

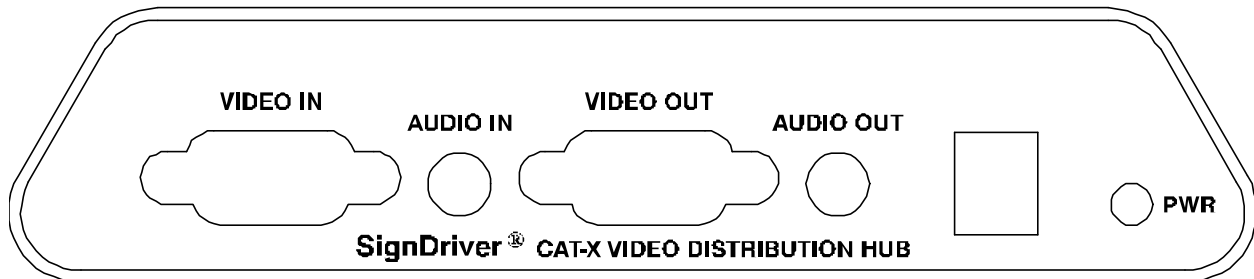
SignDriver® CAT-X VIDEO DISTRIBUTION SYSTEM

USERS MANUAL

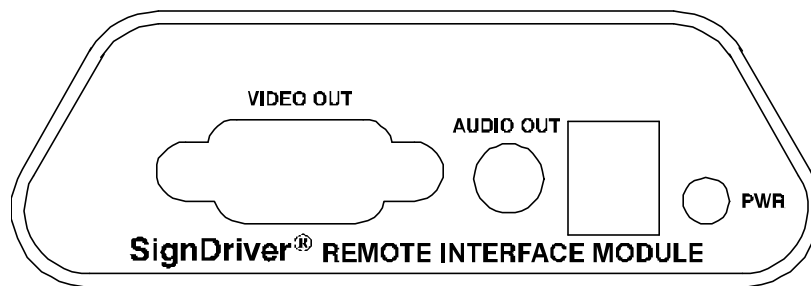
October 2010

Part Numbers

SignDriver® 4-PORT CAT-X VIDEO DISTRIBUTION HUB	6100950
SignDriver® 4-PORT CAT-X VIDEO DISTRIBUTION HUB W/AUDIO	6100951
SignDriver® REMOTE INTERFACE MODULE	6100952
SignDriver® REMOTE INTERFACE MODULE W/AUDIO	6100953
SignDriver® SINGLE PORT CAT-X VIDEO EXTENDER KIT (LOCAL & REMOTE)	6100990
SignDriver® SINGLE PORT CAT-X VIDEO EXTENDER KIT W/AUDIO (LOCAL & REMOTE)	6100991



CAT-X VIDEO DISTRIBUTION HUB WITH AUDIO SHOWN



REMOTE INTERFACE MODULE WITH AUDIO SHOWN

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1. Specifications

Maximum Resolution:	1600 x 1200, 60Hz Refresh
Maximum Distance:	1000 feet from hub to furthest remote
Connectors:	
Video Distribution Hub:	(3) HD15 (1) Male input, (2) Female Outputs (4) RJ45 Connect to Remote Interface Module (3) 3.5mm Audio MONO (Audio Versions only)
Remote Interface Module:	(2) RJ45, One connects to the Hub, One to additional remote (1) HD15 Female Video Output (1) 3.5mm Audio MONO (Audio Versions only)
Video Extender Local:	(2) HD15 (1) Male input, (1) Female Output (1) RJ45 Connect to Video Extender Remote (2) 3.5mm Audio MONO (Audio Versions only)
Video Extender Remote:	(1) RJ45, Connect to Video Extender Local (1) HD15 Female Video Output (1) 3.5mm Audio MONO (Audio Versions only)
Indicators:	(1) Red Power LED on each model
Power:	120VAC, 60-Hz wall mount supply, 6 VAC, 1500 mA output
Physical:	
Video Distribution Hub / Video Extender Local	1.63" (H) 6.25" (W) X 6.75" (D) desktop enclosure, Plastic 2 lbs, including power supply
Remote Interface Module / Video Extender Remote	1.5" (H) 3.8" (W) X 5" (D) desktop enclosure, Plastic 2 lbs, including power supply
Temperature Tolerance:	
Operating: 32° to 104° F (0° to 40° C) Storage: -4° to 176° F (-20° to 80° C)	
Humidity Tolerance:	10% to 90% RH, non-condensing

