

# Troubleshooting Dropouts and Range Issues

## COMMON CAUSES OF DROPOUTS AND POOR RANGE:

1. **Competition.** Other radio remote controls operating in the same frequency band in range of the receiver will result in dropouts. Imagine trying to have a conversation with someone in a noisy, crowded room. It's much easier to hear every word in a quiet room. If the remote control application requires multiple radios to be in use simultaneously, it is best to use different frequencies and reduce the data rate if possible. Consult factory for options.
2. **Interference.** Radio frequency noise from communication and broadcast towers, hand-held radios, electric motors, and high-voltage equipment including spark plugs from gasoline engines can cause interference with remote control equipment. Keeping the receiver and receiver antenna away from these areas will result in more reliable control. In extreme cases, it may be necessary to use remote controls in tethered mode. Most Miratron radios are available with tether options. Tethers are standard on our T-0 and T-1 systems.
3. **Poor receiver location.** In most cases, internal receiver antennas are sufficient for good range. Locating the receiver outside of metal enclosures and away from obstructions will maximize range. Maintaining a line-of-sight to the transmitter provides the best reliability. In cases where the receiver cannot be located in line-of-sight to the transmitter, an external antenna is recommended.
4. **Poor antenna installation.** External antennas should be installed on a flat, metal surface away from obstructions for best results. Take care not to bend or cut the antenna or coax cable. If the coax cable is too long, coil the cable neatly into a 8 to 12" circle. Sharp bends in the cable can greatly reduce radio range. Periodically inspect antenna and cable for damage.
5. **Poor receiver wiring.** What may at first appear to be a radio performance issue often turns out to be a wiring problem. Intermittent wire connections can cause undesirable operation. A good ground connection is very important. Inspect wiring and terminations.
6. **Obstructions.** At close range, remote control systems will generally still perform well in spite of obstructions. In some cases, particularly at longer ranges, obstructions can cause dropouts or prevent radio control completely. Large metal buildings, variations in elevation (rooftops, highrise construction, mining pits, etc.) or other obstructions that block line-of-sight to the receiver can greatly reduce radio range.
7. **Damage to electronics.** Lightning strikes and arc welding can cause damage to the receiver radio module, which can reduce range. Applying excessive voltage to the receiver, such as with battery chargers, can also damage sensitive components.

Note: Please report radio malfunctions or performance issues immediately. Our trained staff can help with troubleshooting and repair to ensure the continued reliability and safety of your radio remote control system.