

# BENCHMARK



O F T

***Optical Fibre  
and Digital  
Communication  
Trainer***





The Benchmark OFT Optical Fibre Trainer is a powerful, versatile and cost-effective experimenter kit, usable to train personnel at all levels – from beginner to expert. The OFT Trainer facilitates demonstration, training & 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 communications

It is suitable for training of:

- R & D Personnel in research labs
- Students at B.S. & M.S. (EE) levels in engineering colleges
- Technical Training Centres – Telecom, Industry R & D, Staff Training, etc.
- Students in Polytechnics and Science colleges



## DESCRIPTION

850nm and 650nm fibre links

Demonstrates established digital communication techniques such as Time Division Multiplexing, Transmitter & Receiver operation, PCM voice coding at (64 Kbps), Manchester coding/decoding for timing recovery, etc.

Channels switchable at transmitter & 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

## FEATURES

- ▶ Eleven usable 64 Kbps channels
- ▶ User definable frame marker (two alternating 8-bit markers - can be set to CCITT compatible)
- ▶ Two on-board digitized 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 & user-defined data streams
- ▶ Modular design enables configuration with user-designed modules
- ▶ Wide scope for experimentation through 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

## EXPERIMENTS

Can be done using just the standard kit.

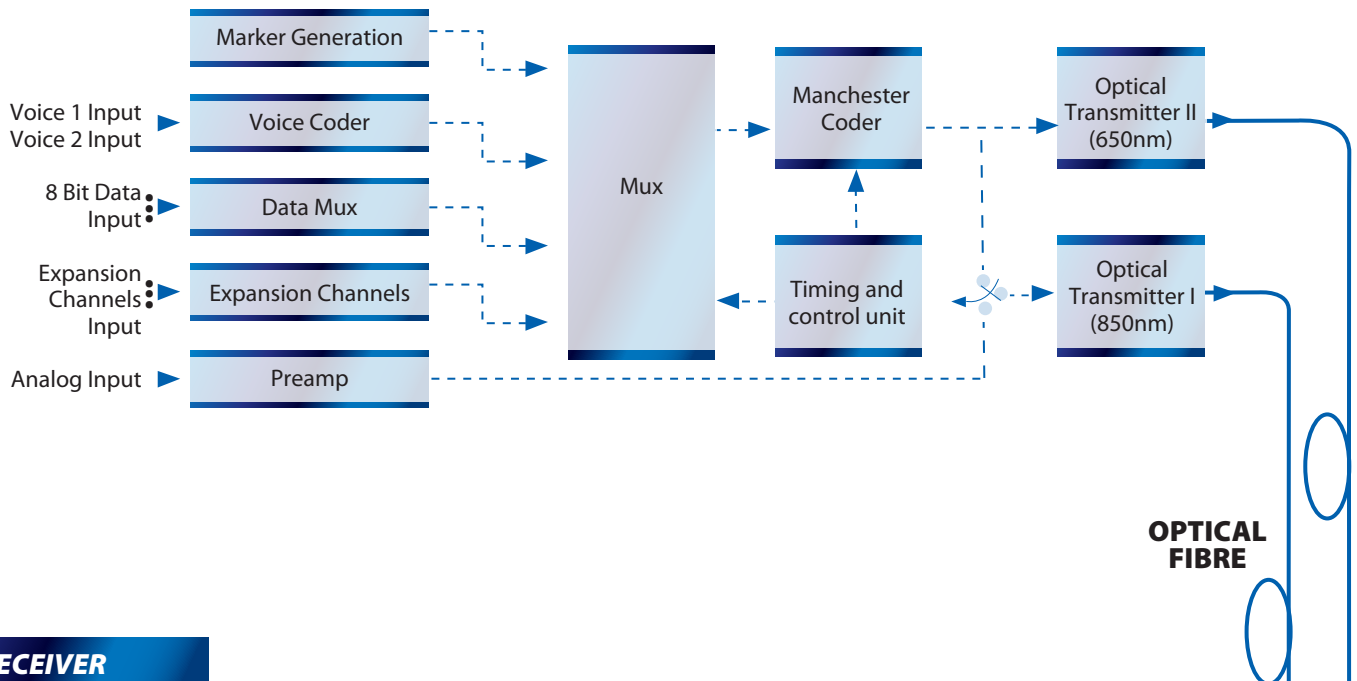
