FIBERDYNE LABS, INC.

LED Sign Troubleshooting

Basic LED Sign Components

- **Controller:** This is the brain of the LED sign and is typically the junction point for the communications, and video input and output for the entire sign.
    - **PC Based:** These are typically external computers running Windows 7, 8 or 10 operating system.
    - **Embedded Controller:** These are typically internal computers running Windows Embedded Standard 7 operating system. Internal computers are built with a sending card combined in the same casework. External embedded controllers will not include the sending card in the same casework.

- **Sending Card:** This converts the video signal from the controller into a readable format for the sign hardware. The sending card is combined with an internal embedded controller, but is separate on a PC based system or external embedded controller. The sending card has a red light which is illuminated to indicate it is power; a flashing green light indicates video data is being received from the controller and being transmitted to the receiving card.

- **Receiving Card:** These, along with hub cards, translate the video signal from the sending card, to the individual LED modules on the sign, usually in rows. Data is transferred from the receiving card to the LED modules via serial ribbon cables. Receiving cards can be daisy chained with Cat5e cables. The receiving card has a red light which is illuminated to indicate it is powered; a flashing green light indicates proper communication with the sending card.

- **LED Modules:** These are the actual panels of LED's that make up the entire sign. The rear of the Modules will have DC power and data connectors. LED modules can be daisy chained via serial ribbon cables.

- **Power Supplies:** These power the internal hardware for the LED sign. They will take in 110/220 AC voltage and output +5DC voltage to the components. Each will power more than one LED module or component.

- **Multifunction Card/Light Sensor:** These are used to get outside ambient light readings to adjust the brightness of the sign. The multifunction card can be placed between the sending card and first receiving card, between receiving cards or after the last receiving card and communicated with via Cat5e cable. The multifunction card has a red light which is illuminated to indicate it is powered; a flashing green light indicates proper communication with the sending card or receiving card.

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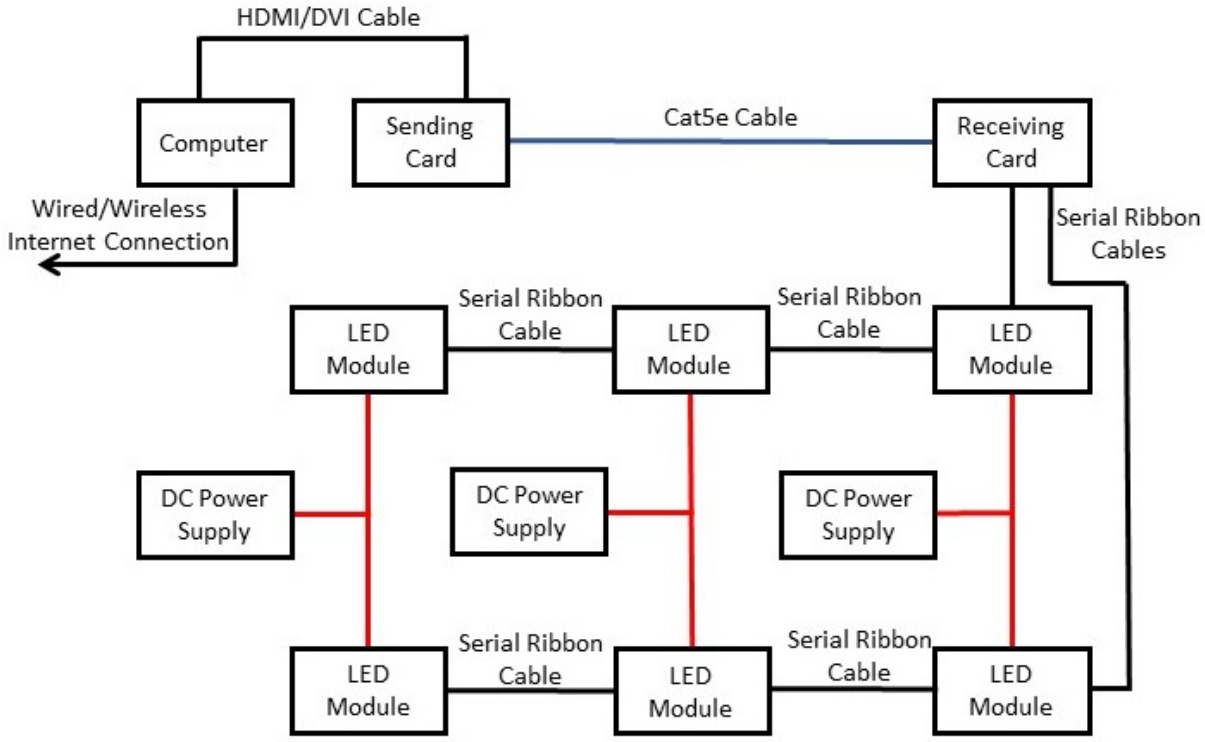
- **Communication Devices:** Many signs use wired or wireless communication devices. The controller could be hardwired with an Ethernet connection, have an attached wireless access point or have a wireless bridge between the controller and internet gateway. Wired connections in excess of 100 meters could also have fiber media converters.