2. Introduction

The SignDriver[®] CAT-X Video Distribution System consists of a video distribution hub which connects to the source and has two local HD15 video output connections that can be used for two local monitors or a local monitor and input to a second video distribution hub. The video distribution hub also has 4 CAT-X RJ-45 outputs which are used to connect to the remote interface modules. The video distribution hub with audio also has three 3.5mm audio connectors, one input which connects to the source, and two audio outputs for local powered speakers, or connection to a second video distribution hub. The audio connection is mono. The remote interface modules have one CAT-X RJ-45 input, one HD15 video output and one CAT-X RJ-45 output that can be daisy chained to another remote interface module. The remote interface module with audio also has a 3.5mm audio output connector.

The single port video extender kit models are intended for applications which do not need the additional expansion capabilities provided by the video distribution hub and remote interface module models. The video extender local has one HD15 video output, one CAT-X RJ-45 output, and audio versions also have one 3.5mm audio output. The video extender remote does not have the CAT-X RJ-45 output.

The SignDriver[®] CAT-X Video Distribution System is designed to extend standard VGA analog computer video over CAT-5, CAT-5E, or CAT-6 unshielded twisted pair cable. As used here, the term VGA refers to the Video Graphics Adapter connector pin-out, the device is NOT limited to VGA (640 x 480) resolution. The analog video source consists of three colors, plus horizontal and vertical sync signals. The video sync signals are encoded along with the color signals and are transmitted over three pairs of the CAT-X cable. The fourth CAT-X pair is used to transmit the audio signal on models with audio.

The video distribution hub / video extender local unit also passes the VGA DDC (Display Data Channel) signals to one of the local video outputs. By default the DDC signals are connected to the HD15 video output connector located on the front next to the HD15 video input connector. The computer uses these DDC signals to communicate with the local monitor. If the DDC signals are not connected to a local monitor, the computer may not provide the desired video display settings. Although the DDC signals can be connected to a second video distribution hub, they are not amplified or buffered in any way. As the DDC signals are only TTL level signals, there will be a limit on the distance that the DDC signals will work properly. Therefore it is recommended that the local monitor is connected to the first video distribution hub if more than one video distribution hub is used. Also, since the local monitor affects the display settings provided by the computer, it is good practice to use remote monitors which support the same display settings as the local monitor.

When transmitting high frequency video signals across twisted pair cable, the high frequency information is attenuated more than the low frequency information. The remote interface module / video extender remote uses a video receiver with built-in equalization which can be adjusted for different lengths of twisted pair cable. The remote interface module / video extender remote has two single turn potentiometers. One labeled COMP is used to compensate for different length cables, and one labeled GAIN is used to adjust the signal gain which affects the image brightness. These potentiometers must be adjusted to provide the optimum image quality for each remote monitor.

