

Data Transmission via Optical Fiber

Full Version(CA-1440) – Basic Version (CA-1441)



The data flux around the world is increasing drastically by communication like telephone and web. The data transfer is based on fiber optics in combination with laser diodes. The main units of such a data transmission line are a transmitter transforming electrical to optical signals, a glass fiber line and a receiver converting back the optical to electrical signals. Peripheral units might be all kind of audio and video devices or other digital media.

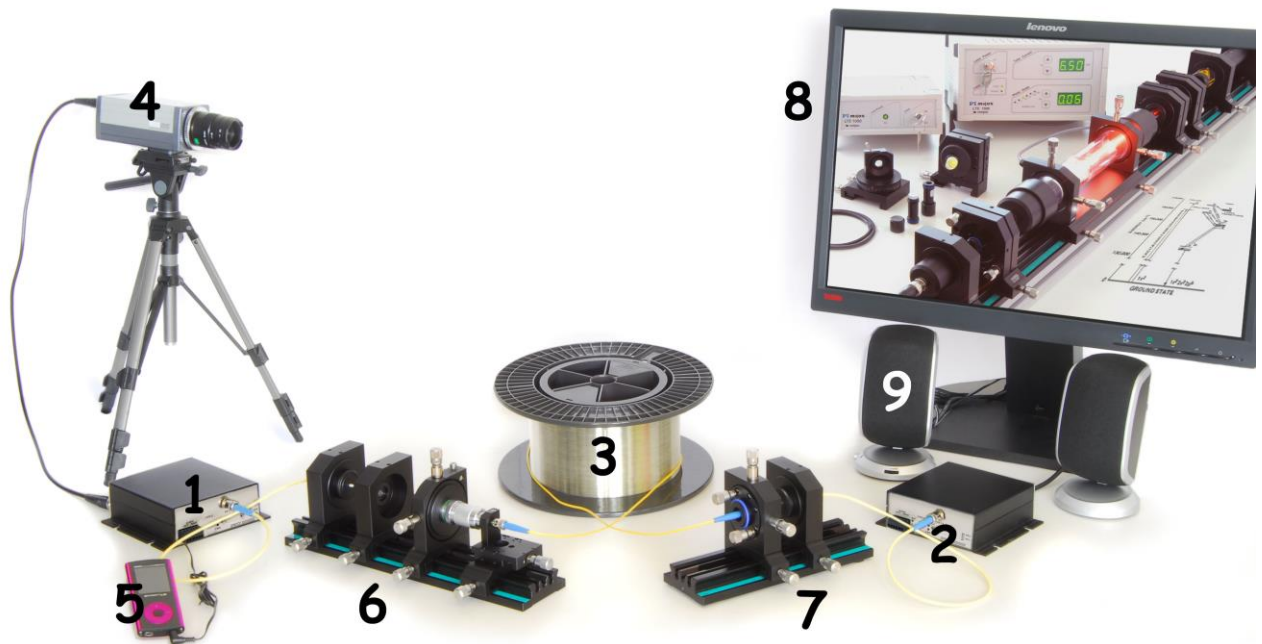
The educational kit for data transmission demonstrates digital signal transmission on a 5 km optical line. A video source consisting of a color video camera and a stereo audio source consisting of an MP3 player are connected to

the optical transmitter. Via the provided fiber the audio as well as video signals are transmitted simultaneously to the optical receiver. At the receiver's side the optical signal is transformed to an electrical signal which passes on to a monitor displaying the picture taken by the video camera. The transmitted audio signal is played by a pair of active speakers. In the Full Version (CA-1440), two air gaps consisting of fiber coupling-out and coupling-in modules allow the introduction of signal losses. The difficulty of coupling laser light into a fiber can be demonstrated. A photo detector allows the detection of the light signal at these positions.

Educational Objectives of Investigation

- Laser Diodes
- Optical Glass Fibers
- Photo Detector
- Handling of Fiber Optical Cable
- Modulation of Laser Diodes
- Video Cameras
- Video Signal Transmission
- Optical Signal Detection
- Coupling Light into a Fiber
- Signal Losses

Setup and Components



- 1 Optical signal transmitter (1 video channel / 2 audio channels)
- 2 Optical signal receiver (1 video channel / 2 audio channels)
- 3 5000 m optical glass fiber
- 4 Color video camera on tripod
- 5 MP3 player
- 6 Light coupling test unit transmitter (Full Version only)
- 7 Light coupling test unit receiver (Full Version only)
- 8 Flat screen display
- 9 Pair of active stereo speakers
- 10 Set of necessary connection cables, patch fibers and adapters
- 11 User manual (not shown)

Ordering Information

For ordering the Data Transmission kit Full Version (CA-1440) use ordering number: 490091440

For ordering the Data Transmission kit Basic Version (CA-1441) use ordering number: 490091441