

The SENTINEL II Fibre Optic Link is a non-galvanic link for the transmission of wide bandwidth analogue and digital signals. It has been designed for interference-free transmission in the presence of intense electromagnetic fields.



## APPLICATIONS

- EMC Testing
- HIRF Aircraft clearance
- Shielding Effectiveness Measurements
- Impulse/Time-Domain/NEMP Tests
- Low and High Level swept frequency vehicle/aircraft coupling measurements
- High Voltage Testing

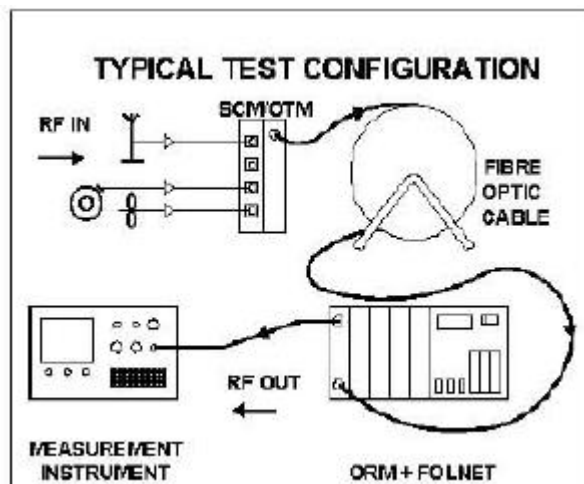
## HIGH PERFORMANCE

The Sentinel II makes use of the latest opto-electronic and RF technology to produce a high performance and high reliability Fibre Optic Link. The result is a product that offers the following important benefits:

- Simultaneous dynamic range of >137dB/Hz
- Wide bandwidth :<2kHz to >1.1GHz, 50W input/output
- Integrated RF components for small physical size
- Advanced battery management and charging technology for a compact battery pack and fast re-charge times
- Ruggedised optical cable, connectors and strain relief system
- Screened Transmitter electronics for transmission of signals from electrically noisy environments

## LOSS-LESS CABLE

The Sentinel II FOL comes close to the ideal “loss-less cable”, whilst exploiting the inherent advantages that optical fibre has for total immunity to electrical interference.



## SYSTEM CONFIGURATION

A complete SENTINEL II system consists of the following modules:



### SIGNAL CONDITIONING MODULE

The SCM provides the system with a range of functions that are ideal for EMC testing. All SCM functions are remotely controlled from the Folnet Controller by easy-to-use menu driven commands.

The SCM provides the following:

- 0-45dB attenuator in 3 dB steps
- 12dB Low noise Pre-amplifier
- Four Switchable Inputs
- Calibrate Generator
- Switchable High Impedance Buffer
- Maximum link gain of 33dB
- Maximum link attenuation of -24dB

The inclusion of the attenuators and pre-amplifier allows the user to adjust the gain in 3 dB steps to adapt the superb simultaneous dynamic range of the Sentinel II FOL to match the signal levels being monitored.

### OPTICAL RECEIVER MODULE

The Optical Receive Module (ORM) receives the signal from the OTM and converts it from an optical to an electrical signal. The ORM front panel contains a three colour LED, which gives the user an immediate indication of the integrity of the optical link.

The ORM is plugged into a Folnet Controller, which provides power and control. The Folnet Controller (see separate Data Sheet) is available in either single channel Desktop (pictured above) or five channel Rack mount version.

### OPTICAL CABLE AND CONNECTORS

The ruggedised Fibre Optic Cable contains two optical fibres: a single-mode fibre for signal information from the OTM to the ORM, and a multi-mode fibre for control information from the ORM to the OTM.

Single-mode fibre has been selected for the signal path due to its superior performance and elimination of “modal noise” and signal distortion, which are characteristic of systems using multi-mode fibre.

The surface finish of the cable has been designed to be resistant to “snagging”, thereby minimising the possibility of cable breaks.

High tensile strength aramid fibres within the optical cable are crimped to the optical connector housing ensuring that any stress on the cable is transferred directly to the mechanics. This guarantees that the sensitive optical fibres and connectors are relieved of stress.



The optical contacts of the Lemo connector are recessed inside the metal shell thus reducing the chance of damage to the polished fibre face. The special design allows for easy cleaning should the contacts become contaminated. The Lemo connector offers superb repeatability.

A cleaning kit and comprehensive instructions are provided for use should cleaning become necessary.

## DYNAMIC RANGE PERFORMANCE

The use of a DFB Laser Diode has yielded a system with unparalleled simultaneous dynamic range. Conventional laser and LED based systems cannot match this performance. The Sentinel II has a very low noise figure, and an output voltage capability of 630mVp-p. The attenuators within the SCM allow the monitoring of pulsed input signals as high as +25dBm/11Vp-p, and the pre-amplifier permits the detection of very low level signals. Refer to Application Note AN003 "Dynamic Range, Noise and Linearity" for further details.

## BATTERY MANAGEMENT

The standard Battery Pack maintains full performance for up to six hours of continuous operation. Alternatively, higher capacity Battery Pack options are available. Advanced power control circuitry within the OTM ensures that full performance is maintained until the Battery Pack is fully discharged. Once discharged, the Battery Pack may be rapidly re-charged with one of a range of Fast Chargers.

Please refer Datasheet for more information.



## OPTICAL TRANSMIT MODULE

The OTM contains an RF amplifier, Laser Diode and control circuitry. Its purpose is to convert the electrical input signal to an optical signal. It is connected to the Optical Receive Module via the ruggedised Fibre Optic Cable. Power is provided either by the removable Battery Pack, a suitably filtered external DC supply or a shielded mains supply. The OTM is paired up with a Signal Conditioning Module to provide greater functionality. Both units are shielded for operation in intense electromagnetic fields.



## Sentry II 250

The Sentry II 250 Fibre-Optic-Link offers similar performance to the Sentinel II, but is optimised for lower frequency operation (40Hz to 250MHz bandwidth). This makes the unit ideal for pulse power and lightning work for example.