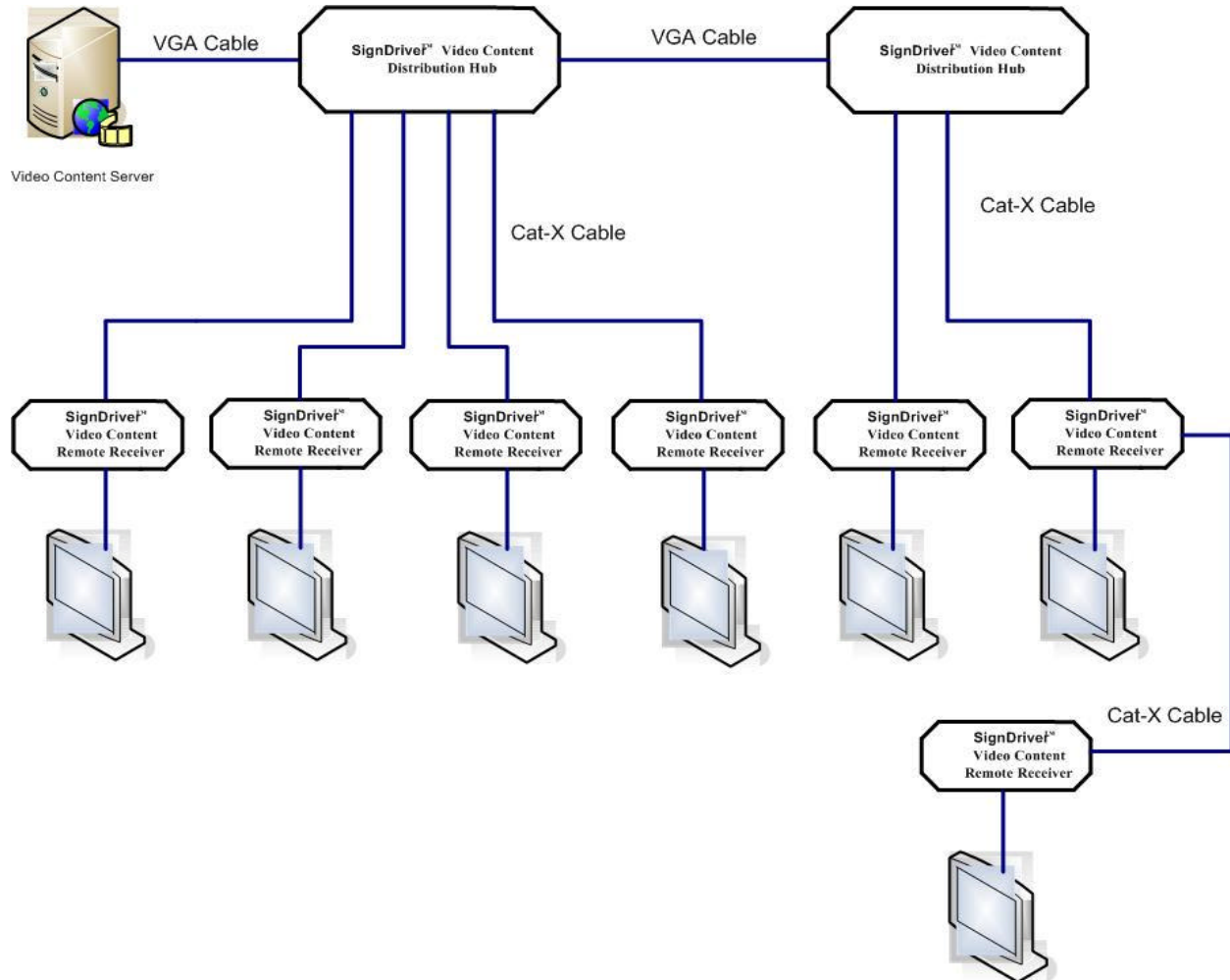
Although the SignDriver[®] CAT-X Video Distribution System is designed with expansion in mind, common sense reminds us that each video output is only as good as its video input. There will be some reduction in image quality with each extension, and only the end user and intended application will determine if the final output meets their requirements. To preserve image quality, the total distance from the video distribution hub to the last remote interface module should not exceed 1000 feet.

3. Configuration

Simply connect the video distribution hub / video extender local to the computer video source and computer audio source if applicable. Connect the local video monitor. Using CAT-5, CAT-5E, or CAT-6 unshielded twisted pair cable, connect the remote interface module / video extender remote CAT-X input(s) to the video distribution hub / video extender local CAT-X output(s). Connect remote monitor(s) to the remote interface module / video extender

remote video output(s). Connect local and remote speakers as applicable. Using the 6 VAC power supplies provided, apply power to the local and remote video distribution units. Using a small flat-blade screwdriver, adjust the cable compensation and video gain potentiometers at the remote units to obtain optimum image quality at the remote monitor(s). An example connection diagram is provided for reference.

