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Component Engineering

Trouble Shooting the Data bus
New Installation

The first step in trouble shooting a data bus is to check that all the basic wiring has been done correctly. The next step is to make sure that each device is properly configured for the task it has been assigned.
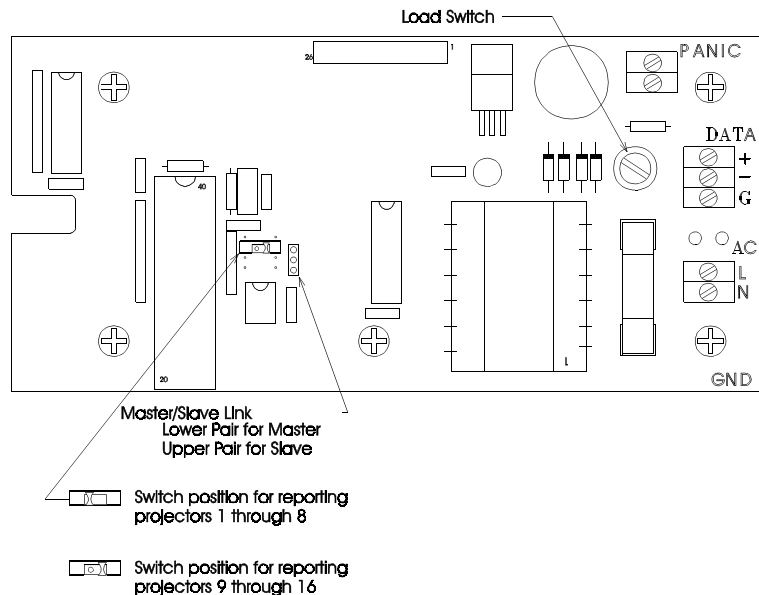
Take the covers off all of the devices and check that the polarity of the bus wiring is correct throughout the system. Ensure also that the data bus has not been confused with the DC + and - in the Ta-10 or the AC line and Neutral in the remote boxes. If you find these errors or hear that these errors were made and then corrected you will have to replace every 75176 chip in the system. There is one chip in each device. This is an in-expensive chip, be sure to replace them all.

While you are at each TA-10 ensure that the address dip switches are set properly. If two or more switches are set alike the projectors with the same address will stop at the same time.

Top edge of MCU board
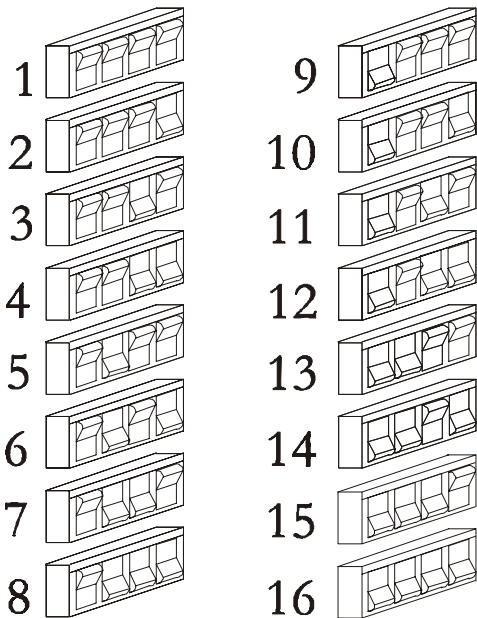
While you are at each remote box ensure that the 1-8 and 9-16 link is set properly to display the projectors that you have. Further check that only one individual remote box is designated as the master.It is best if this remote is at one end of the Data Bus.

Load Switch

PANIC

DATA
+
-
G

AC
L
N

GND

Master/Slave Link
Lower Pair for Master
Upper Pair for Slave

Switch position for reporting projectors 1 through 8

Switch position for reporting projectors 9 through 16

The next step is to determine which two devices are at the ends of the bus. You can tell the ends by the fact that there are only one pair of wires attached to the device. Once the ends are identified, ensure that the load screw in each of the end devices is turned full down. No device should have three pairs of wires attached. If you find this condition or bus wires that are splices together in Tee's along the way, the bus will have to be re wired as a daisy chain with no tee's or Y's. Follow the directions in the TA-10 manual carefully. Electricians have shown little respect for drawings in the past and have strung wire in the shortest possible path. These wiring mistakes are common and MUST be eliminated.
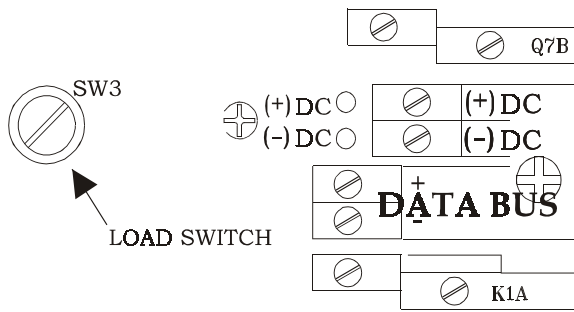
Now turn off all of the devices, Ta-10's and Remote boxes alike. Measure the resistance across the Data + and- . It should be between 70 and 100 ohms. If the number is lower than 75 it indicates that some of the devices in the middle of the bus have their load screws engaged. You must find these devices and unscrew the load resistor screw.

If it is higher than normal it indicates that only one load screws is engaged. If it is very high or infinite there could be no load screws, a break, or poor connections in the line. Blown 75176 chips can also cause bad readings. You must identify the problems and repair them.

Once all of these conditions have been met the data bus is properly setup.

If you have done all of these things and are still having problems you need to isolate the device or wiring that are causing them. Begin at the end of the bus with the master remote on it. Disconnect the Data + wire and turn on the device. If all is well add another device. What you are trying to do is create a very small data bus and increase it one device at a time until it fails. Each new device will have to be loaded as the end device and disconnected from the one in front of it. As they are eliminated as problems you will need to unload them again before moving on to the next device down the line. When testing TA-10's without remotes test them by interlocking. It is possible to have 16 TA-10's all running in interlock at the same time if they are in the same interlock zone.

We have a more advanced trouble shooting tool for problems that are intermittent and occur in a bus that is properly wired and loaded. This is an RS-232 to RS-485 bus converter and software that enables a PC running DOS to display the ascii characters that make up the data on the bus. The adapter plugs into the 75176 socket on any device, TA-10 or remote and into the Com port of your PC. You will be able to see all of the functions that are displayed on a remote in a graphical display. Below the display is a running data stream. Unused or distorted characters will be displayed if Zenon strikes are getting in or un discovered tee's or y's exist on the data bus. Please call to request these advanced tools and for help using them.