

*MicroMach[®]
Eyes wide open!*

THE NEWSletter
for sales teams

axoCLUE

INTERNAL INFORMATION

N°22 January 2018

TECHNICAL CHARACTERISTICS

Compact (close to the current 9pin Micro-D connector)

100 ohms matched impedance connection

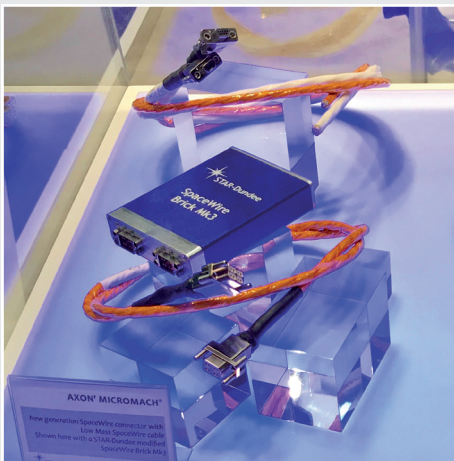
Improved 360° cable screen terminations to connector (inner and outer shields)

Higher data rate performance

Low crosstalk between ways

Uses the tried and tested Micro-D Twist-Pin contacts

Several variants will be offered: male and female inline, SMT PCB, Wired PCB and flex PCB panel mount. For this last variant, the MicroMach[®] is directly connected to a flexible PCB which enables a better absorption of thermal expansion and mechanical vibration.



MICROMACH[®]
ASSEMBLY EXHIBITED
AT SPACETECH EXPO,
BREMEN, IN OCTOBER
WITH STAR-DUNDEE
SPACEWIRE TEST
EQUIPMENT

Axon' has been selected by ESA to develop a new generation of SpaceWire connector. Compatible with ESCC3902/003 and ESCC3902/004 qualified SpaceWire cable, the new MicroMach[®] connector offers significantly better performance than the default 9 way Micro-D: 100 ohms matched impedance pairs, reduced crosstalk and robust EMC protection.

After an intensive evaluation followed by both CNES and ESA, MicroMach[®] connectors should be ESA approved by mid 2018

Note: The name "MicroMach[®]" has been registered and was chosen because the connector design draws its inspiration from the twin heritages of Micro-D technology and the AxoMach[®] range

ADVANTAGES

Regarding the 9pin Micro-D, which is the only solution currently in the market used for SpaceWire protocol, the MicroMach® offers :

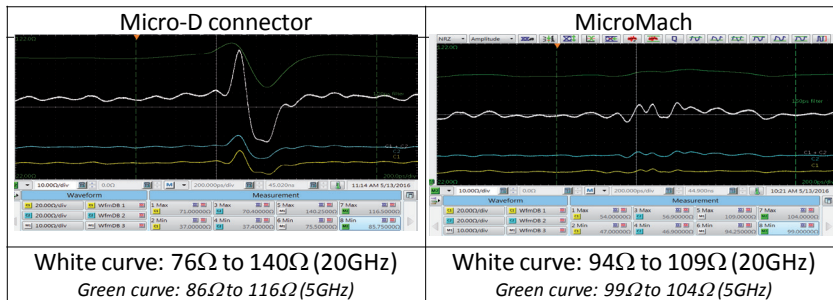
- 1 cavity by transmission line to improve crosstalk
- 360° Inner and outer shield termination to improve EMC
- 100Ω differential impedance throughout the line to improve the data rate
- Integrated guide pin to improve the mechanical robustness

All of the above make for a new connector design that will transmit SpaceWire data faster and more securely than the existing 9 way Micro-D. As the full evaluation has not yet started, we cannot yet give precise comparisons on data rates, but as an example, a 1m MicroMach® link performs very well at 3.4Gb/s, whereas we estimate the same classic SpW link using Micro-D would manage only a few hundred Mb/s maximum.



SPACEWIRE MICROMACH® / FIRST RESULTS

CHARACTERISTIC IMPEDANCE



Q: Which is most important? Maximum Data Rate or maximum length?

A: Either! It depends on what the customer needs in their application, but data rate and length are dependent on each other: the longer the length of cable assembly the lower the data rate possible, so by having a very well matched cable and connector pair it makes it possible for the customer to either increase his data rate, or increase the length of link for the same speed.

Note: MicroMach® exists in variants for both AWG28 and AWG26 SpaceWire cables, so the customer could increase the maximum length using AWG26 SpW cable, or else choose to optimize the system mass using the lighter AWG28.

Q: Can MicroMach® connectors be used for other transmission protocols, or is it just for SpaceWire?

A: Absolutely! The connector has been developed under a ESA TRP (Technology Research Project) initially for SpaceWire, but in simple terms it is "just" a very well EMC protected connector with 4 x 100 ohm pairs of contacts. So it will work very well for any high speed protocol using 100 ohm pairs, e.g.:

- SpaceFibre (2 x 100 ohm pairs per channel, so one connector could support 2 channels)
- LVDS (TIA/EIA-644)
- Any Ethernet-based protocol (XAUII, EtherSpace, etc.)

MORE CLUES

Sales contact: Nigel Kellett n.kellett@axon-cable.co.uk

Technical contact : Kevin Enouf k.enouf@axon-cable.com