### I. Fibre Optic Experiments

Fibre Optic Analog Links  
Digital Link  
Losses in Optical Fibre  
Effect of Electromagnetic Interference  
Numerical Aperture Measurement

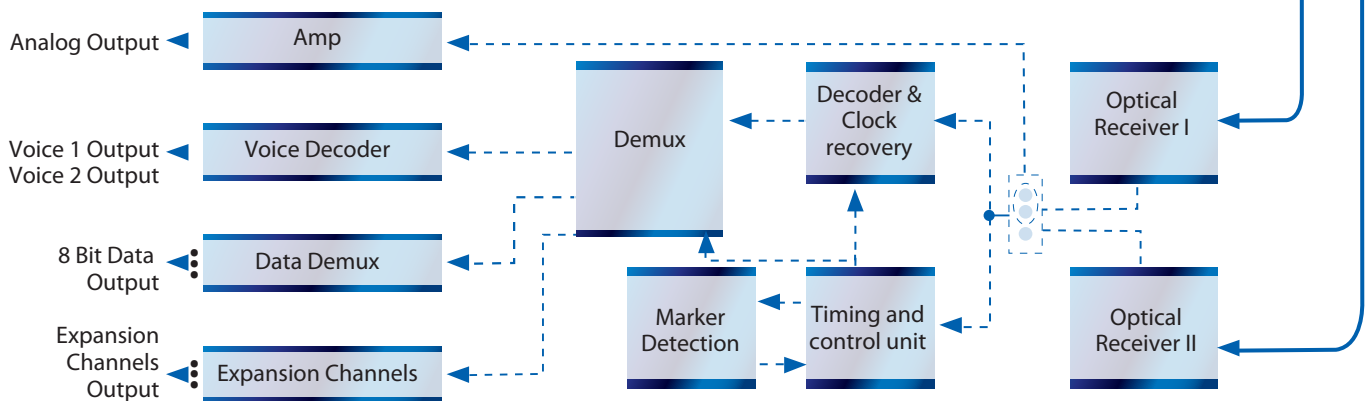
### II. Multiplexing and Digital Communication Experiments

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

## TRANSMITTER



## RECEIVER



## SPECIFICATIONS

### Electrical Section

No. of Channels: 12 (64 Kbps) channels, including one slot for 8-bit Marker

Frame Marker :Two 8-bit markers in alternate frames, user-settable, Can also be set to CCITT standard

Coding/Decoding :Manchester coding/decoding

Data Rate : 768 Kbps, 1.536 Mbits/sec after

Manchester coding

Voice PCM Channels : 2 (2 telephone handsets provided)

Voice coding : A-Law

Analog Input Voltage : 1 V (pp)

Analog Input Bandwidth : 100 KHz

### Optical Section

Wavelengths: 850nm and 650nm

FWHM Spectral Width :100nm

Fibre :1000 micron Plastic Fibre ( 1m and 3m lengths Included)

Max Link Length : 5m for 850nm link, 30m for 650nm optical digital link

Max Data Rate :2 Mbits/sec (NRZ)

*Specifications subject to change without notice*

### Ordering Information

Item	Part #
1. Optical Fibre & Digital Communications Trainer	OFT
2. RS-232C Interface Module for OFT (optional)	OFT-RS232C
3. 20m 1000 micron plastic fiber link (optional)	OFT-LINK

# BENCHMARK

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## ELECTRONIC SYSTEMS

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