3.1 Connection diagram example, showing two video distribution hubs and seven remote interface modules.



3.2 Video Distribution Hub / Video Extender Local Internal Jumper Configuration

Jumper	W5 (SCL) & W6 (SDA)
Connect DDC signals to Video Output 1 (near Video Input)	Pin 1 to Pin 2 on both *
Connect DDC signals to Video Output 2 (near CAT-X RJ-45 connectors)	Pin 2 to Pin 3 on both

* Factory Default Position

Note: Jumpers W5 and W6 function as a pair, both should be set the same. Pin 1 on jumpers W5 and W6 is located toward the Video Input connector. Each 3-position jumper has a two position shunt used to connect two of the three positions together.

Remote Interface Module / Video Extender Remote Internal Jumper Configuration

Jumper	W3 (X2)
Enable receiver 2X Gain	Pin 1 to Pin 2 *
Disable receiver 2X Gain	Pin 2 to Pin 3

* Factory Default Position

Note: This 2X Gain works in addition to the GAIN adjustment potentiometer. The default 2X gain enabled setting should be appropriate for most applications. Pin 1 on jumper W3 is located directly beneath the text “W3” which identifies the jumper. The 3-position jumper has a two position shunt used to connect two of the three positions together.

3.3 CAT-X RJ-45 Pin Assignment

Pin	Signal	Standard EIA/TIA 568B Wire Color
1	BLUE +	White with orange stripe
2	BLUE -	Orange
3	AUDIO +	White with green stripe
4	GREEN +	Blue
5	GREEN -	White with blue stripe
6	AUDIO -	Green
7	RED +	White with brown stripe
8	RED -	Brown

Note: Connections from hub to remote should be straight-through, do NOT use cross-over cable.

3.4 HD-15 VGA Pin Assignment

Pin	Signal
1	RED
2	GREEN
3	BLUE
4	ID2 Monitor ID Bit
5	GND *
6	RGND *
7	GGND *
8	BGND *
9	No Connection
10	SGND *
11	ID0 Monitor ID Bit
12	SDA (DDC Data)
13	HSYNC
14	VSYNC
15	SCL (DDC Clock)

* All Ground Signals are connected inside the video distribution hub and remote interface module.

3.5 3.5mm Audio Connector Signal Assignment

Signal	3.5mm Mono Plug	3.5mm Stereo Plug (for reference only)
Mono Audio Signal	Tip	Tip (Typically Left Channel)
No Connection		Ring (Typically Right Channel)
Ground	Sleeve	Sleeve

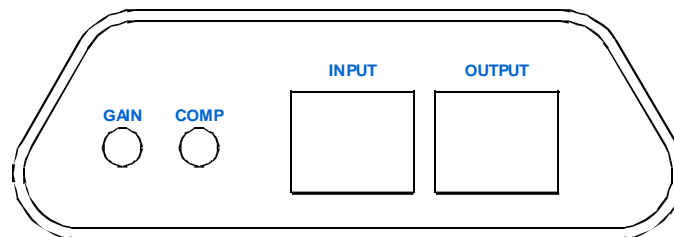
4. Installation

- 4.1 Find a location suitable for your SignDriver[®] Video Distribution System, with access to AC power outlets and the connections you intend to make. Keep SignDriver[®] units away from sources of heat, and avoid stacking the units.
- 4.2 Make sure to keep the hubs and remotes as close to the monitors as can be conveniently accomplished without exceeding Video cable length capabilities.
- 4.3 When routing CAT X cables try to avoid any sources of noise that can be injected into your transmission.
- 4.4 Using HD15 Male / Female cable, connect the video distribution hub / video extender local, video input to the

