

Guide to IRIG-B termination

For all but high accuracy synchrophasor applications, the following guide to termination of IRIG-B Time Sync Bus's should be sufficient.

DCLS IRIG-B (B0xx): DC Level Shifted

- Use shielded twisted pair cables, such as Belden 9841. The key specifications are 120 ohm impedance and low capacitance
- At the end of the Time Sync Bus, terminate with 120 ohm resistance
- For higher accuracy, use an oscilloscope and looking at ringing or undershoot, adjust termination resistance accordingly
- Ensure the total loading on the time bus does not exceed the drive capability of the source (150 mA for Tekron Clock and ITR, 75 mA for MOFR)

For DCLS systems, the main goal of the termination is to match the impedance of the cabling. Shielded twisted pair, or twisted pair wiring, is more convenient and preferable to coax. A rule of thumb is cable distances should not be more than 100 m. Use ITRs to isolate and regenerate signals where needed.

AM-IRIG-B (B1xx)

- Use shielded twisted pair cable. If you must use coaxial cable, then use 75 ohm coax due to its lower capacitance (RG-59 rather than RG-58)
- Use the Tekron spreadsheet to determine the termination resistance (based on drive voltage, the number of IED's and their input resistance)
- In the absence of any information, a termination resistance of 100-180 ohm can be used for time sync buses connecting to 20-30 IEDs

For AM-IRIG-B systems, the main goal of termination is to ensure the correct voltage levels are being provided to the connected devices. The termination resistor is used to load the source so the AM IRIG-B signal level is in the "sweet spot" for the IED's. AM signals can be used up to typically 200 m.

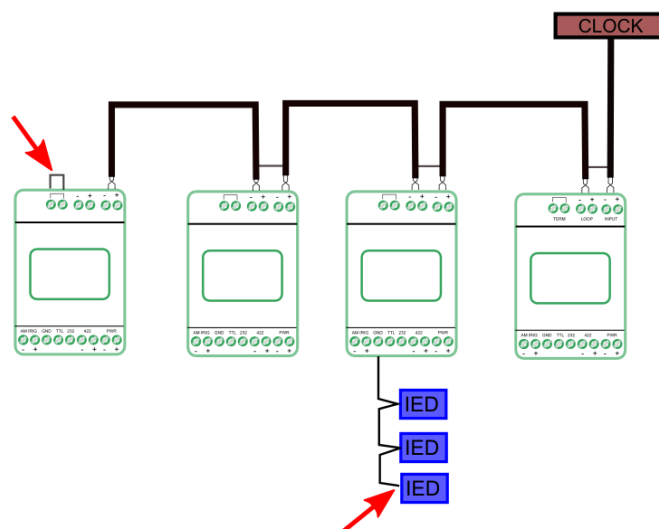


Figure 1. Correctly terminate the end of time bus circuits.