REFERENCE DOCUMENT

RFID READER GROUNDING

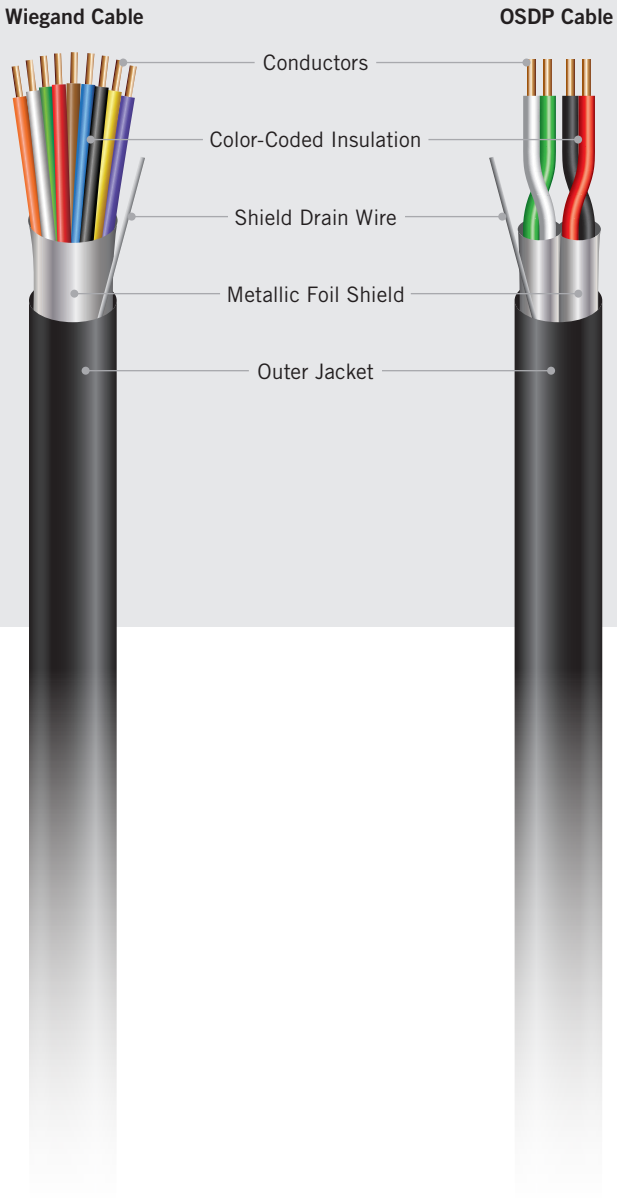
Farpointe Data®
Readers • Credentials

Grounding benefits the operation, performance and reliability of RFID card readers installed as key components within an electronic access control system.

The construction of cables recommended for access control, such as Belden 9539 for Wiegand and Belden 8723 for OSDP, includes elements that provide protective shielding to prevent potentially detrimental EMI/RFI (electromagnetic and radio frequency interference) signals—induced and radiated—from creating issues amongst system components. This protective shielding consists of a metallic foil shield and shield drain wire, which together, enwrap the bundled cable conductors. Connecting the shield drain wire to an earth ground makes the metallic foil shield effective as it completes the circuit within the cable, and allows harmful EMI/RFI signals to be directed towards and drained at the earth ground.

Below are basic grounding recommendations to help prevent reader issues, or to assist in troubleshooting existing installations. As always, connections must be done in accordance with NFPA 70, National Electrical Code.

Elements of RFID Reader Cable Construction



Grounding Recommendations

- Use the proper cable, per the specific recommended requirements of the access control system manufacturer.
- Use quality cable with an overall metallic foil shield and drain wire.
- Stay within maximum cable lengths for appropriately gauged wire, per specification:
  – Wiegand: 500 feet (152 m)
  – OSDP: 4,000 feet (1,219 m)
- Shield and drain wire continuity must run from the reader to the access panel.
- Typically, tie drain wire and reader ground wire together at access panel and connect to earth ground.
- Earth ground connections should typically be made at one end only to avoid ground loops.
- Earth ground is an electrical and physical connection to the earth via a conductive material, such as a copper ground rod or metal cold water pipe.
- Connections must be done in accordance with NFPA 70, National Electrical Code.

