XTRALIS LI-ION TAMER® SENSOR MULTI OUTPUT SOLUTION (MOS) CABLE FABRICATION APPLICATION NOTE

December 2024
Doc. No. 38088_00

Preface

This Application Note outlines how to fabricate the RJ45 cable required for interfacing the LT-SEN-M with the LT-SEN-IM-UL.

Related Products

Li-ion Tamer Sensor MOS.

Contents

1 Introduction

The Li-ion Tamer Sensor MOS requires a network cable with the following termination configuration for appropriate EMI protection:

- Unshielded connection to the Li-ion Tamer G2+ off-gas sensor (LT-SEN-M).
- Shielded connection to the interface module (LT-SEN-IM-UL).

The process for fabricating this cable involves RJ45 connector crimping, which is a common electrical cable installation procedure.

2 Required Materials

The fabrication process requires the following materials and tools:

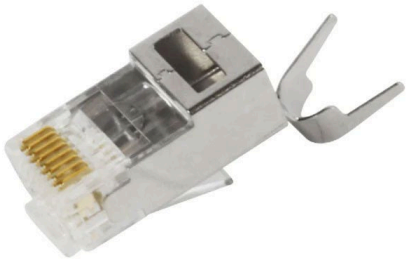
- **Cable/Connector - Option A:**
  - Li-ion Tamer GEN3 network cables (Part Numbers: LT-ACC-NCL-3, LT-ACC-NCL-5, LT-ACC-NCL-10) or factory-made Cat 5e or Cat 6a, RJ45 straight through, ***shielded*** (at least S/UTP), 24 – 26 AWG cable (maximum length 6m)

  - Unshielded RJ45 Connector (plug)

- **Cable/Connector - Option B**:
  - Un-terminated (bulk) Cat 5e or Cat 6a, ***shielded*** (at least S/UTP), 24 – 26 AWG cable

  - Unshielded RJ45 Connector (plug)

- Shielded RJ45 Connector (plug)



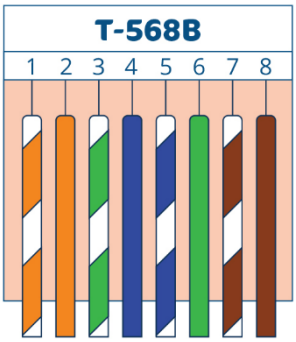
- RJ45 Crimping Tool

- RJ45 Cable Tester or Multimeter
- Flat Head Screwdriver (recommended)

3 Fabrication (Option A)

The cable fabrication procedure for Option A is as follows:

1. Remove one end of the factory-made shielded RJ45 cable.
2. Strip the cable jacket back by at least 25mm (~1 inch), be sure not to cut any of the individual conductors.
3. Cut back the drain wire and foil shielding to the edge of the cable jacket.
4. Untwist and straighten the conductors.
5. Arrange the conductors side-by-side in the correct order, according to T568B.



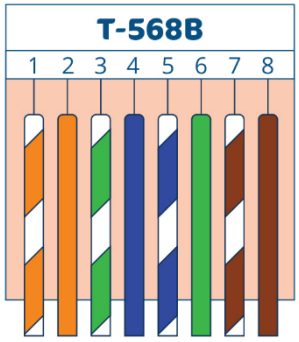
6. Cut the conductors to a length of 13mm (~0.5 inch).
7. Insert the wires into the unshielded RJ45 connector.
   - The cable jacket should fit just inside the connector, so the strain latch is contacting it.
   - Ensure the conductors are in the correct order, according to the image above with the connector pins facing up.
   - Each conductor should fit in its respective groove.
8. Insert the connector into the crimping tool and squeeze to crimp. Release and squeeze again to ensure a good crimp.
9. Use an RJ45 continuity checker or multimeter to verify cable continuity end-to-end.

4 Fabrication (Option B)

The cable fabrication procedure for Option B is as follows:

Connector 1:

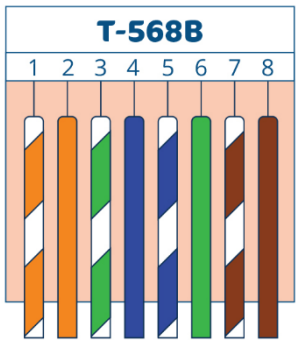
1. Strip the cable jacket back by at least 25mm (~1 inch), be sure not to cut any of the individual conductors.
2. Cut back the drain wire and foil shielding to the edge of the cable jacket.
3. Untwist and straighten the conductors.
4. Arrange the conductors side-by-side in the correct order, according to T568B.



5. Cut the conductors to a length of 13mm (~0.5 inch).
6. Insert the wires into the unshielded RJ45 connector.
   - The cable jacket should fit just inside the connector, so the strain latch is contacting it.
   - Ensure the conductors are in the correct order, according to the image above with the connector pins facing up.
   - Each conductor should fit in its respective groove.
7. Insert the connector into the crimping tool and squeeze to crimp. Release and squeeze again to ensure a good crimp.

Connector 2:

1. Strip the cable jacket back by at least 25mm (~1 inch), be sure not to cut any of the individual conductors.
2. Cut back the foil shielding to the edge of the cable jacket. ***Do not cut the drain wire.***
3. Untwist and straighten the conductors.
4. Arrange the conductors side-by-side in the correct order, according to T568B.



5. Cut the conductors to a length of 13mm (~0.5 inch), excluding the drain wire.
6. Insert the wires into the ***shielded*** RJ45 connector.
   - The cable jacket should fit just inside the connector, so the strain latch is contacting it.
   - Ensure the conductors are in the correct order, according to the image above with the connector pins facing up.
   - Each conductor should fit in its respective groove.
7. Insert the connector into the crimping tool and squeeze to crimp. Release and squeeze again to ensure a good crimp.

8. Wrap the drain wire around the cable jacket so that it will be in contact with the ground tab once it's crimped to the jacket.
9. Use a flat head screwdriver to press the "wings" of the ground tab onto the cable jacket, over the drain wire.
10. Use the crimp tool to crimp the ground tab around the cable jacket.
11. Use an RJ45 continuity checker or multimeter to verify cable continuity end-to-end.

5 Further Support

Contact an Xtralis office or distributor for further information.

www.xtralis.com

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