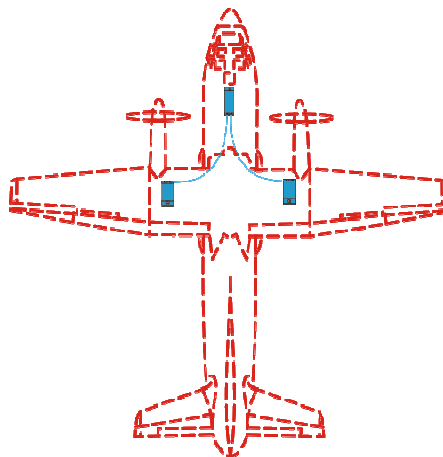# MCDL - MULTI CONFIGURABLE DATA LINK

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Abstract: This paper presents an innovative tool in the data acquisition and flight test instrumentation field. The objective of the tool is to drastically improve the effectiveness of Flight Test reducing the flight set up time, the volume and weight of copper cabling required and the risk of human error in arranging all the connections. The tool is based on TESEO high performing and modular fiber-optic based Multi Configurable Data Link (MCDL), which is able to acquire a large number of signals from analog and digital sources and transfer them over-fiber across the aircraft. The solution is to create quite close the sources local hub where signals to be acquired or monitored are conveyed and transfer them over fiber via a digital optical link to another MCDL hub in order to be faithfully reconstructed in analog/digital form for being acquired by an existing or dedicated acquisition system or being remotely monitored. The fiber-optic based system has an additional benefits: signals over-fiber are immune to harsh EMI environments and to the presence of explosive materials.

The MCDL modular system has given a competitive advantage due to its compactness and extreme modularity and configurability.

The paper, for scientific purposes, will focus on simple scenario consisting of 32 analog channels time coherent and isochronous, but many configurations are possible by optical link band-width only limited.

1   LIST OF SIMBOLS

MCDL	TESEO Multi Configurable Data Link.
ON	Optical Node.
BN	Backplane Node.
LK	Link Card.
P2P	Point to Point
USB	Universal Serial Bus
TDMA	Time-Division Multiple Access
SPI	Serial Peripheral Interface

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