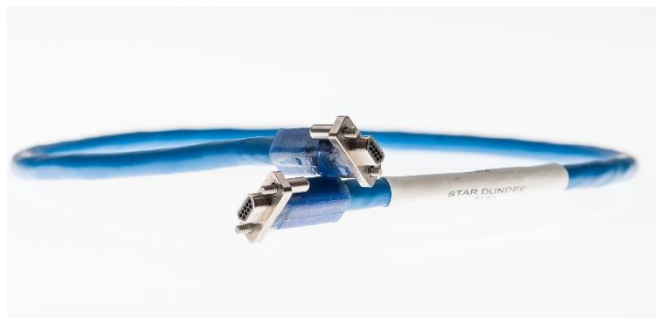


SpaceWire Lab Cables

STAR-Dundee's SpaceWire Lab Cables have been designed to be easy to use in the laboratory while giving similar performance to standard SpaceWire cables. The innovative connector assembly uses captive jack screws, allowing the connector to be fully mated before the jack screws are screwed home. This makes mating and de-mating the connectors much easier, ideal for the lab. The Lab Cables are not suitable for use in a thermal-vacuum chamber.



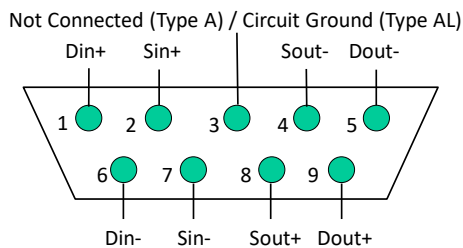
SpaceWire Lab Cable

Cable

The cable used in STAR-Dundee SpaceWire Lab Cable Assemblies was specially designed to have similar electrical properties to "true" SpaceWire cable while costing less and being more flexible. Each twisted pair has 100 ohm differential impedance and an individual shield. The overall cable has an outer shield. The SpaceWire Lab Cable electrical properties are listed in the Specifications on the following page.

Connectors

The connector used for the SpaceWire Lab Cable Assembly is the 9-pin micro-miniature D-type male connector, as defined in the SpaceWire standard. Commercial versions of this type of connector are used. The pin out of the connector is illustrated in the figure below, viewed from rear of receptacle or front of plug.



Viewed from rear of receptacle or front of plug

SpaceWire Connector Pin Out

To ease handling of the finished cable assembly, captive jack screws are used. The jack screws are loose within their captive housing to allow the connector to be fully mated before the jack screws are tightened. The jack screws have hex heads to enable a ball-head screwdriver to be used to tighten them. This again eases handling of the cable assembly.

Type A and Type AL Cable Assemblies

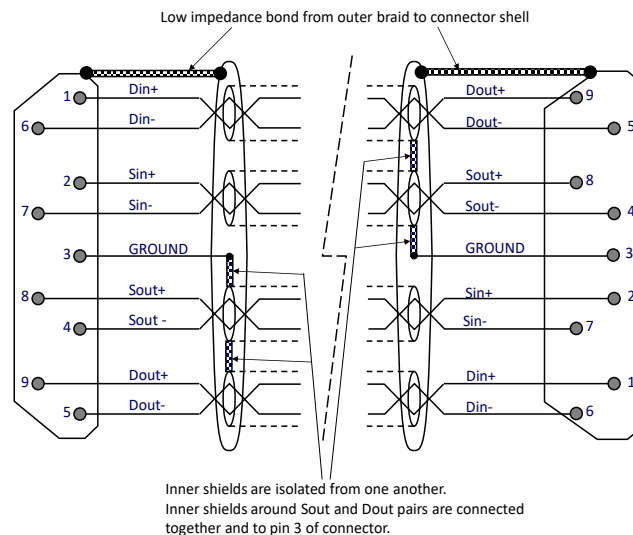
The latest issue of the SpaceWire standard, ECSS-E-ST-50-12C Rev.1, defines two types of cable assemblies: Type A and Type AL. STAR-Dundee offers both Type A and Type AL SpaceWire Lab Cable Assemblies.

The cable assembly defined in previous issues of the SpaceWire standard is now named Type AL in the latest revision of the standard, with the "L" standing for legacy. These were the cable assemblies STAR-Dundee previously offered as standard. The SpaceWire standard states that these cable assemblies should not be used for new designs.

The inner-shields of Type AL cable assemblies are connected to pin 3 of the connector at the transmit end of the cable only. The Type A cable assembly improves on this by connecting the inner shields to the connector shell at both ends. Pin 3 is not connected.

Type AL Cable Assembly

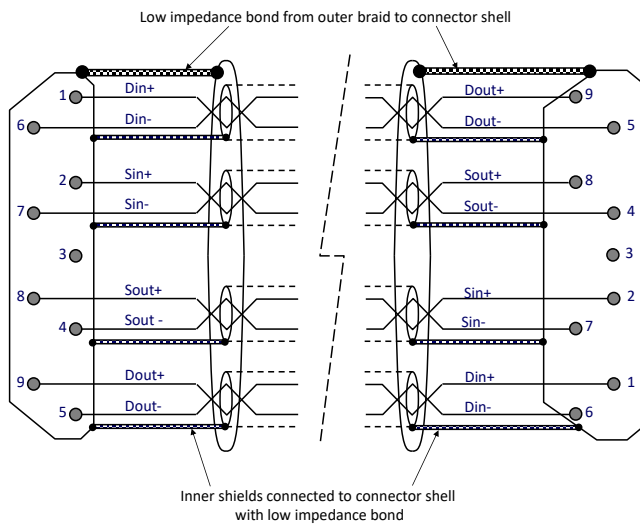
The wiring of the Type AL SpaceWire Lab Cable Assembly is the same as defined in the SpaceWire standard for Type AL cable assemblies. The inner shields of the Dout and Sout twisted pairs are connected to pin three of the connectors using the inner shield drain wire. The outer shield drain wire is bonded to the connector shell. The cable is retained using potting; there is no metal backshell.



Type AL SpaceWire Cable Assembly Wiring Diagram

Type A Cable Assembly

The wiring of the Type A SpaceWire Lab Cable Assembly is as defined in the SpaceWire standard for Type A cable assemblies. The inner shields of the twisted pairs are connected to the connector shell while pin 3 is not connected. The outer shield is also connected to the connector shell. The cable is retained using potting; there is no metal backshell.



Type A SpaceWire Cable Assembly Wiring Diagram

Type A cables are recommended for all new applications.

Ordering Information

Both Type A and Type AL SpaceWire Lab cables are available in several standard sizes:

- 0.5m
- 1m
- 2m
- 3m
- 5m
- 10m

These lengths are normally held as stock.

Other lengths and cable assemblies with female 9-way micro-miniature D-type connectors can be custom made on request, at additional cost and with a longer lead time.

Specifications

Part Number	Length	Type AL	Type A
		0.5m	114
	1m	115	701
	2m	116	702
	3m	117	703
	5m	118	704
	10m	119	705
Differential Impedance	100 Ohms Nominal @ TDR		
Mutual Capacitance	14 pF/ft Nominal		
Velocity of Propagation	71% Nominal		
Time Delay Skew (Between Pairs)	30 ps/ft Maximum		
Conductor DC Resistance	0.064 Ohms/ft Nominal at 20°C		
Temperature Range	-10°C to 80°C		
Environment	Not suitable for use in a vacuum		

All information provided is believed to be accurate at time of publication. Please contact STAR-Dundee for the most recent details. © 2021 STAR-Dundee Ltd.



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