

QUICK-START GUIDE

Thinklogical's® RX Display Text Overlay as used with the System Management Interface

with Q-Series Transmitters and Velocitydvi Receivers

Installing the ASCII Programming Interface for Thinklogical's RX Display Text Overlay

This document describes the steps necessary to set-up and operate a command set used to program the Thinklogical® DVI Extender Receiver to add a text message overlay to the extended, displayed video image (active horizontal- 1920 pixels). Follow steps 1 through 10 to connect and install the system hardware.

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Complete Steps 1-10 to connect the system hardware:

RECEIVERS:

STEP 1: Connect the **Receivers** to the KVM Matrix Router using **multi-mode fiber-optic cables** (up to 1000 meters). Connect **L1** to any SFP's Transmit Port. If a back channel is required, connect **L2** to the same SFP's Receive Port.

STEP 2: On the **VelocityDVI Receivers**, connect the **+5VDC Adapter** (PWR-000022-R) to the unit and plug it into a standard AC source.

STEP 3: Connect the **peripheral devices** (monitors, audio, etc.) to the **Receivers** using standard copper cables as shown in the examples, right. Turn the devices ON.

TRANSMITTERS and SMI:

STEP 4: Connect the **Q-Series Transmitter Modules and SMI** (RX PORT 1) to the KVM Matrix Router using **multi-mode fiber-optic cables** (up to 1000 meters). Connect **L1** to any SFP's Receive Port. If a back channel is required, as on the SMI, connect **L2** to the same SFP's Transmit Port.

STEP 5: On the **SMI and Transmitters'** chassis, ensure the ON/OFF switch is in the OFF position. Install the AC Power Cord (PWR-000006-R) and plug it into a standard AC source. Turn the unit ON.

STEP 6: Connect DVI cables from the Source CPUs to the **DVI IN** ports of each Transmitter. Connect **peripheral device sources** to the Transmitters with standard copper cables. *Ensure the CPUs are turned ON.*

ROUTER:

STEP 7: Connect the two supplied **AC Power Cords** (PWR-0000006-R) to the receptacles located on the Router's power supplies. Plug each of them into a standard AC source.

STEP 8: Connect the **Router's Controller Card LAN Ports**, the **Crestron/AMX** and the **Linux Debian CPU** to the Network Hub with CAT5 cables. Connect the **Linux Debian CPU** to the SMI USB port. Configure the IP addresses of the Router, Linux CPU and the Crestron/AMX Controller. Default IP addresses should be on the 192.168.13.XXX subnet.

STEP 9: The ASCII commands describing the text message are processed by the **Linux CPU** that communicates them to the **SMI**. The SMI will send the commands over its fiber connection to the Thinklogical Receiver. This programming set supports two overlay lines, each consisting of 48 characters. This interface is accessible over the network via a TCP port 17567 (eg. telnet <ip address> 17567). Use telnet to manually open a connection and send commands. The commands are all ASCII based and are terminated with either a linefeed character or a carriage-return/linefeed pair.

STEP 10: Source video may now be routed to the DVI receiver.

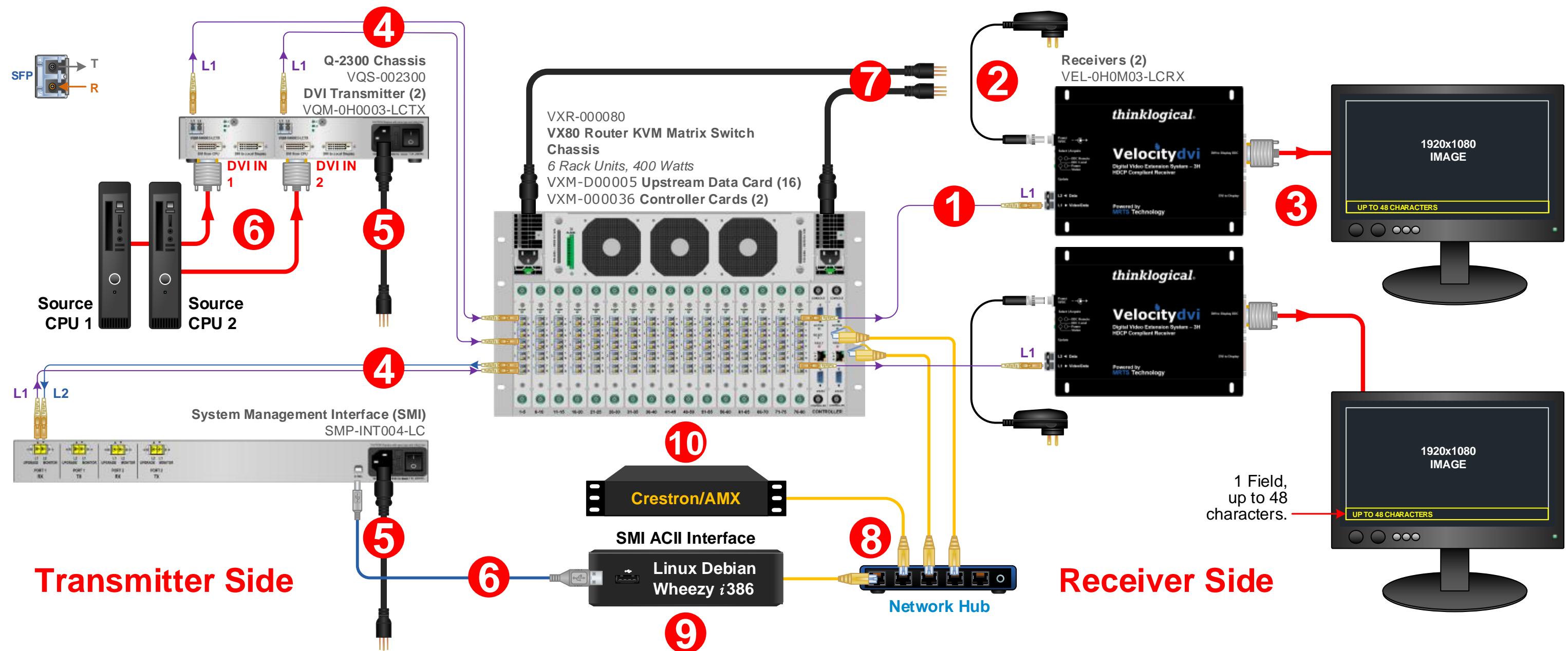
This programming set supports 2 overlay lines, each consisting of 48 characters. The characters supported are as follows:

