



# Optical Communication over POF Integrated Optical Receiver Technology

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## Abstract:

This book presents high-performance data transmission over plastic optical fibers (POF) using integrated optical receivers having good properties with multilevel modulation, i.e. a higher sensitivity and higher data rate transmission over a longer plastic optical fiber length. Integrated optical receivers and transmitters with high linearity are introduced for multilevel communication. For binary high-data rate transmission over plastic optical fibers, an innovative receiver containing an equalizer is described leading also to a high performance of a plastic optical fiber link. The cheap standard PMMA SI-POF (step-index plastic optical fiber) has the lowest bandwidth and the highest attenuation among multimode fibers. This small bandwidth limits the maximum data rate which can be transmitted through plastic optical fibers. To overcome the problem of the plastic optical fibers high transmission loss, very sensitive receivers must be used to increase the transmitted length over POF. The plastic optical fiber limited bandwidth problem can be decreased by using multilevel signaling like multilevel pulse amplitude modulation or by using an equalizer for binary data transmission.

## Keywords:

Equalization Techniques - High-speed Transmission through Plastic Optical Fibers - Multi-level Data Transmission - Multilevel Modulation Formats - Multilevel Signaling - Optical Communication - Optical Receiver - Optical Transmitter - Plastic Optical Fiber - Transimpedance Amplifier Theory

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