(See Wiegand and OSDP interface diagrams on next two pages)

Wiegand Interface Wiring

Diagram 1: Grounding Example using Access Contoller for Power

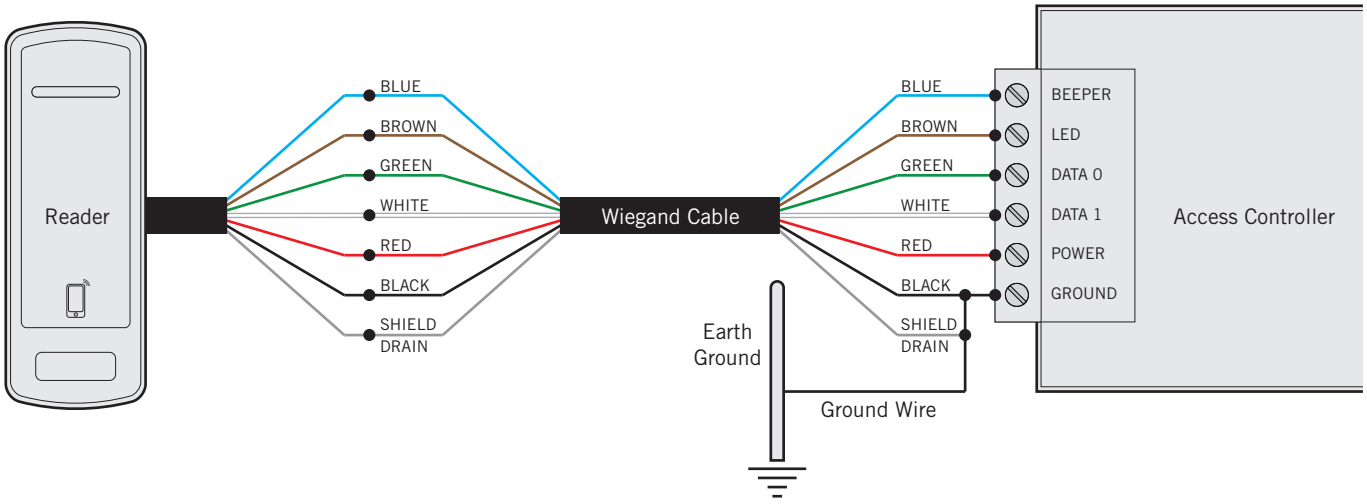
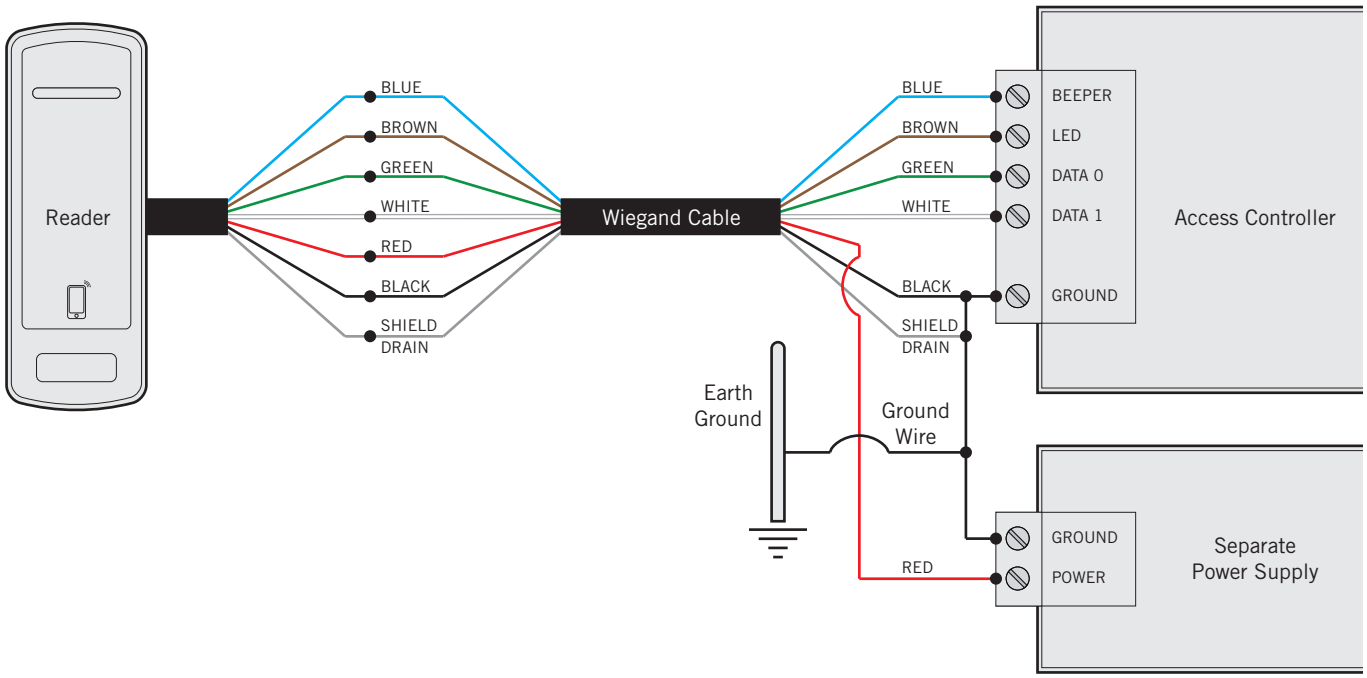


