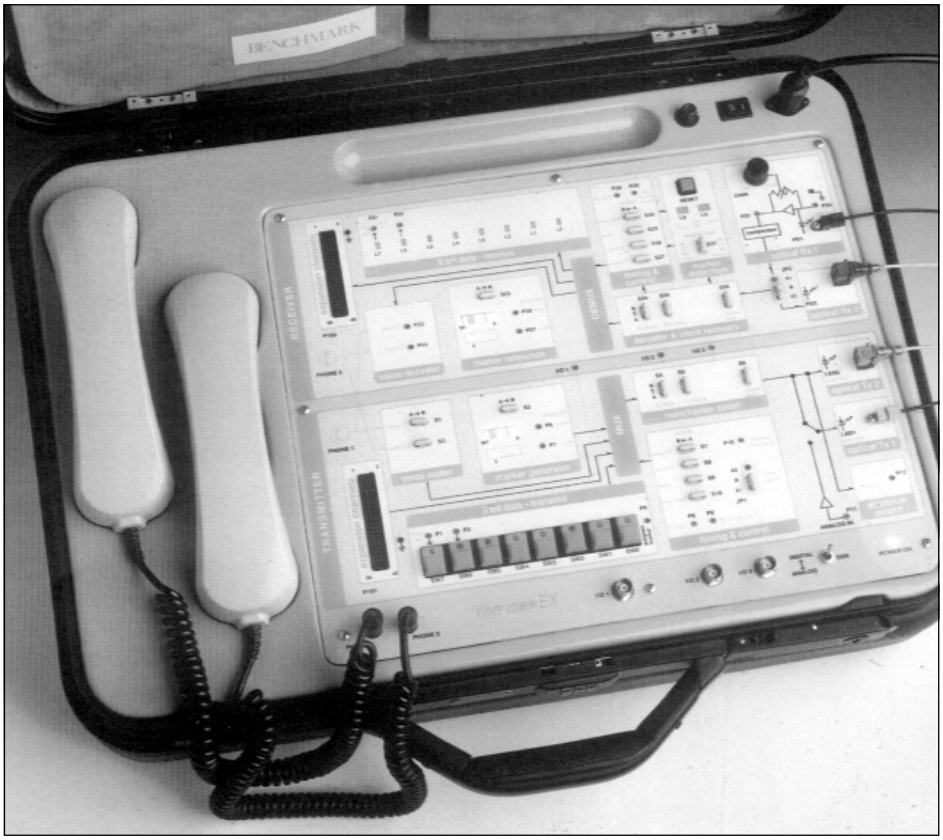
Feedback

Telecommunications

FIBRE OPTIC and DIGITAL COMMUNICATIONS TRAINER



BENCHMARK

The BENCHMARK Fibre Optics Trainer is a powerful, versatile and cost-effective experimenter kit, used to train personnel at all levels - from beginner to expert.

The **OFT Trainer** facilitates demonstration, training and experimentation in basic and advanced concepts including:

- **Principles of Fibre Optic Communications**
- **Basics of Digital Baseband Communications**
- **Advanced experimentation and development in Fibre Optic Digital Communication**

DESCRIPTION

- 850nm and 650nm fibre links
- Demonstrates established digital communication techniques such as Time Division Multiplexing,
- Transmitter & Receiver operation, PCM voice coding at (64 Kbits/sec), Manchester coding/ decoding for timing recovery, etc.
- Channels switchable at transmitter and receiver using time-switching principles
- Easy interface to external circuitry - all required inputs and outputs provided and extensively documented
- Power available to external circuitry as well

Comprehensive Laboratory Manual

The manual clearly explains the theory of Fibre-Optic analogue & digital communications through in-depth experimentation.

Accessories

All accessories required to conduct basic experiments and to interface circuitry are provided with kit.