LED Sign Topography



Troubleshooting LED Signs Tips

Follow the Data Chain

LED signs rely on a certain amount of "daisy chains" to get data from one component to the next. Generally speaking, it goes something like this:
Internet --- Sign Controller --- Sending Card --- Receiving Card (These may be daisy chained to other Receiving Cards across the sign) --- Rows of LED Modules Daisy Chained together.

Keep it Simple

Look at your symptoms, and find a logical place to start ruling out causes of the issue. For example, if the sign has a module out, you wouldn't start testing the communication devices. You would start looking at the LED sign hardware (LED Modules, Data cables, etc...).

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Make the Issue Move
When you are physically troubleshooting components, you want to either fix the issue or make it move. If you can make it move then you can isolate the component and replace or repair it to fix the issue.

Re-boot
Electronic devices sometimes get locked up and require a reboot to get going again. Cycling power to the sign can sometimes fix issues. However, you shouldn't have to do this constantly. If so, then look for the root cause of the freeze ups. If you cycle power to the sign, wait at least 10 seconds after turning off the power before restoring it so capacitors in the controller, power supplies and LED modules can fully discharge first.

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Problem	Cause	Correction
Sign is blank	Sign is not powered	Turn sign power on
	Controller is not powered	Turn controller on
	Communication failure between controller and sending card	Check video (HDMI/DVI) cable; check power (red) and communication (green) lights on sending card
	Communication failure between sending and receiving cards	Check Cat5e cable between sending and receiving cards; check power (red) and communication (green) lights on sending and receiving cards
	No content scheduled	Check schedule to see if it's current and not expired
	One or more sign power supplies needs to be reset	Turn power to sign off, wait at least 10 seconds, then turn power back on
One or more section(s) of sign is blank	No power to that part of sign	Check power; to reset power supplies, turn power to sign off, wait at least 10 seconds, then turn power back on
	Communication failure between receiving cards or LED modules	Check Cat5e cable between receiving cards; check power (red) and communication (green) lights on receiving cards; check serial ribbon cables between LED modules
One or more LED module(s) is blank or scrambled	No power supplied to LED module(s)	Check power; to reset power supplies, turn power to sign off, wait at least 10 seconds, then turn power back on
	No data or bad data supplied to LED module(s)	Make sure LED module is powered; check that it is getting data from previous data source (receiving card or LED module), start with first (right-most) data source
Sign is white	Schedule has expired	Make schedule current
Sign is not updating scheduled content	Controller did not receive scheduled content	Check controller for internet connectivity
	Schedule not accurate	Check schedule for accurate content, date, time, etc
Sign displays content slowly or inaccurately or not at all	Content is the wrong size or wrong file type, incorrectly scheduled or file name contains special characters	Check that files are the same size as the sign which they are displayed on; files should be .jpg, .jpeg, .gif, .avi, .wmv or .swf only; check for schedule errors; do not use special characters (!, @, #, $, %, ^, &, *) in file name
Error displayed on controller monitor	Error between schedule and player	Check for schedule accuracy, no gaps in schedule, schedule not expired, correct schedule times/dates, no commas in file names; Make sure controller date/time is correct

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