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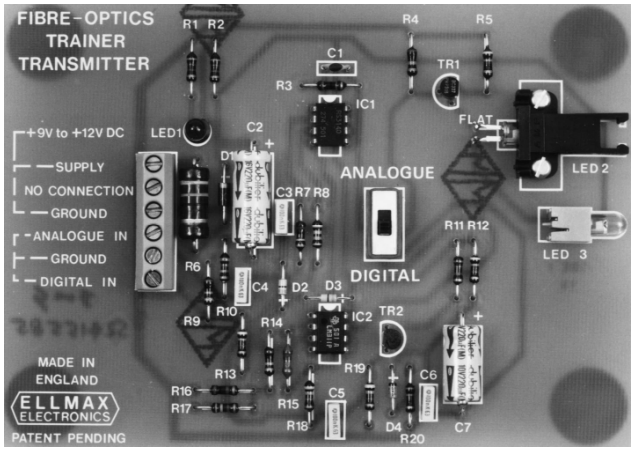
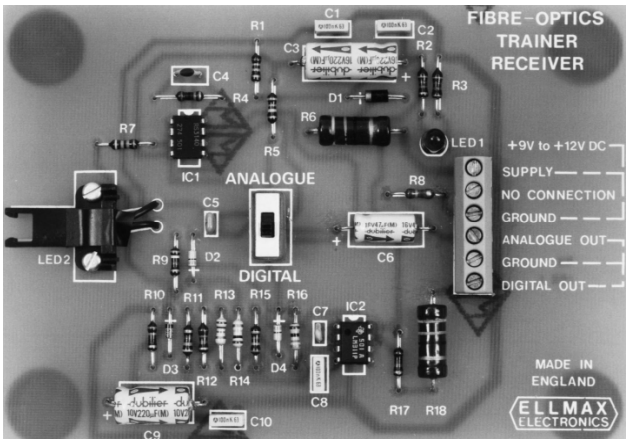
# FIBRE-OPTICS TRAINER


## A unique product for teaching fibre-optics and telecommunications

The Fibre-Optics Trainer has been designed for teaching fibre-optics and telecommunications, particularly in schools. The Trainer consists of an optical transmitter and receiver unit (both switchable between **analogue** and **digital),** 5 metres of terminated optical cable, a comprehensive manual, a carrying case, and two battery clips.

Numerous exciting demonstrations and experiments using the Trainer are described in the instruction manual, and the versatility of the instrument enables many more applications to be thought up by the teacher or student. Visible **red** light sources have been incorporated in the transmitter in order that the concepts being taught may be readily understood. A detailed and easy to follow explanation of the principles and applications of fibre-optics is also given in the Fibre-Optics Trainer manual.

The cost of the product has been kept to a minimum by including only the essential items in the package, and allowing the teacher to use standard school equipment in conjunction with the Trainer for carrying out the various demonstrations.

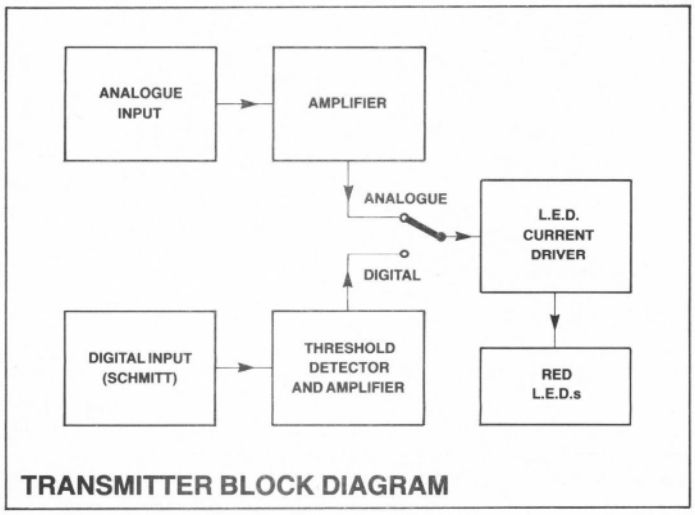
Designed and Manufactured in the U.K.

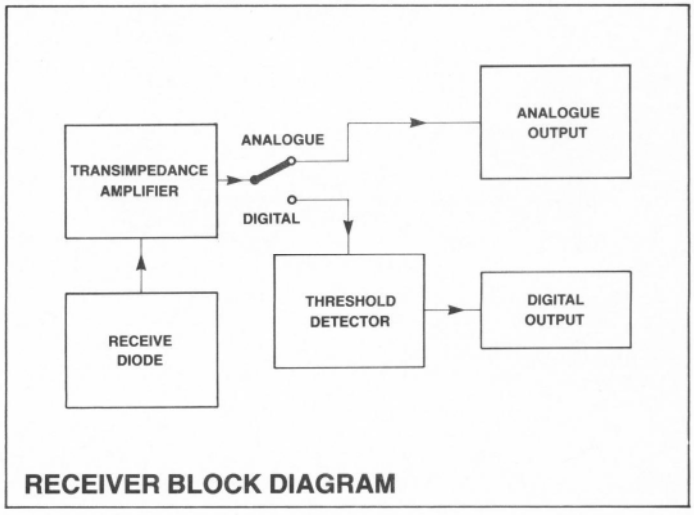
# FIBRE-OPTICS TRAINER
# APPLICATIONS AND DEMONSTRATIONS

The many applications that can be carried out with the Fibre-Optics Trainer in conjunction with standard school equipment include:

1. transmission of high quality **analogue** (e.g. speech and music) and **digital** data (including morse code and computer data) over **optical fibres** and **free-space;**
2. "listening" to various light sources, such as mains lighting, torch light, sunlight, or infra-red light;
3. measuring the frequency of a rotating disc or vibrating object using light reflection or transmission;
4. clarifying the important differences between analogue and digital techniques;
5. construction of an alarm system based on the presence of a light signal;
6. producing an optical pulse-counting system;
7. showing the properties of light using a novel approach.

The following diagrams show the functions of the transmitter and receiver units in simplified form:




Some major parameters of the transmitter and receiver units are:

a) Transmitter/Receiver Combination

Bandwidth:

Analogue: 20Hz to 25kHz
Digital: d.c. to 20kBit/s

Range for analogue transmission (better than 20dB S.N.R.): 20dB

Range for digital transmission (better than 1 in $10^9$ error rate): 10dB

(The above transmission ranges are for 1mm diameter polymer fibre. As an example of transmission distance, low-cost plastic fibre with a loss of 0.2dB/m allows a transmission distance of over 40m.)

b) Power supply

1. Transmitter +9V to +12V d.c. (current is 25mA typical at 9V)
2. Receiver +9V to +12V d.c. (current is 15mA typical at 9V)

c) Physical Characteristics

Dimensions: 14cm x 10cm for each unit

Operating Temperature Range: 0°C to 50°C

Optical Connectors: AMP DNP

Optical Cable: 5 metres of 1 mm core plastic fibre.

*For further details contact:*

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