Options

RS-232 communication interface module available as an option to enable computers to be connected over fibre - demonstrates integrated voice/data/RS-232 communication link

EXPERIMENTS

Basic experiments (using standard kit)

1. Fibre Optics

- Fibre Optic Analogue links
- Digital link
- Losses in optical fibre
- Effect of EMI interference
- Numerical aperture measurement

2. Multiplexing & Digital Communication

- Time Division Multiplexing
- Framing in Time Division Multiplexing
- Manchester Coding/Decoding - Timing Recovery
- Voice Coding - A-Law
- Pulse broadening in Fibre Optic Communications

Advanced Experiments (concepts explained in manual, requires circuit development by user)

- Interfacing 8kbps, 64kbps and 256kbps synchronous channels
- Interfacing synchronous channels at less than 8kbps
- Asynchronous channel interfacing using oversampling
- Asynchronous channel interfacing using bit stuffing

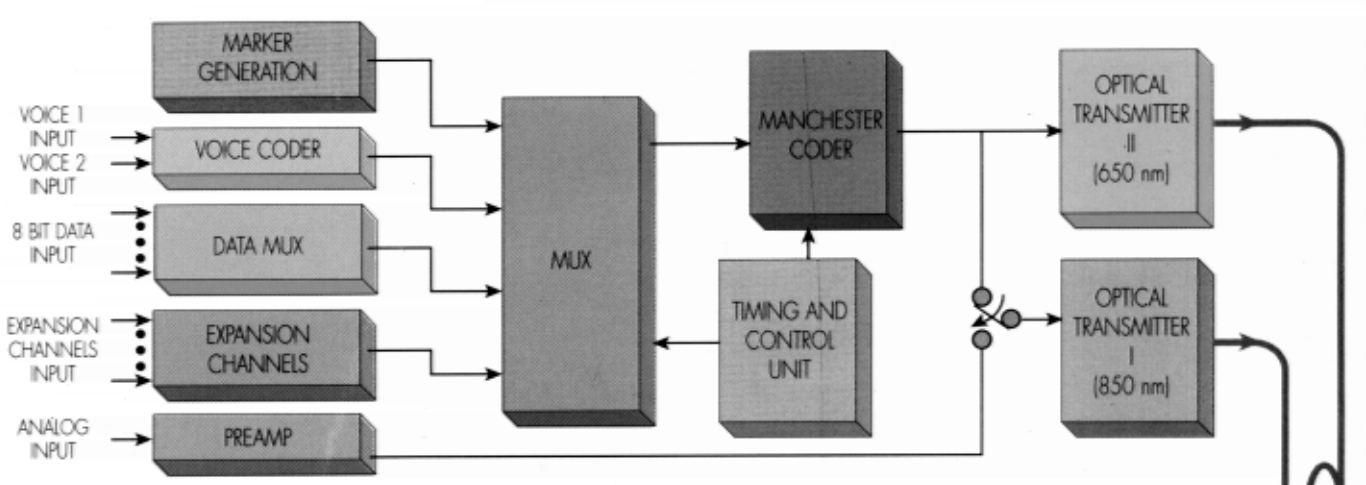
Advanced Applications (concepts explained in manual, requiring circuit development by user)

- 1/4 Voice Channel
- Manchester coder/decoder with PLL clock recovery
- 4B/5B (or 5B/6B) coder/decoder with clock recovery
- Frame marker coder/decoder
- RS-232 communication link
- Slow-scan video link

