

Splicing DataBus cables for exterior weatherproof deployment

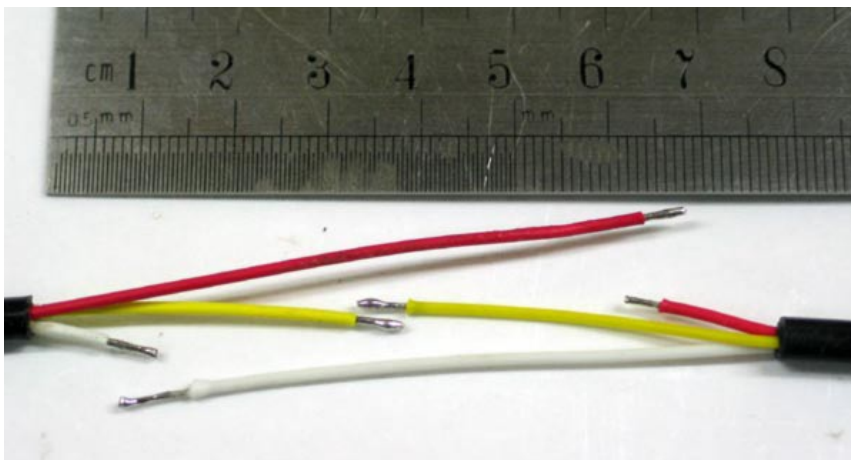


If you need to extend DataBus cables and they are exposed to the exterior environment, correct weatherproofing is essential to prevent eventual failure of the join by water ingress. The following instructions explain the recommended procedure.

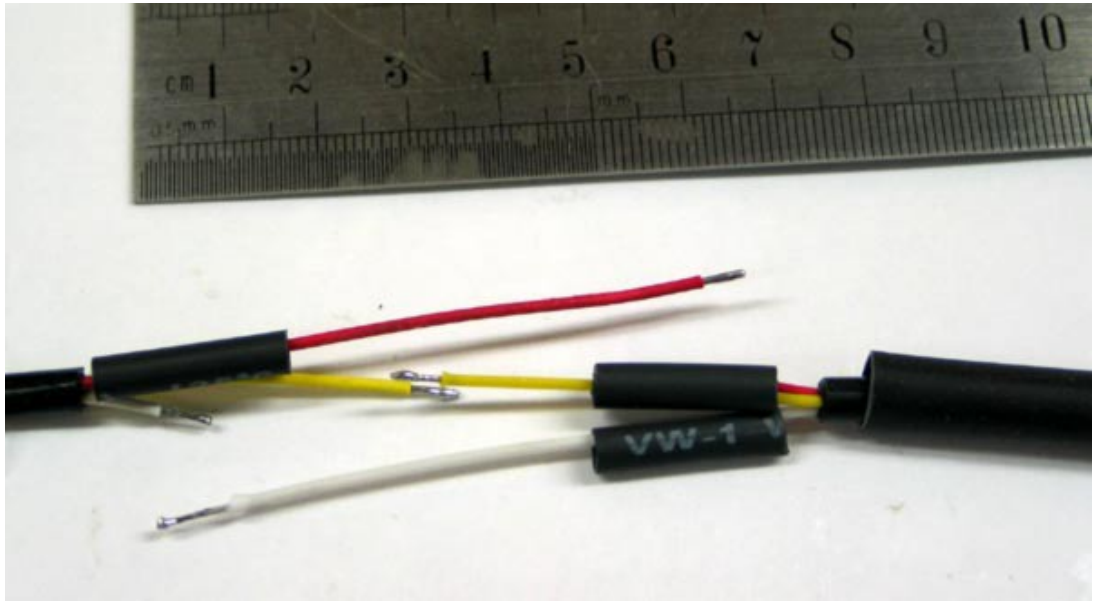
Equipment and materials required:

- Cable insulation stripper
- Soldering Iron and multicore (electronics grade) solder
- Heat-shrink tubing with internal hotmelt adhesive coating in 2 sizes: 3 - 3.5mm and 6.4 - 8mm diameters
- Hot-air gun or hair dryer