Diagram 2: Grounding Example using Separate Power Supply



OSDP Interface Wiring

Diagram 3: Grounding Example using Access Controller for Power

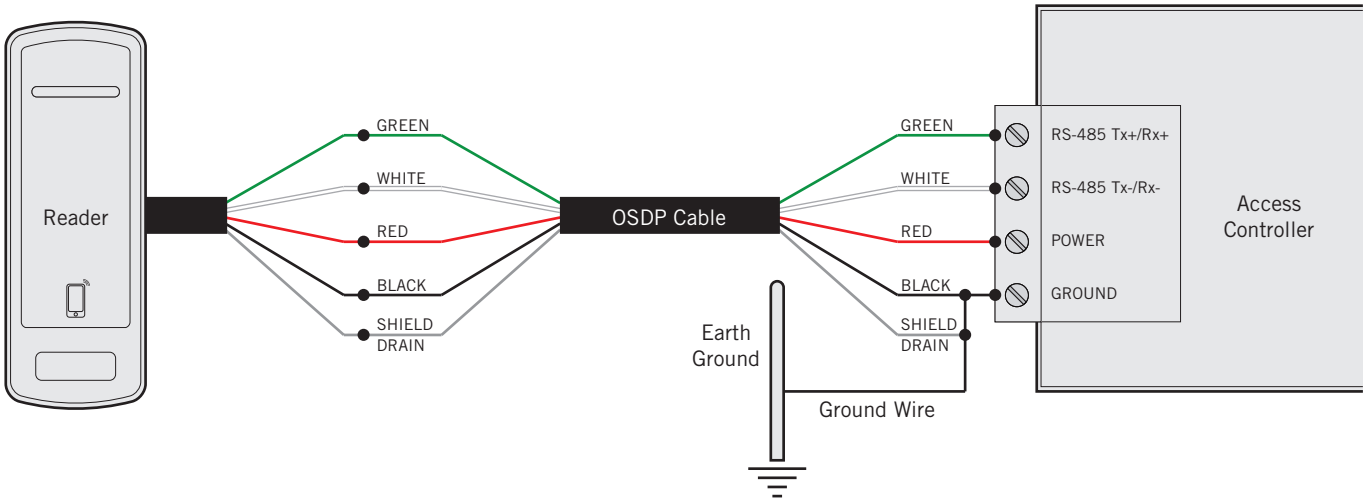
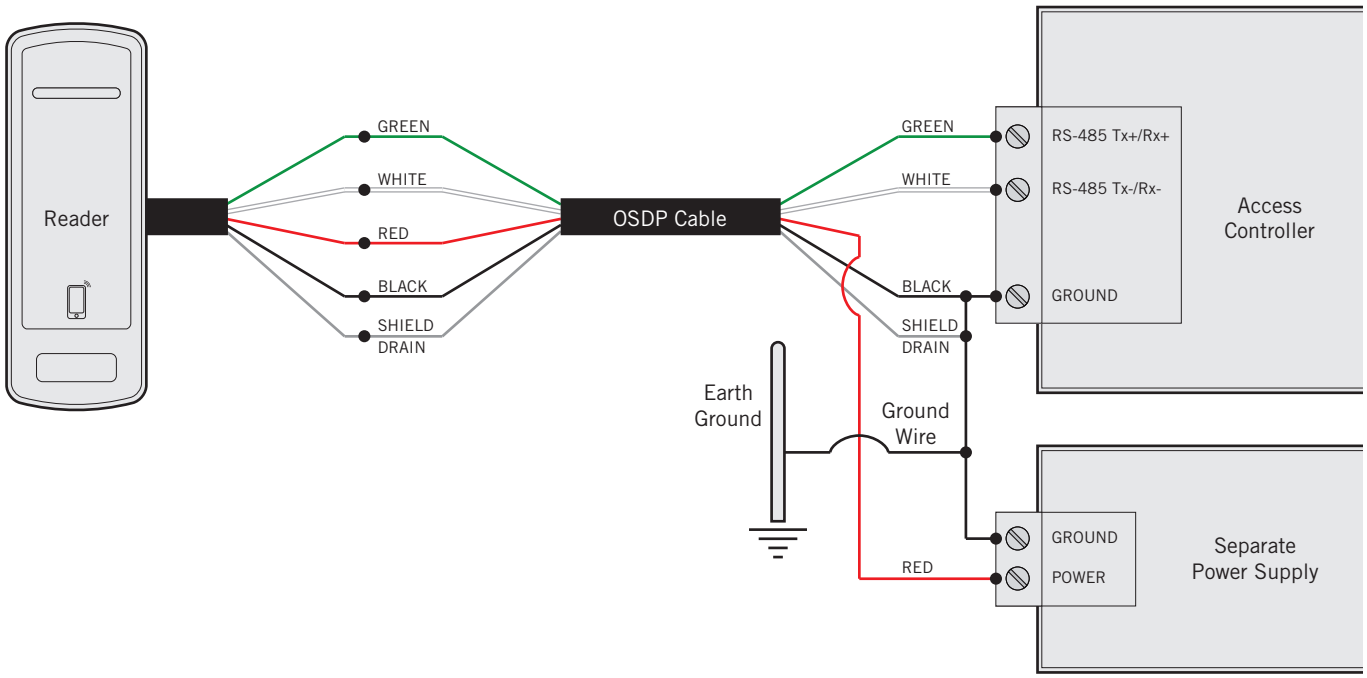


Diagram 4: Grounding Example using Separate Power Supply



Farpointe Data reserves the right to change specifications without notice.

© 2022-2024 Farpointe Data, Inc. All rights reserved. Farpointe Data®, *Pyramid Series* Proximity®, Delta®, Ranger®, and CONEKT® are the registered U.S. trademarks of Farpointe Data, Inc. All other trademarks are the property of their respective owners.

Farpointe Data, Inc.
2195 Zanker Road
San Jose, CA 95131 USA
Office: +1-408-731-8700
Fax: +1-408-731-8705
support@farpointedata.com