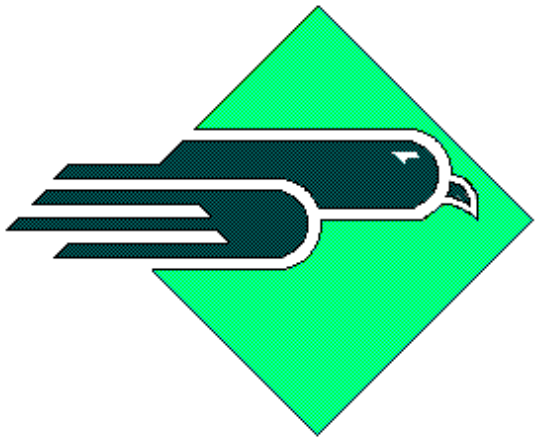

WESTERN AVIONICS

STANAG 3910
Fibre Optic Front End Adapter

P/N 1U10910G01 Rev A

User Manual
UM 10910 Rev A

13/14 Shannon Free Zone
Co. Clare
Ireland

13th July 2001

1 INTRODUCTION

Western Avionics has standardised on the use of the Litton Industries FOFE to P/N EO3687-80N-065 for all applications requiring the use of a 3910 Optical Transceiver.

Whilst these units are directly mounted onto our VXI and VME format products, the smaller panel sizes used for PCI, CompactPCI, PMC, and ISA format units precludes their use in this manner.

The Western Avionics 3910 FOFE Adapter unit is designed to allow the use of these same Optical Transceivers, in a self-contained unit allowing remote mounting from the smaller PCI, CompactPCI, PMC, and ISA host units.

2 UNIT DESCRIPTION

As may be seen from the above photograph, the Western Avionics 3910 FOFE Adapter unit is manufactured within a aluminium case, with all 3910 Optical, 3838 electrical, and Trigger-in and Trigger-out connections on one face, and host interface connector and LED power indicator on the opposite face.
The cable assembly used to connect the unit to the host system can be supplied in any length (up to a maximum of 4.5 metres (15 feet), and is terminated with a 25 pin sub-miniature D type male connector for use with PCI, CompactPCI and ISA units, with a smaller 25 pin micro-miniature D type being used for PMC units.

3 TECHNICAL SPECIFICATIONS

3.1 Physical

- Dimensions 140mm by 145mm by 55mm
- Weight 520 grams

3.2 Power requirements

- +5V +/- 5% 1.35 Amps maximum (Provided by host system)

3.3 Environmental

- Operating Temp range 0 to +70 degrees Centigrade
- Storage Temperature -20 to +90 degrees Centigrade
- Humidity 5% to 95%, non-condensing
- MTBF 489,274 hours at 25 degrees Centigrade, Ground Benign

3.4 3910 and 3838 interface connectors

- 3910 Primary FOFE Deutsch 454596 (N)
- 3910 Secondary FOFE Deutsch 454596 (N)
- 3838 Primary Trompeter CBBJR79 (Tri-ax)
- 3838 Secondary Trompeter CBBJR79 (Tri-ax)
- Trigger-in Trompeter CBBJR79 (Tri-ax)
- Trigger-out Trompeter CBBJR79 (Tri-ax)

3.5 Optical Characteristics

3.5.1 Common Signal Characteristics

Parameter	Description		Limits	Units
	Encoding method		Manchester II	
Rd	Data Rate		20	Mbit/s
Rs	Signalling Rate		40	Mbaud
To	Nominal Bit Time		50	ns
Tm	Signalling Time		25	ns
Rsts	Short Term Stability		0.01	%
Rlts	Long Term Stability		0.03	%
Sp	Preamble Size		40	Bits
Sltg	Minimum Inter-transmission		2+Sp x 0.05	us
W1	Optical Wavelength Lower		770	nm
W2	Optical Wavelength Upper	850	nm	
BW	Spectral Bandwidth		<60	nm

3.5.2 Transmitter

Parameter	Description	Limits	Units
Tpo	TX Optical Power (signal high)	-0.5 +/- 3.5	dBm
Tpr	TX Residual Power (signal low)	Tpo -14	dBm
Tpl	TX Leakage Power (Tx off)	-42	dBm
Tplr	TX Leakage Power Ripple RMS	-60	dBm
Tr	TX Maximum Rise Time	10	ns
Tf	TX Maximum Fall Time	10	ns
Tdpw	TX Maximum Pulse Width Distortion	2.5	ns
Tous	TX Combined Over/Under-Shoot	5	%
Ttm	TX Maximum Signalling	25 +/- 5%	ns
TI	TX Initialise Time	24 to 32	us

3.5.3 Receiver

Parameter	Description	Limits	Units
Rpo	RX Maximum Optical Power Input	+7	dBm
Rrec	RX Recovery Time after +7 dBm Input	100	us
Ror	RX Operating Range	25	dB
Ridr	RX Inter-transmission Dynamic Range	23	dB
Rpm	RX Minimum Optical Power Input	-37	dBm
Rous	RX Combined Over/Under Shoot	10	%
Rr	RX Input Maximum Rise Time	10.0	ns
Rf	RX Input Maximum Fall Time	10.0	ns
Rtm	RX Minimum Signalling Duration	25 +/- 5%	ns
RI	RX Initialise Time	24	us
Riout	RX Initialise Timeout	185 +/- 15	us
Rdpw	RX Maximum Pulse Width Distortion	5	ns
Rber	Maximum Bit Error Rate	10^{-10}	

3.5.4 Transmission Media Compatibility

Fibre Type	Step index, Multimode	
Fibre Material	Core: pure fused silica	Cladding: doped fused silica

Parameter	Description	Limits	Units
Dcore	Fibre Core Diameter	200 +/- 3	um
Dclad	Fibre Cladding Diameter	278 +/- 2	um
Ncore	Non Circularity of Core	$\leq$ 2.5	um
Nclad	Non Circularity of Cladding	$\leq$ 2	um
Eco/cl	Concentricity Error Core/Cladding	$\leq$ 1	um
NAeff	Effective Fibre Numerical Aperture	0.24	

4 PREPARATION FOR USE

4.1 Interface cable to host system

The unit is supplied with an interface cable, to connect the FOFE adapter to the host system. The host system should be powered down, and the interface cable connected to the FOFE and hosts system.

4.2 FOFE Adapter Connections to Units Under Test

4.2.1 3910 High Speed

High Speed 3910 connectors for Primary and Secondary should be connected to the corresponding UUT primary and/or secondary ports using suitable Optical cable assemblies, terminated with RSC06E-N-100 connectors, or equivalent. When connecting to a EFA compliant star-coupler, direct connection is permissible, but if using point-to-point connection (i.e.; to a single UUT) then it is the responsibility of the user to ensure that adequate optical attenuation is built into the connection path, to avoid overloading the RX of either the UUT or FOFE by direct transmission of full TX power into the RX. Western Avionics can provide cable assemblies with the requisite optical attenuation of 15 dBm which allows usage in this direct connection mode.

4.2.2 3838 Low Speed

Low Speed 3838 connectors for Primary and Secondary should be connected to the corresponding UUT primary and/or secondary ports using suitable cable assemblies. Western Avionics can provide suitable cable assemblies.

4.2.3 Trigger In / Trigger Out

Connect as required.

5 USING THE FOFE ADAPTER

5.1 Power Indicator

With power applied to the host system, the FOFE adapter box power supply indicator LED should be on. If this LED fails to turn on, check cable connections between FOFE adapter and host card.

5.2 Operating the FOFE Adapter.

There are no special considerations to be observed when using the FOFE adapter, as all functions of the unit are under the control of the host system.