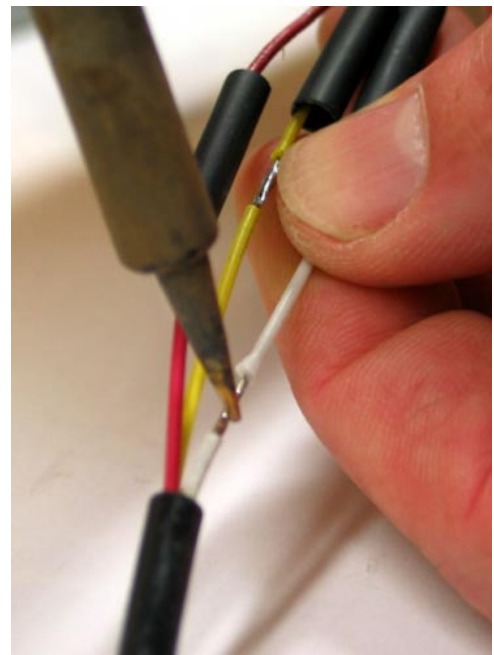
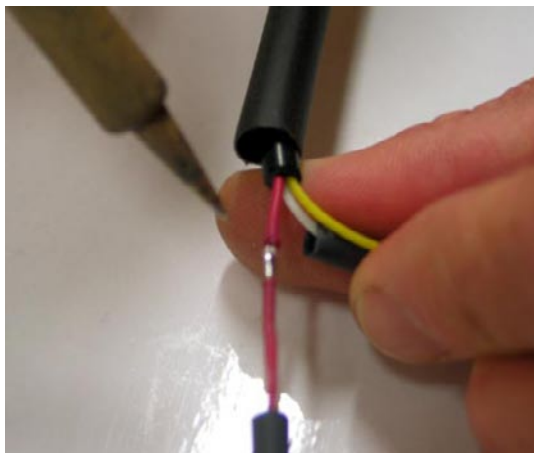
1. Prepare the cable ends by removing 85mm of the outer sheath. The three inner conductors are then cut to lengths of 85mm, 50mm and 15mm. On the joining piece, cut each matching conductor to the corresponding length so that the joins will be distributed along the length of the splice. Note: Do NOT try to strip the outer sheath using a knife - use the proper cable stripping tool. The cables used have a tough outer sheath which is difficult to cut safely with a knife, and if you knick the inner insulation it will compromise the mechanical strength and waterproof nature of the splice described here. ICT recommend an insulation stripper of the type pictured.



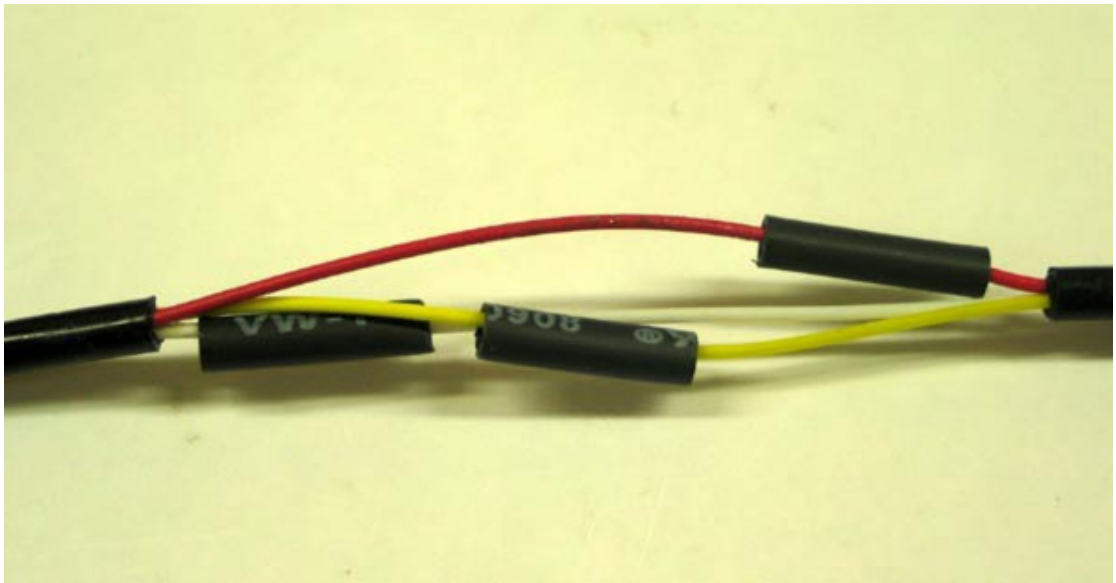
2. Strip the inner conductors back 5mm to expose the copper cores. Gently twist the strands together neatly and tin them. Use a fairly generous quantity of solder so that there is sufficient to remelt and form the splice without needing additional solder - this will make it much easier to solder the joins together since you'll only need three hands instead of four!