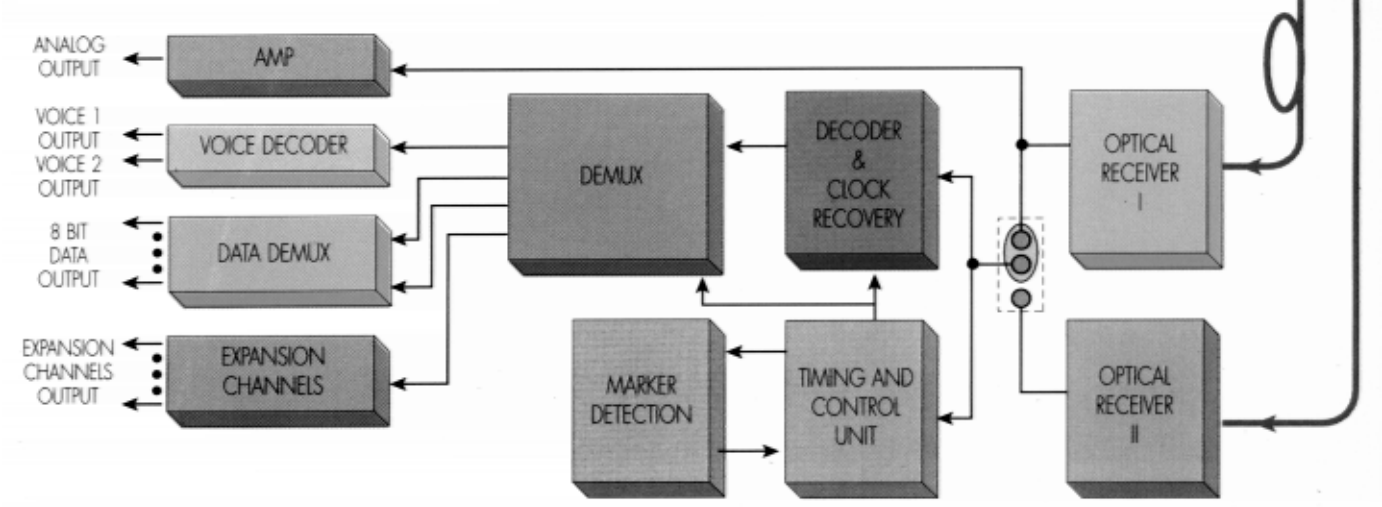
FEATURES

- 11 usable 64kbps channels
- User definable frame marker (two alternating 8-bit markers - can be set to CCITT compatible)
- On-board two digitised voice channels, one 8-bit data channel and several user expansion channels
- Demonstrates fully operational integrated voice/data fibre-optic communication link
- RS-232C Communications module optional - demonstrates computer communications over fibre
- Time Division Multiplexing of voice, data and user-defined data streams
- Modular design enables configuration with user-designed modules
- Wide scope for experimentation through the use of external circuitry interfaced to kit
- Comprehensive manual describes wide range of experiments - can form basis of courses
- Ready to use kit comes complete with accessories

TRANSMITTER



RECEIVER



SPECIFICATIONS

Electrical Section

No. of Channels	:	12 (64 Kbit/s) channels, including one slot for 16-bit marker
Frame Marker	:	2 x 8-bit markers in alternative frames, user-settable, can also be set to CCITT standard
Coding/Decoding	:	Manchester coding/decoding
Data Rate	:	768 Kbits/sec, 1.536 Mbits/sec after Manchester coding
Voice PCM Channels	:	2 nos. (2 telephone handsets provided)
Voice coding	:	A-Law
Analogue Input Voltage	:	1V (pp)
Analogue Input Bandwidth	:	100 KHz

Optical Section

Wavelengths	:	850nm & 650nm
FWHM Spectral Width	:	100nm
Fibre	:	1000 micron Plastic Fibre (1m, 3m & 20m lengths included)
Max Link Length	:	5m for 850nm Link 30m for 650nm optical digital link
Max Data Rate	:	2 Mbits/sec (NRZ)

Ordering Information

Optical Fibre & Digital Communications Trainers	**OFT**
RS-323 Interface Module for OFT	**OFTRS**
Series 2000 Optical Power Meter Mainframe with PM2011XX Silicon Photodetector Module	**PM2001**
Series 2000 Optical Power Meter Mainframe with PM2012XX Germanium Photo Detector Module	**PM2002**
Series 2000 Optical Power Meter Mainframe with PM2011XX Silicon Photo Detector Module PM2012XX & Germanium Photo Detector Module	**PM2003**
Silicon Photo Detector Module	**PM2011**
Germanium Photo Detector Module	**PM2012**
Series 2000 Stabilized Light Source Mainframe with LS2011XX 860nm Stabilized Light Source Module	**LS2001**
Series 2000 Stabilized Light Source Mainframe with LS2012XX 1300nm Stabilized Light Source Module	**LS2002**
860nm Stabilized Light Source Module	**LS2011**
1300nm Stabilized Light Source Module	**LS2012**
850nm Stabilized, 2Mbps 501125 Glass Fibre Optical link with Power Supply & 100m of fibre	**FOTR300**
650nm, 4Mbps, Plastic Fibre Optical link with Power Supply & 20m of lmrn plastic fibre	**FOTR200**
Fibre Optic Video link with Audio Channel (850nm SMA) Transmitter & Receiver units with built-in power supply (Fibre not included)	**VL200**

Feedback
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