM during system diagnostics/debugging.

G

Description

The 'G' command returns the current state of the video switch. The command returns the state for destination channels [0,15] as the MAX 4355 has 16 destinations. The Ventana video switch routes [0,7] off board as that is the number of video channels the Focal Mux can accept.

Example

```
G<CR>
DST 00 SRC 15<CR>
DST 01 SRC 01<CR>
DST 02 SRC 15<CR>
DST 03 SRC 02<CR>
DST 04 SRC 15<CR>
DST 05 SRC 05<CR>
DST 06 SRC 01<CR>
DST 07 SRC 00<CR>
DST 08 SRC 15<CR>
DST 09 SRC 15<CR>
DST 10 SRC 15<CR>
DST 11 SRC 15<CR>
DST 12 SRC 15<CR>
DST 13 SRC 15<CR>
DST 14 SRC 15<CR>
DST 15 SRC 15<CR>
RDY<CR>
```

V

Description

The 'V' command displays a firmware version string for the Ventana video switch.

Example

```
V<CR>
Ventana video switch, rev 1.0<CR>
built on 09-Jun-04<CR>
RDY<CR>
```

ECHO [0|1]**Description**

The 'ECHO' command enables or disables a user echo mode. The user echo mode echoes back characters sent to the interface and appends a <LF> after every <CR>. The state of echo mode is disabled on powerup or reset.

RESET_EE**Description**

The 'RESET_EE' clears the state of the EE_PROM and routes source 0 to every destination channel. This command should never be necessary in normal operation but is available to restore the video switch to a known state if EEPROM corruption is suspected.

?**Description**

The '?' command displays user help for the video switch.

Example

```
?<CR>
S - set dst and src of video channel (e.g. S [DST] [SRC])<CR><LF>
I - reinitialize the video switch from EEPROM<CR><LF>
G - return the video switch state<CR><LF>
V - display firmware revision info<CR><LF>
ECHO - enable/disable console echo mode (e.g. ECHO [0|1])<CR><LF>
RESET_EE - clear the EERPOM and reinitialize the video switch<CR><LF>
? - show this menu<CR><LF>
RDY<CR>
```

Error Code Description

ERR 001 – No command match.

ERR 010 – Video source channel specified is out of range [0,15].

ERR 011 – Video destination channel specified is out of range [0,15].

ERR 020 – An invalid parameter was used with a valid command.

Video Switch GUI

The Ventana Video Switch GUI is an interface to aid the configuration of the video switch. The GUI is implemented in Visual Basic.Net and uses the Microsoft .Net framework. The GUI allows any video source channel to be routed to any video destination channel by pressing the source button and then pressing the destination button. The GUI supports one level of undo to allow the user to undo their last action. All source button labels as well as destination labels are settable by editing the 'vidgui.ini' file that resides in the same directory as the 'vidSwitchGui.exe' executable.

The 'vidgui.ini' File

The 'vidgui.ini' File stores the configuration information for the Ventana video switch GUI. The .ini file allows the serial port that the GUI uses to communicate with the video switch to be specified as well as all of the source button labels and destination labels. Below is the an example of the contents of a 'vidgui.ini' file

```
[VideoSource]

src0 = Source 0
src1 = Source 1
src2 = Source 2
src3 = Source 3
src4 = Source 4
src5 = Source 5
src6 = Source 6
src7 = Source 7
src8 = Source 8
src9 = Source 9
src10 = Source 10
src11 = Source 11
src12 = Source 12
src13 = Source 13
src14 = Source 14
src15 = Source 15

[VideoDest]

dst0 = Dest 0
dst1 = Dest 1
dst2 = Dest 2
dst3 = Dest 3
dst4 = Dest 4
dst5 = Dest 5
dst6 = Dest 6
dst7 = Dest 7

[SerialPort]
port = 1
```

The file contains the sections [VideoSource], [VideoDest], and [SerialPort]. The [VideoSource] section allows the labels on the video source buttons to be specified by setting the text string following '=' sign. The [VideoDest] allows the text labels next to the destination buttons to be specified in the same manner as the video source buttons. The [SerialPort] allows the serial port that the video switch GUI uses to be specified.

1. The source box displays 'Connected' when the source is connected to the video switch and 'Disconnected' when the connection is lost. It will poll the video switch at 1 Hz for status.

2. A video destination is set in the destination box. The undo button allows one to revert to the selected source.

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If the 'vidgui.ini' is ever lost or becomes corrupt simply start the 'vidSwitchGui.exe' application with out the .ini file present and a new default 'vidgui.ini' file will be generated.

GUI Example