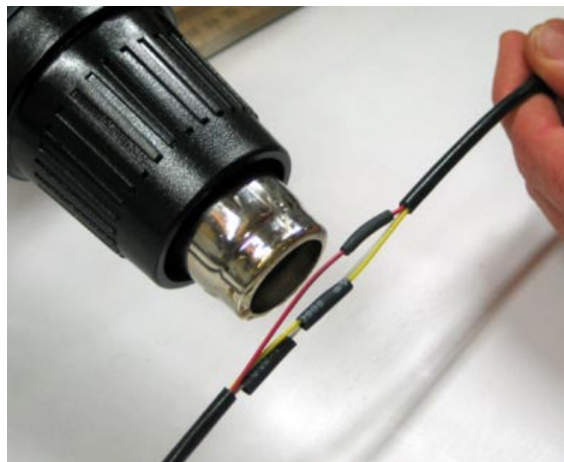
3. Place a 20mm length of 3.2mm diameter heatshrink on each inner conductor, and a 110mm length of 6.4mm diameter heatshrink on one of the cables before soldering.



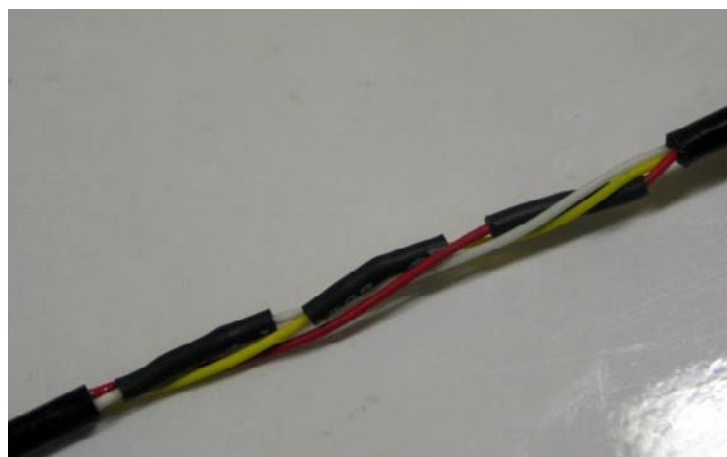
4. Solder each joint together by placing each tinned end adjacent to its corresponding wire, and quickly remelting the solder to fuse the ends together (use a little extra solder if necessary - this is where a fourth hand is useful!). Do not apply the soldering iron for too long - just enough to reflow the solder. Take care not to melt the insulation. A good joint should be bright and shiny, with a smooth surface. A dull, crystalline or uneven surface will indicate a poor joint which may fail under mechanical stress. This is usually caused by prolonged overheating.



5. Once all three joints are made, let them cool before sliding the small heatshrink tubes centrally over each joint. Check that the tubes don't overlap each other, and that the joints are covered centrally with no solder visible. Note - if you don't let the solder cool sufficiently first, the tubes can begin to shrink prematurely making them hard to slide into the correct position.



6. Gently heat the heatshrink using a hot-air gun or hair dryer. Do not use an excessive temperature to speed up shrinking - this can melt the insulation or even the solder. About 120°C is adequate. Once the tubes shrink around the wires, look for the adhesive starting to exude from each end - this is correct, and indicates that the tubes have shrunk as much as they need to.



7. Gently apply a twist to the entire cable to pull the spliced wires together - just two or three turns are all that are needed - do not overdo it. Then slide the outer 6.4mm heatshrink over the entire splice and make sure it's central. Shrink the tubing until the adhesive just starts to exude from the ends. Visually check that a ring of adhesive is visible around the whole circumference of the tubing at each end. When this sets, it forms a totally waterproof seal.



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