- video output from the computer or other VGA video source.
- 4.5 Using HD15 Male / Male cable, or the cable that came with your monitor, connect the local monitor to video output 1, located next to the video input connector.
 - 4.6 If using a second local monitor, or a second video distribution hub, connect it to video output 2, located next to the CAT-X RJ-45 output(s).
 - 4.7 If using a model with audio capability, connect the computer audio output or other audio source to the video distribution hub / video extender local, audio input using a 3.5mm male / male cable. Connect local speakers to the audio output connectors as appropriate. The tip of the audio plug is the audio signal and the sleeve of the audio plug is ground.
 - 4.8 Using straight-through CAT-5, CAT-5E, or CAT-6 unshielded twisted pair cable, connect the CAT-X RJ-45 output(s) from the video distribution hub / video extender local to the CAT-X RJ-45 input on the remote interface module(s) / video extender remote(s).
 - 4.9 Using HD15 Male / Male cable, or the cable that came with your monitor, connect the remote monitor to the remote interface module / video extender remote, video output.
 - 4.10 If using a model with audio capability, connect the remote speakers to the audio output connectors as appropriate.
 - 4.11 Using the 6 VAC power supplies provided with your unit, apply power to the video distribution system, local hubs and remote units.
 - 4.12 Apply power to the local and remote monitors and computer or other video / audio source.
 - 4.13 If using a model with audio capability, apply power to the local and remote speakers as applicable.
 - 4.14 Using a small flat-blade screwdriver, adjust the COMP (compensation) and GAIN potentiometers at each remote interface unit / video extender remote to obtain optimum image quality.
 - 4.15 To cascade or daisy-chain a second remote interface module, simply connect the CAT-X RJ-45 output from the first unit to the CAT-X RJ-45 input on the second, then connect video, audio, and power as described above. Then adjust the COMP and GAIN potentiometers on the second remote interface module / video extender remote. Note: adjusting the COMP and GAIN of the first remote interface module will affect the image of all connected units.

5. Operation

Simply connect the SignDriver[®] Video Distribution System as described in section 4, and apply power. The red power led should illuminate on all units. There are no adjustments at the local unit(s), only the cable length compensation and gain potentiometers at the remote unit(s).



Remote Interface Module – Rear Panel

COMP – Cable Length Compensation Potentiometer

Use this potentiometer to adjust the image quality for different cable lengths. It may be useful to turn the GAIN potentiometer fully counter-clockwise before adjusting the COMP potentiometer. Adjust this potentiometer slowly until you achieve the best image possible.

GAIN – Gain Adjustment Potentiometer

Use this potentiometer to adjust the video signal gain to achieve the desired image brightness. Too little gain may cause the image to look dark or dull, while too much gain will cause the image to look washed out.

6. Troubleshooting

Warnings

Do not use to link between buildings, unless potential grounding and shock hazards have been addressed.

The video distribution system is intended for dry, indoor, non hazardous locations.

Do not use the RJ45 connectors to connect to any other type of equipment, as this may damage the video distribution hub / extender or remote interface module.

The units may not work properly in the presence of large GROUND potential differences.

Problem: The power LED does not illuminate, or illuminates very dim.

Possible Solution: Check that the 6 VAC power supply is connected to the unit and connected to an AC power outlet of the correct voltage.

Problem: Computer will not adjust to the desired video display settings.

Possible Solution: The computer may be failing to communicate with the “local” monitor. Try connecting the “local” monitor to video output 1 on the video distribution hub, located near the video input connector. If there is no “local” monitor in the system, you may need to connect one temporarily to adjust the video display settings. Note: the remote monitors should be capable of operating with the same video display settings as the local monitor. Some LCD monitors will operate with a variety of settings, however, they only look crisp and clear when using their “native” resolution.

Problem: Local monitor looks good, but remote monitor does not look as crisp.

Possible Solution: Check video display settings. These devices have been tested at a resolution of 1600 x 1200, 60Hz refresh. A higher refresh will increase the video bandwidth, and may reduce performance at the remote monitors. Try a lower refresh rate or lower resolution to decrease the video bandwidth.

Problem: Remote image looks ghosted, smeared, or blurry.

Possible Solution: Adjust the cable length compensation and gain potentiometers at the remote interface module / video extender remote. It may be helpful to turn the GAIN potentiometer to the minimum setting (fully counter-clockwise), then adjust the COMP potentiometer for the clearest image, and then re-adjust the GAIN for the desired brightness level.

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AND
INDUSTRY CANADA
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This equipment generates, uses, and can radiate radio-frequency energy, and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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