!"&#%&'()*+,-./0123456789:;<=>?@
ABCDEFGHIJKLMNOPQRSTUVWXYZ
[\]^_`abcdefghijklmnopqrstuvwxyz{|}

The ~ is a special character (an ascii x73) which is used to disable overlay insertion for that character space. All characters are a fixed font size of 40 pixels by 43 lines.



Fig. 1: 1920 x 1200 pixel display



Transmitter Side

Receiver Side

Installing the ASCII Interface

Simply perform a 'sudo tar -xvf tld.tar' (tld.tar file available from Thinklogical).

Configuring the ASCII Programming Interface

The Programming Interface is controlled by entries in the file /lib/udev/udev-tld. The modification required to set the option for verbose is: /usr/local/sbin/tld --verbose

Commands

The following describes the command **XSET** to define each line of a text message:

XSET Set an address to a value. Each address has its own format.

Format: XSETAAAAAPDD...

AAAA command address
P port (SMI)
DDD... ASCII data

Port: The port determines which SMI fiber port transmits the command. Valid port number is 0. Added ports in future releases.

Address:

1200	overlay 1	48 characters
1201	overlay 2	48 characters
1203	overlay 1 line start	5 characters for vertical pixel to start on. Valid range 0-65535.
1204	overlay 2 line start	5 characters for vertical pixel to start on. Valid range 0-65535.
1206	overlay control	16 characters (control word 1 - 2 char, control word 2 - 2 char, RGB text - 6 char, RGB background - 6 char)
		2 characters used to define 1 byte control word 1 in hex.
		Bit7=Overlay On
		Bit6=reserved
		Bit5=reserved
		Bit4=reserved
		Bit3=Text Overlay background (1 darkened active video) (0 used RGB background)
		Bit2= reserved
		Bit1= reserved
		Bit0= reserved
		2 characters used to define 1 byte control word 2 in hex (reserved for future use).
		6 characters used to define 3 byte (RGB) text color in hex
		6 characters used to define 3 byte(RGB) background color in hex

XRETRYr Set number of retries, r = 0, 1, or 2 (default is 0).

XTIMEOUTttt Set timeout in ms, t = 0 - 250 (default is 50).

Note: The XRETRY and XTIMEOUT commands have been added in order to support the ability to control the time between XSET commands when the link does not support a back-channel (i.e., lack of acknowledgement of positive data transmittal).

Results

Results from commands are ASCII strings terminated with a newline (linefeed). The first character is an 'R', followed by a 4 digit, zero-filled length. The length includes the trailing newline. Following the length will be either 'OK', or 'ERnnnn'. OK signifies the command was successful, while ERnnnn is an error code. After the OK or ERnnnn, a comment may appear giving more detailed information.

In the case of a status command, the OK is followed by the status response.

You must wait for a result response before sending another command.

There are two options to control the output:

1. [-CR] Include a carriage return on each line output. (Useful for Windows)
2. [-verbose] Append a comment to each response with more information about an error code, or repeat the successful command. Comments will start with the '#' character.

Examples of verbose output

Command: XSET120608b00000000000000000

Normal: R0003OK

Verbose: R0015OK# XSET120608b00000000000000000

Command: XSET12060bg000000000000000000

Normal: R0007ER0007

Verbose: R0072ER0007#Control byte 'bg' is out of range (0 thru 9, a thru f)

Command Example

The following example set of commands will produce the display shown in Figure 1 (left) for a 1920x1200 pixel display.

```
XSET12000LABEL1 ~LABEL2 ~LABEL3 ~LABEL4
XSET12010parameter1 ~parameter2 ~parameter3 ~param4
XSET120300994
XSET120401037
XSET120608800FFFFFFF000000
```

NOTE: DVI Receivers can be programmed with a single L1 fiber; however, without L2 command acknowledgement, an